Rampion 2 Wind Farm
Category 8: Examination Documents

Guillemot and Razorbill Evidence and Roadmap

Compensation Plan

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1. Summary

1.1.1 This document outlines proposed small-scale compensation measures for guillemot (*Uria aalge*) and razorbill (*Alca torda*) colonies in south west England. These compensation measures have been developed as part of the Development Consent Order for Rampion 2 Offshore Wind Farm. This project has low-level impacts for these species, with 1.26 breeding adult guillemot and 1.23 razorbill mortalities attributed to the Flamborough and Filey Coast Special Protection Area. Additionally, an impact of 1.07 breeding guillemot mortalities are attributed to the Farne Islands SPA.

1.1.2 Due to the low predicted mortalities for this project, Natural England have advised in e-mail correspondence dated 28.03.2024, that strategic, collaborative compensation is an appropriate option. A collaborative approach would likely be a desirable option to ensure that compensation for such small numbers of birds is delivered effectively and efficiently, both from an ecological and cost perspective. Selected compensation measures will seek to address one or several key threats to guillemot and razorbill, so that population health can be improved for these species.

1.1.3 In this document, key threats from recreational disturbance (including disturbance from walking, rock climbing and coasteering, birdwatching, watercraft, and aircraft) are discussed. It was concluded that compensation for Rampion 2 Offshore Wind Farm should focus on mitigating the effects of recreational disturbance. This area of focus was selected because this document identified several measures that could potentially address the effects of recreational disturbance and can be implemented using the resources and timelines available to the project. These compensation measures include strategies to reduce disturbance from recreational activity, including signage, visitor access statements, restriction of dogs, restriction of visitor time, restriction of visitor approach distance, restriction of boat time, restriction of boat approach distance, seasonal closures, birdwatching codes, wardens, and coordination with equipment hire businesses and recreational organisations.

1.1.4 In addition, there are links between recreational disturbance and other key seabird threats, including avian flu, predation, and litter. Therefore, selecting recreational disturbance as a focus for compensation can also bring added benefits to guillemot and razorbill by indirectly addressing or alleviating other threats.

1.1.5 Sites for compensation were selected based on a longlisting and shortlisting process. Potential longlist sites that could be selected for compensation were limited to the south west of England due to its relatively high abundance of guillemot and razorbill and the sought provision of compensation for English guillemot and razorbill colonies (given the location of Rampion 2 Offshore Wind Farm). After the longlist of sites was compiled, the desk-based shortlisting process involved determining each colony's population, population trend, and location to identify colonies that have opportunities for growth and are currently subjected to tourist pressure. Bawden Rocks, Carters Rock, Carvannet – Portreath 3, Grower Rock, Highveer Point, Lye Rock, and Lynton1 & 2, North Cornwall 2, Tresungers

Point, and Treyarnon - Merope were selected as key colonies to investigate further for compensation measures.

1.1.6 Finally, this document discusses the feasibility of the selected compensation measures based on existing implementations and key challenges. The document outlines the feasibility of employing these various compensation measures at the chosen compensation sites. Appropriate compensation measures for each site are selected based on the existing threats and management measures already present at the site, so that recreational disturbance can best be addressed according to the needs of each site. The roadmap for implementing compensation measures, as well as options for collaborative compensation delivery, will also be presented.

1.1.7 In conclusion, signage, visitor access statements, seasonal closures to reduce both disturbance and the spread of avian flu, birdwatching codes, warden presence, coordination with equipment hire businesses and recreational organisations were determined to be feasible measures for every key site. These measures have not yet been implemented at these sites, and therefore provide additionality to any current site management. Furthermore, restriction of dogs, restriction of visitor time, restriction of visitor approach distance, restriction of boat time, restriction of boat approach distance are relevant for some, but not all sites.

2. Introduction

2.1 Project Background

2.1.1 Rampion Extension Development Limited (hereafter referred to as 'RED') (the 'Applicant') is developing the Rampion 2 Offshore Wind Farm Project ('Rampion 2') located adjacent to the existing Rampion Offshore Wind Farm Project ('Rampion 1') in the English Channel.

2.1.2 Rampion 2 will be located between 13km and 26km from the Sussex Coast in the English Channel and the offshore array area will occupy an area of approximately 160km^2. A detailed description of the Proposed Development is set out in **Chapter 4: The Proposed Development, Volume 2** of the Environmental Statement (ES) **[APP-045]**, submitted with the Development Consent Order (DCO) Application.

2.1.3 Before a DCO can be granted, the Secretary of State of the Department for Energy Security and Net Zero is required to undertake a Habitats Regulations Assessment (HRA) under Regulation 63 of the Habitats Regulations (2017 and Regulation 28 of the Offshore Marine Conservation (Natural Habitats, &c.) Regulations (2017)). The Applicant must therefore provide the Examining authority and the Secretary of State with the information it needs to undertake the HRA and establish the potential implications of Rampion 2 for The National Site Network. The National Site Network comprises of 'European sites' in the UK that already existed on 31 December 2020 (or proposed to the EC before that date) and established under the Nature Directives (Department for the Environment, Food and Rural Affairs (Defra), 2021).

2.1.4 Where the potential for adverse effects on integrity (AEoI) cannot be ruled out, measures providing compensation for the impacted populations must be considered. In the case of Rampion 2, the Applicant's **Report to Inform Appropriate Assessment** **[APP-038]** concluded that Rampion 2 will not result in an AEoI on any sites within the National Site Network alone or in-combination with other plans / projects. However, following a request by Natural England during a meeting with the Applicant to discuss ornithology held on the 17 April 2024, this Guillemot and Razorbill Evidence and Roadmap has been developed on a without prejudice basis in the event that the Secretary of State does not agree with the conclusions of the Applicant's **Report to Inform Appropriate Assessment** **[APP-038]** in relation to the in-combination impact on guillemot and razorbill at Flamborough and Filey Coast Special Protection Area (FFC SPA), and the guillemot feature of the Farne Islands SPA from the operation of the proposed wind farm.

Document Purpose

2.1.5 This document will outline the evidence and roadmap for the delivery of the Rampion 2 without prejudice guillemot and razorbill compensation (see **Habitats Regulations Assessment (Without Prejudice) Derogation Case** **[APP-039]**). The preferred compensation strategy of reducing human disturbance at colonies in

the south west of England will be justified and presented. This document also outlines the other stakeholders that will be involved in this compensation process, including any landowners and partner offshore wind farm (OWF) developers. In addition, this document presents a timeline for the implementation of the compensation measure. The ongoing maintenance, monitoring, and adaptive management programs are also presented.

2.1.6 The Applicant also proposes participating in the Department for Environment Food and Rural Affairs (Defra) strategic compensation via the Marine Recovery Fund (MRF) as an alternative option.

2.2 Species Overview

Guillemot

2.2.1 Guillemot, a member of the auk family (*Alcidae*), is a cliff-nesting seabird. They nest in large colonies on rocky cliffs around the UK coastline. There are approximately 1,265,888 individual breeding guillemot in the UK, 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, but has declined since the last full census (1998 – 2002) by 11% (Burnell *et al*., 2023). Guillemot have two defined bioseasons; breeding season from March to July, and non-breeding season from August to February (Furness, 2015). During their breeding season guillemot forage near their coastal colonies, using pursuit diving to hunt small fish, especially sandeel (*Ammodytes tobianus*), 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).

Razorbill

2.2.2 Razorbill are also cliff-nesting seabirds from the auk family. There are approximately 225,015 individual breeding razorbill in the UK (Burnell *et al*., 2023). Whilst the breeding abundance of razorbill has increased since the late 1980s, current trends show an overall population decline since 2017 (JNCC, 2021), however, despite these recent declines the population still increased by 18% between the 1998 – 2002 and 2015 – 2021 census periods. This species is long-lived with an average lifespan of 13 years and reaches breeding maturity after 4 years (Robinson, 2005). The razorbill has four defined bioseasons: breeding season (April – July), post-breeding season (August – October), migration-free winter season (November – December) and pre-breeding migration season (January – March) (Furness, 2015). Razorbill are pursuit diving seabirds and prey mainly on sandeel and clupeids (*Clupeidae*) during the breeding season (Birdlife International, 2023).

3. Site Selection

3.1 Site Longlisting Process

3.1.1 Potential sites that could be selected for compensation were limited to the south west of England due to its relatively high abundance of guillemot and razorbill and the sought provision of compensation for English guillemot and razorbill colonies (given the location of the Proposed Development). Whilst there is also a large population of guillemot and razorbill along the Flamborough and Filey Coast Special Protection Area (FFC SPA), this site is already highly managed, so options to provide additional management are limited.

3.1.2 A long list of potential sites (**Table 3.1**) was therefore selected from seabird colonies that fell within the boundaries of the South West Inshore and South West Offshore Marine Plan 2021 (HM Government, 2021).

Table 3.1 Longlist of guillemot and razorbill colonies in South West England.

Site	Master Site	Guillemot Peak Historical Count (IND)	Guillemot Most Recent Count (IND)	Guillemot Colony trend	Razorbill Peak Historical Count (IND)	Razorbill Most Recent Count (IND)	Razorbill Colony trend
Armed Knight	West Penwith	402 (2023)	402 (2023)	Increase	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
Bawden Rocks	Chapel Porth to Perranporth	130 (1985)	20 (2018)	Decrease	70 (2018)	70 (2018)	Increase
Bounds Cliff	Bounds Cliff – North Cornwall	20 (2017)	20 (2017)	N/A	48 (2017)	48 (2017)	Increase
Carters Rocks	Ligger Point to Porth	47 (2015)	4 (2017)	Decrease	49 (1987)	0 (2017)	Decrease
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)	Increase	21 (2007)	6 (2016)	Decrease
Carvannet – Portreath 3	Godrevy Head to St Agnes SSSI	205 (2016)	205 (2016)	Increase	5 (2000)	4 (2016)	Stable
Carvannet – Portreath 5	Hayle – Chapel Porth	78 (2014)	76 (2016)	Stable	N/A	N/A	N/A
Elwill bay	West Exmoor Coast and Woods SSSI	160 (2023)	160 (2023)	N/A	33 (2016)	25 (2023)	Increase
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)	Increase	80 (2006; 2023)	80 (2023)	Increase
Grower Rock	Tintagel Cliffs SSSI	81 (2009)	41 (2015)	Decrease	151 (2015)	151 (2015)	Increase

Site	Master Site	Guillemot Peak Historical Count (IND)	Guillemot Most Recent Count (IND)	Guillemot Colony trend	Razorbill Peak Historical Count (IND)	Razorbill Most Recent Count (IND)	Razorbill Colony trend
Gull Rock – North Cornwall	Gull Rock – North Cornwall	2 (2015)	2 (2015)	N/A	48 (2009)	40 (2015)	Increase
Gull Rock	Plymouth – Falmouth	300 (2017)	298 (2023)	Decrease	79 (1985)	17 (2023)	Decrease
Hell's Mouth	Hayle – Chapel Porth	50 (1986)	48 (1987)	Stable	16 (1986)	16 (1986)	N/A
Highveer Point	West Exmoor Coast and Woods SSSI	53 (2016)	21 (2023)	Decrease	178 (2016)	23 (2023)	Decrease
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	3,785 (2023)	3,785 (2023)	Increase
Lye Rock	Lye Rock, North Cornwall	124 (2009)	0 (2015)	Decrease	32 (1985)	0 (2015)	Decrease
Lynton 1 & 2	West Exmoor Coast and Woods SSSI	361 (2016)	240 (2023)	Decrease	117 (2008)	34 (2023)	Decrease
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)	36 (2015)	Increase
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)	Decrease
Morvah 1	West Penwith	3 (2017; SEA Count)	3 (2017; SEA Count)	N/A	1 (2017)	1 (2017)	N/A

