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Dee Estuary Cockle Fishery

Public Certification Report

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1. Executive Summary

The fishery under assessment is defined as:

Species:	Cockle *Cerastoderma edule*
Geographical Area:	Dee Estuary, UK
Method of Capture:	Hand-gathering
Stock:	Dee Estuary cockle
Management System:	Environment Agency Wales
Client Group:	All Licensed fishers

The cockle fishery is located in the river Dee estuary between north Wales and Wirral. Within the estuary there are five main cockle beds which vary spatially according to spatfall, exploitation and other external factors. Historically, the fishery tended to operate in a 'boom and bust' fashion, with extensive harvesting of good cockle resource, followed by little fishing until the next spatfall had reached an economically harvestable size. Issues associated with cockle fishery management in the UK (notably deaths of some gatherers on Morecambe Bay) led to a regulating order being put in place; 2008 was the first year under regulation. This is the current management regime; with EAW being the fishery management authority.

The Dee Estuary is also a highly protected site of European nature conservation importance. Recognising this, the fishery is managed in close liaison with the Welsh nature conservation agency Countryside Council for Wales (CCW). Most notably, the harvest of cockles is largely determined by analysis of the cockle requirements for their main predator in the estuary, oystercatchers. The fishery performed very strongly against all three Principles, reflecting a well-managed, small and discrete fishery with low environmental impact.

The assessment was conducted by a team of two experts; Dr Terry Holt and Dr Andrew Hough. Andrew Hough has been trained in the use of the Risk Based Framework. Peer Reviews were carried out by Dr Andy Brand and John Holmyard.

The assessment was announced according to MSC procedure, and a Site Visit carried out at the EAW offices in Buckley, 29 November 2011.

The determination is that the fishery should be certified. No conditions have been raised.

2. Authorship and Peer Reviewers

Assessment Team

Dr Terry Holt. Dr Holt is a director of CMACS Ltd with responsibility for managing marine consultancy projects, Environmental Assessments and ecological surveys. He has over twenty five years experience in shellfish ecology, marine aquaculture, EIAs and benthic fish and invertebrate surveys, including providing expert evidence on molluscan fisheries at planning enquiries. Dr Holt has previously been involved in Marine Stewardship Council (MSC) pre-assessments and main assessments for Moody Marine (Burry Inlet Cockle fishery, Danish Blue shell mussel fishery Limfjord, Ben Tre clam fishery, Vietnam) and has worked on molluscan fishery pre-assessments for other organisations in SE Asia. He also contributed at early MSC workshops on the development of generic scoring guidelines and refining of assessment methods.

Dr Andrew Hough: Moody Marine Limited. Dr Hough has a PhD in marine ecology from the University of Wales, Bangor on marine ecology. He has been involved in marine and coastal environmental management since 1991, including management of fishery impacts on ecosystems and marine conservation biology. He has been manager of Moody Marine operations within Moody International Certification from 1999 to 2011 with particular responsibility for the implementation of MSC Certification procedures and development of MSC methodologies. Dr. Hough has acted as lead assessor on the majority of Moody Marine MSC pre assessments and main assessments during this time. He is fully trained in use of the MSC Risk-Based Framework.

Peer Reviewers

Dr Andy Brand. Dr Brand has 40 years experience as a University academic, involving undergraduate teaching, postgraduate training and research: lecturing on marine physiology, marine ecology, fisheries biology and aquaculture. Over this time, he built up a large, active, research group with grants and contracts totalling £3.8 million, including major grants from the EU, MAFF, DEFRA and the Isle of Man Government. He was Fishery Advisor to the Isle of Man Government, 1966-2006, carrying out stock assessments for herring, scallops and other species, advising on fishery management and representing the Manx Government at local, national and international meetings. Occasional member of ICES Herring Assessment, Pectinid Stocks and Ecosystem Effects of Fishing Working Groups and Current member of the Editorial Board of Journal of Shellfish Research. He has extensive fishery management and environmental assessment consultancy experience and MSC Assessor and independent reviewer for Marine Stewardship Council certification applications for scallop, mussel and oyster fisheries.

John Holmyard. John holds a degree in Marine Biology and Oceanography from the University of Wales, Bangor. He applied the knowledge gained during his studies to the development of one of Scotland's largest and most innovative mussel farming operations. He now undertakes consultancy work on aquaculture for a wide range of clients worldwide, and continues to work with the research community and eNGOs to further develop bivalve fisheries. For the past four years he has directed his energies into the research and planning of a large-scale offshore rope grown mussel farm in the UK. His research has taken him as far afield as France, China, New Zealand and the Netherlands. For many years he was the scientific representative on the Association of Scottish Shellfish Growers' Management Committee, and was actively engaged in the representation of shellfish aquaculture interests at policy level. He serves on aquaculture strategy groups at National and EU level, with particular emphasis on the potential for integrating shellfish cultivation with other maritime industries.

3. Description of the Fishery

3.1 Unit(s) of Certification and scope of certification sought

The Unit of Certification is defined as:

Species: Cockle *Cerastoderma edule*
Geographical Area: Dee Estuary, UK
Method of Capture: Hand-gathering
Stock: Dee Estuary cockle
Management System: Environment Agency Wales
Client Group: All Licensed fishers

The fishery is managed and licensed by the client, Environment Agency Wales and includes all licensed gatherers. There are 50 main licensees within the fishery, and additional 3 apprentices. Details of licensees, excluding personal information, are available from the EA on request.

There are no introduced species or stock enhancement activities in relation to this fishery. The fishery is within scope of the MSC fishery standard.

3.2 Overview and History of the fishery

The cockle fishery is located in the river Dee estuary between north Wales and Wirral. The Dee Estuary fishery is defined to the north by a line drawn between Red Rocks, northernmost point of Hilbre Island and the old lighthouse, point of Ayr, and to the south by a line drawn at right angles to the training wall intersecting the Flint channel light. Total area below mean high water springs (MHWS) on the definitive map is 10,656 hectares. Within the estuary there are five main cockle beds located on the West Kirby, Thurstaston, Bagillt, Mostyn and Salisbury banks. These beds vary spatially according to spatfall, exploitation and other external factors and it is possible that new beds may develop in the future.

Historically, the fishery tended to operate in a 'boom and bust' fashion, with extensive harvesting of good cockle resource, followed by little fishing until the next spatfall had reached an economically harvestable size. A permit system has been in operation since Byelaws regulating fishing for shellfish in the River Dee and its estuary were made by the former National Rivers Authority and confirmed in 1995. The beds have been closed since 1996, except for brief periods in 1997, 2001, 2002, 2003 and 2005. Best estimates of landings over this period are:
2001: 808 permits issued. West Kirby bed yielded 2500 tonnes in 34 days, TAC unrecorded.
2002: 1017 permits issued. West Kirby and Salisbury beds yielded 1835 tonnes in 7 days, TAC=3772 tonnes.
2003: 859 permits issued. West Kirby and Thurstaston yielded 1182 tonnes in 16 days, TAC=2522 tonnes.
2005: 565 permits issued. Salisbury bed yielded 500 tonnes in 3 days, TAC=1150 tonnes.

Fishing has, however, always been undertaken by hand gathering (raking and sieving), although access to beds is generally by boat.

Issues associated with cockle fishery management in the UK (notably deaths of some gatherers on Morecambe Bay) led to a regulating order being put in place; 2008 was the first year under regulation. This is the current management regime; with EAW being the fishery management authority (further details are provided in Section 3.5).

3.3 Principle One: Target Species Background

3.3.1 Biology of the target species

The cockle *Cerastoderma edulis* is a common burrowing bivalve occurring on all British and European coasts. It is common in the intertidal and shallow subtidal, where it can occur in a variety of sediments, notably muds, sands and muddy gravels. It can tolerate salinities down to 10 ppt, although the normal salinity range is around 15 – 35 ppt. In broad, sheltered bays and estuaries densities can be extremely high. Cockles live within a few cm of the surface and can be washed out en-masse during storms. Lifespan is typically 2-4 years in most situations, although individuals can live to 9 or 10 years. The sexes are separate and spawning normally occurs in the summer at a length of around 15 – 20 mm and an age of around 18 months, although large (>15mm) 1 year old individuals can also spawn. The number of eggs released is extremely large (typically greater than 1 million per animal). Larvae are planktonic, and typically spend around 3-5 weeks in the plankton. Settlement of small cockles, known as spat, normally occurs during the summer, sometimes in densities of 10,000 / m2. There may be a primary settlement low on the shore followed a few weeks later by movement to a secondary settlement higher on the shore. Cockles can be an important food item for many intertidal wading birds, particularly over winter in the UK.

Cockle populations in the region vary from year to year, between beds and even within beds. This variation is due not only to levels of exploitation but also local environment factors which can affect the success of spatting. This interaction between environment and exploitation and spatting success is a feature of all exploited cockle fisheries.

In the absence of robust scientific information, the Agency is adopting a conservative approach and assuming that the cockles in the Dee Estuary are a discrete population which is dependent upon recruitment to the fishery within the estuary with little or no input from populations outside the estuary. There are, however, gaps in knowledge regarding any interdependence of cockle beds in different areas.

3.3.2 Stock Status and Reference Points

Part of the aim of the management system is to increase the stability of the Dee Estuary population, and fishery – by maintaining a more constant biomass level and increasing the year class strength within the population.

Cockles have an extremely high reproductive potential, large number of spat may be produced from an extremely small stock biomass. Recruitment is then dependent upon successful settlement and growth. Evidence from several cockle populations (e.g. Burry Inlet) show very high recruitment from very low stock levels. As mentioned above, cockle populations vary from year to year, between beds and even within beds. This variation is due not only to levels of exploitation but also local environment factors which can affect the success of spatting. This interaction between environment and exploitation and spatting success is a feature of all exploited cockle fisheries.

The model used in managing the cockle fishery is a behaviour-based predator nutrition model that was developed by Centre for Ecology and Hydrology (CEH) to explore the relationship between oystercatchers and shellfish populations in order to inform policy-makers of the consequences for oystercatchers and the shellfish industry of alternative ways of managing shellfisheries (oystercatchers eating commercially exploited size-classes of shellfish).

The model predicts both the body condition (fat reserves), and the numbers of oystercatchers that could starve, under alternative fishery management regimes, including the current harvest strategy. The model therefore predicts the effect of alternative shellfishery management options on fitness and population size, the key biological parameters. The model uses 5-year mean numbers of oystercatchers to predict the population level. The number was last updated in May 2010 when a number of 22 677 oystercatchers was obtained. It is currently being reviewed.

The CEH model has estimated that the Dee oystercatcher population would require 4600 tonnes of cockle on the 1st September to survive the winter. The most important factor in determining whether the body condition or mortality rate of the birds was affected was the density of fishable cockles (i.e. those retained by a 20 mm sieve) at which the beds were closed to fishing. Taking the precautionary assumption of no supplementary food sources, it was found that the current limit of 100 fishable cockles m^{-2} combined with the overall TAC, could be reached without any effect on bird body condition or mortality in the model. If the presence of supplementary food sources was assumed, large cockles could be fished down to 50 m^{-2} without affecting the birds. However, these simulations require a significant stock of cockles below fishable size but still of a size suitable for oystercatchers.

Stock assessment surveys are carried out bi-annually (May/June and Sept/Oct). The TAC is then determined using data on the standing crop estimated to be present on 1st July; stock removal (fishing is allowed only from 1 July to 31 December each year) is estimated by monitoring quotas, and abundance of the stock is then checked during the autumn stock assessment. Each year, a Habitats Risk Assessment (HRA) is carried out to determine the effects of the cockle licence conditions (notably the TAC) on the relevant features of the European Site (in this case, primarily oystercatchers). This is an assessment prepared by EAW and reviewed by CCW. The assessment considers the quantity of cockle required on 1st September for oystercatchers to survive the winter (4600 tonnes in latest assessment). The model inputs the total biomass >15mm cockle estimated from April surveys and adjusts for growth up to July. Mussel stocks are also included in the estimate. The model then predicts a baseline mortality without fishing and tests to see if fishing by 50 fishermen to end of December with a daily quota of 300kg has a significant effect on mortality. Depending on stock levels and the presence of any other significant effects, the duration of fishing and/or the daily TAC can be adjusted until no significant effect is predicted to occur. The critical test is to assess how any variation in cockle mortality could have a significant adverse effect on the oystercatcher population of the Dee estuary.

This assessment does assume that cockle natural mortality rates remain stable over the fishing period when in fact factors such as high temperatures can increase mortality. Stock surveys in September (and regular inspections of the cockle beds) ensure that these variations are accounted for.

The total estimated biomass from the latest (September 2011) survey was 9451 t, of which the biomass >20mm was 2876 t. The distribution of densities among the beds is given in the table below.

	Mostyn	**Thurstaston**	**West Kirby**	**Salisbury**	**Caldy**	**S.Salisbury**	**No 3**	**The Marsh**
Total April density (per m^2) [1]	87	221	195	344	1128	303	372	414
Calc Sept density[6] (per m^2)	58	146	129	228	820	201	46	274
Estimated Sept Biomass (tonnes)	278	1568	1032	2030	1856	441	916	1330
Estimated Biomass >20mm (tonnes)	94	533	351	650	408	77	311	452

The fishery is opened when at least one bed has a density sufficient to allow exploitation that will not impact on oystercatcher survival which tends to be >100/m2.

Under the provisions of the Dee Regulating Order, 50 licences have been issued for the purposes of commercial cockle fishing. For 2011, Stock surveys in April have estimated a total biomass of 9144 tonnes (>15mm) and the CEH oystercatcher behavioural model has predicted that 4702 tonnes is available to the fishery. A daily catch allocation of 300 kg (an amount reasonably harvestable by a hand gatherer over a single low water period) has been agreed equating to an annual TAC for the fishery of 1725 tonnes. The model estimates that this would not significantly change oystercatcher mortality rates. The TAC is be reviewed following stock surveys in September to ensure that natural mortality levels remain as predicted.

Total biomasses in recent years (since the granting of the Regulating Order) have been:

2008 23,578 mt
2009 18,495 mt
2010 9,272 mt

3.3.3 Harvest Strategy

A harvest strategy is the combination of monitoring, stock assessment, harvest control rules and management actions; these issues are discussed in Sections 3.3.3 to 3.3.6.

The Harvest Strategy for this fishery is set out in the fishery Management Plan (latest version of September 2011). The overall management objectives are:

- To develop a sustainable fishery that provides a consistent, regular income for fishermen.
- To minimise the impacts to the European site and local residents arising from fishing activities
- To improve fishery management, monitoring and enforcement.

These objectives are achieved primarily through the setting of a TAC so as to maintain a sustainable fishery and to prevent significant effects of cockle harvest on their key predator – overwintering oystercatchers. As discussed above, the TAC is set to maintain the stock above levels empirically determined not to have a significant effects on oystercatcher mortality (a precautionary target reference point). Both cockle and oystercatcher populations are well monitored. The TAC is allocated through a daily quota to licensed gatherers (50 at present).

Additional elements of the strategy comprise closed seasons, minimum size limits, limits on the number of licenses, and the density of cockles on at least one bed exceeds the 'giving up density (100/m2). These are discussed further below.

3.3.4 Harvest Control Rules and Tools

A key aim of the harvest strategy is to allow up to 50 fishermen to participate in the Fishery, on an annual basis. The figure of 50 licences is based on the following justification:

• Total Annual Catch (TAC) is estimated to vary between 500 and 2500 tonnes.
• Maximum annual exploitation rate is estimated at 50 tonnes/person
• Exploitation rate above 50 licences will result in an economically unsustainable, part time fishery
• Ecological requirements of European site require that fishing pressure/disturbance be minimised.

