Outer Dowsing Offshore Wind

Habitats Regulations Assessment

Without Prejudice Additional Measures for Compensation of Guillemot and Razorbill

Document 7.7.6

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Acronyms & Definitions

Abbreviations~~/~~/Acronyms

Abbreviation~~/~~/Acronym	Description
AEoI	Adverse Effect on Integrity
ANS	Artificial Nesting Structure
~~COWSC~~AON	~~Collaboration on Offshore Wind Strategic Compensation~~ Apparently Occupied Nest
AONB	Area of Outstanding Natural Beauty
AOS	Apparently Occupied Site
BMC	British Mountaineering Council
BTO	British Trust for Ornithology
DCO	Development Consent Order
Defra	Department for Environment, Food & Rural Affairs
DESNZ	Department for Energy Security and Net Zero, formerly Department of Business, Energy and Industrial Strategy (BEIS), which was previously Department of Energy & Climate Change (DECC)
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ETG	Expert ~~Technical~~Topic Group
FFC	Flamborough and Filey Coast
GCIMP	Guillemot Compensation Implementation and Monitoring Plan
GCP	Guillemot Compensation Plan
GT R4 Ltd	The Applicant. The special project vehicle created in partnership between Corio Generation (a wholly owned Green Investment Group portfolio company), Gulf Energy Development and TotalEnergies
~~GCP~~	~~Guillemot Compensation Plan~~
	Highly Pathogenic Avian Influenza
HRA	Habitats Regulations Assessment
~~MPA~~IND	~~Marine Protected Area~~Individuals
~~MRF~~IROPI	~~Marine Recovery Fund~~Imperative reasons of over-riding public interest
NSIP	Nationally Significant Infrastructure Project
OWF	Offshore Wind Farm
~~OWIC~~RCIMP	~~Offshore Wind Industry Council~~Razorbill Compensation Implementation and Monitoring Plan
RCP	Razorbill Compensation Plan
RIAA	Report to Inform Appropriate Assessment
SAC	Special Areas of Conservation
SMP	Seabird Monitoring Programme
SNCB	Statutory Nature Conservation Body
SoS	Secretary of State

SPA	Special Protection Area
SPZ	Seabird Protection Zone
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate
UCI	Upper Confidence Interval
UK	United Kingdom
VP	Vantage Point
WTG	Wind Turbine Generator

Terminology

Term	Definition
The Applicant	~~GT R4 Ltd. The Applicant making the application for a DCO. The Applicant is GT R4~~GTR4 Limited (a joint venture between Corio Generation~~, TotalEnergies~~ (and its affiliates), TotalEnergies and Gulf Energy Development ~~(GULF)),~~), trading as Outer Dowsing Offshore Wind~~. The project is being developed by Corio Generation (a wholly owned Green Investment Group portfolio company), TotalEnergies and GULF.~~
~~Array area~~	~~The area offshore within which the generating station (including wind turbine generators (WTG) and inter-array cables), offshore accommodation platforms, offshore transformer substations and associated cabling will be positioned.~~
~~Baseline~~	~~The status of the environment at the time of assessment without the development in place.~~
Compensatory Measures	Stage 3 of the Habitats Regulations Assessments (HRA; see Derogation) involves the development of compensation measures for any features which the ~~report~~Report to ~~inform appropriate assessment~~Inform Appropriate Assessment (RIAA) was unable to conclude no adverse effect on integrity on.
~~deemed Marine Licence (dML)~~	~~A marine licence set out in a Schedule to the Development Consent Order and deemed to have been granted under Part 4 (marine licensing) of the Marine and Coastal Access Act 2009.~~
Derogation	Stage 3 of the ~~Habitats Regulations Assessments~~HRA which is triggered once it is determined that you cannot avoid adversely affecting the integrity of a designated site. Involves assessing if alternative solutions are available to achieve the same goals as the ~~project~~Project, if there are imperative reasons of overriding public interest, and if compensatory measures will be required.
Development Consent Order ~~(DCO)~~	An order made under the Planning Act 2008 granting development consent for a Nationally Significant

	Infrastructure Project (NSIP) from the Secretary of State (SoS) for Department for Energy Security and Net Zero (DESNZ).
Effect -	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of an impact with the sensitivity of a receptor, in accordance with defined significance criteria.
Evidence Plan	A voluntary process of stakeholder consultation with appropriate Expert Topic Groups (ETGs) that discusses and, where possible, agrees the detailed approach to the Environmental Impact Assessment (EIA) and information to support ~~Habitats Regulations Assessment (~~HRA~~)~~ for those relevant topics included in the process, undertaken during the pre-application period.
Habitats Regulations Assessment ~~(HRA)~~	A process which helps determine likely significant effects and (where appropriate) assesses adverse impacts on the integrity of European conservation sites and Ramsar sites. The process consists of up to four stages of assessment: screening, appropriate assessment, assessment of alternative solutions and assessment of imperative reasons of over-riding public interest (IROPI) and compensatory measures.
Mitigation	Mitigation measures, or commitments, are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the ~~project~~Project design) or secondarily added to reduce impacts in the case of potentially significant effects.
Outer Dowsing Offshore Wind (ODOW)	The Project.
~~Order Limits~~	~~The area subject to the application for development consent, the limits shown on the works plans within which the Project may be carried out.~~
~~Preliminary Environmental Information Report (PEIR)~~	~~The PEIR was written in the style of a draft Environmental Statement (ES) and provided information to support and inform the statutory consultation process during the pre-application phase.~~
The Project	Outer Dowsing Offshore Wind including proposed onshore and offshore infrastructure.
The Planning Inspectorate	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
Wind turbine generator (WTG)	A structure comprising a tower, rotor with three blades connected at the hub, nacelle and ancillary electrical and other equipment which may include J-tube(s), transition piece, access and rest platforms, access ladders, boat access systems, corrosion protection systems, fenders and maintenance equipment, helicopter landing facilities and other associated equipment, fixed to a foundation

Reference ~~Documentation~~documentation

Document Number	Title
6.1.3	Project Description
7.1	Report to Inform Appropriate Assessment
7.1.1	Offshore and Intertidal Ornithology Apportioning
7.5	Derogation Case
7.7	Ornithology Compensation Strategy
7.7.2	Guillemot Compensation Plan
7.7.3	Razorbill Compensation Plan
7.7.4	Artificial Nesting Structures Evidence Base and Roadmap
7.7.5.1	Plémont Seabird Reserve Feasibility Study Report
7.7.6	Additional Measures for Guillemot and Razorbill Evidence Base and Roadmap
19.8 (REP2-057)	Levels of precaution in the assessment and confidence calculations for offshore ornithology;
19.9 (REP2-058)	Statutory Nature Conservation Bodies (SNCB) guidance and bioseasons for guillemot
19.10 (REP2-059)	Rates of displacement in guillemot and razorbill.
20.17 (REP3-049)	Guillemot and razorbill Compensation Quanta

Executive summary

This report has been produced as part of the without-prejudice derogation case for impacts to guillemot and razorbill at the Flamborough and Filey Coast (FFC) Special Protection Area (SPA) arising from the construction, operation and decommissioning of Outer Dowsing Offshore Wind (the Project). This document sets out the evidence base and roadmap for the delivery of additional measures for the compensation of guillemot and razorbill including disturbance reduction, habitat management and potentially additional predator control (if site appropriate), at colonies of both species in south western England. This document has been updated from that submitted as part of the Application to incorporate the results of the 2024 breeding season guillemot and razorbill survey as well as setting out the development of the proposed measures following extensive engagement with stakeholders to date.

Eight sites identified through a site selection process were monitored through the guillemot and razorbill breeding season of 2024. The monitoring programme was designed to inform site use by both birds and potential sources of anthropogenic disturbance, as well as identifying other key pressures such as predators and incidences of habitat loss through vegetation encroachment. Productivity data for a number of colonies were also recorded.

These site visits were also used to collect data on the nature and scale of any sources of disturbance, and the response that each disturbance event elicited from the breeding birds. In summary, disturbance events at each site were narrowed down to two broad categories; disturbance from avian predators (or species perceived to be predators) and disturbance from watercraft. The survey results were used to refine compensation measures for each site and site-specific measures are presented in section 6.4

Data collected from the surveys have been used to identify the most suitable disturbance reduction measures which could be implemented at each of these colonies and to also quantify the likely benefits, in terms of increases in nest spaces and/or productivity (number of young fledged by each breeding pair), from the proposed measures.

GT R4 Ltd, trading as Outer Dowsing Offshore Wind, (the Applicant) maintains that no Adverse Effect on Integrity (AEoI) should be concluded for either guillemot or razorbill, however has developed these without prejudice measures in the event that the Secretary of State is unable to exclude a potential for an AEoI. The Applicant considers that these measures are sufficiently evidenced and developed such that they could be relied on as compensatory measures if required.

1 Introduction

1. The Report to Inform Appropriate Assessment (RIAA; Document 7.1) has concluded that there would be no Adverse Effect on Integrity (AEoI) to the common guillemot~~,~~ (*Uria aalge*~~(~~; hereafter 'guillemot'), and razorbill~~,~~ (*Alca torda*) features of the Flamborough and Filey Coast (FFC) Special Protection Area (SPA) due to displacement, both when considering the ~~project~~Project alone and in combination with other plans or projects.
2. Following consultation with Natural England and other relevant consultees through the Evidence Plan Process~~,~~ (EPP), the ~~project~~Project has however provided a 'without prejudice' derogation case for both guillemot and razorbill in relation to the FFC SPA; alongside this, a number of options for Project alone and collaborative compensation measures have been developed as far as possible. In the event that the Secretary of State determines potential for ~~Adverse Effect on Integrity (AEoI)~~AEoI and considers that compensation is required, the Project has provided sufficient confidence that compensation measures are available, securable and deliverable. This document provides the evidence and roadmap for the delivery of additional measures for the compensation of guillemot and razorbill, including disturbance reduction, habitat management and potentially additional predator control, at colonies of both species in south~~-~~ western England.
3. This document has been updated following a request from Natural England, and as agreed by the Applicant with the Examining Authority (ExA), to update the Habitats Regulations Assessment (HRA) related documentation for Deadline 4 to reflect changes made by the Applicant to the Project during the Examination phase.
4. The Applicant has previously provided environmental reports for these updates throughout the Examination as appropriate (through the submission of the Habitats Regulations Assessment for the Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor (PD1-091)), confirming that no changes made altered the previously drawn conclusions within the Report to Inform an Appropriate Assessment (RIAA).
5. This current version of this report provides updates to that submitted within the Application arising from the following project changes:

- The introduction of an Offshore Restricted Build Area (ORBA) over the northern section of the Project array area.
- Further updates contained herein are focused on: Updates to incorporate the results of the 2024 breeding season guillemot and razorbill survey;
- Updates to "Natural England's" approach for certain assessment values where further information has been provided by that organisation post-Application.

~~3.~~6. Section ~~2~~2 provides an overview of the species under consideration and ~~Section 3~~section 3 details the key threats. Section 1 identifies the short-list of proposed locations where disturbance reduction measures could be carried out within the south west of England. Section ~~4~~5 describes the individual colonies identified in the short-listing process, including the results of the monitoring from the 2024 survey and sets out the potential compensation measures that address disturbance reduction and habitat improvement which could be carried out at each colony, along with their challenges and feasibility. ~~The longlisting and shortlisting process of selecting suitable sites in the south-west of England are then discussed in Section 5.~~ The feasibility of applying the chosen compensation measures at each of the ~~six~~ten shortlisted sites is also explored in ~~Section 6.~~section 5. The possible management measures and the feasibility of implementation at each site following the 2024 survey is provided in section 6. Finally, plans for implementation and monitoring are provided in ~~Section 7.~~section 7.

~~4.~~7. ~~Six~~Eight sites are listed as having potential to deliver compensation based upon colony size, current demographics, existing management measures and ~~proximity to, or likelihood to experience~~the potential for human based disturbance. For each site, potential for growth is defined (through comparison with historical populations and application of region-specific productivity rates), and summaries of existing management measures and potential for effective management are provided. Evidence for the efficacy of reduction of disturbance and reduction of habitat loss as a means of compensation are presented.

~~5.~~8. Discussions regarding the development of all compensation measures were framed around an earlier version of the Department for Environment, Food & Rural Affairs (Defra) compensation guidance (published in 2021). However, although still under consultation, updated draft guidance has been published recently (Defra, 2024). The new proposals prioritise Ecological Effectiveness when considering compensation, i.e. the ecological outcome and the confidence that the measures will be effective. Therefore, the compensation measures developed here align with the principles outlined in the draft guidance.

~~6.~~9. This report should be read alongside the Project's Guillemot Compensation Plan (document 7.7.2) and ~~the~~ Razorbill Compensation Plan (document 7.7.3).

10. ~~The Applicant's position is that no adverse effect on integrity should be~~ Within the RIAA (document 7.1), the Applicant has concluded that there would be no AEoI to the common guillemot, *Uria aalge* (hereafter 'guillemot'), and razorbill, *Alca torda* features of the FFC SPA due to displacement, both when considering the project alone and in-combination with other plans or projects.

11. Following consultation with Natural England through the Evidence Plan Process, the Applicant has provided a 'without prejudice' derogation case for ~~either auk species. However~~both guillemot and razorbill, in relation to the FFC SPA. In the event that the Secretary of State determines potential for AEoI and considers that compensation is required, the Project has provided sufficient confidence that the compensation measures are available, securable and deliverable.

12. For guillemot and razorbill, the Applicant maintains that, should compensation be required ~~then Predator control, through~~ , the implementation ~~support to~~ of ~~a~~ predator ~~exclusion measure~~control at the Plémont Seabird Reserve (see Predator Control Evidence Base and Roadmap~~, document 7.~~ (document reference 7.7.5)) can deliver the full requirement based on the Applicant's approach; however the additional measures in the south-west (see Additional Measures for Compensation of Guillemot and Razorbill (document reference 7.7.6~~.5), would form is the primary measure for guillemot and/or razorbill,~~)) and the ANS are measures which ~~could deliver all~~will be pursued were the SoS to require a higher quantum of ~~the~~ compensation ~~required under~~than that based on the Applicant's approach.

13. Where a compensation requirement is necessary, the Applicant's approach is to calculate this using the method developed by Hornsea Four (HOW4). This method uses survival rates across all age classes of the species in question to calculate the number of fledglings required to deliver a given number of adult birds. The number of breeding pairs required to generate sufficient fledglings is then calculated using published productivity rates.

14. Natural England's preferred approach for calculating compensation is to use the Stage 2 method developed for Hornsea Three (HOW3) (Natural England's Appendix G1 Natural England's Advice on Seabird Compensation Calculations (REP3-071)). This method is considered to be overly precautionary by the Applicant. In addition, it applies an extremely precautionary compensation calculation to an assessment that is already highly precautionary (see REP2-057, REP2-058, REP2-059 and REP3-049), which returns compensation requirements that are equivalent to large proportions of the national and/or global populations of each species.

~~7.~~ The compensation requirements for guillemot and razorbill, calculated using the Applicant's approach and Natural England's ~~anticipated~~ approach, are presented in each of the species specific Compensation Plans: the Guillemot Compensation Plan (document reference 7.7.2) and the Razorbill Compensation Plan (document reference 7.7.3) ~~and also within section 7.1 of this document.~~

~~8.~~15. Should ~~further~~the Secretary of State determine that compensation higher than the Applicant's approach be ~~deemed~~ necessary, then the measures outlined in this document could provide further compensation measures. Additional compensation ~~could~~can also be provided by allocating space on Artificial Nesting Structures (ANS) should that be deemed necessary (ANS Evidence Base and Roadmap (document reference 7.7.4~~))~~.)) as the Applicant will factor in nesting space for both guillemot and razorbill in any ANS design.

16. The Applicant notes the recently published Strategic compensation measures for offshore wind activities: Marine Recovery Fund interim guidance (DESNZ, January 2025), which sets out the mechanism by which projects can rely on the MRF within their applications. The DCO provides the mechanism by which the Applicant will be required to present the proposed compensation option (or combination of options) to be taken forward to the Secretary of State for approval.

17. This report should also be read alongside the following documents submitted at Deadline 2:

- 19.8 Levels of precaution in the assessment and confidence calculations for offshore ornithology (REP2-057);
- 19.9 Statutory Nature Conservation Bodies (SNCB) guidance and bioseasons for guillemot (REP2-058);
- 19.10 Rates of displacement in guillemot and razorbill (REP2-059); and
- 20.17 Guillemot and razorbill compensation quanta (REP3-049)

18. These documents discuss the Applicant's approach to assessment which ultimately defines the levels of compensation potentially required for each species.

2 Species under ~~Consideration~~consideration

Guillemot and ~~Razorbill~~razorbill

~~9.~~19. Guillemot, a member of the auk family (*Alcidae*), are a cliff-nesting seabird. They nest in large colonies on rocky cliffs around the United Kingdom (UK) coastline. The UK breeding population is approximately 1,266,000 individuals (IND; the standard unit for monitoring of breeding guillemot), with the majority of the population found in Scotland and the north of England. The UK population has increased by 23% over the last 40 years (Burnell *et al*., 2023). In line with national increases, populations in the south~~-~~ west of England have risen. Between the Seabird 2000 census (1998 – 2001) and Seabirds Count (2017 – 2022), the population in Devon has risen by 254%, and the population in Cornwall by 323% (Burnell *et al*., 2023). However, despite these increases, some colonies have been experiencing local decline ~~(Table 5.1~~(Annex 1 Table 9-1).

~~10.~~20. Guillemot have two defined bio-seasons; breeding season from March to July, and non-breeding season from August to February (Furness, 2015). During the breeding season, breeding guillemot forage near their coastal colonies, using pursuit dives to hunt small fish, especially sandeel (*Ammodytes* and *Hyperoplus spp.*), as well as crustaceans (Birdlife International, 2023). Outside of their breeding season guillemot disperse widely at sea throughout UK waters. They have an average lifespan of 23 years, and reach breeding maturity after five years (Robinson, 2005). Following the submission of the Application, Natural England provided advice stating that an additional bioseason should be considered for guillemot, covering post-breeding dispersal during the months of August and September. Whilst the Applicant has updated the impact values (and associated compensation requirements based on this) for the "Natural England approach" following receipt of this advice, the Applicant maintains that the use of the two bioseasons as established by Furness (2015) is the most appropriate and robust (in that it follows established guidance in the literature) method (see REP2-058 and REP3-049).

~~11.~~21. Razorbill are also cliff-nesting seabirds from the auk family. The breeding population is approximately, 225,000 ~~individuals~~IND in the UK (Burnell *et al.,* 2023). While the breeding abundance of razorbill has increased since the late 1980s (by 45%), current trends show an overall population decline since 2017 (JNCC, 2021; Burnell *et al*., 2023). In line with national increases, populations in the south~~-~~ west of England have risen. Between the Seabird 2000 census (1998 – 2001) and Seabirds Count (2017 – 2022), the population in Devon has risen by 263%, and the population in Cornwall by 332% (Burnell *et al*., 2023). However, despite these increases, some colonies have been experiencing local decline ~~(Table 5.1~~(Annex 1 Table 9-1).

~~12.~~22. This species is long-lived with an average lifespan of 13 years and reaches breeding maturity after ~~4~~four years (Robinson, 2005). The razorbill has four defined bio-seasons: breeding season (April - July); post-breeding season (August - October); migration-free winter season (November - December); and return-migration season (January - March) (Furness, 2015). Razorbill are pursuit divers and prey mainly on sandeel and ~~clupids~~clupeids during the breeding season (Birdlife International, 2023).

3 Key Threats

~~13.~~23. The key threats that relate to disturbance reduction and habitat improvement are recreational disturbance (including walking, rock climbing and coasteering, birdwatching, watercraft, and aircraft), avian flu, predation and invasive non-native species, climate change, and litter. Additional compensation measures will focus on addressing one or more of these threats, as these can impact guillemot and razorbill at the population level.

3.1 Recreational Disturbance

~~14.~~24. Recreational activities can disturb guillemot and razorbill both in the marine environment (where the species forage), and on their breeding sites, including walking, rock climbing and coasteering, birdwatching, the use of watercraft, and the use of aircraft can affect these auks.

~~15.~~25. Recreational disturbance has several immediate effects for guillemot and razorbill. First, guillemot and razorbill may demonstrate visible discomfort or distress in the presence of recreational disturbance. Typically, these behaviours are seen as an escalating set of responses and can include looking at the source of disturbance, alarm calling, pacing, freezing, or other species-specific behaviour like bobbing (Buckley, 2004). It is common for guillemot and razorbill to show a range of disturbance behaviours. Guillemot nesting at Bass Rock, Scotland were seen to display disturbance behaviours that included head bobbing and making direct visual contact in the presence of a tourist boat (Cully, 2023).

~~16.~~26. The final escalation of disturbance behaviours for guillemot and razorbill is flushing, where birds leave their nests temporarily or permanently (Carney and Sydeman, 1999; Buckley, 2004; Devney and Congdon, 2009). Both temporary flushing and permanent nest abandonment has been recorded for a range of auks, including tufted puffin (*Fratercula cirrhata*), so it is likely that this behaviour may also translate to guillemot and razorbill who share similar ecological and behavioural characteristics with other members of the auk family (Buckley, 2004). Flushing results in an increased energetic cost for guillemot and razorbill, as birds must expend additional energy leaving their nest more often (Buckley, 2004). Flushing can also result in direct mortality, as the absence of adult birds at nest sites leaves eggs and young exposed to predation (Buckley, 2004). This has been recorded for Atlantic puffin (*Fratercula arctica*; hereafter 'puffin') and is common for colony-nesting birds like guillemot and razorbill (Buckley, 2004). Long-term or temporary nest abandonment during flushing can also leave eggs and chicks exposed to the elements with associated implications for hatching success/chick mortality (Carney and Sydeman, 1999).

~~17.~~27. Flushing is a last-resort behaviour for guillemot and razorbill during the nesting season when they prefer to stay to protect their egg (National Trust for Scotland, pers. comm.). Furthermore, some individuals may be unable to flush if they are injured or sick, and birds may be unwilling or less likely to flush if they are protecting their nest (Gill *et al*., 2001; Beale and Monaghan, 2004a). Therefore, a bird may still experience disturbance in the absence of flushing behaviour, as it can experience non-visible stress responses (Buckley, 2004; Devney and Congdon, 2009, Watson *et al*~~.~~., 2014). These can result in changes to seabirds' temperature, heart rate, levels of corticosterone, and vigilance (Cairns, 1980; Pierce and Simons, 1986; Carney and Sydeman, 1999; Buckley, 2004; Huddart and Stott, 2019).

~~18.~~28. Colony-nesting seabirds like guillemot and razorbill are particularly sensitive to the effects of recreational disturbance because direct mortality events like egg crushing are more likely to occur with the mass flushing events that come from large seabird colonies (Buckley, 2004).

~~19.~~29. These disturbance behaviours can ultimately have colony-level consequences for guillemot and razorbill. First, recreational disturbance can alter guillemot and razorbill behaviour ~~and~~. For example, repeated disturbance events may cause seabirds to alter their nest site selection (Huddart and Stott, 2019). Secondly, the effects of recreational disturbance can ultimately reduce colony productivity for seabirds, with direct nestling or egg mortality through nest spillage or predation during flushing events, nest abandonment resulting in nestling or egg exposure, and crushed nests from tourists can all result in reproductive failure.

~~20.~~30. Reduced reproductive success due to recreational disturbance and human disturbance has been recorded for auks (Carney and Sydeman, 1999; Buckley, 2004; Huddart and Stott, 2019). Pierce and Simons (1986) recorded a higher level of reproductive success in tufted puffin chicks who did not experience disturbance. Chicks in undisturbed areas had a 94% rate of fledgling success as opposed to chicks in a disturbed area who had an 18% fledgling success rate (Pierce and Simons, 1986). Third, physiological effects can reduce the fitness of individual seabirds if they are experienced repeatedly over a long period of time (Buckley, 2004). Scaled across multiple colonies, population level consequences are possible.

~~21.~~31. Finally, it should be noted that recreational disturbance can result in habituation to human presence. This is not a negative effect for guillemot and razorbill in itself, but habituation can make monitoring colony health and response to visitors harder over the long-term. Colonies that have historically received more visitor pressure demonstrate fewer visible disturbance responses (Buckley, 2004). These same individuals may still be experiencing non-visible stress responses, yet these responses are harder to detect (Gill *et al*., 2001; Beale and Monaghan 2004a; Watson *et al*., 2014). Therefore, it may be difficult to monitor the ways in which non-visible stress responses affect long-term individual or colony fitness and degree of disturbance.

~~22.~~32. The following sub-sections provide further detail on specific sources of recreational disturbance, and evidence as to how these ultimately impact guillemot and razorbill.

3.2 Walking

~~23.~~33. Guillemot and razorbill colonies that are in close proximity to coastal paths or popular coastal areas receive pressure from visitors on foot. As cliff-nesting seabirds, their colonies may be located further down a cliff and out of eyesight from visitors, yet human smell, noise, and footfall vibrations can all cause disturbance to birds (Watson *et al.,* 2014). Therefore, high human presence in an area can bring disturbance effects to guillemot and razorbill and ultimately impact reproductive success and productivity. Both visitor distance and visitor time spent in close proximity to colonies can negatively impact guillemot and razorbill (Beale and Monaghan, 2005; Beale, 2007; Allbrook and Quinn, 2020). Cairns (1980) found that there was a lower hatching success for guillemot and razorbill in a heavily disturbed area compared to the control plot. Human presence can also result in an increased energetic cost for adult birds, as disturbance from walkers meant that UK golden plover (*Pluvialis apricaria*) had to forage for an extra hour a day (Buckley, 2004). Dogs often accompany walkers in coastal areas and can be particularly disruptive to seabird colonies, especially if they are off-leash. Seabirds are particularly sensitive to acute, high decibel sounds, and ~~cormorants~~great cormorant (*Phalacrocorax carbo*; hereafter 'cormorant') have been shown to flush in the presence of unexpected noise (Buxton *et al*., 2017), such as that from a barking dog.

