Response to the Scottish Government Consultation on the management of inshore Special Areas of Conservation and Marine Protected Areas

by the Scottish Environment LINK Marine Taskforce

Scottish Environment LINK

Summary

- LINK members support environmentally sustainable fisheries and a transition to more sustainable levels and methods of fishing. We contend that a well-managed network of MPAs will deliver secondary long-term benefits for all fishermen working in the Scottish fishing industry, due to:
  - ecological recovery: of wider marine ecosystems and some fisheries both within and beyond MPA boundaries
  - positive displacement: via the movement of sustainable (well-managed) levels of fishing into areas which previously could not support economically-viable fisheries
- LINK members are disappointed with many of the management measures proposed, for the MPAs and SACs in this consultation, and are concerned that many are insufficient to achieve the conservation objectives and contribute to wider ecosystem enhancement.
- LINK supports the consideration of protected features most at risk from (primarily) mobile demersal fishing activities in this first tranche of management measures, but insist that additional measures for other activities are needed in order to achieve the conservation objectives.
- LINK supports the application of sound science to identify the sites and the process by which the proposed management measures have been determined. However, where data is lacking and/or confidence is low, some of the proposed approaches are not sufficiently precautionary and may in some cases undermine site integrity.
- Statutory management measures chosen for a site must be underpinned by the ecosystem approach, providing the best chance to conserve/enhance the protected features, to secure the ecosystem services the features deliver for wider ecosystem health and to ensure overall site integrity.
- LINK members are concerned that some management options will not deliver site integrity, as recently defined by the Court of Justice in the European Union[1]. A crucial ruling we support is that characteristics of the site *connected to* the designated features, and not just the features themselves, should also be preserved. This ecosystem-based principle should also apply to nature conservation MPAs.
- A serious re-appraisal is needed for those protected features whose conservation status has been highlighted by authoritative reviewers (e.g. IUCN Red List) as a concern, in some cases notwithstanding of its conservation objective. Where a species or habitat is endangered or

[1] The CJEU 'Sweetman Ruling' stated that site protection should involve *'the lasting preservation of the constitutive characteristics of the site concerned that are connected to the presence of a priority natural habitat whose preservation was the objective justifying the designation of that site'*

declining, its conservation must be given priority ahead of damaging anthropogenic activities in line with the Sandford Principle[2].

- LINK maintain that certain features should have conservation objectives of 'recover' rather than 'conserve' (e.g. common skate and fan mussel aggregations) and/or that some (e.g. 'northern featherstar aggregations' and 'kelp and seaweed communities on sublittoral sediment') should have advice set to 'remove/avoid' mobile demersal fishing pressure rather than 'reduce/limit'.
- We fully support the proposed site-wide prohibition of mobile demersal fishing gear in the following sites:
    - Treshnish Isles SAC (approach 1)
    - Loch Creran ncMPA/SAC (approach 2)
    - Luce Bay SAC (approach 1)
    - East Mingulay SAC (approach 2)
    - Loch Laxford SAC
    - St. Kilda SAC
    - Noss Head ncMPA
    - Wyre and Rousay ncMPA
    - Sanday SAC
- We do not support any of the proposed management approaches in the following sites:
    - Loch Sween ncMPA
    - South Arran ncMPA
    - Upper Loch Fyne and Loch Goil ncMPA
    - Lochs Duich, Long and Alsh SAC and ncMPA

  We do not agree that the proposed measures will adequately support the conservation and recovery of the species and habitats to be protected, and instead are calling for site-wide prohibition of mobile demersal fishing gear in these protected areas.
- We do not agree that the proposed management approaches in the five sites below will adequately support the conservation and recovery of the features to be protected, instead are calling for a greater reduction of mobile demersal fishing gear than any of the options presented for these protected areas:
    - Loch Sunart to the Sound of Jura ncMPA (including Loch Sunart ncMPA and Loch Sunart SAC)
    - Small Isles ncMPA
    - Wester Ross ncMPA
- Monitoring is key to assessing appropriate application of the management measures within the sites, progress where recovery is the ambition, and, ultimately, ensuring the conservation objectives of the sites are met.
- A monitoring strategy should be developed and a programme should commence upon formal adoption of the statutory management measures in order to build up a baseline of scientific data against which future change can be measured.

[2] "National Park Authorities can do much to reconcile public enjoyment with the preservation of natural beauty by good planning and management and the main emphasis must continue to be on this approach wherever possible. But even so, there will be situations where the two purposes are irreconcilable... Where this happens, priority must be given to the conservation of natural beauty." Sandford, Lord (1974). *Report of the National Parks Policy Review Committee. (Sandford Report)*. London: HMSO.

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- Promoting a culture of compliance is vital to ensure that management measures are adhered to, but the Scottish Government must provide sufficient resources to successfully monitor and, where necessary, ensure compliance from restricted marine activities within the sites.

Introduction

Scottish Environment LINK is the forum for Scotland's voluntary environment community, with over 30 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 this community in communications with decision-makers in Government and its agencies, Parliaments, the civic sector, the media and with the public.

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 members welcome the opportunity to comment on this consultation: SAC and MPA Management Public Consultation 2014.

Consultation on the management of inshore Special Areas of Conservation and Marine Protected Areas

General comments

LINK members fully support the designation and effective management of Nature Conservation Marine Protected Areas (ncMPAs) and Special Areas of Conservation (SACs) in Scottish seas. The emerging network of marine protected areas is an historic opportunity to help reverse the declining health of our marine environment, improve the goods and services our marine ecosystem provides and make a significant contribution to the long-term resilience of Scotland's coastal communities. All the designated sites require ambitious protection measures to help secure sustainable stewardship of our seas and the delivery of ecosystem services for the public benefit in perpetuity.

Management of Scottish ncMPAs and SACs must reduce the anthropogenic impact on marine habitats and species, many of which Scotland's Marine Atlas[3] clearly shows are in a depleted condition. These fisheries management measures must properly protect and, where appropriate, enhance the health of Priority Marine Features (PMFs), help contribute to wider ecosystem enhancement and play a role in the transition toward more sustainable levels and methods of fishing effort.

The following general comments apply to all the sites for which management measures have been proposed in this public consultation.

Sound science and the ecosystem approach

Scotland has risen to the challenge of European and domestic commitments to marine conservation legislation and is becoming a prominent participant at a global level. Both ncMPAs (under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009) and marine SACs (EU Habitats Directive) are designed specifically for nature conservation purposes, therefore management measures should be explicitly underpinned by sound science and the ecosystem approach. Where sound science is not available, or of low confidence, the precautionary principle must act as the basis for management decisions, to reduce the risk of environmental impacts that may further damage the protected features or compromise the achievement of conservation objectives for the site.

In this context, LINK also still has concerns about the rationale for feature- rather than site-led protection. Paragraph 83(b)(iv) of the Marine (Scotland) Act 2010 requires any public authority to make management decisions based on:

> *'any ecological…process on which the conservation of any protected feature in a Nature Conservation MPA…is (wholly or in part) dependent'.*

[3] Baxter, J.M., Boyd, I.L., Cox, M., Donald, A.E., Malcolm, S.J., Miles, H., Miller, B., Moffat, C.F., (Editors), 2011. Scotland's Marine Atlas: Information for the national marine plan.Marine Scotland, Edinburgh. pp. 191

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Paragraph 83(10) also states that:

'..."damage" includes the prevention of an improvement'[4].

Whilst the primary legal consideration under Paragraph 83(b)(iv) is for the designated ncMPAs to meet their conservation objectives, these provisions should be fundamental and prominent considerations when designing appropriate management measures for the conservation and recovery of features within a site. Article 83(10) signifies a legal requirement to ensure that protected features have the scope to increase in population numbers, extent and/or overall ecological health, which is clearly pertinent to sites with a conservation objective of 'recover'. Furthermore we think this requirement also applies to sites where the conservation objective is 'conserve' or where features are deemed to be of poor conservation status (as assessed by authorities such as the IUCN Red List, the OSPAR list of Threatened and Declining Species and Habitats, or in peer reviewed literature) as, even where this is the case, there still needs to be the possibility of improvement.

According to the EU Habitats Directive, the site integrity of a Natura 2000 site must not be compromised under any management regime. The CJEU 'Sweetman' Ruling[5] stipulated that in order for site integrity not to be adversely affected, maintaining the site at favourable conservation status was necessary, which involves, crucially:

'the lasting preservation of the constitutive characteristics of the site concerned that are connected to the presence of a natural habitat type whose preservation was the objective justifying the designation of that site...'.

In other words, characteristics of the site *connected to* the designated features, and not just the designated features themselves, should also be preserved. Or, in short, the ecological importance of a site, whilst designated for specific features, is greater as a functioning whole than as merely the sum of its parts. This ecosystem-based principle is particularly key for sites such as Luce Bay and Sands SAC and must also be applied to nature conservation MPAs.

Cumulative impacts should also be considered within the context of MPA management. Many other activities take place within or near to a number of the protected areas that will inevitably have an impact on the condition of the priority features (e.g. fish farms, shipping lanes). While we acknowledge that there are legislative mechanisms to manage licensed developments and other marine activities, the impacts of these must be considered in relation to mobile demersal fishing activities in order that fisheries management measures can be more proportionate and are likely to be more effective. In order to successfully measure ecological change brought about by the implementation of fisheries management, other impacts must also be taken into account to ensure that any change is not being influenced or impeded by anything except fisheries activities.

[4] http://www.legislation.gov.uk/asp/2010/5/pdfs/asp_20100005_en.pdf

[5] See case C-258/11 Peter Sweetman, Ireland, Attorney General, Minister for the Environment, Heritage and the Local Government v An Bord Pleanala (Sweetman) at para 43; also Article 6(1) Habitats Directive's reference to the 'ecological requirements' of designated features; and Commission Note on Setting Conservation Objectives for Natura 2000 Sites, 23/11/2012

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Commitment to improving Scotland's seas as a whole

The three pillar approach of species protection, site protection and wider seas policies and measures, as set out in Scotland's Marine Nature Conservation Strategy,[6] provides the framework within which marine conservation in Scotland should be implemented. Under this framework, management measures for protected areas must consider and account for conservation benefits for the whole of Scotland's sea area as well as the protected area itself. LINK members contend that measures which focus on zonal management of features within a site may not allow for this wider seas contribution and in some cases may not be sufficient to meet the conservation objectives of a site. The conservation of a feature requires that the wider ecology (e.g. habitat, food sources, component species), upon which it relies for its successful function, is also maintained in good condition and this must be integral to management measures to maintain or restore a feature to favourable conservation status (as defined in Article 1(i) of the Habitats Directive)[7]. Where a zonal approach to feature management is adopted, it must allow for a sufficient spatial buffer from anthropogenic activities, ensure protection from indirect damage, such as sedimentation or pollution from activities outside the site, and to account for modelled feature extent where data confidence is low[8]. Many of the management measures proposed for the MPAs and SACs being consulted upon do not take account of the wider ecology of a feature, provide a sufficient buffer from permitted fishing activities, or consider how improvements to biodiversity within a protected area may contribute to non-protected areas and the wider health of Scottish seas. This point is closely linked to that made above in relation to site integrity and is also fundamental to the wider seas pillar of the marine nature conservation strategy when considering the degree to which Nature Conservation MPAs and other sites, including Natura 2000 sites, contribute 'to the protection and enhancement of the area to which the plan applies', whether the national or, as the case may be, regional marine plans as required under section 5(3)(b) of the Marine (Scotland) Act 2010. Further site-specific details are provided for each site in this consultation response.

Site prioritisation under scientific advice

We note from the SNH advice to the Scottish Government on the programme to implement fisheries measures for SACs (which accompanied the documents circulated for reference in the stakeholder workshops in October 2014[9]) that some sites assessed where 'the most sensitive features exist and additional management is considered highest priority (i.e. biogenic reef features)' have not been included in this tranche of management measures. These sites are Loch nam Madadh, Sound of Arisaig and Sullom Voe SACs. We would like clarification as to why these sites were not included in the present tranche of management measures and, where processes are already in place to establish appropriate management measures for these sites, clarification as to why these have not also been included for comment in this, or another, consultation. We agree that it is important to align existing high priority sites management processes (e.g. Sound of Arisaig management forum) with the current consultation process to avoid any confusion and to benefit from the insight of alternative ways of determining appropriate management.

