

<p>Title: <i>Impact Assessment of measures to protect sensitive areas from damage by bottom towed gears</i></p> <p>Bottom Towed Gear Prohibition Byelaw – Folkestone Pomerania</p> <p>IA No: Draft</p> <p>Lead department or agency: Kent and Essex IFCA</p> <p>Other departments or agencies: MMO, Defra</p>	<h2 style="margin: 0;">Impact Assessment (IA)</h2>
	Date: 13/02/2015
	Stage: Draft
	Source of intervention: Domestic
	Type of measure: Secondary Legislation
Contact for enquiries: Dominic Bailey, Assistant Chief IFCO, Kent and Essex IFCA	
Summary: Intervention and Options	RPC Opinion: N/A

Cost of Preferred (or more likely) Option					
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Two-Out?	Measure qualifies as	
£m ¹	£ ²	NA ³	No	NA	
<p>What is the problem under consideration?</p> <p>Folkestone Pomerania MCZ was designated as a first tranche MCZ in November 2013. It is designated with six protected habitat features. Exposed rock ledges and boulder-strewn platforms support large rich communities and the soft muddy areas within the MCZ support dense ross worm (<i>Sabellaria spinulosa</i>) reefs. Honeycomb worm (<i>Sabellaria alveolata</i>) reefs are also found within the site, which is very unusual as these normally occur in the intertidal zone. This mix of habitats is not known to occur elsewhere in the south-east area and this MCZ is one of only two that protect honeycomb worm reefs.</p> <p>In addition, the preceding version of this byelaw (Bottom Towed Gear) applies to two other marine protected areas. As the impact of these was already considered in a previous impact assessment (IA), they are not considered here. The IA relating to these sites is attached as Appendix 1.</p> <p>Why is government intervention necessary?</p> <p>Four of the six designated features of Folkestone Pomerania MCZ have a general management approach of 'recover to favourable condition' therefore management is required to further the conservation objective of the MCZ. Government intervention is required to redress market failure in the marine environment by implementing appropriate management measures (e.g. this byelaw) to conserve features to ensure negative externalities are reduced or suitably mitigated. Implementing this byelaw will support continued provision of public goods in the marine environment. The purpose of this IA is to identify the consequences of closing these areas to bottom towed fishing gear type.</p>					

¹ To be documented in £ms and calculated for 10 years from implementation of byelaw

² To be documented in £ms and calculated for 10 years from implementation of byelaw – costs and benefits to business only.

³ As these IAs are not in scope of one in two out this does not need to be completed

What are the policy objectives and the intended effects?

The policy objective is to further the conservation objective of Folkestone Pomerania MCZ, by ensuring that the protected features of the MCZ are protected from the risk from damage due to bottom towed fishing gear activities . The intended effects are that the potential for damage to these feature types will be reduced and obligations under the Marine and Coastal Access Act 2009 will have been met. In addition, the economic impacts of management intervention will be considered with the environmental benefits in order to secure a sustainable fishery.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Four management options are considered within this IA;

- **Do nothing:** This has been discounted as it does not fulfil the criteria of ‘furthering the onservation objective’.
- **Voluntary measures:** This has been discounted as KEIFCA considers that due to the need to protect features quickly, and the risk that even low levels of interaction could lead to deterioration of the feature, voluntary measures are not appropriate in this case.
- **Feature specific bottom towed gear prohibition byelaw:** This has been discounted as it is considered that this would not go far enough in promoting the management of the wider ecosystem in the site and as such, is not appropriate in this case.
- **Full site bottom towed gear prohibition byelaw:** Ease of enforcement and the need to have clear demarcation to promote compliance was taken into account in developing the preferred option of a full site closure to bottom towed gear as well as ensuring site integrity is promoted through management

Will the policy be reviewed? Yes If applicable, set review date: 6 years

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

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

Signed by the responsible SELECT SIGNATORY: Date:

Summary: Analysis & Evidence Policy Option 1

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2013 ⁴	PV Base Year 2013 ⁵	Time Period Years 10 ⁶	Net Benefit (Present Value (PV)) (£m ⁷)		
			Low: Optional	High: Optional	Best Estimate:

COSTS (£m)	Total Transition ⁸ (Constant Price) Years	Average Annual ⁹ (excluding transition) (Constant Price)	Total Cost ¹⁰ (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate			£32, 500

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

Annual additional enforcement costs faced by KEIFCA are estimated at **£32,500**. This is a good estimate of the enforcement costs, based on the predicted number of patrols necessary and associated enforcement action. This is based on experience of closed areas enforcement in other parts of the KEIFCA district. Costs to the fishing fleet currently active in the area from decreased potential landings in the first year of the closure cannot be estimated to a detailed level. Average annual landings from the whole ICES rectangle (IVc) is £12.9 million based on data from 2008 to 2011. The proposed closed area is less than 1% of this. There are potential increases in fuel and time costs for searching and fishing in new areas; potential costs of impacts from displacement of fishing effort. However it is expected that these will be low due to minimal displacement caused by the intervention, as the site is not a prime fishing ground and alternative fishing grounds are easily accessible and currently used to a greater extent than the proposed area. An annual cost of £917 has been estimated, however costs to fisheries are likely to be an overestimation as no displacement has been assumed and 100% of GVA in the areas affected is assumed lost.