Site	Master Site	Guillemot Peak Historical Count (IND)	Guillemot Most Recent Count (IND)	Guillemot Colony trend	Razorbill Peak Historical Count (IND)	Razorbill Most Recent Count (IND)	Razorbill Colony trend
Morvah 3	West Penwith	10 (2017)	10 (2017)	N/A	7 (2017)	7 (2017)	Stable
Mullion to Predannack Cliff NNR	Mullion Cliff to Predannack Cliff SSSI	14 (1985)	10 (2016)	Decrease	10 (1985)	3 (2015)	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 3	Godrevy Head to St Agnes SSSI	172 (2016)	172 (2016)	N/A	11 (2016)	11 (2016)	Increase
North Cliffs 5	Godrevy Head to St Agnes SSSI	3 (2016)	3 (2016)	N/A	4 (2016)	4 (2016)	N/A
North Cornwall 2	North Cornwall Coast	134 (2015)	84 (2017)	Decrease	49 (2017)	49 (2017)	N/A
North Cornwall 3	North Cornwall Coast	112 (2022)	102 (2023)	Decrase	86 (2021; 2022)	58 (2023)	Decrease
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)	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)	53 (2018)	Decrease
Portreath – Porthtowan 2	Godrevy Head to St Agnes SSSI	95 (2000)	49 (2016)	Decrease	65 (2016)	65 (2016)	Increase
Portreath – Porthtowan 3	Godrevy Head to St Agnes SSSI	9 (2007)	0 (2016)	Decrease	5 (2000)	4 (2016)	Stable

Site	Master Site	Guillemot Peak Historical Count (IND)	Guillemot Most Recent Count (IND)	Guillemot Colony trend	Razorbill Peak Historical Count (IND)	Razorbill Most Recent Count (IND)	Razorbill Colony trend
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)	Decrease	81 (2023)	81 (2023)	Increase
Seal Hole to Trevaunance Cove	Chapel Porth to Perranporth	122 (2015; 2017)	24 (2023)	Decrease	70 (2017)	7 (2023)	Decrease
St Aldhelm's Head – Durlston Head	South Dorset Coast SSSI	1652 (2022)	1071 (2023)	Decrease	194 (2022)	155 (2023)	Decrease
The Brisons	West Penwith	350 (2016)	348 (2023)	Increase	500 (2016)	68 (2023)	Decrease
The Mouls	The Mouls, North Cornwall	732 (2015)	678 (2016)	Increase	68 (2015)	16 (2016)	Decrease
The Sisters	The Sisters, North Cornwall	870 (2015)	870 (2015)	Increase	58 (2015)	58 (2015)	Increase
Tresungers Point	Tresungers Point, North Cornwall	67 (1999)	38 (2017)	Decrease	70 (2017)	70 (2017)	Increase
Treyarnon – Merope	Trevelgue Head to Merope Rocks	31 (2000; 2016)	22 (2020)	Decrease	18 (2000)	6 (2020)	Decrease
Willapark	Tintagel Cliffs SSSI	87 (2015)	87 (2015)	N/A	100 (2015)	100 (2015)	N/A
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)	Increase

3.2 Site Shortlisting Process

3.2.1 After the longlist of sites was compiled, the shortlisting process involved determining each colony's population and health (see **Table 3.2**). These characteristics were considered in the shortlisting process to help target colonies that had future potential to increase to peak historical counts. Guillemot and razorbill colonies with a peak historical count that is higher than current levels indicate that there may be unused nesting habitat that was previously occupied by a larger population, or that the population is being limited by some other pressure. Therefore, the colony has room to expand and benefit from any new compensation measures. Colonies that currently have a peak population may not be able to benefit from compensation measures through increased breeding pairs unless further nesting space is provided, through management measures (e.g., clearing of invasive plant-species) or by providing artificial nesting spaces. Where limited nesting spaces are available, compensation may still be possible without relying on additional nesting spaces by improving colony productivity. For example, productivity can be increased by reducing the likelihood of breeding failure.

3.2.2 Declining colonies, or those with populations below historic peaks in the south west of England are considered to offer opportunities for effective compensation as these colonies are set within a regional context of population growth for guillemot and razorbill. Between the Seabird 2000 census (1998 – 2002) and the Seabirds Count census (2015 – 2021) the guillemot population has grown by 9.4% in Cornwall and 7.3% in Devon. Over the same period, razorbill populations grew by 9.6% in Cornwall and 8.4% in Devon. This suggests that conditions such as climate and food availability are conducive to population growth, and that colonies that are not growing must be being limited by some other pressure, such as those presented in this document.

3.2.3 Furthermore, sites were shortlisted based on their proximity to built-up areas or high tourism areas. This process drew from desk-based research and the local knowledge of project delivery teams and stakeholders. Settlements were identified in the south 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 done into the tourism industry around each site, with the assumption that the presence of recreational businesses indicates the presence of high levels if tourism. The search criteria used to identify the presence of the recreational industry included searching for water sport 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 presence around the selected colonies. This criterion ensured that compensation measures could be targeted towards those sites that have to contend with high human pressure and its associated risks. The short list of sites is presented in **Table 3.2**.

Table 3.2 Guillemot and razorbill colonies selected for compensation measures.

Site	Designation	Management	Are Guillemot or Razorbill a Designated Feature?	Guillemot SMP Population Data (IND)	Guillemot Colony trend	Razorbill SMP Population Data (IND)	Razorbill Colony trend
Bawden Rocks	N/A	Cornwall Area of Outstanding Natural Beauty (AONB)[a] South West Inshore and South West Offshore Marine Plan 2021[b] National Trust Property (adjacent to site)[c]	N/A	**130** (1985); **80** (1992); **83** (2000); **5** (2007); **4** (2016); **10** (2017); **20** (2018)	Decreasing	**20** (1985); **52** (2000); **12** (2007); **35** (2016); **40** (2017); **70** (2018)	Increasing
Carters Rocks	N/A	South West Inshore and South West Offshore Marine Plan 2021[b] National Trust Property (adjacent to site)[d]	N/A	**33** (1987); **0** (2000); **20** (2007); **47** (2015); **4** (2017)	Decreasing	**49** (1987); **19** (1991); **0** (2000); **8** (2007); **0** (2017)	Decreasing
Carvannet – Portreath 3	Godrevy Head to St Agnes SSSI	Natural England[e] Cornwall AONB[a] South West Inshore and South West Offshore Marine Plan 2021[b]	No	**124** (2013); **108** (2014); **205** (2016)	Increasing	**5** (2000); **4** (2016)	Stable
Grower Rock	Tintagel Cliffs SSSI	Natural England[e] Cornwall AONB[a] South West Inshore and South West Offshore Marine Plan 2021[b]	No	**7** (1999); **81** (2009); **41** (2015)	Decreasing	**2** (1999); **4** (2009); **151** (2015)	Increasing
Highveer Point	West Exmoor Coast and Woods SSSI	Natural England[e] Sout West Inshore and South West Offshore Marine Plan 2021[b]	Yes (Both)	**53** (2016); **21** (2023)	Decreasing	**7** (2008); **178** (2016); **23** (2023)	Decreasing

Site	Designation	Management	Are Guillemot or Razorbill a Designated Feature?	Guillemot SMP Population Data (IND)	Guillemot Colony trend	Razorbill SMP Population Data (IND)	Razorbill Colony trend
		Exmoor National Park[f]					
Lye Rock	N/A	Cornwall AONB[a] South West Inshore and South West Offshore Marine Plan 2021[b]	N/A	**12** (1989); **22** (1991); **20** (1992); **42** (1999); 124 (2009); **0** (2015)	Decreasing	**32** (1985); **19** (1989); **2** (1999); **14** (2009); **0** (2015)	Decreasing
Lynton 1 & 2	West Exmoor Coast and Woods SSSI	Natural England[e] South West Offshore Marine Plan 2021[b] Exmoor National Park[f]	Yes (Both)	**160** (2008); **361** (2016); **240** (2023)	Decreasing	**117** (2008); **58** (2016); **34** (2023)	Decreasing
North Cornwall 2	N/A	Cornwall AONB[a] South West Inshore and South West Offshore Marine Plan 2021[b]	N/A	**13** (2000); **134** (2015); **108** (2016); **84** (2017)	Decreasing	**49** (2017)	N/A
Tresungers Point	N/A	Cornwall AONB[a] South West Inshore and South West Offshore Marine Plan 2021[b]	N/A	**67** (1999); **38** (2017)	Decreasing	**8** (1999); **70** (2017)	Increasing
Treyarnon – Merope	N/A	Cornwall AONB[a] South West Inshore and South West Offshore Marine Plan 2021[b]	N/A	**31** (2000); **31** (2016); **19** (2018); **22** (2020)	Decreasing	**18** (2000); **6** (2018); **6** (2020)	Decreasing

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3.3 Key Site Challenges

3.3.1 The implementation of any schemes to reduce recreational disturbance may have difficulty achieving consent with the relevant landowners and management organisations. In addition, there could be added complications if businesses, for example Equipment Hire Businesses and Recreational Organisations, feel that any restrictions may be detrimental to the business. This will require careful planning and early engagement with key stakeholders.

3.3.2 There is a strong baseline for understanding guillemot and razorbill, as well as wider seabird, responses to human disturbance. However, it should be noted that there are knowledge gaps that may complicate the implementation and monitoring of interventions aiming to reduce recreational disturbance. These knowledge gaps are addressed in **Section 4**.

4. Key Threats

4.1.1 This section will outline the key threats faced by guillemot and razorbill. Potential compensation measures will focus on addressing one or more of these threats, as these can impact guillemot and razorbill at the population level. The shortlisting process for identifying the most appropriate focal topics for compensation is discussed in **Section 1**.

4.1.2 For the Proposed Development, it was concluded that compensation measures should address the effects of recreational disturbance. This area of focus was selected because recreational disturbance represents a key threat to guillemot and razorbill, and measures that address the effects of recreational disturbance can be feasibly implemented using the resources and short timelines of the project. Compensation measures will need to be completed before the Proposed Development becomes operational so that guillemot and razorbill receive population benefits before the impacts of the OWF take place. The selection process for compensation measures was made through consultation with key conservation organisations. These consultations helped identify compensation measure selection based on available project timelines and resources. In **Section 5**, the potential compensation measures which can be used to address the threat of recreational disturbance are discussed in further detail.

4.1.3 It should be noted that, there are links between recreational disturbance and other key seabird threats. Humans can be a vector for avian flu and mammalian predators at seabird colonies. Furthermore, flushing as a result of recreational disturbance can increase avian predation. Increased human presence around coastal areas also results in higher concentrations of litter. Therefore, though recreational disturbance has been chosen as a focus area for compensation, a reduction in recreational disturbance will also bring benefits to guillemot and razorbill by indirectly addressing other pressures. A reduction in human proximity to guillemot and razorbill may reduce some of the pressures from avian flu, predation, and litter.

4.2 Recreational Disturbance

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

4.2.2 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 showcase a range of disturbance behaviours. For example, 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).

4.2.3 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, thus it is likely that nest abandonment may also be demonstrated by 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 frequently (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*) 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 (Carney and Sydeman, 1999).

4.2.4 Flushing is a last-resort behaviour for guillemot and razorbill during 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, 2019).

4.2.5 Finally, besides demonstrating disturbance behaviours and physiological responses, another immediate result of recreational disturbance is direct mortality. Incursions into seabird colonies from recreational activities, especially birdwatching, can crush eggs or chicks. Instances of these behaviours have been recorded at the Isle of May, Scotland when birdwatchers left the path and crushed eggs (Harris and Wanless, 1995). Further effects of birdwatching will be described below. 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 are found in large seabird colonies (Buckley, 2004). Flushing events can also increase spillage, where eggs are displaced from the ledge (and are therefore lost) at the moment the adult is flushed from the cliff.

4.2.6 These disturbance behaviours can ultimately have population-level consequences for guillemot and razorbill. First, recreational disturbance can alter guillemot and razorbill behaviour. Repeated disturbance events may cause seabirds to alter their nest site selection (Huddart, 2019). Secondly, the effects of recreational disturbance can ultimately reduce colony productivity for seabirds. 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. Reduced reproductive success due to

recreational disturbance and human disturbance has been shown for auks (Carney and Sydeman, 1999; Buckley, 2004; Huddart, 2019). In addition, Pierce and Simons (1986) recorded a higher level of reproductive success in tufted puffins that 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). Furthermore, physiological effects can reduce the fitness of individual seabirds if they are experienced repeatedly over a long period of time (Buckley, 2004).

4.2.7 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 experience 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.

4.2.8 The remainder of this section will explore the sources of recreational disturbance in more detail and provide evidence as to how their effects ultimately impact guillemot and razorbill.