[6] http://www.scotland.gov.uk/Resource/Doc/295194/0115590.pdf
[7] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
[8] http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2013/Special%20requests/NEAFC_Evaluation_of_buffer_zones.pdf
[9] http://www.scotland.gov.uk/Resource/0046/00463043.pdf

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Whilst we are fully committed to engaging with the Scottish Government throughout the marine protected area management process, we are also concerned about addressing fisheries management measures in different tranches. There seems to be an inconsistency in the decisions to address lower priority habitats (such as burrowed mud). For some sites, the lower priority habitats are considered as a whole system and in some instances the component species are prioritised. Furthermore, it is not clear how it has been decided to propose management measures for these lower priority habitats in this first tranche of measures, or the forthcoming second tranche. We seek clarification as to how it was determined what proportion of mobile demersal gear prohibition for these habitats is sufficient to achieve the conservation objectives, and how they are better achieved by proposing management in the first or second tranche. We question whether progressing management measures in two separate tranches will be an effective process at all and what further changes may be authorised. There seems a reluctance to change management boundaries once established, as seen in the stakeholder workshops (October 2014), where the existing fishing zone in Lochs Duich Long and Also SAC/MPA was maintained, despite the fact that within this boundary there is Annex 1 reef and also burrowed mud habitat, upon which mobile demersal fishing gear can operate for 6 months of the year.

A similar argument would apply to mobile species in the same MPAs or SPAs. In the case of black guillemot it is accepted that a ban on the use of set nets is needed to prevent the possibility of entanglement. As this is not a controversial measure it would seem sensible to introduce in the fisheries regulations at the same time.

Compliance

We recognise that these management measures will have short and mid-term impacts for a small number of fishing boats that currently fish the area. We think it is important that the Scottish Government supports affected fishermen during the transition in management. It is anticipated that the closure of areas to bottom-towed fishing gear will improve the wider ecological health of our seas and provide long-term, beyond-the-site benefits for commercial fishermen.

LINK members think that, while compliance of management measures by commercial fisheries and other marine users is not the primary focus of this consultation it is a key consideration in the design of appropriate protected area management. In short, measures must be made easy for fishermen to know where management areas are, and easy and economically efficient to enforce. We support the Scottish Government's vision of a 'culture of compliance' among sea users, and we acknowledge that the majority of commercial fishermen abide by the law whilst operating at sea. However, a culture of compliance is best backed up with statutory measures to ensure that MPAs are not perceived as an optional exercise in bureaucracy. In order to promote this concept, the Government must ensure that its communication of MPA and SAC management is comprehensive, leaving sea users in little doubt as to what site restrictions are and where they are. Already the Scottish Government has had to implement an emergency Marine Conservation Order (MCO)[10] in voluntary maërl recovery areas in the South Arran MPA, following the unwitting operation of mobile demersal fishing gear within it. This highlights the pressing need to ensure all sea users are well informed of the management measures as early as possible and this responsibility lies with the Government, representative bodies, local authorities, communities and other marine stakeholders.

[10] http://www.scotland.gov.uk/Topics/marine/marine-environment/mpanetwork/southarranmco

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MPA and SAC management measures must be easy to enforce from a practical, spatial perspective. Complex boundaries and a variable mixture of licence conditions for fishing permit zones within protected areas may make it difficult to identify infringements by eye by any number of people who may be aware of the protected area designation, including Marine Scotland Compliance, local authorities, local community members and the general public. Whilst we acknowledge that over 15 metre vessels have to be fitted with Vessel Monitoring Systems (VMS) and that other tracking or observational technologies are being trialled (e.g. AIS, iVMS) and fitted to the wider Scottish fishing fleet, we remain concerned that a reliance on these methods may not be sufficient to *prevent* infringement of statutory protected area management measures. VMS is a valuable resource for identifying illegal fishing activity but, by the time illegal fishing has been detected, damage may have already been done to sensitive protected features. Furthermore, we are concerned that emerging satellite and mobile phone technology for vessel tracking enables an *increase* in footprint, as skippers can more confidently determine their position and operate closer to features and buffer zones, potentially putting sensitive seabed features at greater risk of damage.

As we have previously advocated to the Scottish Government, more and better resourcing is needed to equip Scottish authorities to manage and enforce these protected areas. Scotland's resourcing for fisheries compliance is currently much less than the English Inshore Fisheries Conservation Authorities' and we think that the Scottish Government should make clear what resources will be made available (over the next five years, until the first network review) to achieve effective monitoring of the local and wider ecological status of features within MPAs and to properly enforce management across the MPA network.

Monitoring

Ecological monitoring will be a key part of the implementation of management within these protected areas and will be essential for determining how effective the measures will be towards meeting conservation objectives. Furthermore, the Scottish Government must demonstrate a commitment to robust site monitoring from the onset of statutory management; a monitoring programme should have been in place from the initial implementation of management measures (if not before) in order to generate a baseline from which progress can be measured. It will not be sufficient to review sites periodically (e.g. every 3 years) to assess change, as it may be necessary to amend management measures reactively to maximise the ecological potential of the protected area and minimise any impacts on sea users that may be revealed as new evidence is gathered.

The requirement for monitoring also presents a real opportunity for alleviating any short-term, socio-economic impacts of MPA designation via collaboration between affected marine users (such as fishermen) and those tasked with developing science-based monitoring programmes. Co-management of protected areas with multiple stakeholders, including fisheries has been adopted in various areas world-wide (albeit more frequently in developing countries) and in many cases has been found to be an important partnership for effective ecological monitoring and promoting a culture of compliance through shared responsibility[11].

[11] Example: Harvey, O. and Baldeo, R. (2013). Stakeholder Led Co-Management Governance Regimes: The New Paradigm For Marine Protected Areas In Grenada, West Indies. *Proceedings of the 66th Gulf and Caribbean Fisheries Institute. November 4-8, 2013. Corpus Christi, Texas, USA.*

We would like the opportunity to comment on the monitoring programme at public consultation or through other stakeholder participation processes.

Economic assessment

LINK members agree that economic assessment is a valuable method of quantifying impacts of designating MPAs and management measures implemented within them. However we are concerned that the economic analyses carried out for the MPA management approaches in this consultation, and throughout the designation process, have been insufficient and portray an incomplete picture of the positive impacts of MPA designation and management. Such assessments must address more than just the potential losses to some fishers, who may be displaced from particular areas under the proposed management regimes. We contend that a balanced economic assessment should also present the potential benefits of MPA management approaches to fishers, in terms of a healthier seabed and a potential increase in health and population number of commercial fish and shellfish stock as a consequential secondary result of biodiversity conservation 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). A study by Kenter *et al* (2013)[12] indicated 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) is £125 – 225 million.

Furthermore, natural ecosystem services should also be assessed in terms of their value to society, such as marine species and habitats' provision 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[13].

Finally, the economic costs of non-management of these sites should also be presented as part of a more overarching approach to the economic assessment of the impact of MPAs and management measures.

Further information needs

We acknowledge the to-date and substantial on-going contribution of Marine Scotland Science, SNH and members of the academic community to the growing evidence base for inshore marine protected areas in Scottish seas. However, with limited resources and legislative timelines, confidence in the some of the scientific evidence available remains low and we have found it difficult

[12] 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*.

[13] Mcleod, E., Chmura, G. L., Bouillon, S., Salm, R., Björk, M., Duarte, C. M., ... & Silliman, B. R. (2011). A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO2. *Frontiers in Ecology and the Environment, 9(10), 552-560*.

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in some cases to assess the management approaches due to lack of sound evidence to underpin some generalised statements. For example, many of the management approaches presented in this consultation are based on conjecture, due to low confidence in the data and information which underpins them, and many key aspects of the proposals are assumed. For example, for Loch Creran ncMPA/SAC the consultation document states that: '…the current level of trawl activity would be unlikely to have a significant negative effect on the environment.' Here, the proposed approaches are based on undefined, qualitative terms (e.g. how much is 'significant'?), which may result in decisions being made that risk further environmental damage, or unnecessary socio-economic impacts on local fishermen.

We think that the Scottish Government should, as a matter of priority, carry out and publish the following to better inform future marine protected area consultations:

- Overall assessment of all types of mobile demersal fishing around Scotland. We assert that, in order to properly understand and implement effective protected area management, a complete picture of the collective <15m and >15m fishing vessel activity should be provided (as aggregated data). The combined effort of all types of mobile demersal fishing should be made clear and available.
- Assessment of the impacts of <15m (or lower capacity) vessels. We are not confident in proposals to restrict the vessel capacity within a protected area, as it is not clear whether even a reduced impact is appropriate and sufficient to achieve the conservation objectives. In many instances, a single pass of mobile fishing gear across sensitive seabed features can damage decades and more of growth, regardless of the weight of vessel pulling the heavy gear. The impact of these vessel types on sensitive habitats must be assessed for comparison to >15m vessels.
- Assessment of the impacts of static gear fishing and sea angling on habitats, fish stocks and top predators. While these activities are individually generally accepted to be less impactful and more sustainable methods of fishing, they must be managed in proportion to the level of cumulative impact relative to that arising from mobile demersal fishing gear and their cumulative impacts considered in the context of the carrying capacity of a protected area and wider regional sea..

LINK members also agree that an Appropriate Assessment should be carried out on the impacts of permitting fishing activities that may have a likely significant effect to take place within all Natura sites (under the Habitats Directive article 6(3)):

'Any plan or project likely to have a significant effect on a Natura 2000, either individually or in combination with other plans or projects, shall undergo an Appropriate Assessment to determine its implications for the site. The competent authorities can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site concerned (Article 6.3)'

Furthermore, where mobile demersal fishing gear is allowed to operate within a Natura site under statutory management measures, the Scottish Government must also align it with Article 6(4) and build necessary mitigation measures into the management plan:

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'In exceptional circumstances, a plan or project may still be allowed to go ahead, in spite of a negative assessment, provided there are no alternative solutions and the plan or project is considered to be of overriding public interest. In such cases the Member State must take appropriate compensatory measures to ensure that the overall coherence of the N2000 Network is protected. (Article 6.4)'

For the stakeholder workshops led by Marine Scotland to discuss proposed management measures in October 2014, the following text was included in the prepared papers for SACs but excluded from the consultation documents:

'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 a SAC. Where there is a likely significant 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)).'

Regarding the SACs being considered in this consultation where a zonal management approach has been proposed (Luce Bay and Sands, Loch Creran, East Mingulay, Lochs Duich Long and Alsh, Loch Sunart and the Treshnish Isles) we are calling for an Appropriate Assessment before management measures can be decided upon, as there will be a likely significant effect from mobile demersal gear on protected features. The results of Appropriate Assessments for fishing activities in Natura sites, under the Habitats Directive should be made publicly available.

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Consultation Questions

East Mingulay SAC

1. Do you support the preferred approach (number 1) for managing this protected area?
No, we do not support Approach 1, which would still permit the use of mobile demersal fishing gear in large parts of the SAC.

2. If you answered no to question 1, do you support the other approach?
Yes, we support Approach 2: the exclusion of mechanical and hydraulic/suction dredging and demersal trawling from the whole of this SAC, and designated zones closed to creels, long-lining and bottom set nets.

3. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?
We agree with the management advice for the site, to remove/avoid pressure from mobile demersal fishing gear on biogenic and bedrock reef, and we agree that these activities should be prohibited on and around the reef features. However we are also concerned about the secondary effects of trawling on and around the reef and potential accidental damage by gear snagging. These reef features are unique in UK territorial waters, these being the only known areas of extensive *Lophelia pertusa* reef in our inshore waters, and such reefs are extremely productive in terms of biodiversity and habitat formation. This is further reinforced by peer reviewed surveys of the site and ocean acidification forecasting, which highlights that as ocean acidification risks dissolving cold water corals starting deeper, the Mingulay reefs present an important shallow water refuge from acidification[14] [15]. This potentially makes them the most valuable *Lophelia* reefs in the entire EU.

