

Title: Closed Areas Byelaw 2021	Impact Assessment (IA)
IA No:	
RPC Reference No:	
Lead department or agency: Eastern Inshore Fisheries and Conservation Authority (Eastern IFCA)	
Other departments or agencies: Marine Management Organisation, Defra	
Contact for enquiries: Julian Gregory (CEO) Eastern IFCA, 6 North Lynn Business Village, Bergen Way, King's Lynn, Norfolk, PE30 2JG tel:01553775321 email: mail@eastern-ifca.gov.uk	
Date: 08/12/2021	
Stage: Draft 1	
Source of intervention: Domestic	
Type of measure: Other	
RPC Opinion: Not applicable	

Summary: Intervention and Options

Cost of Preferred (or more likely) Option			
Total Net Present Social Value	Business Net Present Value	Net cost to business per year	Business Impact Target Status
-£145,597.7	-£88,192.7	£10,245.8	Qualifying provision

What is the problem under consideration? Why is government action or intervention necessary?

Eastern IFCA is required to ensure that fishing activity does not have an adverse impact on the site integrity of Marine Protected Areas (MPAs) within the Eastern IFC district. To achieve this, intervention is required to introduce spatially restricted areas that are closed to bottom towed gear, and in some cases, hand working and crab tiling, within the following MPAs: the Wash and North Norfolk Coast Special Area of Conservation (SAC); the Cromer Shoal Chalk Beds Marine Conservation Zone (MCZ); the Inner Dowsing, Race Bank and North Ridge SAC; the Haisborough, Hammond and Winterton SAC; and the Humber Estuary SAC.

What are the policy objectives of the action or intervention and the intended effects?

To remove fishing pressures which will hinder the conservation objectives of the MPAs and protect site integrity whilst minimising the socioeconomic impact on fisheries livelihoods.

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

Option 0 – Do nothing

Option 1 – Closed Areas Byelaw 2021: Implement a byelaw under the Marine and Coastal Access Act 2009 (c.23) to close discrete areas to fishing activity using bottom towed gear, and in some cases crab tiling and hand working, to prevent impact on the site integrity of the MPAs within the Eastern IFC district.

Option 2 – Implement total closure to bottom towed gear activity (and in some closures hand working and crab tiling) across the Marine Protected Areas within the Eastern IFC district.

Option 3 – As per Option 1 through using voluntary measures.

Option 1 (Closed Areas Byelaw 2021) is preferred because it will ensure that fishing activity will not adversely impact the conservation objectives of the site, whilst mitigating socio-economic impact on fishing activity through spatially discrete closed areas. A regulatory approach is required to address the level of risk associated with the fisheries in relation to the conservation objectives of the MPAs.

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

Is this measure likely to impact on international trade and investment?	No			
Are any of these organisations in scope?	Micro 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 Chief Executive:

Julian Gregory

Date:

22/11/2021

Summary: Analysis & Evidence

Policy Option 1

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2021	PV Base Year	Time Period Years 10	Net Benefit (Present Value (PV)) (£)		
			Low: -£22,509,187.8	High: 0	Best Estimate: -£159,442.7

COSTS (£)	Total (Constant Price)	Transition Years	Average (excl. Transition) (Constant Price)	Annual (Constant Price)	Total (Present Value)	Cost
Low	Optional		0		0	
High	Optional		£2,615,010.2		£22,509,187.8	
Best Estimate			£18,523.3		£159,442.7	

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

The key monetised cost is the loss of fishing ground for those who use bottom towed gear. The primary fishery impacted will be the brown shrimp particularly within the Wash and North Norfolk Coast SAC and the Inner Dowsing Race Bank and North Ridge SAC, where brown shrimp is the main fishery prosecuted using bottom towed gear. However the impact of the closures in these areas is assessed to be at a low scale, data suggests the closures are not covering important brown shrimp ground within the sites. Additional low-scale impact is identified in the loss of potential future fishing opportunities (seed mussel) in relation to some closures. Costs to Eastern IFCA relate to the monitoring and enforcement of the areas however this is not anticipated to be significant in relation to regular operation.

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

The cumulative impact of closures and restrictions on fishing areas (including from external forces such as windfarms etc.) alongside the limited availability of species in the district limits fishing opportunity within the Eastern IFC district. The proposed option (the Byelaw) attempts to mitigate the necessity for closures with this impact by only closing discrete areas following consultation with affected stakeholders. Potential for low-level displacement to other areas because of closures, however the likelihood of displacement is further limited noting the limited species available and remaining available areas to fish inshore.

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

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

None identified.

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

The key non-monetised benefits of the proposed management are:

- To protect the Wash and North Norfolk Coast Special Area of Conservation (SAC); the Cromer Shoal Chalk Beds Marine Conservation Zone (MCZ); the Inner Dowsing, Race Bank and North Ridge SAC; the Haisborough, Hammond and Winterton SAC; and the Humber Estuary SAC from the impacts of bottom towed fishing and crab tiling and hand working in some closures.
- To support the long-term sustainable health of the fisheries in these areas
- To contribute to the overall health of the marine environment by contributing to the network of well managed

Key assumptions/sensitivities/risks	Discount rate (%)	3.5
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Average cost estimates for the fishing industry are based on MMO landings values, estimated within the management areas and the International Council for the Exploration of the Sea (ICES) statistical rectangles 34FO, 34F1, 35FO and 35F1 (Appendix 1, Chart A). Eastern IFCA catch returns data for shrimp is also used alongside VMS data that monitors location, speed and heading of vessels over 12m, however this does exclude a minority of affected vessels under this length. Actual landings derived directly from the proposed management areas are not known.

As the more important areas of activity closer inshore are easily accessible, estimated costs to the fishing industry are likely to be an overestimate, because those likely to be impacted are more likely to be fishing in the other more important areas. The total costs are derived as a proportion (the percentage coverage) of the total value of the ICES rectangles. Because activity is not equally distributed across the areas and is known to vary, accurate figures specific to each closure are not known. In addition, costs are estimated as lost revenue rather than a loss in profits to the fishing industry, and therefore overestimate the economic loss to the fishing sector as they do not account for the costs of fishing.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £:			Score for Business Impact Target (qualifying provisions only) £:
Costs: £11,220.1	Benefits: 0	Net: £11,220.1	

Evidence Base

1. Introduction
2. Problem under consideration
3. Rationale for intervention
4. Policy objectives and intended effects
5. Rationale and evidence used to justify the level of analysis used in the IA (proportionality approach)
6. Options and the preferred option
7. Cost and benefits
8. Risks and assumptions
9. Impact on small and micro businesses
10. Wider impacts
11. Monitoring and evaluation
12. Conclusion summarising recommended option
13. Appendices
14. References

1. Introduction

1.1. The preferred option, The Closed Areas Byelaw 2021, proposes closed areas to specific types of fishing activity within five Marine Protected Areas (MPAs):

1.1.1. **The Wash and North Norfolk Coast Special Area of Conservation (WNNC)** which lies in International Council for the Exploration of the Sea (ICES) statistical rectangles 34F0, 34F1, 35F0, 35F1 (Appendix 1, Chart A). The site is located in the North Sea, along the Lincolnshire and East Anglian coastline.

- 5 distinct closures to bottom towed gear are proposed in this MPA
- 1 distinct closure to bottom towed gear, crab tiling and handwork is also proposed.

1.1.2. **The Inner Dowsing, Race Bank and North Ridge MPA (IDRBNR)** lies in ICES statistical rectangle 35F0 (Appendix 1, Chart A). The site is located in the North Sea along the Lincolnshire coast.

- 17 distinct closures to bottom towed gear are proposed in this MPA.
- 1 amendment to an existing closure is proposed (the existing part of the closure overlaps with the WNNC).

1.1.3. **The Humber Estuary Special Area of Conservation (HE)** lies in ICES statistical rectangle 35F0 (Appendix 1, Chart A). The site is located in the North Sea along the northern Lincolnshire coastline.

- The existing closure in this MPA restricts activity using bottom towed gear, and hand working and crab tiling, to prevent an adverse impact on the integrity of the site.

- Assessment and review of the closure as part of monitoring processes has concluded that the size of the restricted area is in excess of what is required to provide a protective effect. Eastern IFCA is required to ensure that management is proportionate and evidenced based, therefore the Byelaw proposes a reduction to the size of the closure.

1.1.4. **The Haisborough, Hammond and Winterton Special Area of Conservation (HHW)** lies in ICES statistical rectangle 34F1 (Appendix 1, Chart A). The site is located in the North Sea off the northeast coast of Norfolk.

- 3 distinct closures to bottom towed gear are proposed in this MPA.

