Conservation and Management Advice

AILSA CRAIG SPA

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This document provides advice to Public Authorities and stakeholders about the activities that may affect the protected features of Ailsa Craig 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 Ailsa Craig 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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Contents

1 Overview of document

This document provides details of the Conservation and Management Advice for the Ailsa Craig Special Protection Area (SPA) and it is divided into eight main sections. The introduction in section 2 gives an overview of the Ailsa Craig 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 marine protected area.

Annex 1 sets out the Ailsa Craig 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. Ailsa Craig 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 Ailsa Craig 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

1.1. Purpose statement

The Ailsa Craig SPA has been designated to protect five species of breeding seabirds, a breeding seabird assemblage, 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 Ailsa Craig SPA is to contribute towards 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 SPA.

1.2. Conservation benefits

The conservation benefits for the Ailsa Craig SPA are:

- Protecting internationally important numbers of breeding gannet (around 23,000 pairs, equating to around 8.7% of the world biogeographic population), making it one of the most important sites in the world for this species. The SPA also protects internationally important numbers of lesser black-backed gulls (around 1800 pairs equating to 1.4% of the total biogeographic population).
- Protecting nationally important numbers of other seabirds during the breeding season including guillemot (around 3,350 pairs), kittiwake (around 3,100 pairs) and herring gull (around 2,250 pairs).

- Protecting important waters immediately surrounding the seabird breeding colony, which birds use for resting, preening and other maintenance activities.
- Protecting important cliff habitats where the seabird protected features can nest.
- Protecting waters with rich marine habitats, including important shelf waters with areas of high productivity, that support a diversity of pelagic and demersal fish, bivalve molluscs, gastropods and crustaceans where the seabirds can feed.

1.3. Wider benefits

The protected features of the Ailsa Craig 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 Ailsa Craig SPA contribute to benefits for people. There can be many complex interactions and dependencies amongst the protected features, their functions, associated natural resources and the benefits we gain from them.

The protected features, especially when taken within the context of the whole SPA 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 SPA, and to the long-term health of the protected features.

In terms of resources, Ailsa Craig SPA is an island situated in the outer part of the Firth of Clyde. Cliffs up to 100m encircle the island and provide nesting sites for a variety of seabirds, in particular supporting one of the largest northern gannet colonies in the world. The island is known for its rare type of microgranite, and its landscape also consists of maritime vegetation. The SPA also comprises adjacent coastal waters extending 2 km into the marine environment. The surrounding marine waters support a variety of natural resources, including molluscs, crustaceans, marine worms, pelagic and demersal fish species together with the birds and mammals that feed on them.

The rich and varied natural resources present within the SPA give rise to a range of benefits to people. Whilst the island is now uninhabited, except for scientific study, the seascapes and wildlife within the SPA provide opportunities for tourism and wildlife watching in particular, all of which encourage local jobs and businesses. Fisheries and supporting businesses from local communities around the SPA utilise and benefit from the wildlife and the area's fish resources. Historically, fishermen used the island as a refuge place in stormy weather. Descriptive place names such as Craigna'an (cliff of birds) and Balvar (big round cliffs) illustrate both the landscape and the long-standing importance of the site for wildlife. The properties of Ailsa Craig's microgranite make it almost uniquely suitable for the manufacture of curling stones, with a majority of all curling stones using the island's granite. Quarrying for curling stones began in the mid-1800s and has continued in recent years, subject to conditions that seek to avoid disturbance to breeding birds. Benefits relating to health and well-being, food and nutrition also arise from the site's natural resources, resulting in a place where visitors can spend time connecting with and enjoying nature.

The benefits that arise from the functions and natural resources of the MPA may be large in the context of the whole of Scotland, although some are of greater importance for this MPA and the people that use it. There is potential for benefits to be enhanced by improving the quantity or quality (health) of the protected features themselves.

Figure 1. Benefits to people associated with protected features of the Ailsa Craig SPA.

1.4. Contribution to policy commitments

Managing the Ailsa Craig SPA to maintain the protected features in favourable condition, will ensure the continued provision of the benefits above as well as the SPA'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 Ailsa Craig SPA in relation to activities that may affect the protected features. More detailed advice can be provided to relevant 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 authorities[1] to ensure that the activities they regulate, permit or license do not hinder the achievement of the Conservation Objectives of the Ailsa Craig SPA. The management advice in this document is provided to assist authorities in managing the activities outlined in Table 2, 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

The Ailsa Craig 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 Ailsa Craig 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. Current trends for relevant seabird colonies can be found in JNCC (2021) and is based on trends derived from the Seabird Monitoring Programme (SMP) including where available, Seabird Counts census data (Burnell *et al.* 2023). Where the SMP data is more recent than the SCM data this has been used to inform the feature condition at the site.

[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 Ailsa Craig SPA.
Feature condition refers to the condition of the protected feature at a site level. 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 year	Broader conservation status	
			UK[2]	European region[3]
Black-legged kittiwake (breeding)	Unfavourable, recovering	2021	Red	Vulnerable
Common guillemot (breeding)	Favourable, maintained	2021	Amber	Least Concern
Herring gull (breeding)	Unfavourable, recovering	2019	Red	Least Concern
Lesser black-backed gull (breeding)	Unfavourable, recovering	2019	Amber	Least Concern
Northern gannet (breeding)	Favourable, maintained	2023	Amber	Least Concern

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.

Annex 1 sets out the Conservation Objectives for Ailsa Craig SPA.

5.2 Relationship between feature condition and Conservation Objectives

The Conservation Objectives seek to *maintain* protected SPA features where evidence exists that a feature 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 designation. Where evidence exists that a feature or its supporting habitats, resources or processes 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.

[2] Based on Birds of Conservation Concern 5a (BoCC5a), for further details on definitions see Stanbury *et al.* 2024.
[3] Based on BirdLife International, 2021

The following protected features are in favourable condition at the Ailsa Craig SPA: guillemot and gannet. Therefore, the Conservation Objectives seek to *maintain* this condition.

The following protected features are in unfavourable condition at Ailsa Craig SPA: kittiwake, herring gull and lesser black-backed gull. Therefore, the Conservation Objectives seek to *restore* this condition.

Breeding kittiwake are in unfavourable condition at the Ailsa Craig SPA due to a decline of 84% from around 3,100 pairs at designation (1990 citation) to around 490 pairs (2021 count). The reasons for declines of kittiwakes at this SPA are uncertain however reduction of prey in their foraging areas is considered a key contributing factor. Kittiwake breeding success was found to be related to sandeel abundance and availability (e.g. Daunt *et al.* 2008; Poloczanska *et al.* 2004). Diet studies have highlighted a long-term decline in the overall prevalence of sandeels in kittiwake chick diet, concomitant with an increase in the relative prevalence of clupeids in Scottish waters (Wanless *et al.* 2018). In addition to off-colony factors, potential on-site pressures may include habitat changes due to quarrying and rock removal, tree mallow colonisation affecting nesting habitat extent, and reduced rabbit grazing which may affect nesting extent.

Breeding herring gull are in unfavourable condition at the Ailsa Craig SPA due to a decline of around 91% from 2,250 pairs (1990 citation) to around 210 pairs (2019 count). The reasons for the decline are uncertain but are likely to be related to off-colony factors such as reduction in opportunities to feed on fishery discards in the seas around the colony or reduction in other prey in foraging areas. These species are also subject to licensed control. In addition to off-colony factors, potential on-site pressures may include disturbance, and habitat changes due to quarrying and rock removal that has taken place on the island, tree mallow colonisation affecting nesting habitat extent, and reduced rabbit grazing. Predation by rats was formerly a likely impact, but this has ceased to be a pressure since eradication of rats in 1991. Gulls at this SPA have also been known to suffer from outbreaks of botulism in the past.

