

Business and Regulatory Impact Assessment

The Sea Fish (Prohibition on Fishing) (Firth of Clyde) Order 2024

1. Background

In response to the International Council for Exploration of the Sea (ICES) advice on the poor state of cod stocks in ICES Division 6a (west of Scotland), the European Union (EU) introduced a number of temporary closures in 2000 and 2001 to protect adult cod during the spawning season in both the Irish Sea and the Firth of Clyde.

Since 2002, the decision to implement the closure in the Firth of Clyde has rested with the Scottish Government. During this time, a closure has been in place each year by means of either an annual or biennial Scottish Statutory Instrument (SSI).

Between 2002 and 2021, the SSI included exemptions to allow *Nephrops* trawlers, creels, and scallop dredgers to continue to use the area due to the relatively low numbers of cod that they catch. Despite the ongoing seasonal closure, the stock has shown little sign of recovery. Therefore, the Sea Fish (Prohibition on Fishing) (Firth of Clyde) (No. 2) Order 2022 came into force on 12 February 2022 and ran until 30 April 2023 to continue the spawning closure for 2022 and 2023 without any exemptions. This new SSI also reduced the area covered by the closure by 28%. The aim of the SSI was to maximise protection for cod in the closed area by minimising the potential disturbance caused by fishing activity.

At time of writing this BRIA, there have been two full seasonal closures that did not include exceptions for *Nephrops* trawlers, creels, and scallop dredgers, and covered a reduced area. However, data for the 2023 closure has not gone through the Marine Directorate quality assurance process and therefore cannot be used in a published impact assessment. The use of a single year of data is discussed in the costs section of the BRIA in 6.2.1.

The removal of gear exemptions in 2022 and 2023 created consistency with management in other areas, including the UK National North Sea Cod Avoidance Plan, which covers closure areas for all gear types (excluding pelagic which do not fish close to the seabed). The complete closure is also in line with the commitments in relation to our natural environment set out in the Bute House Agreement between the Scottish Government and the Scottish Greens and our shared aim to restore marine habitats in Scotland's inshore waters.

This Business and Regulatory Impact Assessment (BRIA) presents an assessment of the costs and benefits of the SSI 'Sea Fish (Prohibition on Fishing) (Firth of Clyde) Order 2023' which would run for two years, covering the 2024 and 2025 Clyde closure periods.

2. Objective and Rationale

The aim of the Sea Fish (Prohibition on Fishing) (Firth of Clyde) Order 2023 is to have appropriate measures that will, as far as possible, meet the following objectives:

- a. to offer protection to the local spawning cod stock, as a contribution to the wider recovery of cod stocks;
- b. to complement, as far as possible, other west of Scotland cod recovery or other stock management measures; and,
- c. to ensure the measures are in line with other management measures in Scottish waters, including spawning closures introduced through the National Cod Avoidance Plan.

Since 2001, a specific area (consisting of two spawning areas) in the Firth of Clyde has been closed to fishing each year, during the spawning period between 14 February and 30 April (referred to as 'the closure period') in order to protect spawning cod. Since 2002, the Scottish Government has had responsibility for the closure which has been implemented on an annual or biennial basis via a Scottish Statutory Instrument (SSI). In 2022, the measures were changed: the previous exemptions for certain gear types were removed, with the ambition that this would give the best possible chance for cod to spawn.

The removal of exemptions in 2022 was based on the evidence¹ that: cod are extremely vulnerable to fishing activity while mating, physical disturbance could destroy leks or disturb leks so they are no longer used, noise potentially disturbing mating calls, and the cod mating ritual meaning that cod are less likely to evade oncoming nets. Cod mate using a "lekking" system. Males take possession of seabed areas, which they protect from other males, and attract females by "grunting." Males may also follow females through the water column as far as 10m above the seabed while mating meaning they would be vulnerable to any fishing up to 10 metres from the seabed. The evidence also notes that if cod are disturbed, they are unlikely to return to their lek and may not mate that year.

In 2022, restrictions were confined to vessels engaged in fishing activities due to their proximity to spawning activity and, because, from the scientific evidence available, the physical disturbance expected from fishing activities was considered to have the largest impact on the spawning. Noise disturbance from vessels passing the spawning cod was not expected to be as significant.

Given the available evidence, and lack of recovery of cod in the area to date, the Scottish Government maintains the view that the strengthened closure offers increased protection to spawning cod at a crucial time in their life cycle. However, it is too early to tell whether that increased protection has, or will, lead to an increase in the cod stock in the region.

This current view, which is assessed in this report under Option 1 (preferred option), is that retaining a policy of no exemptions offers increased protection to spawning

¹ [Disturbance+of+cod+spawning+areas.pdf \(www.gov.scot\)](https://www.gov.scot/publications/disturbance-of-cod-spawning-areas/pdf/pages/1-10.pdf)

cod and aligns with our Future Fisheries Management Strategy ('the FFM'). The FFM makes a commitment to work with our stakeholders to deliver an ecosystem based approach to fisheries management, including considering additional protections for spawning and juvenile aggregation areas in Scottish waters.

By maintaining a seasonal closure in the Clyde region, the Scottish Government helps safeguard cod stocks for the future and contributes towards objectives under the National Performance Framework, in particular the National Outcome "*We value, enjoy, protect and enhance our environment*" and the National Indicator measuring the "*Sustainability of fish stocks*".

The Sea Fish (Prohibition on Fishing) (Firth of Clyde) Order 2023 will also contribute to Sea Fisheries objectives in Scotland's National Marine Plan².

3. Consultation

3.1. Within Government

In preparing the material for the consultation we have consulted with colleagues within the Marine Directorate including science, nature conservation, fisheries management policy and compliance colleagues.

3.2. Public Consultation

A 12 week public consultation took place between June and September 2023.

There were 47 responses to the consultation. We also received a further 2 submissions via email which did not follow the consultation question format but supported the principle of a spawning closure.

26 (55.32%) responses agreed with the continuation of the closure.

20 (42.55%) responses disagreed with the continuation of the closure.

Whilst there was an overall slight majority in favour of the continuation of the closure, those organisations representing the fishing industry all disagreed with its continuation

There were a wide range of views both for and against the continuation of the closure.

On exemptions, 18 (38.30%) agree with having no exemptions in place, whilst 29 responses (61.70%) disagree and think there should be exemptions in place.

Table 1 below shows the number of responses supporting exemptions for each gear type. This table shows that the spawning closure invokes polarising opinions with no obvious consensus. Albeit with a slight majority agreeing in their view to allow exemptions for creels.

² [6. Sea Fisheries - Scotland's National Marine Plan - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/national-marine-plan-2023/pages/6-sea-fisheries-Scotland's-National-Marine-Plan-2023.aspx)

Table 1: Distribution of responses in favour of some, or no, exemptions being allowed in the Clyde closure area.

Exemption	Total	Percentage
Creels	27	57.45%
Scallop Dredging	13	27.66%
Nephrops Trawling	15	31.91%
Other Exemption	12	25.53%
Supports no exemptions	18	38.30%

3.3 Business

Representatives of the fishers who would primarily be affected by the closure were contacted as part of the public consultation. These businesses were consulted in the development of the proposed legislation via their fisheries associations and through public consultation. In particular The Clyde Fishermen's Association, whose members predominantly work in and around the area affected, were consulted.