At times when the Agency considers that the fishery could sustain it, short-term non-renewable licenses will be issued at the Agency's discretion. These licences will be allocated to people on the top of the license waiting list who have a track record in the commercial cockle fishery on the Dee Estuary.

Stock surveys take place in May/June each year and TAC will be predicted as the total biomass of takeable cockles that can be removed without impacting on the oystercatcher feature. A takeable cockle is defined as one that is retained by a gauge having a square opening of 20 mm measured across each side. Cockles of this length are in their second year of growth and will have spawned at least once. Stock surveys will estimate the biomass of each cohort in each bed within the fishery. The TAC is divided amongst the licensed gatherers as a daily quota, based on an established number of fishing days.

All beds that reach the minimum density will be open until 31st December subject to TAC. A bed will be open unless TAC=0 or the results of the appropriate assessment or the application of the oystercatcher behaviour and feeding model require otherwise.

3.3.5 Information and Monitoring

Annual wide-ranging surveys are undertaken in April each year to provide an estimate of total cockle biomass. All sizes of cockle are included in this survey. The biomass is then adjusted for growth to July to estimate the total biomass of >15mm cockle. This figure is included in the oystercatcher predation model to determine their nutritional requirement for cockle at 1st September for oystercatchers to survive the winter. The highest density beds are then re-surveyed in September to take account of variations in natural mortality between April and the arrival of overwintering oystercatchers, typically in September. There are also regular walk-over surveys of the beds by EAW to monitor progress of the fishery.

The Dee Estuary as a whole is well studied, and cockle beds known by fishery managers, conservation agencies and fishers. Oystercatcher populations are recorded through the annual Wetland Bird Survey (WeBS), coordinated by the BTO and by EAW monitoring.

Cockle gatherers are required to provide daily landing declarations when beds are open. Details include the date and beds from which any cockles were taken, weight (kg) harvested and (where appropriate) buyer details. Failure to provide a complete and valid landing declaration to the EAW within the specified time period results in immediate suspension from the fishery until such a return is received.

3.3.6 Assessment of Stock Status

As described above, the estimation of stock status is based on a survey in April, which provides an estimation of biomass in September. This estimation is also ground-truthed by a second annual survey in September to account for the key variable of variation in natural mortality over summer.

The setting of the TAC is then based on the CEH oystercatcher predation model. This has been well established, published in peer-reviewed journals, and reviewed for its applicability in this situation by EAW as well as CCW and Natural England. CCW also review the annual setting of the TAC through the process of the HRA, submitted by EAW when setting annual TAC, as required under the EC Habitats Directive. The predation model (MORPH) has been parameterised for coastal birds on several European sites, including the Dee and Burry Inlet to predict the effect of environmental change, caused by factors such as habitat loss, disturbance from humans and sea-level rise, on the survival and body condition of these species. The model contains a basic framework to describe animal physiology and foraging behaviour, and the distribution and abundance of the resources required by these animals. The model requires parameters describing (i) the distribution of the food supply and how food quality and abundance changes through time; (ii) the rate at which foragers consume food given the abundance of food and competitors; (iii) the amount of food the forager must consume each day to survive; (iv) the distribution and seasonal changes in other factors which influence the foraging behaviour and survival of foragers.

The surveys and use of the model are fully integrated in the harvest strategy.

3.4 Principle Two: Ecosystem Effects

3.4.1 Background to Ecosystem within which Fishery Operates

The Dee Estuary is a tidal mixed estuary located on the English-Welsh border (North East Wales and Cheshire). It is characterised by wide sandflats and mudflats with extensive areas of saltmarsh predominantly on the English shore. The estuary supports a typical coastal-estuarine invertebrate infauna (including significant cockle populations).

The Dee Estuary (Aber Dyfrdwy in Welsh) is designated as a European Site of nature conservation importance under the EC Birds Directive (a Special Protection Area, SPA) and Habitats Directive (Special Area of Conservation, SAC). Features of the site which led to these designations are as follows.

a) **Annex I** habitats as listed in the EU Habitats Directive:

- Estuaries
- Mudflats and sandflats not covered by seawater at low tide (intertidal mudflats and sandflats)
- *Salicornia* and other annuals colonising mud and sand
- Atlantic salt meadows
- Annual vegetation of drift lines

The Dee Estuary/Aber Dyfrdwy Special Area of Conservation, as designated under the Habitats Directive, also qualifies as a SAC for the following **Annex II** species as listed in the EU Habitats Directive:

- *Lampetra fluviatilis* (river lamprey)
- *Petromyzon marinus* (sea lamprey)

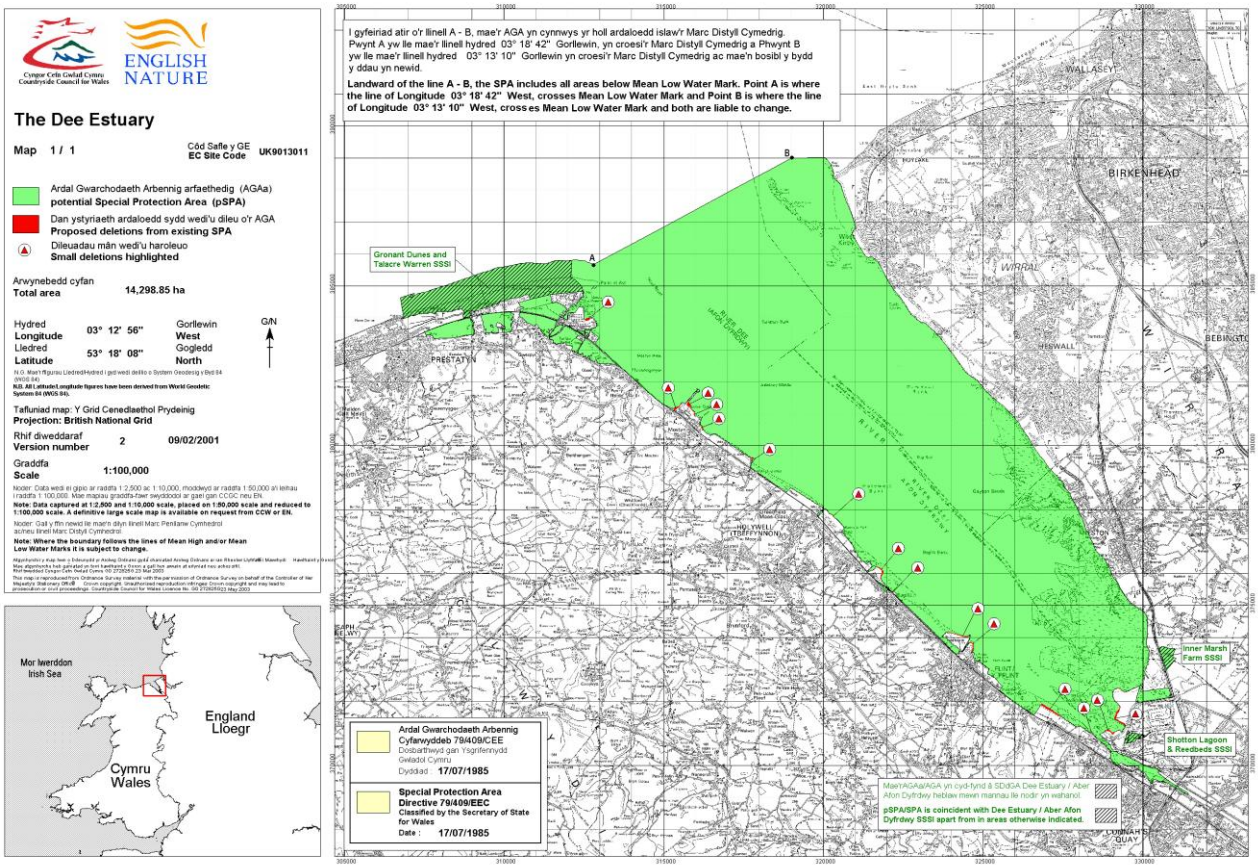
b) **Birds Directive**

The Dee Estuary Special Protection Area qualifies under **Article 4.1** of the EU Birds Directive, as it supports internationally important populations of regularly occurring Annex I species including:-
Sandwich tern *Sterna sandicensis*
Little tern *Sterna albifrons*
Common tern *Sterna hirundo*
Bar- tailed godwit *Limosa lapponica*

It also qualifies under **Article 4.2** of the EU Birds Directive in that it supports-
internationally important populations of regularly occurring migratory species including;
Redshank *Tringa totanus*
Shelduck *Tadorna tadorna*
Teal *Anas crecca*
Pintail *Anas acuta*
Oystercatcher *Haematopus ostralegus*
Grey Plover *Pluvialis squatarola*
Knot *Calidris canutus islandica*
Dunlin *Calidris alpina*
Black-tailed godwit *Limosa limosa islandica*
Curlew *Numenius arquata*

and an internationally important assemblage of waterbirds.

Notable in relation to the cockle fishery are oystercatcher, for which cockle is a highly significant food resource (although small cockle in particular will be taken by other waders).



3.4.2 Retained Species (retained by-catch or by-product)

As the fishery is a hand-raked operation, with cockle sieved and bagged also by hand, it is extremely selective. The take will therefore effectively be 100% cockle with no retained species. Hand gathering, and allowable gear use in the fishery, is prescribed in the Management Plan and License conditions.

There is an overarching strategy behind the management plan, reflected in one of the management objectives, to minimise impacts on the European site (i.e. SAC, SPA). Part of this strategy is to limit gear use within the fishery to hand-gathering (raking, riddling, bagging, carrying, clearing dead cockle). Licence holders may use a jumbo (an implement with a flat base and vertical handle which is used to bring cockles to the surface) to assist hand gathering provided it has a base not exceeding 140 centimetres long and 40 centimetres wide.

3.4.3 By-catch Species (discarded bycatch)

The process of raking and sieving of sediment will involve some disturbance of other sand-dwelling species. As cockles typically inhabit the top few centimetres of sediment, species affected will predominantly be small crustaceans, molluscs and annelids (e.g. bivalve *Macoma*, polychaete *Nephtys*, crustacean *Corophium*, gastropod *Hydrobia*). These are not directly exploited by any fisheries. These will be subject to some incidental mortality and community disturbance. Studies by Kaiser et al (2001) showed community changes between 14 days and 1 year post disturbance (depending on the size of the plot and the number of large animals present).

However, the areas of cockle bed exploited in any year comprise only a small percentage of the total muddy sand habitat within the Dee Estuary. The total estuary area is 38,765ha, comprising approximately 50% sand, 40% muddy sand, 10% mud. Cockles typically inhabit sandy mud habitat – the area of the cockle beds is around 530 ha – areas where cockles reach sufficient density to be

economically harvestable. There will, therefore, be extensive areas of habitat, similar to that on cockle beds, unaffected by the fishery.

There are also extensive areas of similar habitat in adjoining coastal regions that are not fished at all (there will be areas of bait-digging by anglers etc, but Kaiser *et al* identified impacts from these activities as being of lower significance). There will therefore be a high degree of certainty that bycatch species will be within biologically-based limits.

3.4.4 Endangered, Threatened and Protected Species (ETP)

In addition to its importance for cockles, the estuary is also important for wildlife and is designated (amongst others) as a SPA and SAC. As discussed above, waders such as oystercatchers are a significant feature of the site. EAW works closely with organisations such as the RSPB, CCW and Natural England in managing activities within the estuary.

Impacts arising from the cockle fishery which may affect the conservation features (species or habitats) include:

- removal of cockle biomass as a food resource for overwintering waders, particularly oystercatchers
- disturbance to birds
- direct damage to habitat through access to beds, discards, raking, illegal fishing and removal of undersize cockle.

The cockle fishery Management Plan is a 'plan or project' under the Habitats Regulations. Accordingly, an HRA must be completed annually (when TAC is set) to determine that the fishery will have no adverse impact (alone or in combination with other activities) to the features of interest. The assessment is submitted to the competent conservation agency (CCW) who considers the assessment and need to agree with the conclusions before the fishery can open.

The introduction of the Dee Estuary Regulating Order has had the effect of confirming fishing for cockles by hand-gathering only, has limited access to a restricted number of licensed fishermen and has led to increased enforcement activity. The effect of this will therefore be to avoid the large-scale fishing activity during times of large cockle numbers, and to prevent the use of more damaging cockle fishing methods, to the benefit of both fisheries and wildlife.

The HRA therefore considers the model outputs of the effects of fishing the TAC on oystercatcher mortality, the effects of disturbance due to the presence of fishermen on the shore, and the effects of disturbance of sediment by raking etc. Combine defects with other activities, if relevant, are also considered (e.g. maintenance dredging for ports).

In addition, a voluntary code of conduct has been produced for the cockle fishery which includes a clause that "Wildlife must be respected, all of the seashore is legally protected by wildlife designations making it a criminal offence to harm certain animals and plants or to enter certain reserve areas. Birds' nests and eggs must not be disturbed and areas of nature reserves above the high water mark must be avoided. High and low tide roost areas for waders and wildfowl should be avoided."

Changes in fishing practice are listed as a Potentially Damaging Operation for the Dee Estuary site (SSSI) and there is, therefore, a need to obtain assent from the conservation agency (CCW) for this to occur.

3.4.5 Habitats

Cockle fishing typically takes place over intertidal muddy sand. The habitats present in the Dee Estuary (and adjoining coasts and estuaries) have been accurately mapped and documented. The effects of cockle collection (raking and sieving of sediment) will be localised and minor; some sediment will be collected, but this will rapidly be redistributed by wave and current action. Kaiser et

al (2001) found effects on infaunal communities up to 1 year post disturbance, but effects on the structure and function of the habitat itself will be of much shorter duration than this (days to weeks; pers. Obs., EAW meeting). License conditions restrict entry points to the estuary, and use of boats for access to cockle beds prevents habitat disruption.

3.4.6 General Ecosystem Effects

Kaiser et al (2001) studied the effects of simulated cockle harvesting on sediment communities. Evidence of disturbance was found between 56 days and 1 year, depending on the nature of the community (especially the presence of larger animals). As such effects are therefore restricted in scale (affecting only a small proportion of the regional distribution of muddy sand sediments) and of temporary and readily reversible effect, there will therefore be a negligible likelihood of cockle gathering disrupting the structure and function of the infaunal ecosystem. Otherwise, ecosystem impacts have been considered above in respect to by-catch species, ETP species (birds) and habitats. A Code of Conduct also requires avoidance of disturbance of habitats, bird nests, roosting sites etc.

3.5 Principle Three: Management System Background

3.5.1 Management Background and Legal Framework

The fishery is managed under a Regulating Order, granted by the governments of England (DEFRA) and Wales (Welsh Government), to the management authority, the Environment Agency Wales (EAW). The Regulating Order (the 'Dee Estuary Cockle Fishery Order 2008) is granted under section 1 of the Sea Fisheries (Shellfish) Act 1967. The order is valid for 20 years; considered to be the optimum period having regard to possible future changes in the fishery. Management is set out in a Several and Regulating Orders Management Plan held by the Environment Agency and administered by the Environment Agency Wales.

The fishery is also subject to byelaws confirmed on 2 July 1895, 5 August 1992 and 10 November 1995, but these are currently subject to review and the principal management tool is the Regulating Order Management Plan.

