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Scottish MPA Programme

Detailed Assessment against the MPA Selection Guidelines

RED ROCKS AND LONGAY POSSIBLE MPA

DECEMBER 2021

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Background & purpose

Under the Marine (Scotland) Act 2010, Scottish Ministers can designate an MPA on an urgent basis without publishing notice of their proposals or consulting those likely to be affected. Red Rocks and Longay was designated as an MPA in this way on 10 March 2021 to protect flapper skate eggs and the most extensive known example of high-density egg-laying habitat in Scottish waters.

An MPA designated on an urgent basis lasts for a maximum of two years. Normal procedures for protected area designations, including public consultation, need to be undertaken to create (re-designate) an MPA so that it is not time limited.

Survey work undertaken over the course of 2021 has improved understanding of the distribution and nature of flapper skate egg-laying habitat within and adjacent to the MPA and at other locations around Scotland where eggs have been found in smaller numbers. As a result, the Red Rocks and Longay possible MPA boundary has been extended to the north and north-west to encompass new multiple egg records and suitable egg-laying habitat. Quaternary of Scotland glacial landforms were also identified through the 2021 work programme. The geodiversity interests are intrinsically linked to the biodiversity feature and have been incorporated into the possible MPA.

This document provides details of the assessment of Red Rocks and Longay possible MPA against the Scottish MPA Selection Guidelines. The designation of Red Rocks and Longay as an urgent MPA means that some of the stages set out in the selection guidelines (e.g. reference to MPA search locations etc.) are not directly relevant to this site. However, for comparative purposes the format and style used for MPAs designated between 2014 and 2020 have been adopted. Details of supporting evidence are provided in the Red Rocks and Longay Data Confidence Assessment.

Terminology

The main terms used in the assessment 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 NatureScot 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.

Protected feature - any feature (habitats, species, large-scale features and/or geodiversity features) specified within the site Designation Order.

RED ROCKS AND LONGAY POSSIBLE MPA - APPLICATION OF THE MPA SELECTION GUIDELINES

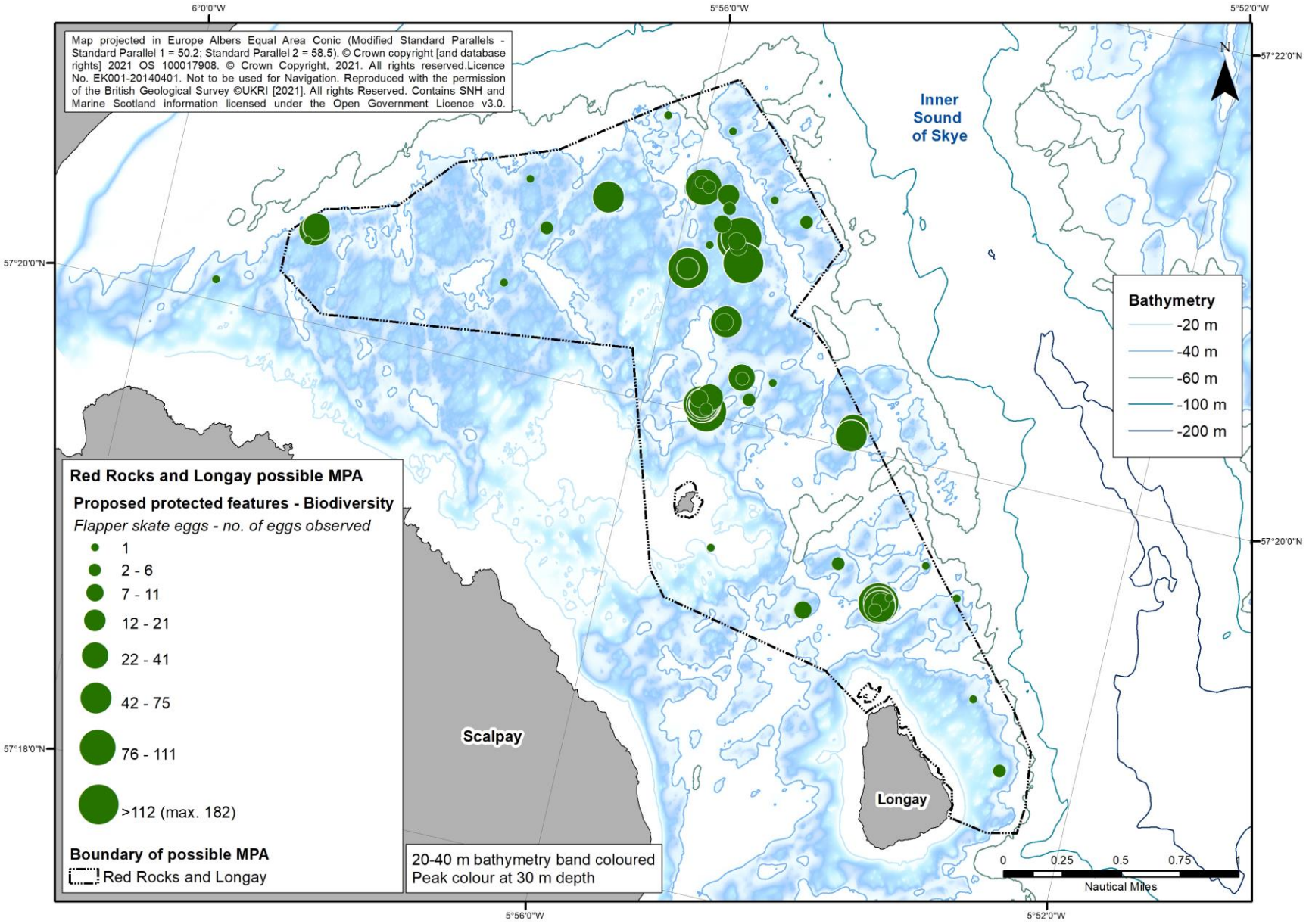
Stage 1 - Identifying search locations that would address any significant gaps in the conservation of MPA search features

