

Conservation and Management Advice

COLL AND TIREE SPA

UK Site: 9020310

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This document provides advice to Public Authorities and stakeholders about the activities that may affect the protected features of the Coll and Tiree Special Protection Area (SPA). It provides advice from Scottish Natural Heritage (SNH) (operating under the name of and hereinafter referred to as NatureScot) under Regulation 33(2) of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) to other relevant authorities on the Conservation Objectives for the Coll and Tiree SPA, and any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species for which the site has been designated. It covers a range of different activities and developments but is not exhaustive. It focuses on where there is a risk to achieving the Conservation Objectives. The paper does not attempt to cover all possible future activities or eventualities (e.g. as a result of accidents), and does not consider cumulative effects.

Further information on marine protected areas and management is available at -

<https://www.gov.scot/policies/marine-environment/marine-protected-areas/>

For the full range of MPA site documents and more on the fascinating range of marine life to be found in Scotland's seas, please visit -

www.nature.scot/mpas or <https://jncc.gov.uk/advice/marine-protected-areas/>

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1. Overview of document

This document provides details of the Conservation and Management Advice for the Coll and Tiree Special Protected Area (SPA) and it is divided into eight main sections. The introduction in section 2 gives an overview of the Coll and Tiree SPA and its contribution in terms of conservation and wider benefits. Section 3 provides an overview of the roles of the various bodies involved with advising, regulating and managing the SPA. Section 4 describes the protected features and their condition, and section 5 introduces the Conservation Objectives for the site. Section 6 describes the threats and pressures to which the protected features are sensitive, and section 7 provides the management advice for these activities. Section 8 identifies what further research and surveys may be required to increase our understanding of how the protected features utilise the site for which they are designated.

Annex 1 sets out the Coll and Tiree SPA Conservation Objectives. Annex 2 provides supporting information relating to the protected features.

Throughout this document the term Special Protection Area (SPA) is used in relation to the site name, e.g. Coll and Tiree SPA or in discussion of the specific legislation relating to the site. Otherwise the term Marine Protected Area (MPA) is used when discussing the MPA network generally. The term *qualifying features* is used in the Conservation Objectives to refer to those Annex 1 and regularly occurring migratory bird species that the Coll and Tiree SPA has specifically been designated to protect. Within the wider document text, the term *protected features* is used to refer both to these specific site features and more generally to species or habitats protected through MPA designations.

2. Introduction

2.1 Purpose statement

The Coll and Tiree SPA has been designated to protect two species of inshore wintering waterfowl; great northern diver and common eider, and their supporting habitats. By doing so it contributes to the Scottish, UK and OSPAR MPA networks, the conservation of the wider marine environment around Scotland, and progress towards Good Environmental Status within the North-East Atlantic marine region.

The main purpose of the Coll and Tiree SPA is to contribute to the [Favourable Conservation Status](#) of the protected features in the Atlantic Biogeographic Region. The Conservation Objectives form the framework for establishing appropriate management measures and assessing all future plans and projects that have the potential to affect the protected features of the MPA.

2.2 Conservation benefits

The conservation benefits of the Coll and Tiree SPA are:

- Protecting over 18% (approximately 450 birds) of the great northern diver (an Annex 1 rare and vulnerable species) GB population which regularly winter in this area, representing the fourth largest concentration of this species in Scotland.
- Protecting over 2% (approximately 1500 birds) of the common eider GB population which regularly winter in this area, some of which may remain and use the area during the breeding season, representing the sixth largest wintering concentration of this species in Scotland.
- Protecting sheltered waters with rich marine habitats that support a diversity of pelagic and demersal fish, crustaceans and bivalve molluscs where great northern diver and common eider can feed, moult and roost.

2.3 Wider benefits

The protected features of the Coll and Tiree SPA provide ecosystem services locally and to the wider marine ecosystem. We describe these ecosystem services in terms of their functions (the support or provision of something to the wider ecosystem e.g. habitat, nutrient cycling, sediment stabilisation) and natural resources (e.g. fish and shellfish, aggregates, wildlife), which in turn lead to benefits for people.

Figure 1 illustrates how the protected features of the Coll and Tiree SPA contribute to benefits for people.

The protected features, especially when taken within the context of the whole MPA and/or local ecosystem, contribute to certain functions more than others, e.g. biomass production and nutrient cycling, and are fundamental to the continued supply of natural resources and benefits associated with this MPA, and to the long-term health of the protected features.

In terms of resources, the MPA comprises rocky coastlines, numerous bays, and relatively sheltered, shallow inshore waters over mud, sand and gravel sea beds, interspersed with submerged rocky ledges. These diverse marine habitats support a variety of natural resources including fish, shellfish (including juveniles), mammal and bird species, in particular high densities of wintering great northern divers and common eiders.

The rich and varied natural resources present within the MPA give rise to a wide range of benefits to people. The unique seascapes and wildlife within the MPA provide opportunities for tourism, recreation and wildlife watching, all of which encourage local jobs and businesses. Fisheries and supporting businesses from local communities within and around the MPA utilise and benefit from the wildlife and the area's fish and shellfish resources. The MPA is a socially valued place by the local community, as people have worked the waters and shores of the MPA from when the first people settled on the islands. Further benefits relating to health and well-being (particularly through water sports), food and nutrition also arise from the site's natural resources, resulting in a place where communities and visitors can spend time connecting with and enjoying nature.

The benefits that arise from the functions and natural resources of the MPA are typically small in the context of the whole of Scotland, but some are of greater importance for this MPA and the people that use it. There is potential for benefits to be enhanced. This may be achieved by improving the quantity or quality (health) of the protected features themselves and/or through promoting, for example, more recreational enjoyment or use of natural resources that is compatible with the site's Conservation Objectives.

