

**Scottish MPA Programme
Assessment against the MPA Selection Guidelines**

NORTH-EAST LEWIS POSSIBLE MPA

JUNE 2019

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Purpose

This document provides details of the assessment of North-east Lewis possible MPA against the [Scottish MPA Selection Guidelines](#). It presents the assessment for each of the proposed protected features.

We have used the terminology set out in the Selection Guidelines to describe the five main stages in the assessment process from the identification of MPA search locations through to the development of MPA proposals. This area has become a possible MPA because, following advice from SNH, Scottish Ministers have decided to consult on whether it should be formally designated.

The main terms used are described below.

MPA search location - this describes a location identified at stage 1 until it passes the assessment at stage 4.

Potential area for an MPA - if an MPA search location passes the assessment at stage 4 it goes on to become a potential area for an MPA for consideration at stage 5.

MPA proposal - a potential area for an MPA that has passed the assessment at stage 5 and which has been formally recommended for designation by SNH and/or JNCC to Scottish Ministers.

Possible MPA - an MPA proposal approved by Scottish Ministers for public consultation. From this time the location is given policy protection as if it were designated.

MPA search features - specified marine habitats, species and large-scale features that underpin the selection of MPAs.

Geodiversity features - specified geodiversity interests of the Scottish sea bed categorised under themed 'blocks' that are analogous to the MPA search features for biodiversity.

Representative features - habitats and/or species which are not MPA search features or key geodiversity features. They have been assessed to determine whether they would add to the broader representativity of the network.

Proposed protected feature - any feature (habitats, species, large-scale features [MPA search features and/or representative features] and/or geodiversity features) which has been proposed by SNH and/or JNCC for designation.

History of development

North-east Lewis possible MPA was identified for the following MPA search features - Risso's dolphin and sandeels. Quaternary of Scotland and Marine Geomorphology of the Scottish Shelf Seabed geodiversity features are also present and have been recommended for inclusion.

North-east Lewis possible MPA encompasses part of the Northern Minch third-party MPA proposal that was identified for Risso's dolphins and white-beaked dolphins. The latter species was subsequently ruled out of further consideration as part of the Scottish MPA Programme (see SNH, 2014 for further details).

Details of supporting evidence are provided in the North-east Lewis possible MPA data confidence assessment.

NORTH-EAST LEWIS POSSIBLE MPA - APPLICATION OF THE MPA SELECTION GUIDELINES

Stage 1 - Identifying search locations that would address any significant gaps in the conservation of MPA search features