Summary of assessment	The Red Rocks and Longay possible MPA will further the conservation of flapper skate (*Dipturus intermedius*), with a particular focus on their eggs and egg-laying habitat. Flapper skate are considered critically endangered globally by the IUCN, and are extinct across large parts of their former range. Flapper skate are listed as threatened and or declining by OSPAR. There are some signs of increasing numbers in Scottish waters. The MPA is situated on a bedrock platform that supports an outstanding range of geodiversity interests representing the Quaternary of Scotland feature. The eggs of the flapper skate are closely associated with these glacial bedforms (moraines, crag and tails, and rock drumlins) which are of international scientific importance for our understanding of past glacial and interglacial cycles. The MPA overlaps with the Inner Hebrides and the Minches Special Area of Conservation, designated for harbour porpoise *Phocoena phocoena*.

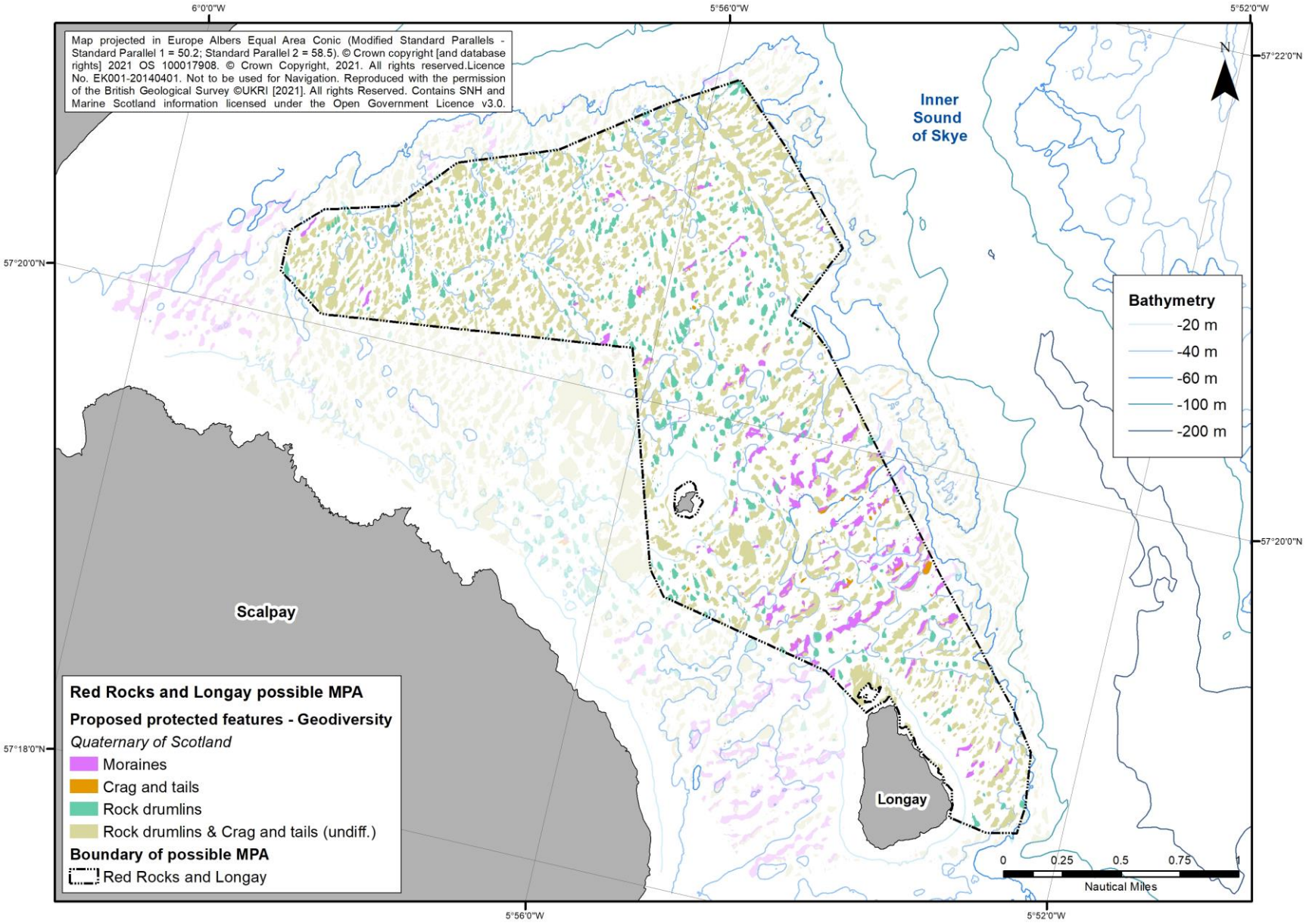
Detailed assessment

Proposed protected features	**Guideline 1a** *Presence of key features* [MPA search features and geodiversity equivalents]	**Guideline 1b** *Presence of features under threat and/or subject to rapid decline*	**Guideline 1c** *Functional significance for the overall health and diversity of Scottish seas*
Biodiversity			
Flapper skate	✓	✓ **OSPAR T&D**	
Geodiversity			
Quaternary of Scotland (moraines, crag and tails, rock drumlins)	✓		

Map of the Red Rocks and Longay possible MPA showing the known distribution of the proposed biodiversity protected feature



Map of the Red Rocks and Longay possible MPA showing the known distribution of the proposed geodiversity protected feature



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

Summary of assessment	The Red Rocks and Longay possible MPA supports the eggs and egg-laying habitat of flapper skate. The possible MPA is considered of national importance, a location where multiple clusters of numerous eggs (>50-60 eggs per cluster at some locations) are found at water depths of 25 - 40 m amongst large boulders and cobbles. Components of the Quaternary of Scotland geodiversity feature (moraines, crag and tails, and rock drumlins) play a key functional role in providing suitable habitat upon which flapper skate lay eggs. The eggs have been recorded across the site in large numbers and at various stages of development, indicating habitat use by multiple females over multiple years. The proposed biodiversity protected feature is sensitive to a range of pressures and at a regional level is considered to be at medium risk of significant damage by human activity. The Red Rocks and Longay MPA was originally designated on an urgent basis due to the feature's sensitivity and the importance of the site to the conservation of flapper skate. There have been recent records of eggs elsewhere in Scotland, but not at the overall high numbers and high densities at multiple discrete locations or over such an extensive area as within Red Rocks and Longay possible MPA. **Four of the five Stage 2 guidelines have been met** (2a - 2e). Guideline 2b is not applicable.

