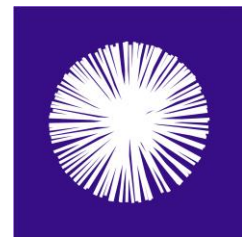


**Written comment on the scope of the project to improve protection given to PMFs outside the MPA network by the Scottish Environment LINK Marine Group**  
**Date: 31 August 2018**



Scottish  
Environment

LINK

### Summary

LINK Marine Group welcomes the opportunity to provide written comment on the scope of the project to improve protection given to Priority Marine Features outside the MPA network.

Following the Loch Carron dredge-damage incident in early 2017, LINK Marine Group welcomed the rapid designation of the emergency Marine Protected Area to protect vulnerable flameshell beds, the subsequent proposal to extend the site and make it permanent and, crucially, the commitment to improve protection of Priority Marine Features beyond the MPA network. The Scottish Environment LINK Marine Group:

- **Agree that a Strategic Environment Assessment of the Proposed Inshore Priority Marine Feature (PMF) Management measures is needed**, as informed by the results of the Screening and Scoping exercise to which we are responding, and that the full range of potential socio-economic benefits – direct, indirect and non-use – should be taken into account;
- **Recommend the proposed approach includes additional benthic Priority Marine Features** that are also sensitive to the use of mobile bottom-towed fishing gear;
- **Support ‘Reasonable Alternatives’ being strategically assessed that provide an ecologically proportionate ‘upper scenario’** to which other scenarios can be compared;
- **Present three suggested ‘Reasonable Alternatives’ for consideration that would provide greater confidence of meeting the requirement of General Policy 9(b), that would also help meet General Policy 9(c), among others, and of contributing to the legal duty to enhance the health of Scotland’s marine area:**
  1. **Prohibit mobile bottom-towed fishing gear from within 1 nautical mile** around the entire coastline of Scotland (with environmentally assessed derogations in outer 0.5nm)
  2. **Prohibit mobile bottom-towed fishing gear from within 0.5nm and to the 50 m depth contour** where this extends beyond 0.5nm around the entire coastline.
  3. **Prohibit mobile bottom-towed fishing gear from within 0.5 nautical mile** around the entire coastline of Scotland.
- Where any of the three options leaves outer areas of larger sea lochs and sounds unprotected beyond a 0.5nm or 1nm limit, **all options for strategic environmental assessment should include closure of these larger systems to mobile bottom-towed fishing gear at the seaward limit.**
- Recommend that whatever spatial measures eventually arise for protecting Inshore PMFs, they are kept under review to determine whether General Policy 9(b) (and 9(c)) is being met and;
- Highlight that further proposals will be essential in order to ensure that the national status of all of Scotland’s PMFs is not significantly impacted by anthropogenic activity since this review only considers the impact of mobile bottom-towed fishing activity on a subset of 11 PMFs.

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### **Introduction to Scottish Environment LINK**

Scottish Environment LINK is the forum for Scotland's voluntary environment community, with over 35 member bodies representing a broad spectrum of environmental interests with the common goal of contributing to a more environmentally sustainable society.

Its member bodies represent a wide community of environmental interest, sharing the common goal of contributing to a more sustainable society. LINK provides a forum for these organizations, enabling informed debate, assisting co-operation within the voluntary sector, and acting as a strong voice for the environment. Acting at local, national and international levels, LINK aims to ensure that the environmental community participates in the development of policy and legislation affecting Scotland.

LINK works mainly through groups of members working together on topics of mutual interest, exploring the issues and developing advocacy to promote sustainable development, respecting environmental limits.

LINK members welcome the opportunity to comment on this consultation.

### **LINK Marine Group Response**

#### **1. Do you have any comments on the economic assessment methodology?**

LINK Marine Group welcomed the swift Scottish Government commitment to improve protection of Priority Marine Features (PMFs) beyond the MPA network following the scallop dredge damage to the outer Loch Carron flameshell beds in early 2017. LINK Marine Group welcomed the opportunity to participate in the stakeholder workshop on 14 May and comment on the draft Screening and Scoping Report for the Strategic Environment Assessment (SEA) of the proposed Inshore PMF Management measures. We again welcome the opportunity to comment on the final Screening and Scoping Report for the SEA of the proposed Inshore PMF Management measures.

LINK Marine Group members welcome the fact that the baseline for the proposed socio-economic impact assessment methodology will require, among other data, "Information on ecosystem service values associated with the marine environment and how these may change over time (in the absence of the intervention)". However, we also recognise that work to evaluate the socio-economic benefits, whether direct, indirect or non-use, of marine conservation measures remains very limited, as was discussed at the May 2018 workshop. Such an evaluation will require recognition of where data on potential benefits is lacking, due to the limited quantity of work that has been done in this slowly growing field. We address this in more detail in response to Question 2.

#### **2. Do you have any comments on the Screening / Scoping Report for the Strategic Environmental Assessment?**

##### **Assessing potential socio-economic benefits**

We welcome the fact that the Strategic Environmental Assessment Screening and Scoping Report recognises that there will be "Potential spillover benefits outwith the location of PMFs". LINK members responded to the Scottish Government Consultation on the management of inshore Special Areas of Conservation and Marine Protected Areas in January 2015 highlighting the potential socio-economic benefits of fisheries management measures and the socio-economic costs of not implementing those measures, to be considered alongside potential socio-economic costs of implementation, that we present again here updated in the context of the proposed PMF protection.