Breeding lesser black-backed gull are in unfavourable condition at the Ailsa Craig SPA due to a decline of around 90% from 1,800 pairs (1990 citation) to around 190 pairs (2019 count). The reasons for the decline are uncertain but are likely to be related to off-colony factors such as reduction in opportunities to feed on fishery discards in the seas around the colony or reduction in other prey in foraging. These species are also subject to licensed control. In addition to off-colony factors, potential on-site pressures may include disturbance, and habitat changes due to quarrying and rock removal that has taken place on the island, tree mallow colonisation affecting nesting habitat extent, and reduced rabbit grazing. Predation by rats was formerly a likely impact, but this has ceased to be a pressure since eradication of rats in 1991. Gulls at this SPA have also been known to suffer from outbreaks of botulism in the past.

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 the Ailsa Craig SPA all protected features are regularly occurring migratory species. Therefore, no protected feature is favoured over another.

There are currently no apparent management conflicts between the protected features within the Ailsa Craig SPA.

5.4 Overlapping Protected Areas

The following protected area boundaries overlap with, or are immediately adjacent to the Ailsa Craig SPA:

- Ailsa Craig Site of Special Scientific Interest (SSSI)

Conservation measures in the overlapping protected areas need to ensure the Conservation Objectives of all the sites are met. Priority would be given to the SPA protected features. There are no apparent management conflicts between the protected features of the Ailsa Craig SPA and the overlapping SSSI. Site information for the overlapping protected area is 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)[4]. 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 Black-legged kittiwake (breeding)

Kittiwakes may be susceptible to collision (Furness *et al.* 2013) and displacement (Peschko *et al.* 2020) from marine developments. They may also be vulnerable to oil spills (Mendel *et al.* 2008) and organochlorine pollution (Tartu *et al.* 2015), which can lead to lower adult survival and reduced breeding performance (Tartu *et al.* 2013; Svendsen *et al.* 2018). Kittiwakes are identified as potentially sensitive to accidental bycatch in fishing nets particularly in surface gears in UK waters (Bradbury *et al.* 2017). Kittiwakes may also be susceptible to disease (OSPAR Commission, 2009), including avian flu (APHA). Any reduction in prey items will also have an effect on kittiwake populations (Tasker *et al.* 2000), whether due to climate change (Sandvik *et al.* 2014) or industry (Bicknell *et al.* 2013). (*See also Sandeel sensitivity assessment in FeAST*).

6.2 Common guillemot (breeding)

Guillemots may be prone to accidental bycatch in fishing nets particularly in surface gears (Zydelis *et al.* 2013). Depletion of prey resources either due to climate change or industry can also have effects on their populations (Mendel *et al.* 2008). This species is also susceptible to large-scale mortality in major oil spills (Mendel *et al.* 2008), particularly during their flightless moult period. There is potential for impacts on auk species due to collision with artificial structures under water (Furness *et al.* 2012). Guillemots are also be susceptible to disease, including avian flu (APHA). These species may be displaced as a result of marine developments (Furness *et al.* 2013) and associated vessel activities (Furness, 2016). Guillemots show sensitivity to visual disturbance associated with vessels (Cook & Burton, 2010) and noise disturbance due to marine industry may also occur (Leopold & Camphuysen, 2009). As guillemots are species that feed in the water column, they can be potentially affected by any increase in turbidity that would affect their ability to successfully

[4] http://www.marine.scotland.gov.uk/feast/

forage for their prey (Cook & Burton, 2010). (*See also Sandeel sensitivity assessment in FeAST)*

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6.3 Herring gull and lesser black-backed gull (breeding)

Gulls may be susceptible to disease (including avian flu (APHA)), persecution and licensed control (Coulson, 2015). Gulls are vulnerable to collision with marine development above water (Furness *et al.* 2013). Other pressures include: accidental bycatch in fishing nets (Žydelis *et al.* 2013), oil pollution (Mendel *et al.* 2008) and organochlorine pollution (Camphuysen *et al.* 2010). Gulls may be displaced by marine development. Large gulls are also sensitive to large-scale changes in prey availability (e.g. Camphuysen, 2013; Bicknell *et al.* 2013).

6.4 Northern gannet (breeding)

Gannets are sensitive to collision with marine developments (Furness *et al.* 2013; ICES, 2015). Gannets are also identified as among the most vulnerable species to bycatch in both surface and pelagic gears in UK waters (Bradbury *et al.* 2017). They are also sensitive to entanglement in discarded fishing net and other plastic waste (Rodriguez *et al.* 2013). Gannets are vulnerable to diseases such as avian flu (APHA). Displacement as a result of marine development may also occur for gannets. This species may also be susceptible to marine litter ingestion or entrapment at their breeding colony (O'Hanlon *et al.* 2017). As these are a species that feed in the water column, they can be potentially affected by any increase in turbidity that would affect their ability to successfully forage for their prey (Cook & Burton, 2010).

7 Management

7.1 Conservation Measures

The following conservation measures are currently in place for the Ailsa Craig 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.

Other relevant measures include:

- Weekend Prohibition on mobile or active fishing gear: Fishing for sea fish with mobile or active gear prohibited from midnight on Friday until midnight on Sunday. SSI 2004 No. 276[5]. For general conservation/to reduce gear conflict. No vessel greater than 21.34 metres can be used to fish by any method.
- The SPA overlaps with the Ailsa Craig notified Site of Special Scientific Interests and management changes described on its list of Operations Requiring Consent must have prior consent from NatureScot.
- Extraction of microgranite from existing quarries currently has planning permission for a period of 30 years from 2020. This planning consent is subject to conditions requiring production and implementation of an environmental management plan (EMP) covering a range of mitigations around the methods and timings of works,

[5] http://www.legislation.gov.uk/ssi/2004/276/schedule/1/made

aimed at minimising the risk of impacts on breeding birds through disturbance, predation and pollution. Monitoring is also required as part of the quarry permission in order to reduce potential for disturbance.
- Management agreement with Northern Lighthouse board on helicopter landings at the site.
- The 'Biosecurity for Scotland's seabird islands' project (2023 – 2026), builds on the Biosecurity for LIFE project (2018 – 2023), and aims to permanently remove the threat of introduction and establishment of invasive predators on seabird islands. The project will work with stakeholders to implement and maintain sustainable biosecurity measures including awareness raising, prevention, surveillance, and incursion response. Ailsa Craig SPA is one of the seabird islands this project is focusing work on, with particular regard to ensuring the successful rat eradication on this island remains.

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.

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.

Table 2 describes the activities that are considered capable of affecting the protected features. Spatial data relating to the location and extent of the activities listed can be accessed on Marine Scotland's National Marine Plan Interactive[6] (where available). Activities that are considered not likely to affect the protected features (other than insignificantly) are listed in Table 3.

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, Scottish Outdoor Access Code, and Technical Standards for Scottish Finfish Aquaculture.