Detailed assessment	
Guideline 2a	**The search location contains combinations of features, rather than single isolated features, especially if those features are functionally linked**
The Red Rocks and Longay possible MPA is proposed for flapper skate and the Quaternary of Scotland geodiversity feature (specific components are moraines, crag and tails, and rock drumlins). A combination of diver, drop-down video and remotely operated vehicle (ROV) surveys have identified patchily distributed groups of large numbers of flapper skate eggs in amongst boulder and cobble habitats down to water depths of 40 m. The boulder and cobble habitats are part of the Quaternary of Scotland geodiversity feature and functionally linked with the biodiversity feature. The bedrock dominated submerged landscape supports a range of streamlined bedforms reflecting palaeo-icestream flow to the north-west. Superimposed on this glacially-eroded seabed are a number of irregular ridges, interpreted as recessional moraines, some of which can be classed as 'boulder moraine' belts up to 5 m in height, 10-20 m wide and 80-380 m in length. The mapped boulder moraines may provide particularly favourable flapper skate egg-laying habitat in terms of the quantity, extent and elevation of substrates where other physical parameters are also suitable (e.g. water depth, water flow, silt levels etc.). Survey work in 2021 also confirmed the widespread distribution of less extensive boulder and cobble habitats fringing and / or partially overlying nearly all of the crag and tails, and rock drumlins and it is clear that flapper skate also used these areas of suitable habitat for egg laying. These more localised boulder deposits are thought to have originated from glacial erosion of *in situ* bedrock (Stewart *et al*., 2022).	
2a - Result	**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 of the Red Rocks and Longay MPA.

Guideline 2c	**The search location contains coherent examples of features, rather than smaller, potentially more fragmented ones**
Flapper skate	Flapper skate are a large (up to 285 cm long and over 100 kg in weight), long-lived (in excess of 50 years), and late-maturing species (>11 years at first maturity) with low fecundity, inhabiting waters of 10 - 600 m depth. Potentially suitable egg-laying landforms extend across the whole of the possible MPA. Survey work undertaken between 2019 and 2021 has highlighted the presence of single eggs through to numerous clusters totalling in excess of a hundred eggs in close proximity (NatureScot, 2021, 2022). The numbers of eggs present indicates multiple flapper skate use the area for egg laying. The range in egg condition (i.e. from intact eggs in various stages of development to hatched egg cases) indicates the egg-laying habitat has been used over at least two years, suggesting there is a degree of fidelity by females to the site. The presence of eggs at this site was initially reported in March 2019 and egg incubation is known to be around 18 months (Benjamins *et al*., 2021). Adult flapper skate have been shown to exhibit high site fidelity (Neat *et al*., 2014, Thorburn *et al*., 2021). Ongoing genetic research will help to establish the numbers of females laying eggs here. Flapper skate eggs have been recorded at other locations on the west coast of Scotland and in the Northern Isles (see Figure 1) but not in the overall numbers or high egg densities at multiple discrete locations nor across as extensive areas of suitable habitat as within the Red Rocks and Longay pMPA. Up to 40 eggs have been recorded to the south of Lunna Ness in Shetland (Shelmerdine and Shucksmith, 2021), off south-east Shapinsay in Orkney (Orkney Shark Trust *pers. comm*.), and an estimated 55 eggs in total around rocky reefs in Loch Melfort on the west coast (Dalriada Dive Club, 2021; Seasearch, 2021). The possible MPA represents an essential area for a key life cycle stage of flapper skate and such areas are considered to offer the best opportunities for spatial protection measures to contribute to the conservation of this species. This possible MPA will complement the Loch Sunart to Sound of Jura MPA that provides protection for adult flapper skate. It will also complement existing fisheries measures that restrict any landing or retaining adults on board vessels.
2c - Result	**Guideline met.**