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

Example:

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
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⁴ The constant price year. The price base year is the year from which your costs are calculated for example if costs were taken from a report carried out in 2010 the price base year would be 2010. If the costs were estimated this year then the price year would be 2014.

⁵ Present Value Base Year: The present value base year relates to the calculation of the NPV (see NPV footnote) and should be the year that the policy comes into force for example the byelaw comes into force in April 2015 then the present value base year is 2015.

⁶ The standard timeframe for analysis is 10 years unless the situation requires a different amount of time for example the benefits will occur over a much longer period. If there is deviation from the standard 10 years this must be clearly explained in the main evidence section.

⁷ Net Benefit - value of the total monetised benefits minus the total monetised costs. All monetised costs and benefits should be expressed in £m. In order to compare options you need to adjust the estimates by discounting the impacts to the same point in time, to estimate the Present Value (PV) of the impacts (see main evidence section for explanation).

⁸ Transient, or one-off costs or benefits that occur, which normally relate to the implementation of the measure. Non-quantified transient or one-off costs should be documented in the non-monetised section

⁹ Average Annual, These are the costs and benefits that will reoccur in every year while the policy measure remains in force (although the scale of the impact may change over time) and so should not include transition costs. These are expressed as an annual average (over the life of the policy). i.e. undiscounted.

¹⁰ i.e. discounted as with NPV

Low	Optional		Optional
High	Optional		Optional
Best Estimate			

Description and scale of key monetised benefits by ‘main affected groups’

No monetised figures are available for the benefits of the recommended closure. However, significant potential benefits are described below.

Other key non-monetised benefits by ‘main affected groups’

The protected features of subtidal coarse sediment, subtidal sand, high energy circalittoral rock, fragile sponge and anthozoan communities on subtidal rocky habitats, honeycomb worm and ross worm will be protected from damage caused by bottom towed fishing gear types. This will contribute to establishing and maintaining the features of the site at favourable condition which will include ecosystem benefits.

Key assumptions/sensitivities/risks

Discount rate (%)

3.5%

Cost estimates are based on landings values provided by the Marine Management Organisation (MMO) which cover the whole of ICES area IVc and are estimated at £12.9 million. It is unknown how much of this total value was made up of catch from the proposed closed area which makes up less than 1% in area of the ICES rectangle.

There is no vessel monitoring system (VMS) data available for under 10m vessels to assess actual fishing activity in this area.

Information has been gathered from MMO and IFCA officers' personal knowledge.

Information gathered directly from fishermen is also anecdotal.

A key assumption of intervention is that it will be successful in preventing further damage to the protected features and that the conservation objective of the MCZ will be furthered.

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/A¹¹	No	N/A

¹¹ Linked to ENCB

Evidence base

The evidence base for the parts of the byelaw relating to Thanet Coast SAC and Essex Estuaries SAC are presented in the IA for the byelaw which preceded this management measure. This information is attached at Appendix 1.

1. Introduction
2. Rationale for Intervention
3. Policy objectives and intended effects
4. Background
 - 4.1 Marine Conservation Zones in the UK
 - 4.2 Folkestone Pomerania MCZ
 - 4.3 Evidence Base:
 - 4.3.1 Environmental Impacts of bottom towed gear activity on benthic habitats
 - 4.4 Sectors Affected
 - 4.4.1 Fishing industry
 - 4.4.2 Local economies and society
 - 4.4.3 Enforcement bodies
5. Options including the preferred option
6. Cost and benefits
7. Conclusion summarising recommended option

1. Introduction

- 1.1 The Thanet Coast SAC and Essex Estuaries SAC are European marine sites designated under the EC Habitats Directive in the Thames Estuary. Further information regarding these sites can be found in the impact assessment (IA) for the byelaw preceding this one which closed those areas to bottom towed fishing gear in 2014 (Appendix 1).
- 1.2 Folkestone Pomerania Marine Conservation Zone (MCZ) is an inshore site located in the narrowest part of the English Channel. The MCZ is located approximately 6 km from the south-east Kent coastline and covers an area of approximately 33.6km². The site was nominated as an MCZ during the Balanced Seas regional MCZ project and was designated in November 2013. It has been designated with the following protected features: subtidal coarse sediment, subtidal sand, rosworm reef (*Sabellaria spinulosa*), honeycomb reef (*Sabellaria alveolata*) and high energy intertidal rock.
- 1.3 Within the site water depth and seabed composition varies, creating a range of habitats capable of supporting a diverse range of species. Commercially important fish species including sole, cod, mackerel and herring are known to use this area as a nursery and spawning ground. Exposed rock ledges and boulder-strewn platforms support large rich communities representing a rare example of the habitat type 'fragile sponge and anthozoan communities on subtidal rocky habitats'. Anthozoans are a group of soft animals with feathery tentacles and these, along with large and slow growing species such as branching sponges tend to dominate such habitats. These animals live in colonies which in turn support other species, including sea squirts and sea anemones, which live under and amongst them.
- 1.4 The soft muddy areas within the MCZ support dense rosworm (*Sabellaria spinulosa*) reefs. These are a type of biogenic reef created when rosworms build tubes from sediment and shell fragments. Honeycomb worm (*Sabellaria alveolata*) reefs are also found within the site, which is very unusual as these normally occur in the intertidal zone. These biogenic reefs are very fragile and are consequently particularly vulnerable to damage. This mix of habitats is not known to occur elsewhere in the south-east area and this MCZ is one of only two that protect honeycomb worm reefs.
- 1.5 The unique features of Folkestone Pomerania MCZ listed in paragraph 1.2 are particularly sensitive to bottom towed fishing gear, which can abrade these features. Bottom towed gear is any fishing gear which is pushed or pulled through the sea and contacts the seabed. This includes demersal otter and beam trawls and shellfish dredges.
- 1.6 This IA has been prepared to outline the costs and benefits of the recommended byelaw to prohibit the use of bottom towed gears from this MCZ. It also indicates why this option is being recommended rather than others considered. This IA will be the subject of a public consultation.

