

Marine Stewardship Council (MSC) Final Report

The Poole Harbour Clam & Cockle Fishery

**On behalf of
The Poole and District Fishermen's Association and
Southern IFCA**

**Prepared by
ME Certification Ltd**

FEBRUARY 2018

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Glossary

Term / acronym	Definition
BTO	British Trust for Ornithology
CA	Consequence Analysis
CAB	Conformity Assessment Body
Cefas	Centre for Environment Fisheries and Aquaculture Science
CFP	Common Fisheries Policy
CoP	Code of practice
CPUE	Catch per Unit Effort
DEFRA	Department for Environment, Food and Rural Affairs
EMS	European Marine Sites
ETP	Endangered/ Threatened/ Protected species
EU	European Union
FAP	Financial administrative penalty
FCR	Fisheries Certification Requirements
FPV	Fisheries protection vessel
GPS	Global Positioning System
HCR	Harvest control rule
HRA	Habitats Regulations Assessment
IFCA	Inshore Fisheries and Conservation Authorities
IFCO	Inshore Fisheries and Conservation Officer
IIAW	Internationally Important Assemblage of Waterfowl
IUU	Illegal, unreported and unregulated (fishing)
LTL	Low trophic level (species)
MACAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zone
MS	Minimum Size
MMO	Marine Management Organisation
MSC	Marine Stewardship Council
NE	Natural England
NM	Nautical Mile
PDFA	Poole and District Fishermen's Association

Term / acronym	Definition
PHAMP	Poole Harbour Aquatic Management Plan
PHC	Poole Harbour Commissioners
PHSG	Poole Harbour Study Group
PI	Performance Indicator
PRI	Point of recruitment impairment
PSA	Productivity Susceptibility Analysis
pSPA	potential SPA
RBF	Risk-Based Framework
RBS	Registration of Buyers and Sellers
RBS	Registration of Buyers and Sellers
ROM	Regularly Occurring Migratory (bird species)
SFC	Sea Fisheries Committee
SIFCA	Southern Inshore Fisheries and Conservation Authority
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TAC	Total Allowable Catch
UK	United Kingdom
UoA	Unit of Assessment
VMEs	Vulnerable marine ecosystems
VMS	Vessel Monitoring System

1 Executive Summary

This report is the Final Report for the Poole Harbour Clam & Cockle Fishery. The assessment team consisted of Dr Hugh Jones (Team Leader and Principle 2), Dr Julian Addison (Principle 1) and Dr Robert Blyth-Skyrme (Principle 3). The site visit for the assessment took place in Poole, England on the 8th March to 10th March 2017.

The fishery is carried out by vessels registered as permit holders under the Southern IFCA Poole Harbour Dredge Permit byelaw. The permit holders represent all the commercial operators in Poole Harbour with permission to fish for Manila clam (*Ruditapes philippinarum*) and cockle (*Cerastoderma edule*) in Poole Harbour by pump scoop dredge. The fishery takes place within the confines of Poole Harbour, Dorset and is managed at two levels: EU and national levels. At EU level, the fishery is managed within the context of the Common Fisheries Policy. At the national level, the main legal bases for fisheries management are the Marine and Coastal Access Act (2009) and local byelaws. The Southern Inshore Fisheries and Conservation Authority (SIFCA) is the implementing body, responsible for the principle components of fisheries management, from science to management and enforcement.

Official landings statistics are compiled by the Marine Management Organisation (MMO) from monthly catch returns where landings are recorded through the registration of buyers and sellers (RBS) legislation. Cross-checking by IFCA officers of landings figures collected by MMO with those recorded on IFCA log books provides evidence that there is no systematic misreporting of landings data. Stock surveys are carried out annually by SIFCA and risks associated with the fishery are evaluated through the annual appropriate assessment under the EC Habitats and Birds Directives. Management of habitat interaction, ETP interaction and ecosystem function is a collaborative effort between fishers, management authorities (SIFCA) and government agencies (Natural England).

The main strength of the client fishery is that it is a well-organised fleet which operates in a well-defined management framework, with transparent stakeholder consultation processes and clear mechanisms for dispute resolution. The stocks of Manila clam and cockle were evaluated by RBF and appear to be robust to overexploitation with regard to spatial and temporal limits on fishing activity. A significant proportion of the fishable area is closed to fishing, to protect VMEs and ETP interactions or for other reasons. In relation to the weaknesses identified by the assessment, a more effective harvest strategy is required to identify intensity of spatial impacts within the harbour and with regards to its wider ecosystem impacts, the fishery will need to address its potential impacts on ETP species, through a formal recording programme.

Overall, no single performance indicator scored below 60 and the aggregate score for each principle was 80 or above; therefore the fishery is being provisionally recommended for certification.

The overall preliminary scores for each Principle are as follows: Principle 1: 82.7, Principle 2: 94.7 and Principle 3: 92.5. Two PIs scored less than 80 and therefore conditions were raised as summarised below. Note that there were no principles or conditions which required harmonisation with other MSC fisheries.

Conditions raised against the fishery for both UoAs.

Condition number	Condition	Performance Indicator
1	By the third annual surveillance, UoA removals should be regularly monitored at a level of accuracy and coverage consistent with the harvest control rule.	1.2.3
2	By the third annual surveillance, a template for recording ETP interactions will be implemented within the fishery allowing the management authority to monitor fishery impacts.	2.3.3

2 Authorship and Peer Reviewers

Dr Hugh Jones (Team Leader): Hugh obtained his PhD in Australia investigating the bioaccumulation of mercury in estuarine food webs and the effects on human health, following a BSc. (Hons) in Marine Biology from Plymouth University.

He has a broad background in marine research including publications and reports on ecotoxicology, environmental risk assessments and fisheries research. Prior to joining MEC he was employed by the University of Tasmania as a fisheries scientist in the development of an empirical harvest strategy for the commercial abalone fisheries and fisheries assessments of estuarine bivalves. This included work on population metrics (recruitment, growth), harvest dynamics (catch rates, market selectivity), and the use of fine scale geo-spatial techniques as performance measures to assess stock sustainability.

He is a contributing author to the Status of Australian Fish stocks for Tasmanian abalone and shellfish fisheries. Hugh currently works as the Fisheries Assessment Manager for MEC.

Dr Hugh Jones was the team leader and Principle 2 expert on this project.

Dr Julian Addison - Dr Julian Addison is an independent fisheries consultant with 30 years' experience of stock assessment and provision of management advice on shellfish fisheries, and a background of scientific research on shellfish biology and population dynamics and inshore fisheries. Until December 2010 he worked at the Centre for Environment, Fisheries and Aquaculture Science (Cefas) in Lowestoft, England where he was Senior Shellfish Advisor to Government policy makers, which involved working closely with marine managers, legislators and stakeholders, Government Statutory Nature Conservation Organisations and environmental NGOs. He has also worked as a visiting scientist at DFO in Halifax, Nova Scotia and at NMFS in Woods Hole, Massachusetts where he experienced shellfish management approaches in North America. For four years he was a member of the Scientific Committee and the UK delegation to the International Whaling Commission providing scientific advice to the UK Commissioner. He has worked extensively with ICES and most recently was Chair of the Working Group on the Biology and Life History of Crabs, a member of the Working Group on Crangon Fisheries and Life History and a member of the Steering Group on Ecosystems Function. He has extensive experience of the MSC certification process primarily as a P1 team member but also as a P2 team member and team leader, undertaking MSC full assessments for the Newfoundland and Labrador snow crab fishery, the Ireland and Northern Ireland bottom grown mussel fisheries, both the Estonia and Faroe Islands Barents Sea cold water prawn fisheries, the Nephrops fishery in the Skagerrak and Kattegat, separate assessments for the Swedish, Danish and Norwegian Skagerrak and Norwegian Deep cold water prawn fishery, the Eastern Canada offshore lobster fishery, the Limfjord mussel and cockle fisheries, Chilean crustacean fisheries and North Sea brown shrimp fisheries. He has also undertaken MSC pre-assessments, numerous annual surveillance audits and has carried out peer reviews of MSC assessments in both Europe and North America of lobster, cold water prawn, razorfish, cockle, scallop and slipper limpet fisheries. Other recent work includes a review of the stock assessment model for blue crabs in Chesapeake Bay, USA, and an assessment of three Alaskan crab fisheries under the FAO-based Responsible Fisheries Management scheme.

Dr Addison was responsible for Principle 1.

Dr Robert Blyth-Skyrme - Rob started his professional career in finfish mariculture in 1996, before switching to a focus on the science, management and policy of wild fisheries. Following his PhD, which considered biological and socio-economic aspects of an inshore shellfish fishery, he worked as the Senior Environment Officer and then Deputy Chief Fishery Officer at the Eastern Sea Fisheries Joint Committee, the largest regional fisheries management organization in England. Rob then became Natural England's senior advisor to the UK Government on marine fisheries and environmental issues, leading a team dealing with fisheries policy, science and nationally significant fisheries casework. Since the end of 2008, Rob has run Ichthys Marine Ecological Consulting Ltd., a consultancy providing marine fisheries and environmental advice to a variety of governmental and industry clients.

Rob has undertaken all facets of MSC work as a Lead Assessor, expert team member and peer reviewer, across a wide variety of fisheries. He has completed the MSC Certification Requirements V.2.0 training, and is a member of the MSC's Peer Review College.

Dr Blythe Skyrme was responsible for Principle 3.

The peer reviewers for this assessment were as follows:

Dr Sophie des Clers - Sophie is an independent expert in fisheries management and socioeconomics, as well as an honorary research fellow of University College London. She has been involved in a number of previous MSC assessments including UK Fisheries Ltd cod, haddock and saithe, Biscay sardine seine fishing, Normandy-Jersey lobster and Euronor/Comapêche cod and haddock. Sophie is an expert in fisheries management and legislation at a regional, national and international level but with particular focus on the EU.

Dr Michael Bell - Dr Bell has 24 years' experience as a research scientist, including 17 years in fisheries, where his research has focused on assessment, monitoring and management of sustainable fisheries and the ecological consequences of marine fisheries. Mike is currently Research Associate at the International Centre for Island Technology at the Heriot-Watt University in Orkney providing research, teaching and consultancy on sustainable fisheries. Previous professional experience includes various shellfish projects, stock assessment peer reviews, MSC assessments, Chair of the ICES Working Group on Nephrops Stocks and Scientific Advisor for Orkney Sustainable Fisheries, developing stock assessments and Fishery Improvement Projects for brown crab and researching crustacean and scallop fishery dynamics. Mike has also provided workshops on generalized linear modelling techniques, age-based stock assessments and mark-recapture modelling techniques.

3 Description of the Fishery

3.1 Unit(s) of Assessment (UoA) and Scope of Certification Sought

3.1.1 UoA and Proposed Unit of Certification (UoC)

MEC confirms that the fishery under assessment is within the scope of the MSC Fisheries Standard (7.4 of the MSC Certification Requirements v2.0):

- The target species is not an amphibian, reptile, bird or mammal;
- The fishery does not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client or client group does not include an entity that has been successfully prosecuted for a forced labour violation in the last 2 years;
- The fishery has in place a mechanism for resolving disputes, and disputes do not overwhelm the fishery;
- The fishery is not an enhanced fishery as per the MSC FCR 7.4.3;
- One of the fisheries is an introduced species-based fishery as per the MSC FCR 7.4.4. see Section 3.1.5 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF).

The UoC and UoA are the same in this assessment as there are no other eligible fishers.

UoA 1:

Species	Manila clam (<i>Ruditapes philippinarum</i>)
Geographical range	Poole Harbour
Pump Scoop	Pump Scoop Dredge
Stock	Poole Harbour
Management Systems	<p>Legal: EC 850/98; Marine and Coastal Access Act (2009); Southern IFCA; Poole Harbour Dredge Permit Byelaw</p> <p>Enforcement: : MMO, Southern IFCA</p> <p>Science: Southern IFCA</p>
Client group	Permit holders under the Southern IFCA Poole Harbour Dredge Permit byelaw targeting Manila clam in Poole Harbour by pump-scoop dredge.
Other eligible fishers	None

UoA 2:

Species	Common cockle (<i>Cerastoderma edule</i>)
Geographical range	Poole Harbour
Pump Scoop	Pump Scoop Dredge
Stock	Poole Harbour
Management Systems	<p>Legal: Marine and Coastal Access Act (2009); Southern IFCA; Poole Harbour Dredge Permit Byelaw; Fishing for Cockle byelaw</p> <p>Enforcement: : MMO, Southern IFCA</p> <p>Science: Southern IFCA</p>
Client group	Permit holders under the Southern IFCA Poole Harbour Dredge Permit byelaw targeting cockle in Poole Harbour by pump-scoop dredge
Other eligible fishers	None

3.1.2 Final UoC(s)

(PCR ONLY)

The PCR shall describe:

- a. The UoC(s) at the time of certification.
- b. A rationale for any changes to the proposed UoC(s) in section 3.1(c).
- c. Description of final other eligible fishers at the time of certification.

(References: FCR 7.4.8-7.4.10)

3.1.3 Total Allowable Catch (TAC) and Catch Data

Table 1. MMO catch data for each UoA from 2012 to 2015. Weights are wet weight. Total weight includes catch taken by hand gathering that is not part of the UoAs in this assessment.

UoA	Year	UoA Weight (t)	Total Weight (t)	UoA Pct of Total Weight
Cockle	2012	10.4	10.4	100.0
	2013	15.9	15.9	100.0
	2014	27.6	28.2	97.7
	2015	9.4	9.6	98.3
Manila Clam	2012	63.3	63.3	100.0
	2013	50.8	50.8	100.0
	2014	88.6	92.5	97.1
	2015	249.3	257.5	96.8

3.1.4 Scope of Assessment in Relation to Enhanced Fisheries

The MSC defines enhanced fisheries as: *Any activity aimed at supplementing or sustaining the recruitment, or improving the survival and growth of one or more aquatic organisms, or at raising the total production or the production of selected elements of the fishery beyond a level that is sustainable by natural processes. It may involve stocking, habitat modification, elimination of unwanted species, fertilisation or combinations of any of these practices.*

The fishery under assessment is a wild capture fishery and does not meet the criteria for enhanced fisheries (see FCR v2.0, G7.4.3)¹. One member of the client group holds a tranche 1 lease right within Poole Harbour under a several order (SIFCA, 2015a) on which Manila clam and cockle fished from Poole Harbour are relaid for the purpose of providing these products outside of the fishing season. This practice does not meet the categories of enhanced fisheries described in FCR v2.0, G7.4.3 and is therefore considered within scope of the default assessment tree with RBF and forms part of the two UoAs identified under section 3.1.1.

3.1.5 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF)

The MSC defines Introduced Species Based Fisheries (ISBF) as: *Any fishery which prosecutes a target fin or shellfish species that was intentionally or accidentally transported and released by human activity into an aquatic environment beyond its natural distribution range. This does not include species that are “introduced” into a location due to an expansion in their natural geographic range. (see FCR v2.0 7.4).*

¹ <https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/fisheries-certification-requirements-version-2.0#page=257>

Manila Clam (*Ruditapes philippinarum*) is an introduced species. Under FCR v2.0 7.4.4 – Introduced Species Based Fisheries², *R. philippinarum* in Poole Harbour meets the listed scope criteria for ISBF in the following ways (Table 2).

Table 2. Introduced Species Based Fisheries (ISBF) Criteria (FCR 7.4.4) in relation to Manila clam in Poole Harbour

Criterion	Manila clam in Poole Harbour
Irreversibility of the introduction	
The introduced species has a large population size.	The population size of Manila clam is greater than that of the native cockle as well as other ecologically-similar species in Poole Harbour (native clams and cockle). These populations are sufficiently large to support a commercial fishery.
The species has spread to a range beyond that of its initial introduction in the new location.	Manila clam were introduced into 19 sites around the UK, including 15 estuaries in S. and SE England (plus one site in NW England, one in N. Wales and two in W. Scotland). By 2010 the species had naturalised in at least eleven estuaries in southern England. These included estuaries with no history of licensed introduction (Humphreys et al., 2015). Manila clam have spread successfully throughout the intertidal zone of Poole Harbour since introduction in 1988 (Jensen et al., 2004).
There is evidence to demonstrate that the species cannot be eradicated from the location by known mechanisms without serious ecological, economic and/or social consequences.	The arrival of Manila clam is not known to have caused any ecological damage in Poole Harbour; it occupies a similar ecological niche to a variety of other co-occurring infaunal suspension-feeding clams, and plays the same role in benthic-pelagic coupling and as a prey species. Humphreys et al. (2015) concluded: ‘...in Britain the species is not aggressively invasive and appears not to present significant risk to indigenous diversity or ecosystem function’, although they note that climate change is likely to facilitate further dispersal further north. If it were eradicated, the ecological consequences are unknown (but logically would not be grave) but there would be severe economic consequences for this fishery. The species ability to survive fishing pressure and its broadcast spawning method of reproduction suggest eradication is unlikely (Sweet and Sewell, 2011).

In accordance with FCR 2.0, 7.4.4.1³ MEC evaluated the Manila clam UoA against Annex SD⁴. SD2.1.1.2 does not apply as PI 1.1.1 is evaluated against the RBF criteria for this species not the default tree, while SD2.1.1.3-5 are dealt with under Principle 2 section 3.4.

² <https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/fisheries-certification-requirements-version-2.0#page=26>

³ <https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/fisheries-certification-requirements-version-2.0#page=26>

⁴ <https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/fisheries-certification-requirements-version-2.0#page=237>

3.2 Overview of the fishery

3.2.1 The Client fishery

The Poole Harbour Clam and Cockle fishery is carried out by vessels registered by permit holders under the Southern IFCA Poole Harbour Dredge Permit byelaw (SIFCA, 2015b) (Table 3). The members represent all the commercial operators in Poole Harbour with permission to fish for clam and cockle in Poole Harbour by pump scoop dredge.

Table 3. Poole Harbour Dredge Permit Vessels 2016-2017. * maximum of two permit holders per vessel.

Vessel name	PLN	Port registration	Vessel length (m)	Vessel engine power (kw)	Base of operations, berthing and landings	No. of permit holders for vessel*
Elle Jay	PE 1176	Poole	6.30	29.40	Poole	1
Sea Striker	PE 1212	Poole	4.70	18.65	Poole	1
Karen Rose	PE 755	Poole	6.35	99.30	Poole	1
Davids Dream	PE 1225	Poole	6.95	44.76	Poole	1
Amelia Jo	PE 1105	Poole	6.85	11.19	Poole	1
Jake	PE 512	Poole	6.00	67.14	Poole	2
Kindred Spirit	PE 1193	Poole	6.80	85.79	Poole	1
Jamie Louise	PE 1078	Poole	5.85	11.20	Poole	1
Florence	SU 949	Southampton	7.48	99.30	Poole	1
Muddy Waters	SU 927	Southampton	6.91	37.30	Poole	1
At Last	SU 3	Southampton	8.10	63.00	Poole	2
Little Joe	HL 283	Hartlepool	6.89	29.84	Poole	1
Sea Turkey	PE 443	Poole	5.30	37.30	Poole	1
Us Two	PE 455	Poole	5.49	52.22	Poole	1
Sea Forever	PE 33	Poole	6.10	22.10	Poole	1
Lola Ella	PE 89	Poole	6.13	7.40	Poole	1
Carly Beth	PE 1170	Poole	5.88	44.76	Poole	2
Jennifer Anne II	PE 13	Poole	6.90	59.68	Poole	1
Sunrise	PE 29	Poole	6.35	18.65	Poole	1
Stella Amy	PE 71	Poole	5.60	93.00	Poole	2
Dawn Fisher	PE 521	Poole	6.55	37.30	Poole	1

Vessel name	PLN	Port registration	Vessel length (m)	Vessel engine power (kw)	Base of operations, berthing and landings	No. of permit holders for vessel*
Green and Buoys	PE 14	Poole	6.74	40.28	Poole	1
Phoebe Alice	PO 14	Portland	6.10	44.76	Poole	1
Lexi Michelle	PE 12	Poole	6.95	37.30	Poole	2
Rapido	PE 1141	Poole	5.05	18.40	Poole	1
Grebe	P 746	Portsmouth	3.54	5.00	Poole	1
Trish	PE 582	Poole	6.00	55.95	Poole	1
Jamie	RX 273	Rye	5.05	18.65	Poole	2
Fae Silvie	PE 1211	Poole	5.90	59.68	Poole	1
Osprey II	PE 332	Poole	5.19	37.28	Poole	1
Sue	PE 167	Poole	6.00	59.68	Poole	1
Louis Macie	PE 15	Poole	6.90	18.65	Poole	2
Sky	PE1232	Poole	6.56	44.10	Poole	1
Johnathan Seagull	PE 112	Poole	5.17	55.95	Poole	2
Faith	SC 84	Isles of Scilly	6.15	22.00	Poole	1
Elmay	PE 1218	Poole	6.65	66.00	Poole	1
Barbara L	BL 57	Bristol	6.58	55.20	Poole	1

3.2.2 History of the fishery and its management

Shellfish (native oyster) fishing in Poole Harbour has occurred since Saxon times (evidenced from middens) (Winder, 2016) while formal management of the cockle and oyster fishery in Poole is first evident from the Poole Fishery Order 1885 (UK, 1885). The last iteration of the Poole Fishery Order came into force in 1985 and acted as a hybrid Several and Regulating Order for shellfish management in the Harbour. The Several Order underpinned the rights to seabed leases for aquaculture in the harbour, while the Regulating Order provided management over the wild harvest fishery. The Regulating Order was resultant from the Sea Fisheries (Shellfish) Act 1967.

Management of the fishery was updated as a result of the Marine and Coastal Access Act 2009, with the replacement of the Sea Fisheries Committees with Inshore Fisheries and Conservation Authorities (IFCAs) in April 2011. The fishery then became the responsibility of the Southern IFCA (SIFCA). When the 1985 Fishery Order expired in 2015, it was replaced with the Poole Harbour Dredge Permit Byelaw under the powers given to IFCAs by the Marine and Coastal Access Act 2009. The byelaw requires a permit (available annually) for use of the gear. The byelaw regulates the fishery via the number of permits, as well as via closed areas

and seasons, and also gives the SIFCA the power to impose other permit conditions if required. The byelaw came into force on 1 July 2015.

3.2.3 Gear and operation of the fishery

All vessels in the fishery are under 9m in length and less than 100 Kw power (Table 3, Figure 1). The vessels are small open boats, and fishing trips are a few hours long, fishing through the high tide on the intertidal mud and sand flats. The gear used in this fishery is strictly limited by the Poole Harbour Dredge Permit in the Poole Harbour Dredge Permit Byelaw (SIFCA, 2015b, 2017a). The dredge is a 'pump-scoop dredge', which is a small box-shaped dredge (maximum dimensions W 460 x D 460 x H 300 mm) with parallel metal bars of 18 mm minimum spacing and support bars with 40 mm spacing (Figure 2). The spacings are based on research conducted by SIFCA to minimize the retention of undersize cockle and Manila clam based on current Minimum Size (MS). At the front lower edge of the dredge is a row of short teeth for fishing clams (Figure 2) while for cockle a blade front edge is used. At the front upper edge is a spray bar which directs a jet of water towards the back of the dredge into the dredged contents (never directly into undredged sediment), to wash sediment, undersized animals and bycatch species through the dredge (Figure 2). There are restrictions on pump power (maximum 15 hp) and pump hose dimensions (3 inches diameter) associated with the dredge listed in the dredge permit (SIFCA, 2017a). Additional permit rules permit only one dredge to be used at any one time on each vessel, the contents of the dredge may only be removed after the dredge has been lifted into the vessel and a second dredge may be carried on board but it must be inboard, stowed and disconnected (SIFCA, 2017a).



Figure 1. Vessel Amelia Jo, (PE 1105) 6.85 m registered to fish for clams and cockle in Poole Harbour. On board are the pump-scoop dredge (port side) on top of the grey sorting tray, and hydraulic pump (under green cover - Starboard aft) which drives the water jets on the dredge. Source: MEC.



Figure 2. (left) The pump-scoop-dredge used in the fishery. (right) Close-up showing the spray bar and water nozzles to wash the sediment from the catch whilst in operation. Source: MEC.

The dredge is typically brought onboard using a hydraulic or electric davit although some vessels still use hand-operated dredges. Once onboard, the dredge contents are transferred directly on to a riddle sorting table (Figure 3). The bar spacing of the riddle table must be 18 mm wide (SIFCA, 2017a). The clams and cockle retained on the riddle are sorted by hand and measured to ensure they conform to the MLS (Figure 3). Undersize and non-target species must be returned to the seabed (SIFCA, 2017a); on most vessels this is via a slip in the back of the sorting table (Figure 3). The majority of the discard is empty shell and weed. Retained cockle and clams are placed in storage baskets and kept cool with a covering of hessian sacks before being unloaded from the vessel at the end of each day and transferred to depuration facilities (see Traceability for more information). Any native oysters (*Ostrea edulis*) caught must be returned to the water (SIFCA, 2017a) while other species of clam such as native clam (*Ruditapes decussatus*), American hard-shelled clam (*Mercenaria mercenaria*) or pacific oyster (*Crassostrea gigas*) may be retained subject to MLS regulations (SIFCA, 2015c, 2016a).



Figure 3. Clockwise from top-left. Pump scoop dredge with teeth for clam fishing, sat on sorting table and attached to davit for hauling in. Manila clam on sorting table riddle (18 mm) with slip opening visible through the riddle. Cockle on sorting table riddle with slip opening visible through the riddle and species-specific gauge issued to the fishing fleet to ensure no under-sized clams are landed. Source: MEC.

3.2.4 Regulation

Management of the fishery is the responsibility of the SIFCA. The fishery takes place in Poole Harbour. Until 2015, the fishery was managed via a Regulating Order under the Sea Fisheries (Shellfish) Act 1967, but when this expired, it was replaced with the Poole Harbour Dredge Permit Byelaw under the powers given to IFCA's by the Marine and Coastal Access Act 2009. The byelaw requires a permit (available annually) for use of the gear. The byelaw regulates the fishery via the number of permits, as well as via closed areas and seasons, and also gives the SIFCA the power to impose other permit conditions if required. The byelaw came into force on 1 July 2015. There are currently 45 permits.

An important point about the byelaw is that the permit is required to have gear on board rather than to fish for a particular species, which has closed loopholes which previously led to significant unregulated fishing ('I was fishing slipper limpets for my dog'). The byelaw and permit therefore cover all the species for which this gear is used – i.e. Manila clam and cockle.

The permit conditions are reviewed every three years or sooner if necessary (the procedure to be followed in this case is also set out); at present they include the following:

- Monthly catch reporting

- Ban on taking native oysters (*Ostrea edulis*)
- Restrictions on gear size, power and quantity (see below)
- Fishery closed from 6pm-6am, on Sundays and from 24 Dec.-24 May inclusive
- Permanent closure areas in Holes Bay, Lytchett Bay and the upper parts of Wych and Middlebere Lake
- Some bird-sensitive areas are closed additionally for May, June, November and December (see Figure 21 in Principle 2).

Note that there are no direct limits on catches for any of the species covered by the permit at present, but via the permit conditions the SIFCA has the option to put these in place, should they be required. There is also the provision to require the fitting of specified equipment to vessels which in the future would allow for the use of VMS technology.

Aside from the byelaw and permit conditions, there is also a separate minimum size (ML) for each species: 35 mm for Manila clam (EU Regulation 850/1998) and based on a 23.8 mm square gauge for cockle (SIFCA Fishing for Cockle Byelaw) (SIFCA, 2016a).

3.2.5 Other fisheries in Poole Harbour

Outside of the UoAs defined in this assessment. Manila clam and cockle are fished commercially by handpicking. Handpicking of these species is typically from walking on the mudflats at low water from the shore as handfishing from vessels requires licenced and registered vessels. Approximations of commercial handpicking landings are provided through the MMO and are summarised in Figure 4. The principal driver behind commercial handpicking is market demand outside of the dredge fishing season. No licensing is required for commercial handpickers, but the practice is regulated through the Poole Harbour Shellfish Hand Gathering byelaw (SIFCA, 2016b). This byelaw limits temporal access (closure 1st November to 31st March) and spatial access. In addition to commercial handpicking for cockle and clams recreational catches of these species and American hardshell clams (*Mercenaria mercenaria*) and razor clams (*Ensis ensis*) are permitted within the harbour. Monitoring of recreational handpicking is undertaken by SIFCA, but there are no estimates on total annual take. All species are subject to minimum size limits – razor clam 10cm, cockle not to fit through a square opening measuring 2.38cm on each side, Manila clam 3.5cm, American hard shell clam 6.3cm. A closed season (1st February to 30th April) for handpicking and hand raking of cockle is controlled through the Fishing for Cockle byelaw (SIFCA, 2016a). Spatial closure of seagrass beds is applied through the Prohibition of gathering (Sea Fisheries Resources) in Seagrass Beds byelaw (SIFCA, 2016c).

Other species fished commercially in the harbour are mullet, bass, flounder, sole and plaice, which are caught using fixed, drift, seine and trawl nets, and hand lines, whilst eels are trapped using fyke nets (Bennett, 2011). There are minimum sizes on all the commercial species which are contained both within European legislation and also specific Southern IFCA byelaws for different species. These byelaws are 'Minimum Fish Sizes', 'Grey Mullet – Minimum Size' and 'Skates and Rays – Minimum Size' copies of which are available from SIFCA.

The use of fixed nets in the Harbour is recorded under the 'Fixed Engines' byelaw which prohibits the use of fixed nets in the Harbour between 1 April and 30 September each year.

The Harbour is a bass nursery area with legislation, which is in force between 30 April and 1 November (SIFCA, 1999) and is accompanied by the European emergency measures for Bass for 2017 which increases the minimum size to 42cm and restricts commercial and recreational fishing. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2015_020_R_0005&from=EN. There is a large recreational finfish fishery in the harbour including club competitions (<http://www.pbsbac.co.uk/index.html>).

Bait digging in the harbour includes both commercial and recreational operations. A Memorandum of Agreement for bait digging was produced from working group discussions with interested parties, and includes agreement to spatial and temporal avoidance of bird sensitive areas with respect to Poole Harbour's European Marine Site status and seagrass beds and prohibited bait digging areas (SIFCA, 2016d). Information pamphlets are also provided by all relevant authorities for education to recreational bait fishers within the harbour (SIFCA, 2016e).

3.3 Principle One: Target Species Background

3.3.1 Species overview

UoA 1 - Manila clam (*Ruditapes philippinarum*)

The Manila clam is a member of the venus clam family (*Veneridae*) which includes a number of commercially viable species. It is native to south-eastern Asia, and commercially harvested from wild fisheries and aquaculture worldwide. As part of experimentations into the suitability of the species for aquaculture in Britain, 100,000 Manila clam (10 mm size, ~50 kg) were introduced to Poole Harbour in 1988 under licence from the Ministry of Agriculture, Fisheries and Food (MAFF, but now the Department for Environment, Food and Rural Affairs – DEFRA). Initial research suggested that the low temperatures would inhibit reproductive success and establishment of a wild self-sustaining population (Jensen et al., 2004; Humphreys et al., 2007). However by 1994 local fishermen and wading birds had begun to exploit the naturalized population (Jensen et al., 2004) and by 2015 commercial catches of the species exceeded 250 tonnes (Figure 4).

Naturalisation of Manila clam has occurred across the globe between latitudes of 25° and 45° where the clam has been introduced (deliberately or not), so the establishment of the clam population at 50° N in Poole and other UK estuaries represents the most northern examples of naturalisation of this species (Humphreys et al., 2007, 2015). By 2010 clam populations were naturalized in at least 11 estuaries in southern England, including estuaries with no history of licensed introduction. Establishment of these populations is uncertain but may well be resultant of commercial storage before market or deliberate unlicensed introduction (Humphreys et al., 2015). Larval dispersal modelling from Poole Harbour suggests that although natural transport could theoretically allow access to other local habitats, based on the duration of their pelagic stage, retention, recruitment and establishment of new adult populations is limited by salinity needs (Herbert et al., 2011). Indeed, naturalization has been shown not to be an inevitable consequence of introduction, and consequently the species is not currently viewed as an aggressively invasive species (Humphreys et al., 2015). The authors suggest that the Manila clam does not appear to present a significant risk to indigenous diversity or ecosystem function, but warn that it is likely to gradually continue its spread to new estuaries if sea surface temperatures rise as predicted.

The Manila clam is a dioecious broadcast spawner and within Poole Harbour has been observed to have two annual recruitment events, firstly in June and secondly in September–October (Jensen et al., 2004; Humphreys et al., 2007). Larval settling time is estimated at 12–15 days with spawning and larval dynamics in Poole suggesting both localized retention of larvae within ‘closed’ areas of the Harbour and with more ‘open’ harbour areas being considerably more connected (Herbert et al., 2011). For example, the populations in Holes Bay (closed to fishing) and Wareham Channel (a principal fishing area) were found to be potentially highly self-sustaining within the TELEMAC-2D hydrodynamic model whereas the main part of the harbour was well mixed with different areas acting as sources and sinks of recruitment (Herbert et al., 2011).

The growth rate of Manila clam in Poole is intermediate in comparison with other studies (reviewed by Humphreys et al. 2007) but is considered good given their ecological position in the intertidal (Humphreys et al., 2007). Size-at-age analysis in Poole showed spatial variation

but on average the animals grow up to 20mm in the first 24 months before the rate decreases as the clams become sexually mature (Jensen et al., 2004). Clam density has increased from 5 per m² in 2002 to 12 per m² in 2010, with the overall harbour biomass almost double that recorded in 2002 (Herbert et al., 2010). There is evidence of a mid-summer decline in abundance due to increased mortality and potential shift in the vertical position within the sediment in response to high water temperatures and the development of anoxic conditions (Jensen et al., 2004; Humphreys et al., 2007).

By 1997, in order to control effort on the new resource and create a sustainable fishery, the Southern Sea Fisheries Committee introduced an 8-10 week season (October to January). Working within the Poole Regulating Order (1915, revised 1985), the committee regulated the fishing technique, and enforced the European Union-wide MLS (Jensen et al., 2004).

Manila clam is an introduced species to Poole Harbour and, as described in detail in section 3.1.4, it meets the scope criteria to be eligible for certification under MSC Certification Requirements v2.0 FCR 7.4.4 on Introduced Species Based Fisheries.

Manila clam is not considered as a key Low Trophic Level (LTL) species as it does not meet the requirements for key LTL species defined by paragraphs SA 2.2.8-SA 2.2.10 of the MSC Fisheries Certification Requirements v2.0. In particular, the Manila clam stock is not involved in a large portion of the trophic connections in the ecosystem, a large volume of the energy passing between lower and higher trophic levels does not pass through this stock, and there are many other species at this trophic level through which energy can be transmitted from lower to higher trophic levels. In addition, Manila clam does not form dense schools.

For management purposes, Manila clam in Poole Harbour is regarded as a single stock unit, and studies of adult distribution and larvae dispersion on the south coast support this assumption (Herbert et al., 2011; Humphreys et al., 2015). Whilst there are nearby populations in the Solent, it is more likely that larvae from Poole Harbour (where the Manila clam was introduced) will be carried by hydrographical processes to other areas along the south coast as opposed to larvae from adjacent areas being dispersed into Poole Harbour (Herbert et al., 2011). All management decisions for Manila clam in Poole Harbour are based on the assumption that the stock is isolated, which leads to a more precautionary approach to management.

UoA 2 - Cockle (*Cerastoderma edule*)

The cockle *Cerastoderma edule* is a common shallow-burrowing bivalve with a wide distribution along the north-eastern coastline of the Atlantic Ocean from the western region of the Barents Sea and the Baltic, and southwards to Senegal on the coast of West Africa and into the Mediterranean (Tebble, 1966). It is common in the intertidal and shallow subtidal, forming aggregated populations in a variety of sediments, notably clean sand, muddy sand, mud and muddy gravels (Tyler-Walters, 2007), and are often abundant in estuaries and sheltered bays, and population densities of 10,000 per m² have been recorded.

Cockle can tolerate salinities down to some 10 ppt, but the normal salinity range is 15 – 35 ppt. Lifespan is typically 2-4 years in most populations, but individuals can live up to 9-10 years or more. The sexes are separate with no external morphological differences, and there is generally a 1:1 sex-ratio in any given population (Boyden, 1971). Spawning normally occurs in the summer, following rapid development of the gonads in April and May. First sexual maturity and spawning occurs at a length of around 15 mm – 20 mm and an age of about 18

months, but large (>15 mm) 1-year-old individuals can also spawn. Fecundity is extremely high (in the range 200,000 - 700,000 per animal, maximum 1.7 million (Honkoop and Meer, 1998), and are capable of producing large spat populations from low adult numbers arising from both natural (mass-mortality) and fishery mortality events (Shelagh Malham et al., 2012; Southall and Tully, 2014), meaning that estimations of stock size at the point where recruitment would be impaired (PRI) are likely to be very low. Cockle larvae are planktonic, and typically spend around 3-5 weeks in the plankton. Settlement of small cockle, known as spat, normally occurs during the summer, sometimes in densities as high as 10,000 m⁻². Survival and subsequent recruitment of cockle into the adult population is highly variable and can be influenced by a number of factors including predation, climate, larviphagy and sediment dynamics (Andre and Rosenberg, 1991; Bouma et al., 2001; Flach, 2003; Beukema and Dekker, 2006), and mortalities following settlement and during recruitment to the fishable stock are more likely to be limiting factors on stock size rather than fishing mortality. Episodic mass mortality events of unknown cause are a commonly reported feature of cockle populations (Burdon et al., 2014).

Cockle are generalist, opportunistic filter feeders; they have very short siphons and generally live within the top 5 cm of the substrate so that they can maintain contact with the overlying water for feeding and respiration. In this position they can be washed out *en masse* during storms but they can also actively move to the surface of the sediment. Cockle have many predators at different stages in their life history (Malham et al., 2012), including brown shrimp, shore crabs, starfish, gastropods, polychaetes, fish such as flounder and plaice and wading birds, particularly oystercatchers and knot (O'Connor and Brown, 1977). A substantial body of research on cockle biology and ecology exists (summarised by Tyler-Walters (2007)) which encompasses the tolerances of this species to fishing and natural mortality, its natural distribution and its role as an important food source for wading birds (Norris and Johnstone, 1998; Gill, 2001).

Cockle is not considered as a key Low Trophic Level (LTL) species as it does not meet the requirements for key LTL species defined by paragraphs SA2.2.8-SA2.2.10 of the MSC Fisheries Certification Requirements v2.0. In particular, the cockle stock is not involved in a large portion of the trophic connections in the ecosystem, a large volume of the energy passing between lower and higher trophic levels does not pass through this stock, and there are many other species at this trophic level through which energy can be transmitted from lower to higher trophic levels.

For management purposes, the cockle stock in Poole Harbour is regarded as a single stock unit. There are populations of cockle in estuaries and sandy bays all around the coast of Britain and Ireland and along the north coast of France (Tyler-Walters, 2007). However populations are generally geographically isolated, and it seems reasonable therefore that all management decisions for the cockle fisheries in Poole Harbour are based on the assumption that the stock is isolated, which leads to a more precautionary approach to management.

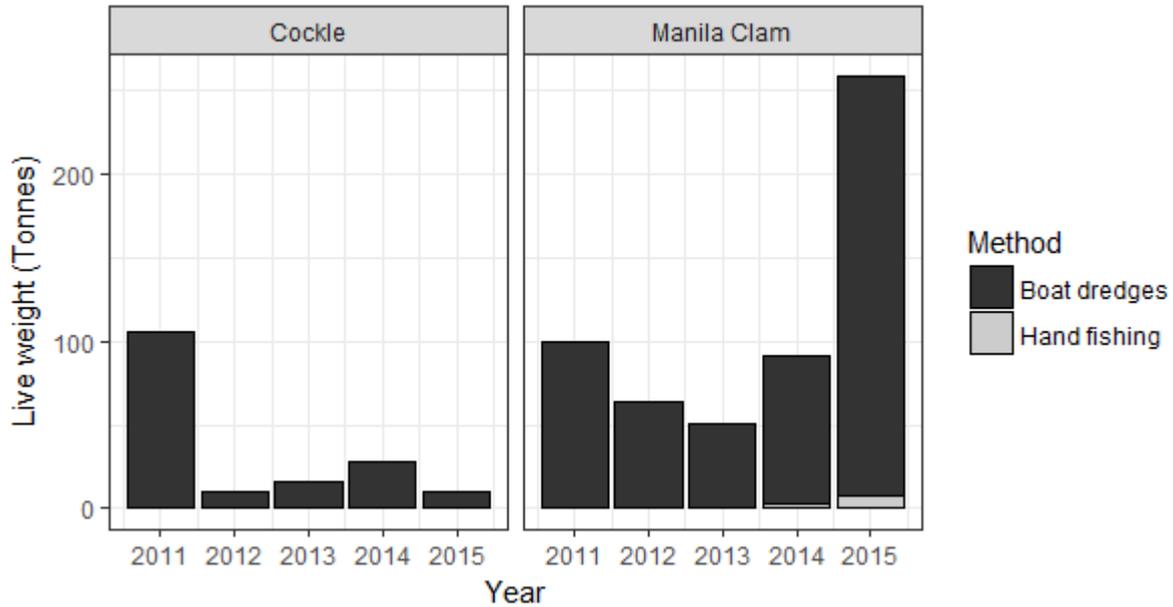


Figure 4. Commercial catch data for Poole Harbour between 2011 and 2015 for Cockle and Manila Clam, data supplied by MMO. Hand fishing catch does not form part of the UoAs.

The combined densities of cockle *C.edule* and *C.glaucum* (commonly misidentified) is remarkably similar compared to the density of *C.edule* of 2002, at approximately 30 per m² although the overall harbour biomass is now estimated to be higher (Herbert et al., 2010). In comparison with Manila clam, the landings of cockle from Poole Harbour have been relatively low with recorded landings between 2012 and 2015 were below 30 tonnes per annum, with 2011 >100 tonnes resultant of a large spat fall.

3.3.2 Harvest strategy

3.3.2.1 EU, National and Local Management

The harvest strategy for the Manila clam and cockle fisheries in Poole Harbour is underpinned by a hierarchy of EU, national and local management legislation. While the UK is a Member State of the European Union (EU), the UK's government must ensure that the management of all UK fisheries is consistent with the objectives of the European Union's Common Fisheries Policy (CFP) (Regulation (EU) No 1380/2013). One of the key objectives of the CFP is that:

“The CFP shall apply the precautionary approach to fisheries management, and shall aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield.”

One key piece of EU legislation that applies to the Manila clam fishery is the EU Technical Conservation Regulation (850/98) (EU, 1998) which sets the minimum size of Manila clam at 35 mm.

Fisheries management within England is the responsibility of the Department for Environment, Food and Rural Affairs (Defra), for whom the Marine Management Organisation (MMO) is responsible for the collection of landings data and the enforcement of regulations. The overarching legislation which delegates powers to local management bodies is the Marine and

Coastal Access Act 2009 (MACAA) (HM, 2009) which underpinned the creation of Inshore Fisheries and Conservation Authorities (IFCAs) as replacements for the Sea Fisheries Committees (SFCs). The Southern IFCA replaced the Southern SFC, and through the Marine and Coastal Access Act, the IFCAs are given the power to manage inshore fisheries in their areas via byelaws and permits. However IFCA byelaws must be approved by Defra before implementation. Defra have provided guidance on best practice in making byelaws (DEFRA, 2011) including regular review and repeal of byelaws. There is also scope for the IFCA to make emergency byelaws in circumstances where management action needs to be taken immediately.

Of particular relevance to the development of a harvest strategy for the Manila clam and cockle fisheries, the MACAA legislation requires that *“the authority for an IFCA district must manage the exploitation of sea fisheries resources in that district and... seek to ensure that the exploitation of sea fisheries resources is carried out in a sustainable way”*.

In relation to the Manila clam and cockle fisheries within Poole Harbour, the fisheries were originally managed under the Poole Fishery Order 1985, a hybrid Several and Regulating Order, granted under the Sea Fisheries (Shellfish) Act 1967. Whilst a Several Order is granted to set up or improve private shellfish fisheries, in this case to lease areas of the seabed for on-growing of molluscs, Regulating Orders permit the grantee to remove the public right of fishing commercially for specified species within designated areas and instead issue a limited number of licences, and therefore gives responsibility for managing a sustainable fishery to local stakeholders. Regulating Orders are generally granted for 20 to 30 years. When the Poole Fishery Order terminated in 2015, the wild fishery element of the Fishery Order was replaced by the Southern IFCA's Poole Harbour Dredge Permit Byelaw (2015). (The Several Order component of the Poole Fishery Order 1985 was replaced by the Poole Harbour Several Order 2015). The Permit Byelaw sets out many of the key elements of the harvest strategy for Manila clam and cockle in Poole Harbour. Permit holders represent all the fishermen in Poole Harbour who are registered to fish for Manila clam and cockle using pump scoop dredge. Hand-picking is not covered by the Permit Byelaw.

3.3.2.2 Elements of the harvest strategy

The key elements of the harvest strategy for Manila clam and cockle are a set of regulations defined primarily within the Poole Harbour Dredge Permit Byelaw, monitoring of the fishery, regular fishery-independent stock surveys of the Manila clam and cockle stocks and the monitoring and enforcement of the regulations (SIFCA, 2015b).

Regulations for the Manila clam and cockle fisheries include the following:

- All fishers require an annual permit issued by Southern IFCA
- Limited entry through restrictions on the number of permits
- There is no form of TAC or other catch limitation
- Closed areas and seasons (24 December to 24 May) to protect birds
- No fishing on Sunday and night time fishing is not permitted – fishery is closed from 1800 to 0600.

- Restrictions on the construction of the pump scoop dredge used in the fishery – maximum dimensions, minimum spacing between bars of 18mm, minimum spacing between support bars of 40mm, restrictions on pump power and hose dimensions
- One dredge only permitted, and contents to be removed on deck
- Minimum spacing of 18mm on sorting table riddle
- Minimum size of 35 mm for Manila clam (EU measure) and cockle must not be able to pass through a 23.8 mm square gauge (IFCA byelaw)
- Bycatch of native oysters (*Ostrea edulis*) must be returned immediately, other clam or oyster species can be retained subject to minimum size regulations
- Southern IFCA has the power to introduce additional regulations under the byelaw, e.g. catch restrictions, spatial and temporal restrictions, revisions to fishing gear specifications

In addition to the set of regulations governing the Manila clam and cockle fisheries, the harvest strategy includes regular monitoring of the fishery through completion of monthly catch returns by all permit holders, annual fishery-independent stock surveys, and monitoring and enforcement of the regulations by both the Southern IFCA and the MMO.

3.3.2.3 Review of the harvest strategy

The harvest strategy was thoroughly reviewed following the termination of the old Poole Fishery Order in 2015. The setting up of the new Permit Byelaw by Southern IFCA required consultation with stakeholders and statutory bodies such as the MMO and Natural England, and also included an environmental/socio-economic impact assessment. Key changes to the harvest strategy incorporated in the new Permit Byelaw were the requirement for the vessel to have a pump scoop dredge on board (i.e. specifying the gear type rather than the target species) and the new byelaw now covers the whole Harbour. As a result of these changes, the IFCA considered that almost all illegal fishing has been stopped.

The new Permit Byelaw includes an agreed timetable for its review, with a review involving stakeholders carried out in 2016 after the byelaw had been in place for one year. A further review is planned in three years' time and will consult with a wider range of stakeholders.

One key element of the harvest strategy that is continually under review is the fishing season. At present this is May to December, primarily to protect the food resources and minimise disturbance of shellfish-eating birds, but many stakeholders believe that an autumn-spring season would be better from a biological point of view as this would avoid the main spawning season of Manila clam in the summer and allow both Manila clam and cockle to “fatten up” in the summer before harvesting. In addition mortality rates are higher in the summer months. There was a major review of the season in both January 2016 and January 2017, but as 70% of permit holders wanted no change, the status quo was maintained (SIFCA, 2017b). The consultation involved Natural England, whose key concern is related to minimising impact on birds in the SPAs. As the IFCA's duties under the EU Habitats Directive (EU, 1992) override all other considerations, the IFCA concluded that the season should not be changed.

There is also continuous review of the harvest strategy through the IFCA's Technical Advisory Group, which acts as a sounding board for management proposals and is chaired by an expert on the Manila clam and its fishery.

3.3.3 Data collection / information

Data are collected from both fishery-dependent and fishery-independent sources.

Permit holders must submit monthly catch returns recording daily catch of each species and fishing effort in terms of number of hours fished, and to whom any part of the catch was sold. As fishers are registered sellers who sell their catch to registered buyers, the landings are recorded through the registration of buyers and sellers (RBS) legislation, and these figures form the basis of official landings statistics produced by the MMO. Cross-checking by IFCA officers of landings figures collected by MMO with those recorded on IFCA log books provides evidence that there is no systematic misreporting of landings data.

There is no requirement for vessels to carry Vessel Monitoring Systems (VMS) or other position recorders, but the standard VMS with position recorded every two hours would not be very informative with fishing trips lasting only a few hours and because of the very localised distribution of the fishery. There is the provision for VMS to be used in the fishery under section 6 of the permit under 'The fitting of specified equipment to vessels'. Southern IFCA does maintain a sightings database, and results from the sightings database provide a good illustration of the distribution of the pump scoop dredge fishery within Poole Harbour, demonstrating that the fishery occurs in the same areas of the harbour each year (Figure 5). In addition to the dredge fishery, hand-gathering for cockle and clams takes place in the shallow intertidal areas of Whitley Lake/Evening Hill and Rockley Spit.

A fishery-independent survey of Manila clam and cockle is undertaken annually in April, prior to the commencement of the fishery in May. Full details of the survey methodology and recent results are given in section 3.3.4. In addition to the biological information obtained from the survey on species composition, stock structure including undersized individuals, recruitment variation and spatial and temporal variations in density, there is a wealth of biological information on Manila clam in Poole Harbour (Jensen et al., 2004; Caldow et al., 2007; Humphreys et al., 2007, 2015) and cockle (Jensen, 1993; Shelagh Malham et al., 2012). There appears to be no observer programme on Manila clam and cockle vessels.

Monitoring of fishing practices and enforcement of regulations is carried out by IFCA officers. All fishers who met the criteria for a permit as set out in the Poole Harbour Dredge Permit Access Policy were offered the opportunity to apply for a permit. SIFCA has a patrol vessel which is used for vessel boardings and inspections also take place on shore. Southern IFCA also works closely with the local police in relation to hand-picking and recreational fishing. Significant resources are put into enforcement by the SIFCA, in particular to minimise unlicensed fishing, enforce the MLS and also to tackle landings of undersized individuals further down the supply line. SIFCA officers work within a Compliance and Enforcement Framework which establishes a framework from which annual risk-based enforcement plans may be developed in the form of a Compliance Risk Register. The Authority has set out a Code of Conduct for officers carrying out inspections .

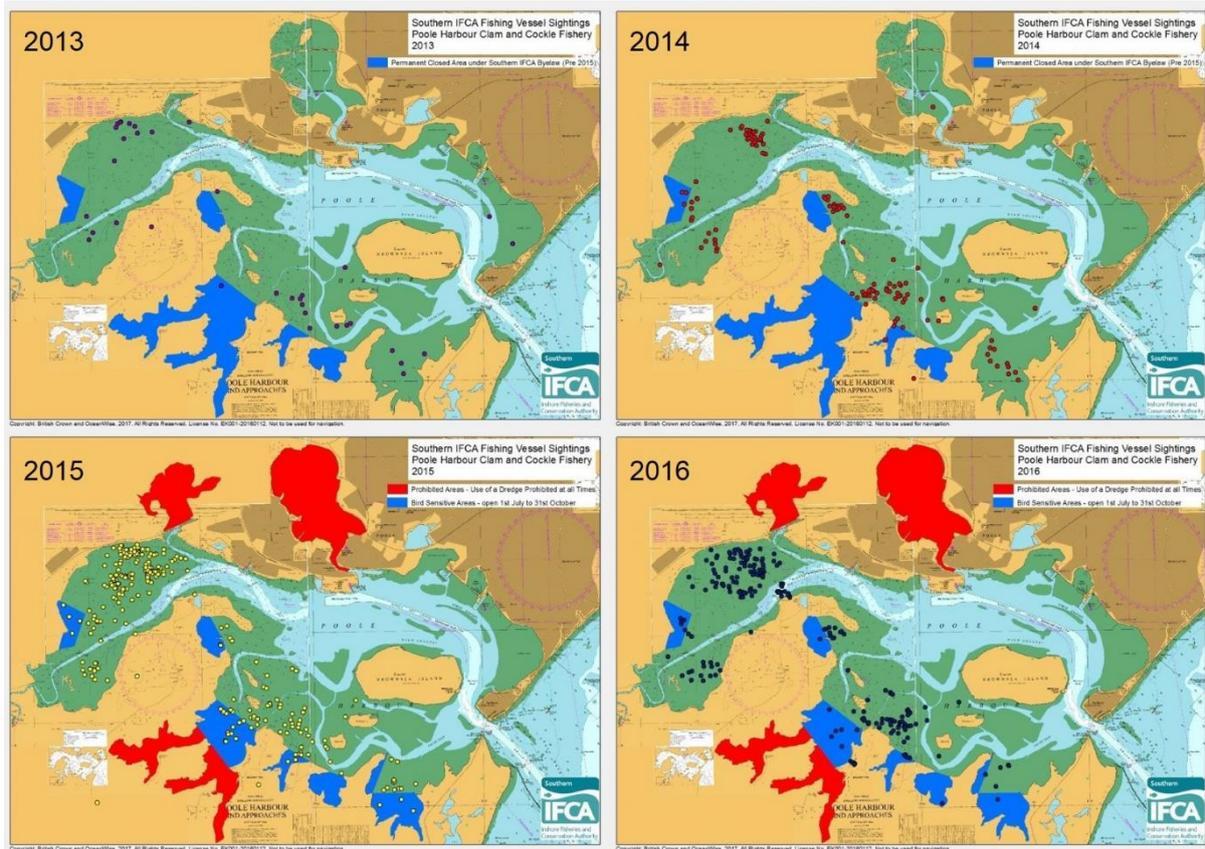


Figure 5. Southern IFCA bottom trawling sighting data between 2013-2016. Source: SIFCA

3.3.4 Monitoring and stock assessment of Manila Clam and Cockle stocks

Monitoring of stock status of Manila clam and cockle stocks is undertaken through the collection of CPUE data from permit holders' monthly returns and from fishery-independent stock surveys (SIFCA, 2015d, 2016f).

