Regulation & Compliance Sub-Committee Meeting

To be held at:

EIFCA Offices, 6 North Lynn Business Village
Bergen Way, King's Lynn, PE30 2JG

17th November 2015

1030 hours

REVISED

Meeting: **Regulatory and Compliance Sub-Committee**

Date: 17 November 2015

Time: 10:30

Venue: Eastern IFCA office, Kings Lynn

"Eastern Inshore Fisheries and Conservation Authority 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."

1 Welcome - *Chair*

2 Declaration of members' interests - *Chair*

Action Items

3 Minutes of the Regulation & Compliance Sub-Committee meeting on 25th November 2014 - *Chair*

4 Matters Arising – *Clerk*

5 Eastern IFCA Regulations: plan of works – *Acting CEO / Project Officer*

6 Byelaw Review Update – *Acting CEO / Project Officer*

7 Whelk management – *Acting CEO / Project Officer*

8 Shrimp management in the Wash and North Norfolk Coast EMS – *MEO (consultation lead)*

Information Items

9 Any other urgent business

To consider any other items which the Chair is of the opinion are matters of urgency by reason of special circumstances which must be specified

Julian Gregory
Acting Chief Executive Officer
2nd November 2015

Regulation& Compliance Sub-Committee

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

A meeting of the Regulation & Compliance Sub-Committee took place at Eastern IFCA offices in King's Lynn on 25th November 2014 at 1030 hours

Members Present:

Mr Tom Pinborough	Chair	MMO Appointee
Cllr Hilary Cox		Norfolk County Council
Mr Conor Donnelly		NE Representative
Mr Paul Garnett		MMO Appointee
Dr Ian Hirst		EA Representative
Mr Neil Lake		MMO Appointee
Cllr Tony Turner		Lincolnshire County Council

Eastern IFCA Officers Present:

Phil Haslam	CEO
Luke Godwin	Enforcement Project Officer
Julian Gregory	Deputy CEO
Judith Stoutt	Senior Marine Environment Officer
Stephen Thompson	Research Officer

R&C14/01 **Welcome be the Chair**

Members were welcomed to the meeting prior to proceedings beginning at 1030 hours.

R&C14/02 **Apologies for Absence**

Apologies for absence were received from Cllrs Baker (NCC) and Patience (SCC) and Messrs Bagley and Morgan (MMO Appointees).

R&C14/03 **Declaration of Members Interests**

Mr Lake declared an Interest as he is a Rights in Common Holder at Brancaster.

R&C14/04 **Minutes of the Regulation & Compliance Sub-Committee meeting on 28th November 2013**

The Minutes were signed as a true record of proceedings.

R&C14/05 **Matters Arising**

There were no matters arising.

R&C14/06 **Byelaw Review / Regulation & Compliance Strategy**

Members were reminded that one of EIFCAs HLOs was to review the EIFCA Byelaws. Having considered the current suite of byelaws it had been decided that rather than review the existing byelaws the Officers would seek approval to adopt a new approach to regulation. The DCEO and Project Officer had provided paperwork which set out the basis for this alternative approach which involved the development of a Regulation & Compliance Strategy which would clarify the process and set out the principles to assess the existing regulatory framework, as well as a Strategic Assessment which gave a comprehensive risk assessment of all fisheries and Marine Protected Areas within the District. The ultimate goal being to provide risk based enforcement which would allow a targeted approach and best use of the Authority's resources.

Having being provided with a précis of the paperwork members had a few queries and suggestions.

Cllr Cox advised that she felt the crab & lobsters stocks between Blakeney Church and Haisborough Church were at risk from over fishing by vessels from outside the District, and regulation of this fishery should be put in place sooner rather than later. The CEO was able to advise that research had been carried out on the stock levels of this fishery and whilst it was currently in a stable condition it would only take a downturn in recruitment for the fishery to be at risk, however, as the work had already been done implementation of regulation measures could be relatively quick.

Mr Donnelly felt the Strategic Assessment which looked at what was likely to affect the fishery in the future was a good approach but questioned whether the risk to designated sites would also be considered. The DCEO advised that risks across the board would be considered including conservation management. He also acknowledged that the Strategic Assessment could change in the future as more information came to light. It was anticipated that the Strategic Assessment would form part of the basis for future sub-committee meetings at which time the most important regulation would be addressed.

Mr Lake expressed concern that the Enforcement Policy allowed Officers to pick and choose which regulations were enforced, and he was apprehensive how this would work in practice. The DCEO acknowledged that officers would have the discretion to choose whether or not to offer advice or to deal with an incident more formally, however the DCEO believed that if the regulations were put together with the support of the industry then there should not be the need for anyone to be in contravention of the Management Measures.

Referring to the Strategic Assessment the Chair questioned how other stakeholders exploitation of the fisheries was applied to the decision to protect a species or otherwise. The Project Officer advised that whilst the first step relied on available information such as landed weight and value the second step was more of a narrative and included the use of reported evidence such as landings by the RSA sector.

When considering the initial findings of the Strategic Assessment Mr Lake raised the question of shrimps. He advised that there had been no landing of pink shrimps since the areas closed to fishing had been put in place, those shrimp that were being landed consisted of 60% small ones which meant the stock were not reaching maturity and he felt put the fishery at a high risk. Mr Garnett also acknowledged that both sides of the industry felt the shrimp fishery had reached its maximum level of effort it could sustain, but if this was made a priority it would mean there were already potentially 4 species with priority status, how would the Authority deal with these. The DCEO advised that once the Strategic Assessment was complete the highest risk species would be considered and then prioritised to assess which to address first.
Mr Lake questioned whether it was possible to prevent any new vessels from targeting shrimp, however, the CEO felt that whilst a permitting scheme could be introduced it would need evidence to back it up and it was important that the Authority tread carefully to ensure legal compliance and not introduce legal risk.

Members Resolved to Approve:

- **the revised approach for undertaking the byelaw review**

- **the Regulation and Compliance Strategy**
- **the revised Enforcement Policy**

and to Note the content of the Strategic Assessment and to Agree that fisheries management would be addressed in line with priorities identified in the Strategic Assessment.

Proposed: Cllr Cox
Seconded: Connor Donnelly
All Agreed

R&C14/07 **<u>Protected Areas byelaw review process and rights in common risk assessment</u>**

Members were advised that as part of the decision to approve the Protected Areas byelaw Defra had requested that EIFCA put in place a procedure for reviewing Regulatory Notices and also assess the impacts of Rights in Common activities in the designated area.

The SMEO advised the procedure for reviewing the Regulatory Notices would need to be transparent and open with consultation being held with stakeholders and discussion with Defra, regardless of whether the proposal was to maintain / change or amend / reissue / scrap or any other action that may be considered appropriated for the Regulatory Notice. Having a strong evidence base will also be essential when making a decision.

Members Resolved to approve the procedure outlined in Annex 1 of the paper for issuing, varying or revoking a regulatory notice issued by the Authority in accordance with the Protected Areas Byelaw.
Proposed: Cllr Turner
Seconded: Cllr Cox
All Agreed

When the Protected Area Byelaw was written the decision was made to exclude Rights in Common activities from the byelaw, however Defra remained nervous about this exclusion which resulted in the request for these activities to be assessed to ascertain whether or not they pose a risk to the sites. Initial advice was that the level of these activities was extremely low and would not warrant regulation.
The initial assessment had been made with information for the national register, however, further investigation was needed in association with local Rights in Common holders. This process would need to be approached very carefully in order to ensure a positive response. The Officers proposal was that this project should be undertaken as part of the 2015 Research & Environment Plan.

Tom Pinborough questioned whether this process was only for EMS or would it apply to all future byelaws and if so what controls would be put in place. The DCEO advised that Defra were sure that Rights in Common were not exempt from legislation applicable under MaCAA however other legal advice disagreed with this thought. He believed further legal advice would need to be taken as and when the need arose. The question was raised how a person gained Rights in Common, Mr Lake was able to advise and added that whilst there is a finite number of them they are tradeable which means they do have a value attached.

Members Resolved to agree to undertake the review of rights in common activities as described in the paper.
Proposed: Mr Garnett

Seconded: Cllr Turner
All Agreed

R&C14/07 <u>Potential Bass Management Measures</u>

Members had previously been advised of the declining Bass stocks. The CEO and RO Thompson had reviewed the data available for these stocks, and it was felt at a local level the pressure on the stock could be attributed to loss of habitat (salt marsh), dredging in the estuaries, industrial interaction, commercial fishing and recreational angling.

Possibly the method to address the declining stock would be to try and limit all of these factors, or establish protected areas for juvenile/school bass, bag limits for RSAs, increase MLS net sizes, and Spacial ,temporal closures
By employing several of these methods it would mean all sectors would be giving a little to ease the problem.

The CEO was aware there may be action being taken at a national level however as there was no indication of how long this would take he was eager to get regulation put in place at a local level in a relatively short space of time.

Members questioned whether this would require emergency byelaws and closing of estuaries or the Wash. The CEO advised it may be necessary to close areas for a period of time but currently it was not thought the Wash would be affected, although as yet the bycatch from the shrimp fishery is unknown. Whether or not an emergency byelaw could be established would remain a matter of legal opinion at the time.
A further report would be made at the next meeting.

Members Agreed to note the report.

R&C14/08 Potential Whelk Management Measures

The DCEO advised that the EIFCA knowledge of whelk biology is limited. It was known that they mature late, don't travel far, and there was some concern that the MLS was not appropriate. It is also known that historically there had been a significant crash in the fishery.

The fishery had since rejuvenated itself which was resulting in a massive increase in effort since 2010 and a substantial increase in landings. The DCEO felt there was a need for management measures to be put in place which may be pot limitation but other measures could be as effective. The emphasis for EIFCA was on sustainability not viability.

Mr Lake felt that if the number of pots was going to be limited it would also be necessary to limit the number of vessels, he added that each vessel needed a certain amount of pots to make it pay and if there were not sufficient pots they may target other potting species which would have the effective of increasing effort on other species, there must be some thought given to the impact on other fisheries.
The CEO advised that it may be an option to reinvent the product so that although they may be landing less it had a higher return.

Members Agreed to note the report.

R&C14/10 <u>Any Other Urgent Business</u>
There were no items of urgent business to consider

The meeting closed at 1210 hours.

Regulation and Compliance Sub Committee meeting

Action Item 5

17th November 2015

Eastern IFCA Regulations: Plan of Works

Report By: L P Godwin – IFCO/Project Officer
J Gregory – Acting Chief Executive Officer

Purpose of report

To inform the sub-committee of the programme of work in relation to Eastern IFCA regulations and to seek the approval for the prioritisation of such work.

Recommendations

Members are recommended to:

- **Note the current work streams regarding Eastern IFCA regulation; and**
- **Agree to implement the plan of works as prioritised in Annex 1.**

Background

There are several streams of work which officers are currently undertaking in order to meet the Authority's objectives and obligation as set under the Marine and Coastal Access Act 2009, the Marine Strategy Framework Directive and the European Habitats and Bird directives. Much of this work ultimately requires the introduction of new measures in the form of regulation.

The process for introducing new regulations involves several steps including the design of regulations, engagement with stakeholders and the production of Impact Assessments and can take in the region of nine to 12 months to complete.

Presented below is a summary of the current works being undertaken by officers with regards to new regulations. Annex 1 indicates a proposed order for these works to be delivered based on their priority.

Whelk management measures

At the 18th Eastern IFCA Authority meeting (29th April 2015) the Authority agreed to introduce an emergency byelaw for whelk fisheries management. This decision reflected the urgent and unforeseen need to protect whelk stocks within the district.

The emergency byelaw will expire on the 29th April 2016 and as such, officers have developed permanent measures to replace the emergency byelaw. This work is now at the stage where it can be presented to the Regulation and Compliance sub-committee

(action paper 7 for this meeting) for consideration to put the measures out to formal consultation.

Given that the current measures expire at the end of April of 2016 and the potential risk associated with the whelk fisheries at present (see action paper 7), it is proposed that this work has the highest priority. In addition, this work is at an advanced stage in the byelaw making process.

Shrimp management measures

As a result of Defra's revised approach to fisheries in European Marine Sites, Eastern IFCA is required to assess the potential of all the fisheries within the district to cause damage to European Marine Sites. Such an assessment for the shrimp fishery within The Wash has been conducted and the conclusion of the assessment was that there is potential for shrimp fishing to have a significant effect on the integrity of the Wash and North Norfolk Coast Special Area of Conservation.

As a result of the assessment, Officers undertook to design management measures which could protect the features of the conservation area and still deliver viable fisheries. This work is presented in action paper 8 of this meeting.

More recently, environmental surveys have detected new *Sabellaria* reef in the Inner Dowsing, Race Bank and North Ridge Special Area of Conservation. This is a 'straddling site' in that it straddles Eastern IFCA's district and the Marine Management Organisation's district and as such it was agreed in 2013 that the Marine Management Organisation would lead on protection of features within these sites. However, because the new *Sabellaria* reef has been found entirely within Eastern IFCA's district it has been decided that Eastern IFCA would be best placed to introduce regulation to protect the feature.

In order to achieve this, the Protected Area byelaw will need to be amended (effectively revoked and remade) to include the Inner Dowsing, Race Bank and North Ridge SAC on Schedule One of the byelaw such that Regulatory notices can be applied to it. In addition, *Sabellaria* reef is considered a 'red risk' feature – i.e. it is at high risk of being damaged or lost through fishing activity. The exact mechanism for achieving this is under consideration – officers are exploring the use of flexibility within the byelaw such that the area of application can reflect new marine protected areas as they are designated (rather than revoking and reissuing the whole byelaw).

Both of these works require new management measures for shrimp fishing activity in the region of The Wash (the Inner Dowsing, Race Bank and North Ridge SAC sits north of the Wash and North Norfolk Coast SAC) and as such, it would be of benefit to align the processes for both.

Given that this work includes the protection of a red risk EMS feature, the work is considered a high priority and is required to be completed as soon as possible. The design of these measures is currently underway and informal consultation with the industry is proposed for January so as not to coincide with proposed formal consultation of whelk measures.

Updated Wash Fishery Order 1992 Regulations and Policy Notes

The Wash Fishery Order (1992) expires in 2022 and will require a thorough review. Prior to this, the Authority has agreed that a review of the Wash Fishery Order Regulations and Policy Notes would benefit the running of shellfish fisheries in The Wash in the interim and has directed officers to do so.

It should be noted that the prompt for this work comes from concerns regarding the current regulations and the higher than usual occurrences of bad practice within the fishery. Given the importance of The Wash as a conservation area, ideally new measures would be in place for the next WFO cockle fishery (likely to be June of 2016) however, it is proposed that this work is of less a priority than the whelk or shrimp management work.

Byelaw review – Application and Exemptions byelaw

Eastern IFCA is conducting a review of all of its byelaws including those inherited from the North Eastern Sea Fisheries Committee. It was agreed at the (ref meeting) that the first step in this process would be a 'tidy-up' of our current byelaws which would involve the following: revoke duplicate and redundant byelaws inherited from North Eastern Sea Fisheries Committee and extend the application of Eastern IFCA byelaws into the inherited area (a circa 13.7km strip of coast in North Lincolnshire – south bank of the Humber Estuary).

This work is presented in Action Item 6 of this meeting for the sub-committee's consideration. It is suggested that it would be of benefit to conduct the formal consultation immediately with regards to this byelaw (pending sub-committee consideration – Action Item 6). Whilst this would result in the formal consultations for both the whelk measures and this byelaw occurring simultaneously, the impacts associated with the Application and Exemptions Byelaw are limited to only the 'inherited area' where very little whelk fishing is thought to occur – i.e. the fishers who would likely be impacted by the measures are not likely to participate in both consultations.

Private Fisheries within Marine Protected Areas

As per Defra's revised approach to fisheries management within EMS, there are discussions currently ongoing regarding the role of IFCA's in managing fishing activity through regulation in private fisheries where these fisheries occur within conservation areas.

The assessments of the potential damage caused by private fisheries in EMS has not yet been started but the conclusions of the work potentially fall within the September 2016 deadline of the associated work for public fisheries.

Until there is an outcome to the assessments, it is not possible to determine whether regulation will be needed for the protection of the environment. Should this be the case and regulation is required, there is potential that the work may miss the September 2016 deadline as a result of the new burden of having to regulate in the Inner Dowsing, Race Bank and North Ridge SAC. Discussions with Defra regarding our deadline in this regard are ongoing.

Inshore Vessel Monitoring System (iVMS)

The introduction of inshore VMS will add an important tool to Eastern IFCA's monitoring and control capabilities and will increase the confidence of stakeholders particularly regarding the IFCA's ability to monitor protected/closed areas. The hardware for iVMS is still currently being tested but some IFCA's are already setting out provisions for its use within their district.

As part of the byelaw review, officers are considering how to implement a requirement for fishers to use iVMS. There is the potential to include this provision within the permitting byelaw or use a stand-alone byelaw to administer regulatory notices which would require it for different gears or areas.

Summary

The current workload with regards to introducing new measures is demanding, a reflection of our obligations and responsibilities as an IFCA. By prioritising work streams and aligning projects where appropriate it is judged that the tasks as set out in Annex 1 are achievable, however our ability to absorb any additional work is limited if not exhausted.

The sub-committee is asked to consider the justification for prioritising work as set out in Annex 1 and direct Officers to undertake such work pursuant of the Authority's obligations.

Annex 1 – Eastern IFCA Regulations: Plan of works

Byelaw	Byelaw design	Informal information gathering	Regulation and compliance sub-committee consider and make byelaw	Formal consultation	Objections/ minor amendments / legal advice	Regulation and compliance sub-committee consider final draft	MMO QA	Completion deadline (if applicable) /adoption by Regulation and compliance
Eastern IFCA Application and Exemptions Byelaw	Complete	Complete	17/11/2015	18/11/2015 - 18/12/2015	18/12/2015 - 08/02/2016	10/02/2016	11/02/2016	n/a
Eastern IFCA Whelk Byelaw	Complete	Complete	17/11/2015	18/11/2015 - 18/12/2015	18/12/2015 - 08/02/2016	10/02/2016	11/02/2016	29/04/2016
Eastern IFCA Permitting Byelaw	Complete	Complete	17/11/2015	18/11/2015 - 18/12/2015	18/12/2015 - 08/02/2016	10/02/2016	11/02/2016	29/04/2016
Eastern IFCA Shrimp Byelaw	11/01/2016	11/01/2016 - 08/02/2016	17/02/2016	21/03/2016 - 22/04/2016	25/04/2016 - 18/05/2016	18/05/2016	19/05/2016	30/08/2016
Protected Areas Byelaw (amendment) + Reg Notice 5 (IDRBNR *Sabellaria*)	11/01/2016	11/01/2016 - 08/02/2016	17/02/2016	21/03/2016 - 22/04/2016	25/04/2016 - 18/05/2016	18/05/2016	19/05/2016	asap (red risk)
Wash Fishery Order (1992) Regulations	*n/a*	*11/01/2016 - 08/02/2016*	*17/02/2016*	*18/02/2016 - 18/03/2016*	*21/03/2016 - 19/05/2016*	*19/05/2016*	*n/a*	*Jun-16*
Private fisheries in MPAs	TBC (assessments not started)	TBC	TBC	TBC	TBC	TBC	TBC	30/08/2016
Inshore Vessel Monitoring System	TBC	TBC	TBC	TBC	TBC	TBC	TBC	n/a

	High Priority
	Medium Priority
	Low Priority

Regulation and Compliance Sub Committee meeting

Action Item 6

17th November 2015

Byelaw Review - Replacement Application and Saving Byelaw

Report By: L P Godwin – IFCO / Project Officer & J Gregory – Acting CEO

Purpose of report

To present the sub-committee with progress made pursuant of the Eastern IFCA byelaw review and to present a byelaw for the sub-committee's consideration.

Recommendations

Members are recommended to:

- **Note the review of those byelaws inherited by Eastern IFCA from North Eastern Sea Fisheries Committee;**
- **Note the conclusions of the associated Impact Assessment;**
- **Agree to make the new Applications and Exemptions byelaw;**
- **Direct Officers to conduct a formal consultation on the Eastern IFCA Application and Exemptions Byelaw;**
- **Agree to endorse policy relating to the enforcement of byelaws within private fisheries within marine protected areas;**
- **Note the new regulatory approach in the form of permitting measures**

Background

Eastern Sea Fisheries Joint Committee became Eastern IFCA in 2011 and under the Marine and Coastal Access Act 2009 (Transactional and Saving Provisions) Order 2011 took responsibility for part of North Eastern Sea Fisheries Committee's District together with their byelaws insomuch as they apply to that part of the district. The area to which the inherited byelaws apply is shown on the chart at Annex 1.

Eastern IFCA high level objective performance indicator 2.2a sets out that Eastern IFCA would review all of its own byelaws in addition to those inherited from North Eastern Sea Fisheries Committee but work on the Byelaw Review has been delayed due to higher priorities. It was agreed at a meeting of the Regulation and Compliance sub-committee on 25 November 2014 that the review would be a proportionate exercise to effectively 'tidy up' the current suite of byelaws to provide a more coherent set of interim regulatory measures and that fisheries management would be addressed in line with priorities identified in the Strategic Assessment.

It is proposed that those inherited byelaws which represent a duplication (or close duplication) of Eastern IFCA byelaws or are redundant (i.e. do not reflect a regulatory need consistent with the rest of Eastern IFCA's district) are revoked and that the

application of Eastern IFCA's byelaws be extended into the 'inherited area' (see annex 1). This will have the effect of creating commonality in regulation across the entire district. It is intended that the remaining byelaws will be more thoroughly reviewed in line with the priorities highlighted in the Strategic Assessment.

Review of inherited byelaws

In revoking some of the inherited byelaws, we are also proposing to extend the application of the Eastern IFCA byelaws into the inherited area – effectively replacing the old NESFC byelaws with the byelaws we use in the rest of our district. It is intended that this will have the effect of simplifying the fisheries regulation within the district as the whole district will operate under the same byelaws.

Annex 2 summarises the inherited North Eastern Sea Fisheries Committee byelaws and recommended action.

Replacing the inherited byelaws with Eastern IFCA byelaws will have the effect of changing some of the ways the fisheries will be regulated in the inherited area – some of the Eastern IFCA byelaws which will 'replace' the inherited byelaws have slight differences.

<u>What would the differences be?</u>

The fishing activity which could be impacted by these changes is potting for crabs and lobster within the inherited area. The differences between the inherited regulation and the proposed regulation are summarised below and explored in more detail in annex 2.

<u>Removal of parts of shellfish</u>

Several IFCAs have byelaws which prohibit the landing of crabs and lobsters unless they are landed whole – i.e. it is prohibited to land a crab claw detached from the rest of the crab. Under the current regulation in the inherited area, it is permitted to land parts of edible crab (*Cancer pagurus*) and velvet crabs (*Necora puber*) if:

- The parts of crab do not make up more than 10% by weight, the total landed catch on one occasion; or
- The crab was caught in a trammel, gill or other enmeshing net and the claw became detached form the crab in clearing the net.

Under the proposed regulations it would be prohibited to land any parts of crabs (edible crabs or velvet crabs) regardless of how it was caught or its percentage with regards to total catch.

<u>Using edible crab for bait</u>

Under the current regulations it is permitted to use edible crab (*Cancer pagurus*) within the inherited area if that crab is cooked offal.

Under the proposed regulations it would be prohibited to use any edible crab as bait even if cooked offal.

<u>Consultation with the industry</u>

Officers have undertaken to engage the industry likely to be actively fishing the inherited area on an informal basis. At present there is thought to be no impact to fishers as

those we have liaised with are already fishing in accordance with Eastern IFCA byelaws. This has been highlighted in Annex 3 – Impact Assessment.

Proposed new application byelaw

In order to replace the revoked byelaws with the Eastern IFCA byelaws, byelaw 2 of our byelaws (application and saving for scientific purposes) will be revoked and replaced with a new byelaw. The purpose of this byelaw will be to:

- Redefine the spatial application of Eastern IFCA byelaws to include the 'inherited area';
- Redefine the application of Eastern IFCA byelaws in relation to private fisheries* in line with section 158 of the Marine and Coastal Access Act 2009;
- Revoke byelaw 2 of our byelaws (application and saving for scientific purposes);
- Revoke the duplicate/redundant byelaws inherited from North Eastern Sea Fisheries Committee; and
- Include a provision to allow a dispensation from the byelaw for reasons relating to fisheries management.

  ** Private fisheries include: Several fisheries, rights under a local Act, special Act, Royal charter, letter patent or by prescription or immemorial use. This includes holders of Rights in Common.*

This will have the effect of increasing the spatial application of Eastern IFCA byelaws to include the inherited area and into private fisheries which occur within Marine Protected Areas in line with the provisions of the Marine and Coastal Access Act 2009.

<u>Spatial application</u>

The case for redefining the spatial application of Eastern IFCA byelaws is straight forward – presently we have an arbitrary line in our district across which the regulatory framework looks very different. Increasing the application of our byelaws to include the entirety of the district is required to have a coherent, cohesive regulatory framework.

<u>Application within private fisheries within marine protected areas</u>

Section 158 of the Marine and Coastal Access Act empowers IFCAs to implement byelaws within private fisheries within marine protected areas (for example the Wash and North Norfolk Coast SAC) without the consent of the owner/leesor of that private fishery. It should be noted that private fisheries outside of marine protected areas are still exempt from our byelaws unless the Authority has sought the consent of the owners/leesors of the private fishery.

Officers have recently received independent legal advice and legal advice from Defra to the affect that all our existing (inherited) byelaws have application in private fisheries throughout the district. This is as an effect of the Sea Fisheries Regulation Act 1966 having been repealed by the Marine and Coastal Access Act 2009 and the Marine and Coastal Access Act 2009 (Transitional and saving provisions) Order 2011.

Some of our byelaws may conflict with the fishing practices within some of these private fisheries - the conflicts and potential impacts are summarised below.

Conflict	Area(s)	Comments
Byelaw 3 – Molluscan Shellfish Methods of fishing	Several Orders around the North Norfolk Coast (Brancaster, Morston, Wells etc), Le Strange Fishery, Stour and Orwell application for a Several Order.	The ethos of this byelaw is to prevent damage to the shellfish stocks and the environment through the use of inappropriate gear. The byelaw includes the provision for gear approval and 10% or less breakage rates of the target species (e.g. cockles).
Byelaw 4 – (*Mytilus edulis*) minimum sizes	Several Orders around the North Norfolk Coast (Brancaster, Morston, Wells etc), Le Strange Fishery, Stour and Orwell application for a Several Order	The minimum landing size for mussels was intended to protect wild stocks from the effects of recruitment over-fishing – i.e. removing pre-spawning individuals. Mussel aquaculture often supports other aquaculture businesses by supplying so called 'improved seed' – mussels which are still small relative to the minimum size but have grown on sufficiently for other aquaculture to benefit.
Byelaw 15 – Towed gear restriction for bivalve mollusc	(Not Le Strange Fishery) lengths of vessels active in other fisheries unknown but likely to be below 14m.	Vessels engaged in the Le Strange fishery are under 14m in length and so do not apply to byelaw 15, length of vessels in other private fisheries unknown

It is suggested that, in the short term, there is no benefit to implementing these measures within private fisheries and that the 'status quo' is maintained pending further review. The above byelaws will be subject to a more thorough review as per the byelaw review process and through the Fisheries in European Marine Sites work which is currently being conducted by the Environment team (highlighted in action paper 5 – private fisheries in MPAs).

In addition to the fisheries prosecuted within Several Orders, section 158 of the Marine and Coastal Access Act 2009 also enables the implementation of byelaws within MPAs in relation to holders of a right in common. An impact assessment of common rights holders on MPAs is currently underway to detect any likely significant impacts on MPAs from common rights activities.

<u>Dispensation for reasons relating to fisheries management</u>

The Current Application and Savings Byelaw (Byelaw 2) has provision for granting dispensation from the byelaw for reasons relating to either scientific data collection (for example using a vessel larger than 15.24m in length to conduct a towed survey) or reasons relating to stocking or breeding (e.g. retaining undersize mussels to use as seed in aquaculture). These exemptions can be granted by Eastern IFCA on application.

In addition, officers judge that there would be benefit in including a provision to grant exemptions for reasons of fisheries management. This general exemption would allow for eventualities which require an authorised breach of a byelaw to further fisheries sustainability.

Next steps

Noting the timescales for the upcoming work streams (Action Item 5) officers seek approval of the sub-committee to undertake formal consultation on the new Eastern IFCA Application and Exemptions Byelaw immediately.