2 Rationale for Intervention

Inshore fisheries and conservation authorities (IFCAs) have duties to ensure that fish stocks are exploited in a sustainable manner, and that any impacts from that exploitation on marine protected area (MPA) designated features in the marine environment are reduced or suitably mitigated, by implementing appropriate management measures (e.g. this byelaw). Implementing this byelaw will ensure that fishing activities are conducted in a sustainable manner and that the marine environment is suitably protected.

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

- Public goods and services – A number of goods and services provided by the marine environment such as biological diversity are 'public goods' (no-one can be excluded from benefiting from them, but use of the goods does not diminish the goods being available to others). The characteristics of public goods, being available to all but belonging to no-one, mean that individuals do not necessarily have an incentive to voluntarily ensure the continued existence of these goods which can lead to under-protection/provision.
- Negative externalities – Negative externalities occur when the cost of damage to the marine environment is not fully borne by the users causing the damage. In many cases no monetary value is attached to the goods and services provided by the marine environment and this can lead to more damage occurring than would occur if the users had to pay the price of damage. Even for those marine harvestable goods that are traded (such as wild fish), market prices often do not reflect the full economic cost of the exploitation or of any damage caused to the environment by that exploitation.
- Common goods - A number of goods and services provided by the marine environment such as populations of wild fish are 'common goods' (no-one can be excluded from benefiting from those goods however consumption of the goods *does* diminish that available to others). The characteristics of common goods (being available but belonging to no-one, and of a diminishing quantity), mean that individuals do not necessarily have an individual economic incentive to ensure the long term existence of these goods which can lead, in fisheries terms, to potential overfishing. Furthermore, it is in the interest of each individual to catch as much as possible as quickly as possible so that competitors do not take all the benefits. This can lead to an inefficient amount of effort and unsustainable exploitation.

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

- Management measures to conserve designated features of MPAs will ensure negative externalities are reduced or suitably mitigated.
- Management measures will support continued existence of public goods in the marine environment, for example conserving the range of biodiversity in the sea of the IFCA District.

- Management measures will also support continued existence of common goods in the marine environment, for example ensuring the long term sustainability of fish stocks in the IFCA District.

3 Policy objectives and intended effects

The policy objective pertinent to the Thanet Coast SAC and Essex Estuaries SAC can be found in the IA which accompanied the preceding byelaw which this measure will directly replace for those areas, attached in Appendix 1.

The policy objective pertinent to Folkestone Pomerania MCZ is to further the conservation objective of this site by ensuring that the protected features listed in Table 1 below are protected from the risk of damage from bottom towed gear.

In addition, the economic impacts of management intervention will be minimised where possible.

Feature	Conservation Objective
Subtidal coarse sediment	Maintain in favourable condition
Subtidal sand	Maintain in favourable condition
High energy circalittoral rock	Recover to favourable condition
Fragile sponge and anthozoan communities on subtidal rocky habitats	Recover to favourable condition
Honeycomb worm (<i>Sabellaria alveolata</i>) reefs	Recover to favourable condition
Ross worm (<i>Sabellaria spinulosa</i>) reefs	Recover to favourable condition

Table 1: Designated features of Folkestone Pomerania MCZ and conservation objectives.

4 Background

The background to the Thanet Coast SAC and Essex Estuaries SAC can be found in the IA for the byelaw which preceded this management measure.