Walking

4.2.9 Guillemot and razorbill colonies that are in close proximity to coastal paths or popular coastal areas receive pressure from visitors on foot. As these species are 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 a control plot. Finally, walkers can result in direct mortality for seabirds, with nests crushed by for instance tourists walking along beaches (Johnson, 2006), or through spillage occurring during flushing events.

4.2.10 Additionally, dogs often accompany walkers in coastal areas. Dogs are particularly disruptive to seabird colonies, especially if they are off leash. Seabirds are particularly sensitive to acute, high decibel sounds, and birds such as cormorants (*Phalacrocorax carbo*) have been shown to flush in the presence of unexpected noise (Buxton *et al*., 2017). Auks are known to be 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). Furthermore, dogs have been associated with crushing shorebird eggs on beaches (Showler *et al*., 2010). The effect of dogs on birds has been monitored in detail 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. Lord *et al*. (2001) have demonstrated that the presence of dogs also affects coastal birds. For example, disturbance behaviour of dotterel (*Charadrius morinellus*) was the 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 more than 50 m in a high traffic area and 70 m in a low traffic area, and dog presence should be restricted to 100 m from coastal birds (Lord *et al*., 2001).

Rock Climbing and Coasteering

4.2.11 Guillemot and razorbill can also face disturbance from specific recreational activities directly at their nesting sites. The steep cliffs on which they prefer to nest are popular locations for rock climbing and coasteering. 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, indicating that UK climbers often encounter seabirds at their nesting sites (UKC, 2019). The frequency of interactions between climbers and birds has resulted in seasonal closures at cliffs during breeding season (Huddart and Stott, 2019). 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). Rock climbing has been shown to alter bird behaviour and affect reproductive success. In a study of the effects of climbing on the common raven (*Corvus corax*), ravens 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. The presence of climbers caused peregrine falcon to flush from their nests which left eggs exposed to chilling and dehydration (Huddart and Stott, 2019).

Birdwatching

4.2.12 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). This data was collected from an analysis of 1,772 online tourist reviews of birdwatching excursions in the UK (Cully, 2023). This highlights that UK birdwatchers are making trips specifically to guillemot and razorbill nesting sites.

4.2.13 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 closely 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 and 2.5m from the colony). A further 4.31% of visitors

even entered the colony despite the presence of a set-back rope (Cully, 2023). 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) found that visitor pressure such as those experienced from birdwatching not only affected individual fitness, but can also result in an effect on the population level (with a <1.6% reduction in colony productivity recorded for European storm petrel *Hydrobates pelagicus*).

4.2.14 Photographers, out of all of those who engage in birdwatching, bring a particular risk to seabirds. The literature suggests that from multiple types of tourists, photographers are most likely to ignore any management measures, including signs and fences (Allbrook and Quinn, 2020). The aforementioned study from the Isle of Staffa revealed that 37.14% of 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 photographer presence specifically (rather than human presence more generally) can exacerbate disturbance for seabirds. 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).

Watercraft

4.2.15 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 and most often cause disturbance for guillemot and razorbill. Similar to terrestrial recreational disturbance sources, watercraft can cause disturbance for these species both based on their proximity and time spent near a colony. It was shown that watercraft can cause disturbance in guillemots if they are within 200 m of the colony (Blanchard, 1994; Chardine *et al*., 1998; Lavers *et al*., 2020; Ainley *et al*., 2021).

4.2.16 Watercraft can alter bird behaviour, as tourist boats, for example, have been shown to interrupt shag foraging and concentrate 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 40 m away and a 2% chance of displaying disturbance behaviour from 50 m away (Chatwin *et al*., 2013). Pigeon guillemot were more likely to be disturbed compared to other seabirds and waterbirds included in the study, including double-crested cormorant (*Phalacrocorax auritus*), black oystercatchers (*Haematopus bachmani*), and glaucous-winged gull (*Laurus glaucescens*; Chatwin *et al*., 2013). This indicates that auks may show a particular sensitivity to watercraft. Disturbance from watercraft has been recorded to have the potential to cause severe population-level consequences for guillemot, as the collapse of a Norwegian colony of guillemots was attributed to an increased presence of tourist boats around a colony over the long-term (Barrett and Vader, 1984).

Aircraft

4.2.17 Aircraft can also cause disturbance for guillemot and razorbill if they are flying within 1,000 m of the colony (Blanchard, 1994; Chardine *et al*., 1998; Lavers *et al*., 2020; Ainley *et al*., 2021). This source of disturbance can thus affect guillemot and razorbill at greater distances than the other sources of disturbance discussed here. Common sources of aircraft used in recreation are drones and planes. 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 been shown to decrease nesting success for some seabirds, with both brown pelicans (*Pelecanus occidentalis*) and white pelicans (*Pelecanus erythrorhynchos*) having been recorded crushing nests in a flushing event that was caused by aircraft (Buckley, 2004).

Key Gaps

4.2.18 There is a strong baseline for understanding guillemot and razorbill responses to human disturbance. However, it should be noted that there are knowledge gaps that may complicate the implementation and monitoring of measures aiming to reduce recreational disturbance.

4.2.19 First, there is little consensus as to the appropriate set back distances (a separation distance between human activities and colonies) for guillemot and razorbill. The examples provided above highlight different proposed distances across studies. The appropriate distance is species-dependent, and there is currently no research on the appropriate distance for guillemot and razorbill. However, distances on land have been suggested for other seabirds, including terns (*Laridae*; 50 m to 200 m) and storm petrels (*Hydrobates pelagicus*; 10 m; Buckley, 2004; Devney and Congdon, 2009; Watson *et al*., 2014), and examples on flushing distances on water (such as those discussed in the aforementioned study on pigeon guillemot by Chatwin *et al*., 2013) could be used to determine appropriate set back distances on water. Therefore, stakeholders implementing disturbance-reducing measures could apply a conservative approach and set a large set back distance based on the largest suggested distance for similar species. If needed and/or desired, additional research into the appropriate distance for guillemot and razorbill could then be used to reduce the set back distance where appropriate.

4.2.20 Furthermore, though there are certain physiological disturbance responses that are common across seabirds (as outlined above), more research is needed into how guillemot and razorbill specifically experience disturbance. Long-term monitoring studies are needed to determine how these responses affect individual- and colony-level fitness. However, as shown earlier, visitor proximity and pressure has been shown to affect breeding success in these and related species (Beale and Monaghan, 2004b), thus illustrating that disturbance-reducing measures have clear potential to benefit colonies at sites where recreational disturbance is present.

4.2.21 Finally, as mentioned above, it is difficult to monitor non-visible disturbance effects from recreation in guillemot and razorbill that have become habituated to human presence. Therefore, it would be beneficial for stakeholders to fill this gap and

develop, where possible, a monitoring method that can assess or estimate the level of disturbance in colonies, including any non-visible signs of disturbance. This will help monitor the key colonies that are receiving increasing numbers of visitors and can inform future measures to protect the health of these sites.

5. Selected Compensation Measures

5.1 Reduction of Disturbance from Recreational Activities

5.1.1 Reduction of recreational disturbance, with the aim to increase the size and/or productivity of guillemot and razorbill colonies, can be achieved by implementing several different measures. Prior to site investigations, all options to reduce pressures from recreational activities are being considered. These include:

- Signage:
  - Signage can be used to alert visitors to the presence of breeding colonies, outline appropriate set back distances, and advise on appropriate 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, flyers, or on relevant organisational websites and social media channels 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 4**, dogs that accompany visitors can have a large disturbance impact. Restricting dog access spatially or temporally may help lessen 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. Specific methods of restricting visitor time will be described in more detail below.
- Restriction of visitor approach distance (set back distances):
  - 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 will be 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 will be described in more detail below.

- Seasonal closures:
  - As described above in **Section 4**, 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. Such could be created by, or in collaboration with, conservation organisations or statutory bodies.
- Wardens:
  - Wardens, guides, rangers, or volunteers could be employed 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

Signage and Wardens

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

5.1.3 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, for there was observed to be 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).

Visitor Access Statements

5.1.4 Visitor access statements have already been implemented at seabird islands that receive visitor pressure. For example, management at the Saltee Islands has created visitor access statements that are 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).

Restriction of Dogs

5.1.5 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).

Restriction of Visitor Time

5.1.6 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).

Restriction of Visitor Approach Distance

5.1.7 Studies on the implantation of set back 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 which suffered higher visitor pressure (Allbrook and Quinn, 2020). The success of using a fence to restrict visitor approach distance was studied in Michaelmas Cay, Australia. A fence was established in 1990, and after long-term implementation of this fence, sooty tern (*Onychoprion fuscatus*) and common noddy (*Anous stolidus*) no longer showed a difference in egg loss between pairs that nested against the fence and those that nested further from the fence (Devney and Congdon, 2009). Therefore, it was concluded that the fence successfully mitigates the effects of disturbance for the birds that nest nearer visitors over the long term, because they now 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, and both the fenced and undisturbed 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).

Restriction of Boat Time

5.1.8 There are currently no examples of the use of restrictions on boat time around sensitive seabird colonies from which to analyse implementation. Similar to a reduction in visitor time and a restriction of boat approach distance (which can also be described as a restriction of boat time, if the minimum approach distance is sufficiently far from the colony), it can be assumed that a reduction in boat time could reduce the extent of disturbance experienced by colonies, but further study would be needed to gain insights on the scale of disturbance reduction that can be achieved by reducing boat time.

Restriction of Boat Approach Distance

5.1.9 The distance of watercraft from seabird colonies affects 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 40 m away and a 2% chance of displaying disturbance behaviour from 50 m away Chatwin *et al*., 2013). Burger *et al*. (2010) found that 95% of nesting black skimmers (*Rynchops niger*) flushed when a boat approached the colony to 118m, and that that threshold provided an appropriate set back distance.

Seasonal Closures

5.1.10 Statutory measures, like seasonal closures, have also been successfully 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 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 for hooded plover (*Thinornis rubricollis*) eggs during the breading season (Weston *et al*., 2012).

Birdwatching Codes

5.1.11 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 and promotes an understanding of disturbance for marine wildlife, as well as the species-specific ways to reduce disturbance when viewing wildlife (Wise Scheme, 2018). The WiSe scheme has created codes of conduct for sustainably conducting marine recreation around seabirds, among other marine species (Wise Scheme, 2018). The extent of participation among the public and operators, however, is unclear. Therefore, further promotion of this programme or the creation of a seabird-specific programme would help continue to bolster its benefits for seabirds. There is also no data on the success that this programme has had in reducing disturbance, as participation is voluntary. Furthermore, there are no current examples of statutory bird watching codes that are implemented throughout the UK. Voluntary accreditation schemes, like WiSe, would be strengthened when paired with statutory measures.

Coordination with Equipment Hire Businesses and Recreational Organisations

5.1.12 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, during the breeding season (UKC, 2023a).

Feasibility

5.1.13 Reducing recreational disturbance through compensation measures has the potential to benefit entire guillemot and razorbill colonies (see **Section 4**). 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.

5.1.14 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 vantagepoint 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).

6. Colony Analysis

6.1.1 The following sites have been shortlisted for the Proposed Development based on their proximity to human settlements and the pressures they face from the recreation industry. These criteria ensured that compensation measures could be targeted towards those sites that have to contend with high human pressure and its associated risks. The search criteria used to identify the presence of the recreational industry at each site included searching for water sport 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.

6.1.2 The process of identifying appropriate sites for compensation and the pressures associated with each site is ongoing. As this is a working document, further investigation is needed to define site-specific pressures. The following review of each site, along with its associated pressures and existing management measures, has been conducted through desk-based research only, and the work of further categorising the sites will need to be progressed with site-specific surveys and stakeholder engagement. Furthermore, since the compensation process has progressed for the Proposed Development, there has not yet been a guillemot and razorbill breeding season during which surveys can be conducted. Visiting the selected colonies during the breeding season when these auks are attending their nest site would, therefore, be beneficial and provide further detail and insights into the specific site pressures and management.

6.1.3 This section will first highlight the health of the guillemot and razorbill population at each site. Then, the site-specific pressures and management measures that were found during the desk-based review will be outlined. These pressures and management measures will then help determine the feasibility of implementing various compensation measures at each site. The compensation measures will be taken from those that were identified in **Section 5**.