Economic assessment is a valuable method of quantifying impacts of spatial marine conservation measures, whether those apply to designated sites or other spatial measures such as those discussed here. However, such

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assessments must address more than just the potential losses to some fishers, who may be displaced from particular areas. A balanced economic assessment should also present the potential benefits of marine conservation measures to fishers, in terms of a healthier seabed and a potential increase in health and population number of commercial fish and shellfish stock, and associated predators, arising as a secondary consequence of those measures.

Benefits to other sea users, particularly the recreation sector, wider ecosystem benefits and non-use values should also be included. The Scottish Government should include and expand upon economic assessment of benefits to other sea users, such as recreational anglers, divers and boaters, wildlife tour operators, visitors and local communities (e.g. B&B owners, restaurant owners). For example, Kenter *et al* (2013) estimated that pre-designation use of the Scottish MPA areas provided approximately £67 – 117 million in annual recreational benefits, and that the theoretical value of a subset of the then proposed Scottish MPAs to recreational divers and anglers (based on a one off non-use value) was £125 – 225 million. Although the study focused on specific sites, similar analyses could be carried out to extend to any proposed spatial conservation approach, such as measures prohibiting mobile bottom-towed fishing gear from within a seaward limit from the shore.

Riddington, *et al* (2015)<sup>1</sup> have carried out an economic analysis of the impacts of increasing the area of Scottish inshore waters protected from mobile bottom-towed fishing gear. In order to provide clarity for stakeholders and avoid too much duplication, we would recommend consideration of this analysis, which contains some innovative methods of assessing the value of non-monetary benefits, and present conclusions regarding if and how the methodology could be used. The main area in which it was deficient was in assessing the ecological spill-over benefits of establishing protected areas, whereby these act as nursery areas for commercially harvested species which can spill out into the surrounding sea, thereby enhancing the fishery. Research in the North Lamlash Bay Community Marine Conservation Area, and elsewhere including the Isle of Man and New Zealand, has shown that these effects can be considerable.

Natural ecosystem services should also be assessed in terms of their value to society, such as the provision by marine species and habitats of carbon sequestration, coastal and flood defence and nutrient cycling. For example, habitats such as seagrass beds act as a highly productive carbon sink, sequestering up to 1.9 tC per hectare per year, and global ocean carbon sinks are thought to have absorbed approximately one third of all anthropogenic carbon dioxide production in the last century.

### **3. Do you have any comments on the approach taken by SNH to develop the advice?**

#### **Shifting baselines and an ecosystem-based approach**

We think SNH has taken a thorough approach to summarise the known extent of the 11 PMFs in scope, their ecosystem role and in identifying areas requiring additional management. However, this process has been constrained by the range of PMFs in scope (see answer to Question 4) and, crucially, by consideration of ‘national status’ as being the current, often diminished, extent that scopes in only known records, rather than considering predicted extent in the absence of anthropogenic pressure (see below).

Our response to the Screening and Scoping Report, and the ‘Reasonable Alternatives’ suggested is informed by the following perspective. As Scotland’s Marine Atlas makes plain, the state of the majority of Scotland’s shelf

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<sup>1</sup> Riddington, G., Radford, A. and Gibson, H. (2015) Managing the Scottish inshore fishery; Options for Change. <https://www.gov.scot/Publications/2015/01/4022/0>

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and deep-sea habitat is a matter of some or many concerns, often associated with declining status, and many species on which the health of the marine environment depends are also in decline. The ecological baseline when the Atlas was published, and indeed Scotland's National Marine Plan (NMP), from which subsequent policy interventions are measured, was that of a diminished marine environment. When compared to historical records, many of the fragile seabed features found today, such as native oyster beds and fan mussel aggregations, are tiny remnants of previously wider and healthier distributions.

An ecosystem-based approach to managing mobile bottom-towed fishing gear, and indeed all anthropogenic activity, needs to be precautionary. This is particularly relevant to areas likely to contain fragile PMFs and other 'essential fish and shellfish habitat', such as sea lochs, tideswept habitats, kyles, sounds and island groups. An ecosystem-based approach will provide the greatest confidence in achieving General Policy 9(b) for PMFs, particularly if the intention is also to contribute to wider policy and legal requirements to 'enhance' the health of Scotland's marine area. Achieving the objective of GEN 9(b) for the 11 benthic PMFs in the scoping report would also contribute to the delivery of ecosystem service benefits, as these habitats are also important foraging and nursery grounds for a range of mobile species, including other PMFs and commercial fish and shellfish species. Additionally, other General Policies in the NMP would benefit from the protection and recovery of PMFs, as we anticipate their protection would help increase the productivity of Scotland's inshore waters and ultimately benefit inshore fishing.

Whilst we anticipate considerable secondary benefits to flow from implementing precautionary protection measures for PMFs, we understand the proposal for improving protection of PMFs outside of MPAs is not intended to deliver ecosystem-based fish and shellfish stock management. We will, therefore, continue to advocate in parallel for improved and reformed inshore fisheries management to deliver a diverse inshore fishery that is ecosystem-based, meets international Sustainable Development Goals, Convention on Biological Diversity and other international targets, includes spatial and effort management, protects and enhances biodiversity and addresses gear conflict.