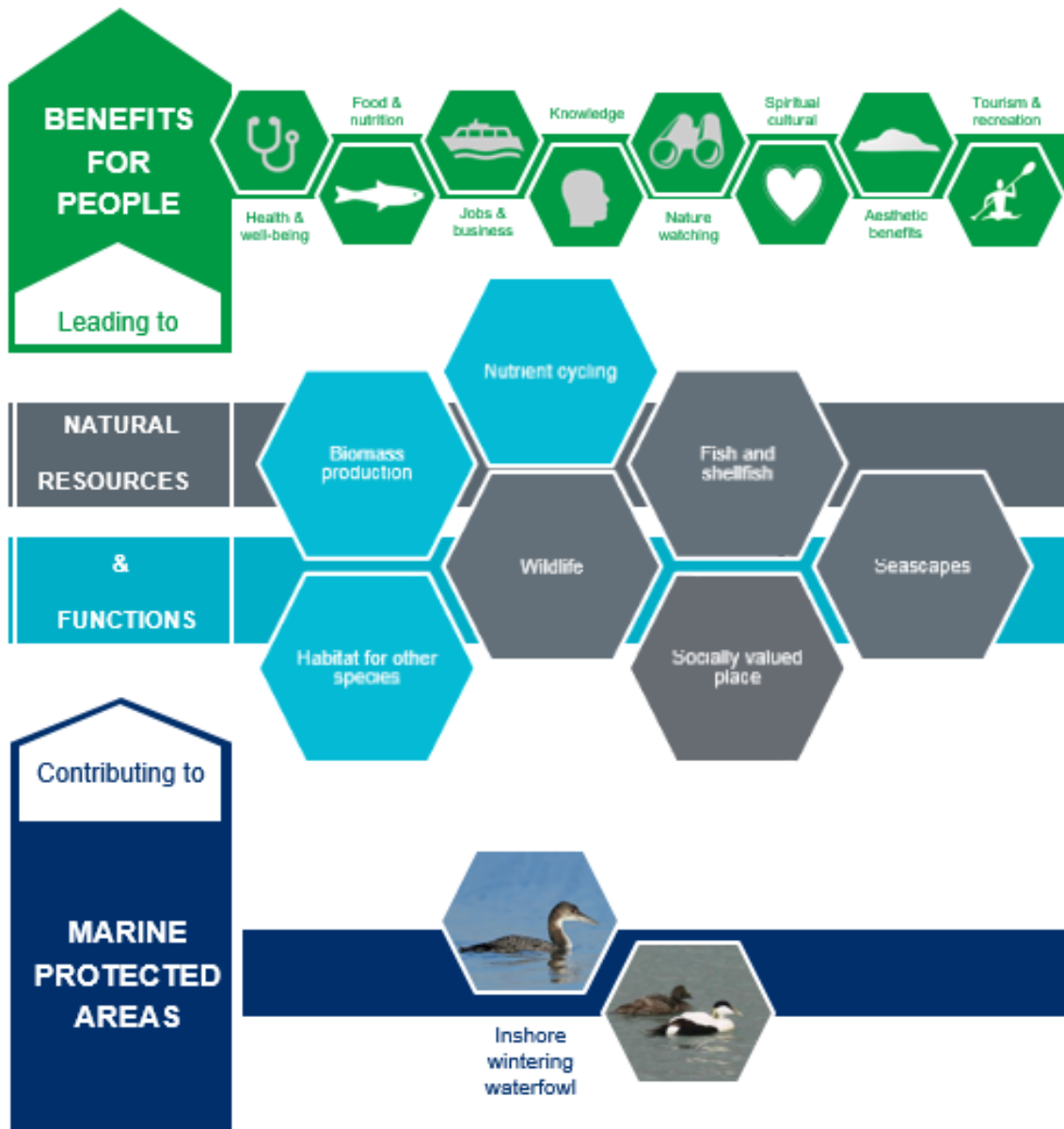


Figure 1 Benefits to people associated with protected features of the Coll and Tiree SPA.

2.4 Contribution to policy commitments

Managing the Coll and Tiree SPA to maintain the protected features in favourable condition, will ensure the continued provision of the benefits above as well as the site’s contribution to:

- An ecologically coherent network of MPAs which are well managed under the OSPAR convention and national legislation.
- Achieving Favourable Conservation Status for the protected features in the Atlantic Biogeographic Region.
- Progress towards achieving Good Environmental Status in relation to maintaining biological diversity, and ensuring marine food web abundance and diversity.
- Making a significant contribution to the protection, enhancement and health of the marine area under the National Marine Plan.

- Restoring marine and coastal ecosystems and increasing the environmental status of our seas under the Scottish Biodiversity Strategy.
- Helping to adapt to climate change under The Scottish Climate Change Adaptation Programme.

3. Roles

This document provides advice for the Coll and Tiree SPA in relation to activities that may affect the protected features. More detailed advice can be provided to public authorities to inform their decision making as required. In doing this, our aim is to ensure the Conservation Objectives for the protected features are met.

The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (the “Habitats Regulations”) under Regulation 33(2), make special provisions for the protection of European marine sites, requiring SNH (now referred to as NatureScot) to advise other relevant authorities of the Conservation Objectives for a site, and also of the operations which may cause deterioration of the habitats or species, or disturbance of species protected in the SPA.

It is the role of the relevant and competent authorities¹ to ensure that the activities they regulate, permit or license do not hinder the achievement of the Conservation Objectives of the Coll and Tiree SPA. The management advice in this document is provided to assist authorities in managing the activities outlined in section 7 and undertaking Habitats Regulations Appraisals of plans and projects.

Stakeholders can provide additional evidence to support the development of management including local knowledge of the environment and of activities. This will contribute to the development of well-designed and effective management measures.

4. Protected features and status

Coll and Tiree SPA has been selected to become part of the UK’s SPA network, contributing to Scotland’s MPA network, which in turn has been established to help conserve and recover a range of Scotland’s important marine habitats, wildlife, geology and landforms.

The protected features of the Coll and Tiree SPA are protected within the SPA throughout the year, irrespective of the season for which they qualified as a protected feature.

Table 1 provides a summary of the protected features within the MPA, their condition within the site (where known) based on the latest NatureScot [Site Condition Monitoring](#) assessment, and the broader conservation status of the protected features.

¹ A relevant authority is a body or authority that has a function in relation to land or waters within or adjacent to the site (Regulation 5) and include: a nature conservation body; a local authority; water undertakers; a navigation authority; a harbour authority; a lighthouse authority; a river purification board (SEPA); a district salmon fishery board; and a local fisheries committee. All relevant authorities are competent authorities. A competent authority is defined in Regulation 6 as “any Minister, government department, public or statutory undertaker, public body of any description or person holding a public office”. In the context of a plan or project, the competent authority is the authority with the power or duty to determine whether or not the proposal can proceed.

Table 1. Protected features and status for the Coll and Tiree SPA.

Feature condition refers to the condition of the protected feature at a site level². Broader conservation status is the overall conservation status of the feature within the UK and Europe. No assessment on the condition of the feature at the Marine Atlantic Biogeographic Region scale is available.

Protected Feature	Feature condition at site	Assessment date	Broader conservation status	
			UK ³	European region ⁴
Great northern diver (non-breeding season)	Favourable	<i>Not yet assessed</i>	Amber	Least Concern
Common eider (non-breeding season)	Favourable	<i>Not yet assessed</i>	Amber	Endangered

5. Setting Conservation Objectives

5.1 Background

Under Regulation 33(2) of the Habitats Regulations, NatureScot have responsibility for providing the Conservation Objectives for European marine sites in Scottish territorial waters. These site-level Conservation Objectives seek to define the contribution that each SPA should make to achieving Favourable Conservation Status for the protected features. They provide the framework for the setting of site conservation measures (management) and for the Habitats Regulations Appraisal of projects and plans.

The Conservation Objectives for the Coll and Tiree SPA are provided in Annex 1.

5.2 Relationship between feature condition and Conservation Objectives

The Conservation Objectives seek to *maintain* protected SPA features where evidence exists that it is in favourable condition in the site, or where there is uncertainty concerning the assessed condition of a feature (see section 4) but no reason to suspect deterioration in condition since site selection. Where evidence exists that a feature is declining and/or damaged and therefore not in a favourable condition in the site, the Conservation Objectives will seek to *restore* the protected feature.

Coll and Tiree SPA was designated in December 2020. The protected features have not been assessed since designation however, corroborative evidence suggests there is no reason to suspect deterioration in condition since site selection. Therefore, the Conservation Objectives for the Coll and Tiree SPA seek to *maintain* this condition.

² The protected features have not been assessed since designation, however corroborative evidence suggest there is no reason to suspect deterioration in condition since site selection (SNH, 2019). Hence, the feature condition is provided as condition at site selection.

³ Based on Birds of Conservation Concern 5 (BoCC5), for further details on definitions see Stanbury *et al.* 2021.

⁴ Based on BirdLife International, 2021.

5.3 Conservation priorities

On the rare occasion where the need to favour the management of one protected feature of a site over another, conservation priority will be given to the most important species/habitats to take action for and/or the most important or urgent measures to be taken.

For Coll and Tiree SPA, great northern diver is an Annex 1 species. The conservation requirements for this Annex 1 species should take precedence over the regularly occurring migratory species common eider. There are no apparent management conflicts between the protected features.

5.4 Overlapping Marine Protected Areas

The following MPA boundaries overlap with Coll and Tiree SPA:

- Inner Hebrides and the Minches Special Area of Conservation (SAC)
- Sea of the Hebrides MPA

Conservation measures in the overlapping marine areas need to ensure the Conservation Objectives of the Coll and Tiree SPA and the overlapping SAC/MPA are met. Priority would be given to the SPA and SAC features. There are currently no known management conflicts between the protected features of the MPAs.

Site information for the MPAs overlapping the Coll and Tiree SPA, including the Conservation Objectives for the sites mentioned above are available on [SiteLink](#).

6. Feature sensitivity

The following section provides an overview of the pressures associated with human activities that are most relevant to the protected features. Further information on feature sensitivity, will be made available on Marine Scotland's [Feature Activity Sensitivity Tool \(FeAST\)](#)⁵. The information in FeAST will reflect our current understanding of the interactions between activities, pressures and features. It highlights that activities can give rise to a range of pressures, which the protected features may be sensitive to. Our assessment of sensitivity is based on a feature's tolerance (response to change) and its ability to recover.