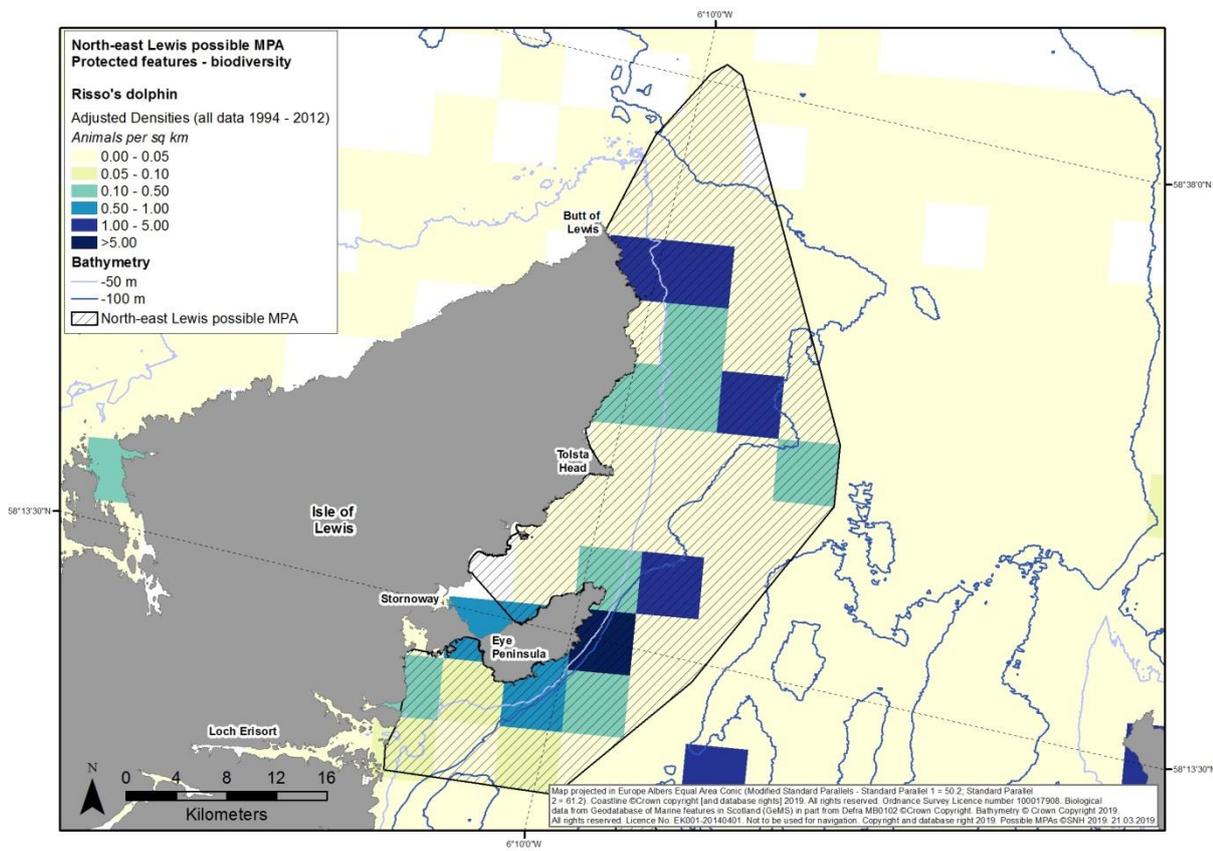
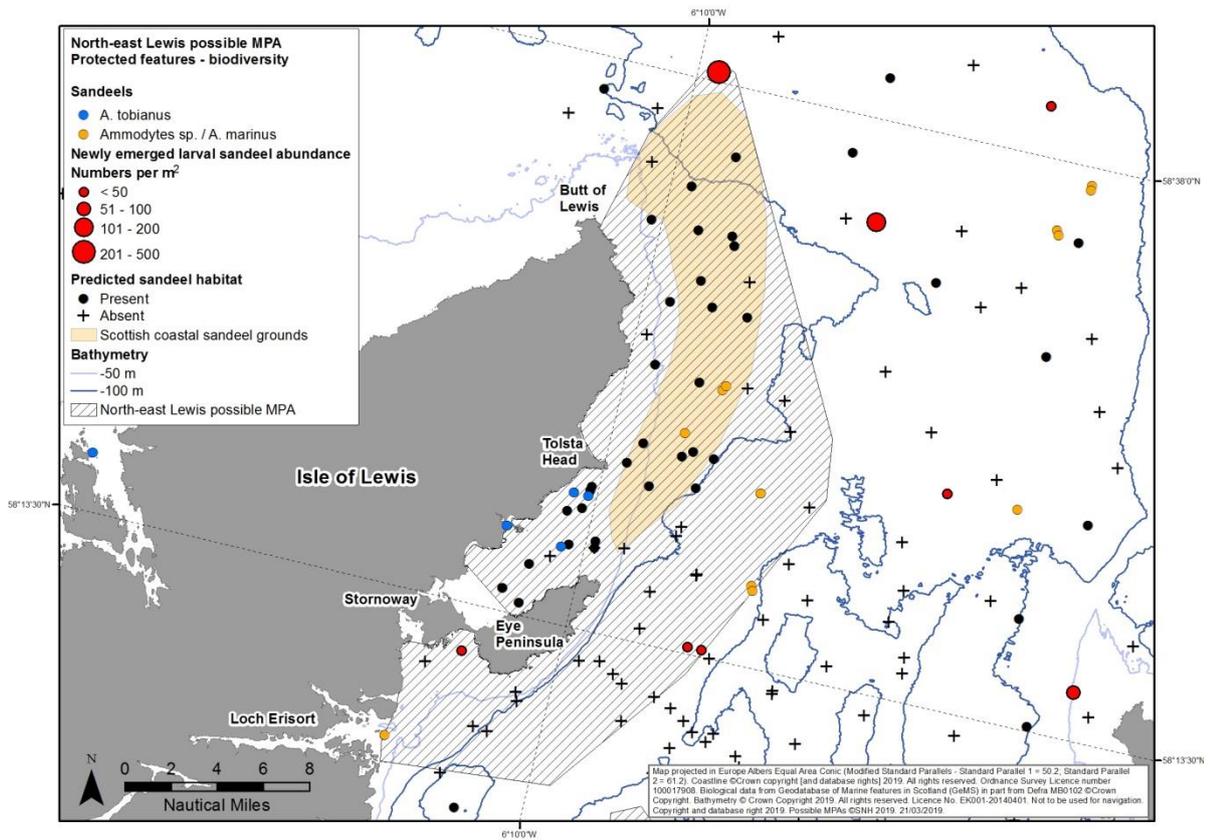
Summary of assessment	North-east Lewis possible MPA encompasses two biodiversity features: Risso's dolphins and sandeels. The protected features also include Quaternary of Scotland interests (represented by glaciated channels/troughs, landscape of areal glacial scour and megascale glacial lineations) and Marine Geomorphology of the Scottish Shelf Seabed interests (represented by longitudinal bedform fields).
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Detailed assessment			
Proposed protected features	Guideline 1a <i>Presence of key features</i> [MPA search features and geodiversity equivalents]	Guideline 1b <i>Presence of features under threat and/or subject to rapid decline</i>	Guideline 1c <i>Functional significance for the overall health and diversity of Scottish seas</i>
<i>Biodiversity</i>			
Risso's dolphin	✓	✓ T&D ¹	
Sandeels ²	✓	✓ T&D ¹	
<i>Geodiversity</i>			
Quaternary of Scotland (glaciated channels/troughs, landscape of areal glacial scour, megascale glacial lineations)	✓		
Marine Geomorphology of the Scottish Shelf Seabed (longitudinal bedform field)	✓		

