

Title: Southern IFCA Solent Dredge Permit Byelaw IA No: Southern IFCA 015 Lead department or agency: Southern Inshore Fisheries and Conservation Authority (IFCA) Other departments or agencies:	Impact Assessment (IA)
	Date: 11/11/2018
	Stage: Consultation
	Source of intervention: Domestic
	Type of measure: Secondary Legislation
	Contact for enquiries: Inshore Fisheries and Conservation Officer, Southern IFCA, 01202 721373
Summary: Intervention and Options	RPC Opinion: N/A

Cost of Preferred (or more likely) Option					
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Two-Out?	Measure qualifies as	
N/A	£ N/A	NA	No	NA	
What is the problem under consideration? Why is government intervention necessary? <p>The Solent bivalve fishery is an important and valuable fishery. Stock assessments for oysters (<i>Ostrea edulis</i>) spanning the last five years have indicated that this fishery has been in decline, as such it has been subject to a series of closures via implementation of the Temporary Closure of Shellfish Beds Legacy Byelaw, to protect the stock. More recently landing trends for manila clams (<i>Ruditapes Philippinarum/Venerupis philippinarum</i>) suggest that within Solent waters there has been a decline.</p> <p>The fishing for bivalves (including oysters, clams and scallops) in the Solent is currently managed through a number of measures. This includes the Southern IFCA Solent Dredge Fishing Byelaw and the Temporary Closure of Shellfish Beds Byelaw. The introduction of an overarching umbrella permit byelaw allows for the adaptive management of the fisheries, providing Southern IFCA with the ability to (1) introduce bespoke conditions under either a Category A or Category B permit, (2) to review the suitability of existing permit conditions and to (3) vary or revoke conditions (following an appropriate review procedure as described in paragraph (25) of the Solent Dredge Permit Byelaw), to ensure that the management measures in place are appropriate and relevant to achieving sustainable bivalve fisheries in the Solent.</p>					

What are the policy objectives and the intended effects? <ol style="list-style-type: none"> To enhance the sustainability and socio-economic viability of bivalve fisheries in the Solent; To maintain a healthy marine environment and further the conservation objectives of the Solent's marine protected areas; To introduce a flexible approach to the management of the Solent bivalve fisheries, supporting the opportunity for a greater use and application of bespoke management based on the best available evidence, which will underpin any decisions regarding the implementation of management measures; To consolidate and simplify existing bivalve fishery management in the Solent.

What policy options have been considered, including any alternatives to regulation? Please

justify preferred option (further details in Evidence Base)

- 0. Do nothing;
- 1. Create a Southern IFCA byelaw to permit the use of bivalve dredges in the Solent area;
- 2. Create a Southern IFCA byelaw to permit the use of bivalve dredges in the Southern IFCA district;
- 3. Voluntary measures.

All options are compared to Option 0, the preferred option is **Option 1**. This is the most effective approach for the future management of bivalve fisheries in the Solent.

Will the policy be reviewed? It will be reviewed. If applicable, set review date: N/A

Does implementation go beyond minimum EU requirements?	No				
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	Micro Yes	< 20 Yes	Small Yes	Medium Yes	Large Yes
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)			Traded: N/A	Non-traded: N/A	

I have read the impact assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Chair: _____ Date: _____

Summary: Analysis & Evidence Policy Option

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year	PV Base Year	Time Period Years	Net Benefit (Present Value (PV) (£m))		
			Low: Optional	High: Optional	Best Estimate:
N/A	N/A	N/A			

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excluding transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate	£4000	Optional	£8600

Description and scale of key monetised costs by 'main affected groups'

The average annual value of bivalve fisheries in the Solent is £425 271. This figure is based on three years of Marine Management Organisation (MMO) landings data. This figure represents the current fishing effort and take into account the existing management measures in place. It is not anticipated that there will be any significant changes to landings at the point that the permit byelaw is implemented, as the byelaw will incorporate existing management measures. The costs to the industry in purchasing a permit are anticipated to be £215 per vessel. These costs are based on the administrative costs only.

The estimated costs to the IFCA for introducing the recommended byelaw, including the costs associated with advertising the new byelaw will be approximately £3000. Legal advice will be sought over this period also and it is estimated that the legal costs of introducing the byelaw will be approximately £1000. When the Permit Byelaw is in place, it is anticipated that there will be an administrative burden on the IFCA of the value of £8592 (this value is based on the estimated uptake of permits by active fishers). However it is anticipated that the cost of the permit will offset this.

Other key non-monetised costs by 'main affected groups'

As a consequence of loss of access and catches by vessels not eligible for a permit there is the potential for fishers and related businesses to experience a loss in income as a result of the recommended byelaw. There is also the potential for the displacement of fishing effort to other areas, potentially creating additional conflict with other users and reducing the sustainability of fisheries and the marine environment.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate			£1100

Description and scale of key monetised benefits by 'main affected groups'

The consolidation of legislation will remove the requirement for the application of certain byelaws such as

the implementation of the 'Temporary Closure of Shellfish Beds Byelaw'. Each year the advertisement of this byelaw costs in the region of £1100.