6.1 Great northern diver (non-breeding)

Great northern diver populations are considered sensitive to mortality through entanglement as incidental bycatch (Furness, 2016) and collision. There is evidence of great northern divers being sensitive to above water collision with physical structures (Furness *et al.* 2013) and potentially sensitive to underwater collision (Furness *et al.* 2012). Great northern divers are susceptible to mortality arising from oil spills, and in some instances this has had long-term impacts on local wintering populations, which may reflect poor recruitment in associated breeding populations (Heubeck, 1997). There is limited information on disturbance and displacement, although great northern divers have been recorded as taking evasive avoidance action at distances of several kilometres from approaching vessels (Jarrett *et al.* 2018) and have been identified as potentially sensitive to displacement associated with marine development (Furness *et al.* 2012; 2013). The habitat associations and prey preferences of great northern divers are poorly understood, but loss or damage of prey supporting habitat and/or reduction in food resources could have an impact on great northern divers.

⁵ <http://www.marine.scotland.gov.uk/feast/>

6.2 Common eider (non-breeding)

Eider are sensitive to mortality through collisions with marine developments and physical structures (e.g. Dierschke & Garthe, 2006; Larsen & Guillemette, 2007), entanglement as bycatch (Mendel *et al.* 2008; Žydelis *et al.* 2013) particularly near the seabed (Bradbury *et al.* 2017) and exposure to pollutants (Carboneras *et al.* 2017), including oil spills (Mendel *et al.* 2008). Eider are also sensitive to physical disturbance including displacement by built structures (Furness *et al.* 2013) and are frequently recorded taking evasive flights in association with vessel movements (Jarret *et al.* 2018). The level to which eider can become habituated to vessel movements is uncertain (Garthe & Hüppop, 2004; Schwemmer *et al.* 2011; Larsen & Laubek, 2005). The impact of some of these pressures may be greatest during their flightless moult period between July and mid-September, when large flocks aggregate in favoured locations and it is difficult for them to move away (Waltho & Coulson, 2015). Eider populations are also vulnerable to changes in availability of favoured bivalve prey (Cervencel *et al.* 2015; Mendel *et al.* 2008). (See also *Horse mussel bed sensitivity assessment in FeAST*). Studies in the Wadden Sea showed that eider can switch to a secondary prey source (surf clams), when blue mussel and common cockle numbers were severely reduced and eiders will move between foraging areas in response to prey depletion (Camphuysen *et al.* 2002). However, the ability to switch prey successfully may be limited. Loss of body condition and mortality are associated with loss of prey resources (Camphuysen *et al.* 2002; Beukema 1993; Laursen *et al.* 2009).

7. Management

7.1 Conservation Measures

The following conservation measures are currently in place for the Coll and Tiree SPA:

- The Habitats Regulations require all plans or projects that may have an effect on the protected features of a SPA to be assessed against the Conservation Objectives for that site. This process is known as a Habitats Regulations Appraisal (HRA). An HRA is a statutory procedure that ensures the integrity of the site is maintained. It also provides an opportunity to consider appropriate mitigation that can reduce impacts, avoid adverse effects and permit plans or projects to proceed, having taken full account of the protected features of an SPA.

There are no further relevant conservation measures in place in the Coll and Tiree SPA.

Further information relevant to management of this MPA will be developed with stakeholders through the [MarPAMM project](#)⁶ in Argyll, and added to this document in the future.

7.2 Advice to support management

Table 2 provides NatureScot's advice on management for activities where we consider this may be necessary to achieve the Conservation Objectives for the protected features. The advice is focused on the activities that cause an effect (a pressure) that a feature is sensitive to. Pressures can be physical (e.g. abrasion of the seabed), chemical (e.g. introduction of pollutants) or biological (e.g. removal of prey resources). Different activities may cause the same pressure, e.g. fishing using bottom gears and aggregate dredging both cause abrasion which can damage the surface of the seabed.

⁶ <http://www.mpa-management.eu/>

Our advice takes a risk-based approach, i.e. we are focusing on providing advice where we believe there is a risk to achieving the Conservation Objectives. We have identified risks to achieving the Conservation Objectives where there is an overlap between protected features and activities associated with pressures that the features are sensitive to. We have provided management advice to support public authorities and others in managing these risks. Our advice is based on existing data and information on protected features and relevant activities, and our understanding of the relationships between the features and activities. We have identified a range of management advice:

- management to remove or avoid pressures;
- management to reduce or limit pressures; or
- no additional management required.

For our advice on fisheries management we have also stated where we think this should be 'considered.' This term is included to highlight that an issue exists, but circumstances mean that a specific recommendation for action cannot or need not be made at this point. However, there is sufficient cause to make fishery managers aware of the issue and for them to consider if a fishery management measure may be helpful in achieving Conservation Objectives – particularly where there may be a synergy between the benefits of management actions for the fishery and the Conservation Objectives for the feature. The term 'recommended' highlights that an issue of fishery-feature interaction exists, there is a reasonable evidence base and a specific recommendation can be made/ justified.

New or other activities not identified within the table would need to be considered on a case-by-case basis.

We recognise that stakeholders can provide local environmental knowledge and more detailed information on activities, including in relation to intensity, frequency and methods. This additional information will help public authorities and others develop more specific management, focussed on the interaction between features and activities. If new information becomes available our management advice may be revised. Where management measures are required, the development of these would be undertaken through discussion with the relevant stakeholders.

Table 2 describes the activities that are considered capable of affecting the protected features. Activities that are considered not likely to affect the protected features (other than insignificantly) are listed in Table 3. Spatial data relating to the location and extent of the activities listed can be accessed on [Marine Scotland's National Marine Plan Interactive](#) (where available).

7.3 Best Practice

In our management advice for activities in Table 2 we refer to the development, adoption or use of 'best practice' as a way of managing interactions between activities and the features. Best practice is taken to mean approaches or procedures that are developed and accepted by regulators and relevant stakeholders as being an effective way of dealing with an interaction between a habitat or species and the pressures created by an activity. Much of this best practice is already being implemented by sectors and regulators, e.g. pre-application discussions between developers and regulators, the Scottish Marine Wildlife Watching Code and Technical Standards for Scottish Finfish Aquaculture.

Table 2. NatureScot’s advice to support management for the Coll and Tiree SPA for activities which are considered capable of affecting the protected features.

The text under the ‘Advice to support management’ columns provides NatureScot’s management advice for the features in relation to the activities (further details about the terminology used are provided in section 7.2). Where a cell is coloured grey this indicates that management is already in place, this includes where there are existing regulatory requirements for new proposals. Cells are also coloured grey where it is considered there is no additional management required to achieve the Conservation Objectives. An * has been used to highlight those activities to which the advice under ‘*Boat use associated with both commercial and recreational activities*’ also applies. For some activities, the pressures associated with new proposals are considered unlikely to affect some the features either because these activities do not occur in the same locations as the features or the pressure is unlikely to be at levels that can affect the features (see also Table 3). In these cases, we have not provided advice however, where regulated; this does not exempt new plans or projects related to these activities undergoing a Habitats Regulations Appraisal (HRA).