Responses were received from a number of organisations including Galloway Static Gear Fishermen's Association, West of Scotland Producers Organisation Ltd., Fish Legal, Scottish Fishermen's Organisation, Scottish Creel Fishermen's Federation, and Clyde Fishermen's Association. None of these organisations supported the continuation of the closure without any exemptions.

4. Options

The following options have been considered and assessed by the Marine Directorate.

Option 0 – Do nothing (closure lapses and is removed)

The Sea Fish (Prohibition on Fishing) (Firth of Clyde) (No. 2) Order 2022 ran until 30 April 2023. Not reinstating a further SSI would allow all fishing activities to return to the closure area. Removing the closure provisions altogether would place the Clyde cod stock at risk of further depletion, unless appropriate alternative measures were introduced in its place. Due to the risk of further stock depletion this is not the preferred option.

Option 1 (preferred option) – Reinstate legislation to maintain closure as in 2022-23 (without any exemptions)

The status quo option is to maintain the closure that was in place for 2022 and 2023. There would be no fishing activity permitted in the closure area during the closure (14th of February to 30th April) and the closure would be for the smaller, more targeted, area.

Monitoring of catches and landings in 2022 and 2023 by the Marine Directorate compliance division indicated very few spawning cod being caught in the open area surrounding the Clyde closure area. This data suggests that the closure is in the correct area for spawning or, there are simply not many cod in the Clyde. In the absence of any additional evidence to suggest other potential spawning locations within the Clyde area, it seems prudent to continue to maximise the protection for

spawning cod without reintroducing exemptions. The benefit being that this gives the stock the best possible chance of spawning and therefore increasing in number.

Maintaining the closure without any exemptions will result in continued increased cost implications to the Clyde fishing industry during the closure period, these are discussed in detail in the Costs section of this assessment.

Option 2 – Maintain closure but reinstate some or all exemptions

This option would maintain some protection for spawning cod, but would allow certain fishing activity to resume within the closure area. Prior to 2022, an exemption applied to Nephrops trawlers, creels and scallop dredgers to continue to use the area: this could be reinstated. Responses to the 2023 consultation show that industry and some NGOs are supportive of some or all of the exemptions being reinstated. The creel sector were particularly critical of the removal of their exemption as this was considered to be a low impact fishing method. Despite the low impact, the scientific evidence is such that creel fishing is likely to cause some disturbance to the spawning fish. Therefore, taking a precautionary approach, the Scottish Government view is that it should not be permitted in order to provide maximum protection for spawning cod.

This is not the preferred option as the scientific evidence supports a closure without exemptions. Furthermore, this would continue the closure as was in place prior to 2022 during which time we failed to see a recovery of the cod stock in the area.

Option 3 – Maintain closure and strengthen measures

This option would increase restrictions either through extending the closure period beyond the proposed 11 weeks, widening the proposed area of closure, or other measures.

Feedback from the consultation suggested that additional strengthened measures should be in the form of an expanded area, suggesting that the current area was either not in the best place or simply did not capture enough of the possible cod spawning grounds. For the purposes of the BRIA modelling Option 3 will consider a closure of the entire ICES statistical rectangle 39E4³. This was chosen as the Clyde closure has previously covered the majority, but not all, of 39E4 with no consensus available from the consultation responses on where the closure should be expanded; therefore Option 3 would be an expansion of the closure area.

Given the best available scientific evidence on suitable sediment for spawning, the 2022-23 measures are considered by the Marine Directorate to be in the right place at the right time to protect spawning cod in the Clyde. Allowing fishing to continue in some of the surrounding areas where there is unlikely to be any spawning taking place allows some fishing to continue, helping to reduce the impact of the closure on fishers. Therefore Option 3 is not a preferred option.

Further technical measures (potentially selectivity based for gear types) may be introduced as part of the Future Catching Policy work in future. However, this current SSI (which is the focus of this BRIA) will focus just on the proposed closure.

³ [ICES - Statistical Rectangles | Marine Scotland Information](#)

Option 4 – No closure but seek voluntary agreement to not fish during the spawning season

Similarly to Option 0 there would be no legal restrictions in place, but the Scottish Government would seek voluntary agreement from local fishers to not fish during the spawning season, aligned to Option 1.

Given the significant number of fishers responding to the consultation against the proposed closure without exemptions it is unlikely that a voluntary agreement would hold, and the uncertainty in other vessels' actions would likely result in vessels being unwilling to try. As a result, this is not a preferred option.

4.1. Sectors and groups affected

It is anticipated that the Scottish Government's preferred option to maintain the closure without any exemptions will primarily affect fishing vessels belonging to the Nephrops trawl fleet and the pots and traps fleet, with the scallop fleet likely also affected but to a much lesser extent. In the case of the removal of the closure entirely, the whitefish trawl fleet would also be affected. Some impacts are expected on fish processing businesses and the supply chain for all options.

5. Benefits

5.1. Option 0 (do nothing)

The main expected beneficiaries to the possible lapsing of the restrictions are expected to be the Nephrops and Scallop fishing fleet and the demersal fishing fleet who would be able to recommence fishing during the closure period. Demersal and shellfish fishing vessels would be able to fish unhindered in the specified area all year round, avoiding any potential short-term cash-flow problems that might be caused by temporarily prohibiting activity in the Firth of Clyde.

This option would reverse restrictions that have been in place in the Clyde region since 2001. To appreciate fully the costs to the sector of the other options, Option 0 is being taken as the baseline. As such and to avoid double counting of costs and benefits, the benefits of 1) access to the fishing fleet to the closure area, and 2) the subsequent downstream benefits, have not been monetised in this section. However, avoiding the costs noted in the alternative options can be considered as the benefits of Option 0.

5.2. Option 1 (preferred option – maintain closure without exemptions)

To prohibit all fishing activity, within targeted areas where scientific evidence⁴ suggests cod are most likely to spawn, provides stronger protection to spawning areas, and therefore provides a much higher chance of stock recovery and future fishing opportunities.

Evidence⁵ suggests that while spawning, cod are extremely vulnerable to fishing activity: they are focussed on mating and the males are unwilling to leave their hard-

⁴ [Clyde cod spawning closures - gov.scot \(www.gov.scot\)](http://www.gov.scot)

⁵ [Disturbance+of+cod+spawning+areas.pdf \(www.gov.scot\)](http://www.gov.scot)

won leks, so both sexes are less likely to try and evade oncoming fishing gear. Physical disturbance during mating will disrupt the activity and potentially destroy the lek areas; cod so disturbed may not return and therefore may not spawn that year. Prohibition of all fishing activity should significantly mitigate this risk.

There remains no definitive scientific evidence that cod stocks in the Clyde closure area have significantly improved as a result of the closure. The Marine Directorate accepts that additional scientific data gathering in the Clyde region would be beneficial, yet under current resource constraints this is not possible. The precautionary principle is therefore the approach taken. The benefits of maintaining the closure without exemptions are still expected to be realised through continued restrictions on fishing. There has been only two years of the closure being in place without exemptions. Therefore continuing with the restrictions introduced for 2022-23 for another two years could enable an improved evidence base (both socio-economic, and scientific) upon which to assess the impact of full closures to protect spawning cod. We would welcome the opportunity to review any relevant research undertaken and/or funded by private or academic sources.

In addition, prohibition of all fishing activity without exemption would create consistency with the management of other areas of Scottish waters. The UK National North Sea Cod Avoidance Plan includes closure areas for all gear types (excluding pelagic). The recent emergency Marine Protected Area (MPA) designation in certain areas of the Inner Sound includes a prohibition on bottom contact fishing activities including creeling, in order to protect the critically endangered flapper skate nursery area.

