

# Habitats Regulations Assessment

# Report to Inform Appropriate Assessment



## Executive summary

Rampion Extension Development Limited (hereafter 'RED') (the Applicant) intends to build a new offshore windfarm 'Rampion 2' (the Proposed Development) adjacent to the existing Rampion 1 Offshore Windfarm in the English Channel, 13km to 25km off the Sussex coast.

The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (together, the 'Habitats Regulations') are amended by The European Union Exit Regulations (2019). These Regulations require that the relevant competent authority (in this case, The Secretary of State for Business, Energy and Industrial Strategy (BEIS)) must undertake an appropriate assessment of the implications if a proposed plan or project is likely to have a significant effect on a particular type of designated conservation site (traditionally known as European sites), alone or in-combination with other plans or projects. The four-stage process of determining impacts to the sites to which the Habitats Regulations apply is known as Habitats Regulations Assessment (HRA). This report provides information to support Stage Two (Appropriate Assessment (AA)) of the HRA process.

A HRA Stage One Screening exercise was completed for Rampion 2 in September 2020 to determine whether and how Likely Significant Effects (LSEs) might result on European sites. This draft Report to Inform an Appropriate Assessment (draft RIAA) builds upon the conclusions of the Screening exercise, but further information is presented to better understand the risks presented by potential effects identified at Screening.

This draft RIAA presents a study of the potential implications of the Proposed Development on the integrity of 36 nature conservation sites to which the Habitats Regulations (2017) apply. These sites protect designated features from four receptor groupings: terrestrial (onshore) ecology which includes wetland wildfowl and waders, also migratory fish species (for offshore effects only), marine benthic habitats and offshore ornithology. An analysis of each mechanism for LSEs identified at Stage One was undertaken for the 36 sites advanced to HRA Stage Two (AA). This includes three 'transboundary' sites in France, also the Alderney West Coast and the Burhou Islands Ramsar in Guernsey. Consideration was given to the potential for the Proposed Development to result in an adverse effect on the integrity of the sites against the respective sites' conservation objectives, alone and in-combination.

On detailed consideration of the potential for Adverse Effects on Integrity (AEoI) and in light of Commitments (embedded environmental measures) secured for the Proposed Development, a determination that no AEoI will result was reached for each site considered.

In conclusion, based on the information presented in this report, it is considered that there will be no adverse effects on the integrity of any designated sites to which the Habitats Regulations apply caused by the Proposed Development. It is therefore recommended that the HRA process for Rampion 2 should not proceed beyond Stage Two of the HRA process, AA.

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## Acronyms

Abbreviation	Term
<b>AA</b>	Appropriate Assessment
<b>AEoI</b>	Adverse Effect on Integrity
<b>AfL</b>	Agreement for Lease
<b>AQI</b>	AQUIND Interconnector
<b>B</b>	Breeding (season)
<b>BEIS</b>	Department for Business, Energy & Industrial Strategy
<b>BDMPS</b>	Biologically Defined Minimum Population
<b>BTO</b>	British Trust for Ornithology
<b>CEA</b>	Cumulative Effects Assessment
<b>Cefas</b>	Centre for Environment, Fisheries and Aquaculture Science.
<b>CoCP</b>	Code of Construction Practice
<b>CJEU</b>	Court of Justice of the European Union
<b>CRM</b>	Collision Risk Modelling
<b>cSAC</b>	Candidate SAC
<b>DEFRA</b>	Department for Environment, Food and Rural Affairs
<b>DML</b>	Deemed Marine Licence
<b>DCO</b>	Development Consent Order
<b>DECC</b>	Former Department of Energy and Climate Change (now BEIS)
<b>DEFRA</b>	Department for Environment Food & Rural Affairs
<b>Draft RIAA</b>	Draft Report to Inform Appropriate Assessment
<b>EIA</b>	Environmental Impact Assessment
<b>EC</b>	European Commission
<b>EEA</b>	European Economic Area
<b>ETG</b>	Expert Topic Group
<b>ES</b>	Environmental statement

Abbreviation	Term
<b>EU</b>	European Union
<b>FFC SPA</b>	Flamborough and Filey Coast SPA
<b>FR</b>	France
<b>GW</b>	Gigawatts
<b>ha</b>	Hectares
<b>HAT</b>	Highest Astronomical Tide
<b>HDD</b>	Horizontal Directional Drilling
<b>HRA</b>	Habitats Regulations Assessment
<b>IAMMWG</b>	Inter-Agency Marine Mammal Working Group
<b>INNS</b>	Invasive Non-Native Species
<b>JNCC</b>	Joint Nature Conservation Committee
<b>kV</b>	kilovolt
<b>LAT</b>	Lowest Astronomical Tide
<b>LSEs</b>	Likely Significant Effect
<b>LSEI</b>	Likely Significant Effect In-combination
<b>M</b>	Migratory (season)
<b>MDS</b>	Maximum Design Scenario
<b>MINNS</b>	Marine Invasive Non-Native Species
<b>MMO</b>	The Marine Management Organisation
<b>MPCP</b>	Marine Pollution Contingency Plan
<b>MMMP</b>	Marine Mammal Mitigation Protocol
<b>MU</b>	Management units (species)
<b>MW</b>	Megawatts
<b>MHWS</b>	Mean High Water Springs
<b>NB</b>	Non-breeding (season)
<b>NNR</b>	National Nature Reserve

Abbreviation	Term
<b>NSIP</b>	Nationally Significant Infrastructure Project
<b>Operation and Maintenance</b>	Operation and Maintenance (phase)
<b>OWEP</b>	Offshore Wind Extensions Plan
<b>OWF</b>	Offshore Wind Farm
<b>PA 2008</b>	The Planning Act 2008 (as amended)
<b>PEIR</b>	Preliminary Environmental Information Report
<b>PEMP</b>	Project Environment Management Plan
<b>PINS</b>	The Planning Inspectorate
<b>pSPA</b>	proposed SPA
<b>PTEC</b>	Perpetuus Tidal Energy Centre
<b>PVA</b>	Population Viability Analysis
<b>RED</b>	Rampion Extension Development ('the Applicant')
<b>RIAA</b>	Report to Inform Appropriate Assessment
<b>RSPB</b>	Royal Society for the Protection of Birds
<b>SAC</b>	Special Areas of Conservation
<b>SCI</b>	Sites of Community Importance
<b>SCOS</b>	Special Committee on Seals
<b>SD</b>	Standard Deviation
<b>SNH</b>	Scottish Natural Heritage
<b>SNCB</b>	Statutory Nature Conservation Body
<b>SMP</b>	Shoreline Management Plan
<b>SMU</b>	Seal Management Unit
<b>SoS</b>	Secretary of State
<b>SoS BEIS</b>	Secretary of State for Business, Energy and Industrial Strategy
<b>SOS</b>	Sussex Ornithological Society

Abbreviation	Term
SPA	Special Protection Areas
SSC	Suspended Sediment Concentrations
SWT	Sussex Wildlife Trust
TTS	Temporary Threshold Shift
TWT	The Wildlife Trust
UK	United Kingdom
UXO	Unexploded ordnance
WSCC	West Sussex County Council
WTG	Wind turbine generators
ZOI	Zone of Influence



## Species Glossary

Species	Latin name
<b>Bird species</b>	
<b>Aquatic warbler</b>	<i>Acrocephalus paludicola</i>
<b>Arctic tern</b>	<i>Sterna paradisaea</i>
<b>Avocet</b>	<i>Recurvirostra avosetta</i>
<b>Puffin</b>	<i>Fratercula arctica</i>
<b>Bar-tailed godwit</b>	<i>Limosa lapponica</i>
<b>Bewick's swan</b>	<i>Cygnus columbianus bewickii</i>
<b>Black-headed gull</b>	<i>Chroicocephalus ridibundus</i>
<b>Black-tailed godwit</b>	<i>Limosa limosa</i>
<b>Cormorant</b>	<i>Phalacrocorax carbo</i>
<b>Common gull</b>	<i>Larus canus</i>
<b>Common pochard</b>	<i>Aythya ferina</i>
<b>Common sandpiper</b>	<i>Actitis hypoleucos</i>
<b>Common scoter</b>	<i>Melanitta nigra</i>
<b>Common shelduck</b>	<i>Tadorna tadorna</i>
<b>Common tern</b>	<i>Sterna hirundo</i>
<b>Curlew</b>	<i>Numenius arquata</i>
<b>Dark-bellied brent goose</b>	<i>Branta bernicla</i>
<b>Dunlin</b>	<i>Calidris alpinata</i>
<b>European nightjar</b>	<i>Caprimulgus europaeus</i>
<b>European shag</b>	<i>Phalacrocorax aristotelis</i>
<b>European storm petrel</b>	<i>Hydrobates pelagicus</i>
<b>Gadwall</b>	<i>Anas strepera</i>
<b>Gannet</b>	<i>Morus bassanus</i>
<b>Golden plover</b>	<i>Pluvialis apricaria</i>

Species	Latin name
Great bittern	<i>Botaurus stellaris</i>
Great black-backed gull	<i>Larus marinus</i>
Great skua	<i>Stercorarius skua</i>
Greenland white-fronted goose	<i>Anser albifrons flavirostris</i>
Greylag goose	<i>Anser anser</i>
Grey plover	<i>Pluvialis squatarola</i>
Guillemot	<i>Uria aalge</i>
Hen harrier	<i>Circus cyaneus</i>
Herring gull	<i>Larus argentatus</i>
Kentish plover	<i>Charadrius alexandrinus</i>
Kittiwake	<i>Rissa tridactyla</i>
Lesser black-backed gull	<i>Larus fuscus</i>
Little grebe	<i>Tachybaptus ruficollis</i>
Little gull	<i>Hydrocoloeus mintus</i>
Little tern	<i>Sternula albifrons</i>
Manx shearwater	<i>Puffinus puffinus</i>
Marsh harrier	<i>Circus aeruginosus</i>
Mediterranean gull	<i>Larus melanocephalus</i>
Northern pintail	<i>Anas acuta</i>
Pink-footed goose	<i>Anser brachyrhynchus</i>
Razorbill	<i>Alca torda</i>
Red-breasted merganser	<i>Mergus serrator</i>
Red-throated diver	<i>Gavia stellata</i>
Redshank	<i>Tringa totanus</i>
Ringed plover	<i>Charadrius hiaticula</i>
Roseate tern	<i>Sterna dougallii</i>

Species	Latin name
Ruff	<i>Philomachus pugnax</i>
Sanderling	<i>Calidris alba</i>
Sandwich tern	<i>Thalasseus sandvicensis</i>
Shoveler	<i>Anas clypeata</i>
Teal	<i>Anas crecca</i>
Turnstone	<i>Arenaria interpres</i>
Whimbrel	<i>Numenius phaeopus</i>
Wigeon	<i>Anas penelope</i>
Marine Mammals	
Bottlenose dolphin	<i>Tursiops truncatus</i>
Harbour Porpoise	<i>Phocoena phocoena</i>
Grey seal	<i>Halichoerus grypus</i>
Harbour seal	<i>Phoca vitulina</i>
Migratory fish	
Atlantic salmon	<i>Salmo salar</i>
Terrestrial ecology	
Barbastelle bat	<i>Barbastella barbastellus</i>

# 1. Introduction

## 1.1 Report overview

- 1.1.1 Rampion 2 Offshore Wind Farm (Rampion 2) is a proposed extension of the existing Rampion Offshore Wind Farm (Rampion 1). Rampion 2 is a Nationally Significant Infrastructure Project (NSIP) under Section 15(3) of the Planning Act 2008 (as amended) (PA 2008) and therefore consented through a Development Consent Order (DCO).
- 1.1.2 This draft 'Report to Inform the Appropriate Assessment' (or draft RIAA) supports the Habitats Regulations Assessment (HRA) of Rampion 2 in the determination of the implications for designated sites (traditionally and hereafter referred to as European sites) if Rampion 2 is consented. Following the United Kingdom's (UK) exit from the European Union (EU Exit), these sites (if located within the UK) are collectively referred to as the UK's National Site Network.<sup>1</sup>
- 1.1.3 This draft RIAA builds upon the HRA Stage One Screening exercise completed in September 2020 (RED, 2020a)<sup>2</sup> to consider the environmental effects of Rampion 2 as they relate to relevant designated site integrity at Stage Two of the HRA process.
- 1.1.4 The draft RIAA will provide the basis for consultation in the pre-application stage of Rampion 2 and will accompany the Preliminary Environmental Information Report<sup>3</sup> (PEIR) (RED, 2021)<sup>4</sup>, before being finalised for Application. Ultimately, the information in the RIAA will be used by the Secretary of State of the Department for Business, Energy and Industrial Strategy (SoS BEIS), as the relevant competent authority, to inform its AA, if so required, for the HRA in accordance with the legislation detailed in **Section 2.4**.

## 1.2 Habitats Regulations Assessment

- 1.2.1 HRA provides the process for the consideration of potential impacts of plans and projects on a particular type of designated conservation site. The

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<sup>1</sup> Department for Environment Food & Rural Affairs (DEFRA). 2021. Policy paper 'Changes to the Habitats Regulations 2017' Published 1 January 2021. Accessed April 2021. Available at this [hyperlink](#).

<sup>2</sup> A summary of the HRA Screening updates is available at **Appendix B**

<sup>3</sup> prepared as part of the Environmental Impact Assessment ("EIA") of the Proposed Development

<sup>4</sup> published alongside the draft RIAA

requirement follows from the EU Habitats Directive<sup>5</sup> and, by virtue of Article 8 of that Directive, also the Wild Birds Directive<sup>6</sup> (the Nature Directives).

- 1.2.2 The Europe-wide network of nature conservation areas that are the subject of the HRA process was established under the Nature Directives. These areas are known as “European sites” and collectively, as the “Natura 2000” network. The wording of Article 6(3) and 6(4) of the Habitats Directive underlies the sequential decision-making tests applied under the HRA process to projects likely to affect European sites.
- 1.2.3 Following the United Kingdom’s (UK) departure from the European Union (EU) on 31 December 2020 (EU Exit), the UK is no longer an EU Member State. Notwithstanding, the Habitats Regulations (2017) (as amended) continue to provide the legislative backdrop for HRA in the UK through the Conservation of Habitats and species Amendment (EU Exit) Regulations 2019 (“EU Exit Regulations”). The HRA process implemented under the Habitats Regulations (2017) continues to apply (subject to minor changes) and the UK is bound by HRA judgments handed down by The Court of Justice of the European Union (CJEU) prior 31 to December 2020.<sup>7</sup>
- 1.2.4 Accordingly, the EU Exit Regulations are considered to have no material bearing on the requirement or process for the HRA of Rampion 2. Rampion Extension Development Limited (hereafter ‘RED’), as the Applicant for Rampion 2, will comply with the requirements of Habitat Regulations (2017) (as amended) other than where specific changes are identified by the government. In accordance with the present position on HRA terminology (Department for Environment, Food and Rural Affairs (Defra), 2021<sup>8</sup>), this report will still refer to “the Habitats Regulations”, “European sites” and HRA caselaw<sup>9</sup>. However, European sites in the UK are collectively termed the “National Site Network” and no longer form part of the Natura 2000 network. The HRA will not refer to any obligations under the Nature Directives but may have regard to European Commission (EC) guidance, so far as it is relevant.

## 1.3 Background to Rampion 2

- 1.3.1 The UK government has committed to deliver 40 gigawatts (GW) of offshore wind generating capacity by 2030<sup>10</sup>. The announcement was part of the

<sup>5</sup> Council Directive 92/43 /EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206/7 22.7.1992) (the Habitats Directive)

<sup>6</sup> Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (OJ L 20/7 26.1.2010) (the Birds Directive)

<sup>7</sup> Other than the Supreme Court. The stipulated mase under section 6(3) EU (Withdrawal) Act 2018 (as amended) only relates to Judgements prior to 31 December 2020

<sup>8</sup> Department for Environment Food & Rural Affairs (DEFRA). 2021. Policy paper ‘ Changes to the Habitats Regulations 2017’ Published 1 January 2021. Accessed April 2021. Available at this [hyperlink](#).

<sup>9</sup> From before 31 December 2020

<sup>10</sup> Queen's Speech December 2019" (GOV.UK). Retrieved 20 January 2020.

government's commitment towards net zero emissions by 2050<sup>11</sup> and optimising the potential of the UK's offshore energy resources is part of the strategy to deliver this target.

- 1.3.2 The Crown Estate, as the managers of most of the seabed around England and Wales and Northern Ireland, has identified 'extension projects' (the expansion of existing offshore wind farms (OWF) as an efficient means to increase the UK's installed capacity (The Crown Estate, 2019a). The Crown Estate's '2018 Offshore Wind Extensions opportunity' brought forward eight projects seeking to extend existing windfarms. These included a proposal to extend the existing Rampion Offshore Wind Farm which forms part of the Crown Estate's 2018 Offshore Wind Extensions Plan (OWEP).
- 1.3.3 A plan-level HRA of OWEP concluded that the plan, with the Rampion extension as a component, will not adversely affect the integrity of any European sites (The Crown Estate, 2019b). The proposal to extend Rampion 1 OWF (hereafter "Rampion 2") was subsequently awarded sea-bed development rights, subject to the necessary consents and the project-level assessments required as a matter of law.

## 1.4 Rampion 2

- 1.4.1 Rampion Extension Development (RED) ('the Applicant') is a joint venture between RWE Renewables, Enbridge and a Macquarie-led consortium. The Applicant intends to build a new OWF 'Rampion 2' adjacent to Rampion 1 OWF in the English Channel, 13km to 25km off the Sussex coast (see **Figure 1.1**). Rampion 2, hereafter also referred to as the 'Proposed Development', will comprise an array of wind turbine generators (WTG) and associated foundations and the onshore and offshore components of a transmission system. Information about the Proposed Development is provided in **Section 3**.
- 1.4.2 With a generating capacity of over 100 megawatts (MW), Rampion 2 qualifies as a NSIP. The PA 2008 is the primary legislation that establishes the legal framework for applying for, examination and determination of applications for DCOs for NSIPs.
- 1.4.3 A number of environmental assessments and surveys are required before an Applicant can seek consent through the statutory planning process. These include HRA under Regulation 63 of the Habitats Regulations (2017 and Regulation 28 of the Offshore Marine Conservation (Natural Habitats, &c.) Regulations (2007)). The Applicant must therefore provide the relevant competent authority with the information it needs to undertake a HRA and establish the implications of Rampion 2 for European sites.

## 1.5 Progress to date

- 1.5.1 A Screening exercise was completed for Rampion 2 in September 2020 (RED, 2020a) to determine whether and how LSEs might result on European

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<sup>11</sup> Towards net zero emissions by 2050\_GOV.UK). Retrieved 20 January 2020.



sites. This Screening was not able to exclude the risk of LSEs, therefore Stage Two (AA) is required.

- 1.5.2 The Applicant's Screening Report (RED, 2020a) was shared with consultees through late September 2020 to mid-October 2020. The responses (detailed in full at **Appendix A**) raised a number of points. In particular, the Applicant was advised to apply the mean-maximum foraging range plus 1 standard deviation (SD) when using foraging ranges for seabirds (i.e., Woodward et al., 2019) to establish potential connectivity between OWFs and Special Protection Areas (SPA) (no standard derivation had been applied).
- 1.5.3 Additional comments concerning collision risk to migratory species prompted the Screening to be revisited and the Screening methodologies have been updated accordingly. Technical notes explaining the method and outcomes of these updates are available at **Appendix C** (regarding migratory non-seabirds) and **Appendix D** (breeding seabirds).
- 1.5.4 In light of these updates and following consultation (see **Section 4: 'Consultation'**), the draft RIAA has confirmed the European sites, features, and pathways for which the potential for LSEs has been identified. A complete account of Screening that incorporates all of the post-consultation updates (and sites for which the risk of LSEs was discounted) is provided at Appendix B.
- 1.5.5 The Screening matrices<sup>12</sup> that accompany the draft RIAA also capture the updates made to Screening and are available at Appendix E. A summary of sites for which the potential for LSEs was identified and for which AA is required is provided in **Table 5.1**.

## 1.6 Next steps

- 1.6.1 HRA is an iterative process. To ensure potential impacts are accurately described at every stage, the assessments must be updated, if necessary, to take account of new developments, or changes or information. The draft RIAA builds upon the conclusions of the Screening exercise, but further information is presented to better understand the risks presented by potential effects identified at Screening. This includes updated Screening methods (see **Appendix C** and **D**), review of baseline ecological conditions of the European sites under consideration (existing condition, threats, and pressures (see **Appendix F**), results from project-specific technical reports and the likely manifestation of effects in this context.
- 1.6.2 Further, the draft RIAA has been developed alongside Rampion 2's PEIR produced as part of the Environmental Impact Assessment ("EIA") process (under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017). Where information was not previously available, the Screening adopted a highly precautionary stance. In some cases, the availability of assessments supporting the EIA process has provided the evidence to refine the conclusions concerning impacts to European sites.

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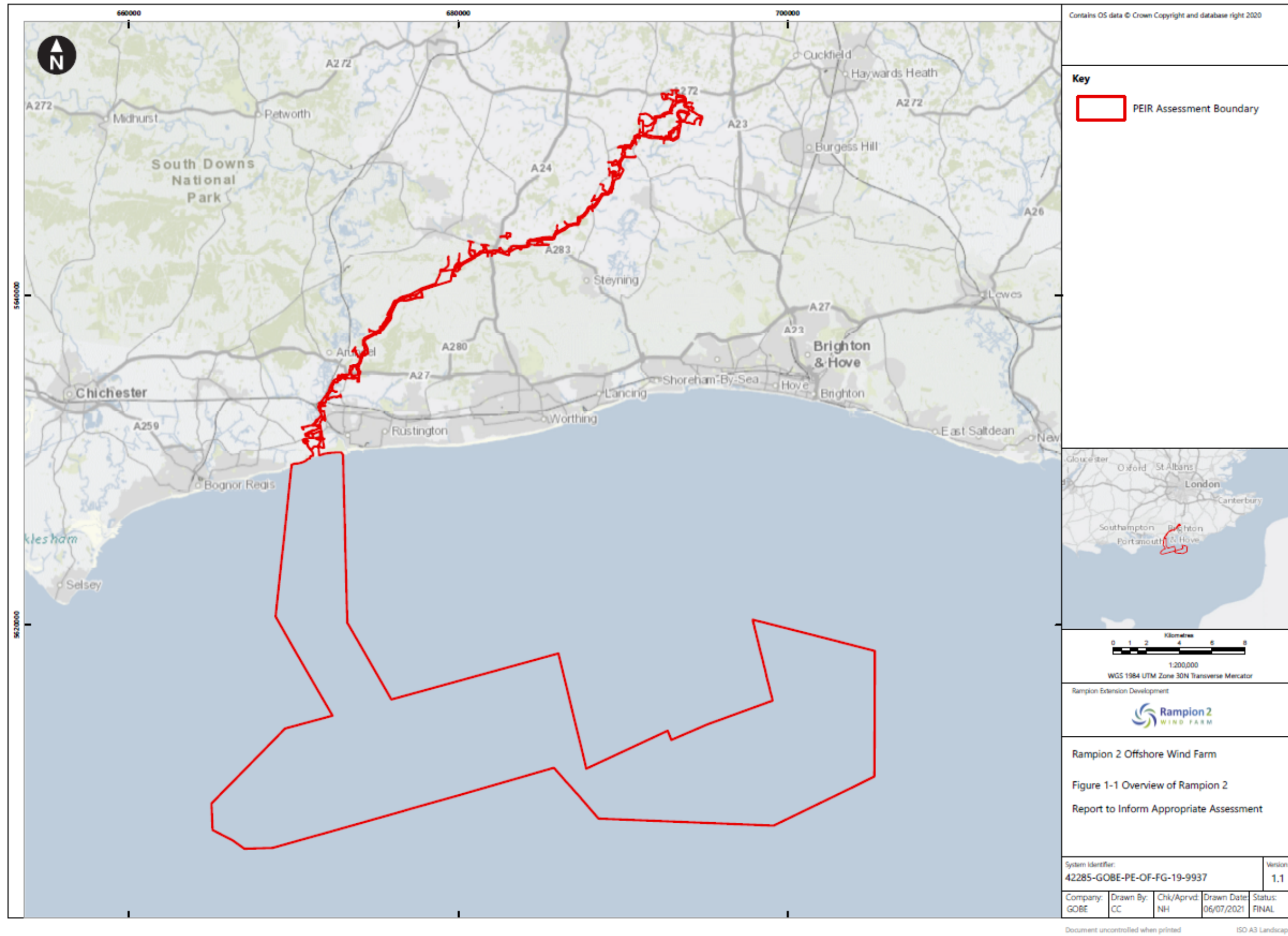
<sup>12</sup> Based upon the Planning Inspectorate (PINS) Advice Note Ten November 2017 (version 8). Available at this [hyperlink](#) (PINS, 2017)

Where design or supporting information is common to both assessments (PIER and the HRA) this information has been used as referenced throughout the draft RIAA.

- 1.6.3 It should be noted that this draft RIAA, as issued with the PEIR, is a document in progress and therefore not all sections and assessments are 'final' at this point. The aim of this document is to provide the Statutory Nature Conservation Bodies (SNCB) with an update on the process and preparation of the HRA so an informed response as possible can be given as part of the consultation. The design is still being developed and the process of gathering information to inform how the environment might be affected by the Proposed Development is still underway. Where gaps exist as a result of ongoing work prior to finalisation of the DCO Application, this has been noted in the relevant section (together with a comment as relevant as regards the status of the work). As the Proposed Development progresses, these will be completed and updated as relevant within the RIAA that will accompany the application.
- 1.6.4 Key information about the Proposed Development is found in the following chapters and documents:
- **PEIR Volume 2, Chapter 4: The Proposed Development** provides a description of the Proposed Development including the design parameters, where possible at this stage, and described in accordance with the Rochdale Envelope approach.
  - **PEIR Volume 2, Chapter 5: Approach to the EIA** provides details of the method followed to assess cumulative effects in relation to the offshore environment. This approach has helped to inform the assessment of in-combination effects for the HRA.
  - **PEIR Volume 4, Appendix 4.1: Commitments register, Table 1.1:** within the Commitments register document summarises the embedded environmental measures within the chapters of the PEIR and associated appendices.
  - **PEIR Volume 2, Chapter 9: Benthic subtidal and intertidal ecology** sets out the proposed approach to characterise the benthic subtidal and intertidal ecology baseline environment as a basis for the EIA presented in the PEIR.
  - **PEIR Volume 4 Appendix 5.4: Cumulative effects assessment shortlisted developments** sets out a short list of 'other developments' (in this report, 'external plans or projects') that may interact with the Rampion 2 respective Zones of Influence (ZOIs) during construction, Operation and Maintenance (Operation and Maintenance ) or decommissioning.
  - **PEIR Volume 2, Chapter 12: Offshore & intertidal ornithology;** an assessment at the EIA level of potential effects from the impacts of Rampion 2 to ornithological features in the offshore and intertidal environment.

- **PEIR Volume 4 Appendix 12.1: Offshore & intertidal ornithology Baseline Technical Report;** a detailed description of the baseline environment with respects to offshore and intertidal ornithology.

Figure 1-1 Overview of Rampion 2



## 1.7 The structure of the draft RIAA

1.7.1 The draft RIAA is structured in the following way.

- **Section 1: Introduction** - introduces the Proposed Development and establishes the need for, and the purpose and structure of the draft RIAA.
- **Section 2: Habitats Regulations Assessment** - sets out the process, principles, tests, (including those established by case law) and guidance applied to the draft RIAA.
- **Section 3: Information on the Proposed Development** - drawing on the information presented in relevant PEIR chapters, this section sets out information on the Proposed Development and programme considered pertinent to the AA, including relevant maximum design parameters.
- **Section 4: Consultation** - provides a summary of the consultation undertaken, responses provided and how these have been addressed.
- **Section 5: HRA Stage One Screening** - Clarifies the updates to Screening (methodologies and outcomes) and presents the final list of sites at risk of LSEs and the features and pathways for which AA is required, both alone and in-combination.

1.7.2 Information for Stage Two (AA) is then provided in the following sections.

- **Section 6: Embedded environmental measures** – all commitments to avoid or reduce effects that are relevant to the receptors under consideration are presented in this section.
- **Section 7: Appraisal of potential Adverse Effects on Integrity (AEol) on relevant sites alone** - for each of the sites, features and pathways identified at Screening, a determination of AEol alone is made.
- **Section 8: Appraisal of potential AEol on relevant sites in-combination** - for each of the sites, features and pathways identified at Screening, a determination of AEol in-combination is made.
- **Section 9: Transboundary Statement** - statement on the potential for a transboundary effects.
- **Section 10: Conclusions of the assessment** – the conclusions of **Section 7** (effects alone) and **Section 8** (effects in-combination) are summarised for clarity and the overall finding of the draft RIAA is provided.

1.7.3 Appendices that provide information to support this report are as follows:

- **Appendix A: Consultation responses on Screening** - provides a record of consultation comments received in response to the Screening Report issued in September 2020 (RED, 2020a), together with the Applicant's responses.
- **Appendix B: HRA Screening update** – provides an update to the original Screening Report 2020 (RED, 2020a) in response to comments

received, summarising conclusions on the potential for LSEs for all sites considered. It therefore addresses comments received on the Screening Report and identifies where material changes to Screening outcomes have occurred.

- **Appendix C: Technical note: European site identification for migratory non-seabirds** - reports on the approach and outcomes of the Screening update for migratory birds.
- **Appendix D: Technical note: European site identification for breeding seabirds** – reports on the approach and outcomes of the Screening update for foraging ranges for breeding seabirds.
- **Appendix E: HRA Screening matrices** - provides (updated) Stage One Planning Inspectorate (PINS) Screening matrices for all sites considered through Screening.
- **Appendix F: European site information** - site-specific information supporting the AAs is provided in this appendix.
- **Appendix G: HRA Stage Two (AA): PINS integrity matrices for all AA in the draft RIAA.**
- **Appendix H: HRA Glossary of terms** - a glossary of HRA-specific terms used in this report has been prepared and is provided in this appendix.



## 2. Habitats Regulations Assessment

### 2.1 Requirement for Habitats Regulations Assessment

- 2.1.1 As explained in **Section 1.2**, the EU Exit Regulations<sup>13</sup> (2019) establish that the regimes that inform planning decisions (including environmental impact assessments such as HRA) will largely remain as set out in the founding legislation and UK European sites will continue to receive the same level of protection. EU Exit-related changes to the Habitats Regulations (2017) are considered to have no material implications on the requirement or process for a HRA of Rampion 2.
- 2.1.2 This document has therefore been drafted on the basis that all relevant HRA-related legislation remains in place and in accordance with The Conservation of Habitats and Species Regulations 2017 and Offshore Marine Habitats and Species Regulations 2017 (together, the Habitats Regulations (2017)) that transposed the European requirements for HRA into UK law and as effected by the EU Exit Regulations (2019) (the Habitats Regulations (2017) (as amended)).

### 2.2 European sites (post EU Exit)

- 2.2.1 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 (Defra, 2021). Regulation 8 of Habitats Regulations (2017) (as amended) defines European sites as Special Areas of Conservation (SAC), Sites of Community Importance (SCI), candidate SACs, proposed SPAs (pSPA) and SPAs.
- 2.2.2 The term 'European marine site' is interchangeable with 'European site' and refers to Special Areas of Conservation (SACs) and SPAs covered by tidal water that protect marine and coastal habitats and species. UK planning policy extended the definition to include proposed and designated Ramsar wetland sites of international importance designated under the Ramsar Convention 1971.<sup>14</sup> Defra has confirmed that following EU Exit, Ramsar sites remain protected in the same way as SACs and SPAs, but do not form part of the National Site Network (Defra, 2021).

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<sup>13</sup> The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (see [hyperlink](#))

<sup>14</sup> stated in para 176 of the National Planning Policy Framework (Ministry of Housing, Communities & Local Government, 2019), Ramsar sites are afforded the same consideration as European sites and are addressed in this document accordingly. The NPPF is available at this [hyperlink](#).

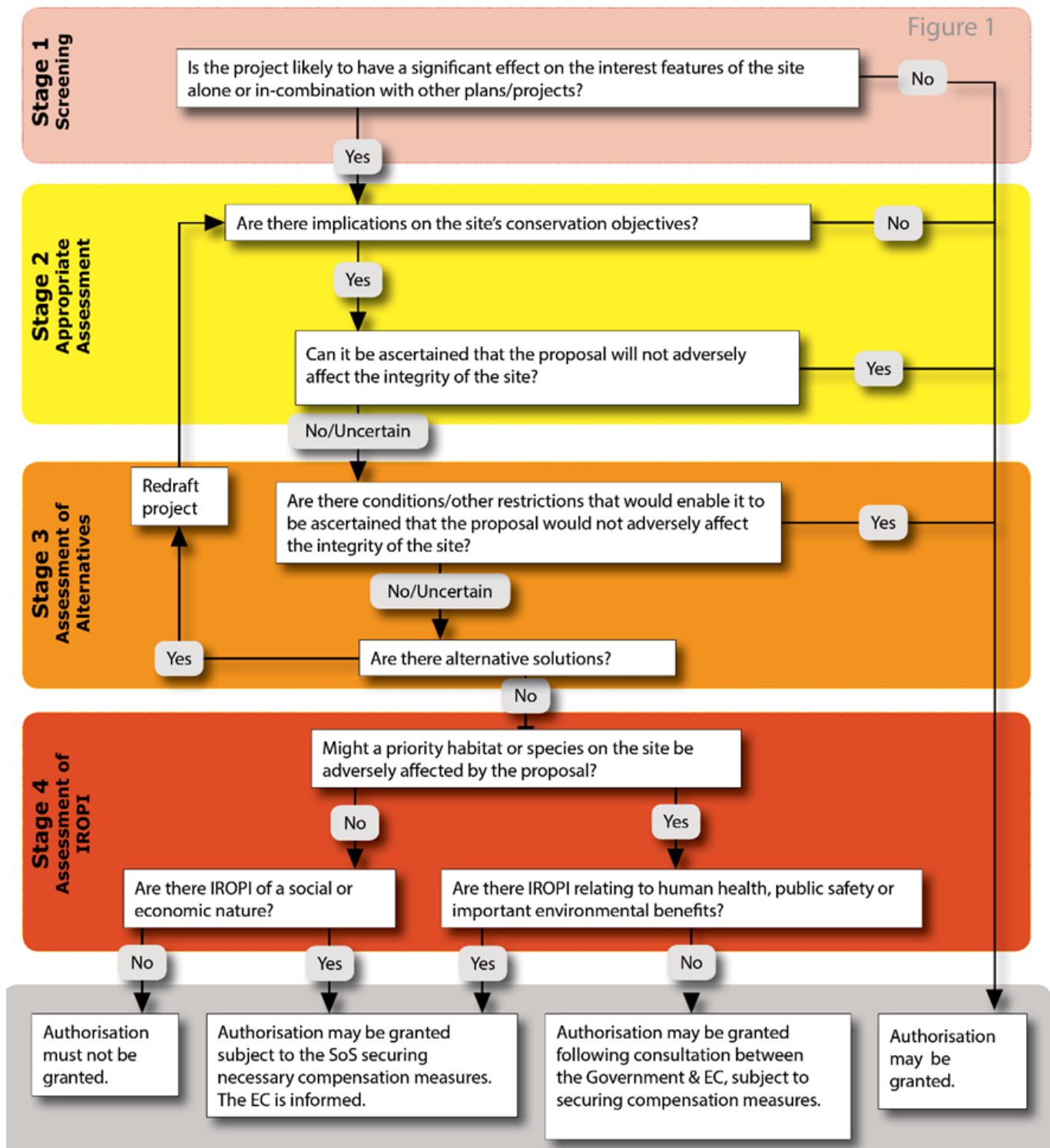
## 2.3 The HRA process

- 2.3.1 The Stages covered by HRA are referenced in PINS Advice Note Ten<sup>15</sup> (see **Figure 2.1**) (PINS, 2017). Each stage (except the last) defines the requirement for and scope of the next. An initial 'Screening' stage (Stage One) is followed by Stage Two (AA) if proposals are likely to have a significant effect.
- 2.3.2 The latter stages become relevant if the RIAA cannot exclude the risk of an adverse effect on (European site) integrity. These stages will be addressed in the event there is a negative outcome to the Stage Two (AA). The current report therefore presents the conclusions of Stage One and the findings of Stage Two; these findings do not identify any requirement to progress beyond Stage Two (AA).

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<sup>15</sup> Planning Inspectorate (PINS) Advice Note Ten November 2017 (version 8) (PINS, 2017). Available at this [hyperlink](#).

Figure 2-1 The stages of the HRA from PINs Advice Note Ten (November 2017, Version 8)



## 2.4 Guidance

- 2.4.1 The EC guidance listed in this section has been referenced. However, Advice Note Ten, which deals explicitly with HRA for NSIP under the PA 2008 process, is a principal resource. Advice Note Ten also provides the templates for assessment matrices (HRA Stage One: Screening Matrices and HRA Stage Two: Integrity Matrices) (**Appendix E** and **G** respectively). PINS expects that Applicants complete these and submit them with the HRA.
- 2.4.2 Reference to EC guidance on the interpretation of key HRA concepts post EU Exit appears optional. Section 6(2) of the EU (Withdrawal) Act 2018 (as amended) establishes that UK courts “may have regard to anything done by an EU entity [i.e., the European Commission] (...) so far as it is relevant” (Defra, 2021). The appropriate authorities may publish guidance on meeting the management objectives for the National Site Network (the ‘Network Objectives’). No such guidance has been identified and Defra (2021) has confirmed that existing guidance is still relevant.
- 2.4.3 The draft RIAA has been carried out with reference to guidance listed below:
- Department for Environment, Food and Rural Affairs (Defra). 1 January 2021. Policy paper - Changes to the Habitats Regulations 2017<sup>16</sup>;
  - Planning Inspectorate’s Advice Note Ten (2017) (Version 8);
  - ‘Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC’ (European Commission, 2018);
  - European Commission. 2020. Commission notice Guidance document on wind energy developments and EU nature legislation.
  - ‘Communication from the Commission on the precautionary principle’ (European Commission, 2000);
  - “Managing Natura 2000 sites. The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC” (European Commission, 2018);
  - ‘When new marine Natura 2000 sites should be taken into account in offshore renewable energy consents and licences’ (Department of Energy and Climate Change (former) (DECC), 2016); and
  - Regulations and the Habitats Regulations Assessment Handbook (Tyldesley and Chapman, 2013).

## 2.5 Case law

- 2.5.1 Two cases are considered particularly pertinent to the draft RIAA and the principles defined by them have been applied to this draft RIAA.
- 2.5.2 First, the approach takes into consideration the decision of the Court of Justice of the European Union in ‘People Over Wind and Sweetman v Coillte

<sup>16</sup> Published 1 January 2021. Available at this [hyperlink](#). Referenced February 2021.

Teoranta' (C323/17) (April 2018) (the 'Sweetman ruling') and where effects are likely in the absence of mitigation, it is determined that an AA should be undertaken.

- 2.5.3 Secondly, the ruling in *Holohan and others v An Bord Pleanala [2018] (Case C-461/17) EU:C:2018:883*, on 7 November 2018 determined that the AA must identify and examine the implications of the Proposed Development for the designated features present at the site, but also habitat types and species present outside the boundaries of that site and functionally linked; insofar as those implications are liable to affect the conservation objectives of the site.

## 3. Information on the Proposed Development

### 3.1 Overview of the Proposed Development

- 3.1.1 The Applicant will seek development consent for an OWF (Rampion 2), located adjacent to the existing Rampion Offshore Wind Farm (Rampion 1) located in the Eastern English Channel in the south of England, as illustrated in .
- 3.1.2 The Preliminary Environmental Report (PEIR) Assessment Boundary (as illustrated in ) has been used to inform the HRA. This boundary combines the search areas for the offshore and onshore infrastructure associated with the Proposed Development. It is defined as the area within which the Proposed Development and associated infrastructure will be located, including the temporary and permanent construction and operational work areas.
- 3.1.3 Full details on the project description, upon which this draft RIAA is based, are presented within the PEIR, specifically in **Chapter 4: The Proposed Development, Volume 2 – Section 4.3 (offshore) and Section 4.4 (Onshore)**.
- 3.1.4 At this stage in the development process, the project description is indicative, and a worst-case envelope has been designed to include sufficient flexibility to accommodate further refinement of the Proposed Development during detailed design, post consent (see **Section 3.3** (Maximum Design Scenario (Rochdale Envelope)).
- 3.1.5 The key components of Rampion 2 are illustrated in **Figure 3.1**.

### 3.2 Proposed Development components

- 3.2.1 The offshore elements of the Proposed Development are situated within an Area of Search adjacent to the south east and west of the existing Rampion 1 project site, comprising seabed areas extending between 13km and 25km offshore.
- 3.2.2 The offshore part of the PEIR Assessment Boundary comprises the following:
- a wind farm array Area of Search of approximately 270km<sup>2</sup> to include the WTG, WTG foundations, offshore substations and associated foundations and inter-array cables;
  - a small area or 'Marine Cable Link Area' to adjoin the south east area and the west area wind farm array zones, which is located at the south west corner of the Rampion 1 site. This 'Marine Cable Link Area' has been included in the Area of Search to enable cabling requirements across the full area. For clarity, no WTG or substations will be located in the 'Marine Cable Link Area'; and



- the offshore export cable Area of Search which will connect the OWF area to the shore of approximately 59km<sup>2</sup>. The nearest coastal ports are Littlehampton, Worthing, Shoreham-by-Sea, Brighton and Newhaven.

3.2.3 The onshore part of the PEIR Assessment Boundary comprises the following:

- a landfall area at Climping;
- an onshore cable corridor, approximately 36km in length and approximately 50m in width (25m either side of a centreline) with route options in specific locations at Warningcamp, Bolney Road and Wineham Lane; and
- two search area options for a new substation that will connect to the existing National Grid Bolney substation, mid Sussex, via buried onshore cables.

3.2.4 Options are intentionally included within the PEIR Assessment Boundary to allow for further design refinement which will take into account engineering information, environmental information and stakeholder feedback. The intention is to refine the onshore cable corridor options to a single corridor and to reduce the substation search areas to a single location for the DCO Application.

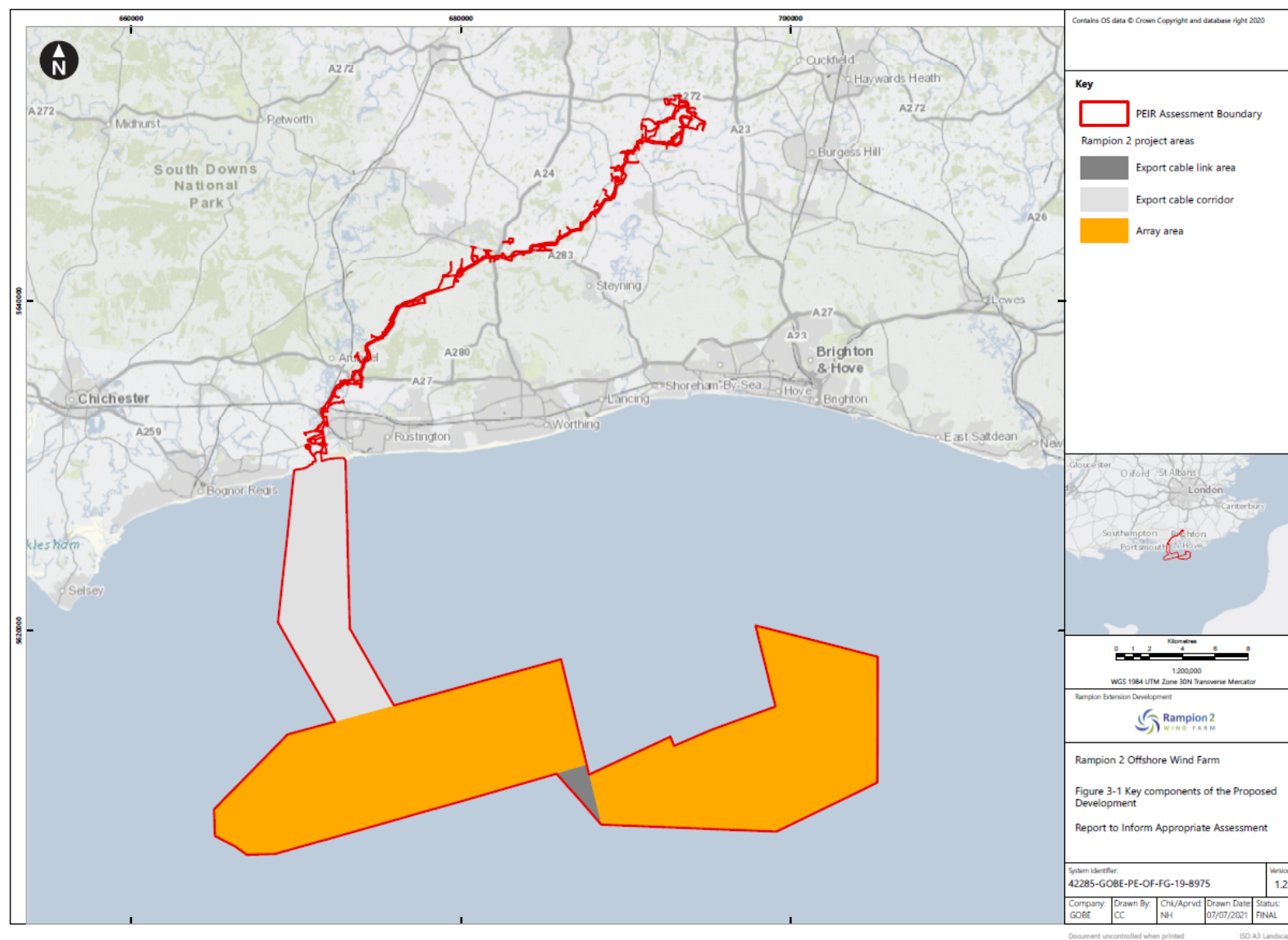
3.2.5 The key characteristics of the PEIR Assessment Boundary are summarised in **Table 3.1**.

**Table 3-1 PEIR Assessment Boundary characteristics**

Characteristic	Area
Wind farm array Area of Search for Rampion 2	270km <sup>2</sup>
Export cable corridor Area of Search	59km <sup>2</sup>
Closest distance to shore of wind farm array Area of Search	13km
Water depth range in wind farm Area of Search	15m – 65m below Lowest Astronomical Tide (LAT)
Onshore cable corridor length	Approximately 36 km
Onshore cable corridor Area of Search width (not including end points)	100m

Characteristic	Area
Onshore temporary construction compounds	Various area measurements – approximately 4 compounds required along onshore cable route.

Figure 3-1 Key components of the Proposed Development



### 3.3 Maximum Design Scenario (Rochdale Envelope)

- 3.3.1 The maximum adverse (or worst case) scenario (hereafter, the Maximum Design Scenario (MDS)) is applied within the draft RIAA for the assessment of adverse effects. This approach ensures that the scenario that will have the greatest impact (e.g., largest footprint, longest exposure, or tallest dimensions, depending on the topic) is assessed; it can then be assumed that any other (lesser) scenarios will have an impact that is no greater than that assessed.
- 3.3.2 The Screening exercise identified a number of receptor groups, with the topic specific maximum adverse scenario for each group presented within the relevant chapter from the PEIR, with those drawn on here. The receptor groups are outlined below, together with the relevant PEIR chapter and Table number.
- **Table 23.14** from **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation**; and
  - **Table 9.14** from **PEIR Volume 2, Chapter 9: Subtidal and intertidal benthic ecology**;
  - **Table 8.10** from **PEIR Volume 2, Chapter: Fish and shellfish ecology**; and
  - **Table 12.5** from **PEIR Volume 2, Chapter 12: Offshore and intertidal ornithology**;
- 3.3.3 The MDS, as it applies to each receptor group, is defined below in **Table 3.2**. For clarity regarding the differences between receptor groups, the information is presented according to individual parameters for the Proposed Development, including a note regarding why the scenario is relevant to that receptor. Where relevant, the information includes any embedded environmental measures.
- 3.3.4 In the opinion of the assessor any development scenario that falls between the two scenarios explained in **PEIR Volume 1, Chapter 4: The Proposed Development** would fall below the MDS.

Table 3-2 Maximum Design Scenarios applied for each phase of the Proposed Development for the relevant AA

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
<b>Construction</b>			
<b>HDD and general operations</b>	<b>Ornithology</b> (birds utilising coastal habitats)	Method: Horizontal Directional Drilling (HDD) Number of HDD drills: 4	Works in the intertidal zone would lead to the maximum disturbance of birds. No such works will occur for Rampion 2 within the intertidal zone (i.e., on land seaward of MHWS and landward of MLWS) due to use of HDD. Activities associated with the HDD are not expected to cause disturbance to birds within the intertidal zone. This parameter refers to the potential for noise and visual disturbances to result from activities associated with HDD and the collective presence of people and machines on the coastline.
<b>Intertidal</b>	Visual or noise disturbances leading to displacement	Landfall construction compound (m <sup>2</sup> ): 100m x 75m (located inland from intertidal zone) Duration of works (start – finish) (months): 6 months	
<b>Piling to install WTG foundations</b>	<b>Migratory fish</b> (during offshore phase of lifecycle)	<b>Maximum spatial design scenario:</b> Monopile WTG foundations Up to 3 offshore converter substations Maximum hammer energy 4,400kJ 4 hour piling duration (24-hours) 2 monopiles per day (monopiles could be drilled concurrently 60 days piling.	<b>Maximum spatial design scenario</b> The maximum spatial design scenario equates to the greatest effect from subsea noise at any one-time during piling. Piling fewer WTG (75) 10m monopiles represents a greater
<b>Offshore</b>	Underwater noise resulting in mortality, injury, behavioural		

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
	changes, auditory masking	<p><b>Maximum temporal design scenario:</b>  116 WTG on piled jacket foundations (3-4 legs per jacket, 3-4 piles per jacket) – 464 pin piles  Up to 3 offshore converter substations (4-6 legs per jacket, up to 12 pins per jacket) – 36 pin piles.  Total of 500 pin piles in the array.  Maximum hammer energy 2,500kJ  4 pin piles per day (24-hours)  125 piling days</p> <p><b>Array and Interconnector Cable installation:</b>  Number of interconnector cables: 2  Total interconnector cable length: 50km  Total array cable length: 250km  Total duration of cable installation: 12 months (2 x 6 months)</p> <p><b>Export Cable Installation:</b>  Where possible, the export cables will be buried below the seabed through to landfall (1 to 1.5m burial depth)  Total length of export cable: 4x19km  Total duration of cable installation: 4 months.</p>	<p>spatial impact than a greater number (116) 10m monopiles.</p> <p><b>Maximum temporal design scenario</b>  The maximum temporal design scenario represents the longest duration of effects from subsea noise. This scenario assumes pin-pile foundations, which could result in a longer duration of piling per foundation.</p>

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
		<p><b>WTG Foundation Installation:</b>  3 installation vessels (60 return trips)  10 support vessels (60 return trips)  6 transport vessels (500 return trips)  6 crew transport vessels (500 return trips)</p> <p><b>WTG Installation:</b>  2 installation vessels (40 return trips)  10 support vessels (100 return trips)  10 crew transport vessels (1,200 return trips).</p> <p><b>Substation Installation:</b>  3 installation vessels (12 return trips)  20 support vessels (12 return trips)  6 transport vessels (12 return trips)  6 crew transfer vessels (60 return trips).  Inter-array and Interconnector Cable</p> <p><b>Installation:</b>  3 main cable laying vessels (12 return trips)  3 main burial vessels (6 return trips)  6 support vessels (300 return trips).</p> <p><b>Offshore Export Cable Installation:</b>  1 main laying vessel (6 return trips)  1 main cable joining vessel (6 return trips)  2 main cable burial vessels (6 return trips)  10 support vessels (60 return trips)</p>	

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
<b>Seabed preparations for foundation installation</b>  <b>Foundation installation</b>  <b>Export cable installation</b>  <b>Offshore</b>	<b>Benthic ecology, coastal habitats</b>  Degradation of habitats/communities due to deposition (smothering) of re-suspended sediments and/or release of sediment-bound contaminants  <b>Seabirds</b> (intertidal or offshore foraging)  Direct: Visual impairment during foraging due to SSC..  Indirect: Effects due to prey affected by habitat changes.	<b>Sandwave clearance</b> Total sandwave clearance volume in array area = $1,375,000\text{m}^2$ .  <b>WTG foundations</b> Spoil volume for all WTG foundations from drill arising (if drilling required due to pile driving refusal and assuming 10 m diameter 60 m embedment monopile): $4,000\text{m}^3 \times 116 \text{ monopiles} = 464,000\text{m}^3$ . Spoil volume for offshore substation foundations (jacket with pin piles foundations) from drilling arisings (if drilling required): $12,000\text{m}^3 \times 3 \text{ offshore substations} = 36,000\text{m}^3$ .  <b>Export cable installation</b> Burial spoil (jetting) = $155,000\text{m}^3$ . Spoil from temporary floatation pits = $275,000\text{m}^3$ . HDD bentonite drilling fluid loss = $450\text{m}^3$ .  <b>Interconnector cable installation</b> Burial spoil jetting = $100,000\text{m}^3$ <b>Array cable installation</b> Burial spoil (ploughing/mass flow excavation) = $500,000\text{m}^3$	The maximum adverse scenario for foundation installation results from largest volume suspended from seabed preparation (suction bucket jacket) or the largest volume suspended from potential drilling of foundations (monopiles) as these are mutually exclusive, both with the maximum number of foundations (116).  For cable installation, the maximum adverse scenario results from the greatest volume from sandwave clearance and installation. This also assumes the largest number of cables and the greatest burial depth.



Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
<b>Vessels operating within array and associated activities</b>  <b>Offshore</b>	<b>Offshore Ornithology</b> (foraging or commuting)  Direct disturbance and displacement from foraging due to unfamiliar stimulus (vessel activities)  Indirect: Effects due to degradation of supporting habitats due to invasives, pollution or direct interactions with seabed (e.g., anchoring)	Foundation installation Installation vessel – maximum number of vessels: 3 Installation vessel – maximum number of return trips: 120 Support vessels – maximum number of vessels: 10 Support vessels – maximum number of return trips: 160 Transport vessels – maximum number of vessels: 6 Transport vessels – maximum number of return trips: 560 Crew Transfer vessels – maximum number of vessels: 10 Crew Transfer vessels – maximum number of return trips: 1,200 Helicopters: maximum number of vessels: 2 Helicopters – maximum number of return trips: 500	<p>The greatest number of vessels and greatest total number of trips will lead to the greatest disturbance to ornithological receptors.</p> <p>As the risk of introduction of marine invasive and non-native species (MINNS) is via vessel fouling and vessels entering ports, the greatest number of vessels and greatest total number of trips will represent the best ‘worst-case’ for this effect.</p> <p>The greatest number of vessels operating within the array will lead to the greatest potential for seabed interactions.</p>
<b>Vessels operating within offshore cable corridor and associated activities</b>	<b>Offshore Ornithology</b> (foraging or commuting)  Disturbance and displacement from foraging due to	Length of offshore cable corridor, link to shore (km): 19km Width of offshore cable corridor, link to shore (km): 2km Main Laying vessels: Number: 1 Main laying vessels (return trips): 6	<p>The greatest number of vessels and greatest total number of trips will lead to the greatest disturbance to ornithological receptors.</p> <p>For more details on the vessels involved, see <a href="#">PEIR, Volume 2</a>,</p>

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
<b>Offshore</b>	<p>unfamiliar stimulus (vessel activities)</p> <p>Indirect: Effects due to degradation of supporting habitats due to invasives, pollution or direct interactions with seabed (e.g., anchoring)</p>	<p>Main jointing vessels: Number: 1 Main jointing vessels (return trips): 6 Main burial vessels: Number: 2 Main burial vessels (return trips): 6 Number of Multicat-type vessels (for excavating floatation pits and duct extensions): 4 Multicat-type vessels (return trips): 16 Number of Spoil barges (for floatation pits): 4 Spoil barges (return trips): 128 Support vessels: Number: 10 Support vessels (return trips): 60 Helicopter support (return trips): 0 Duration: 4 months</p>	<p><b>Chapter 4: The Proposed Development.</b></p> <p>As the risk of introduction of marine invasive and non-native species (MINNS) is via vessel fouling and vessels entering ports, the greatest number of vessels and greatest total number of trips will represent the best 'worst-case' for this effect.</p> <p>The greatest number of vessels operating within the array will lead to the greatest potential for seabed interactions and pollution.</p>
<p><b>Installation of onshore infrastructure</b> <b>Cable laying (trenching)</b> <b>Construction of substation</b></p> <p><b>Onshore</b></p>	<p><b>Terrestrial ecology</b> (wildfowl and waders, barbastelle bats)</p> <p>Habitat loss, fragmentation and disturbance due to land-take for onshore infrastructure and associated activities.</p>	<p>Closest assumed construction activity measured from PEIR Assessment Boundary</p> <p>Land take by habitat type based on worst case scenario accounting for cable route and substation location optionality</p> <p>Cable trenches excavated in sections prior to infilling. Length of each section is a maximum of 500m in any given location.</p>	<p>The greatest level of land take will result in the greatest levels of habitat loss, fragmentation and disturbance.</p>

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
<b>Operation and Maintenance</b>			
<b>Cable repairs</b> <b>Maintenance activities</b>  <b>Coastal habitats</b>	<b>Ornithology</b> (birds using coastal habitats)  Direct: Visual or noise disturbances leading to displacement Indirect: Effects on foraging due to degradation of supporting (intertidal) habitat due to invasives, pollution or direct interactions.	Operational lifetime: around 30 years Routine maintenance: minimal	The maximum amount of routine maintenance and repairs will lead to the greatest disturbance to key ornithological receptors. No works directly on land below MHWS are expected to occur. This parameter refers more generally to the potential for noise and visual disturbances, general operations associated with repairs or maintenance such as the presence of people and machines on the coastline
<b>Presence of WTG foundations</b>  <b>Presence of scour protection</b>  <b>Presence of cable protection</b>  <b>Offshore</b>	<b>Benthic ecology, coastal habitats</b>  Loss or degradation of habitat due to scour or wider effects on coastal process (waves, current, sediment transport regimes)	<b>WTG and substation foundations:</b> WTG footprint with scour protection (9,200m <sup>2</sup> per monopile), based on 75 WTG monopiles = 690,000m <sup>2</sup> . Offshore Substation footprint (jacket with pin pile foundation) with scour protection (8,800m <sup>2</sup> per jacket). Based on up to three offshore substations = 26,400m <sup>2</sup> .	This represents the MDS for the Proposed Development and therefore the maximum area of seabed lost as a result of the placement of structures, scour protection and cable protection. Habitat loss from drilling and drill arisings is of a smaller magnitude than presence of Rampion 2's infrastructure.

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
	Or invasive species that benefit from increased hard substrate	<b>Array and interconnector cables:</b> Maximum rock protection area for array cable crossing (10,000m <sup>2</sup> per crossing, four crossing expected) = 40,000m <sup>2</sup> . Maximum rock protection area for array cables (based on 20% of cable requiring protection) = 260,000m <sup>2</sup> . Maximum rock protection area for interconnector cables (based on 20% of cable requiring protection) = 40,000m <sup>2</sup> . Offshore Export Cable Corridor Protection: Maximum rock protection area for export cables = 61,000 m <sup>2</sup> Total Habitat Loss/Change: 1,117,400m <sup>2</sup>	
<b>The operation of WTG Offshore</b>	<b>Ornithology</b> (foraging, commuting, migrating)  Mortality or injury due to interaction with WTG (collision risk)	Number of WTGs: 116  Rotor diameter: 172m  Minimum height of lowest blade tip above LAT/HAT: 30/22 m	For collision risk, the worst-case scenario is the greatest number of smaller WTG. Although the total frontal area is higher using larger WTG, the vast majority of bird flights are at low heights e.g., for kittiwake 90.7% are below 25m ASL and 99.995% are below 100m ASL (Cook et al., 2012). Therefore, a greater number of smaller WTG creates a higher collision risk (Johnston et al., 2016).

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
<b>Maintenance vessels operating within array and associated activities</b>  <b>Offshore</b>	<b>Ornithology</b> (offshore foraging / commuting)  Direct: Visual or noise disturbances leading to displacement Indirect: Effects on foraging due to degradation of supporting seabed habitats (pollution, MINNIS, sediment)	Operational lifetime: around 30 years Helicopter total trips (per year): 60 Jack-up WTG visits (per year): 12 Jack-up platform visits (per year): 6 Jack-up total trips (per year): 18 Crew vessels wind WTG visits (per year): 1,095 Number of WTG 116 Rotor diameter: 172m Minimum height of lowest blade tip above LAT (m): 30 m	<p>The greatest number of vessels and greatest total number of trips will lead to the greatest disturbance to ornithological receptors. For more details on the vessels involved, see Chapter 4: Project Description.</p> <p>Most scheduled maintenance is expected to occur April – September. The greatest number of vessels operating within the array will lead to the greatest potential for seabed interactions and pollution.</p> <p>As the risk of introduction of marine invasive and non-native species (MINNS) is via vessel fouling and vessels entering ports, the greatest number of vessels and greatest total number of trips will represent the best ‘worst-case’ for this effect.</p>
<b>Maintenance vessels operating within offshore cable corridor and associated activities</b>	As above	Maximum number of remedial burial events – lifetime quantity: 18 Maximum length of cable subject to jetting remediation re-burial) per remedial burial event (m): 2,000	<p>The maximum amount of remedial work will lead to the greatest impact through disturbance.</p> <p>Also, the greatest potential for pollution, the introduction or spread</p>

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
<b>Offshore</b>			of MINNS and activities disturbing sediments.
<b>Routine system maintenance and repairs</b>	<b>Terrestrial ecology</b> (wildfowl and waders, barbastelle bats) Visual or noise disturbances leading to displacement	Operational lifetime: around 30 years Routine maintenance: minimal	The maximum amount of routine maintenance and repairs will lead to the greatest disturbance. Majority of activity located within substation compound.
<b>Onshore</b>			
<b>Decommissioning</b>			
<b>Removal of offshore structures</b>	As for construction phase (regarding seabed and visual/noise disturbances)	MDS is identical (or less) to that of construction phase.	See justification above.
<b>Offshore</b>			
<b>Removal of structures</b> <b>Underwater cutting</b>	As for construction phase (regarding underwatering noise)	Maximum levels of underwater noise during decommissioning will be from underwater cutting required to remove structures. This is much less than pile driving and therefore impacts will be less than as assessed during the construction phase/piled foundations will likely be cut approximately 1m below the seabed.	This will result in the maximum potential disturbance associated with noise associated with decommissioning activities including foundation decommissioning.
<b>Offshore</b>			

Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
<b>Activities to disconnect the transmission system</b>  <b>Coastal habitats</b>	As for construction phase (regarding visual/ noise disturbances and indirect effects)	Minimal	It is anticipated that the electrical cables passing through the landfall area will be left in-situ with ends cuts, sealed, and buried to minimise environmental effects associated with removal.
<b>Decommissioning vessels operating within array and associated activities</b>  <b>Offshore</b>	As for construction phase (regarding visual/ noise disturbances and indirect effects)	As per construction	<p>The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.</p> <p>The greatest number of vessels and greatest total number of trips will lead to the greatest disturbance to ornithological receptors and supporting environment.</p>
<b>Removal of offshore cables</b>  <b>Offshore</b>	As for construction phase (regarding visual/ noise disturbances, sediment dispersal and indirect effects)	As per construction	The MDS assumes all offshore cables will be removed, which will be a similar process to the construction process in reverse. This will therefore entail a similar amount of disturbance over a similar period of time.
<b>Removal of onshore (terrestrial) cables</b>	<b>Terrestrial ecology</b>	Minimal	It is anticipated that the electrical cables passing through the landfall

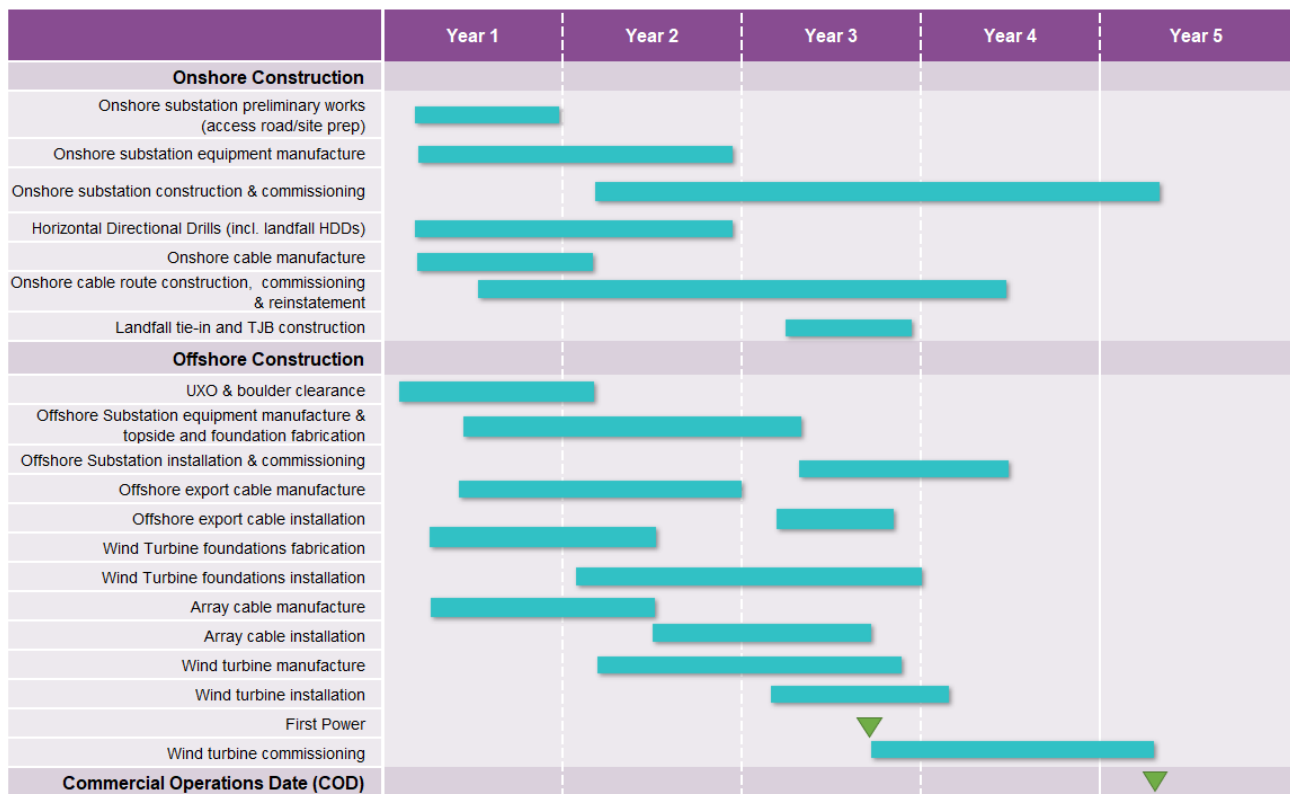


Relevant activity	Receptor group and relevant effect	Parameters for the worst-case scenario applied to the AAs	Justification
Onshore	(bats and wintering wildfowl/ waders)		area will be left in-situ with ends cuts, sealed and buried to minimise environmental effects associated with removal.

### 3.4 Construction programme

- 3.4.1 An indicative construction programme for the Proposed Development is presented in **Figure 3-2**.
- 3.4.2 The programme illustrates the anticipated duration of the major construction / installation elements. The anticipated maximum total construction duration is approximately four years.

Figure 3-2 Indicative construction programme



## 4. Consultation

### 4.1 The Evidence Plan Process

- 4.1.1 The Evidence Plan process is a formal mechanism to meet the recommendation for pre-application consultation (Advice Note Ten (PINS,2017) and agree the information the Applicant needs to supply to meet SNCB expectations. The Evidence Plan Process has been followed during the development of the draft RIAA and includes a number of relevant authorities and stakeholders, although not all provide comment directly on the HRA process. The Evidence Plan Process has been managed through a series of Expert Topic Group (ETG) meetings, which will be held until Application.

### 4.2 Consultation to date

- 4.2.1 The Applicant shared the Screening Report (RED, 2020a), together with supporting matrices, with consultees on 11 September 2020. The consultation period (initially 11 September 2020 to 09 October 2020) was extended to enable consultees additional time to consider and respond due to restrictions arising from measures put in place to protect individuals during the Covid-19 pandemic. The Screening Report (approach and conclusions) was also discussed with Natural England at an additional ETG meeting on 13 October 2020 and a further ETG on the 26 March 2021.
- 4.2.2 The following consultees provided written responses to the invitation to participate in the consultation:
- Arun District Council
  - Horsham District Council;
  - Natural England;
  - Sussex Ornithological Society (SOS).
  - Sussex Wildlife Trust (SWT);
  - The Wildlife Trusts (TWT);
  - West Sussex County Council (WSCC);
  - Whale and Dolphin Conservation;
- 4.2.3 No responses were received from the following during the consultation period, although a number have participated in later ETG meetings including the MMO, the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and the RSPB:
- The Planning Inspectorate;
  - The Marine Management Organisation;

- Royal Society for the Protection of Birds;
- The Environment Agency;
- East Sussex County Council;
- Sussex Inland Fisheries Conservation Authority;
- South Downs National Park;
- Adur District Council and Worthing;
- Brighton and Hove City Council;
- Lewes and Eastbourne Councils;
- Mid Sussex District Council
- hcs.co.uk;
- East Sussex County Council;
- Hampshire County Council;
- Isle of Wight Council;
- Chichester City Council; and
- Cefas (made aware by a third party as direct requests for consultation do not accord with the organisation's policies)

4.2.4 A complete record documenting all consultation responses received from the consultation on the Screening report in September 2020 (and the Applicants responses) are summarised in **Appendix A**. The key comments (those that most defined the updates made to Screening) are listed in **Table 4-1** (summary of consultation), together with subsequent consultation of relevance to the draft RIAA. The minutes from the Evidence Plan meeting of 26 March 2021 are now finalised and outputs from this meeting are captured in **Table 4-1**.

## 4.3 Transboundary consultation

4.3.1 The requirement for energy developments to consider transboundary effects (effects on European sites in other Member States) is established in the principles of the Habitats Directive. As per Advice Note Ten (PINS, 2017) (paragraph 2.1), prior to EU-Exit, the Applicant will be required to provide the necessary information with its DCO application to enable the SoS BEIS to consider such effects. As no LSEs were identified (see **Section 5.7**) with respect to marine mammals receptors within domestic or transboundary sites, this is not considered a pertinent consideration for this receptor group, with transboundary matters limited to potential impacts on foraging or migratory ornithological receptors.

4.3.2 The position post EU-Exit is not clear and does not appear to be explicitly addressed in government briefings regarding EU-Exit and HRA. The UK is

committed under the ‘Espoo Convention’<sup>17</sup> to preventing transboundary harm. Noting this and that “the obligations of the competent authority as set out in the Habitats Regulations (2017) do not change” [post EU-Exit] (Defra, 2021) the continuation of the expectation of transboundary consultation is assumed for developments likely to affect interest features in other European countries.

- 4.3.3 The Applicant has referenced DECC’s ‘*Guidelines on the assessment of transboundary impacts of energy developments on Natura 2000 sites outside the UK*’ (2015) that advise the Applicant to agree the format and extent of transboundary consultation with PINS. The Screening Report (RED, 2020a) addressed possible effects on transboundary sites. A full account of the Screening is provided in **Appendix B** and in the Screening matrices at **Appendix E**. Transboundary consultation received will be published on the PINS website.

### Transboundary Screening (PINS, 2021)

- 4.3.4 On 20 May 2021, the Applicant was advised<sup>18</sup> that a Transboundary Screening has been undertaken for Rampion 2 on behalf of the SoS BEIS under the (Environmental Impact Assessment) Regulations 2017 (PINS, 2021). The reported findings of the Transboundary Screening have been reviewed as to how they pertain to the HRA.
- 4.3.5 With reference to Rampion 2’s Scoping Report (PINS, 2020), PINS concluded that, in applying a precautionary approach, the Proposed Development **may potentially** have transboundary interactions (the magnitude of which has not been specifically identified) on the environment in Netherlands, Belgium, France, and Spain. These states have been notified, accordingly.
- 4.3.6 The potential for significant transboundary impacts is identified for the HRA-specific receptors below. PINS (2021) advises that these pathways are assessed further in the EIA and mitigation strategies considered.
- **Marine mammals:** underwater noise during offshore development. Impacts could extend to France, Belgium, the Netherlands, and Spain.
  - **Ornithological receptors:** collisions with WTG offshore. Impacts could extend to France, Belgium, the Netherlands, and Spain.
- 4.3.7 The information provided for Rampion 2’s HRA has addressed the above-mentioned receptors as follows:
- **Marine mammals:** On SNCB advice, the Inter-Agency Marine Mammal Working Group (IAMMWG) species Management Units (MU) together with any potential connectivity indicated by current research, were referenced to identify sites during Screening. Sites in France, Belgium,

<sup>17</sup> See <https://www.unece.org/env/eia/ratification.html>.

<sup>18</sup> Letter from PINS to RWE dated 20 May 2021 and Record of the transboundary screening undertaken by the PINS on behalf of the SoS BEIS.

the Netherlands, and Denmark were Screened<sup>19</sup>, but connectivity was not established to sites in Spain. LSEs were discounted for all sites on distance and low species densities in the Channel. With no site within 101km of Rampion 2, once effects are diluted over these ranges and apportionment to all SACs with that range, impacts would be of negligible magnitude and significance, alone and in-combination. These findings have not raised comment at consultation.

**Ornithological receptors:** On SNCB advice<sup>20</sup>, the application of Woodward (et al., 2019) breeding ranges plus one SD (a highly precautionary approach) and information on migratory routes were referenced to identify sites for Screening. Ten sites in France<sup>21</sup>, five sites in Ireland<sup>22</sup> and the Alderney West Coast and the Burhou Islands Ramsar in Guernsey were Screened. No sites were identified in Belgium, the Netherlands or Spain. Three French sites and the Ramsar in Guernsey were advanced to Stage Two (AA) but AEoI on those sites can be discounted on the information provided in this draft RIAA.

- On the robust and precautionary approaches applied to identify risks to HRA receptors, the HRA is satisfied there is either no connectivity or the potential only for *de minimis* interactions between Rampion 2 and European sites in the transboundary countries PINS has indicated (alone and in-combination), or any others. With no LSEs to Irish sites and France notified by PINS, there remains for the HRA. only a potential obligation with respect to notify Guernsey.

4.3.8 The following, additional findings were of note to the HRA:

- PINS found there would not be significant transboundary impacts associated with the onshore development (given the nature, scale and duration of potential effects and the relative distances between the onshore works);
- PINS did not identify any interests within the Natura Network that could be exposed to significant transboundary impacts regards Annex II fish.
- The Aquind Interconnector (AQI) is the only external project referenced to have the potential to act cumulatively (in-combination) with Rampion 2. Accordingly, AQI will be addressed in the in-combination assessments for the HRA (between **Section 8.2** and **Section 8.5**).

<sup>19</sup> see Section 6 of the Screening Report (RED, 2020a) 'Consideration of Likely Significant Effects'

<sup>20</sup> See **Appendix A, B, C** and **D**

<sup>21</sup> i) Littoral seino-marin SPA (**Matrix 14**) ii) Falaise du Bessin Occidental SPA (**Matrix 29**) iii) Chausey SPA (**Matrix 32**) iv) Cap d'Erquy-Cap Fréhel SPA (**Matrix 33**) v) Tregor Goëlo SPA (**Matrix 36**) vi) Côte de Granit Rose-Sept Iles SPA (**Matrix 40**) vii) **Matrix 44**: Ouessant-Molène SPA viii) Camaret SPA (**Matrix 45**) ix) Iles Houat-Hoëdic SPA (**Matrix 46**) x) Cap Sizun SPA (**Matrix 47**) (**Appendix E**)

<sup>22</sup> i) Deenish Island and Scariff Island SPA (**Matrix 57**)/ ii) Puffin Island SPA (**Matrix 59**) / iii) Skelligs SPA (**Matrix 60**)/ vi) Blasket Island SPA (**Matrix 61**) v) Cruagh Island SPA (**Matrix 62**) (**Appendix E**)

Table 4-1 Summary of key points from consultation on the HRA (September 2020 – March 2021)

Note: A full account of consultation undertaken regards the Screening Report (RED, 2020a) is provided at **Appendix A**

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
18/09/20	MMO Sussex Ornithological Society (SOS) TWT Cefas	Expert Topic Group Meeting  (online)	Offshore Ornithology, Marine Mammals and HRA	<p>Presentations outlining scope of assessments for ornithology and marine mammals. Methodologies, baseline data, datasets, modelling and data concerns. set out, followed by group discussions. For the HRA:</p> <p>Aim 1 – to agree principles of HRA Screening Report.</p> <p>Aim 2 – agree the appropriateness and sufficiency of the datasets to inform the baseline for HRA Screening.</p> <p>Applicant presented criteria used in the European site selection process and the parameters used to determine connectivity between sites. For cetaceans (Species Management Units (MU) and seals (ranges of 145km</p>	The HRA Screening Report was sent out for consultation (w/c 14/09/20) shortly before this meeting. Consultees are likely to require more time to digest the Screening and return with comments.



Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
				and 120km for grey and harbour seal). There were no questions about the screening parameters proposed for birds and marine mammal HRA Screening.	
13/10/20	Natural England RSBP Sea Mammal Research Unit	Expert Topic Group Meeting (online)	Offshore Ornithology, Marine Mammals and HRA	For breeding ornithological features, the standard deviation range should be applied to the foraging ranges (Woodward <i>et al.</i> , 2019) for the identification of European sites.	The standard deviation range has been considered in the revised Screening. This exercise has been undertaken for all breeding ornithological features listed in Woodward <i>et al.</i> , 2019. The update is reported in <b>Appendix D</b>
28/10/20	Natural England WSCC Environment Agency, SOS, South Downs National Park Authority (SDNPA), SWT RSPB	Expert Topic Group Meeting (online)	Terrestrial ecology and HRA	The survey programme was described and discussed to ensure sufficient baseline information was to be collected. The draft Sussex SAC bat protocol was agreed as applying.	The draft Sussex SAC bat protocol has been used to inform the HRA screening assessment.

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
	Ouse and Adur Rivers Trust				
09/10/20	Natural England	Letter by email	Benthic habitats	Due to the application of mitigation measures, Solent Maritime SAC, South Wight Maritime SAC and Isle of Wight Lagoons SAC- should be considered at Stage Two (AA) unless there is more information to clarify sediment dispersal, including during operational activities.	Sites considered at Stage Two (AA).
09/11/20	Natural England	Letter by email	Marine mammals	The HRA suggests there are low numbers of harbour seal present in the Solent. Whilst Natural England agree that there are relatively low numbers here compared to other areas, the numbers in the Solent are increasing annually and therefore Natural England would advise the Applicant looks for more recent data sources than Special	Noted. However, as reported in <b>Appendix B</b> (and summarised in <b>Appendix A</b> ), no LSEs were identified to SACs for harbour seal features based on the application of the provisional Seal Management Units (SCOS, 2016).

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
				Committee on Seals (SCOS, 2018).	
09/11/20	Natural England	Letter by email	Marine mammals	For grey seals and harbour seals, receptor ranges of 145km and 120km have been used respectively. Natural England would advise that Seal Management Units should be used	Screening has been revisited in line with the comment. The relevant Seal Management Unit (SMU) (South England – Unit 10) was applied to the site identification process (SCOS, 2016). This indicated that there are no SACs for either seal species that share the SMU with Rampion 2. Therefore, no sites for seals have been identified (or 'Screened') in the updated Screening. To align with comments made on the marine mammal EIA (Scoping Opinion, July 2020 (RED, 2020b), the HRA also considered connectivity to SACs within the adjacent SMU (MU 9 – South East England). No connectivity to SACs within that SMU (i.e., The Wash and North Norfolk SAC for harbour seals or the Humber Estuary

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
					SAC for grey seals) could be established.
09/10/20	Natural England	Letter by email	In-combination assessment	Expected Applicant to have identified a comprehensive list of projects based on information currently available. Natural England acknowledge that further information is likely to become available throughout the application process, however Natural England expect the Applicant to make all efforts to consider a comprehensive list of plans or projects with the potential to result in in-combination effects at this stage. It is unclear if the projects listed in Table 3.3 (of the Screening Report (RED,2020a) represent a comprehensive list and whether LSEs in-combination decisions have been made in this assessment have been	External plans and projects to include in-combination have been updated for the draft RIAA. The working assumption is that potential for LSEs alone requires consideration of potential for LSEs from effects in-combination (hereafter 'LSEI'). The potential for LSEI (where there is no LSEs alone) has also been addressed with 14 sites identified for inclusion in the Stage Two (AA).

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
				made taking into account all relevant projects.	
09/10/2020	Natural England	Letter by email	Migratory birds	If collision risk mortality has been ruled out for migratory birds, it is unclear why common and sandwich terns associated with the east coast SPAs have been included in the matrices.	Collision risk mortality has not been ruled out for migratory birds. Common and sandwich terns associated with east coast SPAs have been revisited as part of the Screening update, along with other ornithological receptors recorded at Rampion 2 array area during site specific surveys. These sites are included in the revised Screening (see <b>Appendix C</b> ).
09/10/2020	Natural England	Letter by email	Breeding birds non-breeding season	The matrices do not acknowledge the potential pathway for impact from collision to migratory waterbirds. It would be helpful if collision risk was added and the reasoning why it has been ruled out for waterbirds on migration.	Migratory non-seabirds have been re-considered (see <b>Appendix C</b> ). Migratory waterbirds which may have connectivity with Rampion 2 have be considered in the migratory non-seabirds HRA Screening update
09/10/2020	Natural England	Letter by email	In-combination assessment	Expected the Applicant to have identified a comprehensive list of	External plans and projects to include in-combination have been updated for the draft

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
				<p>projects based on the information currently available. Natural England acknowledge that further information is likely to become available throughout the application process, however Natural England expect the Applicant to make all efforts to consider a comprehensive list of plans or projects with the potential to result in in-combination effects.</p>	<p>RIAA. The working assumption is that potential for LSEs alone requires consideration of potential for LSEI.</p>
23/03/2021	Natural England, WSCC, the Environment Agency, SOS, SDNPA, Mid-Sussex District Council, RSPB, and Adur & Worthing District Council	Expert Topic Group Meeting (online)	Terrestrial ecology	<p>Winter bird survey results were discussed, including linkages from the Arun Valley SPA / Ramsar site to functionally linked land within and adjacent to the PEIR Assessment Boundary.</p> <p>Need for survey work for bats to focus on areas within 12km of The Mens SAC was raised.</p>	<p>Winter bird survey results are provided within <b>Sections 5.2</b> and <b>7.2</b>.</p> <p>Bat surveys focused on the areas within 12km of The Mens SAC are scheduled to take place during the spring/summer of 2021.</p>

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
26/03/2021	MMO Centre for Environment, Fisheries and Aquaculture Science (Cefas) Natural England RSPB SOS SWT and TWT APEM Ltd SMRU Consulting Subacoustech GoBe Wood Plc	Expert Topic Group Meeting  (Videoconference via Microsoft Teams)  <b>Titled: 'Ornithology, Marine Mammals and HRA (offshore)</b>	Updates and intended roadmap for 2021  Section 42 consultation: Sept 2021 ▪ Application: end of 2021	Update addressed Scoping Opinion, development of the PEIR (almost drafted) and the design process for the indicative Assessment Boundary. The refined offshore boundary and new cable route were presented, and consultation feedback summarised. Also, intentions for future consultations and a possible environmental enhancement (kelp restoration). Some PEIR survey data is not yet available.	No requirement for responses
26/03/20	As above: MMO Centre for Environment, Fisheries and Aquaculture Science (Cefas) Natural England RSPB	As above: Expert Topic Group Meeting  <b>Ornithology</b>	<b>Ornithology</b> presentation covering:  i) baseline	Survey updates; information gaps & initial trends presented. Analysis not yet complete (no estimated densities, corrections, or apportionment). Aerial (Feb 21) & intertidal (Mar 21) survey data will supplement ES Baseline Report.	Natural England is concerned about the use of preliminary data to make final conclusions.



Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
	SOS SWT and TWT		<b>Ornithology</b> ii) trends	<p>Relatively low numbers of most species (all gull spp. and prior to 2020, kittiwakes)</p> <p>Large numbers (locally) of Dark-bellied Brent goose, Mediterranean &amp; herring gull (offshore).</p> <p>Post-breeding migration of gannet, guillemot, razorbill may pass through.</p> <p>High numbers reported for Feb 2020 - unusually high auk numbers and kittiwake. Storm Ciara believed to have skewed data towards higher numbers.</p>	<p>Natural England advise not to exclude data believed to be influenced by the storm.</p> <p>SOS, Natural England expressed concern that the local kittiwake population (may winter in the Chanel) is not given due regard. The Applicant is unsure of the bearing on the HRA. Given the near-finalised status of PEIR it cannot now be included there. However, APEM will look to share some analyses (e.g., apportionment to colonies), with a view to addressing this in the ES.</p>
			<b>Ornithology</b> iii) approach to assessment	<p>Method Statement &amp; in-combination effects discussed.</p> <p>The current sample size is currently too small to provide site-specific flight heights.</p> <p>A displacement analysis will not be undertaken for Sandwich tern due to very</p>	<p>Parties agree operational OWFs are not part of the baseline</p> <p>Parties agree that changes to methodologies (flight heights) will be shared.</p>

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
				low abundance . For gannet, just the array area is proposed as the reference for displacement	
26/03/20			<b>Ornithology</b> iv) feedback	Consultation comments (as addressed by Screening updates) were explored. This is covered in more detail below.	LSEs identified to additional SPAs and Ramsar sites. For others, LSE is discounted. New pathways include Dungeness, Romney Marsh and Rye Bay SPA and Ramsar in the HRA as well as the Alderney West Coast and Burhou Islands Ramsar
26/03/20	As above: MMO Centre for Environment, Fisheries and Aquaculture Science (Cefas) Natural England RSPB SOS SWT and TWT	Expert Topic Group Meeting of March 26, 2021  <b>Marine Mammals</b>	<b>Marine mammals</b>  (seals)	As the HRA has not identified LSEs for any marine mammal sites, discussion was more for the benefit of EIA considerations	Baseline information and approaches to the EIA were presented in detail. The HRA will reference its conclusions against pertinent baseline information.
			<b>Marine mammals</b>  baseline, method statements	New potential data sources discussed (e.g., Natural Resources Wales research on behavioural responses to dredging, drilling & vessels). SMRU Consulting will compile both at sea usage	The JNCC (2021) has reported updated abundances for the cetacean MUs. The Applicant intends to use the old MUs for the PEIR

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
				and habitat preference maps but use only the latter.	
26/03/20	As above: MMO Centre for Environment, Fisheries and Aquaculture Science (Cefas) Natural England RSPB SOS SWT and TWT	As above:  Expert Topic Group Meeting of March 26, 2021  <b>HRA (offshore)</b>	<b>HRA (offshore)</b>  Consultation comments on HRA Screening	Presentation of process & outcomes of an updated Screening in response to stakeholder comments.  Substantial changes with most relate to seabirds. minor updates to terrestrial ecology, benthic.	Natural England was grateful for the breakdown of comments/responses and was pleased to note that a breakdown of the Screening and a summary table is provided, as it was what Natural England asked for
			<b>HRA (offshore)</b>  ETG materials  Updates to HRA Screening	Substantial detail was provided in ETG documents: i) 'Summary of Consultation' with the Applicant's answers to comments ii) 'Post-consultation Screening outcomes' – a full account of the revised Screening for every site  Two technical notes explain two notable updates and concern sites identification for:	The ETG materials provide an account of the substantial changes made in response to comments. To the Woodward (et al., 2019) mean max foraging ranges the Applicant has added 1 standard deviation, which extended those ranges and identified additional sites.  New LSEs are identified for migratory birds, to benthic habitat sites on the South coast

Date	Consultee	Type of contact	Topic	Key issues raised	Applicant response and section where addressed
				a) breeding seabirds and b) migratory non-seabirds.	
			<b>HRA (offshore)</b>  Other points HRA Screening	i) The Applicant clarified that following the updates, and on the application of the requested MUs, no LSEs are identified.  ii) RSPB sought clarification that the appropriate tern ranges are applied.  iii) A number of 'points for clarification' arose during the process and these were resolved.  iv) A revised Screening Report will not be issued. The RIAA will clarify Screening outcomes  v) WTW & Natural England believe the comments on benthic ecology impacts were more about EIA considerations.	Natural England will consider the detail of the ETG materials and the specific questions asked by the Applicant (to ensure due regard) in a written response, but on an uncertain timeframe.  The draft RIAA, will be issued for consultation at the end of Q2 2021 (with the PEIR).