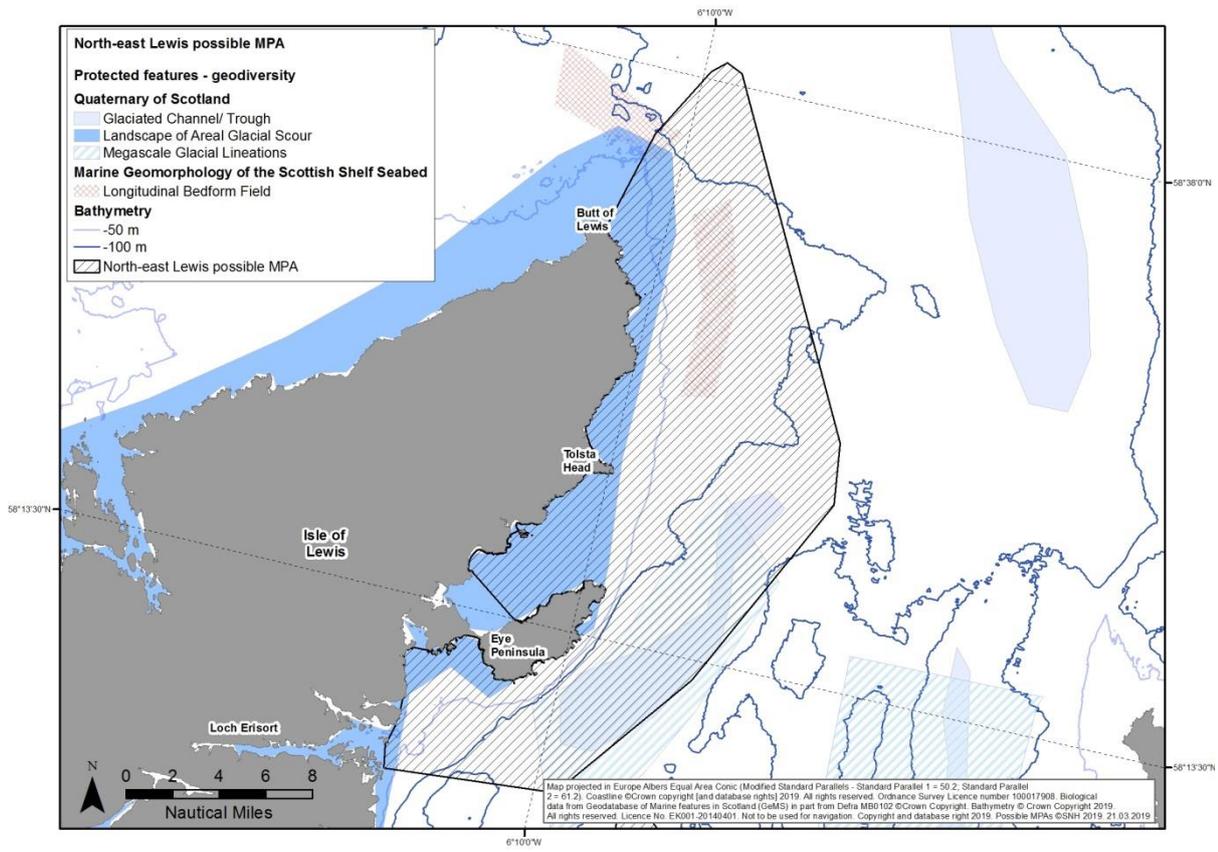
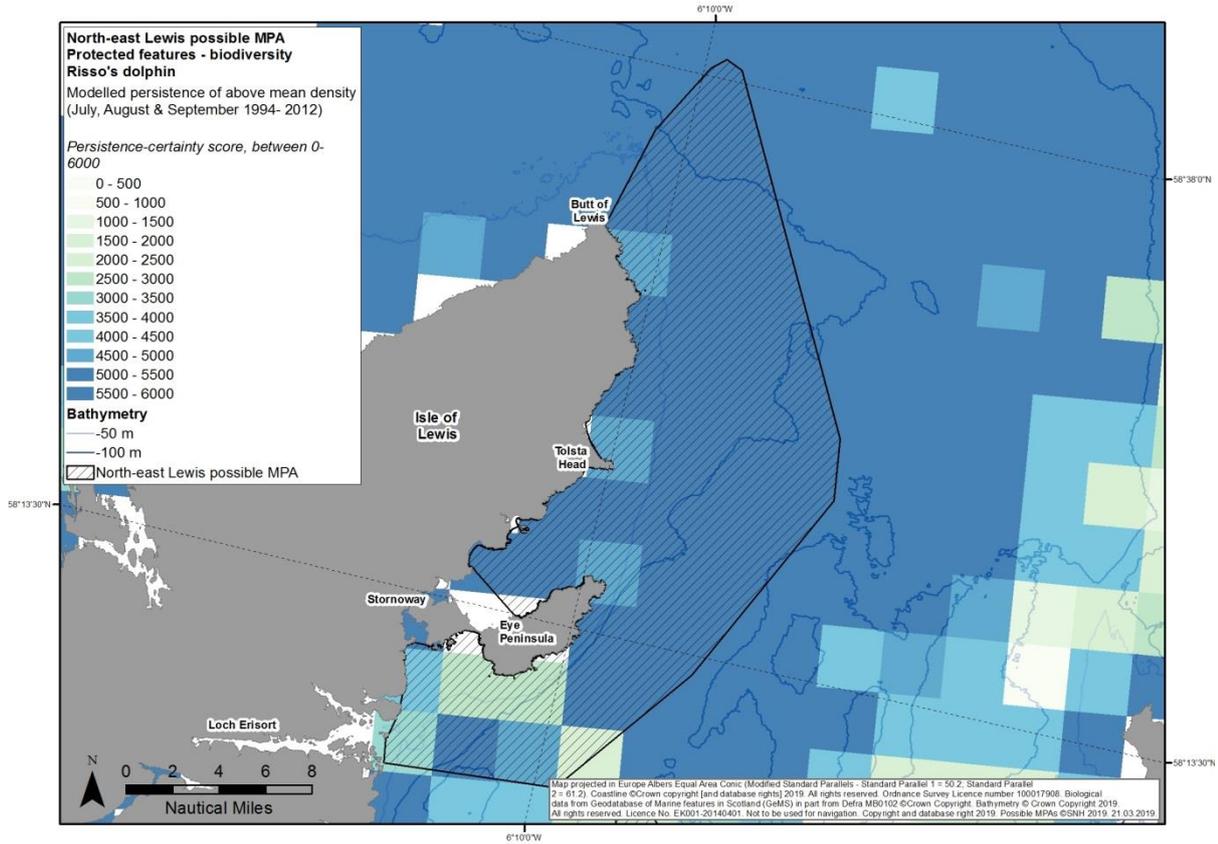
¹ Feature considered to be under threat and/or in decline in Scottish waters (see <https://www.nature.scot/snh-commissioned-report-388-identification-priority-marine-features-scottish-territorial-waters> for further details).