1.1.5. **The Cromer Shoal Chalk Beds Marine Conservation Zone (CSCB)** lies in ICES rectangles 34F1 and 35F1 (Appendix 1, Chart A). The site is located in the North Sea along the North Norfolk coast, 200m offshore from between Weybourne and Happisburgh.

- Assessment of commercial fishing activities within the MCZ identified that bottom towed gear would be likely to cause irreversible damage to the chalk or peat and clay features of the site.
- Eastern IFCA is required to prevent this interaction through the implementation of a site-wide closure to bottom towed gear.
- Previous consultation in 2019 identified low level activity using bottom towed gear at a low impact within a close inshore section of the MCZ. Assessment of the activity (approved by Natural England) has concluded that the activity can continue within the spatially defined Artisanal Shrimp Management Area with measures in place to prevent adverse impact on the site.

- 1.2. Bottom towed fishing means fishing using gear which is towed, dragged or pushed through the water whilst in contact with the seabed. This includes use of demersal otter and beam trawls, shellfish dredges and demersal seines.
- 1.3. Crab tiling means laying artificial items or structures in intertidal areas to gather crabs for the purpose of fishing
- 1.4. Handwork means the collection of sea fisheries resources including bait, using the hands or handheld fishing gear.
- 1.5. Inshore of 6nm, Eastern IFCA is the lead regulator for fishing and has the power to introduce byelaws to manage activity within the Eastern IFC district.
- 1.6. The byelaw includes a generic exemption from the closed areas in relation to activities undertaken in exercising a 'Right of Common', this replicates the effect of the existing MPA 2018 byelaw which concluded that such activities did not pose a risk to site integrity.
- 1.7. The byelaw requires that bottom towed gear is secured and stowed when transiting through Closed Areas except for when transiting smaller areas where it is possible to lift the gear from the water, to enable fishing between the smaller areas effectively and safely.
- 1.8. This Impact Assessment (IA) has been prepared to outline the costs and benefits of the proposed Eastern IFCA byelaw to prohibit bottom towed fishing, and within limited areas, crab tiling and handwork, within discrete closed areas across the Eastern IFC district. The IA also indicates why the option being recommended is the preferred option for management.

2. Problem under consideration

- 2.1. Eastern IFCA is required to ensure that the fisheries within MPAs do not adversely impact the conservation objectives of the sites (*The Conservation of Habitats and Species Regulations 2017*, no.12). The CSCB Marine Conservation Zone is the only such protected area within the Eastern IFC district. Eastern IFCA has additional duties (*Marine and Coastal Access Act 2009*, c23 s.154) for Marine Conservation Zones: to seek to further the conservation objectives of the site.
- 2.2. Defra's Revised Approach (Defra, 2013) to fisheries management outlines fishing activities in a Matrix according to the potential or actual impact of fishing gear types on the feature(s) for which the MPA has been designated. For 'red risk' interactions, identified within the Matrix, management is required to protect the MPA feature(s) from fishing activity. 'Amber risk' interactions between site features and gear as identified in the Matrix require site-specific assessment to inform any required management of fishing activity.
- 2.3. The closures proposed under this byelaw are required in addition to those already in place under the Marine Protected Areas Byelaw 2018 to prevent red risk and amber risk interactions. The closed areas already in place are outlined in Table 1. The proposed closed areas to be implemented under this byelaw are outlined in Table 2, including the interactions (protected feature(s) and impacted gear types), the relevant MPA, ICES rectangle and chart number.
- 2.4. The byelaw also proposes amendments to closures already in place under the Marine Protected Areas Byelaw 2018:
- 2.4.1. A reduction in the size of closure 39 (previously named closure 36 in the MPA 2018 byelaw) in the Humber Estuary;
- 2.4.2. Closures previously named 32 – 35 (in MPA 2018) in the Wash and North Norfolk Coast are extended to form one larger closure, closure 32.
- 2.4.3. Closure 19 in the WNNC in place under the MPA 2018 byelaw, is extended by 23ha into the IDRBNR MPA to cover the extent of the site feature.

Table 1. List of existing closures in place under the Marine Protected Areas Byelaw 2018

Closure(s)	Chart	ICES Rec.	MPA	Existing measure	Protected Feature(s)	Risk
1 - 13	1	34F0	WNNC	Closed to bottom towed gear	Biogenic reef: Intertidal mussel beds	Red
14 - 22	2	35F0	WNNC	Closed to bottom towed gear	Biogenic reef: <i>Sabellaria</i>	Red
23 - 28	2	34F0	WNNC	Closed to bottom towed gear	Biogenic reef: <i>Sabellaria</i>	Red
29	2	35F0, 34F0	WNNC	Closed to bottom towed gear	Subtidal stony reef	Red
30	3	34F0	WNNC	Closed to bottom towed gear	Intertidal eelgrass beds	Red
31	3	34F0, 34F1	WNNC	Closed to bottom towed gear	Subtidal mixed sediment	Red
Previously (32, 33, 34, 35)	3	34F0, 34F1	WNNC	Closed to bottom towed gear	Intertidal eelgrass beds, subtidal mixed sediment subtidal mud (extension proposed below)	Red

Previously 36	6	35F0	HE	Closed to bottom towed gear, crab tiling and handwork	Eelgrass (reduction in size of closure proposed below)	Red
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Table 2. List of proposed closures to be implemented under the Closed Areas Byelaw 2021

Closure	Chart	ICES Rec.	MPA	Proposed measure	Protected Feature(s)	Risk
19	2	35F0	IDRBNR	Closed to bottom towed gear – <i>EXTENSION</i>	Biogenic reef: <i>Sabellaria</i>	Red
32 (previously 32 - 35)	3	34F0, 34F1	WNNC	Closed to bottom towed gear – <i>EXTENSION</i>	(Intertidal eelgrass areas already closed) subtidal mud, subtidal mixed sediment	Red /Amber
33	3	34F0, 34F1	WNNC	Closed to bottom towed gear	Subtidal sand, subtidal mixed sediment, subtidal mud; juvenile fish, harbour seals	Amber /Red
34	3	34F0, 35F1	WNNC	Closed to bottom towed gear	Subtidal mixed sediment, subtidal mud	Amber
35	4	34F0, 35F1	CSCB	Closed to bottom towed gear	Subtidal chalk, infralittoral rock, circalittoral rock, peat and clay exposures, subtidal coarse sediment, subtidal sand, subtidal mixed sediment	Amber
36 - 38	5	34F1	HHW	Closed to bottom towed gear	Biogenic reef: <i>Sabellaria</i>	Red
39 (previously 36)	6	35F0	HE	Closed to bottom towed gear, crab tiling and handwork – <i>REDUCTION</i>	Eelgrass	Red
40 - 51	7	35F0	IDRBNR	Closed to bottom towed gear	Biogenic reef: <i>Sabellaria</i>	Red
52	2	35F0, 34F0	WNNC	Closed to bottom towed gear	Circalittoral rock	Red
53	1	34F0	WNNC	Closed to bottom towed gear, crab tiling and handwork	Biogenic reef: <i>Sabellaria</i>	Red
54 - 58	7	35F0	IDRBNR	Closed to bottom towed gear	Biogenic reef: <i>Sabellaria</i>	Red
59, 60 (specific closures within closure 35)	4	34F1	CSCS	Closed to bottom towed gear	Subtidal chalk	Amber

3. Rationale for intervention

- 3.1. Eastern IFCA has a duty under the Marine and Coastal Access Act (*MaCAA* 2009) to ensure the sustainable exploitation of sea fisheries resources within the Eastern IFC district.
- 3.2. In discharging its duties Eastern IFCA is required to ensure good environmental status of fish and shellfish stocks through responsive and flexible management, taking into account

scientific and technological developments over time as per the Marine Strategy Framework Directive (2008/56/EC).

3.3. Fishing activities can potentially cause negative outcomes in the marine environment as a result of market failures. These failures can be described as:

3.3.1. *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.

3.3.2. *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.

3.3.3. *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.

3.4. This byelaw aims to redress these sources of market failure in the marine environment in the following ways:

3.4.1. Management measures to conserve the designated features of MPAs which will ensure negative externalities are reduced or suitably mitigated.

3.4.2. Management measures will support the continued existence of public goods in the marine environment by conserving the range of biodiversity in the Eastern IFC District.

3.4.3. Management measures will also support the continued existence of common goods in the marine environment by ensuring the long-term sustainability of shrimp stocks in the Eastern IFC district.

4. Policy objectives and intended effects

4.1. The Marine and Coastal Access Act (*MaCAA* 2009) established IFCA's to 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.

- 4.2. The byelaw seeks to prevent adverse impact on the conservation objectives of the MPAs that have been identified as at risk to impact from bottom towed gear and, in some cases crab tiling and handwork. This will be achieved by prohibiting fishing using bottom towed gear, and in some cases crab tiling and handwork, in discrete closed areas across the MPAs specified.
- 4.3. The social and economic impacts of management intervention will be minimised where possible.
- 4.4. The closures will be clear and enforceable.

