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Marine Scotland

Shiant East Bank possible Marine Protected Area

Partial Business and Regulatory Impact Assessment

June 2019

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Scottish Nature Conservation Marine Protected Area (MPA) Project, Socio-Economic Analysis, Shiant East Bank possible MPA

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 sustainable economic, environmental and social benefits.

The introduction of the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 means the Scottish Government now has the authority to introduce statutory marine planning for Scotland's seas. The Marine (Scotland) Act provides powers to designate MPAs out to 12 nautical miles (NM), and the Marine and Coastal Access Act provides powers to designate sites in the rest of Scottish waters. There are currently 31 MPAs in Scottish Waters designated under these provisions. Four additional search locations were still being assessed at the time of consultation and these are now ready for Ministerial consideration.

Proposal and conservation objectives

The Scottish Government proposes to designate Shiant East Bank as an MPA to further its conservation objectives.

Shiant East Bank has been identified for the following MPA search features - circalittoral sands and mixed sediment communities, northern sea fan and sponge communities, shelf banks and mounds and Quaternary of Scotland.

Summary of Features and Conservation Objective - Shiant East Bank pMPA	
Biodiversity Features	**Conservation Objective**
Circalittoral sands and mixed sediment communities[1]	Conserve
Northern sea fan and sponge communities	Conserve
Shelf banks and mounds	Conserve
Geodiversity features	
Quaternary of Scotland (drumlinoid forms, glacial lineations, iceberg ploughmarks, streamlined bedrock)	Conserve

Objective

The purpose of MPAs is to safeguard nationally important species, habitats and geology across Scotland’s marine environment. Correctly identifying critical areas for mobile species is more challenging than for low mobility or static features. Following the designation of 31 MPAs since 2014, Scottish Natural Heritage (SNH) have undertaken additional surveys and research to provide advice on four additional locations. By adding more MPAs to the Scottish MPA network, we can improve the status of the marine environment by protecting a wider

[1] Comprising ‘Offshore circalittoral sand’ (**SS.SSa.OSa** - A5.27), ‘Circalittoral mixed sediment’ (**SS.SMx.CMx** - A5.44) and ‘Offshore circalittoral mixed sediment’ (**SS.SMx.OMx** - A5.45).

range of features. It also enable greater compliance with a range of national and international commitments as stipulated by:

- the Marine (Scotland) Act 2010
- the Marine and Coastal Access Act 2009
- the Convention on Biological Diversity
- The Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention)
- the EU Marine Strategy Framework, and Wild Birds and Habitats Directives

Shiant East Bank has been identified for designation as an MPA due to the confirmed presence of biodiversity features detailed above.

Evidence in this BRIA is drawn from the work of statutory nature conservation body SNH and consultants ABPmer and eftec. It brings together the science-led arguments for management and the projected potential social and economic consequences of such action.
This BRIA examines the socio-economic effects of designating Shiant East Bank as an MPA. The socio-economic effects of introducing specific management measures in Shiant East Bank are not considered here; once finalised, the introduction of any specific management measures will be accompanied by their own assessment.

The appraisal period for assessing the socioeconomic impacts covers the 20 year period from 2019 to 2038, although benefits will be delivered for longer if effective management measures remain in place. As with any socio-economic assessment related to environmental designations, the findings should be considered as estimates, and in cases where greater uncertainty exists, such as for fisheries, are deliberately presented as worst-case scenarios to build in necessary caution into each scenario.

In addition a range of scenarios are presented to account for the inherent uncertainty associated with such proposals. Lower, intermediate and upper scenarios have been developed to reflect the requirements for management measures, the spatial extent of features and the extent to which features are already afforded protection. The intermediate scenario is viewed as the most representative estimate. The estimated impacts across the three scenarios commonly vary quite significantly.