6.2 Existing Management Measures

6.2.1 There are no specific conservation measures in place for guillemot and razorbill in the management plans of relevant organizations 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). The same general desire to conserve the environment is also expressed in the NE Conservation Objectives for Godrevy Head to St Agnes Special Area of Conservation (SAC), which is relevant to Carvannet - Portreath 3 (Natural England, 2018).

6.2.2 There is a specific goal to improve bird habitat in the Cornwall AONB management plan, which is relevant to Bawden Rocks, Carvannet - Portreath 3, Grower Rock, Lye Rock, North Cornwall 2, Tresungers Point, and Treyarnon-Merope, but this does not specify seabirds or include specific actions or strategic goals (Cornwall AONB, 2022). There is also a specific goal to conserve breeding seabird populations in the Exmoor National Park management plan, which is relevant to Highveer Point and Lynton 1 & 2, but this does not include specific actions (Exmoor National Park Authority, 2018).

6.2.3 The National Trust property adjacent to Bawden Rocks at St Agnes Head includes reminders on its website for visitors to keep control of their dogs to avoid disturbance to nesting birds (National Trust, n.d.d). Though there are no specific seabird management measures included at Bawden Rocks, the National Trust has included a birdwatching guide for choughs at this site that includes advice on noise, set-back distances, disturbance behaviour, legal protection, and how to report disturbance incidents (National Trust, n.d.b). Furthermore, the National Trust property adjacent to Carters Rock at Holywell includes reminders on its website for visitors to keep control of their dogs to avoid disturbance to nesting birds (National Trust, n.d.c). The National Trust has also generally implemented a signage system to highlight beaches with dog bans (National Trust, n.d.d). Though the National Trust has included management measures for dogs, they have not specified any visitor management techniques for people.

6.2.4 There are strategic measures in place to keep litter away from wildlife at the selected sites in Cornwall (Bawden Rocks, Carters Rocks, Carvannet - Portreath 3, Grower Rock, Lye Rock, North Cornwall 2, Tresungers Point, and Treyarnon-Merope), including statutory fines for littering, and an online reporting system for beaches that need cleaning (Cornwall Council, 2023). There are also strategic measures in place to keep litter away from wildlife at the selected sites in Devon (Highveer Point and Lynton 1 & 2), 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). Beyond traditional waste removal schemes, community litter picks have been arranged for Bawden Rocks, Carvannet - Portreath 3, and Carters Rocks (Love Portreath, n.d.; National Trust, n.d.a; St Agnes Parish Council, 2020).

6.2.5 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 (relevant to Bawden Rocks, Carters Rocks, Carvannet - Portreath 3, Grower Rock, Lye Rock, North Cornwall 2, Tresungers Point, and Treyarnon - Merope) 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). Local councils in Devon (relevant to Highveer Point and Lynton 1 & 2) have also advertised this helpline and passed on instructions to stop its spread in the local area (North Devon Council, n.d.a).

6.2.6 The existing management measures for each site are summarized below in **Table 6.1** Figure 6.1displays the locations of each short-listed colony.

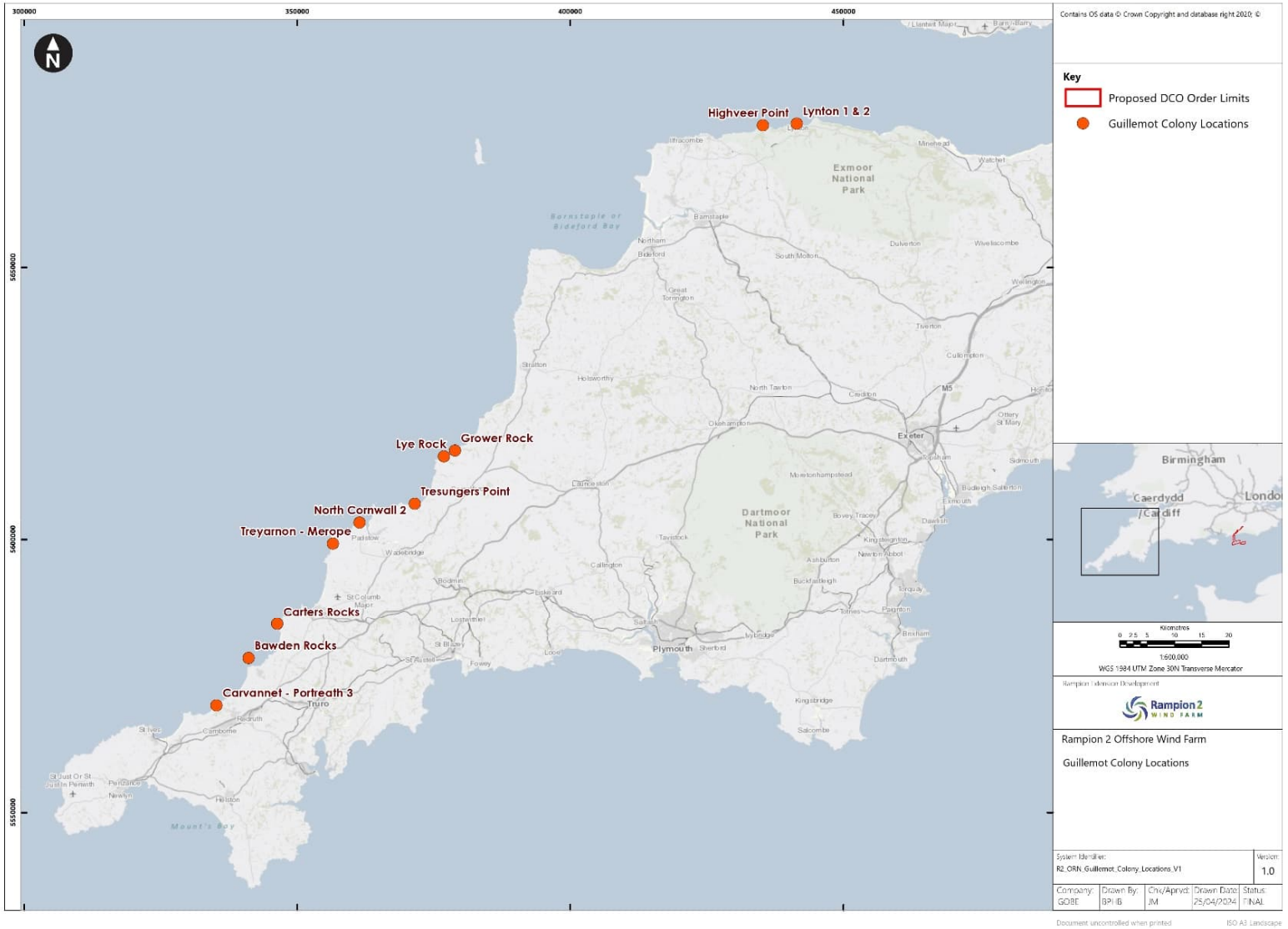


Figure 6.1. Guillemot colony locations.

Table 6.1 Existing management measures at each site.

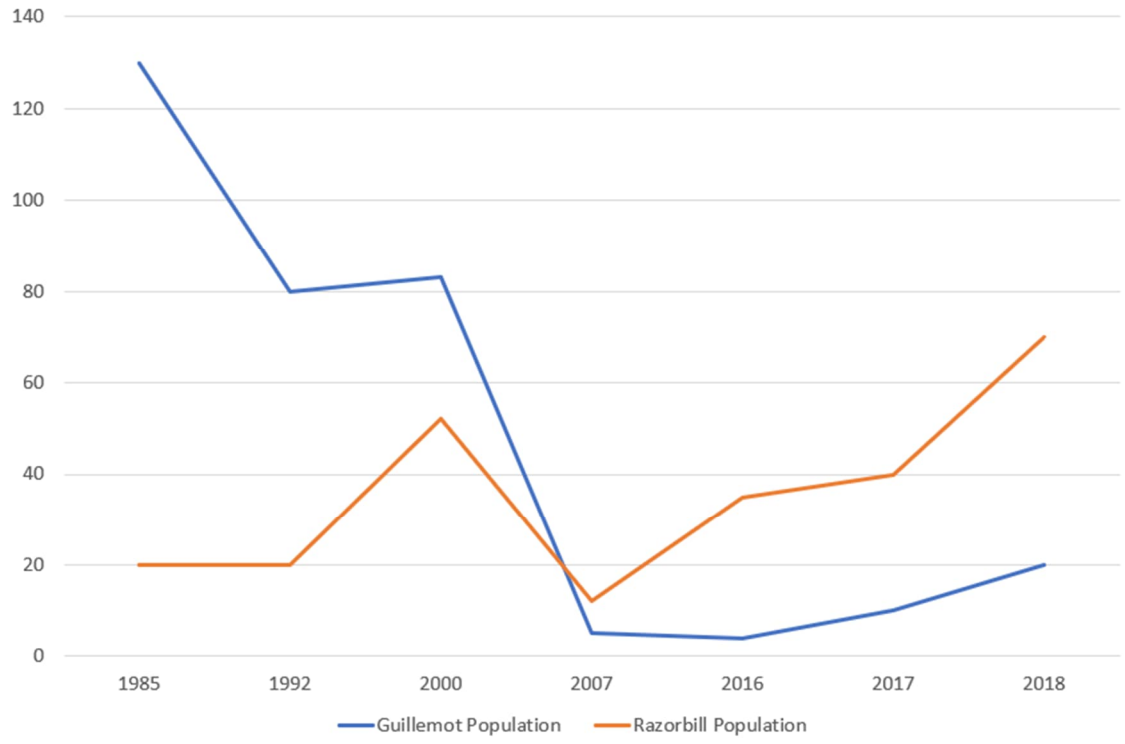
Management Measure	Bawden Rocks	Carters Rock	Carvannet – Portreath 3	Grower Rock	Highveer Point	Lye Rock	Lynton 1 & 2	North Cornwall 2	Tresungers Point	Treyarnon - Merope
General environmental conservation goals (South West Inshore and South West Offshore Marine Plan 2021	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
General environmental conservation goals for Godrevy Head to St Agnes SAC (NE)			Y							
Goal to improve bird habitat (Cornwall AONB management plan)	Y		Y	Y		Y		Y	Y	Y
Goal to conserve breeding seabird populations (Exmoor National Park management plan)					Y		Y			
Online visitor access statements to encourage responsible dog behaviour around nesting birds (National Trust – St Agnes Head)	Y									
Online birdwatching guide for choughs (National Trust – St Agnes Head)	Y									
Online visitor access statements to encourage responsible dog behaviour around nesting birds (National Trust – Holywell)		Y								
Signage system to encourage responsible dog behaviour and highlight	Y	Y								

Management Measure	Bawden Rocks	Carters Rock	Carvannet – Portreath 3	Grower Rock	Highveer Point	Lye Rock	Lynton 1 & 2	North Cornwall 2	Tresungers Point	Treyarnon - Merope
beaches with dog bans (National Trust)										
Statutory fines for littering (Cornwall Council)	Y	Y	Y	Y		Y		Y	Y	Y
Online reporting system for litter on beaches (Cornwall Council)	Y	Y	Y	Y		Y		Y	Y	Y
Statutory fines for littering (Devon Council)					Y		Y			
Online litter monitoring and reporting system (Devon Council)					Y		Y			
Litter educational campaigns (Devon Council)					Y		Y			
Public beach cleans (Devon Council)					Y		Y			
Community-organised litter picks (Various community organisations)	Y	Y	Y							
Avian flu reporting system (DEFRA)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Avian flu educational campaigns (Cornwall Council)	Y	Y	Y	Y		Y		Y	Y	Y
Avian flu educational campaigns (Devon Council)					Y		Y			

6.3 Bawden Rocks

6.3.1 The guillemot population at Bawden Rocks is decreasing while the razorbill population is increasing (**Graphic 6-1**). It is under the management of the Cornwall AONB and the South West Inshore and South West Offshore Marine Plan 2021. There is also a National Trust Property adjacent to this site.