Therefore, due to the aforementioned short time period of the no exemptions policy, the uncertainty in impact of the closure, and the difficulty in valuing biodiversity, no monetised figure has been provided for Option 1 benefits relative to Option 0. Instead, the benefit should be considered to be a more robust spawning season for cod and thus possible improvements in biodiversity and future demersal fishing through increasing stock levels.

5.3. Option 2 (maintain closure, allowing exemptions)

The benefits of Option 2 are similar to those of Option 1 but likely to be lower due to there being a higher level of fishing activity allowed in the Clyde closure period. Firstly, the closure protects spawning areas to some extent, and as such provides a higher chance of stock recovery and future fishing opportunities than Option 0. Secondly, maintaining the closure will have benefits for other demersal fisheries which are impacted by the risk of cod acting as a choke species.

In addition, implementing the closure subject to the same exemptions as those implemented in the years prior to 2022 provides a degree of consistency that will help to avoid disruption to fishing patterns established since 2001, and will help ensure fishermen comply with the closures. This is evident in that there has been almost 100% compliance with the closure since its establishment in 2001.

As with Option 1, no monetised figure is being provided due to the evidence gaps and uncertainty in valuing biodiversity. However, there is expected to be ecosystem benefits of maintaining a closure which are similar, but lower than, under Option 1.

5.4. Option 3 (maintain and strengthen closure)

The 2022-2023 closure protected historically identified spawning areas, and as such provides a higher chance of stock recovery and future fishing opportunities.

Continuing the closure whilst expanding the closure area could provide the cod with an even better opportunity for recovery if cod spawning areas have shifted or were not previously identified. This would benefit both the ecosystem within the Clyde and the longer term sustainability of the fisheries in the area. However, from the scientific evidence available, it seems less likely that an expansion would capture any other cod spawning grounds. As such, this option could result in there being no increase in benefits for spawning cod compared with Option 1 but there would be an increased economic cost as it would result in further restrictions on fishing activities in the area.

Whilst we will continue to monitor the areas left open to fishing activities during the closure period, we are of the view that at this point, balancing the conclusions we have reached from the available scientific evidence and the economic cost of increasing the closure area, we are striking a fair balance as between likely environmental benefits and the anticipated cost to the fishers operating in the area.

As with Option 1, these benefits have not been monetised, however, in addition to the ecosystem benefits of Option 1, there may be wider ecosystem benefits through protecting a larger area.

5.5. Option 4 (no legislated closure, seeking voluntary agreement)

Dependant on adherence to a voluntary agreement that was aligned with Option 1 (no exemptions) would result in benefits ranging from zero benefits for cod spawning to the benefits expected under Option 1. However, even a small number of vessels not adhering to the proposed restrictions could result in disturbance to the spawning grounds and therefore significant loss of benefit. Therefore, any benefits from this option are tentative and highly uncertain.

As with Option 1, these benefits have not been monetised. If any fisher chooses to not adhere with a voluntary agreement, this would both decrease the benefits to the ecosystem but also the costs (see section 6. Costs) for the sector as a whole, trending towards the same results as Option 0.

5.6. Summary of Benefits

The benefits of the above options have not been monetised due to the uncertainty of the impact on cod stocks and due to the difficulty in valuing biodiversity. Maintaining the closure for a further two years could result in improved cod stocks in the Firth of Clyde and improve the evidence base available to inform further cod stock management.

Option 0

- No further restrictions on fishers during this period preventing any cash-flow issues or displacement.
- Impacts are not monetised as this option is considered the baseline.

Option 1

- Strengthened protections for cod to improve stock and the number of mature fish.
- Consistency in approach to cod protections.
- Potential improved evidence base for future cod management.

Option 2

- Some protections for cod to improve stock size but expected to be less than Option 1 or 3.
- Consistency in closure with previous years (prior to 2022) which gives more fishing opportunity.

Option 3

- Strengthened protections for cod to improve stock size, likely in line with Option 1 but possibly stronger.

Option 4

- Possible increased protection to cod to improve stock size, at best up to Option 1 but possibly also zero.
- Potentially improved evidence base for future cod management.

6. Costs

6.1. Option 0 (do nothing)

One of the primary costs under Option 0 is the expected depletion of the spawning stock biomass of cod in the Clyde region, one of the highest value per tonne⁶ fish species from the west of Scotland.

Not maintaining a closure in the Firth of Clyde could be damaging to the cod stock, particularly given the likelihood of increased fishing activity from vessels displaced by conservation measures in the Irish Sea. Historic scientific advice from ICES for cod in ICES area 6a (west of Scotland)⁷ – which includes the Firth of Clyde - showed that recruitment of cod has been very low since 2001. The latest advice in September 2023 for the ICES Northwestern stock⁸ – which includes the Firth of Clyde – indicates a more robust position for the stock as a whole. The recent advice published on 19 September 2023 shows a healthy recovering stock, including the west of Scotland cod stock, with the north-western substock biomass now twice the size of the sustainable biomass threshold⁹. The management measures – selectivity measures and restrictive TACs in area 6 - and the National Cod Avoidance Plan have contributed to this. Our view is that such measures are beneficial but we will need to consider different management approaches to cod in inshore and offshore waters. However, as noted in section 3.2 of the ICES North Shelf Cod Benchmark Workshop (WKBCOD)¹⁰ report, there are known to be different subpopulations within

⁶ [Scottish Sea Fisheries Statistics 2021 - gov.scot \(www.gov.scot\)](http://www.gov.scot)

⁷ [Cod \(Gadus morhua\) in Division 6.a \(West of Scotland\) \(figshare.com\)](http://figshare.com)

⁸ [Cod \(Gadus morhua\) in Subarea 4, divisions 6.a and 7.d, and Subdivision 20 \(North Sea, West of Scotland, eastern English Channel, and Skagerrak\) \(figshare.com\)](http://figshare.com)

⁹ **Sustainable spawning stock biomass threshold** (MSY Btrigger): This is the estimated minimum overall weight of mature fish that are needed to ensure that a fish stock is able to produce sufficient replacements to ensure a stable or increasing fish population.

¹⁰ [Benchmark workshop on Northern Shelf cod stocks \(WKBCOD\) \(figshare.com\)](http://figshare.com)

the Northern shelf cod stock area which do not necessarily follow the same trend as the whole stock grouping. This is further explored in the ICES West of Scotland Sea Cod Workshop in 2021 (WK6aCodID)¹¹ that notes the difficulty in identifying if Clyde cod is its own stock due to the lack of available data. Furthermore, if spawning grounds continue to be protected during or after recovery, this can ensure the recovery continues with the commensurate benefits of a more robust stock and the possible commercial fishing opportunities that arise from this. As such, the Marine Directorate believes that a precautionary approach should be taken with the Clyde cod sub-stock despite a more robust position for the North western stock as a whole which covers ICES area 4 and 6a. The statutory process to introduce this spawning closure overlaps with discussions on the future management of the newly defined Northern shelf cod stock and the North western sub stock specifically. The northwestern stock is trilaterally managed between Norway, the European Union and the UK and there will need to be discussions on how the shares of the stock have changed following the benchmark report. As responsible fisheries managers we need to review whether the current management measures for 6a and area 4 cod are appropriate. Discussions on the sharing and management are expected take place in 2024, subject to agreement in the TAC negotiations held in November and December 2023.