Other key non-monetised benefits by 'main affected groups'

The recommended byelaw has significant benefits to the sustainability of the Solent bivalve fisheries. Allowing adaptable management of these fisheries will ensure that management is appropriate and remains sustainable. Improving the sustainability of the fishery has the potential to allow for more stable and potentially higher catch rates which would have a positive financial effect on the fishery.

Key assumptions/sensitivities/risks

Discount rate (%)

It is assumed that greater adaptability of management will assist in improving the sustainability of the Solent bivalve fisheries.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OITO?	Measure qualifies as
Costs: N/A	Benefits: N/A	Net: N/A	No	N/A

Evidence Base (for summary sheets)

1. Introduction
2. Rationale for intervention
3. Policy objectives and intended effects
4. Background
5. The options
6. Analysis of costs and benefits
 - Costs
 - Analysis of administrative costs
 - Benefits
 - Analysis of environmental benefits
 - Analysis of administrative benefits
 - One In Two Out (OITO)
 - Small firms impact test and competition assessment
7. Conclusion

Evidence base

1. Introduction

1.1 The nationally agreed vision of the IFCA is that they will

“...lead, champion and manage a sustainable marine environment and inshore fisheries within their Districts by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry...”

1.2 As the lead fisheries regulators in the inshore area of Dorset, Hampshire and the Isle of Wight Southern IFCA are responsible for the management of the Solent bivalve fisheries.

1.3 Section (153) of the Marine and Coastal Access Act, 2009 (MaCAA) requires that for the management of inshore fisheries:-

- (1) The authority for an IFC district must manage the exploitation of sea fisheries resources in that district.
- (2) In performing its duty under subsection (1), the authority for an IFC district must:
 - (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, and
 - (d) Seek to balance the different needs of persons engaged in the exploitation of sea fisheries resources in the district.

2. Rationale for intervention

2.1 Southern IFCA has a duty to ensure that appropriate measures for the management of the exploitation of sea fisheries resources are implemented.

2.2 Fishing activities can potentially cause negative outcomes as a result of 'market failures'. These failures can be described as:

- Public goods and services – A number of goods and services provided by the marine environment such as biological diversity are 'public goods' (no-one can be excluded from benefiting from them, but use of the goods does not diminish the goods being available to others). The characteristics of public goods, being available to all but belonging to no-one, mean that individuals do not necessarily have an incentive to voluntarily ensure the continued existence of these goods which can lead to under-protection/provision.
- Negative externalities – Negative externalities occur when the cost of damage to the marine environment is not fully borne by the users causing the damage. In many cases no monetary value is attached to the goods and services provided by the marine environment and this can lead to more damage occurring than would occur if the users had to pay the price of damage. Even for those marine harvestable goods that are traded (such as wild fish), market prices often do not reflect the full economic cost of the exploitation or of any damage caused to the environment by that exploitation.
- Common goods - A number of goods and services provided by the marine environment such as populations of wild fish are 'common goods' (no-one can be excluded from benefiting

from those goods however consumption of the goods *does* diminish that available to others). The characteristics of common goods (being available but belonging to no-one, and of a diminishing quantity), mean that individuals do not necessarily have an individual economic incentive to ensure the long term existence of these goods which can lead, in fisheries terms, to potential overfishing. Furthermore, it is in the interest of each individual to catch as much as possible as quickly as possible so that competitors do not take all the benefits. This can lead to an inefficient amount of effort and unsustainable exploitation.

2.3 IFCA byelaws aim to redress these sources of market failure in the marine environment in the following ways:

- Management measures, introduced through regulatory notices, to meet the conservation objectives of Marine Protected Areas (MPAs) will ensure negative externalities are reduced or suitably mitigated;
- Management measures will support continued existence of public goods in the marine environment, for example conserving the range of biodiversity in the Southern IFCA District.
- Management measures will also support continued existence of common goods in the marine environment, for example ensuring the long term sustainability of fish stocks in the IFCA District.

3. Policy objectives and intended effects

3.1 The policy objective pertinent to this **Permit Byelaw** is to introduce a single coherent management tool to govern the fishing activities within the Solent bivalve fisheries, which will allow for adaptable and flexible management, underpinned and directed by the best available evidence available. The proposed byelaw will provide a mechanism under which the introduction of specific measures can be introduced in a permit, in accordance with the procedure set out in the Solent Dredge Permit Byelaw (“The Permit Byelaw”).

3.2 The Authority currently has a number of stand alone byelaws which are relevant to the Solent bivalve fisheries. It is anticipated that the Solent Dredge Fishing Byelaw, and the Temporary Closure of Shellfish Beds Byelaw will be incorporated into the proposed Permit Byelaw, thus clarifying and simplifying management for site users. It will also, in line with the review procedure outlined in paragraph (25) of the Permit Byelaw, allow for a more adaptable form of management to ensure the sustainability of the fisheries.