Activities considered capable of affecting the protected features	Advice to support management	
	Great northern diver	Common eider
Aquaculture – finfish and shellfish*	<p>Reduce or limit pressures (entanglement, disturbance, displacement, reduction of prey supporting habitats) associated with proposed new aquaculture developments through appropriate mitigation such as:</p> <ul style="list-style-type: none"> • Application of best practice, monitoring and reporting of incidences of bird entanglement, ensuring cage mesh sizes and tensioning are appropriate. • Seasonal limitation and/or defining routes for maintenance vessels, in particular to avoid important foraging areas for non-breeding protected features (as identified from habitat and dive depth preferences). • Spatial limitation to avoid damaging or restricting access to prey-supporting habitats of protected features. • Careful siting of any new aquaculture developments. 	<p>Reduce or limit pressures (entanglement, disturbance, displacement, reduction of prey supporting habitats) associated with proposed new aquaculture developments through appropriate mitigation such as:</p> <ul style="list-style-type: none"> • Application of best practice, monitoring and reporting of incidences of bird entanglement, ensuring cage mesh sizes and tensioning are appropriate. • Seasonal limitation and/or defining routes for maintenance vessels, in particular to avoid important foraging areas for non-breeding protected features (as identified from habitat and dive depth preferences). • Spatial limitation to avoid damaging or restricting access to prey-supporting habitats of protected features. • Careful siting of any new aquaculture developments. <p>Remove or avoid pressures (entanglement due to set nets) in new finfish farms by prohibiting the use of set (gill) nets for recapture of escaped farmed stock within the SPA.</p>

Activities considered capable of affecting the protected features	Advice to support management	
	Great northern diver	Common eider
	Remove or avoid pressures (entanglement due to set nets) in new finfish farms by prohibiting the use of set (gill) nets for recapture of escaped farmed stock within the SPA.	Remove or avoid pressures (mortality) associated with new shellfish farms including the lethal control of eider.
Boat use associated with both commercial and recreational activities (with the exception of Ferry routes – see separate advice)	Reduce or limit pressures (disturbance) associated with new boat use during commercial and recreational activities through effective mitigation such as: <ul style="list-style-type: none"> • following the Scottish Marine Wildlife Watching Code (SMWWC). • seasonal and/or spatial restrictions to avoid sensitive time periods for those protected features most susceptible to disturbance and/or; • production of vessel management plans associated with activities that require a marine licence. This may include agreed routes and for boats, potential seasonal speed restrictions. 	
Dredging/extraction of material (includes navigational, maintenance, and capital dredging)*	No additional management for existing maintenance dredging (ports and harbours)	
	Reduce or limit pressures (disturbance, damage of supporting habitat) associated with new capital dredging projects and associated maintenance dredging through appropriate mitigation such as: <ul style="list-style-type: none"> • spatial limitations to avoid damaging supporting habitat within foraging dive ranges of great northern divers and eider and/or; • seasonal restrictions. 	
Ferry routes	No additional management is recommended for existing ferry routes.	
Fishing - demersal mobile/active gear (inc. mechanical trawls and benthic trawls)*	Whilst we have limited understanding about the extent of interactions between benthic fisheries and prey supporting habitat within the site, we recommend that a principal objective of the management of the relevant fisheries should be to ensure that the fishing activity does not cause such disturbance to the benthic habitats that it adversely affects the abundance and availability of prey. Reduce or limit pressures (removal of prey species and abrasion of prey-supporting habitat) associated	Whilst we have limited understanding about the extent of interactions between benthic fisheries and prey supporting habitat, we recommend that a principal objective of the management of the relevant fisheries should be to ensure that the fishing activity does not cause such damage to the benthic habitats that it adversely affects the availability of prey to bottom-feeding eider. The prey of eider are benthic species (particularly molluscs but also other marine invertebrates) which are associated with habitats within the site. Consideration of site-based

Activities considered capable of affecting the protected features	Advice to support management	
	Great northern diver	Common eider
	with fishing that has the potential to damage seabed habitat (in particular, sandeel habitat).	management to avoid adverse impact on prey availability may be appropriate.
Fishing – hydraulic dredges*	<p>Hydraulic dredging has the potential to cause significant disturbance to the sediment habitats that support the prey species of the protected features, particularly for sandeel. We recommend that a principal objective of the management of the relevant fisheries should be to ensure that the fishing activity does not cause such disturbance to the benthic habitats that it adversely affects the abundance and availability of prey.</p> <p>Remove or avoid pressures (removal of prey species and disturbance of prey-supporting habitat) associated with hydraulic fishing that has the potential to damage seabed habitat (in particular, sandeel habitat).</p>	<p>Hydraulic dredging has the potential to cause significant disturbance to the sediment habitats that support the prey species of the protected features. We recommend that a principal objective of the management of the relevant fisheries should be to ensure that the fishing activity does not cause such disturbance to the benthic habitats that it adversely affects the abundance and availability of prey of bottom-feeding eider.</p> <p>Remove or avoid pressures (removal of prey species and disturbance of prey-supporting habitat) associated with hydraulic fishing that has the potential to damage seabed habitat.</p>
Fishing – static gear*	Remove or avoid pressures (entanglement) associated with the use of all set nets. Spatial exclusion of static nets in areas identified as being important for great northern divers (as identified from habitat and dive depth preferences) between October and May each year is recommended .	Remove or avoid pressures (entanglement) associated with the use of all static nets. Spatial exclusion of static nets in areas identified as being important for eider (as identified from habitat and dive depth preferences) is recommended .
Fishing – pelagic*	<p>Remove or avoid pressures (removal of key prey species) associated with fishing for sandeels. There is no current targeted sandeel fishery within the SPA, this position should be retained.</p> <p>Pelagic fishing for herring/sprat may occur within or around the SPA. We recommend that a principal objective of the management of the fishery should be</p>	<i>Pressure unlikely to affect this feature.</i>

Activities considered capable of affecting the protected features	Advice to support management	
	Great northern diver	Common eider
	ensuring that the fishing activity does not prevent or disrupt the availability of prey species for divers, i.e. it should be considered as part of a broader ecosystem-based approach to management of this fishery.	
Marine disposal sites*	Reduce or limit pressures (disturbance, smothering of prey supporting habitat, changes in water clarity) associated with new disposal sites within or adjacent to the SPA.	
Ports and harbours	<p>No additional management for established activities at ports and harbours within the Coll and Tiree SPA.</p> <p>Reduce or limit pressures (disturbance, displacement, loss or damage to prey-supporting habitat) associated with new development proposals or expansion of ports and harbours within or adjacent to the SPA. Appropriate mitigation may include:</p> <ul style="list-style-type: none"> • spatial limitations to avoid damaging supporting habitat within foraging dive range of the protected features and/or; • seasonal restrictions during construction to avoid periods when birds are present. 	
Renewable energy (inc. wave and wind)	<p>Reduce or limit pressures (disturbance, displacement, collision) for new wave proposals in areas identified as being important for all the qualifying species.</p> <p>Reduce or limit pressures (disturbance, displacement, collision) for new wind proposals through effective mitigation measures.</p>	
Seaweed harvesting –	<p>No additional management for existing seaweed harvesting activities for hand-harvesting.</p> <p>Reduce or limit pressures (disturbance) associated with new seaweed harvesting developments.</p> <p>Remove or avoid pressures (disturbance, removal of prey supporting habitat) associated with mechanical harvesting of seaweed (in particular, of kelp).</p>	
Tourism & recreation (includes diving, surfing, angling, yachting, sea	No additional management for existing recreational activities (includes diving, surfing, yachting, angling and kayaking) providing the Scottish Marine Wildlife Watching Code (SMWWC) is followed by water-borne	No additional management for existing recreational activities (includes diving, surfing, yachting, angling and kayaking) providing the Scottish Marine Wildlife Watching Code (SMWWC) is followed by water-borne recreational users. The

Activities considered capable of affecting the protected features	Advice to support management	
	Great northern diver	Common eider
kayaking, leisure boating)*	<p>recreational users. The SMWWC highlights why birds are sensitive to disturbance and offers practical advice on how to avoid disturbance.</p> <p>Reduce or limit pressures (disturbance, displacement) where an increase by water-borne recreational activities demonstrates there is evidence of impacts at particular locations and/or if there is major increase in intensity of these pursuits within the SPA. There would be potential for some zonation of measures across the site given that great northern divers exhibit behavioural sensitivity to disturbance.</p>	<p>SMWWC highlights why birds are sensitive to disturbance and offers practical advice on how to avoid disturbance.</p> <p>Reduce or limit pressures (disturbance, displacement) where an increase by water-borne recreational activities demonstrates there is evidence of impacts at particular locations and/or if there is major increase in intensity of these pursuits within the SPA.</p>
Wildlife tour operators*	<p>No additional management for existing wildlife tours providing the Scottish Marine Wildlife Watching Code is followed by Wildlife tour operators. The Scottish Marine Wildlife Watching Code (SMWWC) should be followed by water-borne recreational users. The SMWWC highlights why birds are sensitive to disturbance and offers practical advice on how to avoid disturbance.</p> <p>Reduce or limit pressures (disturbance, displacement) associated with an increase in wildlife tour operators if in the future there is evidence of impacts at particular locations and/or if there is an increase in intensity of these pursuits within the SPA. There would be potential for some zonation of measures across the site given that great northern divers exhibit high sensitivity to disturbance.</p>	<p>No additional management for existing wildlife tours providing the Scottish Marine Wildlife Watching Code is followed by Wildlife tour operators. The Scottish Marine Wildlife Watching Code (SMWWC) should be followed by water-borne recreational users. The SMWWC highlights why birds are sensitive to disturbance and offers practical advice on how to avoid disturbance.</p> <p>Reduce or limit pressures (disturbance, displacement) associated with an increase in wildlife tour operators if in the future there is evidence of impacts at particular locations and/or if there is an increase in intensity of these pursuits within the SPA.</p>