Guideline 2d	**The search location contains features considered least damaged / more natural, rather than those heavily modified by human activity**
Flapper skate	The Red Rocks and Longay possible MPA was first designated on an urgent basis to protect flapper skate eggs and egg-laying habitat. Flapper skate were once widespread and abundant throughout Scottish waters, but have shown a marked decline and significant range contraction over the past century, largely as a consequence of removal by fisheries (Walker and Hislop, 1998). Fishing, landing or retaining flapper skate on-board is now illegal by both commercial and recreational fishers via retained EU and domestic law (Council regulation 2019/124 Article 50; SSI 2012 No 63). Since the 1970s flapper skate have become very rare in the North Sea and are now listed on the IUCN Red List as Critically Endangered, and listed as threatened and declining by OSPAR (OSPAR, 2008 a and b, 2010) although there are some signs of increased numbers in Scotland in recent years (Rindorf *et al*., 2020; ICES, 2020). Whilst flapper skate eggs have been recorded over a broad geographic range on the west coast and in Shetland and Orkney, there is no comparable location to the Red Rocks and Longay possible MPA in terms of high egg densities at multiple discrete locations and overall egg numbers. Eggs examined by divers from one location within the MPA in 2019 were at different development stages from newly laid to almost ready to hatch, to hatched and deteriorating (Dodd *et al*., in press). Flapper skate eggs take ~18 months to hatch (Benjamins *et al*., 2021) therefore some of the eggs (those almost ready to hatch and those that are empty) have been on the seabed for around 18 months - 2 years, whilst some have been recently laid (on the seabed for only a few weeks). This suggests that the site has been used over more than two years. There is no literature to describe the number of eggs laid by a single female flapper skate in a year but skate species generally lay two eggs at a time within a few days of each other (Luer and Gilbert, 1985). The number of eggs observed over the wider area of Red Rocks and Longay possible MPA therefore suggests that multiple females are laying eggs in the site. Genetic analysis of the samples taken from the eggs at Red Rocks will help determine if multiple females are laying them. There is no indication that the consolidated boulder and cobble habitat used for egg-laying is modified and this is considered particularly unlikely in the areas where there are significant banks of larger boulders or where this habitat fringes or overlies bedrock. Therefore, it is considered that the features within the possible MPA are in a natural state (albeit that the populations of adult flapper skate have been modified by human activity).
Geodiversity	The Quaternary of Scotland geodiversity interests are distributed across the MPA. The components of the geodiversity feature were formed during repeated glaciations over at least the last 500,000 years (Brooks *et al*., 2013). Within the MPA, the geodiversity interests are entirely natural in origin and are not considered to have been modified by human activity (Stewart *et al*., 2022).
2d - Result	**Guideline met.**

Guideline 2e	**The search location contains features considered to be at risk of significant damage by human activity (based on a qualitative risk assessment by MPA *region* - based on methods in Chaniotis *et al*., 2014).**
Flapper skate	The Red Rocks and Longay possible MPA lies within the West MPA region. On the basis of the cumulative regional risk assessment, there is considered to be a medium risk of significant damage to this feature arising from human activity (a cumulative assessment considering the range of activities known to be taking place in the MPA region). Within the region, the risk of damage from mobile, bottom-contacting fishing activity, marine infrastructure, and aquaculture is considered medium risk to the eggs and the egg-laying habitat. Creels are thought to present a low risk as most eggs are likely to be afforded some protection tucked in the

Guideline 2e	The search location contains features considered to be at risk of significant damage by human activity (based on a qualitative risk assessment by MPA *region* - based on methods in Chaniotis *et al*., 2014).
	crevices between boulders, although there is no published evidence to support this and some eggs do lie in more exposed, open positions on the seabed. Tourism and recreation-related activities are considered to pose a low risk (including potential disturbance risk to adults from angling).
Geodiversity	**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). Moraines generally are considered highly sensitive to removal of substrates and have a medium sensitivity to changes in tidal water flow, wave exposure and sub-surface abrasion. Whilst the boulder moraines present within the MPA are likely to be somewhat less sensitive, the shaping processes no longer exist and the features therefore have no recovery potential if disturbed (Stewart *et al*., 2022). The crag and tails and rock drumlins are likely to be highly resistant (having been formed originally by glacial erosion) and might be considered not sensitive, or to have a low sensitivity, to most pressures associated with human activities. However, like the moraines, these eroded rocky bedforms and their associated boulder and cobble habitats are similarly 'relict' features (defined as having no resilience).
2e - Result	**Guideline met**. This is not an assessment of activities that require management within the possible MPA. That assessment is provided in the Conservation and Management Advice paper.