If the cod stocks become depleted further this would have long term impacts on the marine ecosystem and the fishing sector. There would be an expected environmental and biodiversity impact from a decrease or loss of cod in the Firth of Clyde, however this would be difficult to quantify. This is both due to the uncertainty of impact from losing a top predator species on the ecosystem¹² and in the ability to value the ecosystem as it stands. As a result, the environmental and biodiversity impact cod provide (and thus the cost of their depletion) has not been monetised.

There would also be an expected impact on the fishing industry with a significant risk of losing this potentially valuable resource from the Firth of Clyde altogether, along with the possible changes in ecosystem due to the loss of this species. West of Scotland cod landed by Scottish vessels in 2022 had a value of £2.9 million, with the value per tonne being one of the highest for Scotland's main commercial species¹³. While this figure relates to all cod caught in the west of Scotland, it shows how valuable this species is even in years where only a minimum bycatch allowance was available. Furthermore, £29 million worth of demersal fish were landed from ICES area 6a which could be severely impacted were there to be a wider area closure to protect cod stocks due to decreases in cod spawning. Therefore, taking a precautionary approach in the Firth of Clyde region appears reasonable to help protect the wider demersal industry.

¹¹ [Workshop on stock identification of West of Scotland Sea cod \(WK6aCodID; outputs from 2021 meeting\) \(figshare.com\)](#)

¹² Cod in the Clyde provide ecosystem benefits, both through their impacts as predators in ensuring a well-balanced food web, and their role as prey for marine mammals (and for other fish as juveniles). The general rule of thumb is the more different species, the better, and a loss of cod would affect biodiversity adversely. On the other hand, some of the roles filled by cod could be taken by other, similar demersal species such as whiting and hake, and the Clyde ecosystem is not as fully reliant on cod as would be the case in the Arctic, for example.

¹³ Table 31; [Supporting documents - Scottish Sea Fisheries Statistics 2022 - gov.scot \(www.gov.scot\)](#)

As restrictions were strengthened in 2022-23, removing all restrictions in 2024 would mean the impacts of those closures will not be properly understood, and any potential learnings for this area or other cod spawning areas would be lost.

As noted in section 5.1, in order to appreciate fully the costs to the sector of the other options, Option 0 is being taken as the baseline. As such and to avoid double counting of costs and benefits, the costs of 1) expected depletion of the cod in the Clyde, and 2) the subsequent loss of future earnings from fishing cod, have not been monetised in this section. However, avoiding the benefits noted in the alternative options can be considered as the costs of Option 0.

6.2. Option 1 (preferred option – maintain closure without exemptions)

6.2.1. Option 1 - Monetising the impact on the Nephrops affected fleet

As the size of the closure was reduced by 28% in 2022 compared with the closure area between 2001 and 2021, the closure is now more targeted, focusing on those sediment areas the spawning cod are known to prefer, and allowing fishers to continue to fish in areas of other sediment types. Nonetheless, there are anticipated to be costs for fishermen in prohibiting all fishing activity in this area during the closure periods in 2024 and 2025. While some vessels may be able to move into other grounds, other vessels may struggle to do so, particularly smaller vessels during this part of the year due to bad weather and competition for space with other established users on new grounds.

Data from 2017-2022 was used in the analysis of the impacts to the fishing fleet. Data from 2017-2021 is used to analyse the industry pre change in closure, with 2022 being used to analyse the impact of the closure. While the closure has been in effect for both 2022 and 2023, only 2022 data is available for this analysis. 2023 data has not been used as data cleaning and checks have not yet been completed for 2023 data and as such any results from this data could contain data errors.

The following outlines the Firth of Clyde affected fleet as identified for the purposes of this BRIA, and where data is available. Between 2017 and 2020, there were 67 distinct vessels that were recorded as fishing in the Clyde cod area during the closure, of which 8 were under 10 metres with none between 10 and 12 metres. For 2021-2022, this figure had dropped to 54 vessels, of which 7 vessels were both under 12 metres and also under 10 metres. These 54 vessels will be considered the affected fleet for the purposes of monetising the costs to the fleet. While the VMS data has allowed an accurate count of fishing in the over 12m fleet, the data for the under 12m fleet fishing in the area may be less reliable due to its estimation from local fishery office interaction, with all the under 12m vessels identified also being under 10m. As such there may be more under 12m vessels affected that we are unaware of and which are therefore not included in the below analysis.

Landings for the affected fleet are detailed in table 2 below. Between £349,000 and £946,000 of all landings by this vessel group come from the ICES rectangle 39E4 which includes the closure area and during the closure period, with an average of around 5% of all landings coming from this area between 2017-2022. Of note, there were still landings made in 2022 despite there being no exemptions, this is due to

the ICES rectangle being larger than the closure area and thus still allowing fishing within.

Table 2: Value of all landings by the Firth of Clyde closure affected vessels, by closure period and closure area compared with all landings, £ thousands nominal value.

	2017	2018	2019	2020	2021	2022
Landings within the Closure Season & Closure Area Rectangle	946	674	647	349	592	400
Landings outwith the Closure Season & Closure Area Rectangle	12,657	13,999	14,240	8,000	9,947	10,851
Total	13,603	14,670	14,887	8,349	10,539	11,252
Closure Season & Closure Area Rectangle %	7%	5%	4%	4%	6%	4%

Source: Marine Directorate fisheries data.

Note: The ICES rectangle 39E4 includes, but is larger than, the closure area.

However, this rectangle is the lowest recorded landing area available and thus it will include landings from the area near, but outside of, the closure area.

The value of landings from the closure area during the closure period represents around 5% of the total annual landing value of all species for affected vessels between 2017-2021. Despite this being a low proportion of total catch, the closure area can have a disproportionately large effect on a few vessels. For example, between 2017 and 2021 17 of the 67 affected vessels had landings that represented more than 10% of their annual catch value from the closure area during the closure period, of which less than 5 of these had landings representing more than 20% of their annual catch value.

However, based on fishing activity data this group has seen a range of outcomes in 2022, with some being displaced to other areas and maintaining their catch, some unable to displace activity and catching less, some only caught in the closure area in odd years and simply did not return, some had already chosen to stop fishing during the Covid-19 pandemic and either had already left entirely or chose to remain out of the market due to the new restrictions, and some vessels appear to have left after the removal of exemptions in the closure. In order to not be disclosive with commercially confidential information, the number of vessels for each outcome has not been shown here, instead the aggregated impact is shown below.

These outcomes tells us that the impact of the closure is manageable for some but for others is an unmanageable pressure either directly or alongside cumulative pressures resulting in fishers leaving the market. It should be noted that this is only a single year of data and some vessels may be trialling their ability to catch in 2022 under the changes before making a decision in 2023.

Table 3 below shows the landings made by the affected fleet during the closure period, with a noticeable decrease in tonnage landed from ICES area 39E4 in 2020 and 2022.

Table 3: Weight of Nephrops landings during the closure period by the Firth of Clyde closure affected vessels by closure area (39E4) or other.

Year	Clyde Closure ICES area: 39E4	Other ICES areas	Total
2017	420	647	1068
2018	271	637	908
2019	267	835	1,102
2020	168	392	560
2021	312	713	1,026
2022	182	686	867

Source: Marine Directorate fisheries data.

Note: The ICES rectangle 39E4 includes, but is larger than, the closure area.

However, this rectangle is the lowest recorded landing area available and thus it will include landings from the area near, but outside of, the closure area.