² Note that this includes more than one species of sandeel. Both *Ammodytes marinus* and *A. tobianus* have been recorded within the possible MPA.

Maps of North-east Lewis possible MPA showing the known/modelled distribution³ of proposed protected features



³ Note: Grid boxes used in modelling work are 5 x 5 km.



Stage 2 - Prioritisation of search locations according to the qualities of the MPA search features they contain

Summary of assessment

The possible MPA contains a combination of features, with functional links between the various Quaternary of Scotland interests (an assemblage of geodiversity features representing a classic glacial landscape) and between the Marine Geomorphology of the Scottish Shelf Seabed feature and sandeels. It also contains coherent examples of the biodiversity features including the whole of the coastal sandeel ground in this location. For Risso's dolphins it contains an area predicted by habitat modelling work (and supported by effort-corrected sightings) to persistently support above average densities of Risso's dolphins. All of the proposed protected features are considered to be in a relatively natural state, although there is some uncertainty over the sandeel species for which population estimates/trends are not available. A recent minimum population estimate for Risso's dolphins in the area is available however, how this value has varied over time is unknown (Weir *et al.*, 2017). A number of human activities are capable of affecting the proposed protected features but all are currently considered to be in a relatively natural condition. Risso's dolphins and the geodiversity features are considered to be at low risk of significant damage by human activities whereas sandeels are considered to be at high risk based on a regional risk assessment for the west coast of Scotland.

All of the relevant Stage 2 guidelines have been met. NB Guideline 2b only applies to habitats and so has not been assessed.

Detailed assessment

Guideline 2a The search location contains combinations of features, rather than single isolated features, especially if those features are functionally linked

The possible MPA encompasses two mobile species MPA search features: Risso's dolphin and sandeels (with two species of sandeels recorded within the possible MPA). Marine Geomorphology of the Scottish Shelf Seabed and Quaternary of Scotland geodiversity interests are also included. There is a functional link between the sandeels and Marine Geomorphology of the Scottish Shelf Seabed proposed protected features. The sandeel and Quaternary of Scotland proposed protected features should also be viewed within the context of related protected features of existing MPAs.

- There is a seasonal presence of Risso's dolphin throughout the possible MPA. Sightings are highest during the late summer months; however, there is evidence that Risso's dolphins are present throughout the year, albeit in lower numbers (SNH, 2012). Adjusted density surfaces indicate that Risso's dolphins are particularly recorded to the south and east of the Eye Peninsula, and between Tolsta Head and the Butt of Lewis (Paxton *et al.*, 2014).
- The approach and rationale behind the selection of MPAs for sandeels was outlined within a position paper presented to the 4th MPA stakeholder workshop in March 2012 (Marine Scotland Science, 2012). On the basis of long-term research and monitoring work regarding sandeel ecology and population connectivity in Scotland's coastal and marine areas the position paper recommended that a number of areas known to be important for sandeels should be included within new MPAs / possible MPAs. The Marine Geomorphology of the Scottish Shelf Seabed is represented by longitudinal bedform fields. The components of this feature include sand / sediment banks and wave fields which serve as habitat for sandeels.
- The possible MPA contains an assemblage of Quaternary of Scotland features (landscape of aerial scour, mega-scale glacial lineations and glaciated troughs/channels). The latter two overlap with the Summer Isles to Sula Sgeir key geodiversity area and complement the assemblage of features within Wester Ross MPA. Together the assemblage of Quaternary of Scotland interests represents a classic glacial landscape and helps support our understanding of repeated glaciation events (Brooks, 2013).

Guideline met

Guideline 2b The search location contains example(s) of features with a high natural biological diversity	
This guideline applies to seabed habitats only	Not relevant to the proposed protected features in North-east Lewis possible MPA.