Scientific evidence indicates that biogenic coral reefs are susceptible to damage by smothering, compounded by increases in suspended sediment caused by passing trawls and dredges, and that sediment disturbance can result in changes to anaerobic respiration by sediment biota and alter nutrient exchange processes[16]. Furthermore, the suggested buffer zones are based on trawler warp-length and water depth, and just make sure that the trawl does not reach the reef when the vessel is still outside the zone. Seabed in the buffer zone will be trawled. No account is taken of the effects on the reef habitat of sediment re-suspended by trawling and deposited on the reef. East Mingulay reef contains corals and, for example, shark spawning grounds which are sensitive to sediment deposition. The tidal currents in the region are more than strong enough to move suspended

[14] Roberts, J. M., Davies, A. J., Henry, L. A., Dodds, L. A., Duineveld, G. C. A., Lavaleye, M. S. S., ... & Van Haren, H. (2009). The Mingulay Reef Complex: an interdisciplinary study of cold-water coral habitat, hydrography and biodiversity. *Marine Ecology Progress Series*, *397*, 139-151.
[15] Jackson EL, Davies A, Howell KL, Kershaw PJ, Hall-Spencer JM (2014) Future-proofing Marine Protected Area networks for cold water coral reefs. *ICES Journal of Marine Science 71,2621-2629*
[16] Thrush, S. F., & Dayton, P. K. (2002). Disturbance to marine benthic habitats by trawling and dredging: implications for marine biodiversity. *Annual Review of Ecology and Systematics, 449-473.*

sediments several kilometres. This was not taken account of in the designation of East Mingulay SAC due to lack of scientific evidence. From the SNH commissioned designation report[17]:

"More work is required…to assess the effectiveness of this buffer in preventing fine grained sediments re-suspended by trawling from smothering living reef habitat."

and

"Particle re-suspension modelling is required to assess potential impact of sediments re-suspended by trawling or dredging in the vicinity of the Mingulay cold-water coral reef complex."

We understand that knowledge of the exact distribution of the reefs has been built up by one or two local skippers who trawl there fairly regularly, but this knowledge is not shared with other skippers. If part of the SAC were left open to trawling it would be an open invitation for any skipper to come and, if unfamiliar with the area, potentially incorrectly navigate the reefs. This could cause huge amounts of damage particularly as there was also evidence presented that the larger prawns are to be found closest to the reefs. We are also concerned that a 100GRT vessel capacity restriction will have little or no impact on reducing damaging impacts on these smaller patches of reef and the surrounding seabed as the vessels using this area are considerably smaller than 100t. Therefore we support the prohibition of mobile demersal gear from the entire SAC (Approach 2) as a precautionary approach to ensure the full protection of these reefs.

We acknowledge the management advice to remove/avoid pressure from static fishing gear and we agree that methods, such as creeling, do have some impact on delicate marine structures. However, we also acknowledge that creeling is potentially less damaging to habitats than mobile demersal gear and we consider it a more environmentally benign practice at sustainable levels. We support Approach 2, which will allow the continuation in areas where the reef features do not occur. We suggest that this should be carefully regulated and licenced to ensure that creeling is carried out at sustainable levels within the designated zones. This arrangement may also provide a useful opportunity to conduct further research on the impacts of creels on seabed habitats, on which there is very little scientific information available, and this should be carefully monitored within the fishing zones (Approach 2) to ensure swift action can be taken if damage by creels to the reef is observed.

We suggest that long-lining and bottom set nets should not be permitted throughout the SAC, due the proximity of this site to known areas for black guilemot (on Vatersay and Barra), basking shark, bottlenose dolphin and grey and harbour seal colonies (Mingulay, Vatersay and Barra). While these species are not designated for protection within the East Mingulay SAC, they are all Priority Marine Features that may move through or use the SAC sea area and may be at risk of entanglement and/or may be caught as bycatch.

The Outer Hebrides area is popular with wildlife and marine recreational tourism, which is important for the local community, particularly during the summer months. Marine tourism, particularly wildlife watching (for which the Outer Hebrides are a prime location), is a growing industry and has

[17] Davies, A.J., Green, S.L., Long, D. and Roberts, J.M. (2009). Developing the necessary data layers to inform the development of a site boundary for the East Mingulay dSAC – Phase II. *Scottish Natural Heritage Commissioned Report No. 306 (ROAME No. 1390)*

the potential to deliver a range of socio-economic as well as environmental benefits, such as data recording. However this industry relies on the local marine environment to be in good condition, to which well-managed marine protected areas will contribute.

Loch Creran SAC/MPA

4. Do you support the preferred approach (number 1) for managing this protected area?
No, we do not support approach 1. We support the prohibition of suction/hydraulic dredging from this SAC/MPA and we support the continuation of creeling, providing it is operated at environmentally sustainable levels and an appropriate assessment is carried out to determine its potential impacts on the features. We also support the prohibition of trawling from the flame shell bed and the continuation of the existing management measures. We do not support the continuation of trawling throughout the rest of Loch Creran as, without data on the effort of current trawling activity, there is no indication as to what the potential impacts on the marine environment would be. The loch is very constricted and, given the uncertainty about the distribution of habitats and Priority Marine Features and possible impacts of sedimentation on protected feature status, it is not sufficiently precautionary to permit any trawling within the loch. We would prefer a more precautionary prohibition on mobile demersal gear throughout the site until such information is made clear.

5. Under the preferred approach should there be a permit scheme to maintain trawl effort at current levels?
The consultation document states that for Loch Creran '...the current level of trawl activity would be unlikely to have a significant negative effect on the environment.' Considering the designation of this site as both SAC and MPA, current trawling activities should be subject to a full environmental impact assessment and/or Appropriate Assessment (under the Habitats Directive) before a permit scheme for trawling can be considered, to determine more accurately what degree of impact there is to benthic features. We also seek a more precise definition of how an 'unlikely significant negative effect' has been assessed and quantified, and how it will be measured should trawling continue at current levels within this site. Any unquantified statement regarding the level of a potentially damaging activity within a protected area must be translated to the level of impact on the protected features in order to determine appropriate management measures.

6. If you answered no to question 4, do you support the other approach?
Yes, at present we support the prohibition of mobile demersal fishing gear use and the continuation of static gear use throughout Loch Creran SAC/MPA (Approach 2). As detailed in our response to Q4 (above), it is difficult to agree with the continuation of current levels of trawling within this site without having an indication of how high those levels are, or exactly where they are taking place, and we advocate the precautionary principle in this situation. We support sustainable/non-damaging levels of creeling, subject to Appropriate Assessment and monitoring of its impacts on the seabed and PMFs.

7. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?

We agree with the management advice to remove/avoid pressure from mobile demersal fishing gear for serpulid reefs, horse mussel beds and flame shell beds. To avoid the risk of any secondary impacts to these delicate features (such as smothering from stirred up sediment), we support Approach 2, the prohibition of demersal mobile gear throughout the site. As stated in (6), we would support an environmental impact assessment/Appropriate Assessment of current levels of fishing before we would consider whether a permit scheme for the existing operator is appropriate. Loch Creran is a small water body with a number of highly sensitive benthic features, including populations of global importance, so it is possible that even a low amount of trawling effort could do a relatively large amount of damage. We note the official status of the reefs is 'Unfavourable recovering' although anecdotal evidence, yet to be confirmed, suggests there are outstanding concerns about the conservation status of the serpulid aggregations. We urge the Scottish Government to carry out further research in this site to assess the condition and if there have been declines in status, to determine the reason why. If the serpulid reefs are declining in health, this could suggest the current management regime is not sufficient for the conservation of the feature and must be reviewed and updated. To ensure progress toward Favourable Conservation Status and site integrity and to prevent further deterioration, we support approach 2.

Loch Creran holds a great deal of social and cultural importance to the local community; its rich marine biodiversity and attractive scenery draws recreational marine users (such as divers and kayakers) and tourists to the area. It is a popular area for wildlife watching, as it supports healthy populations of coastal birds, seals, otters and occasionally porpoises or dolphins. There are also a number of local community-based conservation initiatives[18] which reflects the importance of the Loch's coastal and marine environment and the need to ensure its good environmental condition. The local socio-economic importance of this site should be considered alongside commercial fishery and fishery displacement impacts.

Loch Laxford SAC

8. Do you support the management approach for this protected area?
Yes, we fully support the management approach for Loch Laxford SAC.

9. Do you agree with the economic, social and environmental assessments of the impact of the management approach?
We agree with the management advice to remove/avoid pressure from mobile demersal fishing gear for maërl beds and reefs. These habitats provide shelter and substrate for a variety of juvenile fish and shellfish and epifaunal invertebrates and are therefore important in terms of its environmental value and benefit to commercial stocks.

Loch Laxford and the surrounding catchment area is locally important for recreational angling, as wild salmon migrate between the Loch and the River Laxford each year. Salmon feed on a variety of aquatic invertebrates and small fish, and habitats such as maërl and reef as well as soft muds are well known to support important prey species for these (and other) predatory fish.

[18] http://www.argyll-bute.gov.uk/planning-and-environment/loch-creran-guide

Loch Sunart to the Sound of Jura (SAC/MPA)

10. Do you support the preferred approach (number 2) for managing this protected area?
No, we do not support approach 2. We fully support the no take zone in Loch Teacuis. However, we do not agree that the management zones proposed in approach 2 are sufficient for the conservation of the common skate and benthic features in this area. Recently published research provides conclusive evidence of the habitat and depth range of resident and transient populations of the flapper skate (a genetically distinct variant of the common skate – see comments in (12)), some occupying a range of 6-205m. This research recommends that 'Management should consider all depths in the study area, areas beyond the study site, and alternative conservation measures such as technical gear measures for fisheries'[19].

As previously mentioned in the 'General Comments' section, we are concerned that cumulative impacts of other activities are not being considered in this consultation, as fisheries management may not be the only cause of impacts to the features and therefore management measures may not be proportionate. In the case of Loch Teacuis, proposed as a No Take Zone, we are aware of moorings and a shellfish farm consent within the loch, which may both have impacts on the features. We seek clarification as to how these activities have been assessed in relation to fisheries impacts within the loch.

11. If you answered no to question 10, do you support the other approach?
No, we do not support approach 1. We fully support the no take zone in Loch Teacuis. However, we do not agree that the management zones proposed in approach 1 are sufficient for the conservation of the common skate and benthic features in this area. Of the 60 recorded locations for common skate in maps D2, D3 and D5, fewer than half occur within the no mobile demersal gear zones proposed in Approach 1. This implies that it would protect less than half of the skate population within even the restricted confines of the MPA management zones for approach 1. By no stretch of the imagination could this be considered sufficient. Recently published research provides conclusive evidence of the habitat and depth range of resident and transient populations of the flapper skate (a genetically distinct variant of the common skate – see comments in (12)), some occupying a range of 6-205m. This research recommends that 'Management should consider all depths in the study area, areas beyond the study site, and alternative conservation measures such as technical gear measures for fisheries'[15].

12. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?
No we do not agree. We are concerned about the lack of ambition behind the proposed management approaches for the conservation of the common skate. This species has been assessed as 'Critically endangered' by the IUCN Red List, and research indicates that their populations are continuing to decline[20]. Common skate have been extirpated from most of the Northeast Atlantic

[19] Neat, F., Pinto, C., Burrett, I., Cowie, L., Travis, J., Thorburn, J., ... & Wright, P. J. (2014). Site fidelity, survival and conservation options for the threatened flapper skate (Dipturus cf. intermedia). *Aquatic Conservation: Marine and Freshwater Ecosystems*.
[20] http://www.iucnredlist.org/details/39397/0

where, as its name indicates, it was once abundant[21][22][23]. This MPA potentially represents one of the last strongholds for the common skate in the Northeast Atlantic, possibly even on a global level, and, as the only site within the Scottish MPA network that has been designated for this species, we contend that measures for its protection should be treated with more urgency and ambition. As such, we are both surprised and disappointed that the conservation objective for the common skate in this site is not 'recover'. Even with Approach 2, some 30% of the recorded skate locations fall outside the proposed no-trawling zones. Although there is no longer a major target fishery for the common skate, scientific evidence indicates that mobile demersal fishing gear still poses the greatest threat to their populations[24], although this is difficult to assess as chondrichthyan (shark, skate, ray and chimaera) bycatch is not always recorded in fisheries data[25]. However, it is generally agreed that the skates' large body size and wide, flat shape does make it prone to being caught as bycatch in demersal fishing gear, even without the use of tickler chains in the case of trawls. Additionally, their k-selected life history makes population recovery slow, even with an absence of anthropogenic threats[18] [26] [27].