[6] https://marinescotland.atkinsgeospatial.com/nmpi/

Table 2. NatureScot's advice to support management for Ailsa Craig 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**	
	Kittiwake, guillemot and gannet	**Herring gull and lesser black-backed gull**
Aircraft (helicopter and unmanned aerial vehicles (UAV))	**No additional management** for helicopter landings associated with lighthouse maintenance – *existing management in place.* **Reduce or limit pressures** (disturbance) associated with UAVs within the SPA through effective mitigation such as: • following the Good Practice Advice for drones and wildlife • seasonal restrictions to avoid sensitive time periods for those protected features most susceptible to disturbance and/or; • spatial restrictions.	
Aquaculture - finfish	There are no finfish farms within the Ailsa Craig SPA marine waters, however there are finfish farms within connectivity to the Ailsa Craig SPA. Mitigation should focus on reducing or limiting pressures (entanglement) on the gannet and gull protected features.	
Boat use associated with both commercial (includes ship to ship) and recreational activities	**Reduce or limit pressures** (disturbance) associated with boat use during commercial and recreational activities through effective mitigation such as: • following the Scottish Marine Wildlife Watching Code (SMWWC); • seasonal 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.	

Activities considered capable of affecting the protected features	Advice to support management	
	Kittiwake, guillemot and gannet	**Herring gull and lesser black-backed gull**
Fishing - demersal mobile/active gear (inc. mechanical trawls and benthic trawls)*	*Existing management in place for fishing for sea fish with mobile or active gear – weekend prohibition.* Whilst we have limited understanding about the extent of interactions between benthic fisheries and prey-supporting habitat within the site, 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 with fishing that has the potential to damage seabed habitat (in particular, sandeel habitat, herring spawning grounds) **should be considered.**	
Fishing – hydraulic dredge*	Hydraulic dredging has the potential to cause significant disturbance to the sedimentary habitats that support the prey species of the protected features, particularly for sandeel and herring. 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. **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, herring spawning grounds) **is recommended.**	
Fishing – static gear (drift nets and bottom set nets inc. fyke nets)*	**Remove or avoid pressures** (entanglement) associated with the use of all static nets. Spatial exclusion of all static nets in areas identified as being important for auks and gannet (as identified from habitat and dive depth preferences) **is recommended**.	*Pressures unlikely to affect these features.*
Fishing – pelagic*	**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. 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 ensuring that the fishing activity does not prevent or disrupt the availability of	

Activities considered capable of affecting the protected features	Advice to support management	
	Kittiwake, guillemot and gannet	**Herring gull and lesser black-backed gull**
	prey species i.e. it should be considered as part of a broader ecosystem-based approach to management of this fishery.	
Fishing – long-lining (not including jigging)*	Our current understanding is that long-line fisheries are largely restricted to offshore waters. Site-specific measures for long-lining are not currently considered appropriate due to the scale of the fishery, and the wide-spread interaction with seabirds. However, there is evidence of seabird bycatch in long-line (not jigging) fisheries which we **recommend** require wider seas management measures.	
Mineral extraction	**No additional management** for extraction of microgranite from existing quarries – *existing management in place.*	
Renewable energy	There are new marine renewable development proposals within connectivity to the Ailsa Craig SPA. Mitigation should focus on reducing or limiting pressures (disturbance, displacement, collision) on the protected features.	There are new marine renewable development proposals within connectivity to the Ailsa Craig SPA. Mitigation should focus on reducing or limiting pressures (disturbance, displacement, collision) on the protected features. For any new onshore renewable development proposals within connectivity to the Ailsa Craig SPA., mitigation should focus on reducing or limiting pressures (disturbance, displacement, collision) on the gull features.
Scientific survey/research	**No additional management** for current level of scientific survey or research, provided appropriate mitigations to minimise disturbance in the breeding season is in place.	
Tourism & recreation (inc. angling, boating, diving, kayaking, geological tours, birdwatching)	**No additional management** for existing recreational activities (includes angling, boating, diving, kayaking, birdwatching) providing the Scottish Marine Wildlife Watching Code (SMWWC) is followed by water-borne recreational users. The SMWWC highlights why birds are sensitive to disturbance and offers practical advice on how to avoid disturbance. **No additional management** for current levels of land-based tourism activities (walking, birdwatching, geological tours), providing Scottish Outdoor Access Code is followed.	

Activities considered capable of affecting the protected features	Advice to support management	
	Kittiwake, guillemot and gannet	**Herring gull and lesser black-backed gull**
	Reduce or limit pressures (disturbance) where an increase by water-borne or land-based recreational activities demonstrates there is evidence of impacts at particular locations and/or if there is a major increase in intensity of these pursuits within the SPA. There would be potential for some zonation of measures across the site.	
Wildlife tour operators*	**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. **Reduce or limit pressures** (disturbance) 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.	

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

Activity	Comments
Anchorages & moorings	Beyond pressures associated with the vessel traffic (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 (including lobster, crabs and *Nephrops*)	Fishing using creels may take place within the MPA, although is thought to be uncommon. Whilst there is the potential for entanglement for all the protected features, the occurrence is thought to be 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.
Fishing – line fishing (jigging)	Beyond pressures associated with the vessel movement (covered in Table 2), this activity is not expected to have the potential to cause an adverse effect on the protected features.

[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.
- 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.
- Further understanding required on the reasons behind why some protected features are in unfavourable condition at the SPA. Productivity estimates at the SPA would be beneficial to help understand this decline.
- Further ecological studies of all protected features habitat preferences and use, and movements within the SPA.
- Better understanding on the implications of new offshore developments around the site on the protected features.
- Oceanographic studies, such as sea temperature and acidity levels, how these might change in future, and the effects of such changes on prey availability for birds.
- Studies of food availability and competition for food between different fish predators (e.g., birds, seals, dolphins, porpoises, whales) in relation to fisheries policy.
- Improved understanding of what supporting processes the key prey species are reliant upon within the 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 protected features.
- Understanding of the impacts of non-native mammals on the protected features at the SPA.
- Continued monitoring for the presence of any mammalian predators, in particular rats.
- Research is required on understanding the connectivity between the SPA and inland sites used by gull species.
- Research is required on understanding the potential population level impact of licensed control on herring gulls and lesser black-backed gulls which use this SPA.
- Monitoring required on the extent to which tree mallow growth is impacting on available nesting habitat for the protected features at the SPA.
- Investigation is required to assess the potential impact of highly pathogenic avian flu on the protected features both within the SPA and at a wider scale, in particular for gannet.
- Research required on the evolution of the HPAI virus, exposure and survival rates in affected seabird species following the 2021-2023 HPAI outbreak.

- Evaluate the potential mitigations that could be put into place to limit disease spread should another outbreak of HPAI occur at this, or any other SPAs.
- Ensure continued monitoring on the potential impact of the quarry extraction on the protected features at this SPA.

Annex 1. Ailsa Craig SPA Conservation Objectives

The box below provides the high-level Conservation Objective statements for the Ailsa Craig 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). The * denotes a qualifying feature that is an assemblage feature only.

Ailsa Craig SPA
Qualifying features: • Black-legged kittiwake (*Rissa tridactyla*)* • Common guillemot (*Uria aalge*)* • Herring gull (*Larus argentatus*)* • Lesser black-backed gull (*Larus fuscus*) • Northern gannet (*Morus bassanus*)
The Ailsa Craig SPA also supports: • Breeding seabird assemblage (includes all qualifying features)
1. To ensure that the qualifying features of the Ailsa Craig SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. 2. To ensure that the integrity of the Ailsa Craig SPA is restored 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 Ailsa Craig SPA. 2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species. 2c. The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at Ailsa Craig SPA.