5. Rationale and evidence used to justify the level of analysis used in the IA (proportionality approach)

- 5.1. This IA has used the following information:
 - 5.1.1. MMO landings data (2010 to 2020 inclusive, 2021 not included due to the dataset being incomplete)
 - 5.1.2. VMS data (2005 to 2019 inclusive)
 - 5.1.3. Eastern IFCA recorded catch returns data
 - 5.1.4. Eastern IFCA assessment data
 - 5.1.5. Anecdotal information provided by fisheries stakeholders (during informal engagement)
- 5.2. The IA has considered the best available evidence to estimate monetised costs where the data will allow.
- 5.3. To estimate economic impact of the proposed management, fishing patterns of vessels using bottom towed gear within and around the proposed management areas from 2010 to 2020 were analysed using an annual average. Fisheries landings are reported at ICES statistical rectangle level. The proposed management areas fall within the ICES rectangles 34F0, 34F1, 35F0 and 35F1.
- 5.4. Assessment of the landings data shows that the the primary fisheries that are targeted using bottom towed gear in these areas include, brown shrimp, cockles, scallops, mussels, pink shrimp, sole, whiting, bass and cod. Of these fisheries brown shrimp is the most significant and therefore the most likely to be impacted by the closures.
- 5.5. Data is not held to be able to estimate any monetary impact from prohibiting crab tiling and handwork as in closures 39 and 53. However there is not known to be any such activity in the areas anecdotally.
- 5.6. Ongoing development of the byelaw has resulted in several informal consultations being held between 2019 - 2021 with stakeholders who are likely to be impacted.
- 5.7. The boundaries of the proposed management areas were determined taking into account the best available evidence of the extent and sensitivity of the feature as well as the need for a 'buffer zone' between the features and the byelaw boundary. Ease of enforcement and the need to have a clear demarcation to promote compliance was also taken into account when considering the shape of the closed areas.

6. Options and the preferred option

6.1. Option 0. Do nothing

Doing nothing would not reduce the impact from bottom towed gear (and in some cases crab tiling and handwork) on the features of the specified MPAs. This would be contrary to the duties of the IFCAs and is therefore insufficient. To do nothing in relation to the reduction of closure 39, would mean to leave the larger closure in place to no additional benefit.

6.2. Option 1. Closed Areas Byelaw 2021: Eastern IFCA byelaw to prohibit bottom towed fishing, and in some cases crab tiling and handwork, within the specified closed areas (the preferred option)

This option would remove the impact of bottom towed fishing on the features identified as 'red risk' and the 'amber risk' features that have so far been assessed, preventing adverse impact on the conservation objectives of the MPAs. This option will allow low-impact activity using bottom towed gear within the Artisanal Shrimp Management Area (chart 4) in accordance with policy that has been formally agreed with Natural England. This option will also reduce the size of closure 39 to ensure that the closure is limited to the sufficient protected effect to meet the conservation objectives of the site. This option best meets the duties of Eastern IFCA to achieve balance in fisheries and conservation objectives.

6.3. Option 2. Total closure of all MPAs to bottom towed gear.

This option would go beyond the minimum requirement to achieve the conservation objectives of the MPAs and have a disproportionate impact on the inshore fishing industry in the Eastern IFC District. This approach would not be evidence based in relation to the Artisanal Shrimp Management Area, within which low impact activity has been assessed to be able to continue, and the closure 39 in the Humber Estuary where the current closure size is disproportionate to the level of benefit.

6.4. Option 3. Management of activity through a voluntary agreement

The principles of Better Regulation require that statutory regulation is introduced only as a last resort. However, the Revised Approach to fisheries management necessitates that 'red risk' interactions are prevented, additionally where 'amber risk' interactions are assessed, and potential harmful impact is proven the interaction must also be prevented. Due to the need to mitigate impact on fishing industry closures have been drawn that are spatially discrete and only close the minimum required to protect the feature and meet the conservation objectives of the site. This requires that fishers have a clear understanding of the location and necessity of the closures. The risk proposed by potential damage to the site through continued activity using bottom towed gear (and in some cases crab tiling and handwork) necessitates that regulation is required to ensure adequate protection and monitoring of the features.

7. Monetised and non-monetised costs and benefits of each option (including administrative burden)

7.1. Option 0. Do nothing

Monetised costs: None identified.

Non-monetised costs: Environmental costs due to impact being allowed to proceed in areas where adverse impact has been identified. Possibility of legal challenge as a result of Eastern IFCA being in contravention of legislative requirements.

7.2. Option 1. Closed Areas Byelaw 2021: Eastern IFCA byelaw to prohibit bottom towed fishing, and in some cases crab tiling and handwork, within the specified closed areas (the preferred option)

Monetised costs:

7.2.1. Due to the distribution of the closed areas across 5 MPAs the monetised costs are considered for each MPA below. The costs considered cover the proposed closures under the Closed Areas Byelaw 2021, it does not consider the cost of the closures that are already in place under the Marine Protected Areas Byelaw 2018 (which the closures in this Byelaw will amend or be implemented in addition to). The 'high estimate' cost however covers the whole of the relevant ICES area(s) and therefore will be the same as if all closures were considered.

7.2.2. The Wash and North Norfolk Coast Special Area of Conservation (WNNC)

- Best estimate (£9,087.02) is estimated from the percentage coverage of the closures in these areas (0.49%) in relation to the total size of the ICES rectangles 34F0, 34F1, 35F0 and 35F1, and an average of the total sum value of the fisheries using bottom towed gear across these is determined. It is difficult to determine impact upon the most economically valuable fishery, brown shrimp, in closures 31 - 34 in this MPA due to the low level of returns data. Shrimp effort is primarily focused on the central areas in The Wash where closures are already implemented under the Marine Protected Areas byelaw 2018.
- High estimate (£1,854,495.32) is estimated from the average total sum value of 34F0, 34F1, 35F0 and 35F1. This approach assumes that all activity from these areas is concentrated within the closed areas which is known not to be the case. Landings data for ICES statistical rectangles 34F0, 35F0, 34F1 and 35F1 were used to estimate monetary values which will have the effect of an even greater overestimation than for those estimated from one ICES area.
- Low estimate (£0) estimated in the understanding that fishing activity is mobile and frequently changing, due to the spatial accuracy of determining the exact amount of activity within the closed area from landings data available.

7.2.3. The Haisborough, Hammond and Winterton Special Area of Conservation (HHW) The Inner Dowsing, Race Bank and North Ridge MPA (IDRBNR)

- Best estimate (£207.94) is estimated from the percentage coverage of the closures in these areas (1.02%) in relation to the total size of the ICES rectangle 34F1, and an average of the total sum value of the fisheries using bottom towed gear across these is determined. This is likely to be an overestimate as consultation has suggested there is a low level of activity with bottom towed gear in these areas.
- High estimate (£20,336.948) is estimated from the average total sum value of 34F1. This approach assumes that all activity from this area is concentrated within the closed areas which is known not to be the case.
- Low estimate (£0) estimated in the understanding that fishing activity is mobile and frequently changing, due to the spatial accuracy of determining the exact amount of activity within the closed area from landings data available.

7.2.4. The Humber Estuary Special Area of Conservation (HE) and The Inner Dowsing, Race Bank and North Ridge MPA (IDRBNR)

- The monetised costs of these MPAs are considered together as they are both located within ICES rectangle 35F0, and the Humber Estuary closure is of such a scale (0.002%) that impact is impossible to accurately determine.

Additionally, the Humber Estuary closure is proposed to reduce in size therefore existing possible monetary impacts in this area are likely to be reduced.

- Best estimate (£915.20) is estimated from the percentage coverage of the closures in these areas (0.13%) in relation to the total size of the ICES rectangle 35F0, and an average of the total sum value of the fisheries using bottom towed gear in 35F0. This is likely an overestimate because VMS data for the primary fishery in this area (brown shrimp) suggests that activity is very low in the closed areas. Consultation has not highlighted these areas as uniquely important areas in comparison to the entire area.
- High estimate (£703,987.75) is estimated from the average total sum value of 35F0. This approach assumes that all activity from 35F0 is concentrated within the closed areas which is known not to be the case.
- Low estimate (£0) estimated in the understanding that fishing activity is mobile and frequently changing, due to the spatial accuracy of determining the exact amount of activity within the closed area from landings data available, it is possible that no activity occurs within the areas. The VMS data supports low evidence of activity.