Estimating the cost to vessels of the closure without exemptions would involve a significant amount of uncertainty due to the multitude of factors likely to impact the affected fleet including: competition for displaced spaces, productivity of alternate grounds, steaming costs of moving to alternate grounds, and if the vessel in question is close to a profitability tipping point which could prompt it to leave the industry. As such, rather than try and estimate the impact through modelling, the impact is instead estimated from the change seen in 2022.

Although the no exemptions policy has run for two years, only 2022 data is available for use in this assessment. 2023 data has not been used as data cleaning and checks have not yet been completed for 2023 data and as such any results from this data could contain data errors. Therefore, a range has been used as this single year of data will also be influenced by a multitude of other factors including the current market conditions and fuel prices relative to previous years. This range will use a range of assumptions and basepoints to show the level of uncertainty in the final figure and the possible range of impacts expected for 2024 and 2025 under this option.

The range has been estimated as follows:

- The expected maximum impact to vessels has been estimated using the largest observed tonnage decrease seen since 2017 in the closure area during the closure period. This decrease was **239 tonnes** across all vessels between 2017 and 2022 landings (this figure does not match table 3 above due to rounding).- This assumes that all changes to landings is due to the closure.
- The expected minimum impact to vessels has been estimated using the decrease in tonnage by the affected fleet over and above the whole Scottish fleet using the closure period relative to 2019. The assumption is that the whole fleet has yet to recover from Covid-19, but the Clyde affected fleet may still be seeing lower tonnage than the rest of the fleet owing to the removal of exemptions in 2022. The data shows that in 2022, the affected fleet saw a 21% decrease in tonnage of Nephrops landed during the closure period

relative to 2019, for the whole Scottish fleet this was 19%. Therefore, it could be considered that 19 percentage points of the decrease were due to wider market factors which affected all vessels, and only 2 percentage points were due to the change in closure changes. As such a **4 tonne decrease** is used as the lower estimate of impact: the landings in 2022 would have been 2% higher than 182 tonnes if not for the closure.

- Other basepoints and assumptions have not been presented as they are expected to lie within this range, for example the decrease seen between 2021 and 2022 or controlling for the decrease in value rather than tonnage between years.

In recognition that this maximum and minimum include a significant range, two different scenarios have been estimated with the range between these anticipated to be the more likely range of the costs expected by Marine Directorate analysts. These being scenarios 1 and 2.

- Scenario 1 takes the average tonnage caught in the ICES area during the closure period as seen in table 3 between 2017-2019, 320 tonnes, as a basepoint and applies two assumptions to arrive at a cost. These assumptions are that only 50% of the lost tonnage came from the closure area, and that of this 50% lost tonnage, 25% could be successfully displaced which would result in an overall loss of 120 tonnes.
- Scenario 2 also takes the average tonnage caught in the ICES area during the closure period as seen in table 3 between 2017-2019, 320 tonnes, as a basepoint and applies two assumptions to arrive at a cost. These assumptions are that only 50% of the lost tonnage came from the closure area, and that of this 50% lost tonnage, 75% could be successfully displaced which would result in an overall loss of 40 tonnes.

The 50% of tonnage lost coming from the closure area assumption is due to the size of the restricted area relative to the ICES rectangle for which we have data, roughly 50% of the area. Taking the further assumption that fishing is evenly distributed within the ICES rectangle (39E4), it could be assumed that 50% of the loss should come from the closure area. As all landings of Nephrops both from the Clyde and nationally, decreased in 2022 due to the fuel crisis, the Marine Directorate views it as appropriate to consider that not all the lost tonnage would be due to the closure.

The 25% or 75% of tonnage displaced have been used for illustrative purposes. The ability for fishing vessels to be displaced is highly localised and no local estimates are available, these figures have been used to help provide an indication of the potential impacts. The Marine Directorate view it as likely that some displacement of fishing activity will happen, however, the level of displacement is uncertain.

To estimate the cost to fishers of this range of impacts, the average price per tonne for Nephrops seen from 2017 to 2022 for the affected fleet was used: this was £2,519 per tonne in 2022 prices. As such, the estimated highest cost to the affected fleet (54 vessels) is £601,000 and the lowest cost is estimated to be £10,000, see table 4 below. As noted above, a more likely range within this maximum and

minimum have been provided through Scenario 1 and 2 which are also noted in table 4. With the expected cost for the affected fleet being between £302,000 and £101,000 in total. If all vessels were equally affected the per vessel cost would be between £5,600 and £1,900. However, we expect vessels to be impacted differently depending on fishing patterns and therefore the cost could be far greater.

Further analysis on the impact of this estimated cost on the profitability of the fleet is contained in the Scottish Firms Impact Test section of this report.

Table 4: Range of Costs to the Nephrops affected fleet for option 1

	Tonnage % Change	Tonnage	Value impact, 2022 prices £
Maximum Expected Impact	-57%	239	-£601,000
Scenario 1	-29%	120	-£302,000
Scenario 2	-10%	40	-£101,000
Minimum Expected Impact	-2%	4	-£10,000

Source: Marine Directorate fisheries data.

Note: Values are converted to 2022 prices using the UK GDP deflator.

6.2.2. Option 1 - Downstream impact – Monetised Impact

This possible reduction in catch would have knock on impacts to on shore based businesses with lower supply for processors and less services needed by the fishing vessels.

Table 5 below shows how reliant the ports are on the affected vessels landing during the closure period by showing what share these landings make up of the total landings in these ports. These closure period landings include all landings made both inside and outside the closure ICES rectangle. Of note is that no single port appears to be overly exposed to landings regularly from this period (the closure period equates to around 20% of the days in a year).

Table 5: Top 10 ports by % of value landed from the closure period and by the affected fleet.

Port	2017	2018	2019	2020	2021	2022
Troon and Saltcoats	17%	18%	16%	11%	14%	15%
Campbeltown	15%	11%	13%	13%	13%	10%
Tarbert	4%	5%	7%	6%	9%	9%
Tayinloan	7%	20%	10%	7%	12%	16%
Carradale	13%	15%	15%	15%	13%	16%
West Loch Tarbert	24%	12%	21%	4%	18%	10%
Ardrossan	11%	7%	3%	3%	5%	5%
Crinan	3%	3%	6%	0%	0%	3%
Girvan	4%	2%	0%	0%	2%	1%
Largs	2%	2%	2%	0%	2%	1%
Gigha	22%	8%	28%	0%	5%	16%
Total Revenue in 2022 prices	£18.3 million	£18.9 million	£18.8 million	£11.9 million	£15.6 million	£13.4 million

Source: Marine Directorate fisheries data.

Note: Values are converted to 2022 prices using the UK GDP deflator.

There are five ports that regularly see 10% or more of the value landed from anywhere during the closure period by the affected fleet: Troon and Saltcoats, Campbeltown, Tayinloan, Carradale, and West Loch Tarbert. No port appears to be overly exposed, therefore the possible impacts can be assumed to be spread between all 11 ports where the affected fleet land. When considering the maximum loss of £601,000 noted in table 4 above against a 2019 port revenue baseline this would represent 3% of their revenue lost, and when using a 2021 port revenue baseline this would represent 4% of their revenue lost.

To monetise the overall impact of this loss in landed product the 'Input Output Multiplier Study of the UK and Scottish Fish Catching and Fish Processing Sectors' report by the Fraser of Allander Institute is used. This output multiplier was chosen as it is the most applicable to the policy change and also to be consistent with the approach generally taken by Seafish for estimating local economic impact. However, whilst these results are useful to understand the wider economic impacts, the specific results should be taken as general estimates only as the exact relationship between the affected fleet and wider sector are uncertain. This is illustrated by the fact that a different estimate is possible when an alternative reasonable multiplier is used.