3.3.4.1 CPUE data from permit holders' returns

The permit holders' monthly returns include the weight of all species caught, and the hours fished permitting an estimate of catch per unit effort (CPUE) which can be used as a proxy for stock abundance. The data for the 2016-17 season show that catch rates were highest in the summer months (Table 4). In addition to Manila clam and cockle, approximately 2600 kg of other mollusc species were also caught during this time with the pump scoop dredge, and although less in most months than Manila clam and cockle, in May catches of other species were similar to those of cockle. It should be stressed therefore that when using CPUE as an index of stock abundance, the index may be biased if there is a change in target species over the season. At present there is no time series of CPUE data from monthly returns from which inferences on changes in stock status can be drawn because such data have been collected only since the new Permit Byelaw was introduced in 2015.

Table 4. Summary of monthly catch returns of permit holders 2016-17. (Note that the fishery is closed from 24 December to 24 May). (Source: Southern IFCA)

Month	Fishing hours	Manila clam catch	CPUE Manila (kg/hr)	Cockle catches (kg)	Cockle CPUE (kg/hr)	Other species catches (kg)
July	1,125.8	68,945	61.2	2,003	1.8	27
August	2,033.5	72,388	35.6	2,918	1.4	90
September	2,753.0	69,859	25.4	2,227	0.8	1,090
October	2,175.0	48,102	22.1	2,698	1.2	313
November	1,752.0	30,313	17.3	1,916	1.1	291
December	1,247.5	22,406	18.0	851	0.7	35
May	421.8	4,278	10.1	870	2.1	783
Total	11,509	316,291		13,483		2,629
Average	1,644	45,184	27.1	1,926	1.3	376
% catch		95.2		4.1		0.8

Monthly catch returns from the permit scheme are currently available only as total catch from all areas of the harbour, which does not allow for identification of any spatial variation in catch rates and hence stock abundance, or for detecting early warning signs of potential local stock depletion. Both Manila clam and cockle are sedentary molluscs, and as with all such molluscs, there is potential for local depletion of stocks to occur due to the concentration of fishing effort in areas of high density of Manila clam or cockle, which would increase the susceptibility of the stocks by effectively increasing the areal overlap of the fishery with the stock. Management action may be required, therefore, to close specific beds. Whilst the annual surveys may provide information on spatial variations in stock abundance and recruitment, catch returns from the permit scheme are not spatially disaggregated, and therefore it is not possible to obtain early warning signals of local depletion.

3.3.4.2 Fishery independent stock survey

Annual stock surveys for both Manila clam and cockle estimate stock size and the level of recruitment. The surveys take place in April prior to the opening of the fishery on 24 May each year. Although the survey has been conducted since 2003, the methodology described below was initiated in 2015, and therefore survey results from pre-2015 are not readily comparable with those from the 2015 and 2016 surveys (SIFCA, 2015d, 2016f).

For both the 2015 and 2016 surveys, a commercial vessel was used towing standard pump scoop dredge gear in the same way as for commercial harvesting. In addition in 2016, a secondary drag survey was carried out where a fine mesh bag was dragged through sediment to obtain samples of the entire population and provide an index of recruitment (SIFCA, 2015d, 2016f).

Significant shellfish beds within Poole Harbour were identified and mapped (Figure 6) following consultation with stakeholders, and this information formed the basis for the survey plan. The aim was to collect samples at randomly selected locations throughout the Harbour's significant shellfish beds, including areas closed to fishing. A minimum of three replicate samples was

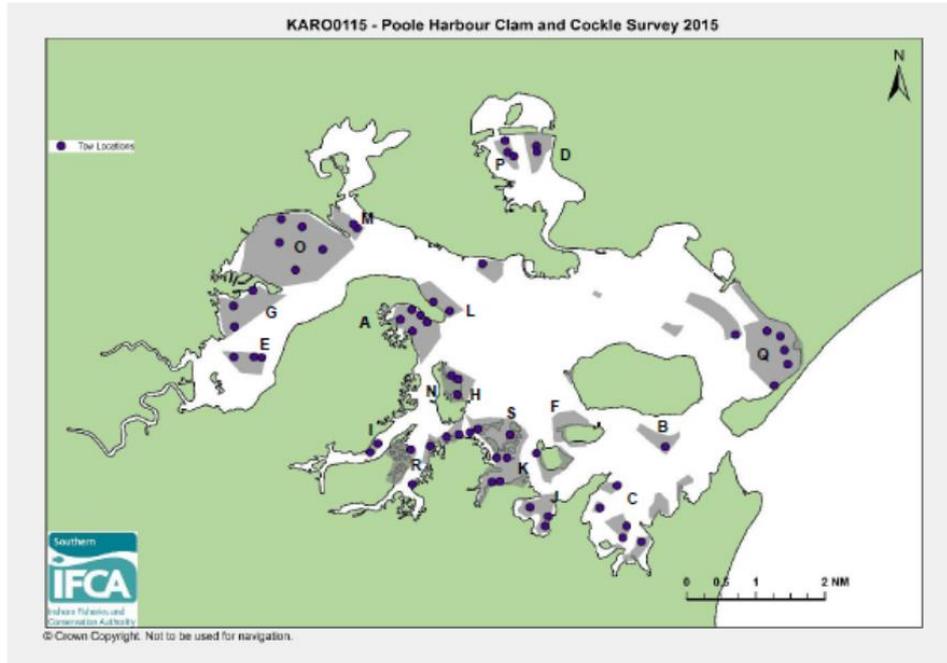
collected at each site. Depending on the overall size of the bed, this was standardised to three samples in the 2016 survey. The sampling dates and times were chosen to coincide with periods of high spring tides, allowing maximum access to fishing grounds. Samples were collected at each site using a trailed pump scoop dredge which was towed along the seabed in circular motions for two minutes. During these two minutes the number of rotations made by the vessel was recorded. (For a number of dredges a handheld GPS was used to record continuous waypoints during the 2-minute period. The data have been used to determine the surface area of sediment dredged through for a single rotation of the vessel.) The dredge was then lifted aboard the vessel and the contents were emptied into a sample bucket. For each individual of all species captured, maximum length was recorded. For Manila clam and cockle, individuals were split into above or below the corresponding minimum size with the cumulative weight recorded for these two categories for each species. A total of 23 sites was sampled in 2015 (Figure 6) and 28 sites in 2016 (Figure 7).

In 2016 the secondary survey used a modified drag which consists of a metal frame with a fixed 30cm wide opening and a fine mesh bag which is dragged across 1m of sediment at a depth of 10-20 cm to obtain a sample. Three replicate samples were taken at each site.

The sediment samples were sieved using a 1 mm mesh sieve and samples were sorted for clam and cockle species with the species identified and individuals measured along the widest axis (width).

The two components of the survey therefore collect the following data:

- quantity of catch by species
- size-frequency of population including sub-legal individuals
- swept area (using GPS)



Site	Location	Site	Location	Site	Location	Site	Location
A	Arne	F	Green Island	K	Ower Bay	P	Upton Lake
B	Blood Alley	G	Keyworth	L	Patchins Point	Q	Whitley Lake
C	Brands Bay	H	Long Island	M	Rockley Spit	R	Wych Lake
D	Creekmoor Lake	I	Middlebere	N	Long Island	S	The Wards
E	Giggers	J	Newton Bay	O	Seagull		

Figure 6. A map and table of important shellfish beds in Poole Harbour and sites for sampling in 2015 stock survey. (Source: SIFCA (2015d))

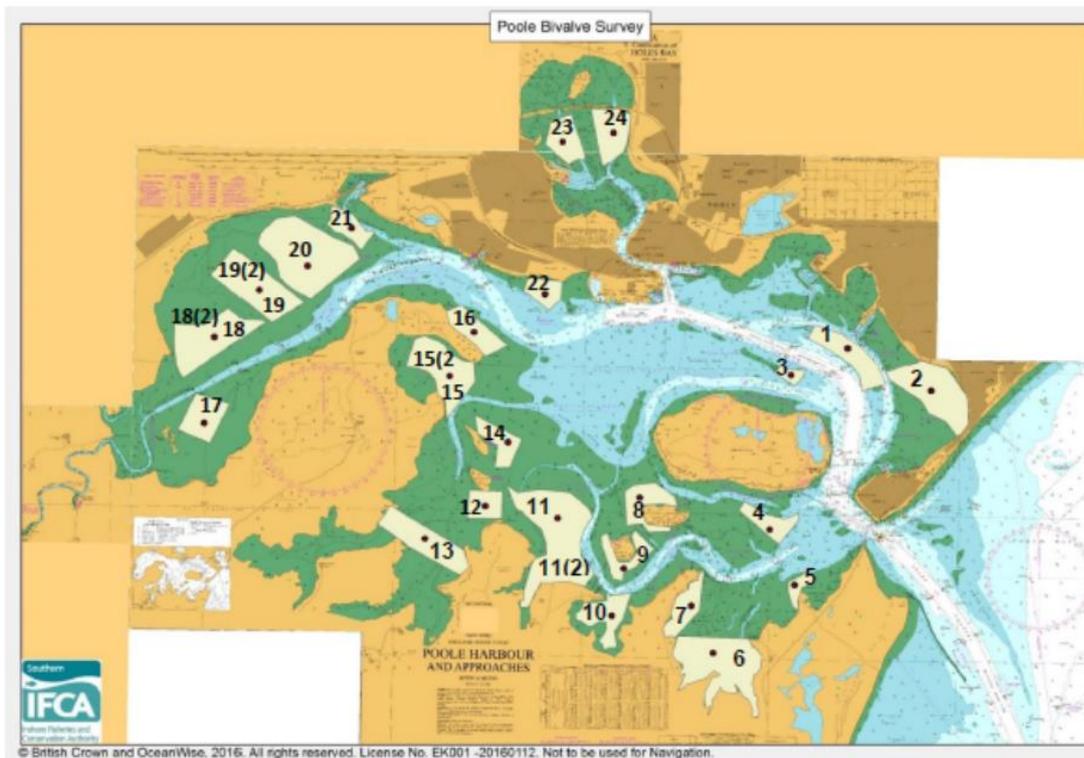


Figure 7. Locations of the sites sampled by grabs and dredges in April 2016. (See Table 5 for the key to all numbered sites). (Source: SIFCA (2016f)).

3.3.4.3 Survey results 2015

The average number of individuals caught per haul for Manila clam and cockle in 2015 is shown in Figure 8 and Figure 9. For Manila clam, the traditionally productive areas of the Wareham Channel, Arne and the Wards, together with the permanently closed areas of Holes Bay and seasonally closed site at Ower Bay proved to contain the highest average catch of clams per dredge, peaking at 300 clams in a single dredge at Arne. In comparison, areas in the east of the Harbour including Whitley Lake and Brands Bay produced comparatively low average catches of clams per dredge (SIFCA, 2015d). There was less variation between sites in the average number of cockle caught per dredge. The Rockley Spit site produced the highest average number of cockle per dredge. Sites in the south of the Harbour generally produced the highest average numbers, with the seasonally closed areas of Ower Bay and Newton Bay, together with the Wards and Round Island averaging more than 100 cockle per dredge. The traditionally productive area of Whitley Lake averaged a relatively poor 47 cockle per dredge (SIFCA, 2015d).

In summary for clams, the 2015 survey showed high densities in areas favoured by fishers, as well as high densities in some of the areas permanently closed (either because of sensitivity of birds or water quality). For cockle, the survey showed a relatively more even distribution of cockle over all the beds, but likewise higher densities, unsurprisingly, in areas which are typically favoured by fishermen. The gear does not sample undersized cockle at all, and undersized clams only in a limited way, but for clams the 2015 survey results suggested that in general, areas with high densities of fishable clams also had high densities of clams below the MLS (SIFCA, 2015d).

3.3.4.4 Survey results 2016

Preliminary results are available from the 2016 survey (SIFCA, 2016f). As expected, areas which have been closed either permanently or for a substantial period prior to the survey, through bird sensitive area closures, designations such as RAMSAR and SPA, or on environmental health grounds, generally contained a larger biomass of cockle and clams, as well as a larger range of sizes of shellfish. These sites include: Creekmoor and Upton Lakes, located in Holes Bay, Ower Bay, Brands Bay (South and West), Arne Bay, Wych and Middlebere Lakes. Most sites contained Manila clam with an average size larger than that of the minimum legal size, with only six sites (Wych and Middlebere Lakes, Inner Arne, Inner Keyworth, Holton Mere, Inner Holton Mere and Seagull Island), containing clams with an average size less than the minimum legal size of 35 mm. All sites contained cockle, but only one sampling site had cockle in which the average size was less than the minimum legal size of 23.6 mm, Inner Holton Mere (Southern IFCA 2016). Size of Manila clam and cockle varied significantly between sites and between 2015 and 2016 (Figure 10). The results from the 2015 and 2016 surveys demonstrate that year-class strength varies both temporally and spatially, and clearly there is settlement of spat every year, although the spatial distribution of spat settlement will be driven by local hydrography and timing of the phytoplankton bloom. Growth rates clearly vary throughout the harbour, and growth may also be dependent on sediment type. Cockle prefer sandier sediments, whereas clams prefer muddy sediments, and the distribution of the two species is strongly influenced by the distribution of sediment type within Poole Harbour.

A study of length distributions before and after the main fishing season in areas both open and closed to the fishery showed that the size structure of Manila clam changed more in the fished areas than in the closed areas (Figure 11).

Table 5. Location of all sites from the 2016 shellfish stock survey in Poole Harbour in relation to their GPS coordinates. (Source: Southern IFCA 2016)

Site No.	Site Name	Location of central mark			
		Latitude		Longitude	
1	Middle Ground	50	42.147	1	57.205
2	Whitley Lake	50	41.875	1	56.337
3	Aunt Betty	50	41.959	1	57.813
4	Blood Alley	50	40.900	1	58.023
5	Jerrys Point	50	40.498	1	57.717
6	Brands Bay South	50	40.040	1	58.569
7	Brands Bay West	50	40.362	1	58.837
8	Furzey Island	50	41.110	1	59.384
9	Green Island	50	40.601	1	59.540
10	Newton Bay	50	40.286	1	59.671
11	Ower Bay	50	40.617	2	00.282
11(2)	Wards	50	40.943	2	00.272
12	Round Island	50	41.027	2	01.053
13	Wych and Middlebere Lake	50	40.804	2	01.659
14	Long Island	50	41.475	2	00.803
15	Arne	50	41.914	2	01.425
15(2)	Inner Arne	50	42.006	2	01.621
16	Patchins Point	50	42.224	2	01.180
17	Giggers	50	41.575	2	03.996
18	Keysworth	50	42.175	2	03.894
18(2)	Inner Keysworth	50	42.215	2	04.181
19	Holton Mere	50	42.499	2	03.488
19(2)	Inner Holton Mere	50	42.629	2	03.965
20	Seagull	50	42.660	2	02.964
21	Rockley Spit	50	42.931	2	02.501
22	Hamworthy	50	42.494	2	00.437
23	Upton Lake	50	43.546	2	00.267
24	Creekmoor Lake	50	43.610	1	59.738

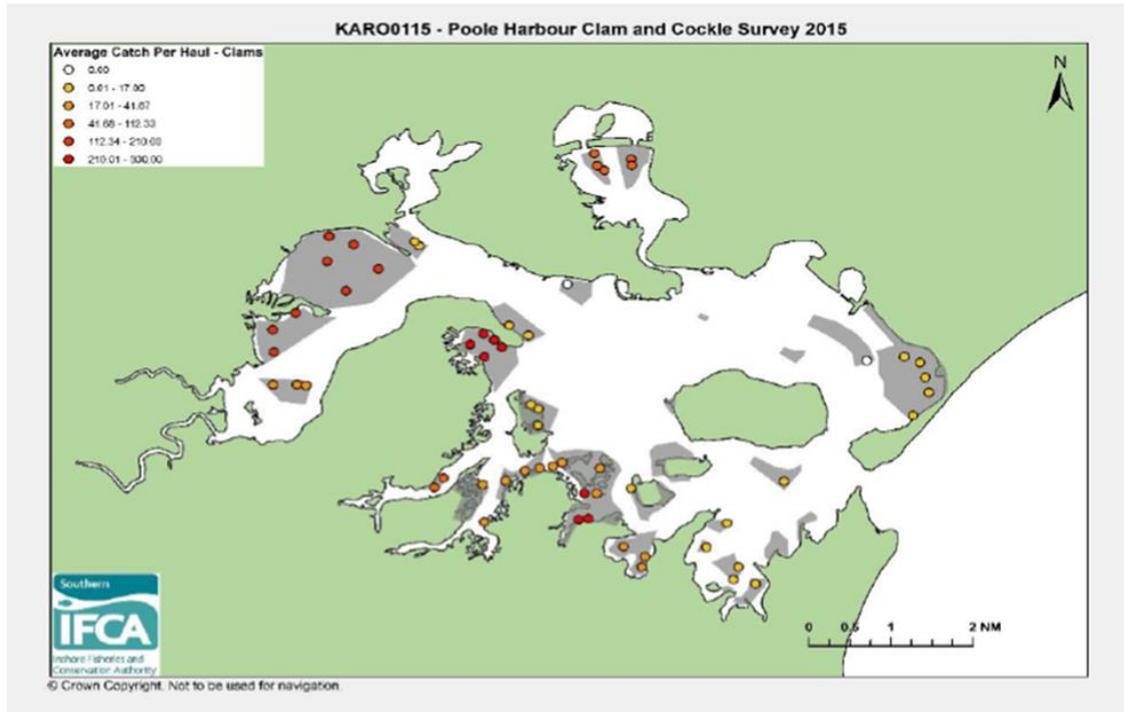


Figure 8. Sampling locations for the 2015 survey showing the average number of Manila clam per haul for each location. (Source: SIFCA (2015d))

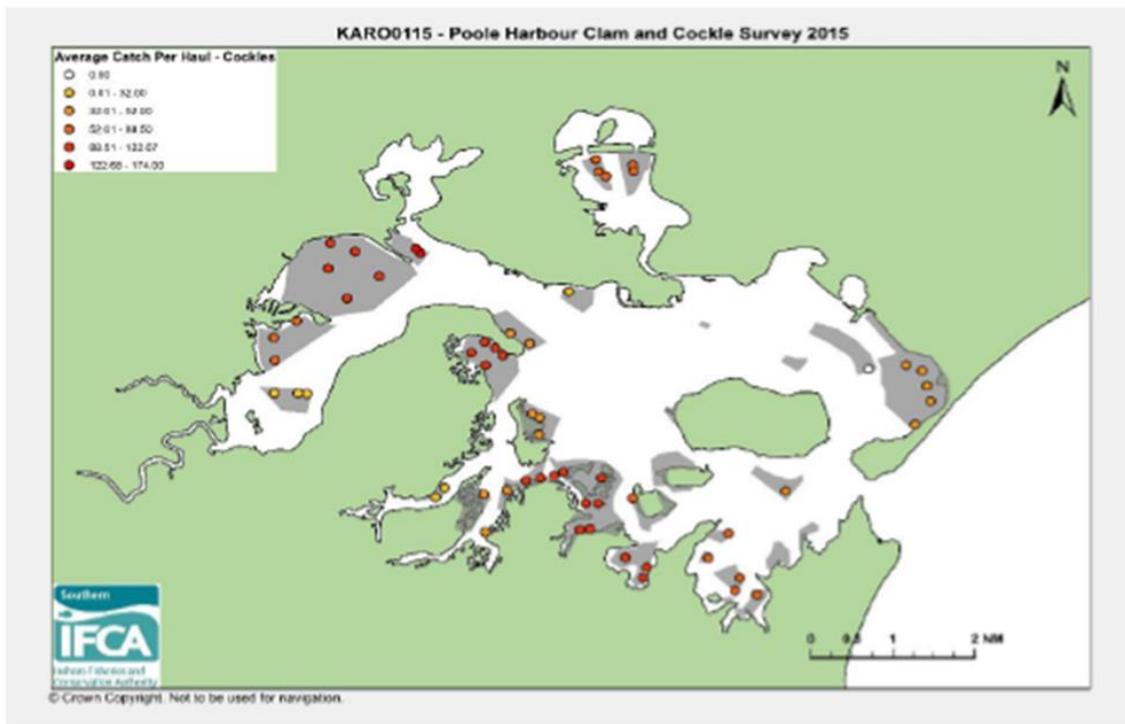


Figure 9. Sampling locations for the 2015 survey showing the average number of cockle per haul for each location. (Source: SIFCA (2015d))

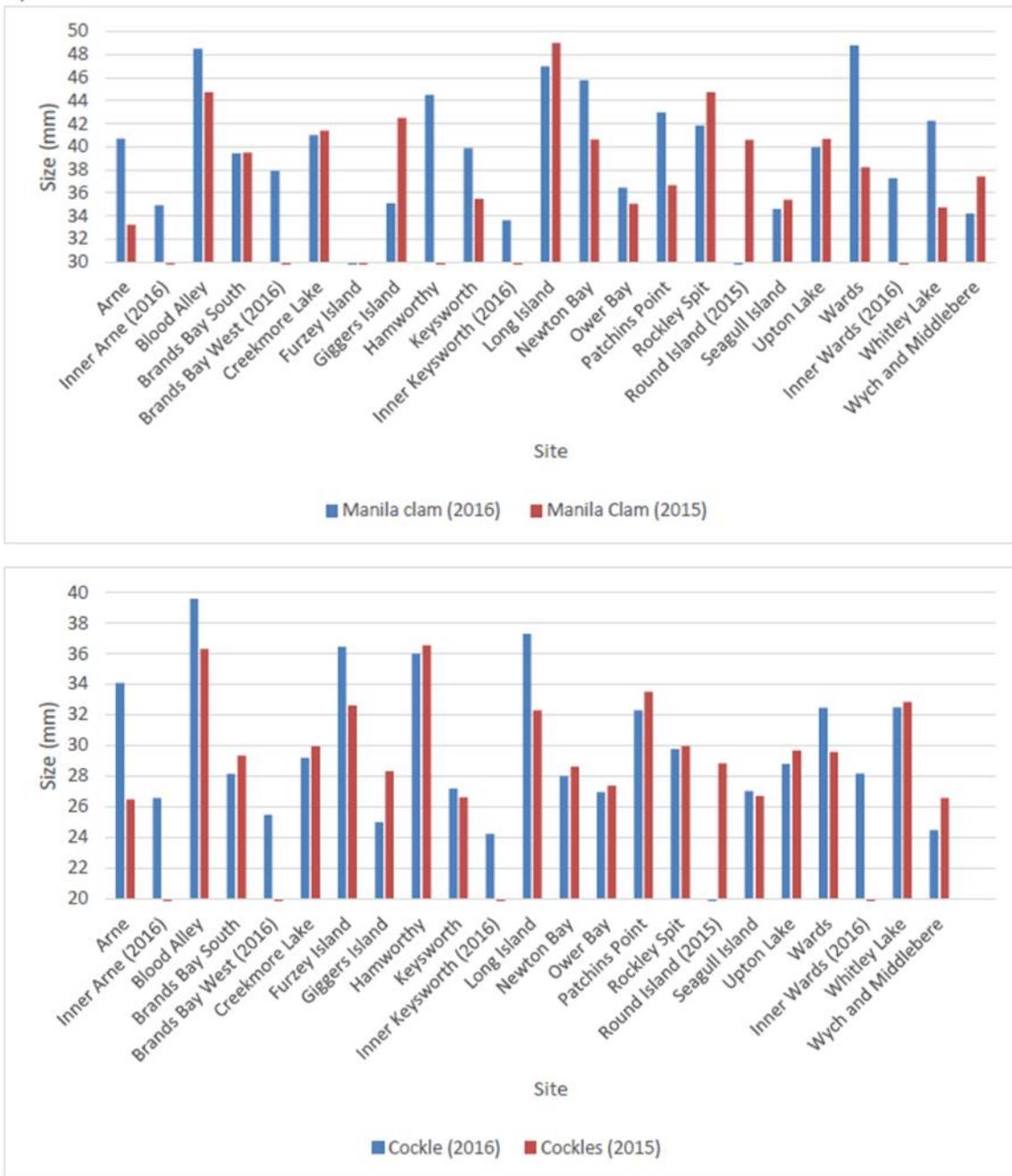


Figure 10. Size distribution of Manila clam and cockle in Poole Harbour at survey locations in 2015 and 2016 (SIFCA, 2016f).

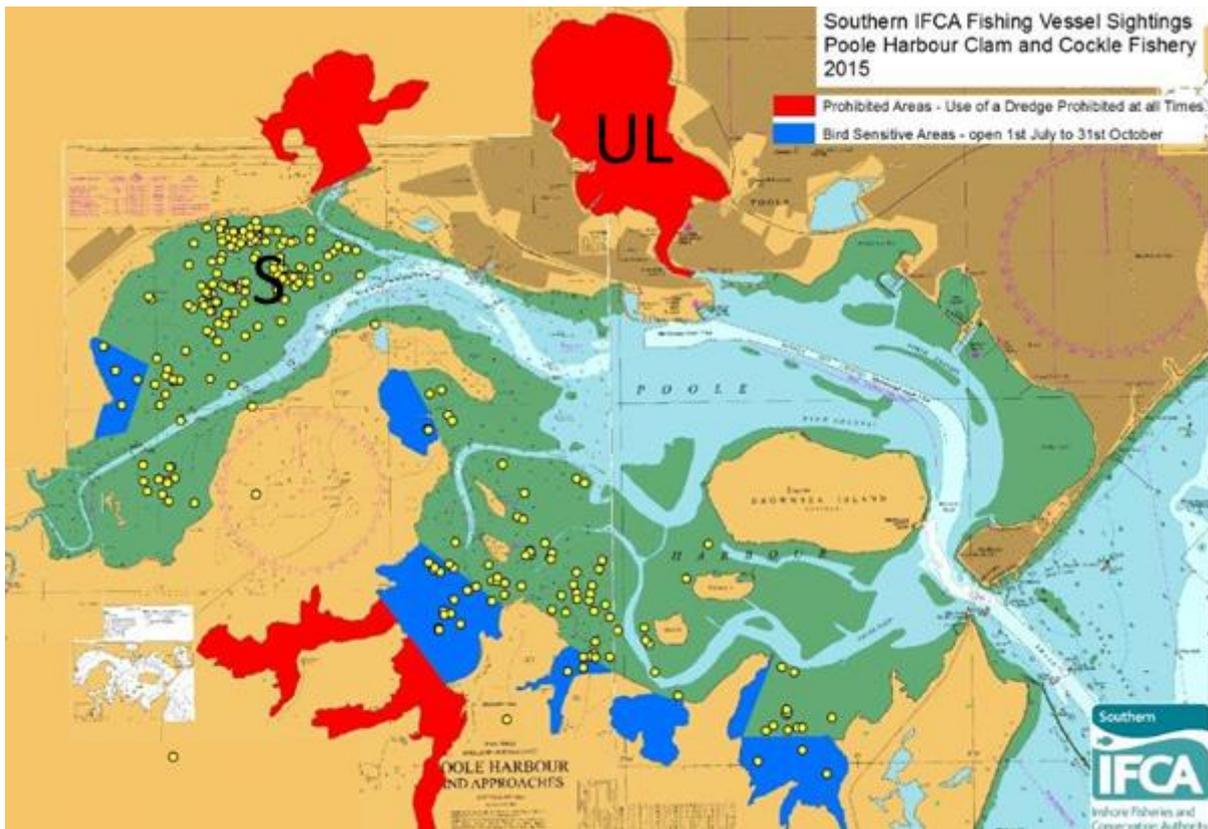
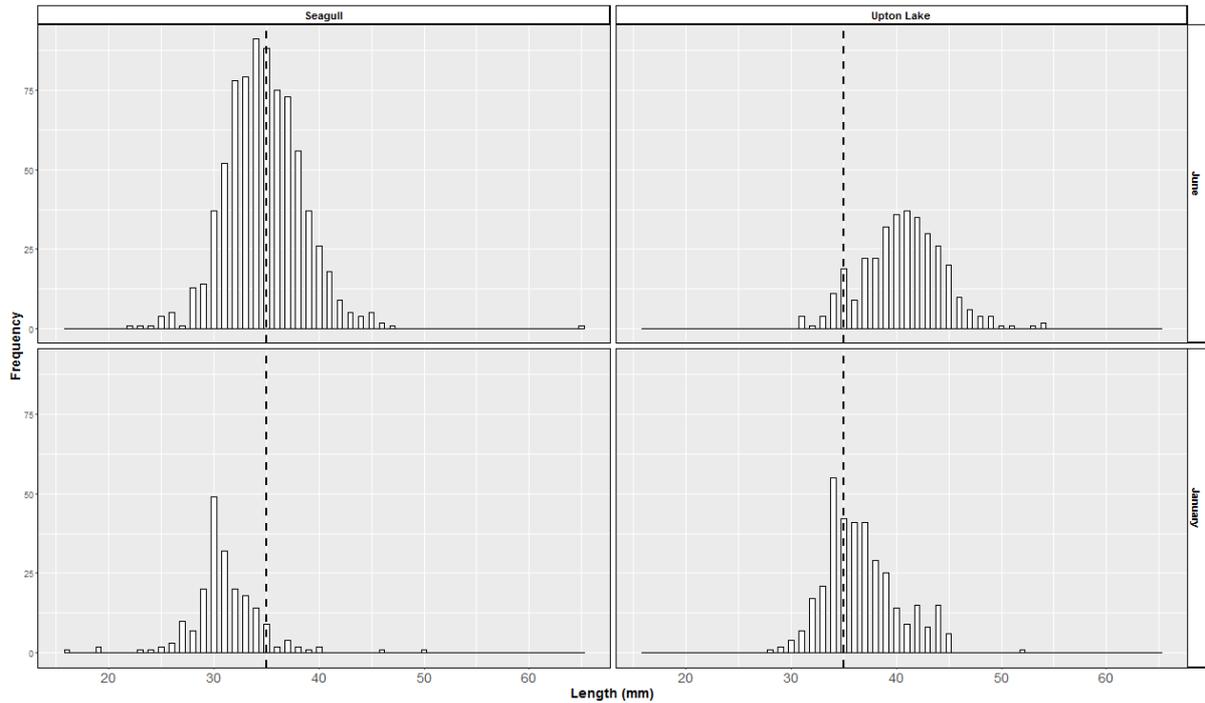


Figure 11. Size distribution of manila clam in fished (S-Seagull) and unfished (UL-Upton Lake) areas of Poole Harbour in June (top) and January (bottom) 2016. Locations of Seagull (S) and Upton Lake (UL) are given in the bottom figure which shows observed fishing activity from SIFCA officers in 2015. Data courtesy of L.Clarke (2017) and Southern IFCA.

At present the survey data have not been used to estimate total fishable biomass. The survey has simply been used to provide a snapshot of the stock and likely CPUE in each bed before the fishing season, as an indicator that there are no particular concerns. In time the CPUE

from the fishery-independent survey can be compared with the eventual CPUE as recorded on permit holders' monthly catch returns. Once a suitable time series of survey data and monthly CPUE are available, the objective is to develop a suitable model or models for a quantitative stock assessment of some kind (e.g. based on length-frequency distribution or CPUE). Based on this, SIFCA can consider putting in place catch limits by area should this be required. All current indications are that the existing management regime (effort limitation, MLS and closed areas) is proving successful at maintaining stocks.

3.3.4.5 Reference Points and Harvest Control Rules

A key element of the harvest strategy for most fisheries is the establishment of reference points and harvest control rules (HCRs) that are triggered when those reference points are exceeded. For the moment there are no quantitative objectives (such as target reference points) for the Manila clam and cockle fisheries but these may be established once sufficient data are available to develop a quantitative assessment of stocks. As there are no formal reference points, there are no agreed harvest control rules that are triggered if reference points are exceeded. However, there are a number of HCRs in place which ensure that the susceptibility of both species to the fishery is not compromised. These tools include the control of fishing effort through the permit scheme, the minimum size to protect juvenile individuals, closed areas and seasons under the permit, and the ability to introduce emergency byelaws. Such byelaws could include restrictions on catch through daily, monthly or annual TACs, or temporary closure of shellfish beds (as has already been introduced by SIFCA for the Solent oyster fishery), although none of these measures .

The Permit Byelaw allows the SIFCA to place conditions on permits (paragraph 9), including catch restrictions and spatial and temporal restrictions. So far, as noted above, it has not been considered necessary (based on commercial catch and CPUE data and the two pre-season surveys) to impose additional restrictions on catches over and above the existing regulations (SIFCA, 2015b).

3.4 Principle Two: Ecosystem Background

3.4.1 Definition of main primary and secondary bycatch species

The fishery's impact of non-target species is analysed differently if the species is from a "managed" stock or not, or considered Endangered, Threatened or Protected (ETP). These are defined as follows:

Primary species (MSC Component 2.1):

- Species in the catch that are not covered under P1
- Species that are within scope of the MSC program, i.e. no amphibians, reptiles, birds or mammals
- Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit (LRP) or target reference points (TRP). Primary species can therefore also be referred to as 'managed species'.

Secondary species (MSC Component 2.2):

- Species in the catch that are not covered under P1
- Species that are not managed in accordance with limit or target reference points, i.e. do not meet the primary species criteria
- Species that are out of scope of the programme, but where the definition of ETP species is not applicable (see below).

ETP (Endangered, Threatened or Protected) species (MSC Component 2.3) are assigned as follows:

- Species that are recognised by national ETP legislation
- Species listed in binding international agreements (e.g. CITES, Convention on Migratory Species (CMS), ACAP, etc.)
- Species classified as 'out-of scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).
- Both primary and secondary species are defined as 'main' if they meet the following criteria:
- The catch comprises 5 % or more by weight of the total catch of all species by the UoC;
- The species is classified as 'less resilient' and comprises 2 % or more by weight of the total catch of all species by the UoC. Less resilient is defined here as having low to medium productivity, or species for which resilience has been lowered due to anthropogenic or natural changes to its life-history;
- The species is out of scope but is not considered an ETP species (secondary species only);

- Exceptions to the rule may apply in the case of exceptionally large catches of bycatch species.

Assessment of bycatch species in this assessment was made using the annual stock status survey conducted by SIFCA at 28 locations within the harbour utilising a Table 4 commercial pump-scoop dredge (SIFCA, 2016f) and 2015-2016 partial landings data.

3.4.2 Primary species

There are no primary species associated with the fishing practices of the UoAs in this assessment.

3.4.3 Secondary species

Secondary species are those species not managed according to management reference points and are not ETP species. They may be landed for bait or for other uses or represent incidental bycatch.

Evidence of bycatch species comes from the annual stock surveys conducted by the fishery authority using one of the licensed vessel's dredges (SIFCA, 2015d) and monthly catch data from the MMO (Table 4). Cockle and Manila clam are recognised as 'main' bycatch species in each other's UoAs, and comprise >98% of the catch, from both the annual stock survey and landings data (SIFCA, 2016f) (Table 4, Table 6). Analysis of the data collected from the stock status assessment for 2016, which utilises the same pump scoop dredge as the fishery, showed that the minimum retained size of Manila clam and cockle were 18 mm and 20 mm respectively (SIFCA, 2016f). Pump scoop dredges do retain several other infaunal species from the top few centimetres of the sediment, predominately other co-existing bivalves and the occasional green crab (Table 6). The combined proportional contribution of these species is <1% and therefore they are treated as 'minor' species within the assessment process (Table 6).

Table 6. Secondary species of the Poole Harbour clam and cockle fishery. % of total catch from sampling data from Data from 2016 stock survey (SIFCA, 2016f). % landings composition between July 2015 and May 2016. Classification as vulnerable and ‘main’ or ‘minor’ secondary species.. * Data for May 2016 refer to period between 25.05.16 and 31.05.16 only. ** Only secondary species when not assessed as a target species.

Species	% of total catch from sampling	% of total landings 2015-16 (July – May*)	Vulnerable?	Main?
Manila clam ** (<i>R. philippinarum</i>)	58.9	95.2	No	Yes
Cockle ** (<i>C. edule</i>)	39.6	4.1	No	Yes
Native clam (<i>Ruditapes decussatus</i>)	0.2	0.7 (combined % of all species)	No	No
American hard-shelled clam (<i>Mercenaria mercenaria</i>)	<0.1		No	No
Pacific oyster (<i>Crassostrea gigas</i>)	<0.1		No	No
Green crab (<i>Carcinus maenas</i>)	0		No	No
Whelk (<i>Buccinum undatum</i>)	<0.1	0	No	No
Gaper clam (<i>Mya arenaria</i>)	<0.1	0	No	No
Blue mussel (<i>Mytilus spp.</i>)	<0.1	0	No	No
Native Oyster (<i>Ostrea edulis</i>)	<0.1	0	Yes	No

3.4.4 ETP species

The Poole Harbour Special Protection Area (SPA) was classified in March 1999, with an area of 2271.99 hectares. The SPA qualifies under Article 4.1 of the EU Birds Directive (2009/147/EC) as the estuary supports internationally important populations of regularly occurring Annex I species (Table 7), under 4.2 by supporting internationally important populations of regularly occurring migratory (ROM) birds species (Table 7) and an internationally important assemblage of waterfowl (IIAW). Poole Harbour supported 25,091 individual birds as a 5 yr peak mean for 1993/94 - 1996/97 (Table 8). Poole Harbour is designated as a Ramsar site based on its ability to support 20,000 waterfowl, and the populations of the Annex 1 species (Table 7, Table 8). It also supports rare assemblages of vulnerable and endangered species including scarce hydroid species (*Hartlaubella gelatinosa*) and nationally rare sponge (*Suberites massa*) and the flora and fauna associated with the nationally scarce plants narrow leaved eelgrass (*Zostera augustifolia*) and dwarf eelgrass (*Zostera noltii*) (SIFCA, 2017c). The Ramsar designation for the seagrass beds is considered in VMEs, section 3.4.5.2.

Table 7. EU Birds Directive species with diets and designations (SIFCA, 2017c). ROM: regularly occurring migratory species

Bird species	Main prey species	Designation	Population at time of SPA
Avocet (<i>Recurvirostra avosetta</i>)	Crustaceans, worms.	Annex 1 (overwinter)	459 birds, 36.1 % GB Pop. (1992/93 - 1996/97)
Common tern (<i>Sterna hirundo</i>)	Fish – sandeels, clupeids.	Annex 1 (breeding season)	155 pairs, 1.3% GB Pop. (1993 - 1997)
Mediterranean gull (<i>Larus melanocephalus</i>)	Fish, snails, bivalves.	Annex 1 (breeding season)	5 pairs, 22.7-38.5% GB Pop. (1993 – 1997)
Shelduck (<i>Tadorna tadorna</i>)	Small crustaceans, worms, snails (Hydrobia), small fish, plant material.	>1% ROM	3,569 birds 1.2% North West Europe Pop. (1992/93 - 1996/97)
Black-tailed godwit (<i>Limosa limosa</i>)	Worms, snails, bivalves, crustaceans, fish eggs. Do feed on cockle but at a small size <14 mm	>1% ROM	1,576 birds 2.3% Iceland Pop. (1992/93 - 1996/97)

Table 8. Diet of Wintering Wildfowl assemblage Article 4.2 of the EC Birds Directive (2009/147/EC)

Species	Diet
Dunlin (<i>Calidris alpina</i>)	Worms (Kelsey and Hassall 1989) https://www.jstor.org/stable/3676488?seq=1#page_scan_tab_contents
Cormorant (<i>Phalacrocorax carbo</i>)	Fish (bostrom et al 2012) http://www.ornisfennica.org/pdf/latest/2Bostrom.pdf
dark-bellied brent geese (<i>Branta bernicla bernicla</i>)	Eel grass https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/b/brentgoose/index.aspx
Teal (<i>Anas crecca</i>)	Seeds and small invertebrates https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/t/teal/
Goldeneye (<i>Bucephala clangula</i>)	Mussels, insect larvae, small fish and plants https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/g/goldeneye/index.aspx
Red-breasted merganser (<i>Mergus serrator</i>)	Fish https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/r/redbreastedmerganser/index.aspx
Curlew (<i>Numenius arquata</i>)	Worms, shellfish and shrimps. https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/c/curlew/index.aspx No cockle or native clams found in diet Goss Custard 1979 (http://www.tandfonline.com/doi/pdf/10.1080/00063657609476507)
Spotted Redshank	Insect larvae, shrimps and worms

Species	Diet
(<i>Tringa erythropus</i>)	https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/s/spottedredshank/
Greenshank (<i>Tringa nebularia</i>)	Worms, snails and fish https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/g/greenshank/index.aspx
Redshank (<i>Tringa tetanus</i>)	Insects, earthworms, molluscs and crustaceans. No evidence of feeding on cockle.
Pochard (<i>Aythya farina</i>)	Plants and seeds, snails, small fish and insects. https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/p/pochard/
Black headed gull (<i>Chroicocephalus ridibundus</i>)	Worms, insects, fish and carrion. https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/b/blackheadedgull/index.aspx

Of the bird species identified within the EU habitat directives for Poole Harbour two bird species are present which may exploit cockle and other bivalves as a food source; these are Mediterranean gull (Annex 1 Species) and black-tailed godwit (ROM).

The Mediterranean gull is an IUCN Red List species of Least Concern given its wide spatial range (BirdLife, 2017). Like most gulls, the Mediterranean gull has highly gregarious feeding habits and is an opportunistic omnivore, eating fish, worms, shellfish, insects, offal and carrion. The only published account of feeding preferences does not include shellfish as a principal dietary item (Milchev et al., 2004) but this record only covers post-breeding season diet. It is unlikely this species is solely dependent on shellfish for its nutrition in Poole Harbour. At the time of SAC designation, the 5-year peak mean for the Mediterranean gull was just 5 pairs which has now risen to 66 birds in 2015 according to Frost et al. (2016) (Table 9), although Natural England record a higher level of 128 birds from different data sources (NaturalEngland, 2015) (Table 10). This trend may suggest that ecosystem conditions within the harbour have not adversely impacted the species' population in the past 20 years and Natural England are seeking extension of the current SPA in part on the basis of the expanding Mediterranean gull population (NaturalEngland, 2015). From a fishery stand point, interaction between dredging disturbance and roosting sites has been mitigated through the formal introduction of a dredging code of conduct (SIFCA, 2015e) which includes details specifically aimed at the principal roosting site of the Mediterranean gull on Seagull Island (Table 11). More details can be found further on in this section.

Black-tailed godwits spend most the non-breeding season in estuarine environments feeding on benthic invertebrates, which can include bivalves (e.g. cockle, *Scrobicularia plana*, *Macoma balthica*, *Mya arenaria*), polychaete worms (e.g. *Nereis diversicolor*) and molluscs (e.g. *Hydrobia* spp.) (Moreira, 1994; Gill, 2001). Despite the black-tailed godwit having the potential to feed on estuarine bivalves of a similar size to those targeted in the commercial fishery, observations have been made of the godwits trying unsuccessfully to ingest *S. plana* >20 mm, with the majority of those taken being ~14 mm in length (Moreira, 1994). It is therefore unlikely they will exploit a large proportion, if any, of the commercial cockle or clam stock in the harbour. Furthermore, many of the sightings have recorded the flocks of black-tailed godwits throughout the entire range of the estuary beyond the commercial shellfish beds,

suggesting they exploit a range of food sources over the entire area. At the time of SPA designation, the 5-year peak mean for black-tailed godwits numbered 1,700 (1994-1999) while in 2015 (latest data available) the abundance had increased and was recorded as 2,636 with a 5-year average of 2,020 (Table 9) (Frost et al., 2016). This suggests that conditions within the harbour have not adversely affected the population of this species in the past 20 years.

Table 9. WeBs annual peak data for bird species in Poole Harbour identified under the EU Birds Directives (categories given under Designation) between 2011 and 2015. Bold values are WeBs undercounts (WeBs, 2016). Data also includes the month of peak numbers, 5 year current average. Poole Harbour total annual estimate is also given (Frost et al., 2016).

Species	2011	2012	2013	2014	2015	Month of peak	Current avg 5 yr	Designation
Avocet	1,361	1,667	1,287	1,218	1,398	Dec	1,386	Annex 1
Common Tern	5	0	-6	5	17	Sep	7	Annex 1
Mediterranean Gull	87	27	29	121	49	Feb	66	Annex 1
Black-tailed Godwit	2,084	2,093	1,218	2,070	2,636	Dec	2,020	ROM
Little Egret	115	60	107	142	240	Sep	133	ROM
Sandwich Tern	40	2	62	92	10	Sep	41	ROM
Shelduck	775	1,826	1,728	1,331	987	Feb	1,329	ROM
Black-headed Gull	7,191	3,781	2,111	2,316	3,684	Sep	4,192	IIAW
Brent Goose (Dark-bellied)	882	1,330	1,235	1,153	1,640	Feb	1,248	IIAW
Cormorant	630	395	418	531	857	Nov	566	IIAW
Curlew	474	978	977	1,094	1,588	Dec	1,022	IIAW
Dunlin	2,456	2,319	2,725	2,195	2,851	Feb	2,509	IIAW
Goldeneye	50	210	68	30	77	Feb	87	IIAW
Pochard	6	40	14	-37	17	Jan	23	IIAW
Red-breasted Merganser	145	278	194	262	299	Feb	236	IIAW
Spotted Redshank	4	11	18	26	22	Oct	16	IIAW
Teal	2,297	2,973	3,925	4,312	3,837	Oct	3,469	IIAW
Poole Harbour Total	17,074	21,662	23,272	22,807	24,673		21,898	

The total number of birds utilising Poole Harbour has remained relatively stable at ca. 20,000 birds in recent years (Table 9) despite some changes in the infaunal community (see section

3.4.5.1) including increases in the Manila clam abundance (see 3.4.3). The majority of these bird species do not have narrowly defined dietary requirements and these generalist predators adapt to changes by switching to alternative prey species and prey size classes (Bowgen et al. 2015). Modelled data from Poole Harbour suggest changes in prey abundance do not necessarily affect the number of birds that the harbour can support, and the authors' predictions reveal a weakness in using birds as indicators of site health and invertebrate regime shifts (Bowgen et al., 2015). Indeed, the unusual nature of the double high water system in Poole Harbour coupled with the limited tidal range (see Section 3.4.5 for a detailed discussion), means that the exposure time of intertidal flats is often very short compared with other estuaries and, on many tides and under certain weather conditions, some areas do not become exposed at all (Humphreys and May, 2005; Durell et al., 2006). As a result, many shorebirds are known to supplement their estuarine diets by feeding extensively in nearby fields, water meadows and recreational grassland, hence the inclusion of some of these species in the SPA and SSSI designations and the Poole Harbour ecosystem management plan (see 3.4.6).

Natural England is currently seeking extension of the current SPA through the SPA selection guidelines (NaturalEngland, 2015). Natural England have nominated the potential SPA (pSPA) as an extension of the seaward boundary of the current SPA to the harbour mouth due to existing qualifying interest features of the SPA foraging and roosting in intertidal and subtidal areas currently outside of the boundary of the SPA. The Brief (NaturalEngland, 2015) sets out the scientific case for the re-classification of the Poole Harbour SPA under Article 4 of the Birds Directive (2009/147/EC) based on the following criteria:

- The proposed site regularly supports more than 1% of the GB populations of six species listed in Annex I of the EC Birds Directive (three additional species to those currently included in the SPA). Therefore, the site qualifies for SPA Classification in accordance with the UK SPA selection guidelines (stage 1.1).
- The site regularly supports more than 1% of the biogeographical population of two regularly occurring migratory species not listed in Annex I of the EC Birds Directive. Therefore the site qualifies for SPA designation in accordance with the UK SPA selection guidelines (stage 1.2).
- The site regularly supports more than 20,000 waterfowl during the non-breeding season. Therefore the site qualifies for SPA designation in accordance with the UK SPA selection guidelines (stage 1.3).

Should this fishery become MSC certified, subsequent surveillance audits will need to consider the pSPA and its influence on ETP and habitat scoring.

Table 10. Summary of qualifying ornithological interest in Poole Harbour pSPA. Entries in bold indicate changes from the figures used in the original classification of the Poole Harbour SPA in 2000 (NaturalEngland, 2015).

Feature	Count (period)	% of subspecies or population	Interest type	New feature? (Y/N)
Common tern <i>Sterna hirundo</i>	178 Pairs (356 breeding adults) 2010-2014	1.8 % of GB population	Annex 1	N
Sandwich tern <i>Sterna sandvicensis</i>	181 Pairs (362 breeding adults) 2010-2014	1.6 % of GB population	Annex 1	Y
Mediterranean gull <i>Larus melanocephalus</i>	64 pairs (128 breeding adults) 2015	10% of GB population	Annex 1	N
Little egret <i>Egretta garzetta</i>	114 Individuals 2009/10-2013/14	2.5 % of GB population	Annex 1	Y
Eurasian spoonbill <i>Platalea leucorodia</i>	20 individuals 2009/10 – 2013/14⁴	100% of GB population⁵	Annex 1	Y
Pied Avocet <i>Recurvirostra avosetta</i>	459 Individuals 1992/93 – 1996/97	36.1% of GB population	Annex 1	N
Shelduck <i>Tadorna tadorna</i>	3,569 individuals 1992/93 – 1996/97	1.2 % of biogeographic population	Regularly occurring migrant	N
Icelandic-race black-tailed godwit <i>Limosa limosa islandica</i>	1,576 individuals 1992/93 – 1996/97	2.3 % of biogeographic population	Regularly occurring migrant	N
Feature	Count (period)			
Overwintering waterbird Assemblage	25,176 individuals 1993/94-1996/7 for all species except new feature of little egret and Eurasian spoonbill for which 5 year means from 2009/10 – 2013/14 (114 and 20 respectively) added to original overwintering assemblage total minus little egret 4 year peak mean (48) for 1993/94-1996/7 and spoonbill 4 year peak mean (1) 1993/94-1996/7			

Protection of bird roosting sites from disturbance by dredge permit holders is formalised through the 'Poole Harbour Roosting Sites Code of Practice' (CoP) (SIFCA, 2015e) which is provided to each permit holder via the annual permit pack and signed off on as part of the permit. This document, split into two sections details, firstly, five procedures to be followed when operating dredges between 25th May and 23rd December and, secondly, five procedures to be observed when operating dredges in proximity to Seagull Island between 25th May and 1st July (Table 11). The second set is specifically designed to mitigate disturbance of the Mediterranean gull roosting site based on its feature as part of the Poole Harbour SPA.

Table 11. Poole Harbour Roosting Sites Code of Practice.

25th May and 23rd December	Seagull Island (25th May and 1st July)
Avoid fishing in close proximity to saltmarsh areas.	Avoid dredge fishing between the three parts of Seagull Island.
When moving around areas of saltmarsh keep speed to a maximum of 6 knots.	Avoid contact between a vessel and any part of Seagull Island.
Avoid landing or disembarking on any saltmarsh area.	Avoid landing or disembarking on any part of Seagull Island.
Avoid contact between a vessel and any part of the saltmarsh.	When moving around or between parts of Seagull Island keep speed to a maximum of 6 knots.
When operating in areas defined under section 5.4 of the Poole Harbour Dredge permit during the period when these areas are open between 1st July and 1st November avoid excessive noise, beyond that caused by deployment of gear.	Avoid excessive noise, beyond that caused by deployment of gear, when in close proximity to any part of Seagull Island.

Prior to the introduction of a series of byelaws in 2015 (SIFCA, 2015b, 2015d, 2015e, 2015f, 2016g) Natural England raised a number of concerns regarding the impact of dredge fishing on conservation objectives. These were:

- Disturbance caused by human activity affecting the foraging and roosting overwintering waterbird assemblage, avocet, black-tailed godwit, shelduck and little egret;
- Change in extent and distribution of supporting non-breeding habitat;
- Change in extent, distribution and availability of supporting breeding habitat;
- Disturbance of nesting common tern, Sandwich tern and Mediterranean gull;
- Reduction in key prey species of preferred prey sizes supporting overwintering waterbird assemblage, avocet, black-tailed godwit, shelduck and little egret;
- Reduction in key prey species of preferred prey sizes supporting breeding common tern, Sandwich tern and Mediterranean gull;
- Change in physical topography of intertidal feeding areas for black-tailed godwits and
- Undermining or compromising conservation measures to maintain or restore structure, function and supporting processes associated with features and supporting habitats.

Since 2015, the SIFCA has produced a Habitats Regulations Assessment for the dredge fishery (SIFCA, 2017c). This includes a detailed analysis which identifies each conservation feature, its location (habitat), target issue, potential impact, nature and likelihood of the impact occurring and preventative measures (SIFCA, 2017c). This extensive assessment defines how concerns raised by Natural England are mitigated through the SIFCA byelaws. It aims to manage dredge fishing activity to a level consistent with the current effort. It does this by recognising that through the mitigation measures outlined in the permit conditions, prohibiting unlicensed/unregistered activity and allowing more effective enforcement of legislation, the effort level of the fishery will be more effectively managed (SIFCA, 2017c). The nature of the

dredge operations means that direct contact with ETP bird species is highly unlikely. There are no records of this type of mortality in the fishery and none are likely to exist. However, there is also no formal procedure within the management plan for reporting ETP species mortality.

Non-avian marine species considered as ETP species within Poole Harbour include all marine mammals which are protected under the UK's Conservation of Habitats and Species Regulations 2010 (HM, 2010a). Seahorse species and their habitat (seagrass) are also protected under the Wildlife and Countryside Act 1981 (as amended UK (2008)) and discussed primarily under the VME habitats section 3.4.5.2. Two seahorse species are recognised and protected in UK waters, *Hippocampus guttulatus* and *H. hippocampus*, occur sub-tidally and principally in seagrass, there is a long term monitoring project for these species close to Poole Harbour (Garrick-Maidment et al., 2014). Seahorses do not appear in intertidal waters and have been shown to remain resident unless disturbed (Garrick-Maidment et al., 2014). Overlap with the fishery was considered to be highly unlikely on this basis.

Dorset Wildlife Trust (DWT) have been monitoring Dorset seals using photographic identification since 2014. They are aware of six visiting grey seals (*Halichoerus grypus*) and five harbour seals (*Phoca vitulina*) residing in Poole Harbour, and note that some of these individuals have only been recorded once during the last three years (2014 - 2017) (E. Rance Pers Comm).

3.4.5 Habitats

Poole Harbour is a large natural harbour comprising subtidal channels, extensive tidal sandflats, mudflats and saltmarshes, together with associated reedbeds, freshwater marshes and wet grassland (Humphreys and May, 2005). It has a narrow entrance and a small tidal range and as a result, although classified as an estuary (several rivers flow into it) it has many of the qualities of a large lagoon (Humphreys and May, 2005). The north side is largely urbanised while the west and south side about heath, mire or grassland.