Recent genetic and taxonomic studies on the common skate indicate that its populations in the Northeast Atlantic are composed of two genetically distinct species[28]. A fundamental issue here is that the proposed management proposals refer only to 'the common skate'; the Scottish Government must clarify whether these proposals are for one or both of these genetically distinct variant species of the common skate, the flapper skate (*Dipturus intermedia*) and the blue skate (*D. flossada)*. The list of PMFs must also be updated to clarify any differences in conservation priorities that may apply to the two species. Furthermore, the Scottish Government must make the process by which it has assessed the conservation priority and the conservation objectives for these two species transparent and publicly available. On-going anthropogenic pressure combined with low species resilience and a lack of basic genetic understanding of the common skate makes it very difficult to apply appropriate management measures to these species[24] and we assert that, in light of this, a more precautionary approach is essential to achieve the conservation objectives.

[21] Walker, P.A. and Heessen, H.J.L. 1996. Long-term changes in ray populations in the North Sea, International Council for Exploration of the Seas. *Journal of Marine Science. 53: 1085–1093.*

[22] Walker, P.A. and Hislop, J.R.G. 1998. Sensitive skates or resilient rays? Spatial and temporal shifts in ray species composition in the central and north-western North Sea between 1930 and the present day. International Council for Exploration of the Seas. *Journal of Marine Science 55: 392-402*.

[23] Molfese C, Beare D, Hall-Spencer JM (2014) Overfishing and the Replacement of Demersal Finfish by Shellfish: An Example from the English Channel. *PLoS ONE 9(7): e101506*.

[24] Dulvy, N. K., Fowler, S. L., Musick, J. A., Cavanagh, R. D., Kyne, P. M., Harrison, L. R., ... & White, W. T. (2014). Extinction risk and conservation of the world's sharks and rays. *Elife, 3.*

[25] Stevens, J. D., Bonfil, R., Dulvy, N. K and Walker, P.A. (2000) The effects of fishing on sharks, rays and chimaeras (chondrichthyans), and the implications for marine ecosystems. *ICES Journal of Marine Science, 57, 476-494*

[26] Dulvy, N. K., Metcalfe, J. D., Glanville, J., Pawson, M. G. and Reynolds, J. D. (2000) Fishery stability, local extinctions and shifts in community structure in skates. *Conservation Biology 14(1), 283-293*

[27] Dulvy, N. K. and Reynolds, J. D. (2002) Predicting extinction vulnerability in skates. *Conservation Biology 16(2), 440-450*

[28] Iglésias, S. P., Toulhoat, L., & Sellos, D. Y. (2010). Taxonomic confusion and market mislabelling of threatened skates: important consequences for their conservation status. *Aquatic Conservation: Marine and Freshwater Ecosystems, 20(3), 319-333.*

As a mobile species, it is unlikely to be sufficient to protect small deep water 'hotspots' where it has been surveyed; research indicates that skate utilise all depths and a range of substrata for various reasons and at various stages of their life history[29]. Paragraph 83(b)(iv) of the Marine (Scotland) Act 2010 places a responsibility on public authorities to make management decision based on 'any ecological…process on which the conservation of any protected feature in a Nature Conservation MPA…is (wholly or in part) dependent'. Paragraph 83(10) also states that '…"damage" includes the prevention of an improvement'. Given the slow population growth rates of common skate, we contend that at present any amount of bycatch is too much for this species, particularly when considered in the context of its global population decline. In order to provide scope for common skate to be conserved in this area, and indeed recovered as we believe ought to be the ambition, these factors must be incorporated into any management approaches.

We agree with the management advice for, and fully support the prohibition of mobile demersal gear from, the benthic features of Loch Sunart SAC/MPA, namely reefs, flame shell beds, northern featherstar and serpulid reefs. We suggest that Loch Sunart should have a site-wide prohibition on mobile demersal gear, particularly given the presence of common skate sightings in the proposed area at the mouth in which demersal fishing is permitted.

Furthermore, the proposed no-mobile demersal zones in the Sound of Jura and the Sound of Mull should be much larger and, as common skate are a mobile species and are known to use deep and shallow areas[25], we question whether there should be a zoned approach at all. We have considered the conservation measures that are already in place in the Firth of Lorn SAC, which overlaps considerably with the Sound of Jura area of this MPA and should have been taken into account when addressing potential management for the site as a whole. Currently there is a ban on scallop dredging within the Firth of Lorn SAC, which forms a large part of the ncMPA, and, as there is a relatively low density of *Nephrops* trawling (consultation documents Figure D7), we suggest that this prohibition should also include trawling. The very fact that more management measures are being proposed for this area indicates that this prohibition is not sufficient to contribute to the conservation of the common skate and wider health of the area. Crucially, we also note from Figure D8 that there appears to be a relatively high density of scallop dredging in the east side of the Firth of Lorn SAC suggesting possible breaching of the existing regulations, which needs urgently addressed. This, in combination with larger no-demersal gear zones, should ensure that the chance of common skate being caught as bycatch is significantly reduced and is more likely to at least maintain current population levels in this area. Figure 1 illustrates our proposed management approach for this site, which should be the bare minimum for the conservation of common skate in Loch Sunart to the Sound of Jura MPA/SAC.

Loch Sween MPA

13. Do you support the preferred approach (number 2) for managing this protected area?
No we do not support approach 2. We fully support sustainable methods of fishing such as hand gathering of shellfish, provided it is carried out at sustainable levels. However, in the specific case of

[29] Neat, F., Pinto, C., Burrett, I., Cowie, L., Travis, J., Thorburn, J., … & Wright, P. J. (2014). Site fidelity, survival and conservation options for the threatened flapper skate (Dipturus cf. intermedia). *Aquatic Conservation: Marine and Freshwater Ecosystems*.

Loch Sween we believe that the prohibition of hand gathering for the conservation of the native oyster is appropriate as it eliminates any possibility of native oyster being accidentally or deliberately removed when fishing for other shellfish species.

We support the prohibition of mobile demersal fishing gear use in the body of Loch Sween in the designated area for the conservation of maërl beds, burrowed mud, and sublittoral mud and mixed sediment communities. These key habitats support an abundance of biodiversity, including populations of commercially important species, and habitats such as maërl beds also provide a refuge for juvenile fish and shellfish.

However, we do not agree that this approach will provide sufficient management to achieve the conservation objectives for this site and we suggest that a more comprehensive ecosystem approach will be required - see (15).

14. If you answered no to question 13, do you support the other approach?
No, we do not support approach 1. We contend that Approach 1 does not provide sufficient management to achieve the conservation objectives and should not be considered as the approach to take forward for Loch Sween. This approach provides minimal protection and only addresses the conservation of small areas for certain features, which leaves limited scope to maintain the biodiversity of the wider ecosystem and other key features such as burrowed mud.

15. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?
We agree with the management advice to remove/avoid pressure from native oyster, maërl beds, burrrowed mud and sublittoral mud and mixed sediment communities and in principle we support the management measures proposed in Approach 2. However we suggest that a more appropriate option, which is more likely to achieve the conservation objectives for this site, would be to extend the prohibition on the use of mobile demersal gear throughout the entire site. The burrowed mud communities in Loch Sween represent a particular community that isn't the same as in other areas around Scotland - noting that the management advice for the burrowed mud and sublittoral mud and mixed sediment communities in this site is specifically remove/avoid pressure - which strongly supports the rationale for a site-wide prohibition on trawling on these habitats. Following verbal information from SNH at the stakeholder workshops in October 2014 that recent surveys of the loch found that maërl beds have been reduced to mere fragments, there is clearly an unacceptable level of sea bed damage occurring in this MPA. We do not agree that a 75GRT vessel capacity restriction will achieve anything for the conservation of the burrowed mud and its communities, as nearly all of the vessels fishing within the loch will be far smaller than this. Furthermore, even a reduced level of trawling can still damage or remove delicate species that inhabit the burrowed mud. Research indicates that trawling on burrowed mud has a negative cumulative impact on the abundance and richness of the communities that inhabit it[30], therefore a lower vessel capacity is only likely to slow any biodiversity decline within the mud habitat, rather than halt it.

[30] Hinz, H., Prieto, V., & Kaiser, M. J. (2009). Trawl disturbance on benthic communities: chronic effects and experimental predictions. *Ecological Applications, 19(3), 761-773.*

Lochs Duich Longs and Alsh SAC/MPA

16. Do you support the management approach for this protected area?
No, we do not support the preferred management approach for the Lochs Duich Long and Alsh MPA/SAC, which would allow mechanical dredging in an area which overlaps with Annex 1 reef features and burrowed mud habitats for 6 months of the year.

17. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?
We agree with the management advice to remove/avoid pressure from flameshell beds and reef features. However we do not agree with the management advice to reduce/limit pressure on the burrowed mud features, as many of the component species of burrowed mud are highly sensitive to disturbance by mobile demersal fishing gear such as trawling.

We note that the existing fishing area demarcated in the middle of this site is considerably larger and different in shape to the equivalent zone illustrated in Marine Scotland's fisheries displacement study in early 2014. We request clarification as to why the shape of this zone has changed. However, regardless of the shape of this permitted fishing area, we contend that the only approach that is likely to fulfil the conservation objectives of this SAC/MPA is to prohibit the use of mobile demersal fishing gear throughout the whole site. This would also have the effect of simplifying the problems of fisheries compliance as it would otherwise be difficult to tell whether vessels are within the permitted area. It is not appropriate to allow such fishing activities to take place on Annex 1 reef, even at a lower vessel capacity, as any level of trawling and dredging has the potential to damage reef structure or remove delicate species associated with these habitats. Historical data from the VMS shows that considerable amounts of mobile demersal gear use have occurred on Annex 1 reef habitats and this is likely to continue with the proposed approach. Furthermore, we are concerned about the indirect effects of trawling and dredging, such as smothering of features due to increased suspended sediment, especially given the proximity of the western boundary of the fishing zone to the flame shell beds.

We suggest that with a site-wide prohibition on mobile demersal gear, the existing fishing area could then be used to carry out research on the environmental impacts of creel fishing on burrowed mud and Annex 1 reef features, as there is currently little documented research on this subject.

Luce Bay and Sands SAC

18. Do you support the preferred approach (number 2) for managing this protected area?
No, we do not support Approach 2 (or Approach 3) proposed for the management of Luce Bay and Sands SAC.

19. If you answered no to Question 18, do you support one of the other approaches?
We support Approach 1, the prohibition on the use of mobile demersal fishing gear throughout the site.

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20. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?

We are fundamentally concerned that anything but Approach 1 for the management of the Luce Bay SAC will breach the Habitats Directive. It is not clear from the management advice or the consultation documents that an Appropriate Assessment under Article 6(3) of the Habitats Directive has been conducted on current levels of fishing and the proposed management approaches where potentially damaging forms of fishing are permitted. Given the size of the permitted fishing zones in approach 2 and 3 (which are larger in size than the alternatives originally set out in the stakeholder workshops, October2014), and that they span a range of habitat types including highly sensitive ones such as kelp (approach 3), we are concerned that allowing mobile demersal fishing to operate on these features is already compromising the integrity of the site. This concern is compounded by the recent Sweetman ruling by the Court of Justice of the European Union that found "site integrity must be determined by reference to the lasting preservation of the *constitutive characteristics* of the site concerned that are connected to the presence of a priority natural habitat whose preservation was the objective justifying the designation of that site" (emphasis added).[31] The Scottish Government has stated that implementation of Approach 1 is not necessary to achieve the conservation objectives[32] and furthermore that this approach is not likely to be adopted anyway (verbal communication, stakeholder workshops, October 2014). This cannot be stated until an Appropriate Assessment has been carried out.

The designation of the SAC as a large shallow inlet/bay covers an area of varied and complex habitat types, some of which require a high level of protection, such as reefs (Annex 1 feature) and maërl (Priority Marine Feature) and some of which are thought to be sensitive to impacts from mobile demersal fishing activity (e.g. kelp habitats). A number of these habitats are vital components of the wider ecosystem, as they act as refuges for juvenile fish and shellfish species, and Luce Bay is a known spawning ground for plaice, cod, scallops and many other commercial fish species. Proper safeguarding of this area is therefore likely to bring about long-term benefits for local fisheries, as well as promote wider ecosystem resilience.

We agree with the management advice to remove/avoid pressure on reefs, maërl beds and Sabellaria *spp* and support the prohibition of mobile demersal gear from these features. We suggest that sandbanks and other soft or mobile sediment features should also be managed under a remove/avoid recommendation, given the complex mosaic of habitat types that occur within the bay. The sandbanks to the north side of the bay support a diverse range of marine and coastal plants and animals and the sand dunes which extend from the beach along the landward part of the SAC are part of a special system which hosts over-wintering seabirds.

