

# Business and Regulatory Impact Assessment

## Title of Proposal

Introduction of new fisheries management measures for Marine Protected Areas (MPAs) and Special Areas of Conservation (SAC), Socio-Economic Analysis.

## Purpose and intended effect

- **Background**

The Scottish Government is committed to a clean, healthy, safe, productive and biologically diverse marine and coastal environment that meets the long-term needs of people and nature. In order to meet this commitment our seas must be managed in a sustainable manner - balancing the competing demands on marine resources. Biological and geological diversity must be protected to ensure our future marine ecosystem is capable of providing the economic and social benefits it yields today.

Marine Protected Areas (MPAs) are designated under the Marine (Scotland) Act 2010. Special Areas of Conservation (SACs) are designated under the EU Habitats Directive. Under the respective legislation sites have to be managed in a way that ensures that the protected features are conserved or recovered.

- **Objective**

### **SACs**

SACs are designed to protect internationally important habitats and species. They are designated under the EU Habitats Directive, which is transposed into Scottish law through the Habitats Regulations. SACs form part of the European network of Natura 2000 sites<sup>1</sup>. The Scottish suite of inshore marine SACs currently incorporate the full range of habitats and species listed in Annexes I and II of the EU Habitats Directive.

All EU member states are obligated to designate SACs for a range of habitats and species as listed in the EU Habitats Directive (the Directive). The Directive requires that the sites are managed to ensure that the conservation objectives of the qualifying features are achieved.

Article 6 of the Directive defines how SACs should be managed and protected. The designation of these sites requires the implementation of conservation measures which correspond to the ecological requirements of Annex I 'habitats' and Annex II 'species' present on the site. (Article 6(1)).

Appropriate steps should also be taken to avoid, within the SACs, the deterioration of natural habitats and habitats of species, as well as significant disturbance to species for which the site is designated. (Article 6(2)).

In addition, any plan or project (e.g. new policy or development) should be assessed to ensure that it does not have any negative implications for an SAC. Where there is a likely significant

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<sup>1</sup> Natura is a collective term used for Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

effect (or it cannot be ruled out) the proposal must undergo an appropriate assessment to determine the implications for the site. Subject to article 6(4), authority must only be given where it can be established that site integrity will not be adversely affected. (Article 6(3)).

A plan or project may be authorised even if such assessment shows negative implications for an SAC only where there are no alternative solutions and where the plan or project must be carried out for imperative reasons of overriding public interest. Where this is the case all compensatory measures necessary must be taken to ensure that the Natura 2000 network is protected. More stringent controls are in place where the SAC hosts a priority habitat type and/or a priority species. (Article 6(4)).

Historically the Scottish Government has generally relied upon article 6(2), as read with Article 6(1), to ensure that fisheries were managed appropriately within SACs. However, a review of the requirements of the Directive has concluded that Article 6(3) should also apply to changes in fisheries policy, and other fisheries management plans. This means that every change in fisheries policy or fisheries management plan (or the development of new management arrangements) would require to be tested against the provisions in Article 6(3).

Without having requisite fisheries management measures in place for each SAC it would be virtually impossible to rule out a likely significant effect beyond reasonable scientific doubt. This means that even beneficial changes in policy or management plans could be prevented from occurring. However by putting the necessary fisheries management measures in place such assessment under article 6(3) is unlikely to be required because there could be no significant effect. This also applies to SACs where little fishing activity takes place.

### **MPAs**

The purpose of Nature Conservation MPAs is to safeguard nationally important species, habitats and geology across Scotland's marine environment. MPAs have been designed to complement existing site-based measures. The intention is to manage MPAs under the principle of sustainable use.

An MPA network will support greater national and international ecological coherence as stipulated by:

- the Marine (Scotland) Act 2010
- the Marine and Coastal Access Act 2009
- the Convention on Biological Diversity
- the World Summit on Sustainable Development
- the OSPAR<sup>1</sup> convention
- the European Union Marine Strategy Framework Directive

Designation of MPAs are based primarily on scientific evidence, and MPA search features have been used to underpin the selection of MPA locations.

Evidence in this BRIA is drawn from the work of statutory nature conservation body SNH<sup>2</sup> and consultants ABPmer and eftec<sup>3</sup>. This has been updated as required.

It brings together the science-led arguments for management and the projected potential social and economic consequences of such action. The sites have been identified for designation as an MPA due to the confirmed presence of biodiversity and geodiversity features detailed above.

Marine Protected Areas (MPAs) that are designated under the Marine (Scotland) Act 2010 and

the Marine & Coastal Access Act 2009 have a range of protective provisions. Both Acts place duties on all Public Authorities and Regulators. They must ensure that their own functions, or consenting/licensing decisions, do not cause a significant risk to the conservation objectives of the MPAs being achieved.