4.1 Marine Conservation Zones in the UK:

- 4.1.1** The Marine and Coastal Access Act (MCAA) 2009, places a duty on Government to establish a network of conservation sites which contributes to the conservation or improvement of the marine environment in the UK marine area, is representative of the range of features present in the UK marine area and reflects the fact that conservation of a feature may require the designation of more than one site. The network will include marine protected areas (MPAs) designated under European legislation such as special areas of conservation (SAC)¹² and special protection areas (SPA)¹³ also known as European marine sites; marine components of RAMSAR sites, sites of special scientific interests (SSSIs)¹⁴ and marine conservation zones (MCZs).
- 4.1.2** In England Defra invited the statutory nature conservation bodies (SNCBs), Natural England and the Joint Nature Conservation Committee (JNCC), to make recommendations for locations for MCZs which had stakeholder support. To do this SNCBs established four regional projects (each of which chose its own name) covering the English North Sea ('Net Gain'), Irish Sea ('Irish Sea Conservation Zones'), South-East ('Balanced Seas') and South-West ('Finding Sanctuary'). This approach engaged a diverse range of stakeholders to shape marine conservation. It also enabled socio-economic considerations to be taken in to account when sites were selected as recommended MCZs.
- 4.1.3** The regional projects made their recommendation for 173 MCZs in 127 locations (108 MCZs, 46 reference areas 11 within MCZs and 19 stand alone reference areas¹⁵) in September 2011. These were reviewed by Defra which, while recognising that the recommendations had come from a stakeholder-led process, raised significant concerns about the state of the evidence base supporting the recommendations. As a result of these concerns, Environment Minister made a written ministerial statement in November 2011 announcing that MCZ designations would be made in tranches with the best-evidenced sites designated first, revising the timetable for designation and announcing additional funding to support further evidence gathering.

4.2 Folkestone Pomerania MCZ

¹²Required by the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna).

¹³ Required by the Wild Birds Directive (Council Directive 2009/147/EC on the conservation of wild birds).

¹⁴ Sites designated as Wetlands of International Importance under the Ramsar Convention (1971).

¹⁵ Highly protected MCZs where all extraction, deposition or human-derived disturbance is removed or prevented to enable features to achieve reference condition (a state where there are no, or only very minor, changes to the values of environmental elements which would be found in the absence of anthropogenic disturbance)

- 4.2.1** Folkestone Pomerania MCZ was designated after recommendation from the Balanced Seas Regional Project. The site is home to a unique combination of benthic features, creating an array of habitats capable of supporting a diverse range of species. Highly dynamic coarse sand and sediment support pockets of high energy rock, which accomodates soft coral and sponge communities. Of particular interest to conservation is the presence of ross worm (*Sabellaria Spinulosa*) and honeycomb worm (*Sabellaria Alveolata*) reefs which provide shelter for numerous benthic species. The site is illustrated in Figure 1 below.
- 4.2.2** Ross worm reefs comprise of dense subtidal groupings of a small, tube building polychaete worm. The reef is fragile and brittle and vulnerable to damage through abrasion. Similar to ross worm ,honeycomb work reefs are formed by the polychaete honeycomb worm. They usually occur on intertidal areas and very shallow subtidal areas so it is uncommon to find this reef at depths found at Folkestone Pomerania.¹⁶
- 4.2.3** Both of these feautres have been designated with a “recover” objective which aims to return the habitat to favourable condition .The value of these reef communities is that they stabalise other benthic habitats creating a network of flora and fauna which sustain a wide range of fish species as well as contributing to overall biodiversity of the region.¹⁷
- 4.2.4** The “fragile sponge and anthozoan communities on rocky habitats” in this site also has a general management approach of recover to favourable condition. These soft sponge and coral communities protrude from the rock habitats on which they are attached and provide shelter for small fish and other species¹⁸.
- 4.2.5** Subtidal coarse sediment and subtidal sand support the unique features of the site. Although they have a general management approach of maintain at favourable condition, the importance of these features to the resilience of the overall ecological network of the region means that it is vital that degradation of these features does not occur.
- 4.2.6** As a result of the diverse nature of the features on the site, it is important that management address the wider ecosystem to ensure site integrity, rather than managing each feature individually.

4.3 Evidence Base:

4.3.1 Environmental Impacts of bottom towed gear activity on benthic habitats

¹⁶ UK Biodiversity Action Plan Priority Habitat Descriptions; *Sabellaria alveolata* Reefs. From: UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008.

¹⁷ UK Biodiversity Action Plan Priority Habitat Descriptions, *Sabellaria spinulosa* Reefs. From: UK Biodiversity Action Plan; From: UK Biodiversity Action Plan BRIG (ed. Ant Maddock) 2008.

¹⁸ UK Biodiversity Action Plan Priority Habitat Descriptions Fragile sponge and Anthozoan Communities on Rocky Habitats From: UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008.

Research into the impacts of trawl activities suggests that trawling has a significant impact on both substrate and benthic epifauna with certain species showing a long term decline in areas of regular trawling activity¹⁹.

Tuck et al, 1998, found that otter trawl markings were visible on the seabed up to 18 months after trawling activity ceased. This study was conducted in an enclosed sea loch with minimal turbidity, which may have reduced resilience of benthic habitats²⁰. Kenchington et al. 2001 conducted a similar survey on the Grand Banks, Canada. Sediments here were much more exposed to natural displacement due to a higher energy environment. Recovery of sediments initially displaced by trawls was rapid in this survey and after a year, sediment displacement was undetectable²¹. However, biomass continued to be reduced up to 22 months after trawling activity ceased.