Guideline 2c The search location contains coherent examples of features, rather than smaller, potentially more fragmented ones	
Risso's dolphin	Risso's dolphins are long-lived and slow to breed, they are estimated to live for between 20-30 years (Taylor <i>et al.</i> , 2007), maturing at around 8-12 years. Around the UK, group sizes are typically in the region of 6-12 individuals (Evans, 2008). There is no information to determine what a minimum viable population for Risso's dolphin might be, or the size of area required to support a viable population. However, there is evidence that the possible MPA is an essential area for Risso's dolphin (Weir <i>et al.</i> , 2017). Habitat modelling (Paxton <i>et al.</i> , 2014) predicts that the area supports persistently above average relative densities of the species, while effort-corrected sightings data indicate that relatively high numbers of Risso's dolphin occur within the possible MPA, with an apparent peak during summer and autumn months. Photo-identification studies (Atkinson <i>et al.</i> , 1998; Dolman <i>et al.</i> , 2013; Weir <i>et al.</i> , 2017) have identified repeat sightings of individual animals between years, indicating that Risso's dolphin may be semi-resident within the possible MPA, or at least consistently return to the same area. Mother and calf pairs, as well as groups of juveniles, have been observed within the possible MPA (Dolman <i>et al.</i> , 2013), suggesting the area may be being used as a calving and nursery area. For example, during 24.1 hrs of encounter effort from boat-based surveys between 2010 and 2017, calves occurred within 37.5% of sightings (Weir <i>et al.</i> , 2017).
Sandeels	The possible MPA contains a former sandeel fishing ground which had the largest annual landings for the west coast fishery. Whilst the aggregation does not represent a population, larval data and fishery landings do indicate it is a notable component of a larger patchy population with other areas known to be important for sandeels. A study of connectivity using otolith chemistry demonstrated that this aggregation is well connected to those in the north west North Sea, especially west of Orkney (Gibb <i>et al.</i> , 2017). There are records of larval and adult presence and potential habitat across the possible MPA. Spawning in this area has been confirmed from densities of newly emerged larvae in plankton surveys (MSS, 2012).
2c - Result	Guideline met.

Guideline 2d The search location contains features considered least damaged / more natural, rather than those heavily modified by human activity	
Risso's dolphin	A study during the 1990s identified at least 142 animals in the North Minch (Atkinson <i>et al.</i> , 1998) with most animals recorded within the boundary of the possible MPA (where the study was mainly focussed). Further boat-based photo identification surveys in the southern half of the MPA occurring in 2010-2017 identified a minimum population size of 117 animals (Weir <i>et al.</i> , 2017). Habitat modelling suggests that North-east Lewis possible MPA supports persistently higher than average densities of Risso's dolphin during summer. Annual cetacean surveys in the area in the 1990s and over the last seven years also consistently record Risso's dolphin (Atkinson <i>et al.</i> , 1998; Dolman <i>et al.</i> , 2013; Weir <i>et al.</i> , 2017). The main threats to Risso's dolphin in Scottish waters are considered to be entanglement / bycatch, disturbance and pollution.
Sandeels	There is no current fishery for sandeels in the wider North Minch. There are no current abundance estimates or trend data for sandeels within the possible MPA. Whilst sandeels have been fished here in the past, the reduction in recent effort and their short life span means that sandeels currently present within the possible MPA are expected to have a natural age and size composition.
Geodiversity features	The Quaternary of Scotland and Marine Geomorphology of the Scottish Shelf Seabed geodiversity features are considered to be in a natural state within the possible MPA.
2d - Result	Guideline partially met.

Guideline 2e The search location contains features considered to be at risk⁴ of significant damage by human activity	
Risso's dolphin	Based on a regional risk assessment the proposed protected feature is considered to be at low risk overall. However, the level of information available to inform the sensitivity scoring is generally limited for this species and the confidence is low. Risso's dolphins are considered to be at medium risk from death or injury through collision with renewable energy infrastructure or through bycatch in pelagic trawl fisheries. They are considered to be at low risk from death or injury associated with other types of fishing (such as drift or set netting) or through collision with commercial shipping, and at low risk of disturbance from military activity.

⁴ Information on the sensitivity of the MPA search features to pressures and their associated activities was taken from FEAST (FEature, Activity, Sensitivity Tool - <http://www.marine.scotland.gov.uk/FEAST/>). The degree to which an MPA search feature is exposed to activities / pressures to which it is sensitive at a regional scale was assessed to provide a qualitative measure of risk. Risk assessments for the various activities were examined to produce an overall qualitative risk assessment by region (Chaniotis *et al.*, 2014). The conclusions may therefore not reflect the level of risk at the scale of the MPA. Site-specific activities and pressures are considered in further detail within the *conservation objectives and advice to support management* paper produced for this MPA.