1. To ensure that the qualifying features of the Ailsa Craig SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status.
Achieving 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). Favourable Conservation Status (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 to understand whether the integrity of the Ailsa Craig SPA would be maintained. If this is the case, then its contribution to FCS across the qualifying features' biogeographic range will be met. 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 Ailsa Craig SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature:

This objective recognises that kittiwake, herring gull and lesser black-backed gull are in unfavourable condition at Ailsa Craig SPA and consequently site integrity is compromised.

For Ailsa Craig SPA, when carrying out appraisals of plans or projects, the focus of the appraisal should be to understand the impact of the plan or project on site integrity. For qualifying features that are favourable condition this means maintaining that condition. For the qualifying features that are in unfavourable condition, it means ensuring that the plan or project does not prevent or reduce the potential for recovery. The expectation is not for the plan or project to restore site integrity. Should the plan or project compromise the ability of the qualifying features to recover (e.g. result in a further decline or accelerate the rate of decline, or prevent a recovery from occurring), then the Ailsa Craig SPA will not make an appropriate contribution to achieving FCS across the Atlantic Biogeographic Region. Similarly, when determining whether management measures are required to meet the Conservation Objectives, the focus is on ensuring the conditions are appropriate to support recovery and subsequently restore site integrity. Further advice on how these appraisals should be focussed in relation to site integrity is provided in 2a, b and c.

The breeding seabird assemblage is not considered further in the Conservation Objectives as each qualifying feature and 'named qualifier' of the assemblage are addressed individually.

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 Ailsa Craig 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 protected 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. Increased levels of atmospheric CO_2 will also result in ocean acidification. Any of these factors could cause changes in bird abundance and distribution at the SPA due to changes in prey (species, availability and distribution).
- ***For breeding seabirds -*** climate change may result in effects at wintering grounds or in other parts of the overall breeding range which could have subsequent effects on their breeding population and distributions. In coastal breeding sites, increased flooding associated with storm tides may also cause nest site failures in breeding seabirds (Mendel *et al.* 2008). Increased storminess could also affect cliff-nesting seabirds, as eggs or chicks are more likely to be dislodged by waves, wind or rain. Parent birds may also find foraging more difficult during storms, reducing their ability to maintain their own body condition whilst also incubating or feeding chicks.
- ***Guillemot:*** This species may be vulnerable to extreme weather events, particularly winter storms, which have been linked to adult mortality and winter 'wreck' events (BirdLife International, 2022). Decreased survival rates in this species have been linked to increased sea temperatures and stronger winds (Votier *et al.* 2005; 2008; Sandvik *et al.* 2005).

- ***Kittiwake:*** Breeding phenology is affected by climate change, with a trend in later breeding being seen in kittiwakes (Wanless *et al.* 2009). Kittiwake breeding populations are highly vulnerable to the impacts of climate change on the population dynamics and distribution of their preferred prey (e.g. Sandvik *et al.* 2014).
- ***Gulls (herring gull and lesser black-backed gulls):*** this species is indirectly influenced by climate variation (for example stratification, sea surface temperature, the North Atlantic Oscillation), as mediated through changes in their food supply (Johnston *et al.* 2021), which in turn can affect their breeding success. Low-lying gull nests can be susceptible to flooding either through sea level rise or increase in storminess (Johnston *et al.* 2021). Overall, herring gulls are predicted to decrease as a result of climate change, whereas lesser black-backed gulls are considered to be at lower risk of climate change effects (Davies *et al.* 2021).
- ***Gannet:*** Gannets can travel great distances from their nest site to forage and are able to exploit a wide range of prey. Hence, they may have greater potential than some other seabird species to adapt to climate change. However, in the North West Atlantic, a century-long population trend of northern gannets correlated with warming surface water conditions and increased mackerel availability on a decadal scale, indicating that climate change effects on diet is likely for this species (Montevecchi & Myers, 1997).

2a. The populations of the qualifying features are viable components of the Ailsa Craig SPA.

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 reduction or continued decline in the population and consequently, reduction in the contribution the Ailsa Craig 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, such that recovery cannot be expected. Ensuring the capacity of the Ailsa Craig SPA to support all the essential behaviours and activities required to support viable populations of the qualifying features in the relevant season(s) are addressed by Conservation Objectives 2b and 2c.

At a site level, the population is 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. For the qualifying features, the viability of the species within the Ailsa Craig SPA is intrinsically linked to their ability to access and use foraging habitat in areas of functionally linked sea, within foraging range, outwith the site, in addition to the ability of the site to support breeding adult survival and chick-rearing.

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); predation, disease, flooding events, and pollution. Indirect mortality 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 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.

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).

Feature	Site-specific advice	Site-specific information
Black-legged kittiwake	Ensure the breeding population of	The site reference population for breeding kittiwakes at the Ailsa Craig SPA is 3,100 pairs (1990 citation). The latest count data available for this SPA has shown a decrease of kittiwakes to around

	kittiwake have the ability to recover to the site reference population. ***and*** Ensure kittiwakes are not at significant risk from injury or mortality. ***and*** Ensure kittiwakes can move safely between the site and important areas of functionally linked sea out with the site.	490 pairs (2021 count). Kittiwake populations have declined in both Scotland and the UK, with decreases of 42% in their UK population since Seabird 2000 (1998-2002) and 57% in Scotland (Burnell *et al.* 2023). It is acknowledged that due to the steep national decline in kittiwakes it will be difficult to recover the kittiwake population to the site reference population. Reasons for the decline in kittiwakes at the Ailsa Craig SPA, are not fully understood but are likely to be related to off-colony factors affecting their food supply. Wider pressures on kittiwakes, such as climate change or disease, may limit the potential for kittiwakes to achieve Favourable Conservation Status. When assessing the effects of any plan or project, consideration should be given to ensuring that the plan or project will not hinder the ability to recover. This will help ensure resilience within the wider kittiwake population. Plans or projects should also ensure that kittiwakes are not at significant risk from injury or mortality either within or out with the SPA. The long-term recovery of kittiwakes at the Ailsa Craig SPA is also intrinsically linked to their ability to access and use habitats in areas of functionally linked sea outwith the SPA. When assessing the effects of any plan or project consideration should therefore also be given to whether impacts on the population whilst outwith the SPA could affect achievement of this Conservation Objective.
Common guillemot	Maintain the breeding population of guillemots at a stable or increasing trend relative to the site reference population. ***and*** Ensure guillemots are not at significant	The site reference population for breeding guillemots at the Ailsa Craig SPA is 3,400 pairs (1990 citation). The latest count data available for this SPA shows this number has increased to around 7100 individuals (2021 count), which is the equivalent to around 4800 pairs. Guillemot populations in the UK decreased by 8% since Seabird 2000 (1998-2002) and 31% in Scotland (Burnell *et al.,* 2023). The long-term maintenance of guillemot at the Ailsa Craig SPA is intrinsically linked to their ability to access and use habitats in areas of functionally linked sea outwith the SPA. When assessing the effects of any plan or project consideration should therefore also be given to whether impacts on the population whilst outwith the SPA could affect achievement of this Conservation Objective.