For the more sensitive features of this MCZ, including ross worm and honeycomb worm reefs, it is likely that bottom towed fishing gear could have a significant effect, leading to deterioration of the overall integrity of the site.

Collie et al, 2000 found that the greatest impact on species surveyed was on *Sabellaria* reef communities²². The impact of towed demersal gear is to break apart the worm tubes resulting in direct mortality (death) of the worms and in a reduction of the structure and complexity of the habitat which may no longer support the associated animals and plant communities.

Within coarse sediment and sand habitats, communities living within the habitats have been found to be significantly damaged by trawl activity. Ramsay et al, 1998 found that macrofauna living within sand habitats were dispersed by trawling and also found an increase in predatory species at sample sites once biota had been exposed, leading to further erosion of communities²³.

4.3.2 Data Certainty

The Folkestone Pomerania MCZ has acceptable data certainty for five features, of these features Fragile sponge and anthozoan communities, Honeycomb worm reef (*Sabellaria alveolata*) and Rossworm reef (*Sabellaria spinulosa*) have been identified as being at higher risk

¹⁹ Kenchington, E.L.R., Prena, J., Gilkinson, K.D., Gordon, D.C., MacIsaac, K., Bourbonnais, C., Schwinghamer, P.J., Rowell, T.W., McKeown, D.L., and Vass, W.P. 2001. Effects of experimental otter trawling on the macrofauna of a sandy bottom ecosystem on the Grand Banks of Newfoundland. *Canadian Journal of Fisheries and Aquatic Science*. Vol. 58, 1043-1057.

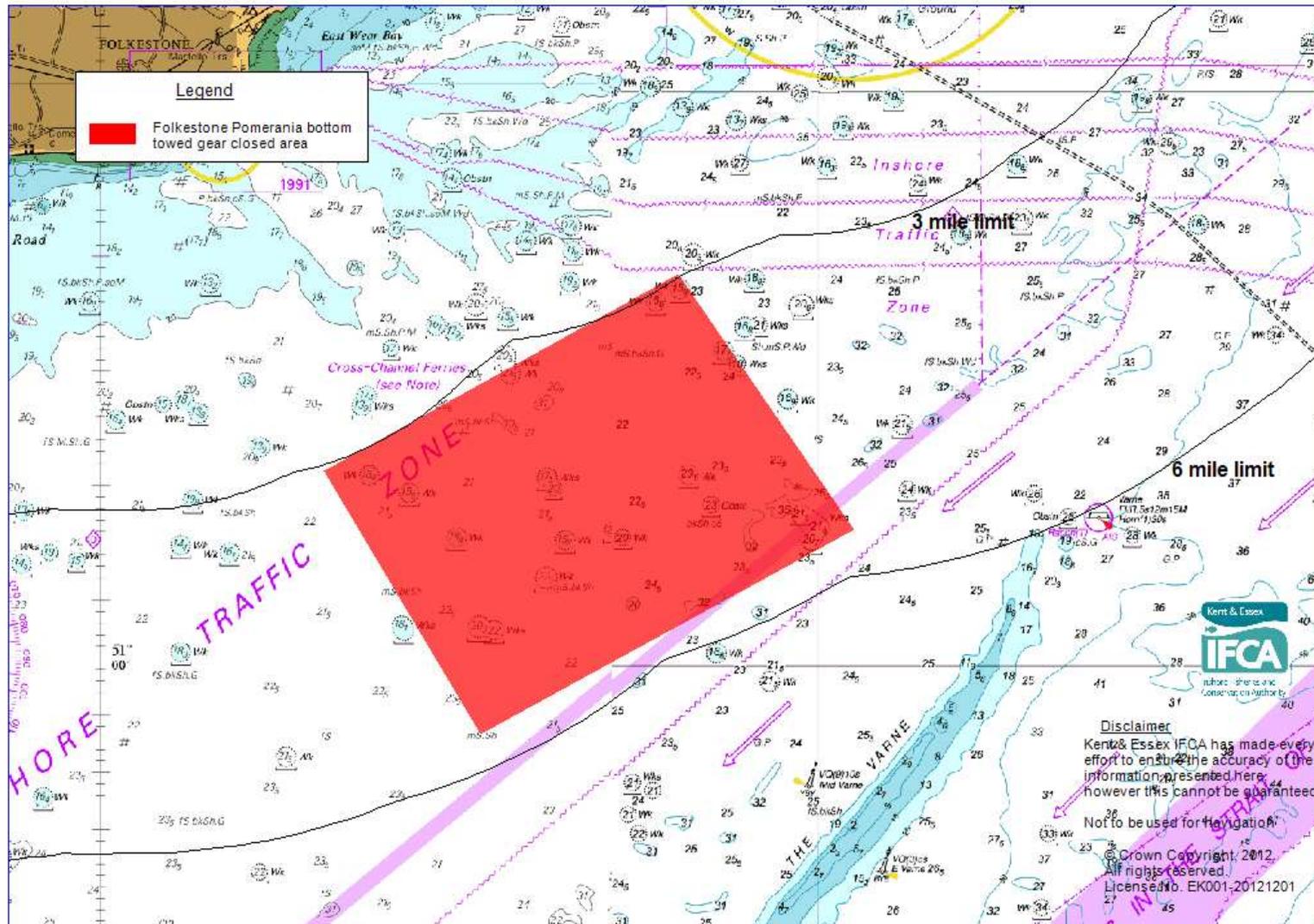
²⁰ Tuck, I., Hall, S., & Robertson, M. (1998). Effects of physical trawling disturbance in a previously unfished sheltered Scottish sea loch. *Marine Ecology Progress*.