The area of Poole Harbour is designated as a SPA, SAC, SSSI and a Ramsar site, cumulatively making the area a European Marine Site (EMS) (Figure 12, Figure 13). The site is designated for a number of habitats and species of conservation interest, and competent authorities have a responsibility under the Conservation of Habitats and Species Regulations 2010 (HM, 2010a) to have regard for the requirements of the Habitats Directive (1992) (EU, 1992) and the Birds Directive (1979 and 2009) (EU, 2009) to ensure that the conservation objectives for these features are maintained. The Conservation of Habitats and Species Regulations 2010 (The Habitats Regulation 2010) is the principal means by which the EU Habitats Directive is transposed in England and Wales for terrestrial environments and territorial waters out to 12 nm. Both Ramsar sites and SPAs are afforded protection by the Conservation of Habitats and Species Regulations. Under Regulation 35(3) of The Habitats Regulations 2010, Natural England must advise other relevant authorities as to:

- the conservation objectives for the European Marine Site,
- any operations which may cause deterioration of natural habitats, the habitats of the species, or disturbance of species, for which the site has been designated.

Qualifying habitat features of the Poole Harbour for which it is designated a SPA are listed in

Table 12. The Poole Harbour SPA was classified in March 1999, with an area of 2271.99 hectares. The SPA is underpinned by parts of the following SSSIs: Poole Harbour, Arne, The Moors, Wareham Meadows, Holton and Sandford Heaths and Studland & Godlingston Heaths (Figure 12).

Table 12. SPA habitats in Poole Harbour (Bennett, 2011)

Habitat	Annex 1 species	Regularly occurring migratory bird species	Important Assesmlage of waterfowl
Shallow inshore waters	✓	✓	✓
Intertidal sediment communities	✓	✓	✓
Saltmarsh	✓	✓	✓
Reedbeds		✓	✓

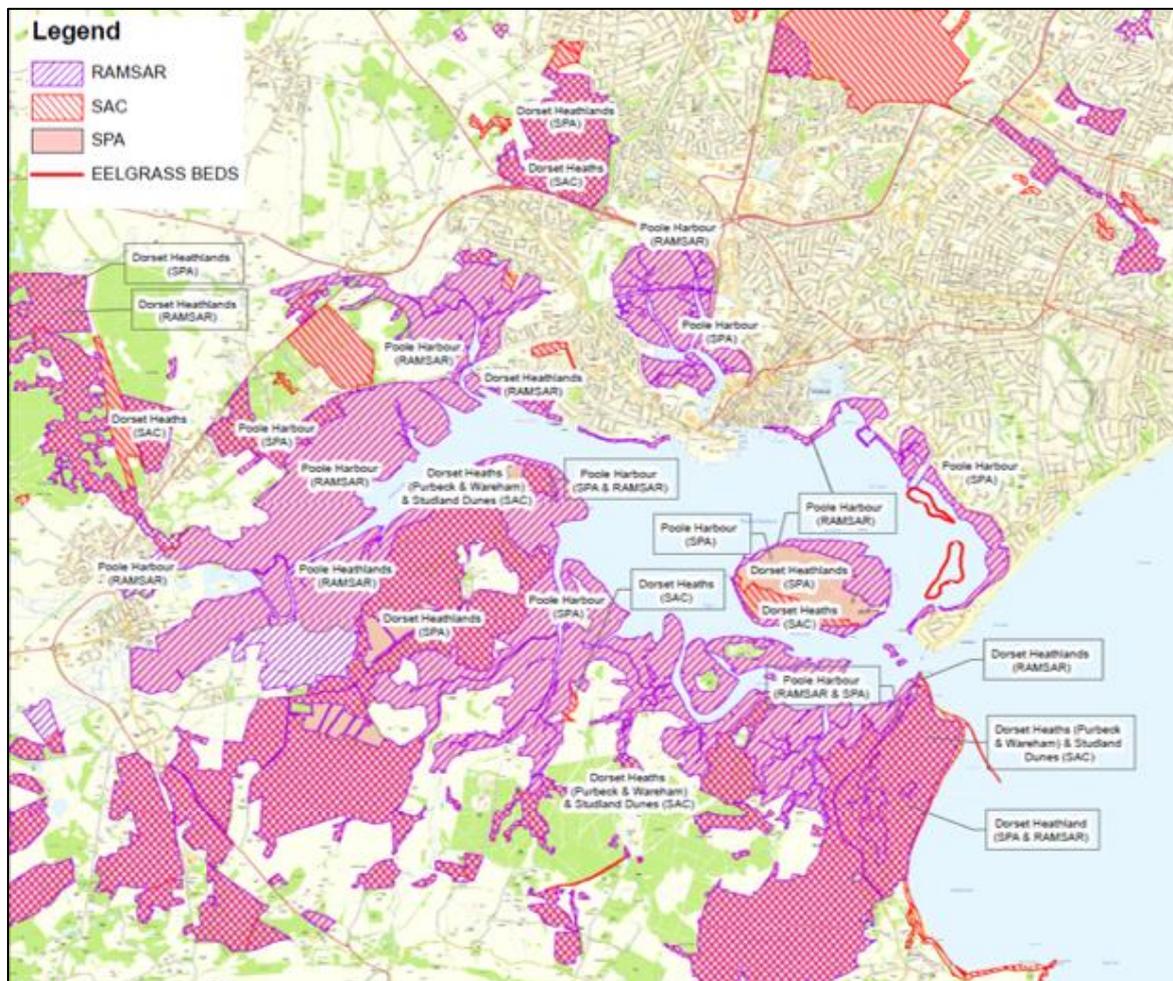


Figure 12. Map of Poole Harbour showing Ramsar SAC and SPA boundaries, reproduced from Ramboll (2014).



Figure 13. Map of Poole Harbour showing SSSI boundaries, reproduced from Ramboll (2014).

The FCR version 2.0 requires the identification and justification of

- commonly encountered ('main') habitats,
- vulnerable habitats ('VMEs') and
- minor habitats (being all those not included above)

Habitat impacts were considered in reference to two main activities: i) physical disturbance through fishing for cockle and clams and ii) physical disturbance through accessing the cockle and clam beds. The narrow seaward entrance to the harbour means that only 45% of harbour water is released into Poole Bay at spring tides, less on neaps (22%) and therefore mud and fine sand sediments dominate the habitat structure of the harbour (Wardlaw, 2005). The estuarine system is largely sedimentary and is dominated by 'intertidal and shallow subtidal mudflats and sandflats'. As these habitat types are also the principal habitats on which the fishery occurs, they were identified as 'main' habitats. Of the remaining designated habitats within Poole Harbour, 'Saltmarsh' and 'Reedbeds' can be defined as VMEs given their vulnerability to disturbance. MEC also included seagrass beds within the VME category given its high biodiversity and sensitivity to dredging carried out by this fishery. 'Minor' habitats were confined to deeper channels within the estuary.

3.4.5.1 Main habitats

Most of the harbour is described as ‘mud’ with a predominant sediment fraction of median diameter of less than 0.063mm (Herbert et al., 2010). This compares similarly to 80% of sites in 2002. Virtually the whole of the Wareham Channel, Lytchett Bay and Holes Bay consists of these finer sediments (Figure 14). Sand and ‘muddy sand’ sediments were recorded just inside the harbour entrance, towards Rockley Point and south of Brownsea Island. Sites with mixed sediment, including sand and gravels (>2mm) were found throughout the harbour and notably parts of Brands Bay and close to the islands (Herbert et al., 2010) (Figure 14).

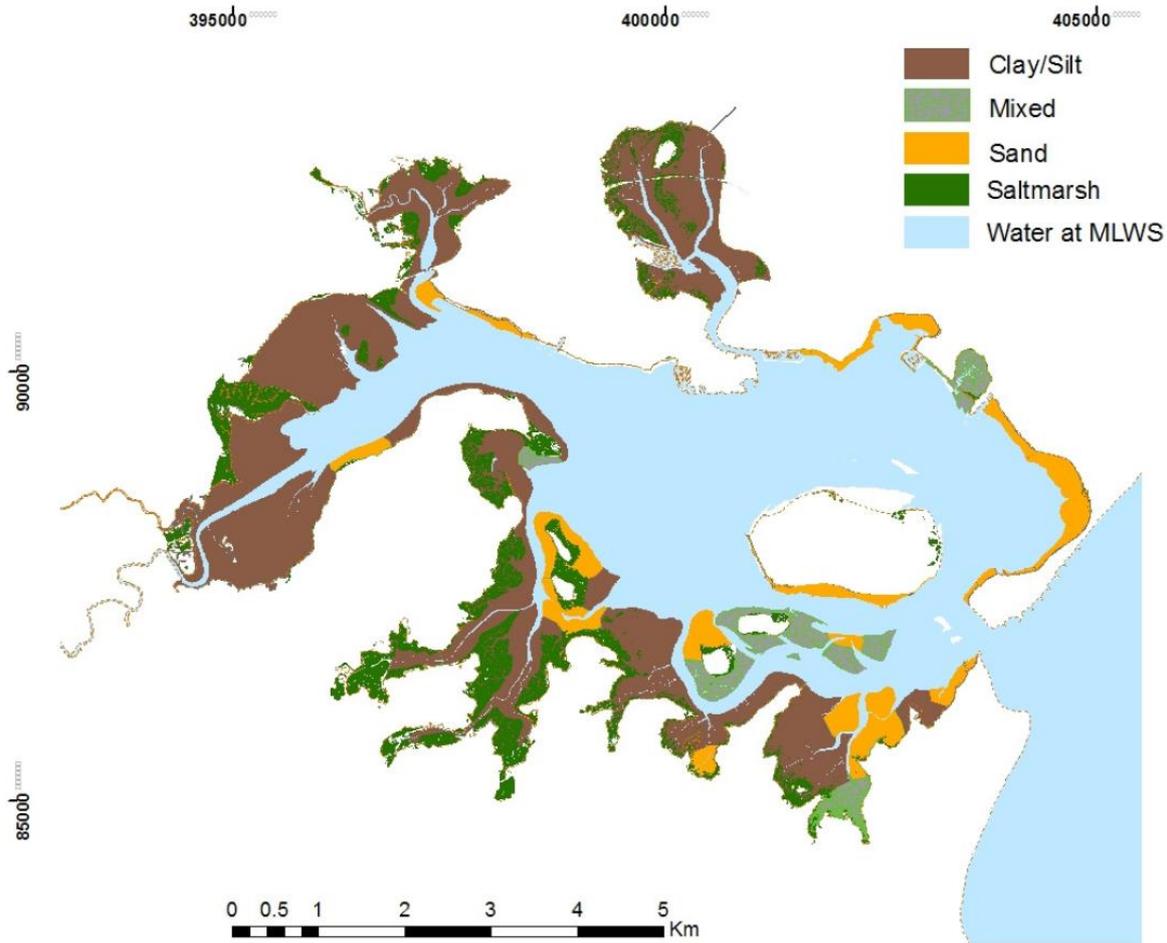


Figure 14. Intertidal sediment distribution in Poole Harbour reproduced from Herbert et al. 2010. Clay/Silt: >45% of sample, weight < 63 µm. Sand: >45% of sample weight >125 µm. Mixed: 45% of sample weight 63-125 µm.

These sediment features are designated under the SSSI and SPA Directives and include the features of ‘Estuaries’, ‘Sheltered Muddy Shores’ and ‘Coastal Saline Lagoons’.

Intertidal sediment habitats are widespread in Poole Harbour with approximately 1325 m² available (Jensen et al., 2004). Within the SPA sediment habitats, 88 invertebrate species have been identified including 10 non-natives. Temporal comparisons between 2002 and 2009 identified the abundance reductions in some polychaete species and amphipod crustaceans and increases in one species of catworm and the bivalves *Macoma balthica*, *Mya arenaria* and the Manila clam (Herbert et al., 2010). Bivalves abundances in Poole Harbour reportedly fluctuate over time in Poole Harbour possibly in relation to human pollution (TBTs and PCBs);

however, the changes may also be cyclical in nature (Herbert et al., 2010). Sediment biotopes identified in 2010 were broadly consistent with the 2002 data and none of the biotopes are considered nationally scarce (Herbert et al., 2010) or appear in the UK BAP list of priority habitats (JNCC, 2011) (Table 13 and Figure 15).

Table 13. Principle soft sediment biotopes and locations identified in Poole Harbour. (Herbert et al. 2010).

Characteristic species	Biotope	Location
This assemblage was characterised by mixed sediments, including sands and gravels, in addition to muds. The diversity was generally higher than average and included a broad range of taxa.	Littoral Mixed Sediment LS.LMx.Mx	Baiter Park and Parkstone Bay
An assemblage of sandy shores, consisting largely of the annelid <i>Scoloplos armiger</i> , the lugworm <i>Arenicola marina</i> and amphipod <i>Urothoe</i> .	Polychaete/Bivalve dominated Muddy Sand Shores: LS.LSa.MuSa	Not given
An assemblage on sands, without <i>Arenicola</i> and <i>Urothoe</i> but including <i>Scoloplos</i> and bivalves.	Polychaete/Bivalve dominated Muddy Sand Shores: LS.LSa.MuSa	Not given
An assemblage characterised by higher than average densities of <i>Hydrobia ulvae</i> , and bivalve <i>Abra tenuis</i>	Polychaete/Bivalve dominated mid estuarine Muds: LS.LMu.MEst	Not given
An assemblage characterised by catworm <i>Nephtys hombergii</i> and oligochaetes	<i>Nephtys hombergii</i> and <i>Streblospio shrubsolii</i> in littoral Mud. LS.LMu.UEst.NhomStr	South of Brownsea Island and in the vicinity of Brands Bay
A mixed and sometime diverse assemblage, yet with generally above average densities of oligochaetes: frequent in Holes Bay.	Polychaete/Bivalve dominated mid estuarine Muds:LS.LMu.Mest <i>Hediste</i> and oligochaetes in littoral mud: LS.LMu.UEst.Hed.OI	Holes Bay
An assemblage characterised by generally high densities of the ragworm <i>Hediste diversicolor</i> and the amphipod crustacean <i>Corophium volutator</i>	<i>Hediste</i> and <i>Corophium</i> in littoral mud: LS.LMu.UEst.Hed.Cvol	Wareham Channel, Brands Bay, and Middlebere Lake
An assemblage characterised by generally high densities of the ragworm <i>Hediste diversicolor</i> , locally enhanced and modified with bivalve molluscs including <i>Macoma balthica</i> , <i>Scrobicularia plana</i> , <i>Mya arenaria</i> or with reduced diversity in association with oligochaetes and or isopod <i>Cyathura carinata</i> , particularly in the upper estuary.	<i>Hediste diversicolor</i> in littoral mud LS.LMu.UEst.Hed. <i>Hediste</i> , <i>Macoma</i> in littoral sandy muds LS.LMu.MEst.HedMac <i>Hediste</i> and oligochaetes in littoral mud: LS.LMu.UEst.Hed.OI	Throughout but dominant in sheltered creeks Wareham Channel and western part of the harbour

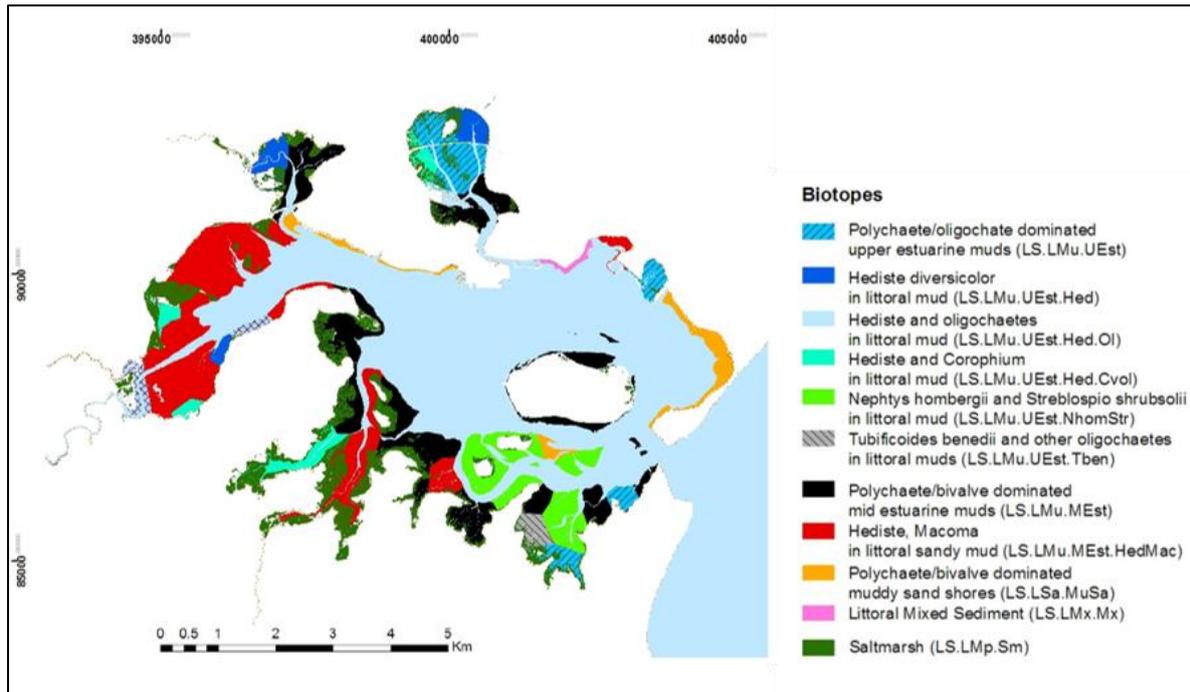


Figure 15. Intertidal biotope distribution in 2009 within Poole Harbour. Source: Herbert et al, (2010).

Conservation issues in relation to ETP bird species identified for the Poole Harbour SPA are the relatively low densities of larger size classes of polychaete worms (Durell et al. 2006). The potential impact of the pump scoop dredge fishing practice in Poole Harbour infaunal communities has been investigated on two occasions (Parker and Pinn, 2005; Clarke, 2017). The initial study in 2005 noted modification of the infaunal community from fishing activity with reductions in species richness over the course of the study (four months) (Parker and Pinn, 2005). No significant differences were observed in the infaunal communities initially (first two months) indicating that either fishing effort was initially low (scarring marks were observed) or that there was no acute impact of pump scoop dredging on the benthic community. However, reductions in infaunal abundance were evident after three months. This could not be directly attributed to pump scoop dredging as other fishing activities (hand raking, bait digging) took place also in this period and the change may also be a result of temperature or mortality following reproduction (Parker and Pinn, 2005). However, dredging activities in general do cause changes in benthic community structure but these are typically reversible following fallow periods, depending on prevailing environmental conditions (Dernie et al., 2003). The Parker and Pinn (2005) study in Poole Harbour did not examine recovery of the infauna. However, because the sediment is naturally mobile within the harbour and there are good local adult populations in the surrounding area, the authors considered the likelihood of recovery to be fairly rapid (Parker and Pinn, 2005). With regard to prey species important to birds, the study found no obvious reduction in either of these key species (*Arenicola marina* and *Corophium spp.*) as a response to pump scoop dredging. The authors summarised that the use of dredging (non-pump scoop dredging) has been apparent in Poole Harbour for many years and that the closed season between January and May would likely be sufficient to allow recovery and that the 'environmental impact of these dredging events in the shallow intertidal waters is unlikely to be a factor in their long-term environmental and biological condition' (Parker and Pinn, 2005). The authors note that further work separating the combined impacts

of human activities on the sediment environment would be beneficial to disseminate the real impact of pump scoop dredging on the habitat.

The second work on macrobenthic composition is part of a wider PhD project considering the harvest of intertidal fauna and has articles in review (Clarke, 2017). The macrobenthic work in Poole Harbour utilised a before-after-control-impact (BACI) study design to observe changes in faunal composition and sediment characteristics resulting from pump scoop dredging. The study had three levels of fishing pressure: none, seasonal and open. The work noted improved species richness in the seasonal fishing area following an initial fishing period with increases in annelid worm species. Open and seasonal sites had reduced numbers of the bivalves *Abra tenuis* and *Peringia ulvae* and higher numbers of *Aphelochaeta marioni* and *Capitella* spp. (disturbance indicator species) than the closed area. The recovery of taxa post-fishing showed partial restoration of crustacean and annelid species over 60 days but no recovery in the small bivalve mollusc species (Figure 16). An experimental disturbance study for mud habitats, designed to mimic fishing revealed similar recovery of community composition between control and experimental treatments after 63 days (Dernie et al., 2003). Small infaunal bivalves such as *A. tenuis* and *P. ulvae* comprise key prey items for shore birds. This suggests that long-term monitoring of communities following disturbance events may be important in order to assess accurately the recovery trajectories of communities (Dernie et al., 2003; Clarke, 2017).

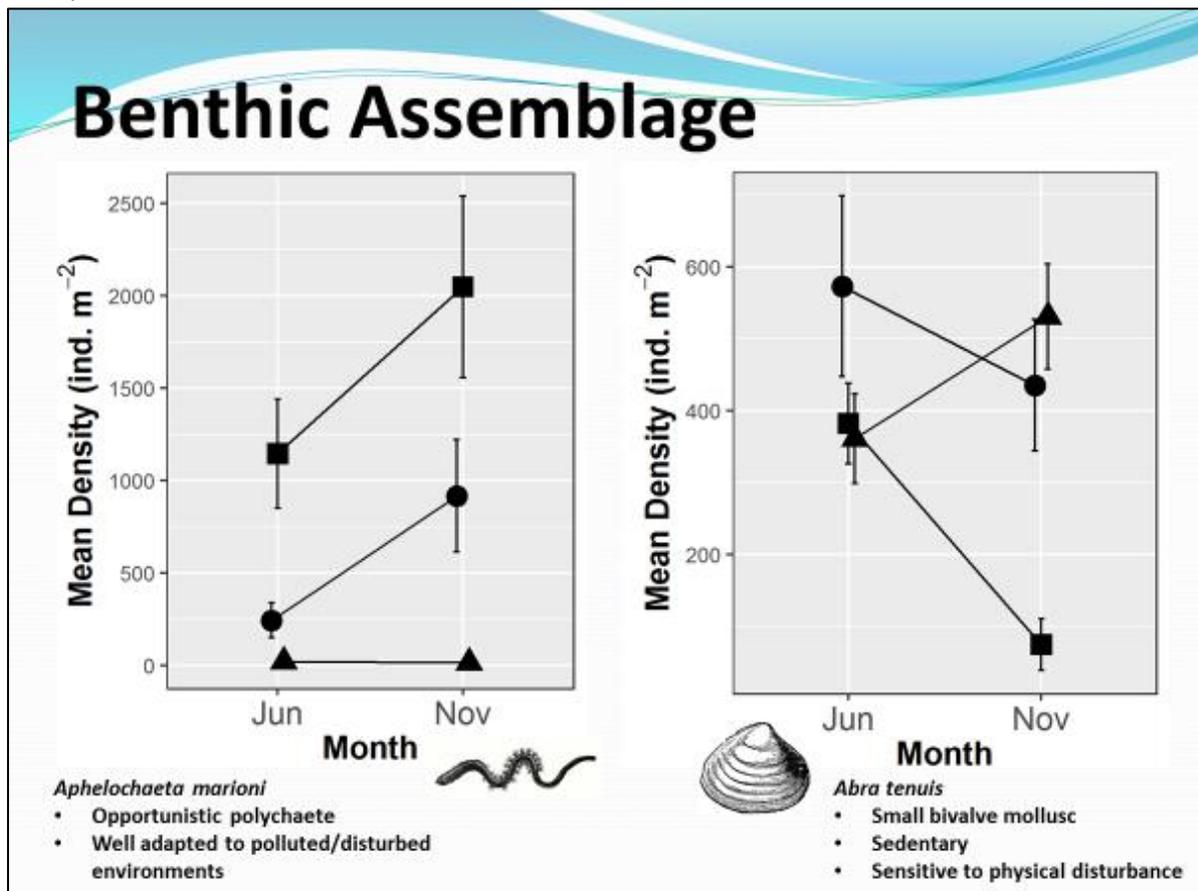


Figure 16. Density of select species before and during pump scoop dredging season from three levels of disturbance in Poole Harbour (Triangles = control, Circles = seasonal fishing, Square = open all season to fishing). (image courtesy of L.Clarke 2017).

Conflicting evidence from the 2005 study and the 2017 thesis exists over sediment size distribution in relation to pump scoop dredging. No significant change in sediment size distribution was observed in 2005 (Parker and Pinn, 2005). While in 2017 a reduction in fine sediments <63 microns was evident post-dredging, although no change in organic content was evident (Clarke, 2017). Scarring of the sediment was present after dredging and visible in both studies (Figure 17, Figure 18). Experimental research on infill recovery rates, from disturbance in the UK, suggests that infill rates can be longer than 250 days in mud habitats (Dernie et al., 2003), but evidence from other dredge research suggests that scars are temporary (< 2 months) (Parker and Pinn, 2005). The time frame in Poole is undetermined. Image texture analysis of sediment disturbance from Clarke (2017), still under development, appears to show dredging intensity and may form a useful management tool in future (Figure 19).



Figure 17. Pump scoop dredge scars in sediment of Poole Harbour. Image from Parker & Pinn 2005.



Figure 18. Aerial imagery of pump scoop dredge scarring in Poole Harbour (image courtesy of L.Clarke 2017).

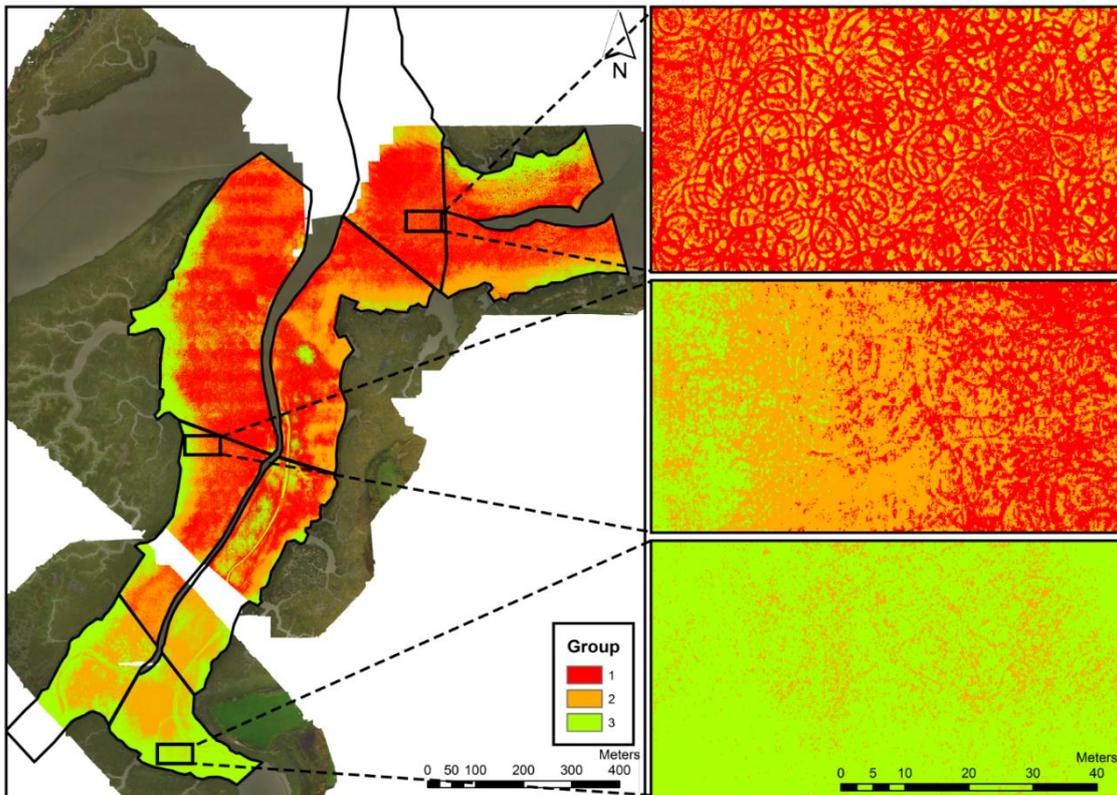


Figure 19. Remote sensing imagery using texture analysis to define low (3) medium (2) and high (1) groupings of pump scoop dredging intensity. (image courtesy of L.Clarke 2017).

3.4.5.2 VMEs

The MSC define VMEs to include the functional significance of a habitat for ETP species (FCR v2.0 GSA3.13.3.2). Given the reliance of over-wintering birds on the intertidal mudflats and their recognition under the SPA (Table 12) it could be argued that the 'intertidal mudflats and sandflats' qualify as a VME in this respect. However, as this habitat is not comprised of any biotopes which are rare or considered part of the UK BAP habitats within the UK it is not listed as a VME. Intertidal mudflats and sandflats are commonly occurring and exist in a high-energy, dynamic environment subject to constant change. They have been shown to recover quickly from disturbance and are characterised by short-lived, high-fecundity species. They were therefore not considered to be VMEs.

Within the Poole Harbour Management Plan shellfish fisheries are not discussed as a potential threat to saltmarsh habitats (Bennett, 2011) as the gear type (pump scoop dredge) under assessment is inoperable in this habitat and the target species are not typically associated with this it. Despite the lack of overlap of the fishery with this VME habitat, fishing activities near the saltmarshes could cause disturbance through vessel-wake and noise and therefore codes of practice are signed by fishers to minimise disturbance when operating near them (Table 11). All reedbeds within Poole Harbour are designated SSSIs and sensitive to physical disturbance, but overlap from the fishery is considered minimal. No code of conduct is issued in relation to fishing near reed beds.

All seagrass beds in the UK are considered⁵:

- Habitats of Principal Importance/Priority Habitats,
- OSPAR List of Threatened and/or Declining Species and Habitats (declining in Region II – North Sea and Region III – Celtic Sea, and threatened in Region V – Wider Atlantic)
- An important feature in estuary Sites of Special Scientific Interest, under the UK Wildlife and Countryside Act 1981.

The main areas of seagrass (*Zostera spp.*) beds in Poole Harbour lie below MLW in the north east of the harbour (Salterns Marina and at Whitley Lake). These provide a food source for dark-bellied brent goose as well as a supporting habitat for fish eating bird species such as red-breasted merganser and goldeneye. Seagrass meadows provide suitable conditions for fish development. As a result, the grass acts as a nursery ground for numerous fish and shellfish species, and provides a sheltered home for many other animals, such as pipefish and BAP species including both seahorse species (*H. hippocampus* and *H. guttulatus*). Recent surveys of the habitat show continued presence of seagrass in similar locations to previous surveys and with a similar total extent (Figure 20 and Table 14) (Benson and Sotheran, 2015). Protection of the seagrass beds from human disturbance is provided through the 'Prohibition of gathering (Sea Fisheries Resources) in seagrass beds byelaw' (SIFCA, 2016g) and 'Bottom towed fishing gear byelaw' (SIFCA, 2015d). These byelaws prohibit the digging for, fishing for or taking any sea fisheries resource and the use of any bottom towed fishing gear respectively within the boundaries of the seagrass areas defined in the byelaw (Figure 20) and therefore provides a level of protection for this conservation feature. There have been records of seagrass being present in other parts of the harbour but not forming seagrass bed (*Zostera*

⁵ <http://jncc.defra.gov.uk/page-5540>

marina) habitat such as the ones found in Whitley Lake and Salterns. Tasselweed (*Ruppia maritima*) (a salt tolerant freshwater plant) was recorded in Newton Bay, Brands Bay, Ower Bay and off Fitzworth Point in 2015 in Environment Agency water framework directive surveys (Suzy Witt EA, pers comm.) but these are outside of the boundaries of the dredge operations.

Table 14. Seagrass area surveys (Benson and Sotheran, 2015).

Survey Year	Seagrass Area
2015	21.7 Ha
2013	23.3 Ha
2009	22.0 Ha

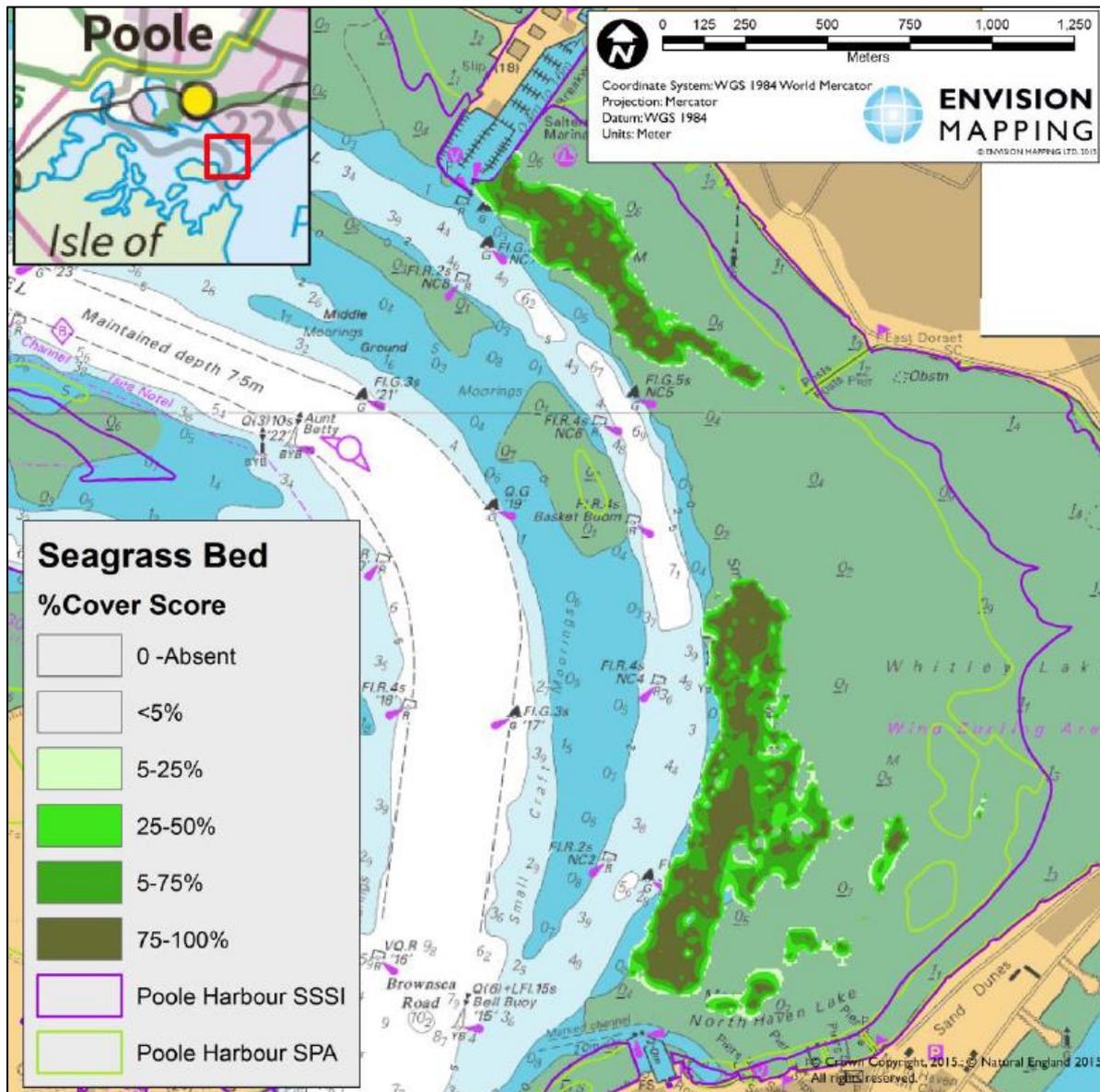


Figure 20. Seagrass beds in the NE area of Poole Harbour, and spatial relations to SSSI and SPA designations, reproduced from (Benson and Sotheran, 2015).



Figure 21. Poole harbour habitats and bird sensitive areas reproduced from (Bennett, 2011).

3.4.5.3 Minor habitats

The only 'Minor' habitats identified below MLW which may be impacted by the fishery are the deeper channel areas which are comprised of biogenic reefs with mixed sediment rock substrata.

The minor habitats of the deepwater channels support fish species and provide roosting areas for overwintering wildfowl. They also contain examples of *Sabella* reefs and the nationally rare sponge *Suberites massa* which was recorded at five locations in 2016 (Baldock, 2017) (Figure 22). The most well developed stands of *Sabella pavonina* recorded during the 2016 survey were located in South Deep to the west of the Goathorn Peninsula (Baldock, 2017). No dredging currently occurs within the deeper water areas due to perceived low abundance of resource in these areas, and due to fouling of the dredge on rocks and biota. The temporal closure of fishing in the winter months from the end of December limits the disturbance to overwintering wildfowl assemblages. The largest threat to these sublittoral habitats is causal anchorages (Baldock, 2017).



Figure 22. Locations of *Suberites massa* from 2016 (red stars) and previous records from 1984-85 (black pentagons). Reproduced from Baldock 2017.

While species diversity is generally low across the whole Harbour it is notable in supporting several rare and restricted marine invertebrates. The sponge *Suberites massa* which is rarely recorded in British waters is locally abundant on suitable substrates. Pollution incidents and turbidity from dredging would also have a direct impact on resident species, while physical disturbance and loss due to shellfish dredging and bait collecting are currently seen as the greatest threat to this habitat.

Statutory monitoring of the SAC intertidal habitats is undertaken on a six-yearly basis by NRW and continues to provide data on habitat extent and infaunal communities in addition to monitoring undertaken to meet Water Framework Directive commitments (pers. Comm., Neil Smith and Mark Kyriacou, NRW; data available on request). The bi-annual fishery cockle surveys do not undertake any recording of additional infaunal species raked up with the cockle but if any extraordinary changes in the habitats occurred these would likely be noted during these surveys. The latest report from SAC statutory monitoring is due mid-2017, too late to be included in this report.

3.4.6 Ecosystem

The FCR version 2.0 considers the ecosystem component to include 'the broad ecological community and ecosystem in which the fishery operates'. For Poole Harbour, the team considers the ecosystem elements that give Poole Harbour its characteristic nature as to be

those defined within the Poole Harbour Management Plan (Bennett, 2011). These are identified as all reedbeds, saltmarshes foreshore and intertidal areas of Poole Harbour encompassed at the seaward end by the bar mouth (North and South Haven Point) and to the lower limits of the rivers to the West (Figure 23). Also included in the ecosystem component are the low lying islands found within the Southern reaches of the harbour and low lying wetland and heath areas which support wintering, migrating and breeding birds (Figure 23).



Figure 23. Extent of the Poole Harbour ecosystem as defined within Poole Harbour Management plan (Bennett, 2011).

Poole Harbour is the second largest natural harbour in the world and is an estuarine system enclosed at the seaward end by a bar mouth with freshwater input from a number of rivers including the River Frome. The estuary is almost 4000 ha in dimension with a micro-tidal regime resultant from the narrow seaward opening (Wardlaw, 2005). Only 45% of harbour water is returned to the harbour at spring tides, less on neaps (22%) and therefore mud and fine sand sediments dominate the habitat structure of the harbour, particularly in the riverine end of the harbour where flushing of sediments is poor (Wardlaw, 2005). Metal pollution in the harbour is largely limited to the Holes Bay area from industrial and sewers sources. No pump-scoop dredge fishing is permitted from Holes Bay.

Environment Agency conducts a monitoring programme under its commitment to the European Water Framework Directive (WFD). Since 2002, no water monitoring site has failed to meet the EU water standards, reflecting the improving waters of the harbour. This monitoring includes water, shellfish and some limited sediment analysis (Wardlaw, 2005; Bennett, 2011). Under the EC Shellfish Waters Directive, Poole Harbour (with the exception of Holes Bay) is designated as a shellfish water (EU, 2006). EC Regulations 853/2004 and 854/2004 set out criteria relating to the commercial production and sale of live bivalve molluscs from classified production areas. These Regulations are law in the UK and are implemented

by means of the The Food Safety and Hygiene (England) Regulations 2013. Poole Harbour as a classified area has water quality and shellfish tissue monitored by the Environment Agency on a monthly basis. The safety of local shellfish for human consumption by seawater and flesh of shellfish sampling is undertaken as part of the National Shellfish Water Classification Programme, and the National Algal Toxin Monitoring Programme. Registration Documents provide a traceability system for shellfish and are an important link in the chain of public health control measures designed to ensure that shellfish placed on the market are safe to eat. A completed Registration Document must accompany each batch of live cockle and clams at all times during transport from the harvesting/production area to the place of destination, such as a purification centre. Registration Documents are available free of charge, on request from Environmental & Consumer Protection Services (<http://www.poole.gov.uk/environment/environmental-health/shellfish-classification/>).

A classification system determines the areas where shellfish can be collected from and how the shellfish have to be treated, after harvesting, to ensure that they are safe to eat (Table 15). Most areas of Poole Harbour are classified as 'B', while the Wareham Channel is classified seasonally as a B during the dredge fishing season and a C during the winter period, and there is one unclassified and one prohibited area (Figure 24, Figure 25):

- Lytchett Bay (prohibited area due to bacteriological contamination)
- Holes Bay (unclassified due to concerns about chemical contamination)
- Poole Bay is no longer classified for bivalve shellfish of any species (no monitoring undertaken)

Table 15. Shellfish classification system gradings.

Classification	Regulation
A	Bivalve molluscs can be harvested for direct human consumption.
B	Bivalve molluscs can be marketed for human consumption after purification in an approved plant or after relaying in an approved class A relaying area or after being subjected to an EC approved heat treatment process.
C	Bivalve molluscs can be marketed for human consumption only after relaying for at least two months in an approved relaying area followed, where necessary, by treatment in a purification centre, or after an EC approved heat treatment process
Prohibited areas	Bivalves molluscs must not be subject to production or be collected.
Unclassified areas	Bivalve molluscs must not be subject to production or be collected.

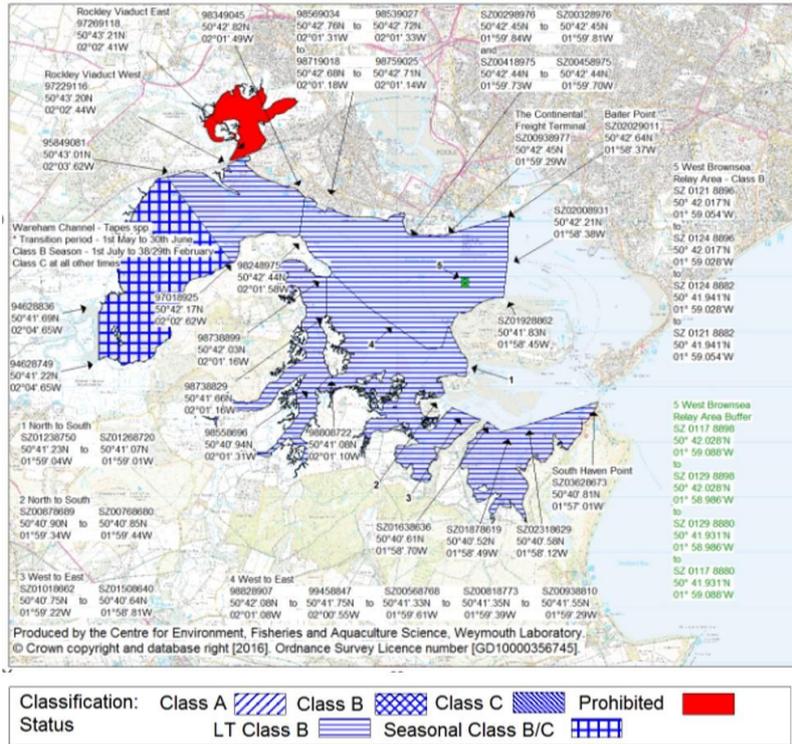


Figure 24. National Shellfish Water Classification Programme for Manila clam in Poole Harbour valid from 10/03/17.

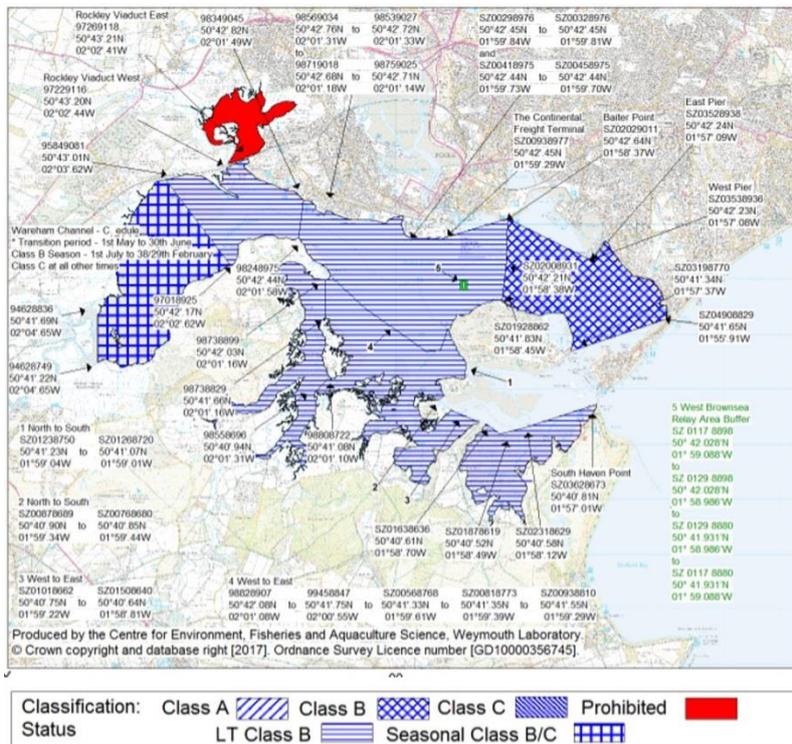


Figure 25. National Shellfish Water Classification Programme for cockle in Poole Harbour valid from 10/03/17.

The UoAs defined in this assessment include >95 % of the commercial wild capture shellfish fishery in Poole Harbour and they remain distinct from any neighbouring commercial wild

shellfish fisheries along the South Coast of the UK. The fishery under consideration here forms part of a larger set of fishery activities in Poole Harbour (Table 16).

Table 16. Other fishing activities in Poole Harbour

Fishing Activity	Species	Regulation and key points
Bait digging	<i>Nereis sp.</i>	MoA bait Digging (SIFCA, 2015g): <ul style="list-style-type: none"> Prohibition in Holes Bay and Seagrass beds (all year), Holes Bay Sensitive Area (seasonal), Bird sensitive areas (seasonal). Backfilling holes Collect bait sustainably and only gather what is needed to ensure future stocks. Avoid taking green spawning worms. Keep to access paths and avoid trampling saltmarsh, reedbeds and other similar habitats. Avoid digging around moorings, slipways and sea walls Be aware of use of torch lights at night which can disturb roosting birds Keep to all local byelaws and regulations Prohibition in seagrass beds (SIFCA, 2016c)
Bait dragging	<i>Nereis sp.</i>	
Shellfish aquaculture	<i>Cerastoderma edule</i> , <i>Ruditapes philippinarum</i> , <i>Ruditapes decussatus</i> , <i>Mercenaria mercenaria</i> *, <i>Venus verrucosa</i> * <i>Ostrea edulis</i> , <i>Magallana gigas</i> <i>*not currently farmed</i>	Poole Harbour Several Order 2015 management plan (SIFCA, 2015h). Poole Harbour Several Order 2015 management plan HRA (SIFCA, 2015a). Poole Fishery Order 2015 (SeaFisheries, 2015)
Commercial and recreational gathering of bivalves	<i>Cerastoderma edule</i> , <i>Ruditapes philippinarum</i> , <i>Ruditapes decussatus</i> , <i>Mercenaria mercenaria</i> , <i>Mytilus edulis</i> , <i>Ostrea edulis</i>	Poole Harbour shellfish hand gathering byelaw (SIFCA, 2016g). <ul style="list-style-type: none"> Closed areas between 01 Nov and 31st March (Bird Sensitive Areas). Fishing for cockle byelaw (SIFCA, 2016g). <i>Italicised</i> section below does not apply to taking cockle by dredge. <ul style="list-style-type: none"> <i>A person must not fish for or take from a fishery a cockle between the 1st February and the 30th April inclusive.</i> <i>A person must not fish for or take from a fishery a cockle except:</i>

Fishing Activity	Species	Regulation and key points
		<ul style="list-style-type: none"> ○ <i>by hand picking, or;</i> ○ <i>b) using a rake or other similar instrument, the head of which does not exceed 305mm in width and has spaces of at least 22.5mm between the teeth; or</i> ○ <i>c) with a dredge provided that:</i> ○ <i>i. the cockle bed is covered by water, and</i> ○ <i>ii. the dredge has a basket not exceeding 460mm in width by 460mm in depth by 300mm high and having spaces of not less than 22.5 mm between the wires or netting forming the basket.</i> <ul style="list-style-type: none"> ● <i>When a dredge being used from a vessel, cockle may only be removed from the dredge after the dredge has been hauled and lifted into the vessel.</i> ● <i>A person must not take from a fishery a cockle which will pass through a gauge having a square opening measuring 23.8mm along each side.</i> ● <i>All species are subject to minimum size limits</i> <ul style="list-style-type: none"> ● <i>Razor clam 10cm,</i> ● <i>Cockle not to fit through a square opening measuring 2.38cm on each side,</i> ● <i>Manila clam 3.5cm,</i> <p><i>Amercian Hard Shelled Clams – Minimum size byelaw (SIFCA, 2016g)</i></p> <ul style="list-style-type: none"> ● <i>No less than 63 mm across longest axis of the shell.</i> <p><i>Temporary closure of shellfish beds byelaw (SIFCA, 2016g)</i></p> <ul style="list-style-type: none"> ● <i>Committee right to close bed based on shellfish population status</i>
Recreational finfish fishing	<i>mullet, bass, flounder, sole plaice skates</i>	Minimum size regulations Bass Nursery Area regulations European Bass Regulations Fixed Engine Regulations
Commercial Finfish fishing	<i>mullet, bass, flounder, sole plaice eels (fyke nets)</i>	fixed, drift, seine and trawl nets, and hand lines Minimum size regulations Bass Nursery Area regulations European Bass Regulations Fixed Engine Regulations

In accordance with FCR 2.0 when a species meets the requirements as an introduced species, which Manila clam does, Annex SD: Introduced Species Based Fisheries (ISBF) framework should be used. Under SD 2.1.1.4 *‘The CAB shall provide a rationale to justify why no measures to prevent further impact on biodiversity are considered necessary in that particular fishery if there are no measures in place.’*

Research conducted on Manila clam in Poole Harbour has concluded that the arrival of Manila clam is not known to have caused any ecological damage; it occupies a similar ecological niche to a variety of other co-occurring infaunal suspension-feeding clams, and plays the same role in benthic-pelagic coupling as these species (included the introduced hard shell clam) and is a prey species to wading birds. Humphreys et al. (2015) concluded: ‘...in Britain the species

is not aggressively invasive and appears not to present significant risk to indigenous diversity or ecosystem function'. Indeed the introduction and establishment of Manila clam in Poole Harbour has been suggested as having significant ecosystem benefits (Caldow et al., 2007). The authors found that the introduction of the Manila clam into European coastal waters has presented the Eurasian oystercatcher (*Haematopus ostralegus ostralegus*) with a new food resource and resulted in a previously unknown predator–prey interaction between these species. The modelled predator-prey relationships in Poole Harbour between Manila Clam and oystercatchers reduced the predicted over-winter mortality of oystercatchers even when the clam densities were comparatively low (2007). Further increases in clam population density are predicted to have even more pronounced effects on the density dependence of oystercatcher over-winter mortality (Caldow et al 2007). The Manila clam is not yet considered to be biotope forming and coexists with other bivalve species (Herbert et al., 2010). Modelling of the larval dispersal of the Manila clam from Poole Harbour highlighted the high retention of the species within the bounds of the harbour. Although through natural transport larvae could theoretically reach the next available habitat within the duration of their pelagic stage, the study indicated that the reduced salinity required by the species would likely limit sufficient retention, recruitment and establishment of new adult populations in other nearby estuaries (Herbert et al., 2011). In support of this no Manila clam have been found in either Christchurch Harbour or the western estuaries of the Solent (Herbert et al., 2011) . Naturalisation in upper Solent regions and other estuaries in Southern England are likely the result of deliberate introduction (Herbert et al., 2011; Humphreys et al., 2015).

Data on the species overall impact on littoral sediment biotopes in northern Europe are not available, although studies in the Venetian Lagoon appear to demonstrate that the species can potentially alter benthic community structure and functioning (Herbert et al., 2010). Given these insights into the clam's ecological role the team argues that no measures are necessary to reduce the clam's ecological impact, but considers a recommendation (see Section 6.4) that biotope structure is continued to be monitored to assess for changes in community structure associated with clam abundance.

3.5 Principle Three: Management System Background

3.5.1 Management overview

Ten English regional Inshore Fisheries and Conservation Authorities (IFCAs), including the Southern IFCA (SIFCA), were established through the Marine and Coastal Access Act 2009 (MACAA) (HM, 2009). The MACAA is the key piece of legislation that gives each Authority the responsibility and powers, within their districts, for the management of the sea fishery resources and for achievement of marine conservation objectives. Together, the districts of the IFCAs comprise English inshore waters between the baseline (generally the high tide mark) and the 6 nm UK territorial limit. The SIFCA district runs from the Devon-Dorset border in the west, to the Hampshire-Sussex border in the east.

The SIFCA Committee is made up of 21 representatives from the relevant constituent authorities (e.g., Dorset Country Council, Poole Borough Council), MMO appointees (e.g., commercial fishermen, recreational fishermen, nature conservation specialists) and partner organisations (i.e., the MMO, NE and the Environment Agency); this main Joint Committee meets quarterly. The Joint Committee also supported by a Technical Advisory Committee, made up of nominated MMO appointees and representatives from the Environment Agency, the Marine Management Organisation and Natural England, which discusses technical measures, evidence and proposed management to make recommendations to the Joint Committee.

The SIFCA has 14 staff members, comprising a Chief Officer, two Deputy Chief Officers, a Finance and Administration lead, an Evidence Officer and nine Inshore Fisheries and Conservation Officers. This team is responsible for day-to-day management of the fisheries within the District, and for advising the Joint Committee and carrying out its instructions and implementing its decisions.