~~24.~~34. Auks are also affected by the risk of sudden noise that dogs can bring. For example, disturbance from dogs has been recorded on the Isle of Staffa, Scotland when a dog was barking within 10m of a puffin colony and caused a mass flushing event (Cully, 2023).

~~25.~~35. The effect of dogs on birds has been monitored in woodlands, where dogs' presence has been linked to a 35% reduction in bird diversity and 41% reduction in bird abundance (Banks and Bryant, 2007). While these terrestrial studies are able, to an extent, to indicate the potential effects of dogs on seabirds, Lord *et al*. (2001) have demonstrated that the presence of dogs also affects coastal birds. The disturbance behaviour of the New Zealand dotterel (*Charadrius obscurus*) was greatest in the presence of dogs, as opposed to walkers or joggers, for dotterel would flush for greater distances and for a longer time (Lord *et al.,* 2001). This study was able to quantify set back distances that would reduce the effects of humans on coastal birds. They suggested that human presence should be restricted to a distance of more than 50m in a high traffic area and 70m in a low traffic area and dog presence should be restricted to 100m from coastal birds (Lord *et al*., 2001).

3.3 Rock Climbing and Coasteering

~~26.~~36. Guillemot and razorbill are key species that are at risk from rock climbing and coasteering due to their presence on sea cliffs (Huddart and Stott, 2019) leading to disturbance from these recreational activities directly at their nesting sites. These types of recreational activities can result in direct incursions into nesting areas. UK climbing associations have provided seabird ID information and tips on avoiding seabird disturbance to their members (UKC, 2019), indicating that UK climbers often encounter seabirds at their nesting sites. The frequency of interactions between climbers and birds has resulted in seasonal closures at cliffs during breeding season (Huddart and Stott, 2019).

~~27.~~37. Rock climbing has been shown to alter bird behaviour and even affect reproductive success. In a study of the effects of climbing on the common raven (*Corvus corax*; hereafter 'raven'), raven were seen to restrict their movement and vocalisations in the presence of climbers (Covy *et al*., 2020). Furthermore, climbing has decreased peregrine falcon (*Falco peregrinus*) reproductive success, with records of climbers causing peregrine falcon to flush from their nests, leaving eggs exposed to chilling and dehydration (Huddart and Stott, 2019).

3.4 Birdwatching

~~28.~~38. Birdwatching can be a particularly disruptive form of recreation because birdwatchers may focus on certain individuals and colonies and observe them over extended periods of time (Inman *et al.,* 2016). Guillemot and razorbill are especially at risk of birdwatching exposure, as they were found to be among the top ten species that Scottish seabird tourists wanted to see on their birdwatching excursions (Cully, 2023).

~~29.~~39. Beale and Monaghan (2004b) found that if visitor numbers remain constant, disturbance is directly correlated to visitor distance from guillemot colonies. Birdwatching creates a high risk for human proximity, as visitors will approach seabird colonies as far as they are allowed. Furthermore, visitors will often enter colonies in the absence of any restriction measures. A study of recreational disturbance from Isle of Staffa, Scotland found that 84.75% of visitors over the course of a week approached the seabird colony as close as the set-back rope would allow (between ~~0~~zero and 2.5m from the colony; Cully, 2023). A further 4.31% of visitors even entered the colony despite the presence of a set-back rope (Cully, 2023). Birdwatching can alter bird behaviour, as it has been shown to disrupt migration for Mexican species whose range changed due to increased tourism at the US-Mexico border (Connell, 2009). Direct mortality due to birdwatchers has also been recorded. In the UK, Manx shearwater (*Puffinus puffinus*) burrows were crushed by tourists who entered the colony on Skomer, Wales, and shag (*Phalacrocorax aristotelis*) eggs were crushed as tourists threw stones at a nesting bird at the Isle of May, Scotland (Harris and Wanless, 1995; Connell, 2009). Watson *et al.* (2014) have translated these disturbance effects to the colony level and found that the presence of birdwatchers can reduce colony productivity of seabirds by approximately 1.6%.

~~30.~~40. Photographers also bring a particular risk to seabirds. The literature suggests that photographers are most likely to ignore any management measures, including signs and fences (Allbrook and Quinn, 2020). A study of a key birdwatching location in Norway revealed that over a 20-day period, 44 potential disturbance events were recorded, and the majority of these incidents were by photographers ignoring signs and set-back distances (Aas *et al*., 2023). A study from the Isle of Staffa revealed that 37.14% of the incidents where the colony was entered involved photographers (Cully, 2023). Allbrook (2021) has recorded and photographed instances of photographers who have entered UK seabird nesting colonies and crushed eggs. Several studies have revealed that photographers exacerbate disturbance for seabirds more than different types of human presence. The slow-moving photographers, whose behaviour may mimic predators, caused seabirds to flush for longer and demonstrate an increased frequency of disturbance behaviours (Ellenberg *et al*., 2013; Slater *et al*., 2019).

3.5 Watercraft

~~31.~~41. Recreational disturbance from the water can also affect guillemot and razorbill, both while they are nesting and foraging at sea. Watercraft like boats, jet skis, and kayaks are commonly used in coastal recreation. Similarly to terrestrial recreational disturbance sources, watercraft can cause disturbance for these species both based on their proximity and time spent near a colony; watercraft can cause disturbance in ~~guillemots~~guillemot if they are within 200m of the colony (Blanchard, 1994; Chardine *et al*., 1998; Lavers *et al*., 2020; Ainley *et al*., 2021). Slow-moving watercraft like stand-up paddleboards can cause disturbance responses for seabirds, as they are more likely to linger around colonies and can approach colonies closely and quietly (Kleiner and Hunziker, 2023).

~~32.~~42. Watercraft can alter bird behaviour, as tourist boats were shown to interrupt shag foraging, and watercraft also result in the concentration of seabirds in areas of little boat traffic (Buckley, 2004; Velando and Munilla, 2011). Watercraft can cause birds to flush, and pigeon guillemot (*Cepphus columba*) have been shown to have a 6% probability of displaying disturbance behaviour from watercraft at 40m away and a 2% chance of displaying disturbance behaviour from 50 away (Chatwin *et al*., 2013). Pigeon guillemot were even more likely to be disturbed out of other seabirds and waterbirds in the study, including double-crested cormorant (*Phalacrocorax auritus*), black oystercatchers (*Haematopus bachmani*), and glaucous-winged gull (*Laurus glaucescens*; Chatwin *et al*., 2013). This suggests the particular sensitivity of auks to watercraft. Disturbance from watercraft has been recorded to have colony-level consequences for guillemot, as the collapse of a Norwegian colony of ~~guillemots~~guillemot was at least in part attributed to an increased presence of tourist boats around a colony over the long-term (Barrett and Vader, 1984). Furthermore, Hearne (1999) showed that tourist boats within 22m of auk colonies resulted in a display of disturbance behaviour and the prevention of breeding and provisioning activities for both guillemot and razorbill.

3.6 Aircraft

~~33.~~43. Finally, aircraft can also cause disturbance for guillemot and razorbill if they are flying within 1,000m of the colony (Blanchard, 1994; Chardine *et al*., 1998; Lavers *et al*., 2020; Ainley *et al*., 2021). Common sources of aircraft used in recreation are drones and planes.

~~34.~~44. Seabirds have been shown to flush in response to aircraft proximity (Blanchard, 1994; Chardine *et al*., 1998; Lavers *et al*., 2020; Ainley *et al*., 2021). This behaviour has decreased nesting success for some seabirds, as both brown pelicans (*Pelecanus occidentalis*) and white pelicans (*Pelecanus erythrorhynchos*) have been recorded crushing nests in a flushing event that was caused by aircraft (Buckley, 2004).

3.7 Avian ~~Flu~~

3.8 Flu

~~35.~~45. Avian flu, or Highly Pathogenic Avian Influenza~~,~~ (HPAI), can spread between birds through bodily fluids, including saliva and faeces (RSPB, n.d.; NatureScot, ~~2023~~2024). Avian flu can also spread through organic materials, like soil and nesting materials (NatureScot, ~~2023~~2024). Migratory species have spread this disease globally (RSPB, n.d.). Avian flu can result in a variety of lethal and sublethal symptoms for birds, including haemorrhage, respiratory disease, unresponsiveness, swelling, musculoskeletal twisting, and loss of limb control (RSPB, n.d.).

~~36.~~46. The current outbreak, which started in 2021, began in English black-headed gull (*Chroicocephalus ridibundus*) colonies (RSPB, n.d.; BTO, 2023). Due to their close-proximity colonial nesting structure, auks are particularly vulnerable to this disease. The National Trust, who monitor the Farne Islands, England, have reported that guillemot were among the most affected species in 2023 (National Trust, 2023). The British Trust for Ornithology (BTO) has also reported 1,443 guillemot deaths in 2023.

~~37.~~47. Whilst avian flu generally spreads outside of human presence, humans can also be a vector for avian flu (NatureScot, 2022). Therefore, the spread of avian flu is an additional risk posed by human presence around seabird colonies in addition to recreational disturbance. A particular risk is the potential for cross-contamination from other seabird colonies by human vectors (NatureScot, ~~2023~~2024). Any management looking to reduce the impacts of human disturbance could thus also consider the potential for measures to reduce disease spread.

~~3.8~~3.9Predation and Invasive Non-native Species

~~38.~~48. Predation is a key threat for many breeding bird species. Guillemot and razorbill colonies are at risk from both avian and mammalian predators. Bird species such as great black-backed gulls (*Larus marinus*), corvids (*Corvus spp.*), and great skuas (*Stercorarius skua*), and mammals such as brown rats (*Rattus norvegicus*) and otters (*Lutra lutra*), are known to predate seabird eggs and chicks (O'hanlon and Lambert, 2017; Johnston *et al*., 2019; Lopez *et al*., 2023). Furthermore, humans can also bring predatory mammals to seabird colonies via boats (Biosecurity for life, n.d.). On Lundy, UK, rats were confirmed as the cause of seabird decline, using comparison with seabird populations on the adjacent rat-free islands, Skomer and Skokholm (RSPB England, 2021). Camera traps have been used to record otter and hooded crow predating on auk eggs (Johnston *et al*., 2019). Furthermore, razorbill nest failure was recorded in areas of brown rat activity (O'Hanlon and Lambert, 2017). Predation threat can cause significant colony-level effects for seabirds. Great black-back gull predation was calculated to affect puffin population sizes by 1.6-8.7 % annually (Lopez *et al*., 2023).

~~39.~~49. Furthermore, after avian predators increased at a guillemot colony due to declined tourist presence during the COVID-19 pandemic, the increased predation reduced guillemot colony productivity by 26% (Hentati-Sundberg *et al*., 2021). Fewer tourists increased the presence of white-tailed eagles (*Haliaeetus albicilla*) around seabird colonies, as this species typically avoids human presence (Hentati-Sundberg *et al*., 2021). Although white-tailed eagles do not prey on guillemot, their presence caused the colony to flush, leaving the guillemot nests without an adult guardian and exposed to avian predation from species like herring gull (*Larus argentatus*) and hooded crow (Hentati-Sundberg *et al*., 2021). Flushing commonly leaves eggs and young exposed to predation (Buckley, 2004). This has been recorded for ~~Atlantic~~ puffin ~~(*Fratercula arctica*)~~ and is common for colony-nesting birds like guillemot and razorbill (Buckley, 2004). The presence of humans can increase the risk of flushing around colonies, which allows for more opportunities for avian predation

~~40.~~50. Finally, invasive non-native species can include plants as well as predators that can cause habitat destruction or direct predation for seabirds. While the risks of predation have been described above, it is important to acknowledge the risk posed by invasive non-native plants. For example, species like tree mallow (*Lavatera maritima*) have invaded important seabird islands in the Firth of Forth, Scotland and prevented seabirds from accessing what would be available nesting space (RSPB, 2023).

~~3.9~~3.10 Litter

~~41.~~51. Litter is a widespread threat to seabirds. Massetti *et al.* (2021) have reported that over one million seabirds die from plastic pollution annually. Litter has multiple sources of origin, including fisheries and port activity (Massetti *et al.,* 2021). Litter pollution can also be exacerbated by increased human presence along coastal areas (Galgani *et al*., 2019). A study of litter presence on German beaches along the Baltic coast revealed that 61% of the litter originated from tourism (Schernewski *et al*., 2018). In a study of litter on UK beaches, the coasts of the Western English Channel and the Celtic Seas had the highest litter levels (Nelms *et al*., 2017). Most of this litter originated from terrestrial sources like public littering (Nelms *et al.,* 2017).

~~42.~~52. Entanglement is a key risk of seabirds' frequent interactions with litter (Massetti *et al*., 2021). Seabirds come into contact with litter in the marine environment, as microplastics have been recorded in sub-surface waters and on the seabed (O'hanlon *et al*., 2017). 28.1% of *Charadriiformes*, which include the auk family, have documented records of entanglements with litter (Kuhn *et al*., 2015). Guillemot mortalities have been attributed to litter entanglement in East Lothian, Scotland, as entangled birds washed up on the beaches (Allan, 2021).

~~43.~~53. Ingestion of litter is another key risk for seabirds, as 30.6% of *Charadriiformes* have documented records of ingestion (Kuhn *et al*., 2015). Ingestion is a particular risk for diving species who may have difficulty distinguishing prey from inorganic material under water (Franco *et al*., 2019). It has been reported that 7% of guillemot in the western Atlantic have ingested plastic (Bond *et al*., 2013; Wilcox *et al.*, 2015). Ireland has the highest prevalence of litter ingestion for guillemot out of sites in the northeastern Atlantic (12%; Acampora *et al*., 2016). Ingestion of litter can cause digestive problems, including blockage and accumulation in the stomachs of seabirds (Kuhn *et al*., 2015; Massetti *et al*., 2021). This can cause mortality for seabirds through starvation, as stomachs full of litter may imitate satiation, and litter in the digestive tract can cover the intestinal wall and prevent digestion (Kuhn *et al*., 2015).

41 Possible Management Measures

4.11.1Direct Reduction of Disturbance from Recreational Activities

44.1. Reduction of recreational disturbance with the aim to increase small-scale guillemot and razorbill colonies could be achieved by implementing several different measures which include:

- Signage;
  - Signage can be used to alert visitors to the presence of breeding colonies and outline appropriate set back distances and behaviour around seabirds. Signage can be placed in the water using buoys or on land.
- Visitor access statements;
  - Some site management plans and organisations have created visitor coastal access codes, especially in areas where the public has direct access to coastal habitats like beaches or cliffside walks. These visitor access statements can be posted on signs or relevant organisational websites to alert visitors to the presence of any wildlife and outline appropriate codes of conduct when visiting coastal habitats.
- Restriction of dogs;
  - As described above in Section 3, dogs that accompany visitors can have a large disturbance impact. Restricting dog access spatially or temporally may help reduce the impact of dogs on sensitive nesting species.
- Restriction of visitor time;
  - Management of visitor time around sensitive nesting colonies could be achieved through the presence of wardens. The specific methods of restricting visitor time will be described in more detail below.
- Restriction of visitor approach distance;
  - Visitor approach distance to sensitive nesting colonies could be managed with rope or fences. The specific methods of restricting visitor approach distance will be described in more detail below.
- Restriction of boat time;
  - Management of boat time around sensitive nesting colonies could be achieved through the presence of wardens. The specific methods of restricting boat presence are described in more detail below.
- Restriction of boat approach distance;
  - Management of boat approach distance to sensitive nesting colonies could be achieved with buoys. The specific methods of restricting boat presence are described in more detail below.
- Seasonal closures;

- As described above in Section 3, some recreational activities, like rock climbing, or the use of beaches, takes place around seabird nesting colonies. Closing these sensitive areas during the breeding season when key species are present, could help prevent incursions into colonies.

- Birdwatching codes;
  - Statutory or voluntary codes of practice could be created on how to best approach and view breeding seabird colonies could be created by conservation organisations or statutory bodies.

- Wardens;
  - Wardens, guides, rangers, or volunteers could be used to monitor and influence visitor behaviour.

- Coordination with equipment hire businesses;
  - Equipment hire businesses and recreational businesses could help raise awareness about recreational disturbance. Marine activities like boating, kayaking, stand up paddleboarding, rock climbing, and swimming could bring visitors into close proximity with seabird colonies. Many of these activities require equipment, and while many individuals own their own equipment, many other visitors will rent equipment from businesses. Equipment hire businesses could be part of the solution to help mitigate visitor disturbance. Management organisations could coordinate with these businesses to help create an education programme about the local area and wildlife for their customers who hire equipment.

- Coordination with recreational organisations.
  - Recreational organizations could help raise awareness about recreational disturbance. Marine activities like boating, kayaking, stand up paddleboarding, rock climbing, and swimming could bring visitors into close proximity with seabird colonies. Many of these activities require equipment, and while many individuals own their own equipment, many other visitors will rent equipment from businesses. As mentioned above, management organisations could coordinate with these businesses to help mitigate visitor disturbance, but this would miss the other portion of visitors who do not need to rent equipment. Many dedicated individuals who participate in recreational activities in the marine environment are part of membership organisations associated with their preferred activities. These organisations could be part of the solution to help mitigate visitor disturbance. Management organisations could coordinate with these organisations to help create an education programme about the local area and wildlife for their members.

4.1.1 Examples of Implementation

4.1.1.1 1.1.1.1 Signage and Wardens

45. Signage has been shown to successfully reduce disturbance at seabird sites. For example, signage implemented at tern breeding colonies has been shown to increase little tern (*Sternula albifrons*) nesting success by 34 times (Medeiros *et al.*, 2006). Signage at a UK gannet (*Morus bassanus*) colony was successful in restricting visitor approach distance, as visitor proximity to the colony was reduced when signs were implemented and fewer birds were flushed from their nests (Allbrook and Quinn, 2023).

46. 1. Wardens increase the success of any management measures, as they provide a mechanism of enforcement to any statutory or voluntary management measures. Wardens have been shown to be an effective management measure for national parks, as there was a 20% increase in the number of dogs kept on a leash when there was a ranger present in the Danube Floodplain National Park in Austria where it is compulsory to keep dogs on leashes (Batey, 2012).

4.1.1.2 1.1.1.1 Visitor Access Statements

47. 1. Visitor access statements have already been implemented at seabird islands that receive visitor pressure. Management at the Saltee Islands has created visitor access statements that they posted on their website and on signage (The Saltee Islands, 2001). These visitor access statements include instructions to remain more than six meters away from nesting birds and include information on the restriction of drones (The Saltee Islands, 2001).

4.1.1.3 1.1.1.1 Restriction of Dogs

48. 1. NatureScot has worked with local tour operators to ban dog access on the Isle of May and the Saltee Islands' management have banned dogs from the islands (The Saltee Islands, 2001; NatureScot, 2020). This measure could help reduce the physiological and direct mortality effects that dogs bring to seabirds. Dogs in the presence of bird colonies have previously been associated with mass flushing events, egg crushing, and a reduction in abundance and diversity (Banks and Bryant, 2007; Showler *et al.*, 2010; Cully, 2023).

4.1.1.4 1.1.1.1 Restriction of Visitor Time

49. 1. The Isle of May, Scotland has successfully reduced disturbance by restricting visiting hours to three hours a day during the breeding season, and the Saltee Islands have restricted visiting hours to five hours per day (Cully, 2023; The Saltee Islands, 2001). As evidenced in Section 3, the length of time spent in close proximity to guillemot and razorbill colonies can result in stress responses (Beale and Monaghan, 2005; Beale, 2007; Allbrook and Quinn, 2020).

4.1.1.5 1.1.1.1. Restriction of Visitor Approach Distance

50.1. Studies on the establishment of setback distances have highlighted their importance. A study of gannet in the UK demonstrated that gannet flushed more frequently the closer visitors approached, and nesting success was higher away from the edges of colonies that received visitor pressure (Allbrook and Quinn, 2020). The success of using a fence to restrict visitor approach distance was studied in Michaelmas Cay, Australia. The fence was established in 1990, and after long-term implementation of this fence, there was no difference in egg loss for sooty tern (*Onychoprion fuscatus*) and common noddy (*Anous stolidus*) that nested both against the fence and further from the fence (Devney and Congdon, 2009). Therefore, the fence successfully mitigates the effects for the birds that nest nearer visitors over the long term because they demonstrate a similar breeding success rate as the undisturbed birds (Devney and Congdon, 2009). Similarly, a study of wetland birds in California revealed that individuals who nested behind a fence demonstrated similar flushing distances to individuals at an undisturbed site (Ikuta and Blumstein, 2002). Both groups demonstrated significantly shorter flushing distances than birds that nested at a site with high visitor pressure (Ikuta and Blumstein, 2002). Finally, Manx shearwater burrows at Skomer, Wales, were subject to crushing from visitors until visitor approach distance was successfully managed (Connell, 2009).

4.1.1.6 1.1.1.1. Restriction of Boat Time

51.1. There are currently no examples of the use of restrictions on boat time around sensitive seabird colonies from which to analyse implementation.

4.1.1.7 1.1.1.1. Restriction of Boat Approach Distance

52.1. The distance of watercraft form seabird colonies makes a difference to bird disturbance behaviour. Watercraft can cause birds to flush, and pigeon guillemot have been shown to have a 6% probability of displaying disturbance behaviour from watercraft at 40m away and a 2% chance of displaying disturbance behaviour from 50m away (Chatwin *et al.*, 2013). Appropriate set-back distances have been studied for boats. Burger *et al.* (2010) found that 95% of nesting black skimmers (*Rynchops niger*) flushed when a boat approached the colony to 118m, and that threshold provided an appropriate set back distance.

53.1. Voluntary restrictions in the form of a 'Seabird Protection Zone' (SPZ) can limit disturbance from encroaching vessels. In Jersey, a voluntary SPZ around seabird breeding cliffs in the Plémont area is well respected, with incursions tending to be occasional and from those unfamiliar with the area (BOTE, pers comms). As such, the SPZ is largely an effective control against seaward disturbance.

4.1.1.81.1.1.1 Seasonal Closures

54.1. Statutory measures, like seasonal closures, have also been implemented, as certain cliffs have been closed to rock climbers during the breeding season (Harrison, 2008). Lundy, a key seabird site, is subject to seasonal closures (The Landmark Trust, 2024a). Climbing organisations maintain databases of seasonal restrictions (BMC, 2023). These measures have been successful in reducing bird disturbance from climbing throughout the UK. For example, peregrine falcons have been well protected at their cliff nesting sites, and through management measures like seasonal closures that are enforced by wardens, it is estimated that disturbance is restricted to 1% of the UK population (Huddart and Stott, 2019). Seasonal closures can also be applied to beaches and coastal areas. Weston *et al.* (2012) studied the effects of temporary beach closures and reported a 93.7% compliance rate among visitors. The temporary beach closure reduced footfall and egg crushing during the breeding season (Weston *et al.*, 2012).

4.1.1.91.1.1.1 Birdwatching Codes

55.1. The voluntary WiSe accreditation scheme has had success at promoting proper behaviour during marine wildlife watching in the UK. This programme delivers training to operators and individuals who undertake recreation in the marine space to promote an understanding of disturbance for marine wildlife and the species-specific ways to reduce disturbance when viewing wildlife (Wise Scheme, 2018). The WiSe scheme has created codes of conduct for sustainably viewing seabirds, among other marine species, and conducting marine recreation around seabirds (Wise Scheme, 2018). The extent of participation among the public and operators in this programme, however, is unclear. Therefore, further promotion of this programme or the creation of a seabird-specific programme would help continue to bolster mitigation of recreational disturbance. There are no data on the success of this programme in reducing disturbance, as participation is voluntary. There are no current examples of statutory bird watching codes that are implemented throughout the UK. It is suggested that voluntary accreditation schemes, like WiSe, could be strengthened when paired with statutory measures.

4.1.1.101.1.1.1 Coordination with Equipment Hire Businesses and Recreational Organisations

56.1. To our knowledge, there has not yet been a coordinated effort between breeding site managers and equipment hire business or recreational organisations to reduce recreational disturbance, however recreational organisations or businesses have voluntarily taken steps to reduce disturbance or encourage their clients and members to reduce disturbance. For instance, an Irish rock climbing organisation promoted educational information about cliff nesting seabirds and encouraged its members to avoid popular routes, like Ireland's Eye (an island off the coast of County Dublin), during the breeding season (UKC, 2023).

Feasibility

57.1. Reducing recreational disturbance through compensation measures has the potential to benefit entire guillemot and razorbill colonies (Section 3). These measures will have a higher impact at sites that receive higher visitor pressure. Most of these measures are low cost (with the exception of monitoring enforcement, and widespread educational efforts), easily implemented, and do not require specialist equipment, so they can easily be applied across multiple sites.

58.1. Reduction of disturbance can potentially contribute at a scale of increasing guillemot numbers across the six colonies (described in Section 6) by 2,081 birds and increasing razorbill numbers across the six colonies by 269 birds. This contribution is calculated based upon the difference between the most recent population estimate and the recent historical peak (between 2022 and 1990) at each of the six sites considered. Monitoring efforts would need to include productivity monitoring to better observe the effects of these measures at the population level. This is often conducted by measuring breeding success using a viewpoint study, with nest failure being checked daily (Beale and Monaghan, 2005). It is important to observe study plots both close to and away from areas of high visitor pressure to monitor whether there are differences in breeding success between the two areas both before and after the implementation of mitigation measures (Watson *et al.*, 2021).

59. The Applicant will continue to work with the relevant organisations to further the development of these measures and ensure coordination with any existing management plans so as not to repeat mitigation efforts and ensure the additionality of any implemented measures. Consultation with Natural England regarding the development of this measure is outlined in the Guillemot Compensation Plan (document reference 7.7.2) and Razorbill Compensation Plan (document reference 7.7.3).

4.21.1Additional Measures to Reduce Disturbance from Recreational Activities

Disease Mitigation

60.1. As described in Section 3, the reduction of human presence around seabird colonies may naturally reduce the spread of disease at seabird colonies since fewer tourists reduces the opportunities for tourists to become a vector for avian flu. However, there is scope to further reduce the effects of recreational disturbance as a vector for avian flu.