It is also an offence to intentionally or recklessly kill, remove, damage, or destroy any protected feature of an MPA. The management options papers set out the advice of SNH and JNCC regarding activities that take place in or near to MPAs. These conclude that for licensed activities, existing operations can continue as at present. However, any new or extended operation requiring consent will have to be assessed against the conservation objectives.

As fishing is licensed in a general spatial manner, the above approach does not fit that model. Therefore a programme of development and implementation of management measures has been developed to ensure that fishing activity does not hinder the achievement of the conservation objectives.

### **Reason for BRIA**

This BRIA examines the socio-economic impact of introducing new fisheries management measures to further the conservation objectives for the all the protected areas detailed in this documents. The assessment period covers the 20 year period from 2015 to 2034 - reflecting the time horizon within which the majority of impacts are expected to occur. As with any socio-economic assessment related to environmental measures, the findings should be considered as estimates.

- **Rationale for Government intervention**

Scotland's marine environment provides: food; energy sources (wind, wave and tidal power, minerals and fossil fuels); routes and harbours for shipping; tourism and recreational opportunities; and sites of cultural and historical interest. Scotland's seas contain important distinctive habitats and support a diverse range of species that require protection in order to be conserved or for recovery to be facilitated. Due to the competing demands placed upon Scotland's marine resources, more effective management is required so that a balance between conservation and sustainable use can be struck.

Currently there is not sufficient protection in place to ensure that the marine environment is properly protected and complex ecosystems safeguarded. An ecologically coherent network of well-managed protected areas is vital to conserve and regenerate our seas, in turn protecting the many goods and services they provide now, and for generations to come.

### **Contribution to an Ecologically Coherent network**

Scotland's seas support a huge diversity of marine life and habitats, with around 6,500 species of plants and animals, with plenty more to be found in the undiscovered deeps of the north and west of Scotland. Our seas account for 61% of UK waters and remain at the forefront of our food and energy needs, through fishing, aquaculture, oil and gas, and new industries such as renewables, as well as recreation activities and ecotourism. An ecologically coherent network of well-managed MPAs is vital to conserve and regenerate our seas, in turn protecting the many goods and services they provide now, and for generations to come. Furthermore it is likely that a network of Nature Conservation MPAs will demonstrate beneficial network effects, i.e. the benefit from the

network as a whole may be greater than the sum of the benefits from the individual MPAs. These effects are potentially of great importance in marine protected areas because of the lack of barriers and mobility of species.

## **Consultation**

A public consultation ran from 11 November 2015 to 02 February 2015. Feedback from the formal consultation responses helped finalise the management measures which this assessment is based on.

## **Introduction of fisheries management measures**

The formal introduction of fisheries management measures at all of these sites would provide recognition and protection to the natural features of the site while also contributing to the wider Scottish and UK marine conservation network.

### **• Sectors and groups affected**

The following sectors have been identified as present (or possibly present in the future) within the sites and are potentially affected by the management measures:

- Commercial Fisheries
- Public Sector

## **Benefits of introducing fisheries management measures**

Fisheries management measures will help to conserve the range of biodiversity in Scottish waters. Such measures will complement (not duplicate) other types of designation and provide an essential contribution to establishing an ecologically coherent network of marine protected areas. In the absence of such measures, there would be areas of Scotland's marine environment that would continue to be unprotected.

Appropriate fisheries management measures will reduce the risk that the extent, population, structure, natural environmental quality and processes of features protected will decrease or degrade over time. The risk that the features will be adversely affected by human activities is greater if not protected by management measures. In addition, beyond a certain point of degradation, changes to ecosystems may be large and irreversible, resulting in a significant societal cost. Avoiding such a reduction in ecosystem services is thus a key benefit of introducing fisheries management measures. However doing nothing is expected to result in environmental decline, with a corresponding declining benefit stream. These measures will contribute towards maintaining these benefits.

While it may not be possible with current levels of research to monetise benefits with a satisfactory degree of rigour, it is clear that many of the benefits relate to aspects of our lives that we take for granted and for which it is good practice and common sense to maintain through protection measures.

## Ecosystem Services Benefits

Ecosystems are very complex, and it is thought that the more complex an ecosystem is the more resilient it is to change. Therefore, if it is damaged or if a species or habitat is removed from that ecosystem, the chances of survival for those services reduce as the ecosystem becomes weaker. However, by conserving or allowing the species and habitats that make up that ecosystem to recover, we can be more confident of the continuation of the long-term benefits the marine environment provides.

Non-use value of the natural environment is the benefit people get simply from being aware of a diverse and sustainable marine environment even if they do not themselves 'use it'. We take for granted many of the things we read about or watch, such as bright colourful fish, reefs and strange shaped deep sea curiosities, to lose them would be a loss to future generations that will not be able to experience them. Due to the scientific uncertainty involved it is challenging to put a true value on this, but the high quality experience and increasing knowledge of Scotland's seas can be better preserved through measures such as MPAs. It is expected that non-use value will be attained as a result of designation both from the knowledge that the features are receiving adequate protection along with the wider conservation objectives that designation supports.