This report indicates an output multiplier of 1.9 for the shellfish industry which includes indirect and induced effects of the spend. The range of impacts to the onshore processors and further downstream impacts of induced spend per annum are shown in table 6 below.

Figures published by Seafish¹⁴ indicate that the UK shellfish sector had a turnover of £540 million in 2020, down from £619 million in 2019 before the Covid-19 pandemic. While the sector servicing the landings from the Clyde would be a subset of the shellfish sector, the 3%-4% of revenue lost by the ports as indicated above suggest that the revenue lost by processors is likely to be the same or lower for this subset of processors and thus likely manageable for these businesses.

Table 6: Range of onshore impact on output value, option 1

	Value impact, 2022 prices £
Maximum Expected Impact	-£541,000
Scenario 1	-£272,000
Scenario 2	-£91,000
Minimum Expected Impact	-£9,000

Source: Marine Directorate fisheries data and Fraser of Allander output multiplier

Note: Values are converted to 2022 prices using the UK GDP deflator.

6.2.3. Option 1 – Other Non-Monetised impacts

Where Nephrops vessels landings have been displaced there are likely to be additional costs, such as increased steaming costs to new grounds or lower

¹⁴ [Processing Enquiry Tool | Tableau Public](#)

productivity of the new ground requiring more time fishing for the same catch. Due to the complexity of modelling, the likely displacement of vessels and subsequent costs this has not been monetised. However, it is expected to be significantly less than the cost to vessels from lost fishing opportunities.

The costs to the demersal fishing fleet are difficult to quantify due to the lack of available data. A closure for demersal fishing has been in effect every year since 2001 in the Firth of Clyde, prior to this time fishing conditions were very different and direct comparisons cannot be made. Additionally, annual landings of demersal fish in the nearby Ayr and Campbeltown fishing districts are relatively low suggesting there is not a major demersal fishery in the area that is ready to increase. This can be seen in the Scottish Sea Fisheries Statistics 2022 with Ayr seeing £43,000 worth of demersal landings and Campbeltown seeing £54,000 worth of demersal landings in 2022. Due to the lack of an existing major demersal fishery in the area and the complexity in modelling behaviour resulting from having no restrictions, the costs to the demersal fleet has not been monetised.

The cost to the scallop fleet has also not been monetised. This is due to both the fact that the scallop fleet is highly nomadic and thus more easily displaced, and the significant decrease in scallop landings by the affected vessels from the Clyde closure area since 2018 indicating that significant displacement from the area would not have to occur. As such there are likely costs to the scallop fleet in reduced flexibility and a further contribution to the spatial squeeze but no directly estimated costs.

This option would also entail some costs to the Scottish Government for compliance monitoring of the closure. This would be managed through a risk based approach resulting in no additional cost, however, this could reduce the effectiveness of other compliance measures which could have a wider cost on the sector and society. Due to the complexity in modelling the cost of reduced compliance attention elsewhere and the expected small increase relative in effort to all compliance, this potential cost has not been monetised.

6.3. Option 2 (maintain closure, allowing exemptions)

There are no additional short-term financial costs associated with implementing the closure on the same basis as years previous to 2022 (i.e. with exemptions to the closure for vessels fishing with a scallop dredge, a creel, or a trawl used for fishing for Nephrops) for a further 2 years. As such there is no expected cost of this option to the Nephrops fleet.

The demersal fleet would still be restricted and as such should see the same costs as those outlined in option 1. However, as noted in option 1 these have not been monetised as it is unclear if fishing would return without the closure.

There are ecological costs – activity which causes disturbance within the spawning grounds is understood to have an impact on the spawning cod, by making spawning more difficult. This is likely to prevent the replenishment of the cod stock and as seen by the lack of evidence of recovery of the cod stock in the last two decades with this form of closure it is likely insufficient on its own. This could negatively impact the

fishing industry in the medium to long-term with the risk of possible future closures to protect stock collapse and the loss of possible revenues from fishing for cod.

This option would also entail some costs, as in Option 1, to the Scottish Government for compliance monitoring of the closure, as noted previously these have not been monetised.

6.4. Option 3 (maintain and strengthen the closure)

If Option 3 were to restrict access to the entire ICES rectangle which currently includes the closed area, there is expected to be increased costs to both the Nephrops and demersal fleets. Due to the small size of the demersal fishery this has not been monetised here.

The cost to the Nephrops fleet is difficult to estimate with certainty as detailed in Option 1, given the unknowns on the ability of the fleet to displace to new grounds, the productivity of these grounds relative to old, the risk of vessels being close to the tipping point of profitability, and the conflating impact of the fuel crisis. However, it is likely that it would be more difficult to displace to new grounds compared to Option 1 due to the significantly larger space being restricted. Due to the uncertainty only a maximum impact figure is presented which is the complete loss of the tonnage previously landed in the ICES rectangle in 2021, the highest tonnage landed in recent years. The minimum impact is most likely to still be some loss of landings, but it is unclear how small this could be.

The estimated loss of 420 tonnes as seen in 2017 in table 3 above, along with the average value estimate used in option 1 of £2,519 per tonne in 2022 prices would result in an estimated maximum impact of £1,059,000 per annum. This would be spread over the 54 vessels of the affected fleet resulting in an average per vessel cost of £19,600 per annum.

As noted in the costs of Option 1 in section 6.2.3. the cost to the scallop industry has not been monetised due to their low catch value from the Clyde closure area since 2018 and their highly nomadic and thus more easily displaceable nature.

Further analysis on the impact of this estimated cost on the profitability of the fleet is contained in the Scottish Firms Impact Test section of this report.

Following the same process as laid out in section 6.2.2. the downstream impacts of this maximum impact would be expected to be £953,000 per annum. This would be the maximum expected cost to the onshore economy due to the lost processing from landings. As no minimum impact to fleet landings have been estimated for this option due to the uncertainty, no minimum downstream impact has been presented.

Where fishing was able to be displaced, there are possible additional costs of higher steaming costs and lost productivity which have not been monetised due to complexity as noted in 6.2.3.

This option would likely also entail further costs to the Scottish Government in terms of compliance measures as noted in Option 1.

6.5. Option 4 (no legislated closure, seeking voluntary agreement)

This option would see the same costs to the Marine Directorate's compliance activities to observe and measure adherence. As noted in Option 1 these costs have not been monetised.

Voluntary reduction in fishing activity will cost fishers who adhere, but if not all fishers adhere there is a risk that no benefits are brought to cod spawning resulting in costs both to a subset of fishers and to the cod stock. This could result in no change in cod spawning but a transfer between fishers depending on compliance.

This option would see costs similar to option 1 in a high voluntary compliance scenario, with similar costs to option 0 where voluntary compliance is low.

6.6. Summary of Costs

Many of the costs laid out above have not been monetised due to uncertainty or their smaller relative cost. Estimated monetised costs to the fleet, presented in a range, can be seen in options 1, 3 and 4. These monetised fleet costs are expected to be one of the major costs of these options, the other potentially major counter cost being the biodiversity and environment costs from the depletion or loss of cod stocks in the Firth of Clyde. As noted this latter cost has not been monetised due to the difficulty in valuing this impact.