61.1. The compensation goal of reducing the effects of disease, especially avian flu, can be met by implementing several different measures which include:

- Seasonal closures;
- Set-back distances;
- Sanitising mats;
- Educational campaigns; and
- Reporting systems.

4.2.1.11.1.1.1 Examples of Implementation

62.1. There are examples of disease mitigation measures being implemented throughout the UK. For example, sanitising mats were implanted at the Isle of May, Scotland and Staffa, two key seabird tourism destinations, during the 2023 breeding season (Cully, 2023). Furthermore, both the Isle of May, Scotland and the Farne Islands, England have implemented seasonal tourism closures to protect seabirds from this potential vector. Set back distances were implemented on Staffa, Scotland during the 2023 breeding season to prevent tourists from bringing infected organic materials into puffin nesting sites (Cully, 2023). Defra has implemented a UK national reporting system for avian flu where members of the public can report sightings of dead birds (Defra, 2023). Finally, management organisations in the southwest of England, including the Cornwall Council and North Devon Council, have undertaken public education initiatives that instruct the public to use the reporting system and provides tips to avoid spreading the disease (North Devon Council, n.d.a; Cornwall Birds, 2023).

4.2.1.21.1.1.1 Feasibility

63.1. Preventing the spread of avian flu owing to tourism has the potential to have a positive impact on bird numbers. These measures will be more impactful at sites that receive higher visitor pressure. Most of these measures are low cost (with the exception of monitoring and enforcement efforts), easily implemented, and do not require specialist equipment, so they can easily be applied across multiple sites.

64.1. The creation of a UK-wide group that can conduct mortality monitoring and carcass testing is necessary to address this issue at a wide scale and coordinate the efforts of individual site managers (Pearce-Higgins *et al.*, 2023).

Litter

65.1. As described in Section 3, the reduction of human presence around seabird colonies may naturally reduce the spread of litter at seabird colonies since fewer tourists reduces the opportunities for tourists produce waste. However, there is scope to further reduce the effects of recreational disturbance as a vector for litter.

66.1. The compensation goal of reducing the effects of littering can be met by implementing several different measures which include:

- Statutory litter control measures;
- Voluntary local litter picks;
- Educational campaigns; and
- Reporting systems.

4.2.1.31.1.1.1. Examples of Implementation

67.1. Voluntary and statutory litter control measures have been implemented throughout the UK and in the southwest of England. For example, Cornwall Council has implemented statutory fines for littering and an online reporting system for beaches that need cleaning (Cornwall Council, 2023). North Devon Council has also implemented statutory fines for littering, an online system to report those who litter, educational campaigns, monitoring systems, and public beach cleans (North Devon Council, n.d.b). Beyond traditional waste removal schemes, community litter picks are a common voluntary method of reducing litter (Love Portreath, n.d.; National Trust, n.d.a; St Agnes Parish Council, 2020).

4.2.1.41.1.1.1 Feasibility

68.1. Addressing the spread of litter from tourism has the potential to reduce the presence of litter around colonies. These measures will be more impactful at sites that receive higher visitor pressure. Most of these measures are low cost (with the exception of monitoring and enforcement efforts), easily implemented, do not require specialist equipment, and draw upon existing efforts, so they can easily be applied across multiple sites.

69.1. Frequent monitoring is important for analysing the success of litter reduction measures (Schernewski *et al.*, 2018). Monthly monitoring of litter rates was shown to be three times more effective than monitoring litter rates every three months (Schernewski *et al.*, 2018). Furthermore, 32-75% more litter was found when litter was recorded through collection as opposed to visual observation (Schernewski *et al.*, 2018).

4.31.1Habitat Improvement

Predator Control

70.1. As described in Section 3, Key Threats, the reduction of human presence around seabird colonies may naturally reduce the rate of mammalian predation since fewer tourists reduces the opportunities for tourists to become a vector for mammalian predators at seabird colonies. Furthermore, the reduction of human presence around seabird colonies may naturally reduce the rate of avian predation if seabirds demonstrate fewer disturbance effects. However, there is scope to further reduce the effects of predation and supplement the reduction of recreational disturbance that naturally accelerates the mitigation of predation on seabirds.

71.1. The compensation goal of reducing the threat of mammalian predators can be met by implementing both eradication-focused control measures and exclusion-focused control measures. Eradication measures focus on removing a current predator population from a seabird site to help maintain or recover an existing seabird population. Exclusion measures focus on keeping mammalian predators out of key seabird colonies to help maintain a seabird population. Eradication-focused measures are more effective on islands, where there are smaller chances of reinvasions by invasive species, and exclusion measures are better suited to mainland areas.

72. Avian predator control can be carried out by controlling avian predator populations through culling or breeding control.

4.3.1.11.1.1.1 Examples of Implementation

73.1. A successful predator eradication programme was implemented on Lundy from 2002 to 2006 that resulted in a tripling of the number seabirds on the island, including a greatly increased guillemot population (The Landmark Trust, 2024b). Over the course of the eradication programme, the guillemot population rose from 2,348 to 6,198 individuals, and it continued to rise, standing at 9,880 in 2021 (RSPB England, 2021). This eradication programme, that was implemented as a partnership between NE, The Landmark Trust, and the Royal Society for the Protection of Birds (RSPB), was followed up by the implementation of exclusionary measures (The Landmark Trust, 2024b). Other studies on the effects of predator eradication on auks saw a reduction of Xantus's murrelet (*Synthliboramphus hypleucus*) egg predation from 36.7% to 20.5% when deer mice (*Peromyscus*) were removed from the study site as opposed to a control site (Millus *et al.*, 2007).

74.1. The technique of oiling eggs to prevent them from hatching has been used for common raven (*Corvus corax*) that were impacting the breeding success of black-crowned night heron (*Nycticorax nycticorax*; Brussee and Coates, 2018). These control measures increased black-crowned night heron, as the rate of predation decreased after this measure was implemented (Brussee and Coates, 2018). The reduction of crow predation of seabirds, including from kittiwake (*Rissa tridactyla*) and black guillemot (*Cepphus grylle*), has been implemented as a compensation measure for Ailes Marines since 2012 (Ailes Marines, 2024). This programme has increased the kittiwake breeding population by 87 pairs from 2012-2019 (Ailes Marines, 2024).

4.3.1.21.1.1.1 Feasibility

75.1. Each method of mammalian predator control (eradication-focused and exclusion-focused) has different challenges and it is easier to implement exclusionary measures for mammalian predators. Predator eradication programmes are much more costly due to the prolific breeding rates of mammalian predators. Once predator populations become entrenched near seabird colonies, it becomes difficult to curb their breeding rate. Therefore, it is much easier to control predators if they are prevented from entering seabird colonies in the first place. Though exclusion-focused predator control programmes come with their own costs, they are less costly than implementing extensive eradication programmes.

76.1. Though implementing predator control measures necessitates a costly and often lengthy process, reducing predation has the potential to benefit guillemot and razorbill populations. Therefore, this compensation measure would provide a significant impact for guillemot and razorbill, as it could help protect entire colonies.

77.1. The Plémont area of Jersey has been identified as suitable for a predator control programme (document 7.7.5). Implementing exclusion programmes for these additional colonies can help protect guillemot and razorbill populations from predators before the threat arises, if there is evidence that non-native predators are limiting breeding numbers therein.

78.1. Colonies that are receiving exclusion-focused predator control measures can implement monitoring programmes that help detect the presence of mammalian predators. Wax bait boxes can be used to detect predator presence, as the wax bait will record the presence of rodents through the presence of teeth marks. Wax bait boxes should also be placed on ferries and any ships travelling to key seabird colonies, as mammalian predators can be transported to seabird islands and colonies by ships. Conservation dogs and their handlers can also be deployed near key seabird sites to help detect the presence of mammalian predators. Frequent monitoring will mean that any predator presence can be detected early and before the predator population breeds out of control.

79.1. For avian predator control, many of the measures, like egg oiling and culling, do not require highly specialised equipment. However, practices like egg oiling would necessitate the hiring of experienced individuals to carry out the work. Furthermore, permits are required to carry out control of avian predator populations.

80.1. Monitoring efforts would need to include productivity monitoring to better observe the effects of these measures at the population level. This is often conducted by measuring breeding success using a viewpoint study, with nest failure being checked daily (Beale and Monaghan, 2005). It is important to observe study plots both before and after the implementation of mitigation measures (Watson *et al.*, 2021).

81.1. More research is needed to determine the scale of benefit that reducing avian predators can provide for guillemot and razorbill colonies. However, the benefits of reducing non-native predators such as rats are well established from eradication programs on, for example Lundy, or the Isles of Scilly. As such, it seems sensible to assume that reduction of predation where predation is a relevant pressure, alongside other measures such as disturbance reduction, will have considerable benefits. The Applicant will work with landowners and managers to determine whether predator control measures are appropriate at the relevant sites and if so, would look to establish the scale and nature of habitat improvement that will deliver the most effective compensation on a site-by-site basis.

Invasive Species Management

82.1. As described in Section 3, invasive non-native species like tree mallow have invaded important seabird islands in the Firth of Forth, Scotland and prevent seabirds from accessing available nesting space (RSPB, 2023). The reduction of invasive species around seabird colonies can take place through volunteer-led removal programmes.

~~4.3.1.3 Examples of Implementation~~

~~83.1. Tree mallow eradication programmes have had success on the seabird islands of Crigleith, Fidra, and Lamb in the Firth of Forth, Scotland (Scottish Seabird Centre, 2024b). This programme has been in place for 14 years and relies on volunteers to help manage the invasive plant on these islands (Scottish Seabird Centre, 2024b). This project has benefitted a range of nesting birds on the island, including auks, eider (*Somateria mollissima*), and fulmar (*Fulmarus glacialis*; Scottish Seabird Centre, 2024b).~~

~~4.3.1.41.1.1.1 Feasibility~~

~~84.1. Removal of invasive species like tree mallow can be costly and labour intensive (Scottish Seabird Centre, 2024a). However, the Project could employ removal experts as part of an implementation strategy. Removal programmes must take place annually, or tree mallow could easily overwhelm an island if left unchecked due to the seed bank that lies in the soil (Scottish Seabird Centre, 2024a&b). This removal schedule could be built into an annual implementation strategy by the Project.~~

~~5~~4 Locations for Implementation of Compensation Measures

~~5.1~~4.1 Site Selection Process

~~85.~~54. Sites with the potential to be selected for the delivery of the measures described ~~(Table 5.1)~~ were limited to the ~~southwest~~south west of England due to the presence of larger guillemot and razorbill colonies, and the desire to provide compensation for English guillemot and razorbill colonies (given the location of the Project). Whilst there is also a large population of guillemot and razorbill at FFC SPA, this site is already highly managed, so there are limited options to provide additional management measures for guillemot and razorbill at that site. The long list of potential sites ~~(Table 5.1~~(Annex 1 Table 9-1) was therefore selected from seabird sites that fell within the boundaries of the South West Inshore and South West Offshore Marine Plan 2021 (~~HM Government~~Defra, 2021). The Applicant plans to improve productivity and increase breeding populations through the deployment of compensation measures at these sites, in order to increase numbers of birds recruiting to sites within the national site network.

~~86.~~55. The ~~six~~initial ten short-listed sites in ~~Table 5.2~~Annex 1 Table 9-1 were selected from the long list based on the following criteria:

- have a declining population of guillemot and/or razorbill;
- are close to built-up areas and/or existing tourist attractions; or
- are likely to experience higher human presence than other sites.

~~87.~~56. After the longlist of sites was compiled, the shortlisting process involved determining each colony's population and health (~~Table 5.2).~~Table 9-3). Colony health was identified based on changes between the most recent count and the peak historical count. Where only one count was available for sites, both the peak historical site and colony health are populated with 'N/A'.

~~88.~~57. These characteristics were considered in the shortlisting process to help target colonies that had the potential to increase to peak historical counts. Guillemot and razorbill colonies with a higher peak historical count indicate that there is unused habitat that was previously occupied by a larger population. Therefore, the colony has room to expand and benefit from any new compensation measures. Colonies that currently have a population at peak levels may not be able to benefit from the outlined compensation measures, if restricted habitat availability is the limiting factor for population growth.

~~89.~~58. Colonies that have been stable historically but are in recent decline were considered appropriate targets for compensatory measures as they present an opportunity to return to these historically higher counts~~. Based on the colony counts outlined in Table 5.2, there is potential additionality of 2,081 guillemots and 269 razorbill at these sites.~~

90.59. Sites were shortlisted based on their proximity to built-up areas or popular tourism areas. This process drew from desk-based research and the local knowledge of project delivery teams and stakeholders. Popular tourist destinations and settlements were identified in the southwestsouth west of England that could provide locations for tourist destinations or origin sites of holiday makers. Sites with settlements within twenty miles were identified. This distance can account for a reasonable distance that holiday makers may travel for a day trip. Furthermore, research was undertaken into the tourism industry around each site, with the assumption that the presence of recreational businesses indicates the presence of higher tourism. High levels of tourism will attract the presence of recreational-focused industry. The search criteria used to identify the presence of the recreational industry included searching for watersport equipment hire businesses (kayak, paddleboard, sailboat), boat tour companies, and adventure companies (offering coasteering, kayak, rock climbing tours). Furthermore, hotspots for coastal recreation were identified using Strava, a social subscriber platform that tracks exercise-based activity. A desk-based review of rock climbing or kayak blogs or chat forums was used to identify various individuals' presence around the selected colonies. Consultation was undertaken with land managers and conservation organisations (e.g.7. RSPB and the National Trust) to identify key pressures at each site (see Technical Consultation, document 6.1.6). This criterion ensured that compensation measures could be targeted towards those sites that have to contend with high human pressure and its associated risks.

~~Table 5.1: Long list of sites selected for compensation~~

60. This list was refined after a preliminary "walk-over" visit to each site undertaken in May 2024. These initial site visits were carried out to identify suitable access and vantage points (VPs) for each site, and those sites where the colony could not be monitored were not taken forward. To replace those sites removed from the list, and to add sites with clear potential for compensation, levels of anthropogenic disturbance near Seabird Monitoring Programme (SMP) sites, from sea and coast users were assessed using Strava (https://www.strava.com/) heatmaps. Where colonies showed high potential for disturbance, potential for colony growth or improved productivity based on historic and current populations, and were deemed accessible and monitorable, sites were added to the shortlist. Through this process a final suite of eight sites were identified as suitable for development of compensation measures. These sites are listed in Table 4-1 and shown in Figure 4-1.

Table 4-1 Refined shortlist of South West sites

Site name	~~Master Site~~ Grid Reference	~~Guillemot Most Recent Count (IND)~~	~~Guillemot Colony Health~~	~~Razorbill Peak Historical Count (IND)~~	~~Razorbill Most Recent Count~~	~~Razorbill Colony Health~~	
~~Armed Knight~~	~~West Penwith~~	~~402 (2023)~~	~~402 (2023)~~	~~Increase~~	~~23 (2023)~~	~~23 (2023)~~	~~Increase~~
~~Barras Nose~~	~~Tintagel Cliffs SSSI~~	~~2 (1999)~~	~~0 (2015)~~	~~Decrease~~	~~N/A~~	~~N/A~~	~~N/A~~
~~Berry Head~~	~~Berry Head to Sharkham Point SSSI: Berry Head 1~~	~~1464 (2011)~~	~~943 (2023)~~	~~Historical growth, but mostly stable with minor fluctuations. Slight recent declines, as current population is below historical peak~~	~~N/A~~	~~N/A~~	~~N/A~~
~~Bounds Cliff~~	~~Bounds Cliff – North Cornwall~~	~~20 (2017)~~	~~20 (2017)~~	~~N/A~~	~~48 (2017)~~	~~48 (2017)~~	~~Increase~~
~~Carvannet – Portreath 1~~	~~Godrevy Head to St Agnes SSSI~~	~~3 (2007)~~	~~0 (2017)~~	~~Decrease~~	~~N/A~~	~~N/A~~	~~N/A~~

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Armed Knight	West Penwith	402 (2023)	402 (2023)	Increase	23 (2023)	23 (2023)	Increase
Carvannet – Portreath 2	Hayle – Chapel Porth	240 (2016)	240 (2016)	Increase	21 (2007)	6 (2016)	Decrease
Carvannet – Portreath 5	Hayle – Chapel Porth	78 (2014)	76 (2016)	Stable	N/A	N/A	N/A
Cow and Calf	West Exmoor Coast and Woods SSSI	1308 (2016)	760 (2023)	Historical increase, now slight decrease	181 (2016)	103 (2023)	Historical increase, now slight decrease
Elwill bay	West Exmoor Coast and Woods SSSI	N/A	160 (2023)	N/A	33 (2016)	25 (2023)	Stable
Godrevy	Godrevy Head to St Agnes SSSI	40 (2016)	40 (2016)	Increase	12 (2000)	9 (2016)	Decrease
Gorregan	Isles of Scilly SPA	343 (2023)	343 (2023)	Increas	80 (2006; 2023)	80 (2023)	Increase
Gull Rock – Berry Head The Mouls Cow and Calf North Cornwall 3 North Cornwall 2 Gulland Rock North Cliffs 3 Ore Stone	Gull Rock – North CornwallSX942560 SW937815 SS 666495 SW889762 SW907779 SW606430 SX949637 SX95616296	N/A	2 (2015)	N/A	48 (2009)	40 (2015)	Increase

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Gull Rock	Plymouth – Falmouth	300 (2017)	298 (2023)	Increase then stable	79 (1985)	17 (2023)	Decrease
Gulland Rock	Gulland Rock – North Cornwall	1176 (2016)	580 (2017)	Historical increase, now decrease	82 (2015)	52 (2016)	Decrease
Hell's Mouth	Hayle – Chapel Porth	50 (1986)	48 (1987)	Stable	16 (1986; AOS Count)	16 (1986; AOS Count)	N/A
Long and Short Island	Tintagel Cliffs SSSI	895 (2015)	895 (2015)	Increase	264 (2015)	264 (2015)	Increase
Long Island Coast	Tintagel Cliffs SSSI	7 (1999)	0 (2015)	Decrease	27 (2009)	10 (2015)	Decrease
Lundy	Lundy	9912 (2023)	9912 (2023)	Increase	3785 (2023)	3785 (2023)	Increase
Meachard	Grower Rock to Boscastle, North Cornwall	N/A	8 (2015)	N/A	N/A	97 (2015)	N/A
Melledgan	Isles of Scilly SPA	N/A	2 (2015)	N/A	36 (2015)	24 (2023)	Historical increase, then stable
Men-a-vaur	Isles of Scilly SPA	177 (1999)	60 (2023)	Decrease	101 (1999)	100 (2023)	Stable
Mew Stone & Cod Rock	Berry Head to Sharkham Point SSSI	8 (1987; AOS Count)	0 (2017)	Decrease	6 (1987)	0 (2017)	Decrease
Mincarlo	Isles of Scilly SPA	80 (2023)	80 (2023)	Increase	120 (2015)	58 (2023)	Historical increase, now decrease
Morvah 1	West Penwith	N/A	3 (2017; SEA Count)	N/A	N/A	1 (2017)	N/A
Morvah 3	West Penwith	N/A	10 (2017)	N/A	7 (2017)	7 (2017)	Stable
Mullion to Predannack Cliff NNR	Mullion Cliff to Predannack Cliff SSSI	14 (1985)	10 (2016)	Historical decrease, now stable	10 (1985)	3 (2015)	Decrease

Gull Rock	Plymouth – Falmouth	300 (2017)	298 (2023)	Increase then stable	79 (1985)	17 (2023)	Decrease
Needles Rocks & Main Bench Cliffs	Isle of Wight	337 (2001)	300 (2017)	Historical increase, then stable	4 (1985)	0 (2017)	Decrease
Newland Island	Newland Island, North Cornwall	1 (1986)	0 (2017)	Decrease	10 (1987)	0 (2017)	Decrease
North Cliffs 1	Godrevy Head to St Agnes SSSI	154 (2014)	120 (2020)	Stable	46 (2000)	1 (2020)	Decrease
North Cliffs 3	Godrevy Head to St Agnes SSSI	N/A	172 (2016)	N/A	11 (2016)	11 (2016)	Increase
North Cliffs 5	Godrevy Head to St Agnes SSSI	N/A	3 (2016)	N/A	N/A	4 (2016)	N/A
North Cornwall 3	North Cornwall Coast	112 (2022)	102 (2023)	Historical increase, now stable	86 (2021; 2022)	58 (2023)	Decrease
Ore Stone	Northern End of Torbay	339 (2017)	90 (2022)	Historical increase, now decrease	25 (2017)	25 (2017)	Increase
Penally	Penally to Cornakey	75 (2000)	0 (2018)	Decrease	16 (2000)	10 (2018)	Decrease
Pentargon	Penally to Cornakey	N/A	9 (2018)	N/A	31 (2018)	31 (2018)	Increase
Pentargon Cove	Penally to Cornakey	67 (2018)	67 (2018)	N/A	11 (2018)	11 (2018)	N/A
Port Isaac	Port Isaac, North Cornwall	35 (1999)	0 (2017)	Decrease	2 (1999)	0 (2017)	Decrease
Portland 5	Portland	586 (2018)	586 (2018)	Increase	74 (2007; AOS Count)	55 (2018)	Historical Increase, now stable
Portreath – Porthtowan 2	Godrevy Head to St Agnes SSSI	95 (2000)	49 (2016)	Decrease	65 (2016)	65 (2016)	Stable

Gull Rock	Plymouth – Falmouth	300 (2017)	298 (2023)	Increase then stable	79 (1985)	17 (2023)	Decrease
Portreath – Porthtowan 3	Godrevy Head to St Agnes SSSI	9 (2007)	0 (2016)	Decrease	41 (2000)	0 (2016)	Decrease
Portreath – Porthtowan 4	Godrevy Head to St Agnes SSSI	27 (2000)	0 (2016)	Decrease	8 (2016)	8 (2016)	Increase
Scilly Rock	Isles of Scilly SPA	60 (2015)	7 (2023)	Historical increase with recent decrease	81 (2023)	81 (2023)	Increase
Seal Hole to Trevaunance Cove	Chapel Porth to Perranporth	122 (2015; 2017)	24 (2023)	Mostly stable with recent decrease	70 (2017)	7 (2023)	Decrease
St Aldhelm's Head – Durlston Head	South Dorset Coast SSSI	1652 (2022)	1071 (2023)	Historical increase, then stable	194 (2022)	155 (2023)	Historical increase, now stable
The Brisons	West Penwith	350 (2016)	348 (2023)	Increase	500 (2016)	68 (2023)	Historical increase, now decrease
The Mouls	The Mouls, North Cornwall	732 (2015)	678 (2016)	Increase	68 (2015)	16 (16)	Historical increase, now decrease
The Sisters	The Sisters, North Cornwall	870 (2015)	870 (2015)	Increase	58 (2016)	58 (2015)	Increase
Willapark	Tintagel Cliffs SSSI	N/A	87 (2015)	N/A	N/A	50 (2015)	N/A
Woody Bay 1 and 2	West Exmoor Coast and Woods SSSI	204 (2001)	90 (2023)	Decrease	142 (2001)	66 (2023)	Decrease
Wringapeak	West Exmoor Coast and Woods SSSI	912 (2018)	530 (2023)	Historical increase, recent decrease	216 (2016)	61 (2023)	Decrease
Wringcliff Bay 2 and 3	West Exmoor	N/A	2 (2023)	N/A	28 (2023)	28 (2023)	Increase

~~Gull Rock~~	~~Plymouth – Falmouth~~	~~300 (2017)~~	~~298 (2023)~~	~~Increase then stable~~	~~79 (1985)~~	~~17 (2023)~~	~~Decrease~~
	~~Coast and Woods SSSI~~						

~~Table~~

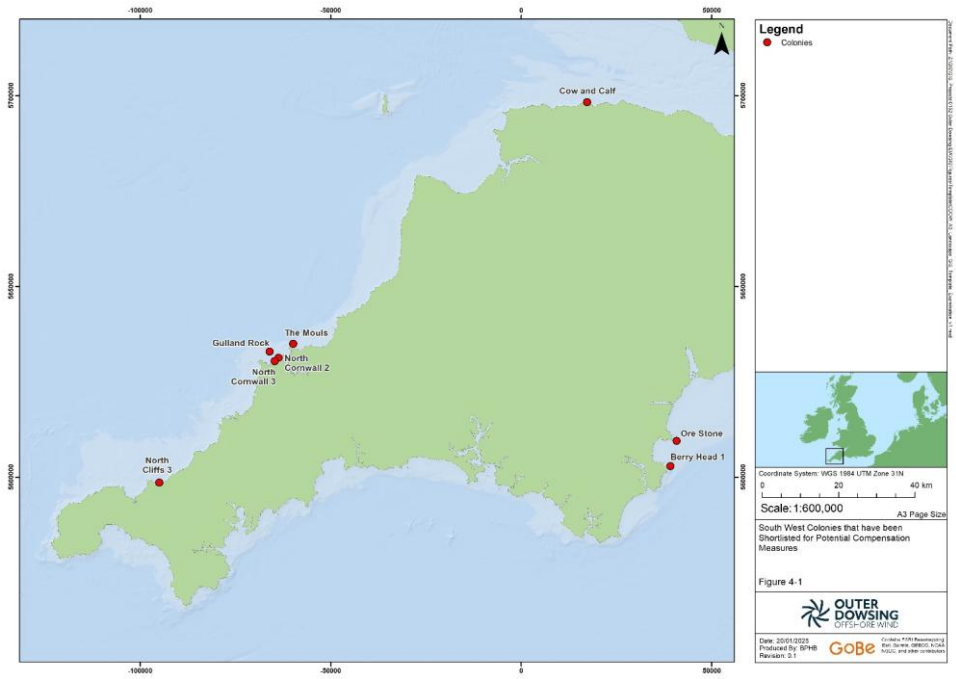

Figure 4.~~2: Sites for compensatory measures~~

-1 South west colonies that have been shortlisted for potential compensation measures.