Guideline 2e The search location contains features considered to be at risk⁴ of significant damage by human activity	
Sandeels	<p>On the basis of a regional risk assessment undertaken for the west coast of Scotland, there is considered to be a high risk of significant damage to this feature arising from human activity (a cumulative assessment considering the range of activities known to be taking place). Sandeels are characterised by bank affiliated resident juvenile and adult life stages (Kunzlik <i>et al.</i>, 1986; Wright <i>et al.</i>, 1998) coupled to specific areas of sediment (Wright <i>et al.</i>, 2000) with dispersal to other areas confined to a drifting larval stage (Wright and Bailey, 1996; Proctor <i>et al.</i>, 1998; Munk <i>et al.</i>, 2002; Jensen <i>et al.</i>, 2003; Christensen <i>et al.</i>, 2008) and a short pelagic juvenile phase (Jensen <i>et al.</i>, 2003). Tagging studies have also found that recapture rates decline rapidly beyond 10 km, indicating limited movement of settled sandeels (Gauld, 1990). This life strategy renders sandeel aggregations potentially vulnerable to localised depletion by fishing or other pressures (MSS, 2012). In addition, sandeel growth rates in Scottish waters are low relative to that of most North Sea grounds (Boulcott <i>et al.</i>, 2007) and areas of habitat are small relative those in the central and eastern North Sea (Freeman <i>et al.</i>, 2004).</p> <p>Historically, sandeel fishing off the west of Scotland has only been managed by a precautionary Total Allowable Catch (TAC), with no account taken of the spatial intensity of effort. Evidence from some North Sea sandeel fisheries indicates localised depletion of grounds (ICES, 2010). A larval transport model has indicated that the sandeel ground within this possible MPA has the potential to provide a source of recruits to many other grounds that were previously fished (Proctor <i>et al.</i>, 1998).</p>
Geodiversity features	<p>Regional risk assessments have not been completed for geodiversity features. However, information is available on the likely sensitivity of these features to pressures arising from human activity (Brooks, 2013). The landscape of areal glacial scour component of the Quaternary of Scotland feature has either a low sensitivity rating or is not sensitive to human activities (having been formed originally by glacial action). The Marine Geomorphology of the Scottish Shelf Seabed geodiversity feature is primarily considered sensitive to changes in tidal flow, physical change (deposition of materials on the sea bed such as concrete mattresses, rock dumping, and moorings) and physical removal (sediment extraction). These pressures may be associated with marine energy production (wave and tidal turbines and associated infrastructure) or other coastal developments. In the vast majority of instances, most pressures associated with marine anthropogenic activities will not be sufficient to impact geological and geomorphological seabed features (Brooks, 2013).</p>
2e - Result	<p>Guideline met.</p> <p>This is not an assessment of activities that require management within the possible MPA. That assessment is provided in the <i>conservation objectives and advice to support management paper</i>.</p>

Stage 3 - Assessing the appropriate scale of the search location in relation to search features⁵ it contains

Detailed assessment

The size of the search location should be adapted where necessary to ensure it is suitable for maintaining the integrity of the features for which the MPA is being considered. Account should also be taken where relevant of the need for effective management of relevant activities

Evidence from modelling work shows that the possible MPA contains areas predicted to support persistently higher than average densities for Risso's dolphin. The results of the modelling are underpinned by adjusted density data (1994-2012), dedicated boat and shore-based surveys (2010-2017) and photo-identification work (1996, 2010-2017). The possible MPA also encompasses the whole of the Scottish coastal sandeel ground to the north-east of Lewis and areas of habitat suitable for supporting both *A. marinus* and *A. tobianus*. The size and shape of the possible MPA is driven by Risso's dolphin for the southern and eastern boundaries, and by sandeels for the northern boundaries. The boundary provides good representation of Quaternary of Scotland (glaciated channels/troughs, landscape of areal glacial scour, megascale glacial lineations) and Marine Geomorphology of the Scottish Shelf Seabed (longitudinal bedform fields) geodiversity interests, although these features also extend outwith the site.

Guideline met.

Stage 4 - Assessing the potential effectiveness of managing features within a search location as part of a Nature Conservation MPA

Summary of assessment

The possible MPA passed the assessment against the Stage 4 guideline. This resulted in the original MPA search location progressing as a potential area for an MPA to Stage 5.

Detailed assessment

There is a high probability that management measures, and the ability to implement them, will deliver the objectives of the MPA

The conservation objectives for all proposed protected features within this possible MPA are 'to conserve'.