Option 0

- Further depletion and possible loss of iconic and valuable demersal species.
- Loss of future fishing opportunities both from loss of cod and possible ramifications from closing fisheries to protect remaining stocks.
- Impacts are not monetised as this option is considered the baseline.

Option 1

- Possible reduction in demersal and scallop fishing due to removal of fishing grounds.
- Monetised cost to the Nephrops fleet possibly ranging between £10,000-£601,000 per annum and expected to lie between £101,000-£302,000 per annum. Non-monetised costs from lower productivity of displaced fishing.
- Monetised cost to onshore businesses as a result of less Nephrops to process and transport ranging between £9,000-£541,000 per annum. Non-monetised costs to onshore businesses from less demersal fish and scallops.
- Cost to the Scottish Government in enforcing compliance.

Option 2

- Possible reduction in demersal fishing due to removal of fishing grounds.
- Possible costs to onshore businesses from less demersal fish.
- Disturbance to Cod spawning resulting in slower or possibly no recovery.
- Cost to the Scottish Government in enforcing compliance.

Option 3

- Costs in addition to those in option 1 on the fishing fleet with likely further costs on Scottish Government compliance.

- Possible reduction in demersal and scallop fishing due to the removal of fishing grounds.
- Monetised cost to the Nephrops fleet ranging up to £1,059,000 per annum. Non-monetised costs from lower productivity of displaced fishing.
- Monetised cost to onshore businesses as a result of less fish and Nephrops to process and transport ranging up to £953,000 per annum. Non-monetised costs to onshore businesses from less demersal fish and scallops.

Option 4

- Risk of further depletion and possible loss of iconic and valuable demersal species.
- Cost to fishers for those voluntarily not fishing, up to £601,000 per annum for the Nephrops fleet if voluntary compliance is on par with Option 1.
- Cost to onshore businesses as a result of less fish Nephrops up to £541,000 per annum if voluntary compliance is on par with Option 1. Costs also to onshore businesses from the loss of demersal fish.

7. Regulatory And EU Alignment Impacts

7.1. Intra-UK Trade Impacts

There is not expected to be any impact on intra-UK trade as the market access for goods and services remain the same under all options, only impacting where and when fishing may take place affecting all fishers. Nor does this unduly affect fishers from other UK regions with most affected fishers being based in Scotland.

7.2. International Trade

There will be no impact on international trade into and out of Scotland from the implementation of the Clyde cod spawning closure.

7.3. International Standards

Given this is a domestic policy, the measure is unlikely to impact on international standards.

7.4. EU Alignment

Given this is a domestic policy, the measure is unlikely to impact on the Scottish Government's policy to maintain alignment with the EU. This was previously an EU policy, and there continues to be an EU linked closure in the Irish Sea.

8. Scottish Firms Impact Test

All fishing vessels affected can be considered small businesses as they all have a turnover of less than £10 million and are expected to have less than 50 employees. These businesses were consulted in the development of the proposed legislation via their fisheries associations and through public consultation. In particular The Clyde Fishermen's Association, whose members predominantly work in and around the area affected, were consulted.

The SSI will not affect quota levels and should not prevent fishermen catching their full quota over the course of the year. There may be short term effects to the cash

flow of fishing businesses during the closure. Nearby areas, such as the North Channel and the remainder of the Firth of Clyde will remain open, with the aim of enabling fishermen to work elsewhere during the closure. However, Option 1 and 3 will continue to impact fishing vessels which routinely fish in the more targeted closed areas, particularly small creel vessels, due to increased fuel costs and the existing high levels of activity in static ground in surrounding areas.

As noted in Option 1 of section 6, the most affected vessels within this group have seen a range of outcomes, including what appears to be successful displacement and for others leaving the industry entirely. As such the costs estimated below are not likely to be shared equally amongst the fleet. However, due to the small number of vessels impacted by different outcomes and in order to not be disclosive the figures below will be presented as averages rather than impacts to individual vessels.

Option 1 (the preferred option) is estimated to cost the Clyde Nephrops fishing industry between £10,000 and £601,000 per annum based on lower fish landed, with the expected range estimated to lie between £101,000 and £302,000. When applied to on average 54 vessels as outlined in section 6 this expected range would average between £1,900-£5,600 per vessel per annum although it is expected that some would experience higher than average costs and some would experience lower than average costs based on if they catch more or less than the average. These costs only include the revenue lost to vessels, however, additional costs could be borne when fishing has been displaced by vessels from increased steaming costs to new grounds or lower productivity of the new ground requiring more time fishing for the same catch. As noted in 6.2.3 these have not been monetised but are likely to be smaller than the revenue lost.

Option 3 would see a cost up to £1,059,000 per annum applied to on average 54 vessels in the Clyde Nephrops fishing industry. This would average up to £19,600 per vessel per annum although it is expected that some would experience higher than average costs and some would experience lower than average costs based on if they catch more or less than the average. As noted above in section 4 this option covers a larger closure area than would likely be considered.

Data from the Seafish economic data¹⁵ shows that the affected vessels could make between £9,000 and £109,000 net profit prior to the Covid-19 pandemic and the fuel crisis. However, the net profits decreased notably over the Covid-19 pandemic with the west of Scotland Nephrops fleets seeing losses in 2021, see table 7. While the Seafish profitability data does not provide data since the change in closure in 2022 and 2023, it does give an indication to the tight margins faced by this sector of the fishing fleet. Early insight from Seafish¹⁶ suggests that profits remain tight with the lower revenue and lower prices seen during Covid-19 returning to normal but are being replaced by higher fuel prices.

¹⁵ [Fleet Enquiry Tool | Tableau Public](#)

¹⁶ [2022 saw fish prices trend upward but profits decline in another challenging year for the UK fishing fleet | Seafish](#)

This evidence suggests that the costs of the closure could be a significant proportion of a vessels profit before the current fuel crisis and Covid-19 impact, and when combined with these impacts could see vessels suffering a loss in profits.

Table 7: Annual net profit of UK fishing vessels by main groups affected and Seafish segment

Vessel Group	2019	2020	2021
WOS Nephrops over 250kw	£35,000	£4,000	-£6,000
WOS Nephrops under 250kw	£21,000	£13,000	-£10,000
Under 10m pots and traps	£14,000	£12,000	£14,000
10-12m pots and traps	£41,000	£30,000	£44,000
Over 12m pots and traps	£109,000	£54,000	£79,000
Under 15m scallop dredge	£9,000	£9,000	£2,000
Over 15m scallop dredge	£33,000	£13,000	£50,000

Source: Seafish Economic Data

9. Competition Assessment

There is not expected to be an overall negative impact on competition arising from this regulation. Fishing that was previously exempt from the closures but under the preferred option would have that exemption removed, accounted for around 1% of the total value and tonnage of Nephrops in Scotland and represented around 5% of the affected fleet's value between 2017-2021. The preferred policy of maintaining the closure is expected to displace fishers to other nearby grounds as the quota available would remain the same. While some of this affected tonnage may be displaced, there is expected to be increased competition in the Firth of Clyde for fishing space which could result in losses in revenue and productivity for fishing vessels.

There is a risk that the closure may result in some fishers landing less or leaving the market due to the increased cost of transit to alternate fishing grounds, the inability to utilise alternate fishing grounds due to weather, or the lower productivity of alternate fishing grounds which could result in a reduced range of suppliers. However, if this occurs it should only impact a small number of suppliers and should not change incentives or prevent the remaining fishers from competing.