### **Avoiding significant impact on national status of features**

General Policy 9(b) of the National Marine Plan states that "Development and use of the marine environment must... Not result in significant impact on the national status of Priority Marine Features." Key to interpreting the application of this policy is how 'significant impact' and 'national status' are defined. To determine whether the impact on a PMF is significant or not requires consideration of the national status, and the definition of 'national status' depends upon the baseline being used and the ecosystem role of a feature.

The term 'status' can relate to the physical *extent* of PMF distribution; the relative ability of the PMF to fulfil its ecological role and provide any subsequent environmental services, such as nutrient-cycling, water filtration, carbon sequestration and coastal protection, and the resilience of the PMF to anthropogenic pressure, such as mobile bottom-towed fishing gear, including the ability to recover to a natural state. At the very least, a desirable 'national status' for any PMF ought to be considered 'good' status in the context of the Marine Strategy Framework Directive (MSFD).

The MSFD requires attainment of 'Good Environmental Status' (GES) for 11 Descriptors by 2020. GES Descriptor 1: Biodiversity is defined as "*The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.*" A common sense interpretation of this definition would therefore be that, for environmental status to be considered 'good', habitats can occur where prevailing natural conditions, such as seabed substrate, tidal movement, wave exposure, temperature and salinity, would allow. The definition of GES Descriptor 1, and the requirement of what the 'quality and occurrence' of habitats should be, is not constrained by the prevailing anthropogenic

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conditions. Indeed, the prevailing economic use of the seabed will limit the presence of some vulnerable PMFs, restricting their ability to establish to a state of sufficient quality and extent that falls in line with the prevailing natural conditions.

For Descriptor 6: Seafloor Integrity, GES is defined as: “*Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected*”. The ‘national status’ of a PMF should therefore be such that the role it fulfils in the structure and function of the ecosystem is safeguarded and, for benthic PMFs in particular, that they are not ‘adversely affected’. This latter term could be considered similar to ‘Not result in significant impact’. Given the high sensitivity of the identified 11 PMFs to pressure from subsurface abrasion/penetration (see below) associated with the use of mobile bottom-towed fishing gear, any towing of that gear over those features would both ‘adversely affect’ and significantly impact them and should be avoided.

The current limited distribution of the extremely fragile fan mussel (*Atrina fragilis*) can be considered an indicator of the extent of *pressure* by mobile bottom-towed fishing gear on Scotland’s seabed, recognising that the extent of impact is a determination of how that pressure interacts with the resilience and recoverability of particular features. *Impact* can likely be considered historically high for a sensitive species like *A. fragilis*, as the Feature Activity Sensitivity Tool (FEAST) indeed recognises: “*In the UK Atrina fragilis was more common in scallop beds in the early 1900s than at present. Presumably trawling and dredging of these (sic) formerly populated regions is the reason for the decline of this species.*”

Given the declines in benthic biodiversity catalogued to date in Scotland’s Marine Atlas, and the distribution of anthropogenic pressure known to directly impact benthic biodiversity, particularly the widespread use of mobile bottom-towed fishing gear, it is reasonable to suggest that the ‘national status’ of all benthic PMFs has *already* been significantly impacted, when compared to pre-industrial baselines. This is particularly evident when considered in the context of GES and applied to the 11 benthic PMFs identified in the Scoping Report.

Deciding on which baseline to measure ‘national status’ against is a matter of societal choice. However, given the currently diminished range of marine habitats when compared to historic baselines in the absence of pressure, we would recommend that ‘national status’ is determined in line with the Descriptors for GES and are based on best available evidence of the potential natural extent of a feature in the absence of anthropogenic pressures, rather than simply a known distribution at a particular time.

Without recognising the historical range of PMFs when unaffected by anthropogenic pressures, any new intervention will merely protect remnant *known* PMF occurrences from subsequent impact, leaving any unrecorded or unknown occurrences exposed to risk of damage, to the detriment of many features that already have a greatly diminished range. Surveys of the damage caused by a scallop dredger in outer Loch Carron revealed what is perhaps the world’s largest flameshell bed that, until the welcome and swift emergency protection that followed, had been unprotected and therefore legally vulnerable to that very risk. By using the Marine Atlas as a baseline for ‘national status’, the scope for recovery of PMFs toward a quality and occurrence in line with the prevailing substrate type, tidal movement, wave action, salinity and temperature, in other words toward ‘good environmental status’, is severely constrained and not adequately considered. The Scottish Government’s proposed approach for improving PMF protection beyond MPAs would not prevent another incident, such as that which damaged the outer Loch Carron flameshell beds, where there is absence of any evidence of whether a PMF occurs in an area or not. A precautionary approach should require an activity to take place only following the collection of evidence of absence of a PMF, reversing the burden of proof.