Rationale for Government intervention
Scotland's marine environment provides: food; energy sources (wind, wave and tidal power, minerals and fossil fuels); harbours and shipping routes; 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. There are a number of market failures evident in the ways in which the marine environment is utilised. These relate to:

- *Public goods*: A number of the benefits of the marine environment, such as the non-use value of biological diversity, have 'public good' characteristics; they are non-excludable (no-one can be excluded from enjoying the benefits and non-rivalrous (enjoyment of the benefits they provide by one person does not diminish the benefits

that are available to others). These characteristics of the benefits from the marine environment mean that private individuals do not have an incentive to voluntarily ensure the continued flow of these goods, which can lead to their under-provision.

- *Negative and positive externalities*: externalities occur when actions of marine users affect other parties positively or negatively, and this is not reflected in market prices. In many cases, the market does not account fully for the value of benefits and costs of the activities of marine users. In the case of negative externalities (positive externalities) this can lead to more environmental damage (fewer benefits) occurring from economic activity than would occur if the full cost (benefits) of economic activity was accounted for. For example, for marine harvestable goods that are traded, such as wild fish, market prices often do not reflect the potential damage caused to the environment by that exploitation.

Due to the competing demands placed upon Scotland's marine resources, market failures related to public goods provision and externalities will lead to insufficient protection of the marine environment if left to the market. This provides rationale for government to intervene to protect the marine environment.

Consultation

Within Government
Consultation has been undertaken with policy colleagues within Marine Scotland, including aquaculture, nature conservation, marine renewables, fisheries and fresh water fisheries.

Public Consultation
A stakeholder workshop took place during the development of the underpinning Sustainability Appraisal. This section will be completed following the public consultation.

Options
Option 1 - Do nothing
Option 1 is the 'Do nothing' option; this is the baseline scenario. Under this option, there is no designation and no change to management measures at the Shiant East Bank pMPA..

Option 2: Designate site as a Marine Protected Area
Option 2 involves the formal designation of Shiant East Bank. Designation would provide recognition and protection to the natural features of the site while also contributing to the national and international MPA networks.

Sectors and groups affected

The following activities have been identified as present (or possibly present in the future) within Shiant East Bank pMPA and potentially interact with one or more of the features:

Commercial fisheries
Telecommunication cables

Affected sectors may be impacted to a greater or lesser degree by designation depending on which scenario is pursued and which management option is preferred. While the above sectors are all potentially operational within the site, not all will necessarily be impacted by designation and management measures.

Benefits

Option 1: Do nothing

No additional benefits are expected to arise from this policy option.

Option 2: Designate site as a Marine Protected Area

Designation will help to conserve the range of biodiversity in Scottish waters. It will complement other types of designation and provide an essential contribution to establishing an ecologically coherent network of MPAs. This would also safeguard the ecosystem services and benefits provided by the marine environment

Appropriate management will reduce the risk that the extent, population, structure, natural environmental quality and processes of features protected will decrease or degrade over time.

Contribution to an Ecologically Coherent MPA 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 depths 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. It is likely that an MPA network will demonstrate beneficial effects greater than the sum of the benefits from the individual areas.

MPA designation will help to conserve the range of biodiversity in Shiant East Bank and for Scotland as a whole, and will contribute to establishing an ecologically coherent network of marine protected areas.

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.

In the case of Shiant East Bank, it is estimated that effective management of protected features may provide wider benefits over and above these non-use values society places on a healthy and productive marine environment.

Annex A summarises the ecosystem benefits that can be derived from designation of Shiant East Bank.

Summary of 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. These benefits include use values, such as recreational use of the marine environment, as well as non-use values, such as the value that people place on simply knowing that something exists, even if they will never see it or use it.

Kenter et al. examined the value of creating a network of marine protected areas in the UK. From the study it is estimated that, in 2019 prices, the total economic valuation of the Shiant East Bank site designation is £5.61 million, rising to £6.36 million when designation is accompanied by management measures[2].

Treating marine protected areas as a collection of individual and separate features providing separate ecosystem services potentially ignores any network effects that could occur from a set of MPAs. A number of adjacent marine reserves may demonstrate network effects, i.e. the benefit from the networks may be greater (or less) than the sum of the benefits from the individual MPAs. Kenter et al estimated total value of non-use benefits of designating all four sites as £28 million in 2019 prices.