The regulation will not lead to a differentiation in costs between new and existing fishermen. The regulation is unlikely to affect the market structure. The measures will apply to all British vessels in the specified areas of Scottish waters. In effect the closure will apply to all vessels because the area falls within territorial waters.

10. Consumer Assessment

The Clyde closure regulation is not expected to have a significant impact on the price of Nephrops to the market nor on the availability of Nephrops. The preferred option to maintain no exemptions would continue to affect around 1% of the total value and tonnage of Nephrops landed in Scotland pre-closure change and around 5% of the value caught by the affected fleet in the Clyde area pre-closure change between 2017-2021. Given the size of the impact, the large international market for Nephrops and the national supply chain for food products this is not expected to have a significant impact.

However, there could be local price and availability issues where local businesses purchase directly from fishers. While this is a risk it is expected that this could be mitigated in large part by fishing being displaced to nearby areas, with the landings of Nephrops from these alternative sites remaining below pre-covid levels (as is most Nephrops fishing in Scotland) suggesting that there is supply available to meet demand.

11. Test run of business forms

The continuing of the Clyde cod spawning closure will not result in the creation of new forms for businesses to deal with, nor result in amendments of existing forms.

12. Digital Impact Test

The Clyde Cod spawning closure will not be impacted by changes in processes moving online.

13. Legal Aid Impact Test

Maintaining a closure in 2024 and 2025 would not give rise to increased use of legal processes or create new rights or responsibilities and should therefore have no new impact on the legal aid fund.

14. Enforcement, Sanctions And Monitoring

Enforcement would be undertaken predominantly by the Marine Directorate Compliance, operating under Scottish legislation. If the measures are found to have been contravened, a fine not exceeding £50,000 may be levied on summary conviction and an unlimited fine on indictment. The court can also order the forfeiture of any fish in respect of which the offence was committed and of any net or gear used in the commission of the offence. On summary conviction, if the court does not order the forfeiture of fish, it may impose an additional fine not exceeding the value of the fish.

Marine Directorate Science is responsible for monitoring levels of fishing activity and the effect of particular fishing methods on stocks in Scottish waters, within the framework of a strategic work programme determined by the Scottish Government. It will be possible to review the effect of these measures by assessing landings data from before and after their introduction, and compare the trend to the rest of the fleet.

Since introducing the changes to the closure in 2022, the Marine Directorate Compliance have undertaken increased monitoring of the closure.

15. Implementation and Delivery Plan

Subject to the consultation and Ministerial agreement, it is proposed to lay the Order on 14 December 2023 in order for the closure to come into effect on 14 February 2024.

15.1. Post-implementation review

As during the 2022 and 2023 closures the Marine Directorate will carry out a review to monitor compliance with the closure, monitor cod catches within the surrounding

area, and to monitor the impact on the local fishing vessels. Stakeholder meetings will also be carried out to seek feedback.

16. Summary and recommendation

It is proposed that, in order to meet the objectives of this policy to provide cod with the best chance of recovery and taking a precautionary approach in view of evidence gaps, the Clyde cod spawning closure remains in situ, Option 1, for the spawning period of 2024 and 2025 without any exemptions, as in 2022 and 2023.

The other options were considered but were deemed to not provide the same level of benefits to the ecosystem and Scotland as Option 1. This is due to either the higher cost for few further benefits of stronger restrictions, and the poor ecosystem benefit of no or fewer restrictions.

The costs presented for Option 1 have a significant range due to the uncertainty surrounding the impacts as explained in section 6.2.1. but the maximum and expected costs portrayed are estimated to be conservative estimates. When accounting for the wider impacts on the Nephrops fishery, the impact of the closure in 2022, it could be as little as a 2% drop in landings. If the fishing fleet can maintain this level of adaptability in displacing their activity from the Clyde closure area, the impact on the fishing vessels and economy as a whole could be a little as £19,000 per annum.

Table 8: Summary costs and benefits table for each option

Option	Total benefit per annum	Total cost per annum
0	<ul style="list-style-type: none"> No further restrictions on fishers during this period preventing any cash-flow issues or displacement. <p>No monetised benefit has been calculated, particularly as this option is considered the baseline.</p>	<ul style="list-style-type: none"> Further depletion and possible loss of iconic and valuable demersal species. Loss of future fishing opportunities both from loss of cod and possible ramifications from closing fisheries to protect remaining stocks. <p>No monetised costs have been calculated, particularly as this option is considered the baseline.</p>
1	<ul style="list-style-type: none"> Strengthened protections for cod to improve stock size. Consistency in approach to cod protections. Improved evidence base for future cod management. <p>No monetised benefit has been calculated.</p>	<ul style="list-style-type: none"> Possible reduction in demersal and scallop fishing due to removal of fishing grounds. Monetised cost to the Nephrops fleet possibly ranging between £10,000-£601,000 per annum and expected to be between £101,000-£302,000 per annum. Monetised cost to onshore businesses as a result of less Nephrops to process and transport ranging between £9,000-£541,000

		<p>per annum. Non-monetised costs to onshore businesses from less demersal fish and scallops.</p> <ul style="list-style-type: none"> • Cost to the Scottish Government in enforcing compliance. <p>Monetised costs possibly ranging from £19,000 to £1,142,000 per annum and expected to lie between £191,000 and £574,000.</p>
2	<ul style="list-style-type: none"> • Some protections for cod to improve stock size but expected to be less than Option 1 or 3. • Consistency in closure with previous years (prior to 2022) which gives more fishing opportunity. <p>No monetised benefit has been calculated.</p>	<ul style="list-style-type: none"> • Possible reduction in demersal fishing due to removal of fishing grounds. • Possible costs to onshore businesses from less demersal fish. • Disturbance to Cod spawning resulting in slower or possibly no recovery. • Cost to the Scottish Government in enforcing compliance. <p>No monetised costs have been calculated.</p>
3	<ul style="list-style-type: none"> • Strengthened protections for cod to improve stock size, likely in line with Option 1 but possibly stronger. 	<ul style="list-style-type: none"> • Costs in addition to those in option 1 on the fishing fleet with likely further costs on Scottish Government compliance. • Possible reduction in demersal and scallop fishing due to removal of fishing grounds. • Monetised cost to the Nephrops fleet ranging up to £1,059,000 per annum. • Monetised cost to onshore businesses as a result of less fish and Nephrops to process and transport ranging up to £953,000 per annum. Non-monetised costs to onshore businesses from less demersal fish and scallops. <p>Monetised costs range up to £2,012,000 per annum.</p>
4	<ul style="list-style-type: none"> • Possible increased protection to cod to improve stock size, at best up to Option 1 but possibly also zero. 	<ul style="list-style-type: none"> • Risk of further depletion and possible loss of iconic and valuable demersal species. • Cost to fishers for those voluntarily not fishing, up to £601,000 per

	<ul style="list-style-type: none"> Improved evidence base for future cod management. <p>No monetised benefit has been calculated.</p>	<p>annum for the Nephrops fleet if voluntary compliance is on par with Option 1.</p> <ul style="list-style-type: none"> Cost to onshore businesses as a result of less Nephrops fished up to £541,000 per annum if voluntary compliance is on par with Option 1. Costs also to onshore businesses from the loss of demersal fish. <p>Monetised costs range up to £1,142,000 per annum.</p>
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17. Declaration and publication

I have read the Business and Regulatory Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs. I am satisfied that business impact has been assessed with the support of businesses in Scotland.

Signed: Gillian Martin

Gillian Martin
Minister for Energy and the Environment

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