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

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. (Note that size and shape considers the distribution of both biodiversity and geodiversity but primarily biodiversity features.)
The size and shape of the possible MPA reflect the distribution and extent of the proposed protected features. The boundary encompasses all records of multiple flapper skate eggs found to date, and the site is considered unique in terms of overall numbers and localised densities of eggs. The seaward boundary was drawn using a series of straight lines that broadly follow the 40 m depth contour. The possible MPA boundary extends the previous urgent MPA to the north and north-west. The landward boundary around Longay (and other outcrops including Red Rocks) is MLWS, which aligns with boundary setting principles applied to other MPAs. The boundary of the possible MPA is considered suitable for maintaining the integrity of the flapper skate egg-laying habitat including unhatched eggs. The boundary also hosts a diverse array of glacially modified bedforms providing good representation of the Quaternary of Scotland geodiversity feature. Examples of the geodiversity interests extend beyond the MPA. **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**. The existing urgent MPA has demonstrated the potential to implement effective management measures. Passing Stage 4 resulted in the possible MPA 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 objective for the flapper skate within this possible MPA is to conserve. Flapper skate are considered to be critically endangered globally, although there is some evidence of recovery in Scotland. Achievement of the stated conservation objectives will be assessed as part of 6-yearly Parliamentary reporting. A number of activities are considered capable of affecting the proposed protected features (see 2e above) and management is required to protect them. Statutory mechanisms exist (e.g. Fisheries Orders or Marine Conservation Orders) to support the introduction of spatial measures to conserve the features within the possible MPA. Implementation of the urgent MPA with the associated urgent Marine Conservation Order in 2021 has so far achieved protection of the proposed protected features. There is therefore good potential to implement management measures successfully and to achieve the conservation objectives of the MPA. Further discussion is required with those involved in using the possible MPA to provide clarification on interactions between the proposed protected features and known/ potential activities and developments. Additional details are provided in the Conservation and Management Advice paper produced for this possible MPA.

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.**

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**
Flapper skate	This is an important site for the conservation of flapper skate. There are no other known locations that support comparable numbers and densities of eggs over such an extensive area in Scotland. There is no published literature of comparable records globally that we are aware of.	Flapper skate is also a protected feature of Loch Sunart to Sound of Jura MPA, so there is replication. The two sites complement each other in protecting essential areas for two different stages of the flapper skate's life cycle. Red Rocks and Longay pMPA protects the eggs and the habitat that supports them (and the adults whilst laying the eggs, and juveniles as they hatch). Loch Sunart to Sound of Jura MPA protects adult flapper skate known to be resident in the area. There is replication of this feature in the Scottish MPA network and within OSPAR Region III (see SNH and JNCC, 2012; Cunningham *et al.*, 2015).	Unknown. The egg-laying behaviour of adult flapper skate is little understood, however, multiple females have used the site over multiple years. Ongoing genetics research will help to ascertain any connectivity to flapper skate in other areas.	Middle of geographic range. Flapper skate are found almost exclusively in Scotland from Argyll to the Shetland Isles. The Loch Sunart to the Sound of Jura MPA is considered essential for resident adults, and the Red Rocks and Longay possible MPA is essential for egg-laying habitat. This pMPA ensures the Scottish MPA network reflects the range of known essential areas for flapper skate.	There is replication within OSPAR Region III to address the lack of replication in the Scottish MPA network and between OSPAR regions and known decline within Scotland's seas historically. If future information highlights other essential areas, then further consideration would be given to identifying additional MPAs in other OSPAR Regions.

Assessment of geodiversity feature (primarily considers the potential contribution to the principal 'networks' of marine geodiversity interests in Scottish waters (representation)

Geodiversity features	The Inner Sound was not highlighted as a key geodiversity area previously (Brookes *et al.*, 2013); primarily because the detailed assessment and processing of high resolution multibeam data and subsequent interpretation for the area has only recently been undertaken (Stewart *et al.,* 2022). This area is scientifically important because it contains an outstanding range of Quaternary of Scotland glacial landforms that are of international importance for our understanding of past glacial and interglacial cycles. They also play a key functional role in the supporting the egg-laying activities of the critically endangered flapper skate within the Red Rocks and Longay possible MPA. Further information on the coverage of geodiversity features within the MPA network is provided in Gordon *et al*. (2013).

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Figure 1 The known wider distribution of subtidal flapper skate egg records across Scotland