Costs

Option 1: Do nothing
This option is not predicted to create any additional costs to the sectors and groups outlined above. However, it should be noted that the societal cost of not designating could be both large and irreversible relative to the current condition of the marine environment. The absence of management measures to conserve the identified features may produce future economic and social costs[3] in terms of increased marine habitat and biodiversity degradation. The option to not designate holds the potential to undermine the overall ecological coherence of the Scottish MPA Network.

Option 2: Designate site as a Marine Protected Area
Costs have been evaluated based on the implementation of potential management measures. Where feasible costs have been quantified, where this has not been possible costs are stated

[2] [2] Kenter, J.O., Bryce, R., Davies, A., Jobstvogt, N., Watson, V., Ranger, S., Solandt, J.L., Duncan, C., Christie, M., Crump, H., Irvine, K.N., Pinard, M. & Reed, M.S., (2013). The value of potential marine protected areas in the UK to divers and sea anglers. UNEP-WCMC, Cambridge, UK.
[3] This potentially large and irreversible societal cost avoided is presented within the benefits section of the 'do designate' scenario (option 2) to avoid double counting the same impact.

qualitatively. All quantified costs have been discounted in line with HM Treasury guidance using a discount rate of 3.5% to reflect preference for current consumption over future consumption.

Commercial fisheries

Shiant East Bank pMPA lies within ICES rectangles 44E3, 45E3, 44E4 and 45E4 in ICES Division VIa. Approximately 5,391 tonnes of fish and shellfish were landed from these ICES rectangles per annum (2012-2016), predominantly shellfish species by weight (over 65%) and value (over 85%). The main gear types were demersal trawls and creels.

VMS-based estimates and ICES rectangle landings statistics indicate that demersal trawls (over-12m vessels) and demersal trawls and creels (under-12m vessels) are the main gear types that operate within the Shiant East Bank pMPA. The value of landings from the site was £110k (over-12m vessels, from VMS data) and £260k (under-12m vessels, indicated from ICES rectangle landings data) (annual average for 2012–2016, 2019 prices).

Vessels fishing in the Shiant East Bank pMPA predominantly operate from: Stornoway and Ullapool (over-12m vessels) and Stornoway, Portree and Ullapool (under-12m vessels).

Landings from the over-12m vessels were made predominantly into Stornoway (42 %), Gairloch (17 %) and Ullapool (17 %). Landings from the under-12m vessels were made predominantly into Back (11 %), Portree (8 %), Stornoway (8 %), Lochinver (7 %), Stockinish (7 %) and Bernera (Lewis) (7 %).

For the over-12m vessels, demersal trawls operated in particular around the northern, southern and western edges of the pMPA. For the under-12m vessels, demersal trawls operated in particular along the southern and eastern edges of the pMPA.

Economic Impacts arising from the Management Scenarios for the pMPA (2019 to 2038)				
		Lower Estimate	**Intermediate Estimate**	**Upper Estimate**
Assumptions for impacts		▪ None	▪ Exclusion of mobile/active bottom-contacting gear from northern sea fan and sponge communities ▪ Exclude mobile bottom-contacting gear from 20% of circalittoral sand	▪ Exclusion of mobile/active bottom-contacting gear from northern sea fan and sponge communities ▪ Exclude mobile bottom-contacting gear from 40% of circalittoral sand
One-off impacts (on-site)		▪ None	▪ None	▪ None
Recurring impacts – cost impacts per fleet segment (annual values, £000s, 2019 prices) (on-site)*	**Over-12m vessels** Demersal trawls & mechanical dredges *Subtotal over-12m*	▪ Loss of >12m fishing income: 0.0 *0.0*	▪ Loss of >12m fishing income: 26.6 *26.6*	▪ Loss of >12m fishing income: 45.5 *45.5*