7.2.5. The Cromer Shoal Chalk Beds Marine Conservation Zone (CSCB)

- Best estimate (£1,009.93) is estimated from the percentage coverage of the closures in these areas (4.01%) in relation to the total size of the ICES rectangles 34F1 and 35F1 and an average of the total sum value of the fisheries using bottom towed gear across these is determined. This is likely to be an overestimate as consultation has suggested there is a low level of activity with bottom towed gear in these areas.
- High estimate (£25,185.36) is estimated from the average total sum value of 34F1. This approach assumes that all activity from this area is concentrated within the closed areas which is known not to be the case.
- Low estimate (£0) estimated in the understanding that fishing activity is mobile and frequently changing, due to the spatial accuracy of determining the exact amount of activity within the closed area from landings data available. Additionally, the MCZ is known for its potting fisheries which are incompatible with bottom towed fishing due to the nature of the gear which suggests that activity within the site is already low.

Non-monetised costs:

7.2.6. The impacts are likely to be distinct for each closure due to the variability of the grounds and the specificity of grounds for certain types of fishing which means that it is not always possible for the same activity to continue in another area. However, some risk from displacement is possible from activity into surrounding areas given the amount of closures across the MPAs. The total closures for all areas including those already implemented will be 58 (with distinct closures 59 and 60 within the Artisanal Shrimp Management Area that is within closure 35). However, catch returns data, VMS, and consultation suggests that most activity with bottom towed gear is already external to the proposed areas.

7.2.7. Closure 32 in the WNNC includes a seasonal corridor to enable activity during periods where the area is not sensitive to impacts from the removal of juvenile fish.

7.2.8. Impact on future mussel seed fisheries is not known. Whilst there have not been any viable mussel seed fisheries for relaying for a number of years, consultation

responses in 2020 and 2021 suggested that closed areas proposed within IDRBNR were historic seed areas. Historic survey data suggests that seed areas were mostly located outside the closed areas. Closures would prevent prospecting for seed mussel. However, should seed mussel be identified within the area, either via non-intrusive survey or by prospecting in the areas adjacent, the potential for a seed mussel fishery remains, subject to the Authority's authorisation, via an exemption to the byelaw (under the Applications and Exemptions Byelaw 2016). Additionally, because the areas are discrete seed-mussel beds may be identified by protrusions of the bed outside the closures.

7.2.9. Loss of fishing activity may have impact on onshore tertiary employment and other related fields.

7.2.10. Direct costs to business could occur due to non-compliance with the regulation. It is difficult to estimate costs, but they would only be placed on business following non-compliance, and ultimately in line with Eastern IFCA's regulation and Compliance Strategy where there is a proportionate approach to enforcement with education, engagement and endorsement of compliance being at the forefront of the strategy.

Costs for Eastern IFCA:

7.2.11. *Monetised:* Additional compliance activities will be required in addition to education and engagement. The cost of such is anticipated to be at low level, with between 4-6 additional sea patrols a year:

- Best estimate (£7,303.2) is estimated from 4 sea patrols a year.
- High estimate (£10,954.8) is estimated from 6 sea patrols a year
- Further evidence of cost is illustrated in Table 3 below.

Table 3. Costs of sea and shore patrols for Eastern IFCA in 2021

2021 totals				
Costs associated with 1 sea patrol				
		employment		cost per 7.4-hour day
Crew: -	Number required	cost including on costs	working days	
Senior IFCO	1	55,585	225	247.04
Grade 5 IFCO	3	125,217	227	551.62
Total cost				798.66
		annual cost	days at sea	
<u>Operation cost of vessel</u>			70	
Maintenance/refit		16,000.00		228.57
Insurance		3,400.00		48.57
Fuel etc.				750
Total Cost		19,250		1,027.14

Total operation cost per day/trip				1,825.80
Costs associated with 1 shore patrol				
		employment		cost per 7.4-hour day
Crew: -		cost inc. on costs	working days	
Grade 5 IFCO	2	83,478	227	367.74
Total cost				367.74
Operation Cost of Patrol vehicle				
	Per day	£20		£20
Total operational cost of shore patrol per day				387.74

7.2.12. *Non-monetised*: Eastern IFCA's approach to enforcement is intelligence led, therefore there is the possibility that in event of non-compliance that the costs of monitoring and enforcement are well in excess of those illustrated above for 4-6 patrols.

7.3. Option 2. Total closure of all MPAs to bottom towed gear.

Monetised costs:

7.3.1. The pink and brown shrimp fisheries alone in the Eastern IFC District are worth between £584,525 and £2,668,788 per annum. The vast majority of these fisheries are thought to occur within the Wash and North Norfolk Coast SAC although there are other notable areas off the Lincolnshire coast.

Non-monetised costs:

7.3.2. The potential impact of this option is likely to be underestimated by the landed value of catch. The factories which process the shrimp caught (both of which are based in King's Lynn) rely to a large degree on the shrimp market. The market price for the processed shrimp is likely to be much higher than the landed value and which includes a significant amount of export to foreign markets (primarily Netherlands). There are a significant number of tertiary jobs associated with this fishery and these processing factories (i.e. engineers, factory workers, delivery drivers).

7.3.3. Closure of the whole site would meet the conservation objectives, however; it is likely to cause a large impact on stakeholders with little or no additional benefit to site integrity. As such, it is considered disproportionate to close the entire site to bottom towed gear.

7.4. Option 3. Management of activity through a voluntary agreement

Monetised costs: If the voluntary measures are adhered to it is possible that the costs will be the same as for Option 1 (the preferred option). However, it is anticipated that voluntary measures will likely be less strictly adhered to and therefore the costs will be reduced. Costs for Eastern IFCA are potentially likely to be less significant due to greater uncertainty surrounding the monitoring and enforcement of voluntary areas.

Non-monetised costs: If the voluntary agreements are not adhered to, there would be the same non-monetised costs as Option 0, as if nothing was done.

8. Risks and assumptions

- 8.1. Cost estimates are based on estimates of UK landings values derived from within the management area. Landings information is reported at ICES rectangle level and it is therefore not possible to ascertain what proportion of the total landings value was actually derived from the proposed management area.
- 8.2. Eastern IFCA is reliant on stakeholders to provide essential information about activity that will be impacted by the proposed closures. Such input is sought in consultation; however it is acknowledged that often that provided may not be to an accurate level and it is extremely unlikely that there would be an emergent active fishery unbeknownst to the Authority.
- 8.3. The absence of VMS 'pings' in an area means that we are confident that this represents the fishing pattern (no fishing in the area). However, given that VMS only 'pings' once every 2 hours it is plausible, although unlikely, that some vessels have fished in the area without the VMS 'pinging'.
- 8.4. The importance of areas closed to fishing are likely to change over time, in accordance with the ephemeral nature of some of the protected features. If the habitat is evidenced to have changed it is likely that the closure may be reviewed, as has been the case in the proposed reduction to the Humber Estuary closure 39, and the extension of closure 19.
- 8.5. Potential displacement to the grounds external to the closure areas is unlikely to the variation of the ground and the vessel capacity for the inshore fleet to change location, however an impact of this is difficult to quantify and impossible to predict where exactly activities will be displaced to.
- 8.6. The increase in closed areas reduced the overall availability of grounds to fish, even where previous activity may have been minimal, therefore increasing pressure on open grounds with potential environmental and welfare impact as competition for reduced grounds increases.

9. Impact on small and micro businesses

- 9.1. Whilst exact data is not available, it is not unreasonable to anticipate a disproportionate impact on smaller businesses with smaller inshore vessels that lack capacity to fish further offshore to find different fishing areas. However, most vessels that operate with bottom towed gear have greater capacity for this work, and VMS data suggests that for brown shrimp in particular, key areas remain open in the close inshore areas within The Wash and along the Lincolnshire Coast.

10. Wider impacts

- 10.1. Wider impacts possible as loss of general fishing opportunity decreases along with opportunities to diversify, for example loss of social heritage and economy should a fishery no longer be viable.
- 10.2. Potential impact of displacement on habitats that remain open as less sensitive as intensity increases.
- 10.3. Loss of tertiary employment through loss of fishing opportunity, including fisheries processors, suppliers etc.

11. A summary of the potential trade implications of measure

- 11.1. None anticipated.

12. Monitoring and evaluation

- 12.1. Eastern IFCA will be responsible for monitoring and enforcing the Byelaw. In line with guidance the Byelaw will be reviewed every four years to ensure that it remains effective.
- 12.2. The Byelaw will be reviewed every 4 years. Monitoring the effectiveness of closures in terms of habitat recovery would require an ongoing programme of vessel-based survey work, although at this stage it is not established whether this cost would fall to Eastern IFCA. Future surveys of the closed areas are estimated to require a minimum of ten survey days per year.