²¹ Kenchington, E.L.R., Prena, J., Gilkinson, K.D., Gordon, D.C., MacIsaac, K., Bourbonnais, C., Schwinghamer, P.J., Rowell, T.W., McKeown, D.L., and Vass, W.P. 2001. Effects of experimental otter trawling on the macrofauna of a sandy bottom ecosystem on the Grand Banks of Newfoundland. *Canadian Journal of Fisheries and Aquatic Science*. Vol. 58, 1043-1057.

²² Collie, J.S., Hall, S.J., Kaiser, M.J. And Poiner, I.R. 2000 A quantitative analysis of fishing impacts on shelf-sea benthos. *Journal of animal ecology*. Vol. 69, 785-798

²³ Ramsay, K., Kaiser, M.J., and Hughes, R.N. 1998. Responses of benthic scavengers to fishing disturbance by towed gear in different habitats. *Journal of Experimental Marine Biology and Ecology*. Vol. 224, 73-89.

Figure 1: Map of Folkestone Pomerania MCZ bottom towed gear prohibited area



4.4 Sectors Affected

Within Thanet Coast SAC and Essex Estuaries SAC there will be no additional impact on any sectors from the introduction of this byelaw as no additional management measures over those which exist in the preceding byelaw are being introduced, therefore a *status quo* is maintained. Information on the sectors affected by the preceding byelaw can be found in the original IA in Appendix 1.

There are a number of sectors affected by this proposal specifically:

4.4.1 Fishing industry: Folkestone Pomerania has been used as an occasional fishing ground for the local communities for many years and has provided key income for fishermen from Ramsgate, Dover, Folkestone, Hythe, Dungeness and Rye. Historically, the area has been fished by smaller, inshore vessels as a supplementary income to other fisheries, although large, nomadic vessels have fished the area of the site on occasion. The region is traditionally a good mixed fisheries area with boats targeting sole as well as other prime species like cod, bass, plaice and thornback rays. Some lobster and whelk potting is undertaken. Local vessels vary species targeted based on season, weather conditions, quota availability and a range of other factors. The primary fishing grounds for trawlers in this region are Hythe Bay and Rye Bay.

4.4.2 Local economies and society: There is the potential for social and economic costs to the local community as a result of potential landings lost and resulting impact on the local fishery but these are difficult to assess. The wider environmental benefit of protecting the ecosystem is outlined in section 6.

4.4.3 Enforcement bodies: The lead responsibility of enforcing the proposed closed area would fall to KEIFCA and therefore the additional enforcement cost would impact on this authority as the regulator. These estimated costs are outlined in section 6.

5. The options

As part of Defra's MCZ programme, management is required for any feature with a "recover" general management approach and may be required for "maintain", to ensure the conservation objective for each individual site is met. Following discussions with local industry, the most favoured option for management of the features on this site is through a KEIFCA byelaw.

Option 0: Do nothing: This option would not involve introducing any permanent management measure. This option would mean that risks to the site from damaging activities would not be addressed.

Option 1: KEIFCA byelaw to prohibit bottom towed gears over "recover" features with appropriate buffering ('zoned management'). This option would involve the introduction of management over areas of the site where features with a "recover" general management approach are known to occur. Managing the site in this way would be challenging due to the more mobile nature of *Sabellaria* features. This option would not go far enough in promoting the management of the wider ecosystem in the site and as such, is not appropriate in this case.

Option 2: KEIFCA to work with fishermen to implement a voluntary agreement on the use of bottom towed gear within the site: This option would involve the development of voluntary codes of practice to protect features. KEIFCA has considered this option in light of Better Regulation Principles, which require that new regulation is introduced only as a last resort. Discussions with local fishing communities resulted in support for legislative management on the whole. There was concern that if voluntary agreements were used, the local industry would be co-operative but larger nomadic vessels would still fish the site, leading to degradation of features. KEIFCA considers that due to the need to protect features quickly, and the risk that even low levels of interaction could lead to deterioration of the feature, voluntary measures are not appropriate in this case.