4.2 2024 Monitoring Summary

61. The eight sites identified through the process described in section 4.1 were monitored through the guillemot and razorbill breeding season of 2024 (May to July). The monitoring programme was designed to record:

- site use by guillemot and razorbill;
- potential sources of anthropogenic disturbance;
- responses to disturbance events; and
- other key pressures such as:
  - presence of predators, including any predation events; and
  - incidences of habitat loss through vegetation encroachment.

62. Monitoring at each site collected data on numbers of individuals of both species at each colony, and their breeding productivity, over a series of site visits. Colonies were zoned in order that disturbance and its impacts could be measured spatially within a colony, as well as between colonies. For analysis, populations of individual birds are converted into pairs by multiplying each individual count by 0.667 (Walsh *et al.*, 1995).These site visits were also used to collect data on the nature and frequency of any sources of disturbance, and the response that each disturbance event elicited from the breeding birds. To this end, day-long visits during periods considered likely to be peak times for anthropogenic disturbance (e.g. bank holidays and weekend days during the school holidays) were carried out. Disturbance was measured through the response of birds to the presence of pressures. Visual responses known to indicate anxiety such as looking up and head bobbing, movement on the cliff, and flushing for short or prolonged periods were recorded. These responses were ranked in order of perceived severity. 'No response' was ranked as '0', and a prolonged flush (i.e. for more than 30 seconds) was ranked as '5'.
63. Where predation or disturbance from predators was noted, the species involved, number of events and severity of response was noted. Any encroachment of vegetation into nesting sites was also noted, in order to record potential opportunities for habitat enhancement
64. Disturbance events at each site were narrowed down to two broad categories; disturbance from avian predators (or species perceived to be predators) and disturbance from watercraft. Results show that at least one of the above should be considered the key pressure at all of the monitored sites, with both being deemed key at two sites. The key pressures across the monitored sites are presented in Table 4-2, and a full breakdown of pressures recorded, frequency, and frequency that an avian response was noted in the presence of the pressure are presented in Table 9-4.

Table 4-2 Key pressures identified across the suite of sites

Site	~~Designation~~Pressure	~~Leasehold~~	~~Freehold~~	~~Manage~~	Deleted Cells
The Mouls	Vessel proximity (tourist, private and fishing boats)				Deleted Cells
Ore Stone	Vessel proximity (tourist and private boats)				Deleted Cells
~~Cow and Calf~~	~~West Exmoor Coast and Woods SSSI~~	~~Landward side held by National Trust[j]~~ ~~Seaward side held by North Devon District Council[k]~~North	~~Seaward side held by The Crown Estate[l]~~	~~Natural England[a]~~ ~~South West Inshore and South West Offshore Marine Plan 2021[b]~~ ~~Exmoor National Park[c]~~	~~Yes, both~~	~~224 (2001); 540 (2008); 1308 (2016); 1165 (2018);~~	~~18 (2001); 168 (2008); 181 (2016); 110 (2018);~~	Deleted Cells

		Cornwall 3 VP2		~~National Trust (property adjacent to site)[d]~~ ~~North Devon Coast AONB[e]~~Avian predation or perceived threat (gulls (*Larinae spp.*) and corvids)		~~760 (2023)~~	~~103 (2023)~~	
~~Woody Bay 1 and 2~~	~~West Exmoor Coast and Woods SSSI~~	~~Seaward side held by North Devon District Council[k] Further investigation required to determine landowner on landward side~~North Cornwall 2	~~Seaward side held by The Crown Estate[l] Further investigation required to determine landowner on landward side~~	~~Natural England[a] South West Inshore and South West Offshore Marine Plan 2021[b] Exmoor National Park[c] National Trust (property adjacent to site)[d] North Devon Coast AONB[e]~~Vessel proximity (tourist and private boats, kayaks)	~~Yes, both~~	~~204 (2001); 126 (2008); 130 (2016); 90 (2023)~~	~~142 (2001); 124 (2008); 57 (2016); 66 (2023)~~	~~Despite past declines, the razorbill population in the last four years. The guillemot population~~
North Cliffs 3				Avian predation or perceived threat (gulls and corvids)				
Gulland Rock	~~N/A~~	~~N/A~~	~~N/A~~	~~Cornwall AONB[f] South West Inshore and South West Offshore Marine Plan 2021[b]~~Vessel proximity (tourist, private, fishing boats and kayaks) and Avian predation or perceived threat (gulls and corvids)	~~N/A~~	~~156 (1987); 150 (1992); 46 (1999); 45 (2007); 1019 (2015); 1176 (2016); 580 (2017)~~	~~52 (1987); 7 (1999); 15 (2007); 82 (2015); 52 (2016)~~	Deleted Cells Deleted Cells Deleted Cells Deleted Cells Deleted Cells Deleted Cells Deleted Cells

North Cliffs 1	Godrevy Head to St Agnes SSSI	National Trust[j]	N/A	Natural England[a] Cornwall AONB[f] South West Inshore and South West Offshore Marine Plan 2021[b] National Trust (property adjacent to site)[g]	No, both	151 (2000); 139 (2013); 154 (2014); 150 (2016); 102 (2020)	46 (2000); 0 (2016); 1 (2020)	Both colonies are in decline
Ore StoneCow and Calf	N/A	The Council Borough of Torbay[m]	The Crown Estate[l]	South West Inshore and South West Offshore Marine Plan 2021[b] Torbay Council – Harbour Authority and Beaches[h] Avian predation or perceived threat (gulls and corvids)	N/A	18 (1987); 5 (2001); 168 (2007); 339 (2017); 300 (2021); 90 (2022)	9 (1987); 0 (2001); 2 (2007); 25 (2017)	Increasing razorbill population; Historical increases for guillemot followed by recent declines
Berry Head	Berry Head National Nature Reserve; South Hams SAC and Berry Head to	N/A	N/A	Natural England[a] South West Inshore and South West Offshore Marine Plan 2021[b]	Yes, guillemot	673 (1986); 701 (1991); 762 (1992); 679 (1993); 1003	N/A	Stable (guillemot), N/A (razorbill)

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	~~Sharkham Point SSSI; The Berry Head and Berry Head (Southern Redoubt) Area of Special Protection.~~			~~Torbay Council – Harbour Authority and Beaches[h] South Devon Area of Outstanding Natural Beauty[b] Torbay Coast and Countryside Trust[i]~~Vessel proximity (kayak, SUP, jet ski, private boats) and Avian predation or perceived threat (gulls and corvids)		~~(1994); 806 (1995); 830 (1996); 878 (1997); 676 (1998); 661 (1999); 1029 (2000); 953 (2001); 858 (2002); 649 (2003); 986 (2004); 1053 (2005); 884 (2007); 1196 (2008); 1229 (2009); 1378 (2010); 1464 (2011); 927 (2012); 704 (2013); 1029 (2014); 823 (2015); 930 (2016); 1145 (2017); 877 (2018);~~		

						1053 (2019); 712 (2020); 891 (2021); 739 (2022); 943 (2023).		

[a] Telephone: 0300 060 3900

[b] Area of Outstanding Natural Beauty; Email: planning@marinemanagement.org.uk

[c] Conservation Email : conservation@exmoor-nationalpark.gov.uk ; Ranger Email : access@exmoor-nationalpark.gov.uk

[d] Email : northdevon@nationaltrust.org.uk

[e] Email : aonb@devon.gov.uk

[f] Email : info@cornwall-aonb.gov.uk

[g] Email : godrevy@nationaltrust.org.uk

[h] Email : harbour.authority@torbay.gov.uk

[i] Email : info@countryside-trust.org.uk

[j] National Trust, Heelis, Kemble Drive, Swindon, Wiltshire, SN2 2NA

[k] North Devon District Council, Lynton House, Commercial Road, Barnstaple, EX31 1DG

[l] The Crown Estate, 1 St James's Market, London, SW1Y 4AH

[m] The Council Borough of Torbay, Town Hall, Castle Circus, Torquay, TQ1 3DR

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65. Levels of disturbance from anthropogenic sources were recorded. As the majority of disturbance incidents were caused by sea users, the numbers at each site, the number eliciting a response, and the number resulting in a flushing response are presented in Table 4-3. Anthropogenic disturbance accounted for 46% of disturbance events noted (with 54% of disturbance caused by avian predation or perceived threat of avian predation)

Table 4-3 Levels of anthropogenic disturbance, with numbers of flushing responses across the suite of sites

Site	Total approaches	Total with response	Total flushes	Vessel notes
The Mouls	115	53	0	Tourist, private and fishing boats
Ore Stone	96	40	36	Tourist, private, sailing, and fishing boats, kayak
North Cornwall 3 VP2	7	1	0	Tourist and fishing boats
North Cornwall 2	37	32	10	Tourist and private boats, kayak
North Cliffs 3	3	0	0	Fishing boat
Gulland Rock	41	17	1	Tourist, private and fishing boats, kayak
Cow and Calf	3	2	1	Tourist RIB
Berry Head	35	16	8	Kayak, SUP, jet ski, private boat
Total	337	161	56	

66. The impact of the presence of predators was also monitored, with observers recording predation events, disturbance related to the presence of predators, and the level of response seen from the breeding guillemot and razorbill. Table 4-4 presents the level of predator related pressure at each site (i.e. the number of events), the severity (i.e. the proportion of the events that elicited a visible response), and the group of birds (i.e. gulls or corvids) responsible for the events with responses.

Table 4-4 Levels of avian disturbance across the suite of sites

Site	Number of events	Number of events with recorded response	Percentage of events with response	Notes
The Mouls	11	10	90.9	50% of incidents with response were from gulls
Ore Stone	16	16	100.0	65% of incidents with response were from gulls
North Cornwall 3 VP2	69	64	92.8	100% of incidents with response were from gulls
North Cornwall 2	4	2	50.0	56% of incidents with response were from gulls
North cliffs 3	24	20	83.3	50% of incidents with response were from gulls, and 50% from corvids
Gulland rock	25	25	100.0	52% of incidents with response were from gulls
Cow and calf	16	15	93.8	53% of incidents with response were from gulls
Berry head	24	13	54.2	100% of incidents with response were from gulls
Total	189	165		

~~6~~5 Colony Analysis

67. This section sets out details of the desk-based analysis undertaken for each of the identified sites subject to survey effort for the Project in 2024, including:

- A desk-based assessment of the likely site pressures;
- Survey results (where relevant); and
- .Existing management

68. Information regarding potential suitable management measures which could be implemented as part of a compensation package for each site is set out in section 6.

~~6.1~~5.1 Cow and Calf

Site Pressures: desk-based analysis

~~91.~~69. Although this site is located along the South West Coast path, the guillemot colonies are located on the sheer cliffs below the path, about 40 – 45m from the cliff tops (National Trust, personal communication). This distance means that the colony is out of sight from visitors and receives little disturbance from non-visible indicators of human presence, such as noise.

~~92.~~70. Due to the sheer cliffs, this site can be used for rope climbing. This activity is infrequent at this site (National Trust, personal communication) but potentially highly disruptive when it does occur.

~~93.~~71. This site also experiences visitor pressure from the water. Although there are multiple kayak hire facilities within ~~5~~five miles of this site, most kayakers generally stay within the sheltered bays and do not reach as far as this site very frequently (National Trust, personal communication). However, there are also multiple companies in the area who run boat tours to this site to specifically view the seabirds. These boats have been observed to come within 10m of guillemot colonies, and they have resulted in flushing events (National Trust, personal communication, see Technical Consultation, document 6.1.6). Threats from other pressures such as avian or mammalian predators due to suboptimal nesting habitat could potentially be impacting populations at this site. The Applicant will continue working to determine whether this is the case.

2024 Survey results

Cow and Calf, consisting of two colonies on west-facing rocky outcrops, hosted populations of at least 209 individual~~Existing Management Measures~~

72. ~~There are no specific conservation measures in place for~~ guillemot and 32 individual razorbill in ~~the management plans of relevant management organisations beyond a general desire~~2024, compared to ~~conserve~~historic peaks of 1,308 individual guillemot and 181 individual razorbill (872 and 121 pairs respectively). These should be treated with some caution as both species have shown variation in trends across different colonies in the region. No young of razorbill were noted in 2024, however 16 guillemot chicks (peak count) were counted in 2024.

5.1.1.1 Key pressures

73. Surveys during the 2024 breeding season determined avian predation to be a key pressure, with 15 of 16 disturbance events eliciting a visible response (Annex 1 Table 9-4). Of these, 53% were responses to gulls. Vessel disturbance was also recorded, with two out of three incidents producing a visible response.

Existing Management Measures

~~94.~~74. There are no specific conservation measures in place for guillemot and razorbill in the management plans of relevant management organisations beyond a general desire to conserve the environment~~environment~~, as expressed in the South West Inshore and South West Offshore Marine Plan 2021 and the North Devon Coast Area of Outstanding Natural Beauty (AONB~~(~~; North Devon Coast AONB, 2019; Defra, 2021). There is a goal to conserve breeding seabird populations in the Exmoor National Park management plan, but this does not include specific actions (Exmoor National Park Authority, 2018).

~~95.~~75. There are strategic measures in place to keep litter away from wildlife at this site, including statutory fines for littering, an online system to report those who litter, educational campaigns, monitoring systems, and public beach cleans (North Devon Council, n.d.b).

~~96.~~76. There is a current reporting system in place for avian flu, where members of the public can report sightings of dead birds (Defra, 2023). Local councils in Devon have also advertised this helpline and passed on instructions to stop its spread in the local area (North Devon Council, n.d.a).

~~6.1.1 Feasible Compensation Measures for This Site~~

5.2 ~~There are currently no measures in place at this~~ Woody Bay 1 and 2

~~97. site to mitigate the effects of recreational disturbance. However, due to the inaccessibility of the colonies by foot, there is little opportunity for such measures, for example, signage, visitor time restrictions, to make an impact at this site. Furthermore, due to the cliffside location of this site, physical interventions like predator control or fencing would not be effective at this site. However, the difficulties associated with this location can be mitigated by carrying out any monitoring by boat.~~

~~98. However, due to the threats posed by climbers and tour boats at this site, wardens would be a useful mitigation measure to help direct visitors' behaviour. Furthermore, the employment of an engagement officer would be another useful tool. An engagement officer could work with local boat operators to better carry out boat tours in a way that reduces disturbance.~~

~~99. More research will be undertaken to understand the degree to which a given site is threatened by predators and non-native species. If disturbance is identified as a relevant pressure specific to this site, through further stakeholder consultation and site visits, the Applicant will seek to secure appropriate disturbance reduction measures for the site in order to deliver compensation at the required level.~~

77. The site visit in April 2024 confirmed that this colony is not visible from any public footpaths. It was therefore not possible to survey this site within the current campaign. The Applicant is confident that the necessary compensation quantum (if required by the Secretary of State (SoS)) can be delivered by the remaining sites within this measure and as such, this site is not considered any further for the Project alone. However, were the Project to deliver the compensation as part of a wider strategic measure, this site may be subject to further survey effort (from the sea, or via agreed access to private land), which may allow any benefits from a wider measure to be attributed to this colony and increases in colony growth and/or productivity to be included within the compensation delivery. As such, details on this site are retained below.

~~6.21.1Woody Bay 1 and 2~~

Site Pressures

~~100.~~78. Though this site is located along the SW Coast path, the guillemot colonies are located on the sheer cliffs below the path, about 40 – 45 m from the cliff tops (National Trust, personal communication). This distance means that the colony is out of sight from visitors, and it receives little disturbance from non-visible indicators of human presence, such as noise.

~~101.~~79. The coastal path allows visitor access to a small beach area near this site, therefore human presence further down the cliffs is possible.

~~102.~~80. This site also experiences visitor pressure from the water. There are multiple kayak hire facilities within 5 miles of this site. There are also multiple companies in the area who run boat tours to this site to specifically view the seabirds. These boats have been observed to come within 10m of guillemot colonies, and they have resulted in flushing events (National Trust, personal communication). Threats from other pressures such as avian or mammalian predators due to suboptimal nesting habitat cannot be ruled out as impacting populations at this site.

Existing Management Measures

~~103.~~81. There are no specific conservation measures in place for guillemot and razorbill in the management plans of relevant management organisations beyond a general desire to conserve the environment that is expressed in the South West Inshore and South West Offshore Marine Plan 2021 and the North Devon Coast AONB (North Devon Coast AONB, 2019; Defra, 2021). There is a goal to conserve breeding seabird populations in the Exmoor National Park management plan, but this does not include specific actions (Exmoor National Park Authority, 2018).

~~104.~~82. There are strategic measures in place to keep litter away from wildlife at this site, including statutory fines for littering, an online system to report those who litter, educational campaigns, monitoring systems, and public beach cleans (North Devon Council, n.d.b).

~~105.~~83. There is a current reporting system in place for avian flu, where members of the public can report sightings of dead birds (Defra, 2023). Local councils in Devon have also advertised this helpline and passed on instructions to stop its spread in the local area (North Devon Council, n.d.a).

~~6.2.1 Feasible Compensation Measures for This Site~~

~~106. There are currently no measures in place at this site to mitigate the effects of recreational disturbance. However, due to the inaccessibility of the colonies by foot, there is little opportunity for disturbance measures to make an impact at this site. Furthermore, due to the cliffside location of this site, physical interventions like predator control or fencing would not be effective at this site. However, the difficulties associated with this location can be mitigated by carrying out any monitoring by boat.~~

~~107. Due to the threats posed by climbers and tour boats at this site, wardens would be a useful mitigation measure to help direct visitors' behaviour. Furthermore, the employment of an engagement officer would be another useful tool. An engagement officer could work with local boat operators to conduct boat tours in a way that reduces disturbance.~~

~~108. More research is needed into the degree to which a given site is threatened by predators and non-native species. If identified as relevant pressures through further stakeholder consultation and site visits, then improved habitat to protect against predators and invasive species could provide a feasible measure of compensation.~~

~~6.3~~5.3Gulland Rock

Site Pressures: desk-based analysis

~~109.~~84. This site is located on an offshore island and so there is no risk of visitor pressure by foot. Local tour companies offer daily boat trips for birdwatchers to visit this colony from the nearest town of Padstow. There is further visitor pressure by water, as this site is located near Padstow and Polzeath, two popular tourist areas. There are multiple equipment hire companies that allow tourists to hire their own sailboats, kayaks, speedboats, and jet skis. Access to this equipment allows tourists to visit the seabird colony and potentially cause disturbance. As with other sites, threats from other pressures such as avian or mammalian predators due to suboptimal nesting habitat cannot be ruled out as impacting populations at this site. The Applicant will continue to explore whether there is evidence to demonstrate that other such pressures could be linked to colony decline at this site.

85. Both avian predation and vessel-based disturbance were determined to be key pressures during the 2024 breeding season. Of 41 vessel approaches, 17 elicited a visible response, with one of these resulting in birds being flushed from the cliff. In addition, 25 avian disturbance events were noted with 100% of these eliciting a visible response. Of these, 52% were caused by gulls.

2024 Survey Results

86. Gulland Rock hosted populations of at least 149 individual auks in 2024. Due to distances from the colony to the view point it was not possible to accurately differentiate between guillemot and razorbill. The site has historic peaks of 1,258 individual auks (839 pairs). It was not possible to differentiate if there were any young of either species in 2024 due to distance of the colony to the viewpoint.

87. Counts, productivity, and any consideration of benefits from implementing measures for this site need to be considered alongside the fact that a larger auk colony also exists on the side of island that could not be seen by observers during (land-based) surveys. Any measures implemented here will benefit these birds in addition to those monitored in 2024. If this compensation measure is required to be delivered by the Project, this site may be subject to further survey effort (from the sea, or via agreed access to private land which may grant an improved vantage point), which may allow any benefits from the proposed measures to be attributed to the whole of this colony and increases in whole colony growth and/or productivity to be included within the compensation delivery rather than solely the section visible during the previous surveys.

5.3.1.1 Key pressures

88. Both avian predation and vessel-based disturbance were determined to be key pressures during the 2024 breeding season (Annex 1 Table 9-4). Of 41 vessel approaches, 17 elicited a visible response, with one of these resulting in birds being flushed from the cliff. In addition, 25 avian disturbance events were noted with 100% of these eliciting a visible response. Of these, 52% were caused by gulls.

Existing Management Measures

~~110.~~89. There are no specific conservation measures in place for guillemot and razorbill in the management plans of relevant management organisations beyond a general desire to conserve the environment that is expressed in the South West Inshore and South West Offshore Marine Plan 2021 (Defra, 2021). There is a goal to improve bird habitat in the Cornwall AONB management plan, but this does not specify seabirds or include specific actions or strategic goals (Cornwall AONB, 2022).

~~111.~~90. There are strategic measures in place to keep litter away from wildlife at this site, including statutory fines for littering, and an online reporting system for beaches that need cleaning (Cornwall Council, 2023).

~~112.~~91. There is a current reporting system in place for avian flu, where members of the public can report sightings of dead birds (Defra, 2023). Bird watching clubs in Cornwall have also advertised this helpline, and the Cornwall Council has undertaken public education initiatives that instruct the public to use the reporting system and provides tips to avoid spreading this disease (Cornwall Birds, 2023).

~~6.3.1 Feasible Compensation Measures for This Site~~

5.4 ~~There are currently no measures in place at this~~North Cliffs 1

~~113. -site to mitigate the effects of recreational disturbance. As this is an offshore island, there is a reduced risk of visitor pressure by foot and so measures like signage, visitor access statements, and dog restriction may be less effective at this site. However, there is an opportunity to use floating signage and buoys to help keep individual visitors on watercraft back from the colonies present on this island.~~

~~114. Such measures could be strengthened through the creation of enforcement measures, such as the use of wardens to help monitor and enforce appropriate visitor behaviour around seabirds. Due to the location of this site, patrols from the water would be required. Enforcement measures could help mitigate disturbance from visitors who choose to ignore any set back distances.~~

~~115. This site would also benefit from coordination with local gear hire companies and recreational organisations, especially any watercraft outfitters and organisations, in promoting appropriate visitor behaviour to the areas surrounding this colony.~~

~~116. Finally, national statutory or voluntary bird watching codes could help protect birds from recreational disturbance. Compensation measures could assist with the establishment of this measure by facilitating any funding or stakeholder consultation that is needed to create birdwatching codes and promote their buy-in.~~

~~117. Habitat management and predator eradication will be considered for this site, should evidence that these pressures are impacting seabird breeding numbers or performance become available.~~

~~118. More research is needed into the degree to which a given site is threatened by predators and non-native species. If identified as relevant pressures through further stakeholder consultation and site visits, then improved habitat to protect against predators and invasive species could provide a feasible measure of compensation.~~

92. The site visit in April 2024 confirmed that this colony is not visible from any public footpaths. It was therefore not possible to survey this site within the current campaign. The Applicant is confident that the necessary compensation quantum (if required by the SoS) can be delivered by the remaining sites within this measure and as such, this site is not considered any further for the Project alone. However, were the Project to deliver the compensation as part of a wider strategic measure, this site may be subject to further survey effort (from the sea, or via agreed access to private land), which may allow any benefits from a wider measure to be attributed to this colony and increases in colony growth and/or productivity to be included within the compensation delivery. The description for North Cliffs 3 below includes information on North Cliffs 1.

5.5 North Cliffs 3

~~**6.41.1North Cliffs 1**~~

Site Pressures: desk-based analysis

~~119.~~93. This site receives high levels of pressure from visitors on foot. The site is adjacent to the popular South West Coast Path. This section of the coastal path is near popular tourist destinations and surfing beaches, so potential for visitor pressure is high. While these colonies are located lower down on the steep cliffs below the coastal path, there is still potential for non-visible indicators of human presence, such as noise, to cause disturbance to these colonies. The coastal path allows visitors access to lower beaches near this site and so visitor presence further down the cliffs is possible.

~~120.~~94. Due to the cliffs and lower beach access, this site is a popular location for coasteering, therefore colonies face visitor pressure directly on the cliffside (National Trust, personal communication). There are several companies that offer coasteering tours in the area.

~~121.~~95. This site also experiences visitor pressure from the water. There are multiple companies in the area who run boat tours to this site to specifically view the seabirds. Threats from other pressures such as avian or mammalian predators due to suboptimal nesting habitat cannot be excluded as playing a role in impacting on colony decline at North Cliffs ~~1~~3. The Applicant will continue working to determine whether this may be the case.

2024 Survey Results

96. North Cliffs 3 is a west facing cliff face with a small area of horizontal ledges on which the colony is located. The colony hosted populations of at least 105 individual guillemot and six individual razorbill in 2024, compared to historic peaks of 172 individual guillemot and 11 individual razorbill (115 and 7 pairs respectively). These should be treated with some caution as both species have shown variation in trends across different colonies in the region. No young of razorbill were noted in 2024, however four guillemot chicks (peak count) were counted in 2024.

5.5.1.1 Key pressures

Surveys during the 2024 breeding season determined avian predation to be a key pressure, with 24 disturbance events 83% of which elicited a visible response (Annex 1 Table 9-4). Both gulls and corvids contributed to disturbance in equal measure.Existing Management Measures

~~Existing Management Measures~~

~~122.~~97. There are no specific conservation measures in place for guillemot and razorbill in the management plans of relevant management organisations beyond a general desire to conserve the environment that is expressed in the South West Inshore and South West Offshore Marine Plan 2021 (Defra, 2021). There is a goal to improve bird habitat in the Cornwall AONB management plan, but this does not specify seabirds or include specific actions or strategic goals (Cornwall AONB, 2022).

~~123.~~98. There are strategic measures in place to keep litter away from wildlife at this site, including statutory fines for littering, and an online reporting system for beaches that need cleaning (Cornwall Council, 2023).

~~124.~~99. There is a current reporting system in place for avian flu, where members of the public can report sightings of dead birds (Defra, 2023). Bird watching clubs in Cornwall have also advertised this helpline, and the Cornwall Council has undertaken public education initiatives that instruct the public to use the reporting system and provides tips to avoid spreading this disease (Cornwall Birds, 2023).