13. Summary of preferred option and description of implementation

- 13.1. The preferred option, Option 1: the Closed Areas Byelaw 2021, will revoke the existing Marine Protected Areas Byelaw 2018 as the closures are proposed addition or amendment to those already implemented under that byelaw.
- 13.2. The Artisanal Shrimp Management Area will be managed in accordance with the Artisanal Shrimp Management Policy to effectively limit the activity within the area to a low level with low impact as is currently the case. The policy will also set out the parameters for establishing risk to the integrity of the site necessitating immediate closure of the area on an annual basis where required.
- 13.3. The closures will come into effect immediately following the implementation of the byelaw. Impacted stakeholders will be notified of the byelaw coming into effect, coordinates and charts will be provided.

14. Appendices

- 14.1. Appendix 1. Chart A: ICES Rectangles and MPA Boundaries
- 14.2. Appendix 2. Charts 1 – 7 of proposed closed areas: Closed Areas Byelaw 2021

15. References

The Conservation of Habitats and Species Regulations 2017, SI/1012 available at: <https://www.legislation.gov.uk/ukxi/2017/1012/contents/made>

Defra, 2013, *The Revised Approach to the Management of Commercial Fisheries in European Marine Sites – Overarching Policy and Deliver Document*, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/345970/REVISED_APPROACH_Policy_and_Delivery.pdf

Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (*Marine Strategy Framework Directive*) available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008L0056-20170607>

The Marine and Coastal Access Act 2009, c.23 available at: <https://www.legislation.gov.uk/ukpga/2009/23/contents>

Appendix 1. Chart A: ICES Rectangles and MPA Boundaries

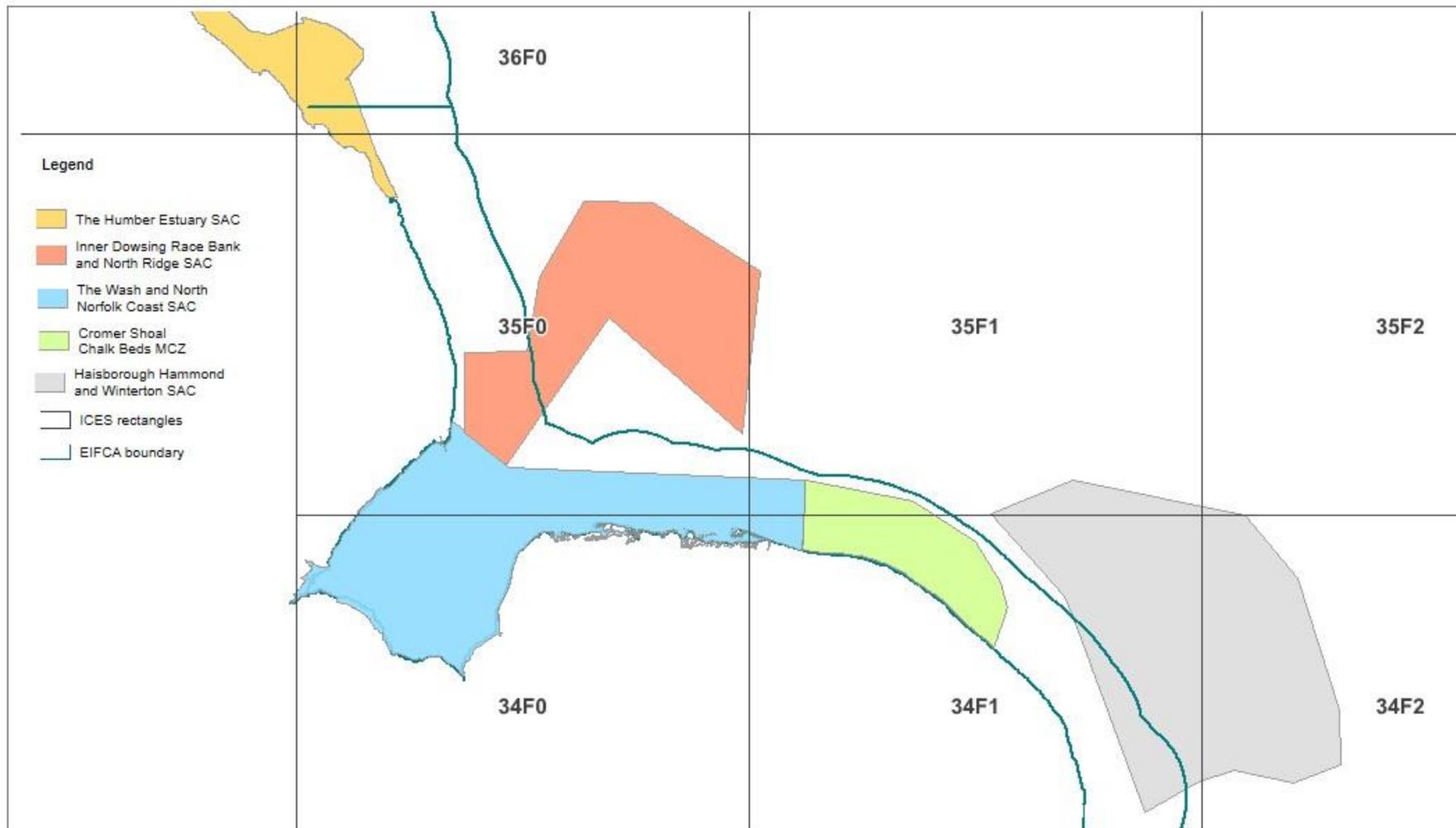


Chart A:

Explanatory text:-

- (i) these are the full extents of the marine protected areas within which the CAB will bring in closed areas
- (ii) other than the MCZ closure, the closed areas are significantly smaller than the full extents of the MPAs
- (iii) the closed areas are shown in the charts in the byelaw itself and
- (iv) there are other MPAs in our district not shown on this chart because this byelaw does not set up closures in them.

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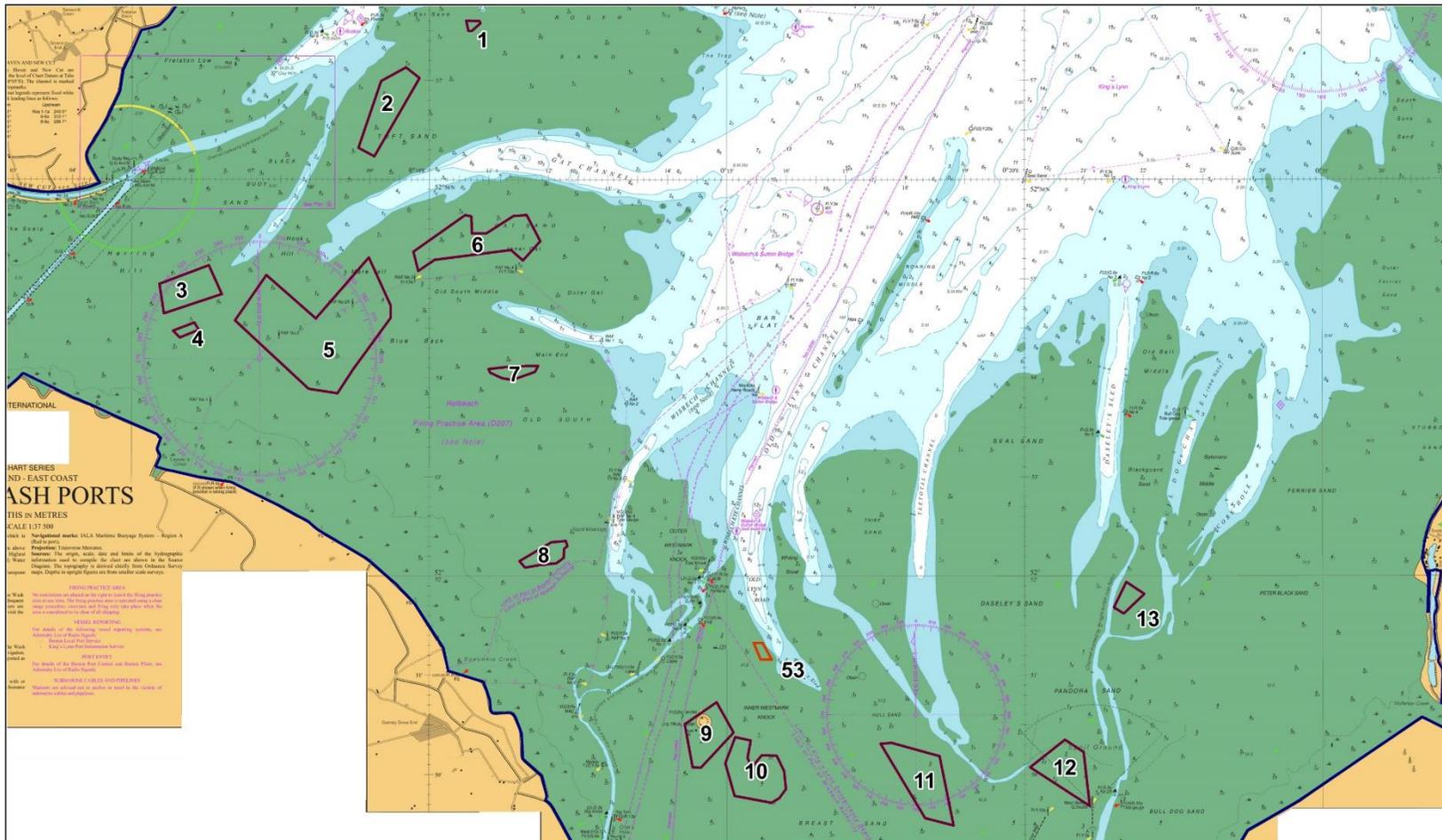
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Appendix 2. Charts of proposed closures: Closed Areas Byelaw 2021.