	risk from injury or mortality. ***and*** Ensure guillemots can move safely between the site and important areas of functionally linked sea outwith the site.	
Herring gull	Ensure the breeding population of herring gulls have the ability to recover to the site reference population. ***and*** Ensure herring gulls are not at significant risk from injury or mortality. ***and*** Ensure herring gulls can move safely between the site and important areas of functionally linked land and sea outwith the site.	The site reference population for breeding herring gulls at the Ailsa Craig SPA is 2,300 pairs (1990 citation). The latest count data available for this SPA shows this number has declined to around 210 pairs (2019 count). Herring gulls have experienced a 44% decline in their breeding populations within the UK since Seabird 2000 (1998-2002). In Scotland, Herring gull have decreased by 44% (Burnell *et al.,* 2023). Monitoring in 2023 indicated a further decline of 24% in Scotland due to avian flu (Tremlett *et al.* 2024). The reasons for the decline of herring gull at this SPA are uncertain. The decline of 91% is much steeper than the national decline of this species. Off-colony factors such as reduction in prey in foraging areas and reduction in opportunities to feed on fishery discards may be contributing to the decline. This species may also be subject to licensed control outwith the SPA. On-site pressures may include disturbance and habitat changes. Research is required to fully understand the reasons behind the decline and whether there is anything that can be done to reverse it at this SPA. The long-term recovery of herring gulls the Ailsa Craig SPA is also intrinsically linked to their ability to access and use habitats in areas of functionally linked sea and land outwith the SPA. This may include marine foraging areas as well as terrestrial environments. In the terrestrial environment herring gulls may be foraging in agricultural/pastoral fields, along the coastlines in intertidal habitats, in freshwater habitats, at landfills, and in urbanised/more built-up areas. When assessing the effects of any plan or project consideration should therefore also be given to whether impacts on the population whilst outwith the SPA could affect achievement of this Conservation Objective.
Lesser black-backed gull	Ensure the breeding population of lesser	The site reference population for breeding lesser black-backed gulls at the Ailsa Craig SPA is 1,800 pairs (1990 citation). The latest count data available for this SPA shows this number has declined to

	black-backed gulls have the ability to recover to the site reference population. ***and*** Ensure lesser black-backed gulls are not at significant risk from injury or mortality. ***and*** Ensure lesser black-backed gulls can move safely between the site and important areas of functionally linked land and sea outwith the site.	around 190 pairs (2019 count). Lesser black-backed gulls have experienced a 49% decline in their breeding 'natural-nesting' populations within the UK since Seabird 2000 (1998 -2002), and 48% in Scotland (Burnell et al., 2023). Monitoring in 2023 indicated a further decline of 58% in Scotland due to avian flu (Tremlett *et al.,* 2024). The reasons for the decline of lesser black-backed gulls at this SPA are uncertain. The decline of 90% is much steeper than the national decline of this species. Off-colony factors such as reduction in prey in foraging areas and reduction in opportunities to feed on fishery discards may be contributing to the decline. This species may also be subject to licensed control outwith the SPA, although population-level effects of this are currently now fully understood. On-site pressures may include disturbance and habitat changes. Research is required to fully understand the reasons behind the decline and whether there is anything that can be done to reverse it at this SPA. The long-term recovery of lesser black-backed gulls the Ailsa Craig SPA is also intrinsically linked to their ability to access and use habitats in areas of functionally linked sea and land outwith the SPA. This may include marine foraging areas as well as terrestrial environments. In the terrestrial environment lesser black-backed gulls may be foraging in agricultural/pastoral fields, along the coastlines in intertidal habitats, in freshwater habitats, at landfills, and in urbanised/more built-up areas. When assessing the effects of any plan or project consideration should therefore also be given to whether impacts on the population whilst outwith the SPA could affect achievement of this Conservation Objective.
Northern gannet	Maintain the breeding population of gannets at a stable or increasing trend relative to the current site reference population. ***and*** Ensure breeding gannets are not at	The site reference population for gannets at the Ailsa Craig SPA is 23,000 pairs (1990 citation). The latest available count noted an increase to around 30, 965 pairs (2023). Gannets in the UK have increased by 38% since the last gannet census (2003-2005) and have increased by 40% in Scotland in the same period (Burnell *et al.* 2023). In summers of 2021 and 2022, gannet populations were affected by avian flu, monitoring in 2023 indicated a decline of 22% in Scotland due to avian flu (Tremlett *et al.,* 2024). The long-term maintenance of gannets at the Ailsa Craig SPA is intrinsically linked to their ability to access and use habitats in areas of functionally linked sea outwith the SPA. When assessing the effects of any plan or project consideration should therefore also be given to whether impacts on the population whilst outwith the SPA could affect achievement of this Conservation Objective.

	significant risk from injury or mortality. ***and*** Ensure gannets can move safely between the site and important areas of functionally linked sea outwith the site.	

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 Ailsa Craig SPA used for breeding, 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 breeding season, 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, or;
2. Significant disturbance which alters their distribution within the site or disrupts important behaviours.

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 with a high degree of certainty. 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.

All qualifying features are protected throughout the whole site, throughout the year. We anticipate that some locations within the Ailsa Craig 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.

Direct displacement/redistribution of the qualifying features can arise from: barriers to movement to and between foraging and roosting locations; and visual disturbance (e.g. associated with vessel movements or human presence). Indirect displacement/redistribution 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)).

For all qualifying features: 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 incubation, chick-rearing, foraging or resting behaviour can also put increased energetic demands on birds during an already energetically expensive season. Ensuring safe movement within and between the breeding colony and those areas used for foraging, roosting and other maintenance behaviours (see also 2c) is important to meet the energetic demands required to achieve or maintain body condition needed to support migration and successful breeding and for subsequent winter survival. Barriers to movement may reduce access to preferred foraging habitat and cause sub-optimal foraging.

Feature	**Site-specific advice**	**Site-specific information**
Black-legged kittiwake	Ensure kittiwakes continue to have access to and can utilise all optimal habitats suitable for all relevant aspects	Kittiwakes are migratory species with the vast majority of adults from North Atlantic colonies such as Ailsa Craig SPA appearing to winter in the west Atlantic between Newfoundland and the mid-Atlantic ridge with relatively small numbers wintering in the North Sea and west of the British Isles. Kittiwakes are present at the Ailsa Craig SPA during their breeding period from mid-April to end of August.

	of their life cycle associated with the site. ***and*** Avoid significant disturbance to kittiwakes and ensure individuals can move safely between these areas within the site.	However, feeding aggregations may still be seen around the Scottish coast until late October/early November. They will therefore be present during both the breeding and non-breeding seasons. In the Ailsa Craig SPA kittiwakes nest on the steep coastal cliffs, with breeding concentrated in localised areas at the north-west and south-west of the island. Kittiwakes also require access to areas of freshwater where rivers and streams flow into the sea within the SPA which they require for bathing. Freshwater is scarce on Ailsa Craig, with two small pools ('Garra Loch') on the upper slopes being the only standing water. For roosting, they may use manmade walls and shorelines. Kittiwakes at the Ailsa Craig SPA will use both inshore waters within 1km of their colony for loafing, preening, bathing and other important maintenance behaviours, and further offshore waters and shelf waters for foraging. In the breeding period, the mean maximum foraging range for kittiwakes is 156.1+/- 144.5km, though they will forage further, with a maximum range of 770km (Woodward *et al.* 2019). After breeding, kittiwakes will also use sandy beaches near their breeding grounds to moult in large flocks of individuals.
Common guillemot	Ensure guillemots continue to have access to and can utilise all optimal habitats suitable for all relevant aspects of their life cycle associated with the site. ***and*** Avoid significant disturbance to guillemots and ensure individuals can move safely between these areas within the site.	Guillemots remain near their breeding colonies throughout the year and will continue to attend their breeding sites at the Ailsa Craig SPA frequently during the non-breeding period, particularly from February onwards. From the beginning of August to mid-October they will remain on the waters by Ailsa Craig SPA, where adults will undergo a flightless moult period. Their breeding season is from April until mid-August. Guillemots will nest on bare cliff ledges and flat boulders at the Ailsa Craig SPA in dense colonies. Their main nesting sites are on the north-western and south-western parts of the coastline. They use areas close to the coast to forage, rest, and carry out other maintenance activities. In the breeding period, the foraging range of guillemot has a mean maximum of 73.2 ± 80.5 km, with a maximum range of 338km (Woodward *et al.* 2019). Guillemots forage both at the seabed (demersal) and within the water column (pelagic), primarily during daylight hours (Wakefield *et al.* 2017). They have an average dive depth of 42m, though can forage up to 200m depth (Ropert-Coudert *et al.* 2018). Guillemots may fly in small groups and will often form large rafts on the sea close in the colony before heading out on a foraging trip. When ready to fledge the chick will leave the nest site and joins the male of the pair on the sea, where they travel further out to sea together and remain close for around two months (Harris & Wanless, 2003).
Herring gull	Ensure herring gulls continue to have access to and can utilise all	Herring gulls will be present at the Ailsa Craig SPA throughout the year. Their breeding season is from March to the end of August, and their non-breeding period from September to end of February.