3.3 When designing management the Authority’s primary objective shall be to further the conservation objectives of a marine protected area. Where this may be achieved through more than one approaches, the Authority may regard any scientific and survey data, any feedback from those affected and any socio-economic considerations in order to maximise the sustainable exploitation of the District’s fisheries.

3.5 Having the ability to flexibly manage fishing activities under the proposed byelaw, the Authority will be able to introduce permit conditions and associated management as new and improved evidence becomes available. This evidence may include improved knowledge of the impact of an activity covered by the byelaw, or a better understanding of the status of a stock or of the suitability of a gear type towards harvesting. The Authority and its partners are committed to improving their knowledge of the impacts of various methods of fishing and over time additional evidence may be developed to better inform management.

3.6 Of the byelaws proposed to be absorbed into the permit scheme, the Solent Dredge Fishing Byelaw was created to ensure that the ongoing activity would not impact the features of the Solent European Marine Site, and as such was subject to a Habitats Regulations Assessment (HRA) to determine whether the management was appropriate for the conservation objectives of the site. In order to ensure that management remains appropriate to the conservation objectives and that no

designated features are adversely impacted by the activities proposed to be managed under the byelaw, a HRA has been undertaken for the management proposed under the Solent Dredge Permit Byelaw.

- 3.7 The introduction of a Permit Byelaw and the flexibility and adaptivity in approach which it will enable, will ensure a saving in costs and time, when compared to the introduction of management through stand-alone byelaws. This cost saving is quantified in section 6 of this impact assessment.

4. Background

- 4.1 The Solent is one of only a few major sheltered channels in Europe, lying between the Isle of Wight and the mainland. The Solent and its estuaries and harbours are unique for a complex tidal regime, with long periods of tidal stand at high and low tide. The variety of inlets, estuaries, harbours and areas of exposure, combined with the variety of marine sediments make it a biologically diverse area creating a significant diversity in habitats.

Oyster Fishery

- 4.2 As a result of the above, areas of the Solent have long provided a suitable habitat for a variety of organisms including commercially important bivalve species. The native oyster (*Ostrea edulis*) has been historically fished in the Solent since the 18th century. Oyster dredging is an established fishing activity in the Solent and the modern fishery developed during the 1960s. From 1972 until 2006 it was Europe's largest self-sustaining flat oyster fishery, peaking between 1970 and 1980. From 2007, the population and fishery have been declining. The reason for the decline remains unknown but is likely to be caused by a combination of factors.
- 4.3 The target species of the fishery is the Native oyster (*Ostrea edulis*) although catches may include the non-native Pacific oyster (*Magallana gigas*).
- 4.4 Up until 2010, the fishery was managed by the Solent Oyster Fishery Order 1980, a Regulating Order which limited the vessels entering the fishery and defined a closed season (1st March – 31st October). This closed season still exists under the Southern IFCA Oyster Closed Season Byelaw. In 2010, it was decided the Regulating Order would not be renewed due to the ongoing decline of the fishery and the area became a public fishery.

Management of the fishery after 2010 is summarised in Table 1. This includes closure of the wider Solent (including Southampton Water) from 2013/14 season onwards which was achieved using the 'Temporary Closure of Shellfish Beds' Byelaw.

Table 1. Management of the Solent oyster fishery after the Solent Fishery Order 1980 expired in 2010 in response to continued declines in the population.

Season	Management
2010/11	Regulating Order expired and fishery became public fishery. Closed season still operated from 1 st March till 31 st October.
2011/12	Closed season 1 st March till 31 st October.
2012/13	Closed season 1 st March till 31 st October.
2013/14	Public fishery was closed in the wider Solent (including Southampton Water) and a shorter season of four weeks from 31 st October. Eastern harbours, Langstone and Portsmouth remained open for the shorter season.
2014/15	Public fishery was closed in the wider Solent (including Southampton Water) and a shorter season of two weeks from 31 st October. Eastern harbours, Langstone and Portsmouth remained open for the shorter season.
2015/16	Public fishery was closed in the wider Solent (including Southampton Water) and a shorter season of two weeks from 31 st October. Eastern harbours, Langstone and Portsmouth remained open for the shorter season.
2016/17	Public fishery was closed in the wider Solent (including Southampton Water). Eastern harbours, Langstone and Portsmouth, defaulted to the 'Oyster Close Season' byelaw (i.e. open for four months between November and February).
2017/18	Public fishery was closed in the wider Solent (including Southampton Water). Eastern harbours, Langstone and Portsmouth, defaulted to the 'Oyster Close Season' byelaw (i.e. open for four months between November and February). Additional closed areas for all types of bottom towed fishing gear were introduced in November 2017, including previously fished areas within Langstone Harbour.
2018/19	Apart from the Ryde Middle bed and Portsmouth Harbour, a Temporary Closure was applied to all oyster beds in the Solent area and associated harbours.