Whilst ecosystem services benefits at an individual site level cannot be easily calculated, the non-use value to Scottish households of marine conservation in Scottish waters generated by a well-functioning MPA network as a whole is estimated to be within the range of £239–583 million<sup>4</sup> over the 20 year assessment period.

The ecosystem services provided by effective management of the MPA contributes to the wider benefits that the MPA network can deliver:

## Benefits of MPAs

<b><i>Benefit</i></b>	<b><i>Habitat(s)</i></b>
<p><b>Supporting fish and shellfish fisheries.</b></p> <p>Habitats within the MPA network can be important to various different aspects of fish/shellfish life history – such as for feeding, for spawning or for recruitment/ juveniles (e.g. providing shelter from predation).</p>	<ul style="list-style-type: none"> <li>• Kelp – including lobster, crab and wrasse (the latter used in aquaculture industry).</li> <li>• Maerl beds – Research showing that scallop spat preferentially settle on maerl. Also provide feeding areas for juvenile cod.</li> <li>• Burrowed mud – main habitat for Nephrops / langoustine. This is the most lucrative shellfishery in Scotland's seas. Worth £64.6 million in 2013 and accounting for 15% of the total value of all Scottish landings.</li> <li>• Seagrass beds – potential cod nursery habitat.</li> <li>• Rocky/boulder and cobble reefs – providing habitat used for European spiny lobster, velvet crabs, lobster and edible crab. Some overlap with kelp (see above).</li> </ul>

<p><b>Carbon capture and storage(blue carbon)</b></p> <p>MPAs with particular features play a role in storing blue carbon.</p>	<ul style="list-style-type: none"> <li>• Kelp</li> <li>• Maerl beds</li> <li>• Seagrass beds</li> <li>• Bivalve beds e.g. horse mussels and blue mussels, flame shell beds</li> <li>• Burrowed mud</li> <li>• Cold water corals</li> </ul>
<p><b>Coastal defence</b></p>	<ul style="list-style-type: none"> <li>• Kelp and rocky reefs – reduce the wave energy reaching the shore, thus reducing coastal erosion.</li> </ul>
<p><b>Ensuring a supply of sediment – including to beaches and machair/dune systems</b></p>	<ul style="list-style-type: none"> <li>• Maerl beds</li> <li>• Shallow tide-swept coarse sands with burrowing bivalves</li> <li>• Horse mussel beds</li> <li>• Flame shell beds</li> </ul>
<p><b>Improving water clarity/quality</b></p>	<ul style="list-style-type: none"> <li>• Horse mussels and blue mussels – through filtering material out of the water.</li> <li>• Seagrass beds – directly through attracting sediment onto the plants’ surface and indirectly through the filter feeders that live amongst the seagrass.</li> </ul>
<p><b>Stabilising coastal sediment</b></p>	<ul style="list-style-type: none"> <li>• Seagrass beds – through holding sediments with their roots and establishing beds.</li> <li>• Blue mussel beds – through binding sediments together through byssus threads and establishing beds.</li> </ul>
<p><b>Providing wildlife experiences (recreation and tourism)</b></p>	<ul style="list-style-type: none"> <li>• This is more often applied to species – seabirds, whales, dolphins etc, that are the focus of most wildlife tourism in Scotland. But also applies to species that are the focus of recreational angling e.g. common skate.</li> <li>• Rockpools – particularly inspiring for children.</li> <li>• Sea caves and reefs – providing underwater adventures for divers and snorkellers.</li> <li>• Blue mussel and horse mussel beds, maerl beds</li> </ul>

## **Costs of introducing fisheries management measures**

### **Assessment of over 15m data**

This dataset is an amalgamation of logbook and landings data with Vessel Monitoring System (VMS) data. Logbook and landings data for ICES rectangles where there are protected areas is identified. The VMS data for each corresponding date and vessel in the logbook data is identified. It is filtered by speed (between 0 and 5 knots) to limit it to reports that are indicative of fishing activity. The two data sets are then merged giving each VMS report a notional value. Each VMS report is considered to be worth 2 hours of effort unless it is clear that the reporting frequency is much greater. In that circumstance adjustments have been made.

There are some potential sources of error in this estimate. If the wrong rectangle has been recorded in the logbook then data will be omitted. The total catch value for the trip is divided in proportion with the daily logged amount for a species. Therefore it is impossible to account for possible variations in catch quality which in turn influences the actual daily value.

In some cases a vessel may have a reported position outside an area in consecutive reports. If the intervening time was spent inside an area then this is missed by the analysis. By the same token a vessel may have just entered the area before a VMS report meaning it is included in the analysis.