The Poole Harbour Manila Clam and Cockle Fishery takes place entirely within the bounds of Poole Harbour, Dorset, UK (Figure 6), and is managed by the SIFCA. Until 2015, the cockle fishery was managed primarily through a 'Cockle' byelaw, while the Manila clam fishery was managed through a hybrid Several and Regulating Order made under the Sea Fisheries (Shellfish) Act 1967. The wild harvest component of the Manila clam fishery was managed through the Regulating Order, while the private shellfish beds that operate primarily as sites for relaying and ongrowing or stock-piling of shellfish were regulated through the associated Several Order.

When the hybrid Order expired, management of the wild fishery was conferred to the Poole Harbour Dredge Permit Byelaw (SIFCA, 2015b), while the Several Order component is now managed through the Poole Harbour Fishery Order (SIFCA, 2015i).

Other UK and EU legislation is also important with respect to management of the Manila clam and cockle fishery. In particular, the Conservation of Habitats and Species Regulations 2010 (as amended) (HM, 2010a) is of key importance, and requires that the SIFCA exercise its marine conservation functions to secure compliance with the requirements of the EU Wild Birds Directive (EU, 2009). More information on the main legislation of relevance is provided in the following sections.

3.5.2 Poole Harbour Dredge Permit Byelaw

The Poole Harbour Dredge Permit Byelaw (SIFCA, 2015b) is the main legislative tool in place for managing the Manila clam and cockle fishery. A key feature of the Dredge Permit Byelaw is that it requires that fishers obtain an annual permit to use, retain on board, store, or transport the dredge gear on a vessel within Poole Harbour. This has closed loopholes which previously allowed significant levels of illegal, unreported and unregulated (IUU) fishing to take place, because a permit is now required to have the dredge gear on board the vessel, rather than to fish for a particular species. As such, no fisher can illegally target Manila clam and cockle with a dredge whilst claiming they were targeting another species.

The Dredge Permit Byelaw also allows the SIFCA to limit the number of permits made available (currently 45 – (SIFCA, 2017d)), and to charge an annual fee for issuing the permit (currently £500 – (SIFCA, 2017a)). The permit conditions are required to be reviewed every three years, or sooner if necessary (see Section 3.5.11, below), and the current permit conditions imposed on the fishery are specified in the 2017 Poole Harbour Dredge Permit (SIFCA, 2017a); they include:

- Monthly catch reporting via electronic or paper submission, using a specified form, and including details of what was caught (species and quantities) and to whom the catch was sold;
- Only one dredge to be in use per vessel, with one spray bar which must be fixed to the dredge and directed to the back of the dredge, not the seabed;
- Maximum basket size = 460 mm width x 460 mm depth x 300 mm height, excluding poles or attachments;
- Gear to be constructed of rigid bars not less than 18 mm between, with cross pieces (for strengthening) not less than 40 mm between;
- 1 pump to be used, of not more than 15 hp, with a maximum hose and outlet diameter of 3 inches;
- A riddle with 18 mm bar spacing must be used for sorting, with discards to be re-deposited forthwith;
- Fishery is open from 25th May – 23rd December 2017, inclusive;
- No fishing during the season from 6pm-6am, and on all Sundays;
- Some bird-sensitive areas are closed additionally from 25th May – 30th June 2017, and from 1st November – to 23rd December 2017, dates inclusive (Figure 5 and Figure 12).

At present, there are no direct limits on catches for any of the species covered by the Dredge Permit Byelaw, but via the permit conditions the SIFCA has the option to put these in place, should they be required.

Aside from the byelaw and permit conditions, there is also a separate minimum size for each species; 35 mm for Manila clam (EU, 1998) and cockle must not be able to pass through a square gauge of 23.8 mm (SIFCA, 2016h).

3.5.3 Poole Harbour Fishery Order

As noted in Section 3.1.4, one member of the client group holds a tranche 1 lease right (a 'lay') within Poole Harbour under the Poole Harbour Fishery Order 2015 (SIFCA, 2015i). On this lay, Manila clam and cockle taken from Poole Harbour under the Dredge Permit Byelaw are relaid for the purpose of providing product outside of the 25th May – 23rd December fishing season.

The Poole Harbour Fishery Order is a Several Order, in that it allows the SIFCA to lease ground, severed from the public fishery, for aquaculture. The ability to lease ground for aquaculture under a Fishery Order has been in place in Poole Harbour since 1915. The 2015 Order was granted for a further period of 20 years, allowing the Southern IFCA to continue to develop and support the potential for aquaculture in the Harbour over an extended period. There are currently 31 beds leased within the extent of the Order, but the Order also affords the SIFCA the power to explore opportunities for new lays within Poole Harbour, and to re-allocate lays to other sub-leasees if an existing leasee does not meet their obligations under the Order (SIFCA, 2015i).

Under the Management Plan for the Order (SIFCA, 2017e), each sub-leasee is required to provide the SIFCA with a business plan outlining how the ground will be used, and an accompanying biosecurity plan. This information is used in the overarching biosecurity plan produced by the SIFCA which outlines the types of activities occurring within the Order extent, any potential biosecurity risks, inspection procedures and mitigation for the movement, laying and removal of sea fisheries resources within the area.

For any leased ground allocated, a number of standard management measures are applied. These include:

- Maximum 16.5 m vessel length overall (unless permitted within an allocated lease area in accordance with written dispensation from the SIFCA);
- Minimum size restrictions apply to species also subject to wild fisheries in the Harbour (as for the fishery under the Dredge Permit Byelaw, Manila clam = 35 mm, cockle must be unable to pass through a square opening measuring 23.8 mm on each side);
- Removal of shellfish can only be undertaken by specific individuals named in the business plan or in possession of a written permission which must be countersigned by the SIFCA.

Under the MACAA, the SIFCA has the power to enforce the Order and, whilst enforcing the Order, IFCA Officers have common enforcement powers (i.e., as laid out in Chapter 2 of the MACAA, including power to board and inspect vessels and marine installations, power to enter and inspect premises, powers of search and examination, power to record evidence of offences, power to require name and address, etc.).

3.5.4 Conservation of Habitats and Species Regulations 2010 (as amended)

The SIFCA is a Relevant Authority for European Marine Sites (EMSs) under the Conservation of Habitats and Species Regulations 2010 (HM, 2010a). With respect to the EU Birds Directive, the SIFCA is required to ensure that fisheries do not damage, disturb or have an adverse effect on the birds and supporting habitats for which European Marine Sites, including

Poole Harbour SPA, have been designated and legally protected. The Regulations require that the SIFCA exercise its functions, which are relevant to marine conservation, to secure compliance with the requirements of the Directive.

In this regard, the SIFCA has adopted Defra's Revised Approach of reviewing potential impacts of commercial fishing activities upon EMSs. This has entailed undertaking a risk assessment, with those fishing activities deemed likely to cause an adverse effect on an EMS, regardless of intensity, being subject to permanent spatial closure byelaws. This has been the case for towed bottom fishing gears and some hand gathering activities, for example as detailed in the SIFCA's 'Bottom towed fishing gear byelaw' (SIFCA, 2013a).

In order to proceed within an EMS, all other fishing activities are required to be taken through a site-specific assessment of impacts, known as a Habitats Regulation Assessment (HRA), which assesses the potential impact of the activity, and any mitigation that is required through management to ensure that there is no adverse effect on the EMS. The HRAs are reviewed and must be confirmed by Natural England (NE) in their role as a Competent Authority under the Regulations 2010, where they must 'secure compliance' with the European Habitats Directive 1992 and the Wild Birds Directive 2009 (NE, 2016).

The HRAs for the Dredge Permit Byelaw 2017-18 fishery (SIFCA, 2017d) and the Poole Harbour Fishery Order 2015 (SIFCA, 2015i) describe the site and its condition, the relevant fishery and likely significant effects that result, potential in combination effects with any other relevant activities, the mitigation and management approach to ensuring no significant effects result from the activities, and the conclusion of the HRA (i.e., that the fisheries can proceed or not). The HRAs for fisheries undertaken in the SIFCA district are available from the SIFCA website (http://www.southern-ifca.gov.uk/useful-documents#EMS_Assessments).

3.5.5 Other important legislation

The EU Common Fisheries Policy (EU, 2013) underpins fishery management in Europe; with very few exceptions, any UK national and local fisheries legislation is required to be more restrictive than measures specified under the CFP.

In addition to responsibilities under the Conservation of Habitats and Species Regulations 2010, in common with other IFCAs, the SIFCA is a Relevant Authority under the Water Framework Directive (England and Wales) Regulations 2003 (HM, 2003) and the Marine Strategy Framework Directive (EU, 2008). These Directives establish frameworks for community action in marine environment and water quality policy, and require that aquatic ecosystems and wetlands meet 'good' status by 2015, and that marine ecosystems achieve 'good environmental status' by 2020. The IFCAs, including the SIFCA, are considered to be delivery partners in achieving these objectives, through the sustainable management of fishing activities.

The Sea Fisheries (Shellfish) Act 1967 (HM Government 1967) is the legislation through which Fishery Orders can be made, which sever the public right to fish for shellfish in inshore waters. The IFCA was required to apply to Defra to introduce the Poole Harbour Fishery Order in 2015, before being confirmed by the Secretary of State (SIFCA, 2015i).

The SIFCA also has a number of other byelaws which are relevant to fishing activities within Poole Harbour, including the 'Prohibition of Gathering (Sea Fisheries Resources) in Seagrass Beds Byelaw' (which limits fishing practices in seagrass beds), the 'Poole Harbour Shellfish

Hand Gathering Byelaw' (which prohibits hand gathering in certain parts of Poole Harbour over winter months), and the 'Fishing for Cockle Byelaw' (which stipulates a closed season, size limit and limits fishing practices for hand gathering, the size limit also applying to the dredge fishery). The SIFCA's byelaw booklet includes a complete list of all byelaws (SIFCA, 2016a)).

3.5.6 Objectives, and strategies to achieve objectives

3.5.6.1 Overarching objectives

The MACAA established the IFCA's in place of Sea Fisheries Committees, and gave each IFCA the responsibility and powers to manage the fisheries in their district.

In summary, sections 153 and 154 of the MACAA require IFCA's to:

153) Manage the exploitation of sea fisheries resources in its district, in doing so it must:

- Seek to ensure that the exploitation of sea fisheries resources is carried out in a sustainable way,
- Seek to balance the social and economic benefits of exploiting the sea fisheries resources of the district with the need to protect the marine environment from, or promote its recovery from, the effects of such exploitation,
- Take any other steps which in the authority's opinion are necessary or expedient for the purpose of making a contribution to the achievement of sustainable development,
- Seek to balance the different needs of persons engaged in the exploitation of sea fisheries resources in the district.

154) Seek to ensure that the conservation objectives of any Marine Conservation Zone (MCZ) in the district are furthered.

Under section 177 of the MACAA, the SIFCA is required to produce an Annual Plan (SIFCA, 2016i), which forms part of the evidence based management process and allows local bodies, local communities and key delivery partners the opportunity to see the issues that the IFCA are facing in the coming year and the ways in which they will work towards resolving those issues.

The SIFCA annual plan specifies the overall vision for all IFCA's, as follows:

"Inshore Fisheries and Conservation Authorities will lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry."

Under the IFCA's' vision, and linked to the high level objectives as outlined in the UK Marine Policy Statement (HM, 2011), five success criteria were then identified for each of the IFCA's, as follows (SIFCA, 2016i):

- (Achieving a sustainable marine economy): IFCA's are recognised and heard, balancing the economic needs of the fishery whilst working in partnership and engaging with stakeholders;

- (Ensuring a strong, healthy and just society): IFCA implement a fair, effective and proportionate enforcement regime;
- (Living within environmental limits): IFCA use evidence based and appropriate measures to manage the sustainable exploitation of sea fisheries resources and deliver marine environmental protection within their districts;
- (Promoting good governance): IFCA have appropriate governance in place and staff are trained and professional;
- (Using sound science responsibly): IFCA make the best use of evidence to deliver their objectives.

The SIFCA annual plan (SIFCA, 2016i) identifies outcomes, indicators and actions for each of the success criteria. For example, and related to the Poole Harbour fishery, under the third success criterion, an identified outcome is:

“The IFCA will develop Fisheries Management Plans for priority species where appropriate. Shared objectives will be developed with identified partners; actions identified and best practice reflected so that management makes a contribution to sustainable development.”

The associated indicator or this outcome is:

“SC3G: Progress made in relevant Fisheries Management Plan areas, including Maximum Sustainable Yield commitments, will be noted in the IFCA’s Annual Report.”

And actions associated with this indicator are then identified for 2016/2017, including:

“We will consolidate our management of shell fishing and aquaculture in Poole Harbour through both the biosecurity plan and a fisheries management plan.”

As noted under Section 3.5.11, the SIFCA provides an annual report against performance (e.g., SIFCA (2016j)); this report is required by the MACAA, and highlights progress against the success criteria and associated outcomes, indicators and actions; more details are provided below.

3.5.6.2 Fishery specific objectives

Under the Conservation of Habitats and Species Regulations 2010 (HM, 2010a), the SIFCA is required to exercise its functions to secure compliance with the requirements of the EU Wild Birds Directive (EU, 2009). In essence, the SIFCA is required to ensure that the fisheries it manages do not damage, disturb or have an adverse effect on the birds and supporting habitats for which Poole Harbour has been designated. The HRA document for the Dredge Permit Byelaw 2017 fishery identifies the following objectives (SIFCA, 2017d):

- Provide a network of areas where there is little or no noise and visual disturbance and sediment disturbance including; bird sensitive areas, areas where declines in some bird species have been observed that are likely to be in part attributable to site-specific pressures, areas where sediment recovery is likely to be slow;
- Exclude or manage intensity where high levels of sediment disturbance could result in release of contaminants;

- Manage shellfish dredging throughout the Harbour in a way that minimises its impact on prey availability and disturbance, for example through restrictions in the number of permits, the design of the pump and dredge used and restrictions in the timing of when the fishery should take place;
- Ensure measures are taken to protect habitats (eelgrass) that are potentially sensitive to damage if they are at risk of exposure to shellfish dredging.

In developing the Poole Harbour Dredge Permit Byelaw, the IFCA was required to undertake an impact assessment (SIFCA, 2014). The following objectives were provided as justification for creating the byelaw:

- To introduce effective and robust management for Poole Harbour’s shellfish fisheries.
- To introduce management for Poole Harbour’s shellfish fisheries following the expiry of the Poole Harbour Regulating Order in June 2015.
- To further the conservation objectives of Poole Harbour’s environmentally designated areas through protecting over-wintering and nesting bird populations within Poole Harbour.
- To enhance the environmental, socio-economic and fisheries sustainability of Poole Harbour.

Further, the Poole Harbour Site Improvement Plan (NE, 2014) also provides three associated, ongoing objectives specific to Poole Harbour and the dredge fishery:

- 3F - Assess the impact of shellfish dredging activity on EMS features.
- 3G - Monitor compliance by shellfish dredgers (high risk amber activity) with management measures agreed as a result of the review of shellfish management in Poole Harbour in 2014 and the Bottom towed gear byelaw.
- 3H - Unlicensed fishing activity - Continue to develop joint working to enforce regulation regarding licensing and registration of fishing vessels and licensing of specific activities within the Harbour.

3.5.7 Roles of other organisations

While the SIFCA is the lead authority in management of the Poole Harbour Manila Clam and Cockle Fishery, a number of other organisations are also involved in its wider regulation and management, as well the regulation of other fisheries within the SIFCA District; their fishery-specific roles and responsibilities are set out in Table 17.

Table 17. Roles and responsibilities of other organisations.

Organisation	Role and responsibilities
Borough of Poole	Local Authority Responsible for sampling shellfish for shellfish water classification under the Food Safety and Hygiene (England) Regulations 2013.
Centre for Environment, Fisheries	Executive Agency of Defra. Advises on shellfish movements and non-native species issues.

Organisation	Role and responsibilities
and Aquatic Science (Cefas)	Fish Health inspectorate undertakes routine testing for shellfish waters classification.
Department for the Environment, Food and Rural Affairs (Defra)	UK Government Department. Overall responsibility for fisheries policy and management in English waters. Advises Secretary of State for the Environment.
Environment Agency	Executive non-departmental body of Defra Water quality monitoring One representative has statutory seat on the SIFCA
Food Standards Agency	UK Government Department Overall responsibility for classification of shellfish production areas under the Food Safety and Hygiene (England) Regulations 2013.
Marine Management Organisation (MMO)	Executive non-departmental body of Defra Plans, licenses and regulates marine activities around the coast of England, including shellfish fisheries in English waters outside the 6 nm Territorial Limit, and all finfish fisheries. Acts as a policy and legal advisor on the IFCA byelaw making process, including through undertaking quality assurance. Appoints individuals to the IFCAs Some overlap in role with IFCAs, for example in collecting landings data; however, roles of IFCA and MMO clearly set out in MACAA. One representative has statutory seat on the SIFCA
Natural England	Executive non-departmental body of Defra Statutory advisor for nature conservation in England and English waters (to 12 nm). Signs off Habitats Regulations Assessments One representative has statutory seat on the SIFCA
Poole and District Fishermen's Association	Represents the fishers engaged in the fishery, as well as representing commercial fishing interests in Poole. The PDFA supports its Members in their commercial endeavours and represents their views at a local and national level.
Secretary of State for the Environment	Minister responsible for Defra Confirms (and can revoke) byelaws.

Section 174 of MACAA places a duty on an IFCA to cooperate with its neighbouring IFCAs and other public authorities that are involved with regulation or enforcement in the sea within its District.

3.5.8 Rights of access

3.5.8.1 Poole Harbour Dredge Permit Byelaw

Access to the Poole Harbour Manila Clam and Cockle Fishery is limited by permit, and there are currently 45 permits available under the Poole Harbour Dredge Permit Byelaw (SIFCA, 2017a). The SIFCA has published an access policy for the permits; the stated purpose of the access policy is *“To enable the Authority to fulfil its obligations under s. 153(2) of the MACAA”*, which relates to the sustainable exploitation of sea fishery resources, balancing social and economic needs with the need to protect the marine environment, and to balance the needs of different fishers within the district (SIFCA, 2016k).

The current access criteria for the 2016-17 season specify that permits will be offered to applicants who demonstrate that they were the holder of a dredge permit for the 2015-16 season, and that the permit holder had paid for and used that dredge permit by 30th June 2016. Applicants must also demonstrate that they hold the majority of the shares in a named, relevant fishing vessel, or that they are a shareholder in a vessel and have been nominated in writing by the majority shareholder to act as the permit holder.

For fishers who did not hold and use a permit during the 2015-16 season, applications can still be made by fishers who are majority shareholders in a vessel (or that they are a shareholder in a vessel and have been nominated in writing by the majority shareholder to act as the permit holder), if their vessel is ordinarily berthed within the area governed by Poole Borough Council or Purbeck Borough Council, and is they have commercially fished legally for shellfish within the area of Poole Harbour during the period 1st January 2010 to 1st January 2012.

Where the number of applicants / fishers who did not hold and use a permit during the 2015-16 season exceeds the number of permits available, a ballot is held at random until all available permits have been awarded (SIFCA, 2016k).

Access criteria under the Dredge Permit Byelaw may be reviewed at any time, although the access policy notes that in undertaking such a review, the IFCA would have regard to its duties and obligations under sections 153 (management of inshore fisheries) and 154 (protection of marine conservation zones) of the MACAA (SIFCA, 2016k).

3.5.8.2 Poole Harbour Fishery Order

When the Poole Harbour Fishery Order was introduced in 2015, Tranche 1 sites (including the single lay covered under this assessment) were offered to existing rights holders under the previous Poole Fishery Order 1985 (SIFCA, 2017e) based on a consideration of the duties of the Authority under section 153 of the Marine and Coastal Access Act 2009. Rights holders were required to produce a business plan (with information detailed including the quantities of different species to be grown and harvested, the methods of harvesting and the people who would be working on the site), a biosecurity plan (detailing the processes that would be employed to ensure practices are consistent with best practice and legal requirements), and a safety plan. If those that were offered the opportunity to hold a lay under tranche 1 were not able to meet these criteria, then access rights could be withdrawn.

The management plan for the Fishery Order also highlights that other sites may be identified within Poole Harbour in future. An extension of leased ground (under 'Tranche 2', or any further tranches), new sites would not be identified without undertaking extensive consultation with key local authorities including Poole Harbour Commissioners, and all other locally interested parties, including those engaged in the wild fisheries, the Royal Yachting Association and any other persons engaged in the Harbour (SIFCA, 2017e).

3.5.9 Consultation and decision-making processes

The structure of an IFCA as established in the MACAA is inherently consultative, since as well as members representing relevant constituent authorities and partner organisations, the

members of the IFCA must include '*persons acquainted with the needs and opinions of the fishing community of the district*' and 'persons with knowledge of, or expertise in, marine environmental matters' (HM, 2009). In the case of the SIFCA, these individuals include commercial and recreational fishers, nature conservation specialists and various academic and independent marine scientists .

Under the first identified IFCA success criterion ('IFCAs are recognised and heard, balancing the economic needs of the fishery whilst working in partnership and engaging with stakeholders'), the SIFCA has authored a communication plan (SIFCA, 2013b). This specifies engagement objectives (e.g., '*raise awareness*', '*identify issues*', '*seek shared solutions*') and guiding principles (e.g., '*be generous in sharing our data and information*'), and highlights how and why the IFCA should engage with stakeholders, with initial targets set for 2013 (e.g., '*to provide media training to all relevant staff*', '*to post, in a timely manner, agendas, papers and minutes on our website*', '*to use social media in interesting and engaging way*'). The commitment to continue implementing the plan is made in the SIFCA Annual Plan (SIFCA, 2016i).

For day-to-day management, the IFCA actively encourages consultation through the SIFCA website (www.southern-ifca.gov.uk), where IFCA Committee meeting agendas and minutes are published, together with relevant news items and other documents such as the annual plan, annual report, the research and evidence plan and the HRAs produced for different fisheries. Members of the public may attend SIFCA meetings, but may be required to leave for some agenda items if the item is likely to result in the disclosure of exempt information (as defined in Schedule 12A, Part 1 of the Local Government Act 1972), for example, information relating to an individual, information relating to the financial or business affairs of any particular person, or information relating to any action taken or to be taken in connection with the prevention, investigation or prosecution of crime.

The IFCA also publishes a newsletter periodically, and has an active social media presence, with a Twitter account (@SouthernIFCA) and a Facebook page (www.facebook.com/SouthernIFCA/). The IFCA may also participate actively in public events, such as the Lymington Seafood Festival (http://www.lymingtonseafoodfestival.co.uk/C:\Users\admin01\Dropbox\3156_Poole_Hbr\Report\www.lymingtonseafoodfestival.co.uk). In addition, the IFCA has an office in Poole, Dorset which operates in business hours, and IFCA Officers are available to discuss fishery issues whilst on patrol at sea or ashore within the district.

The MACAA gives the IFCAs the power to make byelaws, as well as emergency byelaws (HM, 2009). DEFRA have provided guidance on best practice in making byelaws, to be read alongside MACAA (DEFRA, 2011). As well as setting out roles and responsibilities of statutory bodies, it provides for a presumption of non-regulatory over regulatory solutions where possible, evidence-based decision-making, provision for regular review and for repeal of byelaws which are no longer required. It requires that byelaws are specific in what they cover (area, fishery, period), consultative, proportionate and precautionary as required.

For key management decisions such as putting in place a byelaw, there is extensive consultation, including stakeholder consultation meetings and consultation with other statutory bodies (Natural England and MMO); an environmental/socio-economic impact assessment is also required (SIFCA, 2014). The final draft must be approved by DEFRA before it can be implemented. Detailed guidance on consultation for byelaws is provided in DEFRA 2011.

3.5.9.1 Poole Harbour Dredge Permit Byelaw

A review of operation and effectiveness is an ongoing requirement of the Dredge Permit Byelaw, with such a review needing to be undertaken at least every three years. The review is required to follow a set procedure, commencing with a consultative meeting with permit holders. In making any changes to the permit conditions or permit fees, the IFCA is required to have regard to:

- The Authority's duties and obligations under sections 153 and 154 of the MACAA
- Any available scientific and survey data;
- Any statutory advice given by Natural England;
- Any Habitats Regulations Assessment;
- An Impact Assessment relating to any proposed changes to additional permit conditions or permit fees;
- Any feedback received from consultation with permit holders under subparagraph (a) (Section 11, SIFCA (2015b)).

The first review of the permit conditions (after one year) has just been completed.

3.5.9.2 Poole Harbour Fishery Order

In creating the new Poole Harbour Fishery Order, the SIFCA conducted an extensive consultation process from December 2013 to August 2014. This included the establishment of a Poole Order Working Group to facilitate the application process for the Order and the drafting of the management plan, the creation of a questionnaire, and regular meetings and drop-in sessions with stakeholders to garner opinion. Details of the consultation process undertaken are provided in the management plan (SIFCA, 2017e).

3.5.10 Monitoring and enforcement

The conditions of the Dredge Permit Byelaw and the responsibilities and measures of the Poole Harbour Fishery Order are enforced by the SIFCA.

The SIFCA has nine warranted Inshore Fisheries and Conservation officers (IFCOs), who collectively patrol the district at sea and ashore. Five of the IFCOs are employed primarily for enforcement duties. Sea-borne activities within Poole Harbour are facilitated through the deployment of the Fisheries Protection Vessel (FPV) Endeavour, which is based in Poole Harbour. The FPV Endeavour was designed specifically for enforcement, with a shallow draft and screen and A-frame that can be laid flat so that access can be gained to all parts of the Harbour at any state of the tide. The SIFCA also has three other FPVs that can be deployed for monitoring and compliance throughout the district (one catamaran based in Southampton, and two rigid-hulled inflatable boats that are based at either end of the district but can be trailered to different locations as needed).

The SIFCA has published a compliance and enforcement framework, detailing the regulations that the IFCA manages, its enforcement powers and potential enforcement actions (including administrative penalties), the risk-based framework that is employed to categorise and rank

risks, and providing an overview of the intelligence-led approach to enforcement (SIFCA, 2013c).

The compliance and enforcement framework is accompanied by a compliance risk register (SIFCA, 2015j). This document highlights the specific risks that are considered to be presented by each of the SIFCA's fisheries, and the overall risk level as calculated by multiplying the potential impact to the stock, marine environment or to management of an activity occurring (scale of 1 [no immediate threat] to 5 [extreme threat]) by the likelihood of the activity occurring (scale of 1 [remote likelihood] to 5 [common occurrence]). The results of the 2015 risk assessment for the Poole Harbour Manila Clam and Cockle Fishery are presented in Table 18.

Table 18. Overall risk level for different regulatory considerations across the year in the Poole Harbour Manila Clam and Cockle Fishery (Risk = impact x likelihood Yellow = monitor, red = act).

Species /Feature	Risk	Regulatory Considerations	J	F	M	A	M	J	J	A	S	O	N	D
Clam	1. Removal of undersized	Minimum size / EU Technical Conservation	20	20	20	20	20	20	20	20	20	20	20	20
Eel grass	2. Fishing in a prohibited area	Byelaws – Prohibition on using dredge/Bottom towed gear	15	15	15	15	15	15	15	15	15	15	15	15
Shellfish	2. Fishing in a prohibited area (permanent closures)	Byelaw – Poole Harbour Dredge Permit condition	16	16	16	16	16	16	16	16	16	16	16	16
Shellfish	3. Fishing in a prohibited period (18:00 - 06:00)	Byelaw – Poole Harbour Dredge Permit condition					20	20	20	20	20	20	20	20
Shellfish	4. Fishing within a prohibited season	Byelaw – Poole Harbour Dredge Permit condition	20	20	20	20	20							
Shellfish	4. Fishing within a prohibited season (specified areas)	Byelaw – Poole Harbour Dredge Permit condition	16	16	16	16	16	16					16	16
Shellfish	5. Fishing with a prohibited method / technique	Byelaw – Poole Harbour Dredge Permit condition					8	8	8	8	8	8	8	8
Shellfish	6. Fishing with a prohibited gear configuration / quantity	Byelaw – Poole Harbour Dredge Permit condition					8	8	8	8	8	8	8	8
Shellfish	9. Fishing without a permit	Byelaw – Poole Harbour Dredge Permit condition	16	16	16	16	16	16	16	16	16	16	16	16
Cockle	1. Removal of undersized	Byelaw – cockle	12	12	12	12	12	12	12	12	12	12	12	12

Using the risk-based approach enables the SIFCA to identify strategic priorities for enforcement, informing the development and delivery of operational plans and helping to ensure that resources are deployed in the most effective manner. Where the risk level is assessed as being moderate (i.e., scores 5-15), the SIFCA’s approach could be to monitor the issue or to address it through methods such as education or self-regulation, whereas if the risk level is assessed as being high (i.e., scores 16-25) then the SIFCA is committed to acting to address the issue through enforcement and/or further management intervention (SIFCA, 2013b).

It is noted that the risk register available online was last updated in 2015. Prior to the introduction of the Dredge Permit Byelaw in 2015, the Manila Clam and Cockle Fishery suffered from a relatively high level of IUU fishing, in part because the fishery occurs within a

sheltered area, is easily accessible and can be profitable, but also because it was not an offence to carry and deploy a pump scoop dredge within Poole Harbour. As noted previously, this loophole has now been addressed through the Dredge Permit Byelaw, and this is reflected in the compliance data for the fishery, which show that the number of IUU fishing levels have dropped dramatically since 2015 (Figure 26).

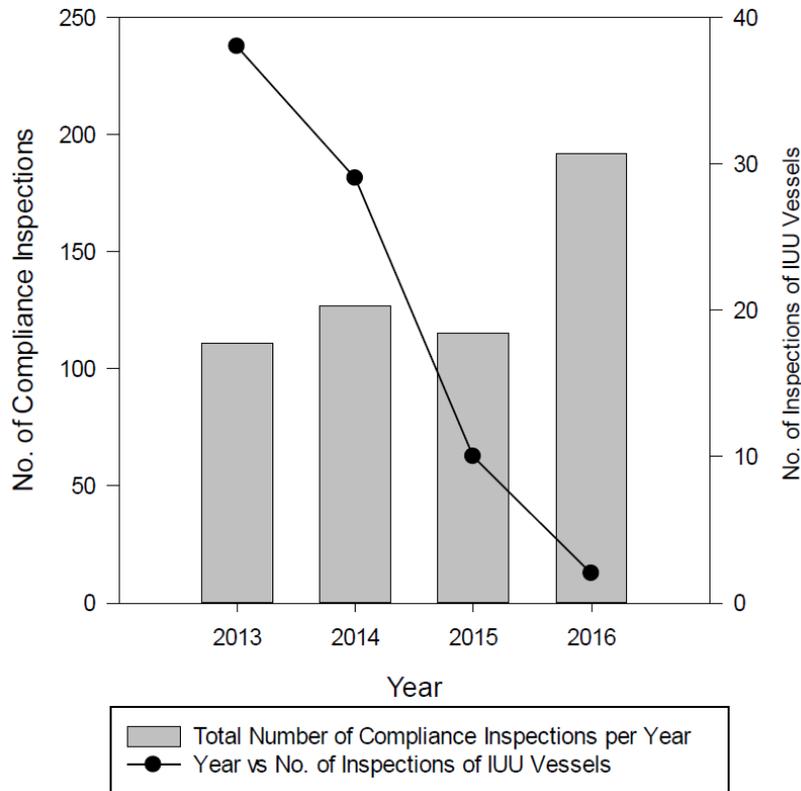


Figure 26. Total number of compliance inspections carried out by the Southern IFCA for 2013-2016 for the Poole Harbour Manila Clam and Cockle Fishery, and corresponding number of those inspections which were of IUU vessels (source: SIFCA (2017f)).

Summary enforcement statistics are published by the SIFCA (SIFCA, 2017f). In addition to the drop in IUU fishing as demonstrated in Figure 26, these show that there was an increase in detected illegal activity in 2015 when the Dredge Permit Byelaw was first introduced, but that an enforcement surge was then undertaken, which resulted in a lower level of serious non-compliance being detected in 2016, as evidenced by the number of prosecutions taken forward (Table 19). It is noteworthy that all prosecutions taken forward since 2013 have been successful.

Table 19. Summary enforcement statistics for the Poole Harbour Manila Clam and Cockle Fishery (source: SIFCA (2017f)).

	Inspections	Action taken where prosecution reports are generated					
		Verbal warning	Written warning	Fixed administrative penalty	Prosecution (all successful)	No further action	Prosecution pending
2013	111	2	2	1	2	0	0
2014	127	8	1	0	4	0	0
2015	115	3	2	0	8	1	0
2016	192	7	4	0	2	1	1

The SIFCA has also established a good working relationship with other relevant authorities, including the Police, the Environment Agency and the MMO, undertaking joint patrols and coordinating activity through a Tactical Coordination Group (SIFCA, 2017f).

In undertaking their role, IFCOs are trained to take evidence as required under the Police and Criminal Evidence Act 1984 (HM, 1984), and have recently been equipped with body cameras to aid in evidence collection (SIFCA, pers. comm.). Under common enforcement powers specified in the MACAA, IFCOs have the power to seize and detain or remove items found on relevant premises, or items which appear to be in a person’s possession or control, including fishing gear and even vessels.

Sanctions for non-compliance then vary with the severity of the offence, as outlined in the SIFCA compliance and enforcement framework (SIFCA, 2013b):

- Verbal warnings – issued when a minor infringement is detected
- Official written warnings – issued where an offence has been committed but it is not appropriate to implement formal prosecution proceedings (noting that proceedings may be initiated if the same behaviour occurs again),
- Simple caution – may be offered if no financial gain is identified from an offence (noting that formal prosecution proceedings may be initiated if the caution is not accepted),
- Financial administrative penalties (FAPs) – issued for the first or second offences of particular types (e.g., undersized fish or technical gear measures). The maximum fine specified for first offences taken forward as a FAP varies with the offence type from £250 to £2,000, and this doubles for the second offence.
- Prosecution – may be taken forward for repeated offences of particular types (see FAPs, above), and where serious infringements are detected (noting that the IFCA is required to be satisfied that there is a clear public interest in taking proceedings, and where there is a realistic prospect of conviction.) The maximum fine for a byelaw offence is £50,000 (noting that if a vessel is used in a byelaw offence, under Section 153 of the MACAA, the master, the owner and the charterer (if any) of the vessel are each guilty of an offence).

3.5.11 Review and audit of the management system

3.5.11.1 Review of the SIFCA

The overall management of inshore fisheries around the coast of England was subject to a very extensive and detailed review process through the development of the MACAA. This review process resulted in a fundamental refocusing of the management approach, with more emphasis for IFCAs on marine conservation and sustainability overall than previously under the Sea Fishery Committees.

As noted in Section 3.5.6 above, the IFCAs are required through the MACAA to provide an Annual Plan, and then an Annual Report which provides a summary of performance against the Plan. The Annual Reports are submitted to the Secretary of State for review. Under Section 183 of the MACAA, every four years following the creation of the IFCAs, the Secretary of State must then lay a report before Parliament on the conduct and operation of the IFCAs. The Secretary of State's first report following the creation of the IFCAs has been published (DEFRA, 2015).

The reporting process undertaken included a three-month public call for evidence, which was undertaken from 22nd April to 1st August 2014, giving an opportunity for members of the public and interested parties to help Defra understand how each individual IFCA worked to meet its duties and/or demonstrated the local leadership that might be expected of a statutory regulator (DEFRA, 2015). It is noteworthy that the call to evidence section of the report specific to the SIFCA stated *"Respondents commented that IFCA staff are pragmatic, professional and make good efforts to engage with stakeholders."*

3.5.11.2 Review of the fishery-specific management system

As part of the process of implementing the MACAA, each IFCA has been required to undertake a review of existing byelaws with the aim of removing duplicate or redundant byelaws, and making sure that any gaps are covered (DEFRA, 2015). The SIFCA has been undertaking this process, and the Dredge Permit Byelaw is a product of that review.

The Byelaw now requires that permit conditions are reviewed every three years, or sooner if necessary (the procedure to be followed in this case is set out in the byelaw, but also see Section 3.5.9), allowing the SIFCA to impose conditions as considered appropriate relating to matters including:

- Catch restrictions and reporting;
- Gear types;
- Gear construction and restrictions;
- Spatial and temporal restrictions;
- The fitting of specified equipment to vessels.

The Dredge Permit Byelaw conditions have been reviewed twice since the introduction of the byelaw, firstly in early 2016 as it was agreed with stakeholders, during consultation prior to the implementation of the byelaw, that the Authority would review the suitability of permit conditions following the first dredge season. The first review resulted in small changes to the

permit validity period, the fishing season, the cost of the permit, inclusion of definitions, a deadline for catch returns and a requirement to identify the buyer and a requirement to sign on receipt of the permit. The second review was carried out in December 2016 as a result of permit holders requesting a review of the timing of the season. The review resulted in no change to the timing of the season. The current permit conditions imposed on the fishery are specified in the 2017-18 Poole Harbour Dredge Permit, as detailed in Section 3.5.2, above (and see SIFCA (2017a)).

The Poole Harbour Fishery Order was created in 2015, with an extensive consultation process having been undertaken, as outlined in Section 3.5.9, above. The Order now specifies that the IFCA must:

- Annually, before 1st July, review the management plan and publish an updated version of the plan on its website.
- At least 4 weeks before the date of such publication, notify the interested parties in writing of any proposed changes to the management plan.
- Before publishing the updated management plan, take account of any representations it receives in writing from any interested party on the plan or any proposed changes to it.

Where ‘interested party’ means (a) the Secretary of State; (b) Natural England; (c) any person likely to be affected by the management plan or changes to it; or (d) any person whom the Authority considers may be the owner, lessee or occupier of the fishery area (SIFCA, 2015a).

The first annual review of the management plan occurred in 2016 with no changes.

4 Evaluation Procedure

4.1 Harmonised Fishery Assessment

There is no harmonisation required for this fishery.

4.2 Assessment Methodologies

This full assessment was undertaken in accordance with the MSC Fisheries Certification Requirements (FCR) version 2.0 for assessment procedure with version 2.0 scoring. Adjustments to the Default Assessment Tree were not required.

The MSC Full Assessment Reporting Template v2.0 V 1.0 (16th March 2015) was used to produce the report.

The Risk-Based Framework (RBF) was used in this assessment to score Performance Indicators 1.1.1 (Target species stock status) and 2.2.1 (Secondary species outcome).

Stakeholder comments and team responses are included in

4.3 Evaluation Processes and Techniques

4.3.1 Site Visits

The site visit for the fishery was held on 08/03/17 until 10/03/17 at the Thistle Hotel, Poole and at the SIFCA offices in Parkstone, Poole with the RBF conducted on the 08/03/17. The P1 (Julian Addison), P2 and team leader (Hugh Jones), P3 (Rob Blyth Skyrme) experts attended the site visit. One request for a meeting from a stakeholder was also conducted during the site visit outside of the formal agenda. During the site visit the assessment team were shown around one of the vessels used in the fishery; this included access to the gear used and the work flow on-board. Table 20 contains a list of all the attendees who took part in the site visit including the RBF workshop.

Table 20. Site visit attendees and RBF attendance.

Name	Representing	RBF attendance
Hugh Jones	MEC	✓
Julian Addison	MEC	✓
Rob Blyth Skyrme	MEC	✓
Philippa Kohn	MSC	✓
Sarah Birchenough	SIFCA	✓
Simon Pengelly	SIFCA	✓
Robert Clark	SIFCA	
Sue Burton	Natural England	✓
Tom Russell	PDFA - Clam/Cockle Permit holder	✓
John Ballett	PDFA - Clam/Cockle Permit holder	✓

Name	Representing	RBF attendance
Mike Bailey	PDFA - Clam/Cockle Permit holder	✓
John Humphreys	SIFCA/PDFA	✓
Neil Richardson	SIFCA	✓
Robert Ayling	SIFCA	✓
Luke James	Clam/Cockle Permit holder	✓
Chris Joy	PDFA - Clam/Cockle Permit holder	✓
Gary Wordsworth	PDFA	

4.3.2 Consultations

As well as the individuals met during the site visit, consultations were conducted with the following individuals:

Person	Consultation
Gary Wordsworth	<u>09/03/17 – in person with Assessment team and SIFCA staff present at the site visit.</u> Information gathering regarding the introduction of Manila clam into the Harbour and the function of the species in the Harbour in relation to fishing effort.
Carolyn Steele (Dorset Environmental Records Centre Manager)	Email exchanges in regard to Dorset species records.
Sue Burton (Natural England)	Email exchanges in regard to Dorset species records, SPA's and maps.
Leo Clarke and Dr Roger Herbert (PhD student and Research Scientist, Bournemouth University)	<u>19/06/17 – in person with Hugh Jones</u> Consultation on the outputs of Mr Clarke's PhD thesis and the implications of the research.

Stakeholder submissions were received from Dorset Wildlife Trust, Natural England and the MSC. The details of which are recorded in Appendix 5 Stakeholder submissions

4.3.3 Evaluation Techniques

a) Media announcements: MEC announced the fishery on the MSC website, through a MSC press release, which targeted a wide range of stakeholders within the sustainable seafood industry.

b) Methodology for information gathering: Review of data and documentation.

c) Scoring process: Scoring was partly completed during the site visit (10/03/17) and finalised afterwards following further information collection. Final scores were agreed across assessors via email.

The scores were decided as follows:

Note that where there is only one scoring issue in the SG, the issue can be partially scored – In this case the team used their judgement to determine what proportion of it was met, e.g. at the 100 level, a small part met = 85, about half met = 90, nearly all met = 95.

Table 21. Example scoring process

How many scoring issues met?	SG60	SG80	SG100
All	60	80	100
Half	FAIL	70	90
Less than half	FAIL	65	85
More than half	FAIL	75	95

d) Decision rule for reaching the final recommendation:

A UoA cannot be certified if:

- the weighted average score for all PIs under each Principle is less than 80 for any of the three Principles
- any individual scoring issue is not met at the SG60 level, contributing to a score of less than 60 on any PI.

The aggregate score for each Principle is the sum of the weighted score of each Performance Indicator within that Principle.

e) Scoring elements

For Principle 1, only one scoring element was considered in each UoA: Manila clam in Poole Harbour (UoA 1) Cockle in Poole Harbour (UoA 2). There were no scoring elements that were considered in the outcome PIs under primary species in Principle 2. For secondary species the main elements considered was Manila clam in the cockle UoA and cockle in the Manila clam UoA. Minor elements in both UoAs were grouped infauna species identified in Table 6. For ETP species, birds protected under EU directives, seals and seahorses are considered. For the Habitats outcome PI the main habitats scoring element considered were intertidal mud and sand habitats, for VMEs Reedbeds, Saltmarshes and subtidal channels (>3 m).

Table 22 Scoring elements. Considered in both UoA unless otherwise stated

Component	Scoring elements	Main/Not main	Data-deficient or not
Target species	UoA1: Manila clam in Poole Harbour	N/a	Yes
	UoA2: Cockle in Poole Harbour		Yes
Primary	None	N/a	N/a
Secondary	Manila clam (UoA2)	Main	Not data deficient RBF used
	Cockle (UoA1)	Main	Not data deficient
	Native clam	Not main	Not data deficient
	American hard-shell clam	Not main	Not data deficient
	Pacific oyster	Not main	Not data deficient
	Green Crab	Not main	Not data deficient
ETP	Birds protected under EU directives	N/a	Not data deficient
	Seals	N/a	Not data deficient
	Seahorses	N/a	Not data deficient
Habitats	Intertidal mud and sand	Main	Not data deficient
	Seagrass	Not main - VME	Not data deficient
	Reedbeds	Not main - VME	Not data deficient
	Saltmarsh	Not main - VME	Not data deficient
	Subtidal channels (>3m)	Minor	Not data deficient

f) RBF

The risk based framework (RBF) was announced for this fishery for the following Performance Indicators:

- PI 1.1.1 (Stock status outcome): There is no formal or empirical stock assessment for either Manila clam or cockle which offered stock status reference points. Therefore a Consequence Analysis (CA) and Productivity Susceptability Analysis (PSA) were undertaken for this P.I.
- P.I. 2.2.1 (Secondary species outcome): Due to the appearance of the two target species appearing in the retained portion of each other UoAs, the RBF was required. Under this P.I. the PSA alone was undertaken.

Annex SA was used for all other PIs with consideration of annex SD for Manila clam. Stakeholders were identified from previous Poole Harbour reports, advice from the local fisheries management authority (SIFCA) and research by MEC. Each stakeholder was informed by MEC of the intended use of the RBF prior to the site visit and accordingly invited to the site visit (Table 23). Additionally SIFCA emailed members of the Poole & District Fishermen's Association and processors requesting participation in the assessment process.

Stakeholders were presented with research evidence for the Manila clam and cockle including evidence of fecundity, age of maturity, life span and density dependent growth (Jensen, 1993; Carter, 2003; Tyler-Walters, 2007; Cesar and Frid, 2009; Malham et al., 2012; Southall and Tully, 2014).

At the site visit, Dr Julian Addison provided the stakeholders with a presentation of the functionality of the RBF and how it would be applied to the UoAs. Discussions regarding the Productivity scoring were undertaken using the background information provided above as a data source. Agreement was reached across the stakeholders and assessors in relation to each of productivity scores for Manila clam and cockle (Appendix 2.2 Productivity-Susceptibility Analysis (PSA)). The susceptibility scoring was undertaken as a general discussion using Table PF5 of the FCR as the base document and after discussion selection of the susceptibility score was only accepted after agreement across all stakeholders. For 'areal overlap' there was an initial split in opinion between stakeholders as to whether the fishery should be medium or high susceptibility, but under this scenario it was agreed that a precautionary level of 'high susceptibility' should be used. For 'gear selectivity' there was unanimous support for 'low susceptibility' across stakeholders as testing of variable dredge bar widths was used to inform the permit restrictions on the fishery with avoidance of undersize/immature animals the driver in the tests. 'Encounterability' and 'Post-capture Survival' were default score 'high susceptibility' in accordance with Table PF5 for target species (Appendix 2.2 Productivity-Susceptibility Analysis (PSA)).

Consequence Analysis (CA) was also undertaken as a general discussion using Table PF3 of the FCR as the base document and after discussion, selection of the subcomponent was only accepted after agreement across all stakeholders.

Table 23. Stakeholders contacted prior to the site visit.

Stakeholder
Poole & District Fishermen's Association
Poole Harbour Commissioners
RSPB
Shellfish Association of Great Briatin
Dorset Wildlife Trust
Poole Yacht Club
Poole Harbour Association
Marine Management Organisation (MMO)
Natural England
WWF UK
Dorset Oysters
Earlmaur Shellfish
Othniel Oysters Ltd.
River Teign Shellfish ltd
Solent Fish
Viviers (UK) Ltd
Wessex Water

5 Traceability

5.1 Eligibility Date

The Eligibility Date has been set as the date of certification, **pending the successful outcome of this evaluation**. Product caught by *Permit holders under the Southern IFCA Poole Harbour Dredge Permit byelaw targeting Manila clam and cockle in Poole Harbour by pump scoop dredge* after the date of certification will be eligible to enter further chains of custody.

5.2 Traceability within the Fishery

The Dredge Permit Byelaw is the principal mechanism by which regulation of shellfish gathering by dredge is regulated. It requires that fishers obtain an annual permit to use, retain on board, store, or transport the dredge gear on a vessel within Poole Harbour and has closed loopholes which previously allowed significant levels of illegal, unreported and unregulated (IUU) fishing to take place. This is because a permit is now required to have the dredge gear on board the vessel, rather than to fish for a particular species. As such, no fisher can illegally target Manila clam and cockle with a dredge whilst claiming they were targeting another species. Dredge fishing comprises of >95 % of the target species landed in Poole Harbour and all fishers are part of the UoAs. Interaction between the dredge vessels and hand pickers of Manila clam and cockle is highly unlikely given that hand pickers operate at low water, while dredging occurs at high water and vessels are unable to reach land, except at the dock, because of the shallow tidal nature of the harbour.

Manila clam and cockle landed by dredge on the vessel once sorted for size are stored in open baskets on the deck of the vessel and covered with hessian sacks. Catch is landed daily. Product from the UoAs can be traced back to fisher and date of capture from daily landing records recorded by the fisher and required by the permit conditions imposed by SIFCA and records forwarded to the MMO. Permit holders must submit monthly catch returns recording daily catch of each species and fishing effort in terms of number of hours fished, and to whom any part of the catch was sold. As fishers are registered sellers who sell their catch to registered buyers, the landings are recorded through the registration of buyers and sellers (RBS) legislation, and these figures form the basis of official landings statistics produced by the MMO. Cross-checking by IFCA officers of landings figures collected by MMO with those recorded on IFCA log books provides evidence that there is no systematic misreporting of landings data. SIFCA officers can board vessels and inspect catch and byelaw compliance and permit conditions.

There are no other Manila clam or cockle fisheries within operating distance of the vessels used by the fishery. The boats are harbour vessels not suited to open sea travel and the nearest cockle and Manila clam fishery is > 20 miles away.

First point of sale for the fishery is the fishermen's dock in Poole, or occasionally Lytchett Bay or 'Ridge' on the Wareham River. Typically, processors meet the fishers at these slipways, although some fishers are also processors. At the dock the fisheries officers can inspect catch/licences etc. and in accordance with FCR G7.12.1.5, it is recommended that the certificate of this fishery ends once the catch is removed from the vessel. This will prevent any mixing of the UoAs' product with product collected by processors from other clam areas and already held in vans. Chain of Custody (CoC) should be required to start from the point of unloading, rather than from the first sale by the fishery. This is recommended, firstly, on the

basis of some licencees holding processing facilities and because, secondly, it will prevent any mixing of the UoAs' product with product collected by processors from fisheries outside the UoA and already held by the wholeseller en-route to the holding facility.

Table 24. Traceability Factors within the Fishery

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
Potential for non-certified gear/s to be used within the fishery	The Unit of Assessments (UoA) for this fishery specifically include only dredges operated by permit holders authorised by SIFCA. The enclosed area (Poole Harbour) and small scale of the fishing grounds, together with SIFCA held records of licensed vessels and regular SIFCA monitoring operations, mean the risks of a non-certified gear being used is extremely low. The physical and temporal separation of hand fishers from dredge fishers makes transfer of product highly unlikely, plus the catch of hand fishing is usually outside of the dredge season. Pump scoop dredges are viewed as the most effective fishing method for Manila clams and cockles and therefore use of other gears is unlikely. SIFCA officers can board vessels and inspect dredges for dredge dimension requirements. Overall risk is considered very low.
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	None - The geographical isolation of the fishery, intertidal and daylight nature of this fishery mean there is no likelihood of vessels to fish below the UoC. The small boats used by the UoAs are not suitable for use outside of the harbour mouth and the next nearest sources of clams and cockle are too far to be accessed or be economically viable. Therefore the ability of the vessels to leave the fishery and fish elsewhere is negligible.
Potential for vessels outside of the UoC or client group fishing the same stock	Very low – SIFCA maintains an active presence in the harbour, monitoring vessels, gear and permits. The RBS legislation and monitored landing points minimise risk of non-registered fishers landing product. Prosecutions for failure to comply in the last few years have acted as a major deterrent to unlicensed fishing.
Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)	There is no risk of mixing before the first change of ownership when the product is landed. The fishery occurs entirely within Poole Harbour. Encounters between handpickers and licenced vessels is highly unlikely given that hand pickers require low water to work and vessels fish similar areas at high water and handpicking typically occurs out of season. Also the volume of handpicked catch is low and therefore unlikely to significantly benefit licencees. Native clam (<i>Ruditapes deccusatus</i>) and American hard-shelled clam (<i>Mercenaria mercenaria</i>) may also be landed by the client fishery but these species are not part of the certificate. They are separated from the Manila clam and cockle whilst sorting is taken on-board each vessel and placed in separate baskets prior to landing.

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of Custody)	There is no risk because there is no at sea processing.
Risks of mixing between certified and non-certified catch during transshipment	No transshipment occurs within this fishery and so the risk is seen as minimal.
Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required	No other risks have been identified. Product is landed directly and chain of custody will be required from the point of landing onwards. Risk of mixing of certified and non-certified product here is therefore minimal.

5.3 Eligibility to Enter Further Chains of Custody

The assessment team have considered the risks of traceability in the fishery and have determined that product landed permit holders of the Southern IFCA Poole Harbour Dredge Permit is eligible after the date of certification to enter further certified chains of custody and may be sold with the MSC ecolabel. All parties listed in Table 3 are eligible. Product landed from vessels not included on the list in Table 3 will not be eligible to enter into further chains of custody.

Product may be landed at fishermen’s dock, Lytchett Bay or the ‘Ridge’ on the Wareham River.

Further chain of custody certification will be required for certified product from direct at the point of landing. There are a number of processors, who are not part of this certificate, which are currently taking product from this fishery and could be eligible for further chains of custody, they were identified at the time of the site visit and are listed in Table 25.

Table 25. Poole Harbour processors

Processor	Details
Dorset Oysters	3 Benson Rd, Poole BH17 0GB
Earlmaur Shellfish	earlmaurshellfish@live.co.uk
Othniel Oysters Ltd.	Othniel Oysters Ltd, 38 Bowden Rd Poole
River Teign Shellfish Ltd	Weeks Linney, Parrs Lane, Chudleigh, Newton Abbot TQ13 0PA
Solent Fish	5 Marshlands Rd, Portsmouth PO6 1ST
Viviers (UK) Ltd	The Camber Docks, White Hart Rd, Portsmouth PO1 2JX

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

Not applicable.

6 Evaluation Results

6.1 Principle Level Scores

Table 26. Final Principle Scores

Final Principle Scores		
Principle	Score UoA1	Score UoA2
	Manila clam	Cockle
Principle 1 – Target Species	82.7	82.7
Principle 2 – Ecosystem	94.7	94.7
Principle 3 – Management System	92.5	92.5

6.2 Summary of PI Level Scores

Table 27. Principle level scores

Principle	Component	Wt	Performance Indicator (PI)		Wt	Score UoA1	Score UoA2
						Manila clam	Cockle
One	Outcome	0.33	1.1.1	Stock status	0.5	88	88
			1.1.2	Stock rebuilding	0.5	-	-
	Management	0.67	1.2.1	Harvest strategy	0.25	85	85
			1.2.2	Harvest control rules & tools	0.25	80	80
			1.2.3	Information & monitoring	0.25	75	75
			1.2.4	Assessment of stock status	0.25	80	80
Two	Primary species	0.2	2.1.1	Outcome	0.33	100	100
			2.1.2	Management strategy	0.33	100	100
			2.1.3	Information/Monitoring	0.33	100	100
	Secondary species	0.2	2.2.1	Outcome	0.33	80	80
			2.2.2	Management strategy	0.33	100	100
			2.2.3	Information/Monitoring	0.33	85	85
	ETP species	0.2	2.3.1	Outcome	0.33	100	100
			2.3.2	Management strategy	0.33	95	95
			2.3.3	Information strategy	0.33	70	70
	Habitats	0.2	2.4.1	Outcome	0.33	95	95
			2.4.2	Management strategy	0.33	95	95
			2.4.3	Information	0.33	100	100
Eco-system	0.2	2.5.1	Outcome	0.33	100	100	
		2.5.2	Management	0.33	100	100	

Principle	Component	Wt	Performance Indicator (PI)		Wt	Score UoA1	Score UoA2
						Manila clam	Cockle
			2.5.3	Information	0.33	100	100
Three	Governance and policy	0.5	3.1.1	Legal &/or customary framework	0.33	100	100
			3.1.2	Consultation, roles & responsibilities	0.33	100	100
			3.1.3	Long term objectives	0.33	100	100
	Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.25	80	80
			3.2.2	Decision making processes	0.25	80	80
			3.2.3	Compliance & enforcement	0.25	80	80
			3.2.4	Monitoring & management performance evaluation	0.25	100	100

6.3 Summary of Conditions

Two performance indicators scored below 80 and thus received a condition, as summarised in Table 28. For further detail on the conditions as well as the corresponding client action plan, see Appendix 3.