Graphic 6-1 Guillemot and razorbill populations at Bawden Rocks



Site Pressures

6.3.2 This site is located on an offshore island, so there is no risk of visitor pressure by foot. However, the island receives disturbance from individuals who swim out to the islands (South West Coast Path, 2023). There is further visitor pressure from the water, as this site is a popular kayaking destination due to its proximity to the shore (Go Sea Kayak, 2011; Kayak Fishing Blog, 2023). The potential for visitor pressure is high, as this site is located near the popular tourist areas of Portreath and St Agnes Head. The area hosts equipment hire businesses that allow tourist to hire their own kayaks (Cornwall Surf Centre, n.d.). Access to this equipment allows tourists to visit the seabird colony independently and cause disturbance. High levels of visitors increase the risk that litter is left around this site.

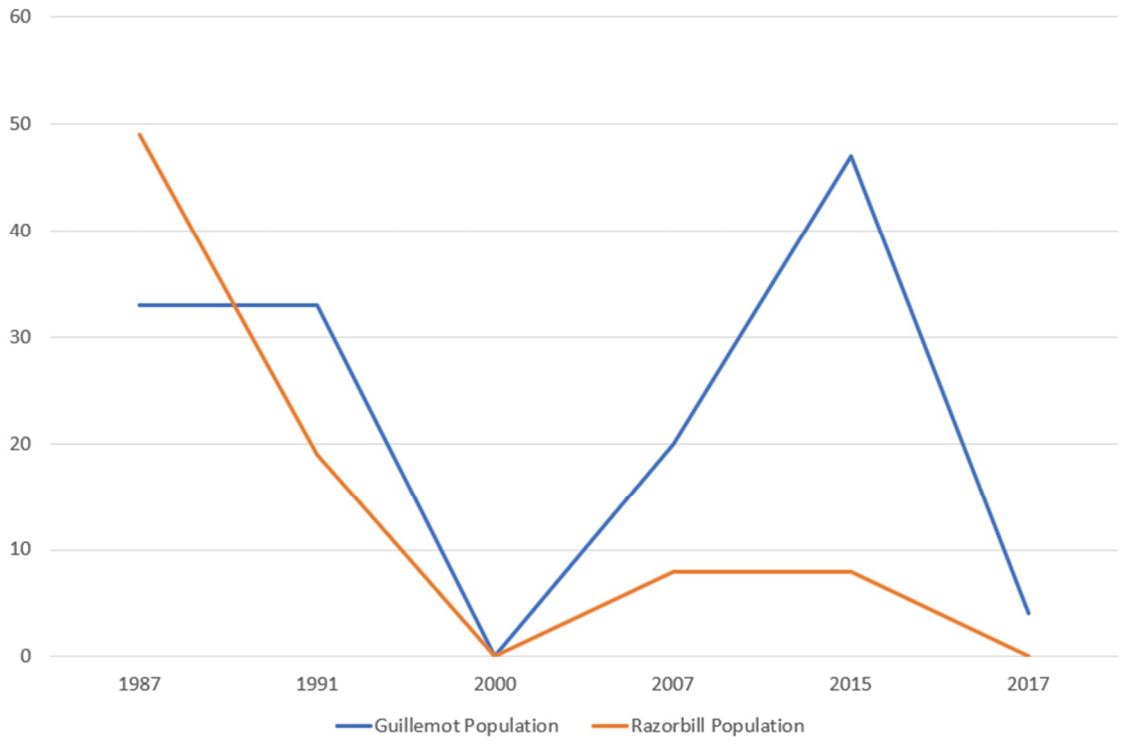
6.3.3 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, this may be due to a lack of monitoring for these pressures, and more research is needed.

6.3.4 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (Cornwall Birds, 2023).

6.4 Carters Rock

6.4.1 The guillemot and razorbill populations at Carters Rock are decreasing despite historical increases (**Graphic 6-2**). This site is under the management of the South West Inshore and South West Offshore Marine Plan 2021, and there is also a National Trust property adjacent to this site.

Graphic 6-2 Guillemot and razorbill populations at Carters Rock



Site Pressures

6.4.2 This site is located on an offshore island, so there is no risk of visitor pressure by foot. However, this site is located near Newquay which is a popular tourist town. There are multiple equipment hire companies that allow tourists to hire their own sailboats, kayaks, speedboats, and jet skis (Newquay Kayak Hire, n.d.; Newquay Activity Centre, n.d.). Access to this equipment allows tourists to visit the seabird colony independently and cause disturbance. There are also multiple companies in the area who run boat tours around this site (Cornwall Waverunner Safaris, 2022; Bootlegger Boat Trips, 2021). High levels of visitors increase the risk that litter is left around this site.

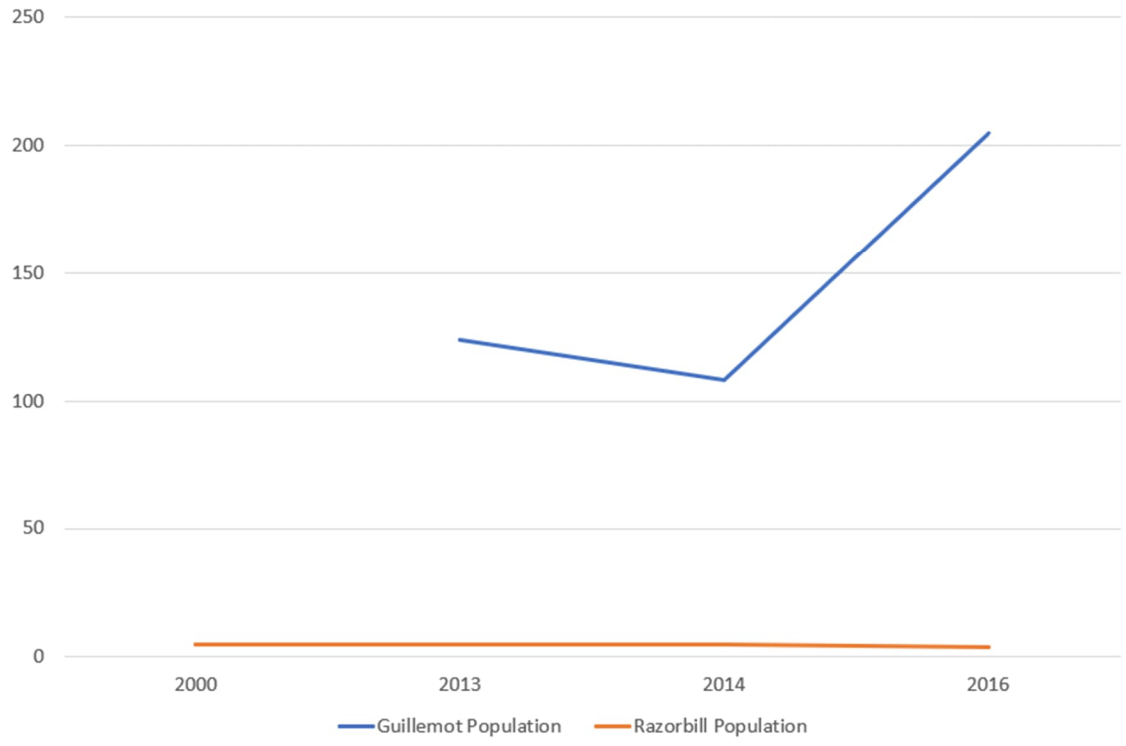
6.4.3 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.4.4 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (Cornwall Birds, 2023).

6.5 Carvannet – Portreath 3

6.5.1 The guillemot population at this site is increasing while the razorbill population has remained largely stable (**Graphic 6-3**). This site is part of the Godrevy Head to St Agnes SSSI; however, guillemot and razorbill are not a designated feature of this SSSI. The site is also under the management of Cornwall AONB and the South West Inshore and South West Offshore Marine Plan 2021.

Graphic 6-3 Guillemot and razorbill populations at Carvannet - Portreath 3



Site Pressures

6.5.2 This site receives high levels of pressure from visitors on foot. The site is adjacent to the popular Carvannel Downs hiking area. Foot traffic will be high in this area due to the presence of popular holiday towns like Portreath. 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 – like noise – to cause disturbance to these colonies. High levels of visitors also increase the risk that litter is left around this site. Furthermore, more dogs are likely to be present in this area if more visitors are present.

6.5.3 This site also experiences visitor pressure from the water. The area hosts equipment hire businesses that allow tourist to hire their own kayaks (Cornwall

Surf Centre, n.d.). Access to this equipment allows tourists to visit the seabird colony independently and cause disturbance.

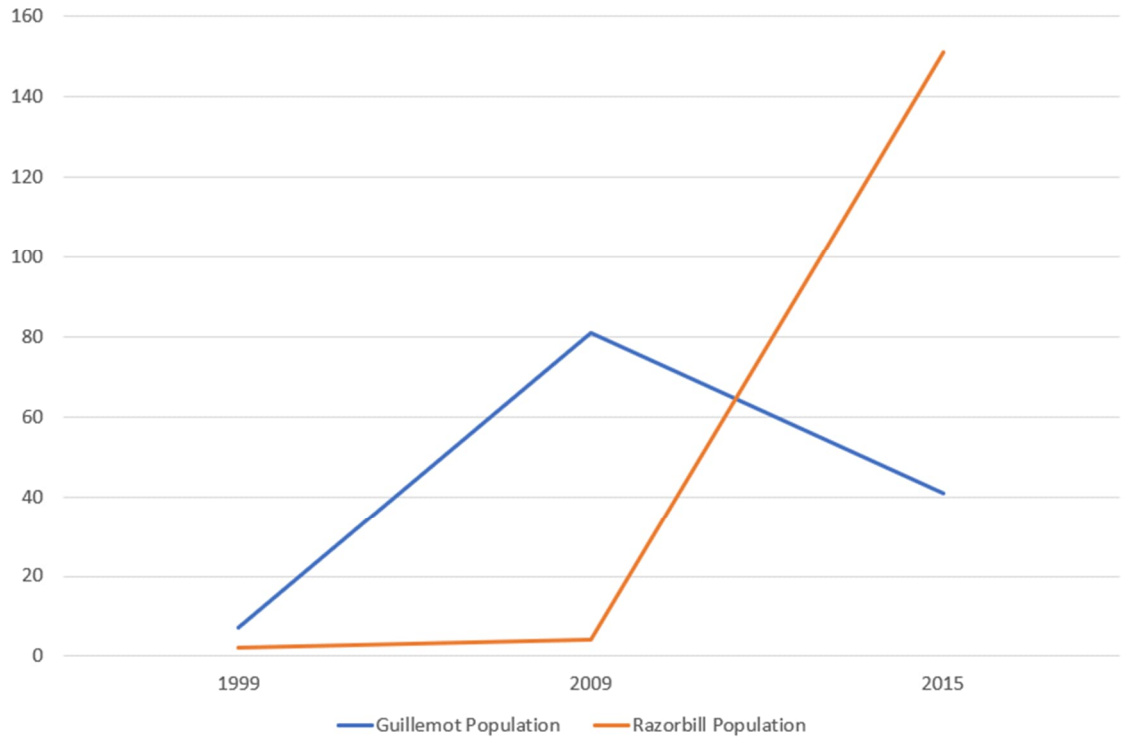
6.5.4 There has not yet been evidence of pressure from mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.5.5 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (Cornwall Birds, 2023).

6.6 Grower Rock

6.6.1 While the guillemot population at Grower Rock has shown previous increases, this colony is now in decline. The razorbill population, however, is increasing (**Graphic 6-4).** This site is part of Tintagel Cliffs SSSI; however, guillemot and razorbill are not a designated feature of this SSSI. The site is also under the management of Cornwall AONB and the South West Inshore and South West Offshore Marine Plan 2021.

Graphic 6-4 Guillemot and razorbill populations at Grower Rock



Site Pressures

6.6.2 This site is located on an offshore island, so there is no risk of visitor pressure by foot. However, this site experiences visitor pressure from the water. There is heavy boat traffic in the area, as local wildlife tour companies operate around this site (Padstow Sealife Safaris, 2023). The area is also popular with kayakers,

especially on calm days (Kirkwood, 2022). High levels of visitors increase the risk that litter is left around this site.