	optimal habitats suitable for all relevant aspects of their life cycle associated with the site. ***and*** Avoid significant disturbance to herring gulls and ensure individuals can move safely between these areas within the site.	Herring gulls nest widely within the Ailsa Craig SPA, but particularly around the northern and south-western coastline and in areas on the upper grassy slopes. As with other gull species, herring gulls nest on flat ground with a shallow nest made from grass, moss and sometimes seaweed. Herring gulls use areas close to the coast as well as offshore waters in which to forage, rest, and carry out other maintenance activities. Herring gulls feeding in the marine environment are largely surface feeders, scavengers, and predators although they can dive up to 2m for prey items. They may also kleptoparasitise other seabirds for fish such as sandeel. They can dive up to 2m for prey items. In the breeding period, herring gulls have a mean maximum foraging range of 58.8±26.8km (Woodward *et al.* 2019), though in the non-breeding season the foraging range may be much larger than this.
Lesser black-backed gull	Ensure lesser black-backed gulls continue to have access to and can utilise all optimal habitats suitable for all relevant aspects of their life cycle associated with the site. ***and*** Avoid significant disturbance to lesser black-backed gulls and ensure individuals can move safely between these areas within the site.	Lesser black-backed gulls will be present at the Ailsa Craig SPA throughout the year. Their breeding season is from mid-March to the end of August, and their non-breeding period from September to mid-March. Many of the lesser black-backed gulls at Ailsa Craig SPA will migrate to their wintering grounds after the breeding period. Lesser black-backed gulls nest widely within the Ailsa Craig SPA, but particularly around the northern and south-western coastline and in areas on the upper grassy slopes. As with other gull species, lesser black-backed gulls nest on flat ground with a shallow nest made from grass, moss and sometimes seaweed. Lesser black-backed gulls use areas close to the coast as well as offshore waters in which to forage, rest, and carry out other maintenance activities. Lesser black-backed gulls feeding in the marine environment are largely surface feeders, scavengers, and predators although they can dive up to 2m for prey items. They may also kleptoparasitise other seabirds for fish such as sandeel. In the breeding period, lesser black-backed gulls have a mean maximum foraging range of 127±109km (Woodward *et al.* 2019), though in the non-breeding season the foraging range is much larger than this.
Northern gannet	Ensure gannets continue to have access to and can utilise all optimal habitats suitable for all	Gannets breeding at the Ailsa Craig SPA will be present from mid-February until the end of September. After their breeding period they will then depart for their wintering areas in the North Sea or off West Africa. Gannets nest in dense colonies on the cliffs within the Ailsa Craig SPA and will construct nests from seaweed, plants, earth and debris from the sea (Nelson, 2010).

	relevant aspects of their life cycle associated with the site. ***and*** Avoid significant disturbance to gannets and ensure individuals can move safely between these areas within the site.	The gannet colony within this SPA is concentrated in cliffs along the western and southern sides of the island. Gannets use areas close to the coast as well as offshore waters in which to forage, rest, and carry out other maintenance activities. Gannets will plunge dive to around 11m but can then carry out wing-propelled pursuit to deeper depths of around 24m. Gannets have a mean maximum foraging range of 315.2+/- 194.2 km during the breeding period, but the maximum foraging distance recorded can be over 700km (Woodward *et al.* 2019).

2c. The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at Ailsa Craig SPA.
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. It also recognises however, that the populations of breeding kittiwake, herring gull and lesser black-backed gull at the Ailsa Craig SPA are in unfavourable condition and that this may, in part, be due factors within the SPA. The qualifying features require suitable habitat for breeding, 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. The supply of food resources is supported by environmental processes. In the terrestrial environment, supporting habitats refer to the characteristics of the vegetation and rock, relevant to their use by the qualifying features. Supporting processes relates to wider processes such as factors affecting coastal erosion, factors affecting vegetation formation, which will influence the habitat types available for the qualifying features. In the marine environment, 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. 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 Ailsa Craig SPA.

The overall water body condition status relevant to the Ailsa Craig SPA was assessed as "Good" in 2020[8]. 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 Ailsa Craig SPA.

Feature	Site-specific advice	Site-specific information
Black-legged kittiwake	Maintain or enhance the extent and distribution of the supporting habitats for kittiwakes within the site. ***and*** Ensure the variety and abundance of food resources and the condition of supporting habitats and associated processes have the ability to recover. ***and*** Existing water quality should be maintained any increase in nutrients, turbidity or contaminants where this could reduce supporting habitats	Kittiwakes at the Ailsa Craig SPA will use steep, coastal cliffs for nesting. Their nest is made of compacted mud, grass, feathers and occasionally seaweed (Snow & Perrins, 1998). Kittiwakes require access to areas of freshwater for bathing and for roosting they may use manmade walls and sandy shores. Kittiwakes at the Ailsa Craig SPA will use both inshore waters within 1km of their colony for loafing, preening, bathing and other important maintenance behaviours, and further offshore waters and shelf waters for foraging. Kittiwakes may also use sandy beaches on nearby coasts to moult in flocks of individuals. Kittiwakes are omnivorous, with a diet consisting predominantly of shoaling marine fish and invertebrates (e.g. squid and shrimps) obtained just below or under (up to 4m) the sea surface. During the breeding season they may also feed on intertidal molluscs, crustaceans (e.g. crayfish), earthworms and plant matter (del Hoyo *et al.* 1996) and may use seaweed for foraging due to the association of seaweed with benthic infauna (Goodship & Furness, 2019). Sandeel are a particularly important prey item, as well as sprat, rockling and gadoids. When fishing, they will often feed in small flocks. Information is lacking on the supporting habitats for kittiwakes at the Ailsa Craig SPA but may relate to the availability of cliff nesting habitat and freshwater. In the marine environment the supporting processes may relate to water quality (nutrients and turbidity) and water flow.