~~6.4.1 Feasible Compensation Measures for This Site~~

~~125. There are currently no measures in place at this site to mitigate the effects of recreational disturbance. Therefore, there is an opportunity to use these measures to mitigate the effects of recreational disturbance at this site, including effects from walkers, those involved in coasteering, and tourists using watercraft.~~

~~126. Furthermore, management measures for watercraft, including floating signage and set back distances marked by buoys, could be utilised to address recreational disturbance that comes from the sea.~~

~~127. These measures could be strengthened through the creation of enforcement measures, including the use of wardens to help monitor and enforce appropriate visitor behaviour around seabirds. This could help mitigate disturbance from visitors who choose to ignore any signs or access statements. These enforcement measures could also be undertaken by boat.~~

~~128. This site could also benefit from coordination with local gear hire companies and recreational organisations, especially any watercraft and coasteering outfitters and organisations, in promoting appropriate visitor behaviour to the areas surrounding this colony.~~

~~129. Finally, national statutory or voluntary bird watching codes could further help protect birds from recreational disturbance. The development of these codes to target both individuals and tour companies would be beneficial, as both groups operate at and around this site. Compensation measures could assist with the establishment of this measure by facilitating any funding or stakeholder consultation that is needed to create birdwatching codes and promote their buy-in.~~

~~130. Seasonal closures, set-back distances, and sanitising mats could also be employed to supplement the efforts to reduce the spread of avian flu at this site.~~

~~131. More research is needed into the degree to which a given site is threatened by predators and non-native species. If identified as relevant pressures through further stakeholder consultation and site visits, then improved habitat to protect against predators and invasive species could provide a feasible measure of compensation.~~

~~6.5~~5.6Ore Stone

Site Pressures: desk-based analysis

~~132.~~100. This site is located on an offshore island and so there is a reduced risk of visitor pressure by foot. Local tour companies offer daily boat trips for birdwatchers to visit this colony from the nearest town of Torquay. As this site is located near a popular tourist area, visitor frequency is high as multiple companies offer kayak tours, jet ski tours, and boat tours, all of which have the potential to cause seabird disturbance. There are also multiple equipment hire companies that allow tourists to hire their own sailboats, kayaks, paddleboards, speedboats, and jet skis. Access to this equipment allows tourists to visit the seabird colony and cause disturbance. Threats from other pressures such as avian or mammalian predators due to suboptimal nesting habitat cannot be excluded as playing a role in impacting on colony decline at this location. The Applicant will continue working to establish whether such pressures may play a role in observed colony decline.

~~Existing Management Measures~~

~~There are no specific conservation measures in place for guillemot and razorbill in the management plans of relevant management organisations beyond a general desire to conserve the environment~~2024 Survey Results

101. The Ore Stone hosted populations of at least 750 individual auks in 2024. These were not divided into counts of guillemot and razorbill due to the distance between the vantagepoint and the colony. This site has historic counts of of 339 guillemot (226 pairs) and 25 razorbill (17 pairs). Due to the distance between the colony and the vantage point from which the colony was viewed young of either species would be extremely difficult to detect. As such, no young were noted in 2024, but this almost certainly presents an unrealistic view of productivity at the site. Therefore, productivity from other surveyed sites was used to assess this site.

102. If this compensation measure is required to be delivered by the Project, this site may be subject to further survey effort (from the sea, or via agreed access to private land) with a more optimised vantage point, which may allow a more accurate count of the numbers of each species present and allow productivity monitoring to occur.

5.6.1.1 Key pressures

103. Both vessel-based disturbance and avian predation were determined to be key pressures during the 2024 breeding season (Annex 1 Table 9-4). A total of 96 vessel approaches were noted, 40 of which elicited a visible response. Of these, 36 were flushing responses. In addition, 16 disturbance events caused by gulls were noted.

Existing Management Measures

~~133.~~104. There are no specific conservation measures in place for guillemot and razorbill in the management plans of relevant management organisations beyond a general desire to conserve the environment that is expressed in the South West Inshore and South West Offshore Marine Plan 2021 (Defra, 2021). Torbay Harbour Authority has included instructions on its website on the statutory requirements for boats to stay out of adjacent ~~Special Protection Areas~~SPAs during the breeding season (around Berry Head), but this does not apply to Ore Stone (Torbay Harbour, n.d.).

~~134.~~105. There are strategic measures in place to keep litter away from wildlife at this site, including statutory fines for littering, an online system to report those who litter, educational campaigns, monitoring systems, and public beach cleans (Devon County Council, n.d.; Clean Devon, 2024).

There is a current reporting system in place for avian flu, where members of the public can report sightings of dead birds (Defra, 2023). Local councils in Devon have also advertised this helpline and passed on instructions to stop its spread in the local area (Devon County Council, 2022).

6.5.1 Feasible Compensation Measures for This Site

135. There are currently no measures in place at this site to mitigate the effects of recreational disturbance. As this is an offshore island, there is a reduced risk of visitor pressure by foot and so measures like signage, visitor access statements, and dog restriction may be less effective at this site. However, there is an opportunity to use floating signage and buoys to help keep individual visitors on watercraft back from the colonies present on this island.

136. This measure could be strengthened through the creation of enforcement measures, like the use of wardens, to help monitor and enforce appropriate visitor behaviour around seabirds. Due to the location of this site, patrols from the water would be required. These enforcement measures could help mitigate disturbance from visitors who choose to ignore any set back distances.

137. This site could also benefit from coordination with local gear hire companies and recreational organisations, especially any watercraft outfitters and organisations, in promoting appropriate visitor behaviour to the areas surrounding this colony.

138. Finally, national statutory or voluntary bird watching codes could further help protect birds from recreational disturbance. Compensation measures could assist with the establishment of this measure by facilitating any funding or stakeholder consultation that is needed to create birdwatching codes and promote their buy-in.

139. More research is needed into the degree to which a given site is threatened by predators and non-native species. If identified as relevant pressures through further stakeholder consultation and site visits, then improved habitat to protect against predators and invasive species could provide a feasible measure of compensation.

~~6.6~~5.7Berry Head

Site Pressures: desk-based analysis

~~140.~~106. This site is subject to high numbers of visitors, both to the top of the cliffs by foot and to the surrounding waters by vessels, especially anglers and tourist boats. As this site is located near a popular tourist area, visitor frequency is high with vessels present year-round and in the vicinity of the guillemot colony (outside the exclusion zone) during the breeding season. The area is also popular with walkers on top of the cliffs, and climbers, both of which have the potential to cause disturbance to birds. The South West Coast Path runs along the cliff top, bringing walkers near the guillemot colony which can cause noise disturbance even if visitors are out of eyesight. Additionally, climbing within the area is not fully restricted within the breeding season (according to the British Mountaineering Council (BMC))[1]; certain routes in the protection zone have been closed to protect breeding birds, although others remain open and there is the potential for people to go off-route and/or people to be present in the water below which remains a displacement risk to ~~guillemots~~guillemot. It is not yet clear whether threats from other pressures such as avian or mammalian predators due to suboptimal nesting habitat could also play a role in colony decline at Berry Head.

2024 Survey Results

107. Berry Head is located within Berry Head Country Park, approximately 1.5 km east of Brixham. The colony hosted populations of at least 574 individual guillemot and 26 individual razorbill in 2024. compared to historic peaks of 1,793 individual guillemot (or 1,196 pairs of guillemot) and with razorbill historic peak not recorded. No young of razorbill were noted in 2024, however 26 guillemot chicks (peak count) were counted in 2024.

5.7.1.1 Key pressures

108. Both vessel-based disturbance and avian predation were determined to be key pressures during the 2024 breeding season (Annex 1 Table 9-4). A total of 35 vessel approaches were noted, 16 of which elicited a visible response. Of these, eight were flushing responses. Vessel based disturbance was largely caused by private users of craft such as stand-up paddleboards, kayaks and jet-skis. In addition, 24 disturbance events caused by avian predators were noted. Of these, 54% were caused by gulls.

[1] https://www.thebmc.co.uk/modules/rad/view.aspx?id=352

Existing Management Measures

~~141.~~109. The guillemot colony at Berry Head is the largest on the South Coast and is protected as an Area of Special Protection (under an Order issued by the Department of the Environment in 1988). Accordingly, boats are prohibited from entering the cove where the colony is located during the breeding season (2nd March to the 31st July). Birds and their eggs are also protected from damage and disturbance under the Wildlife and Countryside Act 1981, though specific measures beyond vessel (including kayak/paddleboard) restrictions are not stated.

~~142.~~110. There are strategic measures in place to keep litter away from wildlife at this site, including statutory fines for littering, an online system to report those who litter, educational campaigns, monitoring systems, and public beach cleans (Devon County Council, n.d.; Clean Devon, 2024).

~~143.~~111. There is a current reporting system in place for avian flu, where members of the public can report sightings of dead birds (Defra, 2023). Local councils in Devon have also advertised this helpline and passed on instructions to stop its spread in the local area (Devon County Council, 2022).

5.8 The Mouls

Site Pressures: desk-based analysis

112. This site is located on an offshore island and so there is a reduced risk of visitor pressure by foot. As this site is located near a popular tourist area, visitor frequency is high as multiple companies offer kayak tours, jet ski tours, and boat tours, all of which have the potential to cause seabird disturbance. There are also multiple equipment hire companies that allow tourists to hire their own sailboats, kayaks, paddleboards, speedboats, and jet skis. Access to this equipment allows tourists to visit the seabird colony and cause disturbance. Threats from other pressures such as avian or mammalian predators due to suboptimal nesting habitat cannot be excluded as playing a role in impacting on colony decline at this location. The Applicant will continue working to establish whether such pressures may play a role in observed colony decline, with results from further surveys, were this measure to be taken forward, designed to answer this question.

2024 Survey Results

113. Results from the 2024 survey indicated that the Mouls hosted populations of 11 individual guillemot and 35 individual razorbill in 2024, compared to historic peaks of 732 individual guillemot and 68 individual razorbill (488 and 45 pairs respectively). No young of either species were noted in 2024. The land-based surveys undertaken for this colony had poor access and limited views of the colony. Therefore, the most recent colony populations available on the SMP database (678 individual guillemot, 16 individual razorbill) have been used to represent this site (BTO, n.d.).

5.8.1.1 Key pressures

114. Vessel based disturbance was determined to be a key pressure at this site during the 2024 breeding season (Annex 1 Table 9-4). A total of 115 vessel approaches were observed, 53 of which elicited a visible response.

Existing Management Measures

~~6.6.1 Feasible Compensation Measures for This Site~~

~~144. Seasonal closures, set-back distances, and sanitising mats could also be employed to supplement the efforts to reduce the spread of avian flu at this site.~~

~~145. The Area of Special Protection at Berry Head provides this site with a level of protection that can help mitigate against the disturbance caused by boats . However, there is an opportunity to provide measures that can help mitigate the effects of kayaking and paddleboarding. Measures like floating signage and buoys to keep visitors on watercraft back from the colonies would be effective at this site.~~

~~146. This measure could be strengthened through the creation of enforcement measures, like the use of wardens, to help monitor and enforce appropriate visitor behaviour around seabirds. Due to the location of this site, patrols from the water would be required. These enforcement measures could help mitigate disturbance from visitors who choose to ignore any set back distances.~~

~~147. This site could also benefit from coordination with local gear hire companies and recreational organisations, especially any watercraft outfitters and organisations, in promoting appropriate visitor behaviour to the areas surrounding this colony.~~

~~148. Finally, national statutory or voluntary bird watching codes could further help protect birds from recreational disturbance. Compensation measures could assist with the establishment of this measure by facilitating any funding or stakeholder consultation that is needed to create birdwatching codes and promote their buy-in.~~

~~149. The Applicant will undertake more research to establish the degree to which a given site is threatened by predators and non-native species. If identified as relevant pressures through further stakeholder consultation and site visits, then improved habitat to protect against predators and invasive species could provide a feasible measure of compensation.~~

115. There do not currently appear to be any measures in place to mitigate the effects of recreational disturbance on the colony at this site.

5.9 North Cornwall 2

Site Pressures: desk-based analysis

116. North Cornwall 2 is an east facing cliff approximately 2.9 km north west of Padstow. The cliff top is a popular walking destination and the coastline is popular with tourist boats and kayakers, these activities have the potential to result in human disturbance.

2024 survey results

117. The colony hosted populations of at least 115 individual guillemot and 20 individual razorbill in 2024, compared to historic peaks of 134 individual guillemot (89 pairs) with razorbill historic peak of 49 individuals (33 pairs). No young of razorbill were noted in 2024, however 26 guillemot chicks (peak count) were counted in 2024.

5.9.1.1 Key pressures

118. Surveys carried out during the 2024 breeding season determined anthropogenic disturbance from vessels to be a key pressure at the site (Annex 1 Table 9-4). A total of 37 vessel approaches were noted, with 32 of these eliciting some sort of visible response. Ten approaches resulted in birds being flushed from their nest sites.

Existing Management Measures

119. There do not currently appear to be any measures in place to mitigate the effects of recreational disturbance on the colony at this site.

5.10 North Cornwall 3

Site Pressures: desk-based analysis

120. North Cornwall 3 is an east facing cliff approximately four km west of Padstow. The cliff top is a popular walking destination, and the coastline is popular with tourist boats and kayakers, these activities have the potential to result in human disturbance.

2024 Survey Results

121. North Cornwall 3 is located on a north facing cliff north of Trevone, Cornwall. The colony hosted populations of at least 74 individual guillemot and 48 individual razorbill in 2024. compared to historic peaks of 112 individual guillemot (75 pairs) and 89 individual razorbill (59 pairs). One razorbill chick and five guillemot chicks (peak count) were counted in 2024.

5.10.1.1 Key pressures

122. Surveys carried out during the 2024 breeding season determined disturbance from avian predators to be a key pressure at the site (Annex 1 Table 9-4). A total of 69 approaches from avian predators were noted, with 92.8% of these eliciting some sort of visible response. All approaches that elicited a response were from gulls. Nineteen instances of vessel approach were also recorded, with one instance producing a visible response.

Existing Management Measures

123. There do not currently appear to be any measures in place to mitigate the effects of recreational disturbance on the colony at this site.

6 Possible Management Measures

6.1 Direct Reduction of Disturbance from Recreational Activities

124. Reduction of recreational disturbance with the aim to increase small-scale guillemot and razorbill colonies could be achieved by implementing several different measures which include:

- Signage;
  - Signage can be used to alert visitors to the presence of breeding colonies and outline appropriate set back distances and behaviour around seabirds. Signage can be placed in the water using buoys or on land.
- Visitor access statements;
  - Some site management plans and organisations have created visitor coastal access codes, especially in areas where the public has direct access to coastal habitats like beaches or cliffside walks. These visitor access statements can be posted on signs or relevant organisational websites to alert visitors to the presence of any wildlife and outline appropriate codes of conduct when visiting coastal habitats.
- Restriction of dogs;
  - As described above in Section 3, dogs that accompany visitors can have a large disturbance impact. Restricting dog access spatially or temporally may help reduce the impact of dogs on sensitive nesting species.
- Restriction of visitor time;
  - Management of visitor time around sensitive nesting colonies could be achieved through the presence of wardens.
- Restriction of visitor approach distance;
  - Visitor approach distance to sensitive nesting colonies could be managed with rope or fences.
- Restriction of boat time;
  - Management of boat time around sensitive nesting colonies could be achieved through the presence of wardens.
- Restriction of boat approach distance;
  - Management of boat approach distance to sensitive nesting colonies could be achieved with buoys.
- Seasonal closures;
  - As described above in section 3, some recreational activities, like rock climbing, or the use of beaches, takes place around seabird nesting colonies. Closing these sensitive areas during the breeding season when key species are present, could help prevent incursions into colonies.

- Birdwatching codes;
  - Statutory or voluntary codes of practice could be created on how to best approach and view breeding seabird colonies could be created by conservation organisations or statutory bodies.
- Wardens;
  - Wardens, guides, rangers, or volunteers could be used to monitor and influence visitor behaviour.
- Coordination with equipment hire businesses;
  - Equipment hire businesses and recreational businesses could help raise awareness about recreational disturbance. Marine activities like boating, kayaking, stand-up paddleboarding, rock climbing, and swimming could bring visitors into close proximity with seabird colonies. Many of these activities require equipment, and while many individuals own their own equipment, many other visitors will rent equipment from businesses. Equipment hire businesses could be part of the solution to help mitigate visitor disturbance. Management organisations could coordinate with these businesses to help create an education programme about the local area and wildlife for their customers who hire equipment.
- Coordination with recreational organisations.
  - Recreational organizations could help raise awareness about recreational disturbance. Marine activities like boating, kayaking, stand-up paddleboarding, rock climbing, and swimming could bring visitors into close proximity with seabird colonies. Many of these activities require equipment, and while many individuals own their own equipment, many other visitors will rent equipment from businesses. As mentioned above, management organisations could coordinate with these businesses to help mitigate visitor disturbance, but this would miss the other portion of visitors who do not need to rent equipment. Many dedicated individuals who participate in recreational activities in the marine environment are part of membership organisations associated with their preferred activities. These organisations could be part of the solution to help mitigate visitor disturbance. Management organisations could coordinate with these organisations to help create an education programme about the local area and wildlife for their members.

Examples of implementation

6.1.1.1 Signage and Wardens

125. Signage has been shown to successfully reduce disturbance at seabird sites. For example, signage implemented at tern breeding colonies has been shown to increase little tern (*Sternula albifrons*) nesting success by 34 times (Medeiros *et al.,* 2006). Signage at a UK Northern gannet (*Morus bassanus;* hereafter 'gannet') colony was successful in restricting visitor approach distance, as visitor proximity to the colony was reduced when signs were implemented and fewer birds were flushed from their nests (Allbrook and Quinn, 2020).

126. Wardens increase the success of any management measures, as they provide a mechanism of enforcement to any statutory or voluntary management measures. Furthermore, wardens have been shown to increase visitors' environmental knowledge and promote better behavioural practices (Major and Smith, 2022). Wardens have been shown to be an effective management measure for national parks, as there was a 20% increase in the number of dogs kept on a leash when there was a ranger present in the Danube Floodplain National Park in Austria where it is compulsory to keep dogs on leashes (Batey, 2013).

6.1.1.2 Visitor Access Statements

127. Visitor access statements have already been implemented at seabird islands that receive visitor pressure. Management at the Saltee Islands has created visitor access statements that they posted on their website and on signage (The Saltee Islands, 2001). These visitor access statements include instructions to remain more than six meters away from nesting birds and include information on the restriction of drones (The Saltee Islands, 2001).

6.1.1.3 Restriction of Dogs

128. NatureScot has worked with local tour operators to ban dog access on the Isle of May and the Saltee Islands' management have banned dogs from the islands (The Saltee Islands, 2001; NatureScot, 2020). This measure could help reduce the physiological and direct mortality effects that dogs bring to seabirds. Dogs in the presence of bird colonies have previously been associated with mass flushing events, egg crushing, and a reduction in abundance and diversity (Banks and Bryant, 2007; Showler *et al*., 2010; Cully, 2023).

6.1.1.4 Restriction of Visitor Time

129. The Isle of May, Scotland has successfully reduced disturbance by restricting visiting hours to three hours a day during the breeding season, and the Saltee Islands have restricted visiting hours to five hours per day (Cully, 2023; The Saltee Islands, 2001). As evidenced in section 3, the length of time spent in close proximity to guillemot and razorbill colonies can result in stress responses (Beale and Monaghan, 2005; Beale, 2007; Allbrook and Quinn, 2020).

6.1.1.5 Restriction of Visitor Approach Distance

130. Studies on the establishment of setback distances have highlighted their importance. A study of gannet in the UK demonstrated that gannet flushed more frequently the closer visitors approached, and nesting success was higher away from the edges of colonies that received visitor pressure (Allbrook and Quinn, 2020). The success of using a fence to restrict visitor approach distance was studied in Michaelmas Cay, Australia. The fence was established in 1990, and after long-term implementation of this fence, there was no difference in egg loss for sooty tern (*Onychoprion fuscatus*) and common noddy (*Anous stolidus*) that nested both against the fence and further from the fence (Devney and Congdon, 2009). Therefore, the fence successfully mitigates the effects for the birds that nest nearer visitors over the long term because they demonstrate a similar breeding success rate as the undisturbed birds (Devney and Congdon, 2009). Similarly, a study of wetland birds in California revealed that individuals who nested behind a fence demonstrated similar flushing distances to individuals at an undisturbed site (Ikuta and Blumstein, 2002). Both groups demonstrated significantly shorter flushing distances than birds that nested at a site with high visitor pressure (Ikuta and Blumstein, 2002). Finally, Manx shearwater burrows at Skomer, Wales, were subject to crushing from visitors until visitor approach distance was successfully managed (Connell, 2009).

6.1.1.6 Restriction of Boat Time

131. There are currently no examples of the use of restrictions on boat time around sensitive seabird colonies from which to analyse implementation.

6.1.1.7 Restriction of Boat Approach Distance

132. The distance of watercraft form seabird colonies makes a difference to bird disturbance behaviour. Watercraft can cause birds to flush, and pigeon guillemot have been shown to have a 6% probability of displaying disturbance behaviour from watercraft at 40m away and a 2% chance of displaying disturbance behaviour from 50m away (Chatwin *et al*., 2013). Appropriate set-back distances have been studied for boats. Burger *et al*. (2010) found that 95% of nesting black skimmers (*Rynchops niger*) flushed when a boat approached the colony to 118m, and that threshold provided an appropriate set back distance.

133. Voluntary restrictions in the form of a 'Seabird Protection Zone' (SPZ) can limit disturbance from encroaching vessels. In Jersey, a voluntary SPZ around seabird breeding cliffs in the Plémont area is well respected, with incursions tending to be occasional and from those unfamiliar with the area (BOTE, pers comms). As such, the SPZ is largely an effective control against seaward disturbance.

6.1.1.8 Seasonal Closures

134. Statutory measures, like seasonal closures, have also been implemented, as certain cliffs have been closed to rock climbers during the breeding season (Harrison, 2008). Lundy, a key seabird site, is subject to seasonal closures (The Landmark Trust, 2024a). Climbing organisations maintain databases of seasonal restrictions (BMC, 2023). These measures have been successful in reducing bird disturbance from climbing throughout the UK. For example, peregrine falcons have been well protected at their cliff nesting sites, and through management measures like seasonal closures that are enforced by wardens, it is estimated that disturbance is restricted to 1% of the UK population (Huddart and Stott, 2019). Seasonal closures can also be applied to beaches and coastal areas. Weston *et al.* (2012) studied the effects of temporary beach closures and reported a 93.7% compliance rate among visitors. The temporary beach closure reduced footfall and egg crushing during the breeding season (Weston *et al.*, 2012).

6.1.1.9 Birdwatching Codes

135. The voluntary WiSe accreditation scheme has had success at promoting proper behaviour during marine wildlife watching in the UK. This programme delivers training to operators and individuals who undertake recreation in the marine space to promote an understanding of disturbance for marine wildlife and the species-specific ways to reduce disturbance when viewing wildlife (Wise Scheme, 2018). The WiSe scheme has created codes of conduct for sustainably viewing seabirds, among other marine species, and conducting marine recreation around seabirds (Wise Scheme, 2018). The extent of participation among the public and operators in this programme, however, is unclear. Therefore, further promotion of this programme or the creation of a seabird-specific programme would help continue to bolster mitigation of recreational disturbance. There are no data on the success of this programme in reducing disturbance, as participation is voluntary. There are no current examples of statutory bird watching codes that are implemented throughout the UK. It is suggested that voluntary accreditation schemes, like WiSe, could be strengthened when paired with statutory measures.

6.1.1.10 Coordination with Equipment Hire Businesses and Recreational Organisations

136. To our knowledge, there has not yet been a coordinated effort between breeding site managers and equipment hire business or recreational organisations to reduce recreational disturbance, however recreational organisations or businesses have voluntarily taken steps to reduce disturbance or encourage their clients and members to reduce disturbance. For instance, an Irish rock climbing organisation promoted educational information about cliff nesting seabirds and encouraged its members to avoid popular routes, like Ireland's Eye (an island off the coast of County Dublin), during the breeding season (UKC, 2023).

Feasibility

137. Reducing recreational disturbance through compensation measures has the potential to benefit entire guillemot and razorbill colonies (Section 3). These measures will have a higher impact at sites that receive higher visitor pressure. Most of these measures are low cost (with the exception of monitoring enforcement, and widespread educational efforts), easily implemented, and do not require specialist equipment, so they can easily be applied across multiple sites.

138. Reduction of disturbance can potentially contribute at a scale of increasing guillemot numbers across the eight colonies (described in section 7) by 980.9 adults birds and increasing razorbill numbers across the eight colonies by 45.1 adults. This contribution is calculated based upon the difference between the most recent population estimate and the recent historical peak (between 2022 and 1990) at each of the eight sites considered. Monitoring efforts would need to include productivity monitoring to better observe the effects of these measures at the population level. This is often conducted by measuring breeding success using a viewpoint study, with nest failure being checked daily (Beale and Monaghan, 2005). It is important to observe study plots both close to and away from areas of high visitor pressure to monitor whether there are differences in breeding success between the two areas both before and after the implementation of mitigation measures (Watson *et al.*, 2021).

139. The Applicant will continue to work with the relevant organisations to further the development of these measures and ensure coordination with any existing management plans so as not to repeat mitigation efforts and ensure the additionality of any implemented measures. Consultation with Natural England regarding the development of this measure is outlined in the GCP (document reference 7.7.2) and RCP (document reference 7.7.3).

6.2 Additional Measures to Reduce Disturbance from Recreational Activities

Disease Mitigation

140. As described in Section 3, the reduction of human presence around seabird colonies may naturally reduce the spread of disease at seabird colonies since fewer tourists reduces the opportunities for tourists to become a vector for avian flu. However, there is scope to further reduce the effects of recreational disturbance as a vector for avian flu.

141. The compensation goal of reducing the effects of disease, especially avian flu, can be met by implementing several different measures which include:

- Seasonal closures;
- Set-back distances;
- Sanitising mats;
- Educational campaigns; and
- Reporting systems.