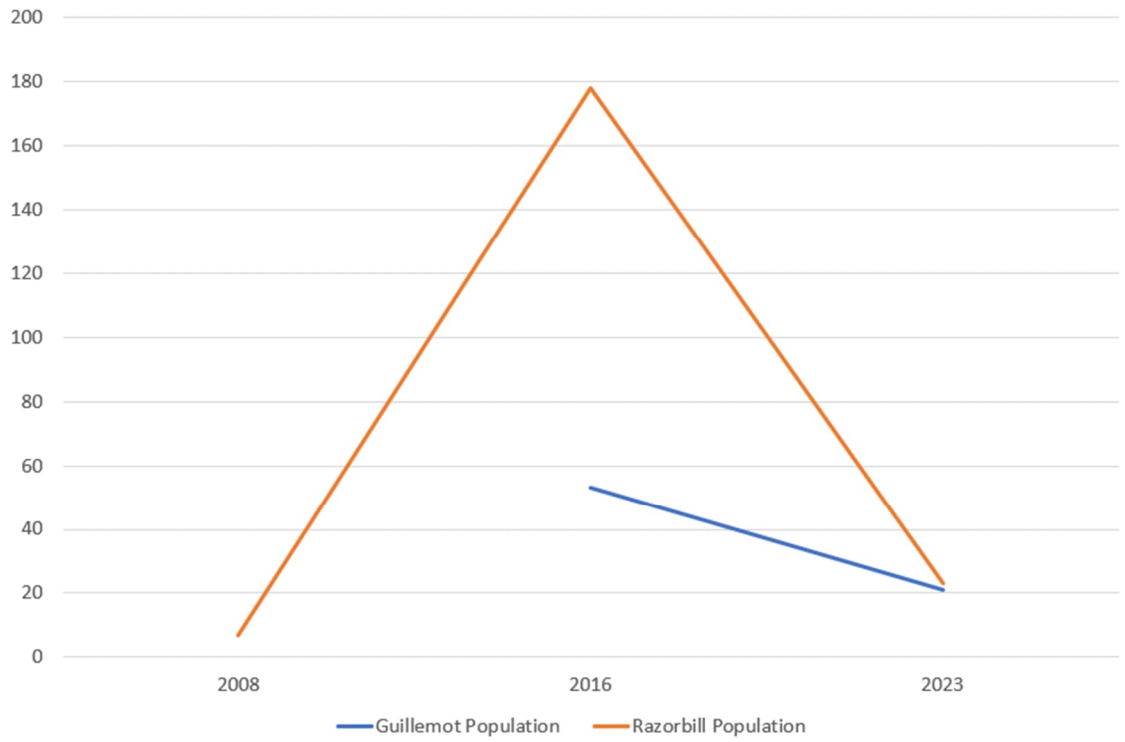
6.6.3 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.6.4 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (Cornwall Birds, 2023).

6.7 Highveer Point

6.7.1 This site is part of the West Exmoor Coast and Woods SSSI for which guillemot and razorbill are a designated feature. However, the guillemot and razorbill populations at Highveer Point are decreasing (**Graphic 6-5**). This site is also under the management of Exmoor National Park and the South West Inshore and South West Offshore Marine Plan 2021.

Graphic 6-5 Guillemot and razorbill populations at Highveer Point



Site Pressures

6.7.2 This site receives high levels of pressure from visitors on foot. The site is adjacent to the popular SW Coast Path. Foot traffic will be high in this area due to the presence of popular features like Heddon's Mouth and the adjacent National Trust visitor centre. 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 - like noise - to cause disturbance to these colonies. High levels of

visitors increase the risk that litter is left around this site. Furthermore, more dogs are likely to be present in this area if more visitors are present.

6.7.3 Due to the sheer cliffs, this site is a popular location for rope climbing; therefore, colonies will face visitor pressure directly on the cliff face (UKC, 2023c).

6.7.4 This site also experiences visitor pressure from the water. There are multiple kayak hire facilities within 5 miles of this site (OSKC Watersports, n.d.). There are also multiple companies in the area who run boat tours to this site with the specific intent to view the seabirds (Ilfracombe Sea Safari, n.d.).

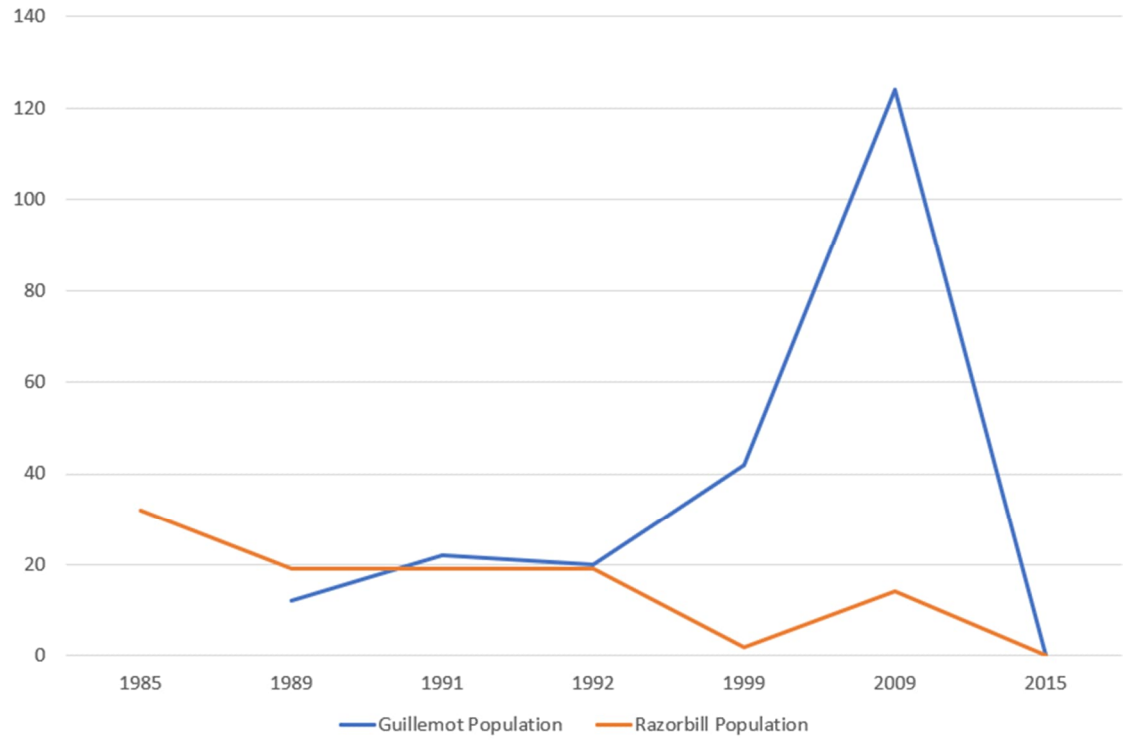
6.7.5 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.7.6 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (North Devon Council, n.d.b).

6.8 Lye Rock

6.8.1 Though guillemot have previously increased at this site, they have shown signs of recent decline. The razorbill population is also in decline (**Graphic 6-6**). This site is under the management of Cornwall AONB and the South West Inshore and South West Offshore Marine Plan 2021.

Graphic 6-6 Guillemot and Razorbill populations at Lye Rock



Site Pressures

6.8.2 This site receives high levels of pressure from visitors on foot. The site is adjacent to the popular SW Coast Path. Foot traffic will be high in this area due to the presence of popular features like Tintagel Castle. 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 – like noise – to cause disturbance to these colonies. High levels of visitors increase the risk that litter is left around this site. Furthermore, more dogs are likely to be present in this area if more visitors are present.

6.8.3 Due to the cliffs, this site is a popular location for coasteering; therefore, colonies will face visitor pressure directly on the cliff face and the surrounding water (OA Surf Club, 2023).

6.8.4 There is also heavy boat traffic in the area, as local wildlife tour companies operate around this site (Padstow Sealife Safaris, 2023). The area is also popular with kayakers (Kirkwood, 2018).

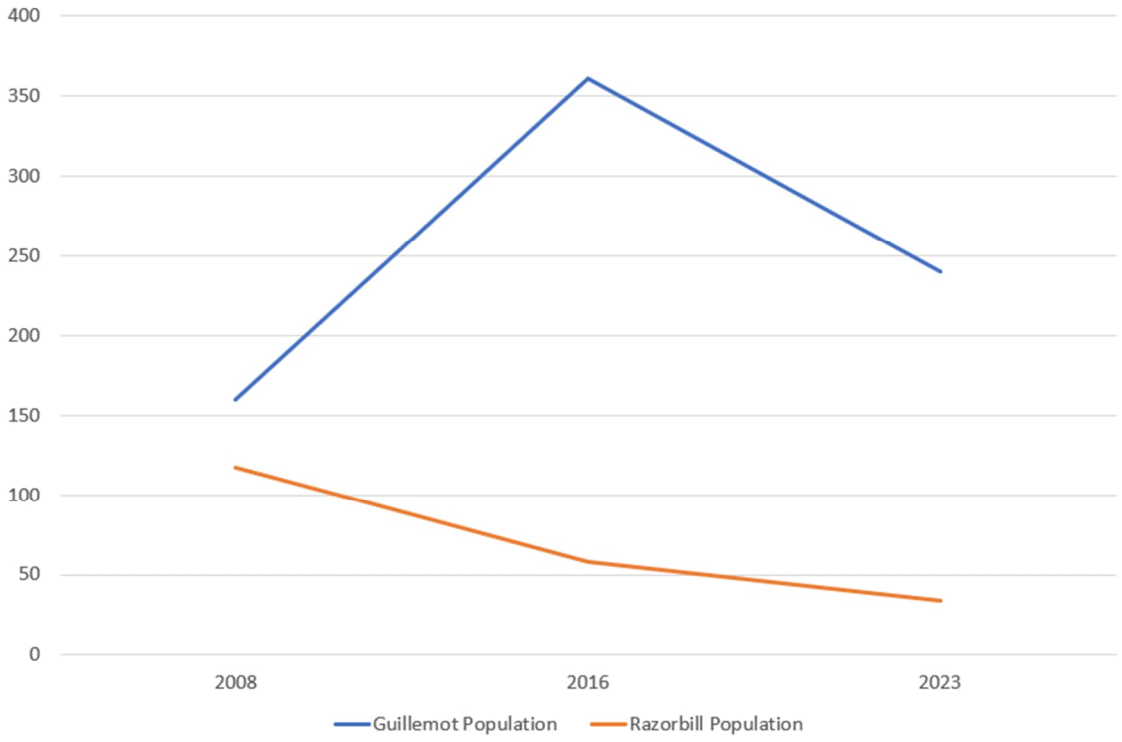
6.8.5 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.8.6 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (Cornwall Birds, 2023).

6.9 Lynton 1 & 2

6.9.1 This site is part of the West Exmoor Coast and Woods SSSI, for which guillemot and razorbill are a designated feature. However, the guillemot and razorbill populations at this site are decreasing (**Graphic 6-7**). This site is also under the management of Exmoor National Park and the South West Inshore and South West Offshore Marine Plan 2021.

Graphic 6-7 Guillemot and razorbill populations at Lynton 1 & 2



Site Pressures

6.9.2 This site receives high levels of pressure from visitors on foot. Foot traffic will be high in this area due to its location in Exmoor National Park. While these colonies are located lower down steep cliffs, there is still potential for non-visible indicators of human presence – like noise – to cause disturbance to these colonies. High levels of visitors increase the risk that litter is left around this site. Furthermore, more dogs are likely to be present in this area if more visitors are present.

6.9.3 Due to the cliffs, this site is a popular location for rope climbing and bouldering; therefore, colonies will face visitor pressure directly on the cliff face (UKC, 2023b).

6.9.4 This site also experiences visitor pressure from the water, as it is popular among kayakers (North Devon Explores, n.d.). There are also multiple companies in the area who run boat tours to this site with the specific intent to view the seabirds (Ilfracombe Sea Safari, n.d.).