Table 3. Activities that are considered not likely to affect the protected features (other than insignificantly) ⁷

Activity	Comments
Anchorage and moorings	Beyond pressures associated with the vessel movement (covered in Table 2), we are not aware of any further pressures that have the potential to cause an adverse effect on the protected features.
Fishing – static gear – creels	Creels (including lobster, crabs and <i>Nephrops</i>). Fishing using creels is widespread throughout the MPA. Whilst there is the potential for entanglement for some diving species such as great northern diver and eider, the occurrence is rare and therefore we consider this method poses a low risk to the protected features. Pressures associated with the vessel traffic from this pressure is covered under Table 2.

⁷ Only the specific examples of activities listed in the table have been excluded, rather than the broad activity types. New plans or projects will still need to be considered by the relevant competent authority (see Annex 1 for further details).

8. Research and survey

We recognise that there are still important gaps in our understanding and knowledge of the features of this site. We will identify research and survey projects to inform our understanding of these aspects. The knowledge gaps identified below are not a commitment to undertake this work. However, by highlighting these gaps we hope to inform future discussions with parties interested in undertaking research in this site and/or on these features, to help direct research and improve understanding of monitoring needs. The following list of research and survey needs is not prioritised and is not exhaustive.

- Establish adequate baseline information for supporting habitats and prey species and gain an understanding of which prey items are the most important at a local scale within the SPA for all protected features.
- Further ecological studies of great northern diver diets, habitat preferences and use, and movements within wintering sites, including within the Coll and Tiree SPA.
- Habitat mapping work is required on prey supporting habitats for both protected features within the Coll and Tiree SPA.
- Studies of the energetic/survival consequences of behavioural sensitivity to visual disturbance, at an individual and a population level, for great northern divers, including within the Coll and Tiree SPA.
- Additional research is required to better understand the relationships between the impact of dredging and benthic trawling on supporting habitats, their ability to support suitable prey and any consequential effect this may have on the protected features.
- Establish a marine bird monitoring programme that informs changes in species populations and distributions at a site and SPA network level, and which may include monitoring of the supporting prey, habitats and processes within the SPA.

Annex 1. Coll and Tiree SPA Conservation Objectives

The box below provides the high-level Conservation Objective statements for the Coll and Tiree SPA.

The full Conservation Objectives, which includes site-specific advice and information on the qualifying features that form part of this SPA, are provided in the tables that follow. The site-specific advice and information provides more detail in relation to each of the high level Conservation Objective statements for each feature, e.g. detail on the seasonal timings and what the supporting habitats and prey are for the qualifying features.

Information is also provided below on how minor changes to features should be considered and the influence of environmental change on features, particular in relation to climate change. Temporary impacts on the qualifying features resulting from plans or projects can only be permitted where there is certainty that the features will be able to quickly recover. Further details on the potential for each qualifying feature to recover are described in more detail in Annex 2 '*Factors determining the potential of features to recover*'.

A definition of the terms used is in the Glossary (Annex 3).

Coll and Tiree SPA
Qualifying features: <ul style="list-style-type: none">• Great northern diver (<i>Gavia immer</i>)• Common eider (<i>Somateria mollissima mollissima</i>)
1. To ensure that the qualifying features of the Coll and Tiree SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status.
2. To ensure that the integrity of the Coll and Tiree SPA is maintained in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature:
2a. The populations of the qualifying features are viable components of the site.
2b. The distributions of the qualifying features throughout the site are maintained by avoiding significant disturbance of the species.
2c. The supporting habitats and processes relevant to the qualifying features and their prey/food resources are maintained.

1. To ensure that the qualifying features of the Coll and Tiree SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status.

Achieving Favourable Conservation Status (FCS) is defined in terms of the natural range and population of the species and the extent of habitat necessary for long-term maintenance of populations. There is an important role for all protected sites in the UK in defining, achieving and maintaining FCS for any habitat or species. Achieving FCS requires that each parameter is either stable or increasing, exceeds the relevant reference value and has good prospects of continuing to do so in the foreseeable future (JNCC, 2018). FCS is assessed across the Marine Atlantic Biogeographic Region with individual SPAs and SPA networks contributing to FCS.

The conservation status will be taken as 'favourable' when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future;
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

When carrying out appraisals of plans and projects against these Conservation Objectives, it is not necessary to understand the status of the qualifying features within each individual SPA in this Biogeographic Region. The focus of the appraisal should be at a site level. If the site Conservation Objectives are met then the site's contribution to FCS across the qualifying features' biogeographic range will be maintained. Similarly, when determining whether management measures may be required to ensure that the Conservation Objectives for this SPA are achieved, the focus should be on maintaining the contribution that it makes to FCS. Further advice on how these appraisals should be focussed in relation to maintaining site integrity is provided by Conservation Objective 2 (including parts a, b and c). If broader information (status, trends) on the qualifying features is available, it should be used to provide context to the site-based appraisal.

Note '*Appropriate*' within this part of the Conservation Objectives is included to indicate that the contribution to FCS varies from site to site, and feature to feature.

2. To ensure that the integrity of the Coll and Tiree SPA is maintained in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature:

The aim at this SPA is to maintain the qualifying features in a favourable condition as a contribution to its wider favourable conservation status. When carrying out appraisals of plans or projects, or determining whether management measures are required, the focus is maintaining site integrity, specifically by meeting the Objectives outlined in 2a, 2b and 2c. If these are met then site integrity will continue to be maintained. Note that not all of these may be relevant for every activity being considered. Any impacts on the Objectives shown in 2a, 2b or 2c must not persist such that they prevent the maintenance of site integrity.

Temporary impacts on these objectives resulting from plans or projects can only be permitted where there is a high degree of certainty that the features will be able to quickly recover from the impact and that impacts do not prevent the ability of unfavourable features to fully recover in the long-term.

Environmental changes

This Conservation Objective recognises that the qualifying features are part of a complex, dynamic and multi-dimensional marine environment. Marine birds depend on environmental conditions (for example water movement, up-wellings and prevailing weather) which vary over time and space. Consequently, marine bird species are exposed to a wide range of drivers of change. 'Environmental changes' for the purpose of these Conservation Objectives means any change to the qualifying features reflecting both natural population dynamics and also broader environmental changes (i.e. those related to climate change and environmental variability, management of which is beyond the scope of the SPA). The impact of human activities on the SPA that can be managed will not be considered as part of the broader context of environmental change (i.e. where required they should be managed).

Some site-level changes are natural and are not a direct result of human influences (e.g. population fluctuations arising from factors such as variable breeding success or weather conditions across the wintering range / shifts or changes in prey availability resulting from variability in environmental factors processes such as water temperature and movements). Changes in the qualifying features' distribution and use of the site, which are brought about by entirely natural drivers, directly or indirectly, are normally considered compatible with the SPA's Conservation Objectives.

There may also be historical human influences that have now ceased but have modified and continue to drive change within the site. It is also recognised that climate change pressures could affect the qualifying features within the site. These changes cannot be prevented, so the Conservation Objectives seek at a site level to take account of them and where possible, improve the qualifying species' resilience to environmental change when considering future plans or projects. The magnitude of the future impacts will depend on the nature, scale, duration and intensity of the activity and the qualifying features tolerance and ability to recover from such an impact.