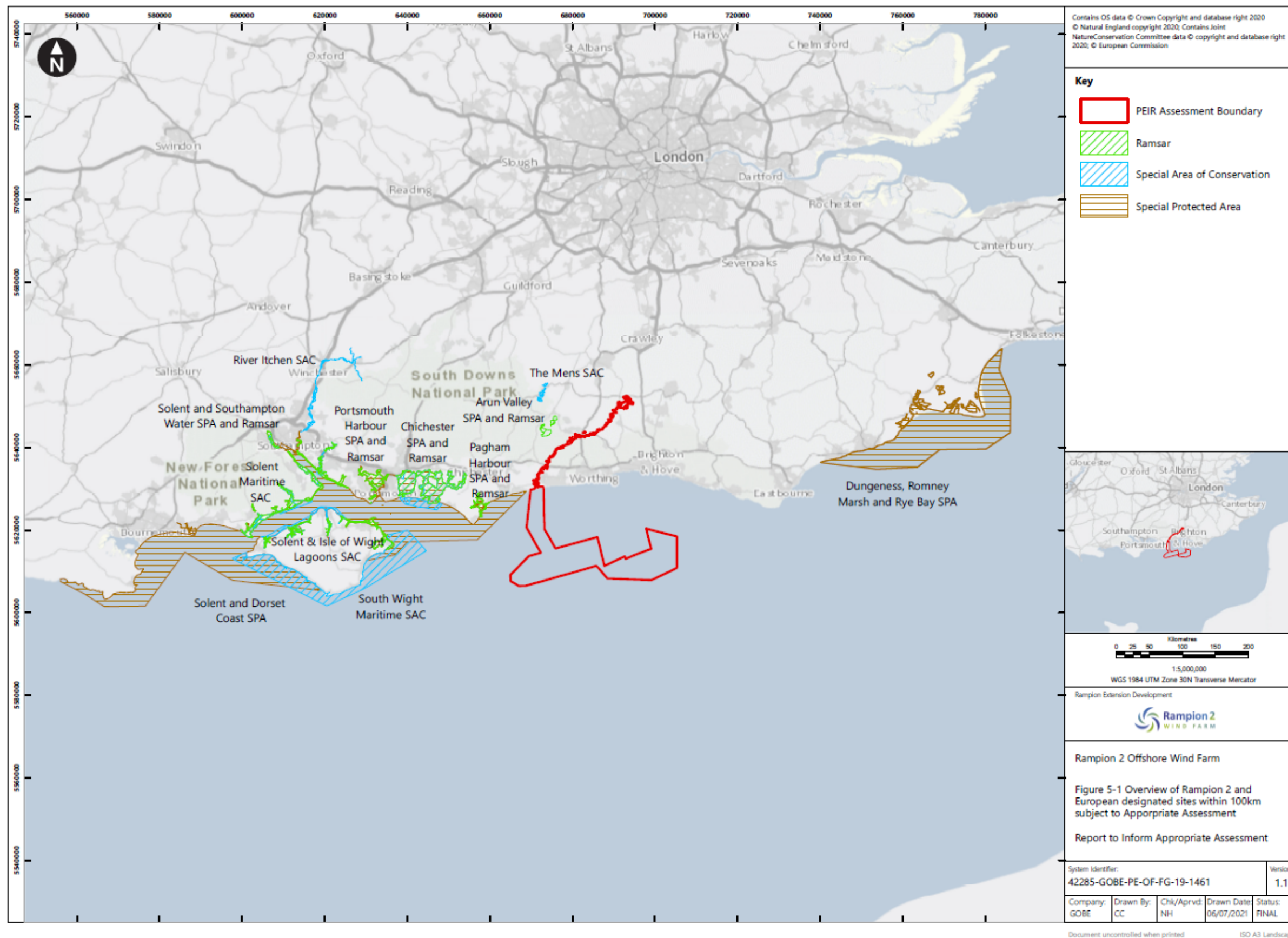
## 5. HRA Stage One Screening

### 5.1 Screening outcomes for the Proposed Development alone

#### Introduction

- 5.1.1 The potential for LSEs to result from Rampion 2 acting alone was identified at Screening to 22 European sites. LSEI could not be discounted with respect to a further 14 sites and 36 European sites require AA. European sites within 100km (and subject to Stage Two (AA)) are presented within **Figure 5.1**.

Figure 5-1 Rampion 2 and European sites within 100km that are subject to Stage Two (AA)



## 5.2 Terrestrial ecology (including wildfowl and waders) (effects alone)

- 5.2.1 The Applicant's Screening Report (RED, 2020a) identified seven European sites for consideration within the Screening exercise, as follows.
- Arun Valley (UK) Ramsar;
  - Arun Valley (UK) SPA;
  - The Mens (UK) SAC;
  - Pagham Harbour (UK) Ramsar;
  - Pagham Harbour (UK) SPA;
  - Arun Valley (UK) SAC; and
  - Duncton to Bignor Escarpment SAC.
- 5.2.2 Of these seven sites, LSEs both alone and /or in-combination with external plans or projects were identified for three, these being the Arun Valley Ramsar site, Arun Valley SPA and The Mens SAC. Following consultation, a further two European sites supporting designated features that may occur above Mean High Water Springs (MHWS) have been included within the assessment, namely Portsmouth Harbour Ramsar site and SPA.
- 5.2.3 Following the publication of the Applicant's Screening Report (RED, 2020a), the EIA Scoping Opinion (PINS, 2020a) and consultation responses (as detailed in **Table 4-1**) have enabled further clarity to be drawn within the Screening process. Firstly, for reasons of clarity an LSEs of land take / land cover change for functionally linked land has been included. Previously this was included within the LSEs covering fragmentation of habitat.
- 5.2.4 Secondly, the emissions associated with construction and operational traffic and site plant both alone and in-combination have now been discounted for all European sites alone and in-combination. This is based both on the location of the European sites identified in relation to the Proposed Development and the temporary (when considering the construction and decommissioning phases) and relatively low levels of road traffic predicted. This was confirmed within the EIA Scoping Opinion (PINS, 2020a) when specifically addressing European sites.
- 5.2.5 Lastly, it was also agreed that the potential for effects on dark-bellied brent geese associated with the Pagham Harbour Ramsar site and SPA could be screened out for all potential terrestrially based effects based on the geographical separation between these European sites and the Proposed Development (in excess of 10km). However, Pagham Harbour Ramsar site and SPA and Portsmouth Harbour Ramsar site and SPA are now included with regards the potential for birds to collide with WTG whilst on migration following consultation. The Arun Valley Ramsar site and SPA are not considered with regards to collision risk as the typical patterns of movement to and from these designated sites will not take birds across the WTG



- 5.2.6 LSEs due to changes in hydrology on functionally linked land associated with cable landfall and cable installation were concluded for the Arun Valley Ramsar site and SPA and The Mens SAC within the Applicant's Screening Report (RED 2020a). However, following the release of that document, further assessment of the effects on the water environment has been provided within the PEIR (RED, 2021). This demonstrates that the potential for degradation of habitats sensitive to changes in groundwater (e.g., from water extraction from cable trench excavations) is negligible. This includes consideration of areas of adjacent habitat known to be functionally linked to the Arun Valley Ramsar site and SPA, namely the Arun Valley: Arundel to Watersfield Local Wildlife Site. Therefore, changes of hydrology are now screened out of consideration at Stage Two (AA).
- 5.2.7 A full account of HRA Screening is available at **Appendix B** which identifies the outcomes for all sites considered, post-consultation updates and the potential for LSEs. Where the potential for LSEs has been identified, this is noted in **Table 5-1**.
- 5.2.8 Screening Matrices for all sites are provided at **Appendix E**.

### 5.3 Migratory fish (effects alone)

- 5.3.1 Two European sites designated for migratory fish species were considered at Screening:
- River Itchen (UK) SAC.
  - Littoral Cauchois (FR) SAC.
- 5.3.2 Only the River Itchen SAC, designated for Atlantic salmon, was advanced to Stage Two (AA). These are the same sites identified in the Screening Report (RED, 2020a) and no updates have been made to the Screening for migratory fish. A full account of HRA Screening is available at **Appendix B** which identifies, the outcomes for all sites considered, post-consultation updates and the potential for LSEs. Where the potential for LSEs has been identified, this is noted in **Table 5-1**.
- 5.3.3 Screening Matrices for all sites are provided at **Appendix E**.

### 5.4 Marine mammals (effects alone)

#### Pinnipeds

- 5.4.1 Following consultation on the Applicant's Screening Report (RED, 2020a), the Screening was revisited with respect to grey seals and harbour seals (see **Appendix A**). The Applicant has applied the relevant provisional SMU (South England – unit 10) provided by the Special Committee on Seals (SCOS) (SCOS, 2016<sup>23</sup>). This indicated that there are no SACs for either seal species that share the management unit with Rampion 2. Consequently,

<sup>23</sup> <http://www.smru.st-andrews.ac.uk/files/2017/04/SCOS-2016.pdf>



no sites were identified for either seal species for Screening and the conclusion remained that there was no potential for LSEs.

- 5.4.2 To align with comments made on the marine mammal EIA (Scoping Opinion, PINS, 2020a), the HRA also considered connectivity to SACs within the adjacent SMU (MU 9 – South East England) (SCOS, 2016). No connectivity to SACs within that MU (i.e., The Wash and North Norfolk SAC for harbour seals or the Humber Estuary SAC for grey seals) could be established. Therefore, no sites are identified for Stage Two (AA).
- 5.4.3 A full account of HRA Screening is available at **Appendix B** which identifies, the outcomes for all sites considered, post-consultation updates and the potential for LSEs.
- 5.4.4 Screening matrices for all sites are provided at **Appendix E**.

## Cetaceans

- 5.4.5 For cetaceans, Species Management Units (SMU) defined the spatial extent over which effects were considered (Inter-Agency Marine Mammal Working Group (IAMMWG, 2015)). The Screening accordingly considered all (24) SACs designated for harbour porpoise within the North Sea SMU and all SACs (15) designated for bottlenose dolphin within the Offshore Channel, Celtic Sea and South West England SMU. This includes sites in France, the Netherlands and Denmark.
- 5.4.6 The potential for LSEs was discounted at Screening and no sites were progressed to Stage Two (AA). Natural England has confirmed<sup>24</sup> with respect to the closest SAC to Rampion 2 for harbour porpoise (The Southern North Sea SAC), that, given the distance of the site from the array (>127km), it is satisfied with the decision to discount LSEs for this site. No comments were made as to the findings of no LSEs to bottlenose dolphin SACs, or other SACs designated for harbour porpoise other than to support the method applied to identify sites for consideration at Stage One Screening.
- 5.4.7 A full account of HRA Screening is available at **Appendix B** which identifies, the outcomes for all sites considered, post-consultation updates and the potential for LSEs.
- 5.4.8 Screening Matrices for all sites are provided at **Appendix E**.

## 5.5 Benthic habitats and communities (effects alone)

- 5.5.1 Three European sites explicitly designated for Annex I habitat features were considered at Screening, and all were advanced to Stage Two (AA). These are as follows:
  - Solent Maritime (UK) SAC;

<sup>24</sup> Letter dated 09 October 2020. Natural England to RWE provided under the Discretionary Advice Service in response to RWE's Habitat Regulations Assessment (HRA) Report to Inform Screening (RED, 2020a)

- Solent and Isle of Wight lagoons SAC (UK); and
- South Wight Maritime (UK) SAC.

- 5.5.2 These sites were initially identified for inclusion in the Screening on the basis of a highly precautionary 30 km range (as the maximum potential range for sediment dispersal in the absence of supporting information at that time). As the maximum extent of effects is, on current information, not predicted to extend further than 10 km buffer around the offshore cable corridor or 15 km buffer around the array, no potential impact pathway was identified in the EIA or therefore, explicitly addressed in the **PEIR, Volume 2, Chapter 9: Benthic subtidal and intertidal ecology**.
- 5.5.3 All three SACs are, however, still advanced to Stage Two (AA) for the HRA (and considered in **Section 7.4**). The SACs are addressed in the draft RIAA following advice at consultation (see Appendix A) and with reference to mitigation (commitments) applied (irrespective of the presence of these European sites) which will reduce seabed disturbance (and thereby potential effects related to sediment suspension) and risks related to Marine Invasive and Non-Native Species (MINNS) and pollution. Since the Screening and in response to comments received on the Screening Report (see **Table 4.1** the potential for LSEs have now been identified for additional pathways to these three sites during Operation and Maintenance.
- 5.5.4 A full account of HRA Screening is available at **Appendix B** which identifies, the outcomes for all sites considered, post-consultation updates and the potential for LSEs. A summary of sites potentially at risk of LSEs is provided in **Table 5-1**.
- 5.5.5 Screening matrices for all sites are provided at **Appendix E**.

## 5.6 Offshore ornithology (effects alone)

- 5.6.1 Consultation responses identified two key points in relation to Screening European sites for breeding seabirds and migratory non-seabirds. Additional information on the approach taken in response is provided in **Appendices C and D**. The consequent updates to the Screening methodology resulted in a number of additional SPAs and Ramsar sites being brought into the draft RIAA.
- 5.6.2 Since Screening, the pathway to effects for a number of cited features of designated sites have been updated also. This includes removal of potential collision risk to Bewick's swan and migratory waterbirds from the Arun Valley SPA, as their migratory flight paths do not cross over the Rampion 2 array area (Wright et al, 2012)<sup>25</sup>.
- 5.6.3 Further updates included the removal of potential pathways to gannet (for collision risk of displacement) during the breeding season from breeding colonies outside of the English Channel (e.g., with respect to Grassholm SPA

<sup>25</sup> BTO Research Report No. 592. Assessing the risk of offshore wind farm development to migratory birds designated as features of UK Special Protection Areas. **See hyperlink.**

and Flamborough & Filey Coast SPA, as evidence suggests birds do not realistically reach the English Channel, and therefore the Rampion 2 array area, during the breeding season (Wright et al, 2013).

- 5.6.4 The potential for effects on prey species from construction activities to impact tern species from south coast SPAs has also been discounted (i.e., with respect to the common tern features of Pagham Harbour SPA and Solent and Dorset SPA). This latter potential pathway was removed on the basis no tern species were recorded foraging within the Rampion 2 array area during site-specific surveys during the breeding season (as reported in the Ornithological Baseline Report). In addition, any potential for this pathway from cable laying activities within nearshore waters surrounding a cable laying vessel is considered to be so minimal to be undetectable during the restricted temporal and spatial period this may occur and therefore, no pathway to effects either alone or in-combination are considered.
- 5.6.5 89 European sites were considered at Screening for breeding seabirds and migratory non-seabirds, of which, 24 sites were advanced to Stage Two (AA). It would not be practicable to list those sites here; a full account of the HRA Screening conclusions is available at **Appendix B**, which identifies, the outcomes for all sites considered during Screening, post-consultation updates and the potential for LSEs. A summary of sites potentially at risk of LSEs is provided in **Table 5-1**.
- 5.6.6 Screening matrices for all sites are provided at **Appendix E**.

## 5.7 Screening outcomes for Rampion 2 in-combination

- 5.7.1 In addition to the Screening process for the Proposed Development (alone), the Habitats Regulations also require consideration of the effects of the Proposed Development in-combination with other plans or projects (hereafter “external projects”), where these are not directly connected with or necessary for the management of the designated site.
- 5.7.2 The working assumption applied here is that where the potential for LSEs has been identified alone, the potential for LSEs in-combination requires consideration. It is also acknowledged that potential remains for a trivial effect alone (insufficient to result in a conclusion of potential LSEs) may be deemed sufficient to contribute to potential LSEs in-combination.
- 5.7.3 The amalgamation of trivial (or non-significant effects alone) that have the potential to result in a LSEs in-combination with external projects are hereafter referred to as LSEI (Likely Significant Effects In-combination). The potential for LSEI to arise via the identified effect pathways has been identified to 14 sites in the Screening matrices at **Appendix E** for the Operation and Maintenance phase of the Proposed Development. As summarised in **Table 5-1**.
- 5.7.4 A summary discussion on the potential for LSEI is also provided for each receptor group addressed in the draft RIAA in the sections below.
- 5.7.5 The consideration of LSEI draws on the Cumulative Effects Assessment (CEA) undertaken for PEIR. The detailed method followed in identifying and

assessing potential cumulative effects in relation to the offshore environment is set out in **PEIR Volume 2, Chapter 5: Approach to the EIA**. The short list of 'other developments' (external projects") that may interact with the Rampion 2 Zones of Influence (ZOI) during their construction, Operation and Maintenance or decommissioning' is presented in **PEIR, Volume 4, Appendix 5.4: Cumulative effects assessment shortlisted developments**.

- 5.7.6 A tiering structure has been used in the Screening process and assessment of other developments in accordance with PINS Advice Note Seventeen<sup>26</sup> (see **PEIR, Volume 2, Chapter 5**). The tiers describe the level of detail likely to be available for the cumulative effects assessment.

## 5.8 Terrestrial ecology (including wildfowl and waders) (effects In-combination)

- 5.8.1 LSEs for the Proposed Development alone for the Arun Valley Ramsar site, Arun Valley SPA and The Mens SAC associated with land take / land cover change, fragmentation of habitats and disturbance have the potential to be greater when considered in-combination with the A27 Arundel By-pass project. The A27 Arundel by-pass is within the Arun Valley, in areas where mobile species listed on the designations have been identified through desk study and field survey.
- 5.8.2 In accordance with the methodology, where the potential for LSEs alone is identified it is assumed that LSEI could result. Consideration for the potential for AEol to result from effects acting in-combination is therefore provided in **Section 8.2**. No other in-combination dynamics are identified for this receptor group.

## 5.9 Migratory fish (effects In-combination)

- 5.9.1 There are two European sites for which the estuary connecting the SAC to the marine environment is within 100km of Rampion 2. Both of these sites were considered at Screening. LSEs alone were discounted to Littoral Cauchois (France (FR)) SAC which is located 97km from the Proposed Development) on the basis of weak connectivity. Given the dissipation of potential effects over distance (and weak connectivity), there is considered to be no potential for the Proposed Development to contribute to measurable in-combination effects to Littoral Cauchois SAC.
- 5.9.2 AQUIND Interconnector (AQI) is a proposed sub-sea power transmission link between France and Portsmouth. PINS (2021) indicated AQI for potential cumulative interactions with Rampion during its transboundary Screening, The 'Indicative worst-case construction programme' for AQI is for a 2024 (Q2) end-date, with cable-related works ending 2023 (Q3) (AQUIND, 2019).

<sup>26</sup> The Planning Inspectorate. August 2019. Advice note seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects. Version 2

As construction for Rampion 2 would not begin until 2025/26<sup>27</sup>, temporal overlap with AQI's construction phase is unlikely. In any case, the HRA of AQI found (as the site was 53km distant from the ZOIs), that standard mitigation would reduce effects to negligible levels (AQUIND, 2019). Therefore, there are no in-combination concerns for this dynamic in any case.

- 5.9.3 Therefore, the only potential for in-combination effects is considered to be limited to the potential impact of underwater noise doing construction for salmon migrating to or from the River Itchen SAC. As the potential for LSEs is identified alone, it is assumed that LSEI could result. The potential for AEol from effects acting in-combination is therefore provided in **Section 8.3**. No other in-combination issues are identified for this receptor group.
- 5.9.4 For the impact of underwater noise, a search area of 100km was used to identify external projects for the CEA, which are discussed in **Section 8.3**. The following types of external development are considered to have the potential to result in effects on migratory fish:
- sub-sea cables, interconnectors, and pipeline (installation);
  - aggregate production areas;
  - tidal energy; and
  - OWF (during construction).

## 5.10 Marine mammals (effects In-combination)

- 5.10.1 All SACs considered for marine mammals (including transboundary sites) are at least 101km from the Proposed Development. Most SACs within the relevant MUs are considerably more distant. It was established for the assessment of the Proposed Development acting alone that connectivity between Rampion 2's direct ZOIs and the SACs considered was possible, but the pathways to effect are extremely weak in view of the low species densities in the English Channel. The evidence supporting the lack of connectivity between SACs designated for marine mammals and the Proposed Development is set out in **PEIR Volume 2, Chapter 11: Marine mammals**.
- 5.10.2 For all potential pathways to effect, the severity of the effect experienced locally is considered to be low to negligible. Measurable effects will not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC populations have been diluted over distance. It is determined that over the relevant scales, the contribution of Rampion 2 to impacts would be small to the extent impacts will not likely amount to a measurable contribution to significant effects in-combination with external plans or projects.
- 5.10.3 For AQI, LSEs were identified for numerous cetaceans and pinnipeds sites across the wider Channel (UK and France) concerning contaminants

<sup>27</sup> See: <https://www.offshorewind.biz/2021/01/15/rampion-2-team-starts-informal-consultation/>

released from sediments and/or spills (AQUIND, 2019). AQI is distinguished from Rampion 2, however, in the significantly broader spatial range of the works (French coast to England south coast) and larger magnitude and duration of works that cause seabed disturbance. Therefore, the likely proximity of works to SACs, the uncertainty about the levels of contaminants in the sediments and the significance of effects would be less for Rampion 2 than for AQI. Any contribution from Rampion 2 would be so small as to not make a material contribution to any in-combination dynamic. No LSEI are therefore identified for this dynamic, or the receptor group.

## 5.11 Benthic habitats and communities (effects In-combination)

5.11.1 For benthic subtidal and intertidal ecology, the potential for cumulative effects and therefore the search area for external projects for inclusion in the CEA was limited to the potential dispersal range of suspended sediment. As above, this search area extends 15km around the array and 10km surrounding the offshore cable corridor. The following type of external project made the short list if located within this area:

- sub-sea cables and pipelines (telecom and power cables);
- aggregate production areas and;
- OWF

5.11.2 Following consultation, the potential for LSEs has been identified for the three European sites designated for benthic features that are closest to the Proposed Development (but beyond the 15km buffer defined to capture the greatest potential range of effects). As the potential for LSEs is identified alone, it is assumed that LSEI could result. The potential for AEol are therefore considered for these sites in **Section 8.4**.

5.11.3 If, at the conclusion of the alone assessments, it was determined that the Proposed Development could result in a detectable measure of change (i.e., above natural variation), the potential for an AEol in-combination was considered. This was with reference to the external projects identified within the CEA search area<sup>28</sup>, with further regard given to the potential for external projects to consecutively, or concurrently affect the European sites under consideration.

## 5.12 Offshore ornithology (effects In-combination)

5.12.1 There is potential for cumulative impacts to birds as a result of construction, operational and decommissioning activities associated with Rampion 2 in-combination with external projects. For the purpose of this draft RIAA such cumulative impacts are defined as in-combination impacts. Potential in-combination collision risk with WTGs and associated infrastructure from

<sup>28</sup> See **Appendix 5.4: Cumulative effects assessment shortlisted developments, Volume 4**



OWFs could result in injury or fatality. This may occur when birds fly through multiple OWFs whilst foraging for food, commuting between breeding sites and foraging areas, or during migration.

- 5.12.2 A further in-combination risk from Rampion 2 and external projects may be to species that are sensitive to the presence of activities associated with the construction, operation and decommissioning of WTGs, such that they may suffer mortality as a consequence of being displaced from multiple OWF site areas and buffers surrounding them. The only external projects identified for this draft RIAA are those defined as being within Tier 1 and Tier 2.
- 5.12.3 The approach taken to assessing collision risk and displacement mortality from Rampion 2 in-combination with external projects is a quantitative one, drawing upon the published information produced by the respective project developers and / or as agreed as appropriate with SNCBs for historic projects that may not have quantified such risk. Such published, quantitative information on predicted mortality rates is not available at an early stage in the development of external projects e.g., an external project in Tier 3. The result is that the collision risk and displacement assessments for Rampion 2 in-combination with external projects therefore addresses external projects in Tiers 1 and 2, but not Tier 3 or below, for which no quantitative data are available.
- 5.12.4 The process taken for this draft RIAA in assessing cited features from designated sites identified for potential LSEI (but not for LSEs alone) considers the relative risk for LSEs alone first ahead of any potential contribution to LSEI. If the potential for LSEs was identified to a cited feature from designated sites with respect to Rampion 2 acting alone, the potential for LSEI is assumed (and assessed).
- 5.12.5 The foundation of the assessment of AEol in-combination is the contribution made by the Proposed Development to the collective impact. Accordingly, the approach has assessed the nature of the effect acting alone for each cited feature from designated sites (see alone assessments in **Section 7.5**), even where only the potential for LSEI is identified.
- 5.12.6 Where a measurable effect (i.e., an effect that is detectable above baseline mortality) is identified in the course of the alone assessment, the cited feature from such a designated site is considered with respect to in-combination effects in **Section 8.5**.
- 5.12.7 However, where, on further scrutiny, there was found to be no pathway to effect, or no detectable measure of change, it is considered there is no potential for an no AEol in-combination. Accordingly, in such cases, the site has not been assessed in **Section 8.5**.

5.13 Summary of Screening conclusions

Table 5-1 European sites (and relevant pathways) for which LSEs/LSEI could not be discounted and Stage Two (AA) is required.

No	Designated site	Distance to (km)			Relevant feature(s)* (NB - Non-breeding B - Breeding M - [on] Migration)	Phase of the Proposed Development # Indicates pathway for which LSE alone is discounted but LSEI could result		
		Array	ON	OFF		Only European site features to which an effect pathway has been identified (relevant features) are listed	Construction	Operation & maintenance
Terrestrial ecology (including wildfowl and waders) (NB - Non-breeding B - Breeding M - [on] Migration)								
1	Arun Valley Ramsar	26.8	2.8	12.2	Northern pintail	Land take / land cover change (functionally linked land) Noise and vibration Fragmentation of habitats	No LSEs	Land take / land cover change (functionally linked land) Noise and vibration Fragmentation of habitats
					Assemblage of wintering waterfowl	Land take / land cover change (functionally linked land) Noise and vibration Fragmentation of habitats	No LSEs	Land take / land cover change (functionally linked land) Noise and vibration Fragmentation of habitats
2	Arun Valley SPA	26.8	2.8	12.2	Bewick's swan	Land take / land cover change (functionally linked land) Noise and vibration Fragmentation of habitats	No LSEs	Land take / land cover change (functionally linked land) Noise and vibration Fragmentation of habitats
					Non-breeding waterfowl assemblage	Land take / land cover change (functionally linked land) Noise and vibration Fragmentation of habitats	No LSEs	Land take / land cover change (functionally linked land) Noise and vibration Fragmentation of habitats
3	Pagham Harbour SPA	15.3	9.2	9.2	Dark-bellied brent goose	No LSEs.	Collison risk on migration (NB)	No LSEs.
					Common tern	No LSEs	Collision during breeding season	No LSEs
					Ruff	No LSEs.	Collison risk on migration (NB)	No LSEs.



No	Designated site	Distance to (km)			Relevant feature(s)* (NB - Non-breeding B - Breeding M - [on] Migration)	Phase of the Proposed Development # Indicates pathway for which LSE alone is discounted but LSEI could result		
		Array	ON	OFF		Only European site features to which an effect pathway has been identified (relevant features) are listed	Construction	Operation & maintenance
4	Pagham Harbour Ramsar	15.3	9.2	9.2	Dark-bellied brent goose	No LSEs.	Collison risk on migration (NB)	No LSEs.
5	Portsmouth Harbour SPA	36.1	34.1	34.1	Dark-bellied brent goose Black-tailed godwit Dunlin Red-breasted merganser	No LSEs	Collison risk on migration (NB)	No LSEs
6	Portsmouth Harbour Ramsar	36.1	34.1	34.1	Dark-bellied brent goose	No LSEs	Collison risk on migration (NB)	No LSEs
Bats								
7	The Mens SAC	35.2	11.0	20.7	Barbastelle bat	Land take / land cover change (functionally linked land) Habitat fragmentation Increased light levels	Potential for LSEI only #	Land take / land cover change (functionally linked land) Habitat fragmentation Increased light levels
Migratory fish								
8	River Itchen SAC	50.5km to the mouth of Southampton Water.			Atlantic Salmon	Underwater noise	No LSEs.	Underwater noise
Marine mammals – no sites identified for potential LSEs								
Benthic habitats and communities								
9	Solent Maritime SAC	15.7	NA	22.0	Estuaries, Spartina swards, Atlantic salt meadows, Sandbanks slightly covered by sea water all the time, Mudflats & sandflats not covered by seawater, Coastal lagoons, Salicornia & other annuals colonizing mud/ sand	Suspended sediment/ deposition INNS Pollution	MINNS Physical processes Suspended sediment/ deposition Pollution	Suspended sediment/ deposition MINNS Pollution
10	South Wight Maritime SAC	20.4	NA	23.3	Reefs Submerged or partially submerged sea caves	Suspended sediment/ deposition MINNS Pollution	MINNS Physical processes Suspended sediment/ deposition Pollution	Suspended sediment/ deposition MINNS Pollution
11	Solent & Isle of Wight lagoons SAC	30.6	NA	31.1	Coastal lagoons	Suspended sediment/ deposition MINNS Pollution	MINNS Physical processes Suspended sediment/ deposition Pollution	Suspended sediment/ deposition MINNS Pollution

No	Designated site	Distance to (km)			Relevant feature(s)* (NB - Non-breeding B - Breeding M - [on] Migration)  Only European site features to which an effect pathway has been identified (relevant features) are listed	Phase of the Proposed Development # Indicates pathway for which LSE alone is discounted but LSEI could result		
		Array	ON	OFF		Construction	Operation & maintenance	Decommissioning
Offshore ornithology								
12	Dungeness, Romney Marsh & Rye Bay SPA	36.1	67.4	46.4	Common tern	No LSEs	Collison risk on migration (NB)	No LSEs
					Sandwich tern	Disturbance/displacement	Collison risk on migration (NB) Collision during breeding season Disturbance/displacement	Disturbance/displacement
13	Solent and Dorset Coast SPA	13	0.63	0.63	Common tern Little tern Sandwich tern	Disturbance/displacement	No LSEs	Disturbance/displacement
					Sandwich tern	See above	Disturbance/displacement	See above
14	Chichester and Langstone Harbours SPA	22.3	15.7	15.7	Sandwich tern	No LSEs	Collision during breeding season Barrier effect Disturbance/displacement	No LSEs
					Common tern	No LSEs	Collision during breeding season	No LSEs
					Bar-tailed godwit Curlew Dark-bellied B goose Dunlin Grey plover Pintail Red-b. merganser Redshank Ringed plover Sanderling Shelduck Shoveler Teal Turnstone Wigeon Waterbird assemblage	No LSEs	Collison risk on migration	No LSEs

No	Designated site	Distance to (km)			Relevant feature(s)* (NB - Non-breeding B - Breeding M - [on] Migration)  Only European site features to which an effect pathway has been identified (relevant features) are listed	Phase of the Proposed Development # Indicates pathway for which LSE alone is discounted but LSEI could result		
		Array	ON	OFF		Construction	Operation & maintenance	Decommissioning
15	Chichester & Langstone Harbours Ramsar	22.2	15.6	15.6	Ringed plover Black-tailed godwit Redshank Dark-bellied Brent goose Shelduck Grey plover Dunlin Waterbird assemblage	No LSEs	Collision risk on migration	No LSEs
	Solent and Southampton Water SPA	28.4	31.3	35.2	Sandwich tern	No LSEs	Collision during breeding season Barrier effect Disturbance/displacement	No LSEs
16					Black-tailed godwit Dark-bellied brent goose Ringed plover Teal Waterbird assemblage	No LSEs	Collision risk on migration	No LSEs
	Solent and Southampton Water Ramsar	28.4	31.3	35.2	Ringed plover Dark-bellied brent goose Teal Black-tailed godwit Waterbird assemblage	No LSEs	Collision risk on migration	No LSEs
17	Medway Estuary & Marshes SPA	91.5	71.2	102.2	Common tern	No LSEs	Collision risk on migration (NB)	No LSEs
18	Littoral seino-marin (FR) SPA	72.2	109.2	95.0	Lesser black-backed gull Kittiwake	No LSEs	Collision during breeding season	No LSEs
19	Foulness (Mid-Essex Coast Phase 5 SPA	109.9	90.7	121.7	Sandwich tern # Common tern #	No LSEs	Collision risk on migration (NB)	No LSEs
20	Falaise du Bessin Occidental SPA	132.6	155.8	139.7	Kittiwake	No LSEs	Collision during breeding season	No LSEs
21	Alde-Ore Estuary (UK) SPA	181.5	161.7	192.7	Sandwich tern # Lesser black-backed gull #	No LSEs	Collision risk on migration (NB)	No LSEs
22	Alde-Ore Estuary (UK) Ramsar	181.5	161.7	192.7	Lesser black-backed gull #	No LSEs	Collision risk on migration (NB)	No LSEs
23								

No	Designated site	Distance to (km)			Relevant feature(s)* (NB - Non-breeding B - Breeding M - [on] Migration)	Phase of the Proposed Development # Indicates pathway for which LSE alone is discounted but LSEI could result		
		Array	ON	OFF		Construction	Operation & maintenance	Decommissioning
24	The Wash SPA	235.4	203.6	230	Common tern #	No LSEs	Collision risk on migration (NB)	No LSEs
25	Breydon Water SPA	239.3	215.2	245.6	Common tern #	No LSEs	Collision risk on migration (NB)	No LSEs
26	Greater Wash SPA	249.1	218.1	244.7	Common tern # Sandwich tern #	No LSEs	Collision risk on migration (NB)	No LSEs
27	North Norfolk Coast SPA	249.1	218.1	244.7	Common tern #	No LSEs	Collision risk on migration (NB)	No LSEs
					Sandwich tern #	No LSEs	Collision risk on migration (NB)	No LSEs
28	North Norfolk Coast Ramsar	256.6	225.1	251.9	Common tern #	No LSEs	Collision risk on migration (NB)	No LSEs
					Sandwich tern #	No LSEs	Collision risk on migration (NB)	No LSEs
29	Côte de Granit Rose-Sept Iles SPA	257.8	276.3	264.0	Gannet	No LSEs	Collision risk (M and B)  Disturbance/displacement (NB and B)	No LSEs
30	Alderney West Coast & Burhou Islands Ramsar	148.1	N/A	154	Gannet	No LSEs	Collision risk on migration (NB)  Collision risk during breeding season  Disturbance/displacement on migration  Disturbance/displacement during breeding season	No LSEs
31	Grassholm SPA	355.3	353.8	354.0	Gannet	No LSEs	Disturbance/displacement (M)  Collision risk on migration	No LSEs
32	Flamborough & Filey Coast SPA	376.4	343.4	366.5	Gannet #	No LSEs	Disturbance/displacement (M)	No LSEs

No	Designated site	Distance to (km)			Relevant feature(s)* (NB - Non-breeding B - Breeding M - [on] Migration)  Only European site features to which an effect pathway has been identified (relevant features) are listed	Phase of the Proposed Development # Indicates pathway for which LSE alone is discounted but LSEI could result		
		Array	ON	OFF		Construction	Operation & maintenance	Decommissioning
							Collision risk on migration	
					Guillemot # Razorbill #	Disturbance/displacement (M)	Disturbance/displacement (M)	Disturbance/displacement (M)
					Kittiwake # Herring gull #	No LSEs	Collision risk on migration	No LSEs
					Gannet #	No LSEs	Disturbance/displacement (NB)	No LSEs
33	Northumbria Coast SPA	453.8	420.6	439.8	Arctic tern #	No LSEs	Collision risk on migration	No LSEs
34	Northumbria Coast Ramsar	453.8	420.6	439.8	Arctic tern #	No LSEs	Collision risk on migration	No LSEs
35	Coquet Island SPA				Sandwich tern # Arctic tern # Common tern # Herring gull # Lesser black-backed gull # Kittiwake	No LSEs	Collision risk on migration	No LSEs
		522.8	489.8	508.6				
36	Farne Islands SPA	555.0	522.0	540.8	Common tern # Arctic tern # Sandwich tern # Black-legged Kittiwake #	No LSEs	Collision risk on migration	No LSEs
					Guillemot #			
						Disturbance/displacement (M)	Disturbance/displacement (M)	Disturbance/displacement (M)

## 6. Embedded environmental measures

- 6.1.1 Embedded environmental measures (commitments) of relevance to the assessment of potential impacts on European sites are presented in **Table 6.1**.
- 6.1.2 **Table 6.1** draws on embedded environmental measures from individual aspect chapters of Rampion 2's PEIR and, where appropriate, embedded environmental measures (that are specific to the draft RIAA). In accordance with the *Sweetman* ruling<sup>29</sup>, such measures were not considered during the Screening exercise but are included within the determination of AEoI.
- 6.1.3 The Applicant is cognisant that measures designed to avoid or reduce the overall impact of a plan or project on a European site, must be considered at the appropriate stage of the HRA. The distinction between 'mitigation' and 'compensation' was clarified in *Grace v An Bord Pleanala*.<sup>30</sup> Measures intended to avoid or reduce any adverse effects that might result from the proposal are mitigation and appropriately discussed at HRA Stage Two. However, measures that seek to offset, or 'make up for' the negative effects are compensation and should be examined at IROPI (HRA Stage Four). The draft RIAA refers only to the former.

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<sup>29</sup> People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17).

<sup>30</sup> Grace v An Bord Pleanala (C-164/17)).

Table 6-1 Embedded environmental measures of relevance to the AA of potential impacts on European sites

Commitment	Relevant Receptor/Pathway	Secured Through
<b>C-1 - The onshore cable route will be completely buried underground for its entire length.</b>	Waders and wildfowl – collision risk with overhead power lines	DCO works plans, description of development and requirements
<b>C-4 - Horizontal Directional Drill (HDD) technique will be used at the landfall location.</b>	Waders and wildfowl – disturbance of birds using the intertidal area and land behind the flood defence	DCO works plans, description of development and requirements
<b>C-65 - The proposed offshore cable route and cable landfall (below MHWS) will avoid all statutory marine designated areas.</b>	Benthic ecology – Suspended sediment, pollution	DCO requirements or DML conditions.
<b>C-43 - The subsea export cable ducts will be drilled underneath the beach using horizontal directional drilling (HDD) techniques.</b>	Benthic ecology – Suspended sediment	DCO requirements or DML conditions.
<b>C-45 - Where possible, subsea cable burial will be the preferred option for cable protection. Cable burial will be informed by the cable burial risk assessment and detailed within the Cable Specification Plan.</b>	Benthic ecology – Suspended sediment	DCO requirements or DML conditions.
<b>C-52 - A piling Marine Mammal Mitigation Protocol (MMMP), will be implemented during construction and will be developed in accordance with JNCC (2010) guidance and with the latest relevant guidance and</b>	Migratory fish – underwater noise	DCO requirements or DML conditions.

Commitment	Relevant Receptor/Pathway	Secured Through
information and in consultation with stakeholders. The piling MMMP will include details of soft starts to be used during piling operations with lower hammer energies used at the beginning of the piling sequence before increasing energies to the higher levels.		
<b>C-53 – An Outline Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to Rampion 2. The MPCP will also include relevant key emergency contact details.</b>	Benthic ecology – accidental pollution	DCO requirements or Deemed Marine Licence (DML) conditions
<b>C-76 - In line with good practice, pollution prevention plans (PPPs) will be drawn up to detail how ground and surface waters will be protected in construction and operation. These will include information on the storage of any fuels, oils and other chemicals (in line with C-8 and C-167) and pollution incidence response planning. These will include measures for the protection of licenced and private abstractions. This could include a</b>	All mobile features of identified European sites using functionally linked land / pollution prevention	Outline Code of Construction Practice (COCP) and DCO articles and requirement



Commitment	Relevant Receptor/Pathway	Secured Through
<b>monitoring regime associated with critical or very near receptors.</b>		
<b>C-89 – There will be a minimum blade tip clearance of at least 22m above highest astronomical tide (HAT).</b>	Offshore ornithology – collision risk.	Secured in the description of the development
<b>C-95 - The assessment will take into consideration the mitigation and control of invasive species measures that will be incorporated into an Outline Project Environmental Management and Monitoring Plan (PEMMP).</b>	Benthic ecology – introduction and or spread of invasive non-native species	DCO requirements or DML conditions
<b>C-103 - Areas of temporary habitat loss will be reinstated, wherever practicable, following the completion of construction in each area. Wherever possible, reinstatement will be back to the type of habitat crossed.</b>	All mobile features of identified European sites using functionally linked land / habitat loss and fragmentation	Outline COCP and DCO articles and requirement
<b>C-105 - A lighting design of all temporary and permanent lighting will be developed once contractors are appointed; however, the principles of lighting design will be detailed at the time of application and informed by the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals (2018). The lighting design will account for the potential effects on terrestrial ecology by taking measures to</b>	Barbastelle / Disturbance via light	Outline COCP and DCO articles and requirement

Commitment	Relevant Receptor/Pathway	Secured Through
<p>minimise lighting usage, minimise light spill, use most appropriate wave lengths of light and locate lighting in the most appropriate locations – this is to decrease the potential displacement effects on light sensitive fauna such as bats.</p>		
<p><b>C-107 - Tried and tested invasive species control and biosecurity measures will be used to avoid the spread of infested materials.</b></p>	<p>All European sites connected via a river system / spread of invasive non-native species</p>	<p>Outline COCP and DCO requirement</p>
<p><b>C-115- The construction corridor through woodland, tree lines and across native hedgerows (in terms of the Hedgerows Regulations 1997) will be narrowed to no more than 30m for its entire length to minimise habitat losses. All hedgerows will be reinstated following cable installation.</b></p>	<p>Barbastelle bat / loss and fragmentation of functionally linked habitat</p>	<p>Outline COCP and DCO requirement</p>
<p><b>C117 - Works in the floodplain will be programmed to occur in late summer/ early autumn if possible, to avoid interaction with known flooding periods to minimise the potential for displacement of floodwater.</b></p>	<p>Wildfowl and waders / loss and fragmentation of functionally linked land and disturbance</p>	<p>Outline COCP and DCO requirement</p>

## 7. Appraisal of potential AEol (the Proposed Development alone)

### Introduction

7.1.1 Where the potential for a LSEs/LSEI on a relevant site has been identified, there is a requirement to consider whether those effects will adversely affect the integrity of the site in view of its conservation objectives. The conclusion on the potential for LSEs and LSEI for Rampion 2 is presented in **Table 5-1** and the conservation objectives for all relevant sites provided in **Appendix F**. The information is presented below according to the following receptor groupings:

- terrestrial ecology (including wildfowl and waders);
- migratory fish;
- benthic and intertidal habitats; and
- offshore ornithology.

### 7.2 Appraisal of potential AEol alone for terrestrial ecology (including wildfowl and waders)

#### Introduction

7.2.1 Information to inform the assessment for terrestrial ecology is provided in **Table 3-2** (the MDS relevant to terrestrial ecology), **Section 6** (Embedded environmental measures) and the Commitments register) and **Appendix F** (Information on the designated sites). The potential for LSEs as regards terrestrial ecology is summarised in **Section 5.8** with the Stage Two (AA) presented below.

### Arun Valley Ramsar

#### Features and effects for assessment

- 7.2.2 The potential for LSEs to result from Rampion 2 acting alone has been identified for the following:
- northern pintail during construction and decommissioning due to land take / land cover change and fragmentation of functionally linked land and disturbance from noise and vibration; and
  - assemblage of wintering waterfowl (identified as being of importance due to teal, wigeon, shoveler and ruff within the Ramsar information sheet) during construction and decommissioning due to land take / land cover change and fragmentation of functionally linked land and disturbance from noise and vibration.

## Assessment information

7.2.3 The conservation objectives (as described in **Appendix F**) for the site<sup>31</sup> are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features; and
  - ▶ the distribution of the qualifying features within the site.

7.2.4 In addition to the site-specific information presented in **Appendix F**, surveys for the Proposed Development have been carried out and reported in **Volume 4, Appendix 23.3: Wintering Bird Survey Report** of the PEIR.

## Construction and decommissioning

### *Land take / land cover change*

7.2.5 The installation of the cable within the Arun Valley will result in the temporary loss of habitat from pasture and arable fields, including those that may become flooded during the winter period, that could provide functionally linked land for foraging wildfowl of the Arun Valley Ramsar site (located 3.8km from the PEIR Assessment Boundary at the closest point). The installation of the cable will be done sequentially to avoid large scale open excavations being present at any given time. It is estimated that within a single location less than ten hectares will be within an active working area at any given time. This may include the following: open cable trenches, an HDD launch/retrieval pit, haul road, access points, soil storage and construction compounds.

7.2.6 The functionally linked land for the Arun Valley Ramsar site of interest with regards the Proposed Development is defined differently for different species as:

- for Northern pintail it is defined as the floodplain of the Arun Valley to the south of Arundel, the floodplain Adur Valley between Ashurst and Partridge Green, and the coastal strip at Climping Beach based on the location of the Proposed Development and the typical foraging distances of this species (Johnson et al., 2014);

<sup>31</sup> There are no published conservation objectives for the Arun Valley Ramsar site. Therefore, the conservation objectives for the Arun Valley SPA have been used due to their applicability to the wildfowl features being assessed.

- for wigeon, teal, and shoveler it is defined as the floodplain of the Arun Valley to the south of Arundel based on the location of the Proposed Development and the typical foraging distances of these species (Johnson et al., 2014); and
- for ruff it is defined as the floodplain of the Arun Valley to the south of Arundel and the coastal strip at Climping based on habitat preferences.

7.2.7 The area of the Arun Valley described above has been defined as the area shown within the Priority Habitat Inventory as coastal and floodplain grazing marsh south of Warningcamp. This area is approximately 387ha in extent and characterised by a farmed landscape dominated by improved pasture and arable fields with a network of ditches on both the east and west banks of the River Arun. There are considerable areas of additional functionally linked land to the east and north of Arundel, as well as the Ramsar site itself. The area of Adur Valley has been defined as the 133 ha of largely grazing land that lies immediately adjacent to the River Adur. The areas of defined as floodplain grazing marsh in this area are relatively narrow and typically bordered by extensive areas of arable land. The coastal strip at Climping Beach is made up of arable fields (with some recent disturbance due to flood defence works) and a golf course when north of the sea wall.

7.2.8 A number of embedded environmental measures outlined in **Table 6.1** characterise the design and schedule of working that reduces the potential for conflict with the non-breeding wildfowl and waders. These are:

- C-1 – the cable will be buried along the entire length of its route to avoid above ground infrastructure;
- C-4 – the landfall will be achieved via HDD ensuring that the coastal strip will remain free from ground-breaking activities;
- C-103 – all land temporarily lost to construction will be restored to the broad habitat disturbed (i.e., farm land will be reinstated to farmland); and
- C-117 – works within the floodplain will be scheduled to avoid the winter months where practicable.

7.2.9 The baseline survey information on the distribution and numbers of over-wintering wildfowl and waders within the vicinity of the Proposed Development in the coastal strip (near Climping), Arun Valley and Adur Valley is provided within the PEIR (**Volume 4, Appendix 23.3: Wintering Bird Survey Report**). This report identifies a peak count of 18 pintail recorded below MHWS at Climping Beach. This species was noted on 3 occasions (single dates in each of September, October and January) during the survey period (peak counts of 1, 15 and 18 respectively) below MHWS, but was not recorded above MHWS including within the coastal and floodplain grazing marshes of the lower Arun Valley or Adur Valley. A peak count of 80 wigeon were noted within the Arun Valley on waterbodies to the north-west of the Church of St. Mary Magdalen, Lyminster, with a much larger peak of 600 in flooded fields of the Adur Valley (noting that this area is not considered to be functionally linked to the Arun Valley Ramsar site for wigeon due to the due to separation distance). Wigeon were also noted on four occasions during intertidal surveys at Climping Beach with a peak of 19 birds; on one of these occasions 13 wigeon were recorded in fields behind the seawall. A single teal was recorded in the intertidal area and 10 shoveler were recorded using

flooded fields in the Adur Valley on one occasion. No ruff were recorded during the surveys.

- 7.2.10 The assessment within the PEIR (**Volume 2, Chapter 23: Terrestrial ecology and nature conservation, Section 23.10**) concludes that there will be no significant effect on the Arun Valley Ramsar site (in terms of the EIA Regulations) based on the location of the Proposed Development, the temporary nature of the works, the timing of the works and the small numbers and sporadic occurrence of the designated features identified during the survey programme.

### *Northern pintail*

- 7.2.11 The temporary loss of arable and pasture land that may be utilised by northern pintail (particularly when flooded) will occupy only a small proportion of the available functionally linked land based on the foraging range of this species (~18km – Johnson *et al.*, 2014). However, it is noted that due to the potential for this species to commute relatively long distances between foraging grounds and roosts the intertidal area at Climping Beach (and associated coastal strip), the Arun Valley and the Adur Valley can all be considered to be functionally linked to the Arun Valley Ramsar site. The loss of habitats in-land, and within the construction footprint will largely take place outside of the winter period as cable installation will not be able to progress through flooded areas thereby providing the opportunity for the habitat restoration to take place prior to an overlap between this species and the Proposed Development largely negating this LSE.
- 7.2.12 In addition to the restricted spatial and temporal extent of the construction works, the potential for temporary habitat loss to result in the loss of fitness of individual northern pintail is further reduced by the small numbers, limited distribution and sporadic occurrence of this species within the vicinity of the Proposed Development.
- 7.2.13 **There is, therefore, no potential for an AEoI to the conservation objectives on the northern pintail of the Arun Valley Ramsar site in relation to land take / land cover change effects from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

### *Assemblage of wintering waterfowl*

- 7.2.14 The floodplain of the Arun Valley within the PEIR Assessment Boundary provides functionally linked habitat for shoveler, teal and wigeon (Johnson *et al.*, 2014), it is assumed that ruff associated with the Arun Valley Ramsar site could also use this habitat as well as that associated with the coastal strip at Climping.
- 7.2.15 As no shoveler, teal or ruff were noted within the area within which land take / land cover change is proposed, these species can be discounted. It is acknowledged that these species could be present within the functionally linked land south of Arundel, however the survey data suggests that this habitat is not providing an area that is relied upon to support the fitness of these populations.
- 7.2.16 Wigeon were noted sporadically in numbers exceeding 1% of the designation figure (4,742 individuals) in the Arun Valley on three occasions. They were recorded regularly (monthly between October and February) in numbers ranging between 7 and 80 (see **Volume 4, Appendix 23.3: Wintering Bird Survey**

**Report** of the PEIR) with all records focused on the area close to the Church of St. Mary Magdelen, Lyminster. Fields adjacent to the waterbodies being used lie within the Proposed Development and comprise functionally linked land (in this case arable fields comprise the majority of habitat within 500m of the waterbodies being used, with some improved pasture and bounding ditches). The area of land to be temporarily lost is small in comparison to the available functionally linked habitat within typical foraging distance (2.5km – Johnson *et al.*, 2014) of the Ramsar site, and the loss will largely take place outside of the winter period. The temporary loss of habitat is estimated at this stage as being less than 25 ha within the floodplain grazing marsh, with this being lost in stages due to the nature of cable installation.

- 7.2.17 **There is, therefore, no potential for an AEol to affect the assemblage of wintering waterfowl of the Arun Valley Ramsar site in relation to land take / land cover change effects from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

## Fragmentation of habitats

### Introduction

- 7.2.18 The installation of the cable within the Arun Valley will result in periods of additional human activity within functionally linked land. If designated features of the Arun Valley Ramsar site avoid moving across or near to these areas due to the presence of human activity or the physical damage of habitat they may be prevented from reaching other suitable foraging opportunities.

### Northern pintail

- 7.2.19 The presence of construction and decommissioning works could result in northern pintail avoiding certain fields (i.e., feeding resources) as they may not cross an active work site to reach them. This could reduce the effective resource base for the waterfowl of the Arun Valley Ramsar site.
- 7.2.20 The construction of the proposed onshore cable corridor will progress across relatively short distances (~500m) at any given point limiting the potential for fragmentation to occur (i.e., avoidance of working area will be highly localised). The mobility of this species is such that a deviation of a few hundred metres will not result in a level of energy expenditure likely to alter the fitness of individual birds. It should also be noted that to reach the floodplain of the lower Arun Valley within the vicinity of the Proposed Development these birds will already have passed across or close to the town of Arundel and crossed the A27, suggesting that they are already acclimatised to some degree of human activity.
- 7.2.21 **There is, therefore, no potential for an AEol to the conservation objectives on the northern pintail of the Arun Valley Ramsar site in relation to fragmentation of habitats from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**



### *Assemblage of wintering waterfowl*

- 7.2.22 The assessment of the fragmentation of habitats for the Proposed Development for ruff, teal and shoveler mirrors that provided in **paragraphs 7.2.16 and 7.2.17** for northern pintail.
- 7.2.23 With respect to wigeon there will be periods when construction activity will be close to the waterbodies near the Church of Mary Magdalene, Lyminster (around 100 – 200m away). For these birds to move between Lyminster and the Arun Valley Ramsar will require them to cross the working area or divert around it. However, as the active working area will be discrete and require a marginal change in flight line to avoid, it will be temporary in nature (e.g. progression of 175m per week, assuming 4 cable ducts being installed) and works will typically be undertaken outside the winter period the potential for wigeon to be excluded from this area due to fragmentation is negligible.
- 7.2.24 **There is, therefore, no potential for an AEol to the conservation objectives on the assemblage of wintering waterfowl of the Arun Valley Ramsar site in relation to fragmentation of habitats from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

### *Disturbance due to noise and vibration*

#### *Introduction*

- 7.2.25 The construction, and to a lesser extent decommissioning activity, will result in the production of noise and vibration through the use of plant, human presence etc. This activity may disturb designated features of the Arun Valley Ramsar site whilst foraging or loafing in functionally linked land within 500m (Cutts, Phelps & Burdon, 2009) of active parts of the construction / decommissioning site.
- 7.2.26 Two of the embedded environmental measures outlined in **Table 6-1** characterise the design and schedule of working that reduces the potential for conflict with the non-breeding wildfowl. These are:
- C-4 – the landfall will be achieved via HDD ensuring that the coastal strip will remain free from ground-breaking activities;
  - C-117 – works within the floodplain will be scheduled to avoid the winter months where practicable.
- 7.2.27 The survey data did not identify northern pintail, shoveler, teal or ruff above MHWS, and wigeon was noted sporadically only in a single location (see **paragraph 7.2.8**).

#### *Northern pintail*

- 7.2.28 Although northern pintail was not recorded above MHWS, it is still likely that they will be present occasionally within the area. However, the survey results do suggest that temporary displacement of this species at a level that is likely to result in a perceivable reduction of fitness will not occur as they are not reliant on the locale (i.e., they have other foraging opportunities). Further, as the cable



installation is likely to take place outside of the winter period (as per commitment C-117) the potential for a temporal overlap is minimal.

- 7.2.29 **There is, therefore, no potential for an AEol to the conservation objectives on the northern pintail of the Arun Valley Ramsar site due to disturbance via noise and vibration from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

#### *Assemblage of wintering waterfowl*

- 7.2.30 The assessment of disturbance due to noise and vibration for the shoveler, teal and ruff components of the assemblage of wintering waterfowl mirrors that provided in **paragraph 7.2.26** for northern pintail. For wigeon, the peak count was noted at the waterbodies north-west of the Church of St. Mary Magdalen, Lyminster. These waterbodies are within 500m of the Proposed Development. Therefore, should construction or decommissioning activity take place any wigeon using this resource could be disturbed. However, as these waterbodies are screened from the Proposed Development by fringing scrub and that the likelihood of a temporal overlap is small (i.e., due to commitment C-117) the potential for disruption is minimal. It is also of note that occurrence of wigeon on these waterbodies was variable suggesting they are not reliant upon them for maintaining fitness.
- 7.2.31 **There is, therefore, no potential for an AEol to the conservation objectives on the assemblage of wintering waterfowl of the Arun Valley Ramsar due to disturbance via noise and vibration from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

## Arun Valley SPA

### Features and effects for assessment

- 7.2.32 The potential for LSEs to result from Rampion 2 acting alone has been identified for the following:
- Bewick's swan during construction and decommissioning due to land take / land cover change and fragmentation of functionally linked land and disturbance from noise and vibration;
  - non-breeding waterfowl assemblage (identified as being of most importance due to the presence of teal, wigeon and shoveler within the designation) during construction and decommissioning due to temporary loss and fragmentation of functionally linked land and disturbance from noise and vibration; and
  - non-breeding waterfowl assemblage during operation due to potential for collision risk on migration.

### Assessment information

- 7.2.33 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features, and
  - ▶ the distribution of the qualifying features within the site.

7.2.34 In addition to the site-specific information presented in **Appendix F**, surveys for the Proposed Development have been carried out and reported in **Volume 4, Appendix 23.3: Wintering Bird Survey Report** of the PEIR.

## Construction and decommissioning

### Land take / land cover change

#### *Bewick's swan*

- 7.2.35 Bewick's swan were not recorded during the wintering bird surveys undertaken. Information provided by Sussex Ornithological Society for the same winter period provided first observations in December 2020 (10-year average has return date in November) with a peak count of 14 Bewick's swans. These records were from an area known as "Burpham Water Meadows" which is outside of the survey area being more than 500m from the PEIR Assessment Boundary and separated by an area of ancient woodland and the crest of a hill.
- 7.2.36 The temporary loss of arable and pasture land that may be utilised by Bewick's swan will occupy only a small proportion of the available functionally linked land based on the foraging range of this species (10km – Robinson et al., 2004) – note it is assumed that Bewick's swan may be present in the area on occasion regardless of the survey findings. The loss of habitats within the construction footprint will largely take place outside of the winter period (commitment C-117) as cable installation will not be able to progress through flooded areas thereby providing the opportunity for the habitat restoration to take place prior to an overlap between this species and the Proposed Development largely negating this LSE.
- 7.2.37 In addition to the restricted spatial and temporal extent of the construction works, the potential for temporary habitat loss to result in the loss of fitness of individual Bewick's swan is further reduced by the small numbers, limited distribution and sporadic occurrence of this species predicted from within the vicinity of the Proposed Development when passing through or near to the Arun Valley.
- 7.2.38 **There is, therefore, no potential for an AEoI to the conservation objectives on the Bewick's swan of the Arun Valley SPA in relation to land take / land**

**cover change effects from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

#### *Non-breeding assemblage of waterfowl*

- 7.2.39 For assessment of shoveler, teal and wigeon please refer to **paragraphs 7.2.13 and 7.2.14** for the Arun Valley Ramsar site.
- 7.2.40 **There is no potential for an AEol to the conservation objectives on the non-breeding assemblage of waterfowl of the Arun Valley SPA in relation to land take / land cover change effects from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

### Fragmentation of habitats

#### *Introduction*

- 7.2.41 The installation of the cable within the Arun Valley will result in periods of additional human activity within functionally linked land. If designated features of the Arun Valley SPA avoid moving across or near to these areas due to the presence of human activity or the physical damage of habitat, they may be prevented from reaching other suitable foraging opportunities.

#### *Bewick's swan*

- 7.2.42 The presence of construction and decommissioning works could result in Bewick's swan avoiding certain fields (i.e., feeding resources) as they may not cross an active work site to reach them. This could reduce the effective resource base for the waterfowl of the Arun Valley SPA. However, the location they favour regularly (i.e., Burpham Water Meadows) is north of the PEIR Assessment Boundary meaning that movements between this area and the Arun Valley SPA will not require any movement across the construction area.
- 7.2.43 **There is, therefore, no potential for an AEol to the conservation objectives on the Bewick's swan of the Arun Valley SPA in relation to fragmentation of habitats from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

#### *Assemblage of wintering waterfowl*

- 7.2.44 The assessment of the fragmentation of habitats associated for the Proposed Development for the assemblage of wintering waterfowl mirrors that provided in **paragraphs 7.2.38 and 7.2.39** for northern pintail.
- 7.2.45 **There is, therefore, no potential for an AEol to the conservation objectives on the non-breeding assemblage of waterfowl of the Arun Valley SPA in relation to fragmentation of habitats from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

## Disturbance due to noise and vibration

- 7.2.46 The construction, and to a lesser extent decommissioning activity, will result in the production of noise and vibration through the use of plant, human presence etc. This activity may disturb designated features of the Arun Valley SPA whilst foraging or loafing in functionally linked land within 500m (Cutts, Phelps & Burdon, 2009) of active parts of the construction / decommissioning site.
- 7.2.47 Two of the embedded environmental measures outlined in **Table 6-1** characterise the design and schedule of working that reduces the potential for conflict with the non-breeding wildfowl. These are:
- C-4 – the landfall will be achieved via HDD ensuring that the coastal strip will remain free from ground-breaking activities; and
  - C-117 – works within the floodplain will be scheduled to avoid the winter months where practicable.
- 7.2.48 The survey data did not identify Bewick's swan, shoveler and teal above Mean High Water Springs (MHWS), and wigeon was noted sporadically only in a single location (see **paragraph 7.2.8**).

### *Bewick's swan*

- 7.2.49 Although Bewick's swan were not recorded above MHWS, it is still likely that they will be present occasionally within the area. However, the survey results suggest that temporary displacement of this species at a level that is likely to result in a perceivable reduction of fitness will not occur as they are not reliant on the locale (i.e., they have other foraging opportunities). Further, as the cable installation is likely to take place outside of the winter period (as per commitment C-117) the potential for a temporal overlap is minimal.
- 7.2.50 **There is, therefore, no potential for an AEol to the conservation objectives on the Bewick's swan of the Arun Valley SPA due to disturbance via noise and vibration from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

### *Non-breeding assemblage of waterfowl*

- 7.2.51 The assessment of disturbance due to noise and vibration for the shoveler and teal components of the non-breeding assemblage mirrors that provided in **paragraph 7.2.47** for Bewick's swan. For wigeon, the peak count was noted at the waterbodies north-west of the Church of St. Mary Magdalen, Lyminster. These waterbodies are within 500m of the Proposed Development. Therefore, should construction or decommissioning activity take place, any wigeon using this resource could be disturbed. However, as these waterbodies are screened from the Proposed Development by fringing scrub and that the likelihood of a temporal overlap is small (i.e., due to commitment C-117) the potential for disruption is minimal. It is also of note that occurrence of wigeon on these waterbodies was sporadic suggesting they are not reliant upon them for maintaining fitness.
- 7.2.52 **There is, therefore, no potential for an AEol to the conservation objectives of the non-breeding assemblage of waterfowl of the Arun Valley SPA due to**

**disturbance via noise and vibration from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

## Operation

### Features and effects for assessment

- 7.2.53 Migratory non-seabirds (wetland wildfowl) flying through the array area during the operational phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision will be fatal. This risk will be present throughout the array area, and for the entire period of operation of the Proposed Development. The potential for LSEs to result from Rampion 2 acting alone has been identified for the following:
- Pagham Harbour Ramsar (Dark-bellied brent goose);
  - Pagham Harbour SPA (Dark-bellied brent goose); and
  - Portsmouth Harbour SPA (Dark-bellied brent goose, black-tailed godwit, dunlin and red-breasted merganser);

### Collision risk on migration

#### *Portsmouth Harbour Ramsar (Dark-bellied brent goose)*

- 7.2.54 The MDS used for assessment is given in **Table 12.17** of **PEIR Volume 2, Chapter 12: Offshore and Intertidal Ornithology**. In order to assess the risk resulting from potential collisions, Collision Risk Modelling (CRM) has been carried out as described in **PEIR Volume 4, Appendix 12.3: Offshore Ornithology Collision Risk Modelling**.
- 7.2.55 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64 - Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89 - There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.2.56 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### *Non-breeding assemblage of waterfowl*

- 7.2.57 In order to minimise repetition and provide a clear and concise approach, all migratory waterbirds have been considered together below in **paragraph 7.5.337**. As per that section, no AEoI was found for any waterbird feature of any SPA or Ramsar site from the Proposed Development alone.

- 7.2.58 **There is, therefore, no potential for an AEoI to the conservation objectives of the waterfowl features of Pagham Harbour SPA and Ramsar and Portsmouth Harbour SPA and Ramsar in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the waterfowl features of Arun Valley SPA will be maintained as features in the long term with respect to potential for adverse effects.**

## The Mens SAC

### Features and effects for assessment

- 7.2.59 The potential for LSEs from Rampion 2 alone has been identified for the following:
- barbastelle during construction due to land take / land cover change (functionally linked land), habitat fragmentation and disturbance from light;
  - barbastelle during decommissioning due to land take / land cover change (functionally linked land), habitat fragmentation and disturbance from noise and vibration; and
  - the potential for LSEI during operation.

### Assessment information

- 7.2.60 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:
    - ▶ the extent and distribution of qualifying natural habitats and habitats of qualifying species;
    - ▶ the structure and function (including typical species) of qualifying natural habitats;
    - ▶ the structure and function of the habitats of qualifying species;
    - ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
    - ▶ the populations of qualifying species, and
    - ▶ the distribution of qualifying species within the site.
- 7.2.61 The assessment of barbastelle presented below is preliminary as a representative survey programme for bats has not been completed for the Proposed Development (data being gathered between spring and autumn 2021). Therefore, the assessment below is based upon the location of the Proposed Development in relation to The Mens SAC and the embedded environmental measures that are encompassed within it.

## Construction and decommissioning

### Land take / land cover change

#### *Barbastelle bat*

- 7.2.62 The draft Sussex SAC bat protocol (South Downs National Park Authority and natural England, 2018) suggests that the barbastelle associated with The Mens SAC are known to commute up to 12km to reach foraging areas. This means that there are areas within the footprint of the Proposed Development that may be used by this species given that at its closest point it is 11.2km away.
- 7.2.63 The extent of the overlap with the Proposed Development (when a 12km buffer is placed around The Mens SAC boundary) is approximately 35ha, which is a small proportion (0.06%) of the area within a 12km foraging range (59,2001 ha in 12km foraging range – noting that much of this area will not be suitable habitat for barbastelle bats). Further, the area of overlap lies within an area of the South Downs National Park between Wepham Down and Sullington Hill that is dominated by large arable fields that support very limited types of habitats preferred by this species for foraging such as riparian corridors and broad-leaved woodland (Zeale, Davidson-Watts and Jones, 2012). Therefore, the potential of the temporary loss of habitat within this area to alter the foraging opportunities of any individual bat to the extent that fitness is compromised is minimal.
- 7.2.64 **There is, therefore, no potential for an AEoI to the conservation objectives on the barbastelle bats of The Mens SAC due to land take / land cover change from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

### Fragmentation of habitats

#### *Barbastelle bat*

- 7.2.65 The installation of the cable will result in the temporary loss of habitats that may be used by barbastelle of The Mens SAC to navigate the landscape (e.g., hedgerow). This may prevent barbastelle crossing the working area to reach suitable foraging opportunities (e.g., Wepham Wood).
- 7.2.66 Two of the embedded environmental measures outlined in **Table 6-1** characterise elements that reduce the potential for conflict with barbastelle. These are:
- C-103 – all land temporarily lost to construction will be restored to the broad habitat disturbed; and
  - C-114 – Sullington Hill Local Wildlife Site will be crossed using a trenchless technique, such as HDD.
- 7.2.67 The construction of the proposed onshore cable corridor will progress across relatively short distances (~500m) at any given point limiting the potential for fragmentation to occur (i.e., avoidance of working area will be highly localised). However, in areas where construction has recently been completed the gaps in



hedgerows (at crossing points) will remain or be filled with young whips. This suggests that the landscape may be more fragmented than it currently is.

- 7.2.68 However, the area of the Proposed Development within 12km of The Mens SAC is already heavily fragmented and exposed and will likely require individual animals to cross areas where field boundaries are marked by fences or gateways. Therefore, if barbastelle from The Mens SAC are crossing this sub-optimal habitat they are already likely to be moving across occasional gaps in habitat that are both similar to, or larger than the hedgerow gaps (30 to 50m) that will be created through cable installation. Further, areas that connect habitats north and south of the Proposed Development will be maintained intact as they will be crossed using a trenchless technique (i.e., Sullington Hill).
- 7.2.69 **There is, therefore, no potential for an AEoI to the conservation objectives on the barbastelle bats of The Mens SAC in relation to fragmentation of habitats from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

## Disturbance by light

### *Barbastelle bat*

- 7.2.70 Temporary lighting will be needed during works to install the cable. This lighting will be required in locations for security purposes (e.g., site access points, equipment storage), during periods when normal working hours are within periods of darkness (e.g., over-winter) and at sites that could operate over a 24-hour period (e.g., sites used to launch or retrieve sub-surface drills). These areas will be restricted, as lighting will not be needed in all areas; however, the specific locations of lighting are yet to be determined.
- 7.2.71 The embedded environmental measures outlined in **Table 6-1** will reduce the potential for conflict with barbastelle. Specifically:
- C-105 - A lighting design of all temporary and permanent lighting will be developed once contractors are appointed; however, the principles of lighting design will be detailed at the time of application and informed by the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals (2018). The lighting design will account for the potential effects on terrestrial ecology by taking measures to minimise lighting usage, minimise light spill, use most appropriate wave lengths of light and locate lighting in the most appropriate locations – this is to decrease the potential displacement effects on light sensitive fauna such as bats.
- 7.2.72 As the degree of overlap with the 12km buffer zone around The Mens SAC is small (see **paragraph 7.2.55**), the works are temporary, lighting localised, lighting used most at times of year when bat activity will be lowest, the habitats being sub-optimal and the lighting design being sensitive, it is unlikely that the patterns of barbastelle movement will be disrupted markedly, and not enough to challenge the fitness of individual bats.
- 7.2.73 **There is, therefore, no potential for an AEoI to the conservation objectives on the barbastelle bats of The Mens SAC in relation to disturbance by light**



from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.

## 7.3 Appraisal of potential AEol alone for migratory fish

### Introduction

- 7.3.1 Information to inform the assessment for migratory fish is provided in **Section 3.3** (the MDS relevant to migratory fish), **Section 6** (embedded environmental measures and the Commitments register) and **Appendix F** (for information on the designated site). The potential for LSEs as regards migratory fish is summarised in **Table 5.1** the Stage Two (AA) presented below.

### River Itchen SAC

#### Features and effects for assessment

- 7.3.2 The potential for LSEs to result from Rampion 2 acting alone has been identified for the following:
- Atlantic salmon mortalities or recoverable injury due to exposure to underwater noise generated during construction and decommissioning; and
  - Atlantic salmon behavioural changes due to exposure to underwater noise generated during construction and decommissioning causing barriers to migration.

#### Assessment information

- 7.3.3 The conservation objectives<sup>32</sup> (Natural England, 2018 (as described in **Appendix F**)) for the site are as follows:
- to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:
    - ▶ the extent and distribution of qualifying natural habitats and habitats of qualifying species;
    - ▶ the structure and function (including typical species) of qualifying natural habitats;
    - ▶ the structure and function of the habitats of qualifying species;
    - ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
    - ▶ the populations of qualifying species, and
    - ▶ the distribution of qualifying species within the site.

<sup>32</sup> 27 November 2018 (version 3).

7.3.4 The following targets from the Supplementary Advice<sup>33</sup> (Natural England, 2019) for the site are considered to be pertinent to the AA:

- **Population (of the feature): Adult Run Size** - Restore the population to that expected under un-impacted conditions.
- **Supporting Habitat: Structure/ Function Biological Connectivity** - Barriers to adult migration have cumulative effects on the ability of individuals to reach spawning grounds and need to be considered in combination.
- **Structure and Function: Supporting Off-Site Habitat** - The conditions experienced by long-distance migratory species (such as salmon) out with the site (through the saline transition zone, estuary, coastal waters and into the high seas) are critical to the well-being of populations within the site.
- **Structure and Function: Supporting Off-Site Habitat** - Habitats beyond the site boundary upon which characteristic biological communities of the site depend should be maintained in a state that does not impair the full expression of the characteristic biota within the site.

7.3.5 A detailed literature review was undertaken to describe the use of the area by fish in relation to key life stages (including on migration). This review was informed by the existing Rampion 1 project's Environmental Statement (ES) (E.ON, 2012), and broader surveys across the English Channel and its coastal waters. **PEIR Volume 2, Chapter 8: Fish and shellfish ecology** reports the full baseline characterisation (in **Section 8.6**) and the data sources used to inform the PEIR and the HRA (**Table 8.8**).

## Construction and decommissioning

### Underwater noise

7.3.6 The Southampton Water (located 49.3km from the closest boundary point of Rampion 2) forms part of the migratory route for Atlantic salmon, some of which will likely contribute to the River Itchen SAC population. The migratory routes taken by salmon smolt, are considered to vary depending upon the river from which they originate (Malcolm et al., 2010). However, the main migration routes for this species are believed to be in and out of the western approaches/ channel into the Atlantic, rather than via the North Sea (ABPmer, 2014). For example, evidence exists to show that returning Atlantic salmon to the River Frome (Dorset) were feeding in north Atlantic and Arctic waters around Iceland (MacKenzie et al., 2012). This may indicate a potential westward migration by salmon smolt out through the English Channel and on into the north Atlantic. Data from the river test (as reported in the Catchment Summary for the Itchen<sup>34</sup>) further indicate that salmon from the River Test head west to Iceland and return to the river again, from the west.

<sup>33</sup> European Site Conservation Objectives: Supplementary advice on conserving and restoring site features. March 2019. See: [link](#)

<sup>34</sup> <http://publications.naturalengland.org.uk/publication/11307713>

- 7.3.7 Further, the Environment Agency was noted to have commented the following in relation to the Navitus Bay OWF:
- “Work under the SALSA (Salmon at Sea) programme has identified that salmon from the South of the UK feed as adults around the Icelandic basin (NASCO Salmon Summit 2011) and adult salmon returning to the Southern Chalk Streams are known to have been captured in the mixed stock drift net fisheries of the West of Ireland. This would indicate that the salmon returning to the Hampshire Avon and Itchen are doing so from a Westerly direction, therefore bringing them through the development area and/or the area of sea affected by it.”*
- 7.3.8 Therefore, the migratory route to (and from) the River Itchen is considered to be from the west and therefore unlikely to interact with underwater noise arising from the construction and decommissioning of Rampion 2, except in the eventuality that underwater noise modelling shows potential for interaction at the eastern arm of the Solent and the entrance to Southampton Water. Therefore, during upstream (16 May to 15 August)<sup>35</sup> and seaward migrations (between 7 April and 15 May in any year) to and from the River Itchen, there is a theoretical risk individual salmon or salmon smolt could be exposed to underwater noise from pile-driving.
- 7.3.9 At the highest levels of noise, sub-lethal and lethal effects may occur, resulting in injury and in extreme cases, the death of exposed fish. Exposure to underwater noise will only result in physical injury at close range, but disturbance displacement or behavioural effects could occur over greater distances. As a result, returning salmon may be temporarily displaced and deflected from making their entry into the river.
- 7.3.10 Pile driving will not be continuous throughout the construction period. A total of four months piling work is anticipated. However, as the timing depends on the weather and any piling restrictions etc. this total might occur outside a four-month window, it will, however, occur regularly for four months.
- 7.3.11 An assessment has therefore been undertaken for Rampion 2 to quantify the spatial extent of any potential noise impacts on fish (including salmon). This assessment is reported in full in **PEIR Volume 2, Chapter 8: Fish and shellfish ecology**.
- 7.3.12 A semi-empirical underwater noise propagation model (INSPIRE) was undertaken using the maximum design hammer energy (4,400kJ for monopiles and 2,500kJ for pin-piles) at three noise modelling locations, one at the East of the PEIR Assessment Boundary, one at the North-west of the PEIR Assessment Boundary (the location closest to the Solent), and one to the South of the PEIR Assessment Boundary (the deepest location furthest from shore). As the shallowest location and point closest to the Solent, the North-west location is considered to represent the best worst-case scenario for the AA of migrating salmon and is the only one reported in full in the AA. The modelling outputs for all three locations are presented in **PEIR Volume 2, Chapter 8**, with full details presented in the **Underwater Noise Assessment Technical Report. Underwater Noise Assessment**. The sensitivity assessment reported in the **PEIR Volume 2**,

<sup>35</sup> These dates were agreed with respect to the Application for the proposed Navitus Bay Wind Park as reported in the Planning Inspectorate’s Report on the Implications for European sites (Planning Inspectorate, 2015). See: [link](#)

**Chapter 8**, puts the modelling into context with respect to sensitivity of fish receptors, including salmon. A summary of the findings from both reports is provided here.

- 7.3.13 As outlined in **Section 3.3** the MDS considered with respect to underwater noise from piling is 116 monopiles being driven with a 4,400kJ hammer energy<sup>36</sup>. The temporal MDS represents the longest duration of effects from subsea noise and assumes a scenario whereby piled jacket foundations are used for all offshore structures. The maximum duration of piling is assumed to be 24 hours per four pin-piles (four pin-piles per WTG and 12 pin-piles per offshore substation (up to three offshore substation), with the temporal MDS assuming a maximum total duration of piling of 3,000 hours, based on this maximum per pile duration. The duration would be considerably less in the event of fewer pin piles or different foundation types (monopiles).
- 7.3.14 The assessment focuses on underwater noise from pile-driving for the installation of foundations for offshore structures (for instance WTG and offshore substations). While other activities such as cable laying, dredging and vessel movements will result in underwater noise, these have the potential to affect a relatively small area in the immediate vicinity of activities and are therefore insignificant in the context of the underwater noise from piling operations.
- 7.3.15 Unexploded ordnance (UXO) removal will be sought in a separate future Marine Licence application, when geophysical survey data of suitable spatial resolution is available, prior to construction, to identify and quantify UXO. Detonation of UXO would represent a short term (seconds) increase in underwater noise (sound pressure levels and particle motion) and while noise levels will be elevated such that this may result in injury or behavioural effects on fish and shellfish species, these effects would be considerably reduced compared to those associated with piling operations. As such, since the Proposed Development are not applying for licence to detonate UXO at this stage, therefore no further consideration of the impacts from UXO clearance is provided here.
- 7.3.16 The following commitments (also set out in **Table 6-1**) are considered relevant to the AA:
- Hammer energies will likely start at low levels (soft start / ramp up) and gradually increase to the maximum required installation energy (see commitment C-52).

### *Atlantic salmon*

- 7.3.17 Due to the absence of secondary hearing modifications linking the swim bladder to the auditory system, salmon is understood not to have sensitive hearing, relative to many other marine fish (Simpson and Bruintjes, 2016). This understanding concurs with past studies (e.g., Hawkins and Johnstone, 1978) that have categorised salmon as a species with poor hearing. This poor hearing has been

<sup>36</sup> It should be noted this maximum hammer energy is considered highly conservative. Although the absolute maximum hammer energy identified within the design envelope is 4,400kJ, hammer energies will be considerably lower for the majority of the time, with the most likely maximum hammer energy of 4,000kJ

associated with smaller ranges of behavioural response (startle and alarm, avoidance, migration, fatigue, loss of equilibrium) to noise in the marine environment than those documented for other species. Sound levels eliciting behavioural responses) in salmon are between 102 and 205dB re 1µPa (Turnpenny and Nedwell, 1994 reported in Horst and Rodhouse, 2000).

- 7.3.18 The fish receptors within the PEIR Assessment Boundary have been grouped into the Popper et al., (2014) categories based on their hearing system. Atlantic salmon is Group 2 – Fish: swim bladder is not involved in hearing. Fish from Group 2 are considered to be less sensitive to sound pressure, with these species detecting sound in the environment through particle motion. Therefore, salmon would therefore be sensitive to the particle motion component of piling noise, with a low risk of behavioural effects in the far field. When considering particle motion, little to no data exists on the effect on demersal fish species or on the levels generated during marine impact piling (Hawkins and Popper, 2016). However, particle motion generated from piling would be expected to attenuate more rapidly than the acoustic pressure component in the water, with a low risk of behavioural effects in the far-field (for instance kilometres from the source).
- 7.3.19 Behavioural effects on Group 2 fish receptors in the Rampion 2 study area, for which particle motion is most relevant, are likely to be spatially limited to within kilometres of piling operations. Therefore, sensitivity to particle motion in fish is more likely to be important for behavioural responses rather than injury (Hawkins, 2009; Mueller-Blenkle *et al.*, 2010; Hawkins *et al.*, 2014).
- 7.3.20 For fish in Group 2, the mean worst-case noise impact ranges for fleeing fish at the North-west modelled location are presented in **Table 7-1** and **Table 7-2**. The location of the Proposed Development relative to the River Itchen SAC and the Southampton Water is presented in **Figure 7-1**, together with the outcome of the noise modelling (impact buffers).

Table 7-1 Mean worst-case noise impact ranges for fleeing fish (Group 2)

## North West modelled location

Receptor	Criteria	Noise level (dB re 1 μPa SPL/ dB re 1 μPa2 s SEL)	Distance (m) from modelling locations surrounding the array	
			MP (f)	PP (f)
Mortality and potentially mortal injury				
Group 2	SPL <sub>peak</sub>	>207	210	160
	SEL <sub>cum</sub>	210	<100	<100
Recoverable injury				
Group 2	SPL <sub>peak</sub>	>207	210	160
	SEL <sub>cum</sub>	203	<100	<100
Temporary threshold shift (TTS)				
Group 2	SEL <sub>cum</sub>	186	5,900 (2,800-10,000)	4,000 (2,000-7,000)
f - fleeing fish (1.5ms <sup>-1</sup> ) MP – monopile foundations; PP – pin-pile installation Where the maximum/minimum differs from the mean, these values are indicated in brackets. TTS - a temporary reduction in hearing sensitivity caused by exposure to sound				

Noise levels for monopile installation (4,400kJ hammer energy), and pin pile installation (2,500kJ hammer energy) surrounding the array

## Mortality and injury

## Atlantic salmon

- 7.3.21 With reference to **Table 7-1**, the impact ranges for mortality and recoverable injury for fish in Group 2 will not exceed 210m. With reference to these findings, **PEIR Volume 2, Chapter 8** concluded low magnitude impacts of minor adverse significance for Group 2 fish with respect to potential mortality, injury and auditory masking arising from noise and vibration during construction. The same conclusion was found for the decommissioning phase.
- 7.3.22 Atlantic salmon would not be attracted to the PEIR Assessment Boundary, present within it in significant numbers (as per the baseline reported in **PEIR Volume 2, Chapter 8**, or resident within or around the array. As such, the likelihood of exposure to lethal or injurious sounds levels (i.e., with 210m of the array, see **Table 7-1**) is expected to be low and limited to sporadic, low numbers of passing migrants (at most). As such, mortalities and or recoverable injuries due to



exposure to underwater noise are not expected to manifest at levels that could (with reference to the site's target objectives) undermine the viability of the SAC population. It is determined that the relevant target attribute (to maintain 'Population: Adult run size' will not be hindered.

- 7.3.23 **There is, therefore, no potential for an AEol to the conservation objectives on the Atlantic salmon feature of The River Itchen SAC in relation to mortalities and or injuries directly associated with underwater noise from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

### Behavioural changes / barrier to migration

#### *Atlantic salmon*

- 7.3.24 Behavioural effects on Group 2 fish receptors in the Rampion 2 study area (for which particle motion is most relevant) have been found likely to be spatially limited to within 5.9 km of piling operations (see **Table 7-2**. In light of the muted sensitivities of Group 2 fish (as discussed in **paragraph 7.3.17**) and with reference to the modelled noise predictions (see **Table 7-2**). **PEIR, Volume 2, Chapter 8** finds, due to the temporary and intermittent nature of any potential noise impacts, that significant effects on migration, including barrier effects, effects on coastal migrations or movement to/from coastal habitats during key migration periods, would not be expected. Overall, it is predicted that the sensitivity magnitude of impact is deemed to be low and that the effect is not significant in EIA terms (see **paragraph 8.9.58 of PEIR, Volume 2, Chapter 8**).
- 7.3.25 Temporary threshold shifts (TTS) (a temporary reduction in hearing sensitivity) could result for up to 5.9km (see **Table 7-2**) (which also presents the extent of the predicted impact buffers relative to the SAC) highlights that the relative proportion of habitats potentially affected by piling operations at any one time will be small in the context of the wider habitat available. The 5.9km buffer does not reach (or therefore interfere with) to the Solent<sup>37</sup> and therefore access to the subsequent Southampton Water passage would not be hindered.
- 7.3.26 Migrating salmon that encounter increased levels of underwater noise may display avoidance and displacement behaviour. Such behaviour would be intermittent and temporary. As the Southampton Water (which provides migratory access to the River Itchen) is c.50km from the Proposed Development, passage would not be materially impeded over this scale, especially as fish are likely accessing the Solent and Southampton Water from the west (as evidenced in **paragraph 7.3.6**). Any short-term behavioural effects would be temporary and not amount to AEol.

<sup>37</sup> The Solent (the strait between the Isle of Wight and South UK coastline) has no definitive boundary. A geographic east to west boundary has been set by The Solent Forum boundary (see [hyperlink](#)). To the west, the Solent Forum boundary ends at Chewton Bunny. To the east the Forum's boundary ends at Selsey Bill. In this report, reference has been made to this boundary.

Table 7-2 Behavioural effects on Group 2 fish receptors in the Rampion 2 study area

Receptor	Criteria	Noise level (dB re 1 μPa SPL/ dB re 1 μPa2 s SEL)	Distance (m) from modelling locations surrounding the array			
			MP (f)	MP (s)	PP (f)	PP (s)
Mortality and potentially mortal injury						
Group 2	SPL <sub>peak</sub>	>207	210	210	160	160
	SEL <sub>cum</sub>	210	<100	2,500 (2,300 - 2,700)	<100	2,600 (2,400- 2,700)
Recoverable injury						
Group 2	SPL <sub>peak</sub>	>207	210	210	160	160
	SEL <sub>cum</sub>	203	<100	4,900 (4,300- 5,600)	<100	5,100 (4,400- 5,900)
TTS						
Group 2	SEL <sub>cum</sub>	186	5,900 (2,800- 10,000)	17,000 (10,000- 26,000)	4,000 (2,000- 7,000)	17,000 (10,000- 26,000)
f - fleeing fish (1.5ms <sup>-1</sup> ); s – stationary fish MP – monopile foundations; PP – pin-pile installation Where the maximum/minimum differs from the mean, these values are indicated in brackets.						

7.3.27 In light of the muted sensitivities and with reference to the modelled noise predictions (see **Table 7-2**), **PEIR, Volume 2, Chapter 8** finds, due to the temporary and intermittent nature of any potential noise impacts, significant effects on migration, including barrier effects, effects on coastal migrations or movement to/from coastal habitats during key migration periods, would not be expected. Overall, it is predicted that the sensitivity of fish and shellfish receptors is considered to be low to medium and the magnitude of impact is deemed to be low (**paragraph 8.9.58, PEIR, Volume 2, Chapter 8**).

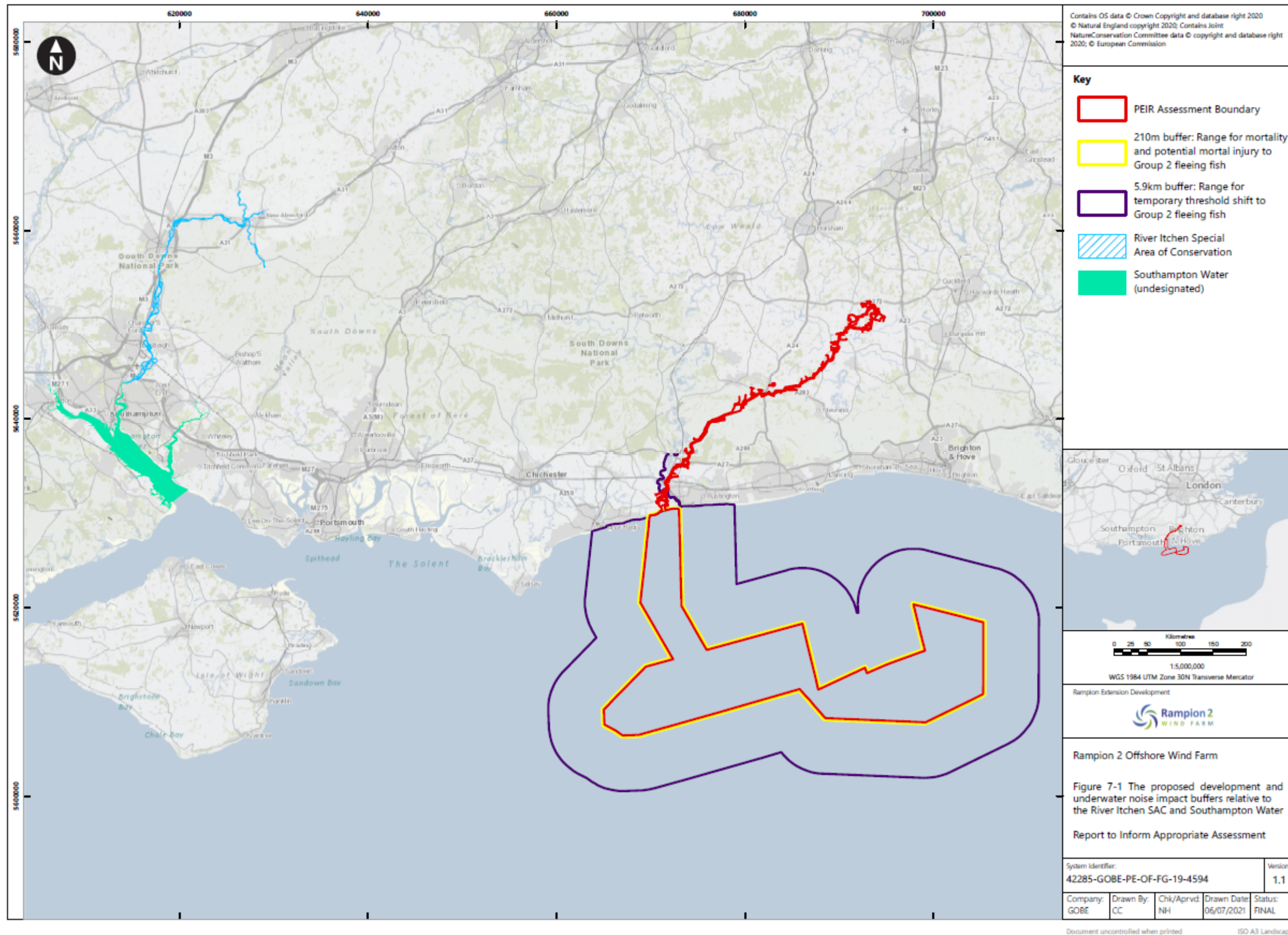
7.3.28 The location of the Proposed Development relative to the River Itchen SAC and the Southampton Water is presented in **Figure 7-1**. Behavioural effects on Group 2 fish receptors in the Rampion 2 study area (for which particle motion is most relevant) have been found likely to be spatially limited to within kilometres of piling operations. **Figure 7-1** highlights that the relative proportion of habitats potentially affected by piling operations at any one time will be small in the context of the



wider habitat available. Further that access to the Southampton Water passage is unlikely to be hindered.