Option 3: IFCA byelaw prohibiting bottom towed gear throughout the MCZ ('full site closure')

IFCAs have been established as the lead regulator for the sustainable management of inshore fisheries. As such, the IFCA is the most appropriate authority to take forward any permanent fisheries management within 6 nautical miles. This byelaw would close off Folkestone Pomerania MCZ to the use of bottom towed fishing gear by prohibiting the use of any equipment which could be dropped, moved, towed or dragged along the seabed and cause damage to the respective designated features in the MCZ. Ease of enforcement and the need to have clear demarcation to promote compliance was taken into account in developing this option as well as ensuring site integrity is promoted through management. **This is the Recommended Option for the management of Folkestone Pomerania MCZ**

6. Analysis of costs and benefits²⁴ - Option 3

There will be no additional costs or benefits to any sector relating to the prohibition of bottom towed gear within Thanet Coast SAC and Essex Estuaries SAC as this byelaw maintains the *status quo* in those sites of the original byelaw, the IA for which can be found in Appendix 1. All following costs and benefits are for the introduction of a bottom towed gear prohibited area for Folkestone Pomerania MCZ.

6.1 The exclusion of bottom towed gear from the proposed area would result in the following costs:

- Direct cost to the industry from reduced fishing grounds
- Costs associated with displacement to other fishing grounds
- Potential impacts on other areas due to displacement
- Administrative and enforcement costs

Direct costs to the fishing industry, including potential displacement costs, and administrative and enforcement costs can be monetised and these estimated values have been collated and presented as part of the impact assessment. Environmental costs due to increased damage of habitats are difficult to value and are therefore described here as non-monetised costs.

6.2 Information available to inform an assessment of the impacts of the proposed closure has been taken from:

- Details of licensed fishing vessels with the ability to tow bottom gear in the area (MMO list of registered vessels combined with KEIFCA officers local knowledge)
- Landings data for vessels from 2008 to June 2011 taken from entered log book and sales note data provided by the MMO statistics unit. MMO landings data goes only to ICES area rectangles and not to specific locations of catch.
- Information gathered from fishers and merchants directly by KEIFCA.

6.3 Activities within the area of Folkestone Pomerania MCZ

6.3.1 The area to the south east of Dungeness point is a high active maritime area with a large range of activities. The Dover Strait is home to some of the busiest shipping areas in the world. The region is also a prime area for diving and recreational sea angling.

6.3.2 Fishing activity is focused on a number of key areas in the region. This is due to a restricted number of areas being suitable for fishing. Trawling is focused on Hythe bay and Rye bay. There are a high number of hazards in other areas such as rocky terrain and shipwrecks which restrict the ability of vessels to tow fishing gear. These areas are used for lobster pots and in some cases are fished with static and drift nets.

6.3.3 Sole is the most commonly targeted species in the region but it is also a prime fishing area for species such as bass, plaice, cod and thornback ray. Potting for whelk, lobster and crab occurs close to the coastline while there is a scallop fishery off Dungeness point and in Rye bay.

²⁴ UKFEN (2012) offers useful industry related guidance for financial and economic impact assessments.

6.4 Direct costs to the fishing industry from the recommended option

6.4.1 Valuation of affected landings

The direct impact on fishing vessels would be a reduction in catch and therefore landings from bottom towed gear in the proposed closed area. In order to estimate potential impacts, landings data supplied by the MMO were analysed. Folkestone Pomerania MCZ lies in the area of two ICES Rectangles; 31F1 which is in area IVc and 30F1 which lies in area Viid. Annual landings data for these two area for three years is displayed in table 2 below.

Year	31F1	30F1
2010	£110,678.02	£71,105.25
2011	£100,546.84	£212,459.11
2012	£110,830.55	£72,395.87
Average	£107,351.80	£118,653.41

Table 2: Landings values for ICES rectangles that overlap with Folkestone Pomerania

A calculation has been made into the maximum value potentially lost to those vessels excluded from the fishery, based on the area of the Folkestone Pomerania MCZ byelaw area as a percentage of the area of ICES rectangle 31F1 and 30F1. This value is calculated as an annual maximum of £917.

As an average over 3 years, this provides only a snapshot of a fishery which may be highly variable over different years. It is also important to note that this figure is only a percentage of overall landings based on area size of Folkestone Pomerania MCZ. It is likely that the value would be significantly less than this figure due to limitations on the ability of vessels to fish the area currently.

6.4.2 Likely effects on fishing fleet from closure

As the number of vessels which have been observed fishing within the area is very low, it is expected that the impact on the fishing fleet from this closure will be limited. Due to the fact that the ICES rectangle covers such a large area containing other key fishing grounds, it is not possible to accurately identify the value of the proposed closed area from landings declarations.

Catch value has been estimated based on the landings from ICES area 31F1 and 30F1 from vessels identified as landing fin fish from this area since 2010. Table 2 shows value of fish landed between January and December for the three years: 2009, 2010 and 2011.

These figures indicate the high variability of this fishery throughout different years and there are a number of factors which impact on the landings and catch value. It is therefore difficult to make definitive conclusions about any potential impact that the closure will have. In addition, the landings data available from the MMO does not pinpoint exactly the area where the catch is taken as the ICES area IVc extends across a wide area with many different types of fishery.

6.4.3 Adaptability

In order to assess the likely effects of the proposed closure on fishing activities, the extent to which vessels would be able to maintain the value of the catch by moving effort to other areas needs to be assessed.