[8] https://www.sepa.org.uk/data-visualisation/water-classification-hub/

	and/or prey, should be avoided.	
Common guillemot	Maintain the extent and distribution of the supporting habitats for common guillemot within the site. ***and*** Maintain the variety and abundance of food resources and the condition of supporting habitats and associated processes. ***and*** Existing water quality should be maintained any increase in nutrients, turbidity or contaminants where this could reduce supporting habitats and/or prey, should be avoided.	Guillemots at the Ailsa Craig SPA require suitable habitat for breeding, foraging, resting, and other maintenance activities. They will use cliff ledges as their nesting habitat. Guillemots use areas close to the coast as well as offshore waters in which to forage and rest. Guillemots forage both at the seabed (demersal) and within the water column (pelagic) up to 200m, primarily during daylight hours (Wakefield *et al.* 2017). Breeding guillemot feed on small schooling fish including sandeels, clupeids, capelin, sprats and juvenile herring and cod (Wakefield *et al.* 2017). They may also consume molluscs, marine worms, squid, crustaceans and amphipods. The key supporting habitats for guillemots at the Ailsa Craig SPA will relate to the availability of suitable cliff-nesting habitat. As they are a species that feeds in the water column, they can be potentially affected by any increase in turbidity that would affect their ability to successfully forage for their prey (Cook & Burton, 2010). Guillemots have been shown to show a weak preference for frontal regions and for substrate containing a relatively low proportion of gravel (Wakefield *et al.* 2017). Guillemots have also been observed to forage in riptides (Wanless *et al.* 1990). Studies have also demonstrated guillemots foraging in areas at fronts between thermally distinct bodies of water (BirdLife International, 2022).

Herring gull	Maintain or enhance the extent and distribution of the supporting habitats for herring gulls within the site. ***and*** Ensure the variety and abundance of food resources and the condition of supporting habitats and associated processes have the ability to recover. ***and*** Existing water quality should be maintained any increase in nutrients, turbidity or contaminants where this could reduce supporting habitats and/or prey, should be avoided.	Herring gulls require suitable habitat for breeding, roosting, loafing, foraging, and maintenance activities within the Ailsa Craig SPA. Their nest will usually be shallow and made from grass, moss and sometimes seaweed. Herring gulls are opportunistic scavengers and predators. Herring gulls feed in the marine, coastal and terrestrial environments. Herring gulls feeding in the marine environment within this SPA will be largely feeding on the surface and scavenging, diving up to 2m for prey items. When foraging in the marine and coastal environments their prey will include fish, crabs, molluscs, starfish, marine worms and may also scavenge from fishing boats (del Hoyo *et al.* 1996). Herring gulls may also forage within infralittoral reef kelp forests to feed on benthic infauna (Kelly, 2005). Information is lacking on the supporting habitats and processes for herring gulls at the Ailsa Craig SPA but may relate to the availability of suitable nesting habitat as well as any processes that would affect their prey.
Lesser black-backed gull	Maintain or enhance the extent and distribution of the supporting habitats for herring gulls within the site. ***and***	Lesser black-backed gulls require suitable habitat for breeding, roosting, loafing, foraging, and maintenance activities within the Ailsa Craig SPA. Their nest will usually be shallow and made from grass, moss and sometimes seaweed. Lesser black-backed gulls are opportunistic scavengers and predators. Lesser black-backed gulls feed in the marine, coastal and terrestrial environments. Lesser black-backed gulls feeding in the marine environment within this SPA will be largely feeding on the surface and scavenging, diving up to 2m for prey items. When foraging in the marine and coastal environments their prey will include fish, crabs,

	Ensure the variety and abundance of food resources and the condition of supporting habitats and associated processes have the ability to recover. ***and*** Existing water quality should be maintained any increase in nutrients, turbidity or contaminants where this could reduce supporting habitats and/or prey, should be avoided.	molluscs, starfish, marine worms and may also scavenge from fishing boats (del Hoyo *et al.* 1996). Lesser black-backed gulls may also forage within infralittoral reef kelp forests to feed on benthic infauna (Kelly, 2005). Information is lacking on the supporting habitats and processes for lesser black-backed gulls at the Ailsa Craig SPA but may relate to the availability of suitable nesting habitat as well as any processes that would affect their prey.
Northern gannet	Maintain the extent and distribution of the supporting habitats for northern gannet within the site. ***and*** Maintain the variety and abundance of food resources and the condition of supporting habitats and associated processes. ***and***	Gannets require suitable habitat for breeding, foraging, loafing, and other maintenance activities within the Ailsa Craig SPA. Gannets forage over shelf waters, and in water closer to shore. Gannets will plunge dive to around 11m but can then carry out wing-propelled pursuit to deeper depths of around 24m within the water column. At breeding grounds they will use cliff habitat to nest colonially. Gannets have a flexible diet and are capable of exploiting a wide variety of pelagic fish prey, including: sandeel, haddock, whiting, blue whiting, cod, saithe, mackerel, sprat, herring and red gurnard. Gannets may also take advantage of fishery discards, though the level of this will differ depending on the individual (Votier *et al.* 2010). Prey taken may differ markedly in size from 0-group sandeels (mean = 7.8 cm) to haddock (29.1 cm) and trout (34.0 cm) (Hamer *et al.* 2000). Information is lacking on the supporting habitats and processes for gannets at the Ailsa Craig SPA, but may relate to availability of nesting habitat, water quality (nutrients) and water flow.

	Existing water quality should be maintained any increase in nutrients, turbidity or contaminants where this could reduce supporting habitats and/or prey, should be avoided.	

Annex 2. Supporting information

Factors determining the potential for feature recovery.

Feature	Factors determining the potential for feature recovery
Black-legged kittiwake	Kittiwake estimated generation length is 9.8 years and age of first breeding is 4 years old (Bird *et al.* 2020). Maximum age recorded is around 29 years (Fransson *et al.* 2010). Kittiwake clutch size is 2 (1-3) (Snow & Perrins, 1998). Fledglings typically depart colonies between late July and mid-August, dispersing rapidly from colonies, leaving the area about 10 days on average after their first flight (Coulson, 2011). Adult survival rates vary with period and colony but range from 0.8-0.93, with an average survival of 0.854 (Coulson, 2011; Horswill & Robinson, 2015). Any effect on adult mortality can potentially have serious effects on breeding numbers. As a long-lived seabird species, the adult will balance parental investment into their current breeding attempt with their own need to survive, and future reproductive attempts. A wide-scale tracking study found that the vast majority of adults from North Atlantic colonies appear to winter in the west Atlantic between Newfoundland and the mid-Atlantic ridge with the relatively small numbers wintering in the North Sea and west of the British Isles coming mostly from colonies in the British Isles or in the Barents Sea (Furness, 2015). Feeding aggregations may be seen around the Scottish coast until late October/early November (Forrester *et al.* 2007). Numbers of kittiwakes passing through UK waters in spring and autumn vary strongly from year to year apparently in relation to weather conditions (Furness, 2015). Pressures in these wintering or passage grounds could limit potential for populations to recover from impacts arising in breeding areas. Adult moult may begin during the breeding season but in general will occur after breeding. This species will often moult in large flocks of several thousand individuals on sandy beaches between the breeding grounds and the open sea (BirdLife International, 2022). Any pressure (e.g. disturbance) to these moulting flocks may have subsequent effects on their energy expenditure and hence their survival. Kittiwakes are surface feeders and are therefore limited to those prey found in the upper 1m of the sea (Snow & Perrins, 1998). Kittiwakes have a high reliance on sandeel as their main prey (Daunt *et al.* 2008), and as such are judged to be one of the most vulnerable species in terms of breeding success in relation to sandeel abundance (Furness & Tasker, 2000). This means they may be less resilient to a loss of sandeel prey resource, and thus their recovery would be compromised.
Common guillemot	Guillemot estimated generation length is 14.8 years and age of first breeding is 4 years (Bird *et al.* 2020). Guillemots can live in excess of 40 years (Fransson *et al.* 2010), though the average lifespan is likely to be less than 25 years. Guillemots lay a single egg and will not relay if the egg is lost (Snow & Perrins, 1998), meaning they have a slow reproductive rate. As with many species, productivity of first-time breeders is relatively low, and for guillemots stabilises from the fifth breeding attempt (Crespin *et al.* 2006). When ready to fledge the chick will leave the nest site and joins the male of the pair on the sea, where they then travel further out to sea together and remain close for around two months (Harris & Wanless, 2003). In this post-fledgling period, the chicks will be vulnerable to predation at this lifestage being less able to