This resulting dataset is then plotted using a Geographic Information System (GIS) and VMS reports that would be affected by a particular management approach identified. These are then summarised into the tables in this document for each site detailing the percentage of activity affected.

### **Assessment of under 15m data**

For vessels in the range of 10 to 15m there is a requirement to keep a logbook detailing catches at ICES rectangle level. VMS is presently being rolled out to vessels in this size range but there is no industry wide dataset available yet. Following the requirement for over 12m boats to have VMS there is also one year's worth of VMS data for some 12m-15m vessels . This has been utilised as a validation test.

Marine Scotland undertook the Scotmap project to get a better understanding of the distribution of activities by under 15m vessels. It provides an improved spatial resolution of where under 15m activity occurs within a ICES rectangle data. Fishing areas were identified by fishermen during the interviews and recorded in GIS format, and the opportunity to provide an estimate value given.

All of the fishing areas were processed into an amalgamated raster layer with 800 cells per ICES statistical rectangle with an average area of ca. 4.20 km<sup>2</sup>. This results in each of the 800 cells having a share of the overall value of the ICES rectangle. However not all vessels participated in Scotmap meaning that the values are an under estimate of total fleet activity, but can be used on a proportional basis. For under 15m vessels, where VMS data is not available, it provides a better spatial resolution of data than looking at values at an ICES rectangle level. However given that it provides an aggregated average value it does not present data at an individual vessel level there will be limits to its accuracy.

In order to analyse data to finer spatial scales to assess the value of MPAs and the potential

impact of management measures each Scotmap grid has been divided further into 25 equally sized smaller grids (this assumes that value is uniformly distributed across the Scotmap grid cell). From the Scotmap data the total value of each ICES rectangle for a particular gear type was calculated. In the same manner the value of each MPA was calculated using each smaller grid, and then the value of the management measures. This allows the percentage of an ICES rectangle catch that is within an MPA and/or management zone to be calculated. These percentages are then multiplied against all under 15m recorded landings for that ICES rectangle to ascertain the estimated value of the MPA, and the impact of the management measures. This provides a more robust estimate than the previously adopted approach of estimating the proportion of activity affected using the same percentage identified from over 15m vessel data.

There are potential sources of error within this estimate. As mentioned it assumes that vessels which did not participate in Scotmap have the same distribution of activity in an ICES rectangle. It also assumes that the proportion of fishing effort in the same as the proportion of value. This may not always be the case due to variations in catch quality. Finally all data is apportioned to the ICES rectangle recorded in the logbook, meaning any errata at this point cannot be accounted for.

### **Fisheries management measures**

Costs have been evaluated based on the implementation of management measures. Where feasible costs have been quantified, where this has not been possible costs are stated qualitatively. All quantified costs have been discounted in line with HM Treasury guidance using a discount rate of 3.5%. Discounting reflects the fact that present consumption is preferred to future consumption. All costs are presented in 2015 prices.

Commercial fisheries costs are presented below in terms of Gross Value Added (GVA). GVA more accurately reflects the wider value of the sector to the local area and economy beyond the market value of the landed catch. Stating costs purely in terms of landed value would overstate the true economic cost of not fishing. Costs are also presented in terms of the reduction in full-time equivalent (FTE) employment. It is also possible that effort not continuing in the area could be transferred to other locations resulting in reduced loss of income. GVA estimates include both direct and indirect impacts, which accounts for upstream supply chain impacts. Initial landings values, used to derive the final costs, are averaged over a period from 2010 - 2014 in order to smooth year-on-year fluctuations.

### **Commercial Fisheries**

The following section sets out details of potential costs at a site level over a 20 year time frame. At the end of the section a cumulative assessment to assess the total effect of the measures

## East Mingulay SAC

### Summary of Features and Conservation Objectives

Feature	Conservation Objective
Reefs (Biogenic, bedrock, and stony)	Maintain

### Management Measures

Gear Type	Measure
Demersal trawl / seine net / mechanical dredging / beam trawling / suction dredging	Prohibit across whole SAC
Creel Fishing / long lining / set nets	Prohibited on a zonal basis

### Costs, Scottish vessels (£)

	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Whitefish Trawls 83 Nephrops Trawls 5,443	Nephrops Trawls 381 Pots 4,447
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 147,155		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 87,255		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is **£87,255**. By comparison, for all UK vessels the total is £94,244.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

### Combined impact in relation to site, Scottish vessels (£)

Average annual revenue site total	14,811
Average annual revenue impact of measures	10,354
Estimated annual revenue of the 36 vessels affected	8,498,260
Total combined revenue impact	0.12%

Total revenue for all gear types within the MPA site is £14,811. The impact on revenue as a result of management measures within the MPA is £10,354 (69.91% of the total site revenue). For this MPA, the overall revenue impact on the 36 affected vessels is just 0.12% (based on their total combined revenue of £8,498,260).