A licence is required to fish for cockles within the Fishery. It is an offence to fish for cockles without a licence (other than small amounts for personal use). The fishery is therefore prosecuted by licensed gatherers and 'apprentice' gatherers. The management plan allows up to 50 fishermen to participate in the Fishery, on an annual basis. The figure of 50 licences is based on the following justification:

- Total Annual Catch (TAC) is estimated to vary between 500 and 2500 tonnes.
- Maximum annual exploitation rate is estimated at 50 tonnes/person
- Exploitation rate above 50 licences will result in an economically unsustainable, part time fishery
- Ecological requirements of European site require fishing pressure/ disturbance minimised.

At times when the Agency considers that the fishery could sustain it, short-term non-renewable licenses can also be issued at the Agency's discretion. These licences are allocated to people on a waiting list who have a track record in the commercial cockle fishery on the Dee Estuary.

The Regulating Order introduced a process of licence application. More than 50 valid applications were received when the order was first established and licences were therefore allocated to the applicants on the basis of experience of active and material participation in the commercial Dee Estuary cockle fishery, in accordance with the Agency's published licence allocation policy. The remaining applicants were placed on a waiting list. While the establishment of the Regulating Order was generally welcomed, the award of licenses led to some dispute; especially amongst those gatherers not awarded a license.
In addition, in order to enable new entrants to participate in the fishery, the Agency introduced an Apprentice Scheme in Year 3 of the Regulated Fishery (i.e. the 2010 fishing season). A maximum of 3 apprenticeships are awarded, with the final number to be determined at the discretion of the Agency

and based on the results of both the annual stock assessment of the fishery and the HRA to be carried out in accordance with the Habitats Regulations. Each apprenticeship involves satisfactory participation in the fishery for two full fishing seasons. Additional licence conditions apply; apprentices must only participate in the fishery when accompanied with another licensee who has agreed to act as the apprentice's 'sponsor' and apprentices will not be allocated an individual daily or annual quota but instead will share their sponsor's quota.

The key aspects of management of the fishery are set out in the EAW Management Plan. These include:

1. The fishing method is restricted to hand-gathering only with a rake head not exceeding 30 centimetres in width.
2. Cockle beds shall be opened and closed individually depending upon levels of harvesting and survey results (TAC) at the discretion of the Agency, in order to safeguard a sustainable population level.
3. Only cockles which are retained by a gauge having a square opening of 20mm along each side of the square can be taken.
4 A cockle shall be deemed to be removed from the Fishery as soon as it is placed in any container (including bags, sacks and other similar receptacles), trailer, vehicle or vessel.
5. Sorting and washing of cockles must be undertaken before cockles are removed from the Fishery.
6. No cockle bags or other equipment or litter are to be left on the beds following fishing.
7. No person shall engage in any activity which disturbs or damages the Fishery without the prior written consent of the Agency.
8. No mechanically driven vehicles are permitted on the Fishery without the prior written consent of the Agency.
9. No vessels greater than 10 metres may be used for the purpose of removing or receiving cockles and must be operated solely by a licence holder, except with the written approval of the Agency for the purpose of ensuring the safe navigation of the vessel.
10. Annual close season shall be from the 1st day of January to the 30th of June following.
11. No fishing for cockles between one hour after sunset and one hour before sunrise.
12. There shall be a weekly closed period on Sundays unless so directed by the Agency.
13. The decision whether to open the fishery will be taken in May/June each year, following completion of stock assessment surveys and consultation with the Sea Fishery Liaison Group.
14. A TAC will be established each year based on cropping a scientifically calculated proportion of the available biomass above the 'giving-up' density on any one bed on the 1st July. This proportion is likely to be around 30% in most years but the proportion and the "giving-up density" may be varied as the Agency considers appropriate in the interests of maintaining a sustainable fishery, having regard to the stock assessment survey and in consultation with the Sea fishery Liaison Group.
15. Fishing will not be permitted during periods when a severe weather order is in effect under section 2(6) of the Wildlife and Countryside Act 1981: closure and reopening of the beds will be in accordance with the guidelines established for the statutory suspension of waterfowl shooting in severe weather.
16. Except in emergencies or unless otherwise agreed by the Agency, no person may access the fishery for the purpose of dredging, fishing for or taking cockles, or leave the fishery after cockling, except—

(a) at points above mean high water, and at times, which may be designated by the Agency from time to time; and

(b) in compliance with the terms and conditions of any such agreement given by the Agency.

17. The Agency shall ensure that any decision regarding designation of access made for the purpose of these regulations is given appropriate publicity in the vicinity of the fishery and to the licence holder.

There are additional license conditions governing day-to-day activities, including:

- Daily landing declarations must be completed and placed in Agency mailboxes at the designated landing points when beds are open. Details will include the date on which and beds from which any cockles were taken, weight (kg) harvested and (where appropriate)

buyer details. Failure to provide a complete and valid landing declaration to the EAW within the specified time period will result in immediate suspension from the fishery until such a return is received.
- No persons other than licence holders are to be carried on vessels/vehicles authorised for use in cockling, while the licence holder is engaged in cockling activity.
- Licence holders may not be assisted by any other person in any way, including raking, riddling, bagging, carrying, clearing dead cockle and boat handling.
- A licence holder may use a jumbo (an implement with a flat base and vertical handle which is used to bring cockles to the surface) to assist hand gathering provided it has a base not exceeding 140 centimetres long and 40 centimetres wide.

There are established mechanisms within EAW and the UK and EU legal system for the resolution of disputes and legal challenges. Disputes and complaints are first addressed under the EAW complaints procedure. If not resolved, complaints may be addressed to the Public Services Ombudsman for Wales, whose decisions are legally binding on the EAW. UK subjects may also take legal challenges to UK courts or ultimately to EU courts.

3.5.2 Consultation, Roles and Responsibilities

Extensive consultations with local fisheries interests and user groups were carried out in 1994 on the introduction of the new shellfish Byelaws referred to above, in order to assist with the conservation and management of the cockle beds.

The creation of the Regulating Order involved informal consultation with MAFF, English Nature and Countryside Council for Wales in 2000 and in January to March 2001 further consultation was carried out with a wide range of stakeholders (over 200) including the following representative groups:

- Environment Agency Wales Northern Area Environment Group
- Dee Estuary Forum
- Dee Estuary Conservation Group
- Dee Estuary Sea Fisheries Liaison Group (representatives of sea fishing interests, regulatory bodies and
- other relevant user groups on the river, who are broadly representative of local opinions)

The need for a Regulating Order also features as a major issue in the Dee Estuary Strategy and the former Local Environment Agency Plan (LEAP) and both of these have been subject to extensive public consultation. Support for the proposed Order was given by many respondents and a summary of the consultation process and key points was submitted to government on 5th August 2004.

Following this consultation exercise, an informal draft management plan and regulating Order were submitted to DEFRA and WAG in December 2002 for consultation inside government. Changes to the management plan were suggested and incorporated by the Agency, which then consulted on those changes in October/November 2003.

English Nature and the Countryside Council for Wales have been consulted on the plan throughout and are supportive of its objectives. Further modifications were made to the draft plan at their instigation in March 2004. The management plan and appropriate assessment was endorsed by CCW, the lead conservation agency for the estuary.

Following Defra and WAG's publication of the revised draft management plan in January 2006, an opportunity was given to the public to make representations about and objections to the making of the regulating order. A total of 36 responses were received, leading to a public inquiry, and the Agency has taken account of these, in making further revisions to the draft management plan.

Management responsibilities for the fishery are now well established between EAW (fishery management and environmental protection) and CCW (nature conservation) with reporting to Welsh Government and DEFRA. The cockle fishery is also considered in meetings of the Dee Estuary Sea

Fisheries Liaison Group (DESFLG), also attended by fishers, CCW, EN, MMO, NWIFCA, WAG and Local Authorities. Regular meetings are also held between EAW and licensees which help to steer fishery practices; these meetings are hosted and facilitated by EAW.

3.5.3 Long-Term Management Objectives

The aims of the Dee Estuary Cockle Fishery Management plan are threefold:

- To develop a sustainable fishery that provides a consistent, regular income for fishermen.
- To minimise the impacts to the European site and local residents arising from fishing activities
- To improve fishery management, monitoring and enforcement.

3.5.4 Incentives for Sustainable Fishing

The basis of the management system is the allocation of licenses to fish; the number of licenses issued (50) is entirely consistent with achieving the outcomes expressed by MSC Principles 1 and 2 as the total effort is constrained by the economic and ecological objectives set out in the Management plan. Licences may be withdrawn for violation of licence conditions. Close monitoring of the management system and fishing practices by EAW, informed by DESFLG and Licensee meetings allows for the identification of any perverse incentives which may arise. There are no subsidies within the system.

3.5.5 Fishery-Specific Objectives

The three long-term objectives are explicit within the Management Plan. The key short-term objective is the annual monitoring of stock status and setting of the annual TAC. Stock assessment surveys are carried out bi-annually (May/June and Sept/Oct) using a standard methodology. The TAC is then determined using data on the standing crop present on 1st July; stock removal is estimated by monitoring quotas, and abundance of the stock is then checked during the autumn stock assessment.

The plan also establishes long and short-term measures for measuring performance against each objective:

Objective 1. Sustainable fishery providing regular income:

- liaison with sea fishery liaison group to agree TAC, quotas etc.
- stock monitoring /maintenance of exploitable stock at predicted levels
- improve understanding of cockle population dynamics

Objective 2. Minimise impacts to European site and local residents:

- complete and implement CEH stock model
- monitor bird populations in conjunction with RSPB.
- monitor beds for illegal fishing
- ensure access and exit from beds is at agreed points.
- agree voluntary code of conduct with shellfish liaison group, taking into account a risk assessment to be carried out by the Dee Conservancy.

Objective 3. Improve management, monitoring and enforcement:

- employ sea fisheries officer and seasonal enforcement team
- use new resources to improve understanding of population dynamics
- produce annual fishery, monitoring and enforcement plan
- regular monitoring of quota and byelaw/regulations compliance
- use stock model (2004) to predict food requirements for shorebirds, predict effects on shorebird populations of different management scenarios, recommend methods for setting sustainable TAC and advise on close season.

3.5.6 Decision-Making Processes

Decision making processes are well established, particularly with annual stock, landing and environmental information reviewed by EAW in setting TACs. The review process for the Management Plan, and subsequent consultations are established, with reviews at least every 5 years.

The key decision making process is the setting of the annual TAC. This takes into account all relevant information including monitoring and evaluation of stocks, waders and landings. The rule for setting TACs, and subsequent review of an HRA by CCW is well established and both EAW and CCW take account of the wider implications of the decisions taken. These and other measures tie-in to the fishery objectives as set out in Section 3.5.5 above.

Key developments in the management of the fishery, including research (e.g. a current PhD on factors affecting recruitment is expected to give rise to a management paper), are discussed at DESFLG and minutes circulated to all attendees (i.e. all affected stakeholders).

Both EAW and CCW have emergency powers for environmental protection in the event of serious incidents occurring in the estuary or its environs.

3.5.7 Compliance and Enforcement

EAW management of the fishery includes an enforcement and prosecution policy. Enforcement is carried out by 7 EA enforcement officers (giving around 20% of their time to the Dee cockle fishery) plus seconded police officers as required. Much surveillance is intelligence-led with overt and covert operations taking place. Sanctions range from official warnings, cautions to prosecutions, which could lead to the loss of a licence. Non-return of landing data leads to suspension of licenses until such data are provided.

Entry to the estuary, and landing points, are prescribed and landings can be easily checked, especially as cockle must be landed in EAW-supplied 300 kg sacks.

The enforcement and monitoring plan is reviewed in consultation with the Dee Sea Fisheries Liaison Group on an annual basis and contributes to the regular review of the overall management plan

In addition, meetings with Licensees, and the apprentice scheme, allow for regular briefings of gatherers in the requirements of the management scheme. This is further reinforced by the Code of Practice for gatherers.

3.5.8 Research Planning

A research plan was included as part of the EAW appropriate assessment accompanying the regulating order application. The plan set out information gaps, and research priorities covering topics of the stock and fishery, impacts on benthic systems and impacts on Bird feeding resources.

Monitoring of cockle populations and landings takes place as required by EAW under the Management Plan and is considered entirely appropriate. Monitoring and evaluation of the status of the European Site (notably waterbirds) takes place by CCW, EAW and groups such as the BTO. Additional research into cockle mortality is coordinated by EAW in respect to the Burry Inlet fishery and this information is shared with managers of the Dee fishery. Specific work also takes place in the Dee, in accordance with the research plan, related to factors affecting recruitment (a PhD study) and parasite burdens, based on work elsewhere on cockle mortality.

Significant outputs will be made available on the websites of EAW, CCW or academic institutions concerned, and discussed at DESFLG meetings (the minutes of which are available to affected stakeholders).

3.5.9 Monitoring and Evaluation of Management Performance

The management system is comprehensively set out in the Management Plan. Combined with close monitoring of stock status, wader populations and nature conservation status of the estuary, the plan has clear objectives and associated indicators. The plan is regularly reviewed and updated, at intervals of no more than 5 years. Reviews of the management plan are led internally within EAW, but these also involve consultation with external bodies within DESFLG (such as EN, CCW etc), and Welsh Government and DEFRA.

4. Evaluation Procedure

4.1 Harmonised Fishery Assessment

The Dee Estuary cockle fishery has no overlapping fisheries.

4.2 Previous assessments

This fishery has not been assessed previously.

4.3 Assessment Methodologies

This fishery has been assessed against MSC Certification Requirements version 1.1, and reported using MSC Full Assessment Reporting Template version 1.

The MSC default assessment tree was sued without adjustment. The Risk Based Framework was not used (use of the RBF for PI 2.2.1 was notified, but sufficient information was available to allow use of the default assessment tree).

4.4 Evaluation Processes and Techniques

4.4.1 Site Visits

Meetings were held at the EAW offices in Buckley, 29 November 2011. Attending were:

Lead Auditor:	A Hough
Team Members:	T Holt
Stakeholders:	
EAW	Alan Whinstone
EAW	Rick Prichard

4.4.2 Consultations

A record of meetings held is included in Appendix 3. All aspects of the management of the fishery were discussed.

4.4.3 Evaluation Techniques

This assessment was announced through direct email to stakeholders (members of the DESFLG), notification on the MSC website and an advertisement placed in Fishing News International.

The MSC Principles and Criteria set out the requirements of certified fishery. The certification methodology adopted by the MSC involves the interpretation of these Principles and Criteria into specific Performance Indicators and Scoring Guideposts against which the performance of Fishery can be measured. In order to make the assessment process as clear and transparent as possible, these identify the level of performance necessary to achieve 100, 80 (a pass score), and 60 scores for each Indicator.

This re-assessment used the Standard Assessment Tree set out in MSC Certification Requirements v1.1. Use of this assessment tree has been the subject of stakeholder consultation. No comments were

received on the use of this Assessment Tree. Use of the RBF was notified to stakeholders in the fishery by email and via the MSC website. No comments were received on the use of the RBF.

For each Performance Indicator, the performance of the fishery is assessed as a 'score'. In order for the fishery to achieve certification, an overall score of 80 is considered necessary for each of the three Principles, 100 represent ideal best practice and 60 a measurable shortfall. A fishery cannot be certified if a score below 60 is recorded. As it is not considered possible to allocate precise scores, a scoring interval of five is therefore used in evaluations. Scores are allocated based on the consensus opinion of the assessment team.

5 Traceability

5.1 Eligibility Date

The Actual Eligibility date is 3 November 2011, six months prior to the date of release of the Public Comment Draft Report.