6.2.1.1 Examples of Implementation

142. There are examples of disease mitigation measures being implemented throughout the UK. For example, sanitising mats were implanted at the Isle of May, Scotland and Staffa, two key seabird tourism destinations, during the 2023 breeding season (Cully, 2023). Furthermore, both the Isle of May, Scotland and the Farne Islands, England have implemented seasonal tourism closures to protect seabirds from this potential vector. Set back distances were implemented on Staffa, Scotland during the 2023 breeding season to prevent tourists from bringing infected organic materials into puffin nesting sites (Cully, 2023). Defra has implemented a UK national reporting system for avian flu where members of the public can report sightings of dead birds (Defra, 2023). Finally, management organisations in the south west of England, including the Cornwall Council and North Devon Council, have undertaken public education initiatives that instruct the public to use the reporting system and provides tips to avoid spreading the disease (North Devon Council, n.d.a; Cornwall Birds, 2023).

6.2.1.2 Feasibility

143. Preventing the spread of avian flu owing to tourism has the potential to have a positive impact on bird numbers. These measures will be more impactful at sites that receive higher visitor pressure. Most of these measures are low cost (with the exception of monitoring and enforcement efforts), easily implemented, and do not require specialist equipment, so they can easily be applied across multiple sites.

144. The creation of a UK-wide group that can conduct mortality monitoring and carcass testing is necessary to address this issue at a wide scale and coordinate the efforts of individual site managers (Pearce-Higgins *et al.*, 2023).

Litter

145. As described in Section 3, the reduction of human presence around seabird colonies may naturally reduce the spread of litter at seabird colonies since fewer tourists reduces the opportunities for tourists produce waste. However, there is scope to further reduce the effects of recreational disturbance as a vector for litter.

146. The compensation goal of reducing the effects of littering can be met by implementing several different measures which include:

- Statutory litter control measures;
- Voluntary local litter picks;
- Educational campaigns; and
- Reporting systems.

6.2.1.3 Examples of Implementation

147. Voluntary and statutory litter control measures have been implemented throughout the UK and in the south west of England. For example, Cornwall Council has implemented statutory fines for littering and an online reporting system for beaches that need cleaning (Cornwall Council, 2023). North Devon Council has also implemented statutory fines for littering, an online system to report those who litter, educational campaigns, monitoring systems, and public beach cleans (North Devon Council, n.d.b). Beyond traditional waste removal schemes, community litter picks are a common voluntary method of reducing litter (Love Portreath, n.d.; National Trust, n.d.; St Agnes Parish Council, 2020).

6.2.1.4 Feasibility

148. Addressing the spread of litter from tourism has the potential to reduce the presence of litter around colonies. These measures will be more impactful at sites that receive higher visitor pressure. Most of these measures are low cost (with the exception of monitoring and enforcement efforts), easily implemented, do not require specialist equipment, and draw upon existing efforts, so they can easily be applied across multiple sites.

149. Frequent monitoring is important for analysing the success of litter reduction measures (Schernewski *et al*., 2018). Monthly monitoring of litter rates was shown to be three times more effective than monitoring litter rates every three months (Schernewski *et al*., 2018). Furthermore, 32-75% more litter was found when litter was recorded through collection as opposed to visual observation (Schernewski *et al*., 2018).

6.3 Habitat Improvement

Predator Control

150. As described in Section 3 the reduction of human presence around seabird colonies may naturally reduce the rate of mammalian predation since fewer tourists reduces the opportunities for tourists to become a vector for mammalian predators at seabird colonies. Furthermore, the reduction of human presence around seabird colonies may naturally reduce the rate of avian predation if seabirds demonstrate fewer disturbance effects. However, there is scope to further reduce the effects of predation and supplement the reduction of recreational disturbance that naturally accelerates the mitigation of predation on seabirds.

151. The compensation goal of reducing the threat of mammalian predators can be met by implementing both eradication-focused control measures and exclusion-focused control measures. Eradication measures focus on removing a current predator population from a seabird site to help maintain or recover an existing seabird population. Exclusion measures focus on keeping mammalian predators out of key seabird colonies to help maintain a seabird population. Eradication-focused measures are more effective on islands, where there are smaller chances of reinvasions by invasive species, and exclusion measures are better suited to mainland areas.

152. Avian predator control can be carried out by controlling avian predator populations through culling or breeding control. However, the Applicant is not currently considering the culling of avian predators as a compensation measure and considers that this would not be supported by Natural England. As such the Applicant will investigate opportunities to implement other means of reducing avian disturbance such as diversionary feeding.

6.3.1.1 Examples of Implementation

153. A successful predator eradication programme was implemented on Lundy from 2002 to 2006 that resulted in a tripling of the number seabirds on the island, including a greatly increased guillemot population (The Landmark Trust, 2024b). Over the course of the eradication programme, the guillemot population rose from 2,348 to 6,198 IND, and it continued to rise, standing at 9,880 in 2021 (RSPB England, 2021). This eradication programme, that was implemented as a partnership between NE, The Landmark Trust, and the Royal Society for the Protection of Birds (RSPB), was followed up by the implementation of exclusionary measures (The Landmark Trust, 2024b). Other studies on the effects of predator eradication on auks saw a reduction of Xantus's murrelet (*Synthliboramphus hypleucus*) egg predation from 36.7% to 20.5% when deer mice (*Peromyscus*) were removed from the study site as opposed to a control site (Millus *et al*., 2007).

154. The technique of oiling eggs to prevent them from hatching has been used for raven that were impacting the breeding success of black-crowned night heron (*Nycticorax nycticorax*; Brussee and Coates, 2018). These control measures increased black-crowned night heron, as the rate of predation decreased after this measure was implemented (Brussee and Coates, 2018). The reduction of crow predation of seabirds, including from kittiwake (*Rissa tridactyla*) and black guillemot (*Cepphus grylle*), has been implemented as a compensation measure for Ailes Marines since 2012 (Ailes Marines, 2024). This programme has increased the kittiwake breeding population by 87 pairs from 2012-2019 (Ailes Marines, 2024).

6.3.1.2 Feasibility

155. Each method of mammalian predator control (eradication-focused and exclusion-focused) has different challenges and it is easier to implement exclusionary measures for mammalian predators. Predator eradication programmes are much more costly due to the prolific breeding rates of mammalian predators. Once predator populations become entrenched near seabird colonies, it becomes difficult to curb their breeding rate. Therefore, it is much easier to control predators if they are prevented from entering seabird colonies in the first place. Though exclusion-focused predator control programmes come with their own costs, they are less costly than implementing extensive eradication programmes.

156. Though implementing predator control measures necessitates a costly and often lengthy process, reducing predation has the potential to benefit guillemot and razorbill populations. Therefore, this compensation measure would provide a significant impact for guillemot and razorbill, as it could help protect entire colonies.

157. The Plémont area of Jersey has been identified as suitable for a predator control programme (document 7.7.5). Implementing exclusion programmes for these additional colonies can help protect guillemot and razorbill populations from predators before the threat arises, if there is evidence that non-native predators are limiting breeding numbers therein.

158. Colonies that are receiving exclusion-focused predator control measures can implement monitoring programmes that help detect the presence of mammalian predators. Wax bait boxes can be used to detect predator presence, as the wax bait will record the presence of rodents through the presence of teeth marks. Wax bait boxes should also be placed on ferries and any ships travelling to key seabird colonies, as mammalian predators can be transported to seabird islands and colonies by ships. Conservation dogs and their handlers can also be deployed near key seabird sites to help detect the presence of mammalian predators. Frequent monitoring will mean that any predator presence can be detected early and before the predator population breeds out of control.

159. For avian predator control, many of the measures, like egg oiling and culling, do not require highly specialised equipment. However, practices like egg oiling would necessitate the hiring of experienced individuals to carry out the work. Furthermore, permits are required to carry out control of avian predator populations.

160. Monitoring efforts would need to include productivity monitoring to better observe the effects of these measures at the population level. This is often conducted by measuring breeding success using a viewpoint study, with nest failure being checked daily (Beale and Monaghan, 2005). It is important to observe study plots both before and after the implementation of mitigation measures (Watson *et al.*, 2021).

161. More research is needed to determine the scale of benefit that reducing avian predators can provide for guillemot and razorbill colonies. However, the benefits of reducing non-native predators such as rats are well established from eradication programs on, for example Lundy, or the Isles of Scilly. As such, it seems sensible to assume that reduction of predation where predation is a relevant pressure, alongside other measures such as disturbance reduction, will have considerable benefits. The Applicant will work with landowners and managers to determine whether predator control measures are appropriate at the relevant sites and if so, would look to establish the scale and nature of habitat improvement that will deliver the most effective compensation on a site-by-site basis.

Invasive Species Management

162. As described in Section 3, invasive non-native species like tree mallow have invaded important seabird islands in the Firth of Forth, Scotland and prevent seabirds from accessing available nesting space (RSPB, 2023). The reduction of invasive species around seabird colonies can take place through volunteer-led removal programmes.

6.3.1.3 Examples of implementation

163. Tree mallow eradication programmes have had success on the seabird islands of Crigleith, Fidra, and Lamb in the Firth of Forth, Scotland (Scottish Seabird Centre, 2024b). This programme has been in place for 14 years and relies on volunteers to help manage the invasive plant on these islands (Scottish Seabird Centre, 2024b). This project has benefitted a range of nesting birds on the island, including auks, common eider (*Somateria mollissima*), and fulmar (*Fulmarus glacialis*; Scottish Seabird Centre, 2024b).

6.3.1.4 Feasibility

164. Removal of invasive species like tree mallow can be costly and labour intensive (Scottish Seabird Centre, 2024a). However, the Project could employ removal experts as part of an implementation strategy. Removal programmes must take place annually, or tree mallow could easily overwhelm an island if left unchecked due to the seed bank that lies in the soil (Scottish Seabird Centre, 2024a&b). This removal schedule could be built into an annual implementation strategy by the Project.

6.4 Identified Site Specific Management Measures

165. The Project has received two costed proposals for the implementation of measures with potential delivery partners that would help implement measures used to reduce recreational disturbance.

166. The Applicant is now in discussion with the first potential delivery partner.

167. As there is no management currently in place, there would be no issue regarding the additionality of any implemented measures. The first proposal will undertake the implementation of measures at two sites within Devon such as;

- Marker buoys around the colony at a set-back distance informed determined by the disturbance evidence collected during the 2024 surveys);
- On water monitoring of the marked zone and associated engagement by a dedicated ranger (twice weekly, for 20 weeks during the breeding season);
- On land monitoring, engagement and data collection on the cliff top by the by a dedicated ranger;
- Installation of a live feed camera on the colony;
- Signage at launch points and beaches;
- Leafleting campaign;
- Website, social media and relevant marketing campaigns;
- Development and implementation of the voluntary management practices. As a substantial number of disturbance events came from watercraft such as jet skis, local watercraft hire companies and leisure organisations will be a particular target; and
- Evidence collection for the purposes of enforcement.

168. For the second proposal the Applicant is in discussions with the potential delivery partner, other relevant developers and The Offshore Wind Industry Council (OWIC) with a view to delivering these disturbance reduction measures, potentially collaboratively. The second proposal will undertake the implementation of measures for sites in Cornwall. As there is no management currently in place, there would be no issue regarding the additionality of any implemented measures.

169. The second proposal could include various measures such as:

- On-water patrols around key colonies;
- Use of buoyage to delineate sensitive areas of sea around colonies;
- Public education and outreach programmes;
- Education and outreach programmes for tour operators and fishers;
- Visitor management through informational infrastructure; and
- An update of the Cornwall Marine and Coastal Code.

Cow and Calf

6.4.1.1 Vessel Restriction

170. Some disturbance noted at this site was anthropogenic, in the form of vessel-based disturbance, with three disturbance events noted during 61.5 hours of survey. Of these, two events elicited some disturbance behaviour from the birds present, and one of these produced a flushing response. Therefore, management of this kind of disturbance is likely to form part of the measure to improving the productivity at the site, and therefore over time increasing the size of the colony. Ensuring that boats maintain an appropriate distance from the colony is likely to have a more significant impact on the colony compared to other potential enhancement measures.

171. Options for restricting or reducing vessel-based disturbance include encouraging watercraft users to sign-up to voluntary management codes. Education and outreach activities will also address the requirement to maintain a certain distance between a vessel and an active colony (with 'active' being defined as a period between May and August). Therefore, measures managing vessel access to this site will comprise of development and implementation of the voluntary management practices. As a substantial number of disturbance events came from watercraft such as jet skis, local watercraft hire companies and leisure organisations will be a particular target.

172. These management measures are not currently in place. As described in paragraphs 165 and 163, the Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.2 Education and Outreach

173. As set out in paragraph 169, a wide-ranging education and outreach programme could be implemented here. Watercraft users will be targeted through signage at ports and harbours, leafletting, encouragement to take part in an updated WiSe Scheme, local newspapers, TV and radio, social media, and visits to schools, local vessel and equipment hire outlets, and other places with gatherings of appropriate people.

174. Messaging will positively reinforce the value of wildlife to the local economy, the benefits of healthy ecosystems and the responsibilities of sea-users to adopt appropriate behaviours around seabird colonies.

175. None of these management measures are currently in place. As described in paragraphs 165 and 163, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.3 Habitat management

176. Removal of vegetation from areas of the site would provide more open ledges on which auks could breed, however there did appear to be abundant space on the ledges in both zones and given the presence of dense vegetation between the coast path and colony and the steep incline access to carry out manual removal of vegetation may prove difficult. This measure, therefore, will be considered as part of adaptive management measures should they be required.

6.4.1.4 Avian disturbance management

177. Auks at the Cow and Calf were subject to disturbance from Avian predators, with 16 disturbance events recorded. 15 of these disturbances from resulted in a recorded response.

178. In order to fully develop measures to manage disturbance from native bird species, further research will be undertaken into the origin and number of the birds causing disturbance, in order to ascertain whether feasible non-lethal measures (for example diversionary feeding or discouragement from breeding locally) can be developed. This measure, therefore, will be considered as part of adaptive management measures should they be required.

Gulland Rock

6.4.1.5 Vessel restriction

179. Almost all disturbance noted at this site was anthropogenic, in the form of vessel-based disturbance, with 41 disturbance events noted during 71.8 hours of survey. Of these, 17 events elicited some disturbance behaviour from the birds present, and one of these producing a flushing response. Therefore, management of this kind of disturbance is likely to be key to improving the productivity at the site, and therefore over time increasing the size of the colony.

180. Options for restricting or reducing vessel-based disturbance include encouraging watercraft users to sign-up to voluntary management codes. Education and outreach activities will also address the requirement to maintain a certain distance between a vessel and an active colony (with 'active' being defined as a period between May and August). Therefore, measures managing vessel access to this site may comprise of development and implementation of the voluntary management practices. As a substantial number of disturbance events came from watercraft such as jet skis, local watercraft hire companies and leisure organisations will be a particular target.

181. These management measures are not currently in place. As described in paragraphs 165 and 163, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.6 Education and outreach

182. As set out in paragraph 169, a wide-ranging education and outreach programme could be implemented here. Watercraft users will be targeted through signage at ports and harbours, leafletting, encouragement to take part in an updated WiSe Scheme, local newspapers, TV and radio, social media, and visits to schools, local vessel and equipment hire outlets, and other places with gatherings of appropriate people.

183. Messaging will positively reinforce the value of wildlife to the local economy, the benefits of healthy ecosystems and the responsibilities of sea-users to adopt appropriate behaviours around seabird colonies.

184. None of these management measures are currently in place. As described in paragraphs 165 and 163, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.7 Habitat management

185. Removal of vegetation on the western side of the island could be considered, as this would provide more space for auks to breed. This measure, therefore, will be considered as part of adaptive management measures should they be required.

6.4.1.8 Avian disturbance management

186. Auks at the Gulland Rock were subject to disturbance from Avian predators, with 25 disturbance events caused by gulls and corvids. Ten of these disturbances from gulls and corvids resulted in birds being flushed from the colony, with four flushes seeing birds only returning to the cliff after more than 30 seconds.

187. In order to fully develop measures to manage disturbance from native bird species, further research will be undertaken into the origin and number of the birds causing disturbance, in order to ascertain whether feasible non-lethal measures (for example diversionary feeding or discouragement from breeding locally) can be developed. This measure, therefore, will be considered as part of adaptive management measures should they be required.

North Cliffs 3

6.4.1.9 Vessel restriction

188. Some disturbance noted at this site was anthropogenic, in the form of vessel-based disturbance, with three disturbance events noted. These events did not elicit disturbance behaviour from the colony.

189. Vessel management has not been considered at this site due to the low levels of vessel-based disturbance that were recorded.

6.4.1.10 Education and outreach

190. Education and outreach measures have not been considered at this site. The instances of anthropogenic disturbance record in the 2024 surveys originated with fishing vessels rather than tourist- or recreation-based sources. However, as set out in paragraph 169, a wide-ranging education and outreach programme that is implemented regionally will have knock-on benefits for this site.

6.4.1.11 Habitat management

191. Habitat management has been proposed, as the removal of vegetation from areas of the site would provide more open ledges on which auks could breed. This measure, therefore, will be considered as part of adaptive management measures should they be required.

6.4.1.12 Avian disturbance management

192. Auks at the North Cliffs 3 were subjected to disturbance from Avian predators, with 24 disturbance events caused by gulls, raptors, and corvids. Three of these disturbances from gulls and corvids resulted in birds being flushed from the colony, with two flushes seeing birds only returning to the cliff after more than 30 seconds.

193. In order to fully develop measures to manage disturbance from native bird species, further research will be undertaken into the origin and number of the birds causing disturbance, in order to ascertain whether feasible non-lethal measures (for example diversionary feeding or discouragement from breeding locally) can be developed. Were this measure to be taken forward as part of a compensation package, surveys will be designed to answer this question, with results informing the design of any control measures.

Ore Stone

6.4.1.13 Vessel restriction

194. Almost all disturbance noted at this site was anthropogenic, in the form of vessel-based disturbance, with 96 disturbance events noted during 74.5 hours of survey. Of these, 40 events elicited some disturbance behaviour from the birds present, and 36 of these produced a flushing response. Therefore, management of this kind of disturbance is likely to be key to improving the productivity at the site, and therefore over time increasing the size of the colony.

195. Options for restricting or reducing vessel-based disturbance include encouraging watercraft users to sign-up to voluntary management codes. Education and outreach activities will also address the requirement to maintain a certain distance between a vessel and an active colony (with 'active' being defined as a period between May and August). Therefore, measures managing vessel access to this site may comprise of the development and implementation of the voluntary management practices. As a substantial number of disturbance events came from watercraft such as jet skis, local watercraft hire companies and leisure organisations will be a particular target.

196. These management measures are not currently in place. As described in paragraphs 165 and 163, the Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.14 Education and outreach

197. As set out in paragraph 167, a wide-ranging education and outreach programme will be implemented. Watercraft users will be targeted through signage at ports and harbours, leafletting, encouragement to take part in an updated WiSe Scheme, local newspapers, TV and radio, social media, and visits to schools, local vessel and equipment hire outlets, and other places with gatherings of appropriate people.

198. Messaging will positively reinforce the value of wildlife to the local economy, the benefits of healthy ecosystems and the responsibilities of sea-users to adopt appropriate behaviours around seabird colonies.

199. None of these management measures are currently in place. As described in paragraphs 165 and 163, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.15 Habitat management

200. There is little opportunity to improve the colony through removal of vegetation.

6.4.1.16 Avian disturbance management

201. Auks at the Ore Stone were subjected to disturbance from Avian predators, with 17 disturbance events recorded. 17 of these disturbances resulted in a recorded response.

202. In order to fully develop measures to manage disturbance from native bird species, further research will be undertaken into the origin and number of the birds causing disturbance, in order to ascertain whether feasible non-lethal measures (for example diversionary feeding or discouragement from breeding locally) can be developed. This measure, therefore, will be considered as part of adaptive management measures should they be required.

Berry Head

6.4.1.17 Vessel restriction

203. Almost half of disturbance noted at this site was anthropogenic, in the form of vessel-based disturbance, with 35 disturbance events noted during 55 hours of survey. Of these, 16 events elicited some disturbance behaviour from the birds present, and 14 of these produced a flushing response, with eight of these eliciting a flushing response that lasted more than 30 seconds. Therefore, management of this kind of disturbance is likely to be key to improving the productivity at the site, and therefore over time increasing the size of the colony.

204. The Applicant is currently in discussion with a delivery partner with the intention of securing an agreement to implement compensation measures with the Project at the Berry Head site. The Applicant has received a costed proposal (commercially sensitive) for the measures at this site, with details of the proposal contained within paragraph 167.

205. In summary, the measures proposed include use of buoyage to encourage watercraft to avoid approaching the cliffs, a ranger to monitor vessels (from the sea) and disturbance and colony health (from land), as well as encouraging watercraft users to sign-up to voluntary management codes and establishment of education campaigns through leafleting and online materials.

206. None of these management measures are currently in place. As described in paragraphs 165 and 163168, the Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.18 Education and outreach

207. As set out in paragraph 167, a wide-ranging education and outreach programme will be implemented. Watercraft users will be targeted through signage at ports and harbours, leafletting, encouragement to take part in an updated WiSe Scheme, local newspapers, TV and radio, social media, and visits to schools, local vessel and equipment hire outlets, and other places with gatherings of appropriate people.

208. Messaging will positively reinforce the value of wildlife to the local economy, the benefits of healthy ecosystems and the responsibilities of sea-users to adopt appropriate behaviours around seabird colonies. Installation of signage in this area on the cliff tops to prevent and minimise disturbance by walkers at the top of the cliffs may also be advantageous.

209. None of these management measures are currently in place. As described in paragraphs 165 and 168, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.19 Habitat management

210. There is little opportunity to improve the colony through removal of vegetation based on observations during the surveys undertaken in 2024.

6.4.1.20 Avian disturbance management

211. Auks at the Berry Head were subjected to disturbance from Avian predators, with 24 disturbance events caused by gulls and corvids. Ten of these disturbances from gulls and corvids resulted in birds being flushed from the colony, with three flushes seeing birds only returning to the cliff after more than 30 seconds.

212. In order to fully develop measures to manage disturbance from native bird species, further research will be undertaken into the origin and number of the birds causing disturbance, in order to ascertain whether feasible non-lethal measures (for example diversionary feeding or discouragement from breeding locally) can be developed. This measure, therefore, will be considered as part of adaptive management measures should they be required.

The Mouls

6.4.1.21 Vessel restriction

213. Almost all disturbance noted at this site was anthropogenic, in the form of vessel-based disturbance, with 114 disturbance events noted during 57 hours of survey. Of these, 52 events elicited some disturbance behaviour from the birds present. Therefore, management of this kind of disturbance is likely to be key to improving the productivity at the site, and therefore over time increasing the size of the colony.

214. Options for restricting or reducing vessel-based disturbance include encouraging watercraft users to sign-up to voluntary management codes. Education and outreach activities will also address the requirement to maintain a certain distance between a vessel and an active colony (with 'active' being defined as a period between May and August). Therefore, measures managing vessel access to this site may comprise of the development and implementation of the voluntary management practices.

215. None of these management measures are currently in place. As described in paragraphs 165 and 163, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.22 Education and outreach

216. As set out in paragraph 169, a wide-ranging education and outreach programme can be implemented. Watercraft users will be targeted through signage at ports and harbours, leafletting, encouragement to take part in an updated WiSe Scheme, local newspapers, TV and radio, social media, and visits to schools, local vessel and equipment hire outlets, and other places with gatherings of appropriate people.

217. Messaging will positively reinforce the value of wildlife to the local economy, the benefits of healthy ecosystems and the responsibilities of sea-users to adopt appropriate behaviours around seabird colonies.

218. None of these management measures are currently in place. As described in paragraphs 165 and 163, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.23 Habitat Management

219. The 2024 surveys determined that some suitable ledges may currently be inaccessible due to vegetation on the western side of the island. This will be further investigated through botanical surveys and surveys to establish whether puffins are breeding at the Mouls and whether any vegetation clearance would be detrimental to their presence. This measure, therefore, will be considered as part of adaptive management measures should they be required.

6.4.1.24 Avian disturbance management

220. Auks at The Mouls were subjected to disturbance from Avian predators, with ten disturbance events caused by gulls, corvids, and raptors, and a single observation of birds being flushed by a cormorant. Two of these disturbances resulted in birds being flushed from the colony, with one flush seeing birds only returning to the cliff after more than 30 seconds.

221. In order to fully develop measures to manage disturbance from native bird species, further research will be undertaken into the origin and number of the birds causing disturbance, in order to ascertain whether feasible non-lethal measures (for example diversionary feeding or discouragement from breeding locally) can be developed. This measure, therefore, will be considered as part of adaptive management measures should they be required.

North Cornwall 2

6.4.1.25 Vessel restriction

222. Almost all disturbance noted at this site was anthropogenic, in the form of vessel-based disturbance, with 37 disturbance events noted during 63 hours of survey. Of these, 32 events elicited some disturbance behaviour from the birds present. Therefore, management of this kind of disturbance is likely to be key to improving the productivity at the site, and therefore over time increasing the size of the colony.

223. The highest number of events were tourist boats, which caused a response in 22 out of 23 events. These were primarily RIBs from Padstow.

224. Options for restricting or reducing vessel-based disturbance include encouraging watercraft users to sign-up to voluntary management codes. Education and outreach activities will also address the requirement to maintain a certain distance between a vessel and an active colony (with 'active' being defined as a period between May and August). Therefore, measures managing vessel access to this site may comprise of development and implementation of the voluntary management practices.

225. None of these management measures are currently in place. As described in paragraphs 165 and 163, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.26 Education and Outreach

226. As set out in paragraph 169, a wide-ranging education and outreach programme will be implemented. Watercraft users will be targeted through signage at ports and harbours, leafletting, encouragement to take part in an updated WiSe Scheme, local newspapers, TV and radio, social media and visits to schools, local vessel and equipment hire outlets, and other places with gatherings of appropriate people.