	escape predators (from late July-end of August during fledging). Adult survival is estimated as being 0.935 (Bird *et al.* 2020) and average productivity 0.672 (Horswill & Robinson, 2015). Any effect on adult mortality can potentially have serious effects on breeding numbers. As with other long-lived seabird species, the adult will balance parental investment into their current breeding attempt with their own need to survive, and future reproductive attempts. The majority of guillemots in UK waters during the non-breeding season are likely to be from UK colonies (Furness, 2015). Few adults move beyond UK waters, although immatures range more widely during the non-breeding season (Furness, 2015). Non-breeding adults tend to remain near their breeding colonies throughout the year and attend their nest ledges, except during their flightless moult period from beginning of August to mid-October. Pressures during this moult period, where adults will be flightless for 1-2 months, could have a subsequent effect on reproduction or survival. Guillemots are not particularly agile in the air, and they find take-off from water difficult (Bédard, 1985), which may limit their ability to avoid e.g. fast moving vessels. A guillemot's foraging technique means that they only carry one fish back to their chick at a time, whereas other auk species can carry multiple fish. This limits the quantity of prey they can bring back to their chick each day. As guillemots can dive deeply, they can feed both at the seabed (on demersal prey) and in the water column (on pelagic prey) (Wakefield *et al.* 2017), meaning they may have more flexibility in the prey items they can forage on, depending on their availability. Guillemots, as with other auk species, have a high wing loading, meaning that there is a high energetic cost of flight (Thaxter *et al.* 2010). This may mean if they have to travel further to find food they may suffer energetically (Masden *et al.* 2010).
Herring gull	Estimated generation length is 14 years, which is longer than other gull species, with a maximum known longevity of around 35 years (Bird *et al.* 2020). Age of first breeding is around 5 years old (Horswill & Robinson, 2015). Clutch size is 3 (2-4) eggs (Cramp & Simmons, 2004). Herring gulls have the ability to lay more than one clutch if the first one has been destroyed, but it depends on the female's physiological condition and replacement clutches will often have smaller or fewer eggs than the first clutch. Incubation takes 28-30 days (from mid-April), chick rearing takes 35-40 days (Cramp & Simmons, 2004). Herring gulls are long-lived species, with an age of 49 having been recorded. Adult survival rates have been estimated to be between 0.83-0.89 (Bird *et al.* 2020; Horswill & Robinson, 2015), though lower survival rates have been estimated for urban nesting herring gulls (Rock & Vaughan, 2013). Any effect on adult mortality can potentially have serious effects on breeding numbers. As a long-lived seabird species, the adult will balance parental investment into their current breeding attempt with their own need to survive, and future reproductive attempts. Northern breeding populations of this species are migratory (del Hoyo *et al.* 1996) although populations in the south are nomadic or completely non-migratory (BirdLife International, 2022). Herring gulls show high site fidelity to their breeding sites. Such high site fidelity may limit individual ability to adapt to changes and hence potential for population recovery from perturbations. Herring gulls feeding in the marine environment are largely surface feeders, scavengers, and predators. Herring gulls are opportunistic foragers and will also forage in terrestrial environments. They have the ability to switch prey

	depending on what is available, meaning they may be more resilient to change if a particular prey item decreases.
Lesser black-backed gull	Estimated generation length is 13 years, with a maximum known longevity of around 35 years (Bird *et al.* 2020). Age of first breeding is around 5 years old (Horswill & Robinson, 2015). Clutch size is 3 (1-4) eggs (Cramp & Simmons, 2004). Lesser black-backed gulls have the ability to lay more than one clutch if the first one has been destroyed, but it depends on the female's physiological condition and replacement clutches will often have smaller or fewer eggs than the first clutch. Incubation takes 28-30 days (from April), chick rearing takes 35-40 days (Cramp & Simmons, 2004). Herring gulls are long-lived species, with an age of 49 having been recorded. Adult survival rates have been estimated to be between 0.89-0.91 (Bird *et al.* 2020; Horswill & Robinson, 2015), though lower survival rates have been estimated for urban nesting lesser black-backed gulls (Rock & Vaughan, 2013). Any effect on adult mortality can potentially have serious effects on breeding numbers. As a long-lived seabird species, the adult will balance parental investment into their current breeding attempt with their own need to survive, and future reproductive attempts. This species is migratory and therefore pressures on route to or in their wintering grounds (e.g. entanglement in fishing gears) could limit potential for populations to recover from impacts arising in summer foraging areas. Lesser black-backed gulls show high site fidelity to their breeding sites. Such high site fidelity may limit individual ability to adapt to changes and hence potential for population recovery from perturbations. Lesser black-backed gulls feeding in the marine environment are largely surface feeders, scavengers, and predators. Lesser black-backed gulls are opportunistic foragers and will also forage in terrestrial environments. They have the ability to switch prey depending on what is available, meaning they may be more resilient to change if a particular prey item decreases.
Northern gannet	Estimated generation length of gannets is 15.0 years and the maximum longevity recorded is 37.4 years (Bird *et al.* 2020). Age of first breeding is 5 years old (Horswill & Robinson, 2015). Northern gannets lay a single egg; incubation is 42-46 days and chick rearing 84-97 days (Snow & Perrins, 1998), one of the longest chick rearing periods of any seabird species. Chicks fledge with large fat stores and begin migration by swimming, independent from their parents (Wanless, 2002) until their fat load is reduced. Their productivity is estimated at 0.700 (Horswill & Robinson, 2015). Local productivity rates have been linked to parental experience and increase sequentially between the first and the fourth breeding attempt (Nelson, 2010). Adult survival is estimated as being 0.940 (Bird *et al.* 2020), one of the highest of all seabirds. Wanless *et al.* (2006) found that about 30% of young survive to an age of four years with annual survival over the first four years of life increasing gradually from 0.424 to 0.895 before reaching this adult value. Any effect on adult mortality can potentially have serious effects on breeding numbers. Gannets leave their colonies mainly between August-October, with their subsequent migration taking up to four weeks to complete, as birds spend time sitting on the water or foraging locally rather than travelling consistently towards their goal (Kubetzki *et al.* 2009). Gannets from Bass Rock, Scotland have been tracked to their wintering grounds further south in the southern North Sea and English Channel, the Bay of Biscay and Celtic Sea, in the

	Mediterranean Sea and off West Africa (Kubetzki *et al.* 2009) Pressures in wintering grounds (e.g. entanglement in fishing gears) could limit potential for populations to recover from impacts arising in summer foraging areas. Gannets have the ability to forage large distances during the breeding period (Woodward *et al.* 2019) and have a wide prey base, meaning they may be more resilient to changes in prey abundances close to their breeding colonies. Spatial partitioning of foraging grounds among breeding adults from different colonies, as revealed by tracking data, (Wakefield *et al*. 2013) may mean that there is some limitation in where they will forage. Newly fledged gannets may be potentially vulnerable (e.g. to collision or pollution) when initially moving away from their natal colonies by swimming. However, given high natural mortality rate among juveniles, it is changes in adult survival rates that are most likely to drive population change (Wanless *et al*. 2006).

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: • 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: • 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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