5.2 Traceability within the Fishery

Licensed gatherers are issued with EAW approved 300 kg sacks for delivery of cockle. Sacks are unloaded from transport boats to docksides at Thurstaston, Greenfield Dock, Bagillt and occasionally West Kirby. Gatherers submit daily landing records to EAW and may be subject to inspection and checking of landings at the dockside (note that the fishery is tidal and restricted to daylight, and so landing times are highly predictable).

Ownership of cockle passes to processors (the first point of sale) either at the dockside (usually) or at the processors grading yard – to which cockle would be delivered by the gatherer.

Therefore, although Dee Estuary cockle are clearly identifiable in EAW sacks, there is the possibility for addition of cockle from outside the Dee Estuary during transport to grading yards. Cross-referencing of sales notes and daily landing records (by EAW during checks on product, and Local Authority Environmental Health Officers) would, however, identify occasions where this may occur. Future Chain of Custody audits would also have this information which would allow confirmation of traceability of product to the Dee Estuary fishery.

5.3 Eligibility to Enter Further Chains of Custody

Tracking and traceability information is therefore considered **sufficient for product to be eligible to enter further certified chains of custody**.

All licensed gatherers (including their apprentices where relevant) may supply product into further certified chains of custody.

Landing points are Thurstaston, Greenfield Dock, Bagillt and West Kirby. Landings are made directly from the fishery in EAW approved sacks and so the risk to the integrity of product at these points is extremely low.

Change of ownership, and the point from which Chain of Custody (CoC) certification is required, is the purchase of cockle by processors at the dockside or at their grading yards. All processors wishing to sell MSC certified cockle will therefore require their own Chain of Custody certification.

5.4 Eligibility of Inseparable or Practically Inseparable (IPI) stock(s) to Enter Further Chains of Custody

No IPI stock(s) are involved in this certification.

6 Evaluation Results

6.1 Principle Level Scores

Table 6.1: Final Principle Scores

Final Principle Scores	
Principle	**Score**
Principle 1 – Target Species	99.4
Principle 2 - Ecosystem	100.0
Principle 3 – Management System	94.0

6.2 Summary of Scores

Prin-ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in			Score	Contribution to Principle Score	
						Either		Or			Either	Or
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	0.333	0.1667	100	25.00	16.67
				1.1.2	Reference points	0.5	0.25	0.333	0.1667	100	25.00	16.67
				1.1.3	Stock rebuilding			0.333	0.1667			0.00
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125			100	12.50	12.50
				1.2.	Harvest control rules & tools	0.25	0.125			100	12.50	12.50
				1.2.	Information & monitoring	0.25	0.125			100	12.50	12.50
				1.2.	Assessment of stock status	0.25	0.125			95	11.88	11.88
Two	1	Retained species	0.2	2.1.	Outcome	0.333	0.0667			100	6.67	6.67
				2.1.	Management	0.333	0.0667			100	6.67	6.67
				2.1.	Information	0.333	0.0667			100	6.67	6.67
		Bycatch species	0.2	2.2.	Outcome	0.333	0.0667			100	6.67	6.67
				2.2.	Management	0.333	0.0667			100	6.67	6.67
				2.2.	Information	0.333	0.0667			100	6.67	6.67
		ETP species	0.2	2.3.	Outcome	0.333	0.0667			100	6.67	6.67
				2.3.	Management	0.333	0.0667			100	6.67	6.67
				2.3.	Information	0.333	0.0667			100	6.67	6.67
		Habitats	0.2	2.4.	Outcome	0.333	0.0667			100	6.67	6.67
				2.4.	Management	0.333	0.0667			100	6.67	6.67
				2.4.	Information	0.333	0.0667			100	6.67	6.67
		Ecosystem	0.2	2.5.	Outcome	0.333	0.0667			100	6.67	6.67
				2.5.	Management	0.333	0.0667			100	6.67	6.67
				2.5.	Information	0.333	0.0667			100	6.67	6.67
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125			100	12.50	12.50
				3.1.2	Consultation, roles &	0.25	0.125			100	12.50	12.50
				3.1.3	Long term objectives	0.25	0.125			100	12.50	12.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125			80	10.00	10.00
		Fishery specific management system	0.5	3.2.	Fishery specific objectives	0.2	0.1			100	10.00	10.00
				3.2.	Decision making processes	0.2	0.1			100	10.00	10.00
				3.2.	Compliance & enforcement	0.2	0.1			85	8.50	8.50
				3.2.4	Research plan	0.2	0.1			80	8.00	8.00
				3.2.5	Management performance	0.2	0.1			100	10.00	10.00

6.3 Summary of Conditions

No conditions are necessary.

6.4 Determination, Formal Conclusion and Agreement

The fishery attained a score of 80 or more against each of the MSC Principles and did not score less than 60 against any MSC Performance Indicator. It is therefore recommended that the Dee Estuary Cockle Fishery be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.

The Intertek Moody Marine Supervisory Board has accepted this recommendation and determined that the fishery be certified.

References

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Appendices

Appendix 1 Scoring and Rationales

Appendix 1.1 Performance Indicator Scores and Rationale

Evaluation Table PI 1.1.1 (See Report Section 3.3.2)

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	It is **likely** that the stock is above the point where recruitment would be impaired.
			Cockle has a very high reproductive potential. The stock is certainly well above the point where recruitment would be impaired.
80	**a**	**Y**	It is **highly likely** that the stock is above the point where recruitment would be impaired.
			Cockle has a very high reproductive potential. The stock is certainly well above the point where recruitment would be impaired.
	b	**Y**	The stock is at or fluctuating around its target reference point.
			The stock is well above the target/limit reference point.
100	**a**	**Y**	There is a **high degree of certainty** that the stock is above the point where recruitment would be impaired.
			Cockle has a very high reproductive potential. The stock is certainly well above the point where recruitment would be impaired.
	b	**Y**	There is a **high degree of certainty** that the stock has been fluctuating around its target reference point, or has been above its target reference point, **over recent years**.
			The fishery has been managed on the current basis for several years. The stock has been above the current TRP since the inception of the regulating order.
References			EAW Meeting; EAW notes on model and stock status, CEH 2005

Stock Status relative to Reference Points			
	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
Target reference point	Value derived from ecosystem model	4,600 t cockle >15mm.	Stock from September 2011 survey was 9451 t.
Limit reference point	As target		

OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table: PI 1.1.2 (See Report Section 3.3.2)

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.
			See 80 a)
80	**a**	**Y**	Reference points are appropriate for the stock and can be estimated.
			Reference points are appropriate, and specific, for the stock and are based on a well-established and tested ecological model (oystercatcher predation). These can be estimated based on Dee Estuary oystercatcher population status, which is well recorded.
	b	**Y**	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.
			See 100 b)
	c	**Y**	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.
			See 100 c)
	d	**Y**	Key low trophic level species, the target reference point takes into account the ecological role of the stock.
			See 100 c) below.
100	**b**	**Y**	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of **precautionary issues**.
			The limit and target reference points are the same – based on maintaining cockle populations at levels in excess of those which would have a significant effect on oystercatcher overwinter mortality. These are precautionary in terms of ecosystem effect, even more precautionary in terms of maintaining cockle populations at levels that would maintain the fishery, and more precautionary still in terms of maintaining the reproductive capacity of the stock.
	c	**Y**	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a **higher level**, and takes into account relevant precautionary issues such as the ecological role of the stock with a **high degree of certainty.**
			The Reference Point specifically takes account of the ecological role of the stock with a high degree of certainty (the model being well established, and the oystercatcher population well recorded). TACs set typically limit fishing mortality to around 1/3 of the stock (i.e. maintaining the stock at 66% of what would be B_0).
References			EAW Meeting; EAW notes on model and stock status, CEH 2005
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 1.1.3

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**		Where stocks are depleted rebuilding strategies which have a reasonable expectation of success are in place.
			This PI not relevant as the stock is not depleted.
	b		A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.
	c		Monitoring is in place to determine whether they are effective in rebuilding the stock within a **specified** timeframe.
80	**a**		Where stocks are depleted rebuilding strategies are in place.
	b		A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or **2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.
	c		There is **evidence** that they are rebuilding stocks, or it is **highly likely** based on simulation modelling or previous performance that they will be able to rebuild the stock within a **specified** timeframe.
100	**a**		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete **within the specified timeframe**.
	b		The shortest practicable rebuilding timeframe is specified which does not exceed **one generation** time for the depleted stock.
References			
OVERALL PERFORMANCE INDICATOR SCORE:			
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 1.2.1 (see Report Section 3.3.3)

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	The harvest strategy is **expected** to achieve stock management objectives reflected in the target and limit reference points.
			See 100 a)
	b	**Y**	The harvest strategy is **likely** to work based on prior experience or plausible argument.
			See 100 b)
	c	**Y**	Monitoring is in place that is expected to determine whether the harvest strategy is working.
			See 100 b)
80	**a**	**Y**	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy **work together** towards achieving management objectives reflected in the target and limit reference points.
			See 100 a)
	b	**Y**	The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.
			See 100 b)
100	**a**	**Y**	The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in the target and limit reference points.
			The harvest strategy is designed to achieve stock and ecosystem objectives – using reference points based on avoiding significant ecological effects. The strategy provides for annual TACs and quotas based on bi-annual stock surveys and annual monitoring of oystercatcher populations. The harvest strategy therefore uses in-season data to ensure accuracy and responsiveness.
	b	**Y**	The performance of the harvest strategy has been **fully evaluated** and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
			The accurate determination of stock levels, oystercatcher populations and landings from the fishery allows for continuing evaluation of the harvest strategy. The maintenance of each population, and the improvement in size class distributions within the cockle stock evidence the achievement of fishery objectives to date.
	d	**Y**	The harvest strategy is periodically reviewed and improved as necessary.
			The management plan is reviewed at intervals of not greater than 5 years.
References			EAW Meeting; EAW notes on model and stock status, Dee Estuary Cockle Fishery Management Plan (Sep 11).
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 1.2.2 (see Report Section 3.3.4)

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Generally understood** harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.
			See 100 a)
	c	**Y**	There is **some evidence** that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.
			See 100 c)
80	**a**	**Y**	**Well defined** harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.
			See 100 a)
	b	**Y**	The **selection** of the harvest control rules takes into account the **main** uncertainties.
			See 100 b)
	c	**Y**	**Available evidence indicates** that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.
			See 100 c)
100	**a**	**Y**	**Well defined** harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.
			Harvest control rules are entirely consistent with the harvest strategy – both are integrated within the fishery management plan. The exploitation rate each year is determined based on the actual (annually surveyed) stock status – the exploitation rate is constant, based on the daily quota, but the rate is established to achieve a TAC that would in turn keep the stock above the target reference point. It is noted that as the harvest rate assumes fishing by all gatherers on all available days, that the TAC has not been achieved.
	b	**Y**	The **design** of the harvest control rules takes into account a **wide range** of uncertainties.
			The harvest strategy, including harvest control rules and monitoring, has been designed to control for uncertainties – in the stock and oystercatcher populations, spatial and temporal variability in the stock and fishing pressure. The critical uncertainty is any variation in natural mortality (eg due to high temperatures) between the stock survey in April and onset of oystercatcher feeding in September (typically). This is accounted for by stock surveys in September which ensure that these variations are accounted for.
	c	**Y**	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
			Ongoing stock status, oystercatcher population status and landings are routinely monitored. The evidence is that required exploitation rates are being maintained (notably, TACs not exceeded and target stock levels are maintained).
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11).
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 1.2.3 (See Report Section 3.3.5)

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Some** relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.
			See 100 a)
	b	**Y**	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.
			See 100 b)
80	**a**	**Y**	**Sufficient** relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.
			See 100 a)
	b	**Y**	Stock abundance and fishery removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest control rule**, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.
			See 100 b)
	c	**Y**	There is good information on all other fishery removals from the stock.
			All gatherers operating on the fishery are licensed within the fishery management system. Some recreational gathering for personal use takes place, but this is generally known and considered negligible. Intelligence, monitoring and enforcement operations relevant to IUU fishing is considered adequate to provide good information on the extent of this. Notwithstanding this, bi-annual surveys provide regularly updated information on actual stock status, allowing for consideration of any such variables.
100	**a**	**Y**	A **comprehensive range** of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
			Stock structure and productivity is monitored bi-annually (together with regular walk-over surveys of the beds by EAW to monitor progress of the fishery). All fishers are licensed and gear used is prescribed in license conditions. All gatherers provide daily landing records. The Dee Estuary is a Special Area of Conservation and Special Protection Area for Birds (amongst other designations), a status which requires regular monitoring and reporting of the conservation status of the site by Nature Conservation agencies (CCW and English Nature).
	b	**Y**	**All information** required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent **uncertainties** in the information [data] and the robustness of assessment and management to this uncertainty.
			As above, all relevant information is monitored with a very high level of accuracy, and at a high frequency. Uncertainties in the data are understood and controlled (e.g. identification of high density sites in April, and re-survey in September).
References			EAW Meeting; EAW notes on model and stock status, Dee Estuary Cockle Fishery Management Plan (Sep 11), Natural England/CCW (2009).
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**b**	**Y**	The assessment estimates stock status relative to reference points.
			The stock status is accurately established each year. The reference point is also established based on actual information (of oystercatcher population levels).
	c	**Y**	The assessment **identifies major sources** of uncertainty.
			See 100 c)
80	**a**	**Y**	The assessment is appropriate for the stock and for the harvest control rule.
			See 100 a)
	c	**Y**	The assessment **takes uncertainty into account**.
			See 100 c)
	e	**Y**	The assessment of stock status is subject to peer review.
			See 100 e)
100	**a**	**Y**	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
			The surveys and oystercatcher predation model are specifically tailored for the Dee Estuary cockle fishery and are fully integrated within the harvest strategy.
	c	**Y**	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a **probabilistic** way.
			The surveys provide annually-updated absolute (empirical) information on the stock status. This is better than a probabilistic estimation. The critical uncertainty is any variation in mortality (such as high temperatures) between the stock survey in April and onset of oystercatcher feeding in September (typically). This is addressed by stock surveys in September which ensure that these variations are accounted for.
	d	**N**	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
			While the assessment approach adopted here has been widely considered and tested and has proven robust, there is no evidence presented that alternative hypotheses have been rigorously explored.
	e	**Y**	The assessment has been **internally and externally** peer reviewed.
			The means of monitoring stock status and allocating a TAC have been provided in the fishery management plan which is reviewed by Welsh Government and DEFRA. More significantly, these are also reviewed by CCW through an annual appropriate assessment submitted by EAW when setting quotas. The oystercatcher predation model has been well established, published in peer-reviewed journals, and reviewed for its applicability in this situation by EAW (internally) as well as CCW and English Nature (externally).
References			EAW Meeting; EAW notes on model and stock status, Dee Estuary Cockle Fishery Management Plan (Sep 11), CEH 2005, Environment Agency Record of Assessment of Likely Significant Effect On A European Site (2011).
OVERALL PERFORMANCE INDICATOR SCORE:			**95**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.1.1 (see Report Section 3.4.2)

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Main retained species are **likely** to be within biologically based limits (if not, go to scoring issue d below).
			See 100 a)
	c	**Y**	If main retained species are outside the limits there are **measures** in place that are **expected** to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.
			Not applicable
	d	**Y**	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.
			Not applicable
80	**a**	**Y**	Main retained species are **highly likely** to be within biologically based limits (if not, go to scoring issue c below).
			See 100 a)
	c	**Y**	If main retained species are outside the limits there is a **partial strategy** of **demonstrably effective** management measures in place such that the fishery does not hinder recovery and rebuilding.
			Not applicable
100	**a**	**Y**	There is a **high degree of certainty** that retained species are within biologically based limits **and** fluctuating around their target reference points.
			The nature of the fishery (hand gathered only) means that there are no retained species (or at least that any retention will be accidental and negligible). The fishery therefore score 100 for this PI (CR CB 3.5.3)
	b	**Y**	Target reference points are defined and retained species.
			Not applicable
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11)
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.1.2