	<p>Chart 1: The Wash and North Norfolk Coast SAC - Restricted Area 1 - 13 and 53</p> <ul style="list-style-type: none"> Restricted area to bottom-towed gear Restricted area to bottom-towed gear, hand working and crab tiling Boundary of the Wash and North Norfolk Coast SAC <p style="text-align: center;">Not to be used for navigation - for illustrative purposes only</p>	<p>Date: 13 August 2020 Drawn by: EQ Projection: Lat Long WSG84 Chart not to be used for navigation ©British Crown and OceanWise 2020. All rights reserved. Licence No.EK001-20180110. This product has been derived in part from material obtained from the UK Hydrographic Office with the permission of the UK Hydrographic Office, Her Majesty's Stationery Office and other relevant authorities.</p>
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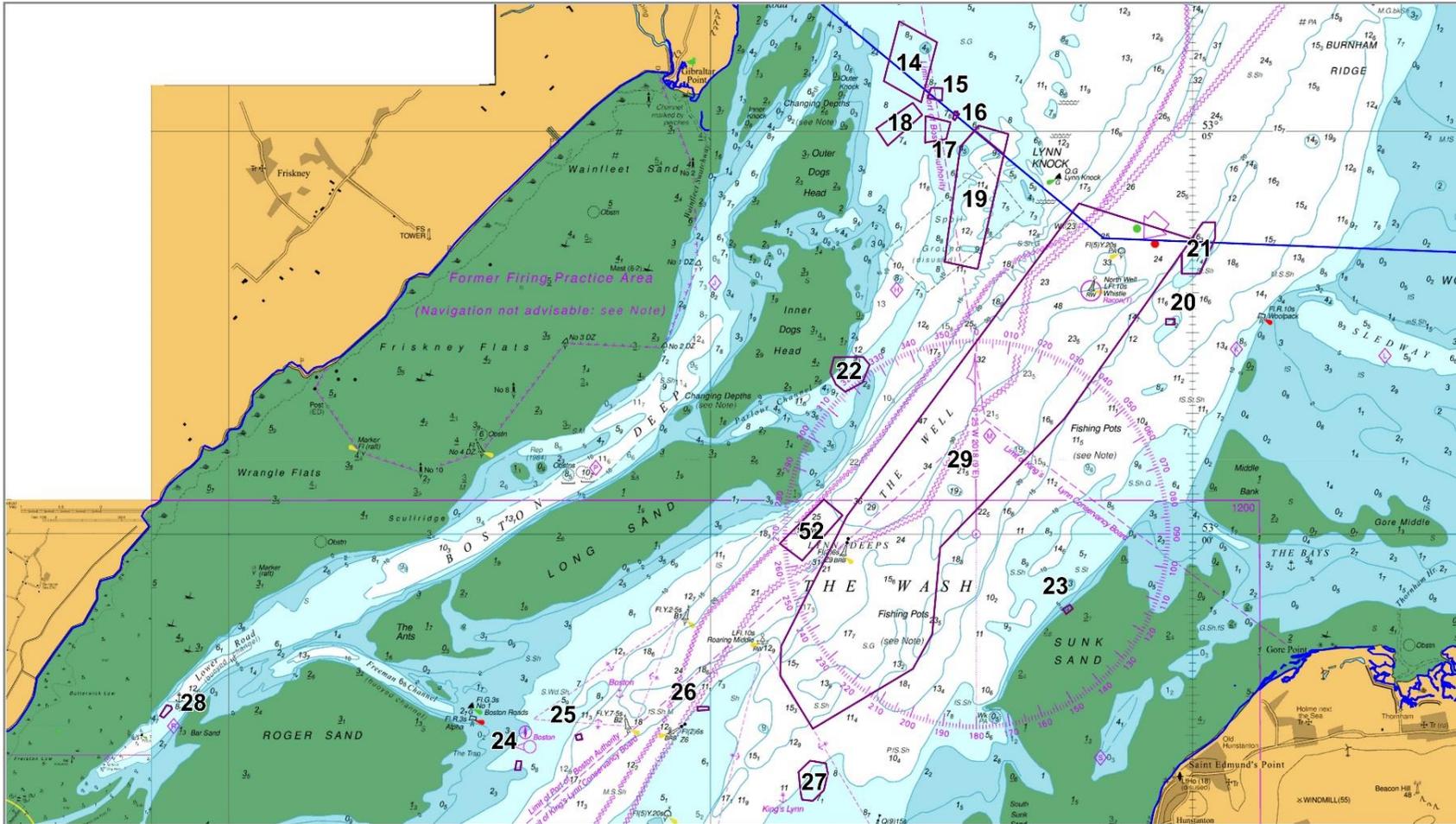


Chart 2: The Wash and North Norfolk Coast SAC – Restricted Areas 14 to 29 and 52

- Restricted area to bottom towed gear
- The Wash and North Norfolk Coast SAC boundary

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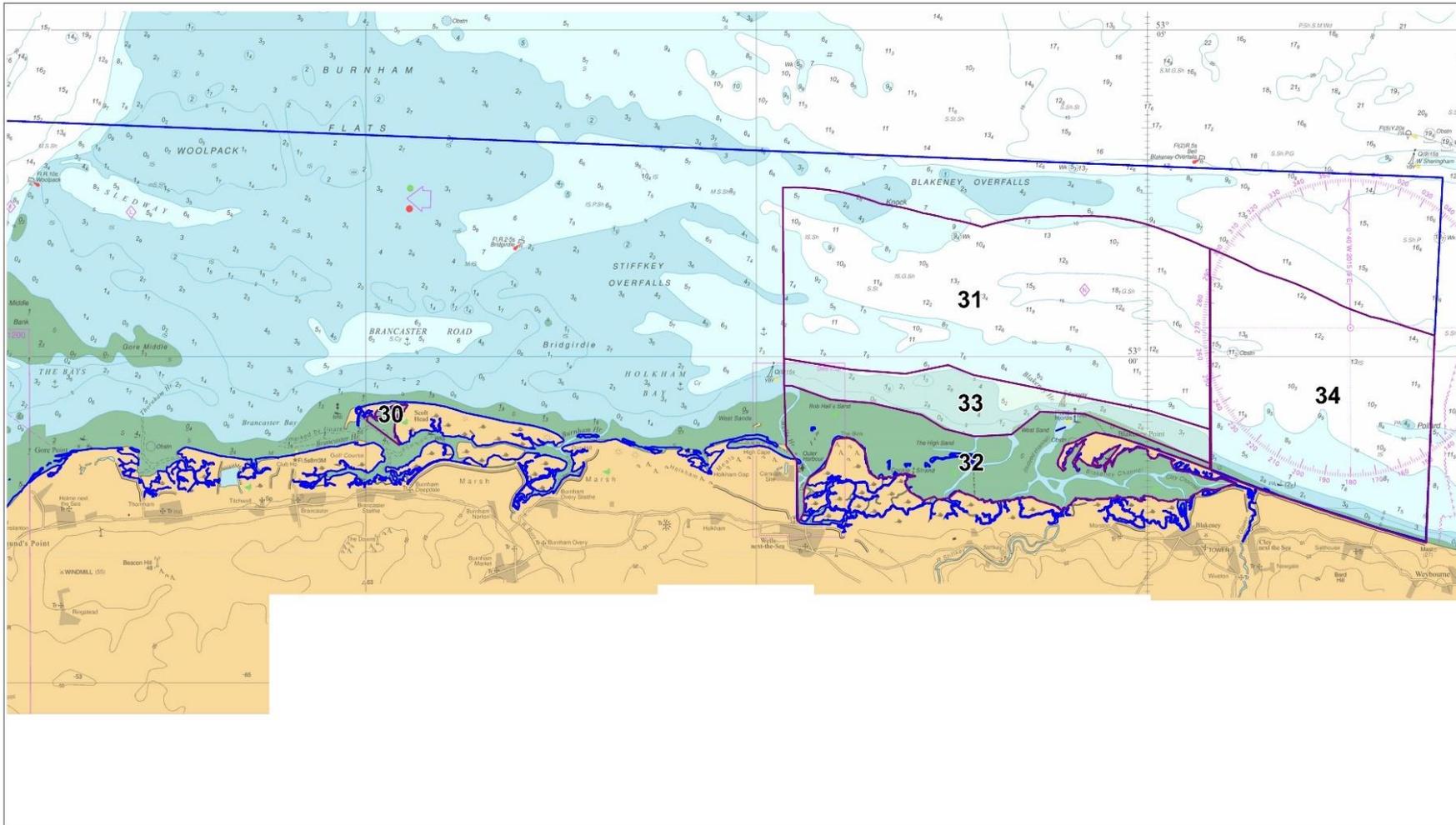