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A proportionate interpretation of 'significant impact' would therefore be one that would prevent the 'national status' being attained. If 'national status' is defined as of a "quality and occurrence in line with prevailing physiographic, geographic and climatic conditions" then any impact that prevents a PMF from occurring in line with these prevailing natural conditions should be considered 'significant'. Given the sensitivity of benthic PMFs, particularly the 11 currently scoped in, to the pressures and impacts arising from the use of mobile bottom-towed fishing gear, it is reasonable to assume that this activity would cause 'significant impact' and should be prohibited from areas in which the 11 PMFs are: 1. known to occur and; 2. crucially, could be *expected* to occur given prevailing natural conditions in the absence of the pressure. For those PMFs of 'moderate/medium' sensitivity (such as those outlined below in response to Question 4), 'significant impact' should be considered on a case-by-case basis as a *proportion* of where these less sensitive PMFs are: 1. known to occur and; 2. could be expected to occur, where they occur beyond the seaward boundaries of the 'reasonable alternatives' set out in answer to Question 9.

#### 4. Do you have any comments on the specific advice for any of the PMFs?

##### Priority Marine Features in scope

We welcome the analysis of known records of the 11 PMFs in scope. However, this process has been constrained by consideration of 'national status' as being the current, often diminished, extent and by looking at known records, rather than considering predicted extent in the absence of anthropogenic pressure. In response to Question 3, we set out our rationale for consideration of 'national status' in the context of 'good environmental status'. Below, we highlight some PMFs that would also benefit from protection outside of marine protected areas that we consider should be in scope for this work. We also have the following comments in relation to the advice presented for the PMFs in scope.

##### Fan mussels

We note the presence of *Atrina fragilis* recorded southwest of Muck and the following conclusion of a PhD<sup>2</sup> that modelled larval dispersal of this protected species: "*The results suggest little reduction in fishing pressure is effected by current restrictions on activity in the subset of MPAs investigated, with protection principally being applied to rugged areas that may already act as natural refugia for vulnerable benthic species such as A. fragilis.*"

The SNH Fisheries Management Review for *A. fragilis* states that "*The causes for the decline of the fan mussel in UK waters are reviewed by Solandt (2003) who presents a convincing case for the decline being linked to the industrialisation of benthic fishing over the last century.*" Among the PMFs in scope, given the vulnerability of this species to surface and subsurface abrasion, it will therefore be among the most diminished in range with a greater potential to improve in status if the proposed 'reasonable alternatives' set out in response to Question 9 were implemented.

##### Flameshell beds

The Loch Carron incident highlighted how vulnerable these habitats are to the impacts of mobile bottom-contact fishing gear and, in keeping with our advice during the developing Scottish MPA project, they merit protection wherever they are found. The proposed 'reasonable alternatives' set out in response to Question 9 provide the most straightforward way to do so for flameshell beds, the other 10 PMFs in scope, and additional PMFs including those discussed below (Priority Marine Features not in scope). That said, we did want to highlight that

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<sup>2</sup> <https://ethos.bl.uk/OrderDetails.do?sessionId=006D4BD2F5BBD1574D2F8AF7C8239A93?uin=uk.bl.ethos.725367>

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there is a known record of flameshell beds off the west coast of Isle of Rum<sup>3</sup> that is not included in the map within the SNH Fisheries Management Review for this PMF.

*"Several flame shells Limaria hians were found in two of the grab samples from the gravel shelf that runs along the eastern side of the sound (G23 and G24). This is a highly cryptic species which builds nests beneath the surface of gravel and is the basis of the flame shell beds (SS.SMx.IMx.Lim) MPA search feature and PMF. The biotope, which occurs in mixed muddy gravels and is often associated with maerl beds, is extremely difficult to identify from remote video. The presence of several live shells in two grabs approximately 2 km apart suggests that there could possibly be a bed of L. hians along the west coast of Rum. However, further survey work would be needed to confirm the existence of more than just scattered individuals of this species."*

### Native Oysters

Given the threatened/declining status and greatly diminished range of native oysters, highlighted most notably by the functional extinction of a very large bed in the Firth of Forth, this PMF is well below a 'national status' consistent with the requirements of MSFD 'good environmental status' Descriptor 1. If the proposed 'reasonable alternatives' set out in response to Question 9 were implemented, there would be greater potential to improve the status of native oysters in tandem with active restoration projects, such as that being proposed for the Dornoch Firth as part of the Dornoch Environmental Enhancement Project.

The proposed 'reasonable alternatives' set out in answer to Question 9, would also benefit the remaining PMFs in scope (blue mussel beds, horse mussel beds, maerl beds, maerl or coarse shell gravel with burrowing sea cucumbers, seagrass beds, serpulid aggregations, northern sea fan and sponge communities and cold water reefs) as well as those examples set out below that we think should also be in scope.

### Priority Marine Features not in scope

LINK Marine Group understand that the PMFs under consideration are those deemed most sensitive to bottom-towed fishing gear using the FEAST sensitivity tool, and for which MPA management advice was 'remove/avoid' pressure from mobile bottom-towed fishing gear. We understand that the proposals under consideration in this scoping exercise are not intended to ensure that the national status of *all* PMFs in Scotland's marine area are not significantly impacted by human activity and as such constitute one package of 'wider seas' measures to seek to ensure General Policy 9 (b) is met for some PMFs. That said, we would like to emphasise that other benthic habitat PMFs, and PMFs with benthic life-history stages, would benefit from the types of proposals being considered for the 11 deemed most sensitive, and some of these are listed below. We also look forward to further species-specific measures and wider seas measures under the three-pillared approach for marine nature conservation for those PMFs not being considered as part of this project in order to ensure GEN 9(b) is achieved for all of Scotland's PMFs.