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
			See 100 a)
	b	**Y**	The measures are considered **likely** to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).
			See 100 b)
80	**a**	**Y**	There is a **partial strategy** in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
			See 100 a)
	b	**Y**	There is some **objective basis for confidence** that the partial strategy will work, based on some information directly about the fishery and/or species involved.
			See 100 b)
	c	**Y**	There is **some evidence** that the partial strategy is being **implemented successfully.**
			See 100 c)
100	**a**	**Y**	There is a **strategy** in place for managing retained species.
			There is an overarching strategy behind the management plan, reflected in one of the management objectives, to minimise impacts on the European site (i.e. SAC, SPA). Part of this strategy is to limit gear use within the fishery to hand-gathering (raking, riddling, bagging, carrying, clearing dead cockle). Licence holders may use a jumbo (an implement with a flat base and vertical handle which is used to bring cockles to the surface) to assist hand gathering provided it has a base not exceeding 140 centimetres long and 40 centimetres wide.
	b	**Y**	**Testing** supports **high confidence** that the strategy will work, based on information directly about the fishery and/or species involved.
			Hand gathering may be easily observed and selectivity can be readily demonstrated.
	c	**Y**	There is **clear evidence** that the strategy is being **implemented successfully.**
			Enforcement and observations show successful implementation of restrictions to hand-gathering only.
	d	**Y**	There is some **evidence** that the strategy is **achieving its overall objective**.
			Observations of landings and gathering provide evidence of selectivity.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11)
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.1.3

PI 2.1.3			Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Qualitative information** is available on the amount of main retained species taken by the fishery.
			See 100 a)
	b	**Y**	Information is **adequate to qualitatively** assess outcome status with respect to biologically based limits.
			See 100 b)
	c	**Y**	Information is adequate to support **measures** to manage **main** retained species.
			See 100 c)
80	**a**	**Y**	**Qualitative information** and **some quantitative information** are available on the amount of main retained species taken by the fishery.
			See 100 a)
	b	**Y**	Information is **sufficient to estimate** outcome status with respect to biologically based limits.
			See 100 b)
	c	**Y**	Information is adequate to support a **partial strategy** to manage **main** retained species.
			See 100 c)
	d	**Y**	Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)
			See 100 d)
100	**a**	**Y**	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
			Accurate and verifiable information is available from observations of hand raking and landings (routinely undertaken by EAW staff). These confirm no retained species – which will therefore have no ecological consequences.
	b	**Y**	Information is **sufficient to quantitatively** estimate outcome status with **a high degree of certainty.**
			As above, the fishery will have no consequence.
	c	**Y**	Information is adequate to support a **comprehensive strategy** to manage retained species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
			Information is adequate to verify compliance with the management plan and license conditions.
	d	**Y**	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
			There are no retained species.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11)
OVERALL PERFORMANCE INDICATOR SCORE:			**100**

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.2.1 (See Report Section 3.4.3)

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Main bycatch species are **likely** to be within biologically based limits (if not, go to scoring issue b below).
			See 100 a)
	b	**Y**	If main bycatch species are outside biologically based limits there are mitigation **measures** in place that are **expected** to ensure that the fishery does not hinder recovery and rebuilding.
			See 100 a)
	c	**Y**	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.
			Not applicable
80	**a**	**Y**	Main bycatch species are **highly likely** to be within biologically based limits (if not, go to scoring issue b below).
			See 100 a)
	b	**Y**	If main bycatch species are outside biologically based limits there is a **partial strategy** of **demonstrably effective** mitigation measures in place such that the fishery does not hinder recovery and rebuilding.
			See 100 a)
100	**a**	**Y**	There is a **high degree of certainty** that bycatch species are within biologically based limits.
			The process of raking and sieving of sediment will involve some disturbance of other sand-dwelling species. As cockles typically inhabit the top few centimetres of sediment, species affected will predominantly be small crustaceans, molluscs and annelids (e.g. bivalve *Macoma*, polychaete *Nephtys*, crustacean *Corophium*, gastropod *Hydrobia*). These are not directly exploited by any fisheries. These will be subject to some incidental mortality and community disturbance, detectable for a period of weeks only.. Fished areas also comprise a minor percentage (up to 30%) of similar habitat within the estuary; and the same habitats are found extensively throughout the region. There is therefore considered a high degree of certainty that bycatch species will be well within any reasonable biologically based limit (e.g. 40% of B_0).
References			EAW Meeting; EAW notes on model and stock status, Dee Estuary Cockle Fishery Management Plan (Sep 11), Kaiser *et al* 2001.
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.
			See 100 a)
	b	**Y**	The measures are considered **likely** to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).
			See 100 b)
80	**a**	**Y**	There is a **partial strategy** in place, if necessary that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
			See 100 a)
	b	**Y**	There is some **objective basis for confidence** that the partial strategy will work, based on some information directly about the fishery and/or species involved.
			See 100 b)
	c	**Y**	There is **some evidence** that the partial strategy is being **implemented successfully.**
			See 100 c)
100	**a**	**Y**	There is a **strategy** in place for managing main bycatch species.
			There is an overarching strategy behind the management plan, reflected in one of the management objectives, to minimise impacts on the European site (i.e. SAC, SPA). Part of this strategy is to limit gear use within the fishery to hand-gathering (raking, riddling, bagging, carrying, clearing dead cockle). Licence holders may use a jumbo (an implement with a flat base and vertical handle which is used to bring cockles to the surface) to assist hand gathering provided it has a base not exceeding 140 centimetres long and 40 centimetres wide.
	b	**Y**	**Testing** supports **high confidence** that the strategy will work, based on information directly about the fishery and/or species involved.
			Hand gathering may be easily observed and selectivity can be readily demonstrated.
	c	**Y**	There is **clear evidence** that the strategy is being **implemented successfully.**
			Enforcement and observations show successful implementation of restrictions to hand-gathering only.
	d	**Y**	There is some **evidence** that the strategy is **achieving its overall objective**.
			Observations of landings and gathering provide evidence of selectivity.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11)

OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table: PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Qualitative information** is available on the main bycatch species affected by the fishery.
			See 100 a)
	b	**Y**	Information is **adequate** to **broadly understand** outcome status with respect to biologically based limits
			See 100 a)
	c	**Y**	Information is adequate to support **measures** to manage bycatch.
			See 100 a)
80	**a**	**Y**	**Qualitative information and some quantitative information** are available on the amount of main bycatch species affected by the fishery.
			See 100 a)
	b	**Y**	Information is **sufficient to estimate** outcome status with respect to biologically based limits.
			See 100 a)
	c	**Y**	Information is adequate to support a **partial strategy** to manage main bycatch species.
			See 100 a)
	d	**Y**	Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectively of the strategy).
			See 100 a)
100	**a**	**Y**	**Accurate and verifiable information** is available on the amount of all bycatch and the consequences for the status of affected populations.
			Accurate and verifiable information is available from observations of hand raking and landings (routinely undertaken by EAW staff). Combined with studies of the ecological effects of hand-raking within the Dee Estuary, these provide assurance that the fishery will have no adverse ecological consequences.
	b	**Y**	Information is **sufficient to quantitatively** estimate outcome status with **a high degree of certainty.**
			As above, the fishery will have no consequence.
	c	**Y**	Information is adequate to support a **comprehensive strategy** to manage bycatch species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
			Information is adequate to verify compliance with the management plan and license conditions (i.e. hand-raking only).
	d	**Y**	Monitoring of bycatch species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
			The evidence available of negligible adverse effects of the fishery provides sufficient detail, unless the operation of the fishery were to change substantially. This is well monitored.

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11)
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.3.1 (See Report Section 3.4.4)

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Known effects of the fishery are **likely** to be within limits of national and international requirements for protection of ETP species.
			See 100 a)
	b	**Y**	Known direct effects are **unlikely** to create **unacceptable impacts** to ETP species.
			See 100 b)
80	**a**	**Y**	The effects of the fishery are known and are **highly likely** to be within limits of national and international requirements for protection of ETP species.
			See 100 a)
	b	**Y**	Direct effects are **highly unlikely** to create **unacceptable impacts** to ETP species.
			See 100 b)
	c	**Y**	Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.
			See 100 c)
100	**a**	**Y**	There is a **high degree of certainty** that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
			The effects of the fishery (disturbance of feeding or roosting waterbirds, disturbance of sediments by raking etc and removal of cockle biomass) are considered under an annual appropriate assessment. The appropriate assessment must, under UK law (Habitats Regulations) be reviewed and accepted by the relevant nature conservation agency (CCW) before the fishery is opened.
	b	**Y**	There is a **high degree of confidence** that there are no significant **detrimental direct effects** of the fishery on ETP species.
			Direct effects would be disturbance of feeding or roosting waterbirds and disturbance of sediments by raking etc. The fishery has limited access to a restricted number of fishers, at restricted times, and has introduced a code of responsible conduct. This is reflected in the appropriate assessment; the conclusion of which (supported by this assessment team), is that this would not lead to detrimental direct effects on ETP species.
	c	**Y**	There is a **high degree of confidence** that there are no significant **detrimental indirect effects** of the fishery on ETP species.
			Indirect effects would be removal of cockle as a food resource for overwintering waders, notably oystercatcher. The TAC is specifically set so as not to have a significant effect on oystercatcher mortality. This is also reflected in the appropriate assessment; the conclusion of which is that TACs set would not lead to detrimental indirect effects on ETP species.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Environment Agency Record of Assessment of Likely Significant Effect On A European Site, Dee Cockle Fishery Code Of Practice, Dee Estuary Regulation 33 Advice.

OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table: PI 2.3.2

PI 2.3.2			The fishery has in place precautionary management strategies designed to: • **Meet national and international requirements;** • **Ensure the fishery does not pose a risk of serious harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place that minimise mortality, and are expected to be **highly likely to achieve** national and international requirements for the protection of ETP species.
			See 100 a)
	b	**Y**	The measures are **considered likely** to work, based on **plausible argument** (e.g., general experience, theory or comparison with similar fisheries/species).
			See 100 b)
80	**a**	**Y**	There is a **strategy** in place for **managing the fishery's impact** on ETP species, including measures to minimise mortality, that is designed to be **highly likely to achieve** national and international requirements for the protection of ETP species.
			See 100 a)
	b	**Y**	There is an **objective basis for confidence** that the strategy will work, based on **information** directly about the fishery and/or the species involved.
			See 100 b)
	c	**Y**	There is **evidence** that the strategy is being implemented successfully.
			See 100 c)
100	**a**	**Y**	There is a **comprehensive strategy** in place for managing the fishery's impact on ETP species, including measures to minimise mortality that is designed to achieve **above** national and international requirements for the protection of ETP species.
			The requirements of the Management Plan, and the associated requirements for appropriate assessments of activities in relation to their effects on both ETP species and habitats within the estuary provide measures which meet national and international requirements. In addition, there is a code of conduct to further constrain impacts.
	b	**Y**	The strategy is mainly based on information directly about the fishery and/or species involved, and a **quantitative analysis** supports **high confidence** that the strategy will work.
			The strategy is based entirely on the fishery; the TAC-setting process quantitatively assesses effects of cockle removal on oystercatcher survivorship against tests of likely significance, including substantial levels of precaution.
	c	**Y**	There is **clear evidence** that the strategy is being implemented successfully.
			TAC setting, appropriate assessment production, subsequent opening of the fishery and confirmation of cockle resource in September surveys provide substantial evidence of successful implementation.
	d	**Y**	There is evidence that the strategy is achieving its objective.
			TACs are set accordingly and fishing occurs in accordance with license requirements.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Environment Agency Record of Assessment of Likely Significant Effect On A European Site, Dee Cockle Fishery Code Of Practice, Dee Estuary Regulation 33 Advice.
OVERALL PERFORMANCE INDICATOR SCORE:			**100**

PI 2.3.2		The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.3.3

PI 2.3.3			Relevant information is collected to support the management of fishery impacts on ETP species including: • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.
			See 100 a)
	b	**Y**	Information is **adequate** to **broadly understand** the impact of the fishery on ETP species.
			See 100 b)
	c	**Y**	Information is adequate to support **measures** to manage the impacts on ETP species.
			See 100 c)
80	**a**	**Y**	**Sufficient data** are available to allow fishery related mortality and the impact of fishing to be **quantitatively** estimated for ETP species.
			See 100 a)
	b	**Y**	Information is **sufficient** to determine whether the fishery may be a threat to protection and recovery of the ETP species.
			See 100 b)
	c	**Y**	Information is sufficient to measure trends and support a full **strategy** to manage impacts on ETP species.
			See 100 c)
100	**a**	**Y**	Information is **sufficient** to **quantitatively** estimate outcome status of ETP species with a high degree of certainty.
			The key aspect of TAC-setting quantitatively estimates the effects of cockle removal on oystercatcher survival. Other effects (e.g. disturbance) are not quantifiable, but are reasonably expected to be negligible.
	b	**Y**	**Accurate and verifiable information** is available on the **magnitude of all impacts, mortalities and injuries** and the **consequences for the status** of ETP species.
			As above, the oystercatcher feeding model provides accurate information on the effects of the fishery on ETP species.
	c	**Y**	Information is adequate to support a **comprehensive strategy** to manage impacts, minimise mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives.
			Information on cockle populations, oystercatcher populations is recorded annually and is sufficient to continue to manage the fishery in accordance with the Management Strategy and UK laws.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Environment Agency Record of Assessment of Likely Significant Effect On A European Site, Dee Cockle Fishery Code Of Practice, Dee Estuary Regulation 33 Advice.
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.4.1 (See Report Section 3.4.5)

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
60	**a**	**Y**	The fishery is **unlikely** to reduce habitat structure and function to a point where there would be serious or irreversible harm. See 100 a)
80	**a**	**Y**	The fishery is **highly unlikely** to reduce habitat structure and function to a point where there would be serious or irreversible harm. See 100 a)
100	**a**	**Y**	There is **evidence** that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. Studies of the effects of cockle harvesting have demonstrated that the fishery would not reduce habitat structure and function to a point where there would be serious or irreversible harm. Kaiser et al 2001.
References			
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.
			See 100 a)
	b	**Y**	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).
			See 100 b)
80	**a**	**Y**	There is a **partial strategy** in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.
			See 100 a)
	b	**Y**	There is some **objective basis for confidence** that the partial strategy will work, based on **information directly about the fishery and/or habitats** involved.
			See 100 b)
	c	**Y**	There is **some evidence** that the partial strategy is being implemented successfully.
			See 100 c)
100	**a**	**Y**	There is a **strategy** in place for managing the impact of the fishery on habitat types.
			There is an overarching strategy behind the management plan, reflected in one of the management objectives, to minimise impacts on the European site (i.e. SAC, SPA). Part of this strategy is to limit gear use within the fishery to hand-gathering (raking, riddling, bagging, carrying, clearing dead cockle). Licence holders may use a jumbo (an implement with a flat base and vertical handle which is used to bring cockles to the surface) to assist hand gathering provided it has a base not exceeding 140 centimetres long and 40 centimetres wide. This strategy will restrict the impacts of the fishery on habitat types to negligible levels. This is supported by the Code of Conduct which also seeks to minimise habitat disruption.
	b	**Y**	**Testing** supports **high confidence** that the strategy will work, based on **information directly about the fishery and/or habitats** involved.
			Hand gathering may be easily observed and selectivity can be readily demonstrated. The short-medium term effects of cockle gathering on habitats structure have been demonstrated (there are no long-term effects).
	c	**Y**	There is **clear evidence** that that strategy is being implemented successfully.
			Enforcement and observations show successful implementation of restrictions to hand-gathering only.
	d	**Y**	There is some evidence that the strategy is achieving its objective.
			Observations of landings and gathering provide evidence of achievement.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Kaiser et al 2001, Environment Agency Record of Assessment of Likely Significant Effect On A European Site, Dee Cockle Fishery Code Of Practice, Dee Estuary Regulation 33 Advice.
OVERALL PERFORMANCE INDICATOR SCORE:			**100**