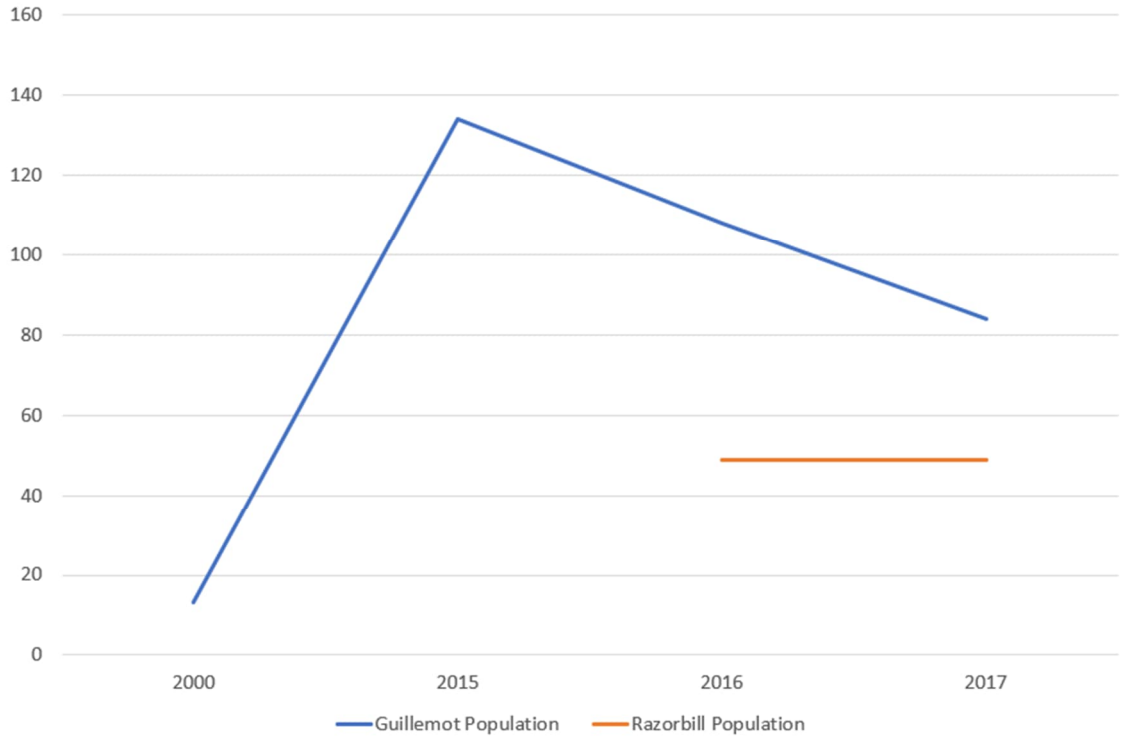
6.9.5 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.9.6 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (North Devon Council, n.d.b).

6.10 North Cornwall 2

6.10.1 The guillemot population at this site has historically increased and is now decreasing. However, there is not enough razorbill data to determine trends at this site (**Graphic 6-8**). This site is under the management of Cornwall AONB and the South West Inshore and South West Offshore Marine Plan 2021.

Graphic 6-8 Guillemot and razorbill populations at North Cornwall 2



Site Pressures

6.10.2 This site receives high levels of pressure from visitors on foot. The site is adjacent to the popular SW Coast Path. Foot traffic will be high in this area due to the presence of popular features like the town of Padstow and the Trevose Head Heritage Coast. 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 – like noise – to cause disturbance to these colonies. High levels of visitors increase the risk that litter is left around this site. Furthermore, more dogs are likely to be present in this area if more visitors are present.

6.10.3 Due to the cliffs and sea caves in the area, this site is a popular location for coasteering, rope climbing, and kayaking; therefore, colonies will face visitor pressure directly on the cliff face and the surrounding water (Trevone Bay Adventures, 2019). This pressure comes from individuals with their own equipment as well as companies who run tours. There are also several companies that conduct wildlife boat tours in the area (Padstow Sealife Safaris, 2023).

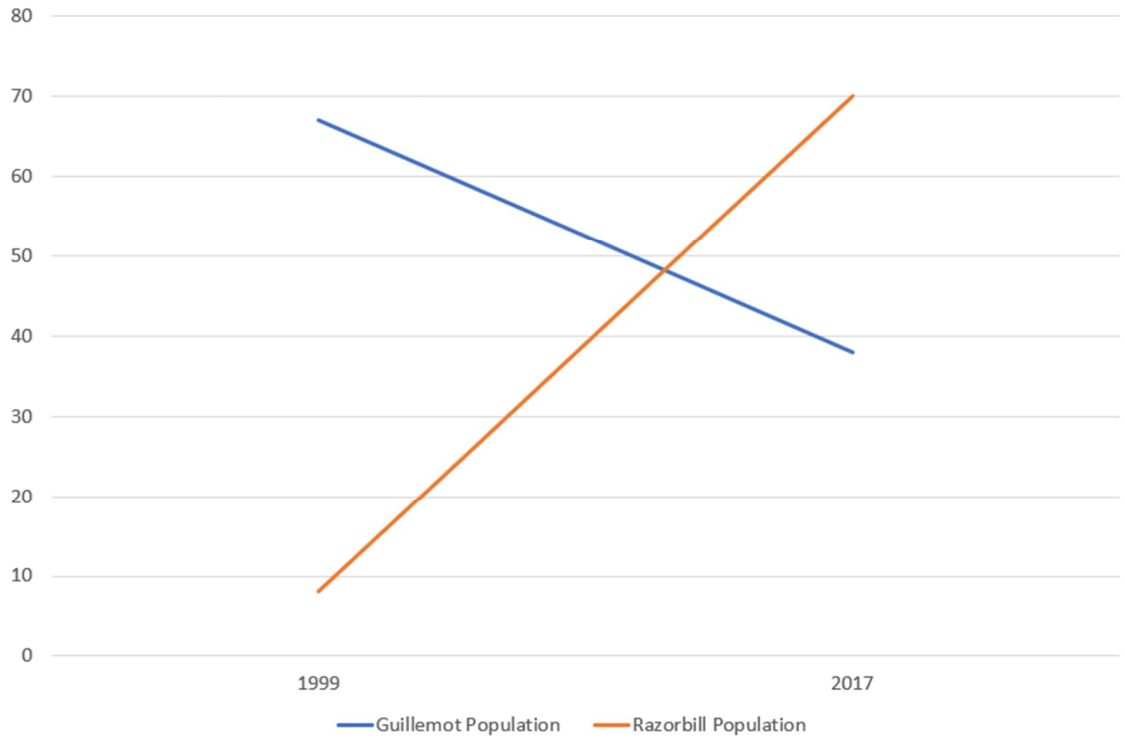
6.10.4 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.10.5 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (Cornwall Birds, 2023).

6.11 Tresungers Point

6.11.1 The guillemot population at Tresungers Point is decreasing, but the razorbill population is increasing (**Graphic 6-9**). This site is under the management of Cornwall AONB and the South West Inshore and the South West Offshore Marine Plan 2021.

Graphic 6-9 Guillemot and razorbill populations at Tresungers Point



Site Pressures

6.11.2 This site receives high levels of pressure from visitors on foot. The site is adjacent to the popular SW Coast Path. Foot traffic will be high in this area due to the presence of popular holiday towns like Port Isaac and Polzeath. 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 - like noise - to cause disturbance to these colonies. High levels of visitors increase the risk that litter is left around this site. Furthermore, more dogs are likely to be present in this area if more visitors are present.

6.11.3 Due to the cliffs, this site is a popular location for coasteering; therefore, colonies will face visitor pressure directly on the cliff face and surrounding water (Cornish Rock Tors, 2023).

6.11.4 Furthermore, this site also experiences visitor pressure from the water. There are multiple kayak hire facilities near this site, along with companies that run kayak and swimming tours (Cornish Rock Tors, 2023). There are also multiple companies in the area who run boat tours around this site to view seabirds (Wavehunters, 2021).

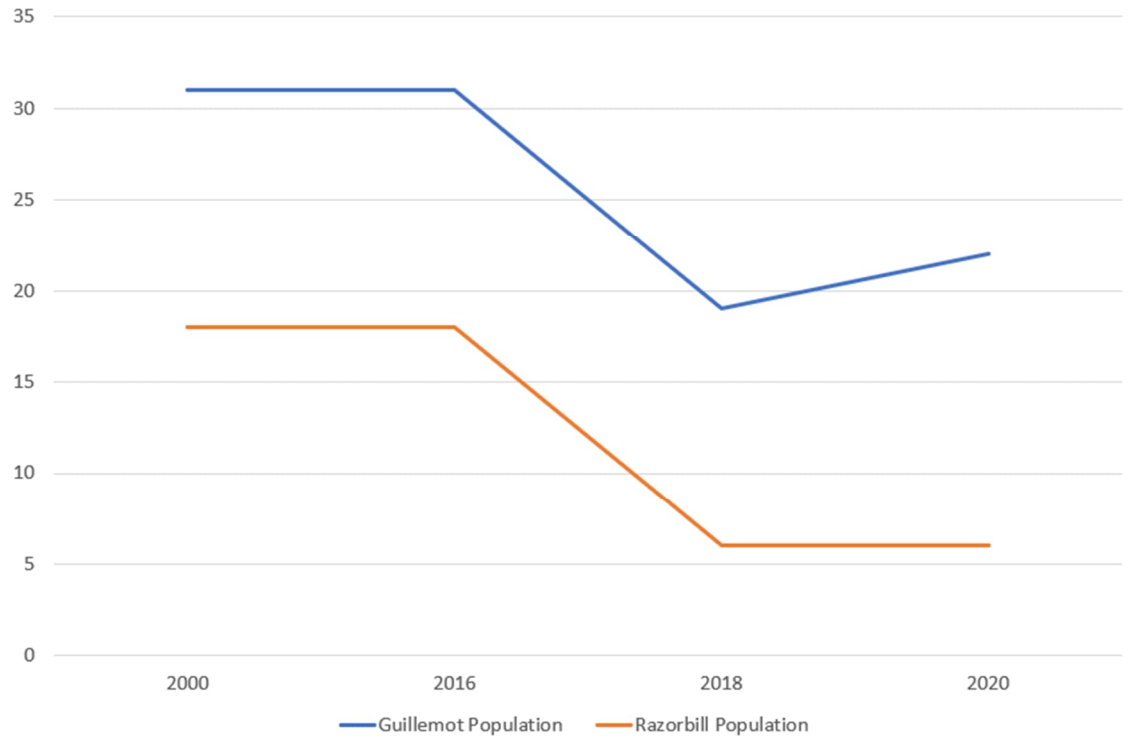
6.11.5 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.11.6 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (Cornwall Birds, 2023).

6.12 Treyarnon – Merope

6.12.1 The guillemot and razorbill populations at Treyarnon - Merope have been decreasing in recent years (**Graphic 6-10**). This site is under the management of Cornwall AONB and the South West Inshore and South West Offshore Marine Plan 2021.

Graphic 6-10 Guillemot and razorbill populations at Treyarnon - Merope



Site Pressures

6.12.2 This site receives high levels of pressure from visitors on foot. The site is adjacent to the popular SW Coast Path. Foot traffic will be high in this area due to the presence of popular features like the town of Padstow and the Trevose Head Heritage Coast. 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 - like noise - to cause disturbance to these colonies. High levels of visitors increase the risk that litter is left around this site. Furthermore, more dogs are likely to be present in this area if more visitors are present.

6.12.3 Due to the cliffs and sea caves in the area, this site is a popular location for coasteering, rope climbing, and kayaking; therefore, colonies will face visitor pressure directly on the cliff face and the surrounding water (Trevone Bay Adventures, 2019). This pressure comes from individuals with their own equipment as well as companies who run tours. There are also several companies that conduct wildlife boat tours in the area (Padstow Sealife Safaris, 2023).

6.12.4 There has not yet been evidence of difficulties with mammalian or avian predators at this site, however, there is the possibility that this could be due to lack of monitoring.

6.12.5 Finally, avian flu has affected seabird communities at this site, as this disease has been found in the area (Cornwall Birds, 2023).

6.13 Feasible Compensation Measures

6.13.1 There are currently no measures in place across any of the sites to mitigate the effects of recreational disturbance using signage and visitor access statements. Therefore, there is scope to create compensation measures that implement these tools at all sites.

6.13.2 Bawden Rocks, Carters Rocks, and Grower Rock would not benefit from the restriction of dogs because there is little visitor access by foot, but this would be an effective recreational mitigation measure for the rest of the sites.

6.13.3 Furthermore, Carters Rocks and Grower Rock would not benefit from the restriction of visitor time and the restriction of visitor approach distance because there is little visitor access by foot, but these would be effective recreational mitigation measures for the rest of the sites.