- 7.3.29 Migrating salmon that encounter increased levels of underwater noise may display avoidance and displacement behaviour. However, as the Southampton Water (which provides migratory access to the River Itchen) is c.50km from the Proposed Development, passage would not be materially impeded over this scale, especially as fish are likely accessing the Southampton Water from the west (see **paragraph 7.3.6**). Any short-term behavioural effects would not amount to AEol. Due to the temporary and intermittent nature of any potential noise impacts, significant effects on migration, including barrier effects, effects on coastal migrations or movement to/from coastal habitats during key migration periods, would not be expected.
- 7.3.30 During decommissioning, the noise levels are expected to be much less than pile driving and therefore impacts would be less than as assessed during the construction phase. The noise resulting from WTG decommissioning employing abrasive cutting is unlikely to result in any injury, avoidance or significant disturbance. Some temporary minor disturbance might be experienced in the immediate vicinity of the decommissioning activity, for example, from jack-up vessels or from cutting piled foundations. The impact is predicted to be of highly local spatial extent, short term duration, intermittent and reversible.
- 7.3.31 It is determined that the relevant target attributes: to maintain '**Population: Adult run size**' and the '**Structure and Function: Supporting off-site habitat**' will not be hindered. In turn, the maintenance of the feature will continue to support site features dependent on the health of the salmon feature.
- 7.3.32 **There is, therefore, no potential for an AEol to the conservation objectives on the Atlantic salmon feature of The River Itchen SAC in relation to disturbance (barrier to migration) from Rampion 2 alone and therefore, subject to natural change, the feature will be maintained in the long term.**

Figure 7-1 The Proposed Development relative to the River Itchen SAC and the Southampton Water



## 7.4 Appraisal of potential AEol alone for benthic habitats and communities

### Introduction

- 7.4.1 Information to inform the assessment for benthic habitats is provided in **Section 3.3 (the MDS relevant to benthic habitats)**, **Section 6** (Embedded environmental measures and the Commitments register) and **Appendix F** (Information on Designated sites). The potential for LSEs /LSEI as regards benthic habitats is summarised in **Table 5-1**, with the Stage Two (AA) presented below.

### Solent Maritime SAC

#### Features and effects for assessment

- 7.4.2 The Potential for LSEs to result from Rampion 2 acting alone has been identified for the following listed features of the SAC:
- estuaries complex: an overarching habitat complex, comprising sub-feature habitats<sup>38</sup> some of which are designated in in their own right;
  - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);
  - mudflats and sandflats not covered by seawater at low tide (mudflats and sandflats)
  - salicornia and other annuals colonising mud and sand (Salicornia)
  - spartina swards (Cord-grass swards) (*Spartinion maritimae*) (Spartina)
  - sandbanks which are slightly covered by sea water all the time (subtidal sandbanks); and
  - coastal lagoons.

<sup>38</sup> Subtidal coarse sediment, subtidal sand, subtidal mixed sediments, subtidal seagrass beds, intertidal coarse sediment, intertidal sand and muddy sand, intertidal mud, intertidal mixed sediment and intertidal seagrass beds.

7.4.3 The potential for LSEs to result from Rampion 2 acting alone relates to the following effect pathways (which apply to each feature listed above):

- Construction and decommissioning:
  - ▶ **Suspended sediment and deposition** – effects due to suspended sediment dispersion and deposition following works during construction and decommissioning.
  - ▶ **MINNS (introductions)**- effects associated with the potential introduction and /or spread of new or existing invasive non-native species during construction and /or decommissioning.
  - ▶ **Pollution** - changes to water quality associated with the introduction of harmful contaminants to the environment following accidental leakages or spillages during marine works in the construction and decommissioning phases.
- Operation and maintenance:
  - ▶ **Suspended sediment and deposition** – effects due to suspended sediment dispersion and deposition associated with activities during the Operation and Maintenance phase.
  - ▶ **MINNS (new substrate)** - effects associated with the introduction of hard substrates and man-made underwater structures that could act as local vectors (new habitats) for the spread of introduced invasive and non-native marine species throughout operation.
  - ▶ **Pollution** - changes to water quality associated with the introduction of harmful contaminants to the environment following accidental leakages or spillages associated with activities during the Operation and Maintenance phase.
  - ▶ **Coastal processes** - effects on habitats, or processes supporting those habitats from changes in the hydrodynamic regime and/or coastal morphology (i.e., waves, currents and / or local sediment processes) due to the presence of the windfarm throughout its operation.

### Assessment information

7.4.4 The conservation objectives (March 2013) (Natural England 2020b) (as described in **Appendix F**) for the site are as follows:

- To ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the Favourable Conservation Status of its qualifying features, by maintaining or restoring:
  - ▶ the extent and distribution of qualifying natural habitats and habitats of the qualifying species;
  - ▶ the structure and function (including typical species) of qualifying natural habitats;
  - ▶ the structure and function of the habitats of the qualifying species;



- ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
- ▶ the populations of each of the qualifying species; and
- ▶ the distribution of qualifying species within the site.

7.4.5 The SAC overlaps geographically with the Solent and Southampton Water SPA, Solent and Southampton Water Ramsar and Solent and Dorset Coast SPA. The Conservation Objectives also refer to these sites and Chichester and Langstone Harbours SPA and Ramsar as functionally linked estuaries and habitat features. The following Conservation Objectives (that apply to ornithological features in SPAs<sup>39</sup> and supporting habitats) are therefore also relevant:

- to ensure that the site contributes to achieving the aims of the Birds Directive, by maintaining or restoring:
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features; and
  - ▶ the distribution of the qualifying features within the site.

7.4.6 At the conclusion of the AA for Solent Maritime SAC, any findings of significant or residual adverse effects on the supporting habitats of the SAC will feed into the site-specific assessments for functionally linked sites.

7.4.7 Supplementary Advice<sup>40</sup> for the SAC (Natural England 2020c), sets out the ecological attributes that contribute to the site's integrity. The attributes and targets have been considered as they specifically relate to each feature identified in **paragraph 7.4.2**, each effect and the target objective to maintain, or recover the feature.

7.4.8 Natural England's Advice on Operations<sup>41</sup> (Natural England 2020d), provides an initial assessment of potential impacts arising from for all phases of a theoretical 'offshore wind project' and direction (through the allocation of a sensitivity rating) as to, which interactions require further assessment. This advice is referenced where applicable.

<sup>39</sup> For Ramsar sites, Defra and Natural England chose not to produce Conservation Advice. Natural England considers the advice for overlapping designations to be, in most cases, sufficient to support the management of the Ramsar interests (Natural England, 2016).

<sup>40</sup> Natural England Designated Sites View: Solent Maritime SAC. Supplementary Advice: Updated: 13 March 2020.

<sup>41</sup> Natural England Designated Sites View: Solent Maritime SAC. Advice on operations: Updated: 13 March 2020. Viewing Advice on Operations for Offshore wind: construction, decommissioning and cables.

- 7.4.9 In addition to the site-specific information presented in **Appendix F**, information supporting the assessment is reported in:
- **PEIR Volume 2, Chapter 9: Benthic subtidal and intertidal ecology** which reports the full baseline characterisation (**paragraph 9.7.1**) and the data sources used to inform the benthic subtidal and intertidal assessment for the PEIR (listed in **Table 9-8** of that chapter);
  - **PEIR Volume 2, Chapter 6: Coastal processes** where a full description of the offshore physical environment (**Section 6.6**) and an assessment of the potential effects from Rampion 2 on that environment (**Section 6.8**) is provided.
- 7.4.10 The location of designated benthic and intertidal habitats in the Solent Estuarine system are shown in **Figure 7-2**<sup>42</sup>.

## Construction and decommissioning

### Suspended sediment and deposition

- 7.4.11 This section addresses the potential for AEoI from effects associated with the dispersion of suspended sediments specifically related to seabed preparation and physical disturbances during construction and decommissioning works.
- 7.4.12 During construction, offshore and/or intertidal works, notably foundation and cable installation and seabed preparation (including sandwave clearance) would cause a temporary, localised increase in suspended sediment concentrations (SSC) in the surrounding marine environment. During decommissioning, sediment could be mobilised during the removal of foundations, cables, and rock protection. Following this mobilisation, and dependent on hydrological conditions and sediment characteristics, the suspended sediment would be dispersed in the water column and ultimately, deposited. If contaminated seabed were disturbed, sediment bound contaminants could also be released and dispersed (Roberts, 2012).
- 7.4.13 Designated subtidal and intertidal habitats (and associated communities) and habitats supporting designated features present within the dispersal range of sediment plumes could be affected by a temporary change in water quality (i.e., reduced visual clarity<sup>43</sup>), increased sediment deposition (smothering) and/or exposure to sediment-bound contaminants. The 'Pressure Names' described in

<sup>42</sup> The Estuary Complex feature of the Solent Maritime SAC comprises of the mapped sub-feature habitats (subtidal coarse sediment, subtidal sand, subtidal mixed sediments, subtidal seagrass beds) that are shown on **Figure 7-2**

<sup>43</sup> Turbidity is a relative measure of light scattering by suspended particles. Visual clarity is referred to instead of turbidity, as the preferred (and more precise) optical quantifier

the Advice on Operations<sup>44</sup> for the SAC have been adopted in the sections below to address the three potential effects on each feature at risk:

- smothering and siltation rate changes (light or heavy);
- changes in suspended solids (water clarity); and
- contamination levels of sediment.

- 7.4.14 The implications of changes to SSC and seabed deposition are considered within **PEIR Volume 2, Chapter 9**, with reference to **PEIR Volume 2, Chapter 6** which describes the coastal process in the receiving environment. The AA has drawn upon the information and conclusions of the PEIR to determine how effects might manifest on the SAC and its features in relation to the site-specific objectives, and component attributes and targets.
- 7.4.15 Potential effects are explored with reference to the maximum design parameters set out in **PEIR Volume 2, Chapter 9** (and **Section 3.3** of this report). These refer to the total volume (m<sup>3</sup>) of sediment that could be mobilised (thereby resulting in a sediment plume) considering the area extent of the array and offshore export cable corridor and the need for seabed preparation for foundations, sandwave clearance, offshore trenching for cables and drilling at foundations. This provides a total estimate of 'temporary habitat disturbance' in the Rampion 2 array area and offshore export cable corridor from construction activities.
- 7.4.16 The behaviour and impact of the plumes is relative to tidal state and range and sediment type. At the time of writing, surveys or analysis are not complete. The baseline is described in **PEIR Volume 2, Chapter 9** with reference to existing sources, notably work undertaken to characterise the benthic ecology baseline for Rampion 1 (EMU, 2011). The most dominant habitat types are circalittoral coarse sediments, deep circalittoral coarse sediments, and deep circalittoral sand. These habitats are found predominantly across the Rampion 2 PEIR Assessment Boundary and across the mid to offshore portion of the Proposed Development. Sublittoral sediments, infralittoral coarse sediments and circalittoral fine sands or circalittoral muddy sands dominate the inshore portion of the offshore export cable corridor. Suspended sediments originating from the adjacent coastline are transported alongshore in a net eastward direction (with some offshore dispersion) (see **PEIR Volume 2, Chapter 6**).
- 7.4.17 Plume dispersion modelling will not be undertaken for Rampion 2 as the Applicant is satisfied that existing information and experience is sufficient and proportionate to describe the extent, duration, and concentration of sediment plumes. The area over which suspended sediments may travel following disturbance has been estimated with reference to the baseline characteristics and the tidal excursion extent and coastal processes modelling undertaken to inform the previous Rampion 1 Offshore Wind Farm EIA (ABPmer, 2012). Based on judgement informed by the baseline characterisation, a secondary zone of influence (ZOI) has been defined (as described in **PEIR Volume 2, Chapter 9**) which extends 10km around the offshore export cable corridor and 15km around the Array, thus

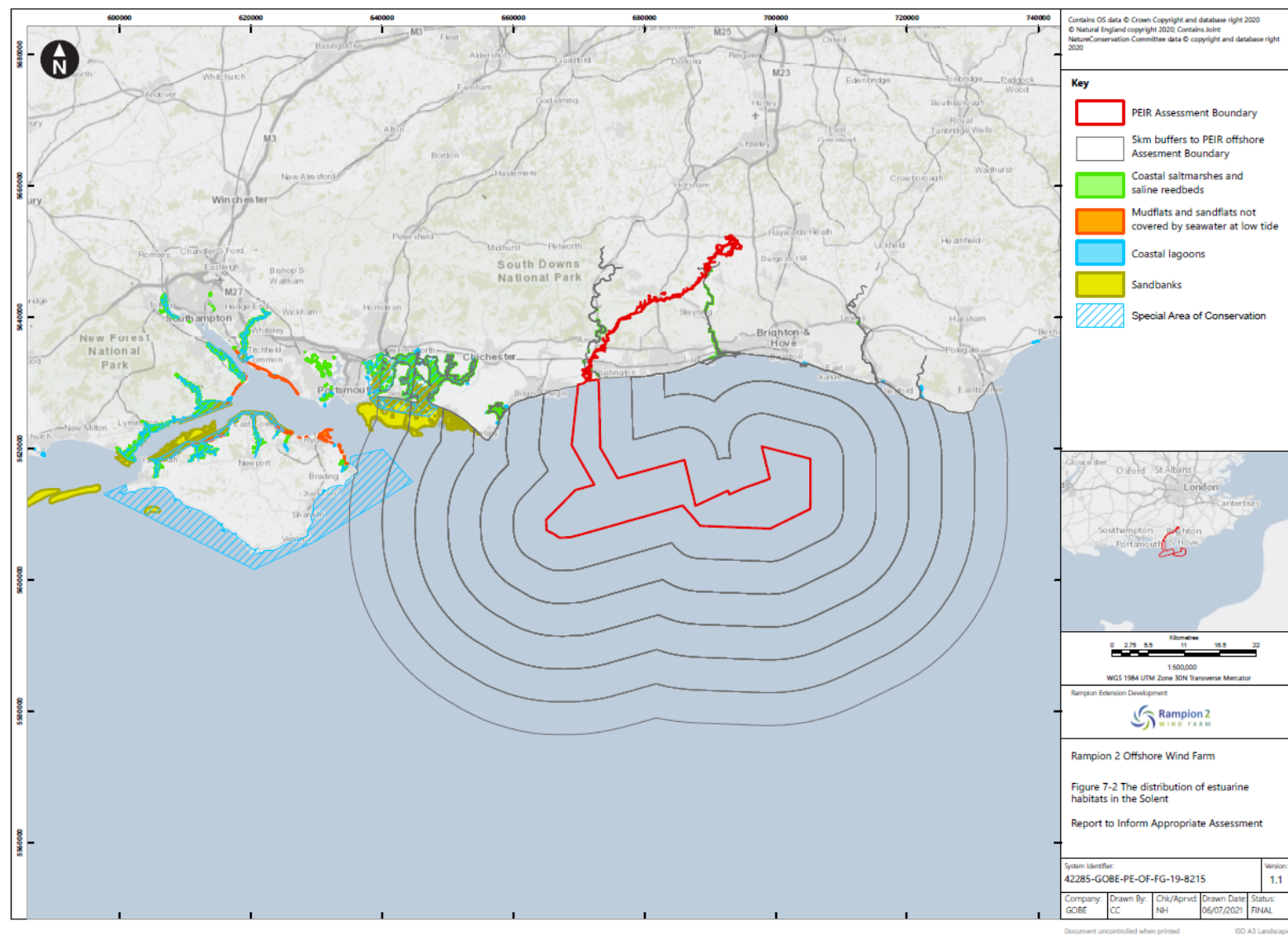
<sup>44</sup> Natural England Designated Sites View: Solent Maritime SAC. Advice on operations: Updated: 13 March 2020. Viewing Advice on Operations for Offshore wind: construction, decommissioning and cables.

defining the outer extent suspended sediment is expected to travel. That assessment enabled significant effects on this SAC to be discounted within the PEIR, on the basis that the SAC is at least 15.7km from the array and 22km from the offshore export cable corridor and therefore outwith the defined secondary ZOI.

- 7.4.18 Prior analysis of sediment plumes resulting from marine aggregate activities in the vicinity of Rampion 2 have shown that increases in SSC due to disturbance of the locally present sediments are a short-term localised effect (EMU, 1999) (see PEIR Volume 2, Chapter 6). Peak increases in SSC are expected local to the source. After larger (heavier) particles drop quickly out of suspension, fine-grained sediments still suspended, would form a plume. This plume would be rapidly dispersed by tidal currents and background concentrations restored rapidly. Activities that disturb the sediment would occur intermittently through construction and would not necessarily manifest consistently (i.e., in the same direction). As the resulting sediment plume would be intermittent, transient, and subject to rapid dilution and dispersion, most material will be re-eroded between activities and non-appreciable within a few tidal cycles. There is little potential for the coalescence of plumes (e.g., during the installation of multiple foundations) and due to the transient nature of effects and dynamic receiving environment, little potential for cumulative effects between activities.
- 7.4.19 Commitments (cited in the relevant sections below) have been secured to minimise seabed disturbance and reduce sediment suspension. In view of these commitments, the magnitude of the impact that construction activities relating to Rampion 2 will have on designated sites (generally) is concluded in the PEIR to be minor and of minor adverse significance. This refers to effects that are discernible, temporary changes, over a minority of the receptor, and / or limited but discernible alterations to key characteristics of the feature.



Figure 7-2 The distribution of estuarine habitats\* in the Solent



### Smothering and siltation rate changes

- 7.4.20 Sensitive habitats (and communities that define habitats) could be adversely affected by the redeposition of mobilised sediment through smothering, abrasion, or habitat alteration. The AA of the effects of suspended sediment deposition on features of the Solent Maritime SAC is provided below.
- 7.4.21 To minimise the disturbance of the seabed and potential impacts on designated sites, no temporary disturbance will occur within the intertidal (below MHWS). This is ensured by the following commitments (also set out in **Section 6**):
- C – 65: The proposed offshore export cable corridor and cable landfall (below MHWS) will avoid all statutory marine designated areas.
  - C – 43 : The subsea export cable ducts will be drilled underneath the beach using HDD techniques.
  - C – 45: Where possible, cable burial will be the preferred option for cable protection. Cable burial will be informed by the cable burial risk assessment and detailed within the Cable Specification Plan.

### Inter-tidal habitats

- 7.4.22 Suites of habitats that consistently occur together (in this case, within sheltered estuarine environments) can be considered as functional units (or an intertidal sub-system) for which independent components should not be considered in isolation of each other (JNCC, undated). Given the inter-dependencies between the following intertidal habitats: Atlantic salt meadows; mudflats and sandflats; Salicornia and Spartina, these features are addressed here as ‘saltmarsh habitat’ (and as individual features where necessary).
- 7.4.23 Saltmarsh (nor its component species (e.g., Salicornia and Spartina) was not assessed as part of the 2020 Marine Condition Assessment.<sup>45</sup> However, an increasing loss of saltmarsh throughout the Solent for unestablished reasons (Natural England, 2015) is, in part, the reason the condition of mudflats and sandflats is considered ‘Unfavourable No Change’ (100%). Intertidal seagrass<sup>46</sup> is also has an ‘Unfavourable’ condition status; its extent has been severely reduced by disease.

<sup>45</sup> Natural England Designated Sites View Solent Maritime SAC condition assessments for assessed features. see link

<sup>46</sup> Considered as a sub-feature of the Estuaries Complex Feature

- 7.4.24 The Advice on Operations<sup>47</sup> indicates that siltation /smothering impacts are not relevant<sup>48</sup> for these intertidal habitat features in relation to offshore windfarm constructions<sup>49</sup> (taken as works within the array), during decommissioning, or activities causing “light siltation”. However, the installation of cables<sup>50</sup> could cause “heavy siltation.” However, this siltation would only exceed the pressure benchmark if 30cm of fine material were added to the habitat(s) in a single event (Natural England, 2020d). This pressure benchmark indicates a level of resilience of these features to varying and high levels of sediment (such that frequently occur during tidal inundations). Accordingly, small scale and transient influxes of fine material on benthic infauna communities would be insignificant. Seagrass beds are highly intolerant to deposited sediment. Large increases in sediment load will reduce the habitat available for recolonisation (Zabarte-Maeztu et al., 2020), however, the feature can withstand small-scale, short-term increases in deposition.
- 7.4.25 Both Chichester and Langstone Harbours contain extensive intertidal mudflats and sandflats with saltmarshes. There is a notable presence also, on the western shore of Southampton Water and Hamble Estuaries (**Figure 7-2**). (Natural England, 2021) Seagrass beds within the Solent Maritime SAC are located within Chichester and Langstone harbours. At the closest points, the array is located 25.9km from Chichester Harbours and 32.9km from Langstone Harbours. The closest Rampion 2 development boundary is 49.3km from to the western shore of Southampton Water and 53.3km from the Hamble Estuaries. Rampion 2’s Offshore Cable Corridor boundary is located 22.1km from this SAC, but notably further away from these known areas of substantial saltmarsh habitat.
- 7.4.26 Given the distance of the subject intertidal features within the SAC, from Rampion 2 there is no potential for fine sediment within the plume to interact with these features.
- 7.4.27 **There is, therefore, no potential for an exceedance of the pressure benchmark (a 30cm settlement) or adverse effects on the integrity of features sensitive to effects at this level. It is determined that the relevant**

<sup>47</sup> Natural England Designated Sites View: Solent Maritime SAC. Advice on operations: Updated: 13 March 2020. Viewing Advice on Operations for Offshore wind: construction, decommissioning and cables.

<sup>48</sup> ‘NOT RELEVANT’: The evidence base suggests that there is no interaction of concern between the pressure and the feature (Advice on Operations for Solent Maritime SAC) Natural England, 2020c

<sup>49</sup> This this refers to a large offshore windfarm constructed over many years and covers seabed preparation, piling, drilling, vessel movements and the installation of scour protection and artificial substrate (Natural England, 2020c)

<sup>50</sup> This covers the installation of cables laid directly on the seabed and covered with material for protection, otherwise buried by trenching (ploughing) and hydraulic jetting. A cable diameter 70 to 450mm is assumed. Seabed preparation works, preparatory, dredging, pre-laying grapnel runs, boulder removal, UXO clearance, vessel movements and anchoring within a footprint feature (Advice on Operations for Solent Maritime SAC) Natural England, 2020d

**target attributes (in all cases to maintain ‘Supporting Processes: Sedimentary Processes’ and ‘Structure and Function: Sediment Size’) would not be hindered. In turn, the composition and distribution of habitats will continue to provide resources for bird species.**

### *Subtidal habitats*

- 7.4.28 Subtidal sandbanks occur throughout the SAC with subtidal sand and mud more prevalent within the estuaries and subtidal and gravel more predominant along the open coast. All subcomponents of this feature (subtidal sand, subtidal mixed and subtidal coarse sediments) are in unfavourable condition (Natural England, 2020e). Subtidal seagrass beds (a sub-feature of the sandbanks that has been surveyed by the Hampshire and Isle of Wight Wildlife Trust since 2008) are present within Chichester and Langstone harbours and across the north of the Isle of Wight and totalled 134.3 Ha in extent in 2014 (MESL, 2015). The representative communities of subtidal sandbanks can include species that can be strongly influenced by sediment stability and type. The character of the feature could therefore be altered or impaired by sediment deposition (which could alter the character of the substrate), although sediment characteristics do fluctuate naturally (e.g. Collins et al., 1995)).
- 7.4.29 The Advice on Operations (Natural England, 2020d) indicates that the feature is sensitive to even light smothering and siltation rate changes (i.e., the introduction of another sediment type). The Advice directs that such an effect could be expected during the construction and decommissioning of an OWF and during cable works. The pressure benchmark would be exceeded if up to 5cm of fine material were added to the habitat in a single event. The vast distance (as summarised in **paragraph 7.4.25**) of the designated subtidal features relative to Rampion 2 (a minimum of 25km) provides a large spatial extent for fine sediment to disperse. In view of this distance, there is considered to be no potential for fine sediment within the plume to interact with these features. It follows that there is no potential for an exceedance of the pressure benchmark (a 5cm settlement) or adverse effects on the integrity of features sensitive to effects at this level. Sediment deposition as a result of construction activities at Rampion 2 is estimated as set out in **Table 9-20** of the **PEIR (Volume 2, Chapter 9)**.
- 7.4.30 In relation to sandwave clearance and seabed preparation for foundations, the maximum expected average local thickness of deposition in the case of predominantly gravelly sediments is 10cm over an area of 1,125m<sup>2</sup>, or 30cm over an area of 350m<sup>2</sup>. The maximum expected average local thickness of deposition in the case of predominantly sandy sediments is 1 to 2cm over an area of 4,000 to 16,000m<sup>2</sup>. Fines are expected to become widely dispersed and so will not resettle with measurable thickness even locally. It is therefore determined that the relevant target attributes (to maintain the: **Distribution: presence and spatial distribution of biological communities; Structure: species composition of component communities** and: **substrate composition and distribution**) would not be hindered.

### *Coastal lagoons*

- 7.4.31 Both coastal lagoons within the SAC (Newtown Quay Lagoon and Yar Bridge Lagoon) are situated landward of Natural England’s coastal path (Natural England,

2013) Both lagoons are actively protected from tidal flooding by sea defences, namely a maintained embankment (Newtown Quay) and a sea wall sluice (Yar Bridge) (Isle of Wight Council & Royal Haskoning, 2010). As these features are isolated from the natural processes within the marine environment, the potential for interactions with Rampion 2 and adverse effects is discounted on the basis there is no viable pathway for effects.

### *Estuaries Complex Feature*

7.4.32 The Estuary Complex Feature comprises nine sub-features<sup>51</sup> which are considered to be accounted for in the feature assessments above (see **paragraph 7.4.20 - 7.4.41**). The impact pathways and vulnerabilities are the same. The feature is considered to be in unfavourable condition (with reference to the condition of its components and due to elevated aqueous contaminants and nitrogen levels. The feature is assessed with reference to the findings for the component features (see feature assessments above). Many of the Estuary qualifying habitats are not considered particularly sensitive to sediment deposition generally and highly tolerant of the minimal, temporary, and transient increases in SSC predicted for Rampion 2. Due to the lack of predicted effects on the sub-features of the Estuary qualifying feature, no adverse effects are anticipated for this feature. It is determined that the relevant target attributes would not be hindered. In turn, the composition and distribution of habitats will continue to provide resources for bird species.

7.4.33 **There is, therefore, no potential for an AEoI to the conservation objectives of the estuarine features of the Solent Maritime SAC in relation to effects associated with smothering and siltation rate changes during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term with respect to the potential for sediment deposition following sediment remobilisation.**

### *Changes in suspended solids (water clarity)*

7.4.34 While sediment remains suspended, 'visual clarity' through the water is reduced. The presence of suspended matter limits light penetration and thereby, potentially primary productivity at affected sites (Bash *et al.*, 2001). The AA of the effects of suspended sediment on sensitive site features is provided below. The mitigation set out in **paragraph 7.4.19** to minimise the disturbance of the seabed at the source applies.

### *Inter-tidal habitats*

7.4.35 The Advice on Operations (Natural England, 2020d) confirms that the potential for effects on these features does not relate to reduced photosynthesis, rather changes in sediment supplies (which are considered a hydrodynamic issue and addressed in **paragraph 7.4.80**) It is noted that the water surrounding the

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<sup>51</sup> Subtidal coarse sediment, subtidal sand, subtidal mixed sediments, subtidal seagrass beds, intertidal coarse sediment, intertidal sand and muddy sand, intertidal mud, intertidal mixed sediment and intertidal seagrass beds.



saltmarshes is naturally turbid (with varying levels between sites) and further, that increased SSC in the water could benefit saltmarsh and aid pioneer species by providing additional sediment to colonise (Natural England 2020c, citing Packham & Willis, 1997).

- 7.4.36 The location (as summarised in **paragraph 7.4.25**) of these features relative to Rampion 2 (at least 25km) provides a large spatial extent for fine sediment to disperse. With reference to the manifestation of the effects (as summarised in **paragraph 7.4.16 to 7.4.18**) and the temporary, intermittent, transient, nature of effects (**paragraph 7.4.18**) and there is extremely limited potential for the exposure of these features to this effect. Given this, that reduced photosynthesis is not of concern and that sediment deposition could, in any event, be advantageous to the system, no adverse effects are anticipated. It determined that the relevant target attributes to maintain **Supporting processes: Sedimentary Processes** and **Structure and function: Sediment Size** would not be hindered.

#### *Subtidal habitats*

- 7.4.37 The Advice on Operations (Natural England, 2020d) cites cable burial, and the secondary effect of construction works as activities with the potential to raise sediment and change water clarity (or turbidity). Prolonged changes in turbidity the habitat's associated communities and average light attenuation should not decrease significantly from baseline conditions. The pressure benchmark is a change in one Water Framework Directive ecological status class for one year (Natural England, 2020d). As Rampion 2's sediment plumes are expected to quickly dissipate, and with reference to the temporary nature of effects described in the **PEIR (Volume 2, Chapter 9)** and as summarised in **paragraph 7.4.18** of this report, this feature (and associated sub-features) are not considered sensitive to this pressure at the benchmark. It determined that the relevant target attributes to maintain **Supporting processes: Sedimentary Processes** and **Structure and function: Sediment Size** would not be hindered.

#### *Coastal lagoons*

- 7.4.38 There is considered to be no pathway to effects on this feature. See **paragraph 7.4.31**.

#### *Estuaries Complex Feature*

- 7.4.39 The Estuaries feature is informed by the findings of the assessments undertaken for the sub-feature habitats the feature encompass. The impact pathways and vulnerability are the same. Due to the lack of predicted effects on the sub-features of the Estuary qualifying feature, no adverse effects are anticipated. It determined that the relevant attributes to maintain: **Supporting Processes: Sedimentary Processes** and **Structure and Function: Sediment Size** would not be hindered.
- 7.4.40 **There is, therefore, no potential for an AEoI to the conservation objectives of the Estuaries complex features of the Solent Maritime SAC in relation to effects associated with reduced water clarity (due to suspended sediments) during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or**

**restored in the long term with respect to the potential for reduced visual clarity following sediment mobilisation.**

### Contamination levels of sediment

#### *All SAC features<sup>52</sup>*

- 7.4.41 Should contaminated seabed be disturbed, sediment bound contaminants could be released and dispersed in marine environment (Roberts, 2012). Any degradation of water quality and / or uptake of contaminants by the ecosystem could result in deleterious effects on feature health, function, resilience, condition, and mortalities. The AA of the potential effects of sediment-bound contaminant on sensitive site features is provided below. The mitigation set out in **paragraph 7.4.19** to minimise the disturbance of the seabed at the source applies.
- 7.4.42 The Estuaries Complex (and all sub-features) are in 'Unfavourable' condition, in part, due to elevated aqueous contaminants levels (Natural England, 2020e). Accordingly, feature target objectives are to restrict surface sediment contaminant levels.<sup>53</sup> Natural England has not provided Advice on [offshore windfarm] operations in relation to this pressure.
- 7.4.43 Risk is relative to the level of contamination and the proximity of the source to sensitive features. The distribution of features is discussed in **paragraph 7.4.25** (saltmarsh), **paragraph 7.4.28** (subtidal habitats including seagrass beds) and **paragraph 7.4.31** (lagoons).
- 7.4.44 In all cases, the sub feature habitats designated within the SAC are located a considerable distance (no closer than 25 km) over which any contaminants released would be dispersed across a large spatial extent.
- 7.4.45 **PEIR Volume 2, Chapter 9** addresses contaminants within the seabed at the array and offshore cable corridor. As part of the baseline characterisation at the existing Rampion 1 project, surface sediments were tested for a range of contaminants. An analysis of benthic invertebrates in hand-cores taken for Phase 1 habitat survey between East Worthing and South Lancing provides regional context. The results revealed that the levels of contaminants within the sediments were generally low, suggesting sediment across the existing Rampion 1 project area ((including the surrounding area) would not present any concern for seabed disturbance.
- 7.4.46 Eleven of the sites sampled supported levels of contaminants in excess of Action Level 1 for Arsenic and Chromium, at four of the sites (EMU, 2011). It is agreed with PINS, that Rampion 2's Environmental Statement will explain the significance of this finding, and the risk posed from any other contaminants found in the context of characterising the whole survey area. The outcomes of the EIA will be used to inform future iterations of HRA.

<sup>52</sup> These are set out in **paragraph 7.4.2**.

<sup>53</sup> heavy metals (Hg, As, Zn, Ni, Ch, Cd, etc.), poly-aromatic hydrocarbons, polychlorinated biphenyls, organotins, pesticides (e.g., hexachlorobenzene)

- 7.4.47 Notwithstanding, as any contaminants released would be subject to rapid dilution, weathering and dispersion and would be unlikely to persist in the marine environment no adverse effects on site integrity are anticipated for a site this distance from the Rampion 2 PEIR Assessment Boundary.
- 7.4.48 **There is, therefore, no potential for an AEol to the conservation objectives of the features of the Solent Maritime SAC in relation to effects associated with the dispersal of sediment-bound contaminants in the marine environment during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term with respect to the potential for effects following the release of sediment-bound contamination.**

### Marine invasive non-native species (introduction and or spread)

#### All SAC features<sup>54</sup>

- 7.4.49 During the construction and decommissioning phases, marine invasive and non-native species (MINNS) could be accidentally imported to site. The most likely vectors are vessels; through fouling on the hulls, or the release of organisms in ballast water, should any such vessels be used (Eno *et al.*, 1997). Vessels transiting ports and harbours and those berthed for long periods present a particular risk.
- 7.4.50 Of those organisms transported and released, a small proportion successfully establish and become invasive. The involvement of such species in competitive interactions could destabilise ecosystem structure and function and compromise native benthic communities. The AA of the potential effects of MINNS on sensitive site features is provided below.
- 7.4.51 The following commitments that will be secured by a DCO requirement or DML Condition to reduce the risk of introduction and spread of MINNS are relevant to the AA:
- C-95: Mitigation and control of invasive species measures will be incorporated into a PEMP; and
  - C – 65: The proposed offshore cable corridor and cable landfall (below MHWS) will avoid all statutory marine designated areas.
- 7.4.52 The Advice on Operations (Natural England, 2020d) considers all features to be sensitive to MINNS, with the exception of intertidal coarse sediments. In 2018, the sandbanks, mud and sand flats, coastal lagoons and Estuaries features all failed to meet the target attribute: **Structure: non-native species and pathogens**. Although, as it was not evident that this was having an adverse effect on the communities present, and the finding did not inform the condition categories (which are 'Unfavourable' in all cases) (Natural England, 2020e).

<sup>54</sup> These are set out in **paragraph 7.4.2**.



- 7.4.53 Some protection against bio-invasion risk is provided by assumed compliance with international legislation, guidelines, and methodologies<sup>55</sup>. The high-risk status currently assigned to the Solent and Southampton Water and the widespread presence of invasive present across the SAC (and neighbouring SACs) indicate further measures are required to ensure invasive species will not be introduced. It is recognised that the risk of impacts to site integrity could be exacerbated if the introduction of hard substrate (i.e., Rampion 2's infrastructure) were to support the colonisation of MINNS.
- 7.4.54 The risk presented by Rampion 2 is associated with 2576 return vessel movements<sup>56</sup> during construction. In the absence of mitigation, the risk of an invasive species being introduced to site during construction or decommissioning cannot be discounted. Therefore, as identified at Screening, the AA is required to illustrate how mitigation measures will be implemented to avoid the spread of non-native species.
- 7.4.55 As per commitment C-95, measures to avoid the introduction or spread of MINNS will be incorporated into a PEMP which will be approved by the relevant stakeholders and secured through DCO requirements or DML conditions. With reference to these two commitments, that include the avoidance of designated habitats **PEIR Volume 2, Chapter 9** predicts non-significant effects in EIA terms (effects of minor adverse significance).
- 7.4.56 With reference to these findings, the AA concludes that adherence to the above mitigation would further reduce the low risk of bio-invasions associated with Rampion 2 vessels and ensure that there is no potential for adverse effects on integrity on the site as a result of invasive species. It is determined that the relevant attribute targets: **Structure: non-native species and pathogens: Reduce / restrict the introduction and spread of non-native species and pathogens, and their impacts** and for saltmarsh, to maintain **Structure and function: vegetation – undesirable species** would not be hindered.
- 7.4.57 **There is, therefore, no potential for an AEol to the conservation objectives of the features of the Solent Maritime SAC in relation to effects associated with invasive non-native species introduced by vessels during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term with respect to the potential for species introductions.**

<sup>55</sup> Such as The European Union's Regulation on the prevention and management of the introduction and spread of invasive alien species (EU, 2014).

<sup>56</sup> This refers to 2567 return journeys from port to site (5,152 trips if the journey from port to site plus the journey back from site to port are counted). This total comprises numbers of return trips 600 for foundation installation, 1,340 for WTG installation, 222 for export cable installation, 96 for Offshore substation installation and 318 for Array cable installation.

## Pollution

### All SAC features<sup>57</sup>

- 7.4.58 This effect refers to potential contamination of the marine environment resulting from the spillage of fluids, fuels<sup>58</sup> or construction materials from vessels and/or machinery during construction and decommissioning. Any degradation of water quality and / or uptake of contaminants by the ecosystem could result in deleterious effects on feature health, function, resilience, condition, and mortalities. Such effects would only result from non-compliance with legislation, codes of conduct or best practice. The Advice on Operations (Natural England, 2020d) lists all features and sub-features of the SAC as Not Sensitive<sup>59</sup> during the construction or decommissioning of an OWF.
- 7.4.59 Pollution events are not considered to present a risk of significant impacts on the designated benthic subtidal and intertidal receptors of this SAC. The magnitude of an accidental spill will be limited by the size of chemical or oil inventory on construction vessels. In addition, released hydrocarbons would be subject to rapid dilution, weathering and dispersion in a tidally dominated coastal marine environment and would therefore be unlikely to persist in the marine environment.
- 7.4.60 The likelihood of an incident will be further reduced by implementation of pollution prevention measures set out in a Marine Pollution Contingency Plan (MPCP) which will be approved by the relevant stakeholders and secured through DCO requirements or DML conditions., together with strict navigational protocols. The following commitments will be secured by a DCO requirement or DML condition to reduce the risk of water pollution:
- C – 53: A MPCP will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to Rampion 2. The MPCP will also include relevant key emergency contact details;
  - C – 56: RED will apply for safety zones post consent. Safety zones of up to 500m will be sought during construction, maintenance and decommissioning phases. Where appropriate, guard vessels will also be used to ensure adherence with Safety Zones or advisory passing distances, as defined by risk assessment, to mitigate any impact which poses a risk to surface navigation during construction, maintenance and decommissioning phases. Such impacts may include partially installed structures or cables, extinguished navigation lights or other unmarked hazards;
  - C – 62: RED will comply with legal requirements with regards to shipping, navigation and aviation marking and lighting; and

<sup>57</sup> These are set out in **paragraph 7.4.2**.

<sup>58</sup> polycyclic aromatic hydrocarbons in vessel oil

<sup>59</sup> Specifically, “not sensitive to the pressure at the benchmark.” This means the activity under consideration generally does not cause impacts at a level of concern, but the activity-pressure-feature combination should be considered for in-combination effects.

- C – 65: The proposed offshore cable corridor and cable landfall (below MHWS) will avoid all statutory marine designated areas.

- 7.4.61 The Planning Inspectorate has agreed (Scoping Opinion, 2020d) that, with the implementation of measures to limit any potential pollution incidents, any potential impacts on benthic subtidal and intertidal ecology are unlikely to result in significant effects. However, the Inspectorate seeks assurances as to the detail of such measures that would be employed and how they would be secured and therefore considers that this detail should be described within the ES. Accordingly, details of the MPCP will be presented within the ES and subsequent versions of the HRA reports.
- 7.4.62 Due to the limited potential for effects and the application of pollution prevention measures and navigational protocols, unplanned oil or chemical spillages from vessels would not result in adverse effect on site integrity. The relevant attribute: targets to maintain **Supporting Processes: water quality – contaminants** or **restrict aqueous contaminants to avoid deterioration from existing levels** would not be hindered.
- 7.4.63 **There is, therefore, no potential for an AEol to the conservation objectives of the features of the Solent Maritime SAC in relation to effects associated with unplanned oil or chemical spillages that may occur during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term with respect to the potential for pollution events.**

## Operation and maintenance

### Temporary increases in suspended sediment and disposition

#### *All SAC features<sup>60</sup>*

- 7.4.64 The potential for LSEs was identified following a request by Natural England (see **Appendix A**) at consultation to clarify the nature of the works likely to take place during Operation and maintenance. Further information on these activities is set out in **PEIR Volume 2, Chapter 4: The Proposed Development** and summarised in **Section 3**). With reference to these activities, the potential for sediment mobilisation during Operation and Maintenance activities would be small-scale, infrequent, intermittent and less than during construction.
- 7.4.65 Given a determination of no AEol was made for effects (of a greater magnitude) during construction, the limited capacity and intermittent nature of sediment dispersal during Operation and Maintenance works and the significant potential for dilution and dispersion in the open coastal environment (as described in **PEIR Volume 2, Chapter 6**), impacts (as described in **paragraph 7.4.15**), are not expected to manifest at levels that could undermine the integrity of this SAC particularly given the distance of the features from the effect-source (feature locations relative to Rampion 2 are discussed in **paragraph 7.4.25** (saltmarsh),

<sup>60</sup> These are set out in **paragraph 7.4.2**.

**paragraph 7.4.28** (subtidal habitats, including seagrass beds) and **paragraph 7.4.31** (lagoons).

- 7.4.66 On the rationale above, there is no potential for an AEol to the conservation objectives of the features of the Solent Maritime SAC in relation to effects associated with temporary increases in suspended sediment and disposition of Rampion 2 alone during operation. **Therefore, subject to natural change, these features will be maintained or restored in the long term with respect to the potential for temporary increases in suspended sediment and disposition.**

### Marine invasive non-native species (introduction of hard substrates)

#### All SAC features<sup>61</sup>

- 7.4.67 The introduction of hard substrates and man-made underwater structures could act as local vectors (new habitats) for MINNS. By creating new opportunities for organisms to settle, new substrates could encourage invasive species to spread and out-complete native species which could lead to the regime shifts described previously in **paragraph 7.4.50**.
- 7.4.68 This effect is associated with the colonisation of the WTGs and scour/ cable protection and the presence of windfarm infrastructure throughout operation. Also, the MDS with regards to maximum number of vessel movements during Operation and Maintenance activities (see **Section 3.3**).
- 7.4.69 The following commitment that will be secured by a DCO requirement is relevant to the AA as it limits, as far as practicable, the initial risk of introduction of MINNS that might be subsequently spread:
- C-95 The assessment will take into consideration the mitigation and control of invasive species measures that will be incorporated into a PEMP.
- 7.4.70 The region surrounding the array and offshore cable corridor is a busy shipping channel, with numerous ports and harbours which contain hard substrate modifications for navigation and flood protection. The existing Rampion 1 also provides hard substrates. These harbours are associated with the high numbers of non-native species that are widely reported for the Solent and Southampton water (e.g., Natural England, 2016). MINNS already present in the region include (most notably) slipper limt (*Crepidula fornicate*), Pacific oyster (*Crassostrea (Magallana) gigas*), Chinese mitten crab (*Eriocheir sinensis*), and the leathery sea squirt (*styela clava*) (Eno et al., 1997; Great Britain Non-Native Species Secretariat, 2019). Many have been present in the Solent and its coastline since the early 1990s (Natural England, 2016) and likely, well before.
- 7.4.71 The distribution of these MINNS extends along the south coast of England with reports at Brighton, Portsmouth and Weymouth and in harbours on the south west (Natural England, 2016). The control of MINNS is the subject of site plans for numerous European sites along that coast line (Natural England, 2014). Despite the presence of MINNS across the Solent Maritime SAC, currently, these do not

<sup>61</sup> These are set out in **paragraph 7.4.2**.

appear to be having an adverse effect on the communities present (Natural England, 2020d).

- 7.4.72 The embedded environmental measures secured for the Proposed Development (namely, commitment C-95) ensures there is a negligible risk of new species introductions. Given this and the prevalence of hard substrate surfaces and MINNS already in the region, the addition of hard substratum in the array and offshore cable corridor and infrastructure associated with Rampion 2 would not create any new 'connectivity routes' or "stepping stones" that were previously absent. This is particularly true given the Rampion 1 OWF is already present in the sea-space immediately adjacent to the Proposed Development. Further, there is considered to be no pathway for the facilitated spread of MINNS to affect the supporting habit of wader and wildfowl species.
- 7.4.73 The increased risk of introduction or spread of MINNS due to presence of infrastructure and potential impacts on benthic ecology biodiversity and productivity due to the introduction of hard substrates is addressed in section **Chapter 9: Benthic Subtidal and Intertidal Ecology**. As the movement of commercial vessels is common throughout the region and hard substrates are already prevalent throughout the region, the significance of effect is deemed minor adverse significance. This finding is held to be applicable to the assessment of potential adverse effects on this SAC.
- 7.4.74 **There is, therefore, no potential for an AEol to the conservation objectives of the features of the Solent Maritime SAC in relation to effects associated with the introduction of hard-substrate that might benefit MINNS during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.**

## Pollution

### *All SAC features<sup>62</sup>*

- 7.4.75 The potential for impacts on benthic subtidal and intertidal receptors associated with accidental pollution events during Operation and Maintenance phase has been scoped out of the PEIR on the basis the pathway is not considered to have the potential to result in significant effects. The potential for LSEs was identified, however, following a request by Natural England (see **Appendix A**) at consultation, based on a need to clarify the nature of the works likely to take place during Operation and Maintenance. Further information on these activities is set out in **PEIR Volume 2, Chapter 4: The Proposed Development, specifically Section 4.6 of that Chapter** (Operation and Maintenance, paragraph 4.6.5 (offshore) and also summarised in **Section 3.3** of this report.
- 7.4.76 The potential for pollution is associated, in part, with 33,390 vessel return trips per year over the 30-year design lifetime. With reference to the activities, as clarified, the potential for pollution events during Operation and Maintenance activities would be small-scale, infrequent, intermittent, and less than during construction. The magnitude of an accidental spill will be limited by the size of chemical or oil

<sup>62</sup> These are set out in **paragraph 7.4.2**.

inventory on vessels. In addition, released hydrocarbons would be subject to rapid dilution, weathering and dispersion and would be unlikely to persist in the marine environment.

- 7.4.77 Further, the following commitment would be secured through DCO requirements or DML conditions to reduce the risk to negligible levels:
- C- 53: A Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to Rampion 2. The MPCP will also include relevant key emergency contact details
- 7.4.78 With reference to the determination of **no AEol** made for effects (of greater magnitude) during construction and the significant potential for dilution and dispersion in the open coastal environment, impacts are not expected to manifest at levels that could undermine the integrity of this SAC. The Inspectorate agrees (Scoping Opinion, 2020) that, with the implementation of measures to limit any potential pollution incidents, any potential impacts on benthic subtidal and intertidal ecology are unlikely to result in significant effects.
- 7.4.79 **There is, therefore, no potential for an AEol to the conservation objectives of the features of the Solent Maritime SAC in relation to effects associated with unplanned oil or chemical spillages that may occur during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term with respect to the potential for accidental pollution events.**

## Changes to coastal processes

### All SAC features<sup>63</sup>

- 7.4.80 Potential effects on benthic and intertidal communities could result from changes to coastal processes. For example, array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g., to wave action). Changes to seabed habitats arising from effects on physical processes, including scour effects and changes in the sediment transport and wave regimes are addressed in **PEIR Volume 2, Chapter 9** with reference to **PEIR Volume 2, Chapter 6**. The MDS for the assessment of changes to seabed habitats, including scour effects and changes in the sediment transport and wave regimes is presented in **PEIR Volume 2, Chapter 6** and **Table 3-1**.
- 7.4.81 The coastal processes assessment (**PEIR Volume 2, Chapter 6**) has determined that the impacts on hydrodynamic and wave regimes from cumulative impacts would be not significant and would therefore not result in any significant changes to sediment transport and consequently will not have any significant adverse impacts on benthic ecology.
- 7.4.82 **There is, therefore, no potential for an AEol to the conservation objectives of the features of the Solent Maritime SAC in relation to changes to coastal**

<sup>63</sup> These are set out in **Paragraph 7.4.2**.



processes during the operation of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.

## South Wight Maritime SAC

### Features and effects for assessment

- 7.4.83 The potential for LSEs from Rampion 2 acting alone has been identified for the following listed features of the SAC:
- reefs; and
  - submerged or partially submerged sea caves<sup>64</sup>.
- 7.4.84 The effects with the potential to result in LSEs relate to the same pathways identified for the features of the Solent Maritime SAC: suspended sediment and deposition, pollution and MINNS (see **paragraph 7.4.2**) and apply to both features listed above.
- 7.4.85 The closest boundary of this SAC is located 20.5 km from the array. As the maximum extent of the plume is not predicted to extend further than 10 km buffer around the offshore cable corridor or 15 km buffer around the array, this site is not explicitly addressed in the **PEIR Volume 2, Chapter 9**). The SAC is addressed in the HRA following advice at consultation (see **Appendix A**) and with reference to mitigation applied to reduce potential effects related to sediment mobilisation, MINNS and pollution.

### Assessment information

- 7.4.86 The conservation objectives (March 2018)<sup>65</sup> (as described in **Appendix F**) for the site are as follows:
- To ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the Favourable Conservation Status of its qualifying features, by maintaining or restoring:
    - ▶ the extent and distribution of qualifying natural habitats and habitats of the qualifying species;
    - ▶ the structure and function (including typical species) of qualifying natural habitats;
    - ▶ the structure and function of the habitats of the qualifying species;

64 No pathways are identified to the Vegetated sea cliffs of the Atlantic and Baltic coasts feature of the site

65 Natural England Designated Sites View: South Wight Maritime SAC. Last updated: 16th March 2018. See this link.



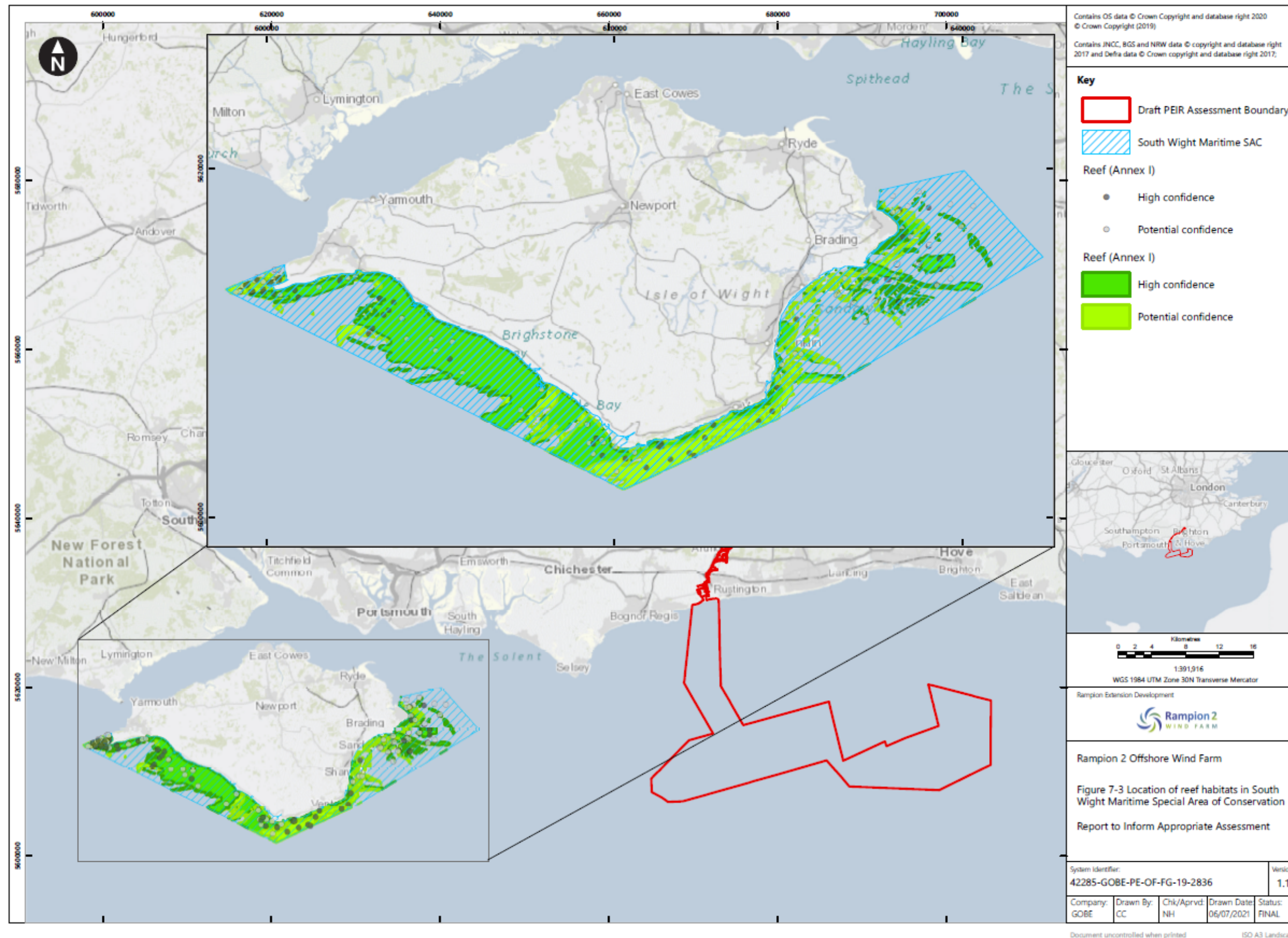
- ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
- ▶ the populations of each of the qualifying species; and
- ▶ the distribution of qualifying species within the site.

- 7.4.87 As the SAC overlaps geographically with the Solent and Dorset Coast SPA and the Solent and Southampton Water SPA and Ramsar (Natural England, 2018), the high-level conservation objectives listed in **paragraph 7.4.5** (that apply to ornithological features in SPAs and supporting habitats) are also relevant. At the conclusion of the AA for South Wight Maritime SAC, any findings of significant or residual adverse effects on the supporting habitats of the SAC will feed into the site-specific assessments for the relevant SPAs.
- 7.4.88 Supplementary Advice<sup>66</sup> for the SAC, sets out the ecological attributes that contribute to the site's integrity. The attributes and targets have been considered as they specifically relate to both features, each effect and the target objective to maintain, or recover the feature.
- 7.4.89 Natural England's Advice on Operations<sup>67</sup> provides an initial assessment of potential impacts arising from for all phases of a theoretical 'offshore wind project' and direction (through the allocation of a sensitivity rating) as to, which interactions require further assessment. This advice is referenced where applicable.
- 7.4.90 In addition to the site-specific information presented in Appendix F, information supporting the assessment are reported in **Chapter 9, The Benthic Method Statement** and: **Chapter 6: Marine Geology, Oceanography and Physical Processes**.
- 7.4.91 Potential effects and the information underpinning the assessments at the Proposed Development site have been described for subtidal and intertidal habitats previously. To avoid repetition, the reader is directed to:
- **paragraph 7.4.12:** for a description of source activities;
  - **paragraph 7.4.14** for the data sources comprising the baseline;
  - **paragraph 7.4.13:** for a summary description of the baseline
  - **paragraph 7.4.15** and **Table 3-2** for the MDS associated with the assessment;
  - **paragraph 7.4.16 - 7.4.18:** describe the behaviour of the sediment plume and;
  - **paragraph 7.4.19:** for commitments relevant to benthic/ intertidal receptors.
- The location of the reef habitats in South Wight Maritime SAC relative to the Proposed Development are presented in **Figure 7-3**.

<sup>66</sup> Natural England Designated Sites View: South Wight Maritime SAC. Supplementary Advice: Updated: 16 March 2018. See this [hyperlink](#).

<sup>67</sup> Natural England Designated Sites View: Solent Maritime SAC. Advice on Operations: Updated: 19 March 2021: Viewing Advice on Operations for Offshore wind: construction, decommissioning and cables. See this [hyperlink](#).

Figure 7-3 Location of the reef habitats in South Wight Maritime SAC



## Construction and decommissioning

### Temporary increases in suspended sediment and disposition

#### *Partially submerged sea caves*

- 7.4.92 The 'submerged or partially submerged sea caves' feature comprises mostly of cave systems located at the south western end of the Isle of Wight. The closest of these caves is 60.1km from the closet boundary of the Proposed Development. The south coast of the Isle is exposed and waters have high turbidity (Bunker et al., 2005) Based on distance, the predicted extents of any plumes of fine suspended sediments (as described in **paragraph 7.4.18**) and the high-energy nature the receiving environment, there is no potential for exposure to this pressure for the south western caves.
- 7.4.93 The two/three caves on the south coast at the eastern end of the Isle are approximately 30km from the array and offshore cable corridor. Based on distance and the predicted extents of any plumes, there is considered to be no connectivity to these features. Further, as the features here are littoral caves exposed to frequent tidal flushing, they are not considered sensitive to redeposition of mobilised sediment, or suspended sediment causing reduced water clarity.
- 7.4.94 The assessment of the potential effects from the dispersal of sediment bound contaminants associated with the Proposed Development mirrors that provided in **paragraph 7.4.41**.

#### *Reefs*

- 7.4.95 The exposed coast between Alum Bay and St Catherine's Point supports a diverse range of moderate-energy and high-energy reef biotopes (English Nature, 2001). The coastline of the South Wight Maritime SAC is naturally dynamic, with exposure to wave action having a significant effect upon community structure. Reefs may be sensitive to suspended and deposited sediment (Isle of Wight Council, 2010). However, based on distance (the closest designated reefs are over 20 km from the offshore cable corridor) (**Figure 7-3**), the nature of the receiving environment and the predicted extents of any plumes (as described in **paragraph 7.4.16 to 7.4.18**), there is considered to be no connectivity to these features.
- 7.4.96 The assessment of the potential effects from the dispersal of sediment bound contaminants associated with the Proposed Development mirrors that provided in **paragraph 7.4.41** and adverse effects are not anticipated.
- 7.4.97 In conclusion, there is no potential for an AEoI to the conservation objectives of the features of the South Wight Maritime SAC in relation to effects associated with temporary increases in suspended sediment and disposition during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.

### Marine invasive non-native species (introduction and or spread)

- 7.4.98 The assessment of the potential effects of pollution associated for the Proposed Development for the benthic habitats of the South Wight Maritime SAC mirrors that provided in **paragraph 7.4.3** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.99 There is no potential for an AEol to the conservation objectives of the features of the South Wight Maritime SAC in relation to MINNS during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.

### Pollution

- 7.4.100 The assessment of the potential effects from pollution associated with the Proposed Development for the benthic habitats of the South Wight Maritime SAC mirrors that provided in **paragraphs 7.2.16** and **7.2.17** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.101 There is no potential for an AEol to the conservation objectives of the features of the South Wight Maritime SAC in relation to pollution during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.

## Operation and Maintenance

### Temporary increases in suspended sediment and disposition

- 7.4.102 The assessment of the potential effects from the dispersal of sediment and any sediment bound contaminants associated with the Proposed Development mirrors that provided in **paragraph 7.4.75** and adverse effects are not anticipated.
- 7.4.103 There is no potential for an AEol to the conservation objectives of the features of the South Wight Maritime SAC in relation to effects associated with the suspended sediment during the Operation and Maintenance phase of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.

### Marine invasive non-native species (hard substrate)

- 7.4.104 The assessment of the potential effects of pollution associated for the Proposed Development for the benthic habitats of the South Wight Maritime SAC mirrors that provided in **paragraph 7.4.3** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.105 There is no potential for an AEol to the conservation objectives of the features of the South Wight Maritime SAC in relation to MINNS during the Operation and Maintenance phase of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.



## Pollution

- 7.4.106 The assessment of the potential effects from pollution associated with the Proposed Development for the benthic habitats of the South Wight Maritime SAC mirrors that provided in **paragraph 7.4.76** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.107 There is no potential for an AEol to the conservation objectives of the features of the South Wight Maritime SAC in relation to pollution during the Operation and Maintenance phase of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.

## Coastal processes

- 7.4.108 The assessment of the potential effects from changes to coastal processes associated with the Proposed Development for the benthic habitats of the South Wight Maritime SAC mirrors that provided in **paragraph 7.4.80** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.109 There is no potential for an AEol to the conservation objectives of the features of the South Wight Maritime SAC in relation to changes to physical processes during the Operation and Maintenance phase of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.

## Solent and Isle of Wight lagoons SAC

### Features and effects for assessment

- 7.4.110 Potential for LSEs alone has been identified for the following listed features of the SAC:
- Coastal lagoons
- 7.4.111 The effects with the potential to result in LSEs relate to the same pathways identified for the intertidal features of the Solent Maritime SAC which concern suspended sediment and deposition, pollution and MINNS (see **paragraph 7.4.2**).
- 7.4.112 The closest boundary of this SAC is located 30.5km from the array. As the maximum extent of the sediment plume is not predicted to extend further than 10 km buffer around the offshore cable corridor or 15 km buffer around the array, this site is not explicitly addressed in **Chapter 9: Benthic Subtidal and Intertidal Ecology**. The SAC is addressed in the HRA following advice at consultation (see **Appendix A**) and with reference to mitigation applied to reduce potential effects related to sediment mobilisation, MINNS and pollution.

### Assessment information

- 7.4.113 The conservation objectives (November 2018)<sup>68</sup> (as described in **Appendix F**) for the site are as follows:

<sup>68</sup> European Site Conservation Objectives for Solent and Isle of Wight Lagoons Special Area of Conservation Site Code: UK0017073. 27 November 2018 (version 3). See this [link](#).

- To ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:
  - ▶ The extent and distribution of qualifying natural habitats;
  - ▶ The structure and function (including typical species) of qualifying natural habitats, and
  - ▶ The supporting processes on which qualifying natural habitats rely.

## Construction and decommissioning

- 7.4.114 Site information indicates (e.g., English Nature, 2005) that many of the coastal lagoons within the SAC are isolated or sluiced lagoons and many are separated from the sea by a sea-wall. This includes, Gilkicker Lagoon (a sluiced lagoon), the lagoons in Keyhaven (within the saltmarsh behind a sea-wall) and the lagoons at Bembridge Harbour (formed in a depression behind the sea-wall) (see Bamber and Robbins, 2010). Although sea water does enter some of the lagoons by percolation, or during spring tides, connectivity to the marine environment is considered to be extremely weak.

### Temporary increases in suspended sediment and disposition

- 7.4.115 The location of the lagoon features relative to Rampion 2 (>30km) provides a large spatial extent for fine sediment to disperse. Noting this distance, the temporary, intermittent, transient, nature of effects (as summarised in **paragraph 7.4.16 - 7.4.18**) and on the rationale presented in **paragraph 7.4.31** (concerning connectivity) there is considered to be no potential for significant adverse effects.
- 7.4.116 The assessment of the potential effects from the dispersal of sediment bound contaminants associated with the Proposed Development mirrors that provided in **paragraph 7.4.41** and adverse effects are not anticipated.
- 7.4.117 In conclusion, there is no potential for an AEoI to the conservation objectives of the features of the Solent and Isle of Wight lagoons SAC in relation to effects associated with temporary increases in suspended sediment and disposition during the construction or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.

### Marine invasive non-native species (introduction and or spread)

- 7.4.118 The assessment of the potential effects of MINNS associated with the Proposed Development for the coastal lagoon habitats of the Solent and Isle of Wight lagoons SAC mirrors that provided in **Section 7.4** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.119 **There is no potential for an AEoI to the conservation objectives of the features of the Solent and Isle of Wight lagoons SAC in relation to MINNS during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.**

## Pollution

- 7.4.120 The assessment of the potential effects from pollution associated with the Proposed Development for the coastal lagoon habitats of the Solent and Isle of Wight lagoons SAC mirrors that provided in **paragraphs 7.2.16 and 7.2.17** for the **benthic and intertidal features of the Solent Maritime SAC**.
- 7.4.121 **There is no potential for an AEol to the conservation objectives of the features of the Solent and Isle of Wight lagoons SAC in relation to pollution during the construction and or decommissioning of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.**

## Operation and maintenance

### Temporary increases in suspended sediment and disposition

- 7.4.122 The assessment of the potential effects from the dispersal of sediment and any sediment bound contaminants associated with the Proposed Development mirrors that provided in **paragraph 7.4.75** and adverse effects are not anticipated.
- 7.4.123 **There is no potential for an AEol to the conservation objectives of the features of the Solent and Isle of Wight lagoons SAC in relation to effects associated with temporary increases in suspended sediment and disposition during the phase of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.**

### Marine invasive non-native species (hard substrate)

- 7.4.124 The assessment of the potential effects of pollution associated for the Proposed Development for the benthic habitats of the Solent and Isle of Wight lagoons SAC mirrors that provided in **paragraph 7.2.17** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.125 **There is no potential for an AEol to the conservation objectives of the features of the Solent and Isle of Wight lagoons SAC in relation to effects associated with the introduction of hard substrate during the Operation and Maintenance phase of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.**

## Pollution

- 7.4.126 The assessment of the potential effects from pollution associated with the Proposed Development for the benthic habitats of the Solent and Isle of Wight lagoons SAC mirrors that provided in **paragraph 7.4.76** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.127 **There is no potential for an AEol to the conservation objectives of the features of the Solent and Isle of Wight lagoons SAC in relation to effects associated with pollution during the Operation and Maintenance phase of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.**



## Coastal processes

- 7.4.128 The assessment of the potential effects from changes to coastal processes associated with the Proposed Development for the benthic habitats of the Solent and Isle of Wight lagoons SAC mirrors that provided in **paragraph 7.4.80** for the benthic and intertidal features of the Solent Maritime SAC.
- 7.4.129 **There is no potential for an AEoI to the conservation objectives of the features of the Solent and Isle of Wight lagoons SAC in relation to changes to physical processes during the Operation and Maintenance phase of Rampion 2 alone. Therefore, subject to natural change, these features will be maintained or restored in the long term.**

## 7.5 Appraisal of potential AEol alone for offshore ornithology

### Introduction

- 7.5.1 Information to inform the assessment for offshore ornithology is provided in **Section 3.3** (the MDS relevant to offshore ornithology), **Section 6** (embedded environmental measures and the Commitments Register) and **Appendix F** (European sites Information). The potential for LSEs as regards offshore ornithology is summarised in **Section 5.6**, with the Stage Two (AA) presented below. In addition, the assessment relies on information presented in the following documents:
- **PEIR Volume 2, Chapter 12: Offshore & intertidal ornithology** – an assessment at the EIA level of potential effects from the Proposed Development to ornithological features in the offshore and intertidal environment;
  - **PEIR Volume 4, Appendix 12.1: Offshore & intertidal ornithology Baseline Technical Report** – a detailed description of the baseline environment with respects to offshore and intertidal ornithology;
  - **PEIR Volume 4, Appendix 12.2: Offshore ornithology displacement analysis** – methods and results used to estimate impacts from disturbance and displacement to key ornithological receptors; and
  - **PEIR Volume 4, Appendix 12.3: Offshore ornithology collision risk modelling** – methods and results used to estimate impacts from collisions with WTGs to key ornithological receptors.

### Assessment criteria

- 7.5.2 In addition to the general guidance presented in **Section 2**, specific assessment criteria have been used for this offshore ornithology assessment. The assessment has been based on the relevant guidance for conducting HRA and assessing OWF (e.g., European Commission, 2018; Maclean *et al*, 2009; Natural England, 2010; PINS Advice Note Ten (PINS, 2017) and applied the criteria contained in that guidance where relevant to the interest features under consideration.
- 7.5.3 The determination of AEol is based on the factors that contribute to the definition of maintaining integrity, namely that the ecological structure and function of the site is not adversely affected, that the ability of the habitat to sustain the bird species that are interest features is not adversely affected (i.e. that breeding, roosting and foraging locations are maintained and that food sources are maintained) and that the population of the interest feature is maintained both in numbers and across the area of the site.

## Construction

### Disturbance and displacement

- 7.5.4 The construction phase has the potential to affect birds in the marine environment through disturbance due to construction activities, including the installation of

foundations, towers, blades, export cables and other infrastructure and the movement of vessels and helicopters. The disturbance created has the potential to result in displacement of birds from the site of construction, from an area around it and from routes used by vessels to access the construction site. This displacement would effectively result in temporary habitat loss through a reduction in the area available to birds for feeding, resting and moulting.

7.5.5 The initial Screening process concluded there was potential for disturbance and displacement during the construction phase to result in an AEoI relating to the following designated sites and the relevant features:

- Dungeness, Romney Marsh & Rye Bay SPA – Sandwich tern during the breeding bio-season;
- Solent and Dorset Coast SPA – common tern, little tern and Sandwich tern during the breeding bio-season;
- Flamborough & Filey Coast SPA – guillemot and razorbill during the non-breeding bio-season; and
- Farne Islands SPA – guillemot during the non-breeding bio-season.

7.5.6 Any impacts resulting from disturbance and displacement during the construction phase are considered to be short-term, temporary and reversible in nature, lasting only for the duration of construction activities, as birds would return to the area once construction activities have ceased. Disturbance and displacement of birds during the construction phase is most likely to affect birds foraging in and around the construction area. The level of disturbance at each work location would differ dependent on the activities taking place, but there could be vessel movements at any time of day or night over the entire construction period.

## Operation and maintenance

### Disturbance and displacement

7.5.7 The presence of WTGs has the potential to directly disturb and displace seabirds that would normally reside within and around the area of sea where Rampion 2 is proposed to be developed. Disturbance and displacement may also be caused by the movement of vessels during the operational phase, such as maintenance vessels. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals.

7.5.8 The initial Screening process concluded there was potential for disturbance and displacement during the Operation and Maintenance phase to result in an AEoI relating to the following designated sites and the relevant features:

- Dungeness, Romney Marsh & Rye Bay SPA – Sandwich tern during the breeding bio-season;
- Solent and Dorset Coast SPA – Sandwich tern during the breeding bio-season;

- Chichester and Langstone Harbours SPA – Sandwich tern during the breeding bio-season;
- Solent and Southampton Water SPA – Sandwich tern during the breeding bio-season;
- Côte de Granit Rose-Sept Iles SPA – Gannet during all bio-seasons;
- Alderney West Coast & Burhou Islands Ramsar – Gannet during all bio-seasons;
- Grassholm SPA – Gannet during the migratory bio-seasons;
- Flamborough & Filey Coast SPA – gannet, guillemot and razorbill during the migratory and non-breeding bio-seasons; and
- Farne Islands SPA – guillemot during the non-breeding bio-season.

### Collision risk

- 7.5.9 There is a potential collision risk to birds which fly through the Rampion 2 array area whilst foraging for food, commuting between breeding sites and foraging areas, or when on migration. The risk to birds arises from colliding with the WTG rotors and associated infrastructure resulting in injury or fatality.
- 7.5.10 The initial Screening process concluded there was potential for collision risk during the phase to result in an AEoI relating to the following designated sites and the relevant features:
- Pagham Harbour SPA – migratory dark-bellied brent goose, ruff. Common tern during the breeding bio-season;
  - Pagham Harbour Ramsar – migratory dark-bellied brent goose;
  - Portsmouth Harbour SPA – migratory black-tailed godwit, dark-bellied brent goose, dunlin and red-breasted merganser;
  - Portsmouth Harbour Ramsar – migratory dark-bellied brent goose;
  - Dungeness, Romney Marsh & Rye Bay SPA – migratory common tern and Sandwich tern during the breeding and migratory bio-seasons;
  - Chichester and Langstone Harbours SPA –migratory bar-tailed godwit, curlew, dark-bellied brent goose, dunlin, grey plover, northern pintail, red-breasted merganser, redshank, ringed plover, sanderling, shelduck, shoveler, teal, turnstone, wigeon and the waterbird assemblage. Common tern and Sandwich tern during the breeding bio-season;
  - Chichester and Langstone Harbours Ramsar – migratory ringed plover, black-tailed godwit, redshank, dark-bellied brent goose, shelduck, grey plover, dunlin and the waterbird assemblage;
  - Solent and Southampton Water SPA –migratory black-tailed godwit, dark-bellied brent goose, ringed plover, teal and the waterbird assemblage. Sandwich tern during the breeding bio-season;

- Solent and Southampton Water Ramsar – migratory ringed plover, dark-bellied brent goose, teal, black-tailed godwit and the waterbird assemblage;
- Medway Estuary and Marshes SPA – migratory common tern;
- Littoral seino-marin SPA – lesser black-backed gull and kittiwake during the breeding bio-season;
- Foulness (Mid-Essex Coast Phase 5) SPA – migratory Sandwich tern and common tern;
- Falaise du Bessin Occidental SPA – kittiwake during the breeding bio-season;
- Alde-Ore Estuary SPA – migratory Sandwich tern and lesser black-backed gull;
- Alde-Ore Estuary Ramsar – migratory lesser black-backed gull;
- The Wash SPA – migratory common tern;
- Breydon Water SPA – migratory common tern;
- Greater Wash SPA – migratory Sandwich tern and common tern;
- North Norfolk Coast SPA – migratory Sandwich tern and common tern;
- North Norfolk Coast Ramsar – migratory Sandwich tern and common tern;
- Côte de Granit Rose-Sept Iles SPA – Gannet during all bio-seasons;
- Alderney West Coast & Burhou Islands Ramsar – Gannet during all bio-seasons;
- Grassholm SPA – migratory gannet;
- Flamborough & Filey Coast SPA – migratory gannet, kittiwake and herring gull;
- Northumbria Coast SPA – migratory Arctic tern;
- Northumbria Coast Ramsar – migratory Arctic tern;
- Coquet Island SPA – migratory Sandwich tern, Arctic tern, common tern, herring gull, lesser black-backed gull and kittiwake; and
- Farne Islands SPA – migratory Sandwich tern, Arctic tern, common tern and kittiwake.

### Barrier effects

- 7.5.11 In the operational phase of Rampion 2, the presence of WTGs could create a barrier to the movements of birds. This may result in permanent changes in flight routes for the birds concerned and an increase in energy demands associated with those movements. This might result in a lower rate of breeding success or in reduced survival chances for the individuals affected.
- 7.5.12 The initial screening process concluded there was potential for barrier effects during the Operation and Maintenance phase to result in an AEoI relating to the following designated sites and the relevant features:

- Chichester and Langstone Harbours SPA – Sandwich tern during the breeding bio-season; and
- Solent and Southampton Water SPA – Sandwich tern during the breeding bio-season.

## Decommissioning

### Disturbance and displacement

- 7.5.13 The decommissioning phase has the potential to affect birds in the marine environment through disturbance due to decommissioning activities, including the removal of foundations, towers, blades, export cables and other infrastructure and the movement of vessels and helicopters. The disturbance created has the potential to result in displacement of birds from the site of decommissioning, from an area around it and from routes used by vessels to access the decommissioning site. This displacement would effectively result in temporary habitat loss through a reduction in the area available to birds for feeding, resting and moulting.
- 7.5.14 The initial screening process concluded there was potential for disturbance and displacement during the decommissioning phase to result in an AEoI relating to the following designated sites and the relevant features:
- Dungeness, Romney Marsh & Rye Bay SPA – Sandwich tern during the breeding bio-season;
  - Solent and Dorset Coast SPA – common tern, little tern and Sandwich tern during the breeding bio-season;
  - Flamborough & Filey Coast SPA – guillemot and razorbill during the migratory and non-breeding bio-seasons; and
  - Farne Islands SPA – guillemot during the non-breeding bio-season.
- 7.5.15 Any impacts resulting from disturbance and displacement during the decommissioning phase are considered to be short-term, temporary and reversible in nature, lasting only for the duration of decommissioning activities, as birds would return to the area once decommissioning activities have ceased. Disturbance and displacement of birds during the decommissioning phase is most likely to affect birds foraging in and around the decommissioning area. The level of disturbance at each work location would differ dependent on the activities taking place, but there could be vessel movements at any time of day or night over the entire decommissioning period.

## Pagham Harbour SPA and Ramsar

### Features and effects for assessment

- 7.5.16 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Pagham Harbour SPA:
- Common tern (breeding season), Operation and Maintenance, collision risk; and

- Ruff (migratory), Operation and Maintenance, collision risk.

7.5.17 Potential for LSEs has been identified for the following for Pagham Harbour SPA and Ramsar:

- Dark-bellied Brent goose (migratory), Operation and Maintenance, collision risk.

### Assessment information

7.5.18 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
- the populations of each of the qualifying features; and
- the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

7.5.19 Common tern flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for this assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.

7.5.20 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:

- C - 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
- C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.

7.5.21 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Common tern (breeding)

7.5.22 Due to difficulty distinguishing common and Arctic terns from aerial digital survey imagery, these two species were considered together as ‘commic’ terns for the



purpose of CRM (see **PEIR Volume 4, Appendix 12.3**). However, it is recognised that as Arctic tern do not breed on the south coast of England any 'commic' terns are most likely to be common terns during this period.

- 7.5.23 The total estimated number of 'commic' tern collisions during the migration-free breeding bio-season was zero birds (0.00) (**PEIR Volume 4 Appendix 12.3**). This therefore represents no change.
- 7.5.24 There is, therefore, no potential for an AEol to the conservation objectives of the **common tern feature of Pagham Harbour SPA in relation to collision risk effects from Rampion 2 alone and therefore, subject to natural change, the common tern feature will be maintained in the long term with respect to the potential for collision risk effect.**

### *Ruff*

- 7.5.25 In order to minimise repetition and provide a clear and concise approach, all migratory waterbirds have been considered together below in **paragraph 7.5.338: 'Migratory Waterbirds – English South Coast SPAs and Ramsars'** onwards.
- 7.5.26 As per that section, no AEol was found for any waterbird feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.27 **There is, therefore, no potential for an AEol to the conservation objectives of the ruff feature of Pagham Harbour SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the ruff feature of Pagham Harbour SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

### *Dark-bellied brent goose*

- 7.5.28 In order to minimise repetition and provide a clear and concise approach, all migratory waterbirds have been considered together below (**paragraph 7.5.338 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any waterbird feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.29 **There is, therefore, no potential for an AEol to the conservation objectives of the dark-bellied brent goose feature of Pagham Harbour SPA or the dark-bellied brent goose feature of Pagham Harbour Ramsar in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the dark-bellied brent goose feature of Pagham Harbour SPA and the dark-bellied brent goose feature of Pagham Harbour Ramsar will be maintained as a feature in the long term with respect to potential for adverse effects.**

## **Portsmouth Harbour SPA and Ramsar**

### **Features and effects for assessment**

- 7.5.30 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Portsmouth Harbour SPA:

- Black-tailed godwit, dark-bellied brent goose, dunlin and red-breasted merganser (migratory); Operation and Maintenance Phase; collision risk.

7.5.31 Potential for LSEs has been identified for the following for Portsmouth Harbour SPA and Ramsar:

- Dark-bellied brent goose (migratory), Operation and Maintenance Phase, collision risk.

### Assessment information

7.5.32 The relevant conservation objectives (all objectives are described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - ▶ the populations of each of the qualifying features; and
  - ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

7.5.33 Birds flying through the array area during the operational phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development.

7.5.34 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:

- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
- C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.

7.5.35 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

7.5.36 In order to minimise repetition and provide a clear and concise approach, all migratory waterbirds have been considered together below (**paragraph 7.5.338 'Migratory Waterbirds – English South Coast SPAs and Ramsars'** onwards). As per that section, no AEoI was found for any waterbird feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.37 There is, therefore, no potential for an AEoI in relation to collision risk from Rampion 2 to the conservation objectives of the following features of Portsmouth Harbour SPA:

- black-tailed godwit;
- dark-bellied brent goose;
- dunlin;
- red-breasted merganser; or
- dark-bellied brent goose.

7.5.38 There is no potential for an AEol in relation to collision risk from Rampion 2 to the conservation objectives of the following features of Portsmouth Harbour Ramsar:

- dark-bellied brent goose.

7.5.39 Therefore, subject to natural change, the black-tailed godwit, dark-bellied brent goose, dunlin and red-breasted merganser features of Portsmouth Harbour SPA, and the dark-bellied brent goose feature of Portsmouth Harbour Ramsar will be maintained as features in the long term with respect to potential for adverse effects.

## Dungeness, Romney Marsh and Rye Bay SPA

### Features and effects for assessment

7.5.40 The potential for LSEs from Rampion 2 acting alone been identified for the following for Dungeness, Romney and Rye Bay SPA:

- Sandwich tern (breeding bio-season), Operation and Maintenance Phase, collision risk;
- common and Sandwich tern (migratory), Operation and Maintenance Phase, collision risk; and
- Sandwich tern (breeding bio-season), construction, Operation and Maintenance and decommissioning phases, disturbance/displacement.

### Assessment information

7.5.41 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - ▶ the populations of each of the qualifying features; and
  - ▶ the distribution of qualifying features within the site.

## Construction and decommissioning

### Disturbance and displacement

#### Overview

- 7.5.42 Activities in the offshore export cable corridor associated with export cable laying, and activities within the array area associated with the construction of WTGs and other infrastructure, may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.
- 7.5.43 In order to assess the risk resulting from disturbance and displacement, an analysis of key species has been carried out as described in **PEIR Volume 4, Appendix 12.2**. Not all species were included in that analysis, as it focused on species for which a potential for a significant effect at the EIA level was identified.

#### *Sandwich tern (breeding)*

- 7.5.44 Within the offshore export cable corridor, construction activities are likely to be spatially and temporally restricted. As given in **Table 12.17** of **PEIR Volume 2 Chapter 12**, construction activities associated with cable laying may take up to four months. Any disturbance and displacement will be restricted to the immediate vicinity of the construction vessel, which would represent only an insignificant proportion of the amount of total habitat available for foraging. Therefore, any impact from disturbance and displacement associated with cable laying activities is likely to be negligible.
- 7.5.45 Displacement from the array area for Sandwich terns has been assessed using the recommended standard buffer of 2km (SNCBs, 2017). The bio-season mean peak abundance for Sandwich terns during the migration free breeding season for the Rampion 2 array area plus a 2km buffer was zero birds (**PEIR Volume 4, Appendix 12.1**). Therefore, regardless of the displacement rates and mortality rates chosen, the estimated mortality resulting from disturbance and displacement is zero birds. This represents no change.
- 7.5.46 **There is, therefore, no potential for an AEoI to the conservation objectives of the Sandwich tern feature of Dungeness, Romney Marsh and Rye Bay SPA in relation to disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.47 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 12.17** of **PEIR Volume 2, Chapter 12**. In order to assess the risk resulting from potential collisions CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.48 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.49 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### *Sandwich tern (breeding)*

- 7.5.50 The total estimated number of Sandwich tern collisions during the migration-free breeding bio-season was zero birds (0.00) (**PEIR Volume 4, Appendix 12.3**). This represents no change.
- 7.5.51 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Dungeness, Romney Marsh and Rye Bay SPA in relation to collision risk effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for collision risk effect.**

#### *Common tern (migratory)*

- 7.5.52 All migratory terns have been considered together below (**paragraph 7.5.390: 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.53 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of Dungeness, Romney Marsh and Rye Bay SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern feature of Dungeness, Romney Marsh and**

**Rye Bay SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

#### *Sandwich tern (migratory)*

- 7.5.54 As noted above, all migratory terns have been considered together below (**paragraph 7.5.390: 'Migratory Waterbirds – English South Coast SPAs'** and onwards. As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.55 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Dungeness, Romney Marsh and Rye Bay SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature of Dungeness, Romney Marsh and Rye Bay SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Operation and maintenance

### Disturbance/displacement

- 7.5.56 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

#### *Sandwich tern (breeding)*

- 7.5.57 Displacement for Sandwich terns has been assessed using the recommended standard buffer of 2km (SNCBs, 2017). The bio-season mean peak abundance for Sandwich terns during the migration-free breeding season for the Rampion 2 array area plus a 2km buffer was zero birds (**PEIR Volume 4, Appendix 12.1**). Therefore, regardless of the displacement rates and mortality rates chosen, the estimated mortality resulting from disturbance and displacement is zero birds. This represents no change.
- 7.5.58 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Dungeness, Romney Marsh and Rye Bay SPA in relation to disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Solent and Dorset Coast SPA

### Features and effects for assessment

- 7.5.59 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Solent and Dorset Coast SPA:
- common tern, little tern and Sandwich tern (breeding bio-season), construction and decommissioning phases, disturbance/displacement; and
  - Sandwich tern (breeding bio-season), Operation and Maintenance Phase, disturbance/displacement.

### Assessment information

- 7.5.60 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - ▶ the populations of each of the qualifying features; and
    - ▶ the distribution of qualifying features within the site.

## Construction

### Disturbance and displacement

#### Overview

- 7.5.61 Activities in the offshore export cable corridor associated with export cable laying, and activities within the array area associated with the construction of WTGs and other infrastructure, may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

#### *Common tern (breeding)*

- 7.5.62 Displacement for common terns has been assessed using the recommended standard buffer of 2km (SNCBs, 2017). Within the offshore export cable corridor, construction activities are likely to be spatially and temporally restricted. As given in **Table 12.17** of **PEIR Volume 2, Chapter 12**, construction activities associated with cable laying may take up to four months. Any disturbance and displacement would be restricted to the immediate vicinity of the construction vessel, which would represent only an insignificant proportion of the amount of total habitat



available for foraging. Therefore, any impact from disturbance and displacement associated with cable laying activities is likely to be negligible.

- 7.5.63 Within the Rampion 2 array area plus a 2km buffer, the bio-season mean peak abundance for common terns during the migration free breeding season for was zero birds (**PEIR Volume 4, Appendix 12.1**). Therefore, regardless of the displacement rates and mortality rates chosen, the estimated mortality resulting from disturbance and displacement is zero birds. This represents no change.
- 7.5.64 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of Solent and Dorset Coast SPA in relation to disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, the common tern feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

#### *Sandwich tern (breeding)*

- 7.5.65 Within the offshore export cable corridor, construction activities are likely to be spatially and temporally restricted. As given in **Table 12.17** of **PEIR Volume 2, Chapter 12**, construction activities associated with cable laying may take up to four months. Any disturbance and displacement would be restricted to the immediate vicinity of the construction vessel, which would represent only an insignificant proportion of the amount of total habitat available for foraging. Therefore, any impact from disturbance and displacement associated with cable laying activities is likely to be negligible.
- 7.5.66 Displacement from the array area for Sandwich terns has been assessed using the recommended standard buffer of 2km (SNCBs, 2017). Within the Rampion 2 array area plus a 2km buffer, the bio-season mean peak abundance for Sandwich terns during the migration free breeding season was zero birds (**PEIR Volume 4, Appendix 12.1**). Therefore, regardless of the displacement rates and mortality rates chosen, the estimated mortality resulting from disturbance and displacement is zero birds. This represents no change.
- 7.5.67 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Solent and Dorset Coast SPA in relation to disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

#### *Little tern (breeding)*

- 7.5.68 Within the offshore export cable corridor, construction activities are likely to be spatially and temporally restricted. As given in **Table 12.17** of **PEIR Volume 2, Chapter 12**, construction activities associated with cable laying may take up to four months. Any disturbance and displacement will be restricted to the immediate vicinity of the construction vessel, which would represent only an insignificant proportion of the amount of total habitat available for foraging. Furthermore, whilst the distance between the offshore export cable corridor and the boundary of the Solent and Dorset Coast SPA is only 0.63km (see **Table 5-1**), this takes no account of the location of breeding colonies. The nearest breeding colony is in Pagham Harbour, which is 10.3km away from the offshore cable corridor. Little

terns have a maximum foraging range of 5km according to Woodward *et al.* (2019). It is therefore evident that there is minimal, if any, overlap of foraging little terns from colonies within Solent and Dorset Coast SPA with the offshore export cable corridor and associated construction activities. Therefore, any impact from disturbance and displacement associated with cable laying activities is likely to be negligible.

- 7.5.69 Displacement from the array area for little terns has been assessed using the recommended standard buffer of 2km (SNCBs, 2017). Within the Rampion 2 array area plus a 2km buffer, the bio-season mean peak abundance for little terns during the migration free breeding season for was zero birds (**PEIR Volume 4, Appendix 12.1**). Therefore, regardless of the displacement rates and mortality rates chosen, the estimated mortality resulting from disturbance and displacement is zero birds. This represents no change.
- 7.5.70 **There is, therefore, no potential for an AEoI to the conservation objectives of the little tern feature of Solent and Dorset Coast SPA in relation to disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, the little tern feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Operation and maintenance

### Disturbance and displacement

#### Overview

- 7.5.71 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which will potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

#### *Sandwich tern (breeding)*

- 7.5.72 Displacement for Sandwich terns has been assessed using the recommended standard buffer of 2km (SNCBs, 2017). The bio-season mean peak abundance for Sandwich terns during the migration free breeding season for the Rampion 2 array area plus a 2km buffer was zero birds (**PEIR Volume 4, Appendix 12.1**). Therefore, regardless of the displacement rates and mortality rates chosen, the estimated mortality resulting from disturbance and displacement is zero birds. This represents no change.
- 7.5.73 **There is, therefore, no potential for an AEoI to the conservation objectives of the Sandwich tern feature of Solent and Dorset Coast SPA in relation to disturbance and displacement effects from Rampion 2 alone and therefore,**

**subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Decommissioning

### Disturbance and displacement

- 7.5.74 Decommissioning activities associated with removing foundations and WTGs and decommissioning the offshore export cable may lead to disturbance and displacement of species within the array area and offshore cable corridor, and different degrees of buffers surrounding it.
- 7.5.75 The impacts from the decommissioning phase are expected to be equal to or lower than the impacts from the construction phase.
- 7.5.76 As no AEoI is expected for any feature during the construction phase, it follows that no AEoI is expected for any feature during the decommissioning phase.
- 7.5.77 **There is, therefore, no potential for an AEoI to the conservation objectives of the common tern, Sandwich tern or little tern features of Solent and Dorset Coast SPA in relation to disturbance and displacement effects from Rampion 2 alone during the decommissioning phase and therefore, subject to natural change, the common tern, Sandwich tern and little tern features will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Chichester and Langstone Harbours SPA and Ramsar

### Features and effects for assessment

- 7.5.78 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Chichester and Langstone Harbours SPA:
- common tern and Sandwich tern (breeding bio-season), Operation and Maintenance Phase, collision risk;
  - Sandwich tern (breeding bio-season), Operation and Maintenance Phase, disturbance/displacement;
  - Sandwich tern (breeding bio-season), Operation and Maintenance Phase, barrier effect; and
  - waterbirds listed in **Table 5-1** for the SPA and for the Ramsar sites (migratory) Operation and Maintenance phase, collision risk.