We do not support Approach 3 for Luce Bay, and we are concerned that under this management regime mechanical dredging would be allowed on the kelp/seaweed communities. The impacts of mobile demersal gear on kelp beds are largely unknown, but research indicates that apart from the physical damage of towed gear on the kelp, increased sedimentation from dredging can cause a

[31] http://www.clientearth.org/reports/natura-2000-site-integrity-briefing.pdf
[32] http://www.dailyrecord.co.uk/news/local-news/kirkcudbright-fishermen-fear-jobs-marine-5071248

significant reduction in the growth rate and condition of kelp[33]. It seems counter-productive to allow dredging on, or even near, kelp beds, especially given that this is a habitat that forms a vital spawning ground for commercially important fish stocks. Furthermore, kelp beds have the potential capacity to store 313–900 g C m^{-2} yr^{-1} [34] and are increasingly at risk from direct damage by anthropogenic activities, storm events and climate change, which makes them less resilient to recovery following damage[35]. Emphasising their important role in carbon sequestration, a recent authoritative report estimated that coastal plants (predominantly kelp) around Scotland's coast potentially contribute a further 1.8 million tonnes of carbon/year into long-term storage in sediments[36].

The Solway Firth has two designated Special Protection Areas, one of which is part of Luce Bay (Loch Inch and Tors Warren) and is for the protection of over-wintering white-fronted geese (*Anser albifrons flavirostris*), which use the shallow, flat areas of the bay to feed between November and April. This species of goose has been assessed under international conservation criteria and is considered a priority species for conservation action. This site represented up to 3.8% of the wintering population of white-fronted geese[37] (50% of the world population over-winter in the UK) and it is appropriate and important to consider the wider ecological needs of these birds, which are one of many wading and sea bird species that make use of this area.

Luce Bay is also a popular area for tourists, recreational fishermen and anglers, wildlife watchers and water sports enthusiasts, which support local communities and businesses in the surrounding area. The tourism industry relies on the good environment condition of the bay and we suggest that the socio-economic benefits for the local community of the proposed management approaches should also be assessed. We recognise that there is a growing strong community interest in the Luce Bay SAC seeking a more ambitious approach to mobile demersal gear fisheries management in this site.

We recognise that Approach 1 will have short and mid-term impacts for a small number of fishing boats that currently fish the area. It is anticipated that a closure to bottom-towed fishing gear in this area will improve the wider ecological health of our seas and provide long-term, beyond-the-site benefits for commercial fishermen.

Noss Head MPA

21. Do you support the management approach for this protected area?
Yes, we fully support the proposed management approach to prohibit the use of mobile demersal fishing gear throughout the site.

[33] Lyngby, J. E., & Mortensen, S. M. (1996). Effects of dredging activities on growth of Laminaria saccharina. *Marine Ecology, 17(1-3), 345-354.*

[34] Wilmers, C. C., Estes, J. A., Edwards, M., Laidre, K. L., & Konar, B. (2012). Do trophic cascades affect the storage and flux of atmospheric carbon? An analysis of sea otters and kelp forests. *Frontiers in Ecology and the Environment, 10(8), 409-415*

[35] Wernberg, T., Thomsen, M. S., Tuya, F., Kendrick, G. A., Staehr, P. A., & Toohey, B. D. (2010). Decreasing resilience of kelp beds along a latitudinal temperature gradient: potential implications for a warmer future. *Ecology letters, 13(6), 685-694.*

[36] http://www.snh.org.uk/pdfs/publications/commissioned_reports/761.pdf

[37] http://jncc.defra.gov.uk/default.aspx?page=1951

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22. Do you agree with the economic, social and environmental assessments of the impact of the management approach?
We agree with the management advice to remove/avoid pressure for the horse mussel bed, as any activity which has abrasive impacts or which causes an increase in suspended sediment on or near the horse mussels may risk the health of the bed and the biodiversity it supports. Horse mussels are important seabed engineers and provide important nursery habitat for juvenile fish and shellfish. Scientific research provides ample evidence to support the prohibition of the use of mobile demersal gear on horse mussel beds[38] and we can learn from the example of Strangford Loch in Northern Ireland, where the horse mussel beds are struggling to recover from damage caused by intensive fishing activity[39].

The use of static gear on and around the horse mussel bed should be monitored closely to ensure that this practice is conducted sustainably and without causing damage to the horse mussel bed. Should any evidence arise to indicate that damage was being caused, static gear should be prohibited from this MPA.

We are concerned about the dredge disposal site located to the south west side of the MPA and seek assurance that the boundary of the MPA has been demarcated with a sufficient buffer between the disposal site and the horse mussel bed, or that the disposal site could be moved further away.
Additionally we are concerned about the impacts of the submarine power cable, which runs through the MPA and was consented prior to its designation. We seek clarification as to how any potential impacts from the cable or maintenance activities will be mitigated to protect the horse mussel bed.

Sanday (SAC)

23. Do you support the management approach for this protected area?
Yes, e fully support the proposed management approach to prohibit the use of mobile demersal fishing gear throughout the site.

24. Do you agree with the economic, social and environmental assessments of the impact of the management approach?
We agree with the management advice to remove/avoid pressure for reefs and sandbanks, as any activity which has abrasive impacts or which causes an increase in suspended sediment on or near these features may risk the health of the bed and the biodiversity it supports, such as juvenile fish and shellfish and seagrass beds. We support the continuation of hand diving for scallops, a successful and sustainable industry in and around Orkney, and static fishing by creeling, provided that it is operated at environmentally sustainable levels and is closely monitored for physical environmental impacts.

[38] 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*

[39] Strain, E. M. A., Allcock, A. L., Goodwin, C. E., Maggs, C. A., Picton, B. E., & Roberts, D. (2012). The long-term impacts of fisheries on epifaunal assemblage function and structure, in a Special Area of Conservation. *Journal of Sea Research, 67(1), 58-68*

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We note that harbour seals (*Phoca vitulina*) are also a qualifying Annex II feature of the Sanday SAC (and a Priority Marine Feature) and we suggest that this species should also be considered as part of the management for this site. Harbour seals are an important predator in our ecosystem and one which has declined by as much as 63% in Orkney waters between 2001 and 2008[40]. Seals are known to be impacted by fisheries activities as a result of damage or alteration of habitat and foraging grounds, disturbance by noise from vessels and possible physical injury or death from corkscrew impacts, where boats are fitted with ducted propellors[41]. Seals are also often entangled in active or discarded static fishing gear and may also be threatened by decline in prey fish stocks such as sandeels due to poorly managed fisheries[42] or may come into direct competition with fishermen for prey[43]. We suggest that there is strong scientific evidence to justify the need for better management for seals in active fishing areas, for the conservation of a key predator and for the benefit of local fishermen. The proposed management approach, to prohibit mobile demersal gear from this site, will benefit the harbour seal by potentially reducing the amount of underwater noise, as well as preventing damage to key foraging habitats such as the seagrass beds and sandflats. However we think that further research should be conducted to investigate the foraging range of seals around colonies or haul out sites and the impacts of static gear on seals in their foraging areas. It may be necessary to review the use and management of static gear around seal haul out sites.

Small Isles MPA

25. Do you support the preferred approach (number 2) for managing this protected area?
No, we do not support Approach 2; we do not agree that the management zone proposed in Approach 2 is sufficient for the conservation of the benthic features in this area. Therefore Approach 2 is certainly not sufficient to support the recovery in extent of the unique fan mussel aggregation that we assert is ecologically required.

26. If you answered no to Question 25, do you support the other approach?
No, we do not support Approach 1; we do not agree that the management zone proposed in Approach 1 is sufficient for the conservation of the benthic features in this area. Therefore Approach 1 is certainly not sufficient to support the recovery in extent of the unique fan mussel aggregation that we assert is ecologically required.

27. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?
We agree with the management advice to remove/avoid pressure from fan mussel aggregations, horse mussel beds, northern seafan and sponge communities and, by proxy as indicated in the consultation document, white cluster anemones. We note that the management advice has been

[40] SMRU Ltd (2011). Utilisation of space by grey and harbour seals in the Pentland Firth and Orkney waters. *Scottish Natural Heritage Commissioned Report No. 441*
[41] Bexton, S., Thompson, D., Brownlow, A., Barley, J., Milne, R., & Bidewell, C. (2012). Unusual Mortality of Pinnipeds in the United Kingdom Associated with Helical (Corkscrew) Injuries of Anthropogenic Origin. *Aquatic Mammals, 38(3)*.
[42] Furness, R.W. 2002. Management implications of interactions between fisheries and sandeel-dependent seabirds and seals in the North Sea. *ICES Journal of Marine Science, 59:261-269*.
[43] Cronin, M., Jessopp, M., Houle, J., & Reid, D. (2014). Fishery-seal interactions in Irish waters: Current perspectives and future research priorities. *Marine Policy, 44, 120-130.*

updated for northern seafan and sponge communities (originally 'reduce/limit pressure'), and we fully support this change.

However, we do not think the management advice, and therefore the overall ambition for the proposed management approaches, goes far enough for a site of this importance. This concern is compounded by the 'conserve' objective for the unique fan mussel aggregation and would like to repeat our assertion that the objective ought to be 'recover'. The remarkable diversity of benthic invertebrate habitats, including the very rare fan mussel, in the Sound of Canna is almost certainly the result of 'self-protection' from trawling offered by the local underwater topography. Confining the zone protected from trawling to this area will achieve little extra. Historical record of Fan Mussels from widespread areas where now they no longer exist[44] strongly suggests an ability to colonise extensive areas provided they are not damaged by impacts, such as repeated passage of mobile demersal fishing gear. Restoring some of this former range is a requirement of the Marine (Scotland) Act as section 83 defines "damage" as including the prevention of improvement. It is essential that the zone is extended to allow this to occur and we repeat the assertion that the conservation objective ought to be 'recover'. This would also benefit the conservation of burrowed mud, circalittoral and coarse sediment communities and northern featherstar aggregations on mixed substrata. Northern featherstar aggregations are a key component of benthic communities, particularly in Scotland where it uniquely occurs in shallower water than its normal known depth range, and is known to be vulnerable to physical disturbance by mobile demersal fishing gear. Additionally, as is the case for all the benthic features listed for this site, they are also impacted by changes to or degradation of their habitat and changes in local hydrology caused by habitat modification. We assert that all these benthic features should have remove/avoid pressure from active fishing gear as the recommendation. We note that the advice for tall sea pens in the Wester Ross MPA is to remove/avoid pressure. We contend that this should be the case for this species (and indeed Northern featherstar) within all MPAs with burrowed mud as a protected feature.

To provide wider ecosystem benefits, and a greater amount of habitat protection for the various benthic invertebrates listed for this site, the no mobile demersal gear zone should be extended into the burrowed mud habitat to the north of the Sound of Canna and Small Isles. This would offer scope for further colonisation of burrowed mud component species and an increase in biodiversity, rather than restricting their range in this area to a small, impact-free zone. The proposed management zone around the Sound of Canna covers only around 8% of the total MPA area and is largely academic, as the depth and topography of this area makes it inaccessible for bottom-contact fisheries and therefore provides *de facto* protection for the benthic features for which this zone has been proposed. The stark difference between the abundance and diversity of benthic species in the Sound of Canna in comparison to the rest of the MPA highlights the clear need to remove pressure from mobile demersal fishing gear across more of the soft sediment habitats to improve the benthic biodiversity. We suggest an extension to the management zone boundary to simplify the shape of the zone and include more of the burrowed mud habitat. A rare example of the burrowing sea anemone (*Aracnanthus sarsi*) has been identified in the muddy seabed off the north east of Canna. This species is considered to be of international importance in Scottish waters as a result of declines in UK populations. It is likely that more may inhabit this area, as yet undocumented, and we think

[44] Solandt, J. (2003). The fan shell Atrina fragilis- a species of conservation concern. *British wildlife, 14(6), 423-427.*

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that as much of this area as possible should be closed to mobile demersal fishing activities as a precaution to ensure that this key habitat, and the biodiversity it hosts, is conserved and has scope for recovery. We note that *Aracnanthus sarsi* aggregations are an MPA search feature and though aggregations have not been located, a precautionary approach should assume where point records exist, aggregations may also be in the vicinity until such time as survey work confirms or otherwise.

Given the re-assessment of the management advice for northern seafan and sponge communities, we suggest that Approach 1 should also include a zone around the modelled extent towards the north of the MPA (see Figure 2) where mobile demersal gear is prohibited. This suggested zone would also include some of the tall seapen records.