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.4.3 (See Report Section 3.4.6)

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There is **basic understanding** of the types and distribution of main habitats in the area of the fishery.
			See 100 a)
	b	**Y**	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.
			See 100 b)
80	**a**	**Y**	The nature, distribution and **vulnerability** of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.
			See 100 a)
	b	**Y**	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.
			See 100 b)
	c	**Y**	Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
			See 100 c)
100	**a**	**Y**	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
			The distribution of habitat types within the European Site has been mapped with a high degree of accuracy.
	b	**Y**	The physical impacts of the gear on the habitat types have been quantified fully.
			Physical effects of gear on habitat have been specifically studied and effects quantified.
	c	**Y**	Changes in habitat distributions over time are measured.
			Monitoring of the conservation status of the European site requires ongoing monitoring of any changes in habitat distributions. Distributions of cockle beds are also monitored annually by EAW.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Kaiser et al 2001, Environment Agency Record of Assessment of Likely Significant Effect On A European Site, Dee Cockle Fishery Code Of Practice, Dee Estuary Regulation 33 Advice.
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
60	**a**	**Y**	The fishery is **unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			See 100 a)
80	**a**	**Y**	The fishery is **highly unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			See 100 a)
100	**a**	**Y**	There is **evidence** that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			Disruption of habitats, predators, and other intertidal invertebrates (by-catch) have been considered above, with no significant effects identified. No other ecosystem effects are anticipated.
References			as above
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place, if necessary.
			See 100 a)
	b	**Y**	The **measures** take into account potential impacts of the fishery on key elements of the ecosystem.
			See 100 b)
	c	**Y**	The measures are considered likely to work, based on **plausible argument** (e.g., general experience, theory or comparison with similar fisheries/ecosystems).
			See 100 c)
80	**a**	**Y**	There is a **partial strategy** in place, if necessary.
			See 100 a)
	b	**Y**	The partial strategy takes into account **available information and is expected to restrain impacts** of the fishery on the ecosystem so as to **achieve** the Ecosystem Outcome 80 level of performance.
			See 100 b)
	c	**Y**	The partial strategy is considered likely to work, based on **plausible argument** (e.g., general experience, theory or comparison with similar fisheries/ecosystems).
			See 100 c)
	d	**Y**	There is **some evidence** that the measures comprising the partial strategy are being **implemented successfully.**
			See 100 d)
100	**a**	**Y**	There is a **strategy** that consists of a **plan**, in place.
			The fishery Management Plan, including the requirement for production of appropriate assessments, considers the effects of the fishery on ecosystem structure and function.
	b	**Y**	The **strategy**, which consists of a **plan**, contains measures to **address all main impacts of the fishery** on the ecosystem, and at least some of these measures are in place. The plan and measures are **based on well-understood** functional relationships between the fishery and the Components and elements of the ecosystem. This plan provides for **development of a full strategy that restrains impacts** on the ecosystem to ensure the fishery does not cause serious or irreversible harm.
			Measures are in place to address all potential significant effects of the fishery on the Dee Estuary ecosystem. These are based on a good understanding of the relations of the fishery to ecosystem components. The management plan includes for a strategy to address sources of potential impact – these are considered above (bycatch, ETP species, habitats) for all relevant ecosystem components.
	c	**Y**	The measures are considered likely to work based on **prior experience**, plausible argument or **information** directly from the fishery/ecosystems involved.

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			As discussed above for each component, evidence (through observation and/or modelling) is available for each ecosystem component.
	d	**Y**	There is evidence that the measures are being **implemented successfully**.
			Measures required by the Management Plan are monitored through EAW compliance actions.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Environment Agency Record of Assessment of Likely Significant Effect On A European Site
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Information is adequate to **identify** the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).
			See 80 a)
	b	**Y**	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and **have not been investigated in detail**.
			See 100 b)
80	**a**	**Y**	Information is adequate to **broadly understand** the key elements of the ecosystem.
			Information on the structure and function of the Dee Estuary ecosystem is extremely good. This is supported by studies such as the oystercatcherfeeding model and the work of Kaiser et al 2001.
	b	**Y**	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and **some have been investigated in detail**.
			See 100 b)
	c	**Y**	The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are **known**.
			See 100 b)
	d	**Y**	Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.
			See 100 b)
	e	**Y**	Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
			See 100 b)
100	**b**	**Y**	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and **have been investigated**.
			All main interactions of the fishery with ecosystem elements have been investigated (by-catch species, ETP species, habitats).
	c	**Y**	The impacts of the fishery on target, Bycatch and ETP species are **identified** and the main functions of these Components in the ecosystem are **understood**.
			The ecological functions of target, by-catch and ETP species are all understood and potential sources of impacts on these from the fishery identified.
	d	**Y**	Sufficient information is available on the impacts of the fishery on the Components **and elements** to allow the main consequences for the ecosystem to be inferred.
			The potential impacts of the fishery on bycatch and ETP species has been well established.
	e	**Y**	Information is sufficient to support the development of strategies to manage ecosystem impacts.
			Information is sufficient to have developed, and continue to monitor the effects of, such strategies.
References			As above

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.1.1 (See Report Section 3.5.1)

PI 3.1.1			The management system exists within an appropriate legal and/or customary framework which ensures that it: • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.
			The management system is established in full accordance with UK law (the 'Dee Estuary Cockle Fishery Order 2008 is granted under section 1 of the Sea Fisheries (Shellfish) Act 1967). This also requires a Regulating Order Management Plan which takes full account of maintenance of the stock and the ecological requirements of the European site. Fishing activities take place with full consideration of the Dee Estuary European Site (notably the preparation of Appropriate Assessments under the Habitats Regulations).
	b	**Y**	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.
			See 100 b)
	c	**Y**	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery.
			See 100 c)
	d	**Y**	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
			See 100 d)
80	**b**	**Y**	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the fishery.
			See 100 b).
	c	**Y**	The management system or fishery is attempting to comply in a timely fashion within binding judicial decisions arising from any legal challenges.
			See 100 c)
	d	**Y**	The management system has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
			See 100 d)
100	**b**	**Y**	The management system incorporates or subject by law to a **transparent** mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
			There is a transparent mechanism for the resolution of complaints set out in the EAW complaints procedure and procedures of the Public Services Ombudsman for Wales. This process has been tested during the establishment of the regulating order (notably license award process). Other legal processes within the UK and EU are transparent and well tested, although not in respect of this fishery.

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework.	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
	c	**Y**	The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.
			EAW have acted to establish the Regulating Order and Management Plan in full accordance with regulatory requirements, and so avoid legal disputes; EAW has also provided proactive legal briefing to the Welsh Government when making proposals for management changes. Where rulings or guidance were provided by the Ombudsman or Public Enquiry inspector, these have been rapidly considered and amendments implemented (notably changes to record-keeping and license allocation procedure).
	d	**Y**	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
			No one is dependent on fishing for food; all fishing is commercial. One of the bases of the Management Plan has been to establish a basis for licence allocation which provides a sustainable livelihood for those fishers with the clearest dependency on the fishery, while maintaining the stock and ecosystem status of the European site within which the fishery operates.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Environment Agency Record of Assessment of Likely Significant Effect On A European Site, EAW Legal Briefing.
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.1.2 (See Report Section 3.5.2)

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood.**
			See 100 a)
	b	**Y**	The management system includes consultation processes that obtain **relevant information** from the main affected parties, including local knowledge, to inform the management system.
			See 100 b)
80	**a**	**Y**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.
			See 100 a)
	b	**Y**	The management system includes consultation processes that **regularly seek and accept relevant** information, including local knowledge. The management system demonstrates consideration of the information obtained.
			See 100 b)
	c	**Y**	The consultation process **provides opportunity** for all interested and affected parties to be involved.
			See 100 c)
100	**a**	**Y**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.
			The participants in the management process are identified and well established. EAW has responsibility for management of the fishery. This involves statutory consultation, and liaison, with CCW on possible effects of the fishery on the European Site. Overall management responsibilities of WG and DEFRA are well established. The DESFLG and Licensee meetings also help to steer fishery practice.
	b	**Y**	The management system includes consultation processes that **regularly seek and accept relevant** information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
			Meetings of the DESFLG provide regular (2 meetings per year) opportunities for relevant information to be passed to EAW. These are supplemented by meetings between licensees and EAW. Feedback is provided by EAW on outputs, including in minutes of the DESFLG meetings.
	c	**Y**	The consultation process **provides opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
			DESFLG meetings are open to relevant parties to attend. EAW organises and facilitates the engagement of licensees in meetings with fishery managers.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Environment Agency Record of Assessment of Likely Significant Effect On A European Site, Dee Estuary Sea Fisheries Liaison Group June 2011

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.1.3 (See Report Section 3.5.3)

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
60	**a**	**Y**	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are **implicit** within management policy
			See 100
80	**a**	**Y**	**Clear** long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are **explicit** within management policy.
			See 100
100	**a**	**Y**	**Clear** long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are **explicit** within **and required by** management policy.
			The long-term objectives of the Management Plan are clearly set out and are entirely consistent with MSC Principles and Criteria; the achievement of these objectives involves an inherent precautionary approach to management. Objectives are required by DEFRA/WG prior to the approval of the Management Plan.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11).
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.1.4 (See Report Section 3.5.4)

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
60	**a**	**Y**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.
			See 80
80	**a**	**Y**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure **that perverse incentives** do not arise.
			The basis of the management system is the allocation of licenses to fish; the number of licenses issued is entirely consistent with achieving the outcomes expressed by MSC Principles 1 and 2 as the total effort is constrained by economic and ecological objectives. Close monitoring of the management system and fishing practices by EAW, informed by DESFLG and Licensee meetings allows for the identification of any perverse incentives. There are no subsidies within the system.
100	**a**	**N**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and **explicitly considers** incentives in a **regular review** of management policy or procedures to ensure they not contribute to unsustainable fishing practices.
			Incentives are not explicitly considered in the management policy or review process.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11).
OVERALL PERFORMANCE INDICATOR SCORE:			**80**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.2.1 (See Report Section 3.5.5)

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	
SG	**Issue**	**Met? (Y/PN)**	**Justification/Rationale**
60	**a**	**Y**	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery's management system.
			See 100
80	**a**	**Y**	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
			See 100
100	**a**	**Y**	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
			The three long-term objectives are explicit within the Management Plan. The key short-term objective is the annual monitoring of stock status and setting of the annual TAC. The plan also establishes long and short-term measures for measuring performance against each objective.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11).
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.2.2 (See Report Sections 3.5.5 and 3.5.6)

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **some** decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.
			See 80 a)
	b	**Y**	Decision-making processes respond to **serious issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take **some** account of the wider implications of decisions.
			See 100 b)
80	**a**	**Y**	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.
			Decision making processes are well established. The review process for the Management Plan, and subsequent consultations are established. The rule for setting TACs, and subsequent review of Appropriate Assessments by CCW is also well established. These and other measures tie-in to the fishery objectives as set out in Section 3.5.5.
	b	**Y**	Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
			See 100 b).
	c	**Y**	Decision-making processes use the precautionary approach and are based on best available information.
			The precautionary approach is inherent in the decision-making process, particularly the key process of setting annual TACs.
	d	**Y**	**Explanations** are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
			See 100 d).
100	**b**	**Y**	Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
			The key decision making process is the setting of the annual TAC. This takes into account all relevant information including monitoring and evaluation of stocks, waders and landings. Outputs (appropriate assessments) are further reviewed by CCW who take account of further environmental considerations which may arise. Both EAW and CCW take account of the wider implications of decisions. Consultations with DESFLG and licensees are taken into account in the process. The Management Plan is subject to regular review (at least every 5 years).
	d	**Y**	**Formal reporting** to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Key developments in the management of the fishery, including research (e.g. a current PhD on factors affecting recruitment is expected to give rise to a management paper), are discussed at DESFLG and minutes circulated to all attendees (i.e. all affected stakeholders).
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Dee Estuary Sea Fisheries Liaison Group June 2011
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.2.3 (See Report Section 3.5.7)

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Monitoring, control and surveillance mechanisms exist are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.
			See 100 a)
	b	**Y**	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.
			See 80 b)
	c	**Y**	Fishers are **generally thought** to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.
			See 80 c)
80	**a**	**Y**	A monitoring, control and surveillance **system** has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.
			See 100 a)
	b	**Y**	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.
			A clear set of sanctions are in place, applied in accordance with the EAW enforcement and prosecution policy and are considered appropriate to provide effective deterrence (taking into account the ease of entry to the estuary, and ready availability, and relatively high value, of cockle).
	c	**Y**	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.
			Evidence shows some low-level of suspensions (5-8 per annum out of 50 licensees, data for 2010 and 2011), cautions, warnings and prosecutions (0-12). This points to a relatively low-level of infringement (given the easily Accessible Nature of the fishery), and the effective surveillance and enforcement in place.
	d	**Y**	There is no evidence of systematic non-compliance.
			As above.
100	**a**	**Y**	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
			A system is in place in accordance with the requirements of the Management Plan and EAW enforcement and prosecution policy. Appropriate levels of staff are available to enforce measures.
	b	**N**	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
			The continuing, albeit low-level, of infringements suggests general compliance but does not demonstrate completely effective deterrence.
	c	**N**	There is a **high degree of confidence** that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			As above.
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11)
OVERALL PERFORMANCE INDICATOR SCORE:			**85**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.2.4 (See Report Section 3.5.8)

PI 3.2.4		The fishery has a research plan that addresses the information needs of management	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Research** is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.
	b	**Y**	Research results are **available** to interested parties.
			See 80 b)
80	**a**	**Y**	A **research plan** provides the management system with a strategic approach to research and **reliable and timely information** sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
			A research plan was set out in Appendix 8 to the Appropriate Assessment accompanying the Regulating Order. This sets out research needs in relation to stock management and ecosystem effects (benthos and overwintering waders). Monitoring and research is underway in relation to the cockle stocks and the nature conservation features of the Dee Estuary, with appropriate prioritisation and progress against the plan. Additional research takes place on a more ad-hoc basis.
	b	**Y**	Research results are **disseminated** to all interested parties in a **timely** fashion.
			Significant outputs will be made available on the websites of EAW, CCW or academic institutions concerned, and discussed at DESFLG meetings (the minutes of which are available to affected stakeholders). Both mechanisms allow for timely distribution of research outputs.
100	**a**	**N**	A **comprehensive research plan** provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and **reliable and timely information** sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
			The lack of a comprehensive ongoing review of research priorities means that the plan may lack coherence with all management requirements.
	b	**N**	Research **plan** and results are **disseminated** to all interested parties in a **timely** fashion and are **widely and publicly available**.
			n/a
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Dee Estuary Sea Fisheries Liaison Group June 2011
OVERALL PERFORMANCE INDICATOR SCORE:			**80**
CONDITION NUMBER (if relevant):			

Evaluation Table: PI 3.2.5

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	The fishery has in place mechanisms to evaluate **some** parts of the management system.
			See 100 a)
	b	**Y**	The fishery-specific management system is subject to **occasional internal** review.
			See 100 b)
80	**a**	**Y**	The fishery has in place mechanisms to evaluate **key** parts of the management system
			See 100 a)
	b	**Y**	The fishery-specific management system is subject to **regular internal** and **occasional external** review.
			See 100 b)
100	**a**	**Y**	The fishery has in place mechanisms to evaluate **all** parts of the management system.
			The management system is comprehensively set out in the Management Plan. Combined with close monitoring of stock status, wader populations and nature conservation status of the estuary, the plan has clear objectives and associated indicators. The plan is regularly reviewed and updated, at intervals of no more than 5 years.
	b	**Y**	The fishery-specific management system is subject to **regular internal and external review.**
			Reviews of the management plan are led internally within EAW, but these also involve consultation with external bodies within DESFLG (such as EN, CCW etc), and Welsh Government and DEFRA
References			EAW Meeting; Dee Estuary Cockle Fishery Management Plan (Sep 11), Dee Estuary Sea Fisheries Liaison Group June 2011
OVERALL PERFORMANCE INDICATOR SCORE:			**100**
CONDITION NUMBER (if relevant):			

Appendix 1.3 Conditions

No Conditions are required.