6.13.4 Bawden Rocks would not benefit from the restriction of boat time and approach distance because this site mainly faces pressures from individual watercraft, rather than tour boats, for which it is difficult to enforce mitigation. However, these measures would be effective for the rest of the sites. Some local operators around Carters Rocks and Carvannet - Portreath 3 have even taken steps to reduce disturbance, and management measures could build on these efforts (Newquay Sealife, 2023).

6.13.5 Seasonal closures would also be effective at reducing disturbance during nesting season for all sites.

6.13.6 Furthermore, the creation of enforcement measures could also be an effective compensation measure for all sites. These measures could include hiring a warden or ranger to help monitor and enforce appropriate visitor behaviour around seabirds. This would help mitigate disturbance from visitors who choose to ignore any signs or access statements.

6.13.7 There is also scope to involve local gear hire companies and recreational organisations in promoting appropriate visitor behaviour to all sites. Many of the sites, such as Highveer Point, Lynton 1 & 2, North Cornwall 2, Treyarnon-Merope, Tresungers Point, and Lye Rock, are popular for activities like kayaking and rock climbing. North Cornwall 2, Tresungers Point, and Treyarnon - Merope are also popular for coasteering. A coasteering company that operates around Tresungers Point has been "backed" by the National Trust, and works with them to reduce disturbance (Cornish Rock Tors, 2023). Efforts like these could be built upon at this site.

6.13.8 Furthermore, the implementation of national statutory or voluntary bird watching codes for individuals and businesses could further help protect birds from recreational disturbance. The development of these codes could be a suitable compensation measure for all sites.

6.13.9 There are already robust measures in place to tackle avian flu across sites, including the existence of a reporting system and educational campaigns. However, while Bawden Rocks, Carters Rock, and Grower Rock would not benefit from set back distances to help prevent avian flu because there is little visitor access by foot, all other sites would benefit from these measures. Furthermore, all

sites would benefit from seasonal closures to prevent visitors from spreading the disease to nesting birds.

6.13.10 The summary chart of appropriate compensation measures for each site is presented below in **Table 6.2.**

Table 6.2: Summary chart of effective guillemot and razorbill compensation measures for each site. This table highlights additional actions that will supplement any existing management at each site. Feasibility is determined by site-specific characteristics and if the management measure is already taking place at a specific site.

Compensation Measure	Overall Compensatory Goal	Bawden Rocks	Carters Rock	Carvannet – Portreath 3	Grower Rock	Highveer Point	Lye Rock	Lynton 1 & 2	North Cornwall 2	Tresungers Point	Treyarnon - Merope
Signage	Reduce recreational disturbance	Y (Signage already installed for dogs, but not for humans)	Y (signage already installed for dogs, but not for humans)	Y	Y	Y	Y	Y	Y	Y	Y
Visitor Access Statements	Reduce recreational disturbance	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Restriction of Dogs	Reduce recreational disturbance	N	N	Y	N	Y	Y	Y	Y	Y	Y
Restriction of Visitor Time	Reduce recreational disturbance	Y	N	Y	N	Y	Y	Y	Y	Y	Y
Restriction of Visitor Approach Distance	Reduce recreational disturbance	Y	N	Y	N	Y	Y	Y	Y	Y	Y
Restriction of Boat Time	Reduce recreational disturbance	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Restriction of Boat Approach Distance	Reduce recreational disturbance	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Seasonal Closures	Reduce recreational disturbance	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bird Watching Codes	Reduce recreational disturbance	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Compensation Measure	Overall Compensatory Goal	Bawden Rocks	Carters Rock	Carvannet – Portreath 3	Grower Rock	Highveer Point	Lye Rock	Lynton 1 & 2	North Cornwall 2	Tresungers Point	Treyarnon - Merope
Wardens	Reduce recreational disturbance	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Coordination with Equipment Hire Businesses	Reduce recreational disturbance	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Coordination with Recreational Organisations	Reduce recreational disturbance	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

7. Roadmap

7.1.1 Initial visits to all the above sites will be necessary to determine what pressures are present in the area. It may be necessary to pursue site-specific surveys during breeding season to conduct productivity monitoring that can be used as a baseline upon which the population-level effects of any compensation measures can be analysed. These initial baseline surveys will need to take place in coordination with the relevant landowners and lease holders and include agreements to undertake this research with experienced surveyors. After the initial site visits and surveys have been completed, the final site and compensation measures selections can be made using the in-situ data and coordination with relevant stakeholders. Agreements with the relevant landowners and lease holders, along with the obtainment of rights to conduct these measures will be secured before any compensation measures are implemented.

7.1.2 A monitoring plan will be developed to help evidence the benefits of these measures at the population level, as these measures must offset any potential population losses from the Proposed Development. Productivity monitoring can help evidence the benefits of these measures, and it will build upon the pre-implementation surveys. An adaptive management plan will also be developed in case any compensation measures need to be adjusted to improve their efficacy in the post-implementation phase. Future monitoring, reporting, and adaptive management plans will be decided through coordination with relevant stakeholders. Finally, a reporting system will be developed to communicate the efficacy of any compensation measures to relevant stakeholders.

7.1.3 During the examination stage, further engagement with NE will be undertaken to refine updates to the ”without prejudice” schedule **[PEPD-017]** of the **Draft DCO [REP2-002]** (updated at Deadline 3) to deal with how any compensation measures would be secured.

8. Collaborative Compensation Delivery

8.1.1 As part of the DCO application, RED is required to produce a Report to Inform Appropriate Assessment (RIAA) to provide the information required by the Competent Authority in order to undertake its Habitats Regulation Assessment (HRA) and Appropriate Assessment (AA). The Habitats Directive sets out the legal requirements for compensation in regard to any projects that may affect Natura 2000 sites (SPAs, Sites of Community Importance (SCIs) and SACs). As part of the HRA process, an AA must take place to analyse the potential effects of any project that may affect a Natura 2000 site. Article 6(4) of the Habitats Directive sets out derogations provisions which can allow the approval of plans or projects for which Adverse Effects on Site Integrity (AEoI) cannot be excluded. The first step of the derogations process is to explore alternative solutions for the project. If there are no feasible alternative solutions, imperative reasons of overriding public interest (IROPI) may mandate the continuation of the development. In this case, the derogations will include the development of compensation measures to maintain the overall network coherence of any affected protected sites. DEFRA provides guidance that underpins the compensation process in the UK (DEFRA, 2012).

8.1.2 The RIAA undertaken for the Proposed Development has not identified any adverse effects as the annual predicted impact of displacement from the Proposed Development array and buffer is 1.26 and 1.23 breeding adult mortalities attributed to the FFC SPA on guillemot or razorbill, respectively **[APP-038]**. This low level of change would not be detectable based on an increase in baseline mortality of less than 0.1%. Following discussions with NE, and after the recent the Proposed Development relevant representations, the Proposed Development will be presenting a without prejudice case for guillemot. Given the low-level of impact on guillemot and razorbill by the Proposed Development it was agreed with NE that a proportionate compensation measure would be the management and reduction of disturbance events at small breeding guillemot and/or razorbill colonies (approx. 100 pairs) in England.

8.1.3 As guillemot and razorbill mortalities attributed to the Proposed Development consist of very low numbers of potentially affected birds, discussions with Natural England have suggested that strategic approach to compensation is the preferred approach. If compensation is required, a collaborative approach between RED and Five Estuaries Offshore Wind Farm Limited (VE OWFL) would likely be an appropriate option. VE OWFL is the DCO applicant for Five Estuaries Offshore Wind Farm (hereafter VE).

8.1.4 Both developers will work together to deliver compensation across appropriate sites that have been selected between the two projects. This collaboration allows the management, implementation, and monitoring of compensation measures to be fully aligned across several sites due to the sharing of resources across projects. This increases the likelihood of successful compensation measures that can distribute benefits across multiple colonies and individuals.

8.2 Compensation Quanta

8.2.1 The quanta of compensation to be provided will be defined by the displacement and mortality rates used in calculating impact, the impact apportioned to FFC SPA and the compensation calculation method**. Table 8.1** presents compensation quanta calculated for impacts to FFC SPA at 50% displacement and 1% mortality (the Applicant's Approach) and 70% displacement and 2% mortality (the position taken for recent HRA for guillemot and razorbill by the UK SoS). The guillemot impact and compensation requirement is calculated for the non-breeding bio-season and the razorbill impact and compensation requirement is calculated for the post breeding migration, the migration free winter bio-season and the pre-breeding migration period combined.

Table 8.1. Compensation quanta at 50:1 and 70:2 displacement and mortality ratios, calculated from the central impact values to FFC SPA and Farne Islands SPA using the HOW4 compensation calculation method.

Species	SPA	Displacement/ mortality ratio	Impact	HOW4 method compensation (1:1)
Guillemot	FFC	50:1	1.26	5.23
		70:2	3.53	15.00
Razorbill	FFC	50:1	1.23	10.77
		70:2	3.45	30.22
Guillemot	Farne Is.	50:1	1.07	4.55
		70:2	3.45	12.71

9. Conclusion

9.1.1 This document outlined the proposed compensation measures for small-scale guillemot and razorbill colonies in south west England. These compensation measures have been developed as part of the DCO for the Proposed Development. Due to the low predicted mortalities for the Proposed Development, discussions with Natural England have suggested that strategic, collaborative compensation is an appropriate measure. A collaborative approach would likely be a desirable option to ensure compensation for such small numbers of birds is delivered effectively and efficiently, both from an ecological and cost perspective.

9.1.2 Selected compensation measures will address one or several key threats to guillemot and razorbill to help improve population health for these species. Compensation for the Proposed Development will focus on mitigating the effects of recreational disturbance (including disturbance from walking, rock climbing and coasteering, birdwatching, watercraft, and aircraft). This area of focus was selected because most measures that address the effects of recreational disturbance are able to be implemented using the resources and within the desired timelines of the project. However, there are links between recreational disturbance and other key seabird threats, including avian flu, predation, and litter. Though recreational disturbance has been initially selected as a focus area for compensation, a reduction in recreational disturbance will also bring benefits to guillemot and razorbill that address these other sources of stress. Furthermore, regular monitoring will allow for an adaptive approach to colony management, for example, measures can be tailored to predation if this is later evidenced at a particular colony.

9.1.3 Sites were selected for compensation based on a longlisting and shortlisting process. Potential longlist sites were limited to the south west of England due to the regional presence of guillemot and razorbill, the general lack of management measures at colonies, and the desire to provide compensation for English guillemot and razorbill colonies (given the location of the Proposed Development). The shortlisting process involved determining each colony's population, health, and location with the intension to focus compensation on colonies that had opportunities for growth and those that were subjected to pressure from tourism.

9.1.4 The document then outlined the feasibility of selected compensation measures while highlighting key challenges and future steps. These compensation measures include strategies to reduce disturbance from recreational activity, including signage, visitor access statements, restriction of dogs, restriction of visitor time, restriction of visitor approach distance, restriction of boat time, restriction of boat approach distance, seasonal closures, birdwatching codes, wardens, and coordination with equipment hire businesses and recreational organisations.

9.1.5 Finally, the feasibility of employing these various compensation measures at the chosen sites was undertaken. Appropriate compensation measures for each site were chosen based on the existing threats and management measures already present at the site, so that recreational disturbance can best be addressed according to the needs of each site. The summary chart of appropriate

compensation measures for each site is presented in **Table 6.2**. Finally, the roadmap for implementing compensation measures, as well as a plan for collaborative compensation delivery, were presented.

10. References

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11. Glossary of terms and abbreviations

Table 11.1: Glossary of terms and abbreviations

Term	Definition
AA	Appropriate Assessment
AEoI	Adverse Effect on Site Integrity
DCO	Development Consent Order
DEFRA	Department for Environment, Food and Rural Affairs
FFC	Flamborough and Filey Coast
HRA	Habitats Regulations Assessment
IND	Individual
IROPI	Imperative Reasons of Overriding Public Interest
NE	Natural England
NSIP	Nationally Significant Infrastructure Project
OWF	Offshore Wind Farm
RED	Rampion Extension Development Limited
RIAA	Report to Inform Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SCI	Site of Community Importance
SMP	Seabird Monitoring Program
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
VE	Five Estuaries Offshore Windfarm
VE OWFL	Five Estuaries Offshore Windfarm Limited

Rampion 2
WIND FARM