We recognise that this approach will have short and mid-term impacts for a small number of fishing boats that currently fish the area. It is anticipated that a closure to bottom-towed fishing gear in this area will improve the wider ecological health of our seas and provide long-term, beyond-the-site benefits for commercial fishermen. The good condition of the burrowed mud habitat (and therefore the productivity of the *Nephrops* fishery) depends upon an ecosystem approach to management in which protection of the infaunal biota (which bioturbate the sediment and maintain the complexity and stability of the habitat as a whole) is prioritised[45] [46].

As this MPA is also designated for Black Guillemots and as large parts of it are within SPAs for its internationally important seabird colonies we suggest that set nets are prohibited throughout the site. It would be simple to include this measure within the fisheries order and it will save having to introduce it later.

South Arran MPA

28. Do you support the proposed high level of protection for recovery of the maërl beds, and conservation of the seagrass beds?
Yes, we fully support the proposed protection for the recovery of maërl beds and the conservation of seagrass beds in the South Arran MPA. These habitats are highly sensitive to a range of anthropogenic impacts, including mobile demersal fishing gear, and little is understood about the potential impacts of anchoring and static gear (which may also be high, depending on the intensity of deployment in the area). Maërl beds, as previously mentioned, are important ecosystem engineers and provide a nursery ground and refuge for many species, including commercial fish and shellfish. Similarly seagrass also provides a nursery habitat and foraging ground for larger fish and marine mammals, as well as acting as a highly productive carbon sink, sequesting up to 1.9 tC per hectare per year[47]. The ecological and economic importance of these habitats justifies the highest possible protection.

[45] Greathead, C. F., Donnan, D. W., Mair, J. M., & Saunders, G. R. (2007). The sea pens Virgularia mirabilis, Pennatula phosphorea and Funiculina quadrangularis: distribution and conservation issues in Scottish waters. *Journal of the Marine Biological Association of the United Kingdom, 87(05), 1095-1103.*

[46] Hiscock, K. (2005) DEEP-WATER MUD HABITATS. *MARINE HEALTH CHECK 2005, 71.*

[47] Mcleod, E., Chmura, G. L., Bouillon, S., Salm, R., Björk, M., Duarte, C. M., ... & Silliman, B. R. (2011). A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO2. *Frontiers in Ecology and the Environment, 9(10), 552-560.*

29. Should there be a permit scheme for creel vessels to work within these recovery areas for maërl beds, and moorings adjacent to the seagrass beds?
No, there should not be a permit scheme for creel vessels or moorings adjacent to seagrass beds. We do not support the use of static fishing gear within maërl recovery areas or deployment of moorings adjacent to the seagrass beds, as the question does not qualify the distance from the seagrass beds moorings would be permitted. We support recreational diving and sea angling as more sustainable and low impact activities compatible with the conservation objectives of the features within the recovery zones.

Creel permit scheme
Whilst we acknowledge that static fishing methods, such as creeling are thought to be more sustainable and less impactful on the marine environment, we contend that the recovery areas should not permit the use of creels. Maërl is slow growing and slow to recover following disturbance, sometimes taking longer than 10 years to exhibit signs of recovery[48]. Given the conservation objective of 'recover' for the maërl beds in South Arran MPA, we think it is essential that these pressures are removed from these areas to maximise recovery potential. If a permit scheme were to be implemented in these areas for creeling, it would need to be subjected to an environmental impact assessment first in order to ensure that the carrying capacity for creel numbers was not exceeded and that damage to the maërl was unlikely to occur. The recovery areas would also need to be closely monitored to ensure that illegal or 'ghost' creeling was not occurring.

Moorings adjacent to seagrass beds
We suggest that the Scottish Government should clarify what it means by the word 'adjacent' in this question: exactly how close would the proposed moorings be to the seagrass beds? Activities such as moorings should be permitted away from the seagrass beds at a conservative distance, so the feature is adequately buffered from any impacts. Given that this is the only nature conservation MPA with seagrass as a designated feature, we assert that the precautionary principle dictates the importance of ambitious protection for these beds. There should be no anthropogenic pressures on or closely adjacent to the seagrass. Moorings may have a small seabed footprint, but in extreme rough weather conditions ropes or chains may be moved and cause abrasion to the seagrass if fixed too close.

30. Do you support the preferred approach (number 3) for managing the protected area?
No, we do not support approach 3 for this site. Please refer to comments in question 32.

31. If you answered no to Question 30, do you support one of the other approaches?
No, we do not support approaches 1 and 2 for this site. Please refer to comments in question 32.

32. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?

[48] Hall-Spencer, J. M. and Moore, P.G. (2000). Scallop dredging has profound, long-term impacts on maërl habitats. *ICES Journal of Marine Science 57, 1407-1415*

LINK members believe that the management approaches proposed for the South Arran MPA are inadequate to achieve the conservation objective of recover for maërl and conserve for all other Priority Marine Features in this site. We assert that the use of mobile demersal fishing gear should be prohibited throughout this site.

We support the management advice to remove/avoid pressure for maërl beds, maërl or coarse shell gravel with burrowing sea cucumbers and seagrass beds. However we suggest that in the case of maërl or coarse shell gravel with burrowing sea cucumbers, this advice should apply year-round; although sea cucumbers retreat into the sediment during winter, the habitat itself must remain in good condition to support them when they emerge in the spring, and we do not yet know whether dredging effects their population even when retreated. We contend that all the habitats in this site which support burrowing infauna, such as burrowed mud and shallow tide-swept coarse sands with burrowing bivalves, should also follow advice to remove/avoid pressure. Many of the component burrowing species of these seabed habitats may be damaged or removed by mobile demersal fishing gear (depending on the species and gear type), with ocean quahog an important example. It is contradictory to prohibit the targeted harvesting of this long-lived bivalve whilst allowing, albeit at a reduced level, use of heavy bottom-towed fishing gear in the same habitat that could easily and regularly bring the species up as bycatch. We suggest that further work be carried out to assess the impacts of mobile demersal gear on these habitats and the species they support or, if this has already been assessed, that the results be referenced within the consultation documents.

The approaches are overly complex both in terms of the geographical shape of the management zones within the site and the conditions of fishing licences within the zones. VMS systems will record the location and activity of vessels within the zones accurately enough, but this will only serve to highlight an infringement as it occurs or after it has been committed and the environmental damage may already have been done. Non-government observers (e.g. community members) viewing the MPA from the shore will find it difficult to know whether a boat is in an area of the MPA in which it is permitted and may not be aware of the conditions of each vessel's licence. In short, these approaches are likely to be difficult and costly to ensure compliance.

Most notably, the proposed approaches fundamentally fail to acknowledge the potential contribution that ambitious protection of this site could make to the wider Clyde ecosystem. The Clyde sea area is currently assessed as of Moderate Ecological Status under the EU Water Framework Directive and Scotland's Marine Atlas highlights 'many concerns' for shallow and shelf subtidal sediments. By 2020, the Clyde (along with the rest of the Scottish marine area and the regional seas of which they form part) must achieve Good Environmental Status, as required by the Marine Strategy Framework Directive. Given that the Clyde Sea area is a heavily modified water body and has been historically overfished - its natural ecosystem almost completely altered within a relatively short time period, and now reduced to a single-species commercial fishery[49] [50] - we strongly contend that mobile demersal fishing gear should be prohibited throughout the South Arran

[49] Heath, M. R., and D. C. Speirs. "Changes in species diversity and size composition in the Firth of Clyde demersal fish community (1927–2009)." *Proceedings of the Royal Society B: Biological Sciences 279.1728 (2012): 543-552.*

[50] Thurstan, R. H., & Roberts, C. M. (2010). Ecological meltdown in the Firth of Clyde, Scotland: two centuries of change in a coastal marine ecosystem. *PloS one, 5(7), e11767*.

MPA. As previously discussed, there is scientific evidence to suggest that maërl beds, seagrass beds, kelp and seaweed communities, and maërl or coarse shell gravel with burrowing sea cucumbers are all habitats which act as nursery grounds for a variety of commercial shellfish and finfish species, and provide refuge in their physical structure for larger fish acting as safe foraging grounds. Until recently there was also a known herring spawning ground near the south western maërl bed (SNH GeMS database), which is now no longer there. This site has clear potential to be a source for the replenishment of a number of key species and habitats in the Clyde, which would help to restore the natural ecosystem, improve fish stocks for commercial and recreational fishermen and help redress the ecological balance which appears to have been lost.

Prohibiting mobile demersal fishing gear from this site would also allow for further study on the effects of relatively lower impact activities, such as creeling, on features such as the maërl or coarse shell gravel with burrowing sea cucumbers - an area of research currently lacking in data.

St. Kilda SAC

33. Do you support the management approach for this protected area?
Yes, we fully support the proposed management approach to prohibit the use of mobile demersal fishing gear throughout the site.

34. Do you agree with the economic, social and environmental assessments of the impact of the management approach?
We agree with the management advice to remove/avoid pressure for the reefs, as any activity which has abrasive impacts or which causes an increase in suspended sediment on or near the reefs may risk the health of the bed and the biodiversity it supports. Bedrock and stony reef habitats are important seabed structures, providing a refuge and nursery grounds for juvenile fish and shellfish.

The use of static gear on and around the reefs should be monitored closely to ensure that this practice is conducted sustainably and without causing damage to the reef structure or its typical species. An Appropriate Assessment may be necessary if deemed to have any likely significant effects. St Kilda is a UNESCO World Heritage Site and boasts internationally important colonies of many species of seabird and an extensive history and cultural heritage. Static gear use should be subjected to an Appropriate Assessment and should be monitored to ensure that foraging seabirds, cetaceans and basking sharks are not at risk from entanglement in creel lines. Should any evidence arise to indicate that damage was being caused, static gear should be prohibited from this SAC. Set nets should be prohibited from this site to prevent entanglement of foraging seabirds.

Treshnish Isles SAC

35. Do you support the preferred approach (number 1) for managing this protected area?
Yes, we fully support the proposed management approach (1) to prohibit the use of mobile demersal fishing gear throughout the site.

36. If you answered no to Question 35, do you support the other approach?

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No, we do not support approach 2; a zonal management approach for mobile demersal fishing gear is inappropriate for a site of this size and complexity of the reef features.

37. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?
We agree with the management advice to remove/avoid pressure for the reefs, as any activity which has abrasive impacts or which causes an increase in suspended sediment on or near the reefs may risk the health of the bed and the biodiversity it supports. Bedrock and stony reef habitats are important seabed structures, providing a refuge and nursery grounds for juvenile fish and shellfish.

The use of static gear on and around the reefs should be monitored closely to ensure that this practice is conducted sustainably and without causing damage to the reef structure or the species which rely on it. An Appropriate Assessment should be carried out and should any evidence arise to indicate that damage was being caused, static gear should be prohibited from this SAC.

The Treshnish Isles SAC is a relatively small area (1962 ha) and the reef structure is a complex shape. We are concerned not only about the potential difficulty of navigating around the reef, but also the indirect effects of mobile demersal fishing, such as stirring up of sediment that may smother the reef and the epifauna that lives on it. There is also a considerable danger of scallop dredges deployed on the neighbouring sediments running over the edges of the reef. A zonal management approach is not only inappropriate for this site, but entirely unnecessary given the extensive area of suitable fishing ground in the surrounding area.

Upper Loch Fyne and Loch Goil MPA

38. Do you support the proposed high level of protection for the recovery of the flame shell bed?
Yes, we fully support the proposed protection for the recovery of flame shell beds and the conservation of seagrass beds in the Upper Loch Fyne and Loch Goil MPA. These habitats are highly sensitive to a range of anthropogenic impacts, including mobile demersal fishing gear, and little is understood about the potential impacts of anchoring and static gear (which may also be high, depending on the intensity of deployment in the area). Flame shell beds are important ecosystem engineers and provide a nursery ground and refuge for many species, including commercial fish and shellfish. The ecological and economic importance of these habitats justifies the highest possible protection.