A number of activities are considered capable of affecting the proposed protected features (see 2e above) and there is therefore a need to consider whether additional management is required.

Statutory mechanisms exist (Fisheries Orders or Marine Conservation Orders) to support the introduction of spatial / temporal measures to conserve the feature within the possible MPA. For example, Fisheries Orders have already been used to underpin management of marine Special Areas of Conservation and Marine Conservation Orders for MPAs. There is also a range of voluntary measures in place that could contribute to achieving the conservation objectives (e.g. the Scottish Marine Wildlife Watching Code). There is therefore potential for management measures to be implemented successfully and the conservation objectives of the MPA to be achieved. Further discussion is required with those involved in using the possible MPA to provide clarification on interactions between the protected features and known activities / developments.

Additional details are provided in the *conservation objectives and advice to support management* paper produced for this possible MPA.

⁵ Setting the size and shape of a possible MPA considers the distribution of MPA search features and relevant geodiversity features. The latter, which are analogous to the biodiversity search features, were defined after the publication of the MPA Selection Guidelines (refer to Brooks *et al.*, 2013).

Stage 5 - Assessment of the contribution of the potential area to the MPA network

Summary of assessment	Guideline met - if designated the possible MPA would make a significant contribution to the MPA network.
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Detailed assessment

The potential area contributes significantly to the coherence of the MPA network in the seas around Scotland

Assessment of biodiversity features

Feature	Representation	Replication	Linkages	Geographic range & variation	Resilience
Risso's dolphin	The only contiguous area in Scottish territorial waters predicted to support persistently higher than average densities, high effort-corrected sightings, re-sights of individual dolphins between years, presence of juveniles and mother-calf pairs.	There is no replication within the MPA network. However, current evidence (from modelling work) indicates that there are no other areas that could be considered 'essential' for Risso's dolphins.	Peak sightings occur during summer and autumn, although animals are present, albeit at potentially lower abundance, all year round.	Provides an example of an essential area for Risso's dolphin on the west coast of Scotland.	If future information suggests additional areas are essential, then further consideration should be given to identifying additional MPAs.
Sandeels	Locally high densities of sandeel larvae near to suitable sedimentary habitats and the highest maximum annual landings of any west coast sandeel ground.	Should this possible MPA be designated there would be replication of important areas for sandeels in MPAs within OSPAR Regions II and III (see SNH and JNCC, 2012; SNH, 2014).	Significant potential for larval export to other north-west grounds.	Extends coverage of geographic range within the MPA network to the west of Scotland. Empirical and modelling studies indicate this area is likely to provide a source of larval recruits to other north-west grounds.	Whilst sandeels are not on the OSPAR T&D list, they are considered to be threatened and/or declining in Scottish waters. The purpose of the network is to protect those sandeel aggregations that have the potential to provide a source of recruits for other Scottish grounds. The possible MPA serves as a potential source of larvae for other areas of suitable habitat off north-west Scotland.

Assessment of geodiversity features	
Geodiversity features ⁶	<p>The North-east Lewis possible MPA contains Quaternary of Scotland and Marine Geomorphology of the Scottish Shelf Seabed interests. In terms of the Quaternary of Scotland feature, the possible MPA overlaps with part of the Summer Isles to Sula Sgeir Fan key geodiversity area, as represented by mega-scale glacial lineations and glacial channels/troughs. These seabed features provide evidence of the former presence of ice-streams on the continental shelf. Other components of this key geodiversity area are represented within the Wester Ross MPA (designated in July 2014). The landscape of glacial scour, whilst not part of the key geodiversity area, complements the other Quaternary of Scotland features. In fully assessing the contribution that this site makes to the conservation of marine geodiversity in Scotland's seas, the Quaternary of Scotland components need to be considered alongside those within the Wester Ross MPA because it is the assemblage of interests present and not simply the individual features that determine the scientific importance of the contribution to the Scottish MPA network. Together, these two sites represent an assemblage of features of international scientific importance. The data available on the component geodiversity interests are at a coarse resolution only.</p> <p>Sources: Brooks <i>et al.</i>, 2013; Gordon <i>et al.</i>, 2013 (and references therein).</p>

⁶ For geodiversity the stage 5 assessment primarily considers the contribution of the potential areas to the principal 'networks' of marine geodiversity interests present in Scottish waters (representation). The MPA Selection Guidelines propose that there should be minimal duplication of geodiversity features at a national level.

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