Chart 3: The Wash and North Norfolk Coast SAC – Restricted Areas 30 to 34

- Restricted area to bottom-towed gear
- The Wash and North Norfolk Coast SAC boundary
- Seasonal corridor (open to the fishery October - April)

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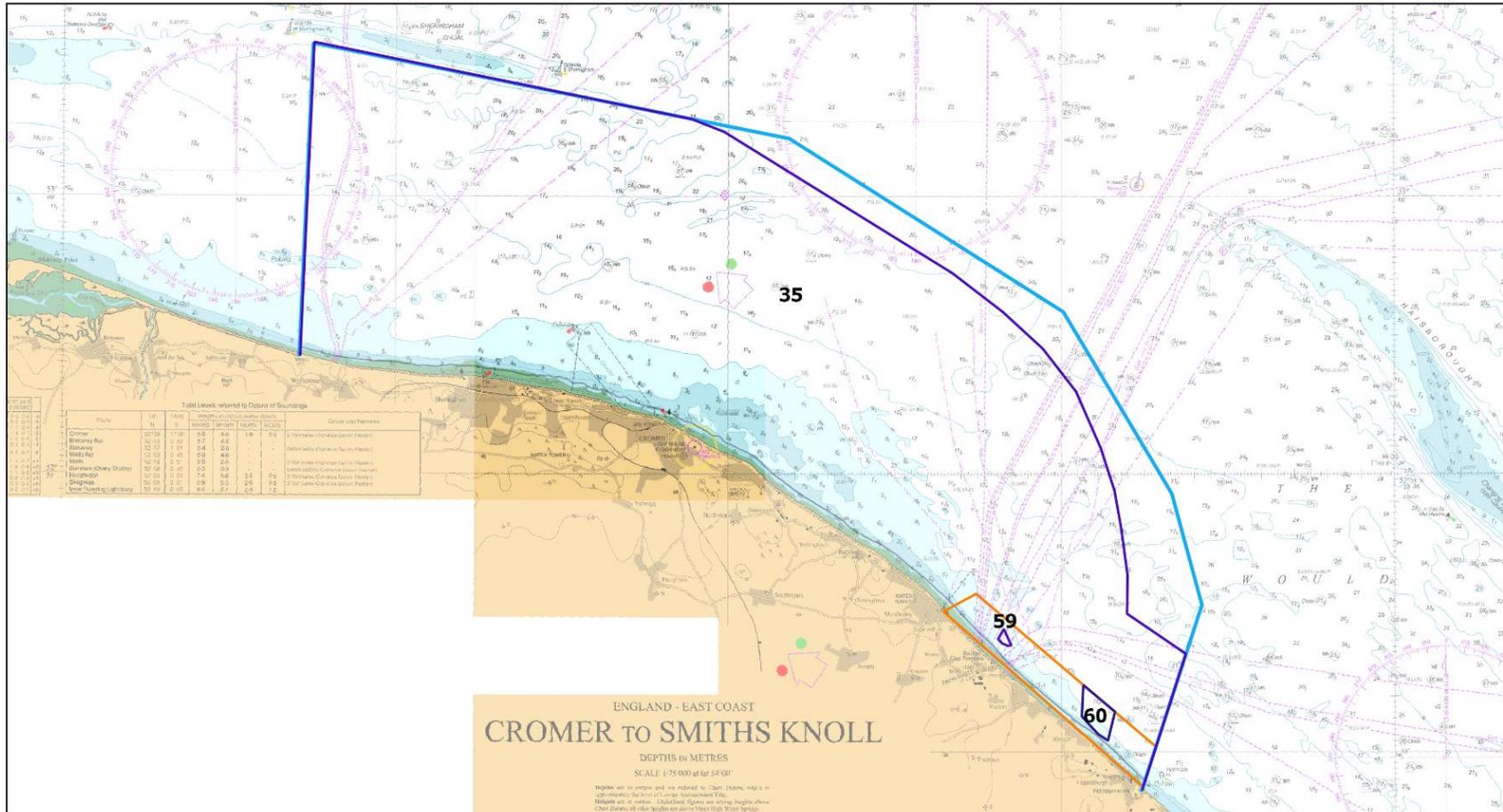


Chart 4: Cromer Shoal Chalk Beds MCZ - Restricted Areas 35, 59 and 60 and the Artisanal Shrimp Management Area

— Cromer Shoal Chalk Beds MCZ boundary Restricted area to bottom towed gear
 Artisanal shrimp management area

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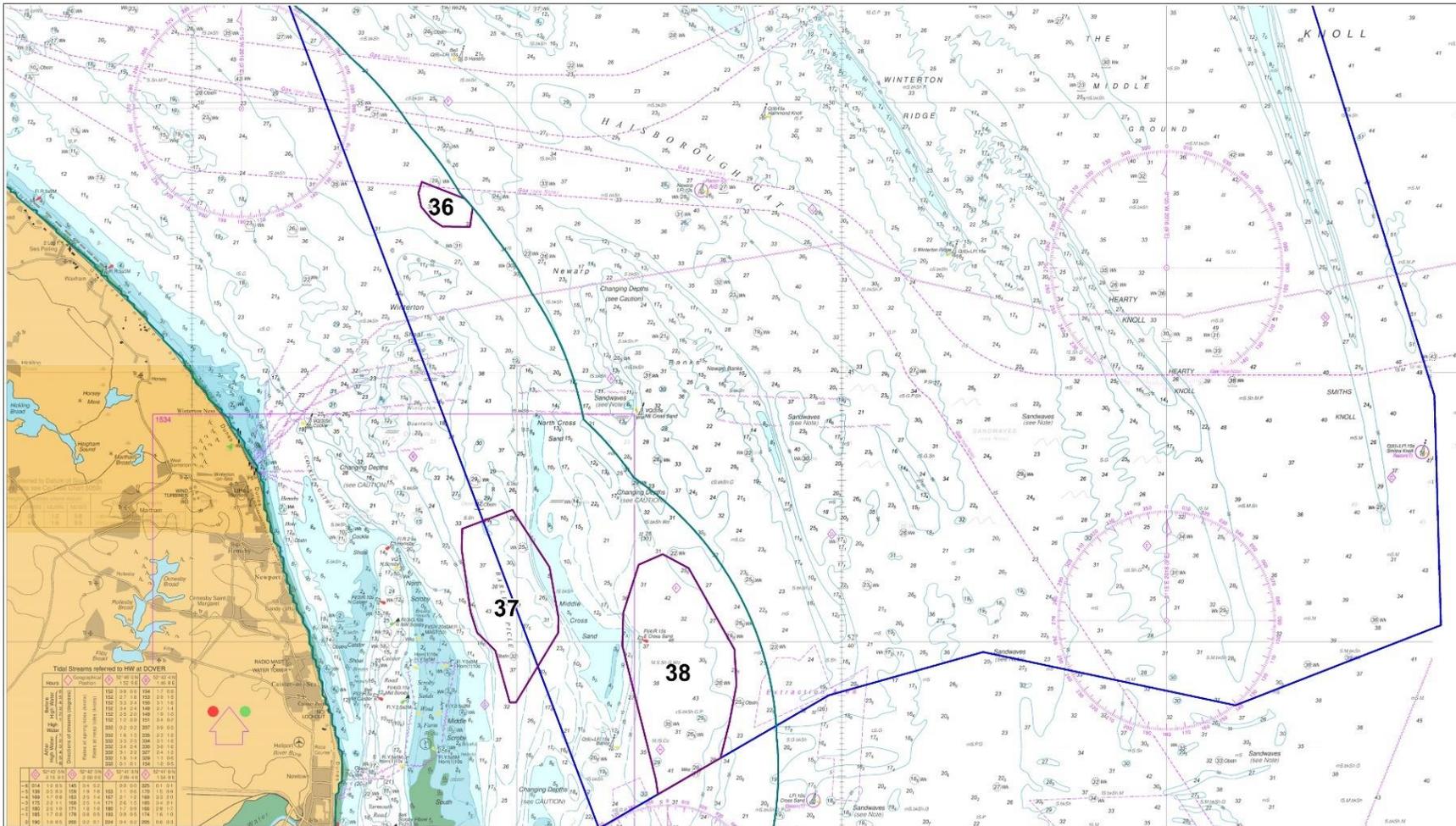