39. If you support a high level of protected for the flame shell bed should provision be made to permit certain activities under specific circumstances?
No, we do not support the use of activities such as deployment of static fishing gear within flame shell bed recovery areas. While we acknowledge that static fishing methods, such as creeling are thought to be more sustainable and less impactful on the marine environment, we contend that the recovery areas should be no take zones. Flame shell beds are slow growing and slow to recover following disturbance. Given the conservation objective of 'recover' for the flame shell beds in this MPA, we think it is essential that all pressures are removed from these areas to maximise recovery potential. If a permit scheme were to be implemented in these areas for creeling, it would need to be subjected to an environmental impact assessment first in order to ensure that a carrying capacity

in terms of the number of creels was not exceeded and damage to the flame shell bed is not likely to occur. The recovery areas would also need to be closely monitored to ensure that illegal or 'ghost' creeling was not occurring. Furthermore we would not support activities such as anchoring or deployment of moorings adjacent to the flame shell beds without environmental impact assessment to determine whether there is a risk of damage (e.g. abrasion from chains/ropes in extreme weather).

We would support activities that do not directly impact on the marine features within the site, such as recreational sea angling and recreational SCUBA diving.

40. Do you support the preferred spatial approach (number 1a) for managing recovery of the flame shell bed?
Yes, we support the proposed flame shell bed recovery area in Approach 1a.

41. If you answered no to question 40, do you support the other approach for managing recovery of the flame shell bed?
No, we do not support the proposed flame shell bed area in Approach 1b, as the boundary of this smaller area does not provide enough of a buffer from mobile demersal fishing activities. Furthermore, we agree that, given the conservation objective of 'recover' for flame shell beds, the recovery area should provide maximum scope for an increase in extent of the bed.

42. Do you support the preferred approach (number 2a) for managing the rest of the protected area?
No, we do not support the proposed approach 2a for managing the rest of the site.

43. If you answered no to question 42, do you support the other approach for managing the rest of the protected area?
No, we do not support the proposed approach 2b for managing the rest of the site.

44. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?
We agree with the management advice to remove/avoid pressure for flame shell beds, horse mussel beds and ocean quahog. These features are all sensitive to activities which cause abrasion (e.g. some mobile demersal fishing gear) and are slow-growing, long-lived species that are slow to recover following disturbance.

However we do not think that the management advice for burrowed mud and sublittoral mud and specific mixed sediment communities goes far enough for the conservation of these habitats and their component species. Figure P3-7 in the consultation documents show records of species which inhabit or occur on the surface of these muddy sediment habitats, including fireworks anemones, horse mussels and ocean quahog. While we note that the permitted fishing zones in Approaches 2a and 2b predominantly avoid these species records, it should be emphasized that these are known records and it is likely that these species are dispersed throughout the MPA. All of these component species make a vital contribution to the integrity and resilience of these habitats through helping to stabilise sediments and through long-term bioturbation as a result of burrowing activity. A more

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precautionary approach should be taken in this site to place higher priority on the muddy habitats and their conservation as a whole (with their component species) in order to ensure the conservation objectives are met. Given that the advice is remove/avoid targeted fishing for ocean quahog, a species associated with mud and mixed sediment communities, and their risk of being bycaught in *Nephrops* fisheries, such a precautionary approach is merited for this species alone, even before considering the numerous other infaunal and epifaunal species associated with these sediments. We therefore contend that management advice should be remove/avoid pressure from the sublittoral mud and specific mixed sediment communities and burrowed mud habitats in this site.

We agree that a zonal approach to fisheries management is not suitable for this MPA and therefore do not support Approaches 2a and 2b. Given that Upper Loch Fyne and Loch Goil are narrow waterbodies, and that the boundaries of the proposed fishing permit zones have been delineated very close to many of the protected features within the site, we believe that there is a risk to the overall integrity of the site and therefore to the achievement of the conservation objectives. Furthermore, as discussed for the South Arran MPA, prohibiting mobile demersal fishing activity from the Upper Loch Fyne and Loch Goil MPA will contribute toward improving the ecological status of the wider Clyde Sea area and, as a secondary outcome, toward a more strategic and sustainable spatial approach to managing the Clyde *Nephrops* fishery. The productivity of the *Nephrops* fishery would be improved by an ecosystem approach to management in which the infaunal biota that bioturbate the sediment and maintain the complexity and stability of the entire habitat are adequately protected[51] [52].

Therefore we contend that the use of mobile demersal fishing gears should be prohibited throughout this MPA. We support the continuation of static fishing on the burrowed mud, provided that this is subjected to an environmental impact assessment to ensure that the carrying capacity of the lochs is not exceeded. The use of static gear in this site should be monitored closely to ensure that this practice is conducted sustainably.

We recognise that this approach will have short and mid-term impacts for a small number of fishing boats that currently fish the area. It is anticipated that a closure to bottom-towed fishing gear in this area will improve the wider ecological health of our seas and provide long-term, beyond-the-site benefits for commercial fishermen.

Wester Ross MPA

45. Do you support the preferred approach (number 2) for managing the protected area?
No, on the basis that Approach 2 has been superseded by the results of the recent survey conducted by the Scottish Wildlife Trust and Fauna & Flora International, with the support of Scottish Natural Heritage, that identified several previously unrecorded maërl beds[53]. The Scottish Government must

[51] Greathead, C. F., Donnan, D. W., Mair, J. M., & Saunders, G. R. (2007). The sea pens Virgularia mirabilis, Pennatula phosphorea and Funiculina quadrangularis: distribution and conservation issues in Scottish waters. *Journal of the Marine Biological Association of the United Kingdom, 87(05), 1095-1103.*
[52] Hiscock, K. (2005) DEEP-WATER MUD HABITATS. *MARINE HEALTH CHECK 2005, 71.*
[53] https://mapsengine.google.com/11652905973052914667-16418225618007921019 4/mapview/?authuser=0

now take account of these findings and extend the zones in prohibiting mobile demersal gear accordingly in approach 2, including a suitable buffer zone to protect the maërl from potential secondary effects of towed gear (such as smothering by disturbance of adjacent sediment). Our suggested management zones, taking these new findings into account, are illustrated in Figure 3.

46. If you answered no to question 43, do you support the other approach?
No, we do not support approach 1 as we do not think that it goes far enough for the protection of the features in this site.

47. Should static gear fisheries be restricted in the areas essential to the recovery of maërl beds and flame shell beds?
We seek clarification as to why the proposed management areas for the recovery of maërl beds and flame shell beds in this site are not referred to as 'recovery zones', in line with the South Arran MPA maërl recovery zones and the Upper Loch Fyne and Loch Goil MPA flame shell bed recovery zones. We also seek assurance that the ambition for recovery of the Wester Ross maërl and flame shell beds is equal to that of the other two sites and that these areas will become part of the statutory management of this MPA.

We support the highest possible level of protection for the recovery of maërl and flame shell beds in the Wester Ross MPA. The impacts of static gear such as creels on sensitive marine habitats is a poorly researched area. We acknowledge that it is a less damaging and potentially more sustainable method of fishing than use of mobile demersal fishing gear. However, there is potential for physical damage to sensitive structures such as maërl and, at high intensities, overfishing can occur (e.g. in Loch Torridon, where MSC certification for the *Nephrops* creel fishery was revoked in 2011 due to unsustainable fishing). Given that the maërl beds in particular are in poor condition[54], and that this site is one of only three which has been assigned a conservation objective of recover (for maërl beds and flame shell beds), the Scottish Government must adopt ambitious and meaningful management measures within this MPA. We agree that use of static gear should be prohibited from the maërl and flameshell recovery zones. However, if static gear is permitted under an amended Approach 2, it should be submitted to an environmental impact assessment and the number of creels should be strictly limited thorugh a permit scheme.

48. Under either approach should the Summer Isles be zoned by depth to enable scallop dredging to continue.
We seek clarification and further information around this question. At what depth would scallop dredging be permitted? Would there be a buffer zone between prohibited depths and permitted depths to protect maërl from secondary impacts?

As a general point we would not support the continuation of scallop dredging around the Summer Isles. The recent maërl bed discovery (see question 45) strongly suggests that there are likely to still be areas of sensitive habitats yet to be discovered. Since the maërl in this site is considered in poor condition already[50], and since maërl will not necessarily be restricted to commonly accepted depth

[54] Moore, C.G. 2014. Upper Loch Fyne and Loch Goil pMPA and Wester Ross pMPA – the identification of conservation management areas to support protected feature recovery. *Scottish Natural Heritage Commissioned Report No. 764.*

ranges (e.g. <30m), we recommend that scallop dredging should be restricted around all areas maërl is likely to be found.

49. Do you agree with the economic, social and environmental assessments of the impact of the management approaches?

We support the management advice to remove/avoid pressure from maërl beds, flame shell beds and maërl or coarse shell gravel with burrowing sea cucumbers. While we acknowledge that static fishing methods, such as creeling are thought to be more sustainable and less impactful on the marine environment, we contend that the recovery areas should not permit the use of static gear. Maërl and flame shell beds are slow growing and slow to recover following disturbance; maërl sometimes taking longer than 10 years to exhibit signs of recovery[55]. Given the conservation objective of 'recover' for the maërl and flame shell beds in Wester Ross MPA, we think it is essential that all pressures are removed from these areas to maximise recovery potential. We support the continuation of hand-diving for shellfish (at sustainable levels), recreational diving and sea angling as more sustainable activities that are compatible with the conservation objectives of the features within the recovery zones.

We support the inclusion of the management zone in approach 2 to protect part of the burrowed mud habitat from bottom-towed fishing activities but believe there to be a strong case for further fisheries management areas for burrowed mud within this MPA. We support the management advice of remove/avoid pressure for tall seapens and reduce/limit pressure for burrowed mud and circalittoral muddy sand communities. However, we do not agree with the management advice for kelp and seaweed communities on sublittoral sediment, and northern featherstar aggregations on mixed substrata. Kelp and seaweed communities are also key habitats, providing refuge for a variety of epifauna and fish species,acting as a carbon sink and providing coastal protection. However, whilst we think the management advice for this feature should be upgraded, given its ecological importance and sensitivity to damage by demersal fishing gear, we are satisfied that the extent of this feature within Wester Ross MPA is captured within the proposed management zones. Northern featherstar aggregations are a key component of benthic communities, particularly in Scotland where it uniquely occurs in shallower water than its normal known depth range, and is known to be vulnerable to physical disturbance by mobile demersal fishing gear. Additionally, as is the case for all the benthic features listed for this site, they are also impacted by changes or degradation of their habitat or changes to local hydrology caused by habitat modification. We assert that it is essential to remove/avoid pressure from active fishing gear for these benthic features. Furthermore, we suggest that the management advice for sea pens should also be reconsidered as remove/avoid pressure. Although the smaller two species of sea pens have been noted to be more resilient and impacts of mobile demersal gear are thought to be lower in comparison to the tall sea pen, the ecological traits of these three species is similar (e.g. sessile, projecting above the surface of the sediment, suspension feeding) and we suggest a more precautionary approach to ensure minimal impact on these important component species of burrowed mud.

[55] Hall-Spencer, J. M. and Moore, P.G. (2000). Scallop dredging has profound, long-term impacts on maërl habitats. *ICES Journal of Marine Science 57, 1407-1415*

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Noting the management advice for mobile gear fisheries is specifically remove/avoid from aggregations of tall seapens, we question why neither of the management proposals appear to remove this pressure from the known records of tall seapens and, as such, we fail to see how the conservation objective can be met for this feature. We suggest a minimum extension to the proposed management zones of approach 2 (see Figure 3) to include more of the known occurrences of tall sea pens and sea pens (as per our suggestion to upgrade the management advice for the other two species of sea pen).

Wyre and Rousay Sounds MPA

50. Do you support the management approach for this protected area?
Yes, we support the proposed approach to prohibit the operation of mobile demersal fishing gear throughout this site.

51. Do you agree with the economic, social and environmental assessments of the impact of the management approach?
We support the management advice to remove/avoid pressure from maërl beds and kelp and seaweed communities on sublittoral sediment. These types of habitat act as a refuge for juvenile fish and a safe feeding ground for larger marine animals, but are sensitive to disturbance by the operation of mobile demersal fishing gear. Keeping this site free of bottom-towed fishing activities will help to preserve its unique geological character and the biodiversity it supports.

We support the continuation of the use of static fishing gear such as creels in this MPA, provided that it is subjected to an environmental impact assessment and is closely monitored to ensure that the sensitive protected habitats are not being damaged and fishing is occurring at sustainable levels. Should any evidence arise to indicate that damage was being caused, static gear should be prohibited from this MPA.