### Assessment information

- 7.5.79 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- ▶ the populations of each of the qualifying features; and
- ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.80 Seabirds flying through the array area during the operational phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the , and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.81 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.82 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Common tern (breeding)

- 7.5.83 Due to difficulty distinguishing common and Arctic terns from aerial digital survey imagery, these two species were considered together as ‘commic’ terns for the purpose of CRM (see **PEIR Volume 4, Appendix 12.3**). However, it is recognised that as Arctic tern do not breed on the south coast of England any ‘commic’ terns are most likely to be common terns during this period.
- 7.5.84 The total estimated number of ‘commic’ tern collisions during the migration-free breeding bio-season was zero birds (0.00) (**PEIR Volume 4, Appendix 12.3**). This represents no change.
- 7.5.85 **There is, therefore, no potential for an AEoI to the conservation objectives of the common tern feature of Chichester and Langstone Harbours SPA in relation to collision risk effects from Rampion 2 alone and therefore, subject to natural change, the common tern feature will be maintained in the long term with respect to the potential for collision risk effect.**

*Sandwich tern (breeding)*

- 7.5.86 The total estimated number of Sandwich tern collisions during the migration-free breeding bio-season was zero birds (0.00) (**PEIR Volume 4, Appendix 12.3**). This represents no change.
- 7.5.87 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Chichester and Langstone Harbours SPA in relation to collision risk effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for collision risk effect.**

*Waterbirds*

- 7.5.88 In order to minimise repetition and provide a clear and concise approach, all migratory waterbirds have been considered together below (**paragraph 7.5.390**). As per that section, no AEol was found for any waterbird feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.89 **There is, therefore, no potential for an AEol to the conservation objectives of the waterbird features of Chichester and Langstone Harbours SPA or the waterbird features of Chichester and Langstone Harbours Ramsar in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the waterbird features of Chichester and Langstone Harbours SPA and the waterbird features of Chichester and Langstone Harbours Ramsar will be maintained as features in the long term with respect to potential for adverse effects.**

## Operation and maintenance

### Disturbance/displacement

*Overview*

- 7.5.90 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which will potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

*Sandwich tern (breeding)*

- 7.5.91 Displacement for Sandwich terns has been assessed using the recommended standard buffer of 2km (SNCBs, 2017). The bio-season mean peak abundance for Sandwich terns during the migration free breeding season for the Rampion 2 array area plus a 2km buffer was zero birds (**PEIR Volume 4, Appendix 12.1**). Therefore, regardless of the displacement rates and mortality rates chosen, the

estimated mortality resulting from disturbance and displacement is zero birds. This represents no change.

- 7.5.92 **There is, therefore, no potential for an AEoI to the conservation objectives of the Sandwich tern feature of Chichester and Langstone Harbours SPA in relation to disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Operation and maintenance

### Barrier effect

#### Overview

- 7.5.93 In the operational phase of Rampion 2, the presence of WTGs could create a barrier to the movements of birds. This may result in permanent changes in flight routes for the birds concerned and an increase in energy demands associated with those movements. This might result in a lower rate of breeding success or in reduced survival chances for the individuals affected. The MDS used for assessment is given in **Table 3-2**.

#### *Sandwich tern*

- 7.5.94 Whilst the Rampion 2 array area is within the mean-max + 1SD foraging range (Woodward et al., 2019) of Sandwich terns from the colonies at Chichester and Langstone harbours, modelling by the Joint Nature Conservation Committee (JNCC) (Wilson et al., 2014) suggests that very few, if any, birds from those colonies will forage in the area of sea on the far side of Rampion 2, with the majority of birds foraging within the Solent or remaining close to the coast. Sandwich terns prefer to forage in shallow waters near the coast or shallow sandbanks (Natural England, 2012), and the waters to the south of Rampion 2 are therefore unsuitable foraging habitat.
- 7.5.95 The aerial digital surveys (see **PEIR Volume 4, Appendix 12.1**) found zero Sandwich terns within the array area in the migration-free breeding bio-season, and an estimated abundance of 19 within a 4km buffer around the array area. The birds observed within the 4km buffer in the migration-free breeding bio-season were all to the northwest of the array area i.e. between the array area and Chichester and Langstone harbours. Therefore, there is no evidence from the site-specific surveys that Sandwich terns fly through the Rampion 2 array area or forage in the waters on the far side of the array area.
- 7.5.96 Therefore, there is no evidence to suggest that a barrier effect would occur. Although it cannot be completely ruled out that, on occasion, Sandwich terns from the colonies at Chichester and Langstone harbours might forage in the waters on the far side of the Rampion 2 array area, the evidence suggests that this would be a very rare occurrence and of negligible consequence to the fitness of the individual involved or the colony.



- 7.5.97 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Chichester and Langstone Harbours SPA in relation to barrier effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for barrier effects.**

## Solent and Southampton Water SPA and Ramsar

### Features and effects for assessment

- 7.5.98 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Solent and Southampton Water SPA:
- Sandwich tern (breeding bio-season), Operation and Maintenance Phase, collision risk;
  - Sandwich tern (breeding bio-season) Operation and Maintenance Phase, disturbance/displacement; and
  - Sandwich tern (breeding bio-season) Operation and Maintenance Phase, barrier effect.
- 7.5.99 Potential for LSEs alone has been identified for the following for Solent and Southampton Water SPA and Ramsar:
- black-tailed godwit, dark-bellied brent goose, ringed plover, teal and waterbird assemblage (migratory), Operation and Maintenance Phase, collision risk.

### Assessment information

- 7.5.100 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - ▶ the populations of each of the qualifying features; and
    - ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.101 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk will be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to



assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.

7.5.102 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:

- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
- C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.

7.5.103 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### *Sandwich tern (breeding)*

7.5.104 The total estimated number of Sandwich tern collisions during the migration-free breeding bio-season was zero birds (0.00) (**PEIR Volume 4, Appendix 12.3**). Of these, zero birds (0.00) are apportioned to Solent and Southampton Water SPA. This represents no change.

7.5.105 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Solent and Southampton Water SPA in relation to collision risk effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for collision risk effect.**

#### *Waterbirds*

7.5.106 In order to minimise repetition and provide a clear and concise approach, all migratory waterbirds have been considered together below (**paragraph 7.5.390 ‘Migratory Waterbirds – English South Coast SPAs’** and onwards). As per that section, no AEol was found for any waterbird feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.107 **There is, therefore, no potential for an AEol to the conservation objectives of the waterbird features of Solent and Southampton Water SPA or the waterbird features of Solent and Southampton Water Ramsar in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the waterbird features of Solent and Southampton Water SPA and the waterbird features of Solent and Southampton Water Ramsar will be maintained as features in the long term with respect to potential for adverse effects.**

## Operation and maintenance

### Disturbance and displacement

#### Overview

- 7.5.108 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

#### *Sandwich tern (breeding)*

- 7.5.109 Displacement for Sandwich terns has been assessed using the recommended standard buffer of 2km (SNCBs, 2017). The bio-season mean peak abundance for Sandwich terns during the migration free breeding season for the Rampion 2 Array area plus a 2km buffer was zero birds (**PEIR Volume 4 Appendix 12.1**). Therefore, regardless of the displacement rates and mortality rates chosen, the estimated mortality resulting from disturbance and displacement is zero birds. This represents no change.
- 7.5.110 **There is, therefore, no potential for an AEoI to the conservation objectives of the Sandwich tern feature of Solent and Southampton Waters SPA in relation to disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Operation and maintenance

### Barrier effect

#### Overview

- 7.5.111 In the operational phase of Rampion 2, the presence of WTGs could create a barrier to the movements of birds. This may result in permanent changes in flight routes for the birds concerned and an increase in energy demands associated with those movements. This might result in a lower rate of breeding success or in reduced survival chances for the individuals affected. The MDS used for assessment is given in **Table 3-2**.

#### *Sandwich tern*

- 7.5.112 Whilst the shortest distance between the Rampion 2 array area and the Solent and Southampton Waters SPA is 29.6km, the Sandwich tern colonies within that SPA

are significantly further away. The shortest distance from Pitts Deep is 60.1km, from North Solent NNR it is 53.4km and from Newtown National Nature Reserve (NNR) it is 51.2km. Therefore, the nearest edge of the Rampion 2 array area is at the limit of the mean-max + 1SD foraging range, and it is highly unlikely that birds from those colonies would travel further than this to forage.

- 7.5.113 Furthermore, modelling by JNCC (Wilson *et al.*, 2014) suggests that very few, if any, birds from those colonies will forage in the area of sea on the far side of Rampion 2, with the majority of birds foraging within the Solent or remaining close to the coast. Sandwich terns prefer to forage in shallow waters near the coast or shallow sandbanks (Natural England, 2012), and the waters to the south of Rampion 2 are therefore unsuitable foraging habitat.
- 7.5.114 The aerial digital surveys (see **PEIR Volume 4, Appendix 12.1**) found zero Sandwich terns within the array area in the migration-free breeding bio-season, and an estimated abundance of 19 within a 4km buffer around the array area. The birds observed within the 4km buffer in the migration-free breeding bio-season were all to the northwest of the array area i.e. between the array area and the Solent. Therefore, there is no evidence from the site-specific surveys that Sandwich terns fly through the Rampion 2 array area or forage in the waters on the far side of the array area.
- 7.5.115 Therefore, there is no evidence to suggest that a barrier effect would occur. Although it cannot be completely ruled out that, on occasion, Sandwich terns from the colonies at Chichester and Langstone harbours might forage in the waters on the far side of the Rampion 2 array area, the evidence suggests that this would be a very rare occurrence and of negligible consequence to the fitness of the individual involved or the colony.
- 7.5.116 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Solent and Southampton Waters SPA in relation to barrier effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for barrier effects.**

## Medway Estuary & Marshes SPA

### Features and effects for assessment

- 7.5.117 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Medway Estuary & Marshes SPA:
- common tern (migratory), Operation and Maintenance Phase, collision risk.

### Assessment information

- 7.5.118 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- ▶ the populations of each of the qualifying features; and
- ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision Risk

- 7.5.119 Seabirds flying through the during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk will be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.120 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.121 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

### *Common tern (migratory)*

- 7.5.122 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: ‘Migratory Waterbirds – English South Coast SPAs’** and onwards). As per that section, no AEoI was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.123 **There is, therefore, no potential for an AEoI to the conservation objectives of the common tern feature of Medway Estuary & Marshes SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern feature of Medway Estuary & Marshes SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Littoral seino-marin SPA, France

### Features and effects for assessment

- 7.5.124 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Littoral seino-marin SPA:

- Kittiwake and lesser black-backed gull (breeding), Operation and Maintenance Phase, collision risk;

### Assessment information

- 7.5.125 No published conservation objectives have been found for this site, although for the purpose of assessment it is assumed that the conservation objectives are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - ▶ the populations of each of the qualifying features; and
    - ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

- 7.5.126 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.127 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.128 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

### Kittiwake

- 7.5.129 Kittiwake has been screened into the assessment of the Operation and Maintenance phase on a precautionary basis based on the potential for connectivity with the array area and its flight behaviour that places it at risk of collision with the turning blades of the WTGs. Kittiwake has been screened in for the breeding bio-season in relation to Littoral seino-marin SPA.
- 7.5.130 During the breeding bio-season, when birds are limited in the distance and number of days over which they can forage by the need to return regularly to the nest site,

it can be expected that the area in and around Rampion 2 will contain a proportion of adult birds that can be attributed to those designated sites within foraging range. Littoral seino-marin SPA at 72.2km from Rampion 2 array lies within the mean maximum ( $\pm$  standard deviation) foraging range of kittiwake ( $156.1 \pm 144.5$  km; Woodward *et al.*, 2019), along with one other designated site based on distances around land. Predicted collision mortality has therefore been apportioned to each of these sites following Scottish Natural Heritage (SNH) (2018).

- 7.5.131 A generic population adult age ratio of kittiwake has been used of 0.49 across all months of the year (**Table 12.16 of PEIR Volume 2, Chapter 12: Offshore ornithology**).

### Breeding

- 7.5.132 The predicted collision resultant mortality from the operation of Rampion 2 in the breeding bio-season is less than a single (0.85) individual. Mortality during the breeding bio-season was apportioned to Littoral seino-marin SPA following the SNH (2018) method. Following this method, 51.4% of birds subject to collision risk may be breeding age individuals from Littoral seino-marin SPA. On this basis, less than a single breeding adult (0.44) predicted to suffer collision mortality attributable to this SPA.

### Conclusion

- 7.5.133 With a potential predicted mortality of well under a single breeding adult (0.45) attributable to the Littoral seino-marin SPA annually, this level of impact can be considered no material contribution, and will therefore will not affect the achievement of the conservation objectives for the SPA and as a result will not have an adverse effect on the integrity of the SPA.
- 7.5.134 **There is, therefore, no potential for an AEol to the conservation objectives of the kittiwake feature of the Littoral seino-marin SPA in relation to collision effects from Rampion 2 alone and therefore, subject to natural change, kittiwake will be maintained as a feature in the long term with respect to the potential for adverse effects from collision.**

### Lesser black-backed gull

- 7.5.135 Lesser black-backed gull has been screened into the assessment of the Operation and Maintenance phase on a precautionary basis based on its potential connectivity with the array area during the breeding season and its flight behaviour that places it at risk of collision with the turning blades of the WTGs. Lesser black-backed gull has been screened in for the breeding bio-season in relation to Littoral seino-marin SPA.
- 7.5.136 During the breeding bio-season, when birds are limited in the distance and number of days over which they can forage by the need to return regularly to the nest site, it can be expected that the area in and around Rampion 2 will contain a proportion of adult birds that can be attributed to those designated sites within foraging range. Littoral seino-marin SPA at 72.2km from the array lies within the mean maximum ( $\pm$  standard deviation) foraging range of lesser black-backed gull ( $127 \pm 109$  km; Woodward *et al.*, 2019), along with one other designated site based on distances



around land. Predicted collision mortality has therefore been apportioned to each of these sites following SNH (2018).

- 7.5.137 Outside the breeding bio-season, when the population contains a mix of birds from UK breeding colonies and breeding colonies from further away, then a much lower percentage of birds can be attributed to any particular breeding colony SPA population. In the migratory bio-seasons, the information on populations contained in Furness (2015) has been applied for the purpose of apportionment.
- 7.5.138 A generic population adult age ratio of lesser black-backed gull has been used of 0.50 across all months of the year (**Table 12.16 of PEIR Volume 2, Chapter 12: Offshore ornithology**).

### *Breeding*

- 7.5.139 The predicted collision resultant mortality from the operation of Rampion 2 in the breeding bio-season is less than a single (0.34) adult. Mortality during the breeding bio-season was apportioned to Littoral seino-marin SPA following the SNH (2018) method. Following this method, 35.5% of birds subject to collision risk may be breeding age individuals from Littoral seino-marin SPA. On this basis, less than a single breeding adult (0.11) predicted to suffer collision mortality attributable to this SPA.

### *Conclusion*

- 7.5.140 With a potential predicted mortality of well under a single breeding adult (0.11) attributable to the Littoral seino-marin SPA annually, this level of impact can be considered no material contribution, and will therefore will not affect the achievement of the conservation objectives for the SPA and as a result will not have an adverse effect on the integrity of the SPA.
- 7.5.141 **There is, therefore, no potential for an AEol to the conservation objectives of the lesser black-backed gull feature of the Littoral seino-marin SPA in relation to collision effects from Rampion 2 alone and therefore, subject to natural change, lesser black-backed gull will be maintained as a feature in the long term with respect to the potential for adverse effects from collision.**

## **Foulness (Mid-Essex Coast Phase 5) SPA**

### *Features and effects for assessment*

- 7.5.142 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Foulness (Mid-Essex Coast Phase 5) SPA:
- common tern and Sandwich tern (migratory), Operation and Maintenance Phase, collision risk.

### *Assessment information*

- 7.5.143 The conservation objectives (as described in **Appendix F**) for the site are as follows:



- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - the populations of each of the qualifying features; and
  - the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.144 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3: Offshore ornithology collision risk modelling**.
- 7.5.145 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.146 As described in **PEIR Volume 2, Chapter 12: Offshore ornithology** for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Common tern (migratory)

- 7.5.147 All migratory terns have been considered together below (**paragraph 7.5.390: 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from Rampion 2 alone.
- 7.5.148 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of Foulness (Mid-Essex Coast Phase 5) SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern feature of Foulness (Mid-Essex Coast Phase 5) SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

### *Sandwich tern (migratory)*

- 7.5.149 As above, all migratory terns have been considered together below (**paragraph 7.5.390: ‘Migratory Waterbirds – English South Coast SPAs’** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.150 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Foulness (Mid-Essex Coast Phase 5) SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature of Foulness (Mid-Essex Coast Phase 5) SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Falaise du Bessin Occidental SPA, France

### Assessment information

- 7.5.151 No published conservation objectives have been found for this site, although for the purpose of assessment it is assumed that the conservation objectives are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - ▶ the populations of each of the qualifying features; and
    - ▶ the distribution of qualifying features within the site.

### Features and effects for assessment

- 7.5.152 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Falaise du Bessin Occidental SPA:
- kittiwake (breeding), Operation and Maintenance Phase, collision risk.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.153 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3: Offshore ornithology collision risk modelling**.

- 7.5.154 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.155 As described in **PEIR Volume 2, Chapter 12: Offshore ornithology** for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

### *Kittiwake*

- 7.5.156 Kittiwake has been screened into the assessment of the Operation and Maintenance phase based on the potential for connectivity with the array area and its flight behaviour that places it at risk of collision with the turning blades of the WTGs. Kittiwake has been screened in for the breeding bio-season in relation to Falaise du Bessin Occidental SPA.
- 7.5.157 During the breeding bio-season, when birds are limited in the distance and number of days over which they can forage by the need to return regularly to the nest site, it can be expected that the area in and around Rampion 2 will contain a proportion of adult birds that can be attributed to those designated sites within foraging range. Falaise du Bessin Occidental SPA lies within the mean maximum ( $\pm$  standard deviation) foraging range of kittiwake ( $156.1 \pm 144.5$  km; Woodward *et al.*, 2019), along with one other designated site based on distances around land. Predicted collision mortality has therefore been apportioned to each of these sites following SNH (2018).
- 7.5.158 A generic population adult age ratio of kittiwake has been used of 0.49 across all months of the year (**Table 12.16** of **PEIR Volume 2, Chapter 12: Offshore ornithology**).

### *Breeding*

- 7.5.159 The predicted collision resultant mortality from the operation of Rampion 2 in the breeding bio-season is less than a single (0.85) individuals. Mortality during the breeding bio-season was apportioned to Falaise du Bessin Occidental SPA following the SNH (2018) method. Following this method, 48.6% of birds subject to collision risk may be breeding age individuals from Falaise du Bessin Occidental SPA. On this basis, less than a single breeding adult (0.41) predicted to suffer collision mortality attributable to this SPA.

### *Conclusion*

- 7.5.160 With a potential predicted mortality of well under a single breeding adult (0.43) attributable to the Falaise du Bessin Occidental SPA annually, this is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural

mortality rate for this species. There is, therefore, no potential for an AEoI to the conservation objectives of the kittiwake feature of the Falaise du Bessin Occidental SPA in relation to collision effects from Rampion 2 alone and therefore, subject to natural change, kittiwake will be maintained as a feature in the long term with respect to the potential for adverse effects from collision.

## Alde-Ore Estuary (UK) SPA and Ramsar

### Features and effects for assessment

- 7.5.161 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Alde-Ore Estuary (UK) SPA:
- Sandwich tern (migratory), Operation and Maintenance Phase, collision risk.
- 7.5.162 The potential for LSEs alone has been identified for the following for Alde-Ore Estuary (UK) SPA and Ramsar:
- lesser black-backed gull (migratory), Operation and Maintenance Phase, collision risk.

### Assessment information

- 7.5.163 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - the populations of each of the qualifying features; and
    - the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.164 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3: Offshore ornithology collision risk modelling**.
- 7.5.165 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:

- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
- C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.

7.5.166 As described in **PEIR Volume 2, Chapter 12 : Offshore ornithology**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### *Sandwich tern (migratory)*

7.5.167 All migratory terns have been considered together below (**paragraph 7.5.390: 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.168 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Alde-Ore Estuary (UK) SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature of Foulness (Mid-Essex Coast Phase 5) SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

#### *Lesser black-backed gull (migratory)*

7.5.169 In order to minimise repetition and provide a clear and concise approach, all migratory gulls have been considered together below (**paragraph: 7.5.372 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any gull feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.170 **There is, therefore, no potential for an AEol to the conservation objectives of the lesser black-backed gull feature of Alde-Ore Estuary (UK) SPA or Ramsar in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the lesser black-backed gull feature of Alde-Ore Estuary (UK) SPA or Ramsar will be maintained as a feature in the long term with respect to potential for adverse effects.**

## The Wash SPA

### Features and effects for assessment

7.5.171 The potential for LSEs from Rampion 2 acting alone has been identified for the following for The Wash SPA:

- common tern (migratory), Operation and Maintenance Phase, collision risk.

## Assessment information

7.5.172 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - ▶ the populations of each of the qualifying features; and
  - ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.173 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3: Offshore ornithology collision risk modelling**.
- 7.5.174 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.175 As described in **PEIR Volume 2, Chapter 12: Offshore ornithology**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Common tern (migratory)

- 7.5.176 All migratory terns have been considered together below (**paragraph 7.5.390: 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.177 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of The Wash SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern**

**feature of The Wash SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Breydon Water SPA

### Features and effects for assessment

7.5.178 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Breydon Water SPA:

- common tern (migratory), Operation and Maintenance Phase, collision risk.

### Assessment information

7.5.179 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - ▶ the populations of each of the qualifying features; and
  - ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

7.5.180 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.

7.5.181 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:

- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
- C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.

7.5.182 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.



### *Common tern (migratory)*

- 7.5.183 As noted previously, all migratory terns have been considered together below (**paragraph 7.5.390: ‘Migratory Waterbirds – English South Coast SPAs’** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.184 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of Breydon Water SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern feature of Breydon Water SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Greater Wash SPA

### Features and effects for assessment

- 7.5.185 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Greater Wash SPA:
- common tern and Sandwich tern (migratory), Operation and Maintenance Phase, collision risk.

### Assessment information

- 7.5.186 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - the populations of each of the qualifying features; and
    - the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.187 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.188 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:

- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
- C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.

7.5.189 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### *Common tern (migratory)*

- 7.5.190 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.191 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of Greater Wash SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern feature of Greater Wash SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

#### *Sandwich tern (migratory)*

- 7.5.192 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.193 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Greater Wash SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature of Greater Wash SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## **North Norfolk Coast SPA and Ramsar**

### **Features and Effects for Assessment**

- 7.5.194 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Greater Wash SPA:
- common tern and Sandwich tern (migratory), Operation and Maintenance Phase, collision risk.

## Assessment information

7.5.195 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - ▶ the populations of each of the qualifying features; and
  - ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.196 Seabirds flying through the array area during the operational phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.197 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.198 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Common tern (migratory)

- 7.5.199 All migratory terns have been considered together below (**paragraph 7.5.390: 'Migratory Waterbirds – English South Coast SPAs'** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.200 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of Greater Wash SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern feature of Greater Wash SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

### *Sandwich tern (migratory)*

- 7.5.201 As noted above, all migratory terns have been considered together below (**paragraph 7.5.390: ‘Migratory Waterbirds – English South Coast SPAs’** and onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.202 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Greater Wash SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature of Greater Wash SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Cote de Granit Rose-Sept Iles SPA, France

### Features and effects for assessment

- 7.5.203 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Cote de Granit Rose-Sept Iles SPA:
- gannet (breeding and migratory bio-seasons), Operation and Maintenance Phase, collision risk; and
  - gannet (breeding and migratory bio-seasons), Operation and Maintenance Phase, disturbance/displacement.

### Assessment information

- 7.5.204 No published conservation objectives have been found for this site, although for the purpose of assessment it is assumed that the conservation objectives are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - ▶ the populations of each of the qualifying features; and
    - ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.205 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.

- 7.5.206 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.207 As described in **PEIR Volume 2, Chapter 12: Offshore and Intertidal Ornithology**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

### Gannet

- 7.5.208 Gannet has been screened into the assessment of the Operation and Maintenance phase based on the density of birds in flight in the array area and its flight behaviour that places it at risk of collision with the turning blades of the WTGs. Gannet has been screened in for both the breeding and non-breeding bio-seasons (there is no migration free winter bio-season for this species) in relation to the Cote de Granit Rose-Sept Iles SPA since birds breeding at this colony may pass through Rampion 2 during their post-breeding and Return migrations (Fort *et al.*, 2012; Furness, 2015).
- 7.5.209 During the breeding bio-season, when birds are limited in the distance and number of days over which they can forage by the need to return regularly to the nest site, it can be expected that the area in and around Rampion 2 will contain a high proportion of adult birds that can be attributed to those designated sites within foraging range. The Cote de Granit Rose-Sept Iles SPA lies within the mean maximum ( $\pm$  standard deviation) foraging range of gannet ( $315.5 \pm 194.2$  km; Woodward *et al.*, 2019), along with two other designated sites based on distances around land. Predicted collision mortality has therefore been apportioned to each of these sites following SNH (2018). In reality however, evidence gained from tracking during the breeding bio-season has demonstrated that adjacent colonies do not have overlapping foraging areas (Wakefield *et al.*, 2013). Based on these tracking data, it is unlikely that birds breeding at the Cote de Granit Rose-Sept Iles SPA will be present within Rampion 2 during the breeding bio-season, and therefore attributing predicted mortality to this SPA is highly precautionary.
- 7.5.210 Outside the breeding bio-season, when the population contains a mix of birds from UK breeding colonies and breeding colonies from further away, then a much lower percentage of birds can be attributed to any particular breeding colony SPA population. In the migratory bio-season, the information on populations contained in Furness (2015) has been applied for the purpose of apportionment.
- 7.5.211 A generic population age ratio of gannets has been used of 0.6 across all months of the year (**Table 12.16** of **PEIR Volume 2, Chapter 12**).

## Breeding

- 7.5.212 The predicted collision resultant mortality from the operation of Rampion 2 in the breeding bio-season is approximately 10 individuals, of which six are assumed to be breeding adults. Mortality during the breeding bio-season was apportioned to the Cote de Granit Rose-Sept Iles SPA following the SNH (2018) method. Following this method, 36.9% of breeding age individuals subject to collision risk may be from the Cote de Granit Rose-Sept Iles SPA. On this basis, of the six adult birds predicted to suffer collision mortality, 2.21 breeding adults would be attributable to this SPA. Given the annual background mortality for this SPA is 3,163 individuals (**Table 12.16 of PEIR Volume 2, Chapter 12**) then this prediction of 2.21 adult birds suffering collision mortality would represent a 0.07% increase in mortality relative to baseline mortality.

## Migration

- 7.5.213 The predicted collision resultant mortality as a result of the operation of Rampion 2 in the Return migration bio-season is one individual and in the Post-breeding migration bio-season is four individuals (there is no migration free winter bio-season). In total, five birds are predicted to suffer collision related mortality during the migratory bio-season or three breeding adults.
- 7.5.214 In the migratory bio-season these birds will have come from a range of seabird breeding colonies in the UK and overseas. The UK North Sea and Channel population during the post-breeding season is estimated to be 456,298 individuals (Furness, 2015). During the Return migration, an estimated 248,385 individuals are present in the UK North Sea and Channel (Furness, 2015). In the absence of information regarding the proportion of SPA breeding adults which remain the UK North Sea and Channel Biologically Defined Minimum Population (BDMPS), a worst-case assumption has been taken which assumes that all breeding adults from the Cote de Granit Rose-Sept Iles SPA remain in this region throughout the non-breeding bio-season. As such, breeding adults from the Cote de Granit Rose-Sept Iles SPA are considered to contribute to 8.56% of the UK North Sea and Channel population during the Post-breeding migration and 15.72% during the Return migration. On that basis less than one breeding adult (0.50 individuals) that suffer collision consequent mortality can be attributed to the SPA. This represents a 0.016% increase in mortality relative to baseline mortality.

## Conclusion

- 7.5.215 The increase in mortality relative to baseline mortality of 0.07% in the breeding bio-season and 0.016% in the migration will not affect the achievement of the conservation objectives for the SPA and as a result will not have an adverse effect on the integrity of the SPA.
- 7.5.216 **There is, therefore, no potential for an AEoI to the conservation objectives of the gannet feature of the Cote de Granit Rose-Sept Iles SPA in relation to collision effects from Rampion 2 alone and therefore, subject to natural change, gannet will be maintained as a feature in the long term with respect to the potential for adverse effects from collision.**



## Operation and maintenance

### Disturbance and displacement

#### Overview

- 7.5.217 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.
- 7.5.218 In order to assess the risk resulting from disturbance and displacement, an analysis of key species has been carried out as described in **PEIR Volume 4, Appendix 12.2**. Not all species were included in that analysis, as it focused on species for which a potential for a significant effect at the EIA level was identified.

#### Gannet

- 7.5.219 In order to assess the potential impacts of displacement on gannet, an effect distance was determined of the array area and no buffer. The percentage of birds displaced, and consequential mortality was determined (**PEIR Volume 4, Appendix 12.2**). The level of displacement considered across all bio-seasons was between 60% to 80% and the consequential mortality was set at 1%. Further details are given in **PEIR Volume 2, Chapter 12**.
- 7.5.220 The Rampion 2 array area is within the mean maximum foraging distance of  $315.5 \pm 194.2$  km to the Cote de Granit Rose-Sept Iles SPA at 257.8 km distant (Woodward *et al.*, 2019). Accordingly, this species is assessed for both the breeding season and the non-breeding season. In the breeding bio-season the mean peak abundance of gannets estimated to occur in the array was 98 individuals. Outside of the breeding season, the mean peak abundance of gannets during the Return migration bio-season was 45 individuals and 78 in the Post-breeding migration bio-season (there is no migration free winter bio-season).
- 7.5.221 The potential for impact on the Cote de Granit Rose-Sept Iles SPA will vary by season and accordingly the assessment is carried out on a seasonal basis.
- 7.5.222 Outside the breeding season, when the population contains a mix of birds from UK breeding colonies and breeding colonies from further away, then a much lower percentage of birds can be attributed to any particular breeding colony SPA population. In the breeding season the maximum foraging distance and the mean maximum foraging distance from Woodward *et al.*, (2019) determine which breeding colonies the birds may be apportioned to using the SNH apportionment tool (SNH, 2018), and in the non-breeding season the information on populations contained in Furness (2015) is applied for the same purpose of apportionment.



- 7.5.223 A generic population age ratio of gannets has been used of 0.6 across all months of the year (**Table 12.16** of **PEIR Volume 2, Chapter 12**).

### Breeding

- 7.5.224 During the migration-free breeding bio-season, a peak abundance of 98 gannets within the array area are estimated to be at risk of displacement. Using displacement rates between 60% to 80% and a mortality rate of 1% would result in approximately one gannet being subject to mortality, or 0.6 breeding adults. Mortality during the breeding season was apportioned to the Cote de Granit Rose-Sept Iles SPA following the SNH (2018) method. Following this method, 36.9% of breeding age individuals subject to displacement may be from the Cote de Granit Rose-Sept Iles SPA. On this basis, of the 0.6 adult birds predicted to suffer displacement mortality, 0.22 breeding adults would be attributable to this SPA. Given the annual background mortality for this SPA is 7,342 individuals (**Table 12.16** of **PEIR Volume 2, Chapter 12**) then this prediction of 0.22 adult birds suffering displacement mortality would represent a 0.003% increase mortality relative to in baseline mortality.

### Migration

- 7.5.225 The predicted displacement resultant mortality as a result of the operation of Rampion 2 in the Return migration bio-season is zero individuals and in the Post-breeding migration bio-season is approximately zero to one individual (there is no migration free winter bio-season). In total, up to one bird (0.6 breeding adults) is predicted to suffer displacement related mortality during the migratory bio-season.
- 7.5.226 In the non-breeding season, birds will have come from a range of seabird breeding colonies in the UK and overseas. The UK North Sea and Channel population during the post-breeding season is estimated to be 456,298 individuals (Furness, 2015). During the Return migration, an estimated 248,385 individuals are present in the UK North Sea and Channel (Furness, 2015). Breeding adults from the Cote de Granit Rose-Sept Iles SPA are considered to contribute to 8.56% of the UK North Sea and Channel population during the Post-breeding migration and 15.72% during the Return migration. On that basis, of the 0.6 breeding adults subject to displacement consequent mortality during the migratory bio-seasons, 0.09 breeding adults can be attributed to the Cote de Granit Rose-Sept Iles SPA. This represents a 0.001% increase in mortality relative to baseline mortality.

### Conclusion

- 7.5.227 The increase in mortality relative to baseline mortality of 0.003% in the breeding bio-season and 0.001% in the migratory bio-seasons will not affect the achievement of the conservation objectives for the SPA and as a result will not have an adverse effect on the integrity of the SPA.
- 7.5.228 **There is, therefore, no potential for an AEoI to the conservation objectives of the gannet feature of the Cote de Granit Rose-Sept Iles SPA in relation to displacement effects from Rampion 2 alone and therefore, subject to natural change, gannet will be maintained as a feature in the long term with respect to the potential for adverse effects from displacement.**

## Alderney West Coast and Burhou Islands Ramsar

### Features and effects for assessment

- 7.5.229 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Alderney West Coast and Burhou Islands Ramsar:
- gannet (breeding and migratory bio-season), Operation and Maintenance phase, collision risk; and
  - gannet (breeding and migratory bio-seasons), Operation and Maintenance phase, displacement.

### Assessment information

- 7.5.230 No published conservation objectives have been found for this site, although for the purpose of assessment it is assumed that the conservation objectives are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Ramsar Convention, by maintaining or restoring:
    - the populations of each of the qualifying features; and
    - the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.231 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.232 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.

- 7.5.233 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

### Gannet

- 7.5.234 Gannet has been screened into the assessment of the Operation and Maintenance phase based on the density of birds in flight in the array area and its flight behaviour that places it at risk of collision with the turning blades of the WTGs. Gannet has been screened in for both the breeding and migratory bio-seasons (there is no migration free winter bio-season for this species) in relation to the Alderney West Coast and Burhou Islands Ramsar since birds breeding at this colony may pass through Rampion 2 during their Post-breeding migration as they follow a potential clockwise loop migration around the UK (Fort *et al.*, 2012; Furness *et al.*, 2018).
- 7.5.235 During the breeding bio-season, when birds are limited in the distance and number of days over which they can forage by the need to return regularly to the nest site, it can be expected that the area in and around Rampion 2 will contain a high proportion of adult birds that can be attributed to those designated sites within foraging range. The Alderney West Coast and Burhou Islands Ramsar lies within the mean maximum ( $\pm 1$  standard deviation) foraging range of gannet ( $315.5 \pm 194.2$  km Woodward *et al.*, 2019), along with two other designated sites. Predicted collision mortality has therefore been apportioned to each of these sites following SNH (2018).
- 7.5.236 Outside the breeding bio-season, when the population contains a mix of birds from UK breeding colonies and breeding colonies from further away, then a much lower percentage of birds can be attributed to any particular breeding colony SPA population. In the migratory bio-season the information on populations contained in Furness (2015) is applied for the same purpose of apportionment.
- 7.5.237 A generic population age ratio of gannets has been used of 0.6 across all months of the year (**Table 12.16** of **PEIR Volume 2, Chapter 12**).

### Breeding

- 7.5.238 The predicted collision resultant mortality from the operation of Rampion 2 in the breeding bio-season is approximately 10 individuals, of which six are assumed to be breeding adults. Mortality during the breeding bio-season was apportioned to the Alderney West Coast and Burhou Islands Ramsar following the SNH (2018) method. Following this method, 63.1% of individuals subject to collision may be apportioned to the Alderney West Coast and Burhou Islands Ramsar. On this basis, of the six adult birds predicted to suffer collision mortality, 3.79 breeding adults would be attributable to this Ramsar. Using a baseline adult mortality rate of 0.081 (**Table 12.16** of **PEIR Volume 2, Chapter 12**) and using the Ramsar population of 18,850 breeding adults, the annual background mortality for this Ramsar site is 1,527 individuals. Therefore, this prediction of 3.79 adult birds suffering collision mortality would represent a 0.24% increase in mortality relative to baseline mortality. This is a level of effect that would not be considered to be significant and not of a material contribution to the overall annual natural mortality rate for this species.

### Non-breeding

- 7.5.239 The predicted collision resultant mortality as a result of the operation of Rampion 2 in the Return migration bio-season is one individual and in the Post-breeding migration bio-season is four individuals (there is no migration free winter bio-season). In total, five birds are predicted to suffer collision related mortality during the migratory bio-season or three breeding adults.
- 7.5.240 In the non-breeding season these birds will have come from a range of seabird breeding colonies in the UK and overseas. The UK North Sea and Channel population during the post-breeding season is estimated to be 456,298 individuals (Furness, 2015). During the Return migration, an estimated 248,385 individuals are present in the UK North Sea and Channel (Furness, 2015). Breeding adults from the Alderney West Coast and Burhou Islands Ramsar are considered to contribute to 4.13% of the UK North Sea and Channel population during the Post-breeding migration and 7.59% during the Return migration. On that basis less than one breeding adult (0.24 individuals) that suffer collision consequent mortality can be attributed to the Ramsar. This represents a 0.016% increase in mortality relative to baseline mortality. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species.
- 7.5.241 **There is, therefore, no adverse effect as a result of collision risk to gannet during the non-breeding season and no adverse effect on the integrity of this designated site as a consequence of potential collision risk in the non-breeding season.**

### Conclusion

- 7.5.242 The increase in mortality relative to baseline mortality of 0.24% in the breeding bio-season and 0.016% in the migratory bio-season will not affect the achievement of the conservation objectives for the Ramsar and as a result will not have an adverse effect on the integrity of the Ramsar. The increase in mortality in total and as an increase relative to baseline mortality an annual basis is a level of effect that would not be considered to be significant and not of a material contribution to the overall annual natural mortality rate for this species.
- 7.5.243 **There is, therefore, no potential for an AEoI to the conservation objectives of the gannet feature of the Alderney West Coast and Burhou Islands Ramsar in relation to collision effects from Rampion 2 alone and therefore, subject to natural change, gannet will be maintained as a feature in the long term with respect to the potential for adverse effects from collision.**

## Operation and maintenance

### Disturbance and displacement

#### Overview

- 7.5.244 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect

represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

### Gannet

- 7.5.245 In order to assess the potential impacts of displacement on gannet, an effect distance was determined of the array area and no buffer. The percentage of birds displaced, and consequential mortality was determined (**PEIR Volume 4, Appendix 12.2**). The level of displacement considered across all bio-seasons was between 60% to 80% and the consequential mortality was set at 1%. Further details are given in **PEIR Volume 2, Chapter 12**.
- 7.5.246 The Rampion 2 array area is within the mean maximum foraging distance of  $315.5 \pm 194.2$  km to the Alderney West Coast and Burhou Islands Ramsar at 148.1 km distant (Woodward *et al.*, 2019). Accordingly, this species is assessed for both the breeding bio-season and the migratory bio-season. In the breeding bio-season the mean peak abundance of gannets estimated to occur in the array was 98 individuals. Outside of the breeding season, the mean peak abundance of gannets during the Return migration bio-season was 45 individuals and 78 in the Post-breeding migration bio-season (there is no migration free winter bio-season).
- 7.5.247 The potential for impact on the Alderney West Coast and Burhou Islands Ramsar will vary by season and accordingly the assessment is carried out on a seasonal basis.
- 7.5.248 Outside the breeding bio-season, when the population contains a mix of birds from UK breeding colonies and breeding colonies from further away, then a much lower percentage of birds can be attributed to any particular breeding colony SPA population. In the breeding bio-season the maximum foraging distance and the mean maximum foraging distance from Woodward *et al.*, (2019) determine which breeding colonies the birds may be apportioned to using the SNH apportionment tool (SNH, 2018), and in the migratory bio-season the information on populations contained in Furness (2015) is applied for the same purpose of apportionment.
- 7.5.249 A generic population age ratio of gannets has been used of 0.60 across all months of the year (**Table 12.16** of **PEIR Volume 2, Chapter 12**).

### Breeding

- 7.5.250 During the migration-free breeding bio-season, a peak abundance of 98 gannets within the array area are estimated to be at risk of displacement. Using displacement rates between 60% to 80% and a mortality rate of 1% would result in approximately one gannet being subject to mortality, or 0.6 breeding adults. Mortality during the breeding bio-season was apportioned to the Alderney West Coast and Burhou Islands Ramsar following the SNH (2018) method. Following this method, 63.1% of breeding age individuals from the Alderney West Coast and Burhou Islands Ramsar may be subject to displacement. On this basis, of the 0.60 adult birds predicted to suffer displacement mortality, 0.38 breeding adults would

be attributable to this Ramsar site. Using a baseline adult mortality rate of 0.081 (Table 12.16 of PEIR Volume 2, Chapter 12) and using the Ramsar population of 18,850 breeding adults, the annual background mortality for this Ramsar site is 1,527 individuals. Given the annual background mortality for this Ramsar is 3,544 individuals. Therefore, this prediction of 0.38 adult birds suffering displacement mortality would represent 0.02% increase in mortality relative to baseline mortality. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable against the overall annual baseline natural mortality rate for this species.

### Migration

- 7.5.251 The predicted displacement resultant mortality as a result of the operation of Rampion 2 in the Return migration bio-season is zero individuals and in the Post-breeding migration bio-season is approximately zero to one individual (there is no migration free winter bio-season). In total, up to one bird (0.6 breeding adults) is predicted to suffer displacement related mortality during the migratory bio-season.
- 7.5.252 In the migratory bio-season, birds will have come from a range of seabird breeding colonies in the UK and overseas. The UK North Sea and Channel population during the post-breeding season is estimated to be 456,298 individuals (Furness, 2015). During the Return migration, an estimated 248,385 individuals are present in the UK North Sea and Channel (Furness, 2015). Breeding adults from the Alderney West Coast and Burhou Islands Ramsar are considered to contribute to 4.13% of the UK North Sea and Channel population during the Post-breeding migration and 7.59% during the Return migration. On that basis less than one breeding adult (0.04 individuals) that suffer displacement consequent mortality during the migratory bio-season can be attributed to the Ramsar site. This represents a 0.003% increase in mortality relative to baseline mortality. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species.

### Conclusion

- 7.5.253 The increase in baseline mortality of 0.02% in the breeding bio-season and 0.003% in the migratory bio-season will not affect the achievement of the conservation objectives for the Ramsar site and as a result will not have an adverse effect on the integrity of the Ramsar site. The increase in mortality in total and as an increase relative to baseline mortality an annual basis is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species.
- 7.5.254 **There is, therefore, no potential for an AEol to the conservation objectives of the gannet feature of the Alderney West Coast and Burhou Islands Ramsar in relation to displacement effects from Rampion 2 alone and therefore, subject to natural change, gannet will be maintained as a feature in the long term with respect to the potential for adverse effects from displacement.**



## Grassholm SPA

### Features and effects for assessment

- 7.5.255 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Grassholm SPA:
- gannet (migratory), Operation and Maintenance Phase, collision risk; and
  - gannet (migratory), Operation and Maintenance Phase, displacement.

### Assessment information

- 7.5.256 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - ▶ the populations of each of the qualifying features; and
    - ▶ the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.257 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.258 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.259 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.



*Gannet (migratory)*

- 7.5.260 In order to minimise repetition and provide a clear and concise approach, the impact from collision risk on migratory gannets to all relevant SPAs have been considered together below (**paragraph 7.5.390 ‘Migratory Waterbirds – English South Coast SPAs’** and onwards). As per that section, no AEol was found as a result of collision risk for the gannet feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.261 **There is, therefore, no potential for an AEol to the conservation objectives of the gannet feature of Grassholm SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the gannet feature of Grassholm SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

**Operation and maintenance***Disturbance and displacement**Overview*

- 7.5.262 Activities in the offshore export cable corridor associated with export cable laying, and activities within the array area associated with the construction of WTGs and other infrastructure, may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

*Gannet (migratory)*

- 7.5.263 In order to minimise repetition and provide a clear and concise approach, the impact from disturbance and displacement on migratory gannets to all relevant SPAs have been considered together below (**paragraph 7.5.366 onwards**). As per that section, no AEol was found as a result of disturbance/displacement for the gannet feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.264 **There is, therefore, no potential for an AEol to the conservation objectives of the gannet feature of Grassholm SPA in relation to disturbance/displacement from Rampion 2 alone and therefore, subject to natural change, the gannet tern feature of Grassholm SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Flamborough and Filey Coast SPA

### Features and effects for assessment

7.5.265 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Flamborough and Filey Coast SPA:

- guillemot and razorbill (migratory), construction phase, displacement;
- gannet, kittiwake and herring gull (migratory), Operation and Maintenance phase, collision risk;
- gannet, guillemot and razorbill (migratory/non-breeding), Operation and Maintenance phase, displacement;
- gannet (breeding), Operation and Maintenance phase, collision risk;
- gannet (breeding), Operation and Maintenance phase, displacement; and
- guillemot and razorbill (migratory), decommissioning phase, displacement.

### Assessment information

7.5.266 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - ▶ the populations of each of the qualifying features; and
  - ▶ the distribution of qualifying features within the site.

## Construction

### Disturbance and displacement

#### Overview

7.5.267 Activities in the offshore export cable corridor associated with export cable laying, and activities within the array area associated within the construction of WTGs and other infrastructure, may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

*Gannet (migratory)*

- 7.5.268 In order to minimise repetition and provide a clear and concise approach, the impact from disturbance/displacement on migratory gannets to all relevant SPAs have been considered together below (**paragraph 7.5.368** onwards) As per that section, no AEol was found as a result of disturbance/displacement for the gannet feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.269 There is, therefore, no potential for an AEol to the conservation objectives of the gannet feature of **Flamborough and Filey Coast** SPA in relation to disturbance/displacement from Rampion 2 alone and therefore, subject to natural change, the gannet feature of **Flamborough and Filey Coast** SPA will be maintained as a feature in the long term with respect to potential for adverse effects.

*Guillemot (non-breeding)*

- 7.5.270 In order to minimise repetition and provide a clear and concise approach, the impact from disturbance/displacement on non-breeding guillemots to all relevant SPAs have been considered together below (**paragraph 7.5.404** onwards). As per that section, no AEol was found as a result of disturbance/displacement for the guillemot feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.271 **There is, therefore, no potential for an AEol to the conservation objectives of the guillemot feature of Flamborough and Filey Coast SPA in relation to disturbance/displacement from Rampion 2 alone and therefore, subject to natural change, the guillemot feature of Flamborough and Filey Coast SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

*Razorbill (migratory & non-breeding)*

- 7.5.272 In order to minimise repetition and provide a clear and concise approach, the impact from disturbance/displacement on migratory and non-breeding razorbills to all relevant SPAs have been considered together below (**paragraph 7.5.404** onwards). As per that section, no AEol was found as a result of disturbance/displacement for the razorbill feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.273 **There is, therefore, no potential for an AEol to the conservation objectives of the razorbill feature of Flamborough and Filey Coast SPA in relation to disturbance/displacement from Rampion 2 alone and therefore, subject to natural change, the razorbill feature of Flamborough and Filey Coast SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.274 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for the assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.275 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.276 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Gannet (migratory)

- 7.5.277 In order to minimise repetition and provide a clear and concise approach, the impact from collision risk on migratory gannets to all relevant SPAs have been considered together below (**paragraph 7.5.368** onwards). As per that section, no AEoI was found as a result of collision risk for the gannet feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.278 **There is, therefore, no potential for an AEoI to the conservation objectives of the gannet feature of Flamborough and Filey Coast SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the gannet feature of Flamborough and Filey Coast SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

#### Gannet (breeding)

- 7.5.279 During the breeding bio-season, when birds are limited in the distance and number of days over which they can forage by the need to return regularly to the nest site, it can be expected that the area in and around Rampion 2 will contain a high proportion of adult birds that can be attributed to those designated sites within foraging range. Although Rampion 2 is within the mean-max + 1 Standard Deviation (SD) foraging range of gannets from Flamborough and Filey Coast SPA as the crow flies, foraging gannets would take an at-sea route and, by this route, Rampion 2 is beyond the mean-max + 1 SD foraging range of gannets. Therefore,

there is not likely to be any connectivity between breeding gannets from Flamborough and Filey Coast SPA and Rampion 2 and therefore no potential impact from collision risk.

### *Kittiwake (migratory)*

7.5.280 In order to minimise repetition and provide a clear and concise approach, all migratory gulls have been considered together below in **paragraph 7.5.372** As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.281 **There is, therefore, no potential for an AEol to the conservation objectives of the kittiwake feature of Flamborough and Filey Coast SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the kittiwake feature of Flamborough and Filey Coast SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

### *Herring gull (migratory)*

7.5.282 In order to minimise repetition and provide a clear and concise approach, all migratory gulls have been considered together below in **paragraph 7.5.372** As per that section, no AEol was found for any gull feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.283 **There is, therefore, no potential for an AEol to the conservation objectives of the herring gull feature of Flamborough and Filey Coast SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the herring gull feature of Flamborough and Filey Coast SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Operation and maintenance

### Disturbance and displacement

#### *Overview*

7.5.284 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

### *Gannet (migratory)*

7.5.285 In order to minimise repetition and provide a clear and concise approach, the impact from disturbance and displacement on migratory gannets to all relevant

SPAs have been considered together below (**Paragraph 7.5.368** onwards). As per that section, no AEol was found as a result of disturbance/displacement for the gannet feature of any SPA or Ramsar site from the Proposed Development alone.

- 7.5.286 **There is, therefore, no potential for an AEol to the conservation objectives of the gannet feature of Flamborough and Filey Coast SPA in relation to disturbance/displacement from Rampion 2 alone and therefore, subject to natural change, the gannet tern feature of Flamborough and Filey Coast SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Decommissioning

### Disturbance and displacement

- 7.5.287 Decommissioning activities associated with removing foundations and WTGs and decommissioning the offshore export cable may lead to disturbance and displacement of species within the array area and offshore cable corridor, and different degrees of buffers surrounding it.
- 7.5.288 The impacts from the decommissioning phase are expected to be equal to or lower than the impacts from the construction phase.
- 7.5.289 As no AEol is expected for any feature during the construction phase, it follows that no AEol is expected for any feature during the decommissioning phase.
- 7.5.290 **There is, therefore, no potential for an AEol to the conservation objectives of the gannet, guillemot or razorbill features of Flamborough and Filey Coast SPA in relation to disturbance and displacement effects from Rampion 2 alone during the decommissioning phase and therefore, subject to natural change, the gannet, guillemot and razorbill features will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Northumbria Coast SPA and Ramsar

### Features and effects for assessment

- 7.5.291 The potential for LSEs to result from Rampion 2 acting alone has been identified for the following for Northumbria Coast SPA and Ramsar:
- Arctic tern (migratory), Operation and Maintenance Phase, collision risk.

### Assessment information

- 7.5.292 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - the populations of each of the qualifying features; and

- the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.293 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.294 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.295 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Arctic tern (migratory)

- 7.5.296 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: Migratory Terns – English SPAs and Ramsar sites** onwards).. As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.297 **There is, therefore, no potential for an AEol to the conservation objectives of the Arctic tern feature of Northumbria Coast SPA or Ramsar in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Arctic tern feature of Northumbria Coast SPA and Ramsar will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Coquet Island SPA

### Features and effects for assessment

- 7.5.298 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Coquet Island SPA:



- Sandwich tern, Arctic tern, common tern, herring gull, lesser black-backed gull and kittiwake (migratory), Operation and Maintenance Phase, collision risk.

## Assessment information

7.5.299 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
- the populations of each of the qualifying features; and
- the distribution of qualifying features within the site.

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.300 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.301 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.302 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Arctic tern (migratory)

- 7.5.303 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: Migratory Terns – English SPAs and Ramsar sites** onwards). As per that section, no AEoI was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.

- 7.5.304 **There is, therefore, no potential for an AEol to the conservation objectives of the Arctic tern feature of Coquet Island SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Arctic tern feature of Coquet Island SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

*Sandwich tern (migratory)*

- 7.5.305 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: Migratory Terns – English SPAs and Ramsar sites** onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.306 There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Coquet Island SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature of Coquet Island SPA will be maintained as a feature in the long term with respect to potential for adverse effects.

*Common tern (migratory)*

- 7.5.307 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: Migratory Terns – English SPAs and Ramsar sites** onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.308 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of Coquet Island SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern feature of Coquet Island SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

*Herring gull (migratory)*

- 7.5.309 In order to minimise repetition and provide a clear and concise approach, all migratory gulls have been considered together below (**paragraph 7.5.372: 'Migratory Gulls – English SPAs and Ramsar' onwards**). As per that section, no AEol was found for any gull feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.310 **There is, therefore, no potential for an AEol to the conservation objectives of the herring gull feature of Coquet Island SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the herring gull feature of Coquet Island SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

*Lesser black-backed gull (migratory)*

- 7.5.311 In order to minimise repetition and provide a clear and concise approach, all migratory gulls have been considered together below (**paragraph 7.5.372:**

**‘Migratory Gulls – English SPAs and Ramsar’** onwards). As per that section, no AEol was found for any gull feature of any SPA or Ramsar site from the Proposed Development alone.

- 7.5.312 There is, therefore, no potential for an AEol to the conservation objectives of the lesser black-backed gull feature of Coquet Island SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the lesser black-backed gull feature of Coquet Island SPA will be maintained as a feature in the long term with respect to potential for adverse effects.

#### *Kittiwake (migratory)*

- 7.5.313 In order to minimise repetition and provide a clear and concise approach, all migratory gulls have been considered together below (**paragraph 7.5.372: ‘Migratory Gulls – English SPAs and Ramsar’** onwards). As per that section, no AEol was found for any gull feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.314 **There is, therefore, no potential for an AEol to the conservation objectives of the kittiwake feature of Coquet Island SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the kittiwake feature of Coquet Island SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Farne Islands SPA

### Features and effects for assessment

- 7.5.315 The potential for LSEs from Rampion 2 acting alone has been identified for the following for Farne Islands SPA:
- guillemot (non-breeding), construction phase, disturbance and displacement;
  - Sandwich tern, Arctic tern, common tern and kittiwake (migratory), Operation and Maintenance phase, collision risk;
  - guillemot (non-breeding), Operation and Maintenance phase, disturbance and displacement;
  - guillemot (non-breeding), decommissioning phase, disturbance and displacement.

### Assessment information

- 7.5.316 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - the populations of each of the qualifying features; and
  - the distribution of qualifying features within the site.

## Construction

### Disturbance and displacement

#### Overview

- 7.5.317 Activities in the offshore export cable corridor associated with export cable laying, and activities within the array area associated with the construction of WTGs and other infrastructure, may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

#### *Guillemot (non-breeding)*

- 7.5.318 In order to minimise repetition and provide a clear and concise approach, the impact from disturbance/displacement on non-breeding guillemots to all relevant SPAs have been considered together below (**paragraph 7.5.404: ‘Migratory and non-breeding auks – English SPAs’** onwards). As per that section, no AEol was found as a result of disturbance/displacement for the guillemot feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.319 **There is, therefore, no potential for an AEol to the conservation objectives of the guillemot feature of Farne Islands SPA in relation to disturbance/displacement from Rampion 2 alone and therefore, subject to natural change, the guillemot feature of Farne Islands SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.320 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.321 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:

- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
- C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.

7.5.322 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### *Arctic tern (migratory)*

7.5.323 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: ‘Migratory Terns – English SPAs and Ramsar sites’** onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.324 **There is, therefore, no potential for an AEol to the conservation objectives of the Arctic tern feature of Farne Islands SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Arctic tern feature of Farne Islands SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

#### *Sandwich tern (migratory)*

7.5.325 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: ‘Migratory Terns – English SPAs and Ramsar sites’** onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.326 There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern feature of Farne Islands SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature of Farne Islands SPA will be maintained as a feature in the long term with respect to potential for adverse effects.

#### *Common tern (migratory)*

7.5.327 In order to minimise repetition and provide a clear and concise approach, all migratory terns have been considered together below (**paragraph 7.5.390: ‘Migratory Terns – English SPAs and Ramsar sites’** onwards). As per that section, no AEol was found for any tern feature of any SPA or Ramsar site from the Proposed Development alone.

7.5.328 **There is, therefore, no potential for an AEol to the conservation objectives of the common tern feature of Farne Islands SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the common tern feature of Farne Islands SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

### *Kittiwake (migratory)*

- 1.1.1 In order to minimise repetition and provide a clear and concise approach, all migratory gulls have been considered together below (**paragraph 7.5.372: ‘Migratory Gulls – English SPAs and Ramsar sites’** onwards). As per that section, no AEol was found for any gull feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.329 **There is, therefore, no potential for an AEol to the conservation objectives of the kittiwake feature of Farne Islands SPA in relation to collision risk from Rampion 2 alone and therefore, subject to natural change, the kittiwake feature of Farne Islands SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Disturbance and displacement

### *Overview*

- 7.5.330 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.

### *Guillemot (non-breeding)*

- 7.5.331 In order to minimise repetition and provide a clear and concise approach, the impact from disturbance/displacement on non-breeding guillemots to all relevant SPAs have been considered together below (**paragraph 7.5.404** onwards). As per that section, no AEol was found as a result of disturbance/displacement for the guillemot feature of any SPA or Ramsar site from the Proposed Development alone.
- 7.5.332 **There is, therefore, no potential for an AEol to the conservation objectives of the guillemot feature of Farne Islands SPA in relation to disturbance/displacement from Rampion 2 alone and therefore, subject to natural change, the guillemot feature of Farne Islands SPA will be maintained as a feature in the long term with respect to potential for adverse effects.**

## Decommissioning

### Disturbance and displacement

- 7.5.333 Decommissioning activities associated with removing foundations and WTGs and decommissioning the offshore export cable may lead to disturbance and displacement of species within the array area and offshore export cable corridor, and different degrees of buffers surrounding it.



- 7.5.334 The impacts from the decommissioning phase are expected to be equal to or lower than the impacts from the construction phase.
- 7.5.335 As no AEol is expected for any feature during the construction phase, it follows that no AEol is expected for any feature during the decommissioning phase.
- 7.5.336 **There is, therefore, no potential for an AEol to the conservation objectives of the guillemot feature of Farne Islands SPA in relation to disturbance and displacement effects from Rampion 2 alone during the decommissioning phase and therefore, subject to natural change, the guillemot feature will be maintained in the long term with respect to the potential for disturbance and displacement.**

## Migratory Waterbirds – English South Coast SPAs and Ramsar sites

### Features and effects for assessment

- 7.5.337 The potential for LSEs from Rampion 2 acting alone has been identified for the following migratory waterbirds from four English south coast SPAs / Ramsar sites, listed in **paragraph 7.5.338** during the Operation and Maintenance phase of the Proposed Development for collision risk:
- dark-bellied brent goose (Pagham Harbour SPA/Ramsar, Portsmouth Harbour SPA/Ramsar, Chichester & Langstone Harbours SPA/Ramsar and Solent & Southampton Water SPA/Ramsar);
  - shelduck (Chichester & Langstone Harbours SPA/Ramsar);
  - shoveler (Chichester & Langstone Harbours SPA);
  - wigeon (Chichester & Langstone Harbours SPA);
  - pintail (Chichester & Langstone Harbours SPA);
  - teal (Chichester & Langstone Harbours SPA & Solent & Southampton Water SPA/Ramsar);
  - red-breasted merganser (Portsmouth Harbour SPA and Chichester & Langstone Harbours SPA);
  - ringed plover (Chichester & Langstone Harbours SPA/Ramsar & Solent & Southampton Water SPA/Ramsar);
  - grey plover (Chichester & Langstone Harbours SPA/Ramsar);
  - curlew (Chichester & Langstone Harbours SPA);
  - bar-tailed godwit (Chichester & Langstone Harbours SPA);
  - black-tailed godwit (Portsmouth Harbour SPA, Chichester & Langstone Harbours Ramsar & Solent & Southampton Water SPA/Ramsar);
  - turnstone (Chichester & Langstone Harbours SPA);
  - ruff (Pagham Harbour SPA);
  - sanderling (Chichester & Langstone Harbours SPA);



- dunlin (Portsmouth Harbour SPA & Chichester & Langstone Harbours SPA/Ramsar); and
- redshank (Chichester & Langstone Harbours SPA/Ramsar).

### Assessment information

7.5.338 The conservation objectives (as described in **Appendix F**) for the site are as follows:

- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - ▶ the populations of each of the qualifying features
  - ▶ the distribution of qualifying features within the site

## Operation and maintenance

### Collision risk on migration

#### Overview

- 7.5.339 The migrant waterbird populations of the four SPA / Ramsars are considered in this assessment together. They have been screened into the assessment of the Operation and Maintenance phase on a precautionary basis as a result of the potential for a proportion of their twice-yearly migratory flights over the English Channel (to spend the non-breeding season at the SPA / Ramsar) which may pass across the array area and at a height that places them at risk of collision with the turning blades of the WTGs. The waterbird species concerned are listed above. They have been screened in for the migratory non-breeding bio-seasons and are designated features.
- 7.5.340 The aerial digital surveys completed to date recorded only two of the species screened in for assessment, dark-bellied brent goose and shelduck, whilst they did not record any of the other migratory waterbird species. An assessment of all potential migrant birds identified the above species on the basis of them having potential flight paths over Rampion 1, with an assumption that the same species would be considered for Rampion 2. As part of the Rampion 1 DCO Examination, APEM carried out Migropath modelling of migratory non-seabirds (APEM, 2013). Migropath is a modelling tool to estimate the number of birds passing through an OWF, based on the work carried out by the British Trust for Ornithology (BTO) as part of the SOSS-05 project (Wright *et al.*, 2012). The results from this modelling were then fed into the Band (2011) CRM to inform potential collision mortality (Percival, 2013). The annual total migrant estimate and subsequent collision mortality at a range of possible avoidance rates is given in **Table 7-3**. The basis of those assessments was to base potential impacts on waterbirds from collision risk on the use of an avoidance rate of 99%.

Table 7-3 Summary of migration modelling and CRM results as determined for Rampion 1 for waterbird species Screened in for Rampion 2

Species	Annual migrant passage estimate	Annual Collisions		
		98% Avoidance	99% Avoidance	99.5% Avoidance
Dark-bellied brent goose	148	0.22	0.11	0.05
Ringed plover (breeding)	818	1.37	0.69	0.34
Ringed plover (non-breeding)	1,420	2.39	1.19	0.60
Grey plover	1,647	3.02	1.51	0.75
Dunlin (breeding and passage population)	96	0.16	0.08	0.004
Dunlin (wintering population)	0	0	0	0
Bar-tailed godwit	770	0.49	0.25	0.12
Redshank (breeding)	214	0.41	0.21	0.10
Redshank (non-breeding)	666	1.29	0.64	0.32

7.5.341 The modelling for Rampion 1 produced predictions of annual flight rates through the proposed wind farm site for each species listed in **Table 7-3** (APEM, 2013). CRM using the standard Band (2011) model showed that the collision risk resulting from these migrant flights would all be of negligible magnitude and not significant (and could not possibly give rise to any Likely Significant Effect on any SPA in terms of the Habitats Regulations) (Percival, 2013). It was stated in the July 2013 Clarification Document that any additional modelling as per the SOSS-05 methodology (Wright et al., 2012) would be likely to only reduce the predicted collision risks to these from the values presented in the ES, and the results presented here confirm that conclusion.

7.5.342 For Rampion 2, quantitative consideration has been provided to the species modelled for Rampion 1 only, with a precautionary approach by considering that all the collision mortality be split between the SPA / Ramsar populations screened in for assessment. The annual mortality rates for all species are considered to be very low, when considering that these rates may be split between a number of different SPA / Ramsar populations. Further to this, when the predicted mortality rates are considered relative to baseline mortality rates all are well under 1% increase in mortality relative to baseline mortality, as described in species-specific assessments below. As an added layer of precaution, the assessment of collision risk to waterbirds for Rampion 2 considers the CRM outputs using a 99% avoidance rate, whilst providing additional consideration to the upper (99.5%) and lower (98%) avoidance rates as a range also.

- 7.5.343 Species not specifically modelled for collision risk for Rampion 1 were eliminated as part of a risk-based screening approach undertaken for that development (APEM, 2013). It can therefore be concluded that the risk from collisions to those species is no higher than, and in all likelihood lower than, the risk to species presented in **Table 7-3**.

#### *Dark-bellied brent goose*

- 7.5.344 It is predicted that under one (0.11) individual (with a range of between 0.05 and 0.22 birds) per annum would be subject to collision consequent mortality from all four SPA / Ramsar populations. The combined populations of brent geese from the four SPAs totals 29,960, whilst the combined populations of the four Ramsar sites totals 29,452. The baseline mortality rate for brent goose is 10% (Robinson, 2005), which would mean 2,960 SPA or 2,945 Ramsar individuals would be lost from these populations per annum. Therefore, the loss of under one (0.11) individual (with a range of between 0.05 and 0.22 birds) per annum represents a 0.001% increase in mortality relative to baseline mortality, which is a level of effect that would not be a detectable change to the overall annual natural mortality rate for this species.
- 7.5.345 The final RIAA that will follow this draft RIAA will include quantitative modelling to assess the impact of Rampion 2 on migratory dark-bellied brent goose. However, given that Rampion 2 is immediately adjacent to Rampion 1, and the maximum number of WTGs for Rampion 2 is lower than the number of WTGs presented for Rampion 1 during that project's DCO application, it can be assumed that the impact of Rampion 2 would be no higher and potentially lower than estimated for Rampion 1.
- 7.5.346 **There is, therefore, no potential for an AEoI to the conservation objectives of the dark-bellied brent goose feature of four SPAs and four Ramsar sites in relation to potential collision risk effects from Rampion 2 alone and therefore, subject to natural change, dark-bellied brent goose will be maintained as a feature in the long term with respect to the potential for adverse effect.**

#### *Ringed plover*

- 7.5.347 It is predicted that under two (1.88) individuals (with a range of between 0.94 and 3.76 birds) per annum would be subject to collision consequent mortality from the entire UK SPA / Ramsar populations. The combined populations of ringed plover from the two SPAs screened in for this assessment totals 1,398, whilst the combined populations of the two Ramsar sites totals 1,897. The baseline mortality rate for ringed plover is 22.8% (Robinson, 2005), which would mean 319 SPA or 433 Ramsar individuals would be lost from these populations per annum. Therefore, the loss of under two (1.88) individuals (with a range of between 0.94 and 3.76 birds) per annum represents a 0.30% or 0.22% increase in mortality relative to baseline mortality of the two SPAs and Ramsar sites, respectively, which is a level of effect that would not be considered to be a detectable change to the overall annual natural mortality rate for this species. Should the higher end of the range of mortality rates be applied then this represents a 1.18% or 0.86% increase in mortality relative to baseline mortality of the two SPAs and Ramsar sites, respectively. However, to reach these levels of mortality the avoidance rates

are assumed to be higher than realistic, so this is highly unlikely. It is also worth noting that the entire UK breeding and migratory SPA populations were modelled through Migropath for Rampion 1, so the mortality rates are more realistically split between the higher level of population rather than just two SPA / Ramsar sites. Therefore, the initial assessment considering mortality rates of under two individuals offers a more realistic, yet still precautionary, assessment of collision risk for ringed plover.

- 7.5.348 The final RIAA that will follow this draft RIAA will include quantitative modelling to assess the impact of Rampion 2 on migratory ringed plover. However, given that Rampion 2 is immediately adjacent to Rampion 1, and the maximum number of WTGs for Rampion 2 is lower than the number of WTGs presented for Rampion 1 during that project's DCO application, it can be assumed that the impact of Rampion 2 would be no higher and potentially lower than estimated for Rampion 1.
- 7.5.349 **There is, therefore, no potential for an AEol to the conservation objectives of the ringed plover feature of two SPAs and two Ramsar sites in relation to potential collision risk effects from Rampion 2 alone and therefore, subject to natural change, ringed plover will be maintained as a feature in the long term with respect to the potential for adverse effect.**

### *Grey plover*

- 7.5.350 It is predicted that under two (1.51) individuals (with a range of between 0.75 and 3.02 birds) per annum would be subject to collision consequent mortality from the two SPA / Ramsar populations. The combined populations of grey plover from the two SPAs totals 3,825, whilst the combined populations of the two Ramsar sites totals 4,176. The baseline mortality rate for grey plover is 14% (Robinson, 2005), which would mean 536 SPA or 585 Ramsar individuals would be lost from these populations per annum. Therefore, the loss of under two (1.51) individuals (with a range of between 0.75 and 3.02 birds) per annum represents a 0.14% or 0.13% (with a range of between 0.28% or 0.26% and 0.56% or 0.52%) increase in mortality relative to baseline mortality of the SPA and Ramsar populations, respectively, which is a level of effect that would not be considered to be a detectable change to the overall annual natural mortality rate for this species.
- 7.5.351 The final RIAA that will follow this draft RIAA will include quantitative modelling to assess the impact of Rampion 2 on migratory grey plover. However, given that Rampion 2 is immediately adjacent to Rampion 1, and the maximum number of WTGs for Rampion 2 is lower than the number of WTGs presented for Rampion 1 during that project's DCO application, it can be assumed that the impact of Rampion 2 would be no higher and potentially lower than estimated for Rampion 1.
- 7.5.352 **There is, therefore, no potential for an AEol to the conservation objectives of the grey plover feature of two SPAs and two Ramsar sites in relation to potential collision risk effects from Rampion 2 alone and therefore, subject to natural change, grey plover will be maintained as a feature in the long term with respect to the potential for adverse effect.**

*Dunlin*

- 7.5.353 It is predicted that under one (0.08) individual (with a range of between 0.004 and 0.16 birds) per annum would be subject to collision consequent mortality from a single SPA / Ramsar population. The population of dunlin from the SPA is 44,294, whilst the population of the Ramsar site is 52,743. The baseline mortality rate for dunlin is 26% (Robinson, 2005), which would mean 11,516 SPA or 13,713 Ramsar individuals would be lost from these populations per annum. Therefore, the loss of under one (0.08) individual (with a range of between 0.004 and 0.16 birds) per annum represents a 0.001% or under increase in mortality relative to baseline mortality to the SPA or Ramsar populations, which is a level of effect that would not be considered to be a detectable change to the overall annual natural mortality rate for this species.
- 7.5.354 The final RIAA that will follow this draft RIAA will include quantitative modelling to assess the impact of Rampion 2 on migratory dunlin. However, given that Rampion 2 is immediately adjacent to Rampion 1, and the maximum number of WTGs for Rampion 2 is lower than the number of WTGs presented for Rampion 1 during that project's DCO application, it can be assumed that the impact of Rampion 2 would be no higher and potentially lower than estimated for Rampion 1.
- 7.5.355 **There is, therefore, no potential for an AEol to the conservation objectives of dunlin feature of single SPA / Ramsar site in relation to potential collision risk effects from Rampion 2 alone and therefore, subject to natural change, dunlin will be maintained as a feature in the long term with respect to the potential for adverse effect.**

*Bar-tailed godwit*

- 7.5.356 It is predicted that under one (0.25) individual (with a range of between 0.12 and 0.49 birds) per annum would be subject to collision consequent mortality from a single SPA / Ramsar population. The population of bar-tailed godwit from the SPA is 1,692, whilst the baseline mortality rate is 28.5% (Robinson, 2005), which would mean 482 SPA individuals would be lost from this population per annum. Therefore, the loss of under one (0.25) individual (with a range of between 0.12 and 0.49 birds) per annum represents a 0.05% increase in mortality (with a range of 0.025% and 0.10%) relative to baseline mortality to the SPA population, which is a level of effect that would not be considered to be a detectable change to the overall annual natural mortality rate for this species.
- 7.5.357 The final RIAA that will follow this draft RIAA will include quantitative modelling to assess the impact of Rampion 2 on migratory bar-tailed godwit. However, given that Rampion 2 is immediately adjacent to Rampion 1, and the maximum number of WTGs for Rampion 2 is lower than the number of WTGs presented for Rampion 1 during that project's DCO application, it can be assumed that the impact of Rampion 2 would be no higher and potentially lower than estimated for Rampion 1.
- 7.5.358 **There is, therefore, no potential for an AEol to the conservation objectives of bar-tailed godwit feature a single SPA in relation to potential collision risk effects from Rampion 2 alone and therefore, subject to natural change, bar-**



**tailed godwit will be maintained as a feature in the long term with respect to the potential for adverse effect.**

### *Redshank*

- 7.5.359 It is predicted that under one (0.46) individual (with a range of between 0.22 and 1.7 birds) per annum would be subject to collision consequent mortality from a single SPA / Ramsar population. The population of redshank from the SPA is 1,788, whilst the population from the Ramsar is 1,460. The baseline mortality rate is 26% (Robinson, 2005), which would mean 465 SPA individuals or 380 Ramsar individuals would be lost from this population per annum. Therefore, the loss of under one (0.46) individual (with a range of between 0.22 and 1.7 birds) per annum represents a 0.099% or 0.12% increase in mortality (with a range of 0.05% and 0.37% or 0.06% and 0.45%) relative to baseline mortality to the SPA or Ramsar populations, respectively, which is a level of effect that would not be considered to be significant and not of a detectable change to the overall annual natural mortality rate for this species.
- 7.5.360 The final RIAA that will follow this draft RIAA will include quantitative modelling to assess the impact of Rampion 2 on migratory redshank. However, given that Rampion 2 is immediately adjacent to Rampion 1, and the maximum number of WTGs for Rampion 2 is lower than the number of WTGs presented for Rampion 1 during that project's DCO application, it can be assumed that the impact of Rampion 2 would be no higher and potentially lower than estimated for Rampion 1.
- 7.5.361 **There is, therefore, no potential for an AEol to the conservation objectives of redshank feature a single SPA / Ramsar in relation to potential collision risk effects from Rampion 2 alone and therefore, subject to natural change, redshank will be maintained as a feature in the long term with respect to the potential for adverse effect.**

### *Other waterbirds*

- 7.5.362 A number of migrant waterbirds were not included in the Rampion 1 assessments, including 11 species screened in for Rampion 2. These species are shelduck, shoveler, wigeon, pintail, teal, red-breasted merganser, curlew, black-tailed godwit, turnstone, ruff and sanderling from a mixture of four SPAs and three Ramsar sites. The final RIAA that will follow this draft RIAA will include quantitative modelling to assess the impact of Rampion 2 on additional migratory waterbirds according to the more precautionary approach for this Proposed Development.
- 7.5.363 However, as a robust risk-based screening process was undertaken for Rampion 1 (APEM, 2013) covering all potential migrant bird species connected to UK SPAs that may have flight paths over the original Rampion 1 array area it is considered that any species not modelled for that project are deemed to be at less risk than those screened in for modelling and subsequent CRM.
- 7.5.364 **On this basis there is, therefore, no potential for an AEol to the conservation objectives of waterbird features and assemblages to any of the SPAs / Ramsars in relation to potential collision risk effects from Rampion 2 alone and therefore, subject to natural change, all waterbird species and**

**assemblages will be maintained as a feature in the long term with respect to the potential for adverse effect.**

## Migratory Gannets – English, Welsh, French SPAs and Channel Island Ramsar

### Features and effects for assessment

- 7.5.365 The potential for LSEs from Rampion 2 acting alone has been identified for the following for migratory gannet species from the following SPAs during the Operation and Maintenance phase of the Proposed Development for collision risk:
- Grassholm SPA (migratory gannet), Operation and Maintenance Phase, collision risk; and
  - Flamborough and Filey Coast SPA (migratory gannet), Operation and Maintenance Phase, collision risk.

### Assessment information

- 7.5.366 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - the populations of each of the qualifying features
    - the distribution of qualifying features within the site

## Operation and maintenance

### Collision risk

#### Gannet

- 7.5.367 Gannet has been screened into the assessment of the Operation and Maintenance phase based on the density of birds in flight in the array area and its flight behaviour that places it at risk of collision with the turning blades of the WTGs. Gannet has been screened in for the non-breeding bio-seasons in relation to the Grassholm SPA and the Flamborough and Filey Coast SPA, since birds breeding at these colonies may pass through Rampion 2 during their post-breeding and Return migrations as they follow a potential clockwise loop migration around the UK (Fort *et al.*, 2012; Furness *et al.*, 2018).
- 7.5.368 Outside the breeding season, when the population contains a mix of birds from UK breeding colonies and breeding colonies from further away, a much lower percentage of birds can be attributed to any particular breeding colony SPA population. Information on non-breeding gannet populations contained in Furness (2015) has been applied for the purpose of apportionment.



- 7.5.369 The predicted collision resultant mortality as a result of the operation of Rampion 2 in the Return migration bio-season is one individual and in the Post-breeding migration bio-season is four individuals (there is no migration free winter bio-season). In total, five birds are predicted to suffer collision related mortality during the non-breeding season or three breeding adults.
- 7.5.370 A generic population age ratio of gannets has been used of 0.6 across all months of the year (**Table 12.16** of **PEIR Volume 2, Chapter 12**).

## Migratory Gulls – English SPAs and Ramsar

### Features and effects for assessment

- 7.5.371 The potential for LSEs from Rampion 2 acting alone has been identified for the following for migratory gull species from the following English SPAs and Ramsar during the Operation and Maintenance phase of the Proposed Development for collision risk:
- Alde-Ore Estuary SPA – migratory lesser black-backed gull;
  - Alde-Ore Estuary Ramsar – migratory lesser black-backed gull;
  - Flamborough & Filey Coast SPA – migratory kittiwake and herring gull;
  - Coquet Island SPA - migratory herring gull, lesser black-backed gull and kittiwake; and
  - Farne Islands SPA – migratory kittiwake.

### Assessment information

- 7.5.372 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- To ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - ▶ the populations of each of the qualifying features
    - ▶ the distribution of qualifying features within the site

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.373 Three English SPAs and a single English SPA/Ramsar were screened in for assessment of the potential of an adverse effect from collision risk associated with Rampion 2 on a precautionary basis based on the species flight behaviour that places them at risk of collision with the turning blades of the WTGs during the migratory and non-breeding bio-seasons.

- 7.5.374 The Rampion 2 array area is beyond the mean max foraging distance (Plus 1SD) for kittiwake of 156.1km (plus 144.5km), lesser black-backed gull of 127km (plus 109km) and herring gull of 58.8km (plus 26.8km) to all English SPAs screened in (Woodward et al. 2019). Accordingly, the three gull species are only assessed for the migratory and the non-breeding bio-seasons for each of the SPAs screened in.
- 7.5.375 In the non-breeding bio-seasons the number of kittiwakes, lesser black-backed gulls and herring gulls potentially at risk of collision with WTGs within the Rampion 2 array area is presented in **PEIR Volume 2, Chapter 12**.
- 7.5.376 In the non-breeding bio-seasons these birds will have come from a wide range of seabird breeding colonies in the UK and overseas. From that mortality estimate for Rampion 2, the number can be attributed to each of the North Sea SPAs based on knowledge of the wider BDMPS and the contribution of different colonies to the BDMPS. Furness (2015) provides the overall population data and SPA colony data from which those calculations can be carried out. It must be noted that the colony counts in Furness (2015) may differ from the SPA citation populations for some species, but in order to provide a level of consistency within this assessment the same source is used for both the colony counts and the wider UK North Sea and English Channel population estimates.
- 7.5.377 According to Furness (2015) differing percentages of each species from each SPA remain in the UK North Sea and English Channel in their constituent non-breeding bio-seasons, which are presented in **Table 7-4**. Accordingly, the proportion of birds in the UK North Sea and English Channel that can be attributed to each SPA/Ramsar is the remaining population as a proportion of the entire population for each species during this period, for which each SPA/Ramsar screened in for assessment is presented as a percentage for each gull species. On that basis the number of breeding adults for each species that may potentially suffer consequent mortality from collision can be attributed to an individual SPA/Ramsar (**Table 7-4**).
- 7.5.378 It should be noted that no data is within Furness (2015) for kittiwake, lesser black-backed gulls and herring gulls associated with Coquet Island SPA, as they are only a named feature of the breeding bird assemblage. The latest Seabird Monitoring Programme (Shoreline Management Plan (SMP); Natural England, 2015) colony data was used instead for apportionment against the North Sea and English Channel BDMPS with a precautionary assumption that all breeding adults associated with the colony remain in UK waters.

Table 7-4 Apportionment of potential migratory gull consequent mortality from collision apportioned to the English sites during the non-breeding bio-seasons.

SPA	Species	Bio-season	SPA breeding adult population (Furness, 2015)	Proportion of SPA adult population remaining in North Sea & English Channel	Proportioned breeding adult population of SPA remaining in UK North Sea & English Channel	SPA population as a percentage of the North Sea and English Channel (%)	Proportioned collision mortality rate for each SPA (breeding adults)
Alde-Ore SPA/ Ramsar	Lesser black-backed gull	Return migration	1,280	100%	1,280	0.65%	0.01
		Post-breeding migration	1,280	100%	1,280	0.61%	0.00
		Migration-free Winter	1,280	50%	640	1.63%	0.00
Flamborough and Filey Coast	Kittiwake	Return migration	75,234	60%	45,140	7.19%	0.52
		Post-breeding migration	75,234	60%	45,140	5.44%	0.09
	Herring gull	Non-breeding	990	99%	980	0.21%	0.01
Coquet Island SPA*	Kittiwake	Return migration	426	100%	426	0.07%	0.00
		Post-breeding migration	426	100%	426	0.05%	0.00

SPA	Species	Bio-season	SPA breeding adult population (Furness, 2015)	Proportion of SPA adult population remaining in North Sea & English Channel	Proportioned breeding adult population of SPA remaining in UK North Sea & English Channel	SPA population as a percentage of the North Sea and English Channel (%)	Proportioned collision mortality rate for each SPA (breeding adults)
	Lesser black-backed gull	Return migration	52	100%	52	0.03%	0.00
		Post-breeding migration	52	100%	52	0.02%	0.00
		Migration-free Winter	52	100%	52	0.13%	0.00
	Herring gull	Non-breeding	4	100%	4	0.00%	0.00
Farne Islands SPA	Kittiwake	Return migration	6,886	60%	4,132	0.66%	0.05
		Post-breeding migration	6,886	60%	4,132	0.50%	0.01

Table Note: \* Values taken from The Coquet Island SPA Departmental brief (NE, 2015) colony data.

### *Kittiwake*

- 7.5.379 The estimated collision mortality rates in **Table 7-4** for kittiwake are so low that this level of effect would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species at each colony.
- 7.5.380 The impact of collision that would occur throughout the operational life of Rampion 2 is a prediction of consequent mortality of less than a single breeding adult associated with each SPA assessed. Based on these mortality rates the increase in mortality relative to baseline mortality is well under 0.1%, which will not affect the achievements of the conservation objectives for any SPA and as a result Rampion 2 will not have an adverse effect on the integrity of the kittiwake feature of any English SPA.
- 7.5.381 **There is, therefore, no potential for an AEol to the conservation objectives of the kittiwake feature of any English SPAs in relation to collision impacts from Rampion 2 alone and therefore, subject to natural change, kittiwake will be maintained as a feature in the long term with respect to the potential for adverse effects from collision with WTGs.**

### *Lesser black-backed gull*

- 7.5.382 The estimated collision mortality rates (see **Table 7-4**) for lesser black-backed gull are so low that this level of effect would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species at each colony.
- 7.5.383 The impact of collision that would occur throughout the operational life of Rampion 2 is a prediction of consequent mortality of less than a single breeding adult associated with each site assessed. Based on these mortality rates the increase in mortality relative to baseline mortality is well under 0.1%, which will not affect the achievements of the conservation objectives for any site and as a result Rampion 2 will not have an adverse effect on the integrity of the kittiwake feature of any English SPA and Ramsar.
- 7.5.384 **There is, therefore, no potential for an AEol to the conservation objectives of the lesser black-backed gull feature of any English SPA and Ramsar in relation to collision impacts from Rampion 2 alone and therefore, subject to natural change, lesser black-backed gull will be maintained as a feature in the long term with respect to the potential for adverse effects from collision with WTGs.**

### *Herring gull*

- 7.5.385 The estimated collision mortality rates in **Table 7-4** for herring gull are so low that this level of effect would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species at each colony.
- 7.5.386 The impact of collision that would occur throughout the operational life of Rampion 2 is a prediction of consequent mortality of less than a single breeding adult associated with each SPA assessed. Based on these mortality rates the increase

in mortality relative to baseline mortality is well under 0.1%, which will not affect the achievements of the conservation objectives for any SPA and as a result Rampion 2 will not have an adverse effect on the integrity of the herring gull feature of any English SPA.

- 7.5.387 **There is, therefore, no potential for an AEol to the conservation objectives of the herring gull feature of any English SPAs in relation to collision impacts from Rampion 2 alone and therefore, subject to natural change, herring gull will be maintained as a feature in the long term with respect to the potential for adverse effects from collision with WTGs.**

## Migratory Terns – English SPAs and Ramsar sites

### Features and effects for assessment

- 7.5.388 The potential for LSEs from Rampion 2 acting alone has been identified for migratory tern species from the following English SPAs and Ramsar sites during the Operation and Maintenance phase of the Proposed Development for collision risk:
- Dungeness, Romney Marsh & Rye Bay SPA – Sandwich tern and common tern;
  - Medway Estuary & Marshes SPA – common tern;
  - Foulness (Mid-Essex) Coast Phase 5 SPA – Sandwich tern and common tern;
  - Alde-Ore Estuary SPA – Sandwich tern;
  - The Wash SPA – common tern;
  - Breydon Water SPA – common tern;
  - Greater Wash SPA - Sandwich tern and common tern;
  - North Norfolk Coast SPA – Sandwich tern and common tern;
  - Northumbria Coast SPA – Arctic tern;
  - Northumbria Coast Ramsar – Arctic tern;
  - Coquet Island SPA – Sandwich tern, common tern and Arctic tern; and
  - Farne Islands SPA – Sandwich tern, common tern and Arctic tern.

### Assessment information

- 7.5.389 The conservation objectives (as described in **Appendix F**) for these sites are as follows:
- to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - the populations of each of the qualifying features
  - the distribution of qualifying features within the site

## Operation and maintenance

### Collision risk

#### Overview

- 7.5.390 Migrant seabirds flying through the array area during the Operation and Maintenance phase are at risk of collision with WTG rotors and associated infrastructure. The result of such collisions may be fatal to the bird concerned. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 7.5.391 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes; and
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 7.5.392 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### *Common & Arctic terns (migratory)*

- 7.5.393 Due to difficulty distinguishing common and Arctic terns from aerial digital survey imagery, these two species were considered together as ‘commic’ terns for the purpose of CRM (see **PEIR Volume 4, Appendix 12.3**).
- 7.5.394 The total estimated number of ‘commic’ tern collisions during the Return migration bio-season was well under one individual (0.13 individuals; range 0.00 – 1.10) (**PEIR Volume 4, Appendix 12.3**).
- 7.5.395 The total estimated number of ‘commic’ tern collisions during the Post-breeding migration bio-season was under one individual (0.48 individuals; range 0.07 – 2.90) (**PEIR Volume 4, Appendix 12.3**).
- 7.5.396 With an annual total of less than one bird (0.61) subject to mortality from collision, this level of effect that would not be considered to be significant when split between the designated sites screened in for this species and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species across all relevant SPAs and Ramsar for both common tern and Arctic terns.
- 7.5.397 **There is, therefore, no potential for an AEol to the conservation objectives of the common or Arctic tern features of any site in relation to migratory collision effects from Rampion 2 alone and therefore, subject to natural change, the common and Arctic tern feature will be maintained in the long term with respect to the potential for migratory collision effects.**



### *Sandwich tern (migratory)*

- 7.5.398 The total estimated number of Sandwich tern collisions during the Return migration bio-season was well under one individual (0.16 individuals; range 0.00 – 1.33) (**PEIR Volume 4, Appendix 12.3**).
- 7.5.399 The total estimated number of Sandwich tern collisions during the Post-breeding migration bio-season was under one individual (0.68 individuals; range 0.14 – 3.61) (**PEIR Volume 4, Appendix 12.3**).
- 7.5.400 With an annual total of less than one bird (0.84) subject to mortality from collision, this level of effect that would not be considered to be significant when split between the designated sites screened in for this species and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species across all relevant SPAs and Ramsar for Sandwich tern.
- 7.5.401 **There is, therefore, no potential for an AEol to the conservation objectives of the Sandwich tern features of any site in relation to migratory collision effects from Rampion 2 alone and therefore, subject to natural change, the Sandwich tern feature will be maintained in the long term with respect to the potential for migratory collision effects.**

## Migratory and non-breeding auks – English SPAs

### Features and effects for assessment

- 7.5.402 The potential for LSEs from Rampion 2 acting alone has been identified for migratory and non-breeding auk species from English SPAs during the Operation and Maintenance phase of the Proposed Development for disturbance and displacement:
- Flamborough & Filey Coast SPA - guillemot during non-breeding bio-seasons;
  - Flamborough & Filey Coast SPA – razorbill during the migratory and migration-free winter bio-seasons; and
  - Farne Islands SPA - guillemot during the non-breeding bio-season.