In addition to the PMFs deemed to have high sensitivity to surface and subsurface abrasion, and for which advice during the phase one MPA management process was to 'remove/avoid' pressure from mobile bottom-towed fishing gear, PMFs deemed to have 'moderate' or 'medium' sensitivity and for which advice was 'reduce/limit' pressure, would also directly benefit from the proposed approach and we would like to see them 'in scope' in order to take this opportunity to seek to achieve General Policy 9(b) (and in turn 9(c)) for these moderately sensitive habitats. Some examples are included below but this is not an exhaustive list:

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<sup>3</sup> Howson, C. M., Clark, L., Mercer, T. S. & James, B. (2012). Marine biological survey to establish the distribution and status of fan mussels *Atrina fragilis* and other Marine Protected Area (MPA) search features within the Sound of Canna, Inner Hebrides. Scottish Natural Heritage Commissioned Report No. 438.

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### Northern featherstar (*Leptometra celtica*) aggregations on mixed substrata

FEAST summarises that *"The species is likely to be intolerant of abrasion as individuals are likely to be killed or damaged by due to their delicate structure. Tolerance is assessed as low...Northern feather stars are likely to have an interaction with demersal towed fishing gear. The potential effects include direct mortality through capture or contact with gear and possible indirect effects from smothering and/or increased suspended sediment."* It is therefore deemed of 'Medium' sensitivity to surface abrasion, a pressure that would arise from the use of mobile fishing gear. FEAST identifies this habitat as being of high sensitivity to smothering by 30cm of sediment and medium sensitivity to smothering by 5cm, which could arise in the vicinity of the operation of mobile bottom-towed fishing gear. Northern featherstar aggregations are often found in areas of 'mixed ground' where the crinoids are attached to cobbles and small boulders amongst sediment, ground which can be susceptible to the passage of mobile bottom-towed fishing gear which has the potential to modify the habitat and reduce the density of suitable anchoring points for the species and therefore reduce the extent of the habitat.

### Tall seapen (*Funiculina quadrangularis*) and Fireworks anemone (*Pachycerianthus multiplacatus*) habitats

We recognise the emerging MPA network, and existing and proposed management measures, would deliver spatial protection for various proportions of a range of burrowed mud habitats within the network, but in the absence of additional measures these may not necessarily be sufficient to ensure General Policy 9(b) is achieved for some of their component species. Scoping these most vulnerable components of the wider OSPAR 'threatened and/or declining' 'Sea-pen and burrowing megafauna communities' habitat into the current work package would be an opportunity to strategically assess the spatial measures needed beyond the MPA network in order to ensure their national status was not significantly impacted by mobile bottom-towed fishing gear.

### Inshore deep mud with burrowing heart urchins

This community has a 'high' sensitivity to physical change and 'medium' sensitivity to physical removal, removal of non-target species, removal of target species and sub-surface abrasion/penetration (a pressure arising from the use of mobile bottom-towed fishing gear) according to FEAST. For example, *"In areas of the North Sea where heavy demersal fishing for Nephrops norvegicus occurs, populations of Brissopsis lyrifera are likely to be reduced owing to damage inflicted to the 'test' by the fishing gear."*

### Kelp and seaweed communities on sublittoral sediment

This community has a tolerance to sub-surface abrasion/penetration of 'Medium' and recoverability of 'Medium' according to FEAST. *"Some species, especially attached algae, are likely to be removed by physical disturbance equivalent to a passing scallop dredge...Low energy sites with dense coverage of kelp and seaweeds will be most sensitive. Slow growing large-biomass biota such as kelp and seaweed take much longer to recover (up to 8 years) than biota with shorter life-span"*. These habitats provide shelter and foraging ground for mobile PMFs such as sea trout and the juveniles of some commercial species and their improved protection would provide wider ecosystem benefits and greater confidence that their national status was not significantly impacted. We also note the threat to natural kelp habitat posed by the proposal from Marine Biopolymers to harvest up to 34,000 tonnes of wild kelp every year, a proposal that LINK Marine Group members responded to with great concern. Given that further similar proposals may come forward, posing a threat of 'significant impact' to the 'national status' of this PMF, we consider this another good reason to make this PMF 'in scope'.

### Kelp beds

FEAST does not separately assess this habitat but given it is characterised on the PMF list as a range of *Laminaria hyperborea* habitats on rock, which can occur to depths at which mobile bottom-towed gear would be operating, are likely to have low tolerance to surface abrasion associated with such gear. It is recognised that

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deployment of mobile gear would wish to avoid rock habitats but scoping these habitats in would provide wider ecosystem benefits, including for mobile PMFs and the juvenile stages of commercial species, and greater confidence that their national status was not significantly impacted. We also note the threat to natural kelp habitat posed by the proposal from Marine Biopolymers to harvest up to 34,000 tonnes of wild kelp every year, a proposal that LINK Marine Group members responded to with great concern. Given that further similar proposals may come forward, posing a threat of 'significant impact' to the 'national status' of this PMF, we consider this another good reason to make this PMF 'in scope'.