**Employment (direct and indirect reduction)**

0.2 jobs

**Loch Creran MPA / SAC****Summary of Features and Conservation Objectives**

Feature	Conservation Objective
Flame shell beds	Conserve
Reefs (Bedrock, and biogenic)	Maintain

**Management Measures**

Gear Type	Measure
Demersal trawl / seine net / Mechanical dredging / beam trawling / suction dredging / set nets / long lines	Prohibited throughout whole MPA / SAC
Creel fishing	Zonal management arrangement
Prohibit the removal of horse mussels by any means	

**Costs, Scottish vessels (£)**

	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)		
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 2		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 1		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is £1. By comparison, for all UK vessels the total is £1.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes

beyond their headline categorisation).

**Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	709
Average annual revenue impact of measures	0.12
Estimated annual revenue of the 2 vessels affected	187,240
Total combined revenue impact	0.00%

Total revenue for all gear types within the MPA site is £709. The impact on revenue as a result of management measures within the MPA is £0.12 (0.02% of the total site revenue). For this MPA, the overall revenue impact on the 2 affected vessels is 0.00% (based on their total combined revenue of £187,240).

**Employment (direct and indirect reduction)**

0.0 jobs

**Loch Laxford SAC**

**Summary of Features and Conservation Objectives**

Feature	Conservation Objective
Large shallow inlet and bay	Maintain
Reefs (Bedrock and stony)	Conserve

**Management Measures**

Gear Type	Measure
Demersal trawl / seine net / mechanical dredging / beam trawling / Suction dredging	Prohibit across the whole area
Creel fishing / long lining / set nets	No change to existing arrangements

**Costs, Scottish vessels (£)**

	>15m vessels		<15m vessels	
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Dredge	579	Nephrops Trawls	1
			Dredge	125

Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels)
10,016

GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels)
6,183

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is £6,183. By comparison, for all UK vessels the total is £6,183.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

**Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	1,652
Average annual revenue impact of measures	705
Estimated annual revenue of the 10 vessels affected	2,551,887
Total combined revenue impact	0.03%

Total revenue for all gear types within the MPA site is £1,652. The impact on revenue as a result of management measures within the MPA is £705 (42.66% of the total site revenue). For this MPA, the overall revenue impact on the 10 affected vessels is just 0.03% (based on their total combined revenue of £2,551,887).

<b>Employment (direct and indirect reduction)</b>
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0.0 jobs
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**Loch Sunart MPA / SAC**

<b>Summary of Features and Conservation Objectives</b>
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Feature	Conservation Objective
Common skate, flameshell beds, northern featherstars, serpulid aggregations	Conserve
Reefs (bedrock and stony)	Maintain

<b>Management Measures</b>
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Gear Type	Measure
Demersal trawl / seine net / mechanical dredging / beam trawling / Suction dredging / long lining / set	Prohibit across the whole area

nets	
Creels	Zonal management arrangement

<b>Costs, Scottish vessels (£)</b>		
	<b>&gt;15m vessels</b>	<b>&lt;15m vessels</b>
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Nephrops Trawls 140 Dredge 190	
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 4,688		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 2,828		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is **£2,828**. By comparison, for all UK vessels the total is £2,828.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

**Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	13,098
Average annual revenue impact of measures	330
Estimated annual revenue of the 7 vessels affected	1,862,253
Total combined revenue impact	0.02%

Total revenue for all gear types within the MPA site is £13,098. The impact on revenue as a result of management measures within the MPA is £330 (XX.XX% of the total site revenue). For this MPA, the overall revenue impact on the 7 affected vessels is just 0.02% (based on their total combined revenue of £1,862,253).

<b>Employment (direct and indirect reduction)</b>
0.0 jobs

## Loch Sween MPA

### Summary of Features and Conservation Objectives

Feature	Conservation Objective
Native oyster, maerl beds, burrowed mud, sublittoral mud and mixed sediment communities	Conserve

### Management Measures

Gear Type	Measure
Demersal trawl / mechanical dredging / hand gathering	Prohibit on a zonal management basis
Suction dredging / beam trawling	Prohibit across whole site
Creel fishing / long lining / set nets	No change to existing arrangements

### Costs, Scottish vessels (£)

	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Nephrops Trawls 519 Dredge 10,022	Nephrops Trawls 7 Hand Fishing 343
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 154,793		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 96,706		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is £96,706. By comparison, for all UK vessels the total is £99,717.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

### Combined impact in relation to site, Scottish vessels (£)

Average annual revenue site total	56,215
Average annual revenue impact of measures	10,891
Estimated annual revenue of the 28 vessels affected	3,965,842
Total combined revenue impact	0.27%

Total revenue for all gear types within the MPA site is £56,215. The impact on revenue as a result of management measures within the MPA is £10,891 (19.37% of the total site revenue). For this

MPA, the overall revenue impact on the 28 affected vessels is just 0.27% (based on their total combined revenue of £3,965,842).