Additionally, management of human activities at a wider scale (i.e. regional, Scotland or the area covered by an international agreement such as the OSPAR convention) may also affect the qualifying features associated with this site (either by making a positive contribution or having a negative impact). Wider scale impacts may affect the ability of the qualifying features to recover from site level changes, and therefore additional precaution over the impacts of any future human activities may be necessary.

An assessment of whether a change is natural or anthropogenic, or a combination of both, will need to be looked at on a case-by-case basis.

In relation to the Coll and Tiree SPA and its qualifying features, the following effects of environmental change (climate change) are relevant. These effects should be taken into account when considering plans and projects as additional pressures may reduce the qualifying features' resilience to climate change, and conversely climate change impacts may start to hinder their ability to recover from human activities.

- **All qualifying features:** Under climate change, sea temperatures are predicted to increase, sea levels will rise and there could be increases in the frequency of stormy conditions. Any of these factors could cause changes in bird abundance and distribution at the SPA due to changes in prey (species, availability and distribution), both in marine waters and in intertidal areas. Climate change may result in effects at their breeding grounds or in other parts of the overall wintering range which could have subsequent effects on their wintering populations and distributions.
- **Great northern diver:** There is no species-specific evidence on the potential impacts of climate change or environmental variability for this species in the non-breeding season.
- **Common eider:** Rising winter temperatures have been identified as a driver for declines in the mussel stocks that common eider feed on in the Wadden Sea (Nehls *et al.* 2006).

2a. The populations of qualifying features are viable components of the site.

This objective seeks to specifically protect the qualifying features from **significant** mortality, injury or removal that can lead to a long-term decline of the feature(s) within the site. It protects the features from significant risk of incidental killing and injury from activities both within and outwith the site. Impacts and effects are considered 'significant' where they could result in a permanent or long term reduction or continued decline in the population and consequently, reduction in the contribution the Coll and Tiree SPA makes to the maintenance of the qualifying features in their natural range in the UK. It should be ensured that the qualifying features are protected from anthropogenic pressures that could lead to a significant long-term decline in numbers using the site.

At a site level, all qualifying features are considered to be viable if the species can carry out their life cycle functions relevant to the season(s) they are present, irrespective of dependencies such as immigration. In the Coll and Tiree SPA, this means that overwinter survival should not decrease significantly for non-breeding birds and birds that have overwintered on this site should have good enough body condition to be able to migrate to their breeding grounds and breed successfully.

When assessing the effects of any plan or project consideration should also be given to whether impacts outwith the SPA could affect achievement of this Conservation Objective. This Conservation Objective is considered to be met if the conditions to support all the species' essential behaviours and activities are in place. This includes:

- avoiding effects within and outwith the site that could prevent or reduce the ability of the populations of qualifying features to recover.
- avoiding effects within and outwith the site that could lead to a permanent reduction in the populations of qualifying features through mortality, injury, or impacts caused by disturbance, displacement, barrier effects or reduction in mobile prey resources.
- maintaining the species' ability to use all areas of importance within the site (to be considered under Conservation Objective 2b)
- maintaining access to, and availability of, supporting habitats and prey within the site (to be considered under Conservation Objective 2c).

Where known, the populations of the qualifying features should be maintained at or above site reference populations, as detailed below. The site reference population may be revised from the baseline at designation where a) there is evidence to show that a population's size has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a

considerable period (generally equivalent to at least one generation length for the given species) and/or b) to reflect any wider strategic objectives for the species (e.g. national or international species action plan). Where there is evidence to show that a qualifying feature has historically been more abundant than the stated minimum target and current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account.

All qualifying features are protected throughout the whole site, throughout the year. This means that irrespective of the season for which they are designated, the qualifying features are protected during both their breeding and non-breeding seasons when using the SPA.

Temporary short-term changes in the populations due to human activity may be considered not to compromise the Conservation Objectives within the site provided it can be demonstrated that the populations of any affected qualifying features can fully recover. Factors limiting the recovery of the qualifying features include: the average generation times, population growth rates, availability of prey and the timing and duration of the activity around vulnerable stages of their life cycles such as during moulting or chick-rearing period.

Direct mortality can arise from: collision (above and underwater); entanglement (incidental bycatch); disease, and pollution. Indirect mortality can arise from reduction of prey or prey-supporting habitats (e.g. through harvesting; physical removal of or damage to seabed; nutrient enrichment; changes to water temperature, salinity, or flows; introduction of invasive non-native species (INNS); pollution). Indirect mortality can arise from reduced ability to capture or access prey arising from e.g. increased water turbidity or displacement from foraging areas.

For both qualifying features, the site-specific information includes a site reference population that is considered the most appropriate for assessments of plans and projects. Where this is based on the citation population at classification or recent surveys, the site reference population is rounded using standard procedures (Stroud *et al.* 2001). The GB population estimates are taken from Musgrove *et al.* 2013 and UK trend information from Frost *et al.* 2018.

Feature	Site-specific advice	Site-specific information
Great northern diver	Maintain the population of non-breeding great northern divers at a stable or increasing trend relative to the site reference population.	The site reference population for great northern divers at the Coll and Tiree SPA is 450 individuals (5 year mean of peak for the period 2004-2008 ⁸), representing approximately 18% of the GB non-breeding season population (for the period 2004/05-2008/09). Great northern diver numbers in both Scotland and the UK have been generally increasing since at least 1993/94. However, in Europe, their populations are expected to decline by 30-49% between 2000-2029 (BirdLife International, 2019).
Common eider	Maintain the population of non-breeding common eider at a stable or increasing trend relative to the site reference population.	The site reference population for eiders at the Coll and Tiree SPA is 1500 individuals (5 year mean 2004-2008), representing over 2% of the GB population (for the period 2004/05-2008/09). Common eider numbers in both Scotland and the UK have declined by 22.5% since at least 1980/81.

⁸ For further details on original survey data see Lawson *et al.* 2015.

	<p>and</p> <p>Ensure common eider can move safely between the site and important areas of functionally linked land outwith the site.</p>	<p>Adjacent shorelines (outwith the Coll and Tiree SPA) may also be used for roosting and during the breeding season will be used for nesting and brooding. When assessing the effects of any plan or project consideration should therefore also be given to whether impacts on the population outwith the SPA could affect achievement of this Conservation Objective.</p>
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2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species.

This objective seeks to ensure that the qualifying features can continue to use and access all areas within the Coll and Tiree SPA used for feeding, moulting, roosting, loafing, shelter and other maintenance activities. Changes in the distribution of the qualifying features are most likely to be brought about through disturbance, therefore this objective relates to avoiding significant disturbance. Changes in distribution may also result from shifts in prey distributions; this is considered under objective 2c. Disturbance associated with human activity may take a variety of forms including: noise, light, sound, vibration, trampling, presence of people, animals and structures, as well as displacement and barrier effects on the species. The type of disturbance, its duration and the area over which the qualifying features are likely to be affected are important considerations in any appraisal of disturbance.

Disturbance can, for example, result in changes to feeding or roosting behaviour, increased energy expenditure due to increased time spent moving to avoid stressors, abandonment of nest sites and desertion of supporting habitat (both within or outside the protected area where appropriate). This may affect successful chick rearing in the subsequent breeding season (related to poor winter condition of adult birds), feeding and/or roosting, and/or may reduce the availability of suitable habitat as birds are displaced and their distribution within the site contracts.

'Significant disturbance' should be interpreted to mean disturbance that affects the integrity of the site through alteration of the distribution of the qualifying features such that recovery cannot be expected or effects can be considered long term. It is expected that significant disturbance will lead to more than a transient effect on the distribution of the qualifying features. It may result in the following types of effect:

- Contributes to the long-term decline in the use of the site by the qualifying features.
- Changes to the distribution of the qualifying features on a continuing or sustained basis.
- Changes to the qualifying features behaviour such that it reduces the ability of the species to survive, breed or rear their young.