Tide swept coarse sands with burrowing bivalves,

This community has a 'high' sensitivity to physical change and 'medium' sensitivity to physical removal, removal of non-target species, removal of target species and sub-surface abrasion/penetration (a pressure arising from the use of mobile bottom-towed fishing gear) according to FEAST. For example, *"The net result of ongoing fishing is the habitat may be maintained in a modified condition with reduced abundance (or possibly loss) of sensitive bivalve and epibenthic species... Particularly vulnerable forms, such as the epifaunal echinoderms, may be eliminated so there may be a minor decline in species richness in the biotope. It seems likely that the characterizing species will suffer some mortality due to physical abrasion and so tolerance is assessed as low."*

Ocean quahog aggregations

Ocean quahog aggregations have a 'high' sensitivity to sub-surface abrasion/penetration and *"are thought to have no resistance to the pressure and low resilience"* according to FEAST.

### **5. Do you have any comments in the identification of areas for management consideration?**

We recognise that the process to identify areas for management consideration is thorough in the context of only considering those 11 PMFs where 'remove/avoid' pressure was the MPA management advice and of a constrained consideration of what 'national status' means. As set out elsewhere in this response, it is reasonable to consider that the 'national status' of PMFs should be consistent with 'good environmental status' for relevant Qualitative Descriptors under the Marine Strategy Framework Directive.

### **6. Do you agree that 12 hours per year is a suitable level to define the fishing footprint?**

No. The damage to the outer Loch Carron flameshell bed would have arisen following just a few passes of the scallop dredge in a period of time less than 12 hours. We would define the fishing footprint in the context of a minimum period of time it is possible to deploy fishing gear and do one tow, since in previously pristine areas, it is the first pass of the gear that causes the damage<sup>4</sup>. By this criterion, four hours fishing per year would be a reasonable level to define the fishing footprint.

### **7. Do you have any evidence of fishing activity outwith the footprint, in particular for vessels under 12m in length?**

No.

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<sup>4</sup> Cook R, Fariñas-Franco JM, Gell FR, Holt RHF, Holt T, et al. (2013) The Substantial First Impact of Bottom Fishing on Rare Biodiversity Hotspots: A Dilemma for Evidence-Based Conservation. PLoS ONE 8(8): e69904

### 8. Do you have any views on the management approach identified for the appraisal?

We think that the approach proposed by the Scottish Government is not sufficient to meet General Policy 9(b), since at best it will only maintain the status of the 11 PMFs at the point at which any new fishery restrictions are put in place. As discussed above, this will be an already diminished status compared to where prevailing natural conditions would allow, and could even be a poorer status than when Scotland's Marine Atlas was published if there have been unrecorded or unknown instances of further PMF damage, other than that known in Loch Carron, since 2010.

### 9. Are there any other reasonable alternative approaches to management that could be tested in the Sustainability Appraisal?

#### LINK Marine Group proposals for 'Reasonable Alternatives'

The Strategic Environment Assessment (SEA) process requires consideration of 'reasonable alternatives' when assessing plans, programmes and strategies. Scottish Government Guidance on SEA states that '*a robust but proportionate approach to this aspect of the methodology is advisable*' ([www.gov.scot/Publications/2013/08/3355/3](http://www.gov.scot/Publications/2013/08/3355/3)). In this respect, we would like to recommend three 'reasonable alternatives' that are proportionate to the environmental risk that bottom-towed mobile fishing gear poses to 'high' and 'moderately' sensitive benthic PMFs.

Similar to the approach taken with the Modifications Report of the Phase One MPA management measures regarding non-designated PMFs, all proposed management options for the inshore PMFs should include consideration of *de facto* benefits for all relevant PMFs, and not just those 11 currently 'in scope'. As outlined above, we would recommend the addition of PMF habitats deemed of 'moderate' or 'medium' sensitivity and for which MPA management advice was 'reduce/limit' pressure to be considered within the management measures proposed and all 'Reasonable Alternatives' set out below. Note that following further consideration of the current, and historic, distribution of all benthic PMFs by LINK Marine Group members, the proposed alternatives set out below differ in some cases from those suggested within our previous informal response, that had been invited, as for all attending stakeholders, following the 14<sup>th</sup> May 2018 workshop.

The 'reasonable alternatives' proposed provide a more holistic approach to inshore fisheries management in relation to the protection of PMFs and would allow scope for recovery in extent and quality and for increasing the resilience of inshore ecosystems. We acknowledge the challenges already stated around such an approach that may conflict with existing MPA and SAC designations and fishing derogations within them. However, we suggest that our 'reasonable alternatives' can be considered whilst respecting the separate SEA processes undertaken for management of fishing in inshore MPAs. The conservation case for the proposed 'reasonable alternatives' is sufficiently compelling to warrant strategic environment assessment, particularly given the Scottish Government guidance that such alternatives should be 'robust'. Using the GeMS database<sup>5</sup>, we have calculated the proportion of the 11 PMFs in scope, and a selection of those PMFs discussed earlier that we think the proposals should extend to, to be found within 0.5nm of Scotland's coastline (see Table 1). This table is the basis for the proposed reasonable alternatives we set out below.