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For more information, please contact:
Calum Duncan
(Scotland Programme Manager, Marine Conservation Society;
Convener of the LINK Marine Task Force).
E-mail: Calum.Duncan@mcsuk.org
Phone: 0131 226 6360

or Esther Brooker
(LINK Marine Policy Officer)
Email: esther@scotlink.org
Phone: 0131 659 9047

www.scotlink.org

Appendix

The following maps illustrate suggested amendments to proposed management measures. The management zones displayed in these maps are not to scale and are for illustrative purposes only.

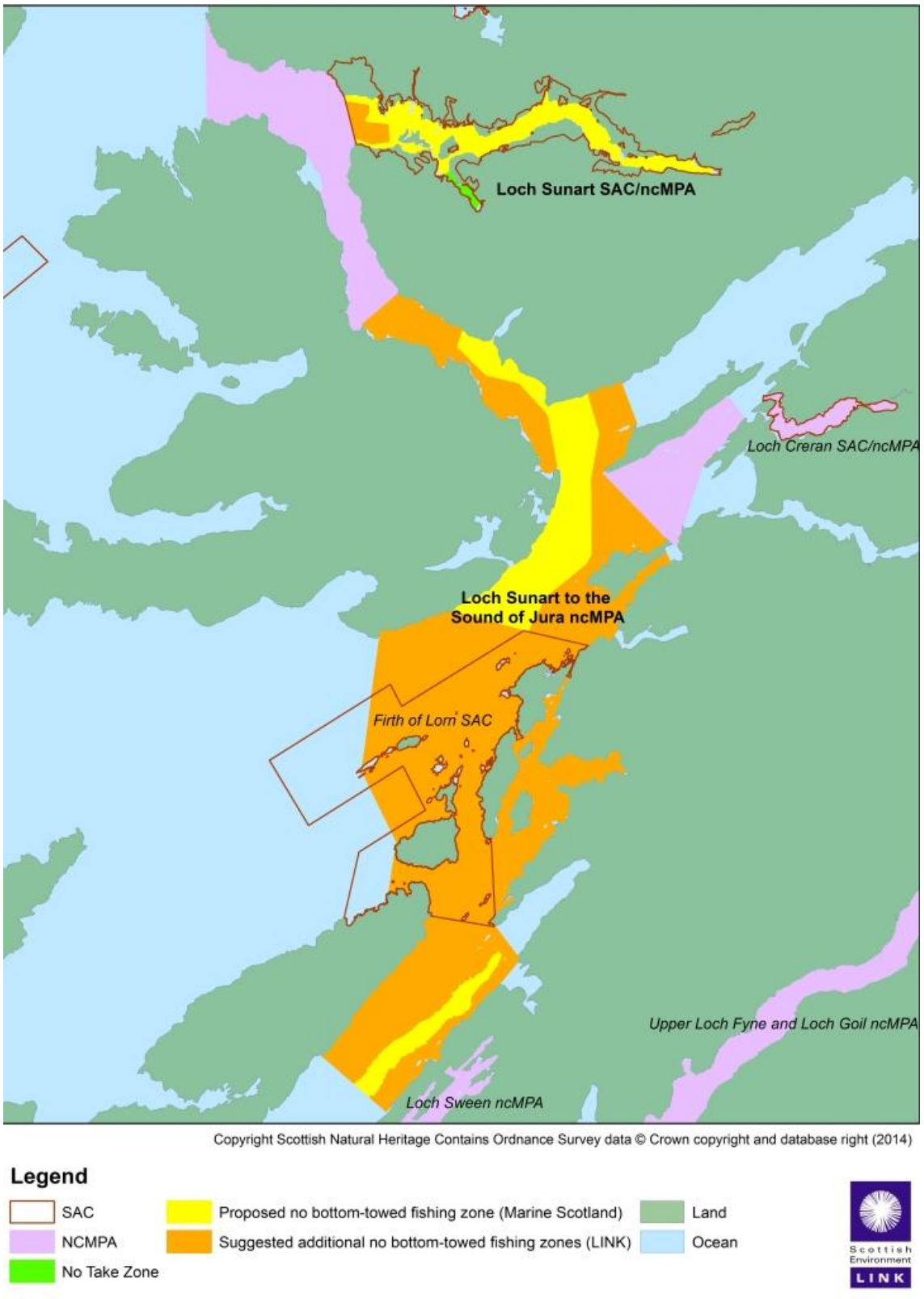

Figure 1: Loch Sunart to the Sound of Jura nature conservation MPA/SAC. Mobile demersal gear prohibitions should be implemented in the orange areas, in addition to the proposed (yellow) areas.

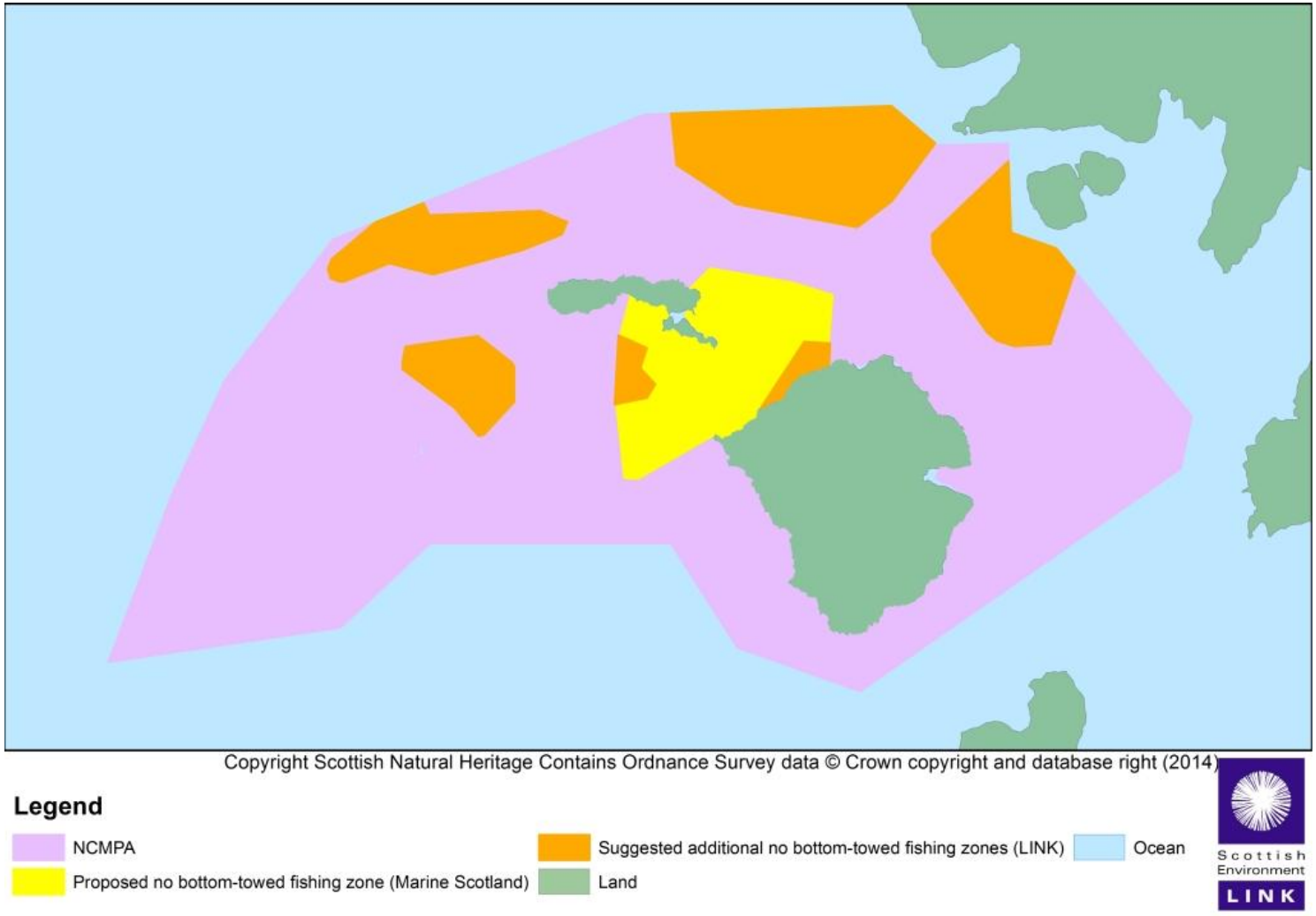

Figure 2: Small Isles nature conservation MPA. Mobile demersal gear prohibitions should be implemented in the orange areas, in addition to the proposed (yellow) areas.

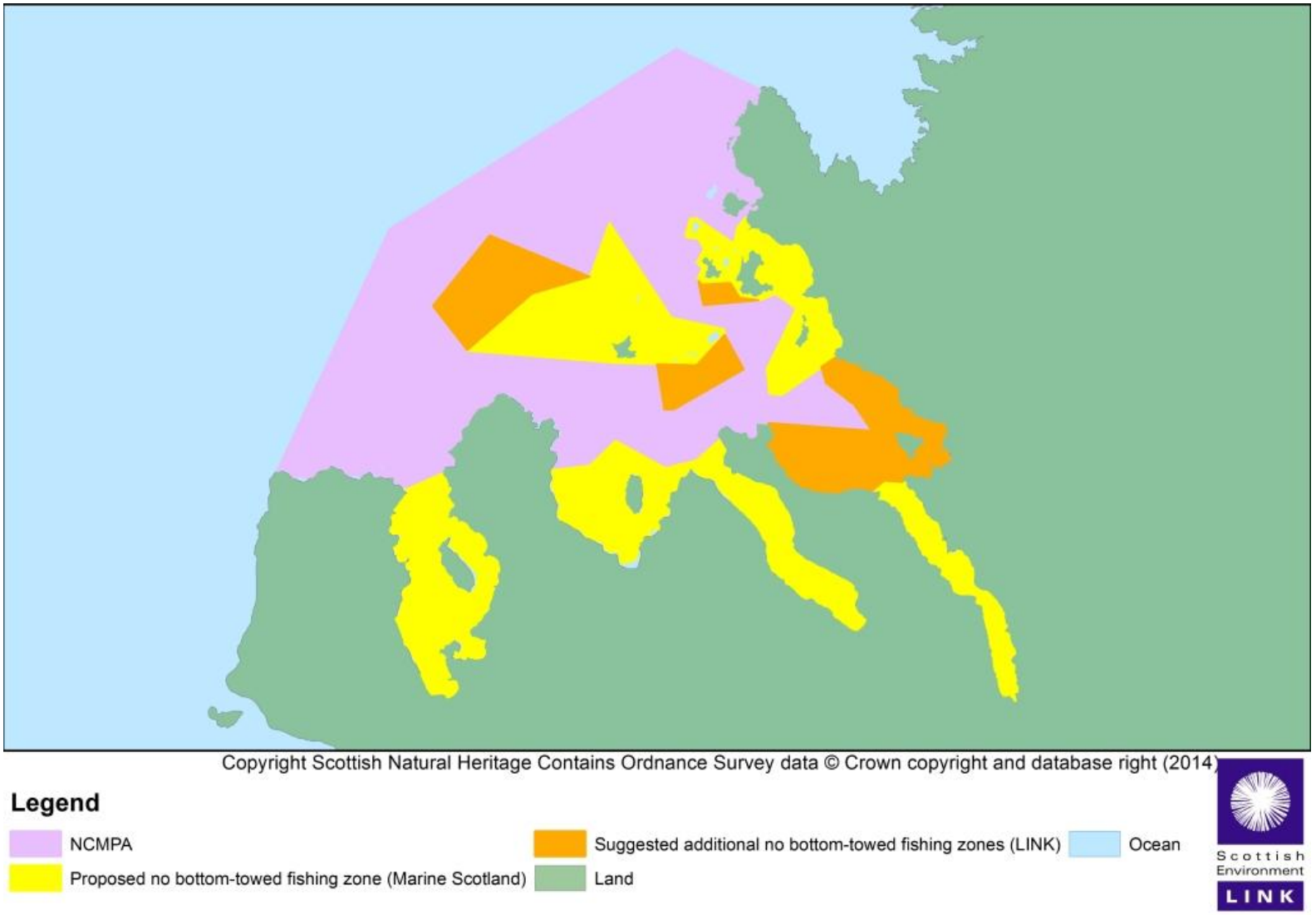

Figure 3: Wester Ross nature conservation MPA. Mobile demersal gear prohibitions should be implemented in the orange areas, in addition to the proposed (yellow/purple) areas.