There are two main ways in which the qualifying features' continued access to suitable resources could be restricted and distribution affected and this is where assessments should be focussed:

1. Large scale physical barriers that prevent access and use of the site, or;

2. Disturbance which alters their distribution (displacement) within the site or disrupts important behaviours.

Direct displacement of the qualifying features can arise from: barriers off-site that reduce or prevent movement to and between foraging and roosting locations; and visual disturbance (e.g. associated with vessel movements). Indirect displacement can arise from loss of or damage to prey or prey-supporting habitats (e.g. through harvesting; physical removal of or damage to seabed; nutrient enrichment; changes to water temperature, salinity, or flows; introduction of INNS; pollution (e.g. light, noise, chemical)).

Disturbance to foraging birds may reduce the time spent feeding or cause them to move to different areas that are less energetically profitable. Disturbance that creates an avoidance response or disrupts/reduces roosting behaviour can also put increased energetic demands on birds. Ensuring safe movement within and between areas used for foraging, roosting and other maintenance behaviours (see also 2c) is important to meet the energetic demands required for winter survival and to achieve or maintain body condition needed to support subsequent migration and successful breeding. Barriers to movement may reduce access to preferred foraging habitat and cause sub-optimal foraging.

All qualifying features are protected throughout the whole site, throughout the year. This means that irrespective of the season for which they are designated, the qualifying features are protected during both their breeding and non-breeding seasons when using the SPA.

We anticipate that some locations within the Coll and Tiree SPA will be more, or less, important than others for individual species. Distributions within the site may also change over time in response to a range of abiotic and biotic factors (e.g. changes in abundance or quality of prey resources at particular locations, numbers of each qualifying feature within the site as a whole, seasonal fluctuations or trends in prevailing weather conditions etc.). In some cases detailed bespoke surveys of bird numbers and distributions, to determine qualifying features' current usage of particular locations within a proposals area of influence, may be required to complete the necessary assessments.

Temporary short-term disturbances due to human activity may be considered not to compromise the Conservation Objectives within the site provided it can be demonstrated that the population can fully recover. Factors limiting the recovery of the qualifying features include the timing, frequency and duration of the activity around vulnerable stages of their life cycle such as during moulting or chick-feeding period.

Feature	Site-specific advice	Site-specific information
Great northern diver	<p>Ensure great northern divers continue to have access to and can utilise all optimal habitats suitable for all relevant aspects of their life cycle associated within the site.</p> <p>and</p> <p>Avoid significant disturbance to great northern divers and ensure</p>	<p>Great northern divers are long distant migrants, moving annually between northern breeding grounds in Iceland, Greenland or Baffin island, and more southerly wintering grounds such as the Coll and Tiree SPA. They are present at the Coll and Tiree SPA from October until mid-May, with a flightless moult period from February until mid-April.</p> <p>Great northern divers are widely distributed at the Coll and Tiree SPA. The open coastal waters and more sheltered marine waters are used for foraging, roosting, and maintenance activities. Foraging is largely restricted to dive depths of up to 55m (Robbins, 2017), although typically they forage in shallower waters (Woodward & Humphreys, 2018). Non-breeding birds have been observed forming communal rafts</p>

	individuals can move safely between these areas within the site.	in deeper waters at sunset, where it is assumed they remain to roost at night (Shackleton, 2012). It is not yet known if great northern divers at this SPA use communal rafts in the same way.
Common eider	<p>Ensure eider continue to have access to and can utilise all optimal habitats suitable for all relevant aspects of their life cycle associated within the site.</p> <p>and</p> <p>Avoid significant disturbance to eider and ensure individuals can move safely between these areas within the site.</p>	<p>Eiders are present throughout the year at the Coll and Tiree SPA. Their non-breeding season is from September to mid-April, with a flightless moult period being from July to mid-September.</p> <p>In the non-breeding season, the highest densities of eiders have been recorded mostly around Tiree and the south-west coast of Coll. The shallow, sheltered bays are used for foraging, moulting and roosting. Eiders prefer to moult in sheltered waters free from disturbance (Waltho & Coulson, 2015). Foraging is largely restricted to waters less than 10m deep (Woodward & Humphreys, 2018), although dive depths of 60m have been identified when in pursuit of prey (Waltho & Coulson, 2015). Eiders have been known to associate with floating seaweed habitats (Vandendriessche <i>et al.</i> 2007). Roost locations are not known within the SPA but may include offshore locations as well as ashore on adjacent shorelines when sheltering from prevailing weather (Cramp & Simmons, 2004).</p>

2c. The supporting habitats and processes relevant to the qualifying features and their prey/food resources are maintained.

This objective seeks to maintain the current extent, quality and distribution of supporting habitats within the site as well as ensure a sufficient food supply within the site.

The qualifying features require suitable habitat for shelter, roosting, foraging, loafing, moulting and other maintenance activities. The variety, quality, abundance and availability of food resources on which the qualifying features depend is important for ensuring adult fitness, survival and breeding success (including for over-wintering species). The supply of food resources is supported by environmental processes.

Supporting habitats refer to the characteristics of the seabed and water column relevant to their use by the qualifying features. Supporting processes relates to wider oceanographic processes such as up-wellings, tidal flows, hydrological movements which may be necessary for the habitat, and thus affects nutrient cycling and prey distribution.

Maintenance of prey species and their supporting habitats is important to maintain the conditions required to support the qualifying features populations.

Temporary short-term changes in supporting habitat and/or food resources due to human activity may be considered not to compromise the Conservation Objectives within the site provided it can be demonstrated with a high degree of certainty that the populations of any affected

qualifying features can fully recover. The species-specific information includes a summary of available information on food resources and where known, the distribution of the key supporting habitats and associated processes within the Coll and Tiree SPA.

The overall water body condition status relevant to the Coll and Tiree SPA was assessed as “High” in 2020⁹. This assessment includes consideration of water chemistry, pollutants, the physical condition of the water body, plant and animal communities, including plankton, and the risk from invasive non-native species.

There is currently insufficient information to support quantitative advice on the environmental processes associated with the supporting habitats and prey of the qualifying features at the Coll and Tiree SPA.

Feature	Site-specific advice	Site-specific information
Great northern diver	<p>Maintain the extent and distribution of supporting habitats for great northern diver within the site.</p> <p>and</p> <p>Maintain the variety and abundance of food resources and the condition of supporting habitats and associated processes.</p> <p>and</p> <p>Existing water quality should be maintained and any increase in nutrients, turbidity or contaminants where this could reduce supporting habitats and/or prey, should be avoided.</p>	<p>Great northern divers require suitable habitat within the SPA for foraging, loafing, moulting and roosting. In Scotland, great northern divers occur in inshore waters along rocky shores, in sheltered bays and channels as well as open coastal waters. These habitats are used for foraging in the water column and on the seabed (down to 55m depth). Open waters are also used potentially for loafing, moulting and roosting.</p> <p>The limited data available on non-breeding season diet show the principal food resource of great northern divers is fish, including both pelagic and benthic species. Fish species taken will be influenced by what is locally and most readily available, but can include haddock, cod, herring, sprats and gurnard, eels, along with smaller species such as sandeels, pipefish, gobies, flatfish and butterfish. They also feed opportunistically on crustaceans, including crabs (Woodward & Humphreys, 2018).</p> <p>Information on prey habitat associations for great northern divers is currently lacking for the Coll and Tiree SPA.</p> <p>The key supporting processes for great northern divers at the Coll and Tiree SPA are not well known but may include water quality (nutrients and turbidity), tidal cycles, and water flow.</p>
Common eider	<p>Maintain the extent and distribution of supporting habitats for common eider within the site.</p> <p>and</p>	<p>Eider require suitable habitat within the SPA for foraging, loafing, moulting and roosting. In Scotland, eiders occur in inshore waters of sheltered bays with rocky, stony or hard substrates associated with their main prey items. Foraging in these habitats occurs on the seabed. Open waters are also used potentially for loafing, moulting and roosting.</p>