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<sup>5</sup> Data from GeMS (v4 redacted) database, licenced to SELINK May 2016; includes all records within 6nm baseline; analysis assumes phase two inshore MPA/SAC fisheries management measures will be adopted as proposed by Scottish Government (as does the PMF consultation); MPA/SAC area includes 0.5nm seaward limit portion – additional 0.5nm is any part outwith MPAs/SACs

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Table 1. Proportion of 11 in scope and of 9 additional PMF records from the GeMS database to be found within existing inshore MPAs and SACs, within 0.5nm of the shore but outside MPAs and SACs and beyond both. Since seapen and burrowing megafauna habitat is one component of burrowed mud, if the entire burrowed mud feature were analysed as a proxy for the historic extent of seapens (and indeed as a PMF in itself), a far smaller proportion of the expected natural extent of seapen habitat would be protected.

PMF (Consultation)	% PMF records		
	Within MPAs/SACs	Within 0.5nm, outwith MPA	Not covered
Blue mussel	61.03	22.07	16.90
Cold-water coral reef	100.00	0.00	0.00
Fan Mussel	88.73	7.04	4.23
Flameshell beds	92.43	7.57	0.00
Horse mussel beds	63.98	32.94	3.08
Northern seafan and sponge communities	60.34	18.64	21.02
Maerl beds	71.42	26.05	2.53
Maerl or coarse shell gravel	70.30	26.73	2.97
Seagrass beds	46.45	32.68	20.86
Serpulid aggregations	99.97	0.03	0.00
<b>PMF (Additional)</b>			
Burrowed mud (component: seapens and burrowing megafauna in circalittoral fine mud)	55.26	34.84	9.90
Inshore deep mud with burrowing heart urchins	22.50	77.50	0.00
Burrowing sea anemone	55.56	22.22	22.22
Northern featherstar	67.18	19.34	13.49
White cluster anemone	63.64	11.69	24.68
Kelp and seaweed communities	60.42	39.58	0.00
Kelp beds	55.32	41.95	2.73
Ocean quahog	37.83	42.32	19.86
Tide-swept coarse sands with burrowing bivalves	59.29	27.43	13.27
Mean (11 PMFs in consultation)	75.46	17.38	7.16
Mean (9 additional PMFs)	53	35.21	11.79
<b>Total mean (11 PMFs in consultation)</b>		<b>92.84</b>	7.16
<b>Total mean (9 additional PMFs)</b>		<b>88.21</b>	11.79

### 1. **Prohibit mobile bottom-towed fishing gear from within 1 nautical mile** around the entire coastline of Scotland (with environmentally assessed derogations in outer 0.5nm)

Greater than 92% of the records of the 11 PMFs currently scoped in – noting a case is made earlier for additions to this list – are found within the 0.5nm boundary in the areas highlighted in this proposed alternative. A further 0.5nm beyond would provide scope to protect other outlying examples of these and other PMFs and scope for feature recovery and a greater contribution to General Policy 9(c) This is our preferred ‘Reasonable Alternative’ scenario, providing the greatest confidence that the majority of the *known* current records within the current range of these 11 PMFs would be protected and also provide the greatest scope for some *de facto* protection for unrecorded examples of these 11 PMFs, protection for some other moderately sensitive PMFs and also some non-PMF features - all which may also be ‘essential fish and shellfish habitat’ - as well as provide the greatest scope for feature and wider ecosystem recovery, though noting in the case of some features such as maerl beds that recovery could take centuries. It would increase the proportion of the 11 PMFs that could be protected beyond 92%. We would envisage that in such a scenario, the outer 0.5nm would be a buffer zone to which derogated access by mobile bottom-towed fishing activity would be possible following strategic environment assessment.

This scenario does not account for historic records of PMFs beyond 1nm which in some cases, such as the fan mussel (*Atrina fragilis*) which is exceptionally vulnerable to heavy bottom-towed gear, would have been much more widespread. We recognise that some discussion on distance from shore closures took place at the workshop on 14<sup>th</sup> May but are of the view that this is a ‘reasonable alternative’ to test, particularly when considered in light of the Scottish Government’s SEA Guidance that a ‘*robust but proportionate approach [to considering ‘Reasonable Alternatives’] is advisable*’.

This ‘Reasonable Alternative’ would be our preferred suggestion as it provides the greatest opportunity to meet General Policy 9(b) requirements for some PMFs, and with its greater scope for ecosystem recovery, would make a greater contribution toward meeting the legal duty under s.3 of the Marine (Scotland) Act 2010 to ‘where appropriate, enhance the health of [the Scottish marine] area’, to General Policy 9(c) of the National Marine Plan: ‘Development and use of the marine environment must: (c) Protect and, where appropriate, enhance the health of the marine area’ and to achieving Good Environmental Status under the Marine Strategy Framework Directive. We also note the Wider Seas policies under 4.55 to 4.58 of the National Marine Plan which this scenario would contribute to.

In the absence of this scenario, the proposal being strategically assessed would help to protect remnant benthic PMFs and prevent further deterioration, going some way to meet GEN 9(b) for those features, but provides more limited scope for ecosystem recovery and thereby a more limited contribution to GEN 9(c) in the National Marine Plan, s.3 of the Marine (Scotland) Act 2010 and to achieving Good Environmental Status under the Marine Strategy Framework Directive.