227. Messaging will positively reinforce the value of wildlife to the local economy, the benefits of healthy ecosystems and the responsibilities of sea-users to adopt appropriate behaviours around seabird colonies.

228. Measures to restrict boat traffic and/or encourage more responsible use of the area would be highly beneficial at this site. Installing additional signage closer to the colony, on the coast path itself to remind walkers of responsible dog ownership may also be beneficial.

229. None of these management measures are currently in place. As described in paragraphs 165 and 168, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.27 Habitat management

230. The removal of vegetation from this site may be considered to create additional ledges, preventing run off into an area of the site may allow more auks to use this zone. This measure, therefore, will be considered as part of adaptive management measures should they be required.

6.4.1.28 Avian disturbance management

231. Auks at North Cornwall 2 were subjected to disturbance from Avian predators, with four disturbance events recorded. Two of these events had no effect, and no birds were flushed from the colony.

232. In order to fully develop measures to manage disturbance from native bird species, further research will be undertaken into the origin and number of the birds causing disturbance, in order to ascertain whether feasible non-lethal measures (for example diversionary feeding or discouragement from breeding locally) can be developed. This measure, therefore, will be considered as part of adaptive management measures should they be required.

North Cornwall 3

6.4.1.29 Vessel restriction

233. Anthropogenic disturbance was recorded at this site in the form of vessel-based disturbance, with 19 disturbance events noted. Of these, one event elicited some disturbance behaviour from the birds present. Therefore, managing vessel-based disturbance could contribute to improving the productivity at this site.

234. Options for restricting or reducing vessel-based disturbance include encouraging watercraft users to sign-up to voluntary management codes. Education and outreach activities will also address the requirement to maintain a certain distance between a vessel and an active colony (with 'active' being defined as a period between May and August). Therefore, measures managing vessel access to this site may comprise of the development and implementation of the voluntary management practices. As a substantial number of disturbance events came from watercraft such as jet skis, local watercraft hire companies and leisure organisations will be a particular target.

235. These management measures are not currently in place. As described in paragraphs 165 and 163, the Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.30 Education and outreach

236. As set out in paragraph 169, a wide ranging education and outreach programme will be implemented. Watercraft users will be targeted through signage at ports and harbours, leafletting, encouragement to take part in an updated WiSe Scheme, local newspapers, TV and radio, social media, visits to schools, local vessel and equipment hire outlets, and other places with gatherings of appropriate people.

237. Messaging will positively reinforce the value of wildlife to the local economy, the benefits of healthy ecosystems and the responsibilities of sea-users to adopt appropriate behaviours around seabird colonies.

238. None of these management measures are currently in place. As described in paragraphs 165 and 163, The Project is currently seeking to ensure that it can be responsible for the delivery of any new management practices through a partnership with interested bodies. As such, there is no issue regarding the additionality of these measures.

6.4.1.31 Habitat management

239. A large area of vegetation could be removed from the central part of the site. This measure, therefore, will be considered as part of adaptive management measures should they be required.

6.4.1.32 Avian disturbance

240. A majority of the disturbance events at this site were caused by avian disturbance, with 65 disturbance events caused by gulls and corvids, and a family of three ravens were frequently observed predating auks and flushing kittiwakes throughout each of the site visits. Twenty of these disturbances from gulls and corvids resulted in birds being flushed from the colony, with three flushes seeing birds only returning to the cliff after more than 30 seconds.

241. In order to fully develop measures to manage disturbance from native bird species, further research will be undertaken into the origin and number of the birds causing disturbance, in order to ascertain whether feasible non-lethal measures (for example diversionary feeding or discouragement from breeding locally) can be developed. This measure, therefore, will be put forward for consideration and subsequently developed once additional information regarding the species creating disturbance and their breeding locations is acquired.

7 Roadmap

7.1 Scale and location of compensation

242. ~~The~~The Applicant has been preparing a number of measures which, taken together, are expected to deliver the compensation required for the Project. The exact nature and scale of the measures to be implemented will be defined post consent, in collaboration with stakeholders, landowners and land managers.

243. Compensation at specific sites will be carried out by the Project alone or on a collaborative basis. The Applicant is currently in discussion with delivery partners, other relevant developers and OWIC, with a view to establishing a collaborative delivery mechanism.

~~150.~~244. During the initial development of this measure, the Applicant identified a series of sites at which it would be possible to deliver a compensation quantum sufficient for the Project alone. Following consultation with stakeholders and potential delivery partners, sites identified within Cornwall by the Applicant are now expected to be delivered through a collaborative mechanism, with a proposal received by the Applicant by a potential delivery partner. As such, whilst the Applicant has provided a detailed analysis of the impacts, and potential measures that could be implemented, at each of the ~~six proposed sites, based upon the requirements at each site. The Applicant will assess the existence of, and the impacts from the pressures~~sites discussed ~~here (disturbance and other human traffic induced pressures such as litter and HPAI), habitat loss, and the potential for predator eradication) at each site, assess what existing management measures are place at each site, and will define a bespoke package for each site based upon the above.~~ in section 5, the Applicant understands that through the collaborative approach to delivery, measures will be undertaken at further colonies not surveyed by the Applicant within the south-west. As such, the scale and location of this measure is anticipated to expand from the details presented herein, with the most likely scenario being that all benefits from a collaborative approach are pooled between the relevant developers.

245. ~~The scale of compensation will be defined by the current population of guillemot and razorbill in the context of historical peaks, i.e. the potential population each site could support. For example, restoring guillemot populations at~~ Across the six eight sites, the implementation of the measures outlined in section 6 will support the restoration of populations to previous maxima as well as providing for an increase in productivity of the colonies. This is predicted to deliver the equivalent of 654.6 pairs of guillemot and 30.1 pairs of razorbill. Details of how the benefits of each surveyed site have been calculated is provided in Annex 2 Calculations of Compensation Benefits.

Potential compensation from the suite of surveyed sites

246. Using the process detailed in Annex 2 Table 7-1 and Table 7-2 show the total potential compensation across all surveyed sites.

Table 7-1 Potential compensation across the total short-listed sites for guillemot.

~~151. Cow and Calf would increase numbers from the current (2023) level of 760 individuals to a recent maximum of 1,308. This site would also deliver an increase in razorbill from 103 to 181 birds. Restoring the Gulland Rock colony to previous maxima for guillemot and razorbill would see increases from 580 to 1,176 guillemot and from 52 to 82 razorbill. Therefore, the overall scale of compensation that can be delivered by this suite of additional measures will be defined by which sites are taken forward.~~

~~152. Across the six sites, restoring populations to previous maxima through the implementation of a measure or suites of measures described here, would increase guillemot numbers by 2,081 birds and razorbill by 269. Applying standard conversion rates (Walsh *et al* 1995) of multiplying numbers of individuals on cliffs by 0.67 gives an increased breeding population of 1,394 pairs of guillemot and 180 razorbill. Should measures or suites of measures produce 50% of the birds required to return to previous maxima, the quanta delivered would be 1,040 individual guillemots and 134 razorbill, which would equate to 520 breeding pairs of guillemot and 77 breeding pairs of razorbill.~~

~~153. The required compensation for guillemots and razorbills based on predicted impacts using the Applicant's approach is shown in Table 7.1.~~

~~Table 7.1: Capacity of the additional measures measure to deliver the required compensation (Applicant's approach)~~

All short-listed sites combined		High compensation scenario	Low compensation case scenario
Total additional fledglings		1,399.3	2,984.4
Total additional adults (IND)		460.1	981.4
~~Species~~	~~Requirement (breeding~~Total additional pairs~~)~~	~~Capacity (breeding pairs)~~306.9	~~% of requirement delivered by measure~~654.6
~~Guillemot~~	~~110.6~~	~~520~~	~~470.2~~
~~Razorbill~~	~~103.4~~	~~77~~	~~77.5~~

Deleted Cells

Table 7-2 Potential compensation across the total short-listed sites for razorbill.

All short-listed sites combined	High compensation scenario	Low compensation scenario
Total additional fledglings	86.3	225.2
Total additional adults (IND)	17.3	45.1
Total additional pairs	11.5	30.1

Compensation beyond the listed sites

247. Through the establishment of the considered guillemot and razorbill compensation measures including enhancement of the WiSe Scheme to include training on best practice for breeding seabirds, and a wide-reaching education and engagement programme, best practice behaviours regarding breeding seabirds should become normalised. This will have benefits beyond the short-listed sites and affect auk colonies across the south west of England.

~~154.~~248. The Applicant's position is that no adverse effect on integrity should be concluded for either auk species. However, should compensation be required then Predator control, through implementation support to a predator exclusion measure at the Plémont Seabird Reserve (see Predator Control Evidence Base and Roadmap, document 7.6.5), would form the primary measure for guillemot and/or razorbill, which could deliver all of the compensation required under the Applicant's approach as presented in ~~Table 7.1.~~.

~~155.~~249. Should it be deemed necessary that additional compensation is required beyond that provided by the Plémont Seabird Reserve, then that measure could be augmented by the measures outlined in this document. Additional supporting compensation could also be provided by ANS should that be deemed necessary. Therefore, in the event that an AEoI is identified for either (or both) auk species, a combination of these measures could be used to deliver compensation, dependent on the final quantum deemed necessary by the Secretary of State.

Evidence that pressures affect populations and productivity

250. Human disturbance from the use of the marine space, including through recreational activities, can cause disturbance for guillemot and razorbill colonies. Watercraft, including boats, jet skis, and kayaks can all cause disturbance for these auks at distances less than 200 m (Blanchard, 1994; Chardine *et al.*, 1998; Lavers *et al.*, 2020; Ainley *et al.*, 2021).

251. These activities can result in both visible and non-visible stress responses for these species. A passing tourist vessel was shown to induce disturbance behaviour in a nesting guillemot colony on the Bass Rock, Scotland, which included the guillemot looking at the boat and head bobbing (Cully, 2023). These disturbances can also cause wide-spread effects, Barrett and Vader (1984) attributed the complete collapse of a Norwegian guillemot colony to an increase in proximity of watercraft to the colony.

252. Rates of failure associated with anthropogenic disturbance were highest during the early part of the breeding season (Beale and Monaghan 2005). This should be considered when planning engagement activities and deployment periods for any physical barriers.

7.2 Design and delivery of the compensation measures

~~156.~~253. Prior to consent, the Applicant will continue to identify the pressures facing these sites (as described above) and undertake necessary investigative work to identify those sites best suited to deliver the proposed compensation measures. Bespoke measures will ~~then~~continue to be developed for each of the relevant sites. In the event that compensation for guillemot and/or razorbill is deemed necessary by the Secretary of State, further detail on monitoring and adaptive management would be secured through the implementation and monitoring plan to be ~~agreed~~consulted on with the ~~species – specific~~relevant steering ~~groups~~group that would be formed in accordance with the Development Consent Order (DCO~~..~~).

7.3 Delivery Mechanism

254. Should compensation be required, the measures taken forward can be delivered either through a strategic approach in partnership with other projects with a requirement to deliver compensation for auks, or by the Project alone. It is expected that for those sites within Cornwall a collaborative delivery will implemented as outlined in paragraphs 165 and 162 Should a collaborative approach be taken forward, individual project compensation requirements will either be addressed through the allocation of sites (and therefore the benefits delivered by those sites) to each project, or through the allocation of an appropriate proportion of the benefits delivered across the suite of measures.

~~157.~~255. Should compensation be required, measures will be delivered with the full consent of, and in full collaboration with, the relevant landowners and managers at each site. The Applicant will continue to liaise with landowners to secure the necessary land rights to facilitate ~~delivery of the measures. Discussions will be continued with The Crown Estate to facilitate this process. Once the measures or suites of measures to be implemented at each site are defined, the Applicant will seek to ensure that all other required consents and approvals are in place.~~the delivery of the measures if they are needed. The delivery mechanism will be discussed with relevant stakeholders as part of the species-specific consultation groups, aiming to identify appropriate project design and stakeholder coordination. The Applicant is also continuing to engage with two potential delivery partner organisations to assist with the implementation of the compensation measures.

256. The Applicant notes the recent published guidance: Strategic compensation measures for offshore wind activities: Marine Recovery Fund (MRF) interim guidance (DESNZ January 2025). The Applicant welcomes this new guidance and confirmation of the intention to establish the MRF by the end of 2025.

7.4 Progress towards delivery of measures

257. Regardless of the final approach to delivery taken, i.e. either project alone or strategic, the Applicant's preference is to deliver measures in partnership with local and regional groups through which compensation can be delivered, or bodies that are well respected within their local communities and already have established relationships with groups through which compensation can be delivered. To this end, a number of potential partners have been contacted and the Applicant has met with potential 'host' partners, i.e. partners who will manage overall delivery of compensation through a network of partner bodies. Details regarding progress are commercially sensitive and as such are not presented here, however, plans have been discussed in sufficient detail to be fully costed. These proposals are outlined in paragraphs 165 and 162.

~~7.4~~7.5 Monitoring, adaptive management, and reporting

258. All measures will incorporate a full monitoring programme in order to detail both the effectiveness of the measures, and the progress of the selected colonies. Monitoring methodologies will mirror those implemented during the 2024 breeding season, collecting data on populations, productivity, and the nature, frequency and impact of disturbance or predation events. The monitoring programme will also consider any necessary modifications taken from lessons learned during the 2024 survey season. Control colonies will also be monitored, in order to contextualise any growth or increases in productivity at colonies where measures have been implemented.

259. Should more robust measures of colony health be required, monitoring could be quantified through collection of a wider range of variables such as laying date, laying date of successful nests, hatching success, or fledging success. The impacts of disturbance could also be evidenced through more in depth monitoring of colony attendance and provisioning rates across the suite of sites (both those with measures and control sites), and relating these factors to measures of success.

260. It is likely that at least three visits to colonies each breeding season will be required to collect productivity data if this measure is implemented. In addition, further dedicated watches to record the level of disturbance events, and any responses from the colony will be required to evidence that the measures are reducing the number and magnitude of disturbance events.

261. The development of the measures for each site has been informed by disturbance that has led to a flushing response, as this response was deemed most severe, and it allows for identification of where disturbance pressure is most intense (rather than where it has the greatest impact on the birds present). Ongoing monitoring of pressures and responses is planned, along with further monitoring of populations and productivity. Should data collected through ongoing monitoring suggest that birds showing a 'less severe' response also have their breeding population or productivity limited, and this pressure has not been reduced through existing measures, this information will be built into and adaptive management strategy.

~~158.~~262. Options for monitoring, subsequent adaptive management (should it be required) and reporting will be developed as the details of the specific pressures at each site and the most appropriate management measures are identified. The final details will be presented in the Guillemot Compensation Implementation and Monitoring Plan (GCIMP) and the Razorbill Compensation Implementation and Monitoring Plan (RCIMP) (if required) that will be developed post-consent in consultation with the relevant steering group.

Further Research Requirements

~~159.~~263. There is a strong baseline for understanding guillemot and razorbill, as well as wider seabird responses to human disturbance. However, it is acknowledged that there are some knowledge gaps which will continue to be explored and final agreement on which would be subject to discussions post consent.

~~7.5~~7.6Funding

~~160.~~264. The anticipated costs of the development, implementation and ongoing maintenance and monitoring of the proposed additional measures are outlined in ~~Table 7.2~~Table 7-3 below. These costs are expected to represent an upper limit and will be refined further as the measures are progressed.

~~161.~~265. These costs are also included within the Compensation Funding Statement (document reference 7.9) which outlines how the Applicant and its ultimate parent companies would fund compensation measures should they be required.

Table 7~~.~~-3: Estimated cost for the delivery of the additional measures for Guillemot and Razorbill

Phase	Cost
Devex	£282,576
Capex	£1,500,000
Opex	£2,241,750
Total	£4,024,326

~~7.6~~7.7Programme

~~162.~~266. An indicative program for the identification and establishment of the management measures ~~1~~one year prior to the installation of any wind turbine tower (as defined in the DCO), is presented in Table 7-4 below.

Table 7-4: Indicative programme for additional measures for compensation for guillemot and razorbill

	Year					
Activity	2024	2025	2026	2027	2028	2029
Identification of management measures for each site	X					
Expected DCO Outcome		X				
Securing necessary consents and land rights (if required)			X			
Implementation of measures				X	X	
Turbine installation						X

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9 Annex 1. Supplementary Tables

Table 9-1: Long list of sites selected for compensation

Site	Master Site	Guillemot Peak Historical Count (IND)	Guillemot Most Recent Count (IND)	Guillemot Colony Health	Razorbill Peak Historical Count (IND)	Razorbill Most Recent Count (IND)	Razorbill Colony Health
Armed Knight	West Penwith	402 (2023)	402 (2023)	N/A	34 (2007)	23 (2023)	Decrease
Barras Nose	Tintagel Cliffs Site of Special Scientific Interest (SSSI)	2 (1999)	0 (2015)	Decrease	N/A	N/A	N/A
Berry Head	Berry Head to Sharkham Point SSSI: Berry Head 1	1,793 (2008; 1,196 Apparently Occupied Nest (AON) Count)	932 (2024)	Decrease	0[1]	26[1]	Increase
Bounds Cliff	Bounds Cliff – North Cornwall	20 (2017)	20 (2017)	N/A	48 (2017)	48 (2017)	N/A
Carvannet – Portreath 1	Godrevy Head to St Agnes SSSI	3 (2007)	0 (2017)	Decrease	N/A	N/A	N/A
Carvannet – Portreath 2	Hayle – Chapel Porth	240 (2016)	240 (2016)	N/A	21 (2007)	6 (2016)	Decrease
Carvannet – Portreath 5	Hayle – Chapel Porth	78 (2014)	76 (2016)	Decrease	N/A	N/A	N/A
Cow and Calf	West Exmoor Coast and Woods SSSI	1,308 (2016)	760 (2023)	Decrease	181 (2016)	103 (2023)	Decrease

Elwill bay	West Exmoor Coast and Woods SSSI	160 (2023)	160 (2023)	N/A	33 (2016)	25 (2023)	Decrease
Godrevy	Godrevy Head to St Agnes SSSI	40 (2016)	40 (2016)	N/A	12 (2000)	9 (2016)	Decrease
Gorregan	Isles of Scilly SPA	343 (2023)	343 (2023)	N/A	80 (2023)	80 (2023)	N/A
Gull Rock – North Cornwall	Gull Rock – North Cornwall	2 (2015)	2 (2015)	N/A	48 (2009)	40 (2015)	Decrease
Gull Rock	Plymouth – Falmouth	309 (2016)	286 (2024)	Decrease	79 (1985)	23 (2024)	Decrease
Gulland Rock	Gulland Rock – North Cornwall	1,176 (2016)	580 (2017)	Decrease	82 (2015)	52 (2016)	Decrease
Hell's Mouth	Hayle – Chapel Porth	50 (1986)	48 (1987)	Decrease	24.00 (1986; 16 Apparently Occupied Site (AOS) Count)	24.00 (1986; 16 AOS Count)	N/A
Long and Short Island	Tintagel Cliffs SSSI	895 (2015)	895 (2015)	N/A	264 (2015)	264 (2015)	N/A
Long Island Coast	Tintagel Cliffs SSSI	7 (1999)	0 (2015)	Decrease	27 (2009)	10 (2015)	Decrease
Lundy	Lundy	9,912 (2023)	9,912 (2023)	N/A	3,785 (2023)	3,785 (2023)	N/A
Meachard	Grower Rock to Boscastle, North Cornwall	8 (2015)	8 (2015)	N/A	97 (2015)	97 (2015)	N/A
Melledgan	Isles of Scilly SPA	2 (2015)	2 (2015)	N/A	36 (2015)	24 (2023)	Decrease
Men-a-vaur	Isles of Scilly SPA	177 (1999)	60 (2023)	Decrease	101 (1999)	100 (2023)	Decrease
Mew Stone & Cod Rock	Berry Head to Sharkham Point SSSI	11.99 (1987; 8 AOS Count)	0 (2017)	Decrease	6 (1987)	0 (2017)	Decrease

Mincarlo	Isles of Scilly SPA	80 (2023)	80 (2023)	N/A	120 (2015)	58 (2023)	Decrease
Morvah 1	West Penwith	N/A	N/A	N/A	1 (2017)	1 (2017)	N/A
Morvah 3	West Penwith	10 (2017)	10 (2017)	N/A	7 (2017)	7 (2017)	N/A
Mullion to Predannack Cliff NNR	Mullion Cliff to Predannack Cliff SSSI	14 (1985)	14.99 (2016; 10 AOS Count)	Stable	10 (1985)	4.50 (2015; 3 AON count)	Decrease
Needles Rocks & Main Bench Cliffs	Isle of Wight	337 (2001)	300 (2017)	Decrease	4 (1985)	0 (2017)	Decrease
Newland Island	Newland Island, North Cornwall	1 (1986)	0 (2017)	Decrease	10 (1987)	0 (2017)	Decrease
North Cliffs 1	Godrevy Head to St Agnes SSSI	154 (2014)	102 (2020)	Decrease	46 (2000)	1 (2020)	Decrease
North Cliffs 3	Godrevy Head to St Agnes SSSI	172 (2016)	172 (2016)	N/A	11 (2016)	11 (2016)	N/A
North Cliffs 5	Godrevy Head to St Agnes SSSI	3 (2016)	3 (2016)	N/A	4 (2016)	4 (2016)	N/A
North Cornwall 3	North Cornwall Coast	112 (2022)	94 (2024)	Decrease	89 (2024)	89 (2024)	N/A
Ore Stone	Northern End of Torbay	339 (2017)	90 (2022)	Decrease	25 (2017)	25 (2017)	N/A
Penally	Penally to Cornakey	75 (2000)	0 (2018)	Decrease	16 (2000)	10 (2018)	Decrease
Pentargon	Penally to Cornakey	9 (2018)	9 (2018)	N/A	31 (2018)	31 (2018)	N/A
Pentargon Cove	Penally to Cornakey	67 (2018)	67 (2018)	N/A	11 (2018)	11 (2018)	N/A
Port Isaac	Port Isaac, North Cornwall	35 (1999)	0 (2017)	Decrease	2 (1999)	0 (2017)	Decrease

Portland 5	Portland	586 (2018)	586 (2018)	N/A	110.94 (2007; 74 AOS Count)	53 (2018)	Decrease
Portreath – Porthtowan 2	Godrevy Head to St Agnes SSSI	95 (2000)	49 (2016)	Decrease	65 (2016)	65 (2016)	N/A
Portreath – Porthtowan 3	Godrevy Head to St Agnes SSSI	9 (2007)	0 (2016)	Decrease	41 (2000)	0 (2016)	Decrease
Portreath – Porthtowan 4	Godrevy Head to St Agnes SSSI	27 (2000)	0 (2016)	Decrease	8 (2016)	8 (2016)	N/A
Scilly Rock	Isles of Scilly SPA	60 (2015)	7 (2023)	Decrease	81 (2023)	81 (2023)	N/A
Seal Hole to Trevaunance Cove	Chapel Porth to Perranporth	122 (2017)	55 (2024)	Decrease	70 (2017)	16 (2024)	Decrease
St Aldhelm's Head – Durlston Head	South Dorset Coast SSSI	1,652 (2022)	1,547 (2024)	Decrease	194 (2022)	188 (2024)	Decrease
The Brisons	West Penwith	350 (2016)	348 (2023)	Decrease	500 (2016)	68 (2023)	Decrease
The Mouls	The Mouls, North Cornwall	732 (2015)	678 (2016)	Decrease	68 (2015)	16 (16)	Decrease
The Sisters	The Sisters, North Cornwall	870 (2015)	870 (2015)	N/A	58 (2015)	58 (2015)	N/A
Willapark	Tintagel Cliffs SSSI	130.43 (2015; 87 AON Count)	130.43 (2015; 87 AON count)	N/A	50 (2015)	50 (2015)	N/A
Woody Bay 1 and 2	West Exmoor Coast and Woods SSSI	204 (2001)	90 (2023)	Decrease	142 (2001)	66 (2023)	Decrease
Wringapeak	West Exmoor Coast and Woods SSSI	912 (2018)	530 (2023)	Decrease	216 (2016)	61 (2023)	Decrease
Wringcliff Bay 2 and 3	West Exmoor Coast and Woods SSSI	2 (2023)	2 (2023)	N/A	28 (2023)	28 (2023)	N/A

Rosevean	Isles of Scilly SPA	N/A	N/A	N/A	11 (2006)	6.00 (2015; 4 AON count)	Decrease
Annet	Isles of Scilly SPA	N/A	N/A	N/A	12 (1998)	4 (2024)	Decrease
St Agnes	St Agnes Island	N/A	N/A	N/A	2 (2023)	2 (2023)	N/A
Maiden Bower	Isles of Scilly SPA	N/A	N/A	N/A	9 (1987)	9 (1987)	N/A
Illiswilgig	Isles of Scilly SPA	N/A	N/A	N/A	35 (2023)	35 (2023)	N/A
Castle Bryher	Isles of Scilly SPA	N/A	N/A	N/A	28 (2023)	28 (2023)	N/A
Gweal	Isles of Scilly SPA	N/A	N/A	N/A	24 (2023)	24 (2023)	N/A
Shipman Head	Isles of Scilly SPA	N/A	N/A	N/A	30 (2023)	30 (2023)	N/A
Round Island	Isles of Scilly SPA	5 (2023)	5 (2023)	N/A	N/A	N/A	N/A
Hanjague	Isles of Scilly SPA	1 (2023)	1 (2023)	N/A	2 (2006)	2 (2006)	N/A
Great Innisvouls	Isles of Scilly SPA	N/A	N/A	N/A	19 (2023)	19 (2023)	N/A
Menawethan	Isles of Scilly SPA	N/A	N/A	N/A	4 (2015)	4 (2015)	N/A
Ragged Isle	Isles of Scilly SPA	N/A	N/A	N/A	31 (2023)	31 (2023)	N/A
Little Ganinick	Isles of Scilly SPA	N/A	N/A	N/A	2 (2015)	1 (2023)	Decrease
North Cornwall 2	North Cornwall Coast	134 (2015)	84 (2017)	Decrease	49 (2017)	49 (2017)	N/A
Lye Rock	Lye Rock, North Cornwall	124 (2009)	0 (2015)	N/A	32 (1985)	0 (2015)	Decrease
Tresungers Point	Tresungers Point, North Cornwall	67 (1999)	38 (2017)	Decrease	70 (2017)	70 (2017)	N/A

[1]This population has been taken from site-specific survey data

Table 9-2 Full results of compensation potential for south west guillemot and razorbill colonies.