⁹ <https://www.sepa.org.uk/data-visualisation/water-classification-hub/>

	<p>Maintain the variety and abundance of food resources and the condition of supporting habitats and associated processes.</p> <p>and</p> <p>Existing water quality should be maintained and any increase in nutrients, turbidity or contaminants where this could reduce supporting habitats and/or prey, should be avoided.</p>	<p>Eiders have a wide variety of prey items. Their principal food resource is benthic bivalves, in particular blue mussels, and other species such as the common cockles, razor clams and clams. They also take shore crabs other marine invertebrates, including gastropods, and fish (Woodward & Humphreys, 2018; Waltho & Coulson, 2015).</p> <p>Eider dive from the surface to pluck their prey from the seabed and typically feed in water depths of under 10m. They prefer areas where there are high abundances of benthic molluscs and actively select particular sizes of their preferred prey (Nehls & Ketzenberg, 2002). Eiders may be attracted to artificial structures that support mussel populations (Heubeck & Mellor, 2013; Cervenci <i>et al.</i> 2015).</p> <p>Benthic habitats capable of supporting the principal bivalve and/or gastropod prey species of eider may be relatively extensive in area within the SPA and the prey distributions and abundance within suitable habitats will vary both spatially and temporally. However, some areas within accessible foraging depths are likely to support relatively higher biomass of benthic prey more consistently. Information on these locations is currently lacking for the Coll and Tiree SPA.</p> <p>The key supporting processes for eiders at the Coll and Tiree SPA are water quality (nutrients and turbidity), tidal cycles, and water flow. Eiders exhibit increased feeding activity at low tide when mussel beds are more accessible and in the morning and towards dusk. In Scotland, greater numbers were observed during ebb tides on an exposed west-facing coast and during slack tides and in mornings and evenings in a strongly tidal area (Robbins, 2011; 2012). Eider appear to be unable to feed in currents faster than ~1.2 m s⁻¹ (Heath, Gilchrist & Ydenberg, 2010). High turbidity may also affect eiders, potentially by limiting their visibility (Dickson & Smith, 2013), or reducing growth of mussel prey (Nehls, 2001). The causal links between eider numbers and water turbidity however are unclear.</p>
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Annex 2. Supporting information

Factors determining the potential for feature recovery.

Feature	Factors determining the potential for feature recovery
<p>Great northern diver</p>	<p>Great northern diver have a relatively long generation length estimated at 11.3 years and a maximum longevity of around 30 years (Bird <i>et al.</i> 2020). Adults first breed at 3 years with a clutch size of 2 (1-3) eggs (Cramp & Simmons, 2004). Adult survival rates have been estimated at 0.915 (Bird <i>et al.</i> 2020) and average productivity as 0.543 (Horswill & Robinson, 2015). With a low fecundity and population stability relying on high levels of adult survival, any pressure on adult survival would quickly have an adverse effect on great northern diver population numbers.</p> <p>Great northern divers use marine waters off Scotland's coasts in their non-breeding season between October and mid-May. They exhibit high site fidelity, which may limit individual ability to adapt to changes within wintering areas and hence potential for population recovery from perturbations. Great northern divers may be particularly sensitive to disturbance on their wintering grounds during their pre-breeding flightless moult period on their wintering grounds between February and mid-April.</p> <p>The birds wintering in GB waters are thought to derive mainly from the European breeding population in Iceland, Greenland and Baffin Island (total population estimated at 700-1,300 pairs, which equates to 1,400-2,600 mature individuals, BirdLife International, 2019) with a very small proportion coming from eastern Canada (Furness, 2015). Pressures in these breeding grounds (e.g. human disturbance and pollution of inland breeding lakes) could limit potential for populations to recover from impacts arising in wintering areas.</p>
<p>Common eider</p>	<p>Eiders have a relatively long generation length estimated at 11.2 years and a maximum longevity of around 38 years (Bird <i>et al.</i> 2020). Females first breed at 3 years with a clutch size typically of 4-6 eggs (Cramp & Simmons, 2004). Adult survival rates from older studies are highly variable, but have been estimated as 0.872 (Bird <i>et al.</i> 2020), with annual productivity being 0.379 (Horswill & Robinson, 2015). The critical factor for the long-term survival of the species appears to be the survival rate of young ducklings (Waltho & Coulson, 2015) and both disease outbreaks and poor breeding female condition have been associated with mass mortality in this species (BirdLife International, 2019).</p> <p>Eiders are dispersive partial migrants, resident year round in Scotland. The non-breeding season extends from September to mid-April during which period large flocks may form. Males start to assemble from June or early July and are joined by post-breeding females 3-4 weeks later forming aggregations during the flightless post-breeding moult period between July to mid-September (Cramp & Simmons, 2004). Eider are especially vulnerable to disturbance at sea during this period. Flightless young ducklings also form crèches at sea, guarded by females.</p> <p>Eider nest on the ground in loose colonies usually in areas free of mammalian predators (Waltho & Coulson, 2015), including coastal islands and islets along low-lying rocky coasts, on coastal shores and spits, on islets in brackish and freshwater lagoons, coastal lakes and rivers or on tundra pools (BirdLife International, 2019). Pressures in these breeding grounds (e.g. human</p>

	disturbance and depredation by introduced mammals) could limit potential for populations to recover from impacts arising at sea.
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Annex 3: Glossary for Conservation Objectives and References

Glossary

Conservation Objective term	Definition
Distribution	The “distribution” is how the qualifying feature is spread out within the site.
Favourable condition	This refers to the assessed condition of a feature through Site Condition Monitoring. Features considered to be in favourable condition for the purposes of these Conservation Objectives are those that have an assessed condition of either: <ul style="list-style-type: none"> • Favourable declining - The attribute targets set for the natural feature have been met, but evidence suggests that its condition will worsen unless remedial action is taken. • Favourable Maintained - the attribute targets set for the natural features have been met, and the natural feature is likely to be secure on the site under present conditions. • Favourable Recovered - the condition of the natural feature has recovered from a previous unfavourable condition, and attribute targets are now being met.
Generation length	Generation length is “the average age of parents of the current cohort”. Generation length therefore reflects the turnover rate of breeding individuals in a population (IUCN, 2019).
Maintain	Where a qualifying feature of the SPA is assessed as being in favourable condition the conservation objective is ‘maintain’. This means that the various attributes of the feature should be kept at that favourable level. This can include increasing/improving condition as well, but not a permanent decline.
Marine birds	This term encompasses true seabirds and waterfowl (seaducks, divers, and grebes).
Metapopulation	A group of connected populations of a species within a defined area, where the individual populations may interact with one another.
Restore	Where a qualifying feature of the SPA is assessed as being in unfavourable condition the conservation objective is ‘restore’. This means that the various attributes of the feature should be returned to the favourable level by increasing/improving condition.
Site integrity	The integrity of a site is defined in general terms as the coherence of its ecological structures and function, across its whole area, which enables it to sustain the habitat, complex of habitats and and/or the levels of populations of the species for which it was designated.
Site reference population	This refers to the estimated population figure for the site and should be used to form the basis of carrying out HRAs. In most cases, the site reference population will be the baseline population (figure at designation). However, where recent surveys show a population to have increased or stayed stable, the current population is considered the most appropriate population figure to use for HRA’s.

Conservation Objective term	Definition
Supporting habitats and processes	This includes the following environmental conditions (but is not limited to) which are important for maintaining/restoring the protected features, e.g. hydrography and supporting water currents, chemical water quality parameters, suspended sediment levels, radionuclide levels.
Unfavourable condition	This refers to the assessed condition of a feature through Site Condition Monitoring. Features considered to be in unfavourable condition for the purposes of these Conservation Objectives are those that have an assessed condition of either: <ul style="list-style-type: none"> • Unfavourable recovering - One or more of the attribute targets have not been met on the site, but management measures are in place to improve the condition. • Unfavourable no change - One or more of the attribute targets have not been met, and recovery is unlikely under the present management and activity on the site. • Unfavourable declining - One or more of the attribute targets have not been met, evidence suggests that condition will worsen unless remedial action is taken.
Waterfowl	Encompasses seaducks, grebes and divers.

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