Chart 5: Haisborough, Hammond & Winterton SAC – Restricted Areas 36 to 38

- Restricted area to bottom-towed gear
- Eastern IFCA district boundary
- Haisborough, Hammond and Winterton SAC boundary

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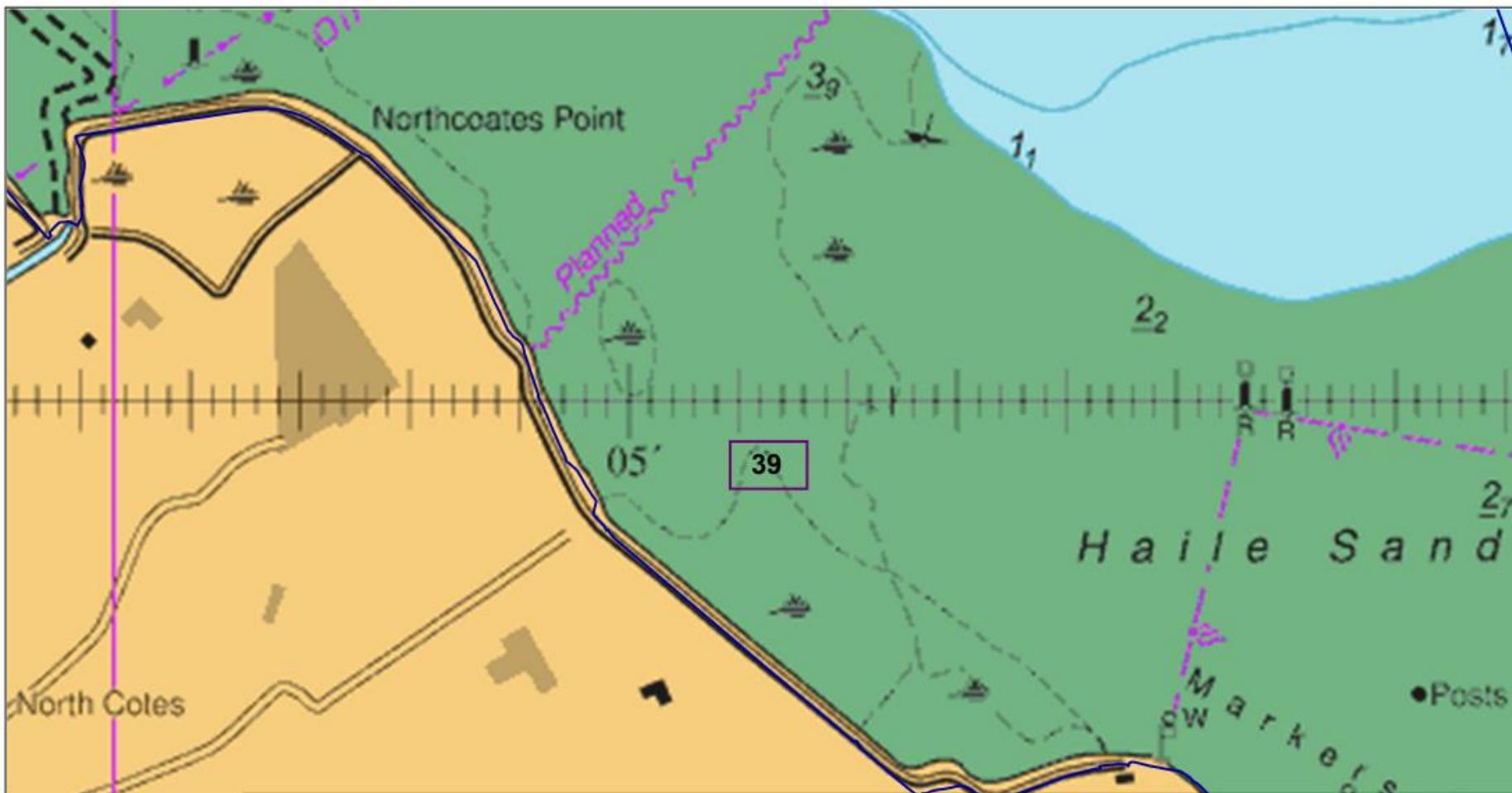


Chart 6: Humber Estuary SAC - Restricted Area 39

- Restricted area to bottom-towed gear, hand working and crab tiling
- Boundary of the Humber Estuary SAC

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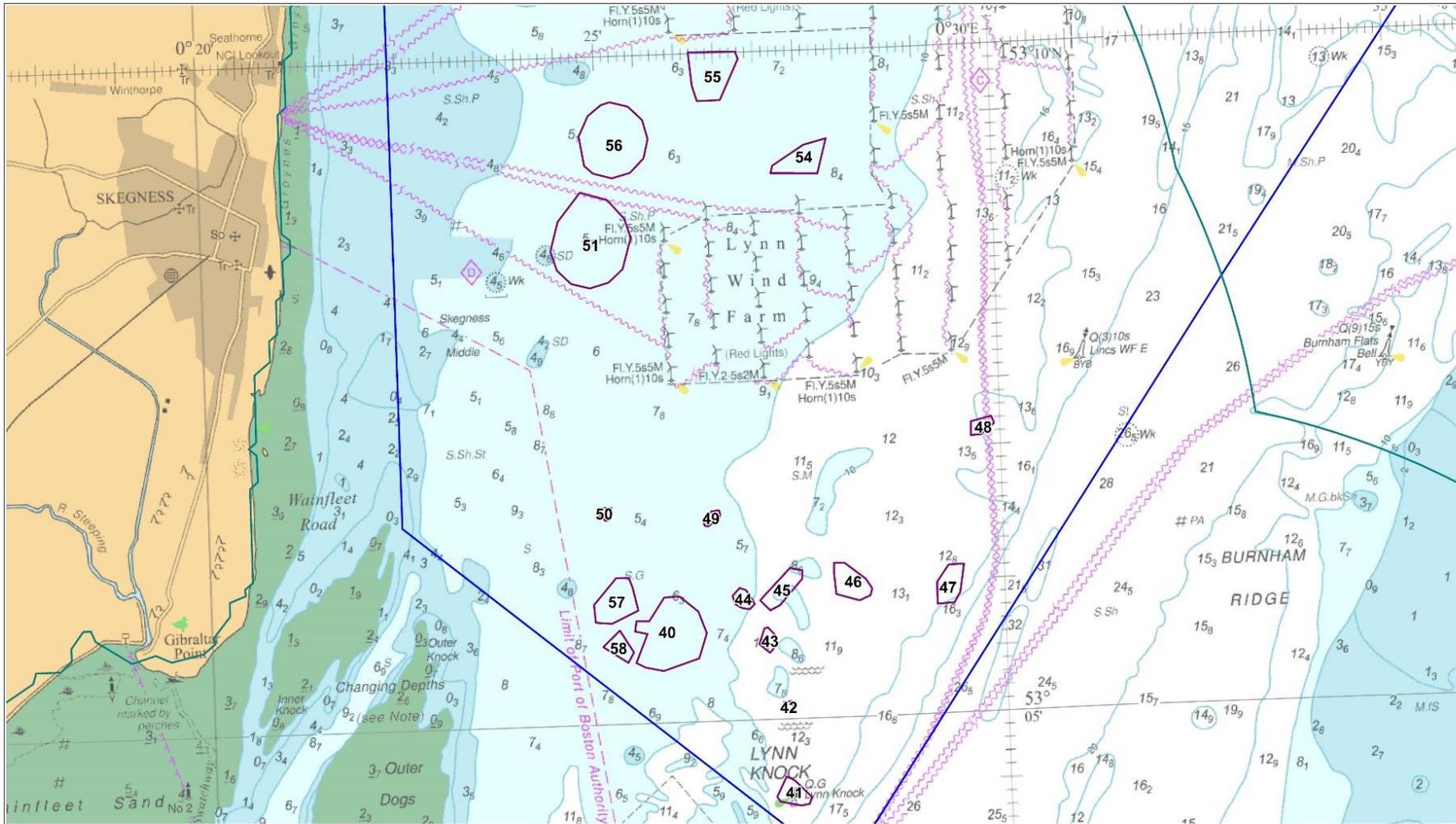


Chart 7: Inner Dowsing, Race Bank and North Ridge SAC - Restricted Areas 40 - 51 and 54 - 58

- Restricted area to bottom-towed gear
- EIFCA boundary
- IDRBNR SAC boundary

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