**Employment (direct and indirect reduction)**

0.2 jobs

**Lochs Duich Long & Alsh MPA / SAC**

**Summary of Features and Conservation Objectives**

Feature	Conservation Objective
Reefs (biogenic, bedrock, and stony)	Maintain
Burrowed mud and flame shell beds	Conserve

**Management Measures**

Gear Type	Measure
Demersal trawl / seine net / mechanical dredging / suction dredging / beam trawling	Prohibit across the whole area
Creel fishing / long lining / set nets	No change to existing arrangements
Prohibit the removal of horse mussels by any means	

**Costs, Scottish vessels (£)**

	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Nephrops Trawls 296 Dredge 16,998	Nephrops Trawls 1,232
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 263,294		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 163,317		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is **£163,317**. By comparison, for all UK vessels the total is £185,374.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

**Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	82,508
Average annual revenue impact of measures	18,526
Estimated annual revenue of the 38 vessels affected	6,979,960
Total combined revenue impact	0.27%

Total revenue for all gear types within the MPA site is £82,508. The impact on revenue as a result of management measures within the MPA is £18,526 (22.45% of the total site revenue). For this MPA, the overall revenue impact on the 38 affected vessels is just 0.27% (based on their total combined revenue of £6,979,960).

<b>Employment (direct and indirect reduction)</b>
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0.4 jobs
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### Noss Head MPA

<b>Summary of Features and Conservation Objectives</b>
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Feature	Conservation Objective
Horse mussel beds	Conserve

<b>Management Measures</b>
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Gear Type	Measure
Demersal trawl / seine net / mechanical dredging / suction dredging / beam trawling	Prohibit across the whole area
Creel fishing / long lining / set nets	No change to existing arrangements
Prohibit the removal of horse mussels by any means	

<b>Costs, Scottish vessels (£)</b>
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	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Dredge 1,127	Nephrops Trawls 4 Dredge 189
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 18,765		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 11,626		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is **£11,626**. By comparison, for all UK vessels the total is £20,314.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

**Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	8,312
Average annual revenue impact of measures	1,320
Estimated annual revenue of the 16 vessels affected	4,796,787
Total combined revenue impact	0.03%

Total revenue for all gear types within the MPA site is £8,312. The impact on revenue as a result of management measures within the MPA is £1,320 (15.88% of the total site revenue). For this MPA, the overall revenue impact on the 16 affected vessels is just 0.03% (based on their total combined revenue of £4,796,787).

**Employment (direct and indirect reduction)**

0.0 jobs

**Sanday SAC**

**Summary of Features and Conservation Objectives**

Feature	Conservation Objective
Reefs (bedrock and stony)	Maintain
Sandbanks slightly covered by seawater all the time	Maintain

**Management Measures**

Gear Type	Measure
Demersal trawl / seine net / mechanical dredging / suction dredging / beam trawling / set nets	Prohibit across the whole area
Creel fishing / long lining	No change to existing arrangements

**Costs, Scottish vessels (£)**

	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Dredge 61	Dredge 4,584
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 66,013		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 37,362		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is **£37,362**. By comparison, for all UK vessels the total is £37,632.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

#### **Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	139,075
Average annual revenue impact of measures	4,645
Estimated annual revenue of the 9 vessels affected	1,563,413
Total combined revenue impact	0.30%

Total revenue for all gear types within the MPA site is £139,075. The impact on revenue as a result of management measures within the MPA is £4,645 (3.34% of the total site revenue). For this MPA, the overall revenue impact on the 9 affected vessels is just 0.30% (based on their total combined revenue of £1,563,413).

#### **Employment (direct and indirect reduction)**

0.1 jobs

## St Kilda SAC

### Summary of Features and Conservation Objectives

Feature	Conservation Objective
Reefs (Bedrock and stony)	Conserve

### Management Measures

Gear Type	Measure
Demersal trawl / seine net / mechanical dredging / suction dredging / beam trawling / set nets	Prohibit across the whole area
Creel fishing / long lining	No change to existing arrangements

### Costs, Scottish vessels (£)

	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Whitefish Trawls 1,661	
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 23,603		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 10,640		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is **£10,640**. By comparison, for all UK vessels the total is £10,640.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

### Combined impact in relation to site, Scottish vessels (£)

Average annual revenue site total	2,946
Average annual revenue impact of measures	1,661
Estimated annual revenue of the 5 vessels affected	7,607,110
Total combined revenue impact	0.02%

Total revenue for all gear types within the MPA site is £2,946. The impact on revenue as a result of management measures within the MPA is £1,661 (56.38% of the total site revenue). For this MPA, the overall revenue impact on the 5 affected vessels is just 0.02% (based on their total combined revenue of £7,607,110).