	Under-12m vessels Demersal trawls Mechanical dredges *Subtotal under-12m*	▪ Loss of <12m fishing income: 0.0 0.0 *0.0*	▪ Loss of <12m fishing income: 3.1 0.4 *3.5*	▪ Loss of <12m fishing income: 4.3 0.6 *4.9*
	Total all vessels	**0.0**	**30.1**	**50.4**
Description of non-quantified impacts	On-site	▪ None	▪ None	▪ None
	Off-site	▪ None	If mobile bottom-contacting gear activity is displaced rather than lost, there is potential for: ▪ Additional abrasion ▪ Potential for gear conflict ▪ Potential changes to vessel costs/revenues	If mobile bottom-contacting gear activity is displaced rather than lost, there is potential for: ▪ Additional abrasion ▪ Potential for gear conflict ▪ Potential changes to vessel costs/revenues

Unlike most other sectors, the potential cost of designation on commercial fisheries is a loss or displacement of current (and future) output, caused by restrictions on fishing activities. Any decrease in output will, all else being equal, reduce the Gross Value Added (GVA) generated by the sector and have knock-on effects on the GVA generated by those industries that supply commercial fishing vessels. The costs estimates for this sector have therefore been estimated in terms of GVA, which more accurately reflects the wider value of the sector to the local area and economy beyond the market value of the landed catch.[4] Costs are 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 no or reduced loss of income.

GVA estimates have been generated by applying fleet segment-specific 'GVA/total income' ratios to the value of landings affected. The GVA ratios have been calculated using data on total income and GVA from the Sea Fish Industry Authority Multi-year Fleet Economic Performance Dataset (published Sept 2014). Further details on the GVA ratios and the methodology for estimating GVA and employment impacts applied are presented in Appendix C.

It is important to note that all costs presented below assume that all affected landings are lost; that there is no displacement of fishing activity to alternative fishing grounds. In reality, some displacement is likely to occur and hence the cost, GVA and employment impacts presented in this table are likely to overestimate costs.

[4] Stating costs purely in terms of landed value would overstate the true economic cost of not fishing. If fishermen are prevented from catching fish they forgo the landed value of those fish but subsequently forgo the payment of intermediate costs such as fuel (it is assumed that no fishing activity is displaced).

Quantified Costs on the Activity of Designation of the Site as an MPA (£Million)			
	Low	Intermediate	High
Total change in GVA (2019–2038)	0	0.24	0.40
Average annual change to GVA	0	0.01	0.02
Present value of total change in GVA (2019–2038)	0	0.18	0.3
Direct and Indirect reduction in Employment	0.0	0.5	0.8

The results presented here represent a 'worst case' scenario for each scenario. In reality vessels are likely to react to any management measures in place in order to maintain profitability (i.e. by changing target species/gear type). Displacement could well negate some of the cost impacts stated above (i.e. by fishing 'elsewhere'), but conversely could also add to them (i.e. the extra fuel cost associated with fishing 'elsewhere'). This uncertainty is the reasoning behind not attempting to quantify this cost impact. 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.

Telecommunications cables

There is one telecommunication cable which transits through Shiant East Bank pMPA (BT-HIE Seg1.13) totalling approximately 8.5 km of length within the site. This links mainland Scotland with the Isle of Lewis. This cable passes through an area of northern sea fan and sponge communities within Shiant East Bank pMPA, and upon replacement may require re-routing around this habitat.

Economic Costs on the Activity of Designation of the Site as an MPA			
	Lower Estimate	**Intermediate Estimate**	**Upper Estimate**
Assumptions for cost impacts	▪ It has been assumed that the cost associated with additional assessment to support planning applications is £5,600 in 2019 prices per application. ▪ It has been assumed that the cable is replaced during the assessment period.	▪ It has been assumed that the cost associated with additional assessment to support planning applications is £5,600 in 2019 prices per application. ▪ It has been assumed that the cable is replaced during the assessment period.	▪ It has been assumed that the cost associated with additional assessment to support planning applications is £5,600 in 2019 prices per application. ▪ It has been assumed that the cable is replaced during the assessment period. ▪ It has been assumed that re-routing of the cable will cost £1.15m per