This proposed option will only limit the use bottom towed fishing gear over the site and not the use of fixed/ drift nets and pots. The majority of affected fishers stated that as the MCZ is not a prime fishing ground, they would not need to change fishing habits significantly. Trawling within the site is restricted due to the presence of wrecks, boulder outcrops and other obstacles. As a result, the potential for displacement will be minimal.

6.5 Indirect costs to the industry

For the recommended option, there may be potential increased costs in terms of fuel and operating costs for vessels travelling further afield to access alternative fishing grounds and to compensate for potential loss of catch due to the proposed closed area. These costs are difficult to predict and quantify but as fishermen currently fish within the site sporadically, it is not likely that the impact on fishermen from displacement will be significant.

6.6 Administrative and enforcement costs

The lead responsibility of enforcing an IFCA byelaw under section 155 of the Marine and Coastal Access Act 2009 will fall to the KEIFCA and all of the proposed closed area lies within 6nm. The existing routine patrols undertaken by the IFCA in the area would be the most likely method of enforcement as all fishing vessels in the area are under 15m and therefore do not have VMS.

KEIFCA currently have the preceding byelaw to this in place in the Essex Estuaries SAC and Thanet Coast SAC at present, closing these areas to bottom towed fishing gear. Based on experience of enforcement activities at these sites, estimated potential additional costs

for the Folkestone Pomerania MCZ site have been calculated and are shown in table 3. Total potential costs for both sites would therefore be approximately £32,500 per annum.

Table 3 Annual additional costs of enforcement of recommended option per site

Activity	Cost per Unit (£)	Number of Units per year	Total cost per year (£)
Routine shore patrol surveillance *	£250	6	£1500
Routine Sea Patrols **	£1500	8	£12,000
Additional IFCA surveillance***	£2250	4	£9000
Prosecution/investigation/ Guilty Plea only ****	£10,000	1	£10,000
TOTAL			£32,500

* Routine shore based enforcement involving one Inshore Fisheries and Conservation Officer (IFCO) plus vehicle

** Patrol Vessel running costs per day based on 2012 IFCA stats

*** Intelligence led surveillance involving several IFCOs and patrol vessel (PV) per day

**** Including IFCO and PV time. Administration and Legal fees. Not-guilty pleas could substantially increase court costs

6.7 Benefits of recommended option

The exclusion of bottom towed gear from Folkestone Pomerania MCZ would prevent the use of bottom towed gear over the features and result in environmental benefits of maintaining or recovering habitats. It is not possible to quantify and monetise these benefits and therefore they are described here as non-monetised benefits.

The ross worm and honeycomb worm reefs provide an important hard substrate within a predominately soft-sediment environment, which provides unique refuge for certain species. Biogenic reefs increase habitat heterogeneity and offer associated species a surface for attachment (e.g. tubeworms, hydroids, bryozoans, sponges and ascidians), and a place to escape from predation (Bruno & Bertness, 2001)²⁵. Ross worm reefs also provide some degree of coastal protection and are important areas for nutrient cycling, carbon and nitrogen fixing and sediment stabilisation. A protected reef habitat is a natural refuge for creating populations of targeted and by catch species.

Exposed rock ledges and boulder-strewn platforms support large rich communities representing a rare example of the habitat type '*fragile sponge and anthozoan communities on subtidal rocky habitats*'. Anthozoans are a group of soft animals with feathery tentacles and these, along with large and slow growing species such as branching sponges tend to dominate such habitats. These animals live in colonies which in turn support other species, including sea squirts and sea anemones, which live under and amongst them. The group of features found in this site support a diverse range of benthic fauna as well as providing protection for small fish species.²⁶

²⁵ Bruno, J. and M. D. Bertness. 2001. Positive Interactions, Facilitations and Foundation Species. In: *Marine Community Ecology*. M. D. Bertness, S. D. Gaines and M. Hay (Editors). Sinauer Associates, Sunderland Massachusetts.

²⁶ UK Biodiversity Action Plan Priority Habitat Descriptions, *Sabellaria spinulosa* Reefs. From: UK Biodiversity Action Plan; From: UK Biodiversity Action Plan BRIG (ed. Ant Maddock) 2008.

The benefits of this byelaw are to afford appropriate protection and a safeguarding of the ecological characteristics that can possibly lead to more abundance of biodiversity compared to the rest of the fishing grounds. The environmental benefits from the introduction of this byelaw will be significant as it will protect the features within the site from bottom towed gear. This will contribute to meeting the “maintain” and “restore” conservation objective. This will have an added benefit on other features within the MCZ and will have an overall benefit to the wider ecosystem as a result of the prohibition recommended.

7 Conclusion

Recommended option: Option 3 - KEIFCA byelaw to prohibit the use of bottom towed fishing gears within Folkestone Pomerania MCZ.

This option is recommended following extensive consultation with the local fishing community. This option best achieves the aims of recovering certain features to favourable condition whilst also maintaining the favourable condition for other features. The local community felt strongly that managing the site using legislative measures would ensure a high level of compliance. Closing the entire site also contributes to compliance through ease of enforcement.