### Assessment information

- 7.5.403 The conservation objectives (as described in **Appendix F**) for the site are as follows:
- the populations of each of the qualifying features; and
  - the distribution of qualifying features within the site.

## Construction and decommissioning

### Disturbance and displacement

- 7.5.404 Contextual information on the assessment of displacement effects for migratory and non-breeding auk species are provided below in the Operation and Maintenance assessment and for conciseness are not repeated here.
- 7.5.405 Due to the impacts from construction and decommissioning being spatially and temporally limited, it is recognised that the potential for impacts from disturbance and displacement during these phases are less than that of an active OWF.
- 7.5.406 Therefore, on the basis that the potential impacts attributed to English SPAs (**Table 7-5**) during the Operation and Maintenance phase are deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species, the potential impacts during the construction and decommissioning phase can also be considered to have no material contribution.
- 7.5.407 **There is, therefore, no potential for an AEol to the conservation objectives of the guillemot and razorbill feature of English SPAs in relation to construction and decommissioning disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, the guillemot and razorbill features will be maintained as a feature in the long term with respect to the potential for adverse effects from disturbance and displacement.**

## Operation and maintenance

### Disturbance and displacement

#### Overview

- 7.5.408 Two English SPAs were screened in for assessment to consider the potential for disturbance and displacement during the Operation and Maintenance phase due to presence of the WTGs and the activities which will take place within the array area during maintenance.
- 7.5.409 The Rampion 2 array area is beyond the mean max foraging distance (Plus 1SD) for guillemot of 73.2km (plus 80.5km) and razorbill of 88.7km (plus 75.9km) to either of the SPAs screened in (Woodward et al. 2019). Accordingly, the two auk species are only assessed for the non-breeding bio-seasons for each of the SPAs screened in.
- 7.5.410 In the non-breeding bio-seasons the number of guillemot and razorbill estimated to occur within the array area and 2km buffer have been estimated from site-specific data (**PEIR Volume 4, Appendix 12.1**). For guillemot the abundance estimate for the non-breeding bio-season was calculated to be 13,020 individuals. For razorbill the abundance estimates were 2,130 in the Return migration bio-season, 18 individuals in the Post-breeding migration bio-season and 22 individuals in the migration-free winter bio-season.

- 7.5.411 Following an evidence-led approach the number of guillemots estimated to suffer mortality due to displacement (using a 50% displacement and 1% mortality rate as described in PEIR Volume 2, Chapter 12 in the non-breeding bio-season is 65 (65.10) individuals. Using the same approach for razorbill the number estimated to suffer mortality due to displacement is 11 (10.65) individuals in the Return migration, less than a single (0.09) individual in the Post-breeding migration and less than a single (0.11) individual in the migration-free winter bio-season.
- 7.5.412 In the non-breeding bio-seasons these birds will have come from a wide range of seabird breeding colonies in the UK and overseas. From that consequent mortality estimate the number which can be attributed to each of the SPAs has to be calculated. Furness (2015) provides the overall population data and SPA colony data from which those calculations can be carried out. It must be noted that the colony counts in Furness (2015) may differ from the SPA citation populations for some species, but in order to provide a level of consistency within this assessment the same source is used for both the colony counts and the wider UK North Sea and English Channel population estimates. For guillemot the UK North Sea and English Channel population during the non-breeding season is 1,617,306 individuals. For razorbill the UK North Sea and English Channel population for the migration-free winter bio-season is 218,622 individuals and during the migratory bio-seasons is 591,874 individuals.
- 7.5.413 According to Furness (2015) differing percentages of each species from each SPA remain in the UK North Sea and English Channel in their constituent non-breeding bio-seasons, which are presented in **Table 7-5**. Accordingly, the proportion of birds in the UK North Sea and English Channel that can be attributed to each SPA is the remaining population as a proportion of the entire population for each auk species during this period, for which each SPA screened in for assessment is presented as a percentage for each auk species. On that basis the number of breeding adults for each auk species that may potentially suffer displacement consequent mortality can be attributed to SPA (**Table 7-5**).

Table 7-5 Apportionment of potential auk mortality from Operation and Maintenance displacement and disturbance apportioned to English SPAs during the non-breeding bio-seasons.

SPA	Species	Bio-season	SPA breeding adult population (Furness, 2015)	Proportion of SPA adult population remaining in North Sea & English Channel	Proportioned breeding adult population of SPA remaining in UK North Sea & English Channel	SPA population as a percentage of the North Sea and English Channel (%)	Proportioned displacement mortality rate for each SPA (breeding adults)
Flamborough and Filey Coast	Guillemot	Non-breeding	79,282	90%	71,354	4.41%	2.87
	Razorbill	Return migration	20,002	100%	20,002	3.38%	0.36
		Post-breeding migration	20,002	100%	20,002	3.38%	0.00
		Migration-free Winter	20,002	30%	6,001	2.74%	0.00
Farne Islands	Guillemot	Non-breeding	67,064	90%	60,358	3.73%	2.43

### Guillemot

- 7.5.414 The estimated displacement mortality rates in **Table 7-5** for guillemot are so low as to be considered no material contribution to the natural baseline mortality rates at each colony.
- 7.5.415 The impact of displacement from the array area and buffer that would occur throughout the operational life of Rampion 2 is a prediction of consequent mortality of less than three (2.87) breeding adults associated with the Flamborough and Filey Coast SPA (FFC SPA) and less than three (2.43) breeding adults associated with the Farne Islands SPA in the non-breeding bio-season. This is a level of effect that would not be considered to be significant at either SPA and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. Based on these mortality rates the increase in mortality relative to baseline mortality is well under 0.1%, which will not affect the achievements of the conservation objectives for either SPA and as a result Rampion 2 will not have an adverse effect on the integrity of the guillemot feature of either SPA.
- 7.5.416 **There is, therefore, no potential for an AEol to the conservation objectives of the guillemot features of any English SPAs in relation to Operation and Maintenance disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, guillemot will be maintained as a feature in the long term with respect to the potential for adverse effects from disturbance and displacement.**

### Razorbill

- 7.5.417 The estimated displacement mortality rates in **Table 7-5** for razorbill are so low as to be considered no material contribution to the natural baseline mortality rates at each colony.
- 7.5.418 The impact of displacement from the array area and buffer that would occur throughout the operational life of Rampion 2 is a prediction of consequent mortality of less than a single (0.37) breeding adult associated with the FFC SPA for all non-breeding bio-seasons combined. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. Based on this mortality rates the increase in mortality relative to baseline mortality is well under 0.1%, which will not affect the achievements of the conservation objectives for the FFC SPA and as a result Rampion 2 will not have an adverse effect on the integrity of the razorbill feature of the FFC SPA.
- 7.5.419 **There is, therefore, no potential for an AEol to the conservation objectives of the razorbill feature of the FFC SPA in relation to Operation and Maintenance disturbance and displacement effects from Rampion 2 alone and therefore, subject to natural change, razorbill will be maintained as a feature in the long term with respect to the potential for adverse effects from disturbance and displacement.**

## 8. Appraisal of potential AEol (Proposed Development in-combination)

### Introduction

8.1.1 Where the potential for LSEs on a relevant site has been identified, there is a requirement to consider whether those effects will adversely affect the integrity of the site in view of its conservation objectives. The conclusion on the potential for LSEI to result from Rampion 2 is presented in **Table 5-1** with the conservation objectives for all relevant sites provided in **Appendix F**. The information is presented below according to the following receptor groupings:

- terrestrial ecology (including wildfowl and waders);
- migratory fish;
- benthic habitats; and
- offshore ornithology.

8.1.2 The working assumption made is where potential for LSEs has been identified alone, the effect should also be considered in-combination – in light of relevant external plans and projects. In addition, it is recognised that where potential for effect alone would be considered *de minimis* or trivial/in-consequential (with a conclusion of no LSEs alone), there is the possibility that LSEI could apply.

### 8.2 Appraisal of potential AEol in-combination for terrestrial ecology

8.2.1 Information to inform the assessment alone for terrestrial ecology is provided in **Section 7.2**. The potential for LSEI as regards terrestrial ecology is summarised in **Section 5.8**, with the Stage Two (AA) presented below.

### Arun Valley Ramsar site

#### Features and effects for assessment

8.2.2 The potential for LSEI from Rampion 2 has been identified for the following:

- northern pintail during the construction and decommissioning phases due to land take / land cover change, fragmentation of habitats and disturbance due to noise and vibration;
- assemblage of wintering waterfowl during the construction and decommissioning phases due to land take / land cover change, fragmentation of habitats and disturbance due to noise and vibration.

### Relevant external plans and projects

- 8.2.3 There is a single external project that could result in in-combination effects should the delivery schedules overlap. This is the construction on the A27 Arundel by-pass as the delivery of this Proposed Development overlaps with the functionally linked land in the Arun Valley that is used by designated features of the Arun Valley Ramsar site.
- 8.2.4 However, as the overlap of the A27 Arundel by-pass with coastal and floodplain grazing marsh is limited, the Proposed Development will result in temporary loss of this habitat only in a sequence of spatially restricted works and the number and distribution of the designated features in this locale is limited no in-combination effects are expected.
- 8.2.5 **There is, therefore, no potential for an AEol to the conservation objectives of the northern pintail and wintering assemblage of waterfowl of the Arun Valley Ramsar site in relation to all effects from Rampion 2 in-combination and therefore, subject to natural change, the features will be maintained in the long term.**

## Arun Valley SPA

### Features and effects for assessment

- 8.2.6 The potential for LSEI from Rampion has been identified for the following:
- Bewick's swan during the construction and decommissioning phases due to land take / land cover change, fragmentation of habitats and disturbance due to noise and vibration; and
  - non-breeding assemblage of waterfowl during the construction and decommissioning phases due to land take / land cover change, fragmentation of habitats and disturbance due to noise and vibration.

### Relevant external plans and projects

- 8.2.7 The potential for in-combination effects for the Arun Valley SPA mirrors that for the Arun Valley Ramsar site, as detailed in **paragraphs 8.2.3 to 8.2.5.**
- 8.2.8 **There is, therefore, no potential for an AEol to the conservation objectives of the Bewick's swan and non-breeding assemblage of waterfowl of the Arun Valley SPA in relation to all effects from Rampion 2 in-combination and therefore, subject to natural change, the features will be maintained in the long term.**

## The Mens SAC

### Features and effects for assessment

- 8.2.9 No potential for in-combination effects for the Proposed Development has been identified for The Mens SAC. This is because no other plans or projects have been identified in the area where the Proposed Development overlaps with the 12km buffer around The Mens SAC.



## 8.3 Appraisal of potential AEol in-combination for migratory fish

- 8.3.1 Information to inform the assessment alone for migratory fish is provided in **Section 7.3**. The potential for LSEI from Rampion 2 as regards migratory fish is summarised in **Section 5.9**, with the Stage Two (AA) presented below.

### River Itchen SAC

#### Features and effects for assessment

- 8.3.2 The potential for LSEI from Rampion 2 has been identified for the following:
- Atlantic salmon, construction, and decommissioning; cumulative mortality, injury exposure to underwater noise; and
  - Atlantic salmon, construction, and decommissioning; behavioural disturbances (barrier to migration) exposure to underwater noise.

#### Assessment information

- 8.3.3 The conservation objectives for the site, with additional data specific to the Proposed Development, are summarised in **paragraph 7.3.31** for the Proposed Development alone and are not repeated here.

## Construction and decommissioning

#### External plans and projects

- 8.3.4 The potential for additional changes caused by the Proposed Development in conjunction with external projects (or as a combined effect) is addressed in **Section 8.12 of PEIR Volume 2, Chapter 8: Fish and shellfish ecology**. A short list of external projects that may interact with the Rampion 2 ZOIs during their construction is presented in **PEIR Volume 4, Appendix 5.4: Cumulative effects assessment shortlisted developments**. The potential for interactive effects from underwater noise associated with construction and OWF piling activities is considered within a representative 100km buffer of the Rampion 2 array area. This buffer was chosen as underwater noise effects are expected to occur over a wider area. The tiering structure discussed in **Section 5.7** was used for the assessment.
- 8.3.5 Further information on other developments will continue to be collected prior to the finalisation of the draft RIAA. On current information, with respect to mortality, injury, behavioural changes and auditory masking arising from noise and vibration the following external projects have been considered within the assessment:
- Tier 1:
    - ▶ planned Perpetuus Tidal Energy Centre (PTEC) (construction phase) – anticipated to commence in 2023<sup>69</sup> – 2027

<sup>69</sup> <https://perpetuustidal.com/consultation/>

- ▶ planned AQI (construction phase) - offshore installation indicated as between 2021 (Q3) – 2014 (Q4)<sup>70</sup>; and
- ▶ OWF under construction (Dieppe – Le Treport and Fécamp) (2019 to 2023)
- Tier 2:
  - ▶ no Tier 2 external projects identified;

Tier 3: the operation of PTEC's tidal-energy demonstration / test facilities

#### *Perpetuus Tidal Energy Centre*

- 8.3.6 PTEC is a proposed tidal-stream energy project expected to take 47-months to install and to have a 25-year operational lifespan.<sup>71</sup> PTEC would be a commercial venture (the largest tidal array consented in England<sup>72</sup>) with the capability to produce over up to 30MW using 60 turbines<sup>73</sup>, 6 export cables and onshore substation.<sup>74</sup> PTEC would be located 47.8km from Rampion 2's array.
- 8.3.7 Once PTEC is complete with commercial deployments<sup>75</sup>, the facility could lease berths (already constructed within the 5km<sup>2</sup> development site) and Grid connection to facilitate testing /development of tidal technologies. PTEC has signed agreements with European Marine Energy Centre regarding optimisation activities. As the timeframe, scale, nature, and duration of effects during test phases are uncertain, with nothing material available within the public domain, the demonstration project is Tier 3. Notwithstanding, it is immaterial to this consideration of in-combination effects (which are considered to be limited to the construction phase) given the infrastructure is already provided for by PTEC that must precede this demonstration element.

### Underwater noise (mortality / injury)

#### *Atlantic Salmon*

- 8.3.8 Injury or mortality of fish from piling noise will not occur concurrently with PTEC due to the small range within which potential injury effects would be expected (see **Table 7-1**). Impacts to the same SAC population could cumulate. However, as fish injury or mortality as a result of piling noise would only be expected within the immediate vicinity of piling operations the impacts, even collectively are not expected to be significant, especially given the relatively short duration of the sources activities.
- 8.3.9 **There is, therefore, no potential for an AEoI to the conservation objectives of the Atlantic salmon feature of River Itchen SAC in relation to mortality or injury from underwater noise from Rampion 2 in-combination and therefore,**

<sup>70</sup> Decision expected September 2021, construction period of 3 years.

<sup>71</sup> <https://perpetuustidal.com/about/>

<sup>72</sup> <https://www.iow.gov.uk/>

<sup>73</sup> <https://www.bbc.co.uk/news/uk-england-hampshire-54331391>

<sup>74</sup> <https://perpetuustidal.com/about/>

<sup>75</sup> PTEC recently re-established its 'operational status' as a prerequisite for this testing element. See (TSIEP, 2020).

**subject to natural change, the Atlantic salmon feature will be maintained in the long term with respect to the potential for underwater noise.**

#### Underwater noise (behavioural changes / barrier to migration)

##### *Atlantic Salmon*

- 8.3.10 Impacts from PTEC are predicted to be highly localised, temporary in nature and unlikely to greatly exceed background underwater noise levels (PTEC, 2014). As evidenced by McCauley et al. (2000) (in relation to PTEC), it is expected that fish will resume to normal behaviour and distribution within a short time period and as such, significant effects (in EIA terms) are not expected to occur in terms of cumulative duration of exposure. As such, the cumulative impact (PTEC and Rampion 2) of underwater noise on fish is predicted to be limited in extent and duration, intermittent and reversible. The magnitude of the cumulative impact is therefore considered to be low and of minor adverse significance.
- 8.3.11 **There is, therefore, no potential for an AEol to the conservation objectives of the Atlantic salmon feature of River Itchen SAC in relation to effects (mortality, injury or behavioural changes) from underwater noise from Rampion 2 in-combination and therefore, subject to natural change, the Atlantic salmon feature will be maintained in the long term with respect to the potential for underwater noise.**

## 8.4 Appraisal of potential AEol in-combination for benthic habitats and communities

### Introduction

- 8.4.1 Information to inform the assessment alone for benthic habitats is provided in **Section 7.4** Potential for LSEs in-combination as regards benthic habitats is summarised in **Section 5.11**, with the Stage Two (AA) presented below.

### Features and effects for assessment

- 8.4.2 The potential for an LSEs in-combination was identified for the benthic habitats of the following sites with respect to suspended sediment and deposition, pollution and MINNS:
- Solent Maritime SAC;
  - South Wight Maritime SAC; and
  - Solent and Isle of Wight Lagoons SAC.

### Assessment information

- 8.4.3 The conservation objectives for the site, as well as additional data on Rampion 2, are summarised in **paragraph 7.4.6**, are provided for the assessment of the Proposed Development acting alone and are not repeated here.

## Construction and decommissioning

- 8.4.4 Although there are a number of developments that fall within the benthic subtidal and intertidal ecology ZOI (and therefore cited on the short list for the CEA of Rampion 2 (see **Table 9.24** of **PEIR Volume 2, Chapter 9: Benthic subtidal and intertidal ecology**) only one (AQI) could affect the subject SACs within that ZOI at the same time as Rampion 2 (although this scenario is considered unlikely). Two SACs were considered in the HRAs undertaken for AQI and Rampion 2:
- Solent Maritime SAC (overlaps with AQI cable corridor for 163.4 m<sup>2</sup>) and
  - South Wight Maritime SAC (reefs 3.3km from AQI cable corridor).
- 8.4.5 With reference to the conclusions of the alone assessments, it is determined there is no realistic potential for in-combination effects from the Proposed Development together with other plans or projects for any of the three pathways considered.

## 8.5 Appraisal of potential AEol in-combination for offshore ornithology

- 8.5.1 Information to inform the assessment alone for offshore ornithology is provided in **Section 7.5**. The potential for LSEs from Rampion 2 in-combination as regards offshore ornithology is summarised in **Section 5.12**, with the Stage Two (AA) presented below.

## Construction and decommissioning

- 8.5.2 The HRA Screening identified the potential for an LSEs for OWF from disturbance and displacement in-combination with Rampion 2 to the following designated sites and the relevant features:
- Dungeness, Romney Marsh & Rye Bay SPA – Sandwich tern during the breeding bio-season;
  - Solent and Dorset Coast SPA – common tern, little tern and Sandwich tern during the breeding bio-season;
  - Flamborough & Filey Coast SPA – guillemot and razorbill during the non-breeding bio-season; and
  - Farne Islands SPA – guillemot during the non-breeding bio-season.
- 8.5.3 For the assessment alone for the three cited tern species (Sandwich, common and little tern) as designated SPA features it is estimated that zero birds would be subject to mortality resulting from displacement during the construction or decommissioning phases. There is, therefore, no adverse effect as a result of disturbance / displacement to these species and no adverse effect on the integrity of these designated sites as a consequence of potential displacement to tern species. Therefore, it can be concluded that Rampion 2 will have no adverse effect alone or in-combination on tern species as it will not contribute to any in-combination effect resulting from disturbance / displacement of tern species at these designated sites and so not be the cause of any potential adverse effect on the integrity of these species or designated sites.

- 8.5.4 For the assessment alone for the two cited auk species (guillemot and razorbill) as designated SPA features it is estimated that a level of effect would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for these species at each designated site resulting from disturbance / displacement during the construction or decommissioning phases. There is, therefore, no adverse effect as a result of displacement to these species and no adverse effect on the integrity of these designated sites as a consequence of potential disturbance / displacement to auk species. Therefore, it can be concluded that Rampion 2 will have no adverse effect on auk species alone or in-combination as it will not contribute materially to any in-combination effect resulting from disturbance / displacement of auk species at these designated sites and so not be the cause of any potential adverse effect on the integrity of these species or designated sites.
- 8.5.5 **There is, therefore, no potential for an AEol to the conservation objectives of any features of the SPAs listed above in relation to potential effects in the construction or decommissioning phases from Rampion 2 in-combination and therefore, subject to natural change, all these bird features will be maintained as a feature(s) in the long term with respect to the potential for adverse effects from disturbance and displacement.**

## Operation and maintenance

### Direct disturbance and displacement

- 8.5.6 The potential for direct disturbance and displacement impacts to result in an AEol in-combination with Rampion 2 relates to the following designated site and the relevant features:
- Alderney West Coast and Burhou Islands Ramsar; gannet during all bio-seasons.
- 8.5.7 This site is assessed in more detail in this section. The remaining sites and features screened in for potential LSEs during Operation and Maintenance phase are as follows:
- Dungeness, Romney Marsh & Rye Bay SPA – Sandwich tern during the breeding bio-season;
  - Solent and Dorset Coast SPA – Sandwich tern during the breeding bio-season;
  - Chichester and Langstone Harbours SPA – Sandwich tern during the breeding bio-season;
  - Solent and Southampton Water SPA – Sandwich tern during the breeding bio-season;
  - Côte de Granit Rose-Sept Iles SPA – Gannet during all bio-seasons;
  - Grassholm SPA – Gannet during the migratory bio-seasons;
  - Flamborough & Filey Coast SPA – gannet, guillemot and razorbill during the migratory and non-breeding bio-seasons; and
  - Farne Islands SPA – guillemot during the non-breeding bio-season.

- 8.5.8 For the assessment alone for the cited tern species (Sandwich tern) as a designated SPA feature it is estimated that zero birds or under one bird would be subject to mortality resulting from displacement during the Operation and Maintenance phase. There is, therefore, no adverse effect as a result of disturbance / displacement to gannet and no adverse effect on the integrity of these designated sites as a consequence of potential displacement to this species. Therefore, it can be concluded that Rampion 2 will have no adverse effect alone or in-combination on gannet as it will not contribute to any in-combination effect resulting from disturbance / displacement of this species at these designated sites and so not be the cause of any potential adverse effect on the integrity of this species or these designated sites.
- 8.5.9 For the assessment alone for the cited feature of gannet as a designated feature of two SPAs it is estimated (see **Table 7-5** that zero birds would be subject to mortality resulting from displacement during the Operation and Maintenance phase. There is, therefore, no adverse effect as a result of disturbance / displacement to gannet and no adverse effect on the integrity of these designated sites as a consequence of potential displacement to this species. Therefore, it can be concluded that Rampion 2 will have no adverse effect alone or in-combination on Sandwich tern as it will not contribute to any in-combination effect resulting from disturbance / displacement of this species at these designated sites and so not be the cause of any potential adverse effect on the integrity of this species or these designated sites.
- 8.5.10 For the assessment alone for the two cited auk species (guillemot and razorbill) as designated SPA features, the estimated level of effect (as set out in **Table 7-5**) would amount to a level of change that is so small it would not be detectable against baseline mortality rates for these species at each designated site. Therefore, the Proposed Development will not contribute materially to any in-combination effect from the disturbance / displacement of auk species from these designated sites.
- 8.5.11 The assessments undertaken in this draft RIAA are preliminary (based on 15 months of site-specific data) and will be revisited once the full 24 months of site-specific data are available. On the assessments presented in this draft RIAA, there is, therefore, no potential for an AEoI to the conservation objectives of any features of the SPAs or Ramsar sites listed above in relation to potential effects in the Operation and Maintenance phase from Rampion 2 alone or in-combination and therefore, subject to natural change, all these bird features will be maintained as a feature(s) in the long term with respect to the potential for adverse effects from disturbance and displacement.

### Collision risk

- 8.5.12 The potential for collision risk from OWFs to result in an AEoI in-combination with Rampion 2 relates to the following designated site and the relevant features:
- Alderney West Coast and Burhou Islands Ramsar; gannet.
- 8.5.13 This site is assessed in more detail in this section. The remaining sites and features screened in for potential LSEs during Operation and Maintenance phase are as follows:



- Pagham Harbour SPA – migratory dark-bellied brent goose, ruff. Common tern during the breeding bio-season;
- Pagham Harbour Ramsar – migratory dark-bellied brent goose;
- Portsmouth Harbour SPA – migratory black-tailed godwit, dark-bellied brent goose, dunlin and red-breasted merganser;
- Portsmouth Harbour Ramsar – migratory dark-bellied brent goose;
- Dungeness, Romney Marsh & Rye Bay SPA – migratory common tern and Sandwich tern during the breeding and migratory bio-seasons;
- Chichester and Langstone Harbours SPA –migratory bar-tailed godwit, curlew, dark-bellied brent goose, dunlin, grey plover, Northern pintail, red-breasted merganser, redshank, ringed plover, sanderling, shelduck, shoveler, teal, turnstone, wigeon and the waterbird assemblage. Common tern and Sandwich tern during the breeding bio-season;
- Chichester and Langstone Harbours Ramsar – migratory ringed plover, black-tailed godwit, redshank, dark-bellied brent goose, shelduck, grey plover, dunlin and the waterbird assemblage;
- Solent and Southampton Water SPA –migratory black-tailed godwit, dark-bellied brent goose, ringed plover, teal and the waterbird assemblage. Sandwich tern during the breeding bio-season;
- Solent and Southampton Water Ramsar – migratory ringed plover, dark-bellied brent goose, teal, black-tailed godwit and the waterbird assemblage;
- Medway Estuary and Marshes SPA – migratory common tern;
- Littoral seino-marin SPA – lesser black-backed gull and kittiwake during the breeding bio-season;
- Foulness (Mid-Essex Coast Phase 5) SPA – migratory Sandwich tern and common tern;
- Falaise du Bessin Occidental SPA – kittiwake during the breeding bio-season;
- Alde-Ore Estuary SPA – migratory Sandwich tern and lesser black-backed gull;
- Alde-Ore Estuary Ramsar – migratory lesser black-backed gull;
- The Wash SPA – migratory common tern;
- Breydon Water SPA – migratory common tern;
- Greater Wash SPA – migratory Sandwich tern and common tern;
- North Norfolk Coast SPA – migratory Sandwich tern and common tern;
- North Norfolk Coast Ramsar – migratory Sandwich tern and common tern;
- Côte de Granit Rose-Sept Iles SPA – Gannet during the breeding bio-season;
- Grassholm SPA – migratory gannet;
- Flamborough & Filey Coast SPA – migrant gannet, kittiwake and herring gull;



- Northumbria Coast SPA – migratory Arctic tern;
- Northumbria Coast Ramsar – migratory Arctic tern;
- Coquet Island SPA – migratory Sandwich tern, Arctic tern, common tern, herring gull, lesser black-backed gull and kittiwake; and
- Farne Islands SPA – migratory Sandwich tern, Arctic tern, common tern and kittiwake.

- 8.5.14 For the assessment of all 17 cited waterbird species, as features of the nine designated sites listed above, it was concluded that there would be no effect or no detectable change to baseline mortality as a result of Rampion 2 alone, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on these waterbird species and make no detectable contribution to an in-combination effect resulting from collision risk to these 17 waterbird species as features of the nine designated sites listed above and so not be the cause of any potential adverse effect on the integrity of these species or designated sites.
- 8.5.15 For the assessment of gannet, as a features of two designated sites listed above, it was concluded that there would be no effect or no detectable change to baseline mortality as a result of Rampion 2 alone, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on the gannet feature of these two designated sites and make no detectable contribution to an in-combination effect resulting from collision risk to this species as features of the two designated sites listed above and so not be the cause of any potential adverse effect on the integrity of this species or either designated site.
- 8.5.16 For the assessment of gull species (kittiwake, herring gull and lesser black-backed gull), as features of the seven designated sites listed above, the CRM predicted mortality rates for Rampion 2 acting alone (as set out in paragraph 7.5.372) that are so small there would be no effect or no detectable change that could be distinguished from baseline mortality. Therefore, no detectable change to any in-combination effect could occur also. On the preliminary assessments presented in this draft RIAA, it can be concluded that Rampion 2 will have no adverse effect on the gull features of any of the seven designated sites listed above and make no detectable contribution to an in-combination effect resulting from collision risk to these species as features of the seven designated sites listed above and so not be the cause of any potential adverse effect on the integrity of these species or designated sites.
- 8.5.17 For the assessment of tern species (common, Sandwich and little tern), as features of the 16 designated sites listed above, it was concluded that there would be no effect or no detectable change to baseline mortality as a result of Rampion 2 alone, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on the tern features of any of the 16 designated sites listed above and make no detectable contribution to an in-combination effect resulting from collision risk to these species as features of the 16 designated sites listed above and so not be the cause of any potential adverse effect on the integrity of these species or designated sites.

- 8.5.18 The assessments undertaken in this draft RIAA are preliminary and based on 15 months of data (of the 24 expected by application). The CRM will be revisited when these data are available. On the preliminary assessments presented in this draft RIAA, there is no potential for an AEol to the conservation objectives of any features of the SPAs or Ramsar sites listed above in relation to potential effects in the Operation and Maintenance phase from Rampion 2 either alone or in-combination.
- 8.5.19 **Therefore, subject to natural change, all these bird features will be maintained as a feature(s) in the long term with respect to the potential for adverse effects from collision risk.**

## Barrier effect

- 8.5.20 The following designated sites and features were screened in for potential LSEs during the Operation and Maintenance phase:
- Chichester and Langstone Harbours SPA – Sandwich tern during the breeding bio-season; and
  - Solent and Southampton Water SPA – Sandwich tern during the breeding bio-season.
- 8.5.21 For the assessment alone for Sandwich tern as designated feature of the two designated sites listed above it is estimated that zero birds would be subject to mortality resulting from a barrier effect during the Operation and Maintenance phase. There is, therefore, no adverse effect as a result of a barrier effect to these species and no adverse effect on the integrity of these designated sites as a consequence of potential barrier effects to Sandwich tern. Therefore, it can be concluded that Rampion 2 will have no adverse effect alone or in-combination on Sandwich tern as it will not contribute to any in-combination effect resulting from a barrier effect on Sandwich tern at these designated sites and so not be the cause of any potential adverse effect on the integrity of this species or designated sites.
- 8.5.22 **There is, therefore, no potential for an AEol to the conservation objectives of any features of the SPAs listed above in relation to potential effects in the Operation and Maintenance phase from Rampion 2 in-combination and therefore, subject to natural change, all these bird features will be maintained as a feature(s) in the long term with respect to the potential for adverse effects from a barrier effect.**

## Alderney West Coast and Burhou Islands Ramsar

### Features and effects for assessment

- 8.5.23 The potential for LSEs from Rampion 2 in-combination as has been identified for the following for Alderney West Coast and Burhou Islands Ramsar:
- gannet (breeding and migratory bio-season), Operation and Maintenance Phase, collision risk; and
  - gannet (breeding and migratory bio-seasons), Operation and Maintenance Phase, disturbance/displacement.

## Relevant external plans and projects

- 8.5.24 During the migratory bio-seasons, in-combination effects are considered for all OWFs within the relevant BDMPS for the feature. During the breeding season, in-combination effects are considered for OWFs within the mean-max foraging range of the feature from colonies within Alderney West Coast and Burhou Islands Ramsar (or from the site as a whole if the location of breeding colonies is uncertain).

## Assessment information

- 8.5.25 The conservation objectives for the site, with additional site-specific data, are summarised in **paragraph 7.5.229**. for the Proposed Development alone and are not repeated here.

## Operation and maintenance

### Collision risk

#### Overview

- 8.5.26 Seabirds flying through the array area during the Operation and Maintenance phase of the Proposed Development may be at risk of collision with WTGs. It is assumed that any such collision would be fatal. This risk would be present throughout the array area, and for the entire period of operation of the Proposed Development. The MDS used for assessment is given in **Table 3-2**. In order to assess the risk resulting from potential collisions, CRM has been carried out as described in **PEIR Volume 4, Appendix 12.3**.
- 8.5.27 The Applicant is committed to minimising environmental impacts, and has made the following commitments to minimise the risk of collision:
- C – 64: Selection of the WTG specifications which allow a minimum lower blade tip height above MHWS/ LAT, which reduces collision risks, based on evidence which shows that typical seabird flight height distribution is skewed towards low altitudes.
  - C – 89: There will be a minimum blade tip clearance of at least 22m above HAT.
- 8.5.28 As described in **PEIR Volume 2, Chapter 12**, for each pathway discussed in this section, it was concluded that there will be no significant effect from Rampion 2 alone at the EIA level.

#### Gannet

- 8.5.29 Gannet has been screened into the assessment of the Operation and Maintenance phase based on the density of birds in flight in the array area and its flight behaviour that places it at risk of collision with the turning blades of the WTGs. Gannet has been screened in for both the breeding and migratory bio-seasons (there is no migration free winter bio-season for this species) in relation to the Alderney West Coast and Burhou Islands Ramsar since birds breeding at this

colony may forage within the Rampion 2 array area during the breeding bio-season or pass through it during migratory bio-seasons as they follow a potential clockwise loop migration around the UK (Fort *et al.*, 2012; Furness *et al.*, 2018).

- 8.5.30 During the breeding bio-season, when birds are limited in the distance and number of days over which they can forage by the need to return regularly to the nest site, it can be expected that the area in and around Rampion 2 will potentially contain a higher proportion of adult birds that can be attributed to those designated sites within foraging range. The Alderney West Coast and Burhou Islands Ramsar lies within the mean maximum ( $\pm 1$  standard deviation) foraging range of gannet ( $315.5 \pm 194.2$  km Woodward *et al.*, 2019), along with two other designated sites. Predicted collision mortality for Rampion 2 alone has therefore been apportioned to each of these sites following SNH guidance (2018).
- 8.5.31 Outside the breeding bio-season, when the population contains a mix of birds from UK breeding colonies and breeding colonies from further away, then a much lower percentage of birds can be attributed to any particular breeding colony SPA population. In the migratory bio-season the information on populations contained in Furness (2015) is applied for the same purpose of apportionment.
- 8.5.32 A generic population age ratio of gannets has been used of 0.6 across all months of the year (**Table 12.16** of **PEIR Volume 2, Chapter 12**).
- 8.5.33 The collision totals for all OWFs within the relevant area<sup>76</sup> are presented in **Table 8.1** based on cumulative data agreed for each project in recent DCO Applications. The collision estimates for Rampion 1 have been modified from those presented in Rampion 1's DCO application as they were calculated on the basis of a Rochdale envelope upper limit of 175 WTG, but Rampion 1 was built with 116. At the PEIR stage it is anticipated that this Rampion 2 application includes the remainder of the AfL originally granted to Rampion 1, and therefore there is no potential for Rampion 1 to expand in addition to consent to Rampion 2 being granted. The position will be confirmed in the final RIAA once the Order Limits for Rampion 2 have been established.

**Table 8-1 Gannet: In-combination collision mortality estimates from Tier 1 and Tier 2 external projects across all bio-seasons with connectivity to Alderney West Coast and Burhou Islands Ramsar (pre-apportionment).**

External project	Migration-free breeding	Post-breeding migration	Return migration	Total
Beatrice	-	48.8	9.5	58.3
Blyth Demonstration Site	-	2.1	2.8	4.9
Dudgeon	-	38.9	19.1	58.0
East Anglia One	-	131.0	6.3	137.3

<sup>76</sup> These OWFs were identified following a review of gannet distribution in the non-breeding / migratory bio-seasons. The numbers for each external project are standard from other recent DCO Applications for gannet from each OWF, with Furness (2015) apportionment applied for the first time for this Ramsar.

External project	Migration-free breeding	Post-breeding migration	Return migration	Total
<b>EOWDC</b>	-	5.1	0.1	5.2
<b>Galloper</b>	-	30.9	12.6	43.5
<b>Greater Gabbard</b>	-	8.8	4.8	13.6
<b>Gunfleet Sands</b>	-	-	-	-
<b>Hornsea Project One</b>	-	32.0	22.5	54.5
<b>Humber Gateway</b>	-	1.1	1.5	2.6
<b>Hywind 2 Demonstration</b>	-	0.8	0.8	1.6
<b>Kentish Flats</b>	-	0.8	1.1	1.9
<b>Kentish Flats Extension</b>	-	-	-	-
<b>Kincardine</b>	-	0.0	0.0	0.0
<b>Lincs, Lynn &amp; Inner Dowsing</b>	-	1.4	1.9	3.3
<b>London Array</b>	-	1.4	1.8	3.2
<b>Methil</b>	-	0.0	0.0	0.0
<b>Race Bank</b>	-	11.7	4.1	15.8
<b>Rampion</b>	24.0	42.1	1.4	67.5
<b>Scroby Sands</b>	-	-	-	-
<b>Sheringham Shoal</b>	-	3.5	0.0	3.5
<b>Teesside</b>	-	1.7	0.0	1.7
<b>Thanet</b>	-	0.0	0.0	0.0
<b>Westermest Rough</b>	-	0.1	0.2	0.3
<b>Hornsea Project Two</b>	-	14.0	6.0	20.0
<b>Moray East</b>	-	35.4	8.9	44.3
<b>Neart na Gaoithe</b>	-	47.0	23.0	70.0
<b>Seagreen Alpha &amp; Bravo</b>	-	49.3	65.8	115.1
<b>Triton Knoll</b>	-	64.1	30.1	94.2
<b>Dogger Bank A &amp; B</b>	-	83.5	54.4	137.9
<b>Dogger Bank C &amp; Sofia</b>	-	10.1	10.8	20.9
<b>East Anglia Three</b>	-	28.4	8.2	36.6
<b>Hornsea Three</b>	-	12.0	11.0	23.0

External project	Migration-free breeding	Post-breeding migration	Return migration	Total
Inch Cape	-	29.2	5.2	34.4
Moray West	-	2.0	1.0	3.0
Norfolk Vanguard	-	18.6	5.3	23.9
East Anglia ONE North	-	11.3	3.0	14.3
East Anglia TWO	-	24.2	4.7	28.9
Hornsea Four	-	9.9	8.1	18.0
Norfolk Boreas	-	12.7	3.9	16.6
Total excluding Rampion 2	24.0	813.9	339.9	1,177.8
Rampion 2	9.7	4.0	1.4	15.1
Total including Rampion 2	33.7	817.9	341.3	1,192.9

### Breeding

- 8.5.34 The predicted collision resultant mortality from the operation of all relevant OWFs in the breeding bio-season is approximately 34 individuals, of which 20 are assumed to be breeding adults. Mortality during the breeding bio-season was apportioned to the Alderney West Coast and Burhou Islands Ramsar following the SNH (2018) method for Rampion 2. As Rampion 2 is immediately adjacent to Rampion 1, the same result has been used for apportionment. Following this method, 63.1% of breeding age individuals subject to collision risk may be attributed to Alderney West Coast and Burhou Islands Ramsar. On this basis, of the 20 adult birds predicted to suffer collision mortality, 12.8 breeding adults would be attributable to this site. Given the annual background mortality for this site is 1,527 individuals (**Table 12.16 of PEIR Volume 2, Chapter 12**) then this prediction of 12.8 adult birds (of which Rampion 2 contributes 3.79 adult birds) suffering collision mortality would represent a 0.84% increase in mortality relative to baseline mortality.

### Non-breeding

- 8.5.35 The predicted collision resultant mortality as a result of the operation of all relevant OWFs in the Return migration bio-season is 818 individuals and in the Post-breeding migration bio-season is 341 individuals (there is no migration free winter bio-season). In total, 1,159 birds are predicted to suffer collision related mortality during the migratory bio-season or 696 breeding adults.
- 8.5.36 In the non-breeding season these birds will have come from a range of seabird breeding colonies in the UK and overseas. The UK North Sea and Channel population during the post-breeding season is estimated to be 456,298 individuals (Furness, 2015). During the Return migration, an estimated 248,385 individuals are present in the UK North Sea and Channel (Furness, 2015). Breeding adults



from the Alderney West Coast and Burhou Islands Ramsar are considered to contribute to 4.13% of the UK North Sea and Channel population during the Post-breeding migration and 7.59% during the Return migration. On that basis approximately 36 breeding adults (of which Rampion 2 contributes 0.24 adult birds) that suffer collision consequent mortality can be attributed to the site. This represents a potential 2.35% increase in mortality relative to baseline mortality.

### Conclusion

- 8.5.37 The increase in mortality relative to baseline mortality of 0.84% in the breeding bio-season and 2.35% in the migratory bio-seasons may be considered as having the potential to affect the achievement of the conservation objectives for the site, as it is over the 1% threshold typically used as a benchmark for further population modelling. Such population modelling, making use of Natural England's Population Viability Analysis (PVA) Seabird Tool (Natural England, 2019) will be undertaken for the final RIAA.
- 8.5.38 However, initial indications are that this level of mortality is unlikely to lead to an AEol, given a background of sustained population growth of gannets at the Alderney West Coast and Burhou Islands Ramsar. This follows initial analysis of the SMP data available for the two main gannet colonies on the islands of Les Etacs and Ortac, which have grown from a total of 8,752 breeding adults in 1987 to 17,372 in 2015/16, with an average annual increase of 3.7%. Given this strong historic growth and anticipated continued growth since 2015/16, it is considered highly unlikely that the predicted in-combination mortality will lead to an AEol of the gannet feature. Therefore, at this stage a conclusion of no AEol is considered appropriate, although this will be confirmed through PVA analysis in the final RIAA.
- 8.5.39 **There is, therefore, no potential for an AEol to the conservation objectives of the gannet feature of the Alderney West Coast and Burhou Islands Ramsar in relation to collision effects from Rampion 2 in combination with other OWFs and therefore, subject to natural change, gannet will be maintained as a feature in the long term with respect to the potential for adverse effects from collisions.**

## Operation and maintenance

### Disturbance and displacement

#### Overview

- 8.5.40 Activities associated with the operation and maintenance of WTGs and the presence of WTGs themselves may disturb and displace species within the array area and potentially within surrounding buffers to a lower extent. This in effect represents indirect habitat loss, which would potentially reduce the area available to those seabirds to forage, loaf and / or moult that currently occur within and around Rampion 2 and may be susceptible to displacement from such a development. Displacement may contribute to individual birds experiencing fitness consequences, which at an extreme level could lead to the mortality of individuals. The MDS used for assessment is given in **Table 3-2**.



- 8.5.41 In order to assess the risk resulting from disturbance and displacement, an analysis of key species has been carried out as described in **PEIR Volume 4, Appendix 12.2**. Not all species were included in that analysis, following a filtering process to identify designated sites (and species) subject to a realistic HRA risk.

### Gannet

- 8.5.42 For external projects, the data on seasonal population estimates have been collated where available. The subsequent bio-season and annual abundance estimates for gannet associated with each of the relevant external projects are presented in **Table 8-2**. As it is difficult to split the collated data from these external projects between the array area and 2 km buffer, a standardised approach has been taken for estimating displacement at the cumulative level. This approach considers gannet displacement within the array area plus 2 km buffers for all external projects, despite the Applicant's preferred approach considering that gannet displacement should only be assessed from within the array area only.

**Table 8-2 Gannet cumulative bio-season and total abundance estimates from all Tier 1 & 2 external projects**

External project	Migration-free Breeding	Post-breeding migration	Return migration	Annual Total	Tier
Beatrice	-	0	0	0	1a
Blyth Demonstration Site	-	-	-	-	1a
Dudgeon	-	25	11	36	1a
East Anglia One	-	3,638	76	3,714	1a
European Offshore Wind Development Centre (EOWDC)	-	5	0	5	1a
Galloper	-	907	276	1,183	1a
Greater Gabbard	-	69	105	174	1a
Gunfleet Sands	-	12	9	21	1a
Hornsea Project One	-	694	250	944	1a
Humber Gateway	-	-	-	-	1a
Hywind 2 Demonstration	-	0	4	4	1a
Kentish Flats	-	-	-	-	1a
Kentish Flats Extension	-	13	0	13	1a
Kincardine	-	0	0	0	1a
Lincs	-	-	-	-	1a

External project	Migration-free Breeding	Post-breeding migration	Return migration	Annual Total	Tier
London Array	-	-	-	-	1a
Lynn and Inner Dowsing	-	-	-	-	1a
Methil	-	0	0	0	1a
Race Bank	-	32	29	61	1a
Rampion	0	590	0	590	1a
Scroby Sands	-	-	-	-	1a
Sheringham Shoal	-	31	2	33	1a
Teesside	-	0	0	0	1a
Thanet	-	-	-	-	1a
Westermest Rough	-	-	-	-	1a
Hornsea Project Two	-	1,140	124	1,264	1b
Moray East	-	292	27	319	1b
Neart na Gaoithe	-	552	281	833	1b
Triton Knoll	-	15	24	39	1b
Seagreen Alpha	-	296	138	434	1b
Seagreen Bravo	-	368	194	562	1b
Dogger Bank A	-	916	176	1,092	1c
Dogger Bank B	-	1,132	218	1,350	1c
Dogger Bank C	-	379	226	605	1c
East Anglia Three	-	1,269	524	1,793	1c
Hornsea Three	-	1,494	1,099	2,593	1c
Inch Cape	-	703	212	915	1c
Moray West	-	439	144	583	1c
Norfolk Vanguard	-	2,453	437	2,890	1c
Sofia	-	508	238	746	1c
East Anglia ONE North	-	468	44	512	1d
East Anglia TWO	-	891	192	1,083	1d
Hornsea Four	-	1,199	659	1,858	1d
Norfolk Boreas	-	1,723	526	2,249	1d
All projects excluding Rampion 2	0	22,253	6,245	28,498	

External project	Migration-free Breeding	Post-breeding migration	Return migration	Annual Total	Tier
Rampion 2	162	224	90	476	
All Projects including Rampion 2	162	22,477	6,335	28,974	

- 8.5.43 The potential for impact on the Alderney West Coast and Burhou Islands Ramsar will vary by season and accordingly the assessment is carried out on a seasonal basis.
- 8.5.44 Outside the breeding bio-season, when the population contains a mix of birds from UK breeding colonies and breeding colonies from further away, then a much lower percentage of birds can be attributed to any particular breeding colony SPA population. In the breeding bio-season the maximum foraging distance and the mean maximum foraging distance from Woodward *et al.*, (2019) determine which breeding colonies the birds may be apportioned to using the SNH apportionment tool (SNH, 2018), and in the migratory bio-season the information on populations contained in Furness (2015) is applied for the same purpose of apportionment.
- 8.5.45 A generic population age ratio of gannets has been used of 0.60 across all months of the year (**Table 12.16 of PEIR Volume 2, Chapter 12**).
- 8.5.46 During the migration-free breeding bio-season, a peak abundance of 162 gannets within the array plus 2km buffer area are estimated to be at risk of displacement. Using displacement rates between 60 to 80% and a mortality rate of 1% would result in approximately one (1.0 to 1.3) gannet being subject to mortality, or 0.6 to 0.8 breeding adults. Mortality during the breeding bio-season was apportioned to the Alderney West Coast and Burhou Islands Ramsar following the SNH (2018) method. Following this method, 63.1% of breeding age individuals subject to displacement from Rampion 2 may be attributed to Alderney West Coast and Burhou Islands Ramsar. Zero birds from Rampion 1 and no other windfarms require assessment during the breeding bio-season. On this basis, of the 0.6 to 0.8 adult birds predicted to suffer displacement mortality, 0.38 to 0.49 breeding adults would be attributable to this SPA. Given the annual background mortality for this SPA is 1,527 individuals (**Table 12.16 of PEIR Volume 2, Chapter 12**) then this prediction of 0.38 to 0.49 adult birds suffering displacement mortality would represent 0.01 to 0.03% increase in mortality relative to baseline mortality.

### Migration

- 8.5.47 The predicted displacement resultant mortality as a result of the operation of all relevant OWFs in the Return migration bio-season is 135 to 180 individuals and in the Post-breeding migration bio-season is approximately 38 to 51 individuals (there is no migration free winter bio-season). In total, 173 to 230 birds (104 to 138 breeding adults) are predicted to suffer displacement related mortality during the migratory bio-season or three breeding adults.
- 8.5.48 In the migratory bio-season, birds will have come from a range of seabird breeding colonies in the UK and overseas. The UK North Sea and Channel population

during the post-breeding season is estimated to be 456,298 individuals (Furness, 2015). During the Return migration, an estimated 248,385 individuals are present in the UK North Sea and Channel (Furness, 2015). Breeding adults from the Alderney West Coast and Burhou Islands Ramsar are considered to contribute to 4.13% of the UK North Sea and Channel population during the Post-breeding migration and 7.59% during the Return migration. On that basis approximately 5 to 7 adult birds that suffer displacement consequent mortality during the migratory bio-season can be attributed to the site. This represents a 0.33 to 0.46% increase in mortality relative to baseline mortality.

### Conclusion

- 8.5.49 The maximum increase in mortality relative to baseline mortality of 0.03% in the breeding bio-season and 0.46% in the migratory bio-season will not affect the achievement of the conservation objectives for the SPA, as they are both well under the 1% threshold typically used as a benchmark for further population modelling and as a result will not have an adverse effect on the integrity of the SPA.
- 8.5.50 **There is, therefore, no potential for an AEol to the conservation objectives of the gannet feature of the Alderney West Coast and Burhou Islands Ramsar in relation to displacement effects from Rampion 2 in-combination with other OWFs and therefore, subject to natural change, gannet will be maintained as a feature in the long term with respect to the potential for adverse effects from displacement.**

## 9. Transboundary statement

- 9.1.1 Notwithstanding the UK's exit from the EU, the draft RIAA has assumed that the - existing (pre-EU Exit) requirement to consider the potential for transboundary impacts from Rampion 2 to any other European Economic Area State, continues to apply to HRA.
- 9.1.2 The consideration of transboundary effects relevant to the Habitats Regulations (2017) (as amended) is evidenced in part, in the HRA Screening Report (RED, 2020a) (the outcomes of which are since updated, as summarised in **Appendix B** and documented in the updated Screening matrices at **Appendix E**. 54 European sites in five non-UK countries (Belgium, The Netherlands, Denmark, Ireland and France) were considered for transboundary impacts.
- 9.1.3 The potential for transboundary impacts was found to be limited to foraging and migratory seabirds. The potential for LSEI were identified to three sites in France:
- Littoral seino-marin (FR) SPA - Lesser black-backed gull and kittiwake
  - Falaise du Bessin Occidental (FR) SPA - Kittiwake
  - Côte de Granit Rose-Sept Iles SPA (FR) – Gannet
- 9.1.4 It is understood that PINS has notified France of potential transboundary impacts from Rampion 2 (PINS, 2021). Sites for breeding seabird features are considered in **Section 7.5** and **Section 8.5**. At the conclusion of these assessments, it is considered that there is no potential for significant transboundary effects on site integrity either alone, or in-combination.

## 10. Conclusions of the assessment

- 10.1.1 A summary providing the conclusions for the Stage Two (AA) both alone and in-combination is provided in **Table 10-1**.

Table 10-1 Summary of the potential for adverse effects from Rampion 2 alone and in-combination

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>UK11004 Arun Valley (UK) Ramsar</b>	Northern pintail	Land take / cover change	No AEol	NA	No AEol	No AEol	NA	No AEol
	Assemblage of wintering waterfowl of international importance	Fragmentation of habitats	No AEol	NA	No AEol	No AEol	NA	No AEol
		Noise and vibration	No AEol	NA	No AEol	No AEol	NA	No AEol
<b>UK9020281 Arun Valley (UK) SPA</b>	Bewick's swan	Land take / cover change	No AEol	NA	No AEol	No AEol	NA	No AEol
	Non-breeding waterfowl assemblage	Fragmentation of habitats	No AEol	NA	No AEol	No AEol	NA	No AEol
		Noise and vibration	No AEol	NA	No AEol	No AEol	NA	No AEol
<b>UK11052 Pagham Harbour (UK) Ramsar</b>	Dark-bellied brent goose	Collision risk	NA	No AEol	NA	NA	No AEol	NA



Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>UK9012041</b> <b>Pagham Harbour (UK) SPA</b>	Dark-bellied brent goose Common tern Ruff	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK0012716</b> <b>The Mens (UK) SAC</b>	Barbastelle bat	Land take / cover change	No AEoI	NA	No AEoI	No AEoI	NA	No AEoI
		Fragmentation of habitats	No AEoI	NA	No AEoI	No AEoI	NA	No AEoI
		Noise and vibration	No AEoI	NA	No AEoI	No AEoI	NA	No AEoI
<b>UK9011051</b> <b>Portsmouth Harbour (UK) SPA</b>	Dark-bellied brent goose Black-tailed godwit Dunlin Red-breasted merganser	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK11055</b> <b>Portsmouth Harbour (UK) Ramsar</b>	Dark-bellied brent goose	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>UK0012599</b> <b>River Itchen</b> <b>(UK) SAC</b>	Atlantic salmon	Underwater noise	No AEoI	NA	No AEoI	No AEoI	NA	No AEoI
<b>UK0030059</b> <b>Solent Maritime</b> <b>(UK) SAC</b>	Estuaries	Suspended sediment and deposition	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI
	Atlantic salt meadows	MINNS	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI
	Spartina swards	Physical processes	NA	No AEoI	NA	NA	No AEoI	NA
	Salicornia and other annuals colonizing mud and sand	Pollution	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI
	Mudflats and sandflats not covered by seawater at low tide							
	Coastal lagoons							
	Sandbanks slightly covered by sea water all the time							

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>UK0030061</b> <b>South Wight Maritime (UK) SAC</b>	Reefs	Suspended sediment and deposition	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
	Submerged or partially submerged sea caves	MINNS	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
		Physical processes	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
		Pollution	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
<b>UK0017073</b> <b>Solent and Isle of Wight lagoons SAC</b>	Coastal lagoons	Suspended sediment and deposition	NA	No AEol	NA	NA	No AEol	NA
		MINNS	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
		Physical processes	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
		Pollution	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
<b>UK9012091</b>	Common tern Sandwich tern	Collision risk	NA	No AEol	NA	NA	No AEol	NA

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>Dungeness, Romney Marsh &amp; Rye Bay (UK) SPA</b>	Sandwich tern	Disturbance / displacement	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
<b>UK9020330 Solent and Dorset Coast (UK) SPA</b>	Common tern Little tern Sandwich tern	Collision risk	NA	No AEol	NA	NA	No AEol	NA
	Common tern Little tern	Disturbance / displacement	No AEol	NA	No AEol	No AEol	NA	No AEol
	Sandwich tern	Disturbance / displacement	No AEol	No AEol	No AEol	No AEol	No AEol	No AEol
<b>Chichester &amp; Langstone Harbours (UK) SPA</b>	Common tern Sandwich tern	Collision risk	NA	No AEol	NA	NA	No AEol	NA
	Sandwich tern	Disturbance / displacement	NA	No AEol	NA	NA	No AEol	NA
	Bar-tailed godwit Curlew Dark-bellied B goose	Collision risk on migration	NA	No AEol	NA	NA	No AEol	NA

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
	Dunlin Grey plover Pintail Red-b. merganser Redshank Ringed plover Sanderling Shelduck Shoveler Teal Turnstone Wigeon Waterbird assemblage							
<b>UK11013 Chichester &amp; Langstone Harbours (UK) Ramsar</b>	Ringed plover Black-tailed godwit Redshank Dark-bellied B goose Shelduck Grey plover Dunlin Waterbird assemblage	Collision risk on migration	NA	No AEoI	NA	NA	No AEoI	NA

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>UK9011061</b> <b>Solent and Southampton Water SPA</b>	Sandwich tern	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
	Black-tailed godwit Dark-bellied brent goose Ringed plover Teal Waterbird assemblage	Collision risk on migration	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK11063</b> <b>Solent and Southampton Water Ramsar</b>	Ringed plover Dark-bellied brent goose Teal Black-tailed godwit Waterbird assemblage	Collision risk on migration	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9012031</b> <b>Medway Estuary &amp; Marshes SPA</b>	Common tern	Collision risk on migration	NA	No AEoI	NA	NA	No AEoI	NA
<b>FR2310045</b>	Lesser black-backed gull	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>Littoral seino-marin (FR) SPA</b>	Kittiwake							
<b>UK9009246 Foulness (Mid-Essex Coast) Phase 5 (UK) SPA</b>	Sandwich tern Common tern	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>FR2510099 Falaise du Bessin Occidental (FR) SPA</b>	Kittiwake	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9009112 Alde-Ore Estuary (UK) SPA</b>	Sandwich tern Lesser black-backed gull	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK11002 Alde-Ore Estuary (UK) Ramsar</b>	Lesser black-backed gull	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA



Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>UK9008021</b> <b>The Wash (UK) SPA</b>	Common tern	Collision risk on migration	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9009181A</b> <b>Breydon Water (UK) SPA</b>	Common tern	Collision risk on migration	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9020329</b> <b>Greater (UK) Wash SPA</b>	Common tern Sandwich tern	Collision risk on migration	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9009031</b> <b>North Norfolk Coast SPA</b>	Common tern Sandwich tern	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>7UK011</b> <b>North Norfolk Coast Ramsar</b>	Common tern Sandwich tern	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>FR5300009</b>	Gannet	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>Côte de Granit Rose-Sept Iles SPA</b>	Gannet	Disturbance / displacement	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK22002 Alderney West Coast &amp; Burhou Islands Ramsar</b>	Gannet	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
	Gannet	Disturbance / displacement	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9014041 Grassholm SPA</b>	Gannet	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9006101 Flamborough &amp; Filey Coast SPA</b>	Gannet Kittiwake Herring gull	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
	Gannet	Disturbance / displacement	NA	No AEoI	NA	NA	No AEoI	NA
	Guillemot Razorbill	Disturbance / displacement	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI

Designated Site Name Site ID	Relevant Feature(s)	Effect	Conclusion Alone			Conclusion In-combination		
			C	Operation and Maintenance	D	C	Operation and Maintenance	D
<b>UK9006131A</b> <b>Northumbria Coast SPA</b>	Arctic tern	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9006031</b> <b>Coquet Island SPA</b>	Sandwich tern Arctic tern Common tern Herring gull Lesser black-backed gull Kittiwake	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
<b>UK9006021</b> <b>Farne Islands SPA</b>	Common tern Arctic tern Sandwich tern Kittiwake	Collision risk	NA	No AEoI	NA	NA	No AEoI	NA
	Guillemot	Disturbance / displacement	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI	No AEoI

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# Appendix A      Record of Consultation Responses on Screening



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# 1. Introduction

A Habitats Regulations Assessment (HRA) Stage One Screening exercise was undertaken by Rampion Extension Development Limited ('RED') ('the Applicant') in September 2020. Findings were shared with consultees in the Screening Report (RED, 2020a). This appendix of the draft RIAA provides a Record of Consultation with respect to the responses provided by consultees during the September / October 2020 consultation and the answers provided by the Applicant.

## 1.1 Background

- 1.1.1 The Applicant completed a HRA Screening exercise for Rampion 2 to determine whether and how, Likely Significant Effects (LSEs) on European sites might result from the construction, operation or decommissioning of Rampion 2. The outcomes of this exercise were reported in the Applicant's Report to Inform HRA Screening (RWE, 2020) (the Screening Report). The Screening Report set out the European sites and qualifying features considered during the HRA Screening, exercise the Applicant's findings on the potential for LSEs and the proposed methods for Screening and assessment.
- 1.1.2 The Applicant shared the Screening Report (RED, 2020), together with Screening matrices with consultees on 11 September 2020. Comments were invited during a consultation period from late September 2020 to mid-October 2020. This four-week consultation period was extended for an undefined duration to facilitate the restrictions placed on responders during the Covid-19 pandemic. The Screening Report (approach and conclusions) was also discussed at Expert Technical Group (ETG) meetings held on the 18 September 2020 and 10 October 2020.
- 1.1.3 This Appendix reports the responses (and the Applicant's answers) submitted with respect to the September 2020 Screening Report (RED, 2020a) only and hereafter, and in this Appendix only, referred to 'the consultation.'

## 1.2 Written responses

- 1.2.1 Natural England and the following non-statutory consultees responded during the consultation period:
- Natural England - letter dated 09 October 2020
  - The Wildlife Trusts - joint letter with Sussex Wildlife Trust dated 14 October 20
  - Sussex Wildlife Trust -joint letter with The Wildlife Trusts dated 14 October 20
  - West Sussex County Council - letter (WSCC Ecology) dated 2 October 2020
  - Whale & Dolphin Conservation - email stating unable to provide comment dated 15 September 2020
  - Arun District Council - email response dated 8 October

- Sussex Ornithological Society – paper detailing concerns 20 September 2020
- Horsham District Council letter (WSCC Ecology) dated 2 October 2020

1.2.2

No responses were received from the following during the consultation period (although some have joined later ETG meetings:

- The Planning Inspectorate
- The Marine Management Organisation
- Royal Society for the Protection of Birds
- The Environment Agency
- East Sussex County Council
- Sussex Inland Fisheries Conservation Authority
- South Downs National Park
- Adur District Council and Worthing
- Brighton and Hove City Council
- Lewes and Eastbourne Councils
- Mid Sussex District Council [hcs.co.uk](http://hcs.co.uk)
- East Sussex County Council
- Hampshire County Council
- Isle of Wight Council
- Chichester City Council
- Cefas (made aware by a third party as direct requests for consultation do not accord with the organisation's policies)

## 1.3 Structure of Appendix A

1.3.1

Responses (and the Applicant's answers) to the consultation are presented in this document by receptor group as follows:

- general comments (#1-5) - pages 6 and 7 (**Section 2**);
- terrestrial ecology (#6-17) - pages 7, 8 and 9 (**Section 3**);
- marine mammals (#18-23) - page 10 (**Section 4**);
- subtidal and benthic ecology (#24-33) - pages 11, 12 and 13 (**Section 5**);
- the in-combination assessment (#34-39) - pages 14 and 15 (**Section 6**);
- birds during migration (#40-44) - pages 16 and 17 (**Section 7**); and
- seabirds – (#47-71) - pages 18 – 23 (**Section 8**).

## 1.4 Modifications to this document

- 1.4.1 This document was originally issued to consultees invited to the Expert Technical Group (ETG) meeting of March 2021. It was provided as Appendix A of the ETG materials (and had 3 appendices B, C, and D).
- 1.4.2 To accommodate the presentation of this material in the draft RIAA the changes listed below have been made to the original (as issued) version of Appendix A. Otherwise, the tables that comprised Appendix were those provided to consultees invited to the ETG meeting and the material presented here is identical to that provided to the ETG.
- Section 1 is new and was not provided to the ETG.
  - Document name updated from '*Appendix A: HRA Summary of Screening Consultation*' to '*Appendix A to the Draft Report to Inform Appropriate Assessment*'.
  - Appendices A, B and C removed. The items removed are now presented (unaltered) as Appendices B, C and D of the draft RIAA
  - So as not to confuse navigation, documents referenced in the table columns titled: "*Evidence of Applicant's response*" have been updated in this document to refer to the correct appendices in this submission.
  - As above regarding references to Screening matrices, which are since updated
  - Receptor group names updated to refer to those used in the draft RIAA eg.
    - ▶ Terrestrial Ecology (including wetland wildfowl) is now Terrestrial ecology (including wildfowl and waders)
    - ▶ 'Subtidal and intertidal benthic ecology' now 'benthic habitats and communities'
    - ▶ Migratory birds now 'migratory non-seabirds'
    - ▶ Ornithology now 'offshore ornithology'

## 2. General comments on Screening Report of September 2020

Table A-1 General comments (comments #1 - #5) on the HRA Screening Report (RED, 2020a)

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#1	9 October 2020	Natural England	Letter by email	It would be helpful to include a summary table of which sites have been screened in and out.	Conclusions on LSEs for all sites have been review and post-consultation updates identified.	A complete account of the HRA Screening (post-consultation updates) was produced and provided to the ETG meeting of 26 March. This is now <b>Appendix B</b> of the RIAA.
#2	2 October 2020	Horsham District Council	Letter by email	Satisfied with the methodology applied for HRA screening. The site selection process for this initial screening is highly precautionary. Agree a full Appropriate Assessment is required	Noted. No action required.	No action required.
#3	9 October 2020	Natural England	Letter by email	Generally satisfied with the screening decisions made at this stage.	Noted. No action required.	No action required.

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#4	9 October 2020	Natural England	Letter by email	Sites included in the screening for Rampion 1 have not been included in Screening for Rampion 2. These include Portsmouth Harbour SPA and Ramsar site, Forth Islands SPA, Wight-Barfleur Reef SAC, Dungeness SAC, Hastings Cliff SAC, Lyme Bay and Torbay SAC, Margate and Long Sands SAC, Bassurelle Sandbank SAC. It would be useful if the applicant could detail why possible impact pathways to these sites were considered as part of Rampion 1, but they are not considered relevant to Rampion 2.	The differences are explained by the different Screening methodologies applied to Rampion 1 and 2 to identify sites for marine and coastal habitats (regarding potential impacts from sediment plumes during construction and alteration of the hydrodynamic regime during operation). Rampion 1 identified potential LSEs for all sites within the coastal "cell" extending from Beachy Head to Selsey Bill. This resulted in the identification of a large number of SACS ranging 42km up to 170km from Rampion 1. Rampion 2 has been able to adopt a more informed approach to the Screening, employing data resulting	<p>Portsmouth Harbour SPA and Ramsar site have been captured under the 'migratory species updates.'</p> <p>Updates made in response to consultation are captured in:</p> <p><b>Section 5</b> of the RIAA (Table 5-1)</p> <p><b>Appendix B</b> of the RIAA (account of post-consultation HRA Screening)</p> <p><b>Appendix E</b> of the RIAA (revised HRA Screening matrices)</p> <p>And the approach to Screening migratory collision risk:</p> <p><b>Appendix C</b> of the RIAA (Technical note: migratory non-seabirds)</p>

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
					from Rampion 1 concerning realistic sediment dispersal and hydrodynamic effects and applied a range of 30km, beyond which it is considered effects are not likely to occur. This is considered to represent a more refined method, that excludes sites to which there are no viable pathways. It is noted negligible effects were concluded for the SACs listed from Rampion 1.	
#5	18 September 2020	Natural England	ETG meeting	HRA Screening parameters – the Applicant presented criteria used in the European site selection process and the parameters used to determine connectivity between sites. For cetaceans (Species Management Units	The HRA Screening Report was sent out for consultation (w/c 14/09/20) shortly before this meeting. It is noted that consultees have requested more time to consider the Screening and return comments.	No action required.



ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
				(MU) and seals (ranges of 145km and 120km for grey and harbour seal). There were no questions about the screening parameters proposed for birds and marine mammal HRA Screening.		

### 3. Terrestrial ecology (including wildfowl and waders)

Table A-2 Terrestrial ecology comments #6 - #17 on the HRA Screening Report (RED, 2020a)

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#6	9 October 2020	Natural England	Letter by email	<b>The Mens SAC</b> - Matrix 4 impacts due to increased light levels during the decommissioning phase appear to have been incorrectly screened out for Barbastelle bats as they are marked by "Xi" this should be screened in with an "√i" as is stated in the √i text below the table.	<p>The Applicant can confirm that potential LSE was / is identified for increased light levels during decommissioning for the Barbastelle bat features of the Mens SAC.</p> <p>Updates to Screening made are logged in the upfront sections of the RIAA, in Appendix B of the RIAA and are apparent in the HRA Screening Matrices (as revised). A complete record of Screening is provided at Appendix A of this document.</p>	<p><b>Section 5</b> of the RIAA (Table 5-1)</p> <p><b>Appendix B</b> of the RIAA (account of post-consultation HRA Screening)</p> <p><b>Appendix E</b> of the RIAA (revised HRA Screening matrices) See Matrix 4</p>
#7	9 October 2020	Natural England	Letter by email	<b>Pevensay Levels Ramsar and Pevensay Levels SAC</b> - Advise that the applicant consider if there are possible pathways for effects on Pevensay Levels Ramsar and Pevensay Levels SAC.	These sites have been considered as requested. Both are located 28.8km from the onshore cable corridor. The SAC is designated for inland water bodies, humid grassland, mesophile grassland and Ramshorn snail. The Ramsar is designated for criterion 1 and 2 - nationally important species	Response provided to ETG meeting of 26 March as reported here (now <b>Appendix A</b> of the RIAA)

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
					invertebrates. There is considered to be no potential for interactions with the project and no effect pathways are identified.	
#8	9 October 2020	Natural England	Letter by email	<b>The Mens SAC</b> - assessment makes no specific reference to potential impacts of habitat restoration activities, which could also result in fragmentation of functionally linked land.	The restoration of habitats will not result in any effects beyond those already accounted for the construction phase. Habitats will be dug up and restored in a linked fashion. After which, the land will be drilled with a crop or re-seeded if grassland. It is acknowledged that before the land recovers, there will be a period of time when the habitat is degraded. The implications of this are accounted for in the assessment of land cover change during construction, with reference to the amount and location of alternative habitat.	Response provided to ETG meeting of 26 March as reported here (Now <b>Appendix A</b> of the RIAA)
#9	9 October 2020	Natural England	Letter by email	It is unclear what has been assessed under the land take / land cover change category and what has been assessed under the fragmentation of habitats category. It is our understanding	Land take / land cover change was associated with the direct loss (or change to) land from designated sites within the HRA Screening Report due to the nature of the functionally linked land in question	General clarification provided in future PEIR/ES and HRA submissions.

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
				that potential impacts relating to functionally linked land of SPA/Ramsar species has been considered under the fragmentation of habitats category.	(i.e. a farmland resource changing on an annual basis). However, for clarity all future assessments (in PEIR/ES and HRA) land take of functionally linked land will be considered as a stand-alone effect.	
#10	9 October 2020	Natural England	Letter by email	<b>Pagham Harbour SPA/Ramsar</b> - Natural England agree that a LSE on Pagham Harbour SPA/Ramsar during construction can be ruled out.	The Applicant would like to clarify if this comment refers to both the onshore and offshore receptors (considered separately), notably, the potential for changes in prey availability and behaviour to affect common tern (for which potential LSE was identified).	Point of clarification. Resolved as reported in the minutes of the ETG meeting of 26 March 2021
#11	9 October 2020	Natural England	Letter by email	<b>Arun Valley Ramsar</b> - table 8.1 does not include fragmentation of habitats of the assemblage of wintering waterfowl and northern pintail. This should be taken forward to appropriate assessment.	The Applicant agrees this should be covered and can confirm Potential LSE has been identified for the northern pintail and assemblage features of this site, as reported in Screening Matrix 1.	<b>Section 5</b> of the RIAA (Table 5-1)  <b>Appendix B</b> of the RIAA (account of post-consultation HRA Screening)  <b>Appendix E</b> of the RIAA (revised HRA Screening)

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
						matrices) Screening Matrix 1
#12	9 October 2020	Natural England	Letter by email	<b>Arun Valley SPA</b> - Potential for LSE in relation to the potential fragmentation or severance of habitats of the non-breeding water fowl assemblage and Bewick's swan during construction and decommissioning has been omitted from table 8.1. This should be taken forward to appropriate assessment	The Applicant agrees this should be covered and can confirm Potential LSE has been identified for the Bewick's swan and assemblage features of this site, as reported in Screening Matrix 2.	<p><b>Section 5</b> of the RIAA (Table 5-1)</p> <p><b>Appendix B</b> of the RIAA (account of post-consultation HRA Screening)</p> <p><b>Appendix E</b> of the RIAA (revised HRA Screening matrices) Screening Matrix 2</p>
#13	9 October 2020	Natural England	Letter by email	<b>Arun Valley SPA/Ramsar</b> is in identified under criteria 2 (sites with mobile species whose foraging ranges interact with the scoping boundary) when it is identified under criteria 1b (sites with functionally linked land in the scoping boundary).	More than one criteria can apply in respect different pathways. This site qualifies under both categories as the range of the species interacts with the site (Criteria 2) and there is functionally linked land within the scoping boundary (Criteria 1). These sites also now qualify under Criteria 4, where connectivity is established to features on migration.	Explanation provided. No further action required.

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#14	9 October 2020	Natural England	Letter by email	<b>Arun Valley SPA</b> - habitats that may be used by Bewick's swan from the Arun Valley for foraging are present within the Scoping Boundary. However, it makes no specific reference to potential impacts of habitat restoration activities, which could also fragment the habitat resulting in displacement of foraging individuals.	The restoration of habitats will not result in any effects beyond those already accounted for the construction phase. Habitats will be dug up and restored in a linked fashion. After which, the land will be drilled with a crop or re-seeded if grassland. It is acknowledged that before the land recovers, there will be a period of time when the habitat is degraded. The implications of this are accounted for in the assessment of land cover change during construction works, with reference to the amount and location of alternative habitat.	Explanation provided. No action taken.
#15	9 October 2020	Natural England	Letter by email	Natural England applies a foraging range of 5km for brent geese to identify potentially functionally linked land, based on the review of cropped habitat usage in the JNCC 3rd SPA Review. However, we welcome the 10km foraging ranged used in the table as precautionary.	Noted.	No action required.

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#16	9 October 2020	Natural England	Letter by email	<b>Pagham Harbour SPA/Ramsar</b> - The onshore Pagham Harbour Ramsar matrix includes Dark-bellied brent goose and Black-tailed godwit as the features of the site which are screened. The offshore Pagham Harbour Ramsar matrix considers common tern, Dark-bellied brent goose, little tern and Ruff. We would advise the applicant needs to ensure the correct features for the Ramsar site are used.	Designated features Pagham Harbour Ramsar been reviewed and updated for the site screening matrix.	<b>Appendix B</b> of the RIAA (account of post-consultation HRA Screening) <b>Appendix E</b> of the RIAA (revised HRA Screening matrices) Screening Matrix 1
#17	9 October 2020	Natural England	Letter by email	<b>Pagham SPA/Ramsar</b> has been split into onshore and offshore. It is unclear why this approach has been taken for this site. It is important that any possible cumulative and in combination effects are considered in relation to impacts on the site as a whole.	The site was presented this way for clarity and to ensure that effects that were relevant to the features were addressed. As the effects differ for these receptor groups, combined matrices would need to accommodate a large number of effects. The Applicant will ensure any and all impacts to site integrity as a whole are addressed at Stage 2.	A full revised Screening is set out in the RIAA (in particular, <b>Appendix B</b> of the RIAA).  Screening Matrix 17 and 18 (Updated Screening matrices are provided at <b>Appendix E</b> of the RIAA)



## 4. Marine mammals

Table A-3 Marine mammal (comments #18 - #23) comments on the HRA Screening Report (RED, 2020a)

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#18	9 October 2020	Natural England	Letter by email	For grey seals and harbour seals, receptor ranges of 145km and 120km have been used respectively. Natural England would advise that seal management units should be used.	Screening was revisited. The relevant Seal Management units (South England – Unit 10) were applied to the site identification process. This indicated that there are no SACs for either seal species that share the management unit with Rampion 2. Therefore, no sites for seals have been identified (or screened).	A full revised Screening is set out in the RIAA (in particular, <b>Appendix B</b> of the RIAA).
#19	9 October 2020	Natural England	Letter by email	Section 4.37 of the Screening Report (RWE, 2020) suggests there are low numbers of harbour seal present in the Solent and whilst we agree that there are relatively low numbers here compared to other areas, the numbers in the Solent are increasing annually and therefore we would advise the applicant looks for more	Noted. However, on the application of the relevant Seal Management units (South England – unit 10) provided by SCOS (Scientific Advice on Matters Related to the Management of Seal Populations: 2016 (here)), no SACs for seals have been identified (or screened).	No action required.  Screening is set out in the RIAA (in particular, <b>Appendix B</b> of the RIAA).

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
				recent data sources than SCOS, 2018.		
#20	9 October 2020	Natural England	Letter by email	Given the distance of this site from the array Natural England are satisfied with the decision to screen Southern North Sea SAC out in relation to Harbour porpoise.	Noted. No response required.	Point of agreement.
#21	14 October 2020	The Wildlife Trusts and Sussex Wildlife Trust	Letter by email	The Wildlife Trusts request to be named as a consultee on documents such as Marine Mammal Mitigation Protocols.	Noted. As no European sites for marine mammals have been identified for inclusion in the HRA, this comment will be noted with respect to the development of the PEIR/ES (as well as with respect to any updates made to the HRA Screening outcomes for marine mammals as part of the iterative process of HRA).	Noted.
#22	14 October 2020	The Wildlife Trusts and Sussex	Letter by email	The Wildlife Trusts agree with the designated sites screened in with regards to marine mammals.	Noted. However, following Screening no European sites for marine mammals have been identified for inclusion in the HRA.	Point of clarification. Addressed in the minutes of the ETG meeting of 26 March 2021

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#23	15 September 2020	Whale and Dolphin conservation	Email	Unfortunately, due to furlough and subsequently increased workloads, we are unable to provide a comment at this time.	Noted. No response required.	No action required or undertaken.

## 5. Benthic habitats and communities

Table A-4 Benthic habitats and communities (comments #24 - #33) comments on the HRA Screening Report (RED, 2020a)

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#24	9 October 2020	Natural England	Letter by email	<p>Suspended sediment and deposition has been screened out during the operation stage. Without an understanding of the maintenance that may be required and further information to clarify the likely disposition rates on the intertidal areas of this site, we would suggest that this impact should be screened in for the following sites until this is better understood.</p> <ul style="list-style-type: none"> <li>- Solent and Isle of Wight Lagoons SAC (30.6km to Array)</li> <li>- South Wight Maritime SAC (20.5 km to Array)</li> <li>- Solent Maritime SAC (15.7km to array)</li> </ul>	<p>The scale of operation and maintenance activities will be further clarified at PEIR. We do not anticipate that these sites would be affected by such activities, given that the activities will be much reduced from construction and the distance of these sites from the offshore cable corridor and array. However, potential LSEs will be identified for this pathway (to all three sites) pending further information and discussion.</p>	<p>Screening Matrix 8, 9 and 9A. (Updated Screening matrices are provided at <b>Appendix E</b> of the RIAA)</p> <p>A complete account of the HRA Screening (post-consultation updates) was provided to the ETG meeting of 26 March. This is now <b>Appendix B</b> of the RIAA.</p>

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#25	9 October 2020	Natural England	Letter by email	<p>We would suggest that the risk of pollution can be reduced using appropriate construction techniques and good environmental practice, but where measures are considered necessary to mitigate against an impact the applicability and suitability of the mitigation measures needs to be explored at the appropriate assessment stage 2. Comment relates to the following sites:</p> <ul style="list-style-type: none"> <li>- Solent and Isle of Wight Lagoons SAC (30.6km to Array)</li> <li>- South Wight Maritime SAC (20.5 km to Array)</li> <li>- Solent Maritime SAC (15.7km to array)</li> </ul>	<p>Mitigation was not relied upon to discount a potential LSE. LSE was discounted with reference to the distance between the Proposed Development and these sites, the limited capacity for the Proposed Development to cause a major pollution event and the significant dilution and dispersal capacity of the open coast. Effects are considered likely to be negligible. However, the Applicant is happy to identify potential LSE for this pathway (to all three sites) and to set out the pollution control measures within the RIAA.</p>	<p>Screening Matrix 8, 9 and 9A. (Updated Screening matrices are provided at <b>Appendix E</b> of the RIAA)</p> <p>A complete account of the HRA Screening (post-consultation updates) was provided to the ETG meeting of 26 March. This is now <b>Appendix B</b> of the RIAA.</p>
#26	9 October 2020	Natural England	Letter by email	<p>We question the conclusion of no LSE for this pressure as it has been made based on the assertion that existing offshore wind farms provide no evidence for the viability of providing a pathway for non-native species.</p>	<p>Potential LSE is identified during construction for these sites due to the measures and best practice approaches that will be implemented to reduce the potential risk and consequences of invasive non-native species (INNS) introduction and spread. The same finding will be</p>	<p>Screening Matrix 8, 9 and 9A. (Updated Screening matrices are provided at <b>Appendix E</b> of the RIAA)</p>

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
				<p>Comment relates to the following sites:</p> <ul style="list-style-type: none"> <li>- Solent and Isle of Wight Lagoons SAC (30.6km to Array)</li> <li>- South Wight Maritime SAC (20.5km to Array)</li> <li>- Solent Maritime SAC (15.7km to array)</li> </ul>	<p>applied to the operation and maintenance phase during which, control measures will present the potential colonisation of and transfer from new hard substrate by marine INNS.</p>	<p>A complete account of the HRA Screening (post-consultation updates) was provided to the ETG meeting of 26 March. This is now <b>Appendix B</b> of the RIAA.</p>
#27	9 October 2020	Natural England	Letter by email	<p>Solent Maritime SAC - Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") have not been listed as a feature for which potential spatial connectivity exists, but they have been screened in for LSE in combination in matrix 8. It is therefore unclear if the applicant is suggesting there is an impact pathway for effects on this feature or not. We would question the reasoning for suggesting there is not an impact pathway.</p>	<p>The Applicant is not suggesting there is a pathway to the dune feature of this site, and it is not considered that a pathway exists. The Applicant questioned the nature of a potential pathway at the ETG of the 18 Sep 2020. Natural England confirmed that this comment was to be interpreted as a request to check the outcomes for this site. These are considered by the Applicant to be confirmed in the revised Screening reported in <b>Appendix B</b> of the RIAA (a copy of which is provided with the ETG materials)</p>	<p><b>Screening Matrix 8</b> (Updated Screening matrices are provided at <b>Appendix E</b> of the RIAA)</p> <p>A complete account of the HRA Screening (post-consultation updates) was provided to the ETG meeting of 26 March. This is now <b>Appendix B</b> of the RIAA.</p>

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#28	9 October 2020	Natural England	Letter by email	Solent Maritime SAC - Annual vegetation of drift lines and Perennial vegetation of stony banks features of the SAC have been omitted from the screening matrix 8.	No pathway for effects is anticipated. Clarification provided in Screening Matrix 8.	See Screening Matrix 8 (Updated Screening matrices are provided at <b>Appendix E</b> of the RIAA)
#29	9 October 2020	Natural England	Letter by email	Loss/disturbance due to the installation of the piles themselves also needs to also be mentioned here. It should be noted that any activities that involve the disposal or relocation of sediments may lead to permanent habitat loss. Scour and cable protection could also result in permanent habitat loss, particularly if they are not removed at the decommissioning stage.	Noted. However, it is not clear what European site or features this comment relates to. There is no spatial overlap with the Proposed Development and any European site.	Point of clarification for ETG meeting. Outcome reported in the minutes of the ETG meeting of 26 March 2021.
#30	14 October 2020	The Wildlife Trusts and Sussex Wildlife Trust	Letter by email	It should be demonstrated within the assessment that lessons have been learned from previous cable installation and associated cable protection requirements from Rampion 1	Noted. However, it is not clear what European site this comment relates to. There is no spatial overlap with the Proposed Development and any European site.	Point of clarification for ETG meeting. Outcome reported in the minutes of the ETG meeting of 26 March 2021.



ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#31	14 October 2020	The Wildlife Trusts and Sussex Wildlife Trust	Letter by email	Welcome the routing of the cable outside of Kingsmere Marine Conservation Zone (MCZ).	Noted. However, MCZs are outside the scope of the Habitats Directive. The Applicant will follow a separate assessment process to ensure it complies with its statutory obligations, including in relation the MCZs under Section 125 of Marine & Coastal Access Act 2009.	Explanation provided. No action taken.
#32	14 October 2020	The Wildlife Trusts and Sussex Wildlife Trust	Letter by email	Cable installation requirements and cable burial methodology should be outlined in greater detail as part of the future assessment	Noted. Further information is provided in the next iteration of the HRA and in the PEIR. However, it is not clear what European site this comment relates to as there is no direct spatial overlap with the offshore export cable corridor and any European sites.	Covered above see response to #29 and #30
#33	14 October 2020	The Wildlife Trusts and Sussex Wildlife Trust	Letter by email	The expectation of cable maintenance and additional cable protection requirements during the lifetime of the project should be clearly explained to determine operational habitat disturbance and loss.	Noted. Further information is provided in the next iteration of the HRA and in the PEIR. However, it is not clear what European site this comment relates to as there is no direct spatial overlap with the offshore export cable corridor and any European sites.	Covered above see response to #29 and #30

## 6. In-combination assessment

Table A-5 In-combination assessment (comments #34 - #39) comments on the HRA Screening Report (RED, 2020a)

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#34	9 October 2020	Natural England	Letter by email	Pagham SPA/Ramsar has been split into onshore and offshore. It is unclear why this approach has been taken for this site. It is important that any possible cumulative and in combination effects are considered in relation to impacts on the site as a whole.	See response to comment #17. The Applicant will ensure any and all impacts to site integrity as a whole are addressed at Stage 2.	See response to comment #17.
#35	9 October 2020	Natural England	Letter by email	It is important that any impacts of the project during operation are considered in combination with impacts from other projects including Rampion 1 and other offshore windfarms. It is key that effects in-combination with other offshore windfarms are considered, particularly those which will be under construction or operational.	Noted. For all sites at risk of LSE and Likely Significant Effects In-combination (LSEI), effects in-combination with other offshore wind farms will be assessed at Stage 2.	The in-combination assessment will be provided in the RIAA.

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#36	9 October 2020	Natural England	Letter by email	It is unclear if the projects listed in table 3.3 of the Screening Report (RWE, 2020) (Potentially relevant external projects in the English Channel") represent a comprehensive list of projects identifiable at this stage and therefore if the LSE in-combination decisions made in this assessment have been made taking into account all relevant projects.	<p>The projects listed in Table 3.3 of the Screening Report (RWE, 2020) represent a comprehensive list of projects that were identifiable at the time the Screening was undertaken. The Screening method is precautionary so that additional sites are very unlikely to be captured following an appraisal against the current development landscape.</p> <p>A large number of pathways resulting from effects acting in-combination have been identified with reference to the potential for interactions, rather than quantification at this stage. <b>Appendix A</b> clarifies which pathways resulted from effects in-combination.</p>	The in-combination assessment will be provided in the RIAA.
#37	9 October 2020	Natural England	Letter by email	Expected the applicant to have identified a comprehensive list of projects based on the information currently available. We acknowledge that further information is likely to become available throughout the application process, however we expect the applicant to make all efforts to consider a	The Applicant did not identify any plans or projects other than the "Potentially relevant external projects in the English Channel" set out in the report, which was the best account possible at the time. The Screening method is so precautionary that additional sites are very unlikely to be captured following an appraisal against the current development landscape. A large number	The in-combination assessment will be provided in the RIAA.

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
				comprehensive list of plans or projects with the potential to result in in-combination effects at this stage.	of pathways resulting from effects acting in-combination have been identified with reference to the potential for interactions, rather than quantification at this stage. <b>Appendix A</b> clarifies which pathways resulted from effects in-combination. A comprehensive list of projects will be provided in the RIAA.	
#38	9 October 2020	Natural England	Letter by email	It is key that effects in-combination with other offshore windfarms are considered, particularly those which will be under construction or operational.	Noted. This is part of the methodology for the in-combination assessment set out in the Screening report. The RIAA will present a comprehensive assessment of the potential impacts of other offshore windfarms within relevant (sensitive) species range for all project phases. The offshore windfarms considered as part of this assessment will be set out within the RIAA.	The in-combination assessment will be provided in the RIAA.
#39	9 October 2020	Natural England	Letter by email	It is important that any impacts of the project during operation are considered in combination with impacts from other projects including Rampion 1 and other offshore wind farms.	Noted. This is part of the methodology for the in-combination assessment set out in the Screening report. A large number of pathways resulting from effects acting in-combination have been identified with reference to the potential for interactions, rather than quantification at this stage.	The in-combination assessment will be provided in the RIAA.