- 4.5 The number of vessels participating within the oyster fishery has largely declined over the last ten years or more. In 2002/03, the fishery supported 77 licenses and in 2009/10 the number of licenses had declined to 22 (Figure 5). The Solent Regulating Order expired after the 2009/10 season, removing the need for individual oyster licenses.
- 4.6 More recently, over the last three years (2015-2017), it is estimated that the oyster fishery has supported between 14 and 17 vessels. The number of vessels was greatest in 2016 at 17 vessels and lowest in 2015 at 14 vessels, with the most recent year (2017) supporting 15 vessels. It is important to note that typically a large proportion of vessels will engage in the fishery in the first 1 to 3 days of the fishery, and thereafter the number of vessels will rapidly decrease, leaving on average 1 to 2 fishing on any one day for the remainder of the season, weather and conditions permitting.

Clam Fishery

- 4.7 Fishing for species of clams, predominantly the non native American Hard Shelled Clam (*Mercenaria Mercenaria*) and the manila clam (*Ruditapes philippinarum*) has occurred in peaks and troughs historically. The American Hard Shelled clam was first introduced into Southampton water in 1925 but was not commercially fished until the 1960s and has experienced periods of high commercial interest, although currently are only found in commercial quantities in a few areas and are often caught as a bycatch of the manila clam.
- 4.8 The Manila clam was first brought to Britain in 1980 by the then UK Government's Ministry of Agriculture, Fisheries and Food (MAFF). At introduction there was an assumption the species would not naturalise (because of water temperatures restricting reproduction) however this proved incorrect and manila clams are now ordinarily resident in the Solent and other English estuaries. It is thought the Manila clam was introduced into the Solent and Southampton Water in around 2005¹, with a fishery developing shortly after in 2007/08. Both populations of clams have been historically

¹ Humphreys et al., 2011. Introduction, dispersal and naturalisation of the Manila clam *Ruditapes philippinarum* in British estuaries, 1980-2010.

managed through The Solent Oyster Fishery (Variation) (Clams) Order 1996, which expired in 2010. As such, there are currently no direct management measures in place for the harvesting of species in question, with the exception of gear type used, as managed through the Solent Dredge Fishing Byelaw), short of minimum size².

- 4.9 Over the last three years (2015 - 2017) it is estimated that the clam fishery has supported between 14 and 20 vessels, some on an ad-hoc basis. The number of vessels was greatest in 2015 at 20 vessels and has declined slightly to 14 in 2016 and 18 in 2017. It is important to note not all vessels engage in the fishery at the same time. On average, 3 to 4 vessels operate on any one day across the whole site on fishable days when weather and tide permit. Due to the tidal restriction on the fishery, vessels are not able to operate at all states (high/low) and sizes (spring/neap) of tide.
- 4.10 Vessels that take part in the fishery largely operate out of Portsmouth Harbour or Warsash, with other vessels operating out of Southampton Water and Langstone Harbour.

Scallop Fishery

- 4.11 Over the past 6 years, a small population of scallops have also been observed in the Solent, predominantly found on the North East of the Isle of Wight. This fishery, for King Scallops (*Pecten maximus*) has supported up to 6-8 vessels for short periods, however typically it is targeted by 1-2 vessels small vessels over the winter.

Development of suitable management

- 4.12 Although many factors, including fishing effort, will impact on the population dynamics of the bivalves within the Solent, including water quality, seasonal variation, predation, invasive species and other human impacts (e.g. infrastructure, marine developments etc), the need for effective and adaptive management that can respond to fluctuations in bivalve populations is clear. An adaptive management regime with appropriate measures would have the potential to increase the sustainability of the various bivalve stocks and provide more consistent catches, moving away from the historical boom and bust fisheries.
- 4.13 The Authority began development of potential management in January 2018 with a pre-consultation with industry to discuss a potential management of the bivalve fisheries in the Solent. This focused on a review of:
- Existing management measures governing the Solent bivalve fisheries;
 - The possible development of a permit byelaw to enable a flexible management of these fisheries;
 - Views on the sustainable exploitation of stocks and potential measures that could be introduced to enhance the sustainability of the Solent bivalve fisheries³.
- 4.14 The outcomes of the pre consultation informed a second consultation, which occurred during March and April 2018, and was focused on the following areas⁴:
- The proposed introduction of a permit byelaw (to include eligibility and costs);
 - The proposed introduction of new management measures within the Solent dredge fishery, with specific regard to the development of a minimum bar spacing on a box dredge.
 - The proposed review of existing measures with specific regard to (1) the temporal measures under Section 2(a) of the Solent Dredge Fishing Byelaw 2016 and (2) the provisions laid out under the Temporary Closure of Shellfish Beds Legacy Byelaw.
- 4.15 Following the periods of consultation having received feedback from industry (40 responses to the pre-consultation and 28 responses to the second period of consultation) and in taking into

² <http://www.southern-ifca.gov.uk/other-regulations#minimumlandingsizes>

³ <https://secure.toolkitfiles.co.uk/clients/25364/sitedata/files/Summary-of-Responses-Final-.pdf>

⁴ <https://secure.toolkitfiles.co.uk/clients/25364/sitedata/files/Summary-of-Responses-PC-Doc-Apr-V22.pdf>

consideration the IFCA's duties and obligations under the Marine and Coastal Access Act 2009, the following measures under a **Solent Dredge Permit Byelaw** were proposed:

- a. The introduction of a Category A Permit: for the harvesting of all bivalves (except oysters); and a Category B Permit: for the harvesting of oysters only;
 - i. NB: under paragraph of the permit byelaw it will be an offence to use a dredge by means of a relevant fishing vessel within the Solent, unless authorised by either a Category A or Category B permit and in accordance with a daily curfew commencing at 18:00 and ending at 06:00 the following day.
- b) The ability to introduce 'flexible permit conditions' under either a Category A or Category B permit;
 - i. The permitted scope of the flexible permit conditions enables the following to be introduced in the byelaw:
 - Specified areas known as 'bivalve harvesting zones';
 - Specified information, in the form of catch returns;
 - Specified period, in the form of a daily curfew.
- c) The ability for the Authority to charge as fee for the permits;
- d) The ability for the Authority to limit the number of permits that it may grant.

4.16 **Solent Dredge Permits**

In line with paragraph (156) of the Marine and Coastal Access Act 2009, the flexible permit conditions, which could be introduced under a permit may relate to (but are not limited to) the following matters:

- a) Prohibition or restriction of harvesting in a specified area, or during a specified period;
- b) Limitation on the amount of sea fisheries resources which may be harvested in a specified period;
- c) Limitation on the amount of time spent harvesting;
- d) Prohibiting or restricting any method of harvesting;
- e) Provision requiring specified information's;
- f) Provision to specify a fee for a permit;
- g) Provision to specify the number of permits issued.

The management decisions regarding harvesting will primarily be underpinned by the outcomes of annual/biannual stock assessments (which, as documented in paragraph (26,a) of the Permit Byelaw, can consider a variety of data); or by any other pathway as identified in paragraph (26) of the Permit Byelaw. Any permit conditions which may be introduced or amended will be in response to the best available evidence that the Authority receive prior to the start of the fishing season.

At time of Permit Byelaw implementation, the following conditions will be introduced under the appropriate permit:

- a. Seasonal measure (Category A permit only): This integrates the existing measures that currently exist under the Solent Dredge Byelaw (fishery closed in Southampton Water, Portsmouth Harbour and Langstone Harbour between 1st March and 31st October) (for reference seasonal restrictions for the oyster fishery already exist under the Oyster Close Season Byelaw);
- b. Retention of sea fisheries resources: A restriction on retention of bivalves other than those permitted under the permit;

- c. Gear Construction (Category A permit only): this introduces a specified dredge bar spacing;
- d. Catch reporting: this introduces the requirement to submit catch returns;
- e. Cost of permit.

4.17 Permitting this fishery will enable flexible management of bivalve harvesting and will allow Southern IFCA to review the suitability of the permit conditions as per the Review Procedure outlined in the Byelaw (paragraph 25) on a regular basis (every three years, or sooner in accordance with procedures specified in the Byelaw). Any changes will be subject to a consultation with permit holders.

A '**Solent Dredge Management Intentions Document**' has been written to accompany the Permit Byelaw in order to provide clarity of intention and process which will underpin any future management decisions regarding the (a) flexible permit conditions, (b) cost of permits, and (c) limitations on the number of permits.

4.18 As per the Review Procedure (as described in paragraph (25) of the byelaw), any changes in the flexible conditions will have regard to:

- the Authority's duties and obligations under section 153 and 154 of the Marine and Coastal Access Act 2009;
- any scientific and/or survey data;
- feedback from permit holders during consultation periods;
- any Statutory advice received from Natural England or other such bodies, organisations or persons as the Authority shall deem fit;
- any relevant Habitats Regulation Assessments and any relevant Impact Assessments.

4.19 The Authority does not intend to restrict the number of permits available at the time of Byelaw implementation, however in line with the provisions outlined in the '**Solent Dredge Permit Access Policy**', a number of criteria will need to be met to enable fishers to be eligible to apply for a permit. The Access Policy includes (1) Introductory Access Criteria (at the time of implementation), (2) Annual Access Criteria (year two and beyond) and a (3) New Entrants Criteria.

Currently there is only a small fleet of vessels who fish for bivalves in the Solent and therefore by not restricting the access beyond year one, there will be no incentive for those who do not already fish for clams and oysters to purchase a permit at the time the byelaw is implemented. If unexpectedly, numbers of fishers applying for a permit exceeds that of historical fishing effort, it would however be possible to consider restricting the number of permits available.

5. The options

5.1 Option 0: Do nothing

5.1.1 Under this option, no additional management would be introduced. Fisheries would be managed under the existing suite of byelaws. This would provide the stock some level of resilience, through existing measures such as the Solent Dredge Fishing Byelaw. However the areas where stocks are in need of alternative management, such as the Solent native oyster fishery, or where stock measures could be improved such as with the clam fishery, would remain in need of alternative and improved management.

5.2 RECOMMENDED OPTION

Option 1: Create a Southern IFCA 'Solent Dredge Permit' Byelaw

- 5.2.1 Under this approach a Permit Byelaw will be created that enables the Southern IFC Authority to flexibly manage the bivalve fisheries in the Solent. The scope of the management measures which may be introduced under the permit conditions are listed in Section (4.16) of this document.

The measures outlined in Section (4.15) of this document are proposed for introduction under the Solent Dredge Permit Byelaw;

The measures outlined in Section (4.16) of this document are proposed for introduction under the Solent Dredge Permits.

- 5.2.4 Under the proposed management option, permitting this fishery will enable flexible management of bivalve harvesting and will allow Southern IFCA to review the suitability of the permit conditions as per the review procedure outlined in the byelaw on a regular basis (every three years, or sooner in accordance with procedures specified in paragraph (25) of the byelaw). This flexibility in approach will enable amendments, revocations or additions to the permit conditions providing proportionate and bespoke management of the dredge fishery in the Solent whilst achieving the conservation objectives of the site.

5.3 **Option 2: Create individual byelaws**

- 5.3.1 Under this approach the Authority would create individual byelaws to manage bivalve fisheries in the Solent and continue to use existing measures.

- 5.3.2 Considering the declines in bivalve fisheries over recent decades, the existing suite of byelaws alone may not currently be effective. If a new byelaw were introduced, the minimum administrative cost associated with the introduction of a single byelaw is in the region of £3,000. This includes officer time associated with the development of the byelaw, legal costs, advertisement of the byelaw and consultation. The average introductory period for a byelaw, from the initial development to Secretary of State Confirmation, is in the region of 12 to 18 months.

Additional stand alone byelaws would lead to an ever increasing number of byelaws managing the same fishery. This layering of management is not in keeping with the UK Governments approach.

- 5.3.2 This approach may enable Southern IFCA to meet their responsibilities, however management would be more expensive to develop and take longer to introduce. It would also have a potential to increase a long list of existing byelaws.

5.4 **Option 3: Voluntary measures**

- 5.4.1 Due to the total area and value of the District's bivalve fisheries, and complexity of the fishery, it is believed that a voluntary agreement would pose too greater risk to the sustainability of the fisheries.

6. Analysis of costs and benefits

- 6.0 When considering the costs/benefits of the proposed legislation it is important to consider what the proposed impacts of the legislation would be. Considering that many of the measures are already in place, those that would impose new restrictions on the fisheries are:

- An increase in the hours fishable for clams and oysters in Southampton Water, Langstone Harbour and Portsmouth Harbour from 07:00 to 17:00 to 06:00 to 18:00.
- A curfew applied to bivalve fisheries in the Solent outside of the Harbours (where previously none was applied).
- Gear construction guidelines, considering bar spacing and strength.
- Inclusion of catch reporting
- Spatial restrictions – use of bivalve harvesting zones

6.1 Costs for the recommended option

6.1.1 It is anticipated that the proposed management of bivalve fisheries will have an impact on the local fishing industry. The landings for the previous years fisheries into the Solent ports are detailed below in Table 2:

Table 2. – Bivalve Landings (excluding Scallops) into ports in the Solent, provided by the MMO.

Row Labels	Sum of LiveWgt tonnes	Sum of Value £
2015.00	275.45	614420.54
Clams (M.Mercenaria)	19.43	39306.58
Cockles	10.83	14018.50
Manilla Clam	197.65	410590.06
Mixed Clams	23.88	57514.75
Native Oysters	23.59	92930.25
Pacific Oysters	0.07	54.40
Razor Clam	0.00	6.00
2016.00	136.29	390135.03
Clams (M.Mercenaria)	6.53	14068.90
Clams (V.Decussata)	0.20	700.00
Manilla Clam	72.33	201776.40
Mixed Clams	10.65	28756.73
Native Oysters	46.26	144579.40
Pacific Oysters	0.32	253.60
2017.00	84.76	271259.96
Clams (M.Mercenaria)	6.14	19699.70
Clams (V.Decussata)	0.44	1500.40
Manilla Clam	42.46	123672.50
Mixed Clams	22.69	77938.79
Native Oysters	13.02	48448.57
Grand Total	496.49	1275815.53

6.1.2 The above landings figures have been provided from the MMO. They may suffer from under-reporting. They include landings into Emsworth, some of those, particularly the oyster landings would likely include catch from Chichester Harbour, not to be included in the Solent Dredge Permit Byelaw.

6.1.3 Not included above is the bivalve landings of scallops into the Solent. The scallop fishery in the Solent is relatively small and most of the landings are landed into Portsmouth Harbour. The MMO landings figures show large quantities of scallops landed into Portsmouth, likely referring to the offshore fleet which land into Portsmouth. The quantities for the previous two years are shown below, however a only a very small fraction will be taken from the Solent and at this stage this cannot be differentiated.

Table 3. Landings of Scallops into Portsmouth – NOTE includes the large offshore fishing fleet, only a small proportion will relate to the Solent Fishery.

	Sum of LiveWgt tonnes	Sum of Value £
Scallops	1530.95	£3,511,806.82
2016	573.56	£1,201,778.18
2017	957.39	£2,310,028.64

Grand Total	1530.95	£3,511,806.82
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- 6.1.4 The inshore fleet are multi-faceted by nature, and in order to survive often rely on multiple fisheries. As such it is very difficult to determine the amount of fishers who are engaged in each fishery, instead easier to consider those who have engaged in fishing in the past in a form of dredge fishery, with the knowledge that it is likely that they will overlap to some extent. An estimated 25 vessels have engaged in dredge fishing in the past 5 years, although the number of days fished in each fishery will vary greatly.
- 6.1.5 In terms of the potential costs, the application of a curfew outside the harbours has the potential to impact the fishers of the Lee on the Solent clam fishers, oyster fishers in the wider Solent and those who harvest scallops in the solent. A project undertaken in 2018⁵ to consider the value of the shellfisheries in the Solent attempted to differentiate the landings to specific areas. The figures related to the clam fishers at Lee on the Solent are shown in Table 4.

Table 4. Shellfish landings by species and volume from shellfish waters (Southampton Water, Southampton Approach, Hill Head, Portsmouth Harbour and Langstone Harbour) in the Solent from 2015 to 2017.

Shellfish water and year	Landings by species (tonnes)				
	Manila clam	Hard-shell clam	Cockle	Native oyster	(Pacific oyster) ⁶
Hill Head					
2015	6.22	2.31	0	0	NA
2016	9.66	2.87	0	0	NA
2017	8.57	2.41	0	0	NA

- 6.1.6 This indicates that a relatively small percentage of landings in the Solent for clam species are harvested at Hill Head. Determining the timings of harvesting and the impact of the introduction of a curfew onto this fishery is not possible from the landings data, however it is anticipated that some degree of flexibility would be lost by restricting this fishery. The inclusion of the Solent Scallop fishery into the Solent would also have the effect of altering the Scallop curfew, moving it from 07:00 to 19:00, to 06:00 to 18:00. It is not anticipated that this would have a significant impact on the scallop fishery.
- 6.1.7 The inclusion of gear restrictions to the permit would impact the clam fishery in the Solent. The minimum size for clam species is measured by individual length, whereas fishing dredges sort shellfish by the minimum dimension, which in the case of clams is width. Analysis of clam dimension measurements taken as part of Southern IFCA's regular evidence gathering indicates that a dredge bar width spacing of 18mm has been found to retain 79-99% clams greater than 35mm in length. An 18mm dredge bar spacing was observed to retain approximately 5-10% clams less than 35mm in Poole Harbour, and throughout the Southern IFCA District the catch composition based on an 18mm bar spacing has been estimated to contain a range of between 2-16% clams less than 35mm (Pengelly, 2010 and 2012)⁷. The minimum dimension size measurement for cockles within the Southern IFCA District is 23.8mm, therefore the catch would require additional sorting if a dredge with 18mm bar spacing is used. Although these measurements were based on data collected in Poole, it is anticipated that the results would be similar elsewhere.

⁵ NEF, 2018. A valuation of the provisioning ecosystem services provided by shellfish for priority shellfish waters in the Solent.

⁷ Pengelly 2010 and 2012. Poole Bivalve Survey stock assessments.

- 6.1.8 As a result of gear configuration the impact to fishers would be the potential loss of 5-10% of landings and, the cost of modification of dredges. It is difficult to assess the cost to the fishers of modifying gear, especially as in some cases these measurements are already used to reduce sorting and cut down on the amount of undersize that comes up in the dredge.
- 6.1.9 Fishers would also be subject to a annual fee for permits with the introduction of the byelaw. The proposed costs of this is £215 annually in years one to three. The maximum that could be charged is £5000, however it is currently proposed that the permit would only cover the costs of administration. At an estimated 20 permits, this would represent a costs to the industry of approximately £8600.
- 6.1.10 The Authority is also developing an Access Policy to determine eligibility for permits. It is anticipated that this would require a proven track record in the fishery. As those currently engaged in the fishery would have this track record, it is not anticipated that this would impact those which currently access the bivalve fisheries. A New Entrants Policy is also being developed.

6.2 Analysis of administrative costs

- 6.2.1 It is estimated that the administrative cost of introducing the proposed byelaw, and the costs associated with advertising the new byelaw will be approximately £3,000. However there may be further costs associated with advertising if byelaws are to be incorporated and revoked or remade.
- 6.2.2 When in place it has been estimated that administration costs of for each set of permits would be approximately £4291 annually. For both a Category A and Category B Permit, based on an estimate of 20 permits being issued annual administrative costs would be £8592. These costs have been estimated based upon the current administrative costs associated with a Poole Dredge Permit.
- 6.2.3 Costs associated with the development are mainly included in officer time to develop the byelaw, Habitats Regulation Assessments, Impacts Assessments and appropriate policies, it has not been possible to fully quantify these costs.
- 6.2.4 The inclusion of a catch return requirement may lead to a small administrative burden on the industry, it is not possible to quantify this but it is not considered to be significant. Appropriate forms will be provided to Industry in order to minimise any costs associated.

6.3 Benefits for the recommended option

- 6.3.1 The introduction of the proposed Solent Dredge Permit Byelaw to enable the Southern IFC Authority to manage bivalve dredge fisheries within the Solent ensuring that measures are appropriate would have the following benefits:
- A potential increase in the sustainability of the marine environment;
 - A potential reduction in the costs associated with the introduction of management measures;
 - A reduction in the application of a multitude of different layers of byelaws;
 - A greater ability to apply bespoke management measures, based on the best available evidence;
 - A greater understanding of the fisheries, based on catch returns being submitted;
 - A greater use of data and knowledge through flexible management of the District's fisheries;
- 6.3.2 Potential benefits to the sustainability of the marine environment and a greater use of data and knowledge are difficult to value and are therefore described here as non-monetised costs.
- 6.3.3 The benefits to fishers are difficult to quantify, but the proposed management is aimed at ensuring that the bivalve fishery is sustainable. The benefits to sustainability of the fishers are that catches will be more settled on a sustainable level. This should lead to possibly higher catches, whilst leading to more consistent quantities of catch adding better financial security.

6.3.4 The addition of an extra hour into the curfew will provide fishers, in the areas where they are tidally limited, to plan a days fishing with more flexibility, avoiding situations where fishable hours are at the start and end of the day, or where they are limited to short windows of fishable time;

6.3.5 The introduction of a bar spacing will reduce the number of undersize bivalves being removed from the sea bed, thus sustaining future populations for the fishers.

6.4 Analysis of environmental benefits

6.4.1 It is anticipated that the ability to flexibly manage fishing activities within the Solent will enable the Authority to make a greater use of data and knowledge to design and refine management measures, increasing their ability to be effective. The Byelaw will incorporate measures designed to regulate fishing in the context of Marine Protected Areas, a permit scheme will enable changes to be made to ensure that fishing remains within the conservation objectives and that changes as a result of permit conditions will ensure that the average time and costs associated with the introduction of management is less, whilst still ensuring the the correct level of public consultation and use of data. This will enable the Authority to reduce any damage caused by fishing activities to protected features.

6.5 Analysis of administrative benefits

6.5.1 The minimum cost associated with the introduction of a single byelaw is £3,000. This cost can be significantly higher, in the region of £25,000 if the management measures introduced and the area managed are complex and consider significant development. It is anticipated that introduction of management measures through permit conditions, rather than through individual byelaws, will represent a saving.

6.5.2 As well as the introduction of new management measures, the costs associated with using existing measures can also be costly. Each year the application of the Temporary Closure of Shellfish Beds Byelaw has required advertising at a cost of approximately £1100. This would no longer be required as holders of a permit would provide contact details and could be sent measures directly.

6.6 One In Two Out (OITO)

6.6.1 OITO is not applicable for byelaws that are already in place.

6.7 Small firms impact test and competition assessment

6.7.1 No firms are exempt from this byelaw as it applies to all firms who use the area, it does not have a disproportionate impact on small firms. It also has no impact on competition as it applies equally to all businesses that utilise the area.

7. Conclusion

7.1 The IFCA visions states that IFCAs will *“lead, champion and manage a sustainable marine environment and inshore fisheries within their Districts by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry”*. Bivalve fisheries in the Solent have been subject to decline, and in order to ensure they are suitably and sustainably managed more appropriate management is required.

7.2 Under the proposed management option permitting this fishery will enable flexible management of bivalve harvesting and will allow Southern IFCA to review the suitability of the permit conditions as per the review procedure outlined in the Byelaw on a regular basis (every three years, or sooner in accordance with procedures specified in the Byelaw). This

flexibility in approach will enable amendments, revocations or additions to the permit conditions providing proportionate and bespoke management of the dredge fisheries in the Solent. The management will also ensure that the Solent European Marine site is afforded effective protection as detailed in the Habitats Regulation Assessments.

Recommended option: Creation of a Southern IFCA Solent Dredge Permit byelaw