Site	Guillemot compensation potential (number of fledglings)					Razorbill compensation potential (number of fledglings)				
	Site-specific productivity rate	Mean of the productivity rate for all monitored sites (0.08)	Maximum productivity rate for all monitored sites (0.11)	National average productivity rate (0.67)	No change in productivity rate – expected productivity rate (0.82)	Site-specific productivity rate	Mean of the productivity rate for all monitored sites (0.08)	Maximum productivity rate for all monitored sites (0.11)	National average productivity rate (0.67)	No change in productivity rate – expected productivity rate (0.82)
The Mouls	401.8	365.6	352.1	97.9	29.6	29.1	29.0	28.9	23.0	22.3
Ore Stone	179.5	181.3	179.5	145.8	136.7	10.4	10.5	10.4	1.2	10.7
North Cornwall 3	55.2	56.5	54.6	19.3	9.9	36.9	37.5	36.9	4.3	38.1
North Cornwall 2	71.3	69.1	67.4	35.9	27.4	21.0	20.7	20.3	2.4	21.0
North Cliffs 3	87.5	85.2	81.8	17.3	94.4	4.7	4.6	4.6	0.5	4.7
Gulland Rock	603.0	614.6	603.0	385.6	327.2	34.4	34.8	34.4	15.3	12.8
Cow and Calf	662.3	677.5	662.3	377.4	300.8	77.5	76.8	76.1	38.3	33.4
Berry Head	922.2	934.6	915.9	567.0	473.2	11.1	11.0	10.8	1.2	11.1
Armed Knight	N/A	199.2	191.2	40.5	220.7	N/A	14.4	14.3	5.8	4.7

Barras Nose	N/A	1.1	1.1	1.1	1.1	N/A	N/A	N/A	N/A	N/A
Bounds Cliff	N/A	9.9	9.5	2.0	11.0	N/A	20.2	19.9	2.3	20.6
Carvannet – Portreath 1	N/A	1.6	1.6	1.6	1.6	N/A	N/A	N/A	N/A	N/A
Carvannet – Portreath 2	N/A	118.9	114.1	24.2	131.7	N/A	9.0	8.9	6.7	6.4
Carvannet – Portreath 5	N/A	38.8	37.2	8.8	1.1	N/A	N/A	N/A	N/A	N/A
Elwill bay	N/A	79.3	76.1	16.1	87.8	N/A	14.0	13.8	4.6	3.4
Godrevy	N/A	19.8	19.0	4.0	22.0	N/A	5.1	5.0	1.7	1.3
Gorregan	N/A	170.0	163.1	34.5	188.3	N/A	33.7	33.2	3.8	34.3
Gull Rock – North Cornwall	N/A	1.0	1.0	0.2	1.1	N/A	20.3	20.0	5.3	3.4
Gull Rock	N/A	154.4	148.6	41.4	12.6	N/A	33.7	33.5	25.1	24.0
Hell's Mouth	N/A	24.9	23.9	5.9	1.1	N/A	10.1	10.0	1.2	10.3
Long and Short Island	N/A	443.5	425.6	90.1	491.3	N/A	111.3	109.5	12.7	113.0

Long Island Coast	N/A	3.8	3.8	3.8	3.8	N/A	11.5	11.4	7.8	7.3
Lundy	N/A	4,912.2	4,713.9	998.3	5,441.1	N/A	1,595.5	1,570.3	181.8	1,620.8
Meachard	N/A	4.0	3.8	0.8	4.4	N/A	40.9	40.2	4.7	41.5
Melledgan	N/A	1.0	1.0	0.2	1.1	N/A	15.3	15.1	6.3	5.1
Men-a-vaur	N/A	94.0	92.8	70.3	64.2	N/A	42.6	41.9	5.2	0.4
Mew Stone & Cod Rock	N/A	6.6	6.6	6.6	6.6	N/A	2.6	2.6	2.6	2.6
Mincarlo	N/A	39.6	38.0	8.1	43.9	N/A	51.0	50.6	29.3	26.5
Morvah 1	N/A	N/A	N/A	N/A	N/A	N/A	0.4	0.4	0.0	0.4
Morvah 3	N/A	5.0	4.8	1.0	5.5	N/A	3.0	2.9	0.3	3.0
Mullion to Predannack Cliff NNR	N/A	7.4	7.1	1.5	8.2	N/A	4.3	4.2	2.6	2.4
Needles Rocks & Main Bench Cliffs	N/A	169.0	163.0	50.5	20.3	N/A	1.7	1.7	1.7	1.7
Newland Island	N/A	0.5	0.5	0.5	0.5	N/A	4.3	4.3	4.3	4.3
North Cliffs 1	N/A	79.1	77.1	38.8	28.5	N/A	19.7	19.7	19.3	19.3
North Cliffs 5	N/A	1.5	1.4	0.3	1.6	N/A	1.7	1.7	0.2	1.7
Penally	N/A	41.2	41.2	41.2	41.2	N/A	6.8	6.7	3.0	2.6
Pentargon	N/A	4.5	4.3	0.9	4.9	N/A	13.1	12.9	1.5	13.3

Pentargon Cove	N/A	33.2	31.9	6.7	36.8	N/A	4.6	4.6	0.5	4.7
Port Isaac	N/A	19.2	19.2	19.2	19.2	N/A	0.9	0.9	0.9	0.9
Portland 5	N/A	290.4	278.7	59.0	321.7	N/A	47.2	46.8	27.4	24.8
Portreath – Porthtowan 2	N/A	49.5	48.6	30.2	25.3	N/A	27.4	27.0	3.1	27.8
Portreath – Porthtowan 3	N/A	4.9	4.9	4.9	4.9	N/A	17.6	17.6	17.6	17.6
Portreath – Porthtowan 4	N/A	14.8	14.8	14.8	14.8	N/A	3.4	3.3	0.4	3.4
Scilly Rock	N/A	32.6	32.4	29.8	29.1	N/A	34.1	33.6	3.9	34.7
Seal Hole to Trevaunance Cove	N/A	64.0	62.9	42.3	36.8	N/A	29.9	29.8	23.9	23.1
St Aldhelm's Head – Durlston Head	N/A	824.3	793.3	213.4	57.6	N/A	81.8	80.6	11.6	2.6
The Brisons	N/A	173.6	166.6	36.1	1.1	N/A	213.7	213.2	188.3	185.0
The Sisters	N/A	431.2	413.7	87.6	477.6	N/A	24.4	24.1	2.8	24.8

Willapark	N/A	64.6	62.0	13.1	71.6	N/A	21.1	20.7	2.4	21.4
Woody Bay 1 and 2	N/A	107.2	105.4	71.6	62.6	N/A	60.4	59.9	35.7	32.5
Wringapeak	N/A	472.4	461.7	263.1	209.7	N/A	92.1	91.7	69.3	66.4
Wringcliff Bay 2 and 3	N/A	1.0	1.0	0.2	1.1	N/A	11.8	11.6	1.3	12.0
Rosevean	N/A	N/A	N/A	N/A	N/A	N/A	4.7	4.6	2.4	2.1
Annet	N/A	N/A	N/A	N/A	N/A	N/A	5.1	5.1	3.6	3.4
St Agnes	N/A	N/A	N/A	N/A	N/A	N/A	0.8	0.8	0.1	0.9
Maiden Bower	N/A	N/A	N/A	N/A	N/A	N/A	3.8	3.7	0.4	3.9
Illiswilgig	N/A	N/A	N/A	N/A	N/A	N/A	14.8	14.5	1.7	15.0
Castle Bryher	N/A	N/A	N/A	N/A	N/A	N/A	11.8	11.6	1.3	12.0
Gweal	N/A	N/A	N/A	N/A	N/A	N/A	10.1	10.0	1.2	10.3
Shipman Head	N/A	N/A	N/A	N/A	N/A	N/A	12.6	12.4	1.4	12.8
Round Island	N/A	2.5	2.4	0.5	2.7	N/A	N/A	N/A	N/A	N/A
Hanjague	N/A	0.5	0.5	0.1	0.5	N/A	0.8	0.8	0.1	0.9
Great Innisvouls	N/A	N/A	N/A	N/A	N/A	N/A	8.0	7.9	0.9	8.1
Menawethan	N/A	N/A	N/A	N/A	N/A	N/A	1.7	1.7	0.2	1.7
Ragged Isle	N/A	N/A	N/A	N/A	N/A	N/A	13.1	12.9	1.5	13.3

Little Ganinick	N/A	N/A	N/A	N/A	N/A	N/A	0.8	0.8	0.5	0.4
Lye Rock	N/A	68.1	68.1	68.1	68.1	N/A	13.7	13.7	13.7	13.7
Tresungers Point	N/A	34.8	34.0	19.7	15.9	N/A	29.5	29.0	3.4	30.0

Table 9-3: Sites for compensatory measures

Site	Designation	Management	Are guillemot or razorbill a designated feature?	SMD Data Guillemot Population (IND)	SMD Data Razorbill Population (IND)	Colony Health
Cow and Calf	West Exmoor Coast and Woods SSSI	Natural England[a] South West Inshore and South West Offshore Marine Plan 2021[b] Exmoor National Park[c] National Trust (property adjacent to site)[d] North Devon Coast AONB[e]	Yes, both	224 (2001); 540 (2008); 1,308 (2016); 1,165 (2018); 760 (2023)	18 (2001); 168 (2008); 181 (2016); 110 (2018); 103 (2023)	Decreasing from historical peak for both guillemot and razorbill
Woody Bay 1 and 2	West Exmoor Coast and Woods SSSI	Natural England[a] South West Inshore and South West Offshore Marine Plan 2021[b] Exmoor National Park[c] National Trust (property adjacent to site)[d] North Devon Coast AONB[e]	Yes, both	204 (2001); 126 (2008); 130 (2016); 90 (2023)	142 (2001); 124 (2008); 57 (2016); 66 (2023)	Despite past declines, the razorbill population has increased in the last four years. The guillemot population is in decline
Gulland Rock	N/A	Cornwall AONB[f] South West Inshore and South West Offshore Marine Plan 2021[b]	N/A	156 (1987); 150 (1992); 46 (1999); 45 (2007); 1,019 (2015); 1,176 (2016); 580 (2017)	52 (1987); 7 (1999); 15 (2007); 82 (2015); 52 (2016)	Decreasing from historical peak for both guillemot and razorbill

Site	Designation	Management	Are guillemot or razorbill a designated feature?	SMD Data Guillemot Population (IND)	SMD Data Razorbill Population (IND)	Colony Health
North Cliffs 1	Godrevy Head to St Agnes SSSI	Natural England[a] Cornwall AONB[f] South West Inshore and South West Offshore Marine Plan 2021[b] National Trust (property adjacent to site)[g]	No, both	151 (2000); 139 (2013); 154 (2014); 150 (2016); 102 (2020)	46 (2000); 0 (2016); 1 (2020)	Both colonies are in decline
Ore Stone	N/A	South West Inshore and South West Offshore Marine Plan 2021[b] Torbay Council – Harbour Authority and Beaches[h]	N/A	18 (1987); 5 (2001); 251.87 (2007; 168 AOS Count); 339 (2017); 300 (2021); 90 (2022)	9 (1987); 0 (2001); 3.00 (2007; 2 AOS Count); 25 (2017)	Guillemot: Decreasing from historical peak; Razorbill: Increasing
Berry Head	Berry Head National Nature Reserve; South Hams Special Area of Conservation (SAC) and Berry Head to Sharkham Point SSSI; The Berry Head and Berry Head	Natural England[a] South West Inshore and South West Offshore Marine Plan 2021[b] Torbay Council – Harbour Authority and Beaches[h] South Devon AONB[o] Torbay Coast and Countryside Trust[i]	Yes, guillemot	673 (1986); 1,052.47 (1991; 702 AON Count); 762 (1992); 679 (1993); 1,003 (1994); 806 (1995); 830 (1996); 878 (1997); 676 (1998); 661 (1999); 1,029 (2000);	26[1] (2024)	Guillemot: Decreasing from historical peak; Razorbill: N/A

Site	Designation	Management	Are guillemot or razorbill a designated feature?	SMD Data Guillemot Population (IND)	SMD Data Razorbill Population (IND)	Colony Health
	(Southern Redoubt) Area of Special Protection.			953 (2001); 858 (2002); 649 (2003); 986 (2004); 1,053 (2005); 884 (2007); 1,793.10 (2008; 1,196 AON Count); 1,229 (2009); 1,378 (2010); 1,464 (2011); 927 (2012); 704 (2013); 1,029 (2014); 823 (2015); 930 (2016); 1,145 (2017); 877 (2018); 1,053 (2019); 712 (2020); 891 (2021); 739 (2022); 943 (2023).; 931 (2024).		

Site	Designation	Management	Are guillemot or razorbill a designated feature?	SMD Data Guillemot Population (IND)	SMD Data Razorbill Population (IND)	Colony Health
The Mouls	N/A	South West Inshore and South West Offshore Marine Plan 2021[b] Cornwall AONB[f]; National Trust[n]	N/A	15 (1986); 116 (1987); 76 (1989); 18 (1999); 120 (2007); 732 (2015); 678 (2016).	7.50 (1986; 5 AON Count); 58 (1987); 12 (1999); 34 (2007); 30 (2015); 68 (2015); 16 (2016).	Decreasing from historical peak for both guillemot and razorbill
North Cornwall 3	N/A	South West Inshore and South West Offshore Marine Plan 2021[b] Cornwall AONB[f];	N/A	88 (2015); 87 (2016); 54 (2017); 64 (2018); 59 (2019); 81 (2020); 77 (2021); 112 (2022); 102 (2023); 94 (2024).	7.50 (2000; 5 AON Count); 67 (2015); 59 (2017); 45 (2018); 64 (2019); 79 (2020); 86 (2021); 86 (2022); 58 (2023); 89 (2024).	Guillemot: Decreasing from historical peak; Razorbill: Increasing
North Cornwall 2	N/A	South West Inshore and South West Offshore Marine Plan 2021[b] Cornwall AONB[f];	N/A	13 (2000); 134 (2015); 108 (2016); 84 (2017).	49 (2017)	Guillemot: Decreasing from historical peak; Razorbill: N/A
North Cliffs 3	Godfrey Head to St Agnes SSSI	Natural England[a]	No	172 (2016)	5 (2000); 11 (2016).	Guillemot: N/A; Razorbill: Increasing

Site	Designation	Management	Are guillemot or razorbill a designated feature?	SMD Data Guillemot Population (IND)	SMD Data Razorbill Population (IND)	Colony Health
		South West Inshore and South West Offshore Marine Plan 2021[b] Cornwall AONB[f]; National Trust[g]				

[1]This population has been taken from site-specific survey data

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Table 9-4. Detailed breakdown of pressures, frequency, and frequency of response across the monitored sites.

Site	Pressure	Pressure category	Number of events	Number of events with recorded response	Percentage of events with response
Berry Head	gulls	bird	13	13	100
Berry Head	corvids	bird	10	0	0
Berry Head	raptor	bird	1	0	0
Berry Head	private boat	water craft	20	9	45
Berry Head	jet ski	water craft	8	3	38
Berry Head	tourist boat	water craft	3	1	33
Berry Head	SUP	water craft	2	2	100
Berry Head	kayak	water craft	2	1	50
Cow and calf	gulls	bird	8	8	100
Cow and calf	corvids	bird	6	6	100
Cow and calf	raptor	bird	2	1	50
Cow and calf	mammal	bird	1	1	100
Cow and calf	watercraft	water craft	3	2	67
Gulland rock	gulls	bird	13	13	100
Gulland rock	corvids	bird	11	11	100
Gulland rock	Other bird	bird	1	1	100
Gulland rock	helicopter	other	2	2	100
Gulland rock	tourist boat	water craft	21	12	57
Gulland rock	watercraft	water craft	7	3	43
Gulland rock	fishing boat	water craft	7	2	29
Gulland rock	kayak	water craft	3	0	0
Gulland rock	private boat	water craft	3	0	0
North cliffs 3	corvids	bird	11	10	91
North cliffs 3	gulls	bird	10	10	100
North cliffs 3	raptor	bird	3	0	0
North cliffs 3	unknown	other	2	2	100
North cliffs 3	fishing boat	water craft	3	0	0
North Cornwall 3 VP1	gulls	bird	2	2	100
North Cornwall 3 VP1	raptor	bird	2	0	0
North Cornwall 3 VP1	helicopter	other	1	1	100
North Cornwall 3 VP1	tourist boat	water craft	23	22	96
North Cornwall 3 VP1	private boat	water craft	9	6	67
North Cornwall 3 VP1	kayak	water craft	3	3	100
North Cornwall 3 VP1	fishing boat	water craft	1	0	0
North Cornwall 3 VP2	corvids	bird	39	36	92
North Cornwall 3 VP2	gulls	bird	26	26	100
North Cornwall 3 VP2	raptor	bird	4	2	50

Site	Pressure	Pressure category	Number of events	Number of events with recorded response	Percentage of events with response
North Cornwall 3 VP2	kayak	water craft	8	0	0
North Cornwall 3 VP2	tourist boat	water craft	6	1	17
North Cornwall 3 VP2	private boat	water craft	2	0	0
North Cornwall 3 VP2	watercraft	water craft	2	0	0
North Cornwall 3 VP2	fishing boat	water craft	1	0	0
Ore Stone	gulls	bird	11	11	100
Ore Stone	corvids	bird	5	5	100
Ore Stone	shag	bird	1	1	100
Ore Stone	unknown	other	1	0	0
Ore Stone	private boat	water craft	39	10	26
Ore Stone	tourist boat	water craft	26	15	58
Ore Stone	sailing boat	water craft	18	6	33
Ore Stone	fishing boat	water craft	10	8	80
Ore Stone	kayak	water craft	7	5	71
Ore Stone	jet ski	water craft	1	1	100
Ore Stone	coastguard	water craft	1	0	0
Ore Stone	watercraft	water craft	1	0	0
The Mouls	gulls	bird	5	5	100
The Mouls	corvids	bird	2	2	100
The Mouls	Other bird	bird	2	1	50
The Mouls	cormorant	bird	1	1	100
The Mouls	raptor	bird	1	1	100
The Mouls	helicopter	other	1	1	100
The Mouls	unknown	other	1	1	100
The Mouls	tourist boat	water craft	47	26	55
The Mouls	private boat	water craft	44	19	43
The Mouls	fishing boat	water craft	19	7	37
The Mouls	sailing boat	water craft	4	0	0

10 Annex 2 Calculations of Compensation Benefits

Calculating benefits

267. Given that the presence of pressures can not only impact productivity but can also impact the size of the colony (to the point of total collapse in some cases), it has been assumed that reduction of anthropogenic disturbance will have positive impacts on both colony size and productivity. Therefore, calculation of the benefits considers both a rise in productivity and a rise in population. The benefits of any compensation measures (measured in increased population and productivity) have been calculated according to the methods outlined below. These benefits should not be used to measure the success of any compensation measures. Rather, success or the need for adaptive management should be measured through a reduction in the levels of disturbance around sites.

268. To estimate compensation, each site requires:

- A population (in breeding pairs – i.e. the count of individual birds of each species multiplied by 0.667; Walsh *et al.*, 1995)
- Productivity for the colony (a colony specific rate generated from recent data)

269. Historical and current site populations were taken from the SMP database. Site-specific survey data were also used to determine the population of sites. These instances have been specified below.

270. The expected regional productivity rates for guillemot (0.82) and razorbill (0.64) were used to calculate the compensation potential for each site. Monitoring during the 2024 breeding season has provided current site-specific productivity data for the eight shortlisted sites. Additionally, several different productivity rates have been assessed to estimate the current potential productivity range. The following scenarios were assessed to provide a potential range of current productivity data:

- Mean of all monitored sites' productivity data;
  - Guillemot: (0.08)
  - Razorbill: (0.01)
- Maximum of all monitored sites' productivity data;
  - Guillemot: (0.11)
  - Razorbill: (0.02)
- National average productivity (Horswill and Robinson, 2015); and
  - Guillemot: (0.67)
  - Razorbill: (0.57)

- No change between the expected productivity and the current productivity. The expected productivity was used in this case (Horswill and Robinson, 2015). Where a site has no productivity recorded during recent surveys (i.e. productivity data were collected, but no young were fledged) the calculation simply applied the expected productivity rate to the highest colony count (as current outputs are zero, so the number of 'additional' birds does not need to be considered, and therefore the whole colony performing at the expected level can be seen as additional).
    - Guillemot: (0.82)
    - Razorbill: (0.64)

271. From this, the annual number of offspring for each site can be calculated by multiplying the number of pairs by the site-specific productivity.

272. For sites where populations are lower than historical peaks, the compensation estimate considered the potential for a sites population to return to a previous high as a result of increased productivity along with the associated retention of adults. Therefore, for these sites, the expected offspring have been based on the historical peak population.

273. Across all sites, calculation of the potential for compensation will consider the expected productivity at the regional rate for all new breeding pairs generated, and for existing breeding pairs, will use the colony specific rate subtracted from the regional rate, in order to generate a number of additional individual fledglings. The region-specific productivity rate as presented in Horswill and Robinson (2015) above will be used for this calculation. For the SW sites this will be 0.82 for guillemot and 0.64 for razorbill. Both of these rates are higher than the national average productivity, but as they are region specific and productivity is expected to be higher in an environment with reduced pressures, the Applicant considers that they are appropriate.

274. For sites that have a current population that is lower than the historical peak, the potential colony growth in relation to the historical peak population must be added to the expected change in productivity for the recent population.

275. An example of this calculation is given below.

- A site with 300 IND guillemot has 201 pairs (300*0.667).
- This colony has a current site-specific productivity rate of 0.5.
- The historical peak of this population is 400 IND guillemot which equates to 268 pairs.
- If the current productivity at the site is 0.5, then 100 young will be generated (200*0.5)
- Potential new birds generated would be (201 *(0.82-0.5)) + (67*0.82)
- Therefore, in this case, the number of new, additional, fledglings generated per year would be 119.26

276. For sites that currently have a peak population, the current population (in pairs) is multiplied by the change in productivity rate between the expected productivity rate and the current productivity rate.

277. An example of this calculation is given below.

- A site has 200 guillemot pairs and a current productivity rate of 0.5.
- Potential new birds generated would be (200*(0.82-0.5)).
- Therefore, in this case, the number of new, additional, fledglings generated per year would be 64.

278. The results of this calculation indicate that the number of additional fledglings that each guillemot and razorbill colony in the south west of England could potentially produce (Table 10-1 and Table 10-2 respectively). To determine the number of adult guillemot and razorbill that could additionally be produced, the number of fledglings was assessed against the rate of survival until adulthood (guillemot: 0.33; razorbill: 0.20; Horswill and Robinson, 2015) (Table 7-1 and Table 7-2).

Table 10-1 Potential compensation calculation across the suite of sites for guillemot.

Colony	Site population (pairs)		Site-specific productivity rate	Compensation potential (number of fledglings) based on:				
	Historical peak (SMP)	Current count (SMP)		Site-specific productivity rate[1]	Mean of the productivity rates for all sites (0.08)	Maximum productivity rate for all monitored sites (0.11)	National average productivity rate (0.67)	Expected productivity rate only (0.82)
The Mouls	488.24	452.23	0.00	401.8	365.6	352.1	97.9	29.6
Ore Stone	226.11	60.03	0.11	179.5	181.3	179.5	145.8	136.7
North Cornwall 3 VP2	74.70	62.70	0.10	55.2	56.5	54.6	19.3	9.9
North Cornwall 2	89.38	56.03	0.04	71.3	69.1	67.4	35.9	27.4
North Cliffs 3	114.72	114.72	0.06	87.5	85.2	81.8	17.3	94.4
Gulland Rock	784.39	386.86	0.11	603.0	614.6	603.0	385.6	327.2
Cow and Calf	872.44	506.92	0.11	662.3	677.5	662.3	377.4	300.8
Berry Head	1,195.93	620.98	0.10	922.2	934.6	915.9	567.0	473.2

[1]For sites where current data suggest a productivity rate of zero, the peak population and expected productivity rate have been used (Peak population * 0.64) to calculate benefit

Table 10-2 Potential compensation across the suite of sites for razorbill.

Site population (pairs)			Compensation potential (number of fledglings) based on:					
Colony	Historical peak (SMP)	Current count (SMP)	Site-specific productivity rate	Site-specific productivity rate[1]	Mean of the productivity rates for all sites (0.01)	Maximum productivity rate for all monitored sites (0.02)	National average productivity rate (0.57)	Expected productivity rate only (0.64)
The Mouls	45.36	10.67	0.00	29.1	29.0	28.9	23.0	22.3
Ore Stone	16.68	16.68	0.02	10.4	10.5	10.4	1.2	10.7
North Cornwall 3 VP2	59.36	59.36	0.02	36.9	37.5	36.9	4.3	38.1
North Cornwall 2	32.68	32.68	0.00	21.0	20.7	20.3	2.4	21.0
North Cliffs 3	7.34	7.34	0.00	4.7	4.6	4.6	0.5	4.7
Gulland Rock	54.69	34.68	0.02	34.4	34.8	34.4	15.3	12.8
Cow and Calf	120.73	68.70	0.00	77.5	76.8	76.1	38.3	33.4
Berry Head	0.00[2]	17.34[2]	0.00	11.1	11.0	10.8	1.2	11.1

[1]For sites where current data suggest a productivity rate of zero, the peak population and expected productivity rate have been used (Peak population * 0.64) to calculate benefit.

[2]There is no population data for razorbill at Berry Head on the SMP database, so these counts have been taken from the 2024 monitoring surveys.