**Employment (direct and indirect reduction)**

0.0 jobs

**Treshnish Isles SAC****Summary of Features and Conservation Objectives**

Feature	Conservation Objective
Reefs (bedrock and stony)	Maintain

**Management Measures**

Gear Type	Measure
Demersal trawl / seine net / mechanical dredging / suction dredging / beam trawling / set nets	Prohibit across almost all of the area
Creel fishing / long lining	No change to existing arrangements

**Costs, Scottish vessels (£)**

	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Nephrops Trawls 853 Dredge 7,799	Nephrops Trawls 14 Dredge 5,178
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 196,754		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 118,025		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is **£118,025**. By comparison, for all UK vessels the total is £126,968.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

**Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	21,043
Average annual revenue impact of measures	13,844
Estimated annual revenue of the 36 vessels affected	7,563,726

Total combined revenue impact	0.18%
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Total revenue for all gear types within the MPA site is £XX. The impact on revenue as a result of management measures within the MPA is £13,844 (65.79% of the total site revenue). For this MPA, the overall revenue impact on the 36 affected vessels is just 0.18% (based on their total combined revenue of £7,563,726).

<b>Employment (direct and indirect reduction)</b>
0.3 jobs

### Upper Loch Fyne and Loch Goil MPA

Summary of Features and Conservation Objectives	
Feature	Conservation Objective
Flame shells bed	Recover
Horse mussel beds, ocean quahog aggregations, burrowed mud, sublittoral mud and mixed sediment communities	Conserve

Management Measures	
Gear Type	Measure
Mechanical dredging / suction dredging / beam trawling	Prohibit across the whole area
Demersal trawl / seine net / creel fishing / long lining / set nets	No change to existing arrangements

Costs, Scottish vessels (£)		
	>15m vessels	<15m vessels
Average Annual Revenue Affected (2010 – 2014, 2015 prices)	Nephrops Trawls 1,457 Dredge 1,406	Nephrops Trawls 34 Dredge 79 Pots 873
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels) 54,700		
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels) 32,743		

The total economic impact for Scottish vessels (measured in GVA, across the twenty year

assessment period) is £32,743. By comparison, for all UK vessels the total is £32,743.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

**Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	45,496
Average annual revenue impact of measures	3,849
Estimated annual revenue of the 17 vessels affected	2,515,370
Total combined revenue impact	0.15%

Total revenue for all gear types within the MPA site is £45,496. The impact on revenue as a result of management measures within the MPA is £3,849 (8.46% of the total site revenue). For this MPA, the overall revenue impact on the 17 affected vessels is just 0.15% (based on their total combined revenue of £2,515,370).

**Employment (direct and indirect reduction)**

0.1 jobs

**Wyre and Rousay Sounds MPA**

**Summary of Features and Conservation Objectives**

Feature	Conservation Objective
Maerl beds, kelp and seaweed communities on sublittoral sediment	Conserve

**Management Measures**

Gear Type	Measure
Demersal trawl / seine net / suction dredging / beam trawling / mechanical dredging / set nets	Prohibit across the whole area
Creel fishing / long lining	No change to existing arrangements

**Costs, Scottish vessels (£)**

	>15m vessels	<15m vessels

Average Annual Revenue Affected (2010 – 2014, 2015 prices)		
Revenue affected (present value, 2015-2034, 2015 prices, Scottish vessels)	0	
GVA affected (present value, 2015-2034, 2015 prices, Scottish vessels)	0	

The total economic impact for Scottish vessels (measured in GVA, across the twenty year assessment period) is £0. By comparison, for all UK vessels the total is £0.

For under-15m vessels costs presented are likely an overestimate given the level of aggregation within the data (i.e. the data does not allow for the identification of specific gear-type attributes beyond their headline categorisation).

**Combined impact in relation to site, Scottish vessels (£)**

Average annual revenue site total	62,836
Average annual revenue impact of measures	0
Estimated annual revenue of the 0 vessels affected	0
Total combined revenue impact	0.00%

Total revenue for all gear types within the MPA site is £62,836. The impact on revenue as a result of management measures within the MPA is £0.0 (0.0% of the total site revenue). For this MPA, the overall revenue impact on the 0 affected vessels is just 0% (based on their total combined revenue of £0).

<b>Employment (direct and indirect reduction)</b>
0.0 jobs

It should be borne in mind that these costs are based on the affected vessels stopping fishing. Within the dataset used for these calculations there were more than 100 vessels. This means a relatively small impact on many individuals. Therefore it is anticipated that these vessels will make adjustments to their fishing practices to comply with the measures. In other words they will still have the ability to take the same economic value from relatively nearby fishing grounds.

Employment impacts<sup>2</sup> presented assume a linear relationship between output and employment. In reality such a relationship may not hold. Other non-quantified costs include: potential conflict with other fishing vessels, environmental consequences of targeting new areas, longer steaming times and increased fuel costs, changes in costs and earnings, gear development and adaptation costs, and additional quota costs.