Appendix 2. Peer Review Reports

Review 1

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	Yes/No Yes	Conformity Assessment Body Response
Justification: In my opinion the assessment team has carried out a detailed and comprehensive review of the evidence and has arrived at the appropriate conclusion, which is to recommend certification according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries, with no attached conditions.		

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	Yes/No	Conformity Assessment Body Response
Justification: **N/A No conditions are raised**		

If included:

Do you think the client action plan is sufficient to close the conditions raised?	Yes/No	Conformity Assessment Body Response
Justification:		

General Comments on the Assessment Report (optional)

The assessment report has examined in a detailed manner all the available evidence on what is a relatively small, discrete, data rich, well managed and well observed fishery.

The fishery has only been managed under the current regime since 2008 although the current regime of management seems considerably more conservative than the previous permitting system.

The key determinant in setting a TAC for this fishery is the population size of overwintering Oyster Catchers, which are the chief predator of the target species. For this reason it would have been useful to have had a more detailed description of the predator nutrition model that has been used to inform management.

It would also have been useful to have had more information on the population dynamics of predator populations and what the fishery management reactions would be in the event of large increases in the predator population. The first stated objective of the management plan is “to develop a sustainable fishery that provides a consistent, regular income for fishermen” and theoretically this might become impossible to maintain for all 50 licenses if the TAC were to be heavily reduced by the need to maintain an increased predator population. In this event, would the number of licenses be reduced so that the remaining ones were still profitable and what would be the mechanism for changing the number of licenses?
IMM: TACs are based on the 5 year mean oystercatcher population. Such increases would be extremely unlikely.

There is a moderate level of infringements of license terms (10%) within the license holder community and an unknown, though apparently low, level of unlicensed fishing. It is not clear whether this has been taken into account in setting the TAC or whether it is considered insignificant due to the fact that the TAC is calculated mainly on the stock densities available from the twice yearly stock assessments and only partially on the rate of removal of stock by the fishery.

IMM: The latter situation applies.

There is mention on page 70 of the experimental removal of the overburden of seed mussels but no information is provided on the manner in which this is carried out. There is no information on the effects of the mussel seed removal and no information on the bycatch and retained species from this operation. If these effects are not considered to be significant then it should be made clear. The results of this work and any future work along these lines should be added to the research program.

IMM: The assessment team considered whether this activity was actually part of the fishery. It is peripherally related to the fishery and so the preparation, and acceptance, of an appropriate assessment is considered sufficient management scrutiny for this operation.

Performance Indicator Review

Please complete the table below for each Performance Indicator which are listed in the Conformity Assessment Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.1.1	Yes	Yes	N/A		
1.1.2	Yes	Yes	N/A		
1.1.3	No	No	N/A	PI not relevant as stock not depleted	
1.2.1	Yes	Yes	N/A		
1.2.2	No	Yes	N/A	It is not clear whether or not a target population of predators is aimed at or if the harvest control rules will continue to react to predator populations regardless of size	A five-year mean of the oystercatcher population is used. Text has been added to the report clarifying this.
1.2.3	Yes	Yes	N/A		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.4	Yes	Yes	N/A		
2.1.1	Yes	Yes	N/A		
2.1.2	Yes	Yes	N/A		
2.1.3	No	Yes	N/A	Information on retained species does not seem to include those taken during the removal of the mussel seed overburden	This activity is considered only peripheral to the operation of the fishery and preparation of an acceptable appropriate assessment considering effects on the European Site is considered more than adequate management scruitiny.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.2.1	No	Yes	N/A	Information on bycatch species does not seem to include those taken during the removal of the mussel seed overburden	See above.
2.2.2	Yes	Yes	N/A		
2.2.3	Yes	Yes	N/A		
2.3.1	Yes	Yes	N/A		
2.3.2	Yes	Yes	N/A		
2.3.3	Yes	Yes	N/A		
2.4.1	Yes	Yes	N/A		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.4.2	Yes	Yes	N/A		
2.4.3	Yes	Yes	N/A		
2.5.1	Yes	Yes	N/A		
2.5.2	Yes	Yes	N/A		
2.5.3	Yes	Yes	N/A		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.1.1	No	Yes	N/A	The key objective of the fishery management is maintainance of sufficient cockle for the survival of overwintering predators, principally the oyster catchers. If predator numbers greatly increase it may become nessessary to reduce the number of licenses so as to maintain the ability of the remaining licenses to provide a livelihood. It is not clear what mechanisms are in place for this to happen.	This is extremely unlikely given the daily quota system and nature of oystercatcher populations. The integrity of the European site would be expected to take precedence.
3.1.2	Yes	Yes	N/A		
3.1.3	Yes	Yes	N/A		
3.1.4	Yes	No	N/A	The retention of a license might be considered as an economic incentive to fish sustainably	Agreed.
3.2.1	Yes	Yes	N/A		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.2	Yes	Yes	N/A		
3.2.3	Yes	Yes	N/A		
3.2.4	Yes	Yes	N/A	Should include information on mussel seed removal process	See above
3.2.5	Yes	Yes	N/A		

Any Other Comments

Comments	Conformity Assessment Body Response
Condition number 1 is given for section 3.2.4 but no conditions are listed in appendix 1.3	Corrected in text.

Review 2

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	Yes/No YES	Conformity Assessment Body Response
Justification: Although I have some reservations about the amount of detail in the report concerning the assessment process, I believe that the overall conclusion that the fishery should be certified is correct.		

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	Yes/No N/A	Conformity Assessment Body Response
Justification: As none of the scores were below 80, no conditions have been set		

If included:

Do you think the client action plan is sufficient to close the conditions raised?	Yes/No N/A	Conformity Assessment Body Response
Justification: Not applicable as no conditions		

General Comments on the Assessment Report (optional)

This is a small, well-managed fishery and the assessment report has been carried out appropriately according to the MSC Fishery Requirements.

The report is admirably concise but some parts of it, like the description of the oystercatcher predation model, are so general and lacking in detail that it is impossible to determine exactly how it is carried out, and its applicability, without going to the original reports. The model is said to have been peer reviewed but it is not clear what this means since no reference is given to the model's description in any peer-reviewed journal (indeed, the whole assessment report gives only 8 references, of which only one is to a peer -reviewed journal and several others are not readily traceable).

IMM: Additional text has been added to the report in Section 3.3.6 describing the model. The basis of the model has been extensively published in peer reviewed journals, an additional reference has been added to the reference list.

The descriptions of the methods used to assess stock status and determine the TAC contain a number of inconsistencies and statements without explanation.
For example:

1. In sections 3.3.2, 3.3.4 & 3.3.5 there are various references to biomass estimates used in the model, some of which are >20mm, while others are >15mm, with no explanation.

IMM: 15 mm cockle from the May survey are used in the model as these would reach 20 mm by 1st September and so recruit to the fishery.

2. If, as stated in some of the Tables, oystercatcher numbers are well monitored, why does the model use an estimation of bird stocks dating from 2003/04 to get a 'latest assessment' of the food requirement of 4,600t of cockles? Has this value of 4,600t been used every year as the target/limit reference point for this fishery, irrespective of changes in bird stocks? Could a current estimate of the food requirements not be made every year?

IMM: The model uses a five-year average of bird numbers. Further text has been added to the report on this.

3. The data presented in the report is minimal. There is only very limited data on cockle biomass and no data on annual oystercatcher numbers and food requirements and how these vary from year to year. The total annual catch of cockles for recent years is not given, nor is the TAC, so it is not possible to assess by how much the annual catch falls short of the TAC.

IMM: Historical development of the fishery, including TAC, is given in Section 3.2. See also comments above.

4. At the start of section 3.3.2 it states 'Part of the aim …..by maintaining a more constant biomass level and increasing year class strength. There is evidence over recent years that this is occurring'. Where is this evidence? The only data presented shows a major decline in biomass from 2008 to 2010/11 and no data are presented on year-class strength. No comment is made anywhere in the report about this rapid fall in stock biomass.

IMM: This change in biomass is considered in-line with natural variability in these populations.

5. In fisheries, TAC is the usual abbreviation for Total Allowable Catch but in this report it is stated to be Total Annual Catch. This is not explained nor defined. Total Annual Catch seems to indicate the total catch actually landed, while Total Allowable Catch, as conventionally used, is a calculated catch level that is predicted to be sustainable.

IMM: TAC is used as a total allowable catch.

6. In section 3.3.4 Total Annual Catch is stated 'to be estimated to be between 500 and 2,500t'. Whose estimate is this and on what is it based? For the 3 years for which data are given in the report, total biomass is given as 23, 578t, 18,495t and 9,272t. If the assessment model sets aside 4,600t for the birds each year, that leaves an 'available' biomass of 18,978, 13,895 and 4,672 t for the three years respectively. What were the actual TAC's set for the fishery for these years and on what basis were they set? And what was the actual catch landed from the fishery? Also, what is the basis for setting the daily quota at 300kg? This is all very confusing.

IMM: There are a number of interacting factors (density, TAC and daily quota) that determine the harvesting rate. Further text has been added to the report as follows: "*Under the provisions of the Dee Regulating Order, 50 licences have been issued for the purposes of commercial cockle fishing. For 2011, Stock surveys in April have estimated a total biomass of 9144*

tonnes (>15mm) and the CEH oystercatcher behavioural model has predicted that 4702 tonnes is available to the fishery. A daily catch allocation of 300 kg has been agreed equating to an annual TAC for the fishery of 1725 tonnes. The model estimates that this would not significantly change oystercatcher mortality rates." This also maintains a 'broodstock' of cockle and age structure to the population.

7. Section 3.3.2 also states that 'mussel stocks are also included in the estimate' yet there is no information on how the mussel stocks are assessed, who does it, the magnitude of available mussel biomass or how it varies from year to year. In the years when mussel biomass is high, does this mean that the cockle biomass taken by the fishery is increased?

IMM: Mussel stocks will be evaluated by EAW when present. Cockle biomass remains the main food source for oystercatcher and the basis of the model tuns.

Performance Indicator Review

Please complete the table below for each Performance Indicator which are listed in the Conformity Assessment Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.1.1	Yes	Yes	N/A	See 1.1.2. below.	
1.1.2	Yes	No	N/A	This is not a conventional biological reference point as the principle aim is to maintain sufficient food for oystercatchers, rather than to maintain a sustainable catch for fishermen. Never-the-less it is a valid and appropriate reference point for this fishery. While I believe that the scores for 1.1.1.and 1.1.2 are probably appropriate (because of the biological nature of the cockle stocks) the descriptions of the assessment methods and the rationale for the reference point is not well supported by the text or in the Table because of the concerns I have listed above in General Comments.	Further information has been added to the report as above.
1.1.3	N/A	N/A	N/A		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.1	Yes	No	N/A	While the cockle biomass is assessed twice a year, the harvest strategy does not appear to be very responsive to the state of the stocks in that the target reference point appears to have been set at a constant level, based on an 8-year-old value for bird food requirements and has not been modified in line with data from the annual monitoring of oystercatcher populations that are said to take place. The justification for this score would be easier to assess if some data on stock levels, oystercatcher populations and landings from the fishery had been include in the report. No evidence was also presented to support the statement that an 'improvement in size class distributions within the cockle stock is evident. Given these uncertainties I think the score of 100 has not been justified	The oystercatcher population estimate is based on a five year average – text has been added to the report in this regard, and on setting TACs and daily quotas. Strenghtening of size classes was reported, but is not fundamental to the scoring here..

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.2	Yes	No	N/A	The score is probably justified but with historical TAC's not tabulated in the text the statements in the Table have not been supported by the presentation of data.	Further text has been added to the report as above.
1.2.3	Yes	No	N/A	There are a number of uncertainties in this fishery (eg. recruitment, mass mortalities from temperature extremes and disease) and while these are understood, and the bi-annual stock surveys provide a mechanism for good control of exploitation, I do not believe that **all** information required is monitored adequately to meet the scoring issue 100b	In the context of global fishery management, it is hard to see what better information could be obtained than a bi-annual count of the stock, monthly predator counts and very close monitoring of licensed fishers.
1.2.4	Yes	Yes	N/A	See concerns under General Comments above	
2.1.1	Yes	Yes	N/A	No retained species in a hand-gathered fishery	
2.1.2	Yes	Yes	N/A	Strategy in place, successfully implemented and achieving its objective.	
2.1.3	Yes	Yes	N/A	No retained species.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.2.1	Yes	Yes	N/A	Hand raking and relatively small footprint of the fishery has very limited impact on bycatch species	
2.2.2	Yes	Yes	N/A	Strategy in place, successfully implemented and achieving its objective.	
2.2.3	Yes	Yes	N/A	Accurate and verifiable information, sufficient to support strategy	
2.3.1	Yes	Yes	N/A	Annual appropriate assessment for the European site and fishery Management Plan ensure protection of ETP species	
2.3.2	Yes	Yes	N/A	Clear evidence of good, successfully implemented strategy to protect ETP species and habitats incorporated in the fishery Management Plan.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.3	Yes	No	N/A	The score may be appropriate but my only reservation is whether the annual information on cockle stocks and oystercatcher populations is actually used in the setting of the annual TAC when it would appear from the text that the predation model is based on a fixed, 8-year-old assessment of oystercatcher food requirements. Whis throws doubt on whether the SG100 scoring issues are met.	See text on use of oystercatcher data above – this is a moving five-year mean of the population.
2.4.1	Yes	Yes	N/A	SG100 well supported by a peer-reviewed journal publication	
2.4.2	Yes	Yes	N/A	A sound strategy, well implemented.	
2.4.3	Yes	Yes	N/A	The on-going monitoring associated with maintaining the conservation status of the European site provides confidence that the fishery poses no risk to habitat types.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.5.1	Yes	Yes	N/A	This is a well understood and well monitored system and the fishery poses no significant risks to the ecosystem.	
2.5.2	Yes	Yes	N/A	As above	
2.5.3	Yes	Yes	N/A	Good information is available.	
3.1.1	Yes	Yes	N/A	Sound legal framework	
3.1.2	Yes	No	N/A	The scoring may well be appropriate but 'providing opportunities' is not necessarily the same as 'regularly seeking and accepting' information and it is not clear how much active 'encouragement' is given to other (eg. Environmental NGO's) to be involved so I am not sure that SG100a & c have been fully justified.	The reviewer is mixing two separate elements within this PI; both have been met as decribed in PI 3.1.2 text and report section 3.5.2. The DESFLG includes for NGO membership (NGOs tend to engage when an issue of concern is apparent)..
3.1.3	Yes	Yes	N/A	Good precautionary approach to management.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.1.4	Yes	Yes	N/A	I agree that incentives to achieve good management are not explicitly considered.	
3.2.1	Yes	Yes	N/A	Well-defined and measurable short and long-term objectives are in place	
3.2.2	Yes	No	N/A	As previously noted, I have some concerns that while stocks, waders and landings may well be regularly monitored, these data do not appear to be utilized in the setting of the annual TAC, which is the key decision-making process, which questions part of the justification for SG100b.	See text above, and added to report.
3.2.3	Yes	Yes	N/A	An annual suspension rate of 10-16% is not a low level of infringement so this wording should be modified in SG80c to stress more the effectiveness of surveillance and enforcement and the comment about the number of infrigements used to support SG100b	Agreed.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.4	Yes	Yes	N/A	The lack of a comprehensive research plan and the consequent failure to meet SG100a (with which I agree) makes me question whether this is consistent with the scores awarded for 1.2.3, 2.2.3, 2.3.3, 2.4.3 and 2.5.3, all of which were scored at 100 on the basis that all the information required to assess and manage the fishery was available.	The routine monitoring of the fishery is considered excellent. The issue here is the lack of a comprehensive review of all possible research requirements.
3.2.5	Yes	Yes	N?A	Met? column not filled in.	Done.