Byelaw review – use of permitting schemes

In addition to the work above to revoke duplicate and redundant byelaws, Eastern IFCA is required to review the remaining byelaws. The primary function of this review will be to investigate the necessity of the remaining byelaws – i.e. do we still need them to fulfil our duties under the Marine and Coastal Access Act? – and if the Authority is to keep any byelaws, they are to be amended to reflect contemporary IFCA byelaws taking into account our powers under the Marine and Coastal Access Act 2009.

The work progressed with regards to the whelk management measures has involved investigating a new regulatory structure for Eastern IFCA fisheries management.

The marine environment is dynamic and changeable and fisheries reflect this and adapt and change with the changing natural and economic environment. Four years ago, whelk landings still reflected a marginal, winter fishery for example whereas whelks in 2014 had the greatest first sale value of any species landed within the district.

To effectively manage dynamic inshore fisheries, a flexible approach to management is also required which reflects Eastern IFCA's contemporary powers and obligations under the Marine and Coastal Access Act (2009) and other legislation.

It is proposed that, the mechanism through which the whelk fisheries are managed reflect an overarching need to have flexible management across all the fisheries within the district through a permitting scheme with flexible permit conditions. Measures that benefit from or require flexibility could be reflected in such permit conditions.

The trade-off for flexibility is that, measures imposed through a permitting scheme have a lower penalty level than measures set out as provisions of a byelaw. To mitigate this it is proposed that, where such measures do not benefit from having flexibility, bylaw provisions are used.

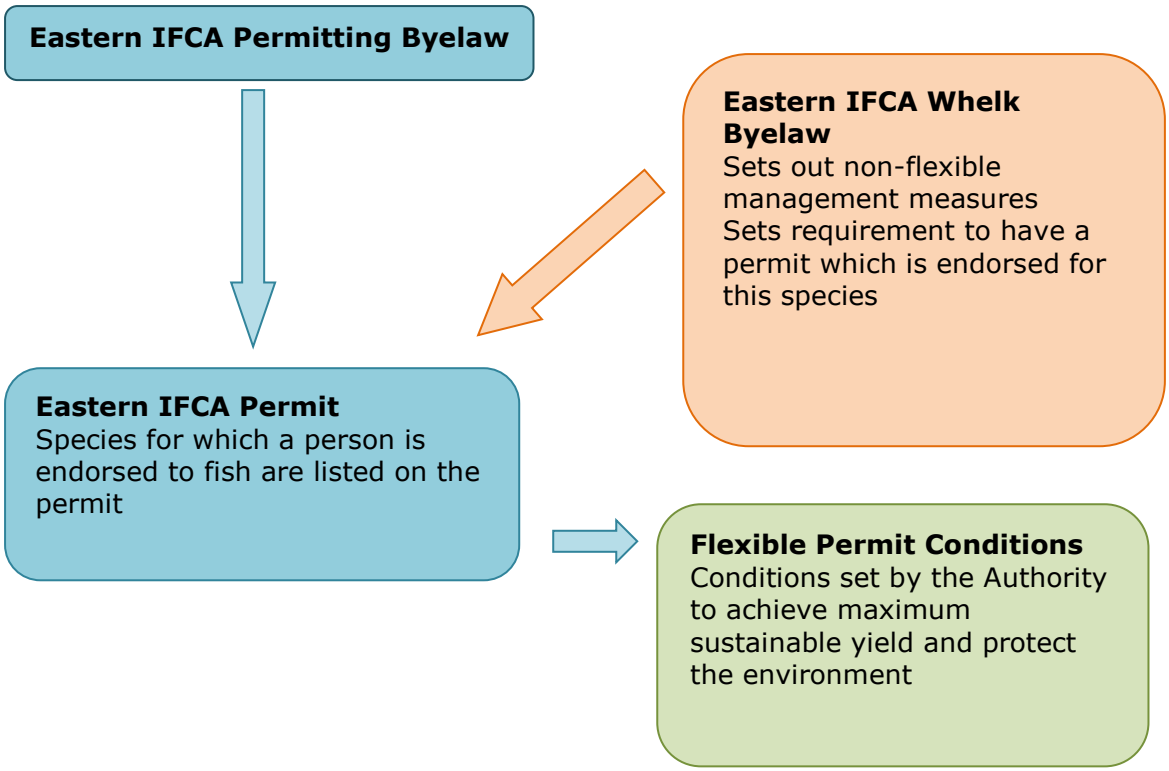
Proposed structure

It is proposed that an Eastern IFCA Permitting Byelaw could be created to enable Eastern IFCA to require a permit to fish for certain species. Through this permit, flexible

conditions could be set which would reflect the current needs of the fishery. Through a proportionate process, as set out in the permitting byelaw, new measures could be added and existing measures could be amended or removed.

It is proposed that fisheries specific byelaws are created which create the requirement to hold a permit to fish for a specified species and which impose those restrictions which do not benefit from flexibility. The creation of the fishery specific byelaw (for example a Whelk Byelaw) will ensure that due process has been observed (i.e. formal consultation and an Impact Assessment).

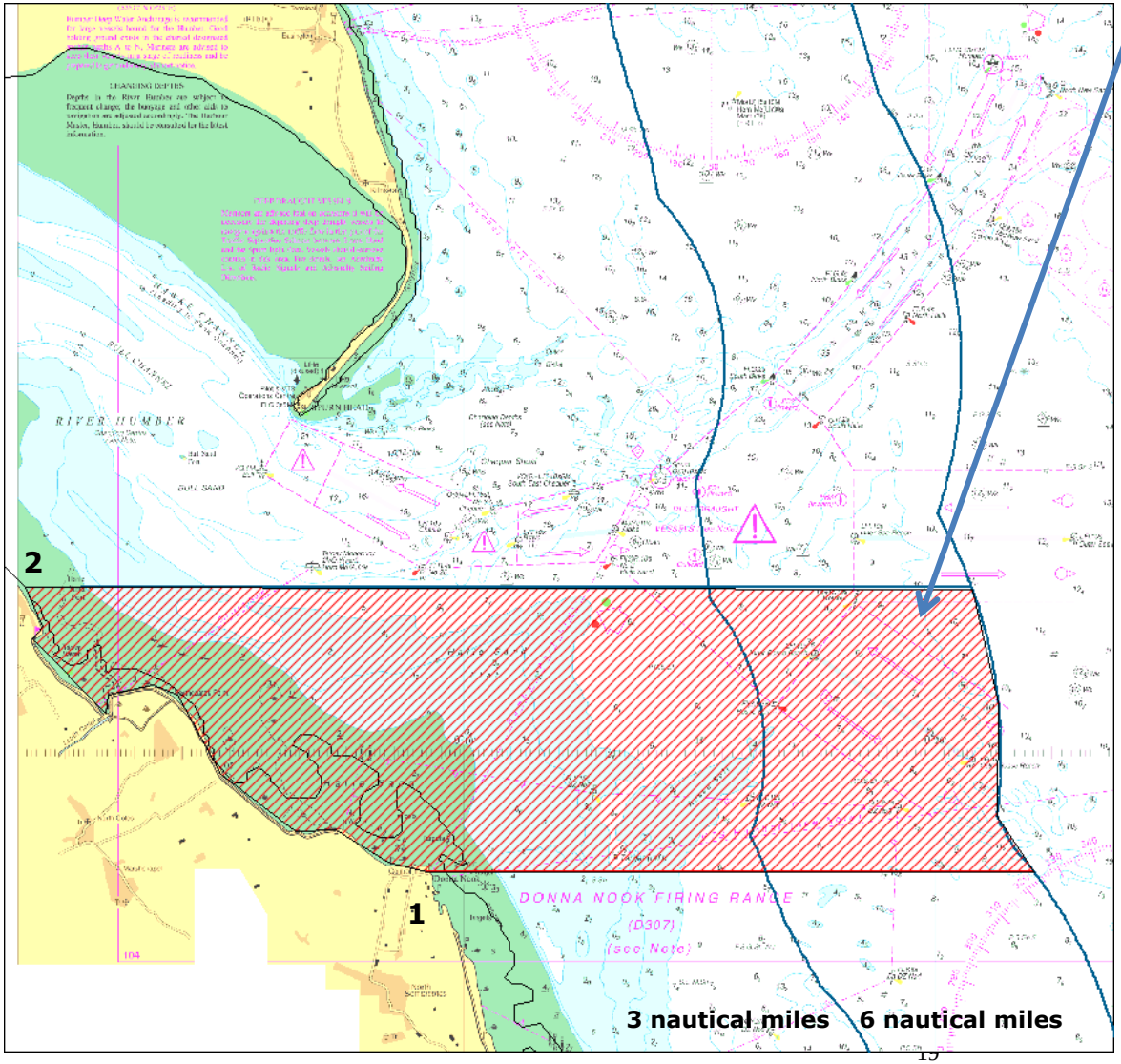
Box 1 – Proposed Eastern IFCA permitting structure



This approach would allow Eastern IFCA to review the remaining byelaws for fisheries throughout the district and ultimately apply them to this new system.

This new approach will represent greater clarity for the end user – the fishermen – replacing a large number of byelaws which are unable to meet the needs of dynamic fisheries with annual permits and flexible permit conditions. The new approach also reflects the IFCA's abilities and obligations under the Marine and Coastal Access Act 2009 whilst maintaining a due process.

Annex 1 – Inherited Area chart



The '**inherited area**' (coloured in with red shading on the chart) consist of the sea out to six nautical miles between:

1. The control tower at the Royal Air Force Gunnery and Bombing Range at Donna Nook in Lincolnshire – (Latitude 53 28.22'N Longitude 0 09.24'E); and
2. Haile Sand Fort in Lincolnshire (Latitude 53 32.09' N Longitude 0 01.82E).

The two blue lines on the chart running south to north indicate the 3 and 6 nautical mile boundaries. **This chart is not to be used for navigational purposes**

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Annex 2 – Review of byelaws inherited form North Eastern Sea Fisheries Committee

North Eastern IFCA BYELAW	**Summary of Offence / Byelaw**	**EIFCA Equivalent (Y/N)**	**Recommended Action**	**Explanation**	**Economic Impacts (***Including the impact of replacing with Eastern Byelaw***)**	**Environmental Impacts (***Including the impact of replacing with Eastern Byelaw***)**
II. Application & Saving for scientific purposes		Y - Byelaw 2 : EIFCA refers to sec 6 Sea Fisheries Regulation Act 1966, NEIFCA refers to Section 13 Sea Fisheries Regulation Act 1888	Revoke	ESFJC equivalent includes more up-to-date legislation	N/A	N/A
III. Trawling Prohibition : Exceptions	Trawling without a Permit	N - eastern IFCA only has trawling restrictions in specified areas	Retain - further review	The NESFC byelaw prohibits fishing within the inherited area. Removal of this byelaw would allow trawling in the inherited area - Options for removal include extending EIFCA byelaw 12 (which would restrict the length of vessels which can trawl) or amending our byelaw 12 to include a prohibition in this area. There are important sole nursery/spawning grounds around the Humber Estuary. There is a case to keep it until EIFCA byelaw 12 is reviewed.	N/A	N/A
IV. Seine Net, Draw Net Prohibition	Use of a Seine net, or any drawn net of the kind known as the Danish seine or 'snurrevaad'	N	Revoke	The NESFC byelaw prohibits the use of siene nets (and snurrevaad) in this area. The byelaw is generic and doesn't specify this area. Need to consider the impact of allowing seine netting in this area (i.e. sole grounds) and the current level of activity - would seine netting have an impact on the sole grounds?	N/A	Potential conflict with the sole spawning grounds - need to consider the likelihood of this activity actually taking place should the

						byelaw be revoked
V. Push Net	Push nets must be raised and cleared at least once in every half hour	N	Revoke	The NESFC byelaws prohibits the use of shrimp push nets in this area. This byelaw is generic and doesn't specify this area. Need to consider impact of allowing push netting in this area (i.e. sole grounds) and the current level of activity.	N/A	Potential conflict with the sole spawning grounds - need to consider the likelihood of this activity actually taking place should the byelaw be revoked
VIII. Mussels : Minimum Size	removal from a fishery of mussels less than 51mm in length	Y - Byelaw 4 : Minimum sizes differ between the two byelaws	Revoke	There are currently no known mussel beds within inherited part of Eastern IFCA district - Eastern IFCA has no reason to believe an increase in the MLS of mussel is required within its district. Removal of this byelaw will make regulation across district consistent.	N/A - Positive	Potential impact on mussels if taking smaller size
X. Re-Deposit of Shellfish	Removal of prohibited shellfish - must be redeposit as close as possible to the place from which it was taken.	Y - Byelaw 9	Revoke	This byelaw represents a duplication of the EIFCA byelaw and can be removed with no effect.	N/A	N/A
XI. Regulations of Shellfish Beds	Removal of shellfish from a closed area	Y - Byelaw 8	Revoke	EIFCA has an equivalent byelaw - Byelaw 8 includes the ability to temporarily close a bed for 'protection of the fishery' which may include more metrics than juvenile density and stock levels. EIFCA byelaw is more appropriate.	N/A	N/A

XII. Shrimp & Prawn Fishing	Failure to raise or clear nets when fishing for shrimp or prawn, at least once in every hour	N	Retain - further review	The byelaw requires fishers to lift and clear gear every hour - presumably to prevent the death of by-catch. Given that the area is a sole nursery area this is likely to be important. EIFCA are currently reviewing shrimp measures with a view to implement new measures. There is a case to keep this byelaw and look to revoke it at conclusion of our shrimp measures.	N/A	N/A
XIV. Prohibition of Removal of parts of lobsters from any fishery	Removal of lobsters below MLS, or tail, claw or any other detached part of a lobster	Y - Byelaw 7 - refers to edible crab, velvet crab and lobsters	Revoke	This byelaw duplicates the Eastern IFCA byelaw 7 but includes more species - includes edible crab and velvet crab	Potential impact if current fishing practices include landing parts of velvet crab or edible crab	N/A - positive
XV. Application of Byelaws	Byelaws in force prior to 22nd Dec 1992 apply only to inside three nautical miles from baselines	N - Reference is made to where byelaws are applied in the paragraph prior to Byelaw 1.	Revoke	Not relevant	N/A	N/A
XVIII. Fixed Engine (Authorisation) Byelaw	Use of fixed engines only in specified areas, for specified species and for a period of 5 years after the date the byelaw was made.	Y - BYELAW 13 - this prohibits the use of fixed engines in waters inland of the ESFJC District except where historical rights of several fisheries make the prohibition exempt	Retain - further review	Removal of this byelaw would allow the targeting of sole, cod and all sea fish within 'Box B'. The byelaw specifically names an area within Eastern IFCA's district which is also a known sole spawning/nursery area. Revoking this byelaw would potentially have impacts on the sustainability of sole fisheries. Recommendation is to keep this byelaw and remake at a later stage in line with up-to-date byelaw guidance.	N/A	N/A
XIX. Parts of a Crab	prevents the landing of parts of a crab which cannot be measured to ensure compliance with the MLS, with the exceptions stated as (a)	Y - Byelaw 7 - refers to edible crab, velvet crab and lobsters	Revoke	Eastern IFCA byelaw is more restrictive - i.e. NESFC byelaw has exemptions where it is permitted to remove parts of (edible crab) - if removed the increased regulation would need to be reflected in an	Potential impact if parts of crab is caught as by-catch (not more than	N/A - positive

	and (b)			Impact Assessment	10%) or by a trammel, gill, entangling etc. Should consider potential loss of earnings if this is prohibited.	
XX. Prohibition on use of Crab(Cancer Pagurus) for Bait	use of edible crab for bait with the exception of cooked crab offal	Y - Byelaw 5 - no reference is made to cooked crab offal being an exception	Revoke	Eastern IFCA byelaw is more restrictive - i.e. has no exception for cooked crab offal. This increase in regulation will need to be reflected in an IA	Potential impact on cost of bait if cooked offal is currently being used as bait.	Potential impact if fishers start capturing other bait sources
XXI. Protection of 'V' notched lobsters	fishing for or taking lobster which have a v-notch in any of their tail fan flaps, or which have any form of mutilation to any of the tail fan flaps	N - SI (2000 No.874) prohibits the landing of v-notched lobsters	Revoke	The Lobsters and Crawfish (Prohibition of Fishing and Landing) Order 2000 (SI 874) prohibits the fishing of v notched or mutilated lobsters however the byelaw would allow for fishers not associated with a relevant vessel (i.e. recreational fishers). There is unlikely to be a significant impact on the lobster fishery from recreational fishers taking lobster in this area - should be considered in IA.	N/A	Potential for v-notched lobsters to be caught by recreational fishers
XXII. Permit to fish for lobster, crab, velvet crab and whelk	fishing for or removing lobster, crab, velvet crab or whelk without a specified permit	N	Revoke	Removal of this byelaw will allow fishing for the species prescribed in the byelaw to occur as in the rest of Eastern IFCA district - as we do not currently issue any permits for this area fishing for these species is currently banned in the inherited area. Removal would bring fisheries management in line with rest of district and will potentially be considered during Whelk byelaw/potting byelaw. It currently contradicts the whelk potting byelaw.	N/A - Positive (technically potting is prohibited din this area as we have not issued any permits)	Lobster, edible crab and velvet crab fishing could take place without any conditions on gear which could have an impact. Whelk effort is controlled under the EIFCA whelk

						byelaw.
XXIII. Method and area of fishing (Dredges) byelaw	Use of a dredge other than between 1st July and 30th September, dredges must be limited to max of 10 and of specified construction. Dredging is not permitted inside 3nm from baselines	Y - Byelaw 3, byelaw 15	Revoke	Byelaw relevant to scallop dredging which is prohibited under the byelaw. Fishers will not be able to use any gear to take scallops (or any shellfish prescribed in Byelaw 3) without authorisation from Eastern IFCA under byelaw 3. As such we have a byelaw which has the same protective effect at the moment.	N/A	N/A
XXIV. Humber Estuary Cockle Fishery Byelaw	Removal or disturbance of cockle without a permit	Y/N - Byelaw 3 - prevents the removal of cockles except by hand, hand-rake or gear approved by the Authority. Byelaw 8 allows us to close a shellfish bed. Byelaw 11 allows us to ask for returns.	Retain - further review	Permits will be provided to anyone on demand who accurately completes an application form - we can only refuse a permit on the grounds that the application form is not complete. i.e. there would be no real way to limit the number of permits under this byelaw. use of byelaw 8 and 11 of our byelaws could be used in its stead however we would still have same issue. Recommended that the byelaw remains in place until further review can be completed.	N/A	N/A
XXV. Prohibition on removal of tope or parts thereof	Removal of tope or the species (*Galeorhinus galeus*) of parts thereof.	Y - Byelaw 14	Revoke	Eastern IFCA equivalent	N/A	N/A
XXVIII. Crustacea Conservation Byelaw	Use of pots, creel or traps which do not meet the guidelines set out in the byelaw	N	Revoke	This byelaw does not apply in the inherited part of Eastern IFCA's district	N/A	N/A

Annex 3 – Impact Assessment (Eastern IFCA Application and Exemptions Byelaw)

Title: Eastern IFCA Application and Exemptions Byelaw **IA No:** **EIFCA002** **Lead department or agency:** **Eastern Inshore Fisheries and Conservation Authority** **Other departments or agencies:**	**Impact Assessment (IA)** **Date:** **Stage: Consultation** **Source of intervention: Domestic** **Type of measure: Secondary Legislation** **Contact for enquiries:** Julian Gregory – Acting CEO (01553 775321)
Summary: Intervention and Options	RPC Opinion: **N/A**

Cost of Preferred (or more likely) Option				
Total Net Present Value £m	**Business Net Present Value** £	**Net cost to business per year** (EANCB on 2009 prices) **NA**	**In scope of One- In, Two-Out?** **No**	**Measure qualifies as** **NA**

What is the problem under consideration?

In 2011 Eastern Sea Fisheries Joint Committee became Eastern IFCA and inherited part of North Eastern Sea Fisheries Committee's district and all of their byelaws. Eastern IFCA conducted a review of these inherited byelaws and 15 were identified as being either a duplicate of Eastern IFCA byelaws or redundant within the inherited area. Byelaw 2 of Eastern IFCA's byelaws sets the spatial application of Eastern IFCA's byelaws which currently doesn't include the inherited area.

Why is government intervention necessary?

A new byelaw is required with the provision that Eastern IFCA's byelaws shall apply within the whole of Eastern IFCA's district – this can only be achieved through new regulation. In addition, the new byelaw will revoke those byelaws which were found to be redundant or duplications including Byelaw 2 – Application and saving for scientific purposes.

What are the policy objectives and the intended effects? To revoke those byelaws inherited from North Eastern Sea Fisheries Committee which were identified as redundant or duplications, to redefine the spatial application of Eastern IFCA's byelaws to include the inherited area and to retain the provisions which allow for exemptions for reasons of scientific research or breeding or stocking and add a provision to allow dispensation from Eastern IFCA byelaws for reasons relating to fisheries management. This will have the effect of a common set of byelaws across the whole district, reducing complexity to the benefit of fishers.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base) The preferred option is the implementation of a new byelaw which will revoke 15 inherited byelaws and one Eastern IFCA byelaw and redefine the spatial application of byelaws in line with the Eastern IFCA district. The other option considered is the do nothing option.

Will the policy be reviewed? It **will** be reviewed. **If applicable, set review date: n/a**					
Does implementation go beyond minimum EU requirements?			**Yes**		
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 SELECT SIGNATORY: _____ Date: _____

Summary: Analysis & Evidence Policy Option

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2014	PV Base Year 2014	Time Period Years	Net Benefit (Present Value (PV) (£m)		
			Low: Unknown	**High:** Unknown	**Best Estimate:** Unknown

COSTS (£m)	Total Transition (Constant Price) Years		Average Annual (excluding transition) (Constant Price)	Total Cost (Present Value)
Low	£0		£0	£0
High	£0		£0	£0
Best Estimate	£0		**£0**	***£0***

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

The only area affected by the new byelaw is the area inherited by Eastern IFCA from North Eastern Sea Fisheries Committee (circa 12700ha of sea along the south bank of the Humber estuary). Some of the byelaws which will have application in the inherited area are more restrictive than the byelaws inherited from North Eastern Sea Fisheries Committee. Fishers have been engaged informally and have indicated that the more restrictive byelaws will not have an impact on their fishing activity. As such, no costs were identified with regards to private businesses.

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

None identified.

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

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

Monetised benefits cannot be estimated.

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

The main benefit of the regulation will be better clarity for fishers utilising sea fisheries resources in the inherited area and commonality of regulation throughout Eastern IFCA's district.

Key assumptions/sensitivities/risks **Discount rate (%)** n/a

Assumptions: all fishers were identified through informal engagement. Key risks: fishers active in the inherited area not identified during information gathering.

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

1. Introduction

Eastern Sea Fisheries Joint Committee became Eastern IFCA in 2011 and, under the Marine and Coastal Access Act 2009 (Transactional and Saving Provisions) Order 2011, Eastern IFCA inherited part of North Eastern Sea Fisheries Committee's District and all of their byelaws.

Eastern IFCA high level objective performance indicator 2.2a sets out that Eastern IFCA would review all of its own byelaws in addition to those inherited from North Eastern Sea Fisheries Committee. This is to ensure that our regulatory measures are consistent in format and approach and reflect contemporary regulatory frameworks and fisheries.

2. Rationale for intervention

The issue under consideration is the wording of the current Eastern IFCA Byelaw, Byelaw 2 – Application and saving for scientific purposes. The first provision of this byelaw sets out that Eastern IFCA's byelaws shall apply within the 'Eastern Sea Fisheries District' which excludes the inherited area. Revoking this byelaw and replacing the provision which excludes the inherited area with one which reflects Eastern IFCA's district is required to remedy the issue.

As a first step in the byelaw review process, it is proposed that those inherited byelaws which represent a duplication (or close duplication) of Eastern IFCA byelaws or are redundant (i.e. do not reflect a regulatory need consistent with the rest of Eastern IFCA's district) are revoked and that the application of Eastern IFCA's byelaws be extended into the 'inherited area' (figure 1). This will result in commonality of regulations across Eastern IFCA's District. It is intended that the remaining byelaws will be more thoroughly reviewed in line with the priorities highlighted in the Strategic Assessment.

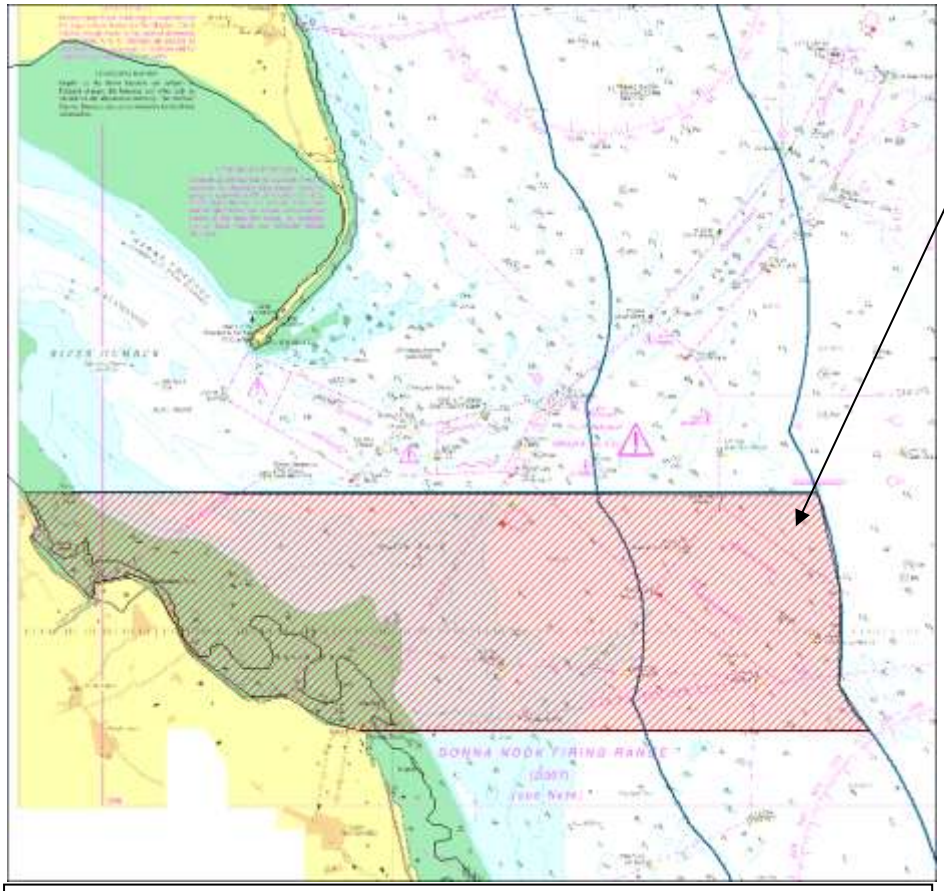

Figure 1. Chart showing the location of the 'inherited area'.

The '**inherited area**' (coloured in with red shading on the chart) consist of the sea out to six nautical miles between:

3. The control tower at the Royal Air Force Gunnery and Bombing Range at Donna Nook in Lincolnshire – (Latitude 53 28.22'N Longitude 0 09.24'E); and
4. Haile Sand Fort in Lincolnshire (Latitude 53 32.09' N Longitude 0 01.82E).

The two blue lines on the chart running south to north indicate the 3 and 6 nautical mile boundaries.

This chart is not to be used for navigational purposes

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The inherited byelaws were reviewed as in table 1.

North Eastern IFCA BYELAW	**Summary of Offence / Byelaw**	**EIFCA Equivalent (Y/N)**	**Recommended Action**	**Explanation**	**Economic Impacts (***Including the impact of replacing with Eastern Byelaw***)**	**Environmental Impacts (***Including the impact of replacing with Eastern Byelaw***)**
II. Application & Saving for scientific purposes		Y - Byelaw 2 : EIFCA refers to sec 6 Sea Fisheries Regulation Act 1966, NEIFCA refers to Section 13 Sea	Revoke	ESFJC equivalent includes more up-to-date legislation	N/A	N/A

		Fisheries Regulation Act 1888				
III. Trawling Prohibition : Exceptions	Trawling without a Permit	N - eastern IFCA only has trawling restrictions in specified areas	Retain - further review	The NESFC byelaw prohibits fishing within the inherited area. Removal of this byelaw would allow trawling in the inherited area - Options for removal include extending EIFCA byelaw 12 (which would restrict the length of vessels which can trawl) or amending our byelaw 12 to include a prohibition in this area. There are important sole nursery/spawning grounds around the Humber Estuary. There is a case to keep it until EIFCA byelaw 12 is reviewed.	N/A	N/A
IV. Seine Net, Draw Net Prohibition	Use of a Seine net, or any drawn net of the kind known as the Danish seine or 'snurrevaad'	N	Revoke	The NESFC byelaw prohibits the use of siene nets (and snurrevaad) in this area. The byelaw is generic and doesn't specify this area. Need to consider the impact of allowing seine netting in this area (i.e. sole grounds) and the current level of activity - would seine netting have an impact on the sole grounds?	N/A	Potential conflict with the sole spawning grounds - need to consider the likelihood of this activity actually taking place should the byelaw be revoked
V. Push Net	Push nets must be raised and cleared at least once in every half	N	Revoke	The NESFC byelaws prohibits the use of shrimp push nets in this area. This byelaw is generic and doesn't specify this area. Need	N/A	Potential conflict with the sole spawni

	hour			to consider impact of allowing push netting in this area (i.e. sole grounds) and the current level of activity.		ng grounds - need to consider the likelihood of this activity actually taking place should the byelaw be revoked
VIII. Mussels : Minimum Size	removal from a fishery of mussels less than 51mm in length	Y - Byelaw 4 : Minimum sizes differ between the two byelaws	Revoke	There are currently no known mussel beds within inherited part of Eastern IFCA district - Eastern IFCA has no reason to believe an increase in the MLS of mussel is required within its district. Removal of this byelaw will make regulation across district consistent.	N/A - Positive	Potential impact on mussels if taking smaller size
X. Re-Deposit of Shellfish	Removal of prohibited shellfish - must be redeposit as close as possible to the place from which it was taken.	Y - Byelaw 9	Revoke	This byelaw represents a duplication of the EIFCA byelaw and can be removed with no effect.	N/A	N/A
XI. Regulations of Shellfish Beds	Removal of shellfish from a closed area	Y - Byelaw 8	Revoke	EIFCA has an equivalent byelaw - Byelaw 8 includes the ability to temporarily close a bed for 'protection of the fishery' which may include more metrics than juvenile density and stock levels. EIFCA byelaw is more appropriate.	N/A	N/A

XII. Shrimp & Prawn Fishing	Failure to raise or clear nets when fishing for shrimp or prawn, at least once in every hour	N	Retain - further review	The byelaw requires fishers to lift and clear gear every hour - presumably to prevent the death of by-catch. Given that the area is a sole nursery area this is likely to be important. EIFCA are currently reviewing shrimp measures with a view to implement new measures. There is a case to keep this byelaw and look to revoke it at conclusion of our shrimp measures.	N/A	N/A
XIV. Prohibition of Removal of parts of lobsters from any fishery	Removal of lobsters below MLS, or tail, claw or any other detached part of a lobster	Y - Byelaw 7 - refers to edible crab, velvet crab and lobsters	Revoke	This byelaw duplicates the Eastern IFCA byelaw 7 but includes more species - includes edible crab and velvet crab	Potential impact if current fishing practices include landing parts of velvet crab or edible crab	N/A - positive
XV. Application of Byelaws	Byelaws in force prior to 22nd Dec 1992 apply only to inside three nautical miles from baselines	N - Reference is made to where byelaws are applied in the paragraph prior to Byelaw 1.	Revoke	Not relevant	N/A	N/A
XVIII. Fixed Engine (Authorisation) Byelaw	Use of fixed engines only in specified areas, for specified species and for a period of 5 years after the date the byelaw was made.	Y - BYELAW 13 - this prohibits the use of fixed engines in waters inland of the ESFJC District except where historical rights of	Retain - further review	Removal of this byelaw would allow the targeting of sole, cod and all sea fish within 'Box B'. The byelaw specifically names an area within Eastern IFCA's district which is also a known sole spawning/nursery area. Revoking this byelaw would potentially have impacts on the sustainability of sole fisheries.	N/A	N/A

		several fisheries make the prohibition exempt		Recommendation is to keep this byelaw and remake at a later stage in line with up-to-date byelaw guidance.		
XIX. Parts of a Crab	prevents the landing of parts of a crab which cannot be measured to ensure compliance with the MLS, with the exceptions stated as (a) and (b)	Y - Byelaw 7 - refers to edible crab, velvet crab and lobsters	Revoke	Eastern IFCA byelaw is more restrictive - i.e. NESFC byelaw has exemptions where it is permitted to remove parts of (edible crab) - if removed the increased regulation would need to be reflected in an Impact Assessment	Potential impact if parts of crab is caught as by-catch (not more than 10%) or by a trammel, gill, entangling etc. Should consider potential loss of earnings if this is prohibited.	N/A - positive
XX. Prohibition on use of Crab(Cancer Pagurus) for Bait	use of edible crab for bait with the exception of cooked crab offal	Y - Byelaw 5 - no reference is made to cooked crab offal being an exception	Revoke	Eastern IFCA byelaw is more restrictive - i.e. has no exception for cooked crab offal. This increase in regulation will need to be reflected in an IA	Potential impact on cost of bait if cooked offal is currently being used as bait.	Potential impact if fishers start capturing other bait sources
XXI. Protection of 'V' notched lobsters	fishing for or taking lobster which have a v-notch in any of their tail fan flaps, or which have any form of mutilation to any of the tail fan flaps	N - SI (2000 No.874) prohibits the landing of v-notched lobsters	Revoke	The Lobsters and Crawfish (Prohibition of Fishing and Landing) Order 2000 (SI 874) prohibits the fishing of v notched or mutilated lobsters however the byelaw would allow for fishers not associated with a relevant vessel (i.e. recreational fishers). There is	N/A	Potential for v-notched lobsters to be caught by recreational

				unlikely to be a significant impact on the lobster fishery from recreational fishers taking lobster in this area - should be considered in IA.		fishers
XXII. Permit to fish for lobster, crab, velvet crab and whelk	fishing for or removing lobster, crab, velvet crab or whelk without a specified permit	N	Revoke	Removal of this byelaw will allow fishing for the species prescribed in the byelaw to occur as in the rest of Eastern IFCA district - as we do not currently issue any permits for this area fishing for these species is currently banned in the inherited area. Removal would bring fisheries management in line with rest of district and will potentially be considered during Whelk byelaw/potting byelaw. It currently contradicts the whelk potting byelaw.	N/A - Positive (technically potting is prohibited din this area as we have not issued any permits)	Lobster, edible crab and velvet crab fishing could take place without any conditions on gear which could have an impact. Whelk effort is controlled under the EIFCA whelk byelaw.
XXIII. Method and area of fishing (Dredges) byelaw	Use of a dredge other than between 1st July and 30th September, dredges must be limited to max of 10 and of specified construction. Dredging is not permitted inside 3nm from baselines	Y - Byelaw 3, byelaw 15	Revoke	Byelaw relevant to scallop dredging which is prohibited under the byelaw. Fishers will not be able to use any gear to take scallops (or any shellfish prescribed in Byelaw 3) without authorisation from Eastern IFCA under byelaw 3. As such we have a byelaw which has the same protective effect at the moment.	N/A	N/A
XXIV. Humber Estuary Cockle	Removal or disturbance of cockle without a permit	Y/N - Byelaw 3 - prevents the	Retain - further review	Permits will be provided to anyone on demand who accurately completes an	N/A	N/A

Fishery Byelaw		removal of cockles except by hand, hand-rake or gear approved by the Authority. Byelaw 8 allows us to close a shellfish bed. Byelaw 11 allows us to ask for returns.		application form - we can only refuse a permit on the grounds that the application form is not complete. i.e. there would be no real way to limit the number of permits under this byelaw. use of byelaw 8 and 11 of our byelaws could be used in its stead however we would still have same issue. Recommended that the byelaw remains in place until further review can be completed.		
XXV. Prohibition on removal of tope or parts thereof	Removal of tope or the species (*Galeorhinus galeus*) of parts thereof.	Y - Byelaw 14	Revoke	Eastern IFCA equivalent	N/A	N/A
XXVIII. Crustacea Conservation Byelaw	Use of pots, creel or traps which do not meet the guidelines set out in the byelaw	N	Revoke	This byelaw does not apply in the inherited part of Eastern IFCA's district	N/A	N/A

3. Policy objectives and intended effects

The intended objectives of the proposed byelaw are as follows:

1. Change the spatial application of Eastern IFCA's byelaws to reflect the spatial extent of Eastern IFCA's district as per the Eastern Inshore Fisheries and Conservation Order 2010;

2. To add a provision for granting dispensation from Eastern IFCA's byelaws for reasons relating to fisheries management; and

3. Revoke those byelaws inherited by North Eastern Sea Fisheries Committee which have been reviewed as being either a duplication of Eastern IFCA byelaws (or close duplication) or as being redundant.

The intended effects of the proposed byelaw is as follows –

1. Clarity of regulations across the Eastern IFCA district; and

2. Consistency of regulations across the Eastern IFCA district.

4. The options

Option 0 – do nothing

The do nothing option would result in a mixture of byelaws inherited form North Eastern IFCA which only have application in the 'inherited' part of the district and Eastern IFCA byelaws which do not have application within the inherited area.

This presents a lack of clarity to fishers how would be overburdened by confusing and conflicting regulations.

Option 1 – Eastern IFCA Application and Exemption Byelaw

This option would have the effect of creating a common set of regulations across the district.

5. Analysis of costs and benefits

Option 0 – Do nothing

This option would maintain the status quo and there are no associated costs or benefits to this option.

Option 1 – Application and exemptions byelaw

The associated costs with this byelaw have been identified as zero. There are no identified costs associated with retaining the provisions to grant dispensation for reasons relating to scientific research or breeding or stocking purposes. In addition, no costs are associated with adding the provisions to grant exemptions from Eastern IFCA byelaws for reasons relating to fisheries management. Informal information gathering was conducted with fishers who are thought to fish within the 'inherited area'. The purpose of this consultation was to determine the costs associated with the revocation and replacement of North Eastern Sea Fisheries Committee byelaws with more restrictive Eastern IFCA byelaws.

The fishing activity which could be impacted by these changes is potting for crabs and lobster within the inherited area. The differences between the inherited regulation and the proposed regulation are summarised below and explored in more detail in Table 1.

Removal of parts of shellfish

Several IFCAs have byelaws which prohibit the landing of crabs and lobsters unless they are landed whole – i.e. it is prohibited to land a crab claw detached from the rest of the crab. Under the current regulation in the inherited area, it is permitted to land parts of edible crab (*Cancer pagurus*) and velvet crabs (*Necora puber*) if:

- The parts of crab do not make up more than 10% by weight, the total landed catch on one occasion; or
- The crab was caught in a trammel, gill or other enmeshing net and the claw became detached from the crab in clearing the net.

Under the proposed regulations it would be prohibited to land any parts of crabs (edible crabs or velvet crabs) regardless of how it was caught or its percentage with regards to total catch.

Using edible crab for bait

Under the current regulations it is permitted to use edible crab (*Cancer pagurus*) within the inherited area if that crab is cooked offal.

Under the proposed regulations it would be prohibited to use any edible crab as bait even if cooked offal.

Consultation with the industry

Officers have undertaken to engage the industry likely to be actively fishing the inherited area on an informal basis. At present there is thought to be no impact to fishers as those we have liaised with are already fishing in accordance with Eastern IFCA byelaws.

The key non-monetised benefits of the proposed byelaw is commonality of regulation throughout the Eastern IFCA district.

One In Two Out (OITO)

OITO is not applicable for byelaws as they are local government byelaws introducing local regulation and therefore not subject to central government processes.

Small firms impact test and competition assessment

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.

Conclusion

Recommended option: Option 1 – Eastern IFCA Application and Exemptions Byelaw

This option is considered the only option to address the issue of current byelaw wording which currently has the effect of Eastern IFCA byelaws having no application within the inherited part of the district. Revocation of duplicate and redundant byelaws through this option will provide a commonality of regulation throughout the district.

Annex A: Policy and Planning

Which marine plan area is the MPA and management measure in?

Have you assessed whether the decision on this MPA management measure is in accordance with the Marine Policy Statement and any relevant marine plan?

- Yes/No.

If so, please give details of the assessments completed:

- Which policies support this management measure and which policies this management measure may not comply with. For the latter, the assessor will be asked to explain the case for proceeding.
- The assessment must not consider the marine plan policies in isolation but all policies where relevant.
- Where an assessment takes place in a marine plan area that does not have an adopted marine plan consideration must be given to the MPS in the assessment.

Annex 4 – Draft Eastern IFCA Applications and Exemptions Byelaw

Eastern Inshore Fisheries and Conservation Authority

MARINE AND COASTAL ACCESS ACT 2009

APPLICATION AND EXEMPTIONS BYELAW

The Authority for the Eastern Inshore Fisheries and Conservation District in exercise of its powers under sections 155, 156 and 158 of the Marine and Coastal Access Act 2009 hereby makes the following byelaw for the District.

Interpretation

1. In this byelaw
    a. 'District' means the Eastern Inshore Fisheries and Conservation District as defined in Articles 2 and 3 of the Eastern Inshore Fisheries and Conservation Order 2010 (SI 2010 No 2189)

Provisions

2. All byelaws shall apply to the whole area of the District unless;
    a. Otherwise specified in a particular byelaw;
    b. In cases to which the provisions of section 158 of the Marine and Coastal Access Act 2009 apply; or
    c. To any person bona fide fishing for sea fish for scientific or for stocking or breeding purposes or for reasons relating to fisheries management under the written authority in that behalf of Eastern Inshore Fisheries and Conservation Authority, signed by their Clerk, or the Minister of the Department for Environment, Food and Rural Affairs and in accordance with the conditions contained in that authority.

Revocations

3. The following byelaws are hereby revoked such as they applied within the district:
    a. BYELAW 2. Application and saving for scientific purposes
    b. BYELAW II. Application and saving for scientific purposes;
    c. BYELAW IV. Seine net, draw net or 'Snurrevaad': prohibition of;
    d. BYELAW V. Push net;
    e. BYELAW VIII. Mussels: minimum size;
    f. BYELAW X. Shellfish: re-deposit of;
    g. BYELAW XI. Shellfish beds: regulations of;
    h. BYELAW XIV. Removal of parts of lobsters from any fishery: prohibition of;

i. BYELAW XV. Application of byelaws;
j. BYELAW XIX. Parts of crab;
k. BYELAW XX. Prohibition on use of crab (*Cancer pagurus*) for bait;
l. BYELAW XXI. Protection of 'V' notched lobsters;
m. BYELAW XXII. Permit to fish for lobster, crab, velvet crab and whelk
n. BYELAW XXIII. Method and area of fishing (dredges) byelaw
o. BYELAW XXV. Prohibition on removal of tope or parts thereof
p. BYELAW XXVIII. Crustacea conservation byelaw

Regulation and Compliance Sub Committee meeting

Action Item 7

17th November 2015

Permanent Whelk Management Measures

Report By: L P Godwin – IFCO / Project Officer & J Gregory – Acting Chief Executive Officer

Purpose of report

To present the sub-committee with a proposed mechanism for managing inshore fisheries and to introduce permanent measures for the management of whelk fisheries.

Recommendations

Members are recommended to:

- **Note the results of the informal consultation with regards to the permanent Whelk management measures;**
- **Note the proposed approach to managing fisheries;**
- **Agree to the proposed management measures for whelk fisheries;**
- **Note the conclusions of the associated draft Impact Assessment;**
- **Agree to make the Proposed Eastern IFCA Permitting Byelaw and the proposed Eastern IFCA Whelk Byelaw;**
- **Direct Officers to conduct a formal consultation on the Eastern IFCA Permitting Byelaw and the Eastern IFCA Whelk Byelaw.**

Background

At the 18th Eastern IFCA Authority meeting (29th April 2015), the Authority agreed to introduce an emergency byelaw for whelk fisheries management. The whelk management measures were made in response to industry concerns regarding whelk sustainability and a decline in catch per unit effort.

As per section 157 of the Marine and Coastal Access Act (2009), an emergency byelaw can only have effect for 12 months after it is made and for an additional 6 months upon approval from the Secretary of State under certain circumstances. As the emergency byelaw will expire on the 29th April 2016, Officers have been progressing with work pursuant of a permanent set of measures for the management of whelk fisheries to replace the emergency byelaw.

In addition to the work relating to the whelk byelaw, Officers have been conducting a wider byelaw review. Part of this review has sought to investigate ways of 'future-proofing' any new byelaws and implementing a new regulatory structure which will allow for more flexibility in these regulations to reflect the dynamic marine environment and changing fishing practices.

The management measures presented in this paper reflect both the need to protect the whelk fisheries within the District and a new approach to implementing regulations and management measures.

The need for permanent whelk measures

The key issues which were the catalyst for the creation of the Emergency Whelk Byelaw are still relevant to the fishery today – these are summarised in the table below. The Impact Assessment (Annex 1) interrogates the requirement for permanent whelk management measures in detail.

Table 1. Key sustainability issues	
Key sustainability issue	**Explanation**
Effort control required	Whelk fisheries in the past have operated as a 'boom-and-bust' fishery, with intense fishing activity resulting in only short-term gains for the fishers. Since the last 'boom' (thought to be in the 70's) the fishery has only been a marginal one until recently. It is well accepted in scientific literature that whelks (*Buccinum undatum*) are particularly vulnerable to overfishing. This is primarily due to their slow growth and low mobility. Without effective effort controls, the science indicates that whole populations of whelks can be quickly fished out.
Size of maturity	The current, national minimum landing size (45mm) is thought to be far below the size at which whelk actually mature. The size of maturity is also thought to vary over relatively small spatial scales. Given the vulnerability of whelks to overfishing, preventing the removal of pre-spawning individuals is key to ensuring a sustainable, long-term fishery.
Lack of data	There is limited data relating to fishing effort within the whelk fishery. This information is a key metric in determining the 'health' of a stock. Collection of data relevant to whelk fishing is fundamental to managing a sustainable, long-term fishery. The lack of relevant fisheries data has the effect that, measures such as pot limitations have to be precautionary – we cannot currently determine how much effort is too much with the current data. As such, measures need to be flexible to allow for better evidence in the future.

Whelks are a commercial species with a limited market within the United Kingdom however, there is significant demand from Asian markets and as a consequence national whelk landings are increasing, with whelk making the top ten list of species landed during 2014 (MMO landings figures 2014). This means that the fishery has significant value (estimated to be in excess of £13m annually), and is particularly important to the inshore fishing sector as quotas reduce for other species.

The only national management measure applicable to whelk is a minimum landing size, which is widely considered to be lower than necessary to be effective. There is no total allowable catch or quota.

Effective management measures are required for the inshore whelk fisheries to allow a long-term, sustainable fishery which will be of benefit to inshore fishers and the local economy.

Informal consultation responses

Fishers and associations within the District were sent a questionnaire designed to capture information which could be used in an Impact Assessment for proposed measures. Key questions were asked regarding the economics of whelk fishing (earnings and costs). The starting point has been that the measures will, in the absence of additional information, reflect the emergency measures.

Only four questionnaires were returned to Eastern IFCA (out of over 250 sent) relating to 7 vessels. This poor return has provided little additional information on which to base an impact assessment. However, Officers have also engaged with fishers through informal meetings and we have received some written representation which does highlight areas of concern for fishers. The key themes of the informal consultation are summarised below.

Table 2. Effective measures – fishers were asked to identify which measures they felt would have the most positive effect on the sustainability of the fishery and those measures which would have the least positive effect.

Measure	Comments	Reflection in proposed measures
Increase in minimum landing size (to 55mm)	Fishers accept the principle that removal of pre-spawning individuals will seriously damage the fishery. Responses also generally indicated that an increase to 55mm is appropriate and works well in combination with the minimum riddle size. There are some concerns that the minimum size is too large for certain areas.	To remain at 55mm until Eastern IFCA research project has been completed. The minimum landing size will be implemented as a flexible permit condition such that the findings of the Eastern IFCA research project can be reflected in the measures.
Pot limitations (500 pots)	The principle of pot limitations is also well accepted but, as with the emergency byelaw, the exact number of pots at which the limit is set is contentious. Representation from some fishers has indicated that 500 pots is too few for their vessels to viably operate in the fishery and that a different approach is required (for example a number of pots per person). Others have indicated that 500 pots are too many and that failing to reduce it would hazard the fishery. It is worth noting also that some representation has been made by fishers with a whelk permit and in	A thorough review of the impacts of a 500 pot, pot-limitation has been conducted based on information provided during the informal consultation (see below). Whilst there will clearly be disproportionate effects on larger vessels, the precautionary approach is considered appropriate under the current circumstances due to a lack of evidence. The pot limitation will be flexible such that new evidence can be reflected in the future (increases or decreases in fishing effort as required).

	those cases, the pot limitation was considered proportionate.	
Escape holes (minimum of 2 per pot with a minimum diameter of 24mm)	Informal dialogue with some active whelk fishers has indicated that escape holes have been effective at reducing undersize component of catch and that the minimum required number of escape holes should be increased from 2 to 4. Other representation has been made suggesting that the escape holes would not work in theory – indicating that small whelks would enter pots through the escape holes, eat the bait and then leave through the escape holes, reducing the effectiveness of the pots to fishing for larger whelks.	Maintain the requirement for a minimum of 2 escape holes of at least 24mm diameter. Implement as a flexible measure such that it can be amended as evidence becomes available.
Gear marking	Every representation received included an objection to the gear marking as proposed under the emergency measures. Generally it is accepted that the requirement for marking gear is justified but that the extent to which the emergency byelaws requires marking is over-burdensome and expensive, particularly when considering gear which is lost due to other marine traffic. Some representations were made which suggested that the pot marking was also a risk to safety.	Maintain the requirement to mark gear but reflect objections which call for less expensive means of marking gear.
Permit charge (£0.50 per pot)	Representations called for more clarity on what the cost to the public was in order to justify a charge on the whelk permit.	Detailed breakdown of the costs to the public are presented in the Impact Assessment. The contribution to the public costs by the fishers is in the region of 36% and essentially covers the cost of having flexible rather than fixed measures (i.e. the cost of research and administration).

Proposed whelk management measures

Since the implementation of the Emergency Whelk Byelaw, Eastern IFCA has started a research project which aims to inform whelk management measures. The key outputs of the research in the short-term will be to determine size at maturity for whelks within the District and, using catch returns data, the maximum sustainable yield of the whelk fishery. Data which can be utilised in management decisions is anticipated after the project has run for two years.

Until such a time as Eastern IFCA has appropriate evidence on which to base the measures, Officers propose a precautionary approach to managing the fishery. This approach is in keeping with the ethos of the Common Fisheries Policy and Defra guidance[1].

As such, the management measures proposed for the permanent measures reflect those of the Emergency byelaw. The key difference is that some of these measures are proposed as 'flexible permit conditions'. This will allow for the measures to reflect the needs of the fishery as Eastern IFCA's evidence base improves.

The proposed measures are summarised in the table below.

Table 3. proposed management measures

Permit condition	**Rationale**	**Proposed starting position**
Permit charge	In line with the current governments approach it is proposed that there is a charge associated with issuing of whelk permits.	50p per pot (minimum charge of £50) for a Category One permit (commercial) and £5 per pot for a Category Two permit (recreational).
Requirement to provide fisheries data (catch returns)	Fisheries data is required to manage the fishery at maximum sustainable yield – that is, at a point where the level of effort reflects the status and size of the whelk stock. Different data may be required in the future and as such, the ability to request different/additional data is required. The measure is not a flexible measure but the provision is general such that the Authority can request such data as is required.	Catch returns books which capture the following; Area fished, the number of pots hauled, the weight of catch associated with those pots, vessel details. Returns are require every month.
Pot limitations	Limiting the number of pots to be used per permit holder will be the main mechanism through which effort on the fishery is managed. The number of pots per permit holder will reflect the current state of the fishery as determined by data collected from permit holders and other relevant data and in line with a maximum sustainable yield approach.	500 pots

[1] *IFCA Byelaw Guidance – Guidance on the byelaw making powers and general offences under part 6, Chapter 1, sections 155 to 164 of the Marine and Coastal Access Act – Department for Environment, Food and Rural Affairs March 2011.*

	In the absence of enough data to determine maximum sustainable yield it is proposed that 500 pots is proportionate – in line with the findings of the Emergency Byelaw Impact Assessment.	
Internal pot volume limitation	The internal volume of each pot is limited to a proportionate amount to prevent fishers from increasing the size of whelk pots as a means of effectively increasing effort.	30 litres
Requirement to use riddles and minimum riddle sizes	Used as a means of reducing the removal of pre-spawning whelk. It is likely that further research – which is currently ongoing – will indicate that the size of maturity for whelks differs between different areas of the district. The minimum riddle size will ultimately reflect the findings of this research. The current best available evidence indicates that 24mm bar spacing for riddles is appropriate to reduce the removal of pre-spawning individuals.	24mm
Minimum landing size for whelk	Used as a means of reducing the removal of pre-spawning whelk. It is likely that further research – which is currently ongoing – will indicate that the size of maturity for whelks differs between different areas of the district. The minimum landing size will ultimately reflect the findings of this research. The current best available evidence indicates that 55mm is a proportionate minimum landing size given the lack of data on the size of maturity of whelks.	55mm in length
Requirement to have escape holes in whelk pots	Used as a means of reducing the removal of pre-spawning whelk. It is likely that further research – which is currently ongoing – will indicate that the size of maturity for whelks differs between different	A minimum of 2, 24mm escape-holes per pot.

	areas of the district. The minimum escape-hole size will ultimately reflect the findings of this research. The current best available evidence indicates that a minimum of two, 24mm escape-holes per pot is appropriate to reduce the removal of pre-spawning individuals.	
Gear marking (pot tags and marker buoys)	Required to effectively enforce the permitting scheme.	Each pot to be tagged with a tag supplied by the Authority and; Each string or shank of pots must be marked by a dahn or buoy at each end which should be clearly marked with the PLN of the vessel and associated permit number.

Gear marking

The requirement to mark gear used for whelk fishing was introduced in the Emergency byelaw. The measures reflected guidance issued by the Maritime and Coastguard Agency for inshore static gear and mirror the regulations for pots etc. outside of the six nautical mile boundary.

Fishers have made representation that these requirements are too expensive and burdensome. For example, many of the smaller whelk fishing vessels have limited room and the requirement for a floating dahn actually presented a health and safety risk. In addition, high levels of marine traffic on the North Norfolk Coast results in these markers being lost as a result of vessels transiting over the fishing gear. Cheaper markers are usually used by fishers to prevent the cost of replacing markers from being too high.

It is judged that a compromise may be appropriate by proposing lesser requirements which would still enable IFCOs to identify whelk gear and the permit/vessel they belong to. Cheaper materials being used would lessen the financial burden on fishers who regularly lose their marking gear and fishers would not be required to have poles (dahns) which would lessen any potential health and safety concerns.

It should be noted that the MCA/RYA requirements are guidance and not a statutory requirement. As such the proposed byelaw will seek a minimum requirement that meets Eastern IFCAs needs and leaves the matter of further marking with fishers or with the MCA should they decide to regulate.

Permit charge

The Marine and Coastal Access Act 2009 sets out that IFCA's have the ability to charge for permits (section 156 (4)(a)). The estimated costs to Eastern IFCA (i.e. public costs) are £16,131 annually. This takes into account enforcement, research and administration costs (for example processing applications and analysing catch data). The estimated contribution

to the public cost from permit charges is estimated at £5,838 annually – offsetting circa 36% of the cost to the public.

The permit charge essentially covers to cost of the research and administration – without which, flexible measures would not be possible and a more precautionary approach would be required. Costs associated with enforcement are more variable and will depend on levels of compliance with the measures. They could be much greater than estimated if several cases have to be taken to court but successful prosecution could also lead to costs being covered by the enforcement action.

It is proposed that the contribution of circa 36% of estimated costs is appropriate for the complexity of the measures proposed.

Disproportionate effect on larger vessels

Details on all the potential impacts on fishers are investigated and where possible, quantified in the Impact Assessment (see Annex 1). The pot limitation of 500 pots is still the most controversial issue regarding the proposed measures – impacts to different business models as a result of maintaining a 500 pot pot-limitation are outlined in box 1.

Box 1 – impacts of measures on different business models

Table 4. Fixed parameters used in crew earnings model

kg whelk per pot	2.5
Bait cost (per pot)	0.4
First sale price whelk	0.775
Cost per pot (markers and tag)*	8.84
Annual number of trips	49

Information gained during consultation was used to develop and run a model to determine the earnings of crew members of whelk fishing vessels. Details of the model are not shown to protect the identity of the fishers who passed on information.

Fixed parameters used in the model are shown in table 4 (left) and the outputs are shown in the table 5 (below).

Table 5. OUTPUTS Crew earnings per trip

	Number of pots		
Business model	No limit	500	750
Company vessel (average)	£ 198.70	£ 103.75	£ 192.29
Independent (10 and over)	£ 215.42	£ 215.42	£ 351.13
Independent (less than 10)	£ 216.85	£ 443.03	£ 669.21

Earnings hatched out in red are associated with a number of pots greater than that actually used in practice.

When the model is run with the number of pots set to 500, it is clear to see that the earnings associated with a company owned vessel are less (less than half) than that of an independent vessel. This is primarily due to company owned vessels being larger (thus having higher fuel and insurance costs) and operating with more crew. With no limit, the company owned vessels would have in the region of 750 to 800 pots (based on information gathered during informal consultation) which does bring the crew earnings more in line the independent vessels. That said, it has been anecdotally reported that, although the crew of independent vessels could earn as much as set out in table 4, crew for independent fishers often operate under a fixed daily rate which is sometimes as little as £30 per trip.

One representation made during the informal consultation indicated that the 500 pot limit could constitute a safety risk as larger vessels feel forced to operate with fewer crew to allow for lower earnings in whelk catch. It is important to note that, the model for crew earnings does also include a share of the catch for 'the vessel' which is the share of catch which goes to the company in ownership of the vessel; effectively increasing the number of crew by at least one.

Some vessels are also unable to transit outside of the 6 nautical miles in order to place more pots – fishers from The Wash believe that the extra time and fuel expended makes the trip unviable.

The potential for disproportionate impacts on the crew of larger, company owned vessels as set out in Box 1 has been considered in determining an appropriate pot limitation and is reflected in the Impact Assessment (Annex 1).

Analysis conducted (presented in the Impact Assessment) indicates that the fishing effort would be too high and present too high a risk if the pot limitation was increased. Effort would likely increase to levels similar to the peak experienced in 2014 which is thought to be partly responsible for the decline in catch per unit effort which prompted the emergency byelaw.

In addition, analysis also indicated that there would be latent capacity for up to 10 additional vessels (in addition to the 38 active in 2014) before effort reached the peak of

2014, allowing for a greater amount of diversification in the industry. Several representations were made concerning ensuring that additional permits could be granted without increased effort having a detrimental impact on the fishery. In limiting the number of pots to 500, there should be enough latent capacity to allow this prior to having a more rigorous dataset to test the fishery against maximum sustainable yield.

The 500 pot, pot-limitation would represent a proportionate approach. Based on the available literature, including case studies of other whelk fisheries, this pot limitation is proportionate given the lack of information.

It is also important to note that, in proposing flexible measures, the Authority can vary the number of pots per vessel based on more evidence as it becomes available.

Proposed mechanism

It is proposed that the regulation of this and other fisheries in the future would benefit from a flexible approach. Setting measures out in fixed byelaw provisions, such as the pot limitation and minimum landing size for whelks would not enable changes to be made in order to reflect the dynamic nature of these elements.

A draft Eastern IFCA Permitting Byelaw is presented in Annex 2. This byelaw would enable the Authority to introduce, vary or revoke flexible permit conditions in a Permit Conditions Notice applicable to a particular species or fishery that require management measures. The mechanism by which a permit will be required will be the introduction of a species specific byelaw to require a permit to fish and to set out measures that would not benefit from being flexible.

Flexible permit conditions can be issued through this byelaw following a proportionate process. Draft initial permit conditions for whelk are presented in Annex 3 An associated Whelk Byelaw has also been drafted which would set out those measures which do not benefit of require flexibility (annex 4). Table 6 (below) sets out whether measures are proposed as set out in the Whelk Byelaw or as flexible permit conditions through the permitting byelaw.

Table 6. Proposed measures introduced via a permitting scheme or byelaw provision.

Measure	**Byelaw provision /permit condition**	**Rationale**
Pot limitation	Permit condition	This is the primary form of effort limitation and would need to change to reflect the status of the fishery with regards to maximum sustainable yield.
Minimum landing size	Permit condition	Research is currently underway to determine the size of maturity throughout the district which is likely to differ across the district. As such, there will be a benefit to this measure being flexible to reflect the findings of research over the coming years.
Gear marking	Permit condition	There is no benefit to introducing flexibility in this provision.
Riddle size	Permit condition	Riddle sizes would likely need to change to reflect the outcomes of the size of maturity work conducted by the research department.
Escape holes (size	Permit condition	Escape hole sizes would likely need to change

and number)		to reflect the outcomes of the size of maturity work conducted by the research department.
Catch returns	Byelaw provision	The provision to provide Eastern IFCA with catch data is general and should suffice for the Authority to retrieve such information as may be required now and in the future to determine maximum sustainable yield.
Internal pot volume	Permit condition	This requirement may need to change in the future in line with changing fishing practices.

Summary

Given the vulnerability of the whelk fisheries to over-fishing, the historical 'boom-and-bust' operation of the fishery and the potential worth of the whelk fishery, there is a clear need to regulate.

The proposed measures reflect a more contemporary method of regulating, reflecting Eastern IFCA's ability to use flexible permit conditions and balance that with the need to have an appropriate deterrent (in the form of a penalty). The proposed measures are proportionate given the lack of available evidence and reflect the Authority's obligation to manage inshore fisheries in a precautionary manner where data is lacking.

Annex 1 – Whelk Measures Impact Assessment

Title: Eastern IFCA Permitting Byelaw, Eastern IFCA Permitting Byelaw (Flexible Conditions), Eastern IFCA Whelk Byelaw **IA No:** **EIFCA001** **Lead department or agency:** **Eastern Inshore Fisheries and Conservation Authority** **Other departments or agencies:**	**Impact Assessment (IA)** **Date:** **Stage: Consultation** **Source of intervention: Domestic** **Type of measure: Secondary Legislation** **Contact for enquiries:** Julian Gregory – Acting CEO (01553 775321)
Summary: Intervention and Options	RPC Opinion: **N/A**

Cost of Preferred (or more likely) Option				
Total Net Present Value £m	**Business Net Present Value** £	**Net cost to business per year** (EANCB on 2009 prices) **NA**	**In scope of One-In, Two-Out?** **No**	**Measure qualifies as** **NA**

What is the problem under consideration? Available scientific literature and case study evidence indicated that whelks are very vulnerable to over-fishing. Peak levels of fishing effort in 2014 and removal of pre-spawning individuals are likely to have contributed to the observed reduction in catch per unit effort. Due to the importance of whelk as a non-quota species, particularly to inshore fishermen who regularly diversify, ensuring a long-term, sustainable fishery will provide better economic security for fishes in the long term.

Why is government intervention necessary? The fishery has historically operated under a 'boom-and-bust' model, where fishers remove the majority of the population though intense fishing morality. Due to limited available evidence regarding whelk population dynamics and fishing activity a precautionary approach is required until Eastern IFCA's evidence base is more robust.

What are the policy objectives and the intended effects? To collect data relevant to operating the fishery at maximum sustainable yield, introduce flexible effort restrictions which will allow Eastern IFCA to manage a fishery at maximum sustainable yield as data becomes available, reduce the removal of pre-spawning individuals, partial cost recovery for the associated measures, introduce measures which are enforceable, initially introduce measures which are precautionary to lessen immediate impacts on fishery.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base) The preferred option is a combination of flexible permit conditions (administered through a permitting byelaw) and byelaw provisions (administered through an Eastern IFCA byelaw) to balance flexibility with proportionate deterrent for non-compliance. This option is proportionate and presents a low risk to fisheries sustainability. Other options considered include; do nothing, non-flexible permitting scheme, and total closures.

Will the policy be reviewed? It **will** be reviewed. **If applicable, set review date:** 6 years					
Does implementation go beyond minimum EU requirements?			**Yes**		
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
SELECT SIGNATORY: _____ Date: _____

Summary: Analysis & Evidence Policy Option

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2014	PV Base Year 2014	Time Period Years 10	Net Benefit (Present Value (PV) (£m)		
			Low: Unknown	**High:** Unknown	**Best Estimate:** Unknown

COSTS (£m)	Total Transition (Constant Price) Years		Average Annual (excluding transition) (Constant Price)	Total Cost (Present Value)
Low	£57,915		£173,799	£1,553,922
High	£169,290		£578,060	£5,145,049
Best Estimate	£113,602		***£247,829***	***£2,249,836***

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

Fishers will incur costs associated with reducing effort (and landings as a result), lost catch as a result of using riddle screens, the charge for a permit and the modification of fishing gear. Public costs include the likely increase in sea patrols (estimated 2-3 per month for 6 months and as required on a risk assessed basis subsequently) and the cost of personnel involved in assessing the presence of undersize whelks based on previous experience, administration and research associated with collecting and analysis of permit holder data (relevant for achieving MSY). Public costs have been partially offset by the permit charge.

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

Fishers will likely incur additional costs associated with loss of catch due to an increased minimum landing size which cannot be estimated due to variable size of maturity of whelks across the district and loss of fishing gear marking items (buoys and dhans).

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

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

Monetised benefits cannot be estimated.

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

A long-term, sustainable whelk fishery will provide income over a longer period resulting in a net gain over time. The whelk fishery within Eastern IFCA's district had a first sale value of £1.32 million in 2014. The main benefit of the measures will be to maintain this valuable fishery in the long-term and prevent the 'boom-and-bust' fishing culture historically associated with whelk fisheries in the district. The vulnerability of whelk populations to overfishing and historical 'boom-and-bust' nature of the fishery indicates that costs will only actually be short-term and be offset by longer-term income over time resulting in a net benefit.

Key assumptions/sensitivities/risks **Discount rate (%)** **3.5%**

Assumption: MSY can be achieved and reflected in flexible permit conditions. Sensitivities/risk: whelk fisheries are already overfished and recovery not possible.

BUSINESS ASSESSMENT (Option 2)

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

1. Introduction

Eastern IFCA has a duty to take action to ensure the sustainable exploitation of fisheries within its district as per section 153 of the Marine and Coastal Access Act 2009. Furthermore, in carrying out its duties Eastern IFCA is obliged to ensure Good Environmental Status of fish and shellfish stocks as per the Marine Strategy Framework Directive (2008/56/EC) namely; sustainable fisheries with high long-term yields, stocks functioning at full reproductive capacity, and to maintain or increase the proportion of older and larger individuals.

2. Rationale for intervention

Eastern IFCA currently has in place an emergency byelaw to manage a sustainable whelk fishery – this byelaw will expire on 29 April 2016. Best available evidence has indicated that whelk stocks within Eastern IFCA's district were at a high risk of over-exploitation and potential collapse as a result of a sudden increase in fishing effort in 2014. The Emergency Whelk Byelaw has had the effect of reducing effort in the whelk fishery thus far. Failure to implement permanent management measures would potentially result the resumption of previous high levels of fishing activity and fishing mortality - historically the fishery has operated under a 'boom-and-bust' model where populations are reduced through intense fishing mortality to the point that fishing is no longer viable, whelk populations have anecdotally been reported to then recovery over several years or decades. Operating the whelk fishery under these conditions does not constitute maximum sustainable yield and would not meet the requirements set under the Marine Strategy Framework Directive.

3. Policy objectives and intended effects

The key objectives of the measures are as follows:

1. Acquisition of accurate effort and landings data to build models to identify maximum sustainable yield;
2. Introduce flexible effort controls which can be varied based on best available evidence to achieve maximum sustainable yield;
3. Introduce flexible permit conditions which can be added to, varied or removed to reflect the needs of a long-term, sustainable fishery including requirements for effective enforcement;
4. Introduce byelaw provisions relevant to a long-term, sustainable fishery and effective enforcement;
5. Initial precautionary cap on effort (pots per vessel) until such a time as assessments can determine appropriate levels of effort; and
6. Prevent or reduce removal of pre-spawning whelk.

The intended effect of the measures is to secure a long-term, sustainable whelk fishery which operates at maximum sustainable yield. Initially a precautionary approach to

effort limitation has the intended effect of limiting the damage to the inshore whelk fisheries until such a time as Eastern IFCA can determine maximum sustainable yield. To cater for the dynamic nature of the marine environment and inshore fishing sector, flexible measures likely present the most effective method of achieving this. That said, flexible permit conditions represent a lower penalty level than byelaw provisions and as such, a balance is sought between the appropriate deterrent (i.e. an appropriate penalty level) and flexibility. A combination of both is proposed as the most effective method to achieve this.

4. Background

It is well established in scientific literature that whelk are vulnerable to overfishing; primarily due to their slow growth and low mobility (Caddee et al 1995, Fahy et al 2000). In addition, the national minimum landing size for whelks (45mm) is generally considered to be far below the size at which whelks are sexually mature (Fahy et al 1995) which is also thought to vary at relatively small spatial scales (Lawler 2014).

Whelk fishing activity increased dramatically within Eastern IFCA's district over a four year period (2010-2014) and more so in 2014 than was expected. This reflects a national growth in the UK's whelk fisheries thought to be driven in part because of low quota's for controlled species (particularly in the inshore sector) and increased demand (including an increase in the price) from Asian Markets (primarily South Korea). This dramatic increase in effort preceded collapses, near collapses or poor performance in whelk fisheries in several case studies including the Irish Sea (Fahy et al 1995), the Wadden Sea (Caddee et al) and the Normandy Whelk fishery (Gascoigne et al 2015).

Whilst the increase in effort in the whelk fishery represents a greater risk to its sustainability, it also reflects the importance of whelk to the inshore fishing sector. Landed whelk in the district had a first sale value of £1.32 million in 2014 making it the most valuable fishery that year. Ensuring a long-term, sustainable fishery will have a positive effect on the local inshore fishing industry and local economy.

Using limited effort and landings data Eastern IFCA analysis determined that there was a potential reduction in catch per unit effort, reflecting a high risk to the whelk fisheries in the district in January 2015. An emergency byelaw was introduced to prevent irreparable damage to the sustainability of the fishery. The measures introduced were precautionary in nature to reflect the limited available data.

5. The options

***Option 0**: **Do nothing** – Given the vulnerability of whelk fisheries to over-fishing, historical fishing activity (i.e. boom-and-bust) and the 2014 (current) peaks in fishing activity this option presents a very high risk to fisheries sustainability and potential long-term impacts on the local inshore fishing sector and local economy.*

Option 1: Introduce a generic permitting byelaw which will enable flexible permit conditions to be introduced, removed and varied to reflect the needs of a fishery. This byelaw will allow for additional species to require a permit to future proof against fisheries sustainability needs of any species or fishery within the district. Also introduce a specific whelk byelaw with fixed provisions which will not benefit from flexibility. Introduce flexible permits conditions which are precautionary in nature until such a time as available evidence allows Eastern IFCA to determine Maximum Sustainable Yield and appropriate minimum landing sizes of whelks across the district. This approach allows for Eastern IFCA to balance the benefits of flexible permit conditions, where required, and higher penalty level byelaw provisions which are fixed to achieve long-term, sustainable fisheries.

Eastern IFCA Permitting Byelaw (see annex 1)
Requires fishers to obtain a permit which is endorsed for certain fisheries or species, as defined in an associated byelaw. The byelaw also allows Eastern IFCA to set flexible permit conditions for fishing through a process which includes a proportionate level of consultation and evidence gathering. This byelaw also includes the provision that permit holders return catch data to Eastern IFCA on the 10th day of each month.

Flexible permit conditions (see annex 2)
The initial Permit Conditions Notice issued will include the following; pot limitation (500 pots), requirement for a minimum of two escape holes per pots of a minimum diameter of 24mm, catch to be riddled using a screen of a minimum of 24mm spacing, a minimum landing size of 55mm, a maximum internal pot volume of 30 litres.

Eastern IFCA Whelk Byelaw (see annex 3)
This byelaw includes the provision that the species Whelk (*Buccinum undatum*) is listed on Schedule One of the Eastern IFCA Permitting Byelaw and requires an endorsed permit to fish for this species. The byelaw also includes provisions which reflect management measures which do not benefit from the flexibility of being flexible permit conditions. These include; whelk pots must be marked with tags provided by the Authority, Lost tags shall be reported and replaced by the permit holder, the use of fishing gear of any other description than whelk pots, set gear must be marked with buoys or dhans.

Option 2:*.Introduce an Eastern IFCA whelk byelaw with provisions which will have the effect of capping effort in the whelk fishery, reduce/prevent the removal of pre-spawning whelks. . Introduce flexible permits conditions which are precautionary in nature until such a time as available evidence allows Eastern IFCA to determine Maximum Sustainable Yield and appropriate minimum landing sizes of whelks across the district.*

Option 3: *Introduce a Whelk permitting byelaw which would allow for flexible permit conditions to meet the requirements of the fishery as evidence becomes available.*

6 Analysis of costs and benefits

Option 0 – Do nothing

The cost and benefits of the 'do nothing' option cannot be monetised due to the massive uncertainties associated with the whelk fisheries within Eastern IFCA's district.

Case studies of other whelk fisheries have shown that, because whelk are so vulnerable to over-fishing, the potential cost of a do-nothing option in the long term can range from poor quality catch to collapse of the fishery entirely.

In 2014 the first sale value of the whelk landed into Eastern IFCA's district was £1.32 million – most of which is thought to have been caught in the inshore region. The down-stream value of whelk fisheries cannot be estimated but include a range of businesses from selling cups of whelks to tourists in sea-side towns to a large export from a processing factory in King's Lynn which supports several jobs and skills including engineers, drivers and factory workers.

The benefit associated with the 'do nothing' option are likely – based on case studies – only to be felt in the short-term.

Option 1 – Combination of fixed byelaw provisions and flexible permit conditions (preferred option)

The estimated monetised costs associated with Option 1 are incomplete and the benefits could not be monetised.

The monetised costs to businesses include the transitional costs associated with fishers purchasing additional fishing gear to meet the requirements of the proposed measures. This includes the following; riddle screens, gear markers (including dhans and buoys) and the time (in loss of earnings) to make and deploy these gear markers and adapt fishing gear (including modifying whelk pots to include escape holes. The transitional costs to businesses was estimated at £113,602.

Annual costs to businesses have been estimated for the loss in earnings associated with a pot limitation and the charge associated with permits. A minimum estimate of this costs was estimated by reducing the earnings of each vessel in proportion to the reduction in the pots they were able to use and then offset by that amount for vessels which are able to travel outside of the 6nm (i.e. outside of Eastern IFCA's district) where the byelaw has no application. This is a fair assumption given that several vessels have indicated this is the approach they will take. The high estimate for these costs was estimated by reducing the earnings of each vessel in proportion to the reduction in the pots they can use, including no offset for vessels which can travel outside the 6nm boundary and using zero earnings for vessels which have indicated that 500 pots is not viable and so would not fish. The 'best' estimate includes an offset for vessels which can transit to outside of the 6nm boundary but does also subtracts the amount earned by vessels which have indicated they would not fish for whelks under a 500 pot limitation. The best estimate associated with the pot limitation was £125,693 annually.

500 pot, pot limitation

The 500 pot, pot limitation was identified in the informal information gathering exercise as the most divisive measure. Ideally Eastern IFCA would set a pot limitation in accordance with maximum sustainable yield however, the evidence base for this is not yet available (it will likely require several years of landings and effort data to calculate) and as such, the initial objective of the pot limitation is to be precautionary and prevent detrimental impacts on the whelk fishery until such a time as the evidence is available.

Informal consultation has indicated that several fishers feel the 500 pot limitation is too low to make the fishing activity viable. This view is associated with the owners and skippers of the larger vessels within the fleet which naturally have higher running costs. In contrast, several whelk fishers are written representation to the effect that the 500 pot, pot limitation is too high and risks the long-term sustainability of the whelk fisheries.

An analysis of the potential earnings per crew has highlighted that there will be a disproportionate effect on company owned, larger vessels within the district (see box 1).

Box 1 – impacts of measures on different business models

Table 1. Fixed parameters used in crew earnings model

kg whelk per pot	2.5
Bait cost (per pot)	0.4
First sale price whelk	0.775
Cost per pot (markers and tag)	8.84
Annual number of trips	49

Information gained during consultation was used to develop and run a model to determine the earnings of crew members of whelk fishing vessels. Details of the model are not shown to protect the identity of the fishers who passed on information.
Fixed parameters used in the model are shown in table 1 (left) and the outputs are shown in the table 2 (below).

Table 2. OUTPUTS

		Number of pots	
Crew earnings per trip	No limit	500	750
Company vessel (average)	£ 198.70	£ 103.75	£ 192.29
Independent (10 and over)	£ 215.42	£ 215.42	£ 351.13
Independent (less than 10)	£ 216.85	£ 443.03	£ 669.21

Earnings hatched out in red are associated with a number of pots greater than that actually used in practice.

When the model is run with the number of pots set to 500, it is clear to see that the earnings associated with a company owned vessel are less (less than half) than that of an independent vessel. This is primarily due to company owned vessels being larger (thus having higher fuel and insurance costs) and operating with more crew. With no limit, the company owned vessels would have in the region of 750 to 800 pots which does bring the crew earnings more in line the independent vessels. That said, it has been anecdotally reported that, although the crew of independent vessels could earn as much as set out in table 2, crew for independent fishers often operate under a fixed daily rate which is sometimes as little as £30 per trip.

One representation made during the informal consultation indicated that the 500 pot limit could constitute a safety risk as larger vessels feel forced to operate with fewer crew to allow for lower earnings in whelk catch. It is important to note that, the model for crew earnings does also include a share of the catch for 'the vessel' which is the share of catch which goes to the company in ownership of the vessel; - effectively increasing the number of crew by at least one.

Several representations from the larger, company owned vessels indicated that a pot limitation of 750 pots would make fishing within the Eastern IFCA district viable and as such, has been considered alongside the current (Emergency Byelaw) pot limitation of 500.

The case study of the Normandy Whelk fishery was used to test whether there would be a case for increasing the initial pot limitation form 500 to 750. A detailed report on the productivity and management of the Normandy Whelk fishery was prepared by Gascoigne *et al*. The report shows how the fishing effort on the Normandy whelk fishery increased to the detriment of the fishery, resulting in poor catch per unit effort. This increase in effort was sudden and unfortunately, management of the fishery could not affect quickly enough the fishing mortality on the Normandy whelk population. A series of management measures have been used to reduce effort including pot limitations and daily quotas.

Currently, the pot limitation is set at 720 pots per vessel. Given also that the number of vessels permitted is 70, the effort within the Normandy whelk fishery is well in excess of that in Eastern IFCA's district. However, the daily catch quota is currently set at 300kg per person (crew) up to a maximum of 900kg per vessel per day. If vessels are having to use the full 720 pots to catch 900 kg this represents a poor catch per unit effort, well below that which is anecdotally thought to be the case within Eastern IFCA's district.

The management of the Normandy whelk fishery currently includes a one-in-two-out policy to try and continue to reduce the effort in the fishery. Unless voluntarily relinquished, the management measures of the Normandy whelk fishery do not include an ability to limit the number of permits for fisheries sustainability and instead, each vessel has had to accept poor catch per unit effort and small daily quotas.

By comparison, vessels fishing within the Eastern IFCA district under the 500 pot pot-limitation are thought to catch between 1000 and 1500 kg per trip, representing a healthier catch per unit effort. At 750 pots, the estimated catch per vessel per day would be between 1500 and 1875 kg, far in excess of the current limitations in place for the Normandy fishery.

As such, the 500 pot pot-limitation still appears to be the most appropriate limitation. Given the paucity of data on the current health of the whelk stocks within the district a precautionary approach is required until such time as the IFCA can determine maximum sustainable yield. The 500 pot limitation will not restrict fishers to the same extent as in the Normandy fishery due to the higher catch per unit effort.

It is also important to note that costs of the measures have been estimated based on 2014 data which represents a peak in whelk catches which is unlikely to be sustainable in the long-term. Calculating the impacts of the measures based on the 2014 data has likely inflated the potential impacts. Furthermore, the majority of vessels who have made representation to the extent that they will not be able to go fishing have a very limited track record according to MMO landings data. The majority of the larger, company owned vessels who will be disproportionately affected by these measures have only landed whelks in one out of the last 5 years (most often 2014) and most of those landed less than 1 tonne in that year. As such, the impacts on these vessels should be considered as lost opportunity rather than an actual impact on current activity.

Granting of additional permits

The proposed initial measures do not include a limitation on the number of permits however, the Permitting Byelaw has a provision such that whelk fishing endorsements can be limited should there be a need via a proportionate process (including consultation). Several representations were made regarding concerns that additional permits granted would lead to over fishing.

An analysis was conducted to estimate the number of pot days (the number of days each pot from each vessel had fished) based on the 2014 landings data. Using this information, estimates on the number of pot days resulting from the pot limitations were determined. The results are shown in table 3.

Table 3. Estimates of the fishing effort in the whelk fishery based on 2014 data. Estimates on the reduction in fishing effort were calculated using an average catch per unit effort of 2.5 kg per pot and an average soak time of 2 days. Latent capacity was estimated assuming an average number of trips per year of 49 and shows the number of additional vessels which could join the fishery before effort reaches the peak levels seen in 2014.

Pot limitation	Pot days	% reduction	Latent capacity (number of vessels based on average)

2014 estimate (no limitation)	617,202	0	0
500 pot limitation	401,464	34.95	9.93
750 pot limitation	538,075	12.82	2.66

The analysis indicated that, assuming average fishing effort per year, an additional 10 vessels could join the fishery if operated at a 500 pot, pot-limitation compared to an additional 3 vessels in the case of a 750 pot, pot-limitation.

As such, the 500 pot, pot-limitation has the benefit of increasing the latent capacity of the fishery based on 2014 landings and effort (which saw 38 vessels actively fish in the inshore region). That said, it would not be beneficial to allow effort to increase to the levels seen in 2014 as the increase in effort is thought to have been partly responsible for the decrease in catch per unit effort (in addition to removal of pre-spawning individuals).

Permit charge

The permit charge is set at 50 pence per pot. The estimated cost has taken into account to the fishers is based on 13 vessels with 500 pots (low), 38 vessels with 500 pots (high) and 25 vessels (best). The permit charge is an annual charge which contributes to the annual cost of the whelk fishery to the public. The estimated cost to the public is £16,131 annually of which the permit charge offsets £5,838 (best estimate) reducing the cost to the public to an estimated £10,294 annually.

Public costs include the administration requirements (such as the cost of the pot tags, entering landings data into the database and processing permit applications), research requirements (developing a maximum sustainable yield model, projects regarding the size of maturity of whelks) and the enforcement costs (which includes 6 extra sea patrols and the time in man-hours to check the catch for undersize).

Increase in minimum landing size

The increase in minimum landing size will potentially reduce the amount of catch per trip in comparison to the 2014 landings data. The extent to which catch is reduced cannot be monetised for two reasons. Firstly, the size distribution of whelks within different stocklets is highly variable (for example it is thought to be different in The Wash in comparison to the North Norfolk Coast) and as such, the amount of catch lost though an increase in the mls will differ. Secondly the requirement to use escape holes in whelk pots is thought to offset the loss of catch, as has been reported from some fishers. A whelk pot will usually stop fishing when the bait has been eaten or the pot is full. By using escape holes, some fishers have reported that the whelk pots have the same number of whelks in as before but the majority are closer to 55mm in length as the smaller whelks can escape through the holes – i.e. the pots do not stop fishing when full as smaller whelks can leave the pots.

The current minimum landing size is considered in the scientific literature to be well below the size at which whelk are sexually mature. A study conducted using whelks caught off the North Norfolk coast found that the size of maturity is closer 67mm. The removal of pre-spawning individuals from a population can very quickly reduce the capability of the population to recover from fishing mortality and potentially lead to a collapse of the fishery given enough fishing effort. It is likely that the 'boom-and-bust' nature of this fishery in the past is a consequence of the removal of pre-spawning individuals given that the national mls is only 45mm.

Whilst the increase in mls may have the effect of reducing the catch of fishers in the short term, this is more than offset by potential fishing opportunities in the long-term which, without intervention, are unlikely to occur.

Requirement to riddle catch – bar spacing of 24 mm

Sorting gear (e.g. riddles or grids) are used to separate undersized whelk catch form commercial whelk catch. Informal consultation with the fishing industry has indicated that bar spacing of sorting gear varies from 20-25mm; a spacing of 20mm has been shown to be effective at selecting whelks of greater than the 45mm minimum landing size (Lawler et al 2012). Lawler et al 2012 found that the effectiveness of a riddle size depended on the location of the fishery with differences found in the width/length relationship between the four sample sites. The bar spacing at which whelk of a size of 55mm was retained varied between 23 and 24mm.

Whelks vary in width for a given length. For a given minimum landing size (length) the width of these whelk will vary and, as such, fit through riddles of different sizes. The intension of choosing a minimum bar spacing for riddles is to balance the amount of undersized whelk which will be discarded with as smaller loss of commercial sized whelk as possible.

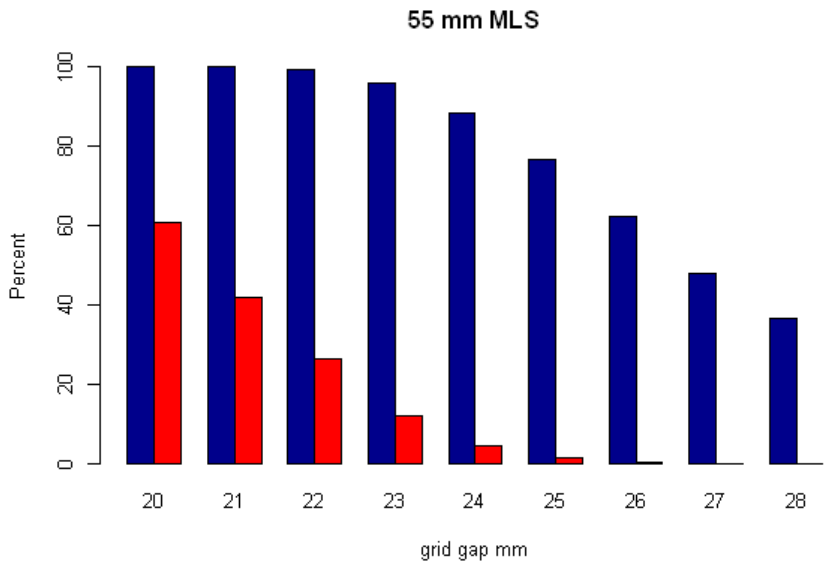


Figure 1 – extracted from Lawler et al 2012. Catch retention by riddle grid gap of both commercial (blue) and undersized (red) whelks for different assumed minimum landing sizes.

Percent

The most effective size of riddle for discarding cockles of the length 55mm would be 27 or 28mm – no whelks of 55mm will be retained (figure 1). However, this will also result in a loss of commercial whelk in the region of 50-60%.

A riddle size of 24mm would reduce the proportion of under 55mm whelk retained to under 10% and would result in the loss of commercial sized whelk in the region of 10%.

A riddle of 25mm would result of a reduction in the retention of undersized whelk to only a few percent but would reduce the retention of commercial sized whelk to around 80%.

A small study was conducted with whelk caught from within Eastern IFCA's district to ascertain if the Cefas study was comparable. As riddles select for whelks based on their width (rather than length), differences in the width-length relationship may result in differences in whelk retention. The study indicated that, for a riddle with bar spacing of 24mm, the proportion of commercial catch lost was comparable to that of the Cefas study.

A minimum riddle size of 24mm represents the best balance between a limited economic impact on the fishers whilst still having a protective effect. A study will be conducted over the next 12 months which will provide more evidence towards the most effective riddle size.

Benefits

The overriding non-monetised benefit to this option is that the fishery will operate as a more stable, long-term fishery rather than as a 'boom-and-bust' fishery as it has in the past. Given the worth (first sale value) of the whelk fishery in 2014, this could provide an important source of income to the inshore fishers and local economy.

In addition, the flexibility of this option will allow for measures to be tailored to minimise the impact on fishers where there is enough evidence – removing the necessity to rely on a precautionary approach. This will also have the effect of saving public money with regards to a streamlined process for adding, removing or varying permit conditions rather than conducting revisions to byelaws which involves more time and process.

Option 2 – Fixed byelaw provisions

The monetised costs and benefits estimated for this option are essentially the same as for option 1. The main difference between the two options relate to the non-monetised benefits of the options.

Without the flexibility of flexible permit conditions, over time the fishery may be over-fished (possibly resulting in a cost relating to reduced catch per unit effort) or under-fished with regards to maximum sustainable yield. The benefits of this option are not as great as in option 1.

In addition, this option would not allow for effort to reflect maximum sustainable yield on an annual basis and would likely not reflect Eastern IFCA's obligations under the Marine and Coastal Access Act (2009) or the Marine Strategy Framework Directive.

Option 3 – introduce flexible permit conditions only

The monetised costs and benefits estimated for this option are essentially the same as for option 1. The main difference between the two options relate to the potential reduced effectiveness of measures as flexible permit conditions.

Permit conditions have a lower penalty level (Fixed Administrative Penalties) than byelaw provisions. The benefit of using a combination of byelaw provisions and flexible permit conditions is that, where measures do not benefit from flexibility they can remain as fixed byelaw provisions to maintain the deterrent of non-compliance. In the case of all the measures being flexible permit conditions, the deterrent for non-compliance may be perceived as worth the risk and encourage offending to the detriment of the fishery's sustainability.

One In Two Out (OITO)

OITO is not applicable for byelaws as they are local government byelaws introducing local regulation and therefore not subject to central government processes.

Small firms impact test and competition assessment

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.

Conclusion

Recommended option:

The recommended option is option 1 – a combination of a flexible permit conditions issued through a generic permitting byelaw and fixed byelaw provisions as set out in a Whelk byelaw.

The implementation of a generic Eastern IFCA permitting byelaw will future proof the regulatory framework to allow for new species requiring management measures. The permitting byelaw will also allow for flexible measure which can reflect the needs of the fishery (i.e. maximum sustainable yield). In addition, the whelk byelaw will contain byelaw provisions for measures which do not require flexibility.

The cost of the measures to businesses is likely to be offset by the long-term gains of a sustainable whelk fishery. Historically the fishery has run in accordance with a 'boom-and-bust' model with high levels of fishing mortality (and the removal of pre-spawning individuals) contributing to the rapid collapse of whelk stocks within an area. These measures should reduce the risk of this occurring such that inshore fishers benefit from a more stable catch of whelks.

Annex A: Policy and Planning

Which marine plan area is the MPA and management measure in?

Have you assessed whether the decision on this MPA management measure is in accordance with the Marine Policy Statement and any relevant marine plan?

- Yes/No.

If so, please give details of the assessments completed:

- Which policies support this management measure and which policies this management measure may not comply with. For the latter, the assessor will be asked to explain the case for proceeding.
- The assessment must not consider the marine plan policies in isolation but all policies where relevant.
- Where an assessment takes place in a marine plan area that does not have an adopted marine plan consideration must be given to the MPS in the assessment.

Annex 2 – Draft Eastern IFCA Permitting Byelaw

Eastern Inshore Fisheries and Conservation Authority

MARINE AND COASTAL ACCESS ACT 2009

Eastern IFCA Permitting Byelaw 2015

The Authority for the Eastern Inshore Fisheries and Conservation District in exercise of its powers under sections 155, 156 and 158 of the Marine and Coastal Access Act 2009 hereby makes the following byelaw for the District.

Interpretation

4. In this byelaw
   a. 'the Authority' means the Eastern Inshore Fisheries and Conservation Authority as defined in Articles 2 and 4 of the Eastern Inshore Fisheries and Conservation Order 2010 (SI 2010/2189);

   b. 'District' means the Eastern Inshore Fisheries and Conservation District as defined in Articles 2 and 3 of the Eastern Inshore Fisheries and Conservation Order 2010 (SI 2010 No 2189);

   c. 'fishing' for the purpose of this byelaw includes: digging for bait; the shooting, setting, towing and hauling of fishing gear; gathering sea fisheries resources by hand or using a hand operated implement; catching, taking or removing sea fisheries resources and fish shall be construed accordingly.

   d. 'fishing gear' for the purpose of this byelaw includes: any nets, pots, ropes, anchors, surface markers, lines, dredges, grabs, rakes or other implements used or deployed during fishing.

   e. 'species' means a sea fisheries resource which is identified by science as belonging to a specific group;

   f. 'fishery' refers to a fishing activity for one or more species typified by those species or the fishing gears associated with that activity;

   g. 'permit' means the authorisation granted by the Authority under this byelaw which can also include an endorsement to fish for species or within a fishery as granted under an associated Eastern IFCA Byelaw.

h. ‘flexible permit conditions’ means the conditions under which a permit must be used in fishing for species or within fisheries, which can be issued, varied or revoked through the process set out in this byelaw.

i. ‘endorsement’ means the authorisation to fish for a species or within a fishery which is required under an associated byelaw;

j. ‘relevant fishing vessel’ means a fishing vessel;
   i. Registered on Part II of The Registry of Shipping and Seaman as governed by the provisions of the Merchant Shipping Act 1995 and the Merchant Shipping (Registration of Ships) Regulations 1993 (SI 1993/3138)
   ii. In respect of which there is a valid fishing licence issued under the Sea Fish (Conservation) Act 1967.

k. ‘vessel’ means a ship, boat, raft or watercraft of any description and includes non-displacement craft, personal watercraft, seaplanes and any other thing constructed or adapted for floating on or being submerged in water (whether permanently or temporarily) and a hover craft or any other amphibious vehicle, used or capable or being used as a means of transportation on water.

l. ‘commercial’ means to fish for sea fisheries resources for financial or other gain.

m. ‘recreational’ means to fish for sea fisheries resources not for financial or other gain (e.g. for personal consumption).

n. ‘Category One Permit’ means a permit granted for fishing for commercial purposes and as set out in paragraph 2 of this byelaw.

o. ‘Category Two Permit’ means a permit granted for fishing for recreational purposes and as set out in paragraph 3 of this byelaw.

p. ‘nominated representative’ means a person suitably qualified to skipper a vessel who has been granted permission to fish from a vessel by the owner of that vessel and whose name is included on a permit issued by the Authority.

q. ‘owner’ means the person named as the owner of a vessel in an associated Certificate of British Registry granted under The Merchant Shipping Act 1995, The Merchant Shipping (Registration of Ships) Regulations 1993, as amended. .

Permits

5. Where required by an associated byelaw, the Authority may issue a permit to a person fishing from a named relevant fishing vessel or a person who is fishing for commercial purposes by issuing a Category One Permit to the owner of that vessel;

6. The Authority may issue a permit to the owner of a vessel which is not a relevant fishing vessel who is fishing for recreational purposes by issuing a

Category Two permit;

7. The Authority may issue a permit to named person without a vessel who is fishing for recreational purposes by issuing a Category Two Permit.

8. Only one permit may be issued to a named person without a vessel.

9. Only one permit may be issued to a vessel or in respect of a named vessel.

10. Application for a permit should be made using printed forms available from Eastern IFCA. This form will require applicant and vessel details. The applicant may nominate up to 2 persons as their representatives whose details must also be entered on the application form.

11. No person, other than the permit holder or a nominated representative, shall fish for a species or within a fishery under the authority of a permit from a vessel other than the vessel named on the associated permit without firstly obtaining the agreement of the Authority. Such agreement will usually only be given in circumstances where the permit holder, named representative and/or the named vessel are unable to put to sea.

Endorsement

12. The Authority may authorise the fishing for a species or within a fishery for which a permit is required by endorsing a permit for that species or fishery.

General provisions

13. A permit holder or their named representatives must be present when fishing under the authorisation of permit.

14. The holder of a permit shall submit to Eastern IFCA, no later than the 10th day of the month following such relevant information as is required by the Authority in the discharge of its functions.

Flexible permit conditions

15. The Authority may issue flexible permit conditions which fall within one or more of the categories listed in paragraph 13.

16. The categories referred to in paragraph 12 are;
    a) Catch restrictions;

    b) Fishing Gear restrictions;

    c) Fishing Effort restrictions;

    d) Spatial restrictions;

    e) Time restrictions;

    f) A combination of the above.

17. Permit conditions for each fishery will be issued in a Permit Conditions Notice.

18. The Authority may issue, vary or revoke any Permit Conditions Notice following a review conducted in accordance with the procedure as set out in paragraphs 15 to 18.

Procedure

19. The procedure for issuing, varying or revoking a Permit Conditions Notice or restricting the number of endorsements issued in any year for fisheries management purposes shall include the following steps;

    a) Acquisition of relevant available evidence including;
        i. Scientific and survey data, and scientific advice provided by the Authority, the Centre for Environment, Fisheries and Aquaculture Sciences or such other persons as the Authority thinks fit;
        ii. Advice given by Natural England or other external authorities, organisations, persons or bodies as the Authority thinks fit; and
        iii. Information from any other relevant source including that which is relevant to effective enforcement;
    b) Consultation by such methods as the Authority considers appropriate, with such stakeholders, organisations and persons as appear to the Authority to be representative of the interests likely to be substantially affected by any flexible permit condition or restriction in the number of endorsements;
    c) Undertaking an impact assessment on the issuing, varying or revoking flexible permit conditions or any restriction in the number of endorsements.
    d) Consideration by the Authority of all information arising from subparagraphs (a) to (c) above;

20. The Authority shall review each Permit Conditions Notice no less frequently than every four years after the date that a Notice has taken effect.

21. The review of a Permit Conditions Notice will be in accordance with a formal operational procedure agreed by the Authority and shall include;
    a) The steps set out in subparagraphs 16(a) and 16(b) above and, where a variation of flexible permit conditions is being considered the steps set out in subparagraph 16(c);
    b) Consideration by the Authority of all information arising from subparagraph 16(a).

22. Where a Permit Conditions Notice is maintained, varied or revoked existing permit holders will be notified in writing.

Endorsements

23. Endorsements will be valid until the 31st of April of each year and for no longer than a 12 month period.

24. Application for an endorsement should be made using printed forms available from Eastern IFCA.

25. An endorsement will be issued on a valid permit if;

    a) A completed application form is submitted;
    b) The associated charge is paid in full; and

c) The person so applying for the endorsement meets any flexible endorsement criteria.

26. The associated charge for an endorsement shall be set out in the associated Eastern IFCA species or fishery byelaw.

27.

Flexible endorsement criteria

28. The Authority may restrict the number of endorsements issued in any year for fisheries management purposes by following a review conducted in accordance with the procedure set out in paragraph 16 above.

Application

29. Contravention of a provision of a Permit Conditions Notice constitutes a contravention of this byelaw.

Annex 3 – (Draft Eastern IFCA Permitting Byelaw) Permit conditions notice - Whelks

Eastern Inshore Fisheries and Conservation Authority

Eastern IFCA Permitting Byelaw 2015

Permit Conditions Notice – Whelks

The permit conditions relate to permits which are endorsed for the fishing of whelks under the Eastern IFCA whelk Byelaw 2015.

Interpretation

Within these permit conditions -

a. 'District' means the Eastern Inshore Fisheries and Conservation District as defined in Articles 2 and 3 of the Eastern Inshore Fisheries and Conservation Order 2010 (SI 2010 No 2189);

b. 'fishing for' includes;
   i. Using, setting or placing any fishing gear for the capture of sea fisheries resources;
   ii. Taking or removing sea fisheries resources from a fishery;
   iii. Landing sea fisheries resources.

c. 'whelk' means the marine gastropod *Buccinum undatum*;

d. 'whelk pot' means a pot or trap set for the purpose of catching whelks and which ordinarily consists of a weighted, rope or plastic container with an open top through which whelks can enter but are restricted in escaping by a mesh covering the opening;

Permit conditions

1. Pot limitation – The maximum number of tags which will be issued to a Category One permit holder with a whelk endorsement is 500.

2. Pot limitation – The maximum number of tags which will be issued to a Category Two permit holder with a whelk endorsement is 5.
3. Escape holes – all whelk pots must include a minimum of two escape holes that are positioned at least 150mm from the base of the pot or no more than 50mm from the top of the pot. These escape holes must be of a size that a bar, the diameter of which is 24mm, will pass freely through the hole. Escape holes must not be obstructed by any means

4. Sorting of catch - All whelks must be graded for size immediately after removal from the sea by passing them over or through a riddle constructed of parallel bars with a minimum spacing between bars which a gauge, the size of which is 24mm, will pass through. All whelk rejected by the riddle shall be returned immediately to the sea.
5. Minimum landing size – the minimum size for whelks caught within the District is 55mm, measured as set out in appendix one.
6. Minimum landing size - Whelk below the minimum landing size, caught within the district, shall not be retained on board or be transhipped, landed, transported, stored, sold, displayed or offered for sale, but shall be returned immediately to the sea.
7. Internal pot volume - No person shall fish for whelks using a whelk pot of an internal volume greater than 30 litres.

Commencement date:

Latest review date:

Expiry date:

I hereby certify that the above Permit Conditions Notice was made by Eastern Inshore Fisheries and Conservation Authority at their meeting on **(date)**.

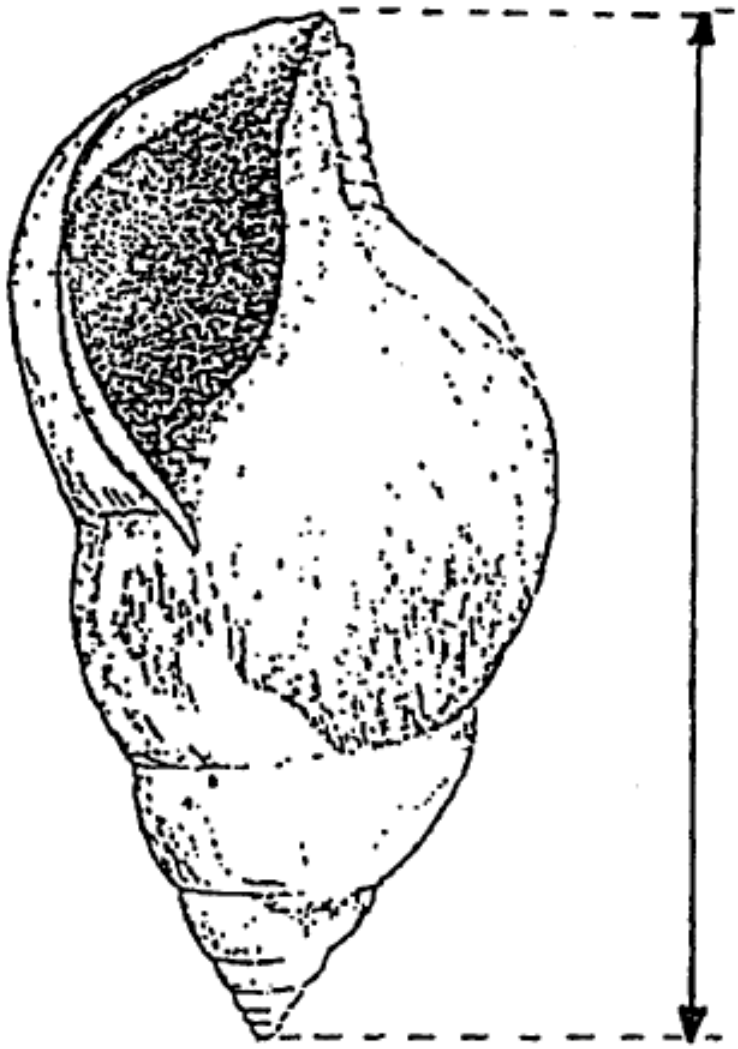
The said Permit Conditions Notice comes into effect on **(date)**

Signed: …..... (CEO)

Appendix 1

Measurement of the length of a whelk (*Buccinum undatum*) in relation to minimum landing size

The size of a whelk shall be measured as shown in figure 1 as the length of the shell.



The length of a whelk is determined as above regardless of any damage which would reduce its length.

Annex 4 – Draft Eastern IFCA Whelk Byelaw

Eastern Inshore Fisheries and Conservation Authority

MARINE AND COASTAL ACCESS ACT 2009

Eastern IFCA Whelk Byelaw 2015

The Authority for the Eastern Inshore Fisheries and Conservation District in exercise of its powers under sections 155, 156 and 158 of the Marine and Coastal Access Act 2009 hereby makes the following byelaw for the District.

Interpretation

1. In this byelaw
   a) 'the Authority' means the Eastern Inshore Fisheries and Conservation Authority as defined in Articles 2 and 4 of the Eastern Inshore Fisheries and Conservation Order 2010 (SI 2010/2189);

   b) 'District' means the Eastern Inshore Fisheries and Conservation District as defined in Articles 2 and 3 of the Eastern Inshore Fisheries and Conservation Order 2010 (SI 2010 No 2189);

   c) 'fishing' for the purpose of this byelaw includes: digging for bait; the shooting, setting, towing and hauling of fishing gear; gathering sea fisheries resources by hand or using a hand operated implement; catching, taking or removing sea fisheries resources and fish shall be construed accordingly.

   d) 'fishing gear' for the purpose of this byelaw includes: any nets, pots, ropes, anchors, surface markers, lines, dredges, grabs, rakes or other implements used or deployed during fishing.

   e) 'whelk' means the marine gastropod *Buccinum undatum*;

   f) 'whelk pot' means a pot or trap set for the purpose of catching whelks and which ordinarily consists of a weighted, rope or plastic container with an open top through which whelks can enter but are restricted in escaping by a mesh covering the opening;

General provisions

2. It is prohibited to fish for whelks within the District unless under the authority of a permit issued under the Eastern IFCA Permitting Byelaw which is also endorsed for whelks.

Prohibitions

3. It is prohibited to set whelk pots within the District unless whelk pots are marked with tags provided by the Authority.

4. The whelk permit tags shall not be transferrable and must be surrendered to the Authority immediately if no longer required by the person to whom they are issued.

5. Lost tags must be reported to the Authority within 21 days of the loss. Claims for replacement of less than 10% of tags or those issued to the holder of a Category Two Permit issued under the Eastern IFCA permitting byelaw 2015 will be considered by the Chief Executive Officer or Deputy Chief Executive Officer. Claims for more than 10% of tags for Category One Permit holders as issued under the Eastern IFCA Permitting Byelaw 2015 will be considered by an Authority Panel made up of Chairman, Vice Chairman and Chief Executive Officer or Deputy Chief Executive Officer. Appeal may be made to the full Authority if an applicant feels that their claim has not been properly dealt with. The re-issue or replacement of tags will be at a cost of 30 pence per tag.

6. It is prohibited for any person to fish for whelks using a whelk pot fitted with a tag which has previously been reported as lost.

7. It is prohibited to use fishing gear of any other description other than a whelk pot in fishing for whelks within the District.

8. It is prohibited to set whelk pots within the District unless each string of whelk pots is marked as follows;

   a) Buoys of any description but which are of sufficient size and shape to be clearly visible must be present at each end of a string of pots; and
   b) Buoys must be marked with the permit number of the permit issued under the Eastern IFCA Permitting Byelaw 2015 in such a way that they are clearly visible; and
   c) Where the endorsement is associated with a relevant fishing vessel, buoys must be marked with the Port Letters and Numbers of that vessel; and
   d) Buoys must set so as to remain fully afloat and visible at all states of tide;

Endorsement charges

9. A fee will be charged for each endorsement to fish for whelks, granted under the Eastern IFCA Permitting Byelaw which will be payable prior to the issuing of an endorsement. Charges will differ depending on the associated permit to which the endorsement is issued and are as follows;
   a) For endorsement issued in association with a Category One permit issued under the Eastern IFCA Permitting Byelaw 2015 the charge is a minimum of £50 or £0.50 per pot for endorsements over 100 pots.
   b) For endorsement issued in association with a Category Two permit issued under the Eastern IFCA Permitting Byelaw 2015 the charge is £5 per pot.

Application

10. Contravention of a prohibition constitutes a contravention of this byelaw

Regulation and Compliance Sub Committee meeting

Action Item 8

17th November 2015

Developing management measures for The Wash and North Norfolk Coast Brown shrimp beam trawl fishery

Report By: F Burrows – Marine Environment Officer (Consultations Lead)

Purpose of report

To inform the sub-committee of an Options Paper appraising seven potential management options for Brown shrimp beam trawling in The Wash and North Norfolk Coast Special Area of Conservation (SAC). To seek the sub-committee's approval to progress with the preferred management option; option 3 – *Shrimp fishery closure in waters deeper than 10 metres below chart datum (CD).*

Recommendations

Members are recommended to:

- **Note the options appraisal and conclusions of the Shrimp Management Options Paper (Annex 1);**
- **Agree that Option 3 –*Shrimp fishery closure in waters deeper than 10 metres below CD* - is the Authority's preferred management option; and**
- **Direct Officers to develop management option 3 through the development and introduction of a Regulatory Notice under the Protected Areas byelaw**
- **Note that officers will develop proposals for further management measures in the shrimp fishery**

Background

In line with Defra's Revised Approach to fisheries management in Marine Protected Areas (MPAs), Eastern IFCA has, since June 2014, completed 35 Habitats Regulations Assessments (HRAs) on fisheries active in MPAs in its district.

Site assessments (HRAs) are being carried out in a manner that is consistent with the provisions of the European Habitats[2] and Wild Birds Directives[3] (as amended)[4].

The aim of the HRAs are to determine whether management measures are required in order to ensure that fishing activities will not have an adverse effect on the integrity of the designated site. If measures are required, the Revised Approach requires these to be implemented by December 2016.

The majority of EIFCA's assessments (29) have either not progressed beyond Test of Likely Significant (TLSE) stage or have concluded "no adverse effect" either alone or in-

[2] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043&from=EN
[3] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0147&from=EN
[4] These EU directives are transposed into UK law through the Habitat Regulations: http://www.legislation.gov.uk/uksi/2010/490/contents/made

combination with other activities. Of those assessments that have concluded "adverse effect" (either alone or in-combination), three[5] involve the east coast brown shrimp (*Crangon crangon*) fishery. Adverse effect interactions involving this fishery are:

- *Shrimp beam trawling on subtidal mixed sediments* in The Wash & North Norfolk Coast Special Area of Conservation (SAC); *Shrimp beam trawling on subtidal mud* in The Wash & North Norfolk Coast SAC; and
- *Shrimp beam trawling in combination with mussel dredging on subtidal coarse sediments in The Wash & North Norfolk Coast SAC*.

An initial conclusion of adverse effect had been found for shrimp beam trawling in combination with mussel dredging on the subtidal coarse sediment sub-feature. However, after further consideration of existing management mechanisms for mussel dredging, the conclusion has been amended to "no adverse effect". Natural England's advice will be sought in relation to this amendment. The requirement, or absence of a requirement, to protect this third sub-feature of the site will affect the proportion of the site that is proposed for protection in this paper. A verbal update will be provided to the Sub-Committee to provide clarification.

The Authority has a duty under Article 6 of the Habitat Regulations (as amended) to introduce new management measures to mitigate the identified adverse effects from brown shrimp trawling to the integrity of the Wash and North Norfolk Coast SAC.

Mitigation for the "adverse effect" conclusions are being developed collaboratively and transparently with representatives of the fishery[6] . The Authority is also maintaining open dialogue with environmental non-governmental organisations (eNGOs), and other interested stakeholders (Defra agencies, other public and private agencies).

To date, mitigation measures (or combinations of more than one) that have been considered are:

- Limiting effort by licensing the shrimp fishery (either in the affected MPAs or across the entire EIFCA district)
- Effort restriction, e.g. limited number of hours fished per fortnight
- Gear management zones (where gear adaptations to reduce surface abrasion and penetration are required e.g. fly wings, wheels instead of "shoes", pulse technology)
- Seasonal closures to protect brood stock and periodically relieve habitat pressure
- Spatial closures around sensitive designated habitats

Eastern IFCA has liaised with Natural England (NE) regarding initial management measures (meetings of 6th and 21st of August 2015) and internally discussed proposed management options on 1st of September, 7th of October and 3rd of November 2015.

From internal discussions, it was decided that an options paper should be produced as a full appraisal of all potential management options for the WNNC brown shrimp fishery.

Aim and objectives

The aim of the Options Paper was to complete an appraisal of the potential management options for the brown shrimp fishery in the W&NNC SAC. Seven management options

[5] Eastern IFCA (2015) Fisheries in European Marine Sites: Habitats Regulations Assessment of inshore fishing activities in The Wash & North Norfolk Coast Special Area of Conservation (SAC).

[6] A site management board involving shrimp trawling fishers was held on 22 April 2015 and this was followed up with a shrimp industry workshop on 10 July 2015, attended by 25-30 shrimp trawling fishers. These sessions were used to present assessment conclusions and design co-managed mitigation measures.

have been derived through dialogue with the Shrimp Industry, NE and internal discussions. The options considered were:

1. Interaction reduction encompassing a combination of effort restrictions; seasonal closures; Gear Management Zones (GMZs) and subtidal habitat closures within the Wash and on the North Norfolk coast;
2. Feature-led spatial closures across the W&NNC SAC including subtidal coarse sediment (if required – see earlier paragraph), subtidal mixed sediment and subtidal mud;
3. Shrimp (Brown and Pink) fishery closure in waters deeper than 10 metres below chart datum in the W&NNC SAC;
4. Utilise a combination of GMZs and technical measures developed through innovative research;
5. Utilise technical gear restrictions across the W&NNC SAC;
6. Close the entire W&NN European Marine Site (EMS) to shrimp trawling (brown and pink shrimp); and
7. Take no management action across the W&NNC EMS

The objective of the paper was to achieve a full assessment of all management options before the Authority decides an appropriate course of action.

Approach

A strength, weakness, opportunities and threat (SWOT) analysis was conducted, and then management options were scored (0-3) and ranked according to EIFCA's legal requirements:

- Achieves compliance with the Habitat Regulations
- Achieves the "healthy seas"
- Achieves the "sustainable fisheries"
- Achieves the "viable industry"

The paper has collated the results of the SWOT analysis, scoring exercises and internal discussions to identify a preferred management option together with accompanying rationale.

Results and discussion

The results of the options appraisal and scoring exercise, in-combination with internal discussions, are summarised in Table 1 and discussed in detail below:

- Option 1 – **Discounted.** This option fulfils the Authority's legal duties under the Habitat Regulations (as amended) and duties under Section 153 of the Marine and Coastal Access Act (MaCAA 09). However, it was discounted because of the challenges of implementing and funding trials of innovative gears in the GMZs within the 2016 deadline set by Defra. There are scientific uncertainties surrounding the use of innovative gears and monitoring requirements that would result in a significant monitoring burden that is beyond the Authority's capabilities. This option would also result in complexities associated with enforcement of the spatial closures that would result in significant enforcement costs.

- Option 2: **Discounted**. This option could potentially meet the Authority's legal duties under the Habitat Regulations (as amended) and under Section 153 of the Marine and Coastal Access Act (MaCAA 09). However, given the highly dispersed and mobile nature of these subtidal habitats, it is considered that purely sub-feature-based spatial closures, regardless of whether these are for 100%, 50% or 30% of each sub-feature extent, would be challenging to implement, to monitor

and enforce. This option could become more viable in future when inshore VMS is operational.

- Option 3: **Preferred option.** This option fulfils the Authority's legal duties under the Habitat Regulations (as amended) and duties under Section 153 of the Marine and Coastal Access Act (MaCAA 09) for "healthy seas", "sustainable fisheries" and "viable industry". This option balances the need to protect the sensitive sub-features from shrimp trawling impacts and achieve the site conservation objectives, whilst at the same time, minimising impacts to the shrimp trawling activity by placing closures over areas of the site that are of less importance for the brown shrimp fishery, i.e. in waters deeper than 10m below CD. It is envisaged that this option would be applied in combination with other new fishery management measures, (e.g. a permitting scheme and the newly-introduced shrimp returns scheme) to manage gear types and fishing effort in order to foster a more biologically sustainable and economically viable shrimp fishery. These would complement the spatial habitat closures. New shrimp management measures are being considered in a separate EIFCA project (see Agenda item 6) and so option 3 would not directly include fishery management measures. For reference, Figure 1 shows the presence of all three sub-features considered under this management option together with existing EIFCA management measures as discussed in the Options paper (Annex 1).

- Option 4: **Discounted.** The Authority would not be meeting its duties under the Habitats Regulations. Natural England have advised that some form of closures are likely to be required and this option does not include closure of any part of the sub-features identified as being at risk from this fishery.

- Option 5: **Discounted**. The level of uncertainty is currently too high in relation to gear innovation – i.e. reduction of impact on sensitive sub-features is not guaranteed. Even if it were possible to conduct trials of innovative shrimp fishing gear during the next few months, the nature of the sub-features is such that longer-term monitoring would be required to assess recovery of fished areas. It is recognised that innovative gear has been proposed by some fishers for trials in the Wash; by discounting this option the Authority would not reject the notion of future technical gear restrictions, when scientific information is available on innovative gears to demonstrate benefits.

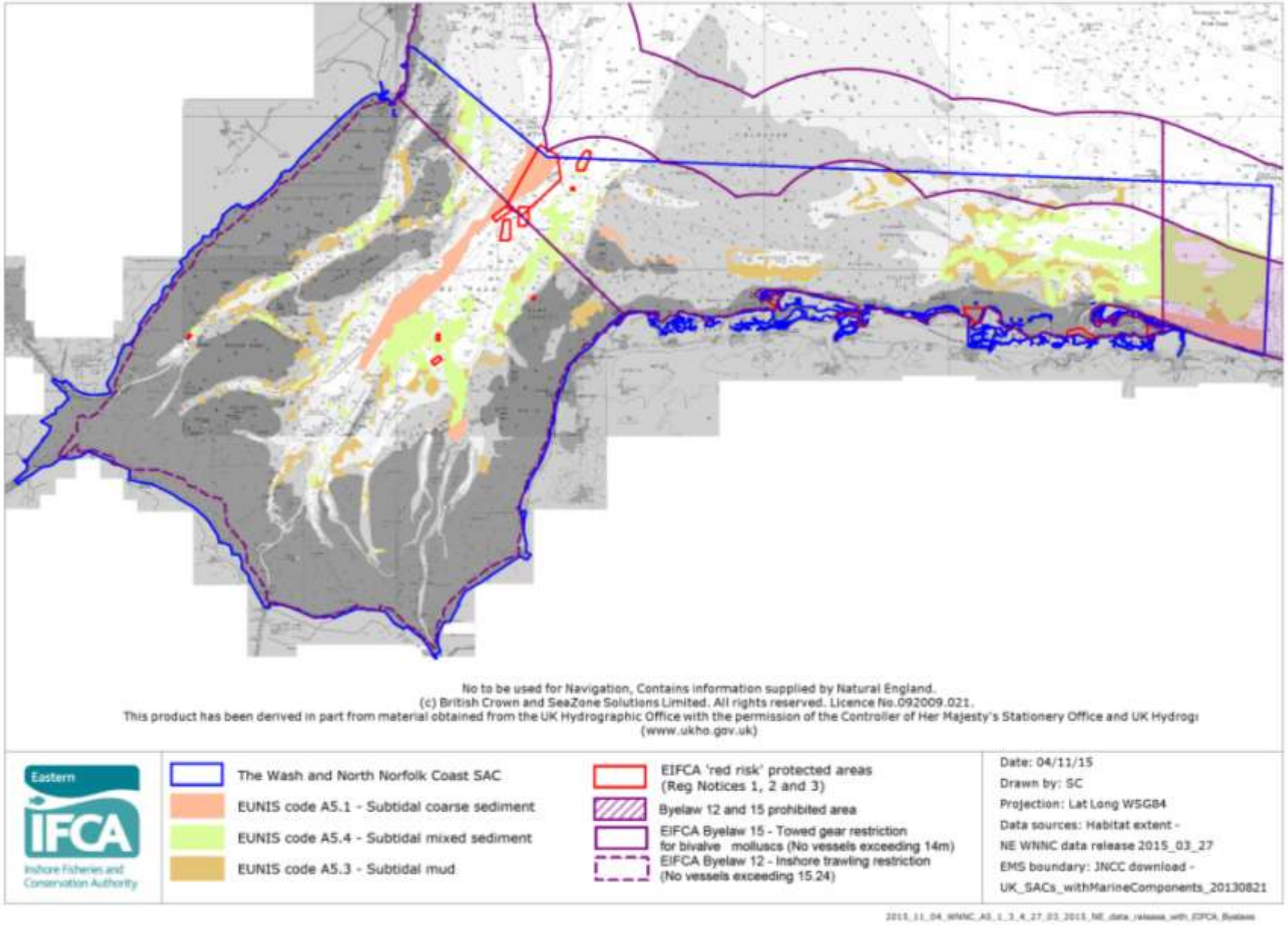
- Option 6: **Discounted**. Although the Authority would be meeting its duties under the Habitats Regulations, this intervention is considered to be disproportionate to the risk to the site from the brown shrimp fishery, and would not enable the Authority to achieve its remit in relation to supporting viable industry.

- Option 7: **Discounted.** The Authority would not be meeting its duties under the Habitats Regulations to protect site integrity. Since the Authority's assessments have identified adverse effect from brown shrimp fishing, there is a requirement to act to mitigate this effect.

Table 1. Summary of the management options scored and ranked according to EIFCA's legal drivers. Scores have been given for answers yes (2), maybe (1) to no (0) and are in parentheses. Scores are summed and options ranked according to the scores.

Option	Description	Compliance with Habitat Regulations	Achieves "healthy seas"	Achieves "sustainable fisheries"	Achieves "viable industry"	Total Score	Rank	Conclusion
1	Interaction reduction	Y (2)	Y (2)	M (1)	M (1)	6	1st	**Discounted**
2	Feature-led spatial closures across the W&NNC SAC (subtidal mixed sediment, subtidal mud and sub-tidal coarse sediment if required)	Y (2)	Y(2)	M(1)	M(1)	6	1st	**Discounted**
3	Shrimp (Brown and Pink) fishery closure in waters deeper than 10 metres below chart datum in the W&NNC SAC	Y (2)	Y(2)	M(1)	M(1)	6	1st	**Preferred Option**
4	Utilise a combination of GMZs and technical measures developed through innovative research	N (0)	M(1)	M(1)	M(1)	3	5th	**Discounted**
5	Utilise technical gear restrictions across the W&NNC SAC	M(1)	M (1)	M(1)	M(1)	4	4th	**Discounted**
6	Close the entire W&NN EMS to shrimp trawling (brown and pink shrimp	Y(2)	Y (2)	N (0)	N(0)	2	6th	**Discounted**
7	Take no management action across the W&NNC EMS	N (0)	N (0)	N (0)	N(0)	0	7th	**Discounted**

Figure 1. Extents of subtidal coarse sediment, subtidal mixed sediment and subtidal mud sub-features in the W&NNC SAC together with existing EIFCA management measures.



Conclusions

The Options Paper identified the strengths/opportunities and weaknesses/threats of potential management options for the Brown shrimp fishery in the W&NNC SAC. The paper considered options from the perspectives of regulatory bodies, the shrimp fishery and eNGOs in an effort to present a balanced appraisal.

There are numerous strengths/opportunities to using Option 3 (Table 2). There is the potential for a reduction in habitat-impacting pressures on sensitive features present in waters deeper than 10 metres below CD. There is potential that large closures (which include buffer zones) would enhance the protective effects to the sub-feature and simplify monitoring and enforcement. There is less potential for displacement impact on shrimp fishery as shrimping tends to occur in shallower waters (Table 2).

There is the potential to use fishery management measures (e.g. a permitting scheme) to manage gear types and fishing effort in order to foster a more sustainable and viable shrimp fishery. These would complement the spatial closures. New shrimp management measures are being considered in a separate EIFCA project and so option 3 would not directly include fishery management measures.

There are weaknesses/threats in pursuing Option 3. This option was based on the concept that shrimp trawling primarily occurs in waters shallower than 10 metres depth, but there are limitations in the Authority's knowledge regarding activity extent and effort. By aiming to close habitats in waters deeper than 10 metres depth, it is acknowledged that there would some exclusion and displacement but that it would be minimised where possible, to ensure there is a viable and sustainable fishery. Spatial habitat closures covering subtidal mixed sediments (and subtidal coarse sediments, if required) deeper than 10 m depth would be extensive within the site. The majority of the subtidal mud feature occurs in areas shallower than 10m below CD, so it is envisaged that additional closures for subtidal mud in waters shallower than 10m depth could be required to ensure this sub-feature is adequately protected across the SAC. The locations and extents of the closures though not yet determined, will present an enforcement challenge. However, the newly-introduced shrimp fishing returns scheme, coupled with the forthcoming introduction of inshore vessel monitoring systems and a risk-based approach to enforcement, should maximise monitoring and management of fishing activity. There is a risk of legal challenge from eNGOs and the fishing industry should management option 3 be perceived as unacceptable (Table 2).

Table 2. SWOT analysis for Option 3.

Strengths	Weaknesses
• Reduction in habitat-impacting pressures on sensitive features present in waters deeper than 10 metres below CD. • Potential that large closures (including buffer zones) would enhance the protective effects to the sub-feature and simplify monitoring and enforcement. • Less impact on shrimp fishery as shrimping is more prevalent in shallower water. Less displacement as a result. • Complements other shrimp fishery	• High uncertainty in relation to spatial distribution of shrimp fishing activity (affects options 1-5);. • Additional closures in waters shallower than 10m depth for subtidal mud could be needed; this could disproportionately impact shrimp activity in shallower parts of the site. • Some risk of fishery exclusion and loss of access to traditional fishing grounds; particularly if the currently minimal pink shrimp fishery were to re-emerge. • Potential displacement of trawling activity leading to increased exposure of other sub-features to damaging pressures.

measures, e.g. current shrimp fishing returns scheme, future Eastern IFCA shrimp permitting scheme, future operation of inshore vessel monitoring systems and future gear innovation	• Spatial habitat closures present an enforcement challenge, but the shrimp fishery returns scheme and the introduction of inshore vessel monitoring systems may help.
Opportunities	**Threats**
• Opportunity for scientific study to compare ecology of closed areas and fished areas.	• Risk of legal challenge from eNGOs and fishery sectors. • Lack of funding to enable assessment of effectiveness of measure

The Authority seeks to ensure that, as far as possible, all management decisions are evidence-based and balance the needs of all stakeholders. As such, further work will be undertaken by officers to investigate the fishery and environmental opportunities of using spatial habitat closures. The spatial habitat closures will be considered with the forthcoming introduction of regulation for the shrimp fishery. A formal risk assessment to identify and manage/mitigate risks to the Authority's duties will also be completed.

The Authority has to fulfil legal duties as a Relevant Authority under the Habitat Regulations (as amended) and our mandated duties under Section 153 of MaCAA 09; "*securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry".* It is concluded that Option 3 fulfils the Authority's legal requirements as described and has the greatest potential to protect large extents of sensitive, designated sub-features whilst supporting the continuation of a viable shrimp industry in the W&NNC SAC. Moreover, Option 3 is an achievable management approach given Defra's 2016 management deadline, and the Authority's limited resource availability for feature monitoring and fishing activity enforcement. It is for these reasons that Option 3 is recommended to be taken forward by the Authority for further development during Q4 2015/16 and Q1-Q2 2016/17.

Next steps

If Option 3 is approved by the sub-committee, Officers will need to take the following steps:

- Determine the inclusion or exclusion of subtidal coarse sediment within management option 3;
- Determine spatial closures and a condition monitoring plan for the protected sub-features;
- Conduct stakeholder consultation;
- Complete an Impact Assessment; and
- Produce a new Regulatory Notice to be approved under the existing Protected Areas Byelaw.

Annex 1 – Shrimp management options paper

Options paper: Developing management measures for The Wash and North Norfolk Coast Brown shrimp beam trawl fishery

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.

Revision history

Version	Date	Revision	Editor
1.0	08/09/15	Document created for first review	FB
1.1	07/10/15	Document with comment for update to next version	JCS
1.2	12/10/15	Updated version 1.1 with internal comments for sections 2-4.	FB
2.0	04/11/15	Updated v 1.2 following internal comments and meeting of 03/11/15.	FB

Contents Page

Executive Summary

Eastern IFCA (hereafter, "The Authority") has, in line with Defra's Revised Approach to fisheries management in Marine Protected Areas (MPAs), completed Habitats Regulations Assessments (HRAs) on fisheries active in MPAs in its district.

Of those assessments that have concluded "adverse effect" (either alone or in-combination), three involve the east Brown shrimp (*Crangon crangon*) fishery. Adverse effect interactions involving this fishery are:

- *Shrimp trawling on subtidal mixed sediments* in The Wash & North Norfolk Coast Special Area of Conservation (SAC)
- *Shrimp trawling on subtidal mud* in The Wash & North Norfolk Coast SAC
- *Shrimp trawling (in combination with mussel dredging and dredge disposal) on subtidal coarse sediments* in The Wash & North Norfolk Coast SAC

The pink shrimp (*Pandalus montagui*) beam trawl fishery was not assessed as there is not considered to be a viable fishery for *P. montaguii* currently (Lake, *pers. comm*.; Wash-based fisherman).
An initial conclusion of adverse effect had been found for shrimp beam trawling in combination with mussel dredging on the subtidal coarse sediment sub-feature. However, after further consideration of existing management mechanisms for mussel dredging, the conclusion has been amended to "no adverse effect". Natural England's advice will be sought in relation to this amendment. The requirement or absence of a requirement, to protect this third sub-feature of the site will affect the proportion of the site that is proposed for protection in this paper. An update will be provided once this matter has been resolved.

The Authority has a duty under Article 6 of the Habitat Regulations (as amended) to introduce new management measures to mitigate the identified adverse effects from shrimp trawling on the site integrity of the Wash and North Norfolk Coast SAC. The Authority has internally considered 7 management options through an options appraisal:

Option 1 – Interaction reduction

Option 2 - Feature-led spatial closures across the W&NNC SAC including subtidal coarse sediment, subtidal mixed sediment and subtidal mud.

Option 3 - Shrimp fishery closure in waters greater than 10 metres below chart datum (CD).

Option 4 - Utilise a combination of Gear Management Zones (GMZs) and technical measures developed through innovative research.

Option 5 – Technical gear restrictions to be used by all shrimp vessels active in the W&NNC SAC.

Option 6 - Close the entire W&NNC EMS to shrimp trawling (brown and pink shrimp)

Option 7 - Take no management action across the entire W&NNC EMS

The options appraisal has been conducted in conjunction with a scoring of the management options against the Authority's legal duties under the Habitat Regulations (as amended), and our mandated duties under Section 153 of the Marine and Coastal Access Act 2009.

The results of the options appraisal and scoring exercise show that Option 3 is the preferred option to be progressed by the Authority as part of formal management measures development (project EP2015E). Option 3 is compliant with the Habitat Regulations (as amended) as it will involve closing off the SAC deeper than 10 metres

below CD to protect areas of subtidal coarse sediment, subtidal mixed sediment and subtidal mud (in addition to other habitats) from shrimp trawling impacts (alone and in-combination with other fishing activities). Also, option 3 has the greatest potential for enabling the Authority to realistically achieve its mandated duties for balancing the needs of all stakeholders and seeking to ensure a healthy marine environment, sustainable fisheries and viable industry, given existing resources and timescales.

The following actions are recommended next steps by the Officers:

a) Present the options paper to the Regulatory and Compliance Sub-Committee to seek approval for option 3;
b) Progress management measures in line with the committee's decision; and
c) Complete informal data gathering, formal stakeholder consultation, develop monitoring proposals, develop/amend regulation, and implement the preferred management option by December 2016.

1. Introduction

1.1 Background

In line with Defra's Revised Approach to fisheries management in Marine Protected Areas (MPAs), Eastern IFCA has, since June 2014, completed 35 Habitats Regulations Assessments (HRAs) on fisheries active in MPAs in its district.

Site assessments (HRAs) are being carried out in a manner that is consistent with the provisions of the European Habitats[7] and Wild Birds Directives[8] (as amended)[9].

The aim of the HRAs are to determine whether management measures are required in order to ensure that fishing activities will not have an adverse effect on the integrity of the designated site. If measures are required, the Revised Approach requires these to be implemented by December 2016.

The majority of EIFCA's assessments (29) have either not progressed beyond Test of Likely Significant (TLSE) stage or have concluded "no adverse effect" either alone or in-combination with other activities.

Of those assessments that have concluded "adverse effect" (either alone or in-combination), three[10] involve the east coast brown shrimp (*Crangon crangon*) fishery. Adverse effect interactions involving this fishery are:

- *Shrimp trawling on subtidal mixed sediments* in The Wash & North Norfolk Coast Special Area of Conservation (SAC)
- *Shrimp trawling on subtidal mud* in The Wash & North Norfolk Coast SAC
- *Shrimp trawling (in combination with mussel dredging and dredge disposal) on subtidal coarse sediments* in The Wash & North Norfolk Coast SAC

See Annex 1 for an evidence summary (sources and confidence ratings) of fishing activity used within the Authority's WNNC HRAs. See Annex 2 for an evidence summary (sources and confidence ratings) of features assessed in the W&NNC HRAs.

An initial conclusion of adverse effect had been found for shrimp beam trawling in combination with mussel dredging on the subtidal coarse sediment sub-feature. However, after further consideration of existing management mechanisms for mussel dredging, the conclusion has been amended to "no adverse effect". Natural England's advice will be sought in relation to this amendment. The requirement or absence of a requirement, to protect this third sub-feature of the site will affect the proportion of the site that is proposed for protection in this paper. An update will be provided once this matter has been resolved.

The Authority has a duty under Article 6 of the Habitat Regulations (as amended) to introduce new management measures to mitigate the identified adverse effects from brown shrimp trawling to the integrity of the Wash and North Norfolk Coast SAC.

The Authority has sought advice from Natural England (NE) in relation to theses assessments. NE has agreed with the conclusions made by EIFCA and is supporting the Authority in identifying appropriate mitigation i.e. that ensures the Authority is meeting its duties under the Habitat Regulations (as amended).

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[7] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043&from=EN
[8] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0147&from=EN
[9] These EU directives are transposed into UK law through the Habitat Regulations: http://www.legislation.gov.uk/uksi/2010/490/contents/made
[10] Eastern IFCA (2015) Fisheries in European Marine Sites: Habitats Regulations Assessment of inshore fishing activities in The Wash & North Norfolk Coast Special Area of Conservation (SAC).

Mitigation for the "adverse effect" conclusions are being developed collaboratively and transparently with representatives of the fishery[11] . The Authority is also maintaining open dialogue with environmental non-governmental organisations (eNGOs), and other interested stakeholders (Defra agencies, other public and private agencies).

To date, mitigation measures (or combinations of more than one) that have been considered are:

- Limiting effort by licensing the shrimp fishery (either in the affected MPAs or across the entire EIFCA district)
- Effort restriction, e.g. limited number of hours fished per fortnight
- Gear management zones (where gear adaptations to reduce surface abrasion and penetration are required e.g. fly wings, wheels instead of "shoes", pulse technology)
- Seasonal closures to protect brood stock and periodically relieve habitat pressure
- Spatial closures to prevent physical interactions between the shrimp fishing gear and sensitive sub-features.

Eastern IFCA has liaised with Natural England (NE) regarding initial management measures (meetings of 6th and 21st of August 2015) and internally discussed proposed management options on 1st September 2015.

From internal discussions, it was decided that an options paper should be produced as a full appraisal of all potential management options for the WNNC brown shrimp fishery.

1.2 Aim and objectives

The aim of this paper is to complete an appraisal of the potential management options for the brown shrimp fishery in the W&NNC SAC. Seven management options have been derived through dialogue with the Shrimp Industry, NE and internal discussions. The options for consideration are:

8. Interaction reduction encompassing a combination of effort restrictions; seasonal closures; Gear Management Zones (GMZs) and subtidal habitat closures within the Wash and on the North Norfolk coast;
9. Feature-led spatial closures across the W&NNC SAC including subtidal coarse sediment, subtidal mixed sediment and subtidal mud;
10. Shrimp (Brown and Pink) fishery closure in waters deeper than 10 metres below chart datum (CD) in the W&NNC SAC;
11. Utilise a combination of GMZs and technical measures developed through innovative research;
12. Utilise technical gear restrictions across the W&NNC SAC;
13. Close the entire W&NN EMS to shrimp trawling (brown and pink shrimp); and
14. Take no management action across the W&NNC EMS

The objective of the paper is to achieve a full assessment of all management options before the Authority decides an appropriate course of action.

[11] A site management board involving shrimp trawling fishers was held on 22 April 2015 and this was followed up with a shrimp industry workshop on 10 July 2015, attended by 25-30 shrimp trawling fishers. These sessions were used to present assessment conclusions and design co-managed mitigation measures.

1.3 Approach

A strength, weakness, opportunities and threat (SWOT) analysis has been conducted to inform an internal appraisal of the seven management options. This approach enables a balanced appraisal of all available management options and will facilitate decision making and the development of management during 2015-2016. The SWOT analyses are presented in Section 2.

In section 3, management options have been scored and ranked according to the following legal requirements:

- Achieves compliance with the Habitat Regulations
- Achieves the "healthy seas"
- Achieves the "sustainable fisheries"
- Achieves the "viable industry"

Scores have been given for answers yes (2), maybe (1) to no (0). Scores are summed and options ranked according to the scores.

In section 4, the SWOT analysis and scoring exercise are drawn together to present the potential options for decision making.

2. Options appraisal

Option 1 – Interaction reduction

Option 1 would encompass a combination of effort restrictions; seasonal closures; Gear Management Zones (GMZs) and subtidal habitat closures within the Wash and on the North Norfolk coast.

Fishing management measures are likely to be, but are not limited to;

- Limiting effort by licensing the shrimp fishery
- Effort restriction, e.g. limited number of hours fished per fortnight
- Seasonal closures to protect brood stock and periodically relieve habitat pressure
- Utilising gear adaptations e.g. fly wings, wheels instead of "shoes", pulse technology and trialling these in the GMZs

The first three options; limiting fleet effort and temporal and spatial effort restrictions, would apply to the entire shrimp trawling fleet that may be active across all of the SAC. Reducing shrimp trawling effort across the entire SAC is aimed at reducing the spatial/temporal "footprint" of the shrimping fleet. Consequently, this should reduce habitat impacting pressures exerted by shrimp trawling specifically across subtidal mixed sediment, subtidal mud and subtidal coarse sediment, where adverse effects have been concluded.

Shrimp trawling would not be permitted during periods when a significant proportion of the population is comprised of juvenile shrimps. The closure assumes a maximum three months per year closure to all shrimp fishing and that the same effort patterns will be observed under the constraints of a closed season.

Gear innovations to reduce surface abrasion and penetration would be required and may include fly wings, wheels instead of "shoes", or pulse technology. A definitive list of gear innovations has not yet been determined by the Authority. It is anticipated that the list will depend on a number of factors:

- Emerging scientific research within the UK and The Netherlands regarding shrimp gear modifications;
- Financial support, either privately from the Industry, or through the European Fisheries Fund or other (EU) funding;
- Willingness and cooperation from the Shrimp Fishing Industry to invest in modified gears and participate in trials; and
- Technical support for the Industry and for Eastern IFCA as the responsible Fisheries Regulator. Support may be available through organisations like the National Federation of Fishermen's Organisations, SeaFish and from academic fishery researchers.

The GMZs would be "impact" sites where the effects of innovative gears (based on best available techniques) are trialled by experimental trawling across the subtidal features (subtidal coarse sediment, subtidal mixed sediment and subtidal mud). No trawling activity would occur in control areas which are to also function as spatial habitat closures. GMZs and control areas would be needed across the three sub-features for a comparable monitoring programme. It is anticipated that one GMZ and one control area would be located across each sensitive habitat in The Wash and on the North Norfolk Coast. The location, number and extent of the GMZs and control areas are yet to be decided or confirmed with stakeholders. Careful planning of locations to would be needed to ensure that GMZs do not overlap with current closed areas for *Sabellaria* reef and cobble and boulder geogenic reef protected under Eastern IFCA's Protected Areas Byelaw.

Gear innovations would need to be trialled within the GMZs. This approach would be based upon a Before-After-Control-Impact (BACI) monitoring programme. With the BACI approach, benthic biotopes within the GMZs (impact sites) and habitat closures (control sites) are monitored before and after management measures are introduced. Monitoring would be required for a length of time according to the monitoring objectives. Regular review of monitoring data as part of the Authority's adaptive management approach would be required.

If Option 1 were to be pursued, then funding would need to be identified and secured for completion of the gear trials and monitoring. At the same time, a robust monitoring programme would need to be developed. Expertise and support from academic institutes experienced in benthic habitat monitoring and fisheries impacts could be utilised. The monitoring programme would then need to be approved by NE before implementation.

The Authority would need to work collaboratively with the Shrimp Industry and fishing representatives to define and agree on a list of gear(s) innovations to be trialled. Some Shrimp Industry representatives have already approached the Authority to request assistance with gear trials during 2016.

Seasonal closures would be required to protect juvenile shrimp and to maintain the value of the fishery catch. Liaison with the Shrimp Industry would be required to agree an optimum period for annual seasonal closures.

Habitat closures would involve discrete spatial closures around sub-sections of subtidal coarse sediment, subtidal mixed sediment and subtidal mud features. The habitat closures would be the control sites and would need to be located in the Wash and on the North Norfolk Coast as part of a BACI designed monitoring programme. The sub-sections would be identified according to feature sensitivity and need to be approved by NE. New regulatory notices, under the Authority's Protected Area Byelaw, would be required to implement spatial closures around subtidal mixed sediment and subtidal mud. Once in place, the Authority's enforcement team would need to undertake compliance monitoring of the closed areas as per the Authority's risk-based Enforcement Policy[12].

Strengths and opportunities

The adoption of spatial habitat closures specifically on the sensitive areas of features most at risk from shrimp trawling could, potentially, mitigate the adverse physical damage pressures identified in our HRAs[4]. Consequently, The Authority would fulfil its legal obligation as a Relevant Authority under the Habitat Regulations[13].

Utilising a balanced approach whereby there are fishery-based management measures (effort capping and effort restrictions, gear innovations and trials within the GMZs) and spatial habitat closures, could be perceived as being proportionate and seeking to balance the needs of all stakeholders as per the Authority's vision: "securing the right balance of healthy seas, sustainable fisheries and viable industry" (Section 153 of MaCAA 09).

Working collaboratively with the industry (and other stakeholders) may encourage the Shrimp Industry to take ownership for trialling of gear adaptations and complying with restriction on effort, such as the seasonal closure for shrimp trawling. This would be beneficial for the industry because shrimp processors are currently seeking to meets the standards required for Marine Stewardship Council certification[14] of the Brown shrimp fishery. During the pre-assessment stage for MSC accreditation, the fishery required improvements under Principle 1 - The stock, Principle 2 – Impacts on the environment,

[12] http://www.eastern-ifca.gov.uk/documents/Enf%20Policy.pdf
[13] http://www.legislation.gov.uk/uksi/2010/490/regulation/6/made
[14] https://www.msc.org/get-certified/fisheries

and Principle 3 - Stock management[15]. In addition, under Article 17 of the revised Common Fishery Policy[16], there will be national incentives for the Shrimp Industry to adopt more selective fishing techniques/gears to reduce habitat/environmental impacts based on the UK's.

A combination of effort restriction through licensing the shrimp fishery and utilising temporal and spatial trawling restrictions could reduce overall levels of effort. Reducing the fishery "footprint" in this way could reduce the interaction of gears within the sensitive subtidal habitats.

The assessments of shrimp trawling are based on a "footprint" of the shrimping fleet that may be an overestimate due to limitations associated with the fishing activity evidence (See Annex 1 for details). By taking steps to improve our knowledge of shrimping trawling activity and reducing effort through new management measures, the "footprint" of the fishery (that triggered an adverse effect conclusion) could be reduced.

Conservation eNGOs may perceive this management option as potentially favourable. This is because it aligns with national eNGO campaigns for conserving designated site features and encouraging an ecosystem-based approach to environmental management.

Weaknesses and threats

This option draws on measures being implemented for the Brown shrimp fishery in the Dutch North Sea Coastal Zone SAC. Research into the effectiveness of the management measures in this Dutch European Marine Site (EMS) is in the early stages. Therefore, The Authority must be proportionate and implement management measures reflecting the high levels of scientific uncertainty surrounding the use of innovative shrimp trawling gears and potential habitat impacts. This means that we face a high monitoring burden leading to a monitoring programme that is potentially beyond the Authority's current resources and capabilities. There is also a major issue that the Authority cannot finance (and should not finance) costs associated with the GMZ gear trails and condition monitoring. Therefore, this option would be financially reliant on the industry to source all funding or for us to partially source funding, for example through European Fisheries Fund or the EU Life Programme.

Some members of the Shrimp Industry are likely to challenge the spatial closures on account of the potential economic impacts resulting from exclusion of fishing activity and non-acceptance of the conclusions reached in the EIFCA HRAs. Also, displacement of effort from any closed areas could result in increased impacts to sub-features in areas that have not been closed.

From a conservation perspective, there is the risk that eNGOs could still legally challenge the robustness of the management option if this option is perceived not to be effective or proportionate to the risks to the designated features.

[15] http://www.eastern-ifca.gov.uk/documents/Shrimp%20Pre%20Assessment%20FINAL%2030.11.11.pdf
[16]

Table 1.1 SWOT analysis for Option 1

Strengths	Weaknesses
• Places restrictions (closed areas) specifically over sensitive habitats as specified by Natural England (NE). • Achieves compliance with Article 6 of Habitat Regulations; closed areas likely to mitigate adverse impacts on the designated site features. • Matches similar approaches in Dutch EMSs for shrimp trawling. • Perceived by stakeholders to be proportionate, adaptive and balancing the Authority's remit of "healthy seas, sustainable fisheries and viable industry". • Aligns with EIFCA's introduction of further fishing regulation for shrimp trawling. • Effort capping and restricting effort both spatially and temporally should lower overall effort across the shrimping fleet. This may reduce subtidal habitat impacting pressures. • There is drive and some level of financial support amongst the industry and representatives to initiate technological innovations and enhance fishery sustainability.	• High uncertainty and lack of evidence for shrimp trawling exclusive to 0-10 metres depth. • Reliance on the Shrimp Industry to take "ownership" and lead in trialing gears and show willingness to participate in trials. • Upfront costs to fishers in relation to modified gears (which may disproportionally affect independent vessels). • Displacement of fishing effort into other parts of the site that are not protected. • Dependent on a significant monitoring commitment. • Uncertainty over what is an acceptable threshold of fishing effort on the sensitive sub-features.
Opportunities	**Threats**
• Collaborative and evidence-led working between the Authority, Shrimp industry, fishing industry bodies and research institutes to collectively develop technical gear improvements. • Innovative and adaptive approach to management in an EMS. • Potential fishery sustainability benefits and support for achieving MSC certification by the Shrimp Industry. • Collaborative approach may enhance industry compliance with new management measures.	• Uncertainty regarding the effectiveness of the GMZs and gear trials, uncertainty over recovery of sub-habitats in closed areas and long-term plans for management after trials are complete. • Uncertainty at present, over funding streams and degree to which the Industry or the Authority would partially or wholly fund new gears and monitoring work. • Risk of judicial review by eNGOs/fishers if the Authority's management options are not seen as efficient or effective.

• Ecosystem-based approach to management, aimed at enhancing marine biodiversity in the closed areas. • National incentives under Article 17 of the revised Common Fisheries Policy may incentivize the Shrimp Industry to use selective fishing gears/techniques.	

Option 2 - Feature-led spatial closures across the W&NNC SAC including subtidal coarse sediment, subtidal mixed sediment and subtidal mud

Under Option 2, the Authority would implement spatial closures over areas of subtidal coarse sediment, subtidal mixed sediment and subtidal mud in the W&NNC SAC. The finalised extent of the closures has not been decided so for the purposes of this paper, closures have been considered around three scenarios; 30%, 50% and 100% of the extent of the three sub-features (Table 2.1). The maximum extent of each feature would be protected by closing 100% to trawling whilst the minimum would be 30% of the feature closed to shrimp trawling. Table 2.2 presents a break-down of the propose feature closures as proportions of the total area of the W&NNC SAC. Up to 14.29% of the total SAC could be closed to shrimp trawling with a 100% feature closure, whereas 7.13% and 4.28% of the total area of the SAC would be closed in the 50% and 30% feature closures (Table 2.2).

Table 2.1 Extent of the three sub-features in the W&NNC SAC to be protected through a 100%, 50% or 30% spatial closure.

	100% closure	**50% closure**	**30% closure**
Sub-feature			
Subtidal coarse sediment	27.5 km^2	13.7 km^2	8.25 km^2
Subtidal mixed sediment	80.9 km^2	40.5 km^2	24.3 km^2
Subtidal mud	45.1 km^2	22.5 km^2	13.5 km^2
Total	**153.50 km^2**	**76.75 km^2**	**46.05 km^2**

Table 2.2 Extent of the three sub-features in the W&NNC SAC to be protected through a 100%, 50% or 30% spatial closure as a proportion of the total W&NNC SAC area.

	100% closure	**50% closure**	**30% closure**
Sub-feature			
Subtidal coarse sediment	2.56%	1.27%	0.77%
Subtidal mixed sediment	7.53%	3.77%	2.26%
Subtidal mud	4.20%	2.09%	1.25%
Total	**14.29% of the SAC area**	**7.13% of the SAC area**	**4.28% of the SAC area**

Introducing new spatial towed gear closures over the most sensitive habitat areas, using the Authority's Protected Areas Byelaw is a potential mitigation option. Spatial closures over 100% the subtidal coarse sediment, subtidal mud and subtidal mixed sediment habitats would amount to 14.29% of the site being closed to the shrimp fishery, whereas

4.28% of the site would be closed under a 30% scenario of closure[17]. The extent of closures for each sub-feature would need to be agreed with NE before this management option could be implemented via new regulatory notices under the Authority's protected area byelaw.

It should be noted that 82.37% of Subtidal coarse sediment is already protected in the site under the Wash Fishery Order 1992, Eastern IFCA Byelaws 12 and 15, and under Regulatory Notice 2 of the Protected Areas byelaw. Therefore, the total amount of this sub-feature that would require protection with a new closure is 4.85km^2 or 17.6% of this sub-feature.

Strengths and opportunities

From a regulatory perspective, this option could mitigate the adverse physical damage pressures identified in our HRAs[4]. Consequently, we would fulfil our legal obligation as a Relevant Authority under the Habitat Regulations[18]. However, this depends on the closure extent for each feature, as NE may want 100% as opposed to a partial closure of 50% or 30%.

Partial closures to protect *Sabellaria spinulosa* reef and boulder and cobble reef (Annex 1 habitat) are already in operation and complement the introduction of closures around subtidal mixed sediment habitat.

We could be perceived as meeting our vision for "healthy seas" which accords with our environmental duties under Section 153 of the Marine and Coastal Access Act 2009 (MaCAA 09). Again, this is dependent on the extent of the feature-led closures.

From a conservation perspective, this option could be perceived as a positive, ecosystem-based approach to marine environmental management. This is because the habitats within the closed areas are afforded protection, which may facilitate recovery and restoration of ecosystem structure, function and processes. In turn, ecosystem services and good provision may be enhanced through a more resilient WNNC ecosystem. In addition, this option aligns with national eNGO campaigns to exclude damaging fishing practises in EMS on the grounds of conserving the designated site features.

Weaknesses and threats

Given the highly dispersed and mobile nature of these subtidal habitats, it is considered that spatial closures, regardless of whether these are for 100%, 50% or 30% of each sub-feature extent, would be challenging to implement, to monitor and enforce.

From the Shrimp Industry's perspective, closing a maximum of 14.29% of the total area of the SAC and thus restricting fishing access could be seen as detrimental to the fishery. The Wash Brown Shrimp fishery is viewed as a traditional fishery (part of the East Anglia coastal tapestry) and of significant national economic value[19]. There is a reputation risk if the Authority were to be challenged by the industry for locating the spatial closures in fishing areas. We may also be perceived to be biased in favouring conservation over our remit for "sustainable fisheries and viable industry".

The fishery may experience displacement due to exclusion from the closures (of any extent) and displaced effort could be directed on other areas of the SAC or outwith of the SAC, into the jurisdiction of other IFCAs.

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[17] This calculation does not include buffer zones and also does not address the fact that both subtidal features are so patchy that larger-scale closures would probably need to be implemented in order to be practically enforceable.

[18] http://www.legislation.gov.uk/uksi/2010/490/regulation/6/made

[19] Approximately 90% of the UK landings of this species are caught from within the site (ICES, 2010).

Closure of any proportion of these habitat areas is likely to disproportionately reduce shrimp fishing opportunities, because the whole site is not targeted evenly. Shrimp fishing is predominantly undertaken in shallow water (up to 20m depth) and in channels between intertidal sandbanks. The remaining open areas are also likely to be more heavily targeted.

Table 2.3 SWOT analysis for Option 2.

Strengths	Weaknesses
• Potentially mitigates adverse effects to the subtidal sensitive habitats. • Meets the "healthy seas" part of EIFCA's vision. • Is an ecosystem-based approach to management; promotes enhanced marine biodiversity and increased resilience of designated habitats/species. • Accords with eNGO campaigns advocating the exclusion/banning of fishing gears considered to be damaging to EMS designated features.	• High uncertainty and lack of evidence for shrimp trawling exclusive to 0-10 metres depth. • The mobile nature of the sub-features means that discrete spatial closures of 100%, 50% or 30% of the feature extents may be unsuitable. • Spatial closures generate significant challenges for enforcement and condition monitoring. • Exclusion of fishery and loss of access to traditional fishing grounds. • Impacts to a socio-economically valuable fishery of national importance. • Potential displacement of trawling activity to other EMS or outside of our district, resulting in interaction and potential conflict with other fisheries and non-fishing activities.
Opportunities	**Threats**
• Potential enhancement of marine biodiversity within the site and ecosystem services provision.	• Less buy-in from the industry could lead to increased enforcement issues. • Risk of legal challenge from fishing sector and requirements for monetary compensation. • Reputational risk – EIFCA considered to be biased towards eNGOs and neglecting our vision for "sustainable fisheries" and "viable industry".

Option 3 - Shrimp fishery closure in waters deeper than 10 metres below CD.

Anecdotal evidence from fishers and EIFCA expert knowledge suggests that Brown shrimp trawling can occur where water depths across the SAC are greater than 10 metres below chart datum (CD). This is partially supported by EIFCA sightings identifying the trawling activity within subtidal areas of the Wash embayment and on the North Norfolk Coast (Fig.1).

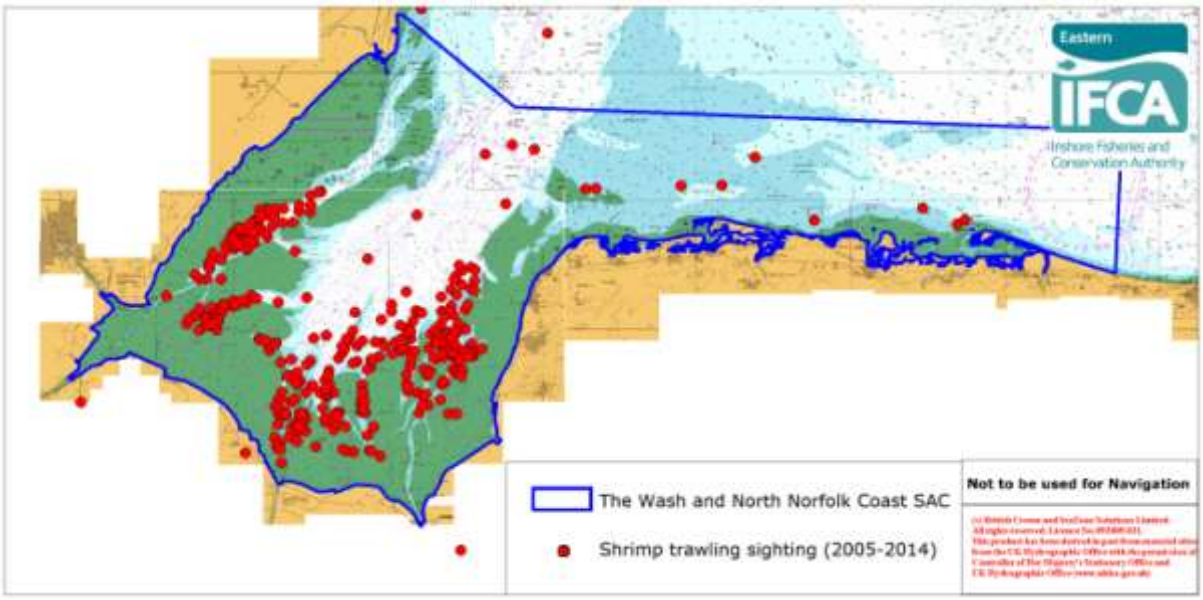

Fig. 1. Spatial distribution of shrimp trawling vessel sightings in The Wash and North Norfolk Coast SAC 2005-2014.

Shrimp trawling may occur in waters deeper than 10 metres below CD for several reasons. Firstly, there are areas of subtidal sediment across the W&NNC SAC at this depth range with the preferred particle size for brown shrimp burial (Pinn and Ansell, 1993) as well as subtidal habitat suitable for Pink shrimp (*P. montagui*). Secondly, environmental variables e.g. temperature and tidal forcing may result in the migration of Brown shrimp into deeper waters (i.e. > 10 metres). Thirdly, fishing activity may be influenced by the behaviours of the fishers e.g. trading off steaming time, potential catch returns and market demand.

Physical disturbance from shrimp trawling may be more significant to the sub-features than natural disturbance (wave-driven and tidally-driven currents) in waters deeper than 10 metres below CD. This means that sub-features present across the depth gradient of 10-50m may have variable sensitivities to fishing-induced disturbance as a result of less exposure to natural disturbance. Subtidal mixed sediment and subtidal coarse sediment in depths of 20-50 m may be particularly sensitive where there is less exposure to natural disturbance. These factors reinforce the need for management of shrimp trawling activity to remove interactions between the shrimp trawl gear and the sensitive sub-features.

The proportion of subtidal coarse sediment, subtidal mud and subtidal mixed sediments present in the W&NNC SAC between 10 and 50 metres depth are summarised in Tables 3.1 to 3.3.

There is approximately 19.271 km^2, or 70.05 % of the total extent of subtidal coarse sediment present between 10-50 metres depth. This amounts to 1.79% of the total extent of the SAC (Table 3.1). It is worth noting that due to existing management measures (i.e. Wash Fishery Order 1992, EIFCA Byelaws 12 and 15 and Regulatory Notice 2), up to 22.66 km^2 or 82.37% of this sub-feature is already protected across the

SAC from depths of 0-50m below CD. Therefore closing the site between 10-50m below CD, would overlap with these existing management measures.

Table 3.1 Extent of subtidal coarse sediment (EUNIS codes A 5.1) in the W&NNC SAC where water depths are greater than 10 metres below CD. This includes the extent of the feature already protected by existing management.

Subtidal coarse sediment (EUNIS code A5.1)	**Area (km^2)**	**% of EMS site**	**% of habitat extent**
Total W&NNC SAC	1073.000	100.000	100.000
Total A5.1 in W&NNC SAC	27.506	2.56	
Total A5.1 in W&NNC SAC greater than 10m depth	**19.271**	**1.79**	**70.05**

An initial conclusion of adverse effect had been found for shrimp beam trawling in combination with mussel dredging on the subtidal coarse sediment sub-feature. However, after further consideration of existing management mechanisms for mussel dredging, the conclusion has been amended to "no adverse effect". Natural England's advice will be sought in relation to this amendment. The requirement or absence of a requirement, to protect this third sub-feature of the site will affect the proportion of the site that is proposed for protection in this paper. An update will be provided once this matter has been resolved.

There is approximately 4.22 km^2, or 9.36 % of the total extent of subtidal mud in the 10-50 meter depth range. This amounts to 0.39% of the total extent of the SAC (Table 3.2). Given the small (4.22km^2) extent of subtidal mud within the 10-50m depth range, it is likely that closures across this feature where present in waters shallower than 10m below CD, would be required to ensure a protective effect for the sub-feature. The extent and location of these shallower habitat closures is yet to be decided.

Table 3.2 Extent of subtidal mud (EUNIS code A5.3) in the W&NNC SAC where water depths are greater than 10 metres

Subtidal mud (EUNIS code A5.3)	**Area (km^2)**	**% of EMS site**	**% of habitat extent**
Total W&NNC SAC	1073	100.000	100.000
Total A5.3 in W&NNC SAC	45.11	4.204	
Total A5.3 in W&NNC SAC greater than 10m depth	**4.22**	**0.39**	**9.36**

There is approximately 51.15 km^2, or 63.20 % of the total extent of subtidal mixed sediment in the 10-50 meter depth range (Table 3.3). This amounts to 4.77 % of the total extent of the SAC.

Table 3.3 Extent of subtidal mixed sediment (EUNIS code A5.4) in the W&NNC SAC where water depths are greater than 10 metres

Subtidal mixed sediment (EUNIS code A5.4)	**Area (km^2)**	**% of EMS site**	**% of habitat extent**
Total W&NNC SAC	1073	100.000	100.000
Total A5.4 in W&NNC SAC	80.93	7.542	
Total A5.4 in W&NNC SAC greater than 10m depth	**51.15**	**4.77**	**63.20**

A total of 19.30%, or 207.29 km^2 of the SAC would be closed to shrimp trawling if a site closure across the 10-50m depth range were introduced. This closure includes areas where the three sub-features are present and not present (Table 3.4).

Table 3.4 A breakdown of the extent of the W&NNC SAC to be protected based on the presence or absence of the three sub-features.

	Area (km^2)	**% of EMS site**
Total W&NNC SAC in 10-50m without A5.1, A5.3 and A5.4	132.65	12.35
Total W&NNC SAC in 10-50m with A5.1, A5.3 and A5.4	74.64	6.95
Total W&NNC SAC in 10-50m depth range to be protected	**207.29**	**19.30**

A new regulatory notice under the Authority's Protected Area byelaw would be required to stipulate to the areas of the site closed to shrimping on a depth basis. Also, a condition, regarding the prevention of trawling in the stated depth range of the site, would need to be secured through future regulatory measures.

Strengths

This option could mitigate adverse shrimping impacts to 63.2% of the subtidal mixed sediment and 70.05% of subtidal coarse sediment; both of these are significant proportions of the sub-feature. With the incorporation of additional closures of subtidal mud in waters <10m below CD, ~10% of the extent of this sub-feature would be protected. By protecting significant proportions of the three sub-features, the site conservation objectives are supported and management is considered compliant with our duties under the Habitat Regulations (as amended).

Option 3 would enable the Authority to achieve the "healthy seas" part of our vision by employing an ecosystem-based approach to management. This management approach can promote enhanced marine biodiversity and increased resilience of designated habitats/species. eNGOs are likely to be supportive of this approach.

A large closure (including buffer zones) would enhance the protective effects to the three sub-features and other non-designated habitats while at the same time, streamlining the costs of enforcement and feature monitoring. The introduction of inshore vessel monitoring systems, as part of further regulation measures being considered by the

Authority, is likely to improve the efficiency of shrimp activity monitoring and management across the closed area(s).

By closing off the SAC where waters are deeper than 10 metres below CD, it is anticipated that there would be less impacts (displacement/loss of access to preferred grounds) to the shrimp fishing industry than if areas shallower than 10m below CD were closed. The Authority would continue to work with the Shrimp Industry during the development of this management measure, to support a viable and sustainable industry as per the Authority's vision.

Opportunities

There could be an opportunity to monitor non-trawled areas of the site to assess the environmental impacts of closed areas. However, this would be dependent on funding.

Weaknesses and threats

Shrimp trawling does not solely occur in waters deeper than 10 metres; shrimping is well known to be a highly dispersed and variable activity typically focussed on the flanks of intertidal mudflats in areas of less than 10 metres water depth. There is a high degree of uncertainty and a lack of comprehensive sightings data to confidently state where shrimp trawling occurs. The confidence in our data, sightings data, is moderate when acknowledging the biases inherent in the sightings data collection and area of coverage.

Though 9.36% of subtidal mud would be protected in waters deeper than 10m CD, additional closures around this sub-feature in waters shallower than 10m CD would be required. This is because the shallower, subtidal depths are where the sub-feature is most exposed and vulnerable to shrimp trawling impacts.

There is a risk that the Authority may not have sufficient funding to enable a thorough assessment of the effectiveness of the depth-based site closure in protecting the designated sub-features. The Authority would need to ascertain funding requirements and availability during the development of the management option and associated monitoring requirements.

Exclusion of trawling from waters deeper than 10 metres, and to a lesser extent in waters shallower than 10m, could displace activity resulting in increased pressure on sensitive habitats across the EMS. There could also be increased fishing gear interactions and with non-fishing activities. Exclusion of shrimp trawling in waters > 10m CD would disproportionately affect the Pink shrimp fishery and may prevent this fishery from re-establishing in the future.

From the Shrimp Industry's perspective, closing a total of 19.3% of the W&NNC SAC to trawling (assuming the entire area of the site in waters of 10-50 m depth is closed) could negatively impact the fishery. The Wash Brown Shrimp fishery is viewed as a traditional fishery (part of the East Anglia coastal tapestry) and of significant national economic value[20]. There is a reputation risk if the Authority were to be challenged by the industry for locating the spatial closures in fishing areas. We may also be perceived to be biased in favouring conservation over our remit for "sustainable fisheries and viable industry".

There may be a reputation risk to the Authority if either the eNGOs or fishery were to publically challenge Eastern IFCA's decision.

[20] Approximately 90% of the UK landings of this species are caught from within the site (ICES, 2010).

Table 3.4 SWOT analysis for Option 3.

Strengths	Weaknesses
• Reduction in habitat-impacting pressures on sensitive features present in waters deeper than 10 metres below CD. • Potential that large closures (including buffer zones) would enhance the protective effects to the sub-feature and simplify monitoring and enforcement. • Less impact on shrimp fishery as shrimping is more prevalent in shallower water. Less displacement as a result. • Complements other shrimp fishery measures, e.g. current shrimp fishing returns scheme, future Eastern IFCA shrimp permitting scheme, future operation of inshore vessel monitoring systems and future gear innovation	• High uncertainty in relation to spatial distribution of shrimp fishing activity (affects options 1-5);. • Additional closures in waters shallower than 10m depth for subtidal mud could be needed; this could disproportionately impact shrimp activity in shallower parts of the site. • Some risk of fishery exclusion and loss of access to traditional fishing grounds; particularly if the currently minimal pink shrimp fishery were to re-emerge. • Potential displacement of trawling activity leading to increased exposure of other sub-features to damaging pressures. • Spatial habitat closures present an enforcement challenge, but the shrimp fishery returns scheme and the introduction of inshore vessel monitoring systems may help.
Opportunities	**Threats**
• Opportunity for scientific study to compare ecology of closed areas and fished areas.	• Risk of legal challenge from eNGOs and fishery sectors. • Lack of funding to enable assessment of effectiveness of measure

Option 4 - Utilise a combination of GMZs and technical measures developed through innovative research

Option 4 is the same as the approach outlined for Option 1, except that Option 4 would not include spatial sub-feature closures.

Strengths and opportunities

From the Shrimp Industry's perspective, there is merit in the Authority implementing gear trials in GMZs, provided the industry is directly involved and the trials are seen to be of benefit to the Shrimp Industry.

Working collaboratively with the industry (and other stakeholders) may encourage the Shrimp Industry to take ownership and lead on the trialling of gear adaptations. This would be beneficial for the industry when seeking to achieve MSC accreditation.

Weaknesses and threats

From a legal perspective, NE do not perceive monitoring (via gear trials) to be the same as mitigation required under Article 6 of the Habitat Regulations (EIFCA-NE Liaison meeting note, 6th August 2015). Therefore, the Authority would not meet legal requirements under the Habitat regulations to mitigate adverse effects to the designated site features.

Currently, there are high levels of scientific uncertainty surrounding the use of innovative shrimp trawling gears and potential habitat impacts (but this may change in the time-scales of the GMZ trials). As such, the Authority will encounter a high monitoring burden and a programme that is beyond the Authority's current resources and capabilities.

This option does not reduce overall levels of shrimp trawling effort across areas of the sub-features (and others) open to fishing. Therefore, a method to cap fishing effort may need to be jointly introduced with technical gear restrictions. This is most likely to be part of a collection of further fishery regulatory measures.

From a conservation perspective, this option may be perceived as biased towards the fishery and so there may be legal challenge from eNGOs and other stakeholders.

Table 4.1 SWOT analysis for Option 4.

Strengths	**Weaknesses**
• There is drive and financial support amongst the industry and representatives to initiate technological innovations and enhance fishery sustainability.	• High uncertainty and lack of evidence for shrimp trawling exclusive to 0-10 metres depth. • Reliance on the Shrimp Industry to take "ownership" and lead in trialing gears. • Upfront costs to fishers in relation to modified gears (which may disproportionally affect independent vessels). • Does not reduce overall level of effort. Continued high effort levels may negate gear modification impacts designed to reduce subtidal habitat pressures.
Opportunities	**Threats**
• Potential fishery sustainability benefits and support for achieving MSC accreditation by the industry. • Collaborative approach may enhance industry compliance with new management measures.	• Reputational risk if we decide to opt contrary to NE advice on the legitimacy of monitoring in an EMS. • Reputational risk from being considered biased towards fisheries and neglecting our duties for "healthy seas".

Option 5 – Technical gear restrictions to be used by all shrimp vessels active in the W&NNC SAC

Under option 5, shrimpers wishing to trawl with the W&NNC SAC must use best practice gears incorporating gear restrictions that are to be defined through further regulation. Gear restrictions would need to be selected by the Authority on the basis of robust scientific advice, analogous case studies of shrimp management across other EU member states, and following consultation with the shrimp industry. Gear restrictions would not be spatially restricted to areas of the subtidal mud and subtidal mixed sediment sub-features where adverse effect conclusions have been determined. Instead, the shrimp trawl fishery would be regulated across all subtidal/intertidal habitats of the SAC, except the highest risk habitats that are already protected under the EIFCA Protected Areas byelaw.

Gear modifications would need to be developed and this work would need to be industry-led with support from national fishery bodies and EIFCA. This could present an opportunity for collaborative working between the Authority, research institutes, the shrimp industry, SeaFish and the NFFO. Industry collaboration could present an opportunity for inclusive management which may enhance compliance across the fishery with new management measures.

Strengths and opportunities

From a regulatory perspective, this approach has merits in that the Authority already plans to implement further regulation for the shrimp fishery in 2015/16. There would be associated administrative and enforcement costs with the introduction of further regulation, but these could potentially be streamlined through cost-recovery charging and risk-based enforcement. In addition, this option could be viewed as fulfilling our mandated duties for "sustainable fisheries" and "healthy seas" under Section 153 of MaCAA 09.

From a conservation perspective, there is merit in adapting the shrimp trawl gears to minimise habitat impacting pressures from the trawl shoes and to minimise by-catch and catch of undersized, juvenile shrimp through increased gear selectivity.

From a fishery perspective, gear modifications could improve selectivity and foster more sustainable fishing practises. From the Shrimp Industry workshop, it was evident that members of the Industry have concerns over various fishing practices and gear variations within the W&NNC SAC that could harm long-term fishery viability. Therefore, there is perceived to be strong interest and drive within the Industry to work towards a more sustainable fishery pursuant to achieving Marine Stewardship Council (MSC) certification.

Weaknesses and threats

The Authority is likely to be challenged for not introducing management to directly prevent impacts to sensitive subtidal habitats identified in the EIFCAs shrimp trawling HRAs[4]. In particular, NE has advised that spatial closures must be introduced to protect sensitive subtidal habitats in the W&NNC SAC. Therefore, a reliance on fishery management measure (via gear restrictions) may not be seen as adequate management of adverse impacts to the SAC features.

Unless further regulation includes effort capping, then under this management option, shrimping effort may continue to be high. This is not considered sustainable from a fishery or environmental perspective, based on discussions with fishers at the Industry Workshop and discussions around the pre-assessment of the Brown Shrimp for MSC accreditation.

Some members of the fishing industry may publically challenge our management choice because of the potential upfront costs to fishers if new gear modifications are required. This could disproportionally affect independent vessels. Similarly, we risk public scrutiny

from members of the industry who do not want any new management measures at all and may be resistant to changes in trawling practises.

Table 5.1 SWOT analysis for Option 5.

Strengths	Weaknesses
• Potential to fulfill our fishery management duties under S.153, MaCAA 09. • Aligns with the introduction of further regulation for the shrimp fishery. • Streamlines enforcement and administrative costs in the long-term. • Could reduce some habitat impact pressures across the SAC for areas of sensitive subtidal habitats. • Potential fishery sustainability benefits and support for achieving MSC accreditation by the industry.	• Upfront costs to fishers (which may disproportionally affect independent vessels) • Does not reduce overall level of effort. Continued high effort levels may negate gear modification impacts designed to reduce subtidal habitat pressures.
Opportunities	**Threats**
• The industry and representatives have motivation and some finances to initiate technological innovations and enhance fishery sustainability. • Collaborative working between the Authority, Shrimp industry, fishing industry bodies and research institutes to collectively develop technical gear restrictions. • Collaborative approach may enhance industry compliance with new management measures. • Reputation of Wash shrimp fishery as a modern, sustainable fishery. • Opportunity to seek some form of "sustainability" funding.	• May not fully mitigate the adverse effects to designated subtidal mud and subtidal mixed sediment. • Risk of only adopting fishery focused management measure, and acting contrary to NE advice for spatial feature closures. • Reputation risk from members of industry publicizing disagreement with management measures. • Risk of non-compliance from fishers.

Option 6 - Close the entire W&NNC EMS to shrimp trawling

Under Option 6, brown shrimp and pink shrimp trawling would be banned across the entirety of the WNNC EMS (1,074 km^2) until such time as the management measures are reviewed by EIFCA. This option would be based on closing the site on a precautionary basis to protect all designated species and habitats in the EMS from the in/direct pressures from shrimp trawling.

A new regulatory notice under the Authority's Protected Area Byelaw would be required to implement the site closure. Once in place, the Authority's enforcement staff would need to undertake compliance monitoring and for some form of monitoring programme to be established to investigate habitat recovery and broader ecosystem impacts.

Strengths and opportunities

From a regulatory perspective, this option would fully mitigate the adverse physical damage pressures identified in our HRAs[4]. Consequently, we would fulfil our legal obligation as a Relevant Authority under the Habitat Regulations[21]. We could also be perceived as meeting our vision for "healthy seas" which accords with our environmental duties under Section 153 of MaCAA 09. By closing the entire site under a new regulatory notice, the Authority's enforcement and administrative costs could be streamlined and risk-based enforcement undertaken in line with the Authority's Enforcement Strategy[22].

From a conservation perspective, this option could be perceived as a positive, ecosystem-based approach to marine environmental management. This is because the habitats within the site and species utilising the EMS are afforded protection. This approach may facilitate an improvement of ecosystem structure, function and processes. In turn, ecosystem services and good provision may be enhanced through a more resilient ecosystem.

Conservation eNGOs are likely to perceive this option as favourable. This is because it aligns with national eNGO campaigns to exclude damaging fishing practices in EMS on the grounds of conserving the designated site features and to encourage an ecosystem-based approach to management.

Weaknesses and threats

From the Shrimp Industry's perspective, this option would be considered detrimental to the fishery as the Wash Brown Shrimp fishery is viewed as a traditional fishery (part of the East Anglia coastal tapestry) and of significant national economic value[23]. The Pink shrimp fishery may resume in the future and so some fishers could argue that the exclusion of pink shrimp trawling prevents fishers from pursing pink shrimp trawling as an additional, or alternative means of fishing.

With the exclusion of shrimp trawling from the WNNC EMS, effort could be displaced to other EMS across our district or into the EMS or non-EMS sites in neighbouring IFCA districts. This displacement may result in increased conflict with other fishing and non-fishing activities as well as concentrating fishing pressure onto other sensitive habitats and species.

From a regulatory perspective, there is a significant risk of legal challenge from the fishing sector which may involve national publicity and potential calls for monetary compensation. This may introduced a significant risk to the Authority's reputation as we may be perceived by our stakeholders as favouring the eNGO and national agendas. We may also be perceived by stakeholders as neglecting our vision for "sustainable fisheries"

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[21] http://www.legislation.gov.uk/uksi/2010/490/regulation/6/made
[22] EIFCA Enforcement Strategy,
[23] Approximately 90% of the UK landings of this species are caught from within the site (ICES, 2010).

and "viable industry" and thus failing to meet our mandated duties under Section 153 of MaCAA 09.

Table 6.1 SWOT analysis for Option 6.

Strengths	**Weaknesses**
• Mitigates adverse effects to the subtidal and intertidal sensitive habitats. • Meets the "healthy seas" part of EIFCA's vision. • Is an ecosystem-based approach to management; promotes enhanced marine biodiversity and increased resilience of designated habitats/species. • Accords with eNGO campaigns advocating the exclusion/banning of fishing gears considered to be damaging to EMS designated features. • Streamlines enforcement and administrative costs in the long-term.	• Loss of a traditional fishery from the "coastal tapestry". • Loss of a socio-economically valuable fishery of national importance. • Potential displacement of trawling activity to other EMS or outside of our district, resulting in interaction and potential conflict with other fisheries and non-fishing activities. • Approach seen as overly precautionary by other national regulators and stakeholders.
Opportunities	**Threats**
• Potential enhancement of marine biodiversity within the site and ecosystem services provision.	• Risk of legal challenge from fishing sector and requirements for monetary compensation. • Reputational risk – EIFCA considered to be biased towards eNGOs and neglecting our vision for "sustainable fisheries" and "viable industry".

Option 7 - Take no management action across the entire W&NNC EMS

Under Option 7 the Authority would take no management action for the Brown shrimp fishery across the entire WNNC EMS.

Strengths

From the Shrimp Industry's perspective, this option could be seen by some as beneficial as shrimp trawling could continue as usual without regulatory restrictions and changes in activity.

Opportunities

None were identified for this option.

Weaknesses and threats

The Authority would be breaching National/European environmental law regarding managing adverse impacts to features designated under the Habitat Regulations. We would be perceived by stakeholders (fishers, eNGOs, other interested parties, national regulators and advisors) as neglecting our mandated duties under Section 153 of MaCAA 2009. Consequently, we would be exposing ourselves to a significant risk of public scrutiny and legal action.

Table 7.1 SWOT analysis for Option 7.

Strengths	**Weaknesses**
• Fishing activity continues as usual without a "regulatory burden" to the fishers. • Viable industry continues	• Contravening EU and national law resulting in significant risk of legal challenge. • Action would be contrary to the Authority's duties under Section 153 of MaCAA 09. • The option is contrary to the national revised approach to fishery management.
Opportunities	**Threats**
N/A	• Risk of legal challenge and monetary costs through fines etc. • Significant risk to organizational reputation from disregarding environmental duties under EU/national law.

3. Discussion

This paper is a first step to identifying the strengths/opportunities and weaknesses/threats of potential management options for the Brown shrimp fishery in the W&NNC SAC. This paper has considered options from the perspectives of regulatory bodies, the shrimp fishery and eNGOs in an effort to present a balanced appraisal. It is acknowledged that formal consultation would be necessary to gather full stakeholder opinions regarding the Authority's management options, and a full impact assessment would be undertaken before any measure is implemented.

Any decision made by the Authority seeks to balance the needs of all stakeholders, but fundamentally, the Authority has to fulfil legal duties as a Relevant Authority under the Habitat Regulations (as amended) and with our mandated duties under Section 153 of MaCAA 09; "*securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry".*

To inform the Authority's decision making, options 1-7 have been objectively scored and then ranked against the legal drivers for management action; achieving compliance with Article 6 of the Habitat Regulations, achieving "healthy Seas", sustainable fisheries" and "viable industry" (Table 8). Where the options achieve the drivers, (yes) a value of 2 has been assigned; where there is potential that the option could achieve the drivers (maybe), then a value of 1 has been assigned. Where the options do not achieve the drivers (no), then a value of 0 has been assigned (Table 8).Options have then been ranked according to the total score.

Table 8. Scoring and ranking of shrimp management options against legal drivers (scores in parentheses).

Option	Compliance with Habitat Regulations	Achieves "healthy seas"	Achieves "sustainable fisheries"	Achieves "viable industry"	Total Score	Rank
1	Y (2)	Y (2)	M (1)	M (1)	6	1st
2	Y (2)	Y(2)	M(1)	M(1)	6	1st
3	Y (2)	Y(2)	M(1)	M(1)	6	1st
4	N (0)	M(1)	M(1)	M(1)	3	5th
5	M(1)	M (1)	M(1)	M(1)	4	4th
6	Y(2)	Y (2)	N (0)	N(0)	2	6th
7	N (0)	N (0)	N (0)	N(0)	0	7th

Options 1 to 3 are in joint first place and score the highest for complying with the Habitat Regulations and demonstrating greatest potential for achieving all aspects of our duties; healthy seas, and a sustainable and viable Brown Shrimp fishery in The W&NNC SAC. Conversely, option 7 is ranked lowest in 7th place as this option would not be legally compliant with requirements of the Habitat Regulations (as amended), and does not score against any of the Authority's legal requirements.

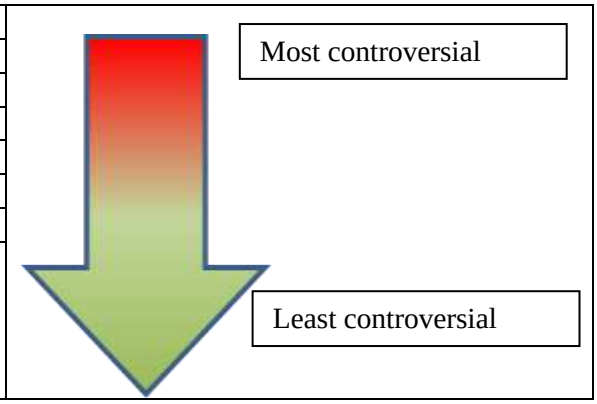
Based on this appraisal, scoring exercise and internal discussions, Option 3 is the preferred option. This is because this option may reduce habitat impacting pressures over 63% of subtidal mixed sediment and 70% of subtidal coarse sediment present in waters deeper than 10 metres below CD, thus supporting compliance with the Habitat Regulations (as amended) and the "healthy seas" objective. Up to 9.36% of subtidal mud at the same depth range would be protected; however, separate closures for subtidal mud in waters <10m above CD may still be needed.

With option 3, a large closure across the SAC between depths of 10-50m below CD would protect areas of the SAC without features. This could have broader environmental benefits, for example, through enhanced ecosystem resilience.

A closure of the site across the 10-50m depth range could lessen fishery impacts (including exclusion and displacement) as shrimping is more prevalent in shallower waters (<10 m CD). As a result, we are meeting our objectives of "sustainable fisheries" and "viable industry" by enabling the continuation of shrimp trawling in a controlled manner. Moreover, the introduction of further fishery regulation could restrict effort and thus reduce the fishery "footprint".

Levels of stakeholder controversy towards the management options are difficult to quantify without full consultation. However, based on prior experience and internal opinion, an initial assessment suggests that the levels of controversy are as follows:

Option
6
7
2
5
4
3
1



4. Conclusion and recommendations

This paper presented an appraisal of the potential management options available to the Authority for Brown shrimp trawling in the W&NNC SAC. The reason for management is that The Authority is legally required to take management action based on identified adverse effects to designated sub-features (subtidal coarse sediment, subtidal mud and subtidal mixed sediment) protected under the Habitat Regulations (as amended).

The strengths, weaknesses, threats and opportunities of the 7 options have been analysed objectively and the options scored according to legal drivers set out in the Habitat Regulations and MaCAA 2009.

Based on this appraisal, scoring exercise and internal discussions, Option 3 is the preferred option that should be taken forward for development. This option balances the need to protect the sensitive sub-features and support the site conservation objectives; whilst at the same time, minimising impacts to the shrimp fishery by closing off 19.3% (207.29 km^2) of the SAC in waters of 10-50 m depth where shrimp trawling is less prevalent.

There is the potential to use fishery management measures (e.g. a permitting scheme) to manage gear types, activity and fishing effort in order to foster a more sustainable and viable shrimp fishery. These would all complement the introduction of the 10-50m depth-based closure. New shrimp management measures are being considered in a separate EIFCA project and so option 3 would not directly include fishery management measures.

The Authority seeks to ensure that, as far as possible, all management decisions are evidence-based and balance the needs of all stakeholders. Therefore, it is important to ensure that the evidence trail (and confidence intervals) underpinning our decision are clearly set out, and that stakeholders are openly consulted on the planned management option.

It should be noted that the conclusion supporting the need for management of subtidal coarse sediment is under review at present. Therefore, there is uncertainty as to whether management for subtidal coarse sediment is required or not. Therefore, this paper is to be revisited and option 3 amended once EIFCA's review is complete.

The following actions are recommended next steps by the Officers:

a. Present the options paper to the Regulatory and Compliance Sub-Committee to seek approval for option 3;
b. Determine the inclusion or exclusion of subtidal coarse sediment within management option 3;
c. Progress management measures in line with the committee's decision; and
d. Complete informal data gathering, formal stakeholder consultation, develop monitoring proposals, develop/amend regulation, and implement the preferred management option by December 2016.

5. References

International Council for the Exploration of the Sea (ICES)
(2010). Working Group on Crangon Fisheries and Life History (WGCRAN). ICES CM 2010/SSGEF:17. International Council for the Exploration of the Sea (ICES)

Pinn, E. H., & Ansell, A. D. (1993). The effect of particle size on the burying ability of the brown shrimp Crangon crangon. *Journal of the Marine Biological Association of the United Kingdom*, 73(02), 365-377.

Annex 1: Evidence Summary for fishing activity

Fishing activity, pressure and environmental impact have been quantified in The Wash & North Norfolk Coast Special Area of Conservation (SAC) through the use of a number of data sources. Table A2.1 lists the types of evidence used and which types of sources were available to support this evidence need. The sections that follow discuss these evidence types in more detail and describe the limitations of the specific datasets or studies that represent them in this assessment.

Table A2.1. Fishing activity evidence needs, scope and source categories used in this assessment. An 'X' indicates that evidence sources of this category were able to fulfil this evidence need. Where an evidence need is fulfilled, a subjective confidence score is assigned (1=Low confidence, 2=Medium confidence, 3=High confidence), indicating how appropriate the specific datasets or studies making up this evidence source were to the assessment. The fishing activity evidence sources are ranked by risk.

Evidence need	**Evidence scope**	**Evidence source category**			
		Primary literature	**Secondary literature**	**Eastern IFCA data**	**Eastern IFCA expertise**
Fishing pressure types	Site-specific	-	X (1)	-	X (3)
Fishing pressure types	Generic/national	-	X (2)	N/A	N/A
Footprint approach	Methodological	-	X (2)	N/A	N/A
Fishing scale	Site-specific	-	-	X (1)	X (2)
Fishing density	Site-specific	X (1)	-	X (1)	X (2)
Fishing distribution	Site-specific	X (1)	-	X (2)	X (3)

A2.1 Site-specific fishing pressures

Specific data source(s): Eastern IFCA expertise, Hall *et al.* (2008)

Risk rating for use of these datasets: High

Given that statutory nature conservation advice for the sensitivity of MPA features is expressed in terms of "pressures", it has been necessary to determine which generic pressures are exerted by the specific fishing activities in use in the SAC. Given the absence of primary literature on, for example, the specific environmental impacts of the shrimp trawling gear used in the SAC, this has involved a degree of inference and relied upon Eastern IFCA's own knowledge of activities to determine which of the physical characteristics of gear dimensions, deployment and fisher behaviour can be considered analogous to pressures such as surface abrasion, surface penetration etc.

Hall *et al.* (2008) is a piece of secondary literature that aims to attribute sensitivity scores to interactions between fishing gears (i.e. not pressures) and MCZ FOCI/EMS

features. Whilst conclusions from this study can be used to directly evaluate the LSE of an activity, they do not specifically align pressures with fishing gears. In the absence of this direct linkage, Eastern IFCA has relied on the knowledge of key members of staff and members of local fishing associations to infer that, for example, shrimp trawling can cause surface abrasion pressure (P. Garnett, pers. comm, R. Jessop, pers. comm., S. Howard, pers. comm).

Clearly, there is a high-degree of risk involved in basing conclusions on inferences such as these. However, with the high degree of regional specificity in inshore fisheries and concomitant lack of research into its specific impacts, the assessment must prioritise Eastern IFCA's own expertise and those of its stakeholders.

A2.2 Generic fishing pressures

Specific data source(s): Tilin *et al.* (2010)

Risk rating for use of these datasets: High

Where linkages between fishing activities and generic pressures could be identified, the assessment relied heavily on the broadscale work of Tilin *et al.* (2010) to attribute sensitivity estimates for specific EMS sub-features/pressure combinations. Whilst this vast project represents the most fit-for-purpose systematic tool for MPA environmental assessment work in the UK, there are significant caveats around the iteration of the project utilised in the assessment.

In terms of specifically evaluating fisheries, the sensitivity estimates of this study are based on *any* industrial activity that may causes these pressures. Therefore, whilst the study concludes that a certain feature is sensitive to a certain pressure, that estimate may be based on knowledge from a particular industry. Clearly, therefore, the linkage this assessment develops between a generic pressure and a specific fishing activity may accrue further risk. This risk is rated as high as the assessment has based a number of conclusions on the estimates derived from this study and the assumption that our linkage between a pressure and a fishery is accurate.

A2.3 Footprint approach method

Specific data source(s): Eastern IFCA expertise, Defra (in press)

Risk rating for use of these datasets: Medium

Several of the fishing activities taken to full Appropriate Assessment have had their impact quantified by the use of a "footprint" method of assessment whereby data relating to the typical behaviour of fishers prosecuting this activity are used to create minimum, average and maximum areas of seabed impact values. These have then been used to determine what proportions of site-specific features could be contacted by this activity at differing levels of effort.

Whilst utilising a "footprint" approach is a common tool in the environmental assessment of other MPA industries (e.g. offshore wind, aggregate dredging etc.), it is a relatively new (and necessarily more complex) proposition for inshore fisheries. The feasibility of the approach has been evaluated as part of a Defra-funded project but there remains the possibility that the approach could over or under-estimate true area or proportional footprint values, with the potential to support incorrect assessment conclusions.

The risk associated with applying the approach is rated as medium, as conclusions in this assessment have not been solely based on these values given that it has not been widely applied to inshore fisheries MPA assessment.

A2.4 Fishing scale

Specific data source(s): Eastern IFCA expertise, Eastern IFCA landings data (2000-present)

Risk rating for use of these datasets: Medium

The scale of active inshore fisheries in the SAC have been quantified by their monthly/annual landings to ports within Eastern IFCA's district and the total number of vessels at these ports observed engaging in the specific activity. These data are collected by Eastern IFCA's three area officers, who (among other duties) record species' monthly landings weights and fishing activity reports at multiple ports within a defined zone.

Whilst this duty produces a long-term numerical dataset, landings weights do not specifically indicate the type of fishing activity used to target the catch and spatial references (i.e. whether the catch was targeted in the SAC) are only in the form of written, anecdotal evidence in the accompanying report. In some cases, numbers of vessels engaged in a particular fishing activity in a given month are supplied but these are biased towards those fisheries where activity is easily observed and discriminated at port (e.g. shrimp trawling).

Clearly, there is a medium risk that data of this type could over or underestimate how many vessels are actively engaged in an activity and fails to detect which vessels are disproportionately active over a given time period.

A2.5 Fishing density

Specific data source(s): Eastern IFCA sightings data (2007-present), Breen *et al.* (2015)

Risk rating for use of these datasets: Medium

Densities of fishing activity were primarily derived from Eastern IFCA's sightings data, which has been recorded from 2007 up until the present. IFCA sightings data have been used nationally to contribute inshore fishery density maps in Breen *et al.* (2015), but Eastern IFCA's own sightings data and contribution to this study are not optimal. The area of the SAC has a higher density of sightings data than other parts of Eastern IFCA's district, but is still biased by the nature of patrol and survey effort.

In the shallow waters of The Wash, a great deal of fisheries patrol and survey effort is undertaken through "drying out" (i.e. remaining on the crest of an intertidal mud/sandflat over the length of a tidal cycle) in order to regulate the intertidal shellfish fisheries regulated by The Wash Fishery Order. This ensures that The Wash, and the rest of EIFCA's district are patrolled uniformly and patrol/survey vessels may remain in a single position for the majority of a day rather than covering a broader range of the district.

There is, therefore, a medium risk associated with producing fishing density charts utilising these sightings data, as whole areas of the SAC may have received very low survey coverage. This risk is only medium as fishing densities are only used for indicative purposes for the assessment, rather than to fully inform conclusions.

A2.6 Fishing distribution

Specific data source(s): Eastern IFCA Fisheries Mapping Project (2010)

Risk rating for use of these datasets: Low

General patterns of fishing distribution have been determined by using Eastern IFCA's Fisheries Mapping Project (FMP), which was an attempt to quantify the spatial extent of fisheries in the authority's district using interview evidence from local fishers and fishing representatives. The project asked fishers, via questionnaires and face-to-face interviews, to define the known extent of fisheries in the EIFCA district and adjacent areas by target species, gear type, season and historical importance.

Data collection began in 2007, so the data are not current. Sample size is fairly representative; the EIFCA district has ~220-240 registered fishing vessels and the project conducted 12 interviews and received 36 questionnaire responses (~20-21% coverage).

Caveats of this project are well known and its use in the assessment is relatively minor and the risk of using these data is rated as low.

Annex 2: Evidence summary for features

Feature extent, sensitivity and importance were quantified in The Wash & North Norfolk Coast Special Area of Conservation (SAC) through the use of a number of data sources. Table A3.1 lists the types of evidence used and which types of sources were available to support this evidence need. The sections that follow discuss these evidence types in more detail and describe the limitations of the specific datasets or studies that represent them in this assessment.

Table A3.1. Feature evidence needs, scope and source categories used in this assessment. An 'X' indicates that evidence sources of this category were able to fulfil this evidence need. Where an evidence need is fulfilled, a subjective confidence score is assigned (1=Low confidence, 2=Medium confidence, 3=High confidence), indicating how appropriate the specific datasets or studies making up this evidence source were to the assessment. The feature evidence sources are ranked by risk.

Evidence need	Evidence scope	Evidence source category			
		Primary literature	Secondary literature	Eastern IFCA data	Eastern IFCA expertise
Feature sensitivity	Generic/national	-	X (3)	-	-
Feature extent	Site-specific	X (3)	X (2)	-	-
Feature extent	Generic/national	-	X (2)	N/A	N/A
Conservation value	Methodological	-	X (2)	N/A	N/A
Feature sensitivity	Site-specific	-	X (1)	-	X (1)

A3.1 Generic feature sensitivity

Specific data source(s): Tilin *et al.* (2010)
Risk rating for use of these datasets: High

The assessment relied heavily on the broadscale work of Tilin *et al.* (2010) to attribute sensitivity estimates for specific EMS sub-features/pressure combinations; as defined in Annex 2, there are significant caveats around the iteration of the project utilised in the assessment.

Firstly, the project is specifically an evaluation of the sensitivities of MCZ FOCI, rather than EMS sub-features. The assessment has, therefore, had to cross-reference generic MCZ habitats with those specifically in the SAC; this could lead to misinterpretation and misattribution of sensitivity estimates. Secondly, the sensitivity scores of many of the habitats in the assessment were those based on expert workshops as opposed to peer review literature and whose estimated sensitivities are therefore low confidence (by the study's own confidence rationale; cf. Table 2.7).
Over-reliance on this study also therefore represents a high risk, as often sensitivity scores can be based on the presence or absence of particular species and, with site-specific knowledge of certain features in the SAC being highly variable, basing a conclusion on these estimates could lead to the protection of non-significant features or

the non-protection of significant features. However, in adopting the precautionary principle (and an adaptive risk management approach), we must ensure that where sensitive features are known to occur – even this is within a range of possible sensitivities – appropriate management must be delivered.

A3.2 Site-specific feature extent
Specific data source(s): Meadows & Barrio-Frojan (2012), EMODnet (2012), Natural England (2015), Eastern IFCA survey data (2014)
Risk rating for use of these datasets: High

The site-specific extent of various features in the SAC has been subject to discussion. Ephemeral features such as *Sabellaria spinulosa* have, in the past, been surveyed annually to determine their extent and their designation is based on their repeated reoccurrence in known zones. Where multiple surveys for features exist, they are not always in agreement (Eastern IFCA's 2014 survey of the subtidal stony reef, for example, did not show EUNIS code agreement with Meadows & Barrio-Frojan, 2012; the initial publication of Natural England's Evidence Project, 2015 did not agree with Eastern IFCA's own intertidal sediment characterisations). This is to be expected in the shifting dynamics of the largest estuarine embayment in the UK; natural variability will mean the conditions that suit certain features may not be permanent.

Clearly, there is a risk in basing conclusions on studies that do not agree over the precise designation of a feature. However, this risk is to be expected in this SAC, as its dynamism is, essentially, its defining feature.

A3.3 Generic feature extent
Specific data source(s): Natural England (2015)
Risk rating for use of these datasets: Medium

Generic feature information for all MPAs was supplied through Natural England's Evidence Project and this has been subject to several delays and revisions. The assessment has used the versions of these data released in April 2015 and is confident that they have received due internal and external scrutiny.

However, their use still represents a medium risk, given that – should human error have occurred in compiling extent data – conclusions of adverse effect or no adverse effect could occur only because extent data has been incorrect.

A3.4 Conservation value method
Specific data source(s): Tilin *et al.* (2010)
Risk rating for use of these datasets: Medium

In a complex site such as this one, the assessment has attempted to rank sensitivities of multiple features and prioritise those that are most generically sensitive to those pressures most commonly identified as being caused by active inshore fisheries in the SAC (Table 2.7). This approach has, as discussed previously, relied on the sensitivity work of Tilin *et al.* (2010) and the same caveats apply in this instance as previously stated.

There is a medium risk associated with this approach, as certain features are considered on sub-feature level (i.e. subtidal sand and subtidal mud within the designated subtidal sandbanks feature) and may exist on a gradient of sensitivity. Attributing conservation value at this sub-feature level is problematic from a management perspective as they may not be easily understood spatially and will be subject to changes in extent and distribution.

A3.5 Site-specific feature sensitivity

Specific data source(s): MarLIN (2002-2015)
Risk rating for use of these datasets: Low

As stated previously, broadscale sensitivity estimates in Tilin *et al* (2010) are based on EUNIS level 3 codes and sensitivity estimates of these habitats therefore encompass a range of more specific biotope types. Given that the majority of the Natural England Evidence Project data records for the SAC do not go to a more granular level than this, there is a low risk that their alignment with other, more sensitive biotopes may lead to misleading conclusions.

This risk is rated as low because of the precautionary nature of the assessment and the highly dynamic nature of the SAC.