### Public Sector:

The decision to introduce fisheries management measures would result in costs being incurred by the public sector in the following areas:

- Preparation of Statutory Instruments
- Compliance and enforcement

The majority of these costs will accrue at the national level and as such have not been disaggregated to site level. Only the preparation of Statutory Instruments has been estimated at the site level.

<b>Public Sector Costs (£m)</b>	
Preparation of Statutory Instruments (present value, 2015-2034, 2015 prices)	0.005

### Total Costs:

Total quantified costs are presented in present value terms at 2015 prices. Commercial fisheries costs are presented in terms of GVA.

<b>Total Costs (£m)</b>	
<b>Sector</b>	<b>Cost</b>
Commercial Fisheries	0.567
Public Sector	0.06
<b>Total Costs</b>	<b>0.627</b>

<b>Employment (direct and indirect reduction)</b>
1.4 jobs

### Scottish Firms Impact Test

This section will be informed by evidence gathered from our discussions with individual businesses during the consultation phase, and completed in the final BRIA.

Many of the businesses affected may include some small and micro-sized firms. For the

<sup>2</sup>Employment impacts are derived from the Scottish Government's Input-Output tables - <http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/Input-Output>

commercial fisheries sector the average number of fishermen per Scottish vessel in 2013 was 2.5. Additional costs imposed by the introduction of fisheries management measures at the Mousa to Boddam site have the potential to fall on small businesses.

### **Competition Assessment**

The introduction of fisheries management measures at the Mousa to Boddam site may impact commercial fisheries activity operating within a given spatial area.

### **Competition Filter Questions**

*Will the proposal directly limit the number or range of suppliers? e.g. will it award exclusive rights to a supplier or create closed procurement or licensing programmes?*

**No.** It is unlikely that the introduction of fisheries management measures will directly limit the number or range of suppliers.

*Will the proposal indirectly limit the number or range of suppliers? e.g. will it raise costs to smaller entrants relative to larger existing suppliers?*

**Limited / No Impact.** The introduction of fisheries management measures could affect the spatial location of commercial fisheries activity and may restrict the output capacity of this sector. However, restrictions on fishing locations may well be negated by displacement i.e. vessels fishing elsewhere. It is not expected that the distribution of additional costs will be skewed towards smaller entrants relative to larger existing suppliers.

*Will the proposal limit the ability of suppliers to compete? e.g. will it reduce the channels suppliers can use or geographic area they can operate in?*

**No.** The introduction of fisheries management measures will not directly affect firms' route to market or the geographical markets they can sell into.

*Will the proposal reduce suppliers' incentives to compete vigorously? e.g. will it encourage or enable the exchange of information on prices, costs, sales or outputs between suppliers?*

**No.** The introduction of fisheries management measures is not expected to reduce suppliers' incentives to compete vigorously.

### **Test run of business forms**

It is not envisaged that the introduction of fisheries management measures will result in the creation of new forms for businesses to deal with, or result in amendments of existing forms.

### **Legal Aid Impact Test**

It is not expected that the management measures will have any impact on the current level of use that an individual makes to access justice through legal aid or on the possible expenditure from the legal aid fund as any legal/authorisation decision impacted by the management measures will largely affect businesses rather than individuals.

Discussions with Scottish Government Legal colleagues are on-going but at this stage it is not envisaged that the introduction of fisheries management measures will have any legal aid impacts.

### **Enforcement, sanctions and monitoring**

Responsibility for compliance, monitoring and enforcement of the measures will be carried out by Marine Scotland.

### **Implementation and delivery plan**

The management measures will be delivered by Statutory Instrument by 8<sup>th</sup> February 2015

### **Post-implementation review**

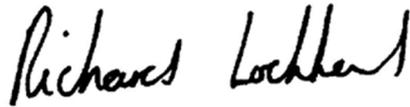
There is a 6 yearly marine protected area network review cycle and this includes all MPAs and SACs. The need for these measures will normally be reviewed as part of that wider review in 2024 and every 6 years thereafter

### **Summary**

These MPAs were designated under the Marine (Scotland) Act 2010 in August 2014. The SACs were designated between 2005 and 2011. These measures are proposed to ensure that these protected areas are well-managed and that the conservation objectives for each protected features are furthered.

**Declaration and publication**

*I have read the Business and Regulatory 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. I am satisfied that business impact will be assessed with the support of businesses in Scotland.*

**Signed:**A handwritten signature in black ink that reads "Richard Lochhead". The signature is written in a cursive style.**Date: 18/12/15**

Richard Lochhead, Cabinet Secretary for Rural Affairs, Food and the Environment

**Scottish Government Contact point:**

Marine\_Conservation@scotland.gsi.gov.uk

## REFERENCES

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