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
					<p><b>Appendix A</b> clarifies which pathways resulted from effects in-combination.</p> <p>The RIAA will present a comprehensive assessment of the potential impacts of other offshore wind farms within relevant (sensitive) species range using Collision Risk Modelling (CRM) (including migratory CRM) to consider the collective magnitude of such impacts during operation and apportionment to allocation such impacts to individual sites. The offshore windfarms considered as part of this assessment will be set out within the RIAA.</p>	

## 7. Migratory non-sea birds

Table A-6 Migratory non-seabirds (comments #40 - #44) comments on the HRA Screening Report (RED, 2020a)

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
#40	9 October 2020	Natural England	Letter by email	The screening matrices do not acknowledge the potential pathway for impact from collision risk to migratory waterbirds. It would be helpful if the collision risk was added and the reasoning why this has been ruled out for waterbirds when on migration.	Migratory seabirds have been re-considered under Criterion 4. Migratory waterbirds that may have connectivity with Rampion 2 have been considered and a number of additional sites drawn into the HRA. The full process and outputs of the updates are documented in a Technical Appendix to the RIAA, available at <b>Appendix C</b> . Updates made are logged in the upfront sections of the RIAA and apparent in the HRA Screening Matrices (as revised).	<p><b>Appendix B</b> of the RIAA. Updates to Screening.</p> <p><b>Appendix E</b> of the RIAA) Updates to Screening matrices</p> <p><b>Appendix C</b> of the RIAA Technical note</p>
#41	9 October 2020	Natural England	Letter by email	The Medway and wider Thames Estuary - Matrix 25, 26, 27, 28, 29 - The Medway and wider Thames Estuary tern sites are identified under criteria 4, and the only pathway for impact is during migration. Therefore,	Migratory seabirds have been re-considered under Criterion 4. Migratory waterbirds that may have connectivity with Rampion 2 have been considered and a number of additional sites drawn into the HRA. The full process and	<p><b>Appendix B</b> of the RIAA. Updates to Screening.</p> <p><b>Appendix E</b></p>

ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
				why are only the terns and no other migratory birds considered?	outputs of the updates are documented in a Technical Appendix to the RIAA, available at <b>Appendix B</b> . Updates made are logged in the upfront sections of the RIAA and apparent in the HRA Screening Matrices (as revised).	of the RIAA) Updates to Screening matrices  <b>Appendix C</b> of the RIAA Technical note
#42	9 October 2020	Natural England	Letter by email	5.5.2 – 5.5.3 of the Screening Report (RWE, 2020). If collision risk mortality has been ruled out for migratory birds, it is unclear why common and sandwich terns associated with the east coast SPAs have been included in the matrices.	Collision risk mortality has not been ruled out for migratory birds. Common and sandwich terns associated with the east coast SPAs to be revisited along with other seabird species recorded at Rampion 2 array area during site specific surveys have been included in Criterion 4.	<b>Appendix C</b> of the RIAA Technical note
#43	9 October 2020	Natural England	Letter by email	5.5.2 – 5.5.3 the Screening Report (RWE, 2020) states that quantitative assessments have been made for other OWF (and simpler quantitative assessment for Rampion OWF) that concluded predicted mortality from collision risk for migratory birds is below that for LSE. Therefore,	To date, migratory seabird apportionment has only undertaken for Rampion 1. Seabird sites to the east (for migratory species) have been identified for migratory seabirds recorded during site specific surveys undertaken at Rampion 2. This has been undertaken under Criterion 4 and	<b>Appendix E</b> of the RIAA) Updates to Screening matrices  <b>Appendix C</b>



ID	Date	Consultee	Nature	Consultee comment	Applicant's response	Evidence of Applicant's response
				collision risk for migratory birds from Rampion 2 is screened out. Can the applicants confirm whether any quantitative CRM assessment has been carried out for Rampion 2, and whether this included an in-combination assessment?	provided in full on a site-by-site basis in the screening matrices. CRM for migratory species will be undertaken for Rampion 2 and reported in the RIAA.	of the RIAA Technical note
#44	9 October 2020	Natural England	Letter by email	Dungeness, Romney Marsh and Rye Bay Ramsar appears to have been excluded from the screening, again we advise this site is included in this assessment	Ramsar site is designated for wintering and passage species. There is therefore no connectivity during the breeding season. The site was not identified during the migratory waterbird screening exercise due to distance from the Rampion 2 array boundary (exceeding 55km to the east). Therefore, there is no impact pathway for this Ramsar site.	Explanation provided. No action taken.

Note: Comment numbers #45 & #46 were duplicated comments and have not been repeated in the tables below

## 8. Offshore ornithology

Table A-7 Offshore ornithology (comments #47 - #71) comments on the HRA Screening Report (RED, 2020a)

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
#47	13/10/20	Natural England RSBP SMRU	Expert Topic Group Meeting (online)	For breeding seabirds, the standard deviation range should be applied to the foraging ranges of seabirds (Woodward et al., 2019) for the identification of European sites.	<p>The standard deviation range has been applied in the revised Screening. This exercise has been undertaken in a separate report (see <b>Appendix C</b> of the RIAA) for all breeding seabirds listed in Woodward <i>et al.</i>, 2019. This approach forms the basis of the Stage one Screening completed for Rampion 2 with respect to offshore ornithological features during the breeding season.</p> <p>The full process and outputs of the updates are documented in a Technical Appendix to the RIAA, available at <b>Appendix C</b>. Updates made are logged in the upfront sections of the RIAA and apparent in the HRA Screening Matrices.</p>	<p><b>Appendix B</b> of the RIAA. Updates to Screening.</p> <p><b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices</p> <p><b>Appendix D</b> of the RIAA Technical Note: European Site Identification for Breeding Seabirds</p>
#48	9 October 2020	Natural England	Letter by email	Ramsar sites are frequently screened for the same features as the	All SPA and Ramsar sites have been reviewed to ensure designated features are correct for each site. English SPA	<b>Appendix B</b> of the RIAA. Updates to Screening.

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
				corresponding SPA. Ramsar sites have their own features and all of these need to be included when a Ramsar site is screened.	designated features have been based on those listed on the Natural England Designated Sites portal. For English Ramsar sites, the JNCC Citation documents have been used. It is important to note that noteworthy fauna have not been included as they are not designated features. Other countries SPAs are based on the relevant SNCB designated site portals, with Ramsar site information gleaned from JNCC Citation documents. Updates made are logged in the upfront sections of the RIAA and apparent in the HRA Screening Matrices (as revised).	<b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices
#49	9 October 2020	Natural England	Letter by email	Assemblages are frequently omitted from the Screening matrices.	Assemblages for each designated site has been reviewed and updated for each designated site Screening matrix. Updates made are logged in the upfront sections of the RIAA, Appendix A of this report and are apparent in the HRA Screening Matrices.	<b>Appendix B</b> of the RIAA. Updates to Screening.  <b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
#50	9 October 2020	Natural England	Letter by email	We advise that the features of all of the designated sites screened are checked by the applicant with reference to the Natural England Designated Sites System. There are some reoccurring inaccuracies and omissions.	All SPA and Ramsar sites have been reviewed to ensure designated features are correct for each site. English SPA designated features have been based on those listed on the Natural England Designated Sites portal. For English Ramsar sites, the JNCC Citation documents have been used. It is important to note that noteworthy fauna have not been included as they are not designated features. Other countries SPAs are based on the relevant SNCB designated site portals, with Ramsar site information gleaned from JNCC Citation documents. Updates made are logged in the upfront sections of the RIAA and apparent in the HRA Screening Matrices.	<p><b>Appendix B</b> of the RIAA. Updates to Screening.</p> <p><b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices</p>
#51	9 October 2020	Natural England	Letter by email	Where a LSE has been ruled out and part of the justification given for no LSE is "previous experience of other offshore wind farms/projects is of no LSE being concluded". We	The Applicant has provided more explicit references to the evidence relied upon in the Screening matrices.	<p><b>Appendix B</b> of the RIAA. Updates to Screening.</p> <p><b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices</p>

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
				would welcome further discussions with the applicant to understand the evidence behind decisions that have used this reasoning.		
#52	9 October 2020	Natural England	Letter by email	Alde-Ore Estuary SPA and Ramsar - We would advise the applicant needs to ensure the correct features have been screened.	<p>Alde-Ore Estuary SPA and Ramsar have been included within the matrices based on the information provided via the Natural England Designated Sites portal. We welcome further discussion as to the specific concerns of Natural England with regard to this site. For reference, the features considered are set out below:</p> <ul style="list-style-type: none"> <li>• <b>SPA</b> - Lesser black-backed gull, Sandwich tern, Ruff, Redshank, Avocet, Marsh Harrier, Little tern; and</li> <li>• <b>Ramsar</b> - Lesser black-backed gull, Avocet, Redshank, wintering waterbird assemblage and wetland bird assemblage (breeding).</li> </ul>	Point of clarification for ETG meeting. reported in the minutes of the ETG meeting of 26 March 2021.

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
#53	9 October 2020	Natural England	Letter by email	Medway Estuary and Marshes SPA and Ramsar - Table 7.1 of the Screening Report (RWE, 2020) for Matrix 25 and 26, disturbance / displacement is in the table twice once screened out for LSE alone, and the next line is blank.	The Applicant can confirm that potential LSE is identified for Medway Estuary and Marshes (UK) SPA with respect to collision risk to common tern on migration. No LSE is identified for any features of these sties regarding disturbance / displacement on the rationale provided in Screening Matrices 25 and 26.	<b>Appendix B</b> of the RIAA. Updates to Screening.  <b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices See Screening Matrix 25 and 26
#54	9 October 2020	Natural England	Letter by email	Outer Thames Estuary SPA - Why is a LSE in combination ruled out for common terns from the Outer Thames SPA when it is screened in for other nearby common tern SPAs (e.g., Medway and Foulness)? Is it because the Outer Thames is a foraging SPA, with the terns breeding at sites within the nearby SPAs?	The Outer Thames Estuary SPA has been revisited to ensure the correct feature and impact combinations have been addressed. As the SPA is a foraging SPA, the features have not been included due to a lack of impact pathway. However, breeding tern species have been fully considered at their respective breeding colony SPAs. Updates made are logged in the upfront sections of the RIAA and apparent in the HRA Screening Matrices.	<b>Appendix B</b> of the RIAA. Updates to Screening. See Screening Matrix 27  <b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices  <b>Appendix D</b> of the RIAA Technical Note: European Site

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
						Identification for Breeding Seabirds.
#55	9 October 2020	Natural England	Letter by email	The distance to the scoping boundary from the Solent and Dorset Coast SPA is less relevant in terms of foraging distances. This SPA is for foraging habitat, therefore, the species it is designated for will be flying from nest sites within the Solent harbours SPAs.	<p>The Solent and Dorset Coast SPA has been revisited to ensure the correct feature and impact combinations have been addressed. As the SPA is a foraging SPA, the features have not been included in relation to foraging distances during the breeding season (Criterion 2). Breeding tern species have been fully considered at their respective breeding colony SPAs. However, the Solent and Dorset Coast SPA are screened in under Criterion 3.</p> <p>Updates to Screening made are logged in the upfront sections of the RIAA, Appendix B of the RIAA and are apparent in the HRA Screening Matrices.</p>	<p><b>Appendix B</b> of the RIAA. Updates to Screening. See Screening Matrix 27</p> <p><b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices</p> <p><b>Appendix D</b> of the RIAA Technical Note: European Site Identification for Breeding Seabirds</p> <p>Screening Matrix 16.</p>
#56	9 October 2020	Natural England	Letter by email	Chichester and Langstone Harbours SPA. The non-breeding features have been omitted from the	The Chichester and Langstone Harbours SPA has been reviewed to ensure the correct feature and impact combinations have been addressed.	<b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices.



ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
				Screening matrix. Applicant needs to ensure the correct features have been screened.	Updates to Screening made are logged in the upfront sections of the RIAA, summarised in <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices (as updated) Appendix E/.	See Screening Matrix 19 and 20  <b>Appendix B</b> of the RIAA. Updates to Screening.
#57	9 October 2020	Natural England	Letter by email	Solent and Southampton Water SPA - waterbird assemblage, non-breeding feature has been omitted from the screening matrix. Applicant needs to ensure the correct features have been screened.	The Solent and Southampton Water SPA has been reviewed to ensure the correct feature and impact combinations have been addressed. Updates to Screening made are logged in the upfront sections of the RIAA, <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices.	<b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices. See Screening Matrix 21 and 22  <b>Appendix B</b> of the RIAA. Updates to Screening.
#58	9 October 2020	Natural England	Letter by email	Dungeness, Romney Marsh and Rye Bay SPA, - The waterbird assemblage, non-breeding feature has been omitted from the screening matrix. needs to ensure the correct features have been screened.	Waterbird Assemblage for Dungeness, Romney Marsh and Rye Bay SPA has been reviewed and updated for the site screening matrix. Updates to Screening are logged in the upfront sections of the RIAA, <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices.	<b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices. See Screening Matrix 23

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
						<b>Appendix B</b> of the RIAA. Updates to Screening.
#59	9 October 2020	Natural England	Letter by email	Medway Estuary and Marshes SPA and SPA - The waterbird assemblage, non-breeding feature has been omitted from the screening matrix. needs to ensure the correct features have been screened.	<p>The waterbird assemblage for Medway Estuary and Marshes SPA has been reviewed and updated for the site screening matrix.</p> <p>Updates to Screening are logged in the upfront sections of the RIAA, Appendix B of the RIAA and are apparent in the HRA Screening Matrices.</p>	<p><b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices. See Screening Matrix 2</p> <p><b>Appendix B</b> of the RIAA. Updates to Screening.</p>
#60	9 October 2020	Natural England	Letter by email	Farne Islands SPA is listed in table 7.2 of the Screening Report (RWE, 2020) as having a LSE in combination but is also in the next line of the table listed as having LSE alone and in-combination ruled out.	<p>The Applicant can confirm that potential LSE alone has been discounted for all pathways. Potential LSE in-combination is identified for the following features of this site with respect to collision risk non-breeding season: Common tern, Arctic tern, Sandwich tern and Kittiwake.</p> <p>Potential LSE is identified for guillemot regarding disturbance/displacement (all phases of the Proposed Development).</p>	<p><b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices.</p> <p>See: Screening Matrix 7</p> <p><b>Appendix B</b> of the RIAA. Updates to Screening.</p>

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
					Updates to Screening are logged in the upfront sections of the RIAA, <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices.	
#61	9 October 2020	Natural England	Letter by email	Flamborough and Filey Coast SPA - We would advise the applicant needs to ensure the correct features have been screened.	<p>Designated features of the Flamborough and Filey Coast SPA have been included within the matrix based on the information provided via the Natural England Designated Sites portal.</p> <p>We welcome further discussion as to the specific concerns of Natural England with regard to this site.</p>	Point of clarification for ETG meeting. reported in the minutes of the ETG meeting of 26 March 2021.
#62	9 October 2020	Natural England	Letter by email	Flamborough and Filey Coast SPA - Natural England would agree that effects in combination - collision risk during operation should be listed as potential for LSEI.	Potential LSE in-combination (collision risk) is identified for Kittiwake, Herring gull and Gannet.	Point of agreement.
#63	9 October 2020	Natural England	Letter by email	Why is a LSE in combination ruled out for sandwich terns from the Alde-Ore Estuary but	This site has been revisited to ensure the correct site and species combinations have been included under Criterion 4 – Migratory connectivity.	<b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices.

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
				screened in for common and sandwich terns from The Wash and N Norfolk Coast, which are further away from Rampion 2?	Updates to Screening made are logged in the upfront sections of the RIAA, <b>Appendix B</b> of the RIAA and apparent in the HRA Screening Matrices. A full account of updates is provided as <b>Appendix A</b> .	See: Screening Matrix 31 and 32  <b>Appendix B</b> of the RIAA. Updates to Screening.
#64	9 October 2020	Natural England	Letter by email	Solent and Southampton Water - We would advise the applicant needs to ensure the correct features have been screened for the Ramsar site.	Solent and Southampton Water Ramsar Site has been updated within the matrices based on the information provided via the JNCC Ramsar Site information portal.  Updates to Screening are logged in the upfront sections of the RIAA, in <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices (as updated) at Appendix E of the RIAA	<b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices. See: Screening Matrix 22  <b>Appendix B</b> of the RIAA. Updates to Screening.
#65	9 October 2020	Natural England	Letter by email	Solent and Southampton Water SPA - waterbird assemblage, non-breeding feature has been omitted from the screening matrix.	Waterbird Assemblage for Solent and Southampton Water SPA has been reviewed and updated for the site screening matrix.	See: Screening Matrix 22  <b>Appendix B</b> of the RIAA. Updates to Screening.

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
					Updates to Screening are logged in the upfront sections of the RIAA, in <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices (as updated) in <b>Appendix E</b>	
#66	9 October 2020	Natural England	Letter by email	Chichester and Langstone Harbours - We would advise the applicant needs to ensure the correct features have been screened for the Ramsar site.	<p>Features for Chichester and Langstone Harbours Ramsar have been reviewed and updated for the site screening matrix.</p> <p>Updates to Screening are logged in the upfront sections of the RIAA, in <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices (as updated) in <b>Appendix E</b></p>	<p><b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices. See: Screening Matrix 19</p> <p><b>Appendix B</b> of the RIAA. Updates to Screening.</p>
#67	9 October 2020	Natural England	Letter by email	Chichester and Langstone Harbours SPA - The waterbird assemblage, non-breeding feature has been omitted from the screening matrix.	<p>Waterbird Assemblage for Chichester and Langstone Harbours SPA has been reviewed and updated for the site screening matrix.</p> <p>Updates to Screening are logged in the upfront sections of the RIAA, in <b>Appendix B</b> of the RIAA and are</p>	<p><b>Appendix E</b> of the RIAA) Updates to PINS Screening matrices. See: Screening Matrix 20</p>

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
					apparent in the HRA Screening Matrices (as updated) in <b>Appendix E</b> .	<b>Appendix B</b> of the RIAA. Updates to Screening.
#68	9 October 2020	Natural England	Letter by email	Solent and Dorset Coast SPA (and also other Solent tern sites) LSE from displacement during construction is screened out as Fliessbach (2019) found that terns were not significantly affected by boat activity. However, this study was of the impact of shipping lanes, and so does not take account of the additional noise disturbance associated with construction activity.	A review of evidence has been made with regard to disturbance and displacement during construction to tern species. The Fliessbach et al., (2019) reference has been replaced by Furness et al., 2013 which showed all tern species have low sensitivity to ship and helicopter traffic (and therefore the associated noise disturbance). Furness et al., 2013 is the standard referenced used in HRA screening for this impact.	No further action required.
#69	9 October 2020	Natural England	Letter by email	Solent and Dorset Coast SPA should be included in Table 5-5 (criteria 3) of the Screening Report (RWE, 2020). It is identified in figure 5.9 and is within 4km	Noted. This has been acknowledged in the Screening updates. Updates to Screening are logged in the upfront sections of the RIAA, in <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices (as updated) in <b>Appendix E</b> .	<b>Appendix B</b> of the RIAA  <b>Appendix A</b> of this document

ID	Date of comment	Consultee	Nature of contact	Consultee comment	Applicant's response	Evidence of Applicant's response
				of the cable route scoping boundary.		HRA Screening Matrix 16
#70	9 October 2020	Natural England	Letter by email	Solent and Dorset Coast SPA - Ruff is mistakenly listed as a breeding species.	Noted. This has been acknowledged in the Screening updates. Updates to Screening are logged in the upfront sections of the RIAA, in <b>Appendix B</b> of the RIAA and are apparent in the HRA Screening Matrices (as updated) in <b>Appendix E</b> .	<b>Appendix B</b> of the RIAA  <b>Appendix A</b> of this document  HRA Screening Matrix 16
#71	9 October 2020	Natural England	Letter by email	Based on abundance recorded in the first year of surveys, kittiwake and common gull should be added to the list of species of interest for offshore ornithology, even if the peak counts were influenced by the weather.	Noted. Kittiwake and common gull added to the list of species of interest for offshore ornithology.	



## Appendix B      Full account of Screening updates

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# 1. Introduction

A Habitats Regulations Assessment (HRA) Stage One Screening exercise was undertaken by Rampion Extension Development Limited ('RED') ('the Applicant') in September 2020. Findings were shared with consultees in the Screening Report (RED, 2020a).

This Appendix provides a full account of the updates subsequently made to the Rampion 2 HRA Screening in response to comments received, including from Natural England. This document was produced in response to a comment from Natural England, as follows:

## 1.1 Modifications to this document

- 1.1.1 This document was originally issued to consultees invited to the Expert Technical Group (ETG) meeting of March 2021. It was provided as Appendix B of the ETG materials (and had 3 appendices B, C, and D).
- 1.1.2 To accommodate the presentation of this material in the draft RIAA the changes listed below have been made to the original (as issued) version of Appendix A. Otherwise, the tables that comprised Appendix were those provided to consultees invited to the ETG meeting and the material presented here is identical to that provided to the ETG.
  - **Section 1** is new and was not provided to the ETG.
  - Document name updated from:
    - ▶ 'Appendix B: HRA Summary of Screening Consultation' to
    - ▶ 'Appendix B to the Draft Report to Inform Appropriate Assessment – HRA Screening updates
  - Site codes inconsistently applied and therefore, universally removed.
  - Cross references to comments have been updated to refer to the relevant comment in Appendix A to the draft RIAA 'Summary of Consultation'.
  - Table of seal sites originally Screened now deleted to avoid confusion over current conclusion.
  - **Highlight added** to indicate feature that has had the Screening conclusion reported here, changed since March 2021.
  - Table headings altered to account for new dates and receptor group names that are updated to refer to those used in the draft RIAA eg.
    - ▶ 'Subtidal and intertidal benthic ecology' now 'benthic habitats and communities'

## 2. Terrestrial ecology (inc. wildfowl and waders)

Table B-1 European sites designated for terrestrial ecology considered during Screening updates (Feb 2021)

No.	European sites considered	Relevant qualifying features	Finding	IN/OUT
1	Arun Valley (UK) Ramsar	Northern pintail, Assemblage wintering waterfowl	Potential for LSE	IN
2	Arun Valley (UK) SPA	Bewick's swan, Assemblage of wintering waterfowl	Potential for LSEs	IN
3	Arun Valley (UK) SAC	Lesser whirlpool ram's-horn snail	No potential for LSEs	OUT
4	Pagham Harbour (UK) Ramsar	Dark bellied brent goose, <b>Common tern</b>	Potential for LSEs	IN
5	Pagham Harbour (UK) SPA	Dark bellied brent goose, <b>Common tern</b> , Ruff	Potential for LSEs	IN
6	Portsmouth Harbour (UK) Ramsar	Dark-bellied brent goose	Potential for LSEs	IN
7	Portsmouth Harbour (UK) SPA	Black-tailed godwit, Dark-bellied brent goose, Dunlin Red-breasted merganser	Potential for LSEs	IN
8	The Mens (UK) SAC	Barbastelle bat	Potential for LSEs	IN
9	Duncton to Bignor Escarpment SAC	Asperulo-Fagetum beech forests	No potential for LSEs	OUT

European sites considered for LSE at Screening for terrestrial ecology				IN/OUT
1	Arun Valley (UK) Ramsar UK11004	Northern pintail, Assemblage wintering waterfowl	Potential for LSE	IN
2	Arun Valley (UK) SPA UK9020281	Bewick's swan, Assemblage of wintering waterfowl	Potential for LSE	IN
3	Arun Valley (UK) SAC UK0030366	Lesser whirlpool ram's-horn snail	No potential for LSE	OUT

European sites considered for LSE at Screening for terrestrial ecology				IN/OUT
4	Pagham Harbour (UK) Ramsar UK11052	Dark bellied Brent geese, Common tern	Potential for LSE	IN
5	Pagham Harbour (UK) SPA	Dark bellied Brent geese, Common tern, Ruff	Potential for LSE	IN
6	Portsmouth Harbour Ramsar	Dark-bellied brent goose	Potential for LSE	IN
7	Portsmouth Harbour (UK) SPA	Black-tailed godwit, Dark-bellied brent goose, Dunlin Red-breasted merganser	Potential for LSE	IN
8	The Mens (UK) SAC UK0012716	Barbastelle bat	Potential for LSE	IN
9	Duncton to Bignor Escarpment AC	Asperulo-Fagetum beech forests	No potential for LSE	OUT

Table B-2 Terrestrial ecology full account of Screening updates

Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion?	Basis for change	Conclusion on for LSE and outcome
Construction	Arun Valley Ramsar	Northern pintail					
		Land take / land cover change	No LSE	Potential LSE	Yes – new pathway	NE sought clarity regarding whether habitat loss within functionally linked land was covered within the “fragmentation of habitats” pathway. For clarity loss of functionally linked land will be considered separately	Potential LSE. AA required
		Waterbird assemblage					
		Fragmentation of habitats	Potential LSE	Potential LSE	Minor updates	NE requested pathway is addressed at AA. Therefore, included. Resulting in minor updates to summary table and Matrix to standardise reporting.	Potential LSE. AA required
		Noise and vibration Changes in hydrology Effects in-combination	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
Operation	Arun Valley Ramsar	Northern pintail					
		Changes in hydrology Effects in-combination	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Waterbird assemblage					
Construction	Arun Valley SPA	Bewick's swan					
		Land take / land cover change	No LSE	Potential LSE	Yes – new pathway	NE sought clarity regarding whether habitat loss within functionally linked land was covered within the “fragmentation of habitats” pathway. For clarity loss of functionally linked land will be considered separately	Potential LSE. AA required
		Fragmentation of habitats Noise and vibration Changes in hydrology	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion?	Basis for change	Conclusion on for LSE and outcome
Operation	Arun Valley SPA	Assemblage wintering waterfowl	Noise and vibration Changes in hydrology	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Assemblage of wintering waterfowl	Fragmentation of habitats	No LSE	Potential LSE	Yes	Included at Stage 2 on Natural England's advice.	Potential LSE. AA required
		Assemblage of wintering waterfowl	Changes in hydrology	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Bewick's swan						
Construction	The Mens SAC		Increased light levels	Potential LSE	Potential LSE	Minor update	Small typo in Matrix suggested light levels not considered during decommissioning. This was corrected to confirm pathway relevant during decommissioning.	Potential LSE. AA required
		Barbastelle bat	Fragmentation of habitats Effects in-combination	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
			Hydrology Pollution events Emissions to air INNS Land take/ cover change Noise and vibration	No LSE	No LSE	No change	N/A	No LSE No AA required
Operation	The Mens SAC		Effects in-combination	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Barbastelle bat	Fragmentation of habitats Increased light levels Noise and vibration Changes in hydrology Pollution events Emissions to air INNS Land take/ cover change	No LSE	No LSE	No change	N/A	No LSE No AA required



	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion?	Basis for change	Conclusion on for LSE and outcome
Construction	Pagham Harbour Ramsar	Dark bellied Brent. geese	Changes in hydrology Pollution events Emissions to air INNS Land take / cover change Fragmentation or severance of habitats Noise and vibration Increased light levels In-combination effects	No LSE	No LSE	Minor update	*Species list amended. As Black-tailed godwit is listed on the citation “for possible future consideration under criterion 6” this species has been removed from Screening.	No LSE No AA required
	Pagham Harbour Ramsar	Dark bellied Brent. geese	Migration - Collision risk (alone and in-combination)	No LSE	Potential LSE	Yes – new pathway	Included at Stage 2 on Natural England’s advice and due to revised approach to Screening migratory non-seabirds. APEM will carry out collision risk modelling for migratory species.	Potential LSE. AA required
Construction	Pagham Harbour (UK) SPA	Dark bellied Brent. geese	Changes in hydrology Pollution events Emissions to air INNS Land take / cover change Fragmentation or severance of habitats Noise and vibration Increased light levels Effects in-combination	No LSE	No LSE	No change	*Species list amended as recommended in Natural England’s comment #16	No LSE No AA required
		Common tern	Prey availability and behaviour	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Common tern	Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE No AA required
Operation	Pagham Harbour (UK) SPA	Dark bellied Brent. geese	Migration - Collision risk (alone and in-combination)	No LSE	Potential LSE	Yes – new pathway	Included at Stage 2 on Natural England’s advice and due to revised approach to Screening migratory non-seabirds. Applicant to carry out collision risk modelling for migratory species.	Potential LSE. AA required

Designated site name		Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion?	Basis for change	Conclusion on for LSE and outcome
		Common tern	Collision during breeding season Indirect: impacts on prey	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Common tern	Disturbance/displacement Barrier	No LSE	No LSE	No change	N/A	No LSE. No AA required.
		Ruff	Migration - Collision risk (alone and in-combination)	No LSE	Potential LSE	Yes – new pathway	On advice from Natural England regarding the features of this site (#16) and in relation to collision risk on migration (e.g. #40)	Potential LSE. AA required
Construction	Duncton to Bignor Escarpment SAC	Beech forests <i>Asperulo-Fagetum</i>	Hydrology Pollution events Emissions to air INNS Land take/ cover change	No LSE	No LSE	No change	N/A	No LSE. No AA required.
Operation	Duncton to Bignor Escarpment SAC	Beech forests <i>Asperulo-Fagetum</i>	Hydrology Pollution events Emissions to air INNS Land take/ cover change	No LSE	No LSE	No change	N/A	No LSE. No AA required.
Construction	Arun Valley (UK) SAC	Ramshorn snail	Changes in hydrology Pollution events Emissions to air INNS Land take /cover change Effects in-combination	No LSE	No LSE	No change	N/A	No LSE. No AA required.
Operation	Arun Valley (UK) SAC	Ramshorn snail	Changes in hydrology Pollution events Emissions to air INNS Land take /cover change Effects in-combination	No LSE	No LSE	No change	N/A	No LSE. No AA required.

### 3. Migratory fish

Table B-3 European sites designated for migratory fish considered during the updated Screening exercise for Rampion 2 (February 2021)

European sites considered			IN/OUT
1	River Itchen SAC	Atlantic Salmon Potential for LSE	IN
2	Littoral Cauchois (FR) SAC	Sea lamprey, River lamprey No Potential for LSE	OUT

Table B-4 Migratory fish: full account of Screening updates

Designated site name		Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion?	Basis for change	Conclusion on for LSE and outcome
Construction	River Itchen SAC	Atlantic Salmon	Underwater noise	Potential LSE	Potential LSE	No change	NA	Potential LSE. AA required
			Suspended sediment/ deposition Effects on prey Pollution Physical disturbance Barriers	No LSE	No LSE	No change	N/A	No LSE. No AA required.
Operation	River Itchen SAC	Atlantic Salmon	Underwater noise Suspended sediment/ deposition Effects on prey Pollution Physical disturbance Barriers EMF	No LSE	No LSE	No change	N/A	No LSE. No AA required.
Construction	Littoral Cauchois (FR) SAC	Sea lamprey River lamprey	Underwater noise Suspended sediment/ deposition Effects on prey Pollution Physical disturbance Barriers EMF	No LSE	No LSE	No change	N/A	No LSE. No AA required.
Operation			Underwater noise Suspended sediment/ deposition Effects on prey Pollution Physical disturbance Barriers EMF	No LSE	No LSE	No change	N/A	No LSE. No AA required.

## 4. Marine mammals

### 4.1 Grey seal

Table B-5 European sites for grey seal considered in Screening updates

European sites considered	Finding	IN/OUT
On the application of Seal Management Unit (South England – Unit 10) to the site identification process (SCOS, 2016)*.	No sites identified	OUT
On the application of Seal Management Unit (MU 9 – South East England) to the site identification process (SCOS, 2016).	No sites identified	OUT
Consideration of connectivity with Humber Estuary SAC	No connectivity established	OUT

\*Prompted by comment #18 (see **Appendix A** to the draft RIAA)

### 4.2 Harbour seal

Table B-6 European sites for harbour seal considered in Screening updates

European sites considered	Finding	IN/OUT
On the application of Seal Management Unit (South England – Unit 10) to the site identification process (SCOS, 2016)*.	No sites identified	OUT
On the application of Seal Management Unit (MU 9 – South East England) to the site identification process (SCOS, 2016)*.	No sites identified	OUT
Consideration of connectivity with The Wash and North Norfolk SAC	No connectivity established	OUT

\*Prompted by comment #18 (see **Appendix A** to the draft RIAA)

## 4.3 Harbour porpoise

Table B-7 Harbour porpoise: European sites considered in Screening

No.	European site considered (FR - France, BE - Belgium, NL - Netherlands, DE - Denmark)	Finding	IN/OUT
1	Southern North Sea SAC UK (UK)	No Potential for LSE	OUT
2	Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire (FR)	No Potential for LSE	OUT
3	Recifs Griz-Nez Blanc-Nez SAC (FR)	No Potential for LSE	OUT
4	Baie de Canche et Couloir des trois estuaries SAC (FR)	No Potential for LSE	OUT
5	Baie de Seine occidentale SAC (FR)	No Potential for LSE	OUT
6	Baie de Seine orientale SAC (FR)	No Potential for LSE	OUT
7	Bancs de Flandres SAC/SCI (FR)	No Potential for LSE	OUT
8	Vlaamse Banken SAC (BE)	No Potential for LSE	OUT
9	SBZ 1 / ZPS 1 (BE)	No Potential for LSE	OUT
10	SBZ 2 / ZPS 2 (BE)	No Potential for LSE	OUT
11	SBZ 3 / ZPS 3 (BE)	No Potential for LSE	OUT
12	Vlakte van de Raan SAC (BE)	No Potential for LSE	OUT
13	Noordzeekustzone SAC (NL)	No Potential for LSE	OUT

No.	European site considered (FR - France, BE - Belgium, NL - Netherlands, DE - Denmark)	Finding	IN/OUT
14	Klaverbank SAC (NL)	No Potential for LSE	OUT
15	Doggerbank SAC (UK)	No Potential for LSE	OUT
16	Doggersbank SAC (NL)	No Potential for LSE	OUT
17	Borkum-Riffgrund SCI (DE)	No Potential for LSE	OUT
18	Nationalpark Niedersächsisches Wattenmeer SAC (DE)	No Potential for LSE	OUT
19	Sylter Aussenriff SCI (DE)	No Potential for LSE	OUT
20	Helgoland mit Helgoländer Felssockel SAC (DE)	No Potential for LSE	OUT
21	Steingrund SAC (DE)	No Potential for LSE	OUT
22	Hamburgisches Wattenmeer SAC (DE)	No Potential for LSE	OUT
23	NTP S-H Wattenmeer und angrenzende Küstengebiete SAC (DE)	No Potential for LSE	OUT
24	Kosterfjorden-Väderöfjorden SAC (DE)	No Potential for LSE	OUT

\*All 24 sites within North Sea Species Management Unit ((Inter-Agency Marine Mammal Working Group (IAMMWG, 2015).



## 4.4 Bottlenose dolphin

Table B-8 Bottlenose dolphin: European sites considered in Screening

No.	European site considered (FR - France)	Finding	IN/OUT
1	Falaises du Cran aux Oeufs du Cap Gris-Nez, Marais de Tardingenhen et Dunes de Wissan SAC (FR)	No Potential for LSE	OUT
2	Récifs et landes de la Hague SAC/SCI (FR)	No Potential for LSE	OUT
3	Baie de Seine orientale SAC (FR)	No Potential for LSE	OUT
4	Anse de Vauville (FR) SAC/SCI (FR)	No Potential for LSE	OUT
5	Banc et récifs de Surtainville SAC (FR)	No Potential for LSE	OUT
6	Chausey SAC (FR)	No Potential for LSE	OUT
7	Nord Bretagne DH SAC/SCI (FR)	No Potential for LSE	OUT
8	Cap d'Erquy-Cap Fréhel SAC (FR)	No Potential for LSE	OUT
9	Côte de Cancale à Paramé SAC (FR)	No Potential for LSE	OUT

No.	European site considered (FR - France)	Finding	IN/OUT
10	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (FR)	No Potential for LSE	OUT
11	Côte de Granit rose-Sept-Iles SAC (FR)	No Potential for LSE	
12	Abers - Côtes des légendes SAC (FR)	No Potential for LSE	
13	Ouessant-Molène SAC/ SCI (FR)	No Potential for LSE	
14	Chaussée de Sein SAC (FR)		
15	Mers Celtiques - Talus du golfe de Gascogne SAC (FR)	No Potential for LSE	

\*All 15 sites designated for bottlenose dolphin within Offshore Channel, Celtic Sea and South West England SMU (IAMMWG, 2015).

Table B-9 Cetaceans: full account of Screening updates

	Designated site name	Relevant feature(s)*	Pathway	Conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on for LSE
Construction	Southern North Sea (UK) SAC	Harbour porpoise	Underwater noise Vessel disturbance Collision risk Effects on prey Pollution Suspended sediment	No LSE given the distance of the site from the array (>127km)	No LSE	No change	N/A	No LSE. No AA required
O&M	(UK0030395)		As above, and also EMF	No LSE	No LSE	No change	N/A	No LSE. No AA required
	Plus, the additional 23 sites listed in the harbour porpoise overview above		European sites were identified for Screening through the application of the relevant SMU. This identified 24 sites for harbour porpoise and 15 for bottlenose dolphin. These European sites were considered for potential LSE with respect to the effects listed above for the construction and O&M phases. All SACs considered for marine mammals (including transboundary sites) are at least 101km from the Proposed Development. . Most SACs within the relevant MUs are considerably more distant. Given the dissipation of potential effects over distance (and weak connectivity), and after apportionment there is considered to be no potential for the Proposed Development to contribute to measurable effects on any of these sites, either alone or in-combination.			No change	N/A	No LSE. No AA required
	Plus, the 15 European sites for bottlenose dolphin listed above in the bottlenose dolphin overview					No change	N/A	

## 5. Benthic habitats and communities

Table B-10 European sites for benthic habitats and communities considered during Screening updates (Feb 2021)

No.	European sites	Feature	Finding	IN/OUT
1	Solent Maritime (UK) SAC (UK0030059)	Estuarine habitats	Potential for LSE	IN
2	South Wight Maritime (UK) SAC (UK0030061)	Reefs, Submerged/partially submerged sea caves	Potential for LSE	IN
3	Solent and Isle of Wight lagoons SAC (UK) (UK0017073)	Coastal lagoons	Potential for LSE	IN

Table B-11 Benthic: full account of Screening updates

*\*On Natural England's advice regarding mitigation – see comments #24-26 OF Appendix A of the draft RIAA*

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion?	Basis for change	Conclusion on LSE and outcome
Construction	Solent Maritime (UK) SAC (UK0030059) (15.7km to Array)	Estuaries Spartina swards Atlantic salt meadows Sandbanks <sup>1</sup> Mudflats and sandflats <sup>2</sup> Coastal lagoons Salicornia <sup>3</sup>	SS deposition INNS (intro/spread)	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
			Pollution	No LSE	Potential LSE	Yes – new pathway	On Natural England advice*	Potential LSE. AA required
			Habitat loss /disturbance	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	Solent Maritime (UK) SAC (UK0030059) (15.7km to Array)	All features, as above	SS deposition INNS (hard substrate) Pollution	No LSE	Potential LSE	Yes – 3 new pathways	On Natural England advice*	Potential LSE. AA required
			Physical processes	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required

<sup>1</sup> slightly covered by sea water all the time

<sup>2</sup> not covered by seawater

<sup>3</sup> and other annuals colonizing mud/ sand

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion?	Basis for change	Conclusion on LSE and outcome
Construction	South Wight Maritime SAC (UK)	(UK0017073)z	SS and deposition INNS (intro/spread)	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
	(UK0030061)		Pollution	No LSE	Potential LSE	Yes – new pathway	On Natural England advice*	Potential LSE. AA required
	20.5 km to Array		Physical habitat loss and disturbance	No LSE	No LSE	No change	N/A	No LSE. No AA required
			SS and deposition INNS (intro/spread)	Potential LSE	No LSE	Pathways removed	Mis-reported	No LSE. No AA required
Operation	South Wight Maritime SAC (UK)	Reefs	SS and deposition INNS (hard substrate)	No LSE	Potential LSE	Yes – new pathways	On Natural England advice*	Potential LSE. AA required
	(UK0030061)	Submerged or partially submerged sea caves	Pollution	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
	20.5 km to Array	Vegetated sea cliffs	Physical processes	Potential LSE	No LSE	Pathways removed	Mis-reported	No LSE. No AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion?	Basis for change	Conclusion on LSE and outcome
Construction	Solent and Isle of Wight lagoons SAC (UK) (UK0017073) 30.0 km to Array	Costal lagoons* priority feature	SS and deposition INNS (intro/spread)	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
			Pollution	No LSE	Potential LSE	Yes – new pathway	On Natural England advice*	Potential LSE. AA required
			Physical habitat loss and disturbance	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	Solent and Isle of Wight lagoons SAC (UK) (UK0017073) 30.0 km to Array	Costal lagoons* priority feature	SS and deposition INNS (hard substrate) Pollution	No LSE	Potential LSE	Yes – new pathways	On Natural England advice*	Potential LSE. AA required
			Physical processes	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required



## 6. Offshore ornithology

6.1.1 For all sites at risk of LSE, all potential pathways to effect are set out in the full account of Screening below. Where no LSE is recorded here, the site will only feature in the full account of Screening if that finding is materially different from the one initially reported (the 'number cell' of these sites is coloured turquoise)

Table B-12 Offshore ornithology: European sites considered during updates

	European sites considered for LSE at Screening	Relevant feature	Finding	IN/OUT
1	Ailsa Craig (UK) SPA	Gannet	No Potential for LSE	OUT
2	Alde-Ore Estuary (UK) Ramsar	Lesser black-backed gull	Potential LSEI	IN
3	Alde-Ore Estuary (UK) SPA	Sandwich tern, Lesser black-backed gull	Potential LSEI	IN
4	Alderney West Coast & Burhou Islands (GG) Ramsar	Gannet	Potential LSE	IN
5	Auskerry (UK) SPA	European storm petrel, Arctic tern	No potential for LSE	OUT
6	Blasket Island (IE) SPA	Manx shearwater	No potential for LSE	OUT
7	Breydon Water (UK) SPA	Common tern	Potential LSEI	IN
8	Breydon Water (UK) Ramsar	Common tern	Potential LSEI	IN
9	Buchan Ness to Collieston Coast (UK) SPA	Fulmar, Herring gull, Kittiwake, Guillemot	No potential for LSE	OUT
10	Caithness and Sutherland Peatlands (UK) SPA	Red-throated diver	No potential for LSE	OUT
11	Caithness and Sutherland Peatlands (UK) d Ramsar	Red-throated diver	No potential for LSE	OUT
12	Calf of Eday (UK) SPA	Great black-backed gull, Fulmar, Kittiwake, Guillemot	No potential for LSE	OUT

	European sites considered for LSE at Screening	Relevant feature	Finding	IN/OUT
13	Camaret (FR) SPA	Fulmar	No potential for LSE	OUT
14	Cap d'Erquy-Cap Fréhel (FR) SPA	Fulmar	No potential for LSE	OUT
15	Cap Sizun (FR) SPA	Manx shearwater, Fulmar	No potential for LSE	OUT
16	Chausey (FR) SPA	Gannet	No potential for LSE	OUT
17	Chichester and Langstone Harbours (UK) Ramsar	Bar-tailed godwit, Dark-bellied B goose, Dunlin, Grey plover, Pintail, Red-b. merganser, Redshank, Ringed plover, Sanderling, Shelduck, Shoveler, Teal, Turnstone, Wigeon, Waterbird assemblage, Sandwich tern, Common tern	Potential LSE	IN
18	Chichester and Langstone Harbours (UK) SPA	Ringed plover, Black-tailed godwit, Redshank, Dark-bellied B goose, Shelduck, Grey plover, Dunlin, Waterbird assemblage, Sandwich tern, Common tern	Potential LSE	IN
19	Copeland Islands (UK) SPA	Manx shearwater, Arctic tern	No potential for LSE	OUT
20	Copinsay (UK) SPA	Great black-backed gull,	No potential for LSE	OUT

	European sites considered for LSE at Screening	Relevant feature	Finding	IN/OUT
		Fulmar, Kittiwake, Guillemot		
21	Coquet Island (UK) SPA	Sandwich tern, Arctic tern, Common tern, Herring gull, Lesser black-backed gull, Kittiwake	Potential LSEI	IN
22	Côte de Granit Rose-Sept Iles (FR) SPA	Gannet	Potential LSE	IN
23	Cromarty Firth (UK) SPA	Common tern	No potential for LSE	OUT
24	Cromarty Firth (UK) Ramsar	Common tern	No potential for LSE	OUT
25	Cruagh Island (IE) SPA	Manx shearwater	No potential for LSE	OUT
26	Deenish Island and Scariff Island (IE) SPA	Manx shearwater	No potential for LSE	OUT
27	Dungeness, Romney Marsh and Rye Bay (UK) SPA	Sandwich tern, Common tern	Potential LSE	IN
28	East Caithness Cliffs (UK) SPA	Great black-backed gull, Fulmar, Herring gull, Kittiwake, Guillemot, Razorbill	No potential for LSE	OUT
29	Fair Isle (UK) SPA	Kittiwake, Guillemot, Razorbill, Fulmar, Gannet, Arctic tern	No potential for LSE	OUT
30	Falaise du Bessin Occidental (FR) SPA	Kittiwake	Potential LSE	IN
31	Farne Islands (UK) SPA	Kittiwake, Common tern, Arctic tern, Sandwich tern	Potential LSEI	IN

	European sites considered for LSE at Screening	Relevant feature	Finding	IN/OUT
32	Fetlar (UK) SPA	Fulmar, Arctic tern	No Potential for LSE	OUT
33	Flamborough & Filey Coast (UK) SPA	Guillemot, Razorbill, Kittiwake, herring gull, gannet	Potential LSEI	IN
34	Foula (UK) SPA	Red-throated diver, Arctic tern, Kittiwake, Razorbill, Guillemot, Fulmar, Leach's storm petrel	No potential for LSE	OUT
35	Foulness (Mid-Essex Coast Phase 5 SPA	Kittiwake, Common tern, Arctic tern, Sandwich tern	Potential LSEI	IN
36	Fowlsheugh (UK) SPA	Fulmar, Herring gull, Kittiwake, Guillemot Razorbill	No potential for LSE	OUT
37	Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island (UK) SPA	Manx shearwater	No potential for LSE	OUT
38	Grassholm (UK) SPA	Gannet	Potential LSE	IN
39	Greater Wash (UK) SPA	Common tern, Sandwich tern	Potential LSEI	IN
40	Hermaness, Saxa Vord and Valla Field (UK) SPA	Kittiwake, Guillemot, Fulmar, Gannet	No potential for LSE	OUT
41	Hoy (UK) SPA	Fulmar, Kittiwake, Guillemot	No potential for LSE	OUT
42	Iles Houat-Hoëdic (FR) SPA	Manx shearwater	No potential for LSE	OUT
43	Imperial Dock Lock, Leith (UK) SPA	Common tern	No potential for LSE	OUT

	European sites considered for LSE at Screening	Relevant feature	Finding	IN/OUT
44	Inner Moray Firth (UK) SPA	Common tern	No potential for LSE	OUT
45	Inner Moray Firth (UK) Ramsar	Common tern	No potential for LSE	OUT
46	Isles of Scilly (UK) SPA	Manx shearwater, Fulmar	No potential for LSE	OUT
47	Isles of Scilly (UK) Ramsar	Manx shearwater, Fulmar	No potential for LSE	OUT
48	Littoral seino-marin (FR) SPA	Lesser black-backed gull, Kittiwake	Potential LSE	IN
49	Loch of Strathbeg (UK) SPA	Sandwich tern	No potential for LSE	OUT
50	Loch of Strathbeg (Ramsar)	Sandwich tern	No potential for LSE	OUT
51	Marwick Head (UK) SPA	Kittiwake, Guillemot	No potential for LSE	OUT
52	Medway Estuary & Marshes (UK) SPA	Common tern	Potential LSEI	IN
53	Medway Estuary & Marshes Ramsar	Common tern	Potential LSEI	IN
54	Mousa (UK) SPA	European storm petrel , Arctic tern	No potential for LSE	OUT
55	North Norfolk Coast (UK) Ramsar	Sandwich tern, Common tern	Potential LSEI	IN
56	North Norfolk Coast (UK) SPA	Sandwich tern, Common tern	Potential LSEI	IN
57	North Rona and Sula Sgeir (UK) SPA	Gannet	No potential for LSE	OUT
58	Northumberland Marine (UK) SPA	Arctic tern, Sandwich tern, Common tern, Kittiwake, Guillemot	Potential for LSE	OUT

	European sites considered for LSE at Screening	Relevant feature	Finding	IN/OUT
59	Northumbria Coast (UK) Ramsar	Arctic tern	Potential LSE	IN
60	Northumbria Coast SPA	Arctic tern	Potential LSE	IN
61	Noss (UK) SPA	Fulmar, Gannet, Kittiwake, Guillemot	No potential for LSE	OUT
62	Orkney Mainland Moors (UK) SPA	Red-throated diver	No potential for LSE	OUT
63	Otterswick and Graveland (UK) SPA	Red-throated diver	No potential for LSE	OUT
64	Ouessant-Molène (FR) SPA	Manx shearwater, Fulmar	No potential for LSE	OUT
65	Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA	Lesser black-backed gull, Gannet, Herring gull, Common tern, Arctic tern, Sandwich tern, Kittiwake, Guillemot, Razorbill, Manx shearwater	No potential for LSE	OUT
66	Outer Thames Estuary (UK) SPA	Common tern	No potential for LSE	OUT
67	Papa Stour (UK) SPA	Arctic tern	No potential for LSE	OUT
68	Papa Westray (North Hill and Holm) (UK) SPA	Arctic tern	No potential for LSE	OUT
69	Pentland Firth Islands (UK) SPA	Arctic tern	No potential for LSE	OUT
70	Portsmouth Harbour (UK) SPA	Black-tailed godwit, Dark-bellied brent goose, Dunlin, Red-breasted merganser	Potential LSE	IN

	European sites considered for LSE at Screening	Relevant feature	Finding	IN/OUT
71	Portsmouth Harbour (UK) Ramsar	Dark-bellied brent goose	Potential LSE	IN
72	Puffin Island (IE) SPA	Manx shearwater	No potential for LSE	OUT
73	Ramna Stacks and Gruney (UK) SPA	Leach's storm petrel	No potential for LSE	OUT
74	Ronas Hill - North Roe and Tingon (UK) SPA	Red-throated diver	No potential for LSE	OUT
75	Ronas Hill - North Roe and Tingon (UK) Ramsar	Red-throated diver	No potential for LSE	OUT
76	Rousay (UK) SPA	Fulmar, Kittiwake, Guillemot, Artic tern	No potential for LSE	OUT
77	Rum (UK) SPA	Manx shearwater	No potential for LSE	OUT
78	Skelligs (IE) SPA	Manx shearwater	No potential for LSE	OUT
79	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA	Manx shearwater, European storm petrel	No potential for LSE	OUT
80	Solent and Dorset Coast (UK) SPA	Common tern, Little tern, Sandwich tern	Potential LSE	IN
81	Solent and Southampton Water (UK) Ramsar	Ringed plover, Dark-bellied brent goose, Teal, Black-tailed godwit Waterbird assemblage	Potential LSE	IN
82	Solent and Southampton Water (UK) SPA	Black-tailed godwit, Dark-bellied, brent goose, Ringed	Potential LSE	IN



European sites considered for LSE at Screening		Relevant feature	Finding	IN/OUT
		plover, Teal, Waterbird assemblage Sandwich tern		
83	St Abb's Head to Fast Castle (UK) SPA	Kittiwake, Herring gull, Guillemot	No potential for LSE	OUT
84	St Kilda (UK) SPA	Manx shearwater	No potential for LSE	OUT
85	Sule Skerry and Sule Stack (UK) SPA	European storm petrel, Leache's storm petrel, Guillemot, Gannet	No potential for LSE	OUT
86	Sumburgh Head (UK) SPA	Fulmar, Kittiwake, Guillemot, Artic tern	No potential for LSE	OUT
87	The Wash Ramsar	Common tern	Potential LSEI	IN
88	The Wash (UK) SPA	Common tern	Potential LSEI	IN
89	Tips of Corsemaul and Tom Mor (UK) SPA	Common gull	No potential for LSE	OUT
90	Tregor Goëlo (FR) SPA	Fulmar	No potential for LSE	OUT
91	Troup, Pennan and Lion's Head (UK) SPA	Kittiwake, Herring gull, Fulmar, Guillemot	No potential for LSE	OUT
92	West Westray (UK) SPA	Fulmar, Kittiwake, Guillemot, Artic tern	No potential for LSE	OUT
93	Ythan Estuary, Sands of Forvie and Meikle Loch (UK) SPA	Sandwich tern Common tern	No potential for LSE	OUT

	European sites considered for LSE at Screening	Relevant feature	Finding	IN/OUT
94	Ythan Estuary, Sands of Forvie and Meikle Loch (UK) \Ramsar	Sandwich tern Common tern	No potential for LSE	OUT

Table B-13 Offshore ornithology: full account of Screening updates

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Construction	Dungeness, Romney Marsh Rye Bay SPA	Common tern	Prey availability & behaviour Disturbance / displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Sandwich tern	Prey availability & behaviour	No LSE	No LSE	No change	N/A	No LSE. No AA required
	36.1km to Array	Sandwich tern	Disturbance / displacement	No LSE	Potential LSE	Yes	The Applicant; reconsidered this finding in light of background advice.	Potential LSE. AA required
Operation	Dungeness, Romney Marsh Rye Bay SPA	Common tern	Indirect: impacts on prey Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Common tern	Collision risk non-breeding season	No LSE	Potential LSE	Yes – new pathway	On advice from Natural England in relation to collision risk of migration (e.g. #40)	Potential LSE. AA required
		Sandwich tern	Indirect: impacts on prey	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Sandwich tern	Collision risk breeding season Collision risk non-breeding season Disturbance/displacement	No LSE	Potential LSE	Yes – new pathways	On advice from Natural England in relation to collision risk of migration (e.g. #40)	Potential LSE. AA required
		Waterbird assemblage- Non-breeding: Including Bewick's swan, bittern, hen harrier, golden plover, ruff, aquatic warbler, shoveler, European white-fronted goose, wigeon, gadwall, pochard, little grebe, great crested grebe, cormorant, coot, sanderling, whimbrel and common sandpiper.	Collision risk prey availability and behaviour Indirect impacts through the effects on prey species Barrier effect Disturbance/displacement In-combination effects	No LSE	No LSE	Site updates	Species list amended on advice from Natural England (see comment #58\0 to account for waterbird assemblage	No LSE. No AA required
Cons		Common tern Little tern	Prey availability & behaviour	Potential LSE	Potential LSE	Minor update	Ruff not listed as a feature	Potential LSE. AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
	Solent and Dorset Coast (UK) pSPA	Sandwich tern	Disturbance / displacement	No LSE	Potential LSE	Yes	The Applicant; reconsidered this finding in light of background advice	Potential LSE. AA required
Operation		Common tern	Collision risk	Potential LSE	No LSE	Pathway removed	As SPA is designated for foraging birds from nearby breeding colonies, Screening has been updated to discount collision for common terns. Breeding SPAs have been considered for these impacts.	No LSE. No AA required
		Common tern Little tern Sandwich tern	Indirect: impacts on prey	Potential LSE	Potential LSE	No change		Potential LSE. AA required
	Solent and Dorset Coast (UK) pSPA	Sandwich tern	Disturbance / displacement	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
	0.63km from Offshore cable corridor	Sandwich tern	Barrier effect Collision risk	Potential LSE	No LSE	Updates	As SPA is designated for foraging birds from nearby breeding colonies, Screening has been updated to discount collision and barrier effects for sandwich terns. Breeding SPAs have been considered for these impacts.	No LSE. No AA required
		Little tern	Collision risk	No LSE	No LSE	No change		No LSE. No AA required
Construction	Chichester and Langstone Harbours SPA	Common tern	Prey availability & behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
	15.6km from Offshore cable corridor							
Operation	Chichester and	Common tern	Collision risk	No LSE	Potential LSE	Yes – new pathway	N/A	Potential LSE. AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
	Langstone Harbours SPA		Indirect: impacts on prey Barrier Disturbance /displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
	22.3 km to array		Collision risk Barrier Disturbance /displacement	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Sandwich tern	Indirect: impacts on prey	Potential LSE	No LSE	Yes – pathway removed	The Applicant; reconsidered this finding in light of developing information about the Proposed Development.	No LSE. No AA required
		Bar-tailed godwit Curlew DBB goose Dunlin Grey plover Pintail Red-breasted. merganser Redshank Ringed plover Sanderling Shelduck Shoveler Teal Turnstone Wigeon Waterbird assemblage	Collision risk	No LSE	Potential LSE	Yes – new pathway	Natural England comment #67 regarding inclusion of wintering waterbird assemblage.  Also, with reference to Natural England's advice on the approach to Screening migratory non-seabirds. see Comment #40	Potential LSE. AA required
		supporting (intertidal) habitat within potential range of a project-related effect	SS deposition					
Construction	Chichester and Langstone Harbours Ramsar	Common tern Sandwich tern	Prey availability & behaviour Disturbance/displacement	No LSE	No LSE	Yes - Pathways excluded	Common tern is listed as noteworthy fauna of the Ramsar and therefore, not considered to be a listed feature. Sandwich tern is not listed on the citation. These pathways	No LSE. No AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Operation	Chichester and Langstone Harbours Ramsar	Common tern	Collision risk	No LSE	No LSE	Yes - Pathways excluded	were identified in error and have been excluded. Species list amended	No LSE. No AA required
		Common tern	Indirect: impacts on prey Barrier Disturbance /displacement	No LSE	No LSE	Yes - Pathways excluded		No LSE. No AA required
		Sandwich tern	Collision risk Barrier Disturbance /displacement	Potential LSE	No LSE	Yes - Pathways excluded		No LSE. No AA required
		Sandwich tern	Indirect: impacts on prey	No LSE	No LSE	Yes - Pathways excluded		No LSE. No AA required
		Ringed plover Black-tailed godwit Redshank Dark-bellied Brent goose Shelduck Grey plover Dunlin Waterbird assemblage	Collison risk on migration	No LSE	Potential LSE	Yes – new pathways identified	Species list amended in response to comment #56 regarding non-breeding features.	Potential LSE. AA required
Construct ion	Solent and Southampton Water SPA	Sandwich tern	Prey availability & behaviour Disturbance/displacement	No LSE	No LSE	Minor updates	Species list updated - matrices based on the information provided via the JNCC Ramsar Site information portal	No LSE. No AA required
Operation	Solent and Southampton Water (UK) SPA	Sandwich tern	Collision risk Barrier effect Disturbance/displacement	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Black-tailed godwit Dark-bellied brent goose Ringed plover Teal Waterbird assemblage	Collison risk on migration	No LSE	Potential LSE	Yes – new pathways identified	Species list amended in response to comment #57 regarding non-breeding features and assemblage.	Potential LSE. AA required
Constr uction	Solent and Southampton Water (UK) Ramsar	Sandwich tern	Prey availability & behaviour Disturbance/displacement	No LSE	No LSE	No change	Sandwich tern is listed as noteworthy fauna on the Ramsar citation and is	No LSE. No AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Operation	Solent and Southampton Water (UK) Ramsar	Sandwich tern	Collision risk Disturbance/displacement Barrier	Potential LSE	No LSE	No change	therefore not considered as a feature. These	No LSE. No AA required
		Ringed plover Dark-bellied brent goose Teal Black-tailed godwit Waterbird assemblage	Collison risk on migration	No LSE	Potential LSE	New pathway	Species list amended in response to comment #57 regarding non-breeding features and assemblage.	Potential LSE. AA required
Operation	Portsmouth Harbour (UK) SPA	Black-tailed godwit Dark-bellied brent goose Dunlin Red-breasted merganser	Collison risk on migration	No LSE	Potential LSE	New site	Included at Stage 2 on Natural England's advice and due to revised approach to Screening migratory non-seabirds.	Potential LSE. AA required
	Portsmouth Harbour Ramsar	Dark-bellied brent goose	Collison risk on migration	No LSE	Potential LSE	New site	Included at Stage 2 on Natural England's advice and due to revised approach to Screening migratory non-seabirds.	Potential LSE. AA required
Construction	Medway Estuary & Marshes SPA 91.5km to Array	Common tern	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	Minor update	Species list amended. Waterbird Assemblage has been reviewed and updated for the site screening matrix.	No LSE. No AA required
Operation	Medway Estuary & Marshes SPA	Common tern	Prey availability and behaviour Indirect: Impacts on prey Barrier Disturbance/displacement	No LSE	No LSE	No change	The Applicant confirms in response to comment ~#53 that no LSE is identified for disturbance.	No LSE. No AA required
		Common tern	Collision risk alone	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Common tern	In-combination collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required



	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Construction	Littoral seino-marine (FR) SPA	Fulmar Lesser black-backed gull Great black-backed gull Kittiwake	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
	72.2km to Array							
Operation	Littoral seino-marine (FR) SPA	Fulmar Kittiwake	Collision during breeding season (alone)	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Fulmar Kittiwake Lesser Black backed gull Great black backed gull	Indirect: Impacts on prey Barrier Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Construction	Foulness (Mid-Essex Coast) SPA	Common tern Sandwich tern	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	Foulness (Mid-Essex Coast Phase 5) SPA	Common tern Sandwich tern	Collision risk Indirect: Impacts on prey Barrier effects Disturbance/displacement	No LSE	No LSE	Minor update	Species list amended	No LSE. No AA required
			Collision during breeding non-season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
			In-combination collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
Construction	Falaise du Bessin Occidental SPA	Fulmar Kittiwake	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	Falaise du Bessin Occidental SPA	Fulmar Kittiwake	Indirect: Impacts on prey Barrier effects Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Fulmar	Collision risk	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Kittiwake	Collision during breeding season	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Construction	Alde-Ore Estuary (UK) SPA	Sandwich tern Lesser black-backed gull	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Lesser black-backed gull Sandwich tern	Indirect: Impacts on prey Barrier effects Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	Alde-Ore Estuary (UK) SPA	Sandwich tern Lesser black-backed gull	Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Lesser black-backed gull	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
		Sandwich tern	In combination - collision risk	No LSE	Potential LSEI	Yes	Included at Stage 2 on Natural England's advice and due to revised approach to Screening migratory non-seabirds.	Potential LSEI. AA required
Construction	Alde-Ore Estuary (UK) Ramsar	Lesser black-backed gull	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	Minor updates	Species list amended	No LSE. No AA required
	Alde-Ore Estuary (UK) Ramsar	Sandwich tern	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	Minor updates – feature removed	Sandwich tern is listed as noteworthy fauna on the Ramsar citation and therefore not considered as a listed feature.	No LSE. No AA required
Operation	Alde-Ore Estuary (UK) Ramsar	Lesser black-backed gull	Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Lesser black-backed gull Sandwich tern	Indirect: Impacts on prey Barrier effects Disturbance/displacement	No LSE	No LSE	Minor updates	Feature removed from Matrix	No LSE. No AA required
		Lesser black-backed gull	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSE. AA required
Construction	The Wash SPA	Common tern	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Operation	The Wash SPA	Common tern	Indirect: Impacts on prey Barrier effects Disturbance/displacement Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	The Wash SPA	Common tern	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
Construction	Breydon Water SPA	Common tern	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	Breydon Water SPA	Common tern	Indirect: Impacts on prey Barrier effects Disturbance/displacement Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Common tern	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
Construction	Greater Wash SPA	Common tern Sandwich tern	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	Greater Wash SPA	Common tern Sandwich tern	Indirect: Impacts on prey Barrier effects Disturbance/displacement Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Common tern Sandwich tern	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSE. AA required
Construction	North Norfolk Coast SPA	Common tern Sandwich tern	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Operation	North Norfolk Coast SPA	Common tern Sandwich tern	Indirect: Impacts on prey Barrier effects Disturbance/displacement Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Common tern Sandwich tern	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
Construction	North Norfolk Coast Ramsar	Common tern Sandwich tern	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	North Norfolk Coast Ramsar	Common tern Sandwich tern	Indirect: Impacts on prey Barrier effects Disturbance/displacement Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Common tern Sandwich tern	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
Construction	Côte de Granit Rose-Sept Iles SPA	Manx shearwater Fulmar European storm petrel	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Gannet	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Operation	Côte de Granit Rose-Sept Iles SPA	Gannet	Collision risk Disturbance/displacement	Potential LSE	Potential LSE	No change	N/A	Potential LSEI. AA required
		Manx shearwater Fulmar European storm petrel	Indirect: Impacts on prey Barrier effects Disturbance/displacement Collision risk	No LSE	No LSE	No change	N/A	No LSE. No AA required
Construction	Alderney West Coast & Burhou Islands Ramsar	Gannet	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Operation	Alderney West Coast & Burhou Islands Ramsar	Gannet	Disturbance/displacement	No LSE	Potential LSE	Yes	The Applicant believes this pathway should have been identified at the outset.	Potential LSEI. AA required
		Gannet	Collison risk	Potential LSE	Potential LSE	No change	N/A	Potential LSEI. AA required
		Fulmar Gannet	Indirect: Impacts on prey Barrier effects Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Construction	Grassholm SPA	Gannet	Prey availability and behaviour Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Both phases	Grassholm SPA	Gannet	Disturbance/displacement Collison risk on migration	Potential LSE	Potential LSE	No change	N/A	Potential LSE. AA required
		Gannet	Indirect: Impacts on prey Barrier effects Disturbance/displacement	No LSE	No LSE	No change	N/A	No LSE. No AA required
Construction	Flamborough and Filey Coast SPA	Guillemot Razorbill	Disturbance/displacement alone	No LSE	No LSE	No change	N/A	No LSE. No AA required
			In-combination - disturbance/displacement	Potential LSEI	Potential LSEI	No change	N/A	Potential LSE. AA required
Operation	Flamborough & Filey Coast SPA	Guillemot Razorbill	Disturbance/displacement alone	No LSE	No LSE	No change	N/A	No LSE. No AA required
			In-combination - disturbance/displacement	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
		Kittiwake Herring gull	Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
			In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
		Gannet	Disturbance/displacement (B) Collision during breeding season	Potential LSE	Potential LSE	No change	N/A	Potential LSEI. AA required
Open	Northumbria Coast SPA	Arctic tern	Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required

	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Operation	Northumbria Coast Ramsar	Arctic tern	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
		Arctic tern	Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Arctic tern	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
Operation	Coquet Island SPA	Sandwich tern	Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Arctic tern Common tern Herring gull Lesser black-backed gull Kittiwake	In combination - collision risk	Potential LSEI	Potential LSEI	No change	N/A	Potential LSEI. AA required
Construction	Farne Islands SPA	Guillemot	Collision	Potential LSE	No LSE	Removed pathway	This species is not vulnerable to collision risk.	No LSE. No AA required
			Disturbance/displacement alone	No LSE	No LSE	No change	N/A	No LSE. No AA required
			In-combination - disturbance/displacement	Potential LSEI	Potential LSEI	No change	N/A	Potential LSE. AA required
Operation	Farne Islands SPA	Common tern	Collision during non-breeding season (alone)	No LSE	No LSE	No change	N/A	No LSE. No AA required
		Arctic tern Sandwich tern Kittiwake	In combination - collision risk	Potential LSEI	Potential LSEI	Update to summary table	To address confusion over these conclusions as reported in table 7.2 of the Screening report	Potential LSEI. AA required
Operation	Breydon Water (UK) Ramsar	Common tern	In combination - collision risk	Potential LSEI	No LSE	Yes – removal of pathway and stie	Common tern is a “noteworthy species” at this site, but not a listed feature. The HRA will therefore not progress the assessment of this pathway.	No LSE. No AA required



	Designated site name	Relevant feature(s)*	Pathway	Screening conclusion Sept. 2020	Current Screening conclusion	Material change to conclusion	Basis for change	Conclusion on LSE and outcome
Operation	Medway Estuary & Marshes Ramsar	Common tern	In combination - collision risk	Potential LSEI	No LSE	Yes – removal of pathway and stie	Common tern is a “noteworthy species” at this site, but not a listed feature. The HRA will therefore not progress the assessment of this pathway.	No LSE. No AA required
Operation	The Wash Ramsar	Common tern	In combination - collision risk	Potential LSEI	No LSE	Yes – removal of pathway and stie	Common tern is a “noteworthy species” at this site, but not a listed feature. The HRA will therefore not progress the assessment of this pathway.	No LSE. No AA required
Operation	Northumberland Marine (UK) SPA	Sandwich tern Common tern Arctic tern Guillemot Kittiwake	In combination - collision risk	Potential LSEI	No LSE	Yes – removal of pathway and stie	The Applicant will focus on the water/ foraging area around the breeding SPAs – these a have been considered elsewhere.	No LSE. No AA required



## Appendix C      Technical note: Screening migratory species

# 1. European site identification for migratory non-seabirds

This Technical Note provides an update to the Rampion 2 Habitats Regulations Assessment (HRA) Screening Report in response to comments received by Natural England during consultation regarding the consideration of migratory non-seabird species. The comment is as follows:

*The screening matrices do not acknowledge the potential pathway for impact from collision risk to migratory waterbirds. It would be helpful if the collision risk were added and the reasoning why this has been ruled out for waterbirds when on migration.*

## 1.1 Background

- 1.1.1 In September 2020, the Applicant submitted a Habitats Regulations Assessment (HRA) Screening Report of European Designated Sites for Rampion 2, to relevant interested stakeholders<sup>1</sup>.
- 1.1.2 This report has been prepared by GoBe Consultants Ltd (GoBe) on behalf of RED to incorporate updates associated with the responses received from stakeholders with specific regard to ornithological aspects of the Screening Report. It is submitted for approval by the offshore ornithology Evidence Plan Expert Technical Group, with the anticipation that this document will form the basis for Stage 1 of the Rampion 2 HRA (with regards offshore ornithological features during the breeding season<sup>2</sup>).

## 1.2 Introduction

- 1.2.1 At this HRA Screening stage, collision risk modelling for migratory waterbirds has not been undertaken. Therefore, following the response from Natural England, and on precautionary basis, a number of SPA and Ramsar sites have been screened into stage two (the Appropriate Assessment) for further consideration with respect to potential collision effects using migratory pathways provided in Wright *et al.* (2012)<sup>3</sup>. It is important to note that some of the designated sites included below may have also been screened in under additional screening criteria for other

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<sup>1</sup> Including Statutory Nature Conservation Bodies, RSPB, Local Authorities, Wildlife Trust, and Regulators.

<sup>2</sup> As this is an update to incorporate a change in metric relevant only to breeding seabirds, other ornithological features are considered in alternative documents (Rampion 2 HRA Screening Report and Screening Update Migratory Non-seabirds).

<sup>3</sup> Wright, L.J., Ross-Smith, V.H., Austin, G.E., Massimino, D., Dadam, D., Cook, A.S.C.P., Calbrade, N.A. and Burton, N.H.K., 2012. Assessing the risk of offshore wind farm development to migratory birds designated as features of UK Special Protection Areas (and other Annex 1 species). BTO Research Report, 592.

potential impacts, within the HRA Screening Report. However, to ensure clarity, and additional impacts such as collision risk to species during migration have been considered, the sites have been included in this document.

- 1.2.2 This process focusses primarily on migratory waterbirds (i.e., wildfowl and waders). Tern and gull species of the associated designated sites presented below have been assessed for breeding season and non-breeding season connectivity as part of the offshore HRA Screening process presented elsewhere and are screened out of this process.
- 1.2.3 SPA designated features have been determined from the Natural England Designated Sites portal, as directed by Natural England in their response to HRA Screening. Ramsar site designations have been identified from the JNCC Ramsar Site Portal. As per previous discussions with SNCBs during the consultation of other English offshore wind farm projects, Ramsar sites included in the below table include on species included under the appropriate Ramsar Criterion and will not include Noteworthy Fauna.
- 1.2.4 **Table C-1** below therefore provides an overview of the designated sites, relevant designated features and distance to the Rampion 2 PEIR Assessment Boundary.

Table C-1 Additional SPAs and Ramsar sites identified

Site Code	SPA/ Ramsar site <sup>4</sup>	Designated features (with those in BOLD screened into Stage 2)	Distance from array (km)	Potential impact
UK9012041	Pagham Harbour SPA	Common tern, <i>Sterna hirundo</i> - Breeding <b>Dark-bellied Brent goose, <i>Branta bernicla bernicla</i> – Wintering</b> Little tern, <i>Sterna albifrons</i> – Breeding <b>Ruff, <i>Philomachus pugnax</i> - Wintering</b>	15.3	Collision risk to features during migration
UK11052	Pagham Harbour Ramsar	<b>Dark-bellied Brent goose - Wintering</b>	15.3	Collision risk to features during migration
UK9011011	Chichester and Langstone Harbours SPA	<b>Bar-tailed godwit, <i>Limosa lapponica</i> - Wintering</b> Common tern, <i>Sterna hirundo</i> - Breeding <b>Curlew, <i>Numenius arquata</i> – Wintering</b> <b>Dark-bellied Brent goose – Wintering</b> <b>Dunlin, <i>Calidris alpina alpina</i> - Wintering</b> <b>Grey plover, <i>Pluvialis squatarola</i> - Wintering</b> Little tern - Breeding <b>Pintail, <i>Anas acuta</i> - Wintering</b> <b>Red-breasted merganser, <i>Mergus serrator</i> - Wintering</b> <b>Redshank, <i>Tringa totanus</i> - Wintering</b> <b>Ringed plover, <i>Charadrius hiaticula</i> - Wintering</b> <b>Sanderling, <i>Calidris alba</i> - Wintering</b> Sandwich tern, <i>Sterna sandvicensis</i> - Breeding <b>Shelduck, <i>Tadorna tadorna</i> - Wintering</b>	23.1	Collision risk to features during migration

<sup>4</sup> Note: A number of Ramsar sites linked to the SPAs identified by NRW have been included in this report.

Site Code	SPA/ Ramsar site <sup>4</sup>	Designated features (with those in BOLD screened into Stage 2)	Distance from array (km)	Potential impact
		<b>Shoveler, <i>Anas clypeata</i> - Wintering</b> <b>Teal, <i>Anas crecca</i> - Wintering</b> <b>Turnstone, <i>Arenaria interpres</i> - Wintering</b> <b>Wigeon, <i>Anas penelope</i> - Wintering</b> <b>Waterbird assemblage – Wintering</b>		
UK11013	Chichester and Langstone Harbours Ramsar	<b>Ringed plover - Passage</b> <b>Black-tailed godwit, <i>Limosa limosa</i> - Passage</b> <b>Redshank - Passage</b> <b>Dark-bellied Brent goose – Wintering</b> <b>Shelduck - Wintering</b> <b>Grey plover - Wintering</b> <b>Dunlin - Wintering</b> <b>Waterbird assemblage – Wintering</b> Little tern breeding - breeding	23.1	Collision risk to features during migration
UK9020330	Solent & Southampton Water SPA	<b>Black-tailed godwit - Wintering</b> Common tern – Breeding <b>Dark-bellied Brent goose - Wintering</b> Little tern - Breeding Mediterranean gull – Breeding <b>Ringed plover - Wintering</b> Roseate tern - Breeding Sandwich tern - Breeding <b>Teal – Non-breeding</b> <b>Waterbird assemblage – Wintering</b>	29.6	Collision risk to features during migration

Site Code	SPA/ Ramsar site <sup>4</sup>	Designated features (with those in BOLD screened into Stage 2)	Distance from array (km)	Potential impact
UK11063	Solent & Southampton Water Ramsar	<b>Ringer plover – Passage</b> <b>Dark-bellied Brent goose – Wintering</b> <b>Teal – Wintering</b> <b>Black-tailed godwit – Wintering</b> <b>Waterfowl assemblage - Wintering</b>	29.6	Collision risk to features during migration
UK9011051	Portsmouth Harbour SPA	<b>Black-tailed godwit - Wintering</b> <b>Dark-bellied Brent goose - Wintering</b> <b>Dunlin - Wintering</b> <b>Red-breasted merganser - Wintering</b>	36.1	Collision risk to features during migration
UK11055	Portsmouth Harbour Ramsar	<b>Dark-bellied Brent goose - Wintering</b>	36.1	Collision risk to features during migration

# Appendix D      Technical note: Screening breeding seabirds



# 1. European site identification for breeding seabirds

This note provides an update to the Rampion 2 Habitats Regulations Assessment (HRA) Screening Report in response to comments received by Natural England during consultation regarding the consideration of breeding seabird species.

## 1.1 Background

- 1.1.1 In September 2020, the Applicant submitted a Habitats Regulations Assessment (HRA) Screening Report of European Designated Sites for Rampion 2, to relevant interested stakeholders<sup>1</sup>.
- 1.1.2 This report has been prepared by GoBe Consultants Ltd (GoBe) on behalf of RED to incorporate updates associated with the responses received from stakeholders with specific regard to ornithological aspects of the Screening Report. It is submitted for approval by the offshore ornithology Evidence Plan Expert Technical Group, with the anticipation that this document will form the basis for Stage 1 of the Rampion 2 HRA (with regards offshore ornithological features during the breeding season<sup>2</sup>).
- 1.1.3 The Statutory Nature Conservation Bodies (SNCBs) have recommended use of species-specific mean maximum foraging range + 1 standard deviation (Mean Max +1SD), as presented in Woodward et al. (2019). This Technical Note therefore seeks to address the comments regarding mean-maximum foraging ranges for Criterion 2. An outline of methods and approaches are presented in these upfront sections, with a list of SPAs and Ramsar sites considered.

## 1.2 Introduction

- 1.2.1 The Rampion 2 HRA Screening Report used a series of criteria to identify impact pathways and screen SPAs and Ramsar sites into Stage 2 of the HRA process (the Appropriate Assessment). Criterion 2 focused on identifying potential connectivity between breeding seabird colonies at SPAs and Ramsar sites and Rampion 2. Foraging ranges presented in Woodward *et al.*, (2019) were used to identify those colonies within range of the Proposed Development, based on a multi-colony analysis of species-specific values.
- 1.2.2 The mean-maximum range was used from the Woodward *et al.*, (2019) review as it provides the average across the maximum foraging distance for each colony included within the study. This is therefore highly precautionary as it used the

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<sup>1</sup> Including Statutory Nature Conservation Bodies, RSPB, Local Authorities, Wildlife Trust, and Regulators.

<sup>2</sup> As this is an update to incorporate a change in metric relevant only to breeding seabirds, other ornithological features are considered in alternative documents (Rampion 2 HRA Screening Report and Screening Update Migratory Non-seabirds).

maximum range as a basis of the calculation for each species and, was deemed appropriate in identifying potential for likely significant effects (LSEs).

- 1.2.3 During consultation, SNCBs advised that in the absence of official guidance on how to interpret the values presented in Woodward *et al.*, (2019), the standard deviation of the mean-maximum foraging ranges should be used. This Technical Note therefore sets out the methods used to update the HRA Screening outcomes as a result of including the standard deviation during the process.

## 1.3 Foraging ranges

- 1.3.1 The Rampion 2 HRA Screening Report employed the Woodward *et al.*, (2019) publication to inform foraging ranges for breeding seabirds. Foraging ranges allow assessments to evaluate potential connectivity between a project and a seabird colony based on species specific foraging ranges during the breeding season. Ranges can only be used to inform foraging ranges of birds during the breeding season as this is the only occasion a reliable metric can be determined (as seabirds are central place foragers and must return the nest site to provision young).
- 1.3.2 Woodward *et al.*, (2019) provides the most up-to-date collation of seabird foraging ranges based on multiple individuals from numerous study colonies. The report updates the previous resource, Thaxter *et al.*, (2012). The recent publication includes an increased number of tracking studies (over double the number of records) in comparison to the previous publication. This has enabled a more robust assessment of foraging ranges to be undertaken by the authors and an overall improvement in confidence for many of the species assessed. Woodward *et al.*, (2019) also include estimates from great black-backed gull which were not included previously (in Thaxter *et al.*, (2012)).
- 1.3.3 The publication presented multiple foraging range values for each species; mean, mean-maximum and maximum, along with the associated standard deviation for each value. The mean-maximum foraging range was used as it is it takes the mean across all maximum foraging ranges considered for that species. This therefore presents a highly precautionary approach to screening of European designated sites for breeding seabirds and is deemed appropriate for establishing where LSEs may exist.
- 1.3.4 If a more precautionary method of employing the standard deviation is incorporated a higher number of designated sites will be considered, but their inclusion within the Stage 2 assessment of the HRA will still depend on the likelihood of an LSE. The Applicant agrees entirely with the precautionary principle, and identifying relevant effect-receptor pathways for consideration, but also considers it important to consider pathways where an LSE may exist, rather than all potential pathways, in order to focus the assessment appropriately and to present a proportionate volume of information.
- 1.3.5 Some key differences between Thaxter *et al.*, (2012) and Woodward *et al.*, (2019) are highlighted below:

- revised data provides evidence for the following species' foraging range estimates more than doubling; fulmar, Manx shearwater, kittiwake, razorbill, puffin and great skua;
- revised data provides evidence for the following species' foraging range estimates being very similar; gannet, herring gull, guillemot, and four of the five tern species;
- lesser black-backed gull and roseate tern have seen a significant reduction in foraging range estimates; and
- two species with the largest mean-maximum foraging ranges include Manx shearwater and fulmar.

- 1.3.6 Standard deviation shows users how spread data is by expressing by how much values differ from the mean. To apply the standard deviation to the already precautionary mean-maximum foraging ranges vastly inflates the level of precaution and therefore the number of SPAs (or Ramsar sites) which are within a species foraging range.
- 1.3.7 below provides an overview of Woodward *et al.*, (2019) foraging ranges with and without the addition of standard deviation.

**Table D-1 Mean-maximum foraging range, standard deviation and mean-max foraging range +1SD of UK breeding seabird species (Woodward *et al.*, 2019)**

Species	Mean-max foraging range (km)	Standard deviation (km)	Mean-max +1SD (km)
Common eider	21.5	-	21.5
Red-throated diver	9	-	9
European storm-petrel	336	-	336
Northern fulmar	542.3	657.9	1200.2
Manx shearwater	1346.8	1018.7	2365.5
Northern gannet	315.2	194.2	509.4
European shag	13.2	10.5	23.7
Cormorant	25.6	8.3	33.9
Black-legged kittiwake	156.1	144.5	300.6
Black-headed gull	18.5	-	18.5
Mediterranean gull	20	-	20
Common gull	50	-	50

Species	Mean-max foraging range (km)	Standard deviation (km)	Mean-max +1SD (km)
Great black-backed gull	73	-	73
Herring gull	58.8	26.8	85.6
Lesser black-backed gull	127	109	236
Sandwich tern	34.3	23.2	57.5
Little tern	5	-	5
Roseate tern	12.6	10.6	23.2
Common tern	18.0	8.9	26.9
Arctic tern	25.7	14.8	40.5
Common guillemot	73.2	80.5	153.7
Razorbill	88.7	75.9	164.6
Atlantic puffin	137.1	128.3	265.4
Great skua	443.3	487.9	931.2

## 1.4 Method

- 1.4.1 To allow an initial overview of potential new sites to be screened in as a result of the foraging ranges plus standard deviation, Criterion 2 (connectivity during the breeding season) was re-screened using the new values presented in **Table D-1**.
- 1.4.2 **Table D-3** presents the screening table which lists all UK SPAs and Ramsar sites designated for breeding seabirds. As mentioned above, foraging ranges in Woodward *et al.*, (2019) can only be applied to birds from their nest site (usually the SPA or Ramsar sites land boundary) during the breeding season as this is the only period where a reliable metric can be determined. Potential connectivity during migration for seabirds was screened in under Criterion 4 in the Rampion 2 HRA Screening Report, with migratory waterbirds assessed in an additional document (see Appendix B) and has not been assessed in this document.
- 1.4.3 Each SPA and Ramsar site were considered in turn according to its designated features being within the mean-maximum foraging approach or the mean-maximum foraging approach plus standard deviation. This was conducted using a GIS distance screening exercise, with the shortest distance provided in the tables below. However, most seabird species are highly unlikely to travel large distances across land and therefore despite Rampion 2 being within foraging range as the crow flies, the coastal route is a significant distance beyond foraging range (which has been considered on a site-by-site basis).

- 1.4.4 A rationale has also been provided to describe whether the site has been screened in or out for each designated feature. Site specific maximum foraging ranges referenced in the below tables were obtained from Woodward *et al.*, (2019<sup>3</sup>). Tracking data referred to for gannet and Manx shearwater referenced for certain sites below was obtained from Wakefield *et al.*, (2013<sup>4</sup>) and Dean *et al.*, (2015<sup>5</sup>), respectively.
- 1.4.5 Information on designated features of English SPAs were obtained from the Natural England Designated Sites portal<sup>6</sup>. Scottish SPA information from NatureScot's SiteLink<sup>7</sup>. Northern Ireland SPAs from each SPA citation hosted by the Department of Agriculture, Environment and Rural Affairs (e.g.,<sup>8</sup>), and Welsh SPA information from the designated site viewer<sup>9</sup>. Ramsar information was obtained from the JNCC Ramsar information webpage<sup>10</sup>.
- 1.4.6 It is important that transboundary Designated Sites (which are part of the Natura 2000 network) are also given due consideration during the screening process. As a result, Irish SPAs and Ramsar sites were also considered under the same methods as UK sites (with SPA information obtained from the National Parks and Wildlife Service SPA spreadsheet<sup>11</sup>, and Ramsar site information from the Ramsar Information Service<sup>12</sup>)
- 1.4.7 Transboundary sites (i.e. in rest of Europe not including the Republic of Ireland) have not been revisited in this screening update (transboundary sites can be found in the Rampion 2 HRA Screening Report).

## 1.5 Results

- 1.5.1 The result of including standard deviation within the foraging range values have been highlighted in, with the results of the site screening presented in the following sections. It is important to note that for species such as fulmar and Manx shearwater, almost every SPA in the UK where either species is a designated

<sup>3</sup> Woodward, I., Thaxter, C., Owen, E. and Cook, A. (2019). Desk-based revision of seabird foraging ranges used for HRA screening. BTO Research Report No. 724. December 2019.

<sup>4</sup> Wakefield, E.D., Bodey, T.W., Bearhop, S., Blackburn, J., Colhoun, K., Davies, R., Dwyer, R.G., Green, J.A., Grémillet, D., Jackson, A.L. and Jessopp, M.J., (2013). Space partitioning without territoriality in gannets. *Science*, 341(6141), pp.68-70.

<sup>5</sup> Dean, B., Kirk, H., Fayet, A., Shoji, A., Freeman, R., Leonard, K., Perrins, C.M. and Guilford, T., 2015. Simultaneous multi-colony tracking of a pelagic seabird reveals cross-colony utilization of a shared foraging area. *Marine Ecology Progress Series*, 538, pp.239-248.

<sup>6</sup> <https://designatedsites.naturalengland.org.uk/SiteSearch.aspx>

<sup>7</sup> <https://sitelink.nature.scot/home>

<sup>8</sup> <https://www.daera-ni.gov.uk/publications/special-protection-area-copeland-islands>

<sup>9</sup> <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en>

<sup>10</sup> <https://jncc.gov.uk/our-work/ramsar-sites/>

<sup>11</sup> <https://www.npws.ie/protected-sites>

<sup>12</sup> [https://rsis.ramsar.org/ris-search/?f\[0\]=regionCountry\\_en\\_ss%3AIreland](https://rsis.ramsar.org/ris-search/?f[0]=regionCountry_en_ss%3AIreland)

feature was within mean-maximum plus standard deviation. This included colonies on the north and west coast of Scotland and the coast of Wales where birds could in theory travel along the coast to Rampion 2.

- 1.5.2 A key outcome of the screening update is the number of SPAs within foraging range when using the standard deviation approach. Many of these SPAs were beyond the mean-maximum value used for each species in the Rampion 2 HRA Screening Report. However, many of these sites were within the mean-maximum foraging range for the species with the most extensive foraging ranges, such as fulmar, Manx shearwater, and gannet. For fulmar and Manx shearwater, their sensitivity to the impacts of offshore wind farms are relatively low (Bradbury *et al.*, 2014, Furness *et al.*, 2013, Diershke *et al.*, 2016, Fliessbach *et al.*, 2019) and based on their wide-ranging behaviour, are considered to be relatively low risk in HRA terms.
- 1.5.3 Nevertheless, each SPA has been considered in turn and screened in or out based on the potential for LSE. The results of this can be seen in **Table D-2** below, where SPAs and Ramsar sites where LSE cannot be discounted at this stage are presented. The full process is provided in **Table D-3**.

**Table D-2 Summary of all SPAs and Ramsar sites where LSE could not be discounted following update to screening.**

Designated site	Species where LSE could not be discounted at this stage
Pagham Harbour SPA	Common tern
Chichester and Langstone Harbours SPA	Common tern Sandwich tern
Solent and Southampton Water SPA	Sandwich tern
Dungeness, Romney Marsh and Rye Bay SPA	Sandwich tern
Flamborough and Filey Coast SPA	Gannet



Table D-3 Full screening update results to incorporate Woodward et al 2019 mean-maximum foraging ranges plus standard deviation.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9020330	Solent and Dorset Coast	UK	pSPA	14.7	Foraging terns	N/A	Out under Criterion 2	SPA is designated for at sea foraging areas for terns. Birds foraging in SPA are likely to be from breeding SPAs considered in the SPAs included below (Solent and Southampton Water). Based on Criterion 2 focusing on distances from breeding locations, this SPA can be screened out for this Criterion.
UK9012041	Pagham Harbour	UK	SPA	15.3	Breeding terns and wintering waterbirds	Common tern	In under Criterion 2 for: Common tern	SPA may have connectivity with Rampion 2 during the breeding season for common tern based on mean-maximum +1SD foraging range. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for other designated seabird species and therefore has no breeding season connectivity.
UK9011011	Chichester and Langstone Harbours	UK	SPA	23.1	Breeding terns and wintering waterbirds	Sandwich tern Common tern	In under Criterion 2 for: Sandwich tern Common tern	SPA may have connectivity with Rampion 2 during the breeding season for Sandwich tern and common tern based on mean-maximum +1SD foraging range. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for other designated seabird species and therefore has no breeding season connectivity.
UK9011061	Solent and Southampton Water	UK	SPA	29.6	Breeding seabirds including terns and wintering waterbirds	Sandwich tern	In under Criterion 2 for: Sandwich tern	SPA may have connectivity with Rampion 2 during the breeding season for Sandwich tern based on mean-maximum +1SD foraging range. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for other designated seabird species and therefore has no breeding season connectivity.
UK9012091	Dungeness, Romney Marsh and Rye Bay	UK	SPA	39.2	Breeding seabirds including terns and breeding and wintering waterbirds	Sandwich tern	In under Criterion 2 for: Sandwich tern	SPA may have connectivity with Rampion 2 during the breeding season for Sandwich tern based on mean-maximum +1SD foraging range. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for other designated seabird species and therefore has no breeding season connectivity.

<sup>13</sup> Distance is based on a GIS which measures the shortest distance to each site. Where it is unlikely that a seabird will fly across land a site specific measurement has been used to inform screening approach.



SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9010111	Poole Harbour	UK	SPA	89.4	Breeding seabirds including terns and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK11054	Poole Harbour	UK	Ramsar	89.4	Breeding seabirds including terns and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9012031	Medway Estuary and Marshes	UK	SPA	91.5	Breeding terns and breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9012011	The Swale	UK	SPA	94.9	Breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020309	Outer Thames Estuary	UK	SPA	103.5	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK11066	Stodmarsh	UK	Ramsar	107.7	Breeding, passage and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9012071	Thanet Coast and Sandwich Bay	UK	SPA	109.7	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9012121	Stodmarsh	UK	SPA	109.8	Breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9009246	Foulness (Mid-Essex Coast Phase 5)	UK	SPA	109.9	Breeding seabirds and breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9009245	Blackwater Estuary (Mid-Essex Coast Phase 4)	UK	SPA	125.9	Breeding seabirds and breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9010091	Chesil Beach and The Fleet	UK	SPA	127.3	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9009243	Colne Estuary (Mid-Essex Coast Phase 2)	UK	SPA	141.3	Breeding seabirds and breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9009131	Hamford Water	UK	SPA	158.9	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9009121	Stour and Orwell Estuaries	UK	SPA	161.3	Breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9009112	Alde-Ore Estuary	UK	SPA	181.5	Breeding seabirds and breeding and wintering waterbirds	Lesser black-backed gull	Out under Criterion 2	Rampion 2 is beyond the colony specific maximum foraging range for lesser black-backed gull (and mean-maximum +1SD for all other features).
UK11002	Alde-Ore Estuary	UK	Ramsar	181.5	Breeding seabirds and wintering waterbirds	Lesser black-backed gull	Out under Criterion 2	Rampion 2 is beyond the colony specific maximum foraging range for lesser black-backed gull (and mean-maximum +1SD for all other features).
UK9009101	Minsmere-Walberswick	UK	SPA	208.4	Breeding seabirds and breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9008021	The Wash	UK	SPA	235.4	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9009181	Breydon Water	UK	SPA	239.3	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020329	Greater Wash	UK	SPA	249.1	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9009271	Great Yarmouth North Denes	UK	SPA	250.3	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9009031	North Norfolk Coast	UK	SPA	256.6	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK11048	North Norfolk Coast	UK	Ramsar	256.6	Breeding seabirds and passage and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9008022	Gibraltar Point	UK	SPA	267.6	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9006111	Humber Estuary	UK	SPA	297.3	Breeding seabirds and breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9014051	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro	UK	SPA	311.6	Breeding seabirds	Storm petrel Manx shearwater	Out under Criterion 2	Site is located on the west coast of UK. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9013011	The Dee Estuary	UK	SPA	329.8	Wintering waterbirds and breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9020294	Liverpool Bay / Bae Lerpwl	UK	SPA	343.3	Wintering marine birds and breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020287	Mersey Narrows and North Wirral Foreshore	UK	SPA	347.8	Wintering waterbirds and breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9005103	Ribble and Alt Estuaries	UK	SPA	354.5	Wintering waterbirds and breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK11057	Ribble and Alt Estuaries	UK	Ramsar	354.5	Passage and wintering waterbirds and breeding and non-breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9014041	Grassholm	UK	SPA	355.3	Breeding seabirds	Gannet	Out under Criterion 2	Site is located on the west coast of UK. Tracking data of gannet from SPA suggests no connectivity with Rampion 2 during breeding season, therefore gannet has been screened out under Criterion 2.
UK9013121	Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island	UK	SPA	360.1	Breeding seabirds and wintering waterbirds	Manx shearwater	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is a significant distance beyond the colony specific maximum foraging range for Manx shearwater (and mean-maximum +1SD for all other features).
UK9013061	Anglesey Terns / Morwenoliaid Ynys Môn	UK	SPA	376.0	Breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9006101	Flamborough and Filey Coast	UK	SPA	376.4	Breeding seabirds	Fulmar Gannet	In under Criterion 2 for:	SPA may have connectivity with Rampion 2 during the breeding season for gannet based on mean-maximum +1SD foraging range. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for other designated

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km)13	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
							Gannet	seabird species and therefore has no breeding season connectivity. For fulmar, the significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9020285	Ynys Seiriol/ Puffin Island	UK	SPA	378.3	Breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK11045	Morecambe Bay	UK	Ramsar	389.7	Passage and wintering waterbirds, breeding seabirds and non-breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020326	Morecambe Bay and Duddon Estuary	UK	SPA	389.7	Wintering waterbirds and breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020288	Isles of Scilly	UK	SPA	403.3	Breeding seabirds	Manx shearwater Fulmar	Out under Criterion 2	Site is located on the south west coast of UK. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.



SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK11033	Isles of Scilly	UK	Ramsar	403.3	Breeding seabirds	-	Out under Criterion 2	Site is located on the south west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9006061	Teesmouth and Cleveland Coast	UK	SPA	437.1	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9006131	Northumbria Coast	UK	SPA	453.8	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK11049	Northumbria Coast	UK	Ramsar	453.8	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9006031	Coquet Island	UK	SPA	522.8	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK12021	Strangford Lough	UK	Ramsar	525.2	Breeding seabirds and passage and wintering waterbirds	-	Out under Criterion 2	Site is located in Northern Ireland. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020111	Strangford Lough	UK	SPA	525.3	Breeding seabirds and	-	Out under Criterion 2	Site is located in Northern Ireland. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.



SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
					wintering waterbirds			
UK9020271	Outer Ards	UK	SPA	526.5	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK12004	Carlingford Lough	UK	Ramsar	526.8	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Site is located in Northern Ireland. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020161	Carlingford Lough	UK	SPA	526.9	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Site is located in Northern Ireland. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9006021	Farne Islands	UK	SPA	555.0	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9006011	Lindisfarne	UK	SPA	555.0	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020291	Copeland Island	UK	SPA	557.0	Breeding seabirds	Manx shearwater	Out under Criterion 2	Site is located in Northern Ireland. Tracking data of Manx shearwater from SPA suggests no connectivity with Rampion 2 during breeding season (Dean et al., 2015).
UK9020042	Larne Lough	UK	SPA	573.0	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Site is located in Northern Ireland. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK12013	Larne Lough	UK	Ramsar	573.0	Breeding seabirds and	-	Out under Criterion 2	Site is located in Northern Ireland. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
					wintering waterbirds			
UK9003091	Ailsa Craig	UK	SPA	590.6	Breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9004271	St Abb's Head to Fast Castle	UK	SPA	591.1	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020316	Outer Firth of Forth and St Andrews Bay Complex	UK	pSPA	593.1	Breeding and non-breeding seabirds and wintering waterbirds	Manx shearwater	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9004171	Forth Islands	UK	SPA	615.8	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9004451	Imperial Dock Lock, Leith	UK	SPA	617.2	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9020011	Rathlin Island	UK	SPA	632.7	Breeding seabirds	Fulmar	Out under Criterion 2	Site is located off the west coast of UK. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9020021	Sheep Island	UK	SPA	639.7	Breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9004121	Firth of Tay and Eden Estuary	UK	SPA	649.8	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9003057	Rinns of Islay	UK	SPA	682.7	Breeding, passage and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9003057	Rinns of Islay	UK	SPA	684.4	Breeding, passage and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002271	Fowlsheugh	UK	SPA	700.5	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9003171	North Colonsay and Western Cliffs	UK	SPA	706.6	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9003211	Glas Eileanan	UK	SPA	732.7	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002221	Ythan Estuary, Sands of Forvie and Meikle Loch	UK	SPA	744.0	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK13061	Ythan Estuary and Meikle Loch	UK	Ramsar	744.0	Breeding seabirds and passage and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9002491	Buchan Ness to Collieston Coast	UK	SPA	745.4	Breeding seabirds	Fulmar	Out under Criterion 2	Rampion 2 is a significant distance beyond the colony specific maximum foraging range for fulmar (and mean-maximum +1SD for all other features).
UK13056	Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	UK	Ramsar	766.8	Breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is a significant distance beyond the colony specific maximum foraging range for fulmar (and mean-maximum +1SD for all other features).
UK9003032	Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	UK	SPA	766.8	Breeding and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002211	Loch of Strathbeg	UK	SPA	776.3	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001341	Rum	UK	SPA	786.3	Breeding seabirds and breeding waterbirds	Manx shearwater	Out under Criterion 2	Site is located on the west coast of UK. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002471	Troup, Pennan and Lion's Heads	UK	SPA	786.3	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9001624	Inner Moray Firth	UK	SPA	795.3	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001431	Canna and Sanday	UK	SPA	806.1	Breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001623	Cromarty Firth	UK	SPA	809.5	Breeding seabirds and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001121	Mingulay and Berneray	UK	SPA	819.6	Breeding seabirds	Fulmar	Out under Criterion 2	Site is located on the west coast of UK. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9001082	South Uist Machair and Lochs	UK	SPA	849.0	Breeding waterbirds, breeding seabirds and passage and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK13058	South Uist Machair and Lochs	UK	Ramsar	849.0	Breeding waterbirds and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.



SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9001182	East Caithness Cliffs	UK	SPA	852.1	Breeding seabirds	Fulmar	Out under Criterion 2	Rampion 2 is a significant distance beyond the colony specific maximum foraging range for fulmar (and mean-maximum +1SD for all other features).
UK9001151	Caithness and Sutherland Peatlands	UK	SPA	856.7	Breeding waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK13003	Caithness and Sutherland Peatlands	UK	Ramsar	856.7	Breeding waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001261	Priest Island (Summer Isles)	UK	SPA	872.6	Breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001051	North Uist Machair and Islands	UK	SPA	879.4	Breeding waterbirds and passage and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK13050	North Uist Machair and Islands	UK	Ramsar	879.4	Breeding waterbirds and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001041	Shiant Isles	UK	SPA	882.7	Breeding seabird and passage and wintering waterbirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001181	North Caithness Cliffs	UK	SPA	894.3	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km)13	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
								been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9001131	Pentland Firth Islands	UK	SPA	905.1	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001241	Handa	UK	SPA	905.7	Breeding seabirds	Fulmar	Out under Criterion 2	Site is located on the west coast of UK. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002141	Hoy	UK	SPA	917.1	Breeding seabirds and breeding waterbirds	Fulmar Great skua	Out under Criterion 2	Rampion 2 is beyond the colony specific maximum foraging range for Great skua. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For fulmar, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9001231	Cape Wrath	UK	SPA	922.5	Breeding seabirds	Fulmar	Out under Criterion 2	Site is located on the west coast of UK. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.



SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9002151	Copinsay	UK	SPA	922.5	Breeding seabirds	Fulmar	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is a significant distance beyond the colony specific maximum foraging range for fulmar (and mean-maximum +1SD for all other features).
UK9002381	Auskerry	UK	SPA	938.5	Breeding seabirds	-	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001031	St Kilda	UK	SPA	939.7	Breeding seabirds	Manx shearwater Fulmar	Out under Criterion 2	Site is located on the west coast of UK. Rampion 2 is beyond the colony specific maximum foraging range for fulmar. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For Manx shearwater, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002121	Marwick Head	UK	SPA	954.4	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9001021	Flannan Isles	UK	SPA	956.4	Breeding seabirds	-	Out under Criterion 2	Site is located off the west coast of UK. Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002371	Rousay	UK	SPA	956.6	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002431	Calf of Eday	UK	SPA	960.2	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
								and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002181	Sule Skerry and Sule Stack	UK	SPA	961.9	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002101	West Westray	UK	SPA	968.3	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002111	Papa Westray (North Hill and Holm)	UK	SPA	976.6	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002091	Fair Isle	UK	SPA	982.0	Breeding seabirds	Fulmar	Out under Criterion 2	Rampion 2 is a significant distance beyond the colony specific maximum foraging range for fulmar (and mean-maximum +1SD for all other features).
UK9001011	North Rona and Sula Sgeir	UK	SPA	995.7	Breeding seabirds	Fulmar	Out under Criterion 2	Site is located on the west coast of UK. The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002511	Sumburgh Head	UK	SPA	1018.7	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km) <sup>13</sup>	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
								of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002361	Mousa	UK	SPA	1035.8	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002081	Noss	UK	SPA	1048.9	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002061	Foula	UK	SPA	1051.4	Breeding seabirds and breeding waterbirds	Fulmar	Out under Criterion 2	Rampion 2 is a significant distance beyond the colony specific maximum foraging range for fulmar (and mean-maximum +1SD for all other features).
UK9002051	Papa Stour	UK	SPA	1074.8	Breeding seabirds and breeding waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002041	Ronas Hill – North Roe and Tingon	UK	SPA	1094.7	Breeding seabirds and breeding waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002941	Otterswick and Graveland	UK	SPA	1095.5	Breeding waterbirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.

SITECODE	SITENAME	MS	TYPE	Distance from Array Area (km)13	Category of Relevant Interest Feature	Array within Mean-maximum +1SD foraging range of:	Screening decision	Rationale
UK9002031	Fetlar	UK	SPA	1096.3	Breeding seabirds and breeding waterbirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.
UK9002021	Ramna Stacks and Gruney	UK	SPA	1109.8	Breeding seabirds	-	Out under Criterion 2	Rampion 2 is beyond the mean-maximum +1SD foraging ranges for designated seabird species and therefore has no breeding season connectivity.
UK9002011	Hermaness, Saxa Vord and Valla Field	UK	SPA	1116.2	Breeding seabirds	Fulmar	Out under Criterion 2	The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these species, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in The English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and impacts have been apportioned to all SPAs within foraging range.

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# Appendix E      HRA Screening matrices (updated)

# 1. Introduction

This Appendix presents Screening matrices completed for 106 European sites in relation to Habitats Regulations Assessment (HRA) Screening exercise for the proposed Rampion 2 Offshore Wind Farm (hereafter 'Rampion 2'). These matrices are provided by Rampion Extension Development Limited (RED) (hereafter 'the Applicant') at the request of and in accordance with the structure and format specified in Planning Inspectorate's Advice Note Ten (November 2017) (version 8) for Nationally Significant Infrastructure developments.

## 1.1 Index of matrices

Table E-1 Index to the matrices with hyperlinks to matrices locations within the document

Matrix no. hyperlink	European site considered at Screening	Screening Determination
<b>Transboundary site</b>		
<b>LSE: Likely Significant Effect    LSEI: Likely Significant Effect in-combination</b>		
<b>Matrix 1</b>	River Itchen Special Area of Conservation (SAC)	<b>LSE</b>
<b>Matrix 2</b>	Arun Valley (UK) Ramsar	<b>LSE</b>
<b>Matrix 3</b>	Arun Valley (UK) Special Protection Area (SPA)	<b>LSE</b>
<b>Matrix 4</b>	Arun Valley (UK) SAC	No LSE
<b>Matrix 5</b>	The Mens (UK) SAC	<b>LSE</b>
<b>Matrix 6</b>	Duncton to Bignor Escarpment (UK) SAC	No LSE
<b>Matrix 7</b>	Pagham Harbour (UK) SPA	<b>LSE</b>
<b>Matrix 8</b>	Pagham Harbour (UK) Ramsar	<b>LSE</b>
<b>Matrix 9</b>	Portsmouth Harbour (UK) SPA	<b>LSE</b>
<b>Matrix 10</b>	Portsmouth Harbour (UK) Ramsar	<b>LSE</b>
<b>Matrix 11</b>	Solent Maritime (UK) SAC	<b>LSE</b>



Matrix no. hyperlink	European site considered at Screening	Screening Determination
<b>Matrix 12</b>	South Wight Maritime (UK) SAC	<b>LSE</b>
<b>Matrix 13</b>	Solent and Isle of Wight lagoons (UK) SAC	<b>LSE</b>
<b>Matrix 14</b>	Littoral Cauchois (UK) SAC	No LSE
<b>Matrix 15</b>	Southern North Sea (UK) SAC	No LSE
<b>Matrix 16a</b>	Transboundary sites - harbour porpoise (1-10)	No LSE
<b>Matrix 16b</b>	Transboundary sites - harbour porpoise (11-20)	No LSE
<b>Matrix 16c</b>	Transboundary sites - harbour porpoise (21-24)	No LSE
<b>Matrix 17a</b>	Transboundary sites - bottlenose dolphin (sites 1- 7)	No LSE
<b>Matrix 17b</b>	Transboundary sites - bottlenose dolphin (sites 8 – 15)	No LSE
<b>Matrix 18</b>	Solent and Dorset Coast (UK) SPA	<b>LSE</b>
<b>Matrix 19</b>	Chichester and Langstone Harbours (UK) SPA	<b>LSE</b>
<b>Matrix 20</b>	Chichester and Langstone Harbours (UK) Ramsar	<b>LSE</b>
<b>Matrix 21</b>	Solent and Southampton Water (UK) SPA	<b>LSE</b>
<b>Matrix 22</b>	Solent and Southampton Water (UK) Ramsar	<b>LSE</b>
<b>Matrix 23</b>	Dungeness, Romney Marsh and Rye Bay (UK) SPA	<b>LSE</b>
<b>Matrix 24</b>	Littoral seino-marin (FR) SPA	<b>LSEI</b>
<b>Matrix 25</b>	Medway Estuary and Marshes (UK) SPA	<b>LSEI</b>
<b>Matrix 26</b>	Outer Thames Estuary (UK) SPA	No LSEs
<b>Matrix 27</b>	Foulness (Mid-Essex Coast Phase 5) (UK) SPA	<b>LSEI</b>
<b>Matrix 28</b>	Alderney West Coast and the Burhou Islands Ramsar	<b>LSEI</b>
<b>Matrix 29</b>	Falaise du Bessin Occidental (FR) SPA	<b>LSEI</b>

Matrix no. hyperlink	European site considered at Screening	Screening Determination
<b>Matrix 30</b>	Alde-Ore Estuary (UK) SPA	<b>LSEI</b>
<b>Matrix 31</b>	Alde-Ore Estuary (UK) Ramsar	<b>LSEI</b>
<b>Matrix 32</b>	Chausey (FR) SPA	No LSEs
<b>Matrix 33</b>	Cap d'Erquy-Cap Fréhel (FR) SPA	
<b>Matrix 34</b>	The Wash (UK) SPA	<b>LSEI</b>
<b>Matrix 35</b>	Breydon Water (UK) SPA	<b>LSEI</b>
<b>Matrix 36</b>	Tregor Goëlo (FR) SPA	
<b>Matrix 37</b>	Greater Wash (UK) SPA	<b>LSEI</b>
<b>Matrix 38</b>	North Norfolk Coast (UK) SPA	<b>LSEI</b>
<b>Matrix 39</b>	North Norfolk Coast (UK) Ramsar	<b>LSEI</b>
<b>Matrix 40</b>	Côte de Granit Rose-Sept Iles (FR) SPA	<b>LSEI</b>
<b>Matrix 41</b>	Skomer, Skokholm the Seas off Pembrokeshire SPA	No LSEs
<b>Matrix 42</b>	Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island (UK) SPA	No LSEs
<b>Matrix 43</b>	Flamborough and Filey Coast (UK) SPA	<b>LSEI</b>
<b>Matrix 44</b>	Ouessant-Molène (FR) SPA	No LSEs
<b>Matrix 45</b>	Camaret (FR) SPA	No LSEs
<b>Matrix 46</b>	Iles Houat-Hoëdic (FR) SPA	No LSEs
<b>Matrix 47</b>	Cap Sizun (FR) SPA	No LSEs
<b>Matrix 48</b>	Isles of Scilly (UK) SPA	No LSEs
<b>Matrix 49</b>	Isles of Scilly (UK) Ramsar	No LSEs

<b>Matrix no. hyperlink</b>	<b>European site considered at Screening</b>	<b>Screening Determination</b>
<b>Matrix 50</b>	Northumbria Coast (UK) SPA	<b>LSEI</b>
<b>Matrix 51</b>	Northumbria Coast (UK) Ramsar	<b>LSEI</b>
<b>Matrix 52</b>	Coquet Island (UK) SPA	<b>LSEI</b>
<b>Matrix 53</b>	Farne Islands (UK) SPA	<b>LSEI</b>
<b>Matrix 54</b>	St Abb's Head to Fast Castle (UK) SPA	No LSEs
<b>Matrix 55</b>	Outer Firth of Forth & St Andrews Bay Complex SPA	No LSEs
<b>Matrix 56</b>	Imperial Dock Lock, Leith (UK) SPA	No LSEs
<b>Matrix 57</b>	Deenish Island and Scariff Island (UK) SPA	No LSEs
<b>Matrix 58</b>	Fowlsheugh (UK) SPA	No LSEs
<b>Matrix 59</b>	Puffin Island (UK) SPA	No LSEs
<b>Matrix 60</b>	Skelligs (UK) SPA	No LSEs
<b>Matrix 61</b>	Blasket Island (UK) SPA	No LSEs
<b>Matrix 62</b>	Cruagh Island (UK) SPA	No LSEs
<b>Matrix 63</b>	Ythan Estuary, Sands of Forvie Meikle Loch SPA	No LSEs
<b>Matrix 64</b>	Ythan Estuary, Sands of Forvie Meikle Loch Ramsar	No LSEs
<b>Matrix 65</b>	Buchan Ness to Collieston Coast (UK) SPA	No LSEs
<b>Matrix 66</b>	Loch of Strathbeg (UK) SPA	No LSEs
<b>Matrix 67</b>	Loch of Strathbeg (UK) Ramsar	No LSEs
<b>Matrix 68</b>	Troup, Pennan and Lion's Head (UK) SPA	No LSEs
<b>Matrix 69</b>	Rum (UK) SPA	No LSEs

<b>Matrix no. hyperlink</b>	<b>European site considered at Screening</b>	<b>Screening Determination</b>
<b>Matrix 70</b>	Inner Moray Firth (UK) SPA	No LSEs
<b>Matrix 71</b>	Inner Moray Firth (UK) Ramsar	No LSEs
<b>Matrix 72</b>	Cromarty Firth (UK) SPA	No LSEs
<b>Matrix 73</b>	Cromarty Firth (UK) Ramsar	No LSEs
<b>Matrix 74</b>	East Caithness Cliffs (UK) SPA	No LSEs
<b>Matrix 75</b>	North Caithness Cliffs (UK) SPA	No LSEs
<b>Matrix 76</b>	Pentland Firth Islands (UK) SPA	No LSEs
<b>Matrix 77</b>	Hoy (UK) SPA	No LSEs
<b>Matrix 78</b>	Copinsay (UK) SPA	No LSEs
<b>Matrix 79</b>	Auskerry (UK) SPA	No LSEs
<b>Matrix 80</b>	St Kilda (UK) SPA	No LSEs
<b>Matrix 81</b>	Marwick Head (UK) SPA	No LSEs
<b>Matrix 82</b>	Rousay (UK) SPA	No LSEs
<b>Matrix 83</b>	Calf of Eday (UK) SPA	No LSEs
<b>Matrix 84</b>	Sule Skerry and Sule SPA Stack (UK) SPA	No LSEs
<b>Matrix 85</b>	West Westray (UK) SPA	No LSEs
<b>Matrix 86</b>	Papa Westray (North Hill and Holm) (UK) SPA	No LSEs
<b>Matrix 87</b>	Fair Isle (UK) SPA	No LSEs
<b>Matrix 88</b>	Sumburgh Head (UK) SPA	No LSEs
<b>Matrix 89</b>	Noss (UK) SPA	No LSEs
<b>Matrix 90</b>	Foula (UK) SPA	No LSEs

<b>Matrix no. hyperlink</b>	<b>European site considered at Screening</b>	<b>Screening Determination</b>
<b>Matrix 91</b>	Papa Stour (UK) SPA	No LSEs
<b>Matrix 92</b>	Ronas Hill North Roe and Tingon (UK) SPA	No LSEs
<b>Matrix 93</b>	Ronas Hill - North Roe and Tingon (UK) Ramsar	No LSEs
<b>Matrix 94</b>	Otterswick and Graveland (UK) SPA	No LSEs
<b>Matrix 95</b>	Fetlar (UK) SPA	No LSEs
<b>Matrix 96</b>	Ramna Stacks and Gruney (UK) SPA	No LSEs
<b>Matrix 97</b>	Hermaness, Saxa Vord & Valla Field (UK) SPA	No LSEs
<b>Matrix 98</b>	Copeland Islands (UK) SPA	No LSEs
<b>Matrix 99</b>	Caithness and Sutherland Peatlands (UK) SPA.	No LSEs
<b>Matrix 100</b>	Caithness and Sutherland Peatlands (UK) Ramsar	No LSEs
<b>Matrix 101</b>	Orkney Mainland Moors (UK) SPA	No LSEs
<b>Matrix 102</b>	Mousa Special (UK) SPA	No LSEs
<b>Matrix 103</b>	Tips of Corsemaul and Tom Mor (UK) SPA	No LSEs
<b>Matrix 104</b>	North Rona and Sula Sgeir (UK) SPA	No LSEs
<b>Matrix 105</b>	Ailsa Craig (UK) SPA	
<b>Matrix 106</b>	Grassholm (UK) SPA	<b>LSE</b>

## 1.2 Effects considered

- 1.2.1 The potential effects on European sites considered within the submitted Information to support the HRA of Rampion 2 are set out in table below

Table E-2 Potential effects on the European site considered in the matrices

Designations	Effects considered in matrices
<b>River Itchen SAC</b>	Underwater noise (injury / mortality) Underwater noise (disturbance / barriers to migration) Suspended sediment Effects on prey Pollution Physical disturbance Electromagnetic fields In-combination
<b>Arun Valley Ramsar Arun Valley SPA</b>	Changes in hydrology Pollution events Emissions to air Invasive non-native species Land take / cover change Fragmentation of habitats Noise and vibration Increased light-levels In-combination
<b>Duncton to Bignor Escarpment SAC</b>	Changes in hydrology Pollution events Emissions to air Invasive non-native species Land take / cover change
<b>Pagham Harbour Ramsar Portsmouth Harbour SPA Portsmouth Harbour Ramsar Chichester Langstone Harbours Ramsar Solent and Southampton Water Ramsar Medway Estuary and Marshes SPA</b>	Collision risk (on migration) In-combination
<b>Pagham Harbour Ramsar Portsmouth Harbour SPA Portsmouth Harbour Ramsar Chichester and Langstone Harbours Ramsar Solent and Southampton Water Ramsar</b>	Collision risk (on migration) In-combination

Designations	Effects considered in matrices
<b>Pagham Harbour SPA</b>	<ul style="list-style-type: none"> <li>Collision risk (on migration)</li> <li>Collision risk (breeding)</li> <li>Barrier effects</li> <li>Prey availability &amp; behaviour</li> <li>Indirect: effects on prey</li> <li>Disturbance/displacement</li> <li>Changes in hydrology</li> <li>Pollution events</li> <li>Emissions to air</li> <li>Invasive non-native species</li> <li>Land take / cover change</li> <li>Fragmentation of habitats</li> <li>Noise and vibration</li> <li>Increased light levels</li> <li>In-combination</li> </ul>
<b>Southern North Sea SAC</b> <b>23 transboundary sites harbour porpoise</b> <b>15 transboundary sites bottlenose dolphin</b>	<ul style="list-style-type: none"> <li>Underwater noise</li> <li>Vessel disturbance</li> <li>Vessel collision risk</li> <li>Prey availability / behaviour</li> <li>Pollution</li> <li>Suspended sediments</li> <li>Physical loss of habitat</li> <li>Electromagnetic fields</li> <li>In-combination</li> </ul>
<b>The Mens SAC</b>	<ul style="list-style-type: none"> <li>Changes in hydrology</li> <li>Pollution events</li> <li>Emissions to air</li> <li>Invasive non-native species</li> <li>Land take / cover change</li> <li>Fragmentation of habitats</li> <li>Noise and vibration</li> <li>Increased light levels</li> <li>In-combination</li> </ul>
<b>Solent Maritime (UK) SAC</b> <b>South Wight Maritime (UK) SAC</b> <b>Solent and Isle of Wight lagoons SAC</b>	<ul style="list-style-type: none"> <li>Suspended sediment /deposition</li> <li>Habitat loss and disturbance</li> <li>Invasive non-native species</li> <li>Coastal processes</li> <li>Pollution</li> <li>In-combination</li> </ul>



Designations	Effects considered in matrices
<b>Solent and Dorset Coast SPA</b> <b>Isles of Scilly Ramsar</b> <b>Isles of Scilly SPA</b>	Collision risk (breeding) Prey availability & behaviour Indirect: effects on prey Barrier effect Disturbance/ displacement In-combination
<b>Farne Islands SPA</b> <b>Grassholm SPA</b>	Collision risk (migration) Disturbance/displacement (migration)
<b>Alderney W. Cst &amp; Burhou Islands Ramsar</b> <b>Falaise du Bessin Occidental (FR) SPA</b> <b>Tregor Goëlo (FR) SPA</b> <b>Côte de Granit Rose-Sept Iles (FR) SPA</b> <b>Skomer, Skokholm the Seas off Pembrokeshire SPA</b> <b>Aberdaron Coast &amp; Bardsey Island SPA</b> <b>Flamborough and Filey Coast SPA</b> <b>Ouessant-Molène (FR) SPA</b> <b>Camaret (FR) SPA</b> <b>Iles Houat-Hoëdic (FR) SPA</b>	Collision risk (breeding) Collision risk (on migration) Prey availability & behaviour Indirect: effects on prey Barrier effect Disturbance/displacement (breeding) Disturbance/displacement (migration) In-combination

Designations	Effects considered in matrices
<b>Chichester Langstone Harbours SPA</b> <b>Solent S.hamtn Water SPA</b> <b>Dungeness, Romney Marsh and Rye Bay SPA</b> <b>Littoral seino-marin SPA</b> <b>Ottr. Thames Estuary SPA</b> <b>North Norfolk Coast SPA</b> <b>N. Norfolk Coast Ramsar</b> <b>Northumbria Coast SPA</b> <b>Breydon Water SPA</b> <b>Greater Wash SPA</b>	<b>Foulness (MEC phs5) SPA</b> <b>Alde-Ore Estuary SPA</b> <b>Alde-Ore Estuary Ramsar</b> <b>Cap d'Erquy-C Fréhel SPA</b> <b>Dungeness, Romney Marsh Rye Bay SPA</b> <b>Medway Estuary &amp; Marshes SPA</b> <b>The Wash SPA</b> <b>Coquet Island SPA</b>  Collision risk (breeding) Collision risk (migration) Prey availability & behaviour Indirect: effects on prey Barrier effect Disturbance/displacement In-combination

Table E-3 Potential effects on the European site considered in the matrices (Cont.)

Effects considered in the matrices	Barrier effect Collision risk (migration) Prey availability & behaviour Disturbance/ displacement In-combination Indirect: effects on prey	
Designations	Designations	Designations
<b>Buchan Ness to Collieston Coast SPA</b> <b>Coquet Island SPA</b> <b>Cruagh Island (SPA</b> <b>Deenish Island &amp; Scariff Island SPA</b> <b>Imperial Dock Leith SPA</b> <b>Loch of Strathbeg SPA</b> <b>North Norfolk Coast Ramsar</b> <b>North Norfolk Coast SPA</b> <b>Northumbria Coast Ramsar</b> <b>Northumbria Coast SPA</b> <b>Outer Firth of Forth and St Andrews Bay Complex SPA</b> <b>Puffin Island SPA</b> <b>Skelligs SPA</b> <b>St Abb's Hd -Fast Castle SPA</b> <b>The Wash SPA</b> <b>Ythan Estuary, Sands of Forvie Meikle Loch Ramsar</b> <b>Caithness &amp;Sutherland SPA</b>	Cromarty Firth Ramsar Cromarty Firth SPA East Caithness Cliffs SPA Inner Moray Firth Ramsar Loch of Strathbeg Ramsar North Caithness Cliffs SPA Papa Westray (North Hill Holm) SPA Pentland Firth Islands SPA Ronas Hill North Roe Tingon Sule Skerry Sule SPA Stack SPA Caithness and Sutherland Peatlands SPA. Sumburgh Head SPA Troup, Pennan Lion's Head SPA Orkney Mainland Moors SPA Otterswick and Graveland SPA North Rona Sula Sgeir SPA Ramna Stacks and Gruney SPA Ronas Hill - North Roe and Tingon Ramsar Tips of Corsemaul and Tom Mor SPA Copeland Islands SPA Ythan Estuary, Sands of Forvie Meikle Loch SPA	Ailsa Craig SPA Peatlands Ramsar Fetlar SPA Grassholm SPA Mousa Special SPA West Westray SPA Rousay SPA Rum SPA St Kilda SPA Marwick Head SPA Moray Firth SPA Noss SPA Papa Stour SPA Farne Islands SPA Fowlsheugh SPA Fair Isle SPA Foula SPA Hoy SPA Auskerry SPA Calf of Eday SPA Copinsay SPA Basket Island SPA Breydon Water SPA Greater Wash SPA Hermaness, Saxa Vord & Valla Field SPA

2. Matrix 1: River Itchen Special Area of Conservation - HRA Screening for Rampion 2

Name of European site:	River Itchen (UK) SAC																					
EU Code:	UK0012599																					
Distance to Proposed Development	50.5 km from the closest point of the Proposed Development boundary (western extent of the Array) to the mouth of the Southampton Water (estuary connecting the River Itchen to the marine environment)																					
Likely Effects of Proposed Development																						
	Underwater noise			Suspended sediment			Effects on prey			Pollution			Physical disturbance			Electromagnetic fields (EMF)			In-combination			
Stage of Proposed Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Atlantic Salmon	✓a	xb	✓c	xd	xe	xf	xg	xg	xg	xh	xh	xh	xi	xi	xi		xj		✓k	xl	✓k	
Otter																						
White-clawed crayfish																						
Brook lamprey																						
Bullhead																						
Southern damselfly																						
Water courses plain to montane levels																						

Evidence Supporting Conclusions

√a Mortality, injury, behavioural changes, and auditory masking could arise from exposure to underwater noise for migratory fish from this SAC during their upstream or downstream migration. Although, auditory injury and lethal effects would only be expected at very close range. The Zone of Influence (ZOI) for noise arising from the Proposed development will be defined by modelling (a semi-empirical underwater noise propagation model (INSPIRE)). Pending the outcomes, the risk of injury or disruption (a noise barrier) to migratory routes cannot be discounted. Pathway requires consideration at HRA Stage Two. **Potential LSE** identified.

Cont. on next page

## Matrix 1: River Itchen SAC (Cont.)

### Evidence Supporting Conclusions

- Underwater noise would be considerably less during operations. As the Planning Inspectorate (PINS) has agreed that underwater noise during operation can be scoped out of the Environmental Impact Assessment for fish receptors (see Table 8-7 in Preliminary Environmental Information Report (PEIR) Chapter 8: Fish and Shellfish Ecology) and the Marine management Organisation also stated it had no major objections to scoping out this effect (MMO, 2021), the HRA concludes no LSE.
- ✓c Potential impacts during decommissioning are considered to be similar of potentially less than those outlined for construction. A finding of potential LSE is appropriate.
  - ×d Sandwave clearance, cable trenching (array and export cables), drilling for foundations and spoil dispersal will cause sediment plumes. Migrating salmon that encounter high levels of suspended sediment (SS) can be disrupted from foraging (Madej *et al.* 2007) or may display avoidance and displacement behaviour (although assume prior distribution shortly thereafter) (Carlson *et al.* (2001). The secondary ZOI for SS is 15km. As the Southampton water (pathway to the River Itchen) is 50km from the Proposed Development, there is no pathway for effect based on the lack of spatial overlap. Any short-term behavioural effects would not amount to LSE.
  - ×e The potential for sediment release during operation and maintenance is considerably less than for construction. Migrating salmon may encounter elevated levels of SS, however, these elevations would be localised and intermittent. Given the limited extent and duration of any increases in SS, effects would be negligible, no LSE applies.
  - ×f Increases in SS from the decommissioning works will be similar to that for the construction phase and of a similar magnitude. No LSE therefore applies.
  - ×g Minor adverse effects are predicted for prey species within (and around) the Proposed Development (as identified by the findings reported in the Proposed Development's PEIR - Chapter 8: Fish and Shellfish during the construction and operational phases. This far-ranging species is unlikely to be sensitive to indirect effects on foraging resource in the context noting the vast resources in the wider habitat available. No LSE is identified.
  - ×h Accidental pollution events are not considered to result in a significant effect on benthic subtidal and intertidal (and therefore fish) receptors. The magnitude of an accidental spill will be limited by the size of chemical or oil inventory on construction vessels. In addition, released hydrocarbons would be subject to rapid dilution, weathering and dispersion and would be unlikely to persist in the marine environment. No LSE applies.
  - ×i No physical habitat loss within the SAC boundary would result from the Proposed Development, nor any loss of important or functionally linked habitat. Habitat loss and or disturbance would be insignificant to this species over these scales. No LSE applies.
  - ×j EMF comprise both the electric (E) fields, measured in volts per metre (Vm-1) and the magnetic (B) fields, measured in tesla (T). Species for which there is evidence of a response to E- and B-fields include Atlantic salmon (Gill *et al.*, 2005). Salmonids may encounter EMF along their coastal migration routes where these overlap with sub-sea cable networks. However, after the burial of cables, EMFs are scarcely detectable in the water column (Russell *et al.*, 2018). The potential for salmon to encounter/ be exposed to EMF is limited to the immediate vicinity of the cable (a small area of habitat within metres of the buried cable) and therefore, exposure is likely to be short-lived. This would not be a significant impediment to migration, or species health. No LSE is identified.
  - ✓k Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
  - ×l Potential (non-significant) effects are limited to the extent they would not amount to LSE in-combination with other plans and Proposed Developments

End of Matrix one

3. Matrix 2: Arun Valley (UK) Ramsar - HRA Screening for Rampion 2

Name of European site	Arun Valley (UK) SPA																													
European site code	UK9020281																													
Distance to Development	2.8km from Onshore Cable Corridor. 26km from Array																													
Likely Effects of Proposed Development																														
Effects	Changes in hydrology			Pollution events			Emissions to air			Invasive non-native species			Land take / land cover change			Collision risk (on migration)			Fragmentation or severance of habitats			Noise and vibration			Increased light levels			In-combination		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 6 Northern pintail	Xa	Xb	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	✓g	Xg	✓g		Xh		✓i	Xj	✓k	✓l	Xm	✓k	Xn	Xo	Xn	✓p	Xq	✓p
Ramsar criterion 5 Assemblage of wintering waterfowl of international importance	Xa	Xb	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	✓g	Xg	✓g		Xh		✓i	Xj	✓k	✓l	Xm	✓k	Xn	Xo	Xn	✓p	Xq	✓p
Ramsar criterion 2 Seven wetland invertebrate species listed in British Red Data Book																												Xr	Xr	Xr
Ramsar criterion 2 Four nationally rare and four nationally scarce plant species																												Xs	Xs	Xs
Ramsar criterion 3 Particularly diverse and rich ditch flora																												Xt	Xt	Xt

Cont. on next page

## Matrix 2: Arun Valley Ramsar (Cont.)

### Evidence Supporting Conclusions

- ×a A reduction in water availability to, or quality of ground or surface water could degrade habitats supporting over-wintering bird features. Dewatering excavations, ground disturbance (e.g., for compounds), and fuel spillages are potential source activities. However, as subsurface works will be limited to the coastal area and the local water table will be connected to sea levels, no impacts on freshwater groundwater levels are anticipated. The indicative onshore construction corridor has, where possible, been routed to avoid designated sites and relevant water supplies. Given that there are no such features in the vicinity of the proposed works, the HRA finds that neither the landfall nor cable laydown works would result in Likely Significant Effects (LSE) due to changes in hydrology during construction, alone or in-combination. No LSE identified.
- ×b Potential effects on hydrology during the operation and maintenance phase are expected to be considerably reduced and limited in scale in comparison to the construction phase. Activities will not involve dewatering works and therefore no impact on groundwater levels is anticipated. The HRA has further considered the potential for water availability and quality to groundwater or surface water supporting designated sites and features (i.e., the habitats supporting of over-wintering birds), which could result during isolated repairs, vehicles onsite or the presence of limited below ground concrete-lined joint bays and backfilled material around cable circuits. With reference to the limited scope of these activities, there is only the potential for localised ground disturbance and contamination, , the HRA finds that neither the landfall nor cable laydown works would result in Likely Significant Effects (LSE) due to changes in hydrology during construction, alone or in-combination. No LSE identified.
- ×c The decommissioning of the wind farm is anticipated to be restricted to the removal and reinstatement of the onshore substation site. Electrical cables will be left in-situ onshore to minimise environmental impacts associated with removal. Decommissioning effects will be similar to construction phase effects, albeit in reverse and of a lower magnitude as sub-surface cable infrastructure will be left in-situ. A finding of no LSE (alone or in-combination) is determined.
- ×d The ZOI associated with potential pollution during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Arun Valley SPA, therefore no direct effects on the designated site are predicted. Although functionally linked land could be affected, the areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat within the Arun Valley. No potential for LSE identified.
- ×e The Arun Valley SPA is not within 200m of the PEIR Assessment Boundary and is therefore outside the ZOI for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Arun Valley SPA is also not within 200m of roads that are likely to be used by traffic associated with construction or decommissioning activity. Any vehicles on roads within 200m that are associated with the Proposed Development will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible. No LSE is concluded on this basis.
- ×f The ZOI associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Arun Valley SPA. Any invasive species colonising functionally linked land would be highly localised and occupy only a small fraction of the foraging habitat available within the Arun Valley. Therefore, no LSE applies.
- ✓g The Arun Valley SPA is over 3km away from any location that may be subject to permanent or temporary land take associated with the Proposed Development. Although functionally linked land may be within the onshore Cable Corridor it will only be affected temporarily during construction and will only represent a small fraction of the grass and cropland available within the Arun Valley. This pathway is advanced to Stage Two, however, with regards to the restoration of habitats. The restoration works themselves will not result in any effects beyond those already accounted for, as habitats excavated will be restored in a linked fashion. After which, the land will be drilled with a crop (or re-seeded if grassland). It is acknowledged, however, that before the land recovers, there will be a period of time when the habitat is degraded. Such habitats could represent supporting (functionally linked) habitat for features of this site. The implications of this will accounted for at HRA Stage Two with reference to the amount and location of alternative habitat. Potential for LSE identified.
- ×h This site is located 26km from the Array. Some designated species, notably Bewick's swan, travel east to their arctic breeding grounds (Wright *et al.*, 2015 and Griffin *et al.*, 2016) the potential for LSE due to collision risk during migration has been considered. As this SPA is situated to the north of the Array, migrating birds that head east could not fly through the Array without flying south first for 26km. Such a scenario is very unlikely. The Strategic Ornithological Support Services Proposed Development SOSS-05: Review of bird migration routes in relation to offshore wind farm development zones is considered to provide sufficient evidence to conclude no LSE.

Cont. on next page



## Matrix 2: Arun Valley Ramsar (Cont.)

### Evidence Supporting Conclusions

- ✓i Habitats that may be used by Bewick's swan from the Arun Valley for foraging are present within the PEIR Assessment Boundary. The activities during the construction phases could fragment the habitat, resulting in displacement of foraging individuals. In light of this, and on the advice of Natural England (Natural England, 2020), this pathway advanced to Stage Two. Potential for LSE identified.
- ✕j Habitats that may be used by Bewick's swan for foraging are present within the PEIR Assessment Boundary, however during the operational period all infrastructure within functionally linked land will be below the surface; thereby avoiding fragmentation. Therefore, **no LSE applies.**
- ✓k Construction and decommissioning activities may result in the fragmentation of foraging habitats within areas of functionally linked land. **Potential for LSE.**
- ✓l Construction and decommissioning activities will result in increases in noise and vibration across functionally linked land of the designated features of the Arun Valley SPA. This could potentially result in the disturbance and displacement of foraging individuals. **Potential LSE** identified.
- ✕m Operational activities will not result in increases in noise and vibration across functionally linked land of the designated features as the infrastructure will be buried. **No LSE** identified.
- ✕n Lighting of construction and decommissioning activities will not result in a likely significant effect on the designated features of the Arun Valley SPA as it will be highly localised (the widest effects associated with vehicle headlights) in an area with an abundance of potential foraging areas. Further, Bewick's swan typically feeds during the day. No LSE.
- ✕o The cable route will not be lit during the operational phase, and the substation location (which will have security lighting) will be in excess of 10km from the Arun Valley SPA and therefore not in an area that could be considered functionally linked. No LSE.
- ✓p Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ✕q The Proposed Development will not contribute towards in-combination effects on the Arun Valley Ramsar site (for habitat, flora and invertebrate features) due to the nature of the designated feature and the geographic separation between any Proposed Development infrastructure and the Ramsar boundary. No LSE.
- ✕r The Proposed Development will not contribute towards in-combination effects on the Arun Valley Ramsar site (for habitat, flora and invertebrate features) due to the nature of the designated feature and the geographic separation between any Proposed Development infrastructure and the Ramsar boundary. No LSE.
- ✕s The Proposed Development will not contribute towards in-combination effects on the Arun Valley Ramsar site (for habitat, flora and invertebrate features) due to the nature of the designated feature and the geographic separation between any Proposed Development infrastructure and the Ramsar boundary. No LSE.
- ✕t Habitats that may be used by northern pintail for foraging are within the Scoping Boundary, although are remote from all cable route and substation options as shallow inland waters are avoided by the cable route options. No LSE

End of Matrix 2

## 4. Matrix 3: Arun Valley Special Protection Area - HRA Screening for Rampion 2

Name of European site:										Arun Valley (UK) SPA																													
EU Code:										UK9020281																													
Distance to Development										2.8 km from Onshore Cable Corridor. 26km from Array																													
Likely Effects of Proposed Development																																							
Effects										Changes in hydrology			Pollution events			Emissions to air			Invasive non-native species			Land take / land cover change			Collision risk (on migration)			Fragmentation or severance of habitats			Noise and vibration			Increased light levels			In-combination		
Stage of Development										C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Bewick's swan										Xa	Xb	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	✓g	Xg	✓g		Xh		✓i	Xj	✓k	✓l	Xm	✓k	Xn	Xo	Xn	✓p	Xq	✓p
Non-breeding waterfowl assemblage Shoveler, teal, wigeon, Bewick's swan.										Xa	Xb	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	✓g	Xg	✓g		Xh		✓i	Xj	✓k	✓l	Xm	✓k	Xn	Xo	Xn	✓p	Xq	✓p

### Evidence Supporting Conclusions

Xa A reduction in water availability to, or quality of ground or surface water could degrade habitats supporting over-wintering bird features. Dewatering excavations, ground disturbance (e.g., for compounds), and fuel spillages are potential source activities. However, as subsurface works will be limited to the coastal area and the local water table will be connected to sea levels, no impacts on freshwater groundwater levels are anticipated. The indicative onshore construction corridor has, where possible, been routed to avoid designated sites and relevant water supplies. Given that there are no such features in the vicinity of the proposed works, the HRA finds that neither the landfall nor cable laydown works would result in Likely Significant Effects (LSE) due to changes in hydrology during construction, alone or in-combination. No LSE identified.

Xb Potential effects on hydrology during the operation and maintenance phase are expected to be considerably reduced and limited in scale in comparison to the construction phase. Activities will not involve dewatering works and therefore no impact on groundwater levels is anticipated. The HRA has further considered the potential for water availability and quality to groundwater or surface water supporting designated sites and features (i.e., the habitats supporting of over-wintering birds), which could result during isolated repairs, vehicles onsite or the presence of limited below ground concrete-lined joint bays and backfilled material around cable circuits. With reference to the limited scope of these activities, there is only the potential for localised ground disturbance and contamination, , the HRA finds that neither the landfall nor cable laydown works would result in Likely Significant Effects (LSE) due to changes in hydrology during construction, alone or in-combination. No LSE identified.

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## Matrix 3: Arun Valley SPA (Cont.)

### Evidence Supporting Conclusions

- ×c The decommissioning of the wind farm is anticipated to be restricted to the removal and reinstatement of the onshore substation site. Electrical cables will be left in-situ onshore to minimise environmental impacts associated with removal. Decommissioning effects will be similar to construction phase effects, albeit in reverse and of a lower magnitude as sub-surface cable infrastructure will be left in-situ. A finding of no LSE (alone or in-combination) is determined.
- ×d The ZOI associated with potential pollution during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Arun Valley SPA, therefore no direct effects on the designated site are predicted. Although functionally linked land could be affected, the areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat within the Arun Valley. No potential for LSE identified.
- ×e The Arun Valley SPA is not within 200m of the PEIR Assessment Boundary and is therefore outside the ZOI for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Arun Valley SPA is also not within 200m of roads that are likely to be used by traffic associated with construction or decommissioning activity. Any vehicles on roads within 200m that are associated with the Proposed Development will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible. No LSE is concluded on this basis.
- ×f The ZOI associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Arun Valley SPA. Any invasive species colonising functionally linked land would be highly localised and occupy only a small fraction of the foraging habitat available within the Arun Valley. Therefore, no LSE applies.
- ✓g The Arun Valley SPA is over 3km away from any location that may be subject to permanent or temporary land take associated with the Proposed Development. Although functionally linked land may be within the onshore Cable Corridor it will only be affected temporarily during construction and will only represent a small fraction of the grass and cropland available within the Arun Valley. This pathway is advanced to Stage Two, however, with regards to the restoration of habitats. The restoration works themselves will not result in any effects beyond those already accounted for, as habitats excavated will be restored in a linked fashion. After which, the land will be drilled with a crop (or re-seeded if grassland). It is acknowledged, however, that before the land recovers, there will be a period of time when the habitat is degraded. Such habitats could represent supporting (functionally linked) habitat for features of this site. The implications of this will be accounted for at HRA Stage Two with reference to the amount and location of alternative habitat. Potential for LSE identified.
- ×h This site is located 26km from the Array. Some designated species, notably Bewick's swan, travel east to their arctic breeding grounds (Wright *et al.*, 2015 and Griffin *et al.*, 2016) the potential for LSE due to collision risk during migration has been considered. As this SPA is situated to the north of the Array, migrating birds that head east could not fly through the Array without flying south first for 26km. Such a scenario is very unlikely. The Strategic Ornithological Support Services Proposed Development SOSS-05: Review of bird migration routes in relation to offshore wind farm development zones is considered to provide sufficient evidence to conclude no LSE.
- ✓i Habitats that may be used by Bewick's swan from the Arun Valley for foraging are present within the PEIR Assessment Boundary. The activities during the construction phases could fragment the habitat, resulting in displacement of foraging individuals. In light of this, and on the advice of Natural England (Natural England, 2020), this pathway advanced to Stage Two. Potential for LSE identified.
- ×j Habitats that may be used by Bewick's swan for foraging are present within the PEIR Assessment Boundary, however during the operational period all infrastructure within functionally linked land will be below the surface; thereby avoiding fragmentation. Therefore, no LSE applies.

Cont. on next page

Matrix 3: Arun Valley SPA (Cont.)

- ✓k The impacts during decommissioning are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of potential LSE is appropriate.
- ✓l Construction and decommissioning activities will result in increases in noise and vibration across functionally linked land of the designated features of the Arun Valley SPA. This could potentially result in the disturbance and displacement of foraging individuals. Potential LSE identified.
- ×m Operational activities will not result in increases in noise and vibration across functionally linked land of the designated features as the infrastructure will be buried. No LSE identified.
- ×n Lighting of construction and decommissioning activities will not result in a likely significant effect on the designated features of the Arun Valley SPA as it will be highly localised (the widest effects associated with vehicle headlights) in an area with an abundance of potential foraging areas. Further Bewick's swan typically feeds during the day. No LSE.
- ×o The cable route will not be lit during the operational phase, and the substation location (which will have security lighting) will be in excess of 10km from the Arun Valley SPA and therefore not in an area that could be considered functionally linked. No LSE.
- ✓p Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ×q The magnitude of non-significant effects alone is small, such that the contribution would not be discernible or meaning in-combination with other plans and projects, no LSE.

End of Matrix 3

5. Matrix 4: Arun Valley Special Area of Conservation. HRA Screening for Rampion 2

Name of European site:	Arun Valley (UK) SAC																										
EU Code:	UK0030366																										
Distance to Proposed Development	2.8 km from Onshore Cable Corridor																										
Effects	Changes in hydrology			Pollution events			Emissions to air			Invasive non-native species			Land take / land cover change			Fragmentation or severance of habitats			Noise and vibration			Increased light levels			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramshorn snail	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe										Xf	Xf	Xf

Evidence Supporting Conclusions

Xa	The Arun Valley SAC is not within the ZOI associated with the potential changes in hydrology; the population of ramshorn snail associated with the SAC is also restricted in mobility and will therefore not access functionally linked land within the ZOI either. Therefore, no LSE is identified.
Xb	The Arun Valley SAC is not within the ZOI associated with the potential pollution events; the population of ramshorn snail associated with the SAC is also restricted in mobility and will therefore not access functionally linked land within the ZOI either. No LSE.
Xc	The Arun Valley SAC is not within 200m of the Scoping Boundary and is therefore outside the ZOI for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Arun Valley SAC is also not within 200m of roads that are likely to be used by traffic associated with construction or decommissioning activity. Any vehicles on roads within 200m that are associated with the Proposed Development will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible. A finding of no LSE is therefore appropriate.
Xd	The ZOI associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Arun Valley SAC. No LSE identified.
Xe	The Arun Valley SAC is over 3km away from any location that may be subject to permanent or temporary land take associated with the Proposed Development. This feature is therefore well outside the ZOI of the Proposed Development. As there is no pathway to effect, a finding of no LSE applies.
Xf	The Proposed Development will not contribute towards in-combination effects on the Arun Valley SAC due to the nature of the designated feature and the geographic separation between any Proposed Development infrastructure and the SAC boundary. Therefore, no LSE is identified.

End of Matrix 4

6. Matrix 5: The Mens Special Conservation Area (SAC). HRA Screening for Rampion 2

Name of European site:	The Mens (UK) SAC																										
EU Code:	UK0012716																										
Distance to Proposed Development	11 km from Onshore Cable Corridor																										
Effects	Changes in hydrology			Pollution events			Emissions to air			Invasive non-native species			Land take / land cover change			Habitat fragmentation			Noise and vibration			Increased light levels			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Barbastelle bat	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	✓e		✓e	✓f	Xg	✓f	Xh	Xh	Xh	✓i	Xj	✓i	✓l	✓m	✓l
Atlantic acidophilous beech forests with Ilex and sometimes Taxus in the shrub layer (Quercion robori-petraeae or Ilici-Fagenion)																											

Evidence Supporting Conclusions

- Xa

The Mens SAC lies outside of the ZOI. Potential changes to foraging habitat for barbastelle is discounted due to the wide range of habitats favoured (e.g., riparian zones, woodlands, hedgerow, field margins etc. (Zeal, Davidson-Watts & Jones, 2012), including those that are not Ground Water Dependent Terrestrial Ecosystems (GWDTE). Therefore, no LSE is identified.
- Xb

The ZOI associated with the loss of pollutants during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Mens SAC, therefore no direct effects on the designated site are predicted. Although functionally linked land could be affected, the areas would be highly localised and small in extent and would represent only a small fraction of available foraging habitat for barbastelle in the area and would be towards the limits of their typical foraging range. No LSE identified.
- Xc

The Mens SAC is not within 200m of the Scoping Boundary. Roads within 200m of the SAC boundary includes the A272, however this is unlikely to carry construction traffic as it is on an east/west route on the opposite side of the Arun Valley than the cable route. Even should small amounts of construction traffic access these roads the emissions can be discounted as the increase in traffic will be temporary and limited ensuring that the extent of the effect will be low, temporary, and reversible. No LSE.
- Xd

The ZOI associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Mens SAC. No LSE identified.
- ✓e

There is 35ha of area within the PEIR Assessment Boundary that overlaps with the 12km buffer placed around The Mens SAC by the draft Sussex Bat Protocol (SDNPA & Natural England, 2018). This 35ha is dominated by habitats that are sub-optimal for barbastelle bat (e.g., open arable fields) and represents only a very small proportion of the habitat available to these wide-ranging bats. This pathway will be addressed at Stage Two AA, on the basis of advice received at consultation. Potential for LSE is therefore identified.

Cont. on next page



## Matrix 5: The Mens SAC (Cont.)

### Evidence Supporting Conclusions

- ✓f The Mens SAC is within 12km of areas that may be subject to construction and decommissioning activities; within this area are habitats that barbastelle from the SAC could forage across; these are therefore assumed to be functionally linked and could be fragmented by the works. Potential for LSE is identified.
- ×g Habitats that may be used by barbastelle for foraging are present within the Scoping Boundary, however during the operational period all infrastructure within functionally linked land will be below the surface; thereby avoiding fragmentation. No LSE.
- ×h Noisy activities associated with the Proposed Development will not take place close to The Mens SAC and will therefore not disturb roosting barbastelle. The majority of construction and decommissioning activities will be undertaken during the daytime when bats are not present, and operational noise will be limited, and largely associated with the substation that is well in excess of 12km away from the SAC. A finding on No LSE is appropriate.
- ✓i Barbastelles are sensitive to lighting and could potentially forage across the areas that may require to be lit for construction and decommissioning purposes, leading to displacement. Therefore, a Stage Two assessment will be undertaken. Potential for LSE is identified.
- ×j Areas within 12km of the Mens SAC will not be lit during the operational phase, as all infrastructure will be below ground. No potential for LSE identified.
- ×k No likely significant effects are identified for the habitat feature of the Mens SAC due to the distance of the designation boundary from areas directly affected by the Proposed Development. Therefore, in-combination effects can be discounted.
- ✓l Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ✓m The extent of non-significant effects identified could act in-combination with other plans and Proposed Developments resulting in a greater level of impact than for the Proposed development acting alone. Potential for LSE in-combination.

End of Matrix 5



7. Matrix 6: Duncton to Bignor Escarpment SAC. HRA Screening for Rampion 2

Name of European site:	Duncton to Bignor Escarpment (UK) SAC																										
EU Code:	UK00301138																										
Distance to Proposed Development	6.5km from Onshore Cable Corridor																										
Effects	Changes in hydrology			Pollution events			Emissions to air			Invasive Non-native Species			Land take / land cover change			Fragmentation or severance of habitats			Noise and vibration			Increased light levels			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramshorn snail	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe										Xf	Xf	Xf

Evidence Supporting Conclusions

- Xa The Duncton to Bignor Escarpment SAC is not within the ZOI associated with the potential changes in hydrology. No potential for LSE identified.
- Xb The Duncton to Bignor Escarpment SAC is not within the ZOI associated with the potential pollution events. No potential for LSE identified.
- Xc The Duncton to Bignor Escarpment SAC is not within 200m of the Scoping Boundary and is therefore, outside the ZOI for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. Roads within 200m of the SAC include the A285, however this is unlikely to carry construction traffic as it is a route into Chichester town centre. Even should small amounts of construction traffic access these roads the emissions can be discounted as the increase in traffic will be temporary and limited ensuring that the extent of the effect will be low, temporary and reversible. No LSE.
- Xd The ZOI associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Duncton to Bignor Escarpment SAC. No LSE identified.
- Xe The Duncton to Bignor Escarpment SAC is over 6km away from any location that may be subject to permanent or temporary land take associated with the Proposed Development. No LSE identified.
- Xf The Proposed Development will not contribute towards in-combination effects on the Duncton to Bignor Escarpment SAC due to the nature of the designated feature and the geographic separation between any Proposed Development infrastructure and the SAC boundary. No LSE identified.

End of Matrix 6

8. Matrix 7: Pagham Harbour Special Protection Area (SPA). HRA Screening for Rampion 2

Name of European site:							Pagham Harbour (UK) SPA																	
EU Code:							UK9012041																	
Distance to Proposed Development							15.3km from Array to Landward Boundary																	
Effects							Collision risk (migration)			Collision risk (Breeding)			Barrier effects			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Direct disturbance and displacement		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern											√a			Xb		Xc		Xd		Xc		Xe	Xf	Xd
Ruff								√g																
Little tern																								
Dark-bellied brent goose								√g																

Effects	Changes in hydrology			Pollution events			Emissions to air			Invasive Non-Native Species			Land take / land cover change			Fragmentation or severance of habitats			Noise and vibration			Increased light levels			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern																								Xh	√i	Xd	
Ruff																									√i		
Little tern																											
Dark-bellied brent goose	Xj	Xj	Xj	Xk	Xk	Xk	Xl	Xl	Xl	Xm	Xm	Xm	Xn	Xn	Xn	Xo	Xo	Xo	Xo	Xo	Xo	Xo	Xo	Xo	Xh	√i	Xd

Cont. on next page

## Matrix 7: Pagham Harbour SPA (Cont.)

### Evidence Supporting Conclusions

- ✓a Species has moderate vulnerability to collision risk (Bradbury *et al.* 2014) and array is located within mean-maximum foraging range plus 1SD of this SPA for this species (Woodbury *et al.* 2019). LSE can therefore not be discounted at this stage.
- ✗b These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al.* 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted.
- ✗c On the basis no tern species have been recorded foraging within the Rampion 2 array area from site-specific survey data during the breeding season there is considered to be no pathway to effect. LSE can be discounted.
- ✗d The impacts during decommissioning are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of no LSE is appropriate.
- ✗e This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Furness *et al.*, 2013). Therefore, LSE can be discounted..
- ✗f These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al.* 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted.
- ✓g Potential collision risk to species during migration at an alone and in-combination level. Despite species not being recorded at Rampion 2 array and being likely to only result in negligible numbers passing through the Rampion 2 site during migration, there is a low risk of LSE. However, as a precautionary approach LSE cannot be discounted.
- ✗h For all effect pathways acting alone, the potential for impacts was found to be extremely limited, based on low species sensitivity and because the significance of potential effects at a population level is considered to decrease with distance. Over the relevant scales, there is considered to be no potential for a contribution to in-combination effects as a level detectable above natural variability. A finding of no LSEI therefore applies.
- ✓i Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ✗j The Pagham Harbour SPA is not within the ZOI associated with the potential changes in hydrology; dark-bellied brent geese functionally linked land is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the SPA boundary.
- ✗k The Pagham Harbour SPA is not within the ZOI associated with the potential pollution events; dark-bellied brent geese functionally linked land is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be, at least several hundred metres, further away from the SPA boundary.
- ✗l The Pagham Harbour SPA is not within 200m of the Scoping Boundary and is therefore beyond any ZOI for emissions associated with vehicles or plant installing, maintaining or decommissioning the proposed infrastructure. The Pagham Harbour SPA is also not within 200m of roads that are likely to be used by traffic associated with construction, operation or decommissioning activity. Any vehicles on roads within 200m that are associated with the Proposed Development will be small in number, will take place over a temporary period and will not result in an effect that would be considered irreversible. LSE can be discounted.
- ✗m The ZOI associated with the spread of invasive non-native species during the construction, operation or decommissioning phases of the Proposed Development does not overlap with the Pagham Harbour SPA. LSE can be discounted.
- ✗m The Pagham Harbour SPA is over 10km away from any location that may be subject to permanent or temporary land take associated with the Proposed Development. LSE can be discounted.
- ✗o Functionally linked land for dark-bellied brent geese is unlikely to be affected as the Scoping Boundary is at the edge of their foraging range, and any infrastructure is likely to be at least several hundred metres further away from the SPA boundary.

End of Matrix 7

9. Matrix 8: Pagham Harbour Ramsar - HRA Screening - Rampion 2

Name of European site:	Pagham Harbour (UK) Ramsar																	
EU Code:	UK11052																	
Distance to Proposed Development	13.5 km from Array																	
Likely Effects of Proposed Development																		
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Dark-bellied brent goose		√a															√b	

Evidence Supporting Conclusions

- √a Potential collision risk to species during migration at an alone and in-combination level. Despite species not being recorded at Rampion 2 array and being likely to only result in negligible numbers passing through the Rampion 2 site during migration, there is a low risk of LSE. However, as a precautionary approach LSE cannot be discounted at this stage
- √b Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 8

10. Matrix 9: Portsmouth Harbour HRA Screening - Rampion 2

Name of European site:	Portsmouth Harbour (UK) Ramsar																	
EU Code:	UK11055																	
Distance to Proposed Development	36.1 km to Array																	
Likely Effects of Proposed Development																		
Effect	Collision risk (breeding)			Changes in prey availability and behaviour			Indirect impacts through the effects on prey species			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Dark-bellied brent goose		√a															√b	

Evidence Supporting Conclusions

- √a
- Potential collision risk to species during migration at an alone and in-combination level. Despite species not being recorded at Rampion 2 array and being likely to only result in negligible numbers passing through the Rampion 2 site during migration, there is a low risk of LSE. However, as a precautionary approach LSE cannot be discounted at this stage.
- √b
- Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 9

11. Matrix 10: Portsmouth Harbour Special Protection Area - HRA Screening for Rampion 2

Name of European site:	Portsmouth Harbour (UK) SPA																		
EU Code:	UK9011051																		
Distance to Proposed Development	36.1 km to Array																		
Likely Effects of Proposed Development																			
Effect	Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts through the effects on prey species			Barrier effect			Direct disturbance displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Red-breasted merganser		√a															√b		
Black-tailed godwit		√a															√b		
Dunlin		√a															√b		
Dark-bellied brent goose		√a															√b		

Evidence Supporting Conclusions

- √a Potential collision risk to species during migration at an alone. Despite species not being recorded at Rampion 2 array there is a low potential for a small (negligible) number of the species to pass through the Rampion 2 site during migration, and as such a similarly low risk of potential LSE to arise. On a precautionary basis, therefore, LSE is not discounted at this stage. **Potential for LSE.**
- √b Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 10

12. Matrix 11: Solent Maritime Special Area of Conservation - HRA Screening for Rampion 2

Name of European site:							Solent Maritime (UK) SAC																	
EU Code:							UK0030059																	
Distance to Proposed Development							15.7km to Array and 22.2km to Offshore Cable Corridor																	
Likely Effects of Proposed Development																								
Effects							Suspended sediment and deposition			Physical habitat loss and disturbance			Invasive Non-Native Species (INNS)			Physical processes			Pollution			In-combination		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Estuaries							√a	√c	√a	Xd	Xd	Xd	√a	√a	√a		√g		√a	√a	√a	√i	√i	√i
Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> )							√b	√c	√b	Xd	Xd	Xd	√e	√f	√e		√g		√h	√h	√h	√i	√i	√i
Spartina swards ( <i>Spartinion maritimae</i> ) (Cord-grass swards)							√b	√c	√b	Xd	Xd	Xd	√e	√f	√e		√g		√h	√h	√h	√i	√i	√i
Salicornia and other annuals colonizing mud and sand							√b	√c	√b	Xd	Xd	Xd	√e	√f	√e		√g		√h	√h	√h	√i	√i	√i
Mudflats and sandflats not covered by seawater at low tide							√b	√c	√b	Xd	Xd	Xd	√e	√f	√e		√g		√h	√h	√h	√i	√i	√i
Coastal lagoons* priority feature							√b	√c	√b	Xd	Xd	Xd	√e	√f	√e		√g		√h	√h	√h	√i	√i	√i
Sandbanks slightly covered by sea water all the time							√b	√c	√b	Xd	Xd	Xd	√e	√f	√e		√g		√h	√h	√h	√i	√i	√i
Shifting dunes along the shoreline with <i>Ammophila arenaria</i>																								
Annual vegetation of drift lines																								
Perennial vegetation of stony banks (on shingle outside reach of waves)																								
Desmoulin's whorl snail																								

Evidence Supporting Conclusions on next page



## Matrix 11: Solent Maritime SAC (Cont.)

### Evidence Supporting Conclusions

- This covers several types of estuaries as overarching habitat complexes containing certain marine and estuarine habitats with unique hydrographic regimes. The component habitats include
- ✓a habitats designated in their own right (namely mudflats and sandflats, shallow subtidal sandbanks, saltmarsh but also seagrass beds). As potential LSE is identified on a precautionary Screening distance basis for component designated features and seagrass beds, a precautionary potential LSE is also identified for the complex.
  - ✓b This habitat and its communities are sensitive to changes in water clarity and siltation rates, smothering and exposure to sediment bound contaminants. Activities during construction and decommissioning would cause a temporary increase in suspended sediment concentrations (SSC). Fine material within the sediment could be more widely distributed and deposited. Noting the distance of this feature from the source of sediment disturbances, levels are not expected to exceed background SSC typical in estuaries. However, potential for LSE is identified on a precautionary basis.
  - ✓c Sediment mobilisation during operation and maintenance activities would be considerably less than during construction, highly localised and intermittent in nature. Given the significant potential for dilution and dispersion in the open coastal environment, LSE are not expected. However, on advice from Natural England potential LSE is identified.
  - xd There is no direct physical overlap with the PEIR Assessment Boundary and this SAC. LSE is therefore discounted.
  - ✓e During construction / decommissioning, INNS could be imported by vessels or on/in material imported into the PEIR Assessment Boundary, then become established. The risk of new introductions is considered to be low due to incidental legislative controls and the high levels of INNS already on site (Natural England, 2018). A number of bio-security control measures will also be implemented. These measures are irrespective of potential effects on European sites, but could be regarded as mitigation under Sweetman 2, potential LSE is therefore identified.
  - ✓f During operation, new underwater substrates e.g., turbine foundations, cable protection could create habitat for INNS which could provide a sink for particles dispersing from an existing site/source and potentially serve as 'stepping-stones' for INNS to spread, thereby increasing the risk to habitats and ecosystems within this SAC. Given high levels of INNS have been recorded across the site (Natural England, 2018) and that the CEMP will include measures to reduce the risk of introduction, Rampion 2 is unlikely to heighten risks. However, with reference to the status of 'mitigation' during the screening stage of the HRA process, and on advice from Natural England at consultation, a precautionary potential LSE is identified.
  - ✓g Changes to physical processes associated with the presence of Rampion 2 during operation are expected to be small, localised and not capable of affecting this SAC given the distance between the Proposed development and site features. However, potential for LSE is identified on a precautionary basis and pending further information on physical processes and how array structures and/or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g., to wave action).
  - ✓h Accidental pollution is not considered likely to result in a significant effect as the scale of accidental spills will be limited by the size of the chemical or oil inventory on construction vessels. In addition, released hydrocarbons would be subject to rapid dilution, weathering and dispersion and would be unlikely to persist in the marine environment. The implementation of a Marine Pollution Contingency Plan (MPCP) would further negate any risks. These MPCP is irrespective of potential effects on European sites, but could be regarded as mitigation under Sweetman 2, potential LSE is therefore identified.
  - ✓i Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 11

13. Matrix 12: South Wight Maritime Special Area of Conservation (SAC). HRA Screening for Rampion 2

Name of European site:	South Wight Maritime (UK) SAC																	
EU Code:	UK0030061																	
Distance to Proposed Development	20.5 km to Array																	
Likely Effects of Proposed Development																		
Effect	Suspended sediment and deposition			Physical habitat loss and disturbance			Invasive Non-Native Species			Physical processes			Pollution			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Reefs	√a	√b	√a	xc	xc	xc	√d	√e	√d		√f		√g	√g	√g	√h	√h	√h
Vegetated sea cliffs of the Atlantic and Baltic Coasts																		
Submerged or partially submerged sea caves	√a	√b	√a	xc	xc	xc	√d	√e	√d		√f		√g	√g	√g	√h	√h	√h

Evidence Supporting Conclusions

- √a This habitats and its communities are sensitive to changes in water clarity and siltation rates, smothering and exposure to sediment bound contaminants. Activities during construction and decommissioning would cause a temporary increase in suspended sediment concentrations (SSC). Fine material within the sediment could be more widely distributed and deposited. Noting the distance of this feature from the source of sediment disturbances, levels are not expected to exceed background SSC typical in estuaries. However, a potential for LSE is identified on a precautionary basis.
- √b Sediment mobilisation during operation and maintenance activities would be considerably less than during construction, highly localised and intermittent in nature. Given the significant potential for dilution and dispersion in the open coastal environment, LSE are not expected. However, on a precautionary basis, and on advice from Natural England, potential LSE is identified.
- xc There is no direct physical overlap with the PEIR Assessment Boundary and this SAC. LSE is therefore discounted.

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Matrix 12: South Wight Maritime SAC (Cont.)

Evidence Supporting Conclusions (cont.)

- ✓d During construction / decommissioning, INNS could be imported by vessels or on/in material imported into the PEIR Assessment Boundary, then become established. The risk of new introductions is considered to be low due to incidental legislative controls and the high levels of INNS already on site (Natural England, 2018). A number of bio-security control measures will also be implemented. These measures are irrespective of potential effects on European sites, but could be regarded as mitigation under Sweetman 2, potential LSE is therefore identified.
- ✓e During operation, new underwater substrates e.g., turbine foundations, cable protection could create habitat for INNS which could provide a sink for particles dispersing from an existing site/source and potentially serve as 'stepping-stones' for INNS to spread, thereby increasing the risk to habitats and ecosystems within this SAC. Given high levels of INNS have been recorded across the site (Natural England, 2018) and that the CEMP will include measures to reduce the risk of introduction, Rampion 2 is unlikely to heighten risks. However, with reference to the status of 'mitigation' during the screening stage of the HRA process, and on advice from Natural England at consultation, a precautionary potential LSE is identified.
- ✓f Changes to physical processes associated with the presence of Rampion 2 during operation are expected to be small and localised and not capable of affecting this SAC given the distance between the Proposed development and site features. However, potential for LSE is identified on a precautionary basis. .
- ✓g Accidental pollution is not considered likely to result in a significant effect as the scale of accidental spills will be limited by the size of the chemical or oil inventory on construction vessels. In addition, released hydrocarbons would be subject to rapid dilution, weathering and dispersion and would be unlikely to persist in the marine environment. The implementation of a Marine Pollution Contingency Plan (MPCP) would further negate any risks. These MPCP is irrespective of potential effects on European sites, but could be regarded as mitigation under Sweetman 2, potential LSE is therefore identified.
- ✓h Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 12

14. Matrix 13: Solent and Isle of Wight lagoons Special Area of Conservation. HRA Screening for Rampion 2

Name of European site:	Solent and Isle of Wight lagoons (UK) SAC																	
EU Code:	UK0017073																	
Distance to Proposed Development	30.0km to Array																	
Likely Effects of Proposed Development																		
Effect	Suspended sediment and deposition			Physical habitat loss and disturbance			Invasive Non-Native Species			Physical processes			Pollution			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Costal lagoon* priority feature	√a	√b	√a	×c	×c	×c	√d	√e	√d		√f		√g	√g	√g	√h	√h	√h

Evidence Supporting Conclusions

- √a This habitat and its communities are sensitive to changes in water clarity and siltation rates, smothering and exposure to sediment bound contaminants. Activities during construction and decommissioning would cause a temporary increase in suspended sediment concentrations (SSC). Fine material within the sediment could be more widely distributed and deposited. Noting the distance of this feature from the source of sediment disturbances, levels are not expected to exceed background SSC typical in estuaries. However, potential for LSE is identified on a precautionary basis.
- √b Sediment mobilisation during operation and maintenance activities would be considerably less than during construction, highly localised and intermittent in nature. Given the significant potential for dilution and dispersion in the open coastal environment, LSE are not expected. However, on advice from Natural England potential LSE is identified.
- ×c There is no direct physical overlap with the PEIR Assessment Boundary and this SAC. LSE is therefore discounted.
- √d During construction / decommissioning, INNS could be imported by vessels or on/in material imported into the PEIR Assessment Boundary, then become established. The risk of new introductions is considered to be low due to incidental legislative controls and the high levels of INNS already on site (Natural England, 2018). A number of bio-security control measures will also be implemented. These measures are irrespective of potential effects on European sites, but could be regarded as mitigation under Sweetman 2, potential LSE is therefore identified.

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Matrix 13: Solent and Isle of Wight SAC (Cont.)

Evidence Supporting Conclusions (cont.)

- ✓e During operation, new underwater substrates e.g., turbine foundations, cable protection could create habitat for INNS which could provide a sink for particles dispersing from an existing site/source and potentially serve as 'stepping-stones' for INNS to spread, thereby increasing the risk to habitats and ecosystems within this SAC. Given high levels of INNS have been recorded across the site (Natural England, 2018) and that the CEMP will include measures to reduce the risk of introduction, Rampion 2 is unlikely to heighten risks. However, given the status of 'mitigation' in the HRA process, and on advice from Natural England at consultation, a precautionary potential LSE is identified.
- ✓f Changes to physical processes associated with the presence of Rampion 2 during operation are expected to be small, localised and not capable of affecting this SAC given the distance between the Proposed development and site features. However, potential for LSE is identified on a precautionary basis and pending further information on physical processes and how array structures and/or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g., to wave action).
- ✓g Accidental pollution is not considered likely to result in a significant effect as the scale of accidental spills will be limited by the size of the chemical or oil inventory on construction vessels. In addition, released hydrocarbons would be subject to rapid dilution, weathering and dispersion and would be unlikely to persist in the marine environment. The implementation of a Marine Pollution Contingency Plan (MPCP) would further negate any risks. These MPCP is irrespective of potential effects on European sites, but could be regarded as mitigation under Sweetman 2, potential LSE is therefore identified.
- ✓h Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 13

15. Matrix 14: Littoral Cauchois Special Area of Conservation (SAC) HRA Screening for Rampion 2

Name of European site:	Littoral Cauchois (France) SAC																													
EU Code:	FR2310045																													
Distance to Rampion 2	94.4km to Array																													
Effects	Increase in underwater noise			Vessel disturbance			Disturbance (above surface)			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Barriers to migration			Suspended sediment deposition			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D				C	O	D	C	O	D	C	O	D
Grey seal	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa				Xa	Xa	Xa		Xa		Xa	Xa	Xa
River lamprey	Xb	Xb	Xb	Xb	Xb	Xb							Xb	Xb	Xb	Xb	Xb	Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Sea lamprey	Xb	Xb	Xb	Xb	Xb	Xb							Xb	Xb	Xb	Xb	Xb	Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Shad	Xb	Xb	Xb	Xb	Xb	Xb							Xb	Xb	Xb	Xb	Xb	Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Freshwater sculpin																														
Southern Coenagrion																														
Jersey tiger																														

Evidence Supporting Conclusions

- Xa

The basis for site identification for grey seal was to apply the provisional seal management units (SCOS, 2017). SACs designated for grey seal that shared the South England Management Unit with Rampion 2 were considered to have a pathway to significant effects. This site is not within that Management Unit, noting this and the distance of the SAC from the Proposed development, it is concluded there is no potential for LSE (from pathway acting alone and in combination).
- Xb

Given the extent of physical effects associated with the construction of the Proposed Development it is considered that the potential for significant effect to the habitats of the migratory fish is negligible.

Matrix cont. on next page

Littoral Cauchois SAC (cont.)

Name of European site:	Littoral Cauchois (France) SAC																													
EU Code:	FR2310045																													
Distance to Rampion 2	94.4km to Array																													
Effects	Increase in underwater noise			Vessel disturbance			Disturbance (above surface)			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Barriers to migration			Suspended sediment deposition			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D				C	O	D	C	O	D	C	O	D
Geoffroy's bat																														
Reefs																														
Perennial vegetation of stony banks																														
Vegetated sea cliffs of the Atlantic and Baltic Coasts																														
Oligotrophic waters few minerals of sandy plains																														
Hard oligo-mesotrophic waters with benthic vegetation of Chara																														
Natural eutrophic lakes with Magnopotamion or Hydrocharition																														
Old acidophilous oak woods with Quercus robur on sandy plains																														

Matrix cont. on next page



Littoral Cauchois SAC (cont.)

Name of European site:	Littoral Cauchois (France) SAC																													
EU Code:	FR2310045																													
Distance to Rampion 2	94.4km to Array																													
Effects	Increase in underwater noise			Vessel disturbance			Disturbance (above surface)			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Barriers to migration			Suspended sediment deposition			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D				C	O	D	C	O	D	C	O	D
Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix																														
European dry heaths																														
Geoffroy's bat																														
Reefs																														
Lowland hay meadows																														
Molinia meadows on calcareous, peaty or clayey-silt-laden soils																														
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels																														
Alluvial forests with Alnus glutinosa and Fraxinus excelsior																														

Matrix cont. on next page

Littoral Cauchois SAC (cont.)

Name of European site:	Littoral Cauchois (France) SAC																													
EU Code:	FR2310045																													
Distance to Rampion 2	94.4km to Array																													
Effects	Increase in underwater noise			Vessel disturbance			Disturbance (above surface)			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Barriers to migration			Suspended sediment deposition			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D				C	O	D	C	O	D	C	O	D
Petrifying springs with tufa formation																														
Alkaline fens																														
Caves not open to public																														
Atlantic acidophilous beech forests with Ilex Taxus in the shrublayer																														
Asperulo-Fagetum beech forests																														
Tilio-Acerion forests of slopes, screes and ravines																														
Bechstein' s bat																														
Great crested newt																														
Stag beetle																														
Barbastelle bat																														

End of Matrix 14

16. Matrix 15: Southern North Sea Special Area of Conservation. HRA Screening for Rampion 2

Name of European site:	Southern North Sea (UK) SAC																										
EU Code:	UK0030395																										
Distance to Rampion 2	127.7km to Array																										
Effects	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Temporary increases in suspended sediments			Physical loss of habitat			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Harbour porpoise	Xa	Xa	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	Xg	Xg	Xg	Xh	Xh	Xh

Evidence Supporting Conclusions

- Xa The range applied to UK harbour porpoise sites for assessing this effect is 26 km. As this SAC does not fall within that range it is determined there is no potential for LSE.
- Xb The significance of effects at population level is considered to decrease with a) distance and b) the severity of the effect experienced locally. Given the high vessel density in the area surrounding the Scoping Boundary, the relatively small increases in vessel movements during construction and operation and maintenance are not considered significant. As this site is located over 125km from the PEIR Assessment boundary, the risk of significant injury, mortality or disturbance from vessels is considered low. LSE is therefore discounted.
- Xc This pathway to indirect effects due to insufficient prey resource is weak for this highly-mobile receptor (with adaptive diet). Only temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, and in view of the considerable expanse of alternative habitat available, there would continue to be sufficient prey resource available to support harbour porpoise from this SAC. LSE (from pathway acting alone) is therefore discounted.
- Xd The Proposed Development has very low potential to generate emissions to the marine environment during the construction, operation and maintenance activities proposed. Further applying professional judgement about the nature of the receiving environment, it is anticipated that contamination would be subject to significant dilution and quickly dissipated to non-harmful levels in the open coastal environment. The risk of population level impacts to this SAC located over 125 km from the source of ay pollutants is negligible. LSE (from this pathway acting alone) is therefore discounted.

Cont. on next page

Southern North Sea SAC (cont.)

Evidence Supporting Conclusions

- ×e As cetaceans often reside in turbid waters, the potential level, extent and duration of any increase in suspended sediment would be negligible as regards the ecology of the species and the proximity of this designated site (from this pathway acting alone) is therefore discounted.
- ×f The small amount of direct habitat lost to accommodate Proposed Development infrastructure (seabed and water column) is considered *de minimis* to both the harbour porpoise within this SAC and its prey resources in the context of the vast extent of similar habitat still available. LSE (from this pathway acting alone) is therefore discounted.
- ×g EMF may be emitted from the submarine circuits into the water but is predicted to be of minor significance based on studies on the potential effects of EMF generated by wind farm submarine cables that have shown effects to be highly localised and non-significant. LSE (from this pathway acting alone) is therefore discounted.
- ×h No in-combination issues are identified. Project-related impacts to species from this site (over 125 km from the Scoping Boundary) would not amount to a discernible contribution to adverse effects in-combination with other project activities, or external plans or projects.

End of Matrix 15

## 17. Matrix 16a: Transboundary sites - harbour porpoise (1-10 of 24). HRA Screening for Rampion 2

Name of European site:	Transboundary harbour porpoise sites (24 sites) (all sites located in France unless otherwise indicated)																										
EU Code:	BE: Belgium																										
Distance to Rampion 2	Between 101.6km – 188km																										
Effects	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Temporary increases in suspended sediments			Physical loss of habitat			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Récifs et marais arrière-littoraux du Cap Lévi à la Pointe de Saire	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Recifs Griz-Nez Blanc-Nez SAC	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Baie de Canche et Couloir des trois estuaries SAC	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Baie de Seine occidentale SAC	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Baie de Seine orientale SAC	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Bancs de Flandres SAC/SCI	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Vlaamse Banken SAC (BE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
SBZ 1 / ZPS 1 (BE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
SBZ 2 / ZPS 2 (BE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
SBZ 3 / ZPS 3 (BE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc

Cont. on next page

## 18. Matrix 16b: Transboundary - harbour porpoise (11-20 of 24). HRA Screening for Rampion 2

Name of European site:	Transboundary harbour porpoise sites (24 sites) (all sites located in France unless otherwise indicated)																										
EU Code:	BE: Belgium NL: Netherlands. DE: Denmark																										
Distance to Rampion 2	Between 206.20km - 454.9km																										
Effects	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Temporary increases in suspended sediments			Physical loss of habitat			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Vlakte van de Raan SAC (BE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Noordzeekustzone SAC (NL)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Klaverbank SAC (NL) NL	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
SBZ 2 / ZPS 2 (BE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Dogger Bank SCI (UK)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Dogger Bank SAC (NL)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Steingrund SAC (DE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Hamburgisches Wattenmeer SAC (DE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Borkum-Riffgrund SCI (DE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Nationalpark Niedersächsisches Wattenmeer SAC (DE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc

Cont. on next page

19. Matrix 16c: Transboundary sites - harbour porpoise (21-24 of 24). HRA Screening for Rampion 2

Name of European site:	Transboundary harbour porpoise sites (24 sites) (all sites located in France unless otherwise indicated)																										
EU Code:	DE: Denmark																										
Distance to Rampion 2	Between 206.20km - 454.9km																										
Effects	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Temporary increases suspended sediments			Physical loss of habitat			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sylter Aussenriff SCI (DE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Helgoland mit Helgoländer Felssockel SAC (DE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
NTP S-H Wattenmeer und angrenzende Küstengebiete SAC (DE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc
Kosterfjorden-Väderöfjorden SAC (DE)	Xa	Xb	Xa	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xd	Xc

Evidence Supporting Conclusions

Drawing on literature associated with the Southern North Sea SAC/SCI e.g. (JNCC, 2015), the range applied to the Screening assessment, within which significant effects from underwear noise Xa might occur, is 26 km. This value (range) encompasses risk of injury (onset of Permanent Threshold Shift) and extends to address risk of habitat loss due to underwater noise driven disturbance. As none of these SACs fall within that range it is determined there is no potential for LSE.

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Transboundary sites - harbour porpoise

Evidence Supporting Conclusions (cont.)

Each SAC is located over 100 km from the Array and Offshore cable corridor and well outside the Proposed Development's ZOI. Direct effects would not, therefore, result to harbour porpoise when present within their respective SACs. Due to the mobility of cetaceans, however, impacts could manifest on individuals associated with this SAC population that have left the confines of their host site and are present within the Proposed Development's sphere of influence. It is assumed that all SACs with potential connectivity to the species known within the effect footprint of the Proposed Development have the theoretical potential to be affected. However, the likelihood that a feature from this SAC is a) present within Proposed Development's effect footprint and b) the significance of effects to this SAC at population level are considered to decrease with a) distance, b) the severity of the effect experienced locally and c) apportionment to the other SACs within the species range. For this pathway, the severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance. The effect has therefore been considered and discounted for potential LSE from this pathway acting alone.

×b

No LSE in-combination are identified on current information. It is determined that Proposed Development-related impacts over these scales would be small to the extent that impacts would not be likely to amount to a discernible contribution to significant effects in-combination with other project related activities, or external plans or projects. This finding will be reviewed following detailed assessment of impacts at later stages of the application process.

×c

End of Matrix 16 (a – c)

20. Matrix 17a: Transboundary sites - bottlenose dolphin. HRA Screening for Rampion 2 (sites 1- 7 of 15)

Name of European site:	Transboundary bottlenose dolphin sites (15 sites) (all sites located in France unless otherwise indicated)																										
EU Code:	Various																										
Distance to Rampion 2	Between 115.km and 220.4km																										
Effects	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Temporary increases in suspended sediments			Physical loss of habitat			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Récifs et landes de la Hague SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Baie de Seine orientale SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Anse de Vauville SAC/SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Banc et récifs de Surtainville	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Chausey SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Nord Bretagne DH SAC/SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Cap d'Erquy-Cap Fréhel	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa

Evidence Supporting Conclusions

The broadscale marine mammal data available clearly shows that the eastern English Channel (east of the Isle of Wight to Dungeness) typically holds a relatively low density and diversity of cetacean species. While connectivity between Rampion 2 and these SACs is possible (via effects on a small number of individuals that enter the ZOI), the significance of effects at population level to this SAC population is considered to decrease to non-significant levels with distance and no LSE is concluded on this basis and the low risk of exposure. Proposed Development-related impacts to species from these sites (all over 100 km from the Scoping Boundary) would be small to the extent impacts would not amount to a discernible contribution to significant effects, alone or in-combination.

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21. Matrix 17b: Transboundary bottlenose dolphin. HRA Screening for Rampion 2 (sites 8 – 15 of 15)

Name of European site:	Transboundary bottlenose dolphin sites (15 sites) (all sites located in France unless otherwise indicated)																										
EU Code:	Various																										
Distance to Rampion 2	Between 115.km and 220.4km																										
Effects	Increase in underwater noise			Vessel disturbance			Vessel collision risk			Changes in prey availability / behaviour			Pollution			Temporary increases in suspended sediments			Physical loss of habitat			Electromagnetic fields (EMF)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Falaises du Cran aux Oeufs et du Cap Gris-Nez, Dunes du Chatelet, Marais de Tardingenhen et Dunes de Wissan SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Côte de Cancale à Paramé SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Côte de Granit rose-Sept-Iles SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Abers - Côtes des légendes SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Ouessant-Molène SAC/ SCI	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Chaussée de Sein SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Mers Celtiques Talus du golfe de Gascogne SAC	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa

Evidence Supporting Conclusions

Xa The broadscale marine mammal data available clearly shows that the eastern English Channel (east of the Isle of Wight to Dungeness) typically holds a relatively low density and diversity of cetacean species. While connectivity between Rampion 2 and these SACs is possible (via effects on a small number of individuals that enter the ZOI), the significance of effects at a population level to this SAC population is considered to decrease to non-significant levels with distance and no LSE is concluded on this basis and the low risk of exposure. Project-related impacts to species from these sites (all over 100 km from the Scoping Boundary) would be small to the extent impacts would not amount to a discernible contribution to significant effects, alone or in-combination.