Table 28 Summary of Conditions

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/NA)
1	By the third annual surveillance, UoA removals should be regularly monitored at a level of accuracy and coverage consistent with the harvest control rule.	1.2.3	NA
2	By the third annual surveillance, a template for recording ETP interactions will be implemented within the fishery allowing the management authority to monitor fishery impacts.	2.3.3	NA

6.4 Recommendations

The assessment team made the following non-binding recommendations:

1. That an accurate estimate of the level of recreational landings should be obtained.
2. That biotope structure of Poole Harbour continues to be monitored to assess for changes in community structure associated with Manila clam abundance.
3. To establish a research program to assess the long-term recovery of the sediment community (in particular *Abra tenuis* and *Peringia ulvae*) and sediment structure (scar retention).

4. It is noted that the risk register (SIFCA, 2015j) is now very likely to be out of date, given the introduction of the byelaw in 2015 and the apparent steep decline in IUU fishing within the Dredge Permit fishery. It is therefore recommended that the risk register is updated as soon as possible to better reflect the current situation.
5. Some non-compliance continues to occur within the fishery, but this is not considered by the Assessment Team to comprise 'systematic' non-compliance. It is recommended that the SIFCA provide evidence at each annual surveillance audit, updating the enforcement and compliance statistics, and demonstrating that there is no evidence of systematic non-compliance.

6.5 Determination, Formal Conclusion and Agreement

Following consideration of all stakeholders' inputs and comments to the Public Comment Draft Report (PCDR), the fishery assessment team concludes that the fishery should be certified against the MSC standard. This determination remains a recommendation pending the completion of the formal objections process and the final certification decision by the MEC official decision making entity.

(REQUIRED FOR PCR)

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| <ol style="list-style-type: none">1. The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation. |
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Appendix 1 Scoring and Rationales

Principle 1 scoring rationales

Evaluation Table for PI 1.1.1 – Stock status

Note: unless otherwise indicated, the scores presented under Principle 1 reflect those for both UoAs.

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue	SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment		
Guide post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
Met?	N/A	N/A	N/A
Justification	<p>The Risk Based Framework (RBF) has been used to score this PI, because there are no reference points available, either derived from analytical stock assessments or using empirical approaches.</p> <p>The results of the RBF assessment were (see Appendix 2 for more detail): - UoA 1 Manila clam: CA Score: 80 PSA Score: 95 UoA 2 Cockle: CA Score: 80 PSA Score: 95</p> <p>The MSC CRv2.0 Table PF7 states that when the CA score is 80 or 100, and the PSA score is ≥ 80, the overall score awarded shall be at the midway point between the CA and PSA scores.</p> <p>A score of 88 is therefore awarded for this PI for UoA 1 Manila clam A score of 88 is therefore awarded for this PI for UoA 2 Cockle (Note that the overall score has been rounded to the nearest integer)</p>		
b	Stock status in relation to achievement of MSY		
Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
Met?		N/A	N/A
Justification	The Risk Based Framework (RBF) has been used to score this PI.		
References	See Appendix 2 Risk Based Framework (RBF) Outputs of this report.		
Stock Status relative to Reference Points			
	Type of reference point	Value of reference point	Current stock status relative to reference point

Reference point used in scoring stock relative to PRI (S1a)	N/A	N/A	N/A
Reference point used in scoring stock relative to MSY (S1b)	N/A	N/A	N/A
OVERALL PERFORMANCE INDICATOR SCORE:			UoA1 88
			UoA2 88
CONDITION NUMBER (if relevant):			N/A

Evaluation Table for PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the 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.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	N/A		N/A
	Justification	As the RBF is used to score PI 1.1.1, Table PF1 of MSC CRv2.0 states that this PI is not scored.		
b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
	Met?	N/A	N/A	N/A
	Justification	As the RBF is used to score PI 1.1.1, Table PF1 of MSC CRv2.0 states that this PI is not scored.		
References		MSC Certification Requirements v2.0, Annex PF, paragraph PF1.1.2.		
OVERALL PERFORMANCE INDICATOR SCORE:				N/A
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue	SG 60	SG 80	SG 100	
a	Harvest strategy design			
	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Y	Y	N
Justification	<p>The harvest strategy for the Manila clam and cockle fisheries in Poole Bay is underpinned by a hierarchy of EU, national and local management legislation. Management of all UK fisheries must be consistent with the objectives of the EU's Common Fisheries Policy (CFP) and the minimum size of Manila clam is set by EU Regulation 850/98. Whilst fisheries management within England is the responsibility of the Department for Environment, Food and Rural Affairs (Defra), for whom the Marine Management Organisation (MMO) is responsible for the collection of landings data and the enforcement of regulations, the Marine and Coastal Access Act 2009 (MACAA) delegates powers to Inshore Fisheries and Conservation Authorities (IFCAs) to manage local inshore fisheries. The harvest strategy for Manila clam and cockle fishery in Poole Bay is set out in the Southern IFCA's Poole Harbour Dredge Permit Byelaw (2015), for which one of the policy objectives is to <i>"introduce effective and robust management for Poole Harbour's shellfish fisheries"</i>.</p> <p>Regulations for the Manila clam and cockle fisheries include a limited entry permit scheme, closed areas and seasons and no fishing at night and on Sundays, which reduce the susceptibility of the stock to fishing by reducing the areal overlap of the fishery with the Manila clam and cockle stocks. Detailed gear specifications for the pump scoop dredge gear include maximum dimensions, minimum bar spacing on the dredge and the riddle on the sorting table on the deck of the boat and minimum sizes for both species, all of which contribute to reducing the susceptibility of the stock through improving selectivity of the gear and reducing post-capture mortality. The closed areas are particularly important as they provide full protection from fishing of a significant component of the stocks. In addition there are many grounds which are not suitable for dredging but which have a large abundance of clams (UoA 1), and dredging may be tidally restricted. These areas in which fishing is restricted provide a significant buffer to any impact that fishing may have on the stocks of Manila clam and cockle by reducing the areal overlap of the fishery with the Manila clam and cockle stocks. There are no TACs or other catch restrictions, but a key element of the Permit Byelaw is that Southern IFCA has the power to introduce additional regulations under the byelaw, e.g. catch restrictions, spatial and temporal restrictions or revisions to fishing gear specifications.</p> <p>In addition to the set of regulations governing the fisheries, the harvest strategy includes regular monitoring of the fishery through completion of monthly catch returns by all permit holders, annual fishery-independent stock surveys, and</p>			

		<p>monitoring and enforcement of the regulations by both Southern IFCA and the MMO.</p> <p>The elements of the harvest strategy all work together to achieve stock management objectives, and under the Permit Byelaw, the Southern IFCA has the power to respond (if necessary through an emergency byelaw) to changes in the state of the stocks as identified by changes in catch rates from the fishery or changes in abundance or size structure identified during the fishery-independent surveys. The SG 80 is met, therefore.</p> <p>One of the key elements of the harvest strategy is the implementation of closed areas which provide significant protection to the stock of Manila clam and cockle from the effects of fishing. However these closures have been implemented to meet the requirements of shellfish-eating birds or on environmental health grounds, and therefore the harvest strategy has not been designed wholly to achieve stock management objectives. The SG100 is not met.</p>		
b	Harvest strategy evaluation			
	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	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.
	Met?	Y	Y	N
	Justification	<p>The monitoring of the status of the fishery through monthly catch returns from permit holders, MMO landings statistics and the annual fishery-independent stock surveys demonstrate that Poole Harbour supports a high biomass and wide size range of both Manila clam and cockle (SIFCA, 2015d, 2016f) providing evidence that the harvest strategy is working. Unlicensed fishing was previously one of the main compliance problems undermining the effectiveness of the harvest strategy. Officially recorded landings were low, but most landings were unrecorded and were occurring in unclassified areas and there was a lack of compliance with the MLS. Inspections of vessels in 2016 showed that the level of IUU fishing has dropped dramatically since the introduction of the new Byelaw (see Figure 26). There is therefore evidence that the MCS strategy, a key component of the Harvest Strategy, is now achieving its objectives and the SG80 is met.</p> <p>The new harvest strategy has been in place for two years only, and a full evaluation of the performance of all elements of the harvest strategy through, for example, a Management Strategy Evaluation (MSE) has not been undertaken yet. The SG100 is not met.</p>		
c	Harvest strategy monitoring			
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Y		
	Justification	Monitoring of the stock status of Manila clam and cockle stocks is undertaken through the collection of data on catch, hours fished and CPUE from permit holders'		

		monthly returns and through annual fishery-independent stock surveys which provide an index of abundance and recruitment of both target and bycatch species. In addition to monthly catch records required under SIFCA's Permit Byelaw, landings information is collated by MMO through the Registration of Buyers and Sellers scheme. Cross-checking of the two sets of catch records by SIFCA did not identify any inconsistencies. Both on-board and shore-based inspections of vessels, their gear and catches ensures compliance with the regulations on gear specification, minimum landing size and closed areas and seasons. There is therefore a robust monitoring system in place which demonstrates that the harvest strategy is working. The SG60 is met.		
d	Harvest strategy review			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Y
	Justification	The harvest strategy was thoroughly reviewed following the setting up of the new Permit Byelaw by Southern IFCA which required consultation with stakeholders and statutory bodies such as the MMO and Natural England, and also included an environmental/socio-economic impact assessment. Key changes to the harvest strategy incorporated in the new Permit Byelaw were the requirement for the vessel to have a pump scoop dredge on board (i.e. specifying the gear type rather than the target species) and the new byelaw now covers the whole Harbour. As a result of these changes, the IFCA consider that almost all illegal fishing has been stopped, providing evidence that the harvest strategy has been improved. A review of the Permit Byelaw conditions involving stakeholders was carried out in 2016 after the byelaw had been in place for one year. A further review is planned in three years' time and will consult with a wider range of stakeholders. There was a major review of the fishing season in both January 2016 and January 2017, and the consultation involved Natural England with the HRA signed. There is also continuous review of the harvest strategy through the IFCA's Technical Advisory Group, which acts as a sounding board for management proposals and is chaired by an expert on the Manila clam and its fishery. The harvest strategy is clearly reviewed on a regular basis and there is evidence that such reviews have led to improvements in the harvest strategy. The SG100 is met.		
e	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Sharks are not a target species in this fishery, so this scoring issue is not scored.		
f	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are	There is a biannual review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are

			implemented as appropriate.	implemented, as appropriate.
Met?	Not relevant		Not relevant	Not relevant
Justification	<p>The gear specifications for the pump scoop dredge set out in the Permit Byelaw, particularly the minimum bar spacing of 18mm, ensure that cockle under the minimum size are not caught at all in the gear, and Manila clam under the minimum size are caught only in very small numbers. Once on board the vessel, the catch is sieved on the sorting table which must incorporate a riddle with a bar spacing of 18mm. Any undersized Manila clam are immediately returned to the sea as close to the point where they were captured. The Client has previously reviewed the effectiveness of a range of measures to minimise unwanted catches of Manila clam and cockle, and concluded that under the current regulations there are minimal catches of undersized Manila clam and cockle. The Client's review is reproduced in Appendix 9 Review of alternative measures.</p> <p>The assessment team concluded that there is no unwanted catch of the target stocks and that SIF need not be scored.</p>			
References	<p>EU (1998, 2013), SIFCA (2015b, 2015d, 2016a, 2016f), HM (2009) Permit Byelaw monthly catch returns</p>			
OVERALL PERFORMANCE INDICATOR SCORE:				85
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Y	Y	N
	Justification	<p>In the absence of formal target and limit reference points, it is not possible to determine the status of the Manila clam and cockle stocks relative to biologically-based limits for sustainability, and the RBF was therefore used to score PI 1.1.1. It is appropriate therefore to consider how the harvest control rules manage the fishery to ensure that the susceptibility scores (for areal overlap, vertical overlap, selectivity and post capture mortality) remain acceptable. When the RBF is used it is not necessary for exploitation rates to be reduced as reference points are approached.</p> <p>The MSC Guidance for the Fisheries Certification Requirements states that - "CABs should assess the extent to which there are management tools and measures in place that are consistent with ensuring that susceptibility of the target species to removal is no higher than that which would cause the risk to the target species to be above an acceptable risk range. Measures could be spatial, temporal, or changes to gear overlap.</p> <p>Assessments should also consider measures in place to respond to changes in the fishery, for example, by reducing susceptibility of target species when the fishery is not heading in the direction of its objectives."</p> <p>(MSC FCR Guidance v2.0, paragraph GSA2.5.2 – 2.5.5)</p> <p>The main harvest control rule for the Manila clam and cockle fishery that maintains the susceptibility at acceptable levels is the control of exploitation rates through a limited entry permit scheme. Additional regulations on gear specifications and minimum size ensure that the selectivity of the gear is such that only Manila clam and cockle above the size at maturity are caught and there is minimal capture of individuals below the minimum size. The areal overlap of the fishery with the distribution of the population for both species in Poole Harbour is approximately 30%, so the harvest strategy ensures that a significant component of the stock is invulnerable to fishing. In addition there are significant areas of Poole Harbour where dredging is not practical (rocks, deeper channels), protected areas where dredging is prohibited (including those closed for environmental reasons (e.g. potential impact on shellfish-eating birds)) and the fishery is typically self-confined to areas where there are commercial densities of Manila clam and cockle. Areal</p>		

		<p>overlap therefore remains low and restrictions on Sunday and night time fishing and closure of the fishery from December through to May all ensure that susceptibility of the Manila clam and cockle fisheries remains at an acceptable level.</p> <p>The requirement for 18mm bar spacings on both the dredge and on the riddle on board ensures that there is negligible post-capture mortality of unwanted catch.</p> <p>If monitoring of the fishery provides an indication that the susceptibility of the stock has increased, the Permit Byelaw provides a mechanism by which management measures can be introduced to ensure that exploitation rates and susceptibility are reduced. The Southern IFCA's powers include the ability to introduce emergency byelaws (which do not require approval from Defra) and temporary closure of shellfish beds byelaw in circumstances where immediate action is required. The SG80 is met.</p> <p>The ecological role of the stock is not taken into account and therefore SG100 is not met.</p>		
b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		Y	N
	Justification	<p>The main uncertainties underlying the Manila clam and cockle stocks in Poole Harbour are variation in recruitment and natural mortality. Recruitment varies both spatially and temporally within the Harbour, and both species can suffer high natural mortality rates particularly early in their life history after settlement of the spat. The harvest strategy restricts the level of exploitation through a limited entry permit scheme, there are gear specifications and minimum landing sizes which ensure that individuals of both species are not captured below the size at maturity, and closed areas and seasons which ensure that a significant component of the stock is not vulnerable to fishing, ensuring that any reductions in recruitment are not as a result of high levels of exploitation in the fishery.</p> <p>Monitoring of the stock through monthly catch returns and annual stock surveys permits the identification of any reductions in recruitment which are likely to impact on the stock, and the IFCA has powers to implement management measures to mitigate the impact of any reductions in recruitment. The harvest control rules are likely to be robust to the main uncertainties. The SG80 is met. The harvest control rules do not take into account the ecological role of the stock, and as the Permit Byelaw is only two years old, there is as yet no evidence that the HCRs are robust to the main uncertainties. For example, there is no evidence yet that specified Manila clam or cockle beds have been closed in the event of local depletion of the stock. The SG100 is not met.</p>		
c	HCRs evaluation			
	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate	Available evidence indicates that the tools in use are appropriate and effective in achieving the	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.

		and effective in controlling exploitation.	exploitation levels required under the HCRs.	
	Met?	Y	Y	N
	Justification	Catch rates from monthly permit returns and MMO landings, and estimates of abundance and recruitment from the annual stock surveys show that the tools of limited entry, MLSs combined with gear specifications, permanently closed areas and daily and seasonal closures all combine to ensure that the susceptibility of the Manila and cockle stocks to fishing does not increase. Recent survey information showed that abundance of both species in permanently closed areas was higher than in fished areas, and for Manila clam there was a significant change in stock structure at the end of the season in fished areas that was not mirrored in the closed areas. The SG80 is met therefore. The Permit Byelaw was only implemented in 2015, so it is too early to conclude that there is clear evidence that the tools are effective in ensuring that susceptibility of the Manila clam and cockle fisheries is not compromised. The SG 100 is not met.		
	References	MSC Fisheries Certification Requirements Version 2.0 SIFCA (2015b, 2016a, 2016f, 2017a) Permit Byelaw monthly catch returns		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Y	Y	Y
	Justification	<p>Data are collected from both fishery-dependent and fishery-independent sources. Comprehensive information on stock structure and recruitment variability, along with spatial and temporal variations in density, for both Manila clam and cockle in Poole Harbour is available through the fishery-independent stock surveys conducted annually by Southern IFCA, and biological information and stock productivity are well known through a major research programme on Manila clam and cockle. Management assumes that the Manila clam and cockle within Poole Harbour comprise of a single stock, with no larvae dispersion into the Harbour from outside sources. The fishery is managed through a limited entry permit scheme. There is no requirement for vessels to carry Vessel Monitoring Systems (VMS) or other position recorders, but the standard VMS with position recorded every two hours would not be very informative with fishing trips lasting only a few hours and because of the very localised distribution of the fishery. However the Southern IFCA does maintain a sightings database, and results from the sightings database provide a good illustration of the distribution of the pump scoop dredge fishery within Poole Harbour demonstrating that the fishery occurs in the same areas of the harbour each year. Fleet composition and activity are therefore well understood.</p> <p>Permit holders must submit monthly catch returns recording daily catch of each species and fishing effort in terms of number of hours fished, and to whom all parts of the catch were sold. As fishers are registered sellers who sell their catch to registered buyers, the landings are recorded through the registration of buyers and sellers (RBS) legislation, and these figures form the basis of official landings statistics produced by the MMO. Cross-checking by IFCA officers of landings figures collected by MMO with those recorded on IFCA log books provide evidence that there is no systematic misreporting of landings data. In addition to the dredge fishery, hand-gathering for cockle and clams takes place in the shallow intertidal areas of Whitley Lake/Evening Hill and Rockley Spit, and so UoA removals are thoroughly monitored.</p>		

		<p>In addition to the wide range of fishery information described above, the annual surveys collect information on stock abundance and structure of other mollusc species present in Poole Harbour, and Appropriate Assessments are undertaken by Southern IFCA as part of HRAs for proposed byelaws to ensure that the dredge fishery does not impact on the conservation features of Poole Harbour. Such HRAs provide additional information beyond that required for the current harvest strategy. SG100 is met therefore.</p>		
b	Monitoring			
	Guide post	<p>Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.</p>	<p>Stock abundance and UoA 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.</p>	<p>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.</p>
	Met?	Y	N	N
	Justification	<p>Stock abundance is monitored annually through the Southern IFCA stock surveys, providing information on spatial and temporal variability in stock abundance, stock structure and recruitment which enables the Southern IFCA to implement management changes if necessary. CPUE calculated from permit returns also provides an index of stock abundance. Permit holders must submit monthly catch returns recording daily catch of each species and fishing effort in terms of number of hours fished, and to whom all parts of the catch were sold. As fishers are registered sellers who sell their catch to registered buyers, the landings are recorded through the registration of buyers and sellers (RBS) legislation, and these figures form the basis of official landings statistics produced by the MMO. Cross-checking by IFCA officers of landings figures collected by MMO with those recorded on IFCA log books provide evidence that there is no systematic misreporting of landings data. In addition to the dredge fishery, hand-gathering for cockle and clams takes place in the shallow intertidal areas of Whitley Lake/Evening Hill and Rockley Spit, and MMO provides landings statistics for this component of the Manila clam and cockle fisheries, so UoA removals are thoroughly monitored.</p> <p>Both Manila clam and cockle are sedentary molluscs, and as with all such molluscs, there is potential for local depletion of stocks to occur due to the concentration of fishing effort in areas of high density of Manila clam or cockle, which would increase the susceptibility of the stocks by effectively increasing the areal overlap of the fishery with the stock. Management action may be required, therefore, to close specific beds. Whilst the annual surveys may provide information on spatial variations in stock abundance and recruitment, catch returns from the permit scheme are not spatially disaggregated, and therefore it is not possible to obtain early warning signals of local depletion from the permit returns. IFCA Officers would have to rely upon advice from permit holders either at sea or at the dockside to obtain up-to-date information on local declines in stock. This is a deficiency in the harvest strategy and therefore SG80 is not met, and a condition is raised.</p>		
	Comprehensiveness of information			

c	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		Y	
	Justification	<p>Landings of Manila clam and cockle by permit holders are rigorously monitored through mandatory catch returns, but both species may be harvested either commercially or recreationally by hand-pickers and landings from both these activities are outside the UoA. As fishers are registered sellers who sell their catch to registered buyers, the landings are recorded through the registration of buyers and sellers (RBS) legislation. For Manila clam, landings by hand-pickers recorded by the MMO have ranged from 0 to 8 tonnes, representing a maximum of 3.2% of the total catch of Manila clam in Poole Harbour. For cockle, recorded landings by hand-pickers has ranged from 0 to 1 tonnes representing a maximum of 2.3% of the total catch of cockle. Hand-picking is regulated by the Southern IFCA Poole Harbour Shellfish Hand Gathering byelaw. Recreational fishing is monitored by the IFCA, and although total landings from this sector are considered very low, there is no formal estimate of landings by the recreational sector.</p> <p>Before the introduction of the Permit Byelaw, there were significant illegal landings, the magnitude of which were unknown. However since the implementation of the Permit Byelaw, inspections of vessels fishing by Southern IFCA enforcement officers show that illegal fishing has been virtually eliminated and that illegal landings are very small in comparison with legal landings recorded in monthly permit returns.</p> <p>There is still a Several Order within the Harbour on which clams are relayed and harvested at a later date. These harvests are not part of the UoA. One member of the client group holds one of these tranche 1 lease rights (a 'lay'). On this lay, Manila clam and cockle taken from Poole Harbour under the Dredge Permit Byelaw are relaid for the purpose of providing product outside of the 25th May – 23rd December fishing season. The stock harvested prior to relaying are included in official landings statistics.</p> <p>The assessment team concluded that landings by hand-pickers and recreational fishers are very small in relation to the pump scoop dredge fishery. In addition, the level of IUU fishing has dropped dramatically (Figure 26), although it is possibly too early to conclude that the introduction of the new Byelaw has completely solved the issue. The SG80 is met therefore. However the assessment team recommends that an accurate estimate of the level of recreational landings should be obtained (see Section 6.4).</p>		
References	<p>Caldow et al. (2007), Humphreys et al. (2015), Jensen et al. (2004), Humphreys et al. (2007), Shelagh Malham et al. (2012), SIFCA (2015b, 2016a, 2016b, 2016f, 2017a, 2017c)</p> <p>Permit Byelaw monthly catch returns</p> <p>MMO landings data</p>			
OVERALL PERFORMANCE INDICATOR SCORE:				75
CONDITION NUMBER (if relevant):				1

Evaluation Table for PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue	SG 60	SG 80	SG 100	
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		N/A	N/A
	Justification	As the RBF is used to score PI 1.1.1, Table PF1 of MSC CRv2.0 states that a default score of 80 shall be awarded to this PI.		
b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	N/A	N/A	
	Justification	As the RBF is used to score PI 1.1.1, Table PF1 of MSC CRv2.0 states that a default score of 80 shall be awarded to this PI.		
c	Uncertainty in the assessment			
	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	N/A	N/A	N/A
	Justification	As the RBF is used to score PI 1.1.1, Table PF1 of MSC CRv2.0 states that a default score of 80 shall be awarded to this PI.		
d	Evaluation of assessment			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			N/A

	Justification	As the RBF is used to score PI 1.1.1, Table PF1 of MSC CRv2.0 states that a default score of 80 shall be awarded to this PI.		
e	Peer review of assessment			
	Guide post		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		N/A	N/A
	Justification	As the RBF is used to score PI 1.1.1, Table PF1 of MSC CRv2.0 states that a default score of 80 shall be awarded to this PI.		
References	MSC Certification Requirements v2.0, Annex PF, paragraph PF1.1.2.			
OVERALL PERFORMANCE INDICATOR SCORE:				UoA 1 80
				UoA 2 80
CONDITION NUMBER (if relevant):				N/A

Principle 2 scoring rationales

Evaluation Table for PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are likely to be above the PRI OR If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are highly likely to be above the PRI OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main , to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: Given the methods used by the fishery (pump scoop dredge), available evidence from the stock assessments and the information gathered at the RBF workshop when talking with fishers, there are no main primary species (see 3.4.2) in the fishery; any retention that did occur would be unintentional and negligible. Therefore SG100 is met by default.		
b	Minor primary species stock status			
	Guide post			For minor species that are below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species
	Met?			Y
	Justification	UoA1 and UoA2: Given the methods used by the fishery (Pump scoop dredge), available evidence from the stock assessments and the information gathered at the RBF workshop when talking with fishers, there are no minor primary species (see 3.4.2) in the fishery; any retention that did occur would be unintentional and negligible. Therefore SG100 is met by default.		
References		SIFCA (2015d, 2016f). Site visit		

OVERALL PERFORMANCE INDICATOR SCORE UOA1:	100
OVERALL PERFORMANCE INDICATOR SCORE UOA2:	100
CONDITION NUMBER (if relevant):	N/A

Evaluation Table for PI 2.1.2 – Primary species management strategy

PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Management strategy in place			
	Guide post	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the point where recruitment would be impaired.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: The licence conditions, gear restrictions, enforcement and sanction guidance within this fishery, together form a strategy to minimize mortality of unwanted catch and ensures that there are no main or minor primary species (see Table 6) in the fishery; any retention that did occur would be negligible. Therefore SG100 is met.		
b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: Stock assessments conducted since 2015 have utilized the dredge types licenced within the fishery with retention of all species. These surveys act as a test of the potential of the fishing method in capturing primary species, to which none have been found to date. The Dredge Bylaw provides SIFCA with a simple method of identifying active vessels allowing fishery officers to monitor catch onboard. SIFCA staff operate under a code of conduct for inspections and can observe catch onboard and at the point of landing and assess them for any additional species (primary or secondary). No primary species have been reported providing high confidence that the management strategy described is working. Therefore SG100 is met.		
c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial	There is clear evidence that the partial

			strategy is being implemented successfully .	strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Y	Y
	Justification	UoA1 and UoA2: Enforcement of the Licence Conditions and Management Plan and field observations demonstrate a reduction in unregulated fishing and a high level of compliance by licensed fishers to gear type licence conditions and thereby minimises the mortality of any unwanted catch. The lack of any main or minor primary species observed by fishery officers and demonstrated in the stock assessments further establishes the strategy is working and therefore SG100 is met.		
d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	UoA1 and UoA2: No sharks are retained in the fishery; therefore this SI need not be scored.		
e	Review of alternative measures			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	UoA1 and UoA2: The MSC Fisheries Standard GSA3.5.3 states, "If there is no unwanted catch of primary species, or no primary species at all, then the 'Review of alternative measures' scoring issue (e) is not scored." Since there are no main or minor primary species, this element is not scored.		
	References	(SIFCA, 2015b, 2016g, 2017a)		
OVERALL PERFORMANCE INDICATOR SCORE UoA1:				100
OVERALL PERFORMANCE INDICATOR SCORE UoA2:				100
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue	SG 60	SG 80	SG 100	
a	Information adequacy for assessment of impact on main species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: Given the methods used by the fishery (pump scoop dredge), available evidence from the stock surveys retained species information and the information gathered at the RBF workshop, there are no main primary species (see 3.4.2) in the fishery; any retention that did occur would be unintentional and negligible. Therefore SG100 is met by default.		
b	Information adequacy for assessment of impact on minor species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Y
Justification	UoA1 and UoA2: Given the methods used by the fishery (pump scoop dredge), available evidence from the stock assessments retained species information and the information gathered at the RBF workshop, there are no main or minor primary species (see 3.4.2) in the fishery; any retention that did occur would be unintentional and negligible. Therefore SG100 is met by default.			
Information adequacy for management strategy				

c	Guide post	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main Primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: The information available on catch composition from stock assessment retained catches from ad hoc inspections of vessel catches and from routine estuarine monitoring of the infauna, demonstrate there are no main or minor primary species in the fishery and therefore the fishery poses no risk. This information is adequate to support the strategy being implemented to minimize fishery impacts and provides a high degree of certainty that the strategy is achieving its objective. Therefore SG100 is met.		
References	(SIFCA, 2015d, 2016f)			
OVERALL PERFORMANCE INDICATOR SCORE UoA1:				100
OVERALL PERFORMANCE INDICATOR SCORE UoA2:				100
CONDITION NUMBER (if relevant):				NA

Evaluation Table for PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biological based limit and does not hinder recovery of secondary species if they are below a biological based limit.			
Scoring Issue		SG 60	SG 80	SG 100	
a	Main secondary species stock status				
	Guide post	<p>Main Secondary species are likely to be within biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are highly likely to be above biologically based limits</p> <p>OR</p> <p>If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</p> <p>AND</p> <p>Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main secondary species are within biologically based limits.</p>	
	Met?	UoA1: Y (RBF) UoA2: Y (RBF)	UoA1: Y (RBF) UoA2: Y (RBF)	UoA1: N (RBF) UoA2: N (RBF)	
Justification	<p>UoA1: cockle was assessed as a “main” secondary species in UoA 1 (Manila clam). This PI was scored using the Risk-Based Framework (RBF). A PSA workshop was held with stakeholders in Poole on the 8th March 2017, and the PSA for cockle scored 95 which is equal to > SG80, See Appendix 2 Risk Based Framework (RBF) Outputs - Table 37 and Error! Not a valid result for table.</p> <p>In accordance with PF4.1.4 ‘ The team may elect to conduct a PSA on ‘Main’ species only when evaluating P.I. 2.2.1’. In accordance with PF5.3.2.1 Where the</p>				

		<p>team has only considered “main” species in the PSA analysis, the final PI score shall not be greater than 80.</p> <p>UoA2: Manila clam was assessed as a “main” secondary species in UoA 2 (cockle). This PI was scored using the Risk-Based Framework (RBF). A PSA workshop was held with stakeholders in Poole on the 8th March 2017, and the PSA for Manila clam scored 95 which is equal to > SG80 See Table 39 and Table 40. In accordance with PF4.1.4 ‘ <i>The team may elect to conduct a PSA on ‘Main’ species only when evaluating P.I. 2.2.1’</i>. In accordance with PF5.3.2.1 Where the team has only considered “main” species in the PSA analysis, the final PI score shall not be greater than 80.</p>	
b	Minor secondary species stock status		
	Guide post		For minor species that are below biologically based limits’, there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?		N/a (RBF)
	Justification	UoA1 and UoA2: This PI was scored using the Risk-Based Framework (RBF). A PSA workshop was held in Poole Harbour on the 8 th March 2017. In accordance with PF4.1.4 ‘ <i>The team may elect to conduct a PSA on ‘Main’ species only when evaluating P.I. 2.2.1’</i> . In accordance with PF5.3.2.1 Where the team has only considered “main” species in the PSA analysis, the final PI score shall not be greater than 80.	
References	(Herbert et al. 2010).		
OVERALL PERFORMANCE INDICATOR SCORE UoA1:			80
OVERALL PERFORMANCE INDICATOR SCORE UoA2:			80
CONDITION NUMBER (if relevant):			N/A

Evaluation Table for PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Y	Y	Y
	Justification	UoA 1 and UoA 2: The Management Plan, Licence Conditions, Enforcement and Sanction guidance and harbours legislated site conservation objectives together form a strategy to minimize mortality of unwanted catch and ensures that there are no main secondary species (other than Manila clam in the Cockle UoA) in the fishery. In addition American hard clams are managed through the SIFCA American Hard Shelled Clams Byelaw. The strategy aims to minimise the disturbance to minor secondary species; any retention by fishers that did occur would be negligible. Therefore SG100 is met.		
b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	UoA1: Y (RBF) UoA2: Y (RBF)	UoA1: Y (RBF) UoA2: Y (RBF)	UoA1: Y (RBF) UoA2: Y (RBF)
	Justification	UoA 1 and UoA 2: No main secondary species have been reported from the fishery excepting that of Manila clam and cockle in the alternate UoAs, therefore providing high confidence that the management strategy described is working. Annual stock status assessments utilising the same gear used by the fishers and limited by the licencing regulations provides a quantitative test of the selectivity of the gear. This data continues to show that the method minimizes bycatch and the stock survey		

		<p>(2016) showed that average lengths of Manila clam and cockle from previous years (2003-2015) had increased, providing a high degree of confidence that the strategy is effective.</p> <p>Minor secondary species are limited to other large infaunal bivalves and the common shore crab which together make up less than 1% total catch (see table Table 6).</p> <p>Other infaunal invertebrate species disturbed during the fishing process demonstrate recovery (within months) of the infaunal communities following disturbance, with the exception of two small bivalve species (Clarke, 2017). None have any commercial value, are present in dredge samples and are not retained as main or minor secondary species.</p> <p>Based on the species-specific information above there is high confidence that the strategy will work and secondary species populations will be maintained and not hindered. Therefore SG100 is met.</p>		
c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	Y
	Justification	<p>UoA 1 and UoA 2: Enforcement of the Licence Conditions and Management Plan as well as field observations demonstrate the fishery is limited to pump scoop dredges of limited dimensions operated by licenced fishers and thereby minimises the mortality of any unwanted catch. Prosecutions in recent years (see Principle 3) brought about through the SIFCA demonstrate the implementation of the Management Plan.</p> <p>The lack of any main secondary species observed by fishery officers further demonstrates the strategy is working. Therefore SG100 is met.</p>		
d	Shark finning			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	UoA1 and UoA2: No sharks are retained in the fishery; therefore this SI need not be scored.		
	Review of alternative measures to minimise mortality of unwanted catch			

e	Justification	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	Not relevant	Not relevant	Not relevant
	Guide post	UoA 1 and UoA 2: The minor secondary species disturbed from the dredge are washed through the dredge via the water pump system or sorted from the main catch on-site and returned to the sediment within minutes of capture at the same site from which they were taken. Although some mortality inevitably occurs, the effects on the majority of the community appear only to be short-term. Based on this evidence, the assessment team considers the effects on minor secondary species to be negligible and as per MSC guidance (GSA3.5.3) have used their discretion in determining that this SI does not need to be scored.		
References	(SIFCA, 2015a, 2015b, 2015d, 2015f, 2016f, 2017a, 2017c)			
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				100
CONDITION NUMBER (if relevant):				N/A

Evaluation Table Ufor PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	UoA1: Y UoA2: Y	UoA1: Y UoA2: Y	UoA1: N UoA2: N
	Justification	UoA1 and UoA 2: Manila clam and cockle are the only main secondary species considered as part of this assessment. There is a significant body of literature which details the life-history, reproductive capacity and productivity of these species from across the globe and response of this species to fishing pressure. Therefore SG80 is met. The annual stock survey assessment undertaken by SIFCA across Poole Harbour provides a quantitative measure of the status of the Manila clam and cockle stocks each year, and from this inferences with regard to the impact of the fishery on the stock could be drawn. However, the current version of the stock assessment is only within its second iteration (2017) and attempts to relate the stock assessment values to overall harbour biomass have not been attempted therefore there is no high of certainty that could be applied to assess UoA impact and SG100 is not met.		
b	Information adequacy for assessment of impacts on minor secondary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			N
	Justification	UoA1 and UoA 2: The current version of the stock assessment within its second iteration (2017) provides a quantitative measure of minor secondary species		

		associated with the UoAs. Interannual comparison between stock assessments would provide some information into the trends of minor secondary species populations, but this work has not yet been accomplished therefore SG100 is not met.		
c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species.	Information is adequate to support a strategy to manage all secondary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective .
	Met?	Y	Y	Y
	Justification	<p>UoA 1 and UoA 2: The studies by Parker and Pin (2005) and Clarke (2017) provide adequate information to support the management strategy in relation to secondary species by providing site-specific data on their recovery following physical disturbance.</p> <p>On-going monitoring of the SAC conservation objectives and annual stock assessment surveys provide on-going infaunal data from the estuary. These programs provide data on the infaunal populations so if potential new secondary species colonized the sediments or existing species began to decline, these changes would be detected and the management strategy could be adapted if required.</p> <p>The data and the licensing regulations preventing capture of non-licensed species along with observations by the fishery officers are adequate to support the management strategy and provide a high degree of certainty that no non-bivalve minor secondary species are retained and that the strategy is achieving its objective. Therefore, SG100 is met.</p>		
References	(Parker and Pinn, 2005; Humphreys et al., 2015; SIFCA, 2015a, 2015b, 2015c, 2015d, 2017a; Clarke, 2017)			
OVERALL PERFORMANCE INDICATOR SCORE UoA1:				85
OVERALL PERFORMANCE INDICATOR SCORE UoA2:				85
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species		
		The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guide post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population/stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	UoA 1 and UoA 2: There are no ETP species with mortality limits identified within Poole Harbour that are likely to interact with the UoAs. Full compliance with fishery management regulations by fishers appears to occur and there were no reported interactions with ETP species described by fishers or fisheries officers at the time of the site visit. The nature of the dredge operations means that direct contact with ETP bird species is highly unlikely. Therefore this scoring issue is deemed not relevant.		
b	Direct effects			
	Guide post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Known direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Y	Y	Y
	Justification	UoA 1 and UoA 2: Direct impacts in the ETP context are defined by the actual capture of a species by fishing and other types of direct mortality, such as following discarding or interactions with the fishing gear (GSA3.1). There is a high degree of confidence that there is no direct impact by the UoAs on ETP bird species. When questioned at the site visit no stakeholder identified any bird interaction with the fishing gear and given the small size of the dredge, deployment alongside the vessel and proximity of the dredge to the vessel (a few metres) during recovery none is expected. All non-target species are washed through a grid onboard and transferred back to the water via a small slipway from the sorting table between dredges. This material is negatively buoyant and principally comprised of dead shell therefore is unlikely to attract avian scavenging. WeBs annual peak data for bird species in Poole Harbour identified under the EU Birds Directive (categories given under Designation in Table 9) between 2011 and 2015 indicate stable populations in each of the species (or species groups) designated under the birds directive, suggestive of favourable conditions in the habitats used by these species. SIFCA since 2015 have produced a Habitats Regulations Assessment for the dredge fishery (SIFCA 2017b). This includes a detailed appropriate assessment identifying each conversation feature, its location (habitat), target issue, potential		

	<p>impact, nature and likelihood of the impact occurring and preventative measures (SIFCA 2017b). The available data on ETP species along with the Habitats Regulations Assessment of the fishery impact on the European Marine Site means that there is a high degree of confidence that there is no significant detrimental effect of the UoA on avian ETP species.</p> <p>Direct effects on non-avian ETP species (fish, marine mammals, invertebrates) would be capture of the species by dredge. There have been no reported cases of ETP capture from the fishery according to fishers and fishery officers at the site visit and given the speed of the dredge (couple of knots) and size of the dredge (W 460 mm by D460 mm by H 300 mm) capture of marine mammals or mobile fish seems highly unlikely.</p> <p>Seahorse species and their habitats (seagrass) are protected through the SIFCA seagrass Byelaw (part of the HRA) and considered under habitats.</p> <p>Therefore SG100 is met.</p>		
c	Indirect effects		
	Guide post	Indirect effects have been considered and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?	Y	Y
	Justification	<p>UoA 1 and UoA 2: Indirect effects of the fishery on ETP bird species are disturbance of feeding/roosting birds and removal of prey items (clam / cockle) and are considered within the overall management plan for the fishery. Specifically the CoC for roosting birds sites, part of the permit conditions, limits disturbance from dredge fishing near birds species which are part of the birds directive and the limit of dredging to day light hours (06.00 -18:00) further reduces this effect. The closure of the dredge fishery to winter fishing post 24th Dec each year, and partial spatial closures near breeding areas between 1st November to 23rd December, preserves the requirements of the EU directives to minimize disturbance to overwintering assemblages.</p> <p>SIFCA since 2015 have produced a Habitats Regulations Assessment for the dredge fishery (SIFCA 2017b). This includes a detailed appropriate assessment identifying each conversation feature, its location (habitat), target issue, potential impact, nature and likelihood of the impact occurring and preventative measures (SIFCA 2017b).</p> <p>Indirect effects on non-avian ETP species (fish, marine mammals, invertebrates) would be disturbance of habitat and in the case of seals disturbance (noise) at haul-out sites. The recovery of the seabed from dredging is seen as rapid in studies undertaken and unlikely to impact ETP marine fauna. Overall seal numbers in the harbour are low and haul-out sites are not located near permitted fishing grounds. Based on the above assessments, there is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species and SG100 is met.</p>	
References	(SIFCA, 2009, 2015e, 2016g, 2017c)		
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:			100
CONDITION NUMBER (if relevant):			N/A

Evaluation Table for PI 2.3.2 – ETP species management strategy

PI 2.3.2	<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p>		
Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)		
Guide post	<p>There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.</p>	<p>There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.</p>	<p>There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.</p>
Met?	Y	Y	Y
Justification	<p>UoA 1 and UoA 2: The Management Plan in place for the fishery is underpinned by conservation requirements for the SAC, SPA, Ramsar and SSSI designations. These designations create the requirement for the annual Appropriate Assessment which assesses the fishery impacts on ETP species and designated habitats within the estuary. The fishery Code of Practice makes further efforts to reduce any impact on ETP species.</p> <p>The conservation objectives, annual Appropriate Assessment, Management Plan and Code of Practice are reviewed by Natural England representatives as part of the fishery steering group and thus form a comprehensive strategy which meets national and international requirements and SG100 is met.</p>		
b	Management strategy in place (alternative)		
Guide post	<p>There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.</p>	<p>There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.</p>	<p>There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species</p>
Met?	Not relevant	Not relevant	Not relevant
Justification	<p>UoA 1 and UoA 2: As there are conservation objectives set for the ETP species through the European Marine Site designations as outlined above, this SI does not need to be scored.</p>		
Management strategy evaluation			

c	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive 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.
	Met?	Y	Y	N
	Justification	UoA 1 and UoA 2: The annual Appropriate Assessment, Management Plan and Code of Practice together with the WeBs bird data provide information sufficient to form an objective view that the strategy is working for bird species. This, together with fisher testimonial that interactions with other (i.e., non-bird) ETP species are none existent is sufficient for SG80 to be met. There are no records of ETP interaction in the fishery, but also no formal procedures within the management plan for reporting ETP interactions in order to quantify them. On this basis SG100 is not met		
d	Management strategy implementation			
	Guide post		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		Y	Y
Justification	UoA 1 and UoA 2: Annual documentary evidence exists demonstrating the Appropriate Assessment, ETP bird species and annual stock assessment surveys undertaken by the fishery management team. WeBs annual peak data for bird species in Poole Harbour identified under the EU Birds Directive (categories given under Designation in Table 9) between 2011 and 2015 indicate stable populations in each of the species (or species groups) designated under the birds directive, suggestive of favourable conditions in the habitats used by these species. The above processes provide clear evidence that the strategy is being implemented successfully and is not hindering the ETP species populations. Therefore, SG100 is met.			
e	Review of alternative measures to minimize mortality of ETP species			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are

			implemented as appropriate.	implemented, as appropriate.
	Met?	Y	Y	Y
	Justification	<p>UoA 1 and UoA 2: The fishery Management Plan is reviewed every year with a 5 year in-depth evaluation..</p> <p>The annual Appropriate Assessment is specific to ETP species and supporting habitats within the estuary which could be impacted by the fishery. Given the information available on ETP species status within the estuary, the annual Appropriate Assessment would determine if there was any fishery-related ETP species mortality and consider any alternative measures to minimize this. There is however, no evidence of any ETP species mortality related to the fishery. On the basis of this annual Appropriate Assessment being undertaken, SG100 is met.</p>		
	References	<p>(SIFCA, 2017c)</p> <p>(Frost et al., 2016)</p> <p>(Bennett, 2011)</p>		
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				95
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 2.3.3 – ETP species information

PI 2.3.3	<p>Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • 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. 		
Scoring Issue	SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts		
Guide post	<p>Qualitative information is adequate to estimate the UoA related mortality on ETP species.</p> <p>OR</p> <p>If RBF is used to score PI 2.3.1 for the UoA:</p> <p>Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.</p>	<p>Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.</p> <p>OR</p> <p>If RBF is used to score PI 2.3.1 for the UoA:</p> <p>Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.</p>	<p>Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.</p>
Met?	Y	N	N
Justification	<p>UoA1 and UoA2: Full compliance with fishery management regulations by fishers appears to occur (according to SIFCA) and there were no reported interactions with ETP species described by fishers or fisheries officers at the time of the site visit. Therefore SG60 is met.</p> <p>The nature of the dredge operations means that direct contact with ETP bird species is highly unlikely. There are no records of ETP mortality in the fishery and none likely to exist. However there is also no formal procedure within the management plan for reporting ETP mortality should it occur and therefore SG80 cannot be met. A Condition of Certification is therefore set.</p>		
b	Information adequacy for management strategy		
Guide post	<p>Information is adequate to support measures to manage the impacts on ETP species.</p>	<p>Information is adequate to measure trends and support a strategy to manage impacts on ETP species.</p>	<p>Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high</p>

				degree of certainty whether a strategy is achieving its objectives.
	Met?	Y	Y	Y
	Justification	Annual WeBS surveys provide quantitative information that permits evaluation with a high degree of certainty that the management strategy is achieving its conservation objectives. The annual Appropriate Assessment determines risk of any fishery-related ETP interaction and the permit system and associated byelaws and CoC assist in minimizing the likelihood of injury and mortality. Therefore SG100 is met.		
	References	(SIFCA, 2015b, 2015f, 2017a, 2017c)		
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				70
CONDITION NUMBER (if relevant):				2

Evaluation Table for PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area(s) covered by the governance body(s) responsible for fisheries management.		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guide post	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	N
	Justification	<p>UoA1 and UoA2: The commonly encountered habitats considered here are those intertidal mud biotopes listed in Error! Not a valid result for table. and their spatial distribution defined in Figure 15. The structure and function of these habitats fluctuate annually based on variable recruitment events of the target species and other infauna, hydrodynamic conditions (rainfall events, tidal flows), anthropogenic impacts (inc. dredging, pollution, anchorages) and predation rates (avian and marine). Dredging activities in general do cause changes in benthic community structure as was evident in the short-term Poole Harbour study conducted by Parker and Pinn (2005) and Clarke (2017) although the long-term effects are not specifically known for this location. The site-specific studies on the effects pump scoop dredge have demonstrated that the effects of dredging the top few centimetres of intertidal sediment do not significantly alter biotope classification or reduce habitat structure and function to a point where there is serious and irreversible harm in the short term. Dredging does, however, reduce fine sediment composition of sediment over the short term and produce scarring of the mud. The studies revealed that infaunal communities recover rapidly from the disturbance to which they are exposed, but that two small bivalves (<i>Abra tenuis</i> and <i>Peringia ulvae</i>) appear to take longer and might be considered as indicators of long term disturbance. Based on the disturbance of the habitat by the dredge being limited to two minor bivalve species within the sediment community and that the studies show no significant alteration in the biotope classification (functional significance) the assessment team concluded that the sediment would be highly unlikely not to recover to at least 80 % of the structure and function in the absence of all fishing, considering the existing environmental and anthropomorphic conditions Therefore SG80 is met.</p> <p>The Management Plan (spatial and temporal access limits), Licence Conditions (limited species retained, gear limitations), Enforcement and Sanction guidance and site conservation objectives together form a strategy to minimise habitat disturbance from the fishery activities.</p> <p>Continued survey information (the new annual stock survey) will provide evidence of the long-term effect of the pump scoop gear type (which is unique to Poole) in the harbour but as this is not yet available there is not sufficient evidence to conclude that SG100 is current met. The team would suggest a non-binding recommendation to establish a research program alongside the annual stock survey to assess the long term recovery of the sediment community (in particular <i>Abra tenuis</i> and <i>Peringia ulvae</i>) and sediment structure (scar retention) (Recommendation 2).</p>		

b	VME habitat status			
	Guide post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	Y
	Justification	VMEs defined for Poole Harbour are saltmarshes, reedbeds and seagrass beds. Despite no overlap of the fishery with saltmarsh habitat fishing activities near the saltmarshes could cause disturbance through vessel-wake and noise and therefore codes of practice are signed by fishers to minimise disturbance when operating near them (Table 8). All reedbeds within Poole Harbour are designated SSSIs and sensitive to physical disturbance, but overlap from the fishery is considered minimal as no vessel is likely to go near them. Seagrass beds are protected habitats and a byelaw is in place to outlawing dredge fishing in this habitat. On this basis it is highly likely that VME structure and function is unimpeded by dredge fishing activities. SG 100 is met.		
c	Minor habitat status			
	Guide post			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			Y
	Justification	Minor habitats in this fishery were considered as the deeper water channels where <i>Sabella</i> reefs and the nationally rare sponge <i>Suberites massa</i> are known to occur. These habitats are highly unlikely to be fished due to the perceived low abundance of the resource in these areas, the limitations of the vessels and rigging used by the fishers for the dredge and the presence of mixed rocky bottom which would foul the dredge. Therefore SG 100 is met		
References	(Herbert et al., 2010; Bennett, 2011; SIFCA, 2017a, 2017c)			
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				95
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 2.4.2 – Habitats management strategy

PI 2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.			
Scoring Issue	SG 60	SG 80	SG 100	
a	Management strategy in place			
	Guide post	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: The location of VMEs relevant to the fishery are known and access to these areas is prohibited. The UoAs under assessment here do not interact with VMEs and therefore move on rules are not needed for the remainder of the fishery grounds. Therefore no precautionary action is required at SG80. The Poole Harbour Aquatic Management Plan (PHAMP, Bennett (2011)) is underpinned by guiding principles which ensure that all activities, plans and projects comply with relevant legislation requirements and that the nature conservation interest of the SPA, Ramsar and SSSI sites are maintained or restored to favourable condition. The commonly encountered habitats (intertidal mud/sand) form part of the SPA and therefore the PHAMP and the appropriate assessment (Appendix 8) form the principal management strategy. To comply with the monitoring requirements for the European Marine Site, the Poole Harbour Steering Group review the Plan on an annual basis and make an assessment of how the specific management actions identified are being progressed. These designations mean that any fishery activity undertaken in the harbour must be assessed for its likely impact on the designated habitats. For the UoAs in this assessment this is done through the appropriate assessment and various byelaws specifically in relation to VME. For the UoAs this is limited to the seagrass beds and access to these is prohibited through the Seagrass Byelaw. All other fisheries are also reviewed under the PHAMP, and subject to byelaws which protect the seagrass habitats, and MoUs which limit damage to the mud habitat. This comprehensive management plan then is supported by a comprehensive impact assessment that determines that all fishing activities will not cause serious or irreversible harm to VMEs. Therefore SG100 is met.		
b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: The small scale of the fishery and unique noise created by the pump scoop dredge allows easy observation by fishery officers to ensure that fishers are adhering to the licence conditions in terms of the methods used, areas		

		<p>fished and the catch landed. SIFCA staff can inspect the catch on board and at the point of landing and assess them for content thereby ensuring the habitats are not being denuded of other species. This ability to observe all aspect of the fishery operation provides high confidence that the management strategy described is working.</p> <p>Infaunal invertebrate species disturbed during the fishing process are described in Parker and Pinn (2005) and Clarke (2017). The studies demonstrated some modification of the infaunal habitats and communities following dredge activity but these changes were not overall thought to be long term – a result expected in a highly dynamic system where physical disturbance is a key driver of ecological processes.</p> <p>Based on the species-specific and site-specific information above there is high-confidence that the strategy will work and there is no risk of serious or irreversible harm to the harbour habitats. Therefore SG100 is met.</p>		
c	Management strategy implementation			
	Guide post		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Y	N
	Justification	<p>UoA1 and UoA2: Enforcement of the Licence Conditions and Management Plan as well as field observations from fisheries officers demonstrate the fishery is limited to licensed dredge fishers only and thereby minimises the impact on the habitats fished. Regular, statutory monitoring of SAC/SPA designated habitats and assessments of their conservation status, in addition to the studies by Parker and Pinn (2005) and Clarke (2017) provides some quantitative evidence that the fishery is achieving its objective not to cause serious or irreversible harm to these habitats. Therefore SG80 is met. The long-term effects of the pump scoop gear type in the harbour have not been studied and there is no clear quantitative evidence to conclude that structure and function of the main habitats is secure in the long term. Therefore SG100 is not met. As per 2.4.1a the team would suggest a non-binding recommendation to establish a research program to assess the long-term recovery of the sediment community (in particular <i>Abra tenuis</i> and <i>Peringia ulvae</i>) and sediment structure (scar retention) (Recommendation 2).</p>		
d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guide post	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs'/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs'/non-MSC fisheries, where relevant.
	Met?	Not Relevant	Not Relevant	Not Relevant

	Justification	<p>UoA1 and UoA2: FCR v2.0 Guidance SA3.14.3 states that “<i>The team shall score scoring issue (d) if the UoA impacts a VME and/or if another MSC UoA or non-MSC fishery, where relevant, impacts a VME within the UoA’s “managed area” (as defined in SA3.13.5).</i>”</p> <p>The VME under consideration here is seagrass habitat, as the other VMEs identified saltmarsh and reedbeds are not accessible by any fishery.</p> <p>As the dredge fishery does not have an impact on seagrass (prohibition byelaw) and there are no other fisheries within the estuary considered to impact the VMEs identified in section 2.8.4., this SI is not scored.</p>
References	(Parker and Pinn, 2005; Bennett, 2011; SIFCA, 2016c, 2017c; Clarke, 2017)	
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:		95
CONDITION NUMBER (if relevant):		N/A