### 2. **Prohibit mobile bottom-towed fishing gear from within 0.5nm and to the 50 m depth contour** where this extends beyond 0.5nm around the entire coastline.

Rather than basing spatial management solely on arbitrary administrative lines, this proposal is also based on an environmental characteristic, depth, in order to provide a buffer for recovery beyond the core 0.5nm zone. As noted above and in Table 1, greater than 92% of the records of the 11 PMFs currently scoped in – noting a case is made earlier for additions to this list – are found within the 0.5nm boundary. Addition of a buffer to 50m would increase the proportion of the 11 PMFs that could be protected beyond 92%. Of the proposed ‘Reasonable Alternatives’, this scenario would provide some confidence that the majority of the *known* current records within the current range of these 11 PMFs would be protected and also provide scope for some *de facto* protection for unrecorded examples of these 11 PMFs, for some other moderately sensitive PMFs and also some non-PMF features - all which may also be ‘essential fish and shellfish habitat’ - as well as provide scope for feature and wider ecosystem recovery, though noting in the case of some features such as maerl beds that recovery could take centuries. The scope for protection of known and yet-to-be-discovered PMFs and for feature and wider ecosystem recovery in this scenario would be less than in proposed Scenario 1.

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This scenario does not account for historic records of PMFs beyond 0.5nm that are in water deeper than 50m which in some cases, such as the fan mussel (*Atrina fragilis*) which is exceptionally vulnerable to heavy bottom-towed gear, would have been much more widespread. We recognise that some discussion on distance from shore closures took place at the workshop on 14<sup>th</sup> May but are of the view that this is a 'reasonable alternative' to test, particularly when considered in light of the Scottish Government's SEA Guidance that a '*robust but proportionate approach [to considering 'Reasonable Alternatives'] is advisable*'.

This 'Reasonable Alternative' would provide some opportunity to meet General Policy 9(b) requirements for some PMFs, and with its greater scope for ecosystem recovery, would contribute toward meeting the legal duty under s.3 of the Marine (Scotland) Act 2010 to 'where appropriate, enhance the health of [the Scottish marine] area', to General Policy 9(c) of the National Marine Plan: 'Development and use of the marine environment must: (c) Protect and, where appropriate, enhance the health of the marine area' and to achieving Good Environmental Status under the Marine Strategy Framework Directive, although not to the same degree as Scenario 1. We also note the Wider Seas policies under 4.55 to 4.58 of the National Marine Plan which this scenario would contribute to.

In the absence of this scenario, the proposal being strategically assessed would help to protect remnant benthic PMFs and prevent further deterioration, going some way to meet GEN 9(b) for those features, but provides more limited scope for ecosystem recovery and thereby a more limited contribution to GEN 9(c) in the National Marine Plan, s.3 of the Marine (Scotland) Act 2010 and to achieving Good Environmental Status under the Marine Strategy Framework Directive.

### **3. Prohibit mobile bottom-towed fishing gear from within 0.5 nautical mile around the entire coastline of Scotland**

As noted above and in Table 1, greater than 92% of the records of the 11 PMFs currently scoped in – noting a case is made earlier for additions to this list – are found within the 0.5nm boundary. Of the proposed 'Reasonable Alternatives', this scenario could protect the majority of the *known* current records within the current range of these 11 PMFs and provide some scope for *de facto* protection for unrecorded examples of these 11 PMFs, for some other moderately sensitive PMFs and also some non-PMF features - all which may also be 'essential fish and shellfish habitat' – and for some feature and wider ecosystem recovery, though noting in the case of some features such as maerl beds that recovery could take centuries. The scope for protection of known and yet-to-be-discovered PMFs and for feature and wider ecosystem recovery in this scenario would be less than in proposed Scenarios 1 and 2.

**Where any of the three scenarios leaves outer areas of larger sea lochs and sounds unprotected beyond a 0.5nm or 1nm limit, all options should include closure across the seaward opening/s of these larger systems.**

### **Going forward**

LINK Marine Group welcome the commitment by the Scottish Government to improve protection of PMFs beyond the MPA network in line with a three-pillared approach to marine nature conservation and look forward to continued engagement with the SEA process for the management proposals to better protect inshore PMFs. We recommend that, whatever spatial measures eventually arise for protecting Inshore PMFs, they are kept under review to determine whether General Policy 9(b) is being met for those PMFs. This review only covers the impact of inshore fishing activity on PMFs and other activities, for example aquaculture and military and industrial activities that emit noise, are also having a potential detrimental impact on PMFs in Scotland's waters. Further proposals will therefore be essential to ensure that the national status of all of Scotland's PMFs is not

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significantly impacted by anthropogenic activity and for other General Policies of the National Marine Plan, and the general duty on Scottish Ministers and public authorities to enhance the health of the Scottish marine area, to be met.

This response was compiled on behalf of LINK Marine Group and is supported by: Marine Conservation Society, National Trust for Scotland, RSPB Scotland, Royal Zoological Society of Scotland, Scottish Wildlife Trust, Whale and Dolphin Conservation and WWF Scotland

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