End of Matrix 17 (a – b)

22. Matrix 18: Solent and Dorset Coast Special Protection SPA - HRA Screening for Rampion 2

Name of European site:				Solent and Dorset Coast (UK) pSPA																	
EU Code:				UK9020330																	
Distance to Proposed Development				14.7km from Array to Landward Boundary																	
Likely Effects of Proposed Development																					
Effect				Collision risk (breeding)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern					Xa		Xb		Xb		Xb		Xc		√d	Xe	√f	√g	Xh	√g	
Sandwich tern					Xa		Xb		Xb		Xb		Xc		√d	√d	√f	√g	√g	√g	
Little tern					Xa		Xb		Xb		Xb		Xc		√d	Xe	√f	√g	Xh	√g	

Evidence Supporting Conclusions

- ×a This SPA is designated for foraging birds from nearby breeding colonies. Breeding SPAs have been considered for these impacts.
- On the basis no tern species have been recorded foraging within the Rampion 2 array area from site-specific survey data during the breeding season (see **PEIR Appendix 12.1: Offshore & intertidal ornithology baseline technical report, Volume 4**) is considered to be no pathway to effect. LSE can be discounted.
- ×b
- ×c Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted.
- √d This species has moderate vulnerability to displacement by offshore wind farms (Bradbury *et al.* 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). The array is within the mean-maximum foraging range plus 1SD for this species (Woodward *et al.* 2019). Therefore, LSE cannot be discounted at this stage.

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- ×e Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted.
- ✓f The impacts during decommissioning are considered to be similar and potentially less than those outlined for construction. Potential for LSE.
- ✓g Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ×h For all effect pathways acting alone, the potential for impacts was found to be extremely limited, based on low species sensitivity and because the significance of potential effects at a population level is considered to decrease with distance. Over the relevant scales, there is considered to be no potential for a contribution to in-combination effects as a level detectable above natural variability. A finding of no LSEI therefore applies.

End of Matrix 18

23. Matrix 19: Chichester and Langstone Harbours Special Protection SPA - HRA Screening for Rampion 2

Name of European site:							Chichester and Langstone Harbours (UK) SPA																				
EU Code:							UK9011011																				
Distance to Proposed Development							23.1km from Array to Landward Boundary																				
Likely Effects of Proposed Development																											
Effect							Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern											√a		Xb		Xc		Xd		Xe		Xf	Xg	Xc	Xh	√i	Xh	
Sandwich tern								√a					Xb		Xc		Xd		√j		Xf	√j	Xc	Xh	√i	Xh	
Little tern																											

Evidence Supporting Conclusions (terns)

- √a This species has moderate vulnerability to collision risk with turbines (Bradbury *et al*, 2014). Rampion 2 is located within the mean-maximum foraging range plus 1SD of this species (Woodward *et al*, 2019) from this SPA. Therefore, LSE cannot be discounted.
- Xb Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- Xc The impacts during decommissioning are considered to be similar and potentially less than those outlined for construction. A finding of no LSE is appropriate.
- Xd Temporary and low-impact effects are anticipated for local fish and benthic ecology. As such, there would be sufficient alternative resource available to support the species population. Consequently, LSE can be discounted.
- Xe These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al*, 2014) and evidence from previous Proposed Development assessments have found no LSE. Consequently, LSE can be discounted.

Matrix 19: Chichester and Langstone Harbours SPA (Cont.)

Evidence Supporting Conclusions

- ×f This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Furness *et al.*, 2013). Therefore, LSE can be discounted.
- ×g Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.*, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted.
- ×h Potential (non-significant) effects are limited to the extent they would not amount to LSE in-combination with other plans and projects
- ✓i Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ✓j This species has moderate vulnerability to displacement by offshore wind farms (Bradbury *et al.* 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). The array is within the mean-maximum foraging range plus 1SD for this species (Woodward *et al.* 2019). Therefore, LSE cannot be discounted.



Matrix 19: Chichester and Langstone Harbours SPA (Cont.)

Name of European site:	Chichester and Langstone Harbours (UK) SPA																					
EU Code:	UK9011011																					
Distance to Proposed Development	23.1km from Array to Landward Boundary																					
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D		O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Common shelduck					✓j															✓h		
Wigeon					✓j															✓h		
Teal					✓j															✓h		
Pintail					✓j															✓h		
Shoveler					✓j															✓h		
Red-breasted merganser					✓j															✓h		

Evidence Supporting Conclusions

- ✓j Potential collision risk to species during migration at an alone and in-combination level. Despite species not being recorded at Rampion 2 array, there is a low potential for a small (negligible) number of the species to pass through the Rampion 2 site during migration. As such, there is a similarly low risk of potential LSE to arise. On a precautionary basis, therefore LSE is not discounted at this stage. Potential for LSE.
- ✓h Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

Matrix 19: Chichester and Langstone Harbours SPA (Cont.)

Name of European site:							Chichester and Langstone Harbours (UK) SPA															
EU Code:							UK9011011															
Distance to Proposed Development							23.1km from Array to Landward Boundary															
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D		O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Ringed plover					√j															√h		
Grey plover					√j															√h		
Sanderling					√j															√h		
Bar-tailed godwit					√j															√h		
Curlew					√j															√h		
Redshank					√j															√h		
Turnstone					√j															√h		
Dunlin					√j															√h		
Dark-bellied brent goose					√j															√h		

24. Matrix 20: Chichester & Langstone Harbours Ramsar - HRA Screening of Rampion 2

Name of European site:										Chichester and Langstone Harbours (UK) Ramsar																				
EU Code:										UK11013																				
Distance to Proposed Development										22.2 km from Array																				
Likely Effects of Proposed Development																														
Effect										Collision risk (breeding)			Collision risk (migration)			Changes in prey availability behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development										C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ringed plover														√a														√b		
Black-tailed godwit														√a														√b		
Redshank														√a														√b		
Dark-bellied brent goose														√a														√b		
Shelduck														√a														√b		
Grey plover														√a														√b		
Dunlin														√a														√b		
Waterbird assemblage- Wintering <sup>1</sup> Including bar-tailed godwit, curlew, dark-bellied Brent geese, dunlin, grey plover, pintail, red-breasted merganser, redshank, ringed plover, sanderling, shelduck, shoveler, teal, turnstone and wigeon.														√a														√b		

Evidence Supporting Conclusions

- √a Potential collision risk to species during migration. Species has not been recorded at Rampion 2 Array. Therefore, negligible numbers likely pass through the Rampion 2 site during migration equating to a very low risk of LSE. However, on a precautionary basis, this pathway will be advanced to the Stage Two assessment.
- √b Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 20

<sup>1</sup> (species not listed in Ramsar criteria).

25. Matrix 21: Solent and Southampton Water Special Protection Area - HRA Screening for Rampion 2

Name of European site:										Solent and Southampton Water (UK) SPA																				
EU Code:										UK9011061																				
Distance to Proposed Development										29.6 km from Array to Landward Boundary																				
Likely Effects of Proposed Development																														
Effect										Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance displacement			In-combination		
Stage of Development										C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern											√a					Xb		Xb		Xb			√c		Xd	√e	Xd	Xf	√g	Xf
Ringed plover														√h														√g		
Teal														√h														√g		
Black-tailed godwit														√h														√g		
Dark-bellied brent goose														√h														√g		
Waterbird assemblage. Wintering: black-tailed godwit, dark-bellied Brent goose, ringed plover, teal.														√h														√g		
Mediterranean gull																														
Roseate tern																														
Common tern																														
Little tern																														

Evidence Supporting Conclusions on next page

## Solent and Southampton Water (UK) SPA (cont.)

### Evidence Supporting Conclusions

- ✓a This species has moderate vulnerability to collision risk with turbines (Bradbury *et al*, 2014). Rampion 2 is located within the mean-maximum foraging range plus 1SD of this species (Woodward *et al*, 2019) from this SPA. Therefore, LSE cannot be discounted at this stage.
- ×b Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ✓c Based on the proximity of Rampion 2 to the breeding colony and the number of foraging trips required by terns per day during the chick rearing period (Masden *et al*, 2010), an LSE cannot be discounted at this stage.
- ×d These species have very low vulnerability to disturbance from vessel movements associated with Construction activity (Fließbach *et al*, 2019). Therefore, LSE can be discounted. The impacts during the decommissioning phase are considered to be similar to and potentially less than those outlined in the Construction phase.
- ✓e This species has moderate vulnerability to displacement by offshore wind farms (Bradbury *et al*, 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016).
- ×f The magnitude of non-significant effects is small, such that the measure would not be discernible or meaning contributing in-combination with other plans and projects, no LSE.
- ✓g Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ✓h This species has not been recorded at Rampion 2 array and therefore only negligible numbers would pass through the Rampion 2 site during migration. there is considered to be a very risk of significant impacts. However, on a precautionary basis, LSE is identified, and further information will be provided in a Stage Two assessment.

End of Matrix 21

26. Matrix 22: Solent and Southampton Water Ramsar - HRA Screening for Rampion 2

Name of European site:	Solent and Southampton Water (UK) Ramsar																						
EU Code:	UK11063																						
Distance to Proposed Development	28.3 km to Array																						
Likely Effects of Proposed Development																							
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance displacement			In-combination				
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D		
Ringed plover					√a															√b			
Dark-bellied brent goose					√a															√b			
Teal					√a															√b			
Black-tailed godwit					√a															√b			
Waterbird assemblage-Wintering <sup>2</sup>					√a															√b			

Evidence Supporting Conclusions

- √a This species has not been recorded at Rampion 2 array and therefore only negligible numbers would pass through the Rampion 2 site during migration. there is considered to be a very risk of significant impacts. However, on a precautionary basis, LSE is identified, and further information will be provided in a Stage Two assessment.
- √b Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 22

<sup>2</sup> species not listed in Ramsar criteria).

27. Matrix 23: Dungeness, Romney Marsh and Rye Bay Special Protection Area - HRA Screening for Rampion 2

Name of European site:	Dungeness, Romney Marsh and Rye Bay (UK) SPA																				
EU Code:	UK9012091																				
Distance to Proposed Development	39.2 km from Array to Landward Boundary																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern					√a		×b		×b		×b			×c		×d	×e	×d	×f	√g	×f
Sandwich tern		√h			√h		×b		×b		×b			×i		√j	√j	√j	×f	√g	×f

Evidence Supporting Conclusions

- √a Species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. However, species has been screened in on a precautionary basis. Potential for LSE.
- ×b Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ×c These species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al*, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted.
- ×d This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Furness *et al.*, 2013). Therefore, LSE can be discounted.

Cont. on next page



### Matrix 23: Dungeness, Romney Marsh and Rye Bay (UK) SPA (Cont.)

#### Evidence Supporting Conclusions

- ×e Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted.
- ×f The magnitude of non-significant effects alone is small, such that the contribution would not be discernible or material in-combination with other plans and projects. No LSE.
- ✓g Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ✓h These species have moderate vulnerability to collision risk with turbines (Bradbury *et al.* 2014). Based on the proximity of the Array and the mean-maximum foraging range plus 1SD of these species (Woodward *et al.* 2019), potential connectivity during the breeding season has been established and LSE cannot therefore be discounted. Species may be sensitive to collision risk during the non-breeding bio-seasons and the potential for LSE is identified on a precautionary basis.
- ×i Rampion 2 is located beyond the mean-maximum foraging range plus 1SD of this species (Woodward *et al.*, 2019) from this SPA. Therefore, LSE can be discounted
- ✓j This species has moderate vulnerability to displacement by offshore wind farms (Bradbury *et al.* 2014) with some evidence of weak avoidance from post-Construction monitoring (Dierschke, Furness & Garth, 2016). The array is within the mean-maximum foraging range plus 1SD for this species (Woodward *et al.* 2019). Therefore, LSE cannot be discounted.

Cont. on next page

Matrix 23: Dungeness, Romney Marsh and Rye Bay (UK) SPA (Cont.)

Name of European site:										Dungeness, Romney Marsh and Rye Bay (UK) SPA																				
EU Code:										UK9012091																				
Distance to Proposed Development										39.2 km from Array to Landward Boundary																				
Likely Effects of Proposed Development																														
Effect										Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development										C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Shoveler																														
Marsh harrier																														
Hen harrier																														
Avocet																														
Golden plover																														
Ruff																														
Mediterranean gull																														
Bittern																														
Bewick's swan																														
Little tern																														
Aquatic warbler																														
Waterbird assemblage- Non-breeding: Including Bewick's swan, bittern, hen harrier, golden plover, ruff, aquatic warbler, shoveler, European white-fronted goose, wigeon, gadwall, pochard, little grebe, great crested grebe, cormorant, coot, sanderling, whimbrel, common sandpiper																														

End of Matrix 23

28. Matrix 24: Littoral seino-marin Special Protection Area - HRA Screening for Rampion 2

Name of European site:							Littoral seino-marin (FR) SPA														
EU Code:							FR2310045														
Distance to Proposed Development							72.2 km to Array														
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake		√a					Xc		Xd		Xc			Xe		Xf		Xg	Xh	√i	Xh
Lesser black-backed		√a					Xc		Xd		Xc			Xe		Xf		Xg	Xh	√i	Xh
Great black-backed gull		Xb					Xc		Xd		Xc			Xe		Xf		Xg	Xh	Xh	Xh
Fulmar		Xb					Xc		Xd		Xc			Xe		Xf		Xg	Xh	Xh	Xh

Evidence Supporting Conclusions

- √a This species has moderate to very high vulnerability to collision risk with turbines (Bradbury *et al*, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward *et al*, 2019) from this site. LSE can therefore not be discounted.
- Xb This species has low vulnerability to collision risk with turbines (Bradbury *et al*, 2014). LSE can therefore be discounted at this stage.
- Xc Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- Xd The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase. Therefore, a finding of no LSE is appropriate.

Cont. on next page (Page 1 of 5)

Matrix 24: Littoral seino-marin Special Protection Area SPA (Cont.)

Evidence Supporting Conclusions (cont.)

- ×e This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted.
- ×f This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness *et al*, 2013). LSE can therefore be discounted.
- ×g This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*, 2014). Therefore, LSE can be discounted.
- ×h The magnitude of non-significant effects alone is small, such that the contribution would not be discernible or measurable above natural variation in-combination with other plans and projects, no LSE.
- ✓i Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

Cont. on next page (Page 2 of 6)

Matrix 24: Littoral seino-marin (FR) SPA (cont.)

Name of European site:	Littoral seino-marin (FR) SPA																				
EU Code:	FR2310045																				
Distance to Proposed Development	72.2 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common sandpiper																					
Razorbill																					
Greenland white-fronted goose																					
Greylag goose																					
Short-eared owl																					
Purple sandpiper																					
Great skua																					
Hen harrier																					
Little egret																					
Merlin																					
Peregrine falcon																					
Red-throated diver																					

Cont. on next page (Page 3 of 6)

Matrix 25: Littoral seino-marin (FR) SPA (cont.)

Name of European site:	Littoral seino-marin (FR) SPA																				
EU Code:	FR2310045																				
Distance to Proposed Development	72.2 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Black-throated diver																					
Great northern diver																					
Gull-billed tern																					
European storm petrel																					
Herring gull																					
Mediterranean gull																					
Little gull																					
Sabine's gull																					
Woodlark																					
Velvet scoter																					
Common scoter																					
Gannet																					

Cont. on next page (Page 4 of 6)

Matrix 25: Littoral seino-marin (FR) SPA (cont.)

Name of European site:	Littoral seino-marin (FR) SPA																				
EU Code:	FR2310045																				
Distance to Proposed Development	72.2 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Red-breasted merganser																					
Leach's European storm petrel																					
Honey buzzard																					
Shag																					
Cormorant																					
Spoonbill																					
Slavonian grebe																					
Great crested grebe																					
Black-necked grebe																					
Manx shearwater																					
Balearic shearwater																					
Avocet																					

Cont. on next page (Page 5 of 6)



Matrix 25: Littoral seino-marin (FR) SPA (cont.)

Name of European site:							Littoral seino-marin (FR) SPA																				
EU Code:							FR2310045																				
Distance to Proposed Development							72.2 km to Array																				
Likely Effects of Proposed Development																											
Effect							Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Eider																											
Arctic skua																											
Pomarine skua																											
Little tern																											
Common tern																											
Arctic tern																											
Sandwich tern																											
Shelduck																											
Guillemot																											

End of Matrix 24 (Page 6 of 6)

29. Matrix 25: Medway Estuary and Marshes Special Protection Area - HRA Screening for Rampion 2

Name of European site:				Medway Estuary and Marshes (UK) SPA																				
EU Code:				UK9012031																				
Distance to Proposed Development				91.5 km to Array																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern*								Xa												√b				
Shelduck																								
Pintail																								
Avocet																								

Evidence Supporting Conclusions

- Xa

The common tern may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is therefore likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.
- √b

The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and Proposed Developments resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms. Potential LSE identified.

End of Matrix 25

### 30. Matrix 26: Outer Thames Estuary Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Outer Thames Estuary (UK) SPA																				
EU Code:	UK9020309																				
Distance to Proposed Development	103.5 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern <i>Sterna hirundo</i>																					
Red-throated diver <i>Gavia stellata</i> :		Xa			Xa		Xb	Xb	Xb	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xe	Xd	Xf	Xf	Xf
Little tern <i>Sternula albifrons</i> :																					

#### Evidence Supporting Conclusions

- <sup>b</sup> These species have moderate vulnerability to collision risk with turbines (Bradbury *et al.* 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al.* 2019) from this site. Potential connectivity during the breeding season although species only recorded in low numbers at the Proposed Development site. LSE can therefore be discounted.
- <sup>Xb</sup> Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- <sup>Xc</sup> Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted.
- <sup>Xd</sup> This species has very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliebsbach *et al.* 2019). Therefore, LSE can be discounted.
- <sup>Xe</sup> This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al.* 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted.
- <sup>Xf</sup> Unlikely for impacts to occur at an in-combination level due to lack of pathway for effect from Rampion 2 acting alone. No LSE identified.

End of Matrix 26

31. Matrix 27: Foulness (Mid-Essex Coast Phase 5) Special Protection Area - HRA Screening for Rampion 2

Name of European site:												Foulness (Mid-Essex Coast Phase 5) (UK) SPA																					
EU Code:												UK9009246																					
Distance to Proposed Development												109.9 km to Array																					
Likely Effects of Proposed Development																																	
Effect												Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development												C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Common tern													Xa			Xa		Xb		Xb		Xb		Xc		Xd	Xe	Xd	Xf	√g		Xf	
Sandwich tern													Xa			Xa		Xb		Xb		Xb		Xc		Xd	Xe	Xd	Xf	√g		Xf	
Avocet																																	
Ringed plover																																	
Grey plover																																	
Red knot																																	
Bar-tailed godwit																																	
Redshank																																	
Hen harrier																																	
Oystercatcher																																	
Little tern																																	
Dark-bellied brent goose																																	
Waterbird assemblage- Non-breeding: Including grey plover, knot, bar-tailed godwit, redshank, avocet, dark-bellied brent goose, dunlin, ringed plover, shelduck, oystercatcher and curlew.																																	

Cont. on next page

## Matrix 27: Foulness (Mid-Essex Coast Phase 5) SPA (Cont.)

### Evidence Supporting Conclusions (cont.)

- ×a These species have moderate vulnerability to collision risk with turbines (Bradbury *et al.* 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al.* 2019) from this site. Potential connectivity during the breeding season although species only recorded in low numbers at the Proposed Development site. LSE can therefore be discounted.
- ×b Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ×c Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted.
- ×d These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.* 2019). Therefore, LSE can be discounted.
- ×e This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al.* 2014) and evidence from previous project assessments have found no LSE. Consequently, c
- ×f Unlikely for impacts to occur at an in-combination level due to lack of pathway for effect from Rampion 2 acting alone. No potential for LSE identified.
- ✓g The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms.

End of Matrix 27

32. Matrix 28: Alderney West Coast and the Burhou Islands (UK) Ramsar - HRA Screening for Rampion 2

Name of European site:				Alderney West Coast and the Burhou Islands (UK) Ramsar																							
EU Code:				UK1587																							
Distance to Proposed Development				148.1 km from array																							
Likely Effects of Proposed Development																											
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement (breeding)			Direct disturbance and displacement (migration)			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar					Xa			Xa		Xb		Xb		Xb		Xc								Xf	Xf	Xf	
Gannet					√g			√h		Xb		Xb		Xb		Xc		√g		Xd	√i	Xd	Xf	√j	Xf		
Lesser black-backed gull																											
Herring gull																											
Puffin																											
Ringed plover																											
Common tern																											
Great black-backed gull																											
Cormorant																											
European storm petrel																											

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## Matrix 28: Alderney West Coast and the Burhou Islands (UK) Ramsar (Cont.)

### Evidence Supporting Conclusions (cont.)

- ×a These species have moderate vulnerability to collision risk with turbines (Bradbury *et al.* 2014). However, array is located beyond the mean maximum foraging range of these species (Woodward *et al.* 2019) from this site. Potential connectivity during the breeding season although species only recorded in low numbers at the Proposed Development site. LSE can therefore be discounted.
- ×b Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ×c Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
- ×d These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.* 2019). Therefore, LSE can be discounted at this stage.
- ×e This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al.* 2014) and evidence from previous Proposed Development assessments have found no LSE. Consequently, LSE can be discounted at this stage.
- ×f Unlikely for impacts to occur at an in-combination level due to lack of pathway for effect from Rampion 2 acting alone
- ✓g This species has high vulnerability to collision risk with turbines (Bradbury *et al.* 2014) and displacement from offshore wind farms (Bradbury *et al.* 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward *et al.* 2019) from this site. LSE can therefore not be discounted.
- ✓h It cannot be discounted that this species could pass through the Rampion 2 site during migration. Further information will be provided in a Stage Two assessment.
- ✓i This species has moderate to high vulnerability to displacement from offshore wind farms (Bradbury *et al.* 2014). Therefore, LSE cannot be discounted at this stage.
- ✓j Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 28



33. Matrix 29: Falaise du Bessin Occidental Special Protection Area. HRA Screening - Rampion 2

Name of European site:				Falaise du Bessin Occidental (FR) SPA																							
EU Code:				FR2510099																							
Distance to Proposed Development				132.6 km to Array																							
Likely Effects of Proposed Development																											
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement (breeding)			Direct disturbance and displacement (migration)			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar					Xa			Xa		Xb		Xb		Xb		Xc		Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf	
Kittiwake					✓g					Xb		Xb		Xb		Xc		Xh	Xi	Xh	Xh	Xi	Xh	Xf	✓j	Xf	
Razorbill																											
Short-eared owl																											
Peregrine falcon																											
Red-throated diver																											
Herring gull																											
Lesser black-backed gull																											
Red-breasted merganser																											
Shag																											
Cormorant																											
Guillemot																											
Dartford Warbler																											

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## Matrix 29: Falaise du Bessin Occidental (FR) (Cont.)

### Evidence Supporting Conclusions (cont.)

- ×a This species has low vulnerability to collision risk with turbines (Bradbury *et al*, 2014). LSE can therefore be discounted
- ×b Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ×c Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al*, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
- ×d These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al* . 2019). Therefore, LSE can be discounted.
- ×e This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al*, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted.
- ×f Unlikely for impacts to occur at an in-combination level due to lack of pathway for effect from Rampion 2 acting alone
- ✓g This species has high vulnerability to collision risk with turbines (Bradbury *et al*, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward *et al*, 2019) from this site. LSE can therefore not be discounted.
- ×h This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness *et al*, 2013). LSE can therefore be discounted at this stage
- ×i This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*, 2014). Therefore, LSE can be discounted at this stage
- ✓j Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 29

34. Matrix 30: Alde-Ore Estuary Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Alde-Ore Estuary (UK) SPA																					
EU Code:	UK9009112																					
Distance to Proposed Development	181.5 km to Array																					
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Lesser black-backed gull <i>Larus fuscus</i>		×a			×a		×b		×b		×b			×c		×d	×e	×d	×f	✓g	×f	
Sandwich tern <i>Thalasseus sandvicensis</i>		×a			×a		×f		×f		×f			×f		×f	×f	×f	×f	✓g	×f	
Ruff <i>Calidris pugnax</i>																						
Redshank <i>Tringa totanus</i>																						
Avocet <i>Recurvirostra avosetta</i>																						
Marsh harrier <i>Circus aeruginosus</i>																						
Little tern <i>Sternula albifrons</i>																						

Evidence Supporting Conclusions

×a Both of these species have very high vulnerability to collision risk with turbines (Bradbury *et al*, 2014). However, Rampion 2 is located a significant distance beyond the mean-maximum foraging range plus 1SD for the species (Woodward *et al*, 2019) from this site. Connectivity during the non-breeding season is limited as species is largely migratory, travelling south following the breeding season (Wright *et al*, 2012). Furthermore, an assessment of collision apportioned to this site outside of the breeding season by Percival 2013 for Rampion offshore wind farm found the impact to be negligible. Therefore, LSE can be discounted for the Proposed Development acting alone.

Cont. on next page

Matrix 30: Alde-Ore Estuary SPA (Cont.)

Evidence Supporting Conclusions (cont.)

- ×b Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ×c Evidence suggests these species are neither displaced nor attracted from or to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al.* (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
- ×d These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al.* 2019). Therefore, LSE can be discounted.
- ×e This species have low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al.*, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted.
- ×f The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of these species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
- ✓g Potential for effect to operate at an in-combination level during the non-breeding bio-seasons. The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms. Additionally, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. However, both species have been screened in on a precautionary basis

End of Matrix 30

35. Matrix 31: Alde-Ore Estuary Ramsar - HRA Screening - Rampion 2

Name of European site:							Alde-Ore Estuary (UK) SPA																				
EU Code:							UK9009112																				
Distance to Proposed Development							181.5 km to Array																				
Likely Effects of Proposed Development																											
Effect							Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Lesser black-backed gull								Xa			Xa		Xb		Xb		Xb		Xc		Xd	Xe	Xd	Xf	✓g	Xf	
Avocet																											
Redshank																											
Waterbird assemblage- Wintering (species not listed in Ramsar criteria)																											
Wetland bird assemblage- Breeding (species not listed in Ramsar criteria)																											

Evidence Supporting Conclusions

- Xa

This species has very high vulnerability to collision risk with turbines (Bradbury *et al*, 2014), however, Rampion 2 is located a significant distance beyond the mean-maximum foraging range plus 1SD of this species (Woodward *et al*, 2019) from this site. Connectivity during the non-breeding season is limited as species is largely migratory, travelling south following the breeding season (Wright *et al*, 2012). Furthermore, an assessment of collision apportioned to this site outside of the breeding season by Percival 2013 for Rampion offshore wind farm found the impact to be negligible. Therefore, LSE can be discounted for the Proposed Development acting alone.
- Xb

Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.

Cont. on next page

Matrix 31: Alde-Ore Estuary Ramsar (Cont.)

Evidence Supporting Conclusions (cont.)

- ×c Evidence suggests this species is attracted to offshore wind farms (Dierschke, Furness & Garth, 2016). Additionally, these species are classified by Bradbury *et al*, (2014) as having low vulnerability to displacement by offshore wind farms. Therefore, LSE can be discounted at this stage.
- ×d These species have very low vulnerability to disturbance from vessel movements associated with construction and decommissioning activity (Fliessbach *et al* . 2019). Therefore, LSE can be discounted.
- ×e This species has a low vulnerability to displacement (the result of avoidance behaviour) (Bradbury *et al*, 2014) and evidence from previous project assessments have found no LSE. Consequently, LSE can be discounted.
- ×f The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
- ✓g Potential for effect to operate at an in-combination level during the non-breeding bio-seasons. The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. However, species has been screened in on a precautionary basis

End of Matrix 31

36. Matrix 32: Chausey Special Protection Area (SPA). HRA Screening - Rampion 2

Name of European site:	Chausey (FR) SPA																				
EU Code:	FR2510037																				
Distance to Proposed Development	188.4 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Gannet							Xa		Xa		Xa					Xa	Xa	Xa	Xa	Xa	Xa
Turnstone																					
Purple sandpiper																					
Sanderling																					
Red-throated diver																					
Black-throated diver																					
Oystercatcher																					
European storm petrel																					
Herring gull																					

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

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Matrix 31: Chausey (FR) SPA (Cont.)

Name of European site:	Chausey (FR) SPA																					
EU Code:	FR2510037																					
Distance to Proposed Development	188.4 km to Array																					
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Black-headed gull																						
Common scoter																						
Red-breasted merganser																						
Common gull																						
Lesser black-backed gull																						
Great black-backed gull																						
Shag																						
Cormorant																						
Grey plover																						
Slavonian grebe																						
Black-necked grebe																						
Manx shearwater																						
Balearic shearwater																						

Cont. on next page

Matrix 31: Chausey (FR) SPA (Cont.)

Name of European site:	Chausey (FR) SPA																				
EU Code:	FR2510037																				
Distance to Proposed Development	188.4 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Eider																					
Common tern																					
Sandwich tern																					
Shelduck																					
Razorbill																					
Guillemot																					

End of Matrix 32

37. Matrix 33: Cap d'Erquy-Cap Fréhel Special Protection Area - HRA Screening – Rampion 2

Name of European site:	Cap d'Erquy-Cap Fréhel (FR) SPA																				
EU Code:	FR5310095																				
Distance to Proposed Development	228.6 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar		Xa			Xa		Xb		Xc		Xb			Xd		Xe	Xf	Xc	Xg	Xg	Xg
Dark-bellied brent goose																					
Dunlin																					
Nightjar																					
Ringed plover																					
Peregrine falcon																					
Razorbill																					
Oystercatcher																					
Herring gull																					
Lesser black-backed gull																					
Great black-backed gull																					
Gannet																					

Cont. on next page

Matrix 33: Cap d'Erquy-Cap Fréhel (FR) SPA (Cont.)

Name of European site:	Cap d'Erquy-Cap Fréhel (FR) SPA																						
EU Code:	FR5310095																						
Distance to Proposed Development	228.6 km to Array																						
Likely Effects of Proposed Development																							
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination				
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D		
Shag																							
Cormorant																							
Balearic shearwater																							
Kittiwake																							
Dartford warbler																							
Shelduck																							
Guillemot																							

Evidence Supporting Conclusions (cont.)

- ×a Fulmar has a low vulnerability to collision risk with turbines (Bradbury *et al*, 2014). LSE can therefore be discounted.
- ×b Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ×c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
- ×d This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted.

Cont. on next page

Matrix 33: Cap d'Erquy-Cap Fréhel (FR) SPA (Cont.)

Evidence Supporting Conclusions (cont.)

- ×e This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness et al, 2013). LSE can therefore be discounted.
- ×f This species has very low vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE can be discounted.
- ×g This species has a very high vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Limited connectivity associated with this site during the breeding season. Therefore, LSE cannot be discounted

End of Matrix 33

38. Matrix 34: The Wash Special Protection Area - HRA Screening - Rampion 2

Name of European site:				The Wash (UK) SPA																				
EU Code:				UK9008021																				
Distance to Proposed Development				235.4 km from Offshore cable corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern								Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	✓c	Xb	
Pink-footed goose																								
Shelduck																								
Wigeon																								
Gadwall																								
Northern pintail																								
Common scoter																								
Common Goldeneye																								
Oystercatcher																								
Grey plover																								
Knot																								
Sanderling																								
Bar-tailed godwit																								

Cont. on next page

Matrix 34: The Wash SPA (Cont.)

Name of European site:	The Wash (UK) SPA																							
EU Code:	UK9008021																							
Distance to Proposed Development	235.4 km from Offshore cable corridor																							
Likely Effects of Proposed Development																								
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination					
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Curlew																								
Redshank																								
Turnstone																								
Bewick's swan																								
Little tern																								
Black-tailed godwit																								
Dunlin																								
Dark-bellied brent goose																								
Waterbird assemblage- Non-breeding: Including avocet, golden plover, lapwing, ringed plover, black-tailed godwit, bar-tailed godwit, oystercatcher, grey plover, dunlin, knot, sanderling, curlew, whimbrel, redshank, turnstone, little grebe, cormorant, whooper swan, white-fronted goose, pink-footed goose, dark-bellied brent goose, shelduck, pintail, wigeon, teal, mallard, eider, common scoter, black-headed gull, lesser black-headed gull, herring gull and great black-backed gull.																								

Cont. on next page



Matrix 34: The Wash SPA (Cont.)

Evidence Supporting Conclusions (cont.)

- Xa

Common tern may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.
- Xb

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and/or species sensitivity means that the severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
- ✓c

The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms.

End of Matrix 34

39. Matrix 35: Breydon Water Special Protection Area - HRA Screening - Rampion 2

Name of European site:										Breydon Water (UK) SPA																				
EU Code:										UK9009181																				
Distance to Proposed Development										239.3 km to Array																				
Likely Effects of Proposed Development																														
Effect										Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development										C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern														Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	✓c	Xb		
Avocet																														
Golden plover																														
Lapwing																														
Ruff																														
Bewick's swan																														
Waterbird assemblage: Non-breeding cormorant, European white-fronted goose, Wigeon, Shoveler, black-tailed godwit Redshank, snipe.																														

Evidence Supporting Conclusions

- Xa

Common tern may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.
- Xb

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and/or species sensitivity means that the severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

Cont. on next page

Matrix 35: Breydon Water (UK) SPA (Cont.)

Evidence Supporting Conclusions (cont.)

- ✓c The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone.
- Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms.

End of Matrix 35

40. Matrix 36: Tregor Goëlo Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Tregor Goëlo (FR) SPA																					
EU Code:	FR5310070																					
Distance to Proposed Development	244.4 km to Array																					
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Fulmar		Xa			Xa		Xb		Xc		Xb			Xd		Xe	Xf	Xc	Xg	Xg	Xg	
Pintail																						
Teal																						
Wigeon																						
Grey heron																						
Turnstone																						
Dark-bellied brent goose																						
Sanderling																						
Dunlin																						
Knot																						
Kentish plover																						
Ringed-plover																						

Cont. on next page

Matrix 36: Tregor Goëlo (FR) SPA (Cont.)

Name of European site:	Tregor Goëlo (FR) SPA																						
EU Code:	FR5310070																						
Distance to Proposed Development	244.4 km to Array																						
Likely Effects of Proposed Development																							
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination				
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D		
Little egret																							
Merlin																							
Peregrine falcon																							
Kingfisher																							
Black-throated diver																							
Great northern diver																							
Oystercatcher																							
Herring gull																							
Lesser black-backed gull																							
Great black-backed gull																							
Mediterranean gull																							
Bar-tailed godwit																							

Cont. on next page

Matrix 36: Tregor Goëlo (FR) SPA (Cont.)

Name of European site:	Tregor Goëlo (FR) SPA																						
EU Code:	FR5310070																						
Distance to Proposed Development	244.4 km to Array																						
Likely Effects of Proposed Development																							
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination				
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D		
Red-breasted- merganser																							
Curlew																							
Osprey																							
Shag																							
Cormorant																							
Golden plover																							
Grey plover																							
Slavonian grebe																							
Great-crested grebe																							
Black-necked grebe																							
Balearic shearwater																							
Avocet																							

Cont. on next page

Matrix 36: Tregor Goëlo (FR) SPA (Cont.)

Name of European site:	Tregor Goëlo (FR) SPA																						
EU Code:	FR5310070																						
Distance to Proposed Development	244.4 km to Array																						
Likely Effects of Proposed Development																							
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination				
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D		
Little tern																							
Common tern																							
Sandwich tern																							
Shelduck																							
Little grebe																							
Redshank																							
Lapwing																							

Evidence Supporting Conclusions (cont.)

- ×a Fulmar has low vulnerability to collision risk with turbines (Bradbury *et al*, 2014). LSE can therefore be discounted.
- ×b Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ×c The impacts during the decommissioning phase are considered to be similar and potentially less than those outlined in the construction phase.
- ×d This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted.

Cont. on next page



Matrix 36: Tregor Goëlo (FR) SPA (Cont.)

Evidence Supporting Conclusions (cont.)

- ×e Fulmar has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness et al, 2013). LSE can therefore be discounted.
- ×f This species has very low vulnerability to displacement from offshore wind farms (Bradbury et al, 2014). Therefore, LSE can be discounted.
- ×g This species has a very high vulnerability to collision risk with turbines (Bradbury et al, 2014). However, Rampion 2 is located beyond the mean-maximum foraging range of this species (Woodward et al, 2019) from this SPA. Limited connectivity associated with this site during the breeding season. Therefore, LSE cannot be discounted

End of Matrix 36

41. Matrix 37: Greater Wash Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Greater Wash (UK) SPA																	
EU Code:				UK9020329																	
Distance to Proposed Development				249.1 km from Array																	
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern					Xa		Xb		Xb		Xb			Xb		Xb	Xb	Xb	Xb	✓c	Xb
Sandwich tern					Xa		Xb		Xb		Xb			Xb		Xb	Xb	Xb	Xb	✓c	Xb
Little gull																					
Red-throated diver																					
Common scoter																					
Little tern																					
Common tern																					

Evidence Supporting Conclusions

- Xa

Both species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.
- Xb

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and/or species sensitivity means that the severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of these species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

Cont. on next page

Matrix 37: Greater Wash (UK) SPA (Cont.)

Evidence Supporting Conclusions (cont.)

✓c The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms.

End of Matrix 37

42. Matrix 38: North Norfolk Coast Special Protection Area (SPA). HRA Screening - Rampion 2

Name of European site:											North Norfolk Coast (UK) Special Protection Area																				
EU Code:											UK9009031																				
Distance to Proposed Development											256.6 km from Array																				
Likely Effects of Proposed Development																															
Effect											Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development											C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern															Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	✓c	Xb
Sandwich tern															Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	✓c	Xb
Wigeon																															
Marsh harrier																															
Avocet																															
Knot																															
Bittern																															
Pink-footed goose																															
Little tern																															
Dark-bellied brent goose																															
Montagu's harrier																															
Waterbird assemblage - Non-breeding: Including pink-footed goose, dark-bellied brent goose, wigeon, knot, white-fronted goose, shelduck, pintail, oystercatcher, ringed plover, grey plover and redshank.																															

Cont. on next page

Matrix 38: North Norfolk Coast (UK) SPA (Cont.)

Evidence Supporting Conclusions

- ✕a

Both species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and/or species sensitivity means that the severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of these species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
- ✓c

The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms.

End of Matrix 38

43. Matrix 39: North Norfolk Coast Ramsar - HRA Screening - Rampion 2

Name of European site:							North Norfolk Coast (UK) Ramsar																				
EU Code:							UK11048																				
Distance to Proposed Development							256.6 km from Array																				
Likely Effects of Proposed Development																											
Effect							Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern											Xa		Xb		Xb		Xb		Xb	Xb	Xb	Xb	✓c	Xb			
Sandwich tern											Xa		Xb		Xb		Xb		Xb	Xb	Xb	Xb	✓c	Xb			
Wigeon																											
Pintail																											
Red knot																											
Pink-footed goose																											
Little tern																											
Dark-bellied brent goose																											
Waterbird assemblage - Wintering (species not listed in Ramsar criteria)																											

Cont. on next page

Matrix 39: North Norfolk Coast (UK) Ramsar (Cont.)

Evidence Supporting Conclusions

- ✕a

Both species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and/or species sensitivity means that the severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of these species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
- ✕b

The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone.
- ✓c

Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms.

End of Matrix 39



44. Matrix 40: Côte de Granit Rose-Sept Iles Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Côte de Granit Rose-Sept Iles (FR) SPA																							
EU Code:				FR5310011																							
Distance to Proposed Development				257.8 km to Array																							
Likely Effects of Proposed Development																											
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement (breeding)			Direct disturbance and displacement (migration)			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Gannet					√a			√b		Xc		Xd		Xc			Xe		Xf	√h	Xd	Xf	√h	Xd	Xi	√j	Xi
Manx shearwater					Xk			Xk		Xc		Xd		Xc			Xe		Xf	Xg	Xd	Xf	Xg	Xd	Xi	Xi	Xi
Fulmar					Xk			Xk		Xc		Xd		Xc			Xe		Xf	Xg	Xd	Xf	Xg	Xd	Xi	Xi	Xi
European storm petrel					Xk			Xk		Xc		Xd		Xc			Xe		Xf	Xg	Xd	Xf	Xg	Xd	Xi	Xi	Xi
Razorbill																											
Brent goose																											
Purple sandpiper																											
Ringed plover																											
Puffin																											
Oystercatcher																											

Cont. on next page

## Matrix 40: Côte de Granit Rose-Sept Iles (FR) SPA (Cont.)

### Evidence Supporting Conclusions

- ✓a This species has high vulnerability to collision risk with turbines (Bradbury *et al*, 2014). Rampion 2 is located within the mean-maximum foraging range of this species (Woodward *et al*, 2019) from this site. LSE can therefore not be discounted.
- ✓b Species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. However, LSE is identified on a precautionary basis.
- ×c Prey species could be affected by changes to water quality, suspended sediment underwater noise, direct habitat loss or damage, changes to physical processes and INNS. Indirect impacts on species could result due to displaced or reduced foraging resource. Temporary and low-impact effects are anticipated for local fish and benthic ecology. Given this and the capacity of this species to forage over vast areas, there would be sufficient alternative resource available to support the species population. The potential for significant effects is considered to be extremely limited for these highly-mobile receptors. Consequently, LSE can be discounted.
- ×d Potential impacts during decommissioning are considered to be similar of potentially less than those outlined for construction. A finding of no LSE is appropriate.
- ×e This species has a significant mean-maximum foraging range with a high degree of habitat flexibility. As a result, any potential additional energetic expenditure as a result of barrier impacts will be trivial. Furthermore, experience of other offshore wind farms is of no LSE being concluded. Therefore, LSE can be discounted
- ×f This species has very low vulnerability to disturbance associated with vessel and helicopter activity and has a high degree of habitat flexibility (Furness *et al*, 2013). LSE can therefore be discounted
- ×g This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*, 2014). Therefore, LSE can be discounted at this stage.
- ✓h This species has moderate to high vulnerability to displacement from offshore wind farms (Bradbury *et al*, 2014) and potential connectivity is indicated by foraging range. Therefore, LSE cannot be discounted.
- ×i Potential (non-significant) effects are limited to the extent they would not amount to LSE in-combination with other plans and projects
- ✓j Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.
- ×k This species has low vulnerability to collision risk with turbines (Bradbury *et al*, 2014). LSE can therefore be discounted

Cont. on next page

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Matrix 40: Côte de Granit Rose-Sept Iles (FR) SPA (Cont.)

Name of European site:	Côte de Granit Rose-Sept Iles (FR) SPA																						
EU Code:	FR5310011																						
Distance to Proposed Development	257.8 km to Array																						
Likely Effects of Proposed Development																							
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination				
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D		
Herring gull																							
Common gull																							
Lesser black-backed gull																							
Great black-backed gull																							
Mediterranean gull																							
Red-breasted merganser																							
Shag																							
Slavonian grebe																							
Great-crested grebe																							
Balearic shearwater																							

Cont. on next page

Matrix 40: Côte de Granit Rose-Sept Iles (FR) SPA (Cont.)

Name of European site:				Côte de Granit Rose-Sept Iles (FR) SPA																				
EU Code:				FR5310011																				
Distance to Proposed Development				257.8 km to Array																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake																								
Little tern																								
Roseate tern																								
Common tern																								
Sandwich tern																								
Shelduck																								
Guillemot																								

End of Matrix 40



45. Matrix 41: Skomer, Skokholm & the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro  
Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro (UK) SPA																				
EU Code:	UK9014051																				
Distance to Proposed Development	310.8 km from Offshore cable corridor																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Manx shearwater		Xa			Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
European storm petrel		Xa			Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Lesser black-backed gull																					
Puffin																					
Short-eared owl																					
Chough																					

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 41

46. Matrix 42: Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island Special Protection Area HRA Screening - Rampion 2

Name of European site:				Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island (UK) SPA																				
EU Code:				UK9013121																				
Distance to Proposed Development				352.5 km from Offshore cable corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Manx shearwater					Xa			Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Chough					Xa			Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 42

47. Matrix 43: Flamborough and Filey Coast Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Flamborough and Filey Coast (UK) SPA																				
EU Code:	UK9006101																				
Distance to Proposed Development	366.5 km from Offshore cable corridor																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement (migration)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar		Xa			Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake		Xb			Xc		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	✓d	Xa
Guillemot		Xa			Xa		Xa		Xa		Xa			Xa		Xe	Xe	Xe	Xe	✓f	Xe
Gannet		Xg			Xh		Xa		Xa		Xa			Xa		Xa	Xe	Xa	Xa	✓f	Xa
Razorbill		Xg			Xh		Xa		Xa		Xa			Xa		Xa	Xe	Xa	Xa	✓f	Xa
Herring gull		Xb			Xc		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	✓d	Xa
Shag																					
Cormorant																					
Puffin																					
Breeding seabird assemblage																					

Cont. on next page



## Matrix 43: Flamborough and Filey Coast (UK) SPA (Cont.)

### Evidence Supporting Conclusions

- ×a The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context. No LSE for the Proposed Development acting alone.
- ×b Rampion 2 is beyond the mean-maximum foraging range +1SD for this species (Woodward *et al.*, 2019). There is no potential for LSE from the Proposed Development.
- ×c Species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.
- ✓d The magnitude of the potential (non-significant) effects (from collision risk in the non-breeding seasons) identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms.
- ×e Rampion 2 is within the mean-maximum foraging range +1SD for this species (Woodward *et al.*, 2019). This species has potential sensitivity to displacement and/or disturbance during the breeding season. This species may also be sensitive to displacement during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.
- ✓f The magnitude of the potential (non-significant) effects (from displacement during the non-breeding bio-seasons) identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms.
- ×g Rampion 2 is within the mean-maximum foraging range +1SD for this species (Woodward *et al.*, 2019). This species has high sensitivity to collision during the breeding season (Bradbury *et al.*, 2014). However, connectivity is likely to be limited, any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.
- ×h This species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone.

End of Matrix 43

48. Matrix 44: Ouessant-Molène Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Ouessant-Molène (FR) SPA																	
EU Code:				FR5310072																	
Distance to Proposed Development				376.1 km to Array																	
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Manx shearwater		Xa			Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar		Xa			Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill																					
Turnstone																					
Purple sandpiper																					
Cory's shearwater																					
Great skua																					
Ringed plover																					
Hen harrier																					
Little egret																					
Peregrine falcon																					
Puffin																					
Red-throated diver																					

Cont. on next page

Matrix 44: Ouessant-Molène (FR) SPA (Cont.)

Name of European site:	Ouessant-Molène (FR) SPA																						
EU Code:	FR5310072																						
Distance to Proposed Development	376.1 km to Array																						
Likely Effects of Proposed Development																							
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination				
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D		
Black-throated diver																							
Great Northern diver																							
Oystercatcher																							
European storm petrel																							
Herring gull																							
Lesser black-backed gull																							
Great black-backed gull																							
Gannet																							
Whimbrel																							
Leach's European storm petrel																							
Shag																							
Cormorant																							
Grey plover																							

Cont. on next page

Matrix 44: Ouessant-Molène (FR) SPA (Cont.)

Name of European site:	Ouessant-Molène (FR) SPA																						
EU Code:	FR5310072																						
Distance to Proposed Development	376.1 km to Array																						
Likely Effects of Proposed Development																							
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination				
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D		
Balearic shearwater																							
Sooty shearwater																							
Chough																							
Kittiwake																							
Pomarine skua																							
Common tern																							
Roseate tern																							
Little tern																							
Sandwich tern																							
Shelduck																							
Ringed plover																							
Guillemot																							

Cont. on next page

Matrix 44: Ouessant-Molène (FR) SPA (Cont.)

Evidence Supporting Conclusions

×a

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 44

49. Matrix 45: Camaret Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Camaret (FR) SPA																				
EU Code:				FR5312004																				
Distance to Proposed Development				385.3 km to Array																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar					Xa			Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	
Peregrine falcon																								
Raven																								
European storm petrel																								
Herring gull																								
Lesser black-backed gull																								
Great black-backed gull																								
Shag																								
Cormorant																								
Chough																								
Kittiwake																								
Guillemot																								

Cont. on next page

Matrix 45: Camaret (FR) SPA (Cont.)

Evidence Supporting Conclusions

×a

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 45



50. Matrix 46: Iles Houat-Hoëdic Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Iles Houat-Hoëdic (FR) SPA																					
EU Code:	FR5312011																					
Distance to Proposed Development	390.2 km to Array																					
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Manx shearwater		Xa			Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Great-northern diver																						
Black-throated diver																						
Fulmar																						
Herring gull																						
Lesser black-backed gull																						
Great black-backed gull																						
Shag																						
Balearic shearwater																						

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 46

51. Matrix 47: Cap Sizun Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Cap Sizun (FR) SPA																				
EU Code:	FR5310055																				
Distance to Proposed Development	397.9 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Manx shearwater		Xa			Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar		Xa			Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
European storm petrel																					
Herring gull																					
Lesser black-backed gull																					
Great black-backed gull																					
Shag																					
Kittiwake																					
Shelduck																					
Guillemot																					
Razorbill																					
Chough																					

Cont. on next page

Matrix 47: Cap Sizun (FR) SPA (Cont.)

Evidence Supporting Conclusions

×a

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 47

52. Matrix 48: Isles of Scilly Special Protection Area - HRA Screening- Rampion 2

Name of European site:							Isles of Scilly (UK) SPA																				
EU Code:							UK9020288																				
Distance to Proposed Development							403.3 km to Array																				
Likely Effects of Proposed Development																											
Effects							Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
European storm petrel													Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Manx shearwater													Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Fulmar													Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Great black-backed gull																											
Herring gull																											
Guillemot																											
Kittiwake																											
Lesser black-backed gull																											
Razorbill																											
Common tern																											
Shag																											
Cormorant																											
Puffin																											

Isles of Scilly SPA (Cont.)

Evidence Supporting Conclusions

×a

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 48

53. Matrix 49: Isles of Scilly Ramsar - HRA Screening - Rampion 2 Offshore Windfarm

Name of European site:		Isles of Scilly (UK) Ramsar																				
EU Code:		UK11033																				
Distance to Proposed Development		403.3km to Array																				
Likely Effects of Proposed Development																						
EffectS	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
European storm petrel		Xa					Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Manx shearwater		Xa					Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Fulmar		Xa					Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Great black-backed gull																						
Herring gull																						
Guillemot																						
Kittiwake																						
Lesser black-backed gull																						
Razorbill																						
Common tern																						
Shag																						
Cormorant																						
Puffin																						

Cont. on next page

Isles of Scilly Ramsar (Cont.)

Evidence Supporting Conclusions

×a

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 51

54. Matrix 50: Northumbria Coast Special Protection Area - HRA Screening - Rampion 2

Name of European site:						Northumbria Coast (UK) SPA																				
EU Code:						UK9006131																				
Distance to Proposed Development						439.8km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																										
Effect						Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development						C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Arctic tern										Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	✓c	Xb	
Purple sandpiper																										
Little tern																										
Turnstone																										

Evidence Supporting Conclusions

- Xa

Species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for Rampion 2 to cause LSE acting alone. **No LSE** is concluded.
- Xb

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and/or species sensitivity means that the severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
- ✓c

Species may be sensitive to collision risk during the non-breeding bio-seasons. Connectivity is likely to be limited and any effect from the project alone, likely to be trivial and inconsequential. However, Rampion 2 could contribute to significant effects in-combination with other plans and projects, notably, other operational and planned offshore windfarms. A finding of potential LSE from effects acting in-combination is concluded.

End of Matrix 50



55. Matrix 51: Northumbria Coast Ramsar - HRA Screening - Rampion 2

Name of European site:	Northumbria Coast (UK) Ramsar																				
EU Code:	UK9006131																				
Distance to Proposed Development	439.8km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Arctic tern					Xa		Xb		Xb		Xb			Xb		Xb	Xb	Xb	Xb	✓c	Xb
Purple sandpiper																					
Little tern																					
Turnstone																					

Evidence Supporting Conclusions

- Xa

Species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for Rampion 2 to cause LSE acting alone. **No LSE** is concluded.
- Xb

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and/or species sensitivity means that the severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
- ✓c

Species may be sensitive to collision risk during the non-breeding bio-seasons. Connectivity is likely to be limited and any effect from the project alone, likely to be trivial and inconsequential. However, Rampion 2 could contribute to significant effects in-combination with other plans and projects, notably, other operational and planned offshore winfarms. A finding of potential LSE from effects acting in-combination is concluded.

End of Matrix 51

## 56. Matrix 52: Coquet Island Special Protection Area (SPA). HRA Screening - Rampion 2 Offshore Windfarm

Name of European site:										Coquet Island (UK) SPA																				
EU Code:										UK9006031																				
Distance to Proposed Development:										508.6 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																														
Effect										Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development										C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern (designated feature and seabird assemblage)														Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	✓c	Xb
Arctic tern (designated feature and seabird assemblage)														Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	✓c	Xb
Common tern (designated feature and seabird assemblage)														Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	✓c	Xb
Herring gull (component of seabird assemblage only)														Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	✓c	Xb
Lesser black-backed gull (seabird assemblage only)														Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	✓c	Xb
Kittiwake (component of seabird assemblage only)														Xa		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	✓c	Xb
Fulmar (component of seabird assemblage only)														Xb		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb
Puffin (component of seabird assemblage only)																														
Black-headed gull (component of seabird assemblage only)										x																				
Roseate tern (designated feature and seabird assemblage)																														
Internationally important seabird assemblage of over 20,000 individuals Including the 4 qualifying species listed above plus: Atlantic puffin and black-headed gull as main components.																														

Evidence Supporting Conclusions on next page

Coquet Island SPA (cont.)

Evidence Supporting Conclusions

- ×a

Species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for Rampion 2 to cause LSE acting alone. **No LSE** is concluded.
- ×b

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and/or species sensitivity means that the severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

Species may be sensitive to collision risk during the non-breeding bio-seasons. Connectivity is likely to be limited and any effect from the project alone, likely to be trivial and inconsequential.
- ✓c

However, Rampion 2 could contribute to significant effects in-combination with other plans and projects, notably, other operational and planned offshore windfarms. A finding of **potential LSE** from effects acting in-combination is concluded.

End of Matrix 52

## 57. Matrix 53: Farne Islands Special Protection Area - HRA Screening - Rampion 2

Name of European site:											Farne Islands (UK) SPA																					
EU Code:											UK9006021																					
Distance to Proposed Development											555.0 km from Array																					
Likely Effects of Proposed Development																																
Effect											Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development											C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Sandwich tern															Xa		Xb		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	✓c	Xb
Kittiwake															Xa		Xb		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	✓c	Xb
Guillemot																											Xd	Xd	Xd	✓c	✓c	✓c
Common tern															Xa		Xb		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	✓c	Xb
Arctic tern															Xa		Xb		Xb		Xb		Xb		Xb		Xb	Xb	Xb	Xb	✓c	Xb
Common shag																																
Cormorant																																
Puffin																																
Roseate tern																																
Internationally important seabird assemblage of over 20,000 individuals including Common tern Arctic tern, Roseate tern, Sandwich tern, Common guillemot, puffin cormorant, shag, kittiwake.																																

Evidence Supporting Conclusions (on next page)

Farne Islands SPA (cont.)

Evidence Supporting Conclusions

- Xa

Species may be sensitive to collision risk during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for Rampion 2 to cause LSE acting alone. No LSE is concluded.

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination. No LSE is concluded.
- ✓c

The magnitude of the potential (non-significant) effects identified could act in-combination with other plans and projects resulting in a greater level of impact than for Rampion 2 acting alone. Based on evidence that this feature could potentially interact with Rampion 2, particularly during migration, LSE cannot be discounted on current information for Rampion 2 operating with other offshore wind farms. Potential for Likely Significant Effects In-combination (LSEI).
- Xd

Species may be sensitive to displacement during the non-breeding bio-seasons. However, connectivity is likely to be limited and any effect is likely to be trivial and inconsequential. There is no potential for LSE from the Proposed Development acting alone

End of Matrix 53

58. Matrix 54: St Abb's Head to Fast Castle Special Protection Area - HRA Screening - Rampion 2

Name of European site:	St Abb's Head to Fast Castle (UK) SPA																				
EU Code:	UK9004271																				
Distance to Proposed Development:	576.4 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Razorbill					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Herring gull					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Shag																					

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 54

59. Matrix 55: Outer Firth of Forth & St Andrews Bay Complex Special Protection Area - HRA Screening - Rampion 2

Name of European site:							Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA															
EU Code:							UK9020316															
Distance to Proposed Development:							593.1 km to Array															
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Gannet					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Guillemot					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Herring gull					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Kittiwake					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Manx shearwater																						
Eider																						
Arctic tern*																						
Goldeneye																						

\*Breeding location in adjacent SPAs (in this instance, the Forth Islands SPA).

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

Cont. on next page

Matrix 55: Outer Firth of Forth and St Andrews Bay Complex (pSPA (cont.))

Name of European site:	Outer Firth of Forth and St Andrews Bay Complex (UK) pSPA																					
EU Code:	UK9020316																					
Distance to Proposed Development:	593.1 km to Array																					
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Long-tailed duck																						
Black-headed gull																						
Puffin																						
Razorbill																						
Red-breasted merganser																						
Red-throated diver																						
Shag																						
Slavonian grebe																						
Common gull																						
Common scoter																						
Common tern*																						
Little gull																						
Velvet scoter																						
Seabird assemblage- Non-breeding **																						
Seabird assemblage- Breeding **																						
Waterbird assemblage- Non-breeding**																						

\*\*species not listed in SPA criteria

End of Matrix 55



60. Matrix 56: Imperial Dock Lock, Leith Special Protection Area (SPA). HRA Screening - Rampion 2

Name of European site:				Imperial Dock Lock, Leith (UK) SPA																				
EU Code:				UK9004451																				
Distance to Proposed Development				602.2 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa			

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 56

61. Matrix 57: Deenish Island and Scariff Island Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Deenish Island and Scariff Island (IE) SPA																					
EU Code:	IE0004175																					
Distance to Proposed Development	677.8 km to Array																					
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Manx shearwater					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Fulmar																						
European storm petrel																						
Lesser black-backed gull																						
Arctic tern																						

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 57

62. Matrix 58: Fowlsheugh Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Fowlsheugh (UK) SPA																				
EU Code:				UK9002271																				
Distance to Proposed Development				686.1 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Herring gull								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Kittiwake								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Guillemot								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Razorbill								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 58

63. Matrix 59: Puffin Island Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Puffin Island (IE) SPA																				
EU Code:				UK11033																				
Distance to Proposed Development				692 km to Array																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Manx shearwater								Xa		Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa			
Fulmar																								
European storm petrel																								
Lesser black-backed gull																								
Razorbill																								
Puffin																								

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 59

64. Matrix 60: Skelligs Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Skelligs (IE) SPA																				
EU Code:	IE0004007																				
Distance to Proposed Development	698.5 km to Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Manx shearwater					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Fulmar																					
European storm petrel																					
Gannet																					
Kittiwake																					
Guillemot																					
Puffin																					

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 60

65. Matrix 61: Blasket Island Special Protection Area - HRA Screening - Rampion 2

Name of European site:		Blasket Island (IE) SPA																				
EU Code:		IE0004008																				
Distance to Proposed Development:		703.5km to Array																				
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Manx shearwater				Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	
Fulmar																						
European storm petrel																						
Shag																						
Lesser black-backed gull																						
Herring gull																						
Kittiwake																						
Arctic tern																						
Razorbill																						
Puffin																						
Chough																						

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 61

66. Matrix 62: Cruagh Island Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Cruagh Island (IE) SPA																				
EU Code:				IE0004170																				
Distance to Proposed Development				723.7km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Manx shearwater								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Barnacle goose																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 62

67. Matrix 63: Ythan Estuary, Sands of Forvie & Meikle Loch Special Protection Area - HRA Screening - Rampion 2

Name of European site:																					
EU Code:																					
Distance to Proposed Development																					
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Sandwich tern					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Pink-footed goose																					
Little tern																					

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 63



68. Matrix 64: Ythan Estuary, Sands of Forvie and Meikle Loch Special Ramsar - HRA Screening - Rampion 2

Name of European site:				Ythan Estuary and Meikle Loch (UK) Ramsar																				
EU Code:				UK13061																				
Distance to Proposed Development				729.9 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Sandwich tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Pink-footed goose																								
Little tern																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 64

69. Matrix 65: Buchan Ness to Collieston Coast Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Buchan Ness to Collieston Coast (UK) SPA																				
EU Code:				UK9002491																				
Distance to Proposed Development				731.3 km from Offshore cable corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Guillemot								Xa		Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Herring gull								Xa		Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Kittiwake								Xa		Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Shag																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 65

70. Matrix 66: Loch of Strathbeg (UK) Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Loch of Strathbeg (UK) SPA																				
EU Code:				UK9002211																				
Distance to Proposed Development				762.5 km from Offshore cable corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Sandwich tern								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Pink-footed goose								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Greylag goose								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Barnacle goose								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Teal								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Goldeneye								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Whooper swan								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 66

71. Matrix 67: Loch of Strathbeg Ramsar - HRA Screening - Rampion 2

Name of European site:				Loch of Strathbeg (UK) SPA																	
EU Code:				UK9002211																	
Distance to Proposed Development				762.5 km from Offshore Cable Corridor																	
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Pink-footed goose					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Greylag goose					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Barnacle goose					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Teal					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Goldeneye					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Whooper swan					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 67

72. Matrix 68: Troup, Pennan and Lion's Head Special Protection Area - HRA Screening - Rampion 2

Name of European site:					Troup, Pennan and Lion's Head (UK) SPA																				
EU Code:					UK9002471																				
Distance to Proposed Development					772.1 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																									
Effect					Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development					C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Herring gull									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Kittiwake									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Guillemot									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Razorbill									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 68

73. Matrix 69: Rum Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Rum (UK) SPA																				
EU Code:				UK9001341																				
Distance to Proposed Development				772.8 km from offshore cable corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Red-throated diver								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Manx shearwater								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Guillemot								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Kittiwake								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Golden eagle																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 69

74. Matrix 70: Inner Moray Firth Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Inner Moray Firth (UK) SPA																		
EU Code:				UK9001624																		
Distance to Proposed Development				772.8 km from Offshore Cable Corridor																		
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Common tern					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Greylag goose																						
Wigeon																						
Teal																						
Greater scaup																						
Goldeneye																						
Red-breasted merganser																						
Goosander																						
Osprey																						
Oystercatcher																						
Curlew																						
Redshank																						
Cormorant																						

Evidence Supporting Conclusions (on next page)

Matrix 70: Inner Moray Firth (cont.)

Evidence Supporting Conclusions

×a

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 70



75. Matrix 71: Inner Moray Firth Ramsar - HRA Screening - Rampion 2

Name of European site:				Inner Moray Firth (UK) Ramsar																		
EU Code:				UK13025																		
Distance to Proposed Development				780.3 km from Offshore Cable Corridor																		
Likely Effects of Proposed Development																						
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Common tern					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa	
Greylag goose																						
Wigeon																						
Teal																						
Greater scaup																						
Goldeneye																						
Red-breasted merganser																						
Goosander																						
Osprey																						
Oystercatcher																						
Curlew																						
Redshank																						
Cormorant																						

Evidence Supporting Conclusions (on next page)

Inner Moray Firth (cont.)

Evidence Supporting Conclusions

×a

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 71

76. Matrix 72: Cromarty Firth Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Cromarty Firth (UK) SPA																				
EU Code:				UK9001623																				
Distance to Proposed Development				794.6 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Greylag goose																								
Wigeon																								
Pintail																								
Greater scaup																								
Common tern																								
Greylag goose																								
Wigeon																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

Cont. on next page

Cromarty Firth SPA (cont.)

Evidence Supporting Conclusions

Name of European site:				Cromarty Firth (UK) SPA																				
EU Code:				UK9001623																				
Distance to Proposed Development				794.6 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Greater scaup																								
Osprey																								
Oystercatcher																								
Bar-tailed godwit																								
Curlew																								
Redshank																								
Whooper swan																								
Red knot																								
Dunlin																								
Pintail																								

End of Matrix 72

77. Matrix 73: Cromarty Firth Ramsar - HRA Screening - Rampion 2

Name of European site:				Cromarty Firth (UK) Ramsar																				
EU Code:				UK13009																				
Distance to Proposed Development				794.6km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Greylag goose																								
Wigeon																								
Pintail																								
Greater scaup																								
Common tern																								
Greylag goose																								
Wigeon																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

Cont. on next page

Cromarty Firth Ramsar (cont.)

Evidence Supporting Conclusions

Name of European site:				Cromarty Firth (UK) Ramsar																				
EU Code:				UK13009																				
Distance to Proposed Development				794.6km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Greater scaup																								
Osprey																								
Oystercatcher																								
Bar-tailed godwit																								
Curlew																								
Redshank																								
Whooper swan																								
Red knot																								
Dunlin																								
Pintail																								

End of Matrix 73

78. Matrix 74: East Caithness Cliffs Special Protection Area - HRA Screening – Rampion 2

Name of European site:				East Caithness Cliffs (UK) SPA																	
EU Code:				UK9001182																	
Distance to Proposed Development				836.9km from Offshore Cable Corridor																	
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Herring gull					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great black-backed gull					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Peregrine falcon																					
Shag																					
Cormorant																					

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 74

79. Matrix 75: North Caithness Cliffs Special Protection Area (SPA). HRA Screening - Rampion 2

Name of European site:				North Caithness Cliffs (UK) SPA																				
EU Code:				UK9001181																				
Distance to Proposed Development				879.7 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Razorbill								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Guillemot								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Kittiwake																								
Herring gull																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 75



80. Matrix 76: Pentland Firth Islands Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Pentland Firth Islands (UK) SPA																				
EU Code:				UK9001131																				
Distance to Proposed Development				890.6 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Arctic tern								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 76

81. Matrix 77: Hoy Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Hoy (UK) SPA																	
EU Code:				UK9002141																	
Distance to Proposed Development				902.3km from Offshore Cable Corridor																	
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Red-throated diver					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Great black-backed gull					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Peregrine falcon																					
Arctic skua																					
Great skua																					
Puffin																					

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 77

82. Matrix 78: Copinsay Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Copinsay (UK) SPA																				
EU Code:				UK9002151																				
Distance to Proposed Development				908.3 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Great black-backed gull								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Kittiwake								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Guillemot								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 78

83. Matrix 79: Aukerry Special Protection Area - HRA Screening - Rampion 2

Name of European site:					Auskerry (UK) SPA																				
EU Code:					UK9002381																				
Distance to Proposed Development					924.3 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																									
Effect					Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development					C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
European storm petrel									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic tern									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 79

84. Matrix 80: St Kilda Special *Protection Area* - HRA Screening - Rampion 2

Name of European site:				St Kilda (UK) SPA																				
EU Code:				UK9001031																				
Distance to Proposed Development				926.8 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Manx shearwater								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
European storm petrel								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Leach’s storm petrel								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Gannet								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Razorbill								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Kittiwake								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Guillemot								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Great skua																								
Puffin																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 80

85. Matrix 81: Marwick Head Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Marwick Head (UK) SPA																				
EU Code:	UK9002121																				
Distance to Proposed Development	939.7 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Kittiwake					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 81

86. Matrix 82: Rousay Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Rousay (UK) SPA																				
EU Code:				UK9002371																				
Distance to Proposed Development				942.1 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Guillemot								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Kittiwake								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic skua																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure and severity of effects that might occur at population level to this SPA. It is determined that significant effects would not therefore manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 82

87. Matrix 83: Calf of Eday Special Protection Area - HRA Screening - Rampion 2

Name of European site:					Calf of Eday (UK) SPA																				
EU Code:					UK9002431																				
Distance to Proposed Development					946km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																									
Effect					Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development					C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Guillemot									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Great black-backed gull									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Kittiwake									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Cormorant																									

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 83



88. Matrix 84: Sule Skerry and Sule Stack Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Sule Skerry and Sule Stack (UK) SPA																				
EU Code:				UK9002181																				
Distance to Proposed Development				946.6 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
European storm petrel								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Leach’s storm petrel								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Gannet								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Guillemot								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Shag																								
Puffin																								

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 84

89. Matrix 85: West Westray Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Sule Skerry and Sule Stack (UK) SPA																				
EU Code:				UK9002181																				
Distance to Proposed Development				946.6 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Razorbill								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Kittiwake								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Guillemot								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic skua																								

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 85

90. Matrix 86: Papa Westray (North Hill and Holm) Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Papa Westray (North Hill and Holm) (UK) SPA																				
EU Code:				UK9002111																				
Distance to Proposed Development				962.3 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Arctic tern								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa			
Arctic Skua																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 86

91. Matrix 87: Fair Isle Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Fair Isle (UK) SPA																				
EU Code:				UK9002091																				
Distance to Proposed Development				969.3km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Gannet								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Kittiwake								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Arctic tern								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Guillemot								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Razorbill								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Shag																								
Arctic skua																								
Puffin																								
Fair Isle wren																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 87

92. Matrix 88: Sumburgh Head Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Sumburgh Head (UK) SPA																				
EU Code:				UK9002511																				
Distance to Proposed Development				1006.5 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Kittiwake								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Guillemot								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 88

93. Matrix 89: Noss Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Noss (UK) SPA																				
EU Code:				UK9002081																				
Distance to Proposed Development				1037.2 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Gannet								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Guillemot								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Kittiwake								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Great skua								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		
Puffin								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 89

94. Matrix 90: Foula Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Foula (UK) SPA																				
EU Code:	UK9002061																				
Distance to Proposed Development	1038.3 km from Offshore Cable Corridor																				
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Fulmar					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Red-throated diver					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Leach's storm petrel					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Kittiwake					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Arctic tern					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Guillemot					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Razorbill					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Arctic skua																					
Great skua																					
Shag																					
Puffin																					

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 90



95. Matrix 91: Papa Stour Special Protection Area - HRA Screening - Rampion 2

Name of European site:						Papa Stour (UK) SPA																				
EU Code:						UK9002051																				
Distance to Proposed Development						1062.1 km from Offshore Cable Corridor																				
Effect						Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development						C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Arctic tern										Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa			
Ringed plover																										

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 91



96. Matrix 92: Ronas Hill North Roe and Tingon Special Protection Area - HRA Screening - Rampion 2

Name of European site:					Ronas Hill - North Roe and Tingon (UK) SPA																				
EU Code:					UK9002041																				
Distance to Proposed Development					1082.3 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																									
Effect					Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development					C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Red-throated diver									Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Great skua																									

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 92

97. Matrix 93: Ronas Hill - North Roe and Tingon Ramsar - HRA Screening - Rampion 2

Name of European site:				Ronas Hill - North Roe and Tingon (UK) Ramsar																				
EU Code:				UK13054																				
Distance to Proposed Development				1082.3 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Red-throated diver								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa			
Great skua																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 93

98. Matrix 94: Otterswick and Graveland Special Protection Area - HRA Screening - Rampion 2

Name of European site:							Otterswick and Graveland (UK) SPA																				
EU Code:							UK9002941																				
Distance to Proposed Development							1083.6 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																											
Effect							Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Red-throated diver											Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa				

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 94

99. Matrix 95: Fetlar Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Fetlar (UK) SPA																				
EU Code:				UK9002031																				
Distance to Proposed Development				1084.9 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Red-necked phalarope																								
Arctic skua																								
Great skua																								
Whimbrel																								
Dunlin																								

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 95

100. Matrix 96: Ramna Stacks and Gruney Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Ramna Stacks and Gruney (UK) SPA																				
EU Code:				UK9002021																				
Distance to Proposed Development				1097.7 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Leach's storm petrel								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa		

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 96



101. Matrix 97: Hermaness, Saxa Vord & Valla Field Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Hermaness, Saxa Vord and Valla Field (UK) SPA																				
EU Code:				UK9002011																				
Distance to Proposed Development				1104.5 km from Offshore Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Fulmar								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Red-throated diver								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Gannet								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Kittiwake								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Guillemot								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Shag																								
Great skua																								
Puffin																								

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 97



102. Matrix 98: Copeland Islands Special Protection Area - HRA Screening Rampion 2

Name of European site:				Copeland Islands (UK) SPA																				
EU Code:				UK9020291																				
Distance to Proposed Development				544.4 km to Export Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Manx shearwater								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic tern																								

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 98

103. Matrix 99: Caithness and Sutherland Peatlands Special Protection Area - HRA Screening – Rampion 2

Name of European site:				Caithness and Sutherland Peatlands (UK) SPA																				
EU Code:				UK9001151																				
Distance to Proposed Development				841.3km to Export Cable Corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Red-throated diver								Xa		Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa
Black-throated diver																								
Wigeon																								
Common scoter																								
Hen harrier																								
Golden eagle																								
Merlin																								
Golden plover																								
Greenshank																								
Wood sandpiper																								
Short-eared owl																								
Dunlin																								



Evidence Supporting Conclusions

×a

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 99

104. Matrix 100: Caithness and Sutherland Peatlands Ramsar - HRA Screening - Rampion 2

Name of European site:				Caithness and Sutherland Peatlands (UK) Ramsar																	
EU Code:				UK13003																	
Distance to Proposed Development				841.3km to Export cable corridor																	
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Red-throated diver					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Black-throated diver																					
Wigeon																					
Common scoter																					
Hen harrier																					
Golden eagle																					
Merlin																					
Golden plover																					
Greenshank																					
sandpiper																					
Short-eared owl																					
Dunlin																					

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 100

105. Matrix 101: Orkney Mainland Moors Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Orkney Mainland Moors (UK) SPA																				
EU Code:				UK9002311																				
Distance to Proposed Development				921.2 km to Offshore cable corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Red-throated diver								Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa			
Hen harrier																								
Short-eared owl																								

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 101

106. Matrix 102: Mousa Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Mousa (UK) SPA																				
EU Code:				UK9002361																				
Distance to Proposed Development				1023.8 km to Offshore export cable																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
European storm petrel								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Arctic tern								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 102

107. Matrix 103: Tips of Corsemaul and Tom Mor Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Tips of Corsemaul and Tom Mor (UK) SPA																				
EU Code:				UK9002811																				
Distance to Proposed Development				154 km to Offshore export cable																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Common gull								Xa		Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa			

Evidence Supporting Conclusions

Xa The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 103

108. Matrix 104: North Rona and Sula Sgeir Special Protection Area - HRA Screening - Rampion 2

Name of European site:				North Rona and Sula Sgeir (UK) SPA																				
EU Code:				UK9001011																				
Distance to Proposed Development				995.7 km from Offshore cable corridor																				
Likely Effects of Proposed Development																								
Effect				Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D			
Gannet								Xa		Xa		Xa		Xa		Xa	Xa	Xa	Xa	Xa	Xa			
Fulmar																								
Leach's storm petrel																								
European storm petrel																								
Kittiwake																								
Great black-backed gull																								
Guillemot																								
Razorbill																								
Puffin																								

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 104



109. Matrix 105: Ailsa Craig Special Protection Area - HRA Screening - Rampion 2

Name of European site:				Ailsa Craig (UK) SPA																	
EU Code:				UK9003091																	
Distance to Proposed Development				355.3 km from Offshore cable corridor																	
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Gannet					Xa		Xa		Xa		Xa			Xa		Xa	Xa	Xa	Xa	Xa	Xa
Herring gull																					
Lesser black-backed gull																					
Kittiwake																					
Guillemot																					
Gannet																					

Evidence Supporting Conclusions

Xa

The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.

End of Matrix 105

110. Matrix 106: Grassholm Special Protection Area - HRA Screening - Rampion 2

Name of European site:	Grassholm (UK) SPA																				
EU Code:	UK9014041																				
Distance to Proposed Development	355.3 km from Array																				
Likely Effects of Proposed Development																					
Effect	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability and behaviour			Indirect impacts via effects on prey			Barrier effect			Direct disturbance and displacement (migration)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Gannet					√a		×b		×b		×b			×b		×b	√c	×b	×b	√d	×b

Evidence Supporting Conclusions

- √a Species may be sensitive to collision risk during the non-breeding bio-seasons. Connectivity is likely to be limited and any effect trivial and inconsequential. However, the potential for LSE has been identified for this feature/site on a precautionary basis.
- Xb The significance of effects at a population level is considered to decrease with distance and the severity of the effect experienced locally. For these categories, the likelihood and or severity of the effect experienced locally is considered to be low and small to negligible. The relatively low densities of this species in the English Channel reduce the likelihood of exposure to and the severity of effects that might occur at population level. It is determined that LSE would not manifest on this distant SPA after the likelihood and severity of effects on the SPA have been diluted over distance and could only result in negligible effects in the wider environmental context either alone, or in-combination.
- √c Connectivity is likely to be limited and any effect trivial and inconsequential. However, the potential for LSE has been identified for this feature/site on a precautionary basis.
- √d Where potential for LSE has been concluded alone, potential for LSE has been concluded in-combination. Therefore, the potential for LSE is identified. No additional in-combination issues are identified.

End of Matrix 106





# Appendix F      European sites information

## European Site Information

This Appendix provides site-specific information for all of the designated sites considered in the draft RIAA at Stage Two (AA), including site characterisations, current conservation status and the conservation objectives.

### 1.1 The Arun Valley Ramsar

- 1.1.1 The Arun Valley Ramsar is of ornithological importance and also supports wetland invertebrate species that are listed as threatened or endangered, and four nationally rare and four nationally scarce plant species.
- 1.1.2 The site covers some 529ha (**Figure F-1**). The receptor groups 'wintering waterfowl', 'breeding waders' and 'wetland invertebrates' are relevant to the Ramsar.
- 1.1.3 Key literature sources, including relevant project literature, are as follows:
  - Arun Valley Ramsar Information Sheet on Ramsar Wetlands (dated December 1998)<sup>1</sup>;
  - Ramsar Sites Information Service (dated December 1999)<sup>2</sup>;
  - **PEIR Volume 2, Chapter 12: Offshore ornithology**; and
  - **PEIR Volume 2, Chapter 14: Nature conservation**.

### Qualifying features

- 1.1.4 The site is designated for the following Ramsar criteria:
  - **Criterion 2:** The site holds seven wetland invertebrate species listed in the British Red Data Book as threatened. One of these, *Pseudamnicola confusa*, is considered to be endangered. The site also supports four nationally rare and four nationally scarce plant species.
  - **Criterion 3:** In addition to the Red Data Book invertebrate and plant species, the ditches intersecting the site have a particularly diverse and rich flora. All five British duckweed *Lemna* species, all five water-cress *Rorippa* species, and all three British water milfoils (*Myriophyllum* species), all but one of the seven British water dropworts (*Oenanthe* species), and two-thirds of the British pondweeds (*Potamogeton* species) can be found on site.
  - **Criterion 5:** Species with peak counts in winter: 13774 waterfowl (5-year peak mean 1998/99-2002/2003).
  - **Criterion 6:** Species with peak counts in winter:

<sup>1</sup> <https://jncc.gov.uk/jncc-assets/RIS/UK11004.pdf>

<sup>2</sup> <https://rsis.ramsar.org/ris/1011>

- ▶ Northern pintail, *Anas acuta*,

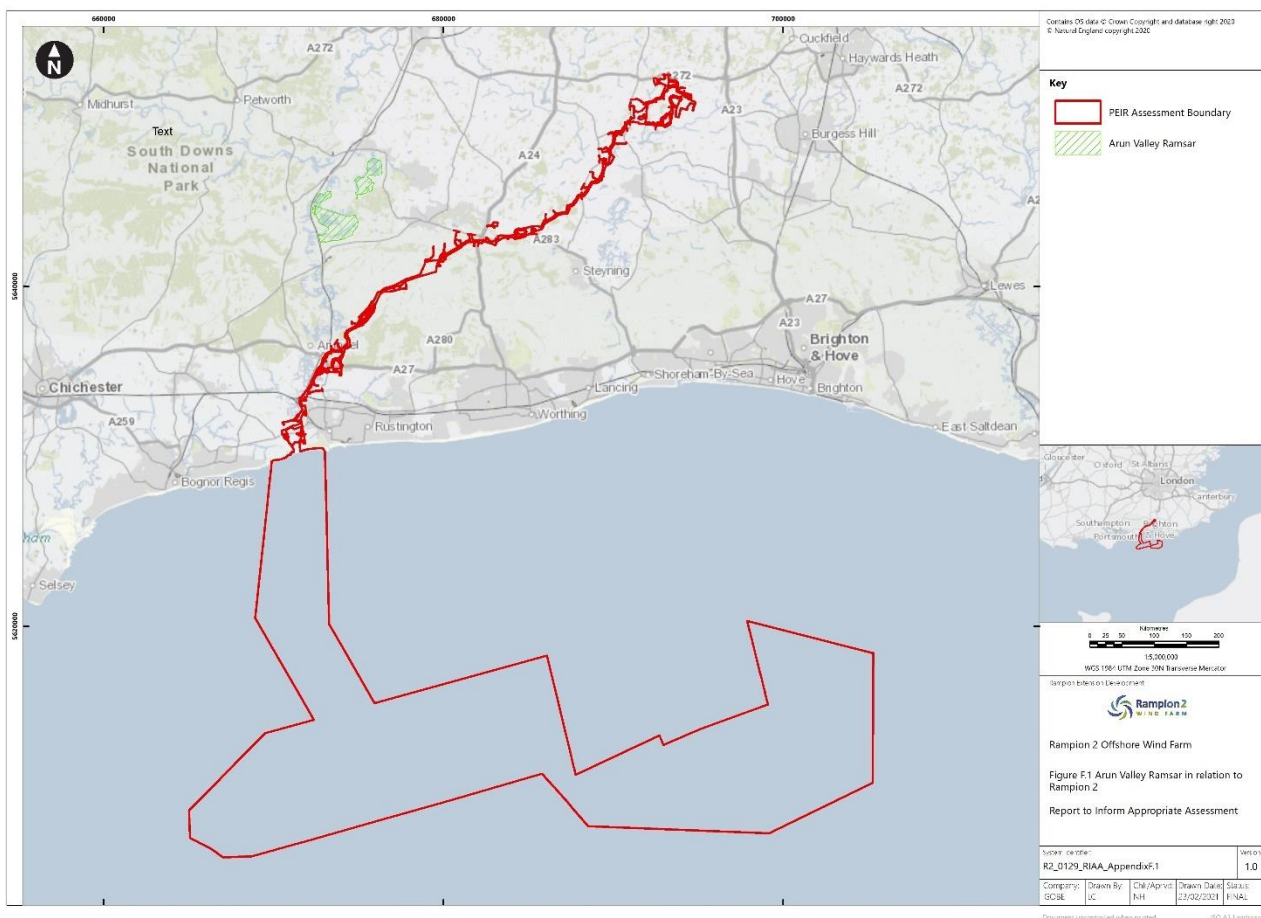
## The characteristics of the European site

- 1.1.5 The Arun Valley Ramsar covers an area of wet meadows on the floodplain of the River Arun between Pulborough and Amberley. The area is subject to occasional flooding, dissected by a network of ditches, several of which support rich aquatic flora and invertebrate fauna. The site is of outstanding ornithological importance for wintering waterfowl and breeding waders. It supports seven wetland invertebrate species that are listed as threatened in Britain, one of which is endangered, and there are four nationally rare and four nationally scarce plant species.

## Conservation advice

- 1.1.6 Much of the site is currently under appropriate management through organizations such as the Sussex Wildlife Trust and the Royal Society for the Protection of Birds, however, influencing private landowners on management issues will continue to be important.

Figure F-1 The Arun Valley Ramsar in relation to Rampion 2



## 1.2 The Arun Valley SPA

- 1.2.1 The Arun Valley SPA is of ornithological importance and also supports wetland invertebrate species that are listed as threatened or endangered, and four nationally rare and four nationally scarce plant species.
- 1.2.2 The site covers some 529ha (**Figure F-2**). The receptor groups 'wintering waterfowl', 'breeding waders' and 'wetland invertebrates' are relevant to the Ramsar.
- 1.2.3 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Arun Valley SPA Citation<sup>3</sup> (dated May 2000); and
  - The Arun Valley SPA Data Form<sup>4</sup> (dated December 2015).

### Qualifying features

- 1.2.4 The site is designated for the following features:
- A037 *Cygnus columbianus bewickii*; Bewick's swan (non-breeding); and
  - waterbird assemblages.

### The characteristics of the European site

- 1.2.5 The Arun Valley Ramsar covers an area of wet meadows on the floodplain of the River Arun between Pulborough and Amberley. The area is subject to occasional flooding, dissected by a network of ditches, several of which support rich aquatic flora and invertebrate fauna. The site is of outstanding ornithological importance for wintering waterfowl and breeding waders. It supports seven wetland invertebrate species that are listed as threatened in Britain, one of which is endangered, and there are four nationally rare and four nationally scarce plant species.

### Conservation advice

- 1.2.6 Advice on operations and Management measures can be found within:
- Supplementary Advice on the Conservation Objectives<sup>5</sup> (dated March 2019); and

<sup>3</sup> <http://publications.naturalengland.org.uk/publication/4567444756627456>

<sup>4</sup> <https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=UK9020281>

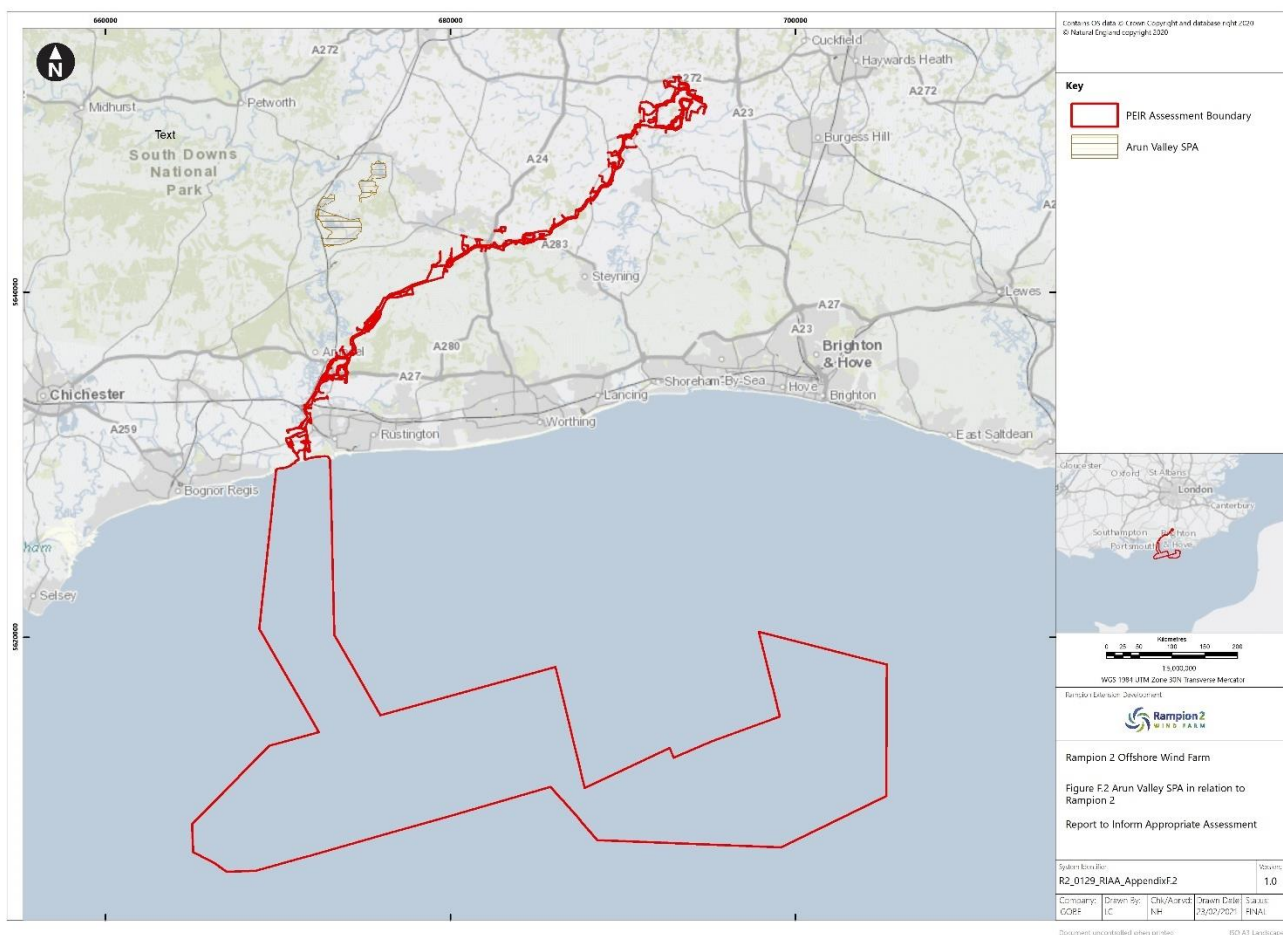
<sup>5</sup> <http://publications.naturalengland.org.uk/publication/4567444756627456>

- The Conservation Objectives<sup>6</sup> (dated February 2019).

1.2.7 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features; and,
  - ▶ the distribution of the qualifying features within the site.

Figure F-2 The Arun Valley SPA in relation to Rampion 2



<sup>6