Economic Costs on the Activity of Designation of the Site as an MPA			
	Lower Estimate	**Intermediate Estimate**	**Upper Estimate**
			km. ▪ It has been assumed that the shortest route to avoid sensitive habitat will be taken (0.4 km).
Description of one-off costs	▪ Cost of additional assessment. Total cost £5,600	▪ Cost of additional assessment. Total cost £5,600	▪ Cost of additional assessment. Total cost = £5,600 ▪ Cost to re-route cable. Total cost = £460,000
Description of recurring costs	N/A	N/A	N/A
Description of non-quantified costs	N/A	N/A	N/A
Quantified Costs on the Activity of Designation of the Site as an MPA (in £000s)			
Total costs (2019–2038)	6	6	466
Average annual costs	0	0	23
Present value of total costs (2019–2038)	4	4	319
Total costs = Sum of one-off costs and recurring costs for the site summed over the 20 year period. Average annual costs = Total costs divided by the total number of years under analysis (i.e. 20). Present value of total costs = Total costs discounted to their current value, using a discount rate of 3.5%.			

Public sector

The decision to designate Shiant East Bank as an MPA, would result in costs being incurred by the public sector in the following areas:

- Preparation of Statutory Instruments
- Development of voluntary instruments
- Site monitoring
- Compliance and enforcement
- Promotion of public understanding
- Regulatory and advisory costs associated with licensing decisions

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 and regulatory and advisory costs associated with licensing decisions have been estimated at the site level

Site-specific Public Sector Costs (£Million, 2019-2038)			
	Lower Estimate	**Intermediate Estimate**	**Upper Estimate**
Preparation of Statutory Instruments	0	0.0042	0.0042
Promotion of Voluntary Measures	0.0042	0.0042	0.0042

Monitoring of Protected Features	0.17	0.17	0.17
Total Quantified Public Sector Costs	**0.174**	**0.178**	**0.178**
Average annual costs	**0.009**	**0.009**	**0.009**
Present value of total costs (2019 to 2038)	**0.145**	**0.149**	**0.149**

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

Total Present Value of Quantified Costs (£Million, 2019-2038)			
	Lower Estimate	**Intermediate Estimate**	**Upper Estimate**
Commercial Fisheries (GVA)	0	0.177	0.296
Telecommunication Cables	0.004	0.004	0.319
Total Quantified Economic Costs	0.004	0.004	0.319
Total Quantified Economic Costs (GVA)	0	0.177	0.296

Non-Quantified Economic Costs			
Commercial Fisheries	▪ None	▪ If mobile bottom-contacting gear activity is displaced rather than lost, there is potential for: ▪ Additional abrasion ▪ Potential for gear conflict ▪ Potential changes to vessel costs/revenues	▪ If mobile bottom-contacting gear activity is displaced rather than lost, there is potential for: ▪ Additional abrasion ▪ Potential for gear conflict ▪ Potential changes to vessel costs/revenues

Scottish Firms Impact Test

This section will be informed by evidence gathered during the consultation phase, and completed in the final BRIA. In addition to the written consultation process there will be meetings with a number of businesses who may be affected by the proposal.

Many of the businesses affected may include some small and micro-sized firms. For the commercial fisheries sector the average number of fishers per Scottish vessel in 2017 was 2.3. Additional costs imposed by the designation of Shiant East Bank have the potential to fall on small businesses.

- **Competition Assessment**

Designation of Shiant East Bank as an MPA may affect marine activities where businesses operate within a given spatial area or require a spatial licence for new or amended operations. At the Shiant East Bank pMPA such activities include:

Commercial fishing
There is a varying degree to which competitiveness may be affected, depending on the management. However it is not possible to quantify this, but it is expected that the most likely scenario would have little impact on competitiveness of the industries, given current consent and licensing requirements that will already be taking account of the features for which the MPA is proposed.

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 designation of Shiant East Bank as an MPA 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. Designation of Shiant East Bank as an MPA 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 expected that the distribution of additional costs will be felt more by larger existing suppliers than smaller entrants.