Any Other Comments

Comments	Conformity Assessment Body Response
Can I repeat, I think the balance between commendable brevity and providing the peer reviewer with sufficient information to assess the report in the short time allocated has erred slightly too far to the former in this case. Otherwise, this is a very good assessment of a well-managed fishery.	

Appendix 3. Stakeholder submissions

Site Visit Meetings:

IMM Attendees
Lead Auditor/Coordinator: A Hough AH
Team Members: T Holt TH

Stakeholders:

Affiliation	Representatives
1. EAW	Alan Whinstone AW
2. EAW	Rick Prichard RP

Location: Buckley

Date: 29 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- RBF (if applicable)
- That stakeholder comments may be non-attributable if required

Comments:

Unit Of Certification is Dee estuary hand gathered cockle fishery; assessment team is AH and TJH.
Introduced TH and outlined experience;
Introduced AH and Intertek Moody
Purpose of the meeting is information gathering.

We are using the standard assessment tree. Although we considered RBF it was decided that information on P2 in the Kaiser paper of 2001 allows normal assessment tree to be used.

Ribble closure recently has led to increase in illegal fishing in the North West. Leasowe (NWIFCA-managed) bed on Wirral foreshore is now closed as stock levels low so this adds to pressure.

Pointed out that comments can be non attributable, but that confidential information cannot normally be used for scoring.

2. Status
What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGO etc)

Client and Fishery Managers

3. IMM Questions
Assessment team questions for stakeholder response

General questions were posed on the status of the fishery, actions in relation to Conditions and general changes in the science, management and regulation of the fishery.

Fishery has a history of boom and bust prior to the regulating order.

P1 – stock levels. Appropriate assessment covers features of the site – overwintering birds, mainly oystercatcher. Model is run for total bird mortality over the winter – model decides whether bird mortality will significantly increase as a result of the TAC levels. Model has been published and peer reviewed and since the appropriate assessment is signed off each year it is clearly accepted by CCW and EN. If AE was not signed off, the EA could in theory still open the fishery but this would risk proceedings from CCW via WG and in practice EA would expect to have dialogue with CCW/NE to resolve.

Existing survey show if anything stocks increasing slightly. Have an aim of trying to increase the spread of year classes on the beds, and presently this seems to be happening in 2010 and 2011 – whereas in 2008 there was only one main year class. Rush cockles have occurred at times in the past– EAW want to be able to thin these out if deemed necessary.

Overall target - what is necessary for oystercatcher population must be retained, and there must also be a minimum of 100 per m2 of 20mm plus cockles at the beginning of the season (in the April survey). Stock assessment works out biomass in beds where stock is above 100/m2 as potentially available to the fishery. If some individual beds are below that level they would probably still open the whole fishery as the fishermen will gravitate quickly to the denser beds. Individual beds can be individually opened and closed as, for example, at Mostyn docks in some years. Oystercatcher modelling tends to be the main determinant at the end of the day (and is obligatory). There is no quota per bed but an overall quota for the estuary. Returns are required from fishermen within 12 working days so information is provided sufficiently fast to allow closure of individual beds part way through the season if necessary though has not been done. Model tends to preserve one third of the cockles to be left (this not a rule, just what it tends to work out at). Reference point is ecologically determined.

Harvest strategy is a total TAC allowing enough for the birds. Harvest control rule is division of TAC into individual daily quotas, there is submission of daily catch reports within 12 days. One year the individual quotas were increased part way through the season because some fishermen were not fishing much and the overall TAC was not being approached. Individual TAC is initially set from the overall TAC assuming all fishermen fish a realistic no of days which is around 115 (can't fish low tides at night for example) but can be increased as described above.

Have not yet achieved the total TAC for any year so there may be pressure for additional licenses – three temporary licenses were given one year though permanent licensees do not like this! Temporary licenses are more likely than more full time licenses. However, can also increase the TAC for all existing license holders part way through the season if it is clear that TAC is being undershot, and this has been done in 2010. One of the aims is not to increase daily quota so much that people are collecting so rapidly that more spat is being removed/damaged etc, so there is a management preference for increasing number of licenses (thus maintaining quality of bed) rather than raising daily quotas too high.

Cockles below the minimum landing size may grow during the season so beds may be opened following the September survey or even additional surveys that are carried out by EA on growth and size at other times.

No major mortality events. In 2009 there was heavy infestation of barnacles on the beds which caused some die off. But nothing like Burry or Wash die off events (latter both have same parasites though it is not known how much of a causal factor this actually is, but a survey has been carried out in Dee and those parasites were not found.

Information and monitoring of stock – surveys are April and September on established beds – there are walkovers during the season often with fishermen. Fishermen provide information on areas of good spat etc, or 10-15mm cockle etc (although they will usually try to keep precise locations of dense patches of marketable cockles to themselves). EA encourages them to provide this information as it may potentially increase TAC in later years. Surveys are 0.1m2 square samples using a 3mm and 20mm riddle along transects, differing numbers of transects per bed.

Cockles generally more desirable from bird point of view than mussels so when EA requested dredging of dense seed mussels to see if cockles would improve CCW and NE were supportive.

P2 No recognised by catch. In observing typical catches of 300kg of cockles from a five hour shift EA staff have never noticed anything other than cockles. There is a minimum landing size for mussels.

Non retained bycatch. Kaiser et al 2001 study was done on the Dee, demonstrating minimal effects which are not likely to affect functioning of the ecosystem. We have a copy of this report.

Size of beds - some beds have clear physical edges eg gutters or banks but for some others the bed peters out over apparently identical habitat.

Protected species are birds, principally oystercatchers (at least with relevance to cockle fishery)– these are strongly monitored and appropriate assessment carried out whenever necessary. Disturbance is not an issue as access to beds is by boat. Also now that there are a max of 53 licensees instead of many hundreds, disturbance does not occur much, certainly compared to historical levels, and the season limits (1 July to 31 Dec) were partly set considering potential disturbance to birds. There is a 10m limit on boats but 5 or 6m is largest in practice and there is some sharing (mostly in pairs).

Habitats – some cockles are in muddy sand and some in pure sand, some at surface and some at as much as 5 inches depth.

Ecosystem effects – management is driven by ecosystem management via Approp Assessments for birds and (on one occasion so far as a test) mussel removal.

P3 Legal framework – local national and intl. standards - ie laws governing fisheries exploitation and environmental protection. Has there been any legal challenge since public enquiry June 2007(latter was about method of license allocation). Inspector made some recommendations and these were incorporated into a rewritten license allocation procedure. There were a large number of licenses applications and some took EA to public service ombudsman but their complaint was not upheld – ombudsman's conclusions would be legally binding on EA (this was preceded by EA complaints procedure). There was some criticism by ombudsman of fisheries managers (EA) record keeping, so they then reviewed and changed the record keeping. 17 years hence there will be a full allocation of licenses again.

Basis for allocation is given in the several and regulating order management plan. Rankings based on 3 tiers of applicants, allocated between and within tiers. People still occasionally added to the waiting list. Temporary licenses would go to those at top of the waiting list. A license holder may in theory have a deputy who uses their license (the two can't go at the same time), each case is dealt with on its merits, but in fact this has not happened yet. There is an apprentice system with up to 3 apprentices possible but anyone who has an apprentice does not get any additional quota.

In summary - complaints go to EAW and if still unhappy go to ombudsman, could in theory then go to law.

Consultation - there was a lot of consultation during setting up of the regulating order, followed by public enquiry. A Dee Estuary Fisheries Liaison Group has been set up including fishermen (including cockle license holders), CCW, NE, Welsh Govt, NW IFCA, MMO, local authorities (Flintshire and Wirral who have health/hygiene responsibilities), and RSPB. There is a cockle sub-group of about 8 fishermen plus EA staff that discusses cockle issues prior to the DEFLG to try to avoid cockles dominating the DEFLG meeting completely and there is also an annual cockle licensees meeting for all licensees to discuss cockle fishery issues – review last years fishery and discuss prospects for this years. The liaison Group is regarded as the main liaison group. All of these are organised by EA who send out invites, agenda, prepare action notes etc.

If anyone wanted to apply for membership of DEFGL they would probably be allowed to attend although EA would want to avoid it getting too big.

Long term objectives – 3 specified in the management plan, specified in box on page 2 and then given in more detail later on;
1 to develop a sustainable fishery that provides a consistent, regular income for fishermen
2 to minimise the impacts to the European sites and local residents arising from fishing activities
3 To improve fishery management, monitoring and enforcement

Incentives for sustainable fishing (and lack of incentives that would encourage unsustainable fisheries). Fishers can lose license for prosecution of a cockle offence, by EA applying to the minister to have the license revoked. Good bed management is encouraged by having TAC set at sensible levels as described earlier. System of c.50 x twenty year licenses was decided on the basis of wanting a sustainable income for fishermen and to avoid the

previous (unregulated) boom and bust fishery. There are presently five licensees being prosecuted for taking more than daily quota. An overriding consideration for this fishery was to get a regular, ie hopefully open every year, fishery, which so far has been the case. Apprentice scheme is an incentive for younger people to learn about the fishery including traditional skills and knowledge.

Fishermen have a voluntary code of conduct. This has not been reviewed but there will now be an agenda for this on next AGM.

No subsidies are available.

Long and short term objectives. Short term is suitable TAC allowing retention of sufficient biomass, and of suitable size, for oystercatcher. An unwritten EA objective is to increase their knowledge of biology/ecology of the cockles based on wider experience from other people and from looking more at existing data – real experienced knowledge is lacking in this area. Decision making process for quotas and TACs is well prescribed and ties back to the objectives including re birds but also re making the fishery realistically long term for the fishermen. Precautionary approach involved because there has to be no chance according to the model of there being an additional mortality to oystercatchers;

Compliance and enforcement: Fisher leave from 3(4) main places - Greenfield dock and Bagillt Dock on Welsh side, and Thurstaston and occasionally West Kirby on English side. EA staff can watch this and also watch them on the beds – there are covert operations around possible illegal operations – may lead to overt operations done legally through RIPPER etc or use of infrared cameras, thermal imaging etc. There are 7 enforcement officers but these also have inland fisheries responsibilities. Police may also get involved, both Welsh and English. This year the 7 have probably devoted around 20% of their time to the Dee cockle fishery. Illegal activity has increased in 2011 as other fisheries have been closed and prices are high. Problems are mainly at night as, when they try in the day they are generally quickly caught. Amounts are thought to be mainly small. Estimate would be a couple of hundred tons this year. There is a 24 hour hotline that can be anonymously used, and is used. Passage of information between IFCA, police and EA is improving.

Sanctions. There is an enforcement policy that sets this all out (in public domain), then after prosecution EA can apply to minister for revoking of license. Can also temporarily suspend fisher from fishery if no catch returns received.

Catch return book is triple carbon, one copy for buyer, one for EA (via “cockle boxes” near the access points) and one for themselves. This year fishermen can only use tagged (with license numbers) EA builders bags which hold just over 300 kg (bags reissued if daily quota changes) that are a license condition. Last year caught some individuals taking 600 or 700kg per day.

Mechanisms to evaluate management system – internal and external review. There is a five year internal review of management required but as yet it does not have an established or written process. It is presumed that EA will identify possible management changes required, consult with the fisheries liaison group and Defra/WAG, and they will then need to go to DEFRA and WAG to actually approve changes.

Traceability. Requested a description of tracking tracing and segregation systems in fishery – now have EA bags for one days fishing labeled , as described above, and can be checked at the three (four) landing points. Environmental health teams give a movement document

that needs to accompany cockles once bought, through the process. This document includes the point (bed) of picking for each batch. Anticipated code of conduct for buyers (presently in early draft form, not discussed with buyers yet; presently would be a voluntary code, though it is hoped there will be something more legally based in future) would hope to improve traceability beyond the fishery.

4. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

Information was provided in relation to questions raised by the assessment team. This information is contained in the surveillance report.

5. Other issues

(e.g. any other stakeholders we should contact, any written submissions to follow?)

None.

6. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed

IMM Lead Auditor EAW

Public Comment Draft Report

Comments were received from the MSC. The original Comment is attached to this report and responses to the points raised are presented below.

Requirement	Reference	Details	CAB Comment
CR-V1.1-27.6.1	The CAB shall nominate a date from which product from a certified fishery is likely to be eligible to bear the MSC ecolabel (the target eligibility date). This could be: The date of the certification of the fishery; or Any date prior to the certification	The target eligibility date given is 1st November, 2011, which is more than 6 months prior to the publication of the most recent PCDR.	The PCDR was published on 3 May 2012. The TED has been amended to 3 November 2011, 6 months prior to this date.
CR-V1.1-27.12.1	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following	The report mentions that a slight chance of addition of non-certified products 'during transport to grading yards' and that 'cross referencing of sales notes and daily landing records' would identify this issue; however, the report does not clarify …	This has been further clarified in the report.
CR-V1.1-27.12.1.6	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following	The report does not clearly define the risk at the point of landing. The point of landing (number and location) is not clearly defined	Landing points are noted in the PCDR as Thurstaston, Greenfield Dock, Bagillt and West Kirby. Additional text has been included identifying the risk to the integrity of product at these points.

Appendix 4. Surveillance Frequency

The report shall include a completed fishery surveillance plan table using the results from assessments described in CR 27.22.1

Table A4: Fishery Surveillance Plan

Score from CR Table C3	Surveillance Category	Year 1	Year 2	Year 3	Year 4
0	Reduced Surveillance	Review of new information	On-site surveillance audit	Review of new information	On-site surveillance audit & recertification site visit if requested

Appendix 5. Client Agreement

It is confirmed that the client has accepted the Public Certification Report, the following was received from Rick Prichard, EA Wales on 28 June 2012: "I can confirm that we would be willing to accept the Public Certification Report for the Dee Cockle Fishery"

Appendix 5.1 Objections Process

No Objections were received.