Evaluation Table for PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	<p>The types and distribution of the main habitats are broadly understood.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.</p>	<p>The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.</p>
	Met?	Y	Y	Y
	Justification	<p>UoA1 and UoA2: The distribution of all habitat types within the Poole Harbour (SAC/SPA/Ramsar/SSSI) has been accurately mapped as part of the site's statutory monitoring program (Figure 12, Figure 13). In addition the intertidal sediment distribution and biotope descriptions for the whole of Poole Harbour are well described (Figure 14, Figure 15). Seagrass habitats are also well described and mapped (Figure 20). Therefore SG100 is met.</p>		
b	Information adequacy for assessment of impacts			
	Guide post	<p>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.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p>	<p>Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>

		Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: The physical impacts of the gear on sediment habitats have been quantified in the site-specific study by Parker and Penn (2005) and Clarke (2017) and are considered annually in the Appropriate Assessment undertaken to assess possible fishery impacts against the site's conservation objectives. SG100 is met.		
c	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?		Y	Y
	Justification	UoA1 and UoA2: The annual stock assessment undertaken by SIFCA for the Manila clam and cockle fishery includes retention of all species within the dredge providing annually repeated data on distribution and abundance of larger infauna. The assessment also includes a sediment drag method which collects all specimens down to 1 mm diameter in a fine mesh bag, providing information on the finer fraction of the sediment community. Continued use of this form of assessment will provide a long-term dataset of sediment community distribution in the main intertidal habitats. Other habitats considered under the EU site designation are also evaluated periodically as part of the overall management plan. For example seagrass habitat distribution was re-evaluated in 2015 and compared to previous distributions in 2010 and 2013. Therefore SG100 is met		
References	(Parker and Pinn, 2005; Bennett, 2011; Benson and Sotheran, 2015; SIFCA, 2015d, 2016f; Clarke, 2017)			
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				100
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA 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.	There is evidence that the UoA 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.
	Met?	Y	Y	Y
	Justification	<p>UoA1 and UoA2: The key ecosystem habitats identified for Poole Harbour are reedbeds, saltmarshes, foreshore and intertidal areas, low-lying islands and low lying wetland and heath areas. The ecosystem elements considered within these are species diversity / richness, trophic food webs (including top predators) and ecosystem services. The UoAs under this assessment are directly associated with the intertidal areas and indirectly with the saltmarshes, low-lying island and foreshore areas. The fishery does cause some disruption to the sediment habitat of the intertidal area in the short term as discussed within the habitats PIs in altering the species composition of the habitat but this disruption it highly unlikely to be long-term or cause irreversible harm to the ecosystem function. Across the ecosystem the spatial protection of some intertidal areas from dredge fishing ensures species diversity in these areas remains, and food sources for overwintering birds are available. Temporal closure of the fishery allows annual recovery of those areas fished more heavily. Indirect influence of the UoAs on the other ecosystem features (saltmarshes, low-lying islands foreshore areas) is through noise and wash from the pump scoop vessels. This is mitigated through the code of conduct issued to the fishers at the start of each fishing season (Error! Not a valid result for table.) and closed areas during winter months. These regulations and reports provide sufficient evidence that the UoAs are highly unlikely to disrupt ecosystem function in an irreversible way and therefore SG100 is met.</p> <p><u>Manila clam Introduced species ecosystem effect:</u> Research conducted on Manila clam in Poole Harbour has concluded that the arrival of Manila clam is not known to have caused any ecological damage; it occupies a similar ecological niche to a variety of other co-occurring infaunal suspension-feeding clams, and plays the same role in benthic-pelagic coupling as these species (included the introduced hard shell clam) and is a prey species to wading birds. Humphreys et al. (2015) concluded: ‘...in Britain the species is not aggressively invasive and appears not to present significant risk to indigenous diversity or ecosystem function’. Indeed the introduction and establishment of Manila clam in Poole Harbour has been suggested as having significant ecosystem benefits (Caldow et al., 2007). The authors found that the introduction of the Manila clam into European coastal waters has presented the Eurasian oystercatcher (<i>Haematopus ostralegus ostralegus</i>) with a new food resource and resulted in a previously unknown predator–prey interaction between these species. The modelled predator-prey relationships in Poole Harbour between Manila Clam and oystercatchers reduced the predicted over-winter mortality of oystercatchers even when the clam densities were comparatively low (2007). Further increases in clam</p>		

PI 2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.	
		<p>population density are predicted to have even more pronounced effects on the density dependence of oystercatcher over-winter mortality (Caldow et al 2007). The Manila clam is not yet considered to be biotope forming and coexists with other bivalve species (Herbert et al., 2010). Modelling of the larval dispersal of the Manila clam from Poole Harbour highlighted the high retention of the species within the bounds of the harbour. Although through natural transport larvae could theoretically reach the next available habitat within the duration of their pelagic stage, the study indicated that the reduced salinity required by the species would likely limit sufficient retention, recruitment and establishment of new adult populations in other nearby estuaries (Herbert et al., 2011). In support of this no Manila clam have been found in either Christchurch Harbour or the western estuaries of the Solent (Herbert et al., 2011) . Naturalisation in upper Solent regions and other estuaries in Southern England are lkely the result of deliberate introduction (Herbert et al., 2011; Humphreys et al., 2015).</p>
References	<p>(Parker and Pinn, 2005; SIFCA, 2015b, 2015e, 2017c) Herbert et al., 2011; Humphreys et al., 2015, Caldow et al 2007, Herbert et al., 2010</p>	
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:		100
CONDITION NUMBER (if relevant):		N/A

Evaluation Table for PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary which take into account the potential impacts of the fishery on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan , in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: The European Marine Site's statutory conservation objectives form a strategy against which to consider the ecosystem impacts. The fishery Management Plan, Harbour management plan, permit conditions and CoC form the plan which addresses the impacts identified in the annual Appropriate Assessments of the fishery on all ecosystem elements based on the best available knowledge. All the measures within the plan are in place and are based on a sound understanding of the ecosystem and the potential impacts the fishery might have. The annual monitoring plan of the manila clam stock within the harbour provides a basis for the strategic evaluation of the resource. The same surveys examine the community composition of the benthic habitat and interannual examination of results will provide evidence of change in benthic biotope. Therefore SG100 is met.		
b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: As explained for each PI above, evidence exists through fishery officer observations, field experiments, annual stock assessments, modelling and on-going statutory monitoring of physical and biological components of the European Marine Site to support high confidence that the strategy will work to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function. The Manila clam has a generation time of approximately two years and given that the functional reproductive unit of stock has been contained within the harbour for		

		20 years there is a high degree of confidence that the research testing to date, which shows no viable populations beyond the harbour bounds, is unlikely to change. Therefore there is a high level of confidence that the annual monitoring strategy can be considered to be highly likely to work. Therefore SG100 is met.		
c	Management strategy implementation			
	Guide post		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	Y
	Justification	UoA1 and UoA2: The enforcement of the Permit Conditions and Management Plan by fishery officers and subsequent prosecutions (See Principle 3) demonstrate the fishery is limited to permitted fishers in recognised areas at permitted times, thereby minimising the impact on the Harbour ecosystem. Regular, statutory monitoring of SAC/SPA designated habitats and species and assessments of their conservation status is undertaken and the WeBs data show in many cases that populations of birds are stable or increasing. WFD monitoring also provides data on the subtidal environment and physico-chemical parameters such as water quality. These data provide quantitative evidence that the fishery is achieving its objective not to cause serious or irreversible harm to the harbour ecosystem. Therefore SG100 is met.		
References	(Parker and Pinn, 2005; Bennett, 2011; Frost et al., 2016; SIFCA, 2017c) SIFCA pers. Comm. Site visit 2017.			
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				100
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	UoA1 and UoA2: Information on the key elements of the Harbour ecosystem is extensive with the various monitoring programs (WFD, SAC/SPA monitoring, WeBS counts, stock assessments, benthic surveys etc) all contributing to the knowledge of the ecosystem. These data are enhanced by specific scientific studies to understand the impacts of the fishery through sediment disturbance, dispersal of the larvae and bird food availability (Durell et al., 2006; Caldow et al., 2007; Bowgen et al., 2015). The impact of manila clam on the ecosystem is very well described (see PI 2.5.1) Therefore SG80 is met.		
b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail .
	Met?	Y	Y	Y
	Justification	UoA1 and UoA2: All the main interactions of the fishery with the ecosystem components with which they interact have been investigated in detail e.g. habitat / community recovery following disturbance, research on bird food availability to consider indirect effects on bird species, together with the annual bird surveys (WeBS counts) (WeBs, 2016) these data provide evidence that the trophic webs within the ecosystem are maintained and not adversely impacted by the fishery. The interactions of manila clam on the ecosystem is well described and have been investigated in detail (see PI 2.5.1 for details) Therefore SG100 is met .		
c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the

				ecosystem are understood .
	Met?		Y	Y
	Justification	<p>UoA1 and UoA2: The trophic relations between the target species and their predators have been identified and modelled by scientific study providing confidence in the understanding of this relationship. The introduction of the Manila clam and its trophic niche has been studied and found not to significantly alter habitat function. The impacts of the fishery on the sediment biodiversity has been measured in the short term and provisions are in place to monitor in the long term through the annual stock survey.</p> <p>Implications of the fishery on habitat components and the ETP bird species are detailed and managed through the annual Appropriate assessment. Therefore SG100 is met.</p>		
d	Information relevance			
	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		Y	Y
	Justification	<p>UoA1 and UoA2: The main impacts on the intertidal element of the ecosystem is sediment and biodiversity disturbance through the use of the dredge. The consequence of this has been expressed in the short term through sediment size analysis and change in community composition. The physical disturbance of sediments is limited to the top few centimetres with rapid recovery taking place in what is naturally a very dynamic environment. Provision of spatial closures and temporal limits on access ensure that across the ecosystem not all of the intertidal area can be disturbed by the fishery. Provisions for understanding these changes in the long term are available through the annual stock survey. These data allow the main consequences for the ecosystem to be both inferred and quantified by sampling. Potential impacts from the fishery on the ecosystem are also reviewed annually through an Appropriate Assessment and have been assessed as being minimized by appropriate byelaws and CoCs (Smith, 2016). Therefore SG100 is met.</p>		
e	Monitoring			
	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		Y	Y
	Justification	<p>UoA1 and UoA2: Information available on the harbor ecosystem is extensive. Consequently the fishery Management Plan in place is based on a sound understanding of the ecology of the species and habitats potentially impacted by the fishery. The information available from various scientific studies provides an understanding of inter-specific relationships relevant to the fishery. On-going</p>		

		monitoring by the fishery of stocks and statutory monitoring of the European Marine Site means that any changes in risk levels can be identified and responded to relatively quickly. Therefore SG100 is met.
References	(Gill, 2001; Wardlaw, 2005; Durell et al., 2006; Caldow et al., 2007; Bennett, 2011; Benson and Sotheran, 2015; Bowgen et al., 2015; Humphreys et al., 2015; SIFCA, 2015b, 2015e; Frost et al., 2016) (Durell et al., 2006; Caldow et al., 2007; Bowgen et al., 2015; WeBs, 2016)	
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:		100
CONDITION NUMBER (if relevant):		N/A

Principle 3 scoring rationales

Evaluation Table for PI 3.1.1 – Legal and/or customary framework

PI 3.1.1	<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainability in the UoA(s); and • 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. 		
Scoring Issue	SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management		
	<p>Guide post</p> <p>There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2</p>	<p>There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.</p>	<p>There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.</p>
	<p>Met?</p> <p>Y</p>	<p>Y</p>	<p>Y</p>
<p>Justification</p>	<p>There are various legal mechanisms which create binding procedures through which the IFCA is required to cooperate with other parties to deliver management consistent with MSC Principles 1 and 2.</p> <p>For example, Section 174 of the Marine and Coastal Access Act 2009 (MACAA) places a duty on an IFCA to cooperate with its neighbouring IFCAs and other public authorities that are involved with regulation or enforcement in the sea within its district. Section 153 of the MACAA requires that the Secretary of State must give every IFCA guidance as to how to perform its duty to manage the exploitation of sea fisheries resources in its district, that IFCAs seek to balance the different needs of persons engaged in the exploitation of those resources, and that IFCAs provide any such guidance to persons who request it. The MACAA also specifies that representatives of the Marine Management Organisation (MMO), Natural England (NE) and Environment Agency (EA) sit on each IFCA, which facilitates cooperation and information exchange (HM, 2009).</p> <p>A further example is that Section 61 of the Conservation of Habitats and Species Regulations 2010 requires that the IFCA (as a relevant authority) consults with NE before deciding to undertake, or give any consent, permission or other authorisation for a plan or project which is likely to have a significant effect on a European Marine Site (e.g., to issue permits under the Dredge Permit Byelaw) (HM, 2010a).</p> <p>Part 4 of the Marine Strategy Regulations 2010 (which transposes the Marine Strategy Framework Directive into UK law) specifies the procedural requirements for their implementation. As the Competent Authority for the Regulations, the Secretary of State is required to consult with the public and other bodies, and provide an early opportunity to participate in preparing monitoring programmes and programmes of measures that are intended to support the delivery of 'good environmental status' for UK waters. Similarly, the Water Environment (Water</p>		

		<p>Framework Directive) (England and Wales) Regulations 2017 transposes the Water Framework Directive into UK legislation, and places duties upon the Secretary of State to secure compliance with the Water Framework Directive. Part 6 requires that the public and a wide range of organisation and bodies that may be affected, including the IFCA's, are consulted on when preparing river basin management plans.</p> <p>IFCA members hold office according to a terms of appointment (HM, 2010b); the terms of appointment direct that IFCA members are bound by the IFCA's Standing Orders (NWIFCA, n.d.), which in turn specify how the SIFCA Committee meetings and other proceedings are to occur (SIFCA, 2015k); the Standing Orders include the rules governing public participation (Schedule 2), and the procedure through which a person who is dissatisfied with a decision made by the IFCA (with respect to the issue or removal of their permit, or the allocation of Several Rights with regard to any Fishery Order) has the right of appeal (Section 48).</p> <p>Within the Dredge Permit Byelaw (Section 11, (SIFCA, 2015b)) and the Poole Harbour Fishery Order (Section 4, (SIFCA, 2015i)) there are also binding procedures governing how the SIFCA undertakes its consultation process (including with other authorities) in making any changes to the conditions of the permit or management of the Order.</p> <p>It is considered that there is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2. SG100 is met.</p>		
b	Resolution of disputes			
	Guide post	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	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 UoA.	The management system incorporates or is 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.
	Met?	Y	Y	Y
Justification	<p>The MACAA is UK primary legislation, which describes the functions, roles and responsibilities of the IFCA's. The Dredge Permit Byelaw and the Poole Harbour Fishery Order are secondary legislation. The SIFCA is bound by this legislation, and any legal challenge to the SIFCA or its functions and activities would be resolved according to UK (English) law, which is clearly transparent and has been tested and proven to be effective.</p> <p>The SIFCA actively works to avoid disputes in the first place, however, by implementing an explicit and active communication plan (SIFCA, 2013b), and by detailing the compliance and enforcement strategy (SIFCA, 2013b). Also, the structure of an IFCA as established in the MACAA is inherently consultative, since as well as members representing relevant constituent authorities and partner organisations, the members of the IFCA must include '<i>persons acquainted with the</i></p>			

		<p><i>needs and opinions of the fishing community of the district’ and ‘persons with knowledge of, or expertise in, marine environmental matters’ (HM, 2009).</i></p> <p>Overall, the management system incorporates or is 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; SG100 is met.</p>		
c	Respect for rights			
	Guide post	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.	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.	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.
	Met?	Y	Y	Y
	Justification	<p>Access to the Poole Harbour Manila Clam and Cockle Fishery is limited by permit, and there are currently 45 permits available under the Poole Harbour Dredge Permit Byelaw (SIFCA, 2017d). The SIFCA has published an access policy for the permits; the stated purpose of the access policy is “<i>To enable the Authority to fulfil its obligations under s. 153(2) of the MACAA</i>”, which relates to the sustainable exploitation of sea fishery resources, balancing social and economic needs with the need to protect the marine environment, and to balance the needs of different fishers within the district (SIFCA, 2016k).</p> <p>Operational examples are that while access criteria under the Dredge Permit Byelaw may be reviewed at any time, the access policy notes that in undertaking such a review, the IFCA would have regard to its duties and obligations under sections 153 (and 154) of the MACAA. Amongst other access criteria, permit holders have to be the majority share holders in a vessel, or be nominated by the majority share holder, and must have participated in the fished in the previous year (SIFCA, 2016k). Further, when the Poole Harbour Fishery Order was introduced in 2015, Tranche 1 sites (including the single lay covered under this assessment) were offered to existing rights holders under the previous Poole Fishery Order 1985 subject to their successful applications against set criteria (SIFCA, 2017e).</p> <p>It is considered that 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; SG100 is met.</p>		
References	(HM, 2009), (HM, 2010a), HM (2010b), NWIFCA (n.d.), SIFCA (2013b, 2015k) (SIFCA, 2015b), (SIFCA, 2015i), (SIFCA, 2016k), (SIFCA, 2017e), (SIFCA, 2017d)			
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				100
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		<p>The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</p>		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood .	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.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Y	Y	Y
	Justification	<p>The MACAA (HM, 2009) and other primary legislation such as the Sea Fisheries (Shellfish) Act 1967 (HM, 1967), Conservation of Habitats and Species Regulations 2010 (HM, 2010a), associated guidance (e.g., (DEFRA, 2011), (NE, 2016)) and relevant secondary legislation (e.g., the Dredge Permit Byelaw [(SIFCA, 2015b)], and the Poole Harbour Fishery Order [(SIFCA, 2015a)]), clearly identify the organisations involved in management process, and their functions, roles and responsibilities.</p> <p>The SIFCA’s Standing Orders detail how the SIFCA meetings and proceedings are required to occur (SIFCA, 2015k).</p> <p>Inevitably, it is a challenge to confirm that functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction, but the Assessment Team was satisfied that this is the case, as there is no area where there appears to be a lack of clarity, and no evidence was presented to the team that a function, role or responsibility was poorly defined or understood. As such, SG100 is considered met.</p>		
b	Consultation processes			
	Guide post	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates	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

			consideration of the information obtained.	how it is used or not used.
	Met?	Y	Y	Y
	Justification	<p>The structure of an IFCA as established in the MACAA is inherently consultative, since as well as members representing relevant constituent authorities and partner organisations, the members of the IFCA must include '<i>persons acquainted with the needs and opinions of the fishing community of the district</i>' and '<i>persons with knowledge of, or expertise in, marine environmental matters</i>' (HM, 2009). In the case of the SIFCA, these individuals include commercial and recreational fishers, nature conservation specialists and various academic and independent marine scientists.</p> <p>For important changes to management, such as putting in place a new byelaw, there is extensive consultation, including stakeholder consultation meetings and consultation with other statutory bodies (Natural England and MMO). Detailed guidance on consultation for byelaws is provided in (DEFRA, 2011).</p> <p>The SIFCA has authored a communication plan (SIFCA, 2013b). This specifies engagement objectives, and highlights how and why the IFCA should engage with stakeholders; the commitment to continue implementing the communication plan is made in the SIFCA Annual Plan (SIFCA, 2016i).</p> <p>For day to day management, the IFCA actively encourages consultation through the SIFCA website (www.southern-ifca.gov.uk), where IFCA Committee meeting agendas (including papers) and minutes are published, together with relevant news items and other documents such as the annual plan, annual report, the research and evidence plan and the HRAs produced for different fisheries. Members of the public may attend SIFCA meetings, but may be required to leave for some agenda items if the item is likely to result in the disclosure of exempt information (as defined in Schedule 12A, Part 1 of the Local Government Act 1972).</p> <p>The IFCA also publishes a newsletter periodically, and has an active social media presence, with a Twitter account (@SouthernIFCA) and a Facebook page (www.facebook.com/SouthernIFCA/). The IFCA may also participate actively in public events, such as the Lymington Seafood Festival (www.lymingtonseafoodfestival.co.uk/). In addition, the IFCA has an office in Poole, Dorset which operates in business hours, and IFCA Officers are available to discuss fishery issues whilst on patrol at sea or ashore within the district.</p> <p>Changes to fishery management conditions under the Dredge Permit Byelaw and the Poole Harbour Fishery Order are also subject to specific consultation requirements, with the IFCA being required to have regard to stakeholder submissions when making changes.</p> <p>It is considered that 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; SG100 is met.</p>		
c	Participation			
	Guide post		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved,

				and facilitates their effective engagement.
	Met?		Y	Y
	Justification	<p>As noted in SIb, above, the SIFCA has a published communication plan (SIFCA, 2013b) and has committed to continue its implementation Plan (SIFCA, 2016i). There is an extensive stakeholder consultation process embedded within the IFCAs, and the SIFCA clearly makes active efforts to promote information exchange.</p> <p>IFCA Committee meetings are open to the public (except for agenda items which are considered to be 'exempt' under the Local Government Act 1972, and the agendas (including papers) and minutes are published on the SIFCA website. The website also provides a wide range of other general and specific information on the SIFCA, the district and activities undertaken, which is intended to support stakeholder engagement in the management process (SIFCA, 2013b).</p> <p>It is considered that the consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement; SG100 is met.</p>		
	References	(DEFRA, 2011), HM (1967), (HM, 2009), (HM, 2010a), (NE, 2016), (SIFCA, 2013b), (SIFCA, 2013b), (SIFCA, 2015b), (SIFCA, 2015k), (SIFCA, 2016i).		
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				100
CONDITION NUMBER (if relevant):				N/A

Evaluation Table for PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are explicit within and required by management policy.
	Met?	Y	Y	Y
	Justification	<p>The MACAA gives each IFCA the responsibility and powers to manage the fisheries in their district (HM, 2009). In summary, sections 153 and 154 of the MACAA require IFCA's to:</p> <p>153) Manage the exploitation of sea fisheries resources in its district, in doing so it must:</p> <ul style="list-style-type: none"> a) Seek to ensure that the exploitation of sea fisheries resources is carried out in a sustainable way, b) Seek to balance the social and economic benefits of exploiting the sea fisheries resources of the district with the need to protect the marine environment from, or promote its recovery from, the effects of such exploitation, c) Take any other steps which in the authority's opinion are necessary or expedient for the purpose of making a contribution to the achievement of sustainable development, d) Seek to balance the different needs of persons engaged in the exploitation of sea fisheries resources in the district. <p>154) Seek to ensure that the conservation objectives of any Marine Conservation Zone (MCZ) in the district are furthered.</p> <p>The IFCA's were also provided with an overall 'vision', specifying that IFCA's will :</p> <p><i>“Lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry.”</i></p> <p>Under the IFCA's' vision, and linked to the high level objectives as outlined in the UK Marine Policy Statement (HM, 2011), five success criteria were then identified for each of the IFCA's, as follows (SIFCA, 2016i):</p>		

		<ol style="list-style-type: none"> 1. (Achieving a sustainable marine economy): IFCAs are recognised and heard, balancing the economic needs of the fishery whilst working in partnership and engaging with stakeholders; 2. (Ensuring a strong, healthy and just society): IFCAs implement a fair, effective and proportionate enforcement regime; 3. (Living within environmental limits): IFCAs use evidence based and appropriate measures to manage the sustainable exploitation of sea fisheries resources and deliver marine environmental protection within their districts; 4. (Promoting good governance): IFCAs have appropriate governance in place and staff are trained and professional; 5. (Using sound science responsibly): IFCAs make the best use of evidence to deliver their objectives. <p>All EU fisheries management is underpinned by the CFP (Regulation (EU) No 1380/2013). One of its key objectives is that: “<i>The CFP shall apply the precautionary approach to fisheries management, and shall aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield.</i>”</p> <p>In managing activities, (DEFRA, 2011)) has clarified for IFCAs that the precautionary principle is applied in the circumstances where there are reasonable grounds for concern that an activity is harmful but where there is uncertainty about the degree of risk and harm (emphasis added by Assessment Team).</p> <p>In addition, Section 6 of the Conservation of Habitats and Species Regulations 2010 states that IFCAs are relevant authorities in relation to marine areas and European marine sites (e.g., Poole Harbour SPA), and Section 9 then states that an authority must, in relation to a marine area, exercise any of their functions which are relevant to marine conservation so as to secure compliance with the requirements of the Habitats Directive (HM, 2009). The precautionary principle is, in particular, embedded within the Habitats Regulations Assessment (HRA) process as a key part of the Habitats Directive, and HRAs must be undertaken before a ‘plan or project’ (e.g., the issuance of permits under the Dredge Permit Byelaw) can be lawfully undertaken (NE, 2016).</p> <p>It is considered that clear, long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are explicit within and required by management policy; SG100 is met.</p>
References	(DEFRA, 2011), (HM, 2009), (HM, 2011), (NE, 2016), (SIFCA, 2016i).	
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:		100
CONDITION NUMBER (if relevant):		N/A

Evaluation Table for PI 3.2.1 Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Objectives , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery-specific management system.	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-specific management system.	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-specific management system.
	Met?	Y	Y	No
	Justification	<p>Under the Conservation of Habitats and Species Regulations 2010 (HM, 2010a), the SIFCA is required to exercise its functions to secure compliance with the requirements of the EU Wild Birds Directive (EU, 2009). In essence, the SIFCA is required to ensure that the fisheries it manages do not damage, disturb or have an adverse effect on the birds and supporting habitats for which Poole Harbour has been designated. The HRA document for the Dredge Permit Byelaw 2017 fishery identifies the following objectives (SIFCA, 2017d):</p> <ol style="list-style-type: none"> 1) <i>Provide a network of areas where there is little or no noise and visual disturbance and sediment disturbance including; bird sensitive areas, areas where declines in some bird species have been observed that are likely to be in part attributable to site-specific pressures, areas where sediment recovery is likely to be slow;</i> 2) <i>Exclude or manage intensity where high levels of sediment disturbance could result in release of contaminants;</i> 3) <i>Manage shellfish dredging throughout the Harbour in a way that minimises its impact on prey availability and disturbance, for example through restrictions in the number of permits, the design of the pump and dredge used and restrictions in the timing of when the fishery should take place;</i> 4) <i>Ensure measures are taken to protect habitats (eelgrass) that are potentially sensitive to damage if they are at risk of exposure to shellfish dredging.</i> <p>In developing the Poole Harbour Dredge Permit Byelaw, the IFCA was required to undertake an impact assessment (SIFCA, 2014). The following objectives were provided as justification for creating the byelaw:</p> <ol style="list-style-type: none"> 1) <i>To introduce effective and robust management for Poole Harbour's shellfish fisheries.</i> 2) <i>To introduce management for Poole Harbour's shellfish fisheries following the expiry of the Poole Harbour Regulating Order in June 2015.</i> 3) <i>To further the conservation objectives of Poole Harbour's environmentally designated areas through protecting over-wintering and nesting bird populations within Poole Harbour.</i> 		

		<p>4) <i>To enhance the environmental, socio-economic and fisheries sustainability of Poole Harbour.</i></p> <p>The Poole Harbour Site Improvement Plan (Natural England 2014) also provides three associated, ongoing objectives specific to Poole Harbour and the dredge fishery:</p> <p>3F) Assess the impact of shellfish dredging activity on EMS features.</p> <p>3G) Monitor compliance by shellfish dredgers (high risk amber activity) with management measures agreed as a result of the review of shellfish. management in Poole Harbour in 2014 and the Bottom towed gear byelaw</p> <p>3H) Unlicensed fishing activity - Continue to develop joint working to enforce regulation regarding licensing and registration of fishing vessels and licensing of specific activities within the Harbour.</p> <p>Objectives under the Conservation of Habitats and Species Regulations 2010 are focused on Principle 2. Objectives under the Dredge Permit Byelaw and the Site Improvement Plan are consistent with the MSC's Principles 1 and 2, and a mix of short term (1 and 2, and 3F) and long-term (3 and 4, and 3G and 3H); as such, the fishery meets SG80. However, the objectives are considered to be neither 'well defined' nor 'measurable', as required by SG100, so SG100 is not met.</p>
References	(EU, 2009), (NE, 2014), (HM, 2010a), (SIFCA, 2014), (SIFCA, 2017d)	
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:		80
CONDITION NUMBER (if relevant):		N/A

Evaluation Table for PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.		
Scoring Issue	SG 60	SG 80	SG 100	
a	Decision-making processes			
	Guide post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Y	Y	
	Justification	<p>At the overarching level, primary legislation including the MACAA, the Sea Fisheries (Shellfish) Act 1967 and the Conservation of Habitats and Species Regulations 2010 describe how IFCA's are to function with respect to delivery of inshore fisheries management within their districts, including the role taken by the MMO and the Secretary of State in directing IFCA's and reviewing and confirming byelaws and Fishery Orders as secondary legislation.</p> <p>The SIFCA's Standing Orders govern the process by which SIFCA Committee meetings are held, including the roles and responsibilities of SIFCA members in coming to decisions on IFCA matters (SIFCA, 2015k). The Dredge Permit Byelaw ((SIFCA, 2015b)) and the Poole Harbour Fishery Order ((SIFCA, 2015i)) then detail the process by which any changes are to be made to the management of those fisheries.</p> <p>The introduction in 2015 of the Dredge Permit Byelaw and the Poole Harbour Fishery Order are measures that demonstrably achieve fishery-specific objectives as laid out under the primary legislation mentioned above. It is considered that SG80 is met.</p>		
b	Responsiveness of decision-making processes			
	Guide post	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.	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.	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.
	Met?	Y	Y	N

	Justification	<p>The SIFCA Committee meets on a quarterly basis, where papers are presented by the professional staff of the IFCA, and questions or petitions raised by IFCA members and members of the public may be heard (SIFCA, 2015k). The SIFCA is also inherently consultative through its make up, but there is also a high level of consultation and engagement with fishers and the public through IFCA staff presence at sea and ashore, which informs the approach to management and the decision-making process.</p> <p>The annual planning and reporting process (e.g., SIFCA (2016i, 2016j),), regular SIFCA meeting schedule and the SIFCA Committee minutes (e.g., SIFCA (2017g)) demonstrate clearly that 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. SG80 is met.</p> <p>It is, though, extremely difficult to demonstrate that decision-making processes respond to <u>all</u> issues. Following the MSC's expectation that scoring will be precautionary, it is considered that SG100 is not met.</p>		
c	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	
	Justification	<p>Five success criteria were identified under the IFCAs' vision, linked to the high level objectives as outlined in the UK Marine Policy Statement (HM, 2011), These included that IFCAs make the best use of evidence to deliver their objectives (SIFCA, 2016i). Defra guidance to the IFCAs also highlights that the best available research and analysis should gathered and interpreted to inform evidence-based management (DEFRA, 2011).</p> <p>As highlighted in PI 3.1.3, the requirement to use the precautionary approach is embedded within the management of fisheries in Poole Harbour, as HRAs must be undertaken before a 'plan or project' (e.g., the issuance of permits under the Dredge Permit Byelaw) can be lawfully undertaken (NE, 2016).</p> <p>The production (and acceptance by NE) of the HRAs for issuing of permits under Dredge Permit Byelaw (SIFCA, 2017d) and for leasing lays within the Poole Harbour Fishery Order (SIFCA, 2015i) provide evidence that decision-making processes use the precautionary approach and are based on best available information; this SG80 requirement is met.</p>		
d	Accountability and transparency of management system and decision-making process			
	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes

			and relevant recommendations emerging from research, monitoring, evaluation and review activity.	how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Y	Y	N
	Justification	Under the MACAA, the SIFCA is required to publish an Annual Plan, and then an Annual Report, which provides a summary of performance against the Plan ((HM, 2009)). This includes a compliance and enforcement summary for the district, and an overview of fisheries management development and the bivalve stock survey undertaken in Poole Harbour. Other more specific information (for example, on catch and bycatch in the fishery, areas fished, and on the results of the stock survey) may be presented to industry and are available on request. As such, the fishery meets SG80, but it is considered that the formal reporting as undertaken does not currently provide comprehensive information on the fishery's performance and management actions to all interested stakeholders; SG100 is not met.		
e	Approach to disputes			
	Guide post	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 for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Y	Y	N
	Justification	To the knowledge of the Assessment Team, the SIFCA has not been subject to court challenge directly, but has responded through its role as a relevant authority under the Conservation of Habitats and Species Regulations 2010 to a potential legal challenge to the management of fishing activities within and around EMSs. This meant that the SIFCA adopted Defra's Revised Approach, which entailed undertaking a risk assessment of fishing activities, with those activities deemed likely to cause an adverse effect on an EMS, regardless of intensity, being subject to permanent spatial closure byelaws. This is now the case for towed bottom fishing gears as detailed in the SIFCA's 'Bottom towed fishing gear byelaw' (SIFCA, 2016h). The response to Defra's revised approach was reviewed by ClientEarth (2014), who stated that " <i>Southern IFCA Bottom Towed Fishing Byelaw is a further example of a sound and legally compliant byelaw...</i> ". It is clear that the fishery meets SG80. The degree to which SG100 is met through the management system acting proactively to avoid legal disputes is difficult to		

		determine, however. Following the MSC's expectation that scoring will be precautionary, it is considered that SG100 is not met.
References	ClientEarth (2014), (DEFRA, 2011), (HM, 2009), (HM, 2011), (NE, 2016), (SIFCA, 2015b), (SIFCA, 2015i), SIFCA (2015k), (SIFCA, 2016i), (SIFCA, 2016h), (SIFCA, 2016j), (SIFCA, 2017d), (SIFCA, 2017g)	
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		N/A

Evaluation Table for PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	Y	N
	Justification	<p>The conditions of the Dredge Permit Byelaw and the responsibilities and measures of the Poole Harbour Fishery Order are enforced by the SIFCA. The SIFCA has published a compliance and enforcement framework, detailing the regulations that the IFCA manages, its enforcement powers and potential enforcement actions (including administrative penalties), the risk-based framework that is employed to categorise and rank risks, and providing an overview of the intelligence led approach to enforcement (SIFCA, 2013b). The compliance and enforcement framework is accompanied by a compliance risk register (SIFCA, 2015j). This document highlights the specific risks that are considered to be presented by each of the SIFCA's fisheries, supporting a targeted approach to enforcement.</p> <p>The SIFCA has 9 warranted IFCOs, who collectively patrol the district at-sea and ashore. Five of the IFCOs are employed primarily for enforcement duties. Sea-borne activities within Poole Harbour are facilitated through the deployment of the FPV Endeavour, which is based in Poole Harbour and was designed specifically for enforcement within this Harbour. The IFCA also has three other FPVs that can be deployed for monitoring and compliance throughout the district (one catamaran based in Southampton, and two rigid-hulled inflatable boats that are based at either end of the district but can be trailered to different locations as needed).</p> <p>Enforcement and compliance data show that IUU fishing has dropped dramatically since the introduction of the new Byelaw (Figure 26), but some non-compliance is still detected at a relatively low level. It is considered that the approach taken by the SIFCA to monitoring, control and surveillance of the fishery comprises a system, and that it has demonstrated an ability to enforce the fishery; SG80 is met. However, it is too soon have been able to demonstrate a consistent ability to enforce the new Dredge Permit Byelaw and the Fishery Order, so SG100 is not met.</p> <p>A non-binding Recommendation (#4) is made at this point. It is noted that the risk register (SIFCA, 2015j) is now very likely to be out of date, given the introduction of the byelaw in 2015 and the apparent steep decline in IUU fishing within the Dredge</p>		

		Permit fishery. It is therefore recommended that the risk register is updated as soon as possible to better reflect the current situation.		
b	Sanctions			
	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Y	Y	N
	Justification	<p>Sanctions for non-compliance in the fishery vary with the severity of the offence, as outlined in the SIFCA compliance and enforcement framework (SIFCA, 2013b). These sanctions range from verbal warnings, through written warnings, simple cautions, Financial administrative penalties (FAPs) and then prosecutions through the courts.</p> <p>For offences that may be addressed through FAPs, the maximum fine specified for first offences varies with the offence type from £250 to £2,000, and this doubles for the second offence. Under the FAP system, a third offence would be taken forward as a prosecution. The maximum fine for a Byelaw offence is £50,000 (noting that if a vessel is used in a byelaw offence, under Section 153 of the MACAA, the master, the owner and the charterer (if any) of the vessel are each guilty of an offence (HM, 2009).</p> <p>The non-compliance data show that the level of IUU fishing has dropped dramatically since the introduction of the new Byelaw (Figure 26), but some non-compliance is still detected at a relatively low level.</p> <p>It is considered that sanctions to deal with non-compliance exist, are consistently applied, and are thought to provide effective deterrence; SG80 is met. It is too soon since the introduction of the new Dredge permit byelaw to confirm that the sanctions demonstrably provide effective deterrence, so SG100 is not met.</p>		
c	Compliance			
	Guide post	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.	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.	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.
	Met?	Y	Y	N
	Justification	The SIFCA maintains an active compliance and enforcement presence within Poole Harbour, including through the deployment of a dedicated patrol vessel that was designed to operate within the confines of the Harbour. After an initial increase in 2015, the number of serious offences detected declined in 2016, despite there being a surge in enforcement activity in that year (Table 19).		

		<p>With respect to providing information of importance to the effective management of the fishery, permit holders provide input to the review of operation and effectiveness of the Byelaw, and are required under the Byelaw to submit landings data on a monthly basis ((SIFCA, 2015b)). Fishers also contributed extensively prior to the introduction of the new Fishery Order in 2015, and are required under the Order to submit an annual management plan ((SIFCA, 2015a)). In general, it is apparent that fishers, individually and through the PDFA, also participate actively in discussions with the SIFCA about the fishery, including in reporting IUU activity.</p> <p>While there is some evidence that fishers comply with the management system, and that fishers provide information of importance to the effective management of the fishery, it is apparent that some non-compliance continues to occur. As such, SG80 is met but the fishery does not meet SG100 (which requires that there is a 'high degree of confidence' that fishers comply with the management system).</p>	
d	Systematic non-compliance		
	Guide post		There is no evidence of systematic non-compliance.
	Met?		Y
	Justification	<p>Until recently, there were high levels of IUU fishing within Poole Harbour. In large part, the Dredge Permit Byelaw was crafted to close loopholes that allowed fishers to illegally target Manila clam and cockle with a dredge whilst claiming they were targeting another species. Although it is somewhat early to conclude that the introduction of the new Byelaw has solved the issue, the level of IUU fishing has dropped dramatically (Figure 26).</p> <p>The SIFCA has provided summary enforcement and compliance statistics for 2013-2016 (Table 19), which show that some non-compliance continues to occur within the fishery, but this is not considered by the Assessment Team to comprise 'systematic' non-compliance.</p> <p>The SG80 requirement for this SId is met, but a non-binding Recommendation (#5) is set, that the SIFCA provide evidence at each annual audit, updating the enforcement and compliance statistics, and demonstrating that there is no evidence of systematic non-compliance. If there is a rise in IUU or non-compliance levels in future then a Condition may be introduced.</p>	
References	(HM, 2009), (SIFCA, 2013b), (SIFCA, 2015b), (SIFCA, 2015j), (SIFCA, 2015a).		
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:			80
CONDITION NUMBER (if relevant):			N/A
RECOMMENDATION NUMBER			4 & 5

Evaluation Table for PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4	<p>There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives.</p> <p>There is effective and timely review of the fishery-specific management system.</p>		
Scoring Issue	SG 60	SG 80	SG 100
a	Evaluation coverage		
Guide post	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
Met?	Y	Y	Y
Justification	<p>There are established mechanisms in place to review the approach to management through the statutory byelaw and Fishery Order making processes. These are required to follow set procedures, including that extensive consultation with other statutory bodies and stakeholders are undertaken. The Secretary of State is also required to undertake a review of proposals before confirming either type of secondary legislation ((DEFRA, 2011), Schedule 1 of HM (1967)).</p> <p>Under the MACAA (Section 178), each IFCA is required to submit an annual report on its activities to the Secretary of State, in a format and containing such information as the Secretary of State may require. Every four years, the Secretary of State is then required under Section 183 of MACAA to lay before Parliament a report about the conduct and operation of the IFCAs (HM, 2009).</p> <p>For the Poole Harbour Manila Clam and Cockle Fishery, a review of operation and effectiveness is an ongoing requirement of the Dredge Permit Byelaw, with a review needing to be undertaken at least every three years. The review is required to follow a set procedure, and in making any changes to the permit conditions or permit fees, the SIFCA is required to have regard to the following (Section 11, (SIFCA, 2015b), with emphasis added by the Assessment team):</p> <ul style="list-style-type: none"> • The Authority's duties and obligations under sections 153 and 154 of the MACAA • Any available scientific and survey data; • Any statutory advice given by Natural England; • Any Habitats Regulations Assessment; • An Impact Assessment relating to any proposed changes to additional permit conditions or permit fees; • Any feedback received from consultation with permit holders under subparagraph (a). <p>The Poole Harbour Fishery Order was also reviewed and renewed in 2015; the Order now specifies that the SIFCA must (Section 4, (SIFCA, 2015a), with emphasis added by the Assessment team):</p> <ol style="list-style-type: none"> 1) Annually, before 1st July, review the management plan and publish an updated version of the plan on its website. 		

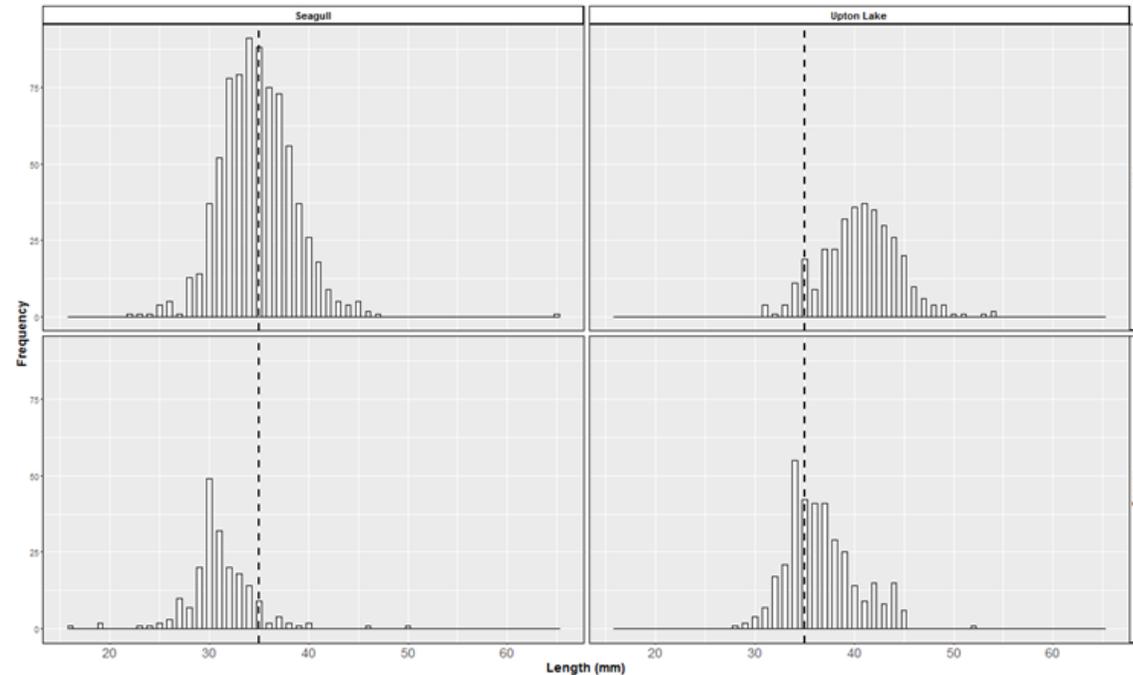
		<p>2) At least 4 weeks before the date of such publication, notify the interested parties in writing of any proposed changes to the management plan.</p> <p>3) Before publishing the updated management plan, take account of any representations it receives in writing from any interested party on the plan or any proposed changes to it.</p> <p>Overall, it is considered that there are mechanisms in place to evaluate all parts of the fishery-specific management system; SG100 is met.</p>		
b	Internal and/or external review			
	Guide post	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Y	Y	Y
	Justification	<p>As part of the process of implementing the MACAA, each IFCA has been required to undertake a review of existing byelaws with the aim of removing duplicate or redundant byelaws, and making sure that any gaps are covered (DEFRA, 2015). The SIFCA has been undertaking this process, and the Dredge Permit Byelaw is a product of that review; the Poole Harbour Fishery Order was also reviewed and renewed in 2015. Both pieces of secondary legislation were subject to confirmation by the Secretary of State, which is considered to comprise an external review.</p> <p>As required under the MACAA, the Secretary of State's first report on the conduct and operation of the IFCAs following the creation of the IFCAs has been published, and included a review of evidence specific to the SIFCA that was submitted during a three-month public call for evidence (DEFRA, 2015).</p> <p>From an internal perspective, the Dredge Permit Byelaw conditions were reviewed recently after one year of operation, and the current permit conditions imposed on the fishery are specified in the 2017 Poole Harbour Dredge Permit (SIFCA, 2017a). The Poole Harbour Fishery Order 2017 management plan was recently published by the SIFCA, detailing the current management approach being taken (SIFCA, 2017e). The Dredge Permit Byelaw conditions and the Poole Harbour Dredge Permit management plan are both subject to HRAs, which are reviewed externally by NE (e.g., (SIFCA, 2015i), (SIFCA, 2017d)).</p> <p>In summary, the Assessment Team is satisfied that there are regular internal and external reviews of the fishery-specific management system; SG100 is met.</p>		
References	(DEFRA, 2011), (DEFRA, 2015), HM (1967), (HM, 2009), (SIFCA, 2015b), (SIFCA, 2015a), (SIFCA, 2015i), (SIFCA, 2017d), (SIFCA, 2017a), (SIFCA, 2017e).			
OVERALL PERFORMANCE INDICATOR SCORE UoA1 and UoA2:				100
CONDITION NUMBER (if relevant):				N/A

Appendix 2 Risk Based Framework (RBF) Outputs

Appendix 2.1 Consequence Analysis (CA) for Principle 1

Table 29. Consequence Analysis Table for Stock status outcome for UoA1 Manila clam (*Ruditapes philippinarum*)

	Scoring element	Consequence subcomponents	Consequence Score
PRINCIPLE ONE: Stock status outcome (UoC1)	Manila clam (<i>Ruditapes philippinarum</i>)	Population size	
		Reproductive capacity	
		Age/size/sex structure	80
		Geographic range	
		Rationale for most vulnerable subcomponent	<p>The RBF Workshop was attended by a wide range of stakeholders including the Client, Southern IFCA, and the IFCA's Fishery Officers, five clam/cockle permit holders who are members of the Poole and District Fishermen's Association (PDFA), a scientific expert on Manila clam in Poole Harbour, Natural England and the assessment team from MEC. (For details of attendees, see Table 20 in section 4.3.1). There was consensus among all participants that age/size/sex structure was the most vulnerable subcomponent. Evidence provided by L. Clarke and R. Herbert of Bournemouth University in conjunction with Southern IFCA showed that at the end of the fishing season, the size structure of the Manila clam population on individual beds had changed significantly since the start of the fishing season (see figure below). The size distribution of Manila clam on a bed in a closed area had also changed following a fishing season, but the change was not as marked as that observed in the fished area.</p>



Size distribution of Manila clam in fished (left) and unfished (right) areas of Poole Harbour at beginning (top) and end (bottom) of 2016 fishing season.

Participants at the workshop considered that population size was relatively unaffected by fishing because year-class strength (indicator of recruitment?) varies significantly both temporally and spatially in response to hydrographical and environmental factors, and thus the Manila clam population is unlikely to be impacted by fishing even at high exploitation rates.

Reproductive capacity is not considered vulnerable to fishing as the minimum size of 35 mm is considerably higher than the size-at-maturity of around 25 mm, so fishing is unlikely to impact on reproductive success.

Participants considered that the geographical range of Manila clam was not vulnerable to fishing. Manila clam are found in all areas of Poole Harbour including the Channel and there is no evidence that Manila clam have been removed from an area in which they were found previously.

Rationale for consequence score

There was a detectable change in stock structure of the Manila clam population on individual beds following a fishing season. However the minimum size is well above the size at maturity and therefore any detectable change in size structure is highly unlikely to have any impact on reproductive success of the population. Manila clam is a sedentary species and therefore any local changes in size structure are highly unlikely to have an effect on the population dynamics of the Manila clam in Poole Harbour, not least because there are large areas of the harbour where the fishery is permanently closed which act as a buffer against the impact of fishing in the open areas of the fishery. In addition, there are areas within Poole Harbour which are not suitable for fishing but which support high densities of Manila clam. The participants at the workshop concluded that any changes in size structure due to fishing had minimal impact on population dynamics and therefore a consequence score of 80 was appropriate.

Table 30. Consequence Analysis Table for Stock status outcome for UoA2 Cockle (*Cerastoderma edule*)

	Scoring element	Consequence subcomponents	Consequence Score
PRINCIPLE ONE: Stock status outcome (UoC2)	Cockle (<i>Cerastoderma edule</i>)	Population size	80
		Reproductive capacity	
		Age/size/sex structure	
		Geographic range	
Rationale for most vulnerable subcomponent	<p>The RBF Workshop was attended by a wide range of stakeholders including the Client, Southern IFCA, and the IFCA's Fishery Officers, five clam/cockle permit holders who are members of the Poole and District Fishermen's Association (PDFA), a scientific expert on Manila clam in Poole Harbour, Natural England and the assessment team from MEC. (For details of attendees, see Table 20 in section 4.3.1). There was consensus among all participants that population size was the most vulnerable subcomponent. Cockle are fast maturing and highly fecund, and the selectivity of the pump scoop dredge ensures that there are minimal numbers of undersized cockle caught, and the minimum size is well above the size at maturity. The participants concluded therefore that reproductive capacity and age/size/sex structure were not vulnerable sub-components. Cockle are widespread within Poole Harbour and along the coast of Britain and Ireland and there is no evidence that cockle have disappeared from areas of Poole Harbour where they were previously present. Geographic range was not therefore considered to be the most vulnerable subcomponent.</p>		

Rationale for consequence score

There are possible detectable changes in size of the cockle population as a result of fishing, and whilst there are significant removals from the population, at the stock level participants considered that environmental variations have a far greater effect than fishing on benthic marine infauna such as cockle. The fishery will target high density cockle beds, and there are large areas of the harbour where the fishery is permanently closed which act as a buffer against the impact of fishing in the open areas of the fishery, and there is long closed season for the fishery. The participants concluded that the fishery has minimal impact on population size and no impact on population dynamics. A consequence score of 80 is appropriate therefore.

Appendix 2.2 Productivity-Susceptibility Analysis (PSA) Principle 1

Productivity-Susceptibility Analysis (PSA) requires an evaluation of the productivity of the species and the susceptibility of the population to fishing. Productivity considers and scores a series of attributes of the life history of the species and uses these scores to generate an aggregate score (the arithmetic mean of the scores). The scoring table for productivity is provided by MSC and is given in Table 31 below. (Note that it is not necessary to score 'average maximum size' or 'average size at maturity' for invertebrate species, so these attributes are not replicated in Table 31). Susceptibility scores four attributes of the fishery in relation to the species and/or population, and generates an aggregate score by calculating the geometric mean of these scores. The scoring table for these four attributes is provided by MSC (Table 32).

The scores and rationales for productivity and susceptibility are given in Table 33 and Table 34 for Manila clam and Table 35 and Table 36 for cockle. The assessment team have used values for life history traits taken from populations in or as close to Poole Harbour as possible, since life history attributes may vary geographically.

Table 31. MSC scoring table for productivity in the PSA

	High productivity / low risk – score 1	Medium productivity / medium risk – score 2	Low productivity / high risk – score 3
Average age at maturity	< 5 years	5-15 years	> 15 years
Average maximum age	< 10 years	10-25 years	> 25 years
Fecundity	> 20,000 eggs / year	100-20,000 eggs / year	< 100 eggs / year
Reproductive strategy	Broadcast spawner	Demersal egg layer	Live bearer
Trophic level	< 2.75	2.75-3.25	> 3.25
Density-dependence	Compensatory dynamics at low population size demonstrated or likely	No compensatory or compensatory dynamics demonstrated or likely	Compensatory dynamics at low population sizes (Allee effects) demonstrated or likely

Table 32. MSC scoring table for susceptibility in the PSA

	Low susceptibility / low risk – score 1	Medium susceptibility / medium risk – score 2	High susceptibility / high risk – score 3
Areal overlap	Overlap < 10%	Overlap 10-30%	Overlap >30%
Vertical overlap	Low overlap with fishing gear (strong depth refuge from fishing)	Medium overlap with fishing gear (small depth refuge from fishing)	High overlap with fishing gear (little or no depth refuge from fishing)
Selectivity	Individuals < size at maturity are rarely caught	Individuals < size at maturity are regularly caught	Individuals < size at maturity are frequently caught
	Individuals < size at maturity can escape or avoid gear	Individuals < half the size at maturity can escape or avoid gear	Individuals < half the size at maturity are retained by gear

	Low susceptibility / low risk – score 1	Medium susceptibility / medium risk – score 2	High susceptibility / high risk – score 3
Post-capture mortality	Evidence of post-release survival	Evidence of some released postcapture and survival. Released alive	Retained or majority dead when discarded

Table 33. PSA score for UoA 1 Manila clam (*Ruditapes philippinarum*) as target species.

PI number	1.1.1		
a) Productivity			
Scoring element (species)	Manila clam (<i>Ruditapes philippinarum</i>)		
Attribute	Rationale	Score	
Average age at maturity.	Manila clam mature at 2-3 years (J. Humphreys, pers. comm.). In addition Humphreys et al. (2007) note that clams of 40mm are on average 3.3 years old, and as in nearby Southampton Water there are a high percentage of clams that are mature at 25mm, it can be concluded that the average age of maturity is less than 3.3 years.	1	
Average maximum age	Average maximum age is 7-8 years (J. Humphreys, pers. comm.), although there are reports of some individuals on the west coast of USA living to 14 years (SealifeBase, n.d.)	1	
Fecundity	Fecundity is 400,000 to 11 million (Tumnoi, 2012)	1	
Reproductive strategy	Broadcast spawner	1	
Trophic level	Filter feeder with phytoplankton and detritus as main food sources (SealifeBase, n.d.; Tumnoi, 2012). So trophic level will be less than 2.75	1	
Density dependence	Historical records show that Manila clam have the ability to establish populations, both from direct introductions and also in areas adjacent to those where introductions have taken place (Humphreys et al. 2015) suggesting that small founder populations are able to thrive and grow given the right environmental conditions. It can be concluded therefore that compensatory dynamics at low population sizes (Allee effects) have not been demonstrated and are unlikely to be observed. Published literature shows that Allee effects have not been convincingly demonstrated in marine broadcast spawners, even those such as abalone which have been significantly depleted (Gascoigne and Lipcius, 2004).	2	
b) Susceptibility			
Fishery only where the scoring element is scored cumulatively	There are no other fisheries in need of consideration for cumulative catch as per PF4.4.3.3.		

Attribute	Rationale	Score
Areal Overlap	Areal overlap can be estimated from SIFCA fishing activity observations from 2015 and 2016 against the distribution of Manila clam in Poole Harbour. Manila clam are found in all parts of Poole Harbour, possibly even in the Channel. Even though some parts of Poole Harbour are closed to fishing, taking into account the dredge fishery, the Several Order lays and the hand-picking fishery, participants at the RBF Workshop considered that the areal overlap was 25-30%. The assessment team therefore took a precautionary approach to scoring this attribute and concluded that the areal overlap could be over 30%.	3
Encounterability	The fishery takes place on the seabed and there is high overlap of the fishery therefore with the Manila clam stock. As a target species, the default score is 'High susceptibility'.	3
Selectivity of gear type	There is a minimum size of 35mm for Manila clam which is underpinned by a minimum spacing on the dredge bars of 18mm. Observations from the commercial fishery and from the annual stock surveys provide evidence that Manila clam under the minimum size of 35mm are not caught in significant numbers (SIFCA, 2016f). As the size-at-maturity of Manila clam in this area is around 25mm, it can be concluded that Manila clam under the size at maturity are rarely caught in the fishery. ('Rarely' is defined as occurring in less than 5% of gear deployments.)	1
Post capture mortality	Manila clam is a target species and therefore the default score for post capture mortality is 3.	3

The productivity and susceptibility scores are used to calculate an overall PSA score and corresponding MSC score for the target species of Manila clam (Table 34).

(For interested readers the algorithms used to calculate the overall productivity, susceptibility and PSA scores, and the corresponding MSC scores are given below Table 34).

Table 34. Summary table PSA score for Manila clam as target species.

PI number 1.1.1	
Scoring Element - Manila clam (<i>Ruditapes philippinarum</i>)	
PSA element	Score
Total Productivity Score	1.17
Total Susceptibility Score	1.65
Overall PSA score	2.02
MSC PSA-derived Score	95
Risk Category Name	Low
MSC scoring Guidepost	>80

Algorithms used to calculate overall PSA and MSC scores:

Productivity: overall score for susceptibility is average of score for 6 attributes = 1.17

Susceptibility: overall score for productivity is multiple of 4 attribute scores re-scaled to [1 3] = 1.65

Overall PSA score is calculated as the Euclidean distance from the origin of the point on the PSA graph represented by the productivity and susceptibility scores, i.e. (1.17, 1.65).

$$= \sqrt{(1.17 + 1.652)} = 2.02$$

This overall PSA score converts to an MSC score using the following relationship:

$$\text{MSC score} = -11.965(\text{PSA})^2 + 32.28(\text{PSA}) + 78.259 = 95$$

Table 35. PSA score for UoA2 Cockle (*Cerastoderma edule*) as target species

PI number	1.1.1	
a) Productivity		
Scoring element (species)	Cockle (<i>Cerastoderma edule</i>)	
Attribute	Rationale	Score
Average age at maturity.	Reportedly 1-2 years in UK waters. http://www.marlin.ac.uk/species/detail/1384	1
Average maximum age	Approximately 5-8 years in The Wash (Dare et al., 2004). SeaLifeBase gives a maximum reported age of 7 years.	1
Fecundity	Fecundity is usually in the range 200,000 to 700,000 per annum (Dare et al., 2004) but a maximum of 1.7 million has been reported (Honkoop and Meer, 1998).	1
Reproductive strategy	Broadcast spawner	1
Trophic level	Suspension feeder, phytoplankton and detritus are main food sources (SealifeBase, n.d.; Dare et al., 2004). Trophic level less than 2.75.	1
Density dependence	Little is known about compensatory mechanisms in cockle, but cockle populations are known to be highly variable over time and may disappear from areas, but then reappear again when environmental conditions are favourable for recruitment. Compensatory dynamics at low population sizes (Allee effects) are unlikely.	2
b) Susceptibility		
Fishery only where the scoring element is scored cumulatively	There are no other fisheries in need of consideration for cumulative catch as per PF4.4.3.3.	
Attribute	Rationale	Score
Areal Overlap	Areal overlap can be estimated from SIFCA fishing activity observations from 2015 and 2016 against the distribution of	3

	cockle in Poole Harbour, which is a precautionary estimate of the stock distribution as cockle are clearly found along the south coast and larvae from adjacent populations may be dispersed into Poole Harbour. Cockle are found in all parts of Poole Harbour. Even though some parts of Poole Harbour are closed to fishing, taking into account the dredge fishery, the Several Order lays and the hand-picking fishery, participants at the RBF Workshop considered that the areal overlap of the fishery with stock distribution was 25-30%. The assessment team therefore took a precautionary approach to scoring this attribute and concluded that the areal overlap could be over 30%.	
Encounterability	The fishery takes place on the seabed and there is high overlap of the fishery therefore with the cockle stock. As a target species, the default score is 'High susceptibility'.	3
Selectivity of gear type	There is a Southern IFCA byelaw that cockle must not be able to pass through a 23.8 mm square gauge providing an effective minimum size for cockle which is underpinned by a minimum spacing on the dredge bars of 18mm. Observations from the commercial fishery and from the annual stock surveys provide evidence that undersized cockle are not caught in the dredge (SIFCA, 2016f). As the size-at-maturity of cockle in this area is around 15-20mm, it can be concluded that cockle under the size at maturity are rarely caught in the fishery. ('Rarely' is defined as occurring in less than 5% of gear deployments.) http://www.marlin.ac.uk/species/detail/1384	1
Post capture mortality	Cockle is a target species and therefore the default score for post capture mortality is 3.	3

The productivity and susceptibility scores are used to calculate an overall PSA score and corresponding MSC score for the target species of cockle (Table 36).

(For interested readers the algorithms used to calculate the overall productivity, susceptibility and PSA scores, and the corresponding MSC scores are given below Table 36.)

Table 36. Summary table PSA score for cockle as target species

PI number 1.1.1	
Scoring Element - Cockle (<i>Cerastoderma edule</i>)	
PSA element	Score
Total Productivity Score	1.17
Total Susceptibility Score	1.65
Overall PSA score	2.02
MSC PSA-derived Score	95
Risk Category Name	Low
MSC scoring Guidepost	>80

Algorithms used to calculate overall PSA and MSC scores:

Productivity: overall score for susceptibility is average of score for 6 attributes = 1.17

Susceptibility: overall score for productivity is multiple of 4 attribute scores re-scaled to [1 3] = 1.65

Overall PSA score is calculated as the Euclidean distance from the origin of the point on the PSA graph represented by the productivity and susceptibility scores, i.e. (1.17, 1.65).

$$= \sqrt{(1.17 + 1.652)} = 2.02$$

This overall PSA score converts to an MSC score using the following relationship:

$$\text{MSC score} = -11.965(\text{PSA})^2 + 32.28(\text{PSA}) + 78.259 = 95.$$

Appendix 2.3 Productivity-Susceptibility Analysis (PSA) Principle 2.

Table 37. PSA score for UoA1 (Manila clam) for main secondary species cockle (*C. edule*).

PI number		2.2.1	
a Productivity			
Scoring element (species)	Cockle (<i>C. edule</i>)		
Attribute	Rationale	Score	
Average age at maturity.	High Productivity – clams mature at 2-3 years	1	
Average maximum age	High Productivity – clam average life span is 7-8 years	1	
Fecundity	High Productivity – Broadcast spawners releasing >20,000 eggs per annum.	1	
Reproductive strategy	High Productivity – Broadcast spawner	1	
Trophic level	High Productivity – filter feeder therefore <2.75	1	
Density dependence	Medium Productivity -	2	
b Susceptibility			
Fishery only where the scoring element is scored cumulatively	There are no other fisheries in need of consideration for cumulative catch as per PF4.4.3.3.		
Attribute	Rationale	Score	
Areal Overlap	Areal overlap is estimated from SIFCA fishing activity observations from 2015 and 2016 (Figure 5) against the extent of Poole Harbour as a functional unit of the cockle population. This is precautionary given the existence of cockle across the Southern coast of England and the likelihood of some dispersal of larval into the harbour Under this scenario a precautionary level of is 'High susceptibility' where >30% overlap is assumed.	3	
Encounterability	There is a high overlap with fishing gear (high encounterability) as cockle is a target species and in accordance with Table PF5 the default score for target species (P1) is 'High susceptibility'.	3	
Selectivity of gear type	Pump-scoop dredge gear requirements are designed to minimise juvenile cockle retention this ensures that the capture of individuals smaller than the size at maturity occurs in less than 5% few gear deployments and according to PF4.4.8.4 a capture of immature specimens can be considered as 'rarely' occurring.	1	
Post capture mortality	Retained species receive a default score of 'High susceptibility' Table PF5.	3	

Table 38. Summary table PSA score for UoA1 (Manila clam) for main secondary species cockle (*C. edule*)

PI number 2.2.1	
Scoring Element cockle (<i>C. edule</i>)	
PSA element	Score
Total Productivity Score	1.17
Total Susceptibility Score	1.65
MSC PSA-derived Score	95
Risk Category Name	Low
MSC scoring Guidepost	>80

Table 39. PSA score for UoA2 (cockle) for main secondary species Manila clam (*R. philippinarum*).

PI number	2.2.1	
a Productivity		
Scoring element (species)	Manila Clam (<i>R. philippinarum</i>)	
Attribute	Rationale	Score
Average age at maturity.	High Productivity – clams mature at 2-3 years	1
Average maximum age	High Productivity – clam average life span is 7-8 years	1
Fecundity	High Productivity – Broadcast spawners releasing >20,000 eggs per annum.	1
Reproductive strategy	High Productivity – Broadcast spawner	1
Trophic level	High Productivity – filter feeder therefore <2.75	1
Density dependence	Medium Productivity -	2
c) Susceptibility		
Fishery only where the scoring element is scored cumulatively	There are no other fisheries in need of consideration for culumative catch as per PF4.4.3.3.	
Attribute	Rationale	Score
Areal Overlap	Areal overlap is estimated from SIFCA fishing activity observations from 2015 and 2016 (Figure 5) against the extent of Poole Harbour as a functional unit of the Manila	3

	clam population given that it is not found beyond the harbour mouth. Under this scenario a precautionary level of is 'High susceptibility' where >30% overlap is assumed.	
Encounterability	There is a high overlap with fishing gear (high encounterability) as Manila clam is a target species and in accordance with Table PF5 the default score for target species (P1) is 'High susceptibility'.	3
Selectivity of gear type	Pump-scoop dredge gear requirement are designed to minimise juvenile clam retention this ensures that the capture of individuals smaller than the size at maturity occurs in less than 5% few gear deployments and according to PF4.4.8.4 a capture of immature specimens can be considered as 'rarely' occurring.	1
Post capture mortality	Retained species receive a default score of 'High susceptibility' Table PF5.	3

Table 40. Summary table PSA score for UoA2 (cockle) for main secondary species Manila clam (*R. philippinarum*).

PI number 2.2.1	
Scoring Element Manila Clam (<i>R. philippinarum</i>)	
PSA element	Score
Total Productivity Score	1.17
Total Susceptibility Score	1.65
MSC PSA-derived Score	95
Risk Category Name	Low
MSC scoring Guidepost	>80

Appendix 3 Conditions

The Poole Harbour Clam & Cockle Fishery scored less than 80 on two Performance Indicators and therefore two conditions have been raised and are listed below.

Table 41. Condition 1

Performance Indicator	PI 1.2.3 Relevant information is collected to support the harvest strategy SIb Stock abundance and UoA 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.
Score	75
Rationale	<p>Stock abundance is monitored annually through the Southern IFCA stock surveys providing information on spatial and temporal variability in stock abundance, stock structure and recruitment which enables the Southern IFCA to implement management changes if necessary. CPUE calculated from permit returns also provides an index of stock abundance. Permit holders must submit monthly catch returns recording daily catch of each species and fishing effort in terms of number of hours fished, and to whom all parts of the catch were sold. As fishers are registered sellers who sell their catch to registered buyers, the landings are recorded through the registration of buyers and sellers (RBS) legislation, and these figures form the basis of official landings statistics produced by the MMO. Cross-checking by IFCA officers of landings figures collected by MMO with those recorded on IFCA log books provide evidence that there is no systematic misreporting of landings data. In addition to the dredge fishery, hand-gathering for cockle and clams takes place in the shallow intertidal areas of Whitley Lake/Evening Hill and Rockley Spit, and MMO provides landings statistics for this component of the Manila clam and cockle fisheries, so UoA removals are thoroughly monitored.</p> <p>Both Manila clam and cockle are sedentary molluscs, and as with all such molluscs, there is potential for local depletion of stocks to occur due to the concentration of fishing effort in areas of high density of Manila clam or cockle, which would increase the susceptibility of the stocks by effectively increasing the areal overlap of the fishery with the stock. Management action may be required, therefore, to close specific beds. Whilst the annual surveys may provide information on spatial variations in stock abundance and recruitment, catch returns from the permit scheme are not spatially disaggregated, and therefore it is not possible to obtain early warning signals of local depletion from the permit returns. IFCA Officers would have to rely upon advice from permit holders either at sea or at the dockside to obtain up-to-date information on local declines in stock. This is a deficiency in the harvest strategy and therefore SG80 is not met, and a condition is raised.</p>
Condition	By the third annual surveillance, UoA removals should be regularly monitored at a level of accuracy and coverage consistent with the harvest control rule.
Milestones	<p>Annual surveillance 1: Show written evidence of consultation with permit holders to agree that monthly catch returns by permit holders will be completed for each specified fishing area as opposed to an aggregated daily figure. Expected interim score: 75</p> <p>Annual surveillance 2: Provide evidence that a new monthly catch return form has been designed and implemented. Expected interim score: 75</p>

	<p>Annual surveillance 3: Provide evidence that a new monthly catch return form has been implemented, that permit holders are completing the new returns diligently, and that analysis of spatial variations in catch rates will be undertaken on an annual basis. Expected score: 80</p>
Client action plan	<p>The client fishery will develop the monthly catch return forms submitted by the permitted fishers under the Poole Harbour Dredge Permit byelaw to indicate specified fishing areas within the Harbour rather than an aggregated daily figure.</p> <p>This process will involve an addition to the monthly catch return form and the associated condition (2.2) in the Poole Harbour Dredge Permit and therefore the process of implementing this addition will follow that outlined in paragraph 11 of the Poole Harbour Dredge Permit byelaw.</p> <p>By the first annual surveillance, an initial consultation phase will be carried out with permit holders, facilitated by the Southern IFCA and the PDFA. The Southern IFCA will look at the areas surveyed as part of the annual stock assessment and combine this with information from the permit holders to determine zones for the Harbour incorporating the shellfish beds used by the fishery and assessed as part of the stock assessment. This will be based on a consideration of the level of spatial coverage needed to provide accurate information to inform the harvest control rule but at the same time take account of the feasibility of providing this information by permit holders to ensure that the information provided is as accurate as possible.</p> <p>By the second annual surveillance, the information obtained through the consultation will have been used to create an amended monthly catch return form to include an additional requirement to report the area of the Harbour fished and the quantities of species removed from that area each day. The design and detail of how this will be reported will be based on the outcome of the consultation and consideration by the management authority (SIFCA). This amended form will be distributed to the fishers to be used for the start of the dredge season prior to the second annual surveillance. A copy of this new monthly catch return form will be provided as evidence along with evidence that the forms are being submitted in accordance with the permit conditions.</p> <p>The Southern IFCA keeps a record of the submission of the monthly catch return form by permit holders within the fishery. This record includes that a form has been submitted for each month of the season and that the form has been submitted fully and is correctly filled out. This record will be maintained and will form the basis of the evidence that permit holders are using and completing the new monthly catch return form diligently by the third annual surveillance. In addition, the data provided on the monthly catch return forms will be analysed for spatial variations in catch rates, including looking at time spent by vessels in different areas of the Harbour, the number of vessels using different areas and how this changes throughout the season and how catch rates differ between different areas. From this analysis comparisons can be made between different years to determine patterns, trends or any changes in patterns of activity within and between seasons.</p>
Consultation on condition	None required

Table 42. Condition 2

Performance Indicator	<p>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • 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. <p>SI a - Information adequacy for assessment of impacts</p>
Score	70
Rationale	<p>UoA1 and UoA2: Full compliance with fishery management regulations by fishers appears to occur (according to SIFCA) and there were no reported interactions with ETP species described by fishers or fisheries officers at the time of the site visit. Therefore SG60 is met.</p> <p>The nature of the dredge operations means that direct contact with ETP bird species is highly unlikely. There are no records of ETP mortality in the fishery and none likely to exist. However there is also no formal procedure within the management plan for reporting ETP mortality should it occur and therefore SG80 cannot be met. A Condition of Certification is therefore set.</p>
Condition	By the third annual surveillance, a template for recording ETP interactions should be implemented within the fishery allowing the management authority to monitor fishery impacts.
Milestones	<p>Annual surveillance 1: Show written evidence of consultation with permit holders to agree that any interaction with ETP species should be recorded and passed on to management authorities for analysis. Expected interim score: 70</p> <p>Annual surveillance 2: Provide evidence that a ETP interaction return form has been designed and implemented within the management plan. Expected interim score: 75</p> <p>Annual surveillance 3: Provide evidence that a ETP interaction return form has been implemented and that permit holders are completing the new returns diligently. Expected score: 80</p>
Client action plan	<p>The client fishery will create a template for recording any interactions between the fishery and ETP species. This will be undertaken by, in the first instance, looking at the type of data that will need to be collected and how best this data can be incorporated into a recording form and submitted to the management authority, the Southern IFCA. This initial phase will be carried out in consultation with permit holders facilitated by the Client (the PDFa) and the Southern IFCA.</p> <p>Monitoring and recording of interactions between the fishery and ETP species will be supported by the entry of permitted vessels in the fishery into the Seafish Responsible Fishing Scheme, which is currently running in parallel to the MSC Assessment. One of the requirements of the RFS certification is that the skipper and crew commit to participating in training or industry initiatives designed to enhance the management of the environment. Post-certification, periodic audits of the vessels in the scheme will monitor compliance with the requirements of the certification ensuring that this standard is maintained. Therefore, the RFS process will provide a further audit and also an incentive for the commitment of vessels within the fishery to participating in the process of recording interactions with ETP species. In addition, as part of both the MSC and RFS process, the client fishery aims to develop a program with the Dorset Wildlife Trust which</p>

	<p>could provide training for fishers in the client fishery on ETP species, what they are, why they are important and how to avoid negative interactions. The feasibility of this type of training program will form part of the consultation with permit holders prior to the first annual surveillance.</p> <p>The Southern IFCA, in conjunction with the PDFA, incorporating outcomes from the consultation with permit holders will produce a recording form for interactions with ETP species by the second annual audit. The reporting form will be designed to be used by permit holders and also fisheries independent observers who may wish to provide data on potential interactions between the fishery and ETP species. This data will be collated via a running spreadsheet, the data from which will be reviewed annually, or sooner if required, and discussed with Natural England at an annual surveillance meeting to ensure that any areas of concern are addressed.</p> <p>Interactions between the fishery and ETP species covered under the European Marine Site (EMS) designation of Poole Harbour are considered annually under the Habitats Regulations Assessment which is produced prior to the fishing season each year and is consulted on with Natural England. Recording of ETP species on the form produced and via the running spreadsheet will be used to inform the HRA for the EMS on an annual basis.</p> <p>By the third annual surveillance, the Southern IFCA as the management authority, working with the PDFA will ensure that the ETP interaction form produced is being submitted and will hold a record of submissions. The collation of this data onto a running spreadsheet will provide evidence of this process. Additionally, recorded evidence will be provided on the annual surveillance meetings to discuss the data collected and any training which has taken place within the fishery.</p>
Consultation on condition	None required

Appendix 4 Peer Review Reports

Peer Review 1

Table 43. Summary of Peer Review opinion.

<p><i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i></p>	<p>YES</p>	<p>CAB Response</p>
<p><u>Justification:</u> The overall determination that this fishery should be certified according to the MSC principles and criteria is appropriate, and is correctly based on the findings of this assessment. The remarks herewith aim to help clarify and complement the report but do not concern substantial points of scoring.</p>		<p>Thank you, please see our comments below.</p>
<p><i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i></p>	<p>YES</p>	<p>CAB Response</p>
<p><u>Justification:</u> There are two conditions, which are both clearly written. Both entail the collection and submission of more detailed information by the fishers to the Southern IFCA. Condition #1: By the third annual surveillance, UoA removals should be regularly monitored at a level of accuracy and coverage consistent with the harvest control rule. Condition #1 will achieve it's aim to support the Harvest Strategy only if that information is then analysed, presented and used by the S-IFCA. Its capacity to do this with existing staff needs to be indicated. Condition #2: By the third annual surveillance, a template for recording ETP interactions will be implemented within the fishery allowing the management authority to monitor fishery impacts. Condition #2 is clearly written. For both conditions, three years are allowed for the new information collection systems to be developed, which seems realistic and enough for the client to achieve the SG80 outcome for both conditions.</p>		<p>In relation to Condition 1, the year 3 milestone has been modified to require analysis of spatial variations in catch rates to be undertaken on an annual basis.</p>
<p><i>Do you think the client action plan is sufficient to close the conditions raised?</i> <i>[Reference FCR 7.11.2-7.11.3 and sub-clauses]</i></p>	<p>YES</p>	<p>CAB Response</p>
<p><u>Justification:</u> For both conditions, the client action plans are detailed and appear realistic. Only reservation for Condition#1 regards the analysis of collected data that is not mentioned (see above)</p>		<p>The CAP for Condition 1 has been revised to include analysis of the collected data.</p>

Comment on the Recommendations

The team also formulated 5 recommendations, where were found to be pertinent in clarifying some specific aspects that could be improved to maintain the scores for each of the 3 Principles at 80 or above.

Table 44. Default tree review

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1	Yes	Yes	NA	It is appropriate that RBF is used for both UoA1-Manila clam and UoA2-Cockle	No response required
1.1.2	NA	NA	NA	Not scored as RBFs used for PI 1.1.1 for both UoAs	No response required
1.2.1	Yes	Yes but	NA	Sla: The various components of the harvest strategy need to be related to the susceptibility scores (areal overlap, encounterability, selectivity of gear type and post capture mortality) to demonstrate that the objectives are met and the stocks (UoA1 and UoA2) are maintained at appropriate levels. Score agreed.	The rationale for Sla has been revised to relate the various components of the harvest strategy to the susceptibility attributes.
1.2.2	Yes	Yes	NA		

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.3	Yes	No	Yes, provided the information can be analysed, validated and used by the S-IFCA to inform its Harvest Strategy	Slb: "Both Manila clam and cockle are sedentary molluscs, and therefore as with all such molluscs, there is concern that local depletion of stocks may occur, and that management action to close specific beds may be required." This aspect and condition need a specific explanation in the main part of the report (3.3) and references. Score agreed	The potential for local depletion due to the concentration of fishing effort in areas of high density has been highlighted in the main part of the report. Condition 1. The year 3 milestone and the Client Action Plan have been modified to incorporate an analysis of spatial variation in catch rates.
1.2.4	Yes	Yes	NA		
2.1.1	Yes	Yes	NA		
2.1.2	Yes	Yes	NA		
2.1.3	Yes	Yes	NA		
2.2.1	Yes	Yes	NA		
2.2.2	Yes	Yes	NA		

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.2.3	Yes	Yes			
2.3.1	Yes	Yes	NA		
2.3.2	Yes	Yes	NA		
2.3.3	Yes	Yes but	Yes	The question of a reporting system for possible rare encounters needs to be introduced in text of the report (section 3.4.4), not just in the scoring tables. Score and condition agreed	This has been addressed with additional text outlining the seal population of Poole Harbour and the lack of a reporting mechanism.
2.4.1	Yes	Yes	NA		
2.4.2	Yes	Yes	NA		
2.4.3	Yes	Yes	NA		
2.5.1	Yes	Yes	NA		
2.5.2	Yes	Yes	NA		

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.5.3	Yes	Yes	NA		
3.1.1	No	Yes	NA	<p>1) Need to explain the importance of the Water Framework Directive (WFD) and Marine Strategy Framework Directive (MSFD), which compel the UK to manage fishing activities (especially dredging) and other pressures on the site see http://www.pooleharbouraqmp.co.uk/viewplan.html</p> <p>2) Include the Habitats Directive and mention pSPA process http://publications.naturalengland.org.uk/publication/6625771074355200</p> <p>3) Sla Need to spell out the acronyms and indicate their prerogatives regarding P1 and P2 separately in the scoring table</p>	<p>Thank you for the comments.</p> <p>1) In support of the 100 score, information on the Marine Strategy Regulations 2010 (which transposes the Marine Strategy Framework Directive into UK law), and the Water Environment Regulations 2017 (which transposes the Water Framework Directive into UK law), both of which place duties upon the Secretary of State to secure compliance with the requirements, are now provided.</p> <p>2) We note that although we have not discussed the Habitats Directive directly, the Habitats Directive is transposed in to UK law by the Conservation of Habitats and Species Regulations 2010, which we have highlighted. As such, no change has been made to the text. Further, while the designation of a site as a SPA or pSPA (proposed SPA) requires that fisheries that may have a significant effect are assessed</p>

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
					<p>and managed in a precautionary manner, the 'process' of designating a pSPA is not a matter of fishery management. As such, no change has been made to the text in regard of this comment.</p> <p>3) Although the acronyms are spelt out fully in the report prior to this PI, we have now spelt them out again. As indicated by the first sentence of the scoring text, the legislation highlighted delivers management consistent with both Principle 1 and 2. Therefore, we have not followed the suggestion of indicating how the legislation applies to either Principle 1 or 2.</p>
3.1.2	Yes	Yes	NA		
3.1.3	Yes	Yes	NA		

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.2.1	No	No	NA	<p>The fishery must have specific short-term and long-term objectives for P1 and P2 as part of the site management plan, see http://publications.naturalengland.org.uk/file/5692032358023168</p> <p>The IFCA and NE are in charge, so well-defined objectives that underpin the monitoring and management to ensure sustainability, protection for Good Environmental Status should be available from the implementing agencies see also: https://secure.toolkitfiles.co.uk/clients/25364/sitedata/files/ResearchandEvidencePlan.pdf</p> <p>If these can be presented then the score should be 100</p>	<p>Thank you for the comment. We have added in details of the fishery-specific objectives under the Site Improvement Plan, but these are also not considered to be well defined and measurable, so support a score of 80 but not higher. Other objectives listed in the Research and Evidence Plan either repeat those presented elsewhere or are not fishery-specific. As such, these have not been included.</p> <p>More generally, there are certainly objectives for the wider management framework related to sustainability and good environmental status, but these are not fishery specific and are addressed under PI 3.1.3. Therefore, no change has been made to the score.</p>

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.2.2	Yes	Yes?	NA	Given the communication strategy, information available from it's website, and various regulatory obligations to report plus the SIFCA's presence in festivals and on facebook for the education and information of the general public (page 72), I would argue that that SG100 is met for Sle	Thank you for the comment. The fishery clearly meets SG80 for this SI, and the Assessment Team agrees that there is some justification for scoring the fishery at 100. However, the evidence for the higher score isn't unequivocal, and in maintaining a precautionary focus we have kept the score at 80.
3.2.3	Yes	Yes	NA		
3.2.4	Yes	Yes	NA		

Table 45. RBF tree review.

Performance Indicator	Does the report clearly explain how the process(es) applied to determine	Are the RBF risk scores well-referenced? Yes/No	Justification: Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	CAB Response:

	risk using the RBF has led to the stated outcome? Yes/No		Note: Justification to support your answers is only required where answers given are 'No'.	
1.1.1	Yes	Yes	Identical PSA and CA scores for the two UoAs are justified. The use of the Risk Based Framework approach is justified. The resulting Productivity Susceptibility Scores were calculated appropriately and translated to an MSC score of 88.8. There is a low risk of recruitment overfishing.	
2.1.1	NA	NA		
2.2.1	Yes	Yes	The two target species are retained in each other's UoA catch	No response required
2.3.1	NA	NA		
2.4.1	NA	NA		
2.5.1	NA	NA		

Peer Review 2

Table 46. Summary of Peer Review opinion.

<p><i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i></p>	<p>Yes</p>	<p>CAB Response</p>
<p><u>Justification:</u> It is clear that comprehensive information on the UoAs has been reviewed by the team and is used very effectively to support the scores. I am satisfied that the fishery is effectively managed in a way that is consistent with MSC Principles 1 and 2, and that there is a comprehensive evidence base for this management.</p>		<p>No response required</p>
<p><i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i> <i>[Reference: FCR 7.11.1 and sub-clauses]</i></p>	<p>Yes</p>	<p>CAB Response</p>
<p><u>Justification:</u> Condition 1 relates to recording catch statistics at a sufficient spatial resolution to allow early detection of local depletion. This is clearly appropriate for a sedentary stock, and it should be straightforward to address the condition and provide an unconditional pass for PI 1.2.3 by the time of the third surveillance audit. I am less certain that Condition 2 for PI 2.3.3 is necessary. This requires a formal procedure for recording interactions with ETP species. Given evidence for a lack of such interactions, I question whether this is necessary. However, if it is seen to be required it should be straightforward to demonstrate effective implementation of an ETP interaction form by the time of the third surveillance audit.</p>		<p>No response required</p>
<p><i>Do you think the client action plan is sufficient to close the conditions raised?</i> <i>[Reference FCR 7.11.2-7.11.3 and sub-clauses]</i></p>	<p>Yes</p>	<p>CAB Response</p>
<p><u>Justification:</u> The Client Action Plan specifies consultation with permit holders on catch recording, the use of the consultation outcomes to design an amended monthly catch return form, and maintenance of monthly catch records for use in evidence. The plan closely matches the specified milestones for Condition 1 and will be adequate to close this condition. In relation to Condition 2, the Client Action Plan specifies the creation of a template for recording of interactions with ETP species, drawn up in consultation with permit holders, engagement with the Seafish Responsible Fishing Scheme and with relevant stakeholders, collation of records to be reviewed, and alignment with the Habitats Regulations Assessment. Again, this plan closely matches the specified milestones and will be adequate to close the condition.</p>		<p>No response required</p>

Table 47. Default tree review

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1	RBF applied				
1.1.2	NA (RBF used for PI 1.1.1)				
1.2.1	Yes	Yes	NA	Limited entry, closed areas (bird conservation and environmental health), temporal restrictions, minimum size and gear regulations together constitute an effective harvest strategy, albeit with elements not specifically designed as such. Although no catch limits are set, responsiveness to stock conditions is provided through Southern IFCA's powers. This, together with information provided on evaluation and review, provides unequivocal support for the score of 85.	No response required

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.2	Yes	Yes	NA	There are no reference points, but justification for the score of 80 hinges on the acceptability of susceptibility components of the RBF. Given limited entry, closed areas, temporal controls and minimum sizes the risk of these components being unacceptable is very low.	No response required
1.2.3	Yes	Yes	Yes	Good information exists on both stock and removals, but an unconditional pass is not achieved because catch returns and not spatially disaggregated, thus do not allow early detection of local depletions patterns in these sedentary stocks. The condition of monitoring fishery removals at a fishing area level is adequate to raise the score to 80 or above.	No response required
1.2.4	NA (RBF used for PI 1.1.1)				

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.1.1	Yes	Yes	NA	It is clear that there are no main or minor primary species for either UoA.	No response required
2.1.2	Yes	Yes	NA	It is clear that the gear regulations and gear type mean that retention of any primary species would be negligible.	No response required
2.1.3	Yes	Yes	NA	Information available on catch composition shows clearly that the fishery currently poses no risk to primary species, nor would any such risk be expected in the future.	No response required
2.2.1	RBF applied				
2.2.2	Yes	No	NA	All available evidence shows that no secondary species other than cockle and Manila clam exist in either UoA, and a score of 100 is justified based on the elements of the harvest strategy. I believe the score of 85 and reference to the RBF are simply typos.	Thanks typo duly amended SG100 is correct.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.2.3	Yes	No	NA	The UoAs fail to meet SG100 on the basis that stock surveys do attempt to relate their outcomes to overall biomass for Poole Harbour. Given that the fishery impacts are likely to be higher when viewed against the backdrop of the surveyed population than at an overall harbour level, this seems to be a harsh view. A score of 100 should be considered on the basis that assessment of fishery impacts in relation to the surveyed stock is likely to be precautionary in relation to the stock at the harbour level.	Although there is an argument for increasing the score to SG100 the team felt that the limitations of the temporal timeframe of the current stock assessment limits the ability to relate the stock assessment values to overall harbour biomass, even if this research was undertaken. Therefore certainty on impact on overall biomass was not high. This is particularly relevant with the concept of differential spatial spawning potential for Manila clam evidenced across the harbour. The team have maintained the more precautionary value.
2.3.1	Yes	Yes	NA	Ample evidence is provided to demonstrate that no significant impacts on ETP are expected in either UoA.	No response required
2.3.2	Yes	Yes	NA	Meeting of conservation requirements in relation to designations under EU Habitats and Birds Directives, Ramsar and SSSI, is sufficient to meet SG100.	No response required

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.3.3	Yes	No?	Yes	The UoAs fail to meet SG80 given a lack of formal procedure for reporting mortality of ETP species. Given Appropriate Assessments and the evidence for a lack of any interaction with ETP species cited under PI 2.3.1, this assessment seems harsh. The condition specifies that a procedure for recording ETP interactions should be put in place; meeting this condition should be effective in raising the score to 80 or more, although I believe the team should consider whether or not this is actually needed.	The peer reviewer is correct in that the production of a condition for this PI may appear harsh, given the unlikely nature of ETP interaction. However, the presence of regulated avian and marine mammal species in the harbour mean interaction is still possible. Furthermore the introduction of a suitable recording form for fishers by the authority (SIFCA) adds a level of completeness to the management strategy of this fishery. The fishery is using MSC as a benchmark to evaluate their newly defined management strategy and therefore implementation of a CAP to meet this condition was considered as a way to achieve this. No change in score is undertaken
2.4.1	Yes	Yes	NA	The scores are well justified, and I support the non-binding recommendation to assess benthic community recovery after impact from the pump scoop gear which is specific to Poole Harbour.	No response required

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.4.2	Yes	Yes	NA	The scores are well justified, and I support the non-binding recommendation to assess benthic community recovery after impact from the pump scoop gear which is specific to Poole Harbour.	No response required
2.4.3	Yes	Yes	NA	Habitats in Poole Harbour are well described and mapped, and good information exists on risks posed to habitats in Poole Harbour.	No response required
2.5.1	Yes	Yes	NA	The score of 100 appears appropriate, but it would be useful to state more explicitly why disruption of intertidal sediment by dredging is not expected to disrupt ecosystem structure and function. Is it simply expected that spatial closures provide adequate protection of structure and function at an ecosystem level?	No response required
2.5.2	Yes	Yes	NA	Conservation objectives for the European Marine Site meet requirements for SG100.	No response required

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.5.3	Yes	Yes	NA	Extensive information exists on the ecosystem within Poole Harbour and is used to inform the fishery Management Plan, meeting requirements for SG100.	No response required
3.1.1	Yes	Yes	NA	Legal and customary framework are well defined, as set out clearly in the rationale. A score of 100 is clearly supported.	No response required
3.1.2	Yes	Yes	NA	Consultation, roles and responsibilities are well defined, as set out clearly in the rationale. A score of 100 is clearly supported.	No response required

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.1.3	Yes	Yes	NA	The requirements of the Marine and Coastal Access Act, the IFCA 'vision', and objectives and principles within EU fisheries and conservation regulations, together provide explicit long-term objectives that are consistent with the precautionary approach. A score of 100 is clearly supported.	No response required
3.2.1	Yes	Yes	NA	The 80 score is adequately justified in the rationale, but it would be useful to spell out explicitly how the fishery-specific objectives fall short of being 'well defined' and 'measurable' as required under SG100.	No response required
3.2.2	Yes	Yes	NA	Meeting SG80 is well supported by the rationale, and I concur with the precautionary view taken by the team in relation to SG100.	No response required

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.2.3	Yes	Yes	NA	Given that a low level of IUU fishing remains in these UoAs, it is appropriate that SG100 is not met. I agree with the recommendations to update the risk register and for the IFCA to provide evidence on compliance and enforcement at the annual audit.	No response required
3.2.4	Yes	Yes	NA	Ample evidence of evaluation of management performance and regular internal and external review is presented to support the score of 100.	No response required

Table 48. RBF tree review

Performance Indicator	Does the report clearly explain how the process(es) applied to determine risk using the RBF has led to the stated outcome? Yes/No	Are the RBF risk scores well-referenced? Yes/No	Justification: Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response:
1.1.1	Yes	Yes	Clear evidence is shown that the size-structure of the Manila clam population is affected by the fishery and that this should be the most vulnerable subcomponent. Given the inaccessibility of much of the population to fishing, it is clear that minimal impact on population dynamics would be expected and thus a score of 80 is justified in the CA. It is not clear from the CA rationale that a different subcomponent (population size) is more vulnerable in cockle, but the score of 80 is nevertheless well justified on similar grounds as for Manila clam. Scores for productivity and susceptibility elements of the PSA for both species are clear-cut and well justified. Overall scores for PI1.1.1 are taken as the midpoints between CA and PSA scores, in accordance with requirements under CR2.0.	No response required
2.1.1	Yes	Yes	Cockle and Manila clam are each considered as a main secondary species in the UoA for the other species. PSA scores for these species are justified, as for PI 1.1.1, and overall scores of 80 follow guidance about scoring when only main species are considered in PSA. A less conservative approach might be to use the PSA scores unmodified, given that no other secondary species, main or minor, are identified, but I am content if the team prefers to retain the lower scores.	No response required

Appendix 5 Stakeholder submissions

Appendix 5.1 – Dorset Wildlife Trust

A stakeholder submission was received from Emma Rance of Dorset Wildlife Trust (DWT) following the call for the submission of new information announcement published on the MSC website on 1st November 2017. Details of the submission via email are provided below, and concern the inclusion of seasearch dive data into the assessment process. A review of the data provided by DWT, showed no evidence of ETP species which hadn't been already determined and that a large proportion of the data had been included in a report which had already been evaluated by the assessment team. A telephone call between Hugh Jones and Emma Rance took place on the 6th of December 2017 to discuss maps of the data.

From: Hugh Jones

Sent: 11 December 2017 12:03

To: Emma Rance <ERance@dorsetwildlifetrust.org.uk>

Cc: Hugh Jones <hugh.jones@me-cert.com>

Subject: RE: 3156_Poole Harbour clam and cockle fishery assessment

Emma,

Thank you for bring this data to our attention.

Having reviewed the excel spreadsheet you provided I have not found any species listed within the data that would conform with the definitions of ETP species which we work under for the MSC.

Specifically this are:

ETP (Endangered, Threatened or Protected) species (MSC Component 2.3) are assigned as follows:

- Species that are recognised by national ETP legislation
- Species listed in binding international agreements (e.g. CITES, Convention on Migratory Species (CMS), ACAP, etc.)
- Species classified as 'out-of scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).
- Both primary and secondary species are defined as 'main' if they meet the following criteria:
- The catch comprises 5 % or more by weight of the total catch of all species by the UoC;
- The species is classified as 'less resilient' and comprises 2 % or more by weight of the total catch of all species by the UoC. Less resilient is defined here as having low to medium productivity, or species for which resilience has been lowered due to anthropogenic or natural changes to its life-history;
- The species is out of scope but is not considered an ETP species (secondary species only);
- Exceptions to the rule may apply in the case of exceptionally large catches of bycatch species.

I note also that a significant amount of the data is included in Baldock, L., 2017. Poole Harbour Subtidal Survey 2016. Natural England, which is already been evaluated in the report

On the basis of this I have no reason to amend any of the scoring of the fishery at present.

Best Regards

Hugh

From: Hugh Jones

Sent: 04 December 2017 21:18

To: Emma Rance <ERance@dorsetwildlifetrust.org.uk>
Subject: 3156_Poole Harbour clam and cockle fishery assessment

Many thanks Emma,

Can I ask if these dive events are summarised in the Baldock, L., 2017. Poole Harbour Subtidal Survey 2016. Natural England Report? If not have the dives been plotted to show position in the harbour. I note that the majority of the dives appear as either 'circalittoral' or 'infralittoral' (which would make sense if they are scuba surveys) and which likely mean they are not directly overlapping with the fishery which operates in the intertidal. I do not want to make this assumption without first seeing the sites mapped or at least reported on.

Many thanks

Hugh

From: Emma Rance [mailto:ERance@dorsetwildlifetrust.org.uk]
Sent: 01 December 2017 16:26
To: Hugh Jones <hugh.jones@me-cert.com>
Subject: RE: 3156_Poole Harbour clam and cockle fishery assessment
Hi Hugh,

Please find attached our brief comments and data for your consultation. Hope this is suffice.
Have a good weekend

Kind regards,

Emma Rance
Marine Conservation Officer
Dorset Wildlife Trust
01305 264620

From: Emma Rance [mailto:ERance@dorsetwildlifetrust.org.uk]
Sent: 15 November 2017 16:09
To: Hugh Jones <hugh.jones@me-cert.com>
Subject: RE: 3156_Poole Harbour clam and cockle fishery assessment

Brilliant! 😊

From: Hugh Jones [mailto:hugh.jones@me-cert.com]
Sent: 15 November 2017 15:41
To: Emma Rance <ERance@dorsetwildlifetrust.org.uk>
Subject: RE: 3156_Poole Harbour clam and cockle fishery assessment

Sabella survey I have is Baldock, L., 2017. Poole Harbour Subtidal Survey 2016. Natural England. I think that is the latest?

Hugh

From: Emma Rance [mailto:ERance@dorsetwildlifetrust.org.uk]
Sent: 15 November 2017 15:32
To: Hugh Jones <hugh.jones@me-cert.com>
Subject: RE: 3156_Poole Harbour clam and cockle fishery assessment

Hi again,

Thanks for this. Good to know you already have the Seasearch data. There have been some additional surveys for the Sabella pavonina last year which you may not have? Depends on your cut-off date.

Have a great week!
Emma

*From: Hugh Jones [mailto:hugh.jones@me-cert.com]
Sent: 15 November 2017 15:20
To: Emma Rance <ERance@dorsetwildlifetrust.org.uk>
Subject: RE: 3156_Poole Harbour clam and cockle fishery assessment*

Hi Emma,
Sorry if I was unclear. So your welcome to submit any new information relevant to the fishery in this 30 day consultation period up to 3rd Dec and MEC will take it into account against the scoring of the fishery and if relevant, include it in the report and amend scoring accordingly. This can be done by email using the attached document and if you'd like we can arrange a consultation to discuss this. During the assessment I had contact with Carolyn Steele at DERC regarding ETP species as well as Susan Burton from NE. We used the Seasearch reports to help with habitat information (deeper water channels, seagrass, sponge community etc).

Once the PCDR is published if you think the report and scoring of the fishery is incorrect or incomplete, then you can submitted a public comment detailing why you think the scoring is inappropriate and MEC will then consider that against the MSC criteria.

Best Regards

Hugh

*From: Emma Rance [mailto:ERance@dorsetwildlifetrust.org.uk]
Sent: 15 November 2017 13:41
To: Hugh Jones <hugh.jones@me-cert.com>
Subject: RE: 3156_Poole Harbour clam and cockle fishery assessment*

Hi again,

Likewise and thanks for your email. I'm still not clear on you require during the consultation? I will highlight the data we hold covering 25 years of Dorset Seasearch diving in Poole Harbour and of course there's data from Dorset Environmental Records Centre. I was going to make a few comments on the client review report.....

Thanks!
Emma

*From: Hugh Jones [mailto:hugh.jones@me-cert.com]
Sent: 15 November 2017 12:49
To: Emma Rance <ERance@dorsetwildlifetrust.org.uk>
Subject: 3156_Poole Harbour clam and cockle fishery assessment*

Morning Emma,

I don't think we have met no, but nice to 'virtually' meet you, and lovely to hear that the PDFAs are going into the RFS.

I have added you to the stakeholder list for the Poole fishery and have attached the request for new information and revised timeline that was sent out to stakeholders at the start of the month after the 9 month assessment period deadline was exceeded. All updates (including those above) on the fishery can be found here https://fisheries.msc.org/en/fisheries/the-poole-harbour-clam-cockle-fishery/@_@view

To give you a synopsis of where the fishery is currently, it has undergone client review (as you note in the TAC meeting from SIFCA below) and subsequently went to peer review. The earliest MEC can publish the PCDR (the first public version of the report, which includes the Peer Review) is the 5th Dec, the MSC publish at 5pm on Tuesday and Thursday and this is the 1st available date after the new consultation period expires (03/12). Following publication of the PCDR the public comment period will be at least 30 days. The PCDR will be available on the link above. Prior to that date I cannot give you a copy of the report I am afraid because of privacy agreements. However, if the client SIFCA @Sarah Birchenough wants to provide you with a copy of the client draft report they are free to do so, as its their property.

Regards

Dr Hugh Jones

From: Emma Rance [mailto:ERance@dorsetwildlifetrust.org.uk]

Sent: 15 November 2017 11:28

To: Hugh Jones <hugh.jones@me-cert.com>

Subject: Poole Harbour clam and cockle fishery assessment

Good morning Hugh,

I don't believe we have met?

We (DWT) have been contracted by Poole & District Fisherman's Association and Southern IFCA to facilitate fisher membership of the Responsible Fishing Scheme which will align nicely with the forthcoming (hopefully!) MSC certification of the fishery. We are therefore, very keen to stay abreast of any assessment developments. Please could you add my email to the relevant distribution list? I was unaware there was a current consultation on the assessment. In view of this, I see on your assessment timeline a reference to the Public Comment Draft Report (PCDR). Is this the MSC Client Draft Report written by MEC that was published by Southern IFCA at their last Technical Advisory Committee? The only copy I have of this is here within their papers

<https://secure.toolkitfiles.co.uk/clients/25364/sitedata/files/JQ-Agenda-Sept17-Public-Part2.pdf>. Do you have a stand-alone one I can keep?

Thanks!

Kind regards,
Emma Rance
Marine Conservation Officer
Dorset Wildlife Trust

A further stakeholder submission was received from Emma Rance of Dorset Wildlife Trust (DWT) following the publication of the PCDR comment period (ending 18th Jan 2018), though the communication was received after the comment period expired the assessment team were happy to consider the comments on the report.

Dr. Hugh Jones
ME Certification
56 High Street
Lymington
SO41 9AH

Tuesday 23rd January 2018.

Dear Mr. Jones,

Marine Stewardship Council (MSC) Public Comment Draft Report: The Poole Harbour Clam & Cockle Fishery

Thank you for providing the opportunity for Dorset Wildlife Trust (DWT) to comment on the report. Regarding the possible changes made to the benthic habitat in Poole Harbour from pump scoop dredging, we agree with the conclusion that “long-term monitoring of communities following disturbance events may be important in order to assess accurately the recovery trajectories of communities”. We would be very keen to support any such research or monitoring programme in the future particularly as the physical recovery from the fishing activity in Poole Harbour is undetermined. The text refers to Figure 19 on the dredging intensity in relation to changes in infaunal abundance. However, the map does not appear to show this. Moreover, it is difficult for us to comment in full as we have not yet seen the cited research of Clarke (2017) on harvesting of intertidal invertebrates: impacts on invertebrates, their habitats and bird predators.

We would also like to update the reference to seals in the report. DWT have been monitoring Dorset seals using photographic identification since 2014. We are now aware of six visiting grey seals (*Halichoerus grypus*) and five harbour seals (*Phoca vitulina*) residing in Poole Harbour. Please note, some of these individuals have only been recorded once during the last 3 years.

There is an error with Figure 15: Intertidal biotope distribution in 2009 within Poole Harbour. It has been cited from Bennett, 2011 but has been taken from Herbert et al, 2010.

And finally, DWT is currently working with the Poole and District Fisherman’s Association and Southern Inshore Fisheries and Conservation Authority on the Responsible Fishing Scheme (RFS). We have been facilitating membership to the RFS for permitted clam and cockle fishers. This partnership has many positive benefits, particularly conservation of the environment. Therefore, we very much welcome the provisional recommendation for MSC certification which will align perfectly with the RFS, and will look forward to promoting both at every opportunity.

Yours sincerely,

Emma Rance
Marine Conservation Officer

MEC response

MEC appreciate the DWT’s review of the report and their support to the monitoring and research program for long term impacts which would be beneficial to the harbour management. The assessment team note that the PhD references for Clarke (2017) are resultant of public presentations of the research by the authors and meetings held between the assessment team during the assessment process. The details in the report are drawn from

these public presentations and the PhD thesis was not complete at the time of assessment. For Figure 19 the team have amended the text as DWT correctly point out that the image at present only shows dredging intensity not its impact on benthic communities, although this is the long term intention.

The additional seal details have been added to the text.

The reference error on figure 15 has been corrected.

A final stakeholder submission was received from Peter Tindsley of Dorset Wildlife Trust (DWT) following the publication of the PCDR comment period (ending 18th Jan 2018), though the communication was received after the comment period expired the assessment team were happy to consider the comments on the report.

From: Peter Tinsley [mailto:PTinsley@dorsetwildlifetrust.org.uk]
Sent: 26 January 2018 14:24
To: Chrissie Sieben <chrissie.sieben@me-cert.com>
Cc: Emma Rance <ERance@dorsetwildlifetrust.org.uk>
Subject: Poole Harbour calm and cockle fishery

Dear Chrissie

Please find below a couple of additional points from Dorset Wildlife Trust.

This fishery is unusual in that the physical effects of it are very visible (the scars on the mudflats) and appear to be widespread and intensive. Anyone looking out of a train window passing Poole Harbour at low tide can see the physical impacts and can make their own assumptions about ecological impacts. The recommendation to certify this fishery would probably be counter to a layman's intuition based on the visible evidence, so it needs to be well argued and fully evidenced – which mostly it is – the management regime with closed seasons and closed areas and managed effort all play a part. However, there are a couple of points.

The decision not to treat the intertidal mudflats as a VME (Vulnerable Marine Ecosystem) seems to go against MSC guidance. The assessors recognise the functional significance of the mudflats for birds listed in the SPA but decide not to treat it as a VME on the grounds that it isn't also a rare or vulnerable habitat -

VMEs have one or more of the following characteristic, as defined in paragraph 42 of the FAO Guidelines:

- Uniqueness or rarity –an area or ecosystem that is unique or that contains rare species whose loss could not be compensated for by similar areas or ecosystems
- Functional significance of the habitat –discrete areas or habitats that are necessary for survival, function, spawning/reproduction, or recovery of fish stocks; for particular life-history stages (e.g., nursery grounds, rearing areas); or for ETP species
- Fragility –an ecosystem that is highly susceptible to degradation by anthropogenic activities
- Life-history traits of component species that make recovery difficult –ecosystems that are characterised by populations or assemblages of species that are slow growing, are slow maturing, have low or unpredictable recruitment, and/or are long lived
- Structural complexity–an ecosystem that is characterised by complex physical structures created by significant concentrations of biotic and abiotic features

Seahorses are mentioned in the assessment, but treated as though they are restricted to seagrass beds in the Harbour. While I'm not aware of any seahorses being caught in a pump-scoop dredge, most of the records of seahorses in Poole Harbour (including those reported by fishermen) are not from seagrass beds. I don't feel there is a significant risk of encounters with seahorses from pump-scoop dredges (there is no history of this), but

this should be specifically addressed in the report, rather than assuming all seahorses are covered by the seagrass protection.

The report also mentions several times the lack of understanding of the long-term effects on the ecosystem and suggests future research to assess long-term recovery and on-going monitoring of changes in community structure, as non-binding conditions. Given the uncertainty (even the recovery period of the physical scars is unknown), these ought to be binding conditions.

Best wishes

Peter Tinsley
Dorset Wildlife Trust
01305 217979

From: Chrissie Sieben

Sent: 29 January 2018 09:44

To: 'Peter Tinsley' <PTinsley@dorsetwildlifetrust.org.uk>

Cc: Emma Rance <ERance@dorsetwildlifetrust.org.uk>; Hugh Jones <hugh.jones@me-cert.com>

Subject: 3156 (Stakeholder) Dorset Wildlife Trust PCDR comment

Dear Peter,

Thank you for your email. As you may be aware the deadline for submissions was the 18th January; however we will do our best to respond to your concerns in the Final Report. The Dorset Wildlife Trust will be notified when this report is published.

Kind regards
Chrissie

MEC Response:

Intertidal mud as VME – In consideration of whether intertidal mud should be included as a 'commonly encountered habitat or VME the assessment considered the MSC standard SA3.13.3.1 – *'Commonly encountered habitats would likely include those that the target species favours, that the UoA's gear is designed to exploit, and/or that make up a reasonable portion of the UoA's fishing area.'* This provided a more definitive definition of intertidal mud's association with the fishery than as a VME. In theory intertidal mud could be VME based on: GSA3.13.3.2 *Functional significance of the habitat – discrete areas or habitats that are necessary for survival, function, spawning/reproduction, or recovery of fish stocks; for particular life-history stages (e.g., nursery grounds, rearing areas); or for ETP species'*. It has a functional significance for the SPA bird species. That intertidal mud is the dominant sediment type in Poole Harbour and not limited to discrete areas in the UoA (rather it is ubiquitous) which would suggest that the commonly encountered habitat definition is more appropriate. Furthermore as this habitat is not comprised of any biotopes which are rare or considered part of the UK BAP habitats within the UK it was not listed as a VME.'

Seahorses – The assessment team reviewed all available seasearch records provided by DWT as part of the assessment process and found no records of seahorses in any areas under which the fishery operates. Given that the two protected species are typically not found in the intertidal and show preference for seagrass habitats the team concluded that this was sufficient to have a high degree of confidence that the species is unlikely to be impacted. The

condition raised related to information on ETP interactions should also improve confidence of low encounterability with these species in the future.

Long term recovery – The justification of a score of 80 is underpinned by research directed within the UoA (Poole Harbour) and specifically states that ‘The site-specific studies on the effects of pump scoop dredge have demonstrated that the effects of dredging the top few centimetres of intertidal sediment do not significantly alter biotope classification or reduce habitat structure and function to a point where there is serious and irreversible harm in the short term.’ Furthermore the text highlights that the communities recover rapidly from the disturbance (<1 year), which is less than 5 years which is the lower time frame considered to be ‘serious or irreversible’ harm (GSA3.13.4). The rationale also notes the dynamic nature of estuarine habitats and that only two small bivalves species have been identified as being impacted long term by the activities of the UoA. The team do not consider that impact on these two bivalves would cause the habitat recovery to be <80% (which the MSC consider as the benchmark of recovery) given the myriad of species present in the mud-biotopes. In order to monitor the status of the sediment communities the recommendation for continued monitoring was raised. Given that the newly (2016) implemented stock status programme for the fishery incorporates sampling and reporting on sediment community the assessment team were content that a recommendation alone was sufficient to meet monitoring needs.

Appendix 5.2 – English Nature

A stakeholder submission was received from English Nature following the publication of the PCDR, and the assessment team were happy to see support for the report and the outcomes. The status of extension of the SPA will be monitored throughout the surveillance cycles of the certificate.

Date: 18 January 2018
Natural England
Sunrise Business Park
Higher Shaftesbury Road
Blandford
DT11 8ST

Dear Hugh

Poole Harbour Site of Special Scientific Interest (SSSI)
Poole Harbour Special Protection Area (SPA)
Poole Harbour Wetland Area of International Importance under the Ramsar Convention (Ramsar)

MEC Certification Ltd Poole harbour Clam and Cockle Fishery by Southern Inshore Fisheries and Conservation Authority- Public Comment Draft Report

Thank you for your consultation on the above received on 2nd December 2017. Natural England strongly support the MSC certification of the Poole Harbour Clam and Cockle fishery. We particularly welcome the very thorough evaluation of the interactions of the fishery with endangered, threatened and protected (ETP) species that has been undertaken and the measures planned to record ETP interactions to improve the monitoring of fishery impacts. As stated on p44 Natural England had sought for an extension to the SPA boundary to Harbour mouth and the addition of Sandwich tern, Eurasian spoonbill and Little Egret as qualifying ornithological interest of Poole Harbour SPA. It should be noted that formal classification of the SPA, to include these amendments, took place on 31st October 2017. However, the Southern Inshore Fisheries Conservation Authority considered these changes in the 2017 appropriate assessment of the fishery, at which time the pSPA was a material consideration of the assessment. We, therefore, advise that this change will not alter the conclusions made in the report. We believe the MSC certification of this fishery will strengthen the protection of ETP species within the Harbour by helping ensure that the fishery continues to be well managed. It is very much welcome!

Thank you for providing Natural England with the opportunity to comment on the report and for us to be involved in the initial stages of the assessment process. Please do not hesitate to contact me directly if you should have any more queries.

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Yours sincerely
Sue Burton
Marine Senior Adviser
Dorset, Hampshire and Isle of Wight Area Team
Natural England
Mobile: 07500 097405
Email: Susan.burton@naturalengland.org.uk

From: Chrissie Sieben

Sent: 22 January 2018 09:28

To: 'Burton, Susan (NE)' <Susan.Burton@naturalengland.org.uk>

Cc: Hugh Jones <hugh.jones@me-cert.com>; Chrissie Sieben <chrissie.sieben@me-cert.com>

Subject: 3156 (Stakeholder) NE comments on the Public comment draft report

Dear Sue,

Thank you for your message to my colleague Hugh who is currently unable to respond. We very much appreciate Natural England's support for this assessment and will be taking into consideration the amendments to the SPA at the next available opportunity. Pending a successful outcome of the assessment, this is likely to be first annual surveillance, one year from certification. At this point, we will get in touch with you again to seek Natural England's views.

In the meantime, should you have any queries or concerns, please do not hesitate to contact us.

With kind regards

Chrissie

Chrissie Sieben

MSC Fisheries Scheme Manager

Office: +44 (0) 1590 613007

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Skype: chrissiesieben

Email: chrissie.sieben@me-cert.com

Appendix 5.5 – MSC Technical Oversights

SubID	Page	Grade	Requirement Version	OversightDescription	PI	CABComment
27454	206	Major	FCR-7.10.6.1 v2.0	PI2.4.1 scoring issue a: There is limited quantitative information provided relating to the consideration of UoA specific impact on commonly encountered habitats (e.g. recovery times of habitats impacted in the relevant area), as such the rationale does not support the score. See SA3.13.4 and relevant guidance.	2.4.1	The assessment team disagree with this oversight. The justification of the SG 80 is underpinned by the need for the sediment to recover 80 % of its structure and function within between 5 and 20 years. The research directed within the UoA (Poole Harbour) and specifically states that: dredging does not significantly alter biotope classification, which is a reflection of habitat structure and function to a point where there is serious and irreversible harm in the short term.' Furthermore, the text highlights that the communities recover rapidly from the disturbance (<1 year), which is less than 5 years which is the lower time frame considered to be 'serious or irreversible' harm (GSA3.13.4). The rationale also notes the dynamic nature of estuarine habitats and that only two small bivalves species have been identified as being impacted long term by the activities of the UoA. The team do not consider that impact on these two bivalves would cause the habitat recovery to be <80% (which the MSC consider as the benchmark of recovery) given the myriad of species present in the mud-biotopes. The team have added a further paragraph to the rationale to support the team view and have not altered the score on this basis.
27455	206	Major	FCR-7.10.6.1 v2.0	PI2.4.2 scoring issue a: This scoring issue refers to all habitats but the rationale focusses on VME habitats. The measures/partial strategy/strategy in place do not account for commonly encountered habitat or minor habitat impact mitigation. As such, the rationale not support the score.	2.4.2	The assessment team disagree with this finding and in order to provide clarity on the spatial extent of the fishery in relation to the SPA have added additional text to the rationale. The commonly encountered habitat in this assessment is intertidal mud and sand which are part of the SPA for Poole Harbour. As such the Poole Harbour Aquatic Management Plan (PHAMP, Bennett (2011) including the appropriate assessment is the primary management tool to underpin all activities, plans and projects and ensure that they comply with relevant legislation requirements and that the nature conservation

						<p>interest of the SPA. This also ensures that the habitat is restored to favourable condition. Minor habitats are seagrass and subtidal channels which are also included in the PHAMP and separate seagrass byelaw. The text of the rationale goes further to state that ...' To comply with the monitoring requirements for the European Marine Site, the Poole Harbour Steering Group review the Plan on an annual basis and make an assessment of how the specific management actions identified are being progressed. These designations mean that any fishery activity undertaken in the harbour must be assessed for its likely impact on the designated habitats.' Appendix 9 includes the appropriate assessment which under the EU feature for 'Internationally important populations of regularly occurring Annex 1 bird species' includes the management and measures applicable to intertidal sediment communities.</p>
27456	206	Minor	FCR-7.10.6.1 v2.0	<p>PI2.4.1 scoring issue c: It is not clear how the rationale for this scoring issue supports the teams conclusion: ""These habitats are highly likely to be fished due to the perceived low abundance of the resource in these areas, the limitations of the vessels and rigging used by the fishers for the dredge and the presence of mixed rocky bottom which would foul the dredge. Therefore SG 100 is met."</p>	2.4.1	<p>This is typo error at the start of the sentence. The text should have read'These habitats are highly unlikely to be fished....' This has been amended in the text</p>
27457	206	Major	FCR-7.10.6.1 v2.0	<p>PI2.4.3 scoring issue b: It is not clear that that SG100 is met for this scoring issue. The rationale provided for PI2.4.1 scoring issue a and PI 2.4.2 scoring issue c and resulting recommendation indicate that the long term impact</p>	2.4.3	<p>This SG asks can we fully quantify the physical impacts of the gear on all habitats. The impacts on minor (deepwater) and VMEs in the harbour are fully understood in that they are not subject to any fishing from the UoA. For the fished habitat (intertidal) we have quantitative information on the change in fauna and sediment composition from more than one study and from these it can be quantified that only</p>

				of the gear on habitats is not known.		physical impacts of the gear are limited to the two small infaunal bivalve species .
27458	206	Major	FCR-7.10.6.1 v2.0	Ecosystem PIs (2.5.x): The ISBF requirements Annex SD require that the CABs consider the ecological role of the introduced species and as per SD2.1.1.3 CABs shall address measures in place in the fishery to prevent further ecosystem impacts that may have occurred as a result of the introduction of the species to the new location under the Ecosystem component of Principle 2. When relevant the CABs may modify the default tree for Ecosystem Performance indicators. However, it is not clear why the assessment team has not assessed the impact of introduced species under the default PIs in PI2.5.1 or PI2.5.2.	2.5.1, 2.5.2	<p>Discussion in regard to the applicability of the ecosystem PIs (2.5.x) took place between Hugh Jones (MEC) and Pippa Kohn (MSC) at the site visit. This was followed up by Hugh Jones by email and included Emily McGregor (FAM-MSC) between 10th March and 24th April 2017. A copy of the email thread is provided below. Justification for not including ecosystem PIs for 2.5.2 is provided in the text (Page 64 -65) and the email thread highlights that if additional PIs for 2.5.2 is not justified then an additional PI2.5.3 can be considered 'not relevant'.</p> <p>The evidence in the text covers the ecological role, dispersal limitation and timeframe of colonisation of the Manila clam. It concludes that 'Given these insights into the clam's ecological role the team argues that no measures (e.g. PIs) are necessary.'</p> <p>The omission of referring back to the information on page 64-65 as evidence why no additional considerations are required for the impact of the introduced species is noted. To respond to this the team have made the necessary changes to PIs 2.5.1 and 2.5.2 to validate the scores given</p>
27461		Guidance	FCR-SD4.13 v2.0	Per the ISBF requirement SD4.1.3, the draft report was to be submitted to MSC 15 days prior to the release of the PCDR.		The CAB acknowledge this omission and will include an addition into the MEC operating manual to ensure that this requirement is met in future.
27463	205-206	Major	FCR-7.10.6.1 v2.0	PI 1.2.2 Scoring issue a: The rationale provided for 1.2.3b highlights that there is potential for local depletion of stocks to occur and it is highlighted in 1.2.2b that there is no evidence that the beds would be closed in the event of local depletion. It is not clear how the outlined HCR takes this into account to meet the 80 level.	1.2.2	The rationale for Sla states clearly that shellfish beds can be closed by the IFCA if there is evidence of local depletion, and the IFCA can activate closures either through its 'Temporary closure of shellfish beds' byelaw or immediately through its emergency byelaws power. There is therefore sufficient justification for a score of 80 for Sla. As the Permit Byelaw is only two years old, there have as yet not been any instances when Manila clam and cockle beds have been closed. The rationale for Slb should therefore read "there is no evidence yet that specified Manila clam or cockle beds <u>have been</u> closed in the event

					<p>of local depletion of the stock”, i.e. beds would be closed if local depletion occurs, but as yet such action has not been required. The rationale for SIb has been amended accordingly.</p> <p>As the rationale for PI 1.2.3b notes, the spatial distribution of Manila clams and cockles is determined through annual surveys, following which beds could be closed if necessary, but during the fishing season permit returns do not provide any information on the spatial distribution of catches, and therefore catch data cannot currently be used to provide an early warning of local depletion. A condition was raised to ensure that catch returns are spatially disaggregated. However fishers will inevitably move their fishing area if catch rates start to decline (likely before significant local depletion occurs), and so information on local depletion might be difficult to obtain from permit returns. More importantly, the IFCA Officers maintain a good working relationship with permit holders who will advise officers on the dockside or at sea if any local depletion of stocks has occurred. In summary, the team considers that the current scores for PIs 1.2.2 and 1.2.3 are justified.</p>
27467	17	Minor	FCR_7.12.1.3 v2.0	<p>The report notes that non-certified clam species such as native clam (<i>Ruditapes deccusatus</i>) and American hard-shelled clam (<i>Mercenaria mercenaria</i>) may be retained. It is not clear how the risk of mixing non-certified clam species with certified species is managed or mitigated within the fishery (are these segregated prior to landing?).</p>	<p>The species are segregated prior to landing at the riddle sorting stage, are readily identifiable from each other and placed in separate baskets onboard the vessel. This text has been added to the text on traceability under risks of mixing certified product.</p>

Email correspondence between Hugh Jones and Emily McGregor and Pippa Kohn regarding additional PI’s for ecosystem (related to SubID 27458).

Hi Hugh,

Sorry for my delay, I wrote a reply and didn't send it.

Following the requirements, a rationale can be provided for not including an additional scoring issue(s) for PI2.5.2 and through some of the background documents for these requirements I think you can justify that you don't need to include scoring issues for 2.5.3, despite there being the 'not relevant' clause.

As examples, or reference, the few fisheries that have assessed introduced species in P1 have gone for no additional scoring issues – DFA Dutch north sea ensis - and for scoring issues - clams and cockle fishery of Ria de Arousa.

We can provide an interpretation on this if you want to submit the question to the MSC interpretations log.

There is one interpretation in the log for Introduced species, if you haven't already seen it: <http://msc-info.accreditation-services.com/questions/1-how-would-clauses-sd2-1-1-3-sd2-1-1-4-and-sd2-1-1-5-apply-to-introduced-species-that-have-been-in-place-for-long-enough-that-the-ecosystem-has-stabilized-with-the-new-species-but-the-new-system/>

Happy to chat more if needed,

Thanks,

Emily

From: Dr. Hugh Jones [mailto:hugh.jones@me-cert.com]
Sent: 24 April 2017 15:45
To: Emily McGregor <emily.McGregor@msc.org>
Cc: Chrissie Sieben <chrissie.sieben@me-cert.com>
Subject: 3156_ISBF_Poole_Harbour

Emily,

Did you manage to talk about Poole Harbour ISBF at the MSC team meeting last week?

Below I have tried to provide a summary of how I perceive the ISBF working in Poole for Manila Clams with the issue coming for SD2.1.1.5 of whether this should or should not be required.

ANNEX SD for Poole Harbour:

As previous noted the for the Poole Harbour fishery one of the UoCs has an introduced species as its primary target species (Manila Clam) this has been justified to meet all the requirements for Table 1 in the FCR but also requires us to consider the ISBF tree (Annex SD).

Annex SD:

SD2.1.1.1 Default PISGs in Principle 1 – no issue here the RBF is being used.

SD2.1.1.2 Modifications to PI 1.1.1 – not applicable as RBF being used.

SD2.1.1.3 address measures in place in the fishery to prevent further ecosystem impacts that may have occurred as a result of the introduction of the species, under the Ecosystem component of P2.

a. When relevant CABs shall define an additional scoring issue and corresponding guidepost at 60,80 and 100 to PI 2.5.2 (management) which evaluates measures in the fishery to prevent progression of further ecosystem impacts from occurring due to the presence of the introduced species.

Or

SD2.1.1.4 Cab shall provide rationale to justify why no measures to prevent further impact on biodiversity are considered necessary. – This is the option I will use based on the available evidence that ‘The arrival of Manila clams is not known to have caused any ecological damage in Poole Harbour; it occupies a similar ecological niche to a variety of other co-occurring infaunal suspension-feeding clams, and plays the same role in benthic-pelagic coupling and as a prey species. Humphreys et al. (2015) concluded: ‘...in Britain the species is not aggressively invasive and appears not to present significant risk to indigenous diversity or ecosystem function’. Indeed one author has suggested ecosystem benefits from the introduction of the Manila Clam within Poole Harbour. Modelled predator-prey relationships in Poole Harbour between Manila Clam and oystercatchers have reduced the predicted over-winter mortality of oystercatchers....even at low clam densities (2007) ... Further increases in clam population density are predicted to have even more pronounced effects on the density dependence of oystercatcher over-winter mortality (Caldow et al 2007).

SD2.1.1.5 CABs should define a corresponding Ecosystem Information scoring issue that addresses the collection of information important to understating and preventing further progression of impact of the introduced species on biodiversity.

– this one is the one I am querying as if there is no management PI for this section and as stated above no apparent impact how can we score an information PI?

In discussions with the other assessors on the site visit we thought that the ‘should’ might actually be ‘when relevant’ in relation to when SD2.1.1.3 is in use.

Best Regards

Hugh

Hi Hugh,

I've touched based with Emily, and have come up with the following. As far as whether the activity can be considered enhancement, reviewing the enhanced fisheries scope criteria again (Table 1, page 23 of the FCR - especially Section Aii) and considering that for this to apply, per FCR 7.4.3.1, an enhanced fishery should only be eligible for assessment if it conforms to all of the scope criteria- I think you could justify not using the enhancement tree. Further, while we don't define what native is, manila clams are recognized as an introduced species in the notification report (meeting 7.4.4) and the intent of the activity (from what was discussed at the site visit) could also be argued to not be enhancement. I recommend that the introduced species tree is looked at since FCR 7.4.4.1 and SD 1.1.1 require that if the fishery is based upon an introduced species, the CAB shall follow the necessary steps in Annex SD.

I hope this is clear. If you have any further questions, please let us know.

Cheers,

Pippa

From: Dr. Hugh Jones [mailto:hugh.jones@me-cert.com]
Sent: 10 March 2017 14:46
To: Philippa Kohn <philippa.kohn@msc.org>
Subject: RE: Poole Clam and Cockle

Ah your welcome Pippa it was great to have you along. It will be interesting what the MSC think of this scenario. We spent some time on it this morning and have come up with what we think should be the approach but will wait on the MSC to provide clarity first.

Cheers#Hugh

From: Philippa Kohn [mailto:philippa.kohn@msc.org]
Sent: 10 March 2017 14:43
To: Dr. Hugh Jones <hugh.jones@me-cert.com>
Cc: Emily McGregor <emily.McGregor@msc.org>
Subject: Poole Clam and Cockle

Hi Hugh,

Thank you again for letting me join you for the site assessment, it was a great learning opportunity! As far as the relaying of clams from the public beds to the private beds and the handling of this, I talked with Shaun (another FAM) this morning, and if it's alright, I would like to catch up with Emily when she is in the office on Monday, so that we are all on the same page and so that she can be included in the response.

Thank you for your understanding,

Pippa

Philippa Kohn

Fisheries Assessment Manager

Appendix 6 Surveillance Frequency

The surveillance level for this fishery has been set at 5, requiring 1 off-site and 3 on-site surveillance audits.

Table 49. Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
1	On-site audit	1 auditor on-site with remote support from 1 auditor	From the client action plans for conditions associated with PIs 1.2.3 and 2.2.3 the information needed to meet the timeline progression towards conditions being met will likely be provided in written form (consultation minutes with stakeholder). The CAB therefore proposes to set the surveillance level for this fishery at 5, requiring 1 off-site and 3 on-site surveillance audits. The on-site audits would be carried out with one auditor on-site with remote support by a second auditor – this is to ensure that all information collected can be verified and because the information can be reviewed remotely post site visit.

Table 50. Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
2019	TBC	Certificate anniversary	The year 1 surveillance audit will take place prior to or on the Year 1 certificate anniversary.

Table 51. Fishery Surveillance Program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 5	On-site surveillance audit	Off-site surveillance audit	On-site surveillance audit	On-site surveillance audit & re-certification site visit

Appendix 7 Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.

(Reference: FCR 7.19.1)

Appendix 8 Poole Harbour Appropriate Assessment

Source (SIFCA, 2017c)

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Internationally important populations of regularly occurring Annex 1 bird species (e.g. avocet)	All habitats	Disturbance caused by human activity (minimising disturbance)	The frequency, duration and/or intensity of disturbance affecting foraging and roosting should not reach levels that substantially affects the feature.	Shellfish dredging activity can cause noise and visual disturbance (either alone or in combination with other plans and projects) to the feature when taking place at key times of the year for the overwintering species and in proximity to important feeding and roosting sites. The significance of this disturbance is likely to depend on the availability of alternative undisturbed areas for birds; and the frequency, seasonality and	Avocet are present in large numbers between September and February. Avocet have a localised distribution with respect to their preferred feeding (Wych Lake, Middlebere Lake and Brownsea Lagoon) and roosting sites (Brownsea Lagoon, the further reaches of Wych Lake and Middlebere Lake and north of Holes Bay). This is possibly linked to the distribution of their prey. Disturbance should be minimised across the site at key times of the year for this species but it is particularly important that disturbance of this feature is kept to a minimum at the locations listed above due to the lack of suitable	<ul style="list-style-type: none"> ○ Exclusion of dredging year round from Holes Bay, Lytchett Bay, upper Wych Lake and Middlebere Lake covers areas identified as preferred feeding and roosting sites for avocet. ○ No fishing vessels are able to access Brownsea Lagoon where avocet preferentially feed and roost. ○ Disturbance is avoided in other areas of the Harbour through: ○ The number of permits issued reflects the current number of permit entitlements issued for the 2016-17 season. Improved regulation prohibits unlicensed/unregistered dredging activity and allows more effective enforcement of legislation. ○ Dredging activity is prohibited between 24th Dec and 25th May each year. This corresponds with the period of highest disturbance sensitivity due to the likelihood of cold weather and depleted food resources prior to migration.

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
<p>Internationally important populations of regularly occurring Annex 1 bird species (e.g. Mediterranean gull, common tern, Sandwich tern)</p>	<p>All Habitats</p>			<p>intensity at which shellfish dredging takes place.</p>	<p>alternative supporting habitat.</p>	<ul style="list-style-type: none"> ○ During the dredge fishing season, fishing activity is excluded from overwintering, feeding and roosting bird sensitive areas at Wych Lake, Middlebere Lake, Newton Bay, Ower Bay, Keyworth and parts of Arne Bay and Brands Bay during key sensitive times of year (1st Nov-23rd Dec and 25th May to 1st July). ○ The inclusion of an additional bird sensitive area at Brands Bay ○ Dredging activity is only permitted between 06:00 and 18:00 each day. ○ There are restrictions in the design and size of the pump and dredge used
		<p>Disturbance caused by human activity (minimising disturbance)</p>	<p>The frequency, duration and/or intensity of disturbance affecting nesting common tern, Sandwich tern and Mediterranean gull should not reach levels which substantially affects the feature.</p>	<p>Disturbance of Mediterranean gull nesting sites from fishing taking place in proximity to Seagull Island could cause a decline in the annual productivity or breeding success of the population (i.e. the number of chicks</p>	<p>Breeding Mediterranean gulls are present in significant numbers between April and August.</p> <p>Shellfish dredging activity is known to occur in proximity to Seagull Island. The shallow nature of the area and pattern of dredging activity means vessels are most likely to</p>	<ul style="list-style-type: none"> ● The dredge fishery season runs between 25th May and 23rd December each year. Dredge fishing activity will not take place between the start of the key Mediterranean gull breeding period (1st April) and the 25th May. ● The Southern IFCA 'Poole Harbour Roosting Sites Code of Practice (CoP)' aims to avoid disturbance to nesting and roosting bird species and promote the protection of supporting breeding habitat

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
<p>Internationally important populations of regularly occurring Annex 1 bird species (e.g. avocet, Mediterranean gull, common tern, Sandwich tern, little egret and Eurasian spoonbill)</p>	<p>All sub-features</p>			<p>successfully raised per breeding pair per year) and this may adversely affect the overall size and age-structure of the breeding population and its long-term viability.</p> <p>Common and Sandwich tern nest at Brownsea Lagoon where there is no fishing access and would therefore not be exposed to disturbance.</p>	<p>be operating at slow speeds in this area.</p> <p>The main breeding colony of Mediterranean gull is found at Seagull Island. Shellfish dredging will be subject to a code of conduct in the area of Seagull Island. Common terns breed at Brownsea Lagoon, which fishing vessels are unable to access.</p> <p>Brownsea Island lagoon is the site of the principle and probably only nesting colony of Sandwich terns in Poole Harbour.</p>	<p>within specific areas of Poole Harbour with particular reference to avoiding disturbance of Mediterranean gulls for the period when the breeding (1st April to 1st August) overlaps with the dredge fishing season under the permit.</p> <ul style="list-style-type: none"> • The Code of Practice sets out the following in relation to Mediterranean gulls: <ul style="list-style-type: none"> – Avoid dredge fishing between the three parts of Seagull Island – Avoid contact between a vessel and any part of Seagull Island – When moving around or between parts of Seagull Island keep speed to a maximum of 6 knots – Avoid excessive noise, beyond that caused by deployment of gear, when in close proximity to any part of Seagull Island • An increase in the overall area of Poole Harbour that is available to dredge activity during the sensitive period for Seagull Island will reduce the intensity and concentration of fishing activity in this area

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Internationally important populations of regularly occurring Annex 1 bird species (e.g. avocet, Mediterranean gull, common tern, Sandwich tern, little egret and Eurasian spoonbill)	All sub-features	Absence of obstructions to view lines	No increase in obstructions to existing bird view lines.	N/A	N/A	N/A
		Conservation Measures	Maintain or restore the structure, function and supporting processes associated with the feature and it's supporting habitat through management or other measures (whether within and/or outside the site boundary as appropriate) and ensure these measures are not being undermined or compromised.	In order to manage bird disturbance in Poole Harbour the Poole Harbour Aquatic Management Plan has identified Bird Sensitive Areas, which have been identified as areas where visual and noise disturbance is likely to be particularly significant to the bird features. Users are asked to avoid these areas at key time of year (Nov-Mar for overwintering bird sensitive areas and Apr-Jun for	Clams and cockle are found within intertidal mudflats in overwintering bird sensitive areas and fishing takes place close to breeding bird sensitive areas for Mediterranean gulls.	<ul style="list-style-type: none"> • Dredge fishing activity is excluded from Holes Bay, Lytchett Bay, upper Wych Lake and Middlebere Lake providing areas which are undisturbed for roosting and feeding bird populations throughout the year. • During the dredge fishing season, fishing activity is excluded from the areas of Wych Lake, Middlebere Lake, Newton Bay, Ower Bay, Keyworth and parts of Arne Bay and Brands Bay during key sensitive times of year (1st Nov-23rd Dec and 25th May to 1st July). • The Southern IFCA 'Poole Harbour Roosting Sites Code of Practice (CoP)' aims to avoid disturbance to nesting and roosting bird species and promote the protection of supporting breeding habitat within specific areas of Poole Harbour with particular

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
<p>Internationally important populations of regularly occurring Annex 1 bird species (e.g. avocet, Mediterranean gull, common tern, Sandwich tern, little egret and Eurasian spoonbill)</p>				<p>breeding bird sensitive areas) if carrying out activities that may disturb the birds.</p>		<p>reference to avoiding disturbance of Mediterranean gulls for the period when the breeding (1st April to 1st August) overlaps with the dredge fishing season under the permit.</p> <ul style="list-style-type: none"> • The number of permits issued reflects the current number of permit entitlements issued for the 2016-17 season. Improved regulation prohibits unlicensed/unregistered dredging activity and allows more effective enforcement of legislation. • The continued development of management through extensive consultation with stakeholders involved in the dredge fishery has helps to ensure proportionate management whilst achieving conservation objectives resulting higher levels of compliance with regulations. • At any time after the permits have been issued, the Authority may review the suitability of permit conditions, attach conditions to the permit and vary or revoke conditions attached to the permit following a set process and having regard to the Authority's duties and obligations under section 153 and 154 of the Marine and

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Internationally important populations of regularly occurring Annex 1 bird species (e.g. avocet, Mediterranean gull, common tern, Sandwich tern, little egret and Eurasian spoonbill)						Coastal Access Act 2009, advice by Natural England, scientific data and/or any Habitats Regulations Assessment.
	Shallow inshore waters	Extent and distribution of habitat	No decrease in extent from an established baseline, subject to natural change.	N/A	N/A	N/A
		Food availability	Presence and abundance of prey species should not deviate significantly from an established baseline, subject to natural change.	N/A	N/A	N/A

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
<p>Internationally important populations of regularly occurring Annex 1 bird species (e.g. avocet, Mediterranean gull, common tern, Sandwich tern, little egret and Eurasian spoonbill)</p>						
	<p>Intertidal sediment communities</p> <p>Intertidal sediment communities</p>	<p>Extent and distribution of supporting non-breeding habitat, seagrass</p>	<p>The extent and distribution of suitable habitat (either within or outside the site boundary) which supports the feature for all stages of the non-breeding period (moulting, roosting, loafing, and feeding) is maintained.</p>	<p>The main eelgrass beds within the intertidal sediment communities in Poole Harbour are known to support fish eating species such as red breasted mergansers as well as providing a food source for dark bellied brent geese. Physical damage could occur from shellfish dredging if it takes place within this habitat. The direct impact of shellfish</p>	<p>Bottom towed fishing gear activity is prohibited from all seagrass beds within Poole Harbour.</p>	<ul style="list-style-type: none"> The Southern IFCA 'Bottom Towed Fishing Gear Byelaw' prohibits bottom towed fishing gear activity within designated seagrass beds in Whitley Lake in Poole Harbour. The byelaw has been in place since December 2013 and there have been no recording breaches of the legislation since it was introduced. Currently, the Authority is seeking confirmation for the 'Bottom Towed Fishing Gear Byelaw 2016' which will replace the 'Bottom Towed Fishing Gear Byelaw'. The new byelaw includes the same prohibitions on bottom towed fishing gear activity within the Harbour's designated seagrass beds so protection of these habitats will be maintained.

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
				dredging on seagrass beds is significant through uprooting shoots and cutting through shoots which immediately reduces seagrass density and biomass.		
		Food availability (function and supporting processes)	Maintain availability of key prey species of preferred prey sizes which supports the feature.	Sediment disturbance as a result of shellfish dredging (and in combination with other activities e.g. bait digging and bait dragging) can potentially impact on bird prey availability, prey size and the birds ability to forage. This can be through removal (mortality) or target and non-target species and impacts on non-	<p>Dredge fishing activity occurs over intertidal sediment habitat within the Harbour.</p> <p>Areas where avocet preferentially feed are relatively small heightening the importance of maintaining their key prey items in these areas (Brownsea Lagoon, Wych Lake and Middlebere Lake). The amphipod <i>Corophium volutator</i> is known to be an important prey item for avocet and has a relatively localised</p>	<ul style="list-style-type: none"> • Holes Bay and the upper Wych Lake and Middlebere Lake are excluded from the fishery all year round. • Vessels are unable to access Brownsea Lagoon • Restrictions in the design of the pump and dredge used • Ongoing monitoring will aim to quantify impacts of activity by comparing sediment structure and benthic community composition in areas used for dredge fishing and areas excluded from the fishery. • Requirement to sort shellfish and return any deposits forthwith

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Internationally important populations of regularly occurring Annex 1 bird species (e.g. avocet, Mediterranean gull, common tern, Sandwich tern, little egret and Eurasian spoonbill)				target prey availability through changes in habitat structure of the intertidal sediment communities.	<p>distribution linked to lower salinity with high densities in Middlebere Lake and the upper parts of Holes Bay.</p> <p>Dredging activity is less likely to pose a risk to the prey availability of common tern, Sandwich tern and Mediterranean gull.</p>	
	Saltmarsh	Extent and distribution of supporting non-breeding habitat	The extent and distribution of suitable habitat (either within or outside the site boundary) which supports the feature for all stages of the non-breeding period (moulting, roosting, loafing, and feeding) is maintained.	Shellfish dredging if taking place in close proximity to saltmarsh roost sites could potentially also cause erosion of this supporting non-breeding habitat.	Fishing activity does not take place within close proximity of saltmarsh.	N/A
		Extent and distribution of supporting breeding habitat	The extent, distribution and availability of suitable breeding	Mediterranean gulls nest primarily at Seagull Island in the Wareham	Shellfish dredging activity is known to occur in proximity to Seagull Island, the shallow nature	<ul style="list-style-type: none"> The dredge fishery season runs between 25th May and 23rd December each year. Dredge fishing activity will not take place

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
	Saltmarsh		habitat which supports feature for all stages of their breeding cycle (courtship, nesting, feeding) is maintained.	channel. Shellfish dredging if taking place in close proximity to saltmarsh nesting sites could potentially cause erosion of this supporting breeding habitat. Common and Sandwich tern nest at Brownsea Lagoon where there is no fishing access.	of the area and pattern of dredging activity means vessels most likely to be operating at slow speed in this area. No fishing vessels are able to access Brownsea Lagoon.	<p>between the start of the key Mediterranean gull breeding period (1st April) and the 25th May.</p> <ul style="list-style-type: none"> The Southern IFCA 'Poole Harbour Roosting Sites Code of Practice (CoP)' aims to avoid disturbance to nesting and roosting bird species and promote the protection of supporting breeding habitat within specific areas of Poole Harbour with particular reference to avoiding disturbance of Mediterranean gulls for the period when the breeding (1st April to 1st August) overlaps with the dredge fishing season under the permit. Increase in overall area of the Harbour available to dredge activity during the sensitive period for Seagull Island will reduce intensity and concentration of activity in this area
			Food availability	Presence and abundance of prey species should not deviate significantly from an established	N/A	N/A

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURRING	PREVENTATIVE MEASURES
			baseline, subject to natural change.			
		Vegetation characteristics	Vegetation height throughout areas used for roosting should not deviate significantly from an established baseline, subject to natural change.	N/A	N/A	N/A
	Reedbed	Extent and distribution of habitat	No decrease in extent from an established baseline, subject to natural change.	N/A	N/A	N/A
Water bird Assemblage	All Habitats	Disturbance caused by human activity (minimising disturbance)	The frequency, duration and/or intensity of disturbance affecting foraging and roosting should not reach a level that substantially affects the feature.	Shellfish dredging activity can cause noise and visual disturbance (either alone or in combination with other plans and projects) to the feature when taking place at key times of the year for the overwintering	Shellfish dredging activity will be restricted during key sensitive overwintering period, fishery closed between 24 th December and 25 th May inclusive each year Shellfish dredging in overwintering, feeding and roosting sites restricted during key times of year	<ul style="list-style-type: none"> The number of permits issued reflects the current number of permit entitlements issued for the 2016-17 season. Improved regulation prohibits unlicensed/unregistered dredging activity and allows more effective enforcement of legislation. Dredge activity prohibited during most sensitive seasonal period, 24th Dec to 25th May inclusive Exclusion of dredging from overwintering, feeding and

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
				<p>species and in proximity to important feeding and roosting sites. The significance of this disturbance is likely to depend on the availability of alternative undisturbed areas for birds; and the frequency, seasonality and intensity at which shellfish dredging takes place.</p>	<p>No Shellfish dredging occurring in Lytchett Bay, Holes Bay, upper Wych Lake and Middlebere Lake at any time</p> <p>Shellfish dredging activity restricted to between 06:00 and 18:00</p>	<p>roosting bird sensitive areas at key times of year</p> <ul style="list-style-type: none"> • Inclusion of additional bird sensitive area to those named in Poole Harbour Aquatic Management Plan at Brands Bay • Exclusion of dredging year round from Holes Bay, Lytchett Bay, upper Wych Lake and Middlebere Lake providing alternative undisturbed areas for bird species and reducing disturbance in particularly sensitive areas • Daily temporal restriction to dredging, only permitted between 06:00 and 18:00 • Restrictions in the design of the pump and dredge used
Black tailed Godwit	All Habitats	Disturbance caused by human activity (minimising disturbance)	The frequency, duration and/or intensity of disturbance affecting foraging and roosting should not reach	Significant numbers of black tailed godwit are present between September and March.	Shellfish dredging activity restricted during key sensitive overwintering period, fishery closed between 24 th December and 25 th May inclusive each year	<ul style="list-style-type: none"> • Upper Middlebere Lake excluded from the fishery year round • No vessels are able to access Brownsea Lagoon • The number of permits issued reflects the current number of permit entitlements issued for

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Black tailed Godwit	All Habitats		levels that substantially affects the feature.	<p>Shellfish dredging activity can cause noise and visual disturbance (either alone or in combination with other plans and projects) to the feature when taking place at key times of year for the overwintering and in proximity to important feeding and roosting sites. The significance of this disturbance is likely to depend on the availability of alternative undisturbed areas for birds; and the frequency and intensity at which shellfish dredging takes place.</p> <p>Location of main roost sites: other than Brownsea Lagoon and</p>	<p>Shellfish dredging in overwintering, feeding and roosting sites restricted during key times of year</p> <p>No Shellfish dredging occurring in Lytchett Bay, Holes Bay, upper Wych Lake and Middlebere Lake at any time</p> <p>Shellfish dredging activity restricted to between 06:00 and 18:00</p>	<p>the 2016-17 season. Improved regulation prohibits unlicensed/unregistered dredging activity and allows more effective enforcement of legislation.</p> <ul style="list-style-type: none"> • Dredge activity prohibited during most sensitive seasonal period, 24th Dec to 25th May inclusive • Exclusion of dredging from overwintering, feeding and roosting bird sensitive areas at key times of year • Inclusion of additional bird sensitive area to those named in Poole Harbour Aquatic Management Plan at Brands Bay • Exclusion of dredging year round from Holes Bay, Lytchett Bay, upper Wych Lake and Middlebere Lake providing alternative undisturbed areas for bird species and reducing disturbance in particularly sensitive areas • Daily temporal restriction to dredging, only permitted between 06:00 and 18:00 • Restrictions in the design of the pump and dredge used

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Black tailed Godwit	All Habitats			<p>Middlebere Creek (where the birds roost at the edge of the water or partly immersed) this wader normally roosts on <i>Spartina</i> saltmarsh with occasional small groups occurring on wet agricultural land (Pickess, 2007).</p> <p>Main foraging areas:</p> <p>Normally this is a nomadic species within the Harbour. Flocks tend to congregate in one bay to feed for a number of days or weeks before moving on to another bay or creek. Their roost attendance is thus limited to the area in which they are feeding (Morrison, 2002).</p>		

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
				<p>With the exception of Brownsea Lagoon it was noted that preferred feeding sites were all in areas of fine silt and had medium to high biomass of <i>Hediste diversicolor</i> (Pickess, 2007).</p>		
Shelduck	All Habitats	Disturbance caused by human activity (minimising disturbance)	The frequency, duration and/or intensity of disturbance affecting foraging and roosting should not reach levels that substantially affects the feature.	Shellfish dredging activity can cause noise and visual disturbance (either alone or in combination with other plans and projects) to the feature when taking place at key times of the year for the overwintering species and in proximity to important feeding and roosting sites. The significance of	<p>Current concerns that Shelduck are declining in Poole Harbour and that trends do not mirror those seen nationally and regionally and are therefore likely to be linked to site specific pressures.</p> <p>Significant numbers of shelduck are present between October and March.</p>	<ul style="list-style-type: none"> • Upper Middlebere Lake excluded from the fishery year round • No vessels are able to access Brownsea Lagoon • The number of permits issued reflects the current number of permit entitlements issued for the 2016-17 season. Improved regulation prohibits unlicensed/unregistered dredging activity and allows more effective enforcement of legislation. • Dredge activity prohibited during most sensitive seasonal period, 24th Dec to 25th May inclusive • Exclusion of dredging from overwintering, feeding and roosting bird sensitive areas at key times of year

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Shelduck	All Habitats			this disturbance is likely to depend on the availability of alternative undisturbed areas for birds; and the frequency, seasonality and intensity at which shellfish dredging takes place.		<ul style="list-style-type: none"> • Inclusion of additional bird sensitive area to those named in Poole Harbour Aquatic Management Plan at Brands Bay • Exclusion of dredging year round from Holes Bay, Lytchett Bay, upper Wych Lake and Middlebere Lake providing alternative undisturbed areas for bird species and reducing disturbance in particularly sensitive areas • Daily temporal restriction to dredging, only permitted between 06:00 and 18:00 • Restrictions in the design of the pump and dredge used

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
<p>Internationally important assemblage including internationally important populations of migratory species</p>	<p>All Habitats</p>	<p>Supporting habitat: food availability within supporting habitat</p>	<p>Maintain availability of key prey species at preferred prey sizes.</p>	<p>Sediment disturbance as a result of shellfish dredging (and in combination with other activities e.g. bait digging and bait dragging) can potentially impact on bird prey availability, prey size and the birds ability to forage. This can be through removal (mortality) or target and non-target species and impacts on non-target prey availability through changes in habitat structure of the intertidal sediment communities.</p>	<p>Activity occurs over intertidal sediment habitat within the Harbour.</p> <p>Shelduck feed throughout the Harbour but favoured sections are Keyworth, Holes Bay and Brands Bay (Pickess, 2007).</p> <p>Significant numbers occur October to March.</p>	<ul style="list-style-type: none"> • Dredge activity prohibited during most sensitive seasonal period, 24th Dec to 25th May inclusive • Exclusion of dredging from overwintering, feeding and roosting bird sensitive areas at key times of year including Keyworth. • Inclusion of additional bird sensitive area to those named in Poole Harbour Aquatic Management Plan at Brands Bay • Exclusion of dredging year round from Holes Bay, Lytchett Bay, upper Wych Lake and Middlebere Lake providing alternative undisturbed areas for bird species and reducing disturbance in particularly sensitive areas • Restrictions in the design of the pump and dredge used • Ongoing monitoring will aim to quantify impacts of activity by comparing sediment structure and benthic community composition in areas used for dredge fishing and areas excluded from the fishery.

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Internationally important assemblage including internationally important populations of migratory species	All Habitats					<ul style="list-style-type: none"> Requirement to sort dredge contents and return any deposits forthwith.
		Landform	Maintain the density of channel networks within intertidal feeding areas for black tailed godwits.	Intense fishing could possibly alter the natural channel networks through a change in topography.	No intense activity over areas defined for distribution of feeding black tailed godwit.	<ul style="list-style-type: none"> Increase of overall area of the Harbour available for dredging reducing intensity over any one specific site Restriction of effort allows better management of clam and cockle populations, leading to greater densities over a wider area reducing area specific intensity.
		Conservation Measures	Maintain or restore the structure, function and supporting processes associated with the feature and it's supporting habitat through management or other measures (whether within and/or outside the site boundary as appropriate) and ensure these	That permit conditions are not complied with or undermined or are unsuitable, resulting in reduced ability to maintain or restore the structure, function and supporting processes associated with the feature and supporting habitats. In order to	<p>Ability to review, attach, revoke or vary permit conditions by Authority removes the impact of permit conditions being unsuitable over a long time period</p> <p>Improved ability to enforce permit conditions, reducing impact of unregistered/unlicensed activity</p>	<ul style="list-style-type: none"> Dredge fishing activity is excluded from Holes Bay, Lytchett Bay, upper Wych Lake and Middlebere Lake providing areas which are undisturbed for roosting and feeding birds all year round. During the dredge fishing season, activity is excluded from the areas of Wych Lake, Middlebere Lake, Newton Bay, Ower Bay, Keyworth and parts of Arne Bay and Brands Bay during key sensitive times of year (1st Nov-23rd Dec and 25th May to 1st July). The Southern IFCA 'Poole Harbour Roosting Sites Code of

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Internationally important assemblage including internationally important populations of migratory species	All Habitats		measures are not being undermined or compromised.	manage bird disturbance in Poole Harbour the Poole Harbour Aquatic Management Plan has identified bird sensitive areas where visual and noise disturbance is likely to be particularly significant to the bird features. Users are asked to avoid these areas at key times of the year (Nov-Mar for overwintering bird sensitive areas and Apr-Jun for breeding bird sensitive areas) if carrying out activities that may disturb the birds.		<p>Practice (CoP)' aims to avoid disturbance to nesting and roosting bird species and promote the protection of supporting breeding habitat within specific areas of Poole Harbour with particular reference to avoiding disturbance of Mediterranean gulls for the period when the breeding (1st April to 1st August) overlaps with the dredge fishing season under the permit.</p> <ul style="list-style-type: none"> • The number of permits issued reflects the current number of permit entitlements issued for the 2016-17 season. Improved regulation prohibits unlicensed/unregistered dredging activity and allows more effective enforcement of legislation. • Continued development of management through extensive consultation with stakeholders involved in the dredge fishery helps to ensure proportionate management whilst achieving conservation objectives resulting in better compliance with the regulations. • At any time after the permits have been issued, the Authority may review the suitability of permit conditions, attach

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Internationally important assemblage including internationally important populations of migratory species	All Habitats					conditions to the permit and vary or revoke conditions attached to the permit following a set process and having regard to the Authority's duties and obligations under section 153 and 154 of the Marine and Coastal Access Act 2009, advice by Natural England, scientific data and/or any Habitats Regulations Assessment.
	Shallow inshore waters inc. lagoons	Extent and distribution of habitat	No decrease in extent from an established baseline, subject to natural change.	N/A	N/A	N/A
		Food availability	Presence and abundance of food species should not deviate significantly from an established baseline, subject to natural change.	N/A	N/A	N/A

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
<p>Internationally important assemblage including internationally important populations of migratory species</p>	<p>Intertidal sediment communities</p>	<p>Extent and distribution of supporting non-breeding habitat, seagrass</p>	<p>The extent and distribution of suitable habitat (either within or outside the site boundary) which supports the feature for all stages of the non-breeding period (moulting, roosting, loafing, and feeding) is maintained.</p>	<p>The main eelgrass beds within the intertidal sediment communities in Poole Harbour are known to support fish eating species such as red breasted mergansers as well as providing a food source for dark bellied brent geese. Physical damage could occur from shellfish dredging if it takes place within this habitat. The direct impact of shellfish dredging on seagrass beds is significant through uprooting shoots and cutting through shoots which immediately reduces seagrass</p>	<p>Bottom towed fishing gear activity prohibited from seagrass beds in Poole Harbour.</p>	<ul style="list-style-type: none"> The Southern IFCA 'Bottom Towed Fishing Gear Byelaw' prohibits bottom towed fishing gear activity within designated seagrass beds in Whitley Lake in Poole Harbour. The byelaw has been in place since December 2013 and there have been no recording breaches of the legislation since it was introduced. Currently, the Authority is seeking confirmation for the 'Bottom Towed Fishing Gear Byelaw 2016' which will replace the 'Bottom Towed Fishing Gear Byelaw'. The new byelaw includes the same prohibitions on bottom towed fishing gear activity within the Harbour's designated seagrass beds so protection of these habitats will be maintained.

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
Internationally important assemblage including internationally important populations of migratory species		Food availability (function and supporting processes)	Maintain availability of key prey species of preferred prey sizes which supports the feature.	density and biomass. Sediment disturbance as a result of shellfish dredging (and in combination with other activities e.g. bait digging and bait dragging) can potentially impact on bird prey availability, prey size and the birds ability to forage. This can be through removal (mortality) or target and non-target species and impacts on non-target prey availability through changes in habitat structure of the intertidal sediment communities.	Activity occurs over intertidal sediment habitat within the Harbour.	<ul style="list-style-type: none"> • Dredge gear type restrictions under permit conditions restrict species that can be taken • Ongoing monitoring will aim to quantify impacts of activity by comparing sediment structure and benthic community composition in areas used for dredge fishing and areas excluded from the fishery.
		Absence of obstructions to view lines	No increase in obstructions to existing view lines.	N/A	N/A	N/A

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURRING	PREVENTATIVE MEASURES
Internationally important assemblage including internationally						
	Saltmarsh	Extent and distribution of supporting non-breeding habitat	The extent and distribution of suitable habitat (either within or outside the site boundary) which supports the feature for all stages of the non-breeding period (moulting, roosting, loafing, and feeding) is maintained.	Shellfish dredging if taking place in close proximity to saltmarsh roost sites could potentially also cause erosion of this supporting non-breeding habitat.	N/A	N/A
		Food availability	Presence and abundance of	N/A	N/A	N/A

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
important populations of migratory species	Saltmarsh		crustaceans, annelids, fish and molluscs should not deviate significantly from an established baseline, subject to natural change.			
		Food Availability	Presence and abundance of soft leaved and seed bearing plants should not deviate significantly from an established baseline, subject to natural change.	N/A	N/A	N/A
		Vegetation characteristics	Vegetation height throughout the areas used for roosting should	N/A	N/A	N/A

FEATURE	SUPPORTING HABITATS	ATTRIBUTE	TARGET	POTENTIAL IMPACT	NATURE AND LIKELIHOOD OF IMPACT OCCURING	PREVENTATIVE MEASURES
			not deviate significantly from an established baseline, subject to natural change.			
		Absence of obstructions to viewlines	No increase in bird obstructions to existing viewlines.	N/A	N/A	N/A

Appendix 9 Review of alternative measures

Poole Harbour Clam & Cockle Fishery

Review of alternative measures to reduce unwanted catch

In developing management for the Poole Harbour Clam & Cockle Fishery both under the Poole Harbour Dredge Permit byelaw and previous management schemes, the Southern IFCA have considered measures which reduce the likelihood of unwanted catch being retained by the fishery. For this fishery, using a pump-scoop dredge, the unwanted catch being considered consists of Manila clam and Common cockle below the minimum legal size of 35mm and 23.8mm respectively.

The following measures were considered during management development for the fishery under the Poole Fishery Order 1985, the pre-cursor to the current management scheme. These measures were reviewed in the development of the Poole Harbour Dredge Permit byelaw and are still in place under the new management.

Introduction of the trailed pump-scoop dredge

In 2012, under the Poole Fishery Order 1985 which licenced the wild fishery for Manila clam, the Southern IFCA introduced the use of trailed dredges within the fishery in addition to the historically used hand held dredge. The trailed dredge method was introduced following requests from the industry to review the licence conditions in light of increasingly mechanised fishing methods aiming to reduce overheads and increase health and safety. The introduction of the trailed dredge is documented in the Poole Harbour Special Protection Area (SPA) Appropriate Assessment for the Licenced Clam Fishery 2012-2013 (Southern IFCA, 2012). As part of the evidence compiled to support the introduction of this method it was recorded that the trailed dredge involves the sorting of catch on board the vessel by hand as opposed to the hand-held dredge which requires manual shaking in situ to aid the sorting of sizable shellfish. It was therefore thought possible that the hand-held dredge has more of a risk of damaging the undersized shellfish than the trailed method and it was observed that the condition of clams caught using the hand-held dredge was poorer than those caught using the trailed dredge, with more broken and cracked shells evident in the hand-held dredge (Pengelly, pers. Obs., 2012). Under the current byelaw for the fishery, under which 45 permits are issued annually, only two of the vessels out of the 45 operate a hand-held dredge, the remainder using the mechanised trailed dredge.

Change in dredge and riddle bar spacing size

In 2008, the European minimum size for the Manila clam was reduced from 40mm to 35mm in length, necessitating a consideration of the appropriateness of the regulations on the spacing requirements for the dredge and riddle used in the licenced fishery under the Poole Fishery Order 1985. There was additional consultation with the industry in 2009 on changes to the minimum dredge bar spacing to reduce the number of undersized shellfish caught, in part to combat the problem of illegal fishing and to assist fishermen with sorting their catches (Pengelly, 2010).

The Poole Harbour Special Protection Area (SPA) Appropriate Assessment for the Licenced Clam Fishery 2012-2013 (Southern IFCA, 2012) documents that, as a result of the change to the minimum size and consultation with the industry, the IFCA resolved to set the riddle and dredge bar spacing measurements at 18mm under the Poole clam licence. The change in

dredge bar spacing to 18mm was seen to retain approximately only 5-10% of clams under the minimum size of 35mm and the riddle spacing of 18mm was seen to retain 2-16% of clams under the minimum size of 35mm.

The bar spacing was further discussed by Members of the Southern IFCA Authority as part of a 'Byelaw Working Group' during the development of the permit conditions for the Poole Harbour Dredge Permit byelaw. At a meeting of the Byelaw Working Group on 25th July 2014, Members discussed options for regulations on riddle bar spacing and determined the need for a single riddle for all species which assists with reducing catch of undersized shellfish. At this meeting Southern IFCA Officers provided information that the current size of 18mm spacing, developed through the process outlined above, was already used and reduced the catch of undersized shellfish with only an approximate 5% loss of sizable clam. The decision to keep the dredge bar spacing and riddle bar spacing at 18mm under the permit conditions of the Poole Harbour Dredge Permit byelaw was presented to the Southern IFCA Authority at the meeting of the Technical Advisory Committee on 28th August 2014. The Committee recommended that the Poole Harbour Dredge Permit byelaw and associated conditions be adopted by the Southern IFCA Joint Committee at the September 2014 meeting. At the meeting of the Joint Committee on 18th September 2014, the Southern IFCA Authority made the Poole Harbour Dredge Permit byelaw incorporating the associated permit conditions including those in reference to the dredge and riddle bar spacing size.

Therefore, the Poole Harbour Dredge Permit byelaw permit conditions lists the following in relation to reducing the retention of unwanted catch and aim to ensure the survivability of that which is returned to the fishery:

Permit Condition 4 – Gear construction and restrictions

4.1 Dredges must be constructed of rigid bars having spaces of not less than 18mm between them

4.8 A riddle with 18mm bar spacing is mandatory for the sorting of shellfish. Any shell discards are to be re-deposited forthwith

The requirement that any discards, including live undersized individuals, be re-deposited forthwith is a further measure to aim to increase the survivability of any undersized individuals caught by the dredge. This ensures that undersized individuals are returned to the ground from which they came, aiming to ensure that they are returned to a suitable habitat, and also aims to ensure the least possible amount of time out of the sediment and therefore a reduced time before individuals are able to re-bury.

Since the introduction of the Permit byelaw, a number of permit holders within the fishery have voluntarily increased the spacing on the dredge and riddle to 19mm to assist them with ensuring that they do not catch or retain undersized shellfish. Although not mandatory, this has been adopted by a growing number of permit holders since 2015 and will ensure that an even lower percentage of undersized shellfish is retained by the dredge or in the riddle reducing the retention of unwanted catch further. Fishermen are also given shellfish gauges by the Southern IFCA which are designed for multiple species including Manila clam and Common cockle, these gauges provide a further opportunity for fishermen to quickly identify undersized individuals and return them to the fishery.

The Poole Harbour Dredge Permit byelaw provides the ability for the Southern IFCA to review the suitability of permit conditions every three years, or sooner if required, according to a set

procedure (Poole Harbour Dredge Permit byelaw, 2015). This flexibility would allow for a review of any of the measures outlined above, or the consideration of additional measures should it be deemed necessary. The process of review involves consultation with permit holders and a consideration of the Authority's duties under the Marine and Coastal Access Act 2009, scientific or survey data, statutory advice by Natural England, any Habitats Regulations Assessment, an Impact Assessment for any proposed changes and any consultation feedback.

References

Pengelly, S., 2010. Poole Harbour Clam and Cockle Fishery Report 2010. Report to the Southern Sea Fisheries District, pp. 14

Southern IFCA, 2012. Poole Harbour Special Protection Area (SPA) Appropriate Assessment Licenced Clam Fishery 2012-2013, pp. 36

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