Designation could affect the preparation of applications, location of marine developments and activities, or requirements for marine developments which would apply to any developer of an affected licensed activity when preparing and submitting an application. Additional costs will potentially be incurred by developers submitting new licence applications, but they will apply to both new entrants and to incumbents looking to expand or alter their operations.

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. Designation of Shiant East Bank as an MPA 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. Designation of Shiant East Bank as an MPA is not expected to reduce suppliers' incentives to compete vigorously.

Test run of business forms

It is not envisaged that designation of the proposed Shiant East Bank site 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 site 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 will largely affect businesses rather than individuals.

Enforcement, sanctions and monitoring

Responsibility for compliance, monitoring and enforcement of the provisions will be carried out by Marine Scotland. Reserved issues will continue to be addressed by the respective departments within the UK government. The Plan will be delivered through the existing marine licensing system, nature conservation measures, in addition to Scottish Planning Policy and other licensing/consenting frameworks. Enforcement and authorisation decisions within these frameworks carried out by public authorities must have regards to new MPAs, these include: local authorities, Crown Estate Scotland, port and harbour authorities and terrestrial planning authorities.

Implementation and delivery plan

If designated, public bodies will have to take any authorisation or enforcement decisions in accordance with the provisions defined in legislation to protect MPAs. If specific management measures are require for the site they will be developed and be subject of their own assessments, consultation, and implementation phase. The MPA network will be reviewed every six years to ensure that they are meeting, or are capable of meeting, the agreed conservation objectives and whether any additional management is likely to be required.

Summary and recommendation

To be updated when Final BRIA is published

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:

Date:
07 Jun. 19

Scottish Government Contact Point:

marine_conservation@gov.scot

Summary of Ecosystem Services Benefits arising from the Designation and Management of the Site as an MPA (2019-2038)									SEB
Services	**Relevance to Site**	**On-site / Off-site**	**Baseline Level**	**Estimated Impacts of Management**			**Value Weighting**	**Scale of Benefits**	**Confidence**
				Lower	**Intermediate**	**Upper**			
Fish and shellfish for human consumption	Moderate, benthic habitat contributes to the food web	On-site and off-site	Stocks not at MSY	Nil	Minimal, small recovery of fish stocks possible		Moderate, sandeels are import in food webs for commercial species and priority wildlife species	Minimal	Moderate
Fish and shellfish for non-human consumption			Stocks reduced from potential maximum						
Climate regulation	Moderate, in coastal areas	On-site	Moderate	Nil, management scenarios will not affect features providing this service			Moderate	Nil	High
Waste breakdown/ detoxification	Minimal	On-site	Low	Nil, management scenarios will not affect features providing this service			Low, water quality in this area not affecting human welfare	Nil	High
Non-use value of natural environment	Moderate, contribution of the site to MPA network has non-use value	On-site and off-site	Non-use value of the site may decline	Moderate, protection of features of site from potential future decline			Low–Moderate, protection of features is valued by divers & anglers (Kenter *et al*. 2013).	Moderate	Moderate, extent of features, responses to management scenarios, and value to society all uncertain
					Low, recovery of features possible				
Recreation	Minimal, features of low relevance to recreation	On-site	Minimal	Minimal, maintain features of site			Minimal	Minimal	High.
Research and Education	Minimal	On-site	Minimal, whether research uses site in future uncertain.	Minimal, maintain features of site			Nil–Low	Minimal	Moderate
				Designation may play role in communicating management needs.					

Summary of Ecosystem Services Benefits arising from the Designation and Management of the Site as an MPA (2019-2038)									SEB
Services	**Relevance to Site**	**On-site / Off-site**	**Baseline Level**	**Estimated Impacts of Management**			**Value Weighting**	**Scale of Benefits**	**Confidence**
				Lower	**Intermediate**	**Upper**			
Total value of changes in ecosystem services			Value of site may decline	Minimal for lower scenario, Low for intermediate and upper scenario, designation has Moderate non-use value to protecting site from future decline (Kenter *et al*. 2013)				Low–Moderate	Moderate
Total value of changes in ecosystem services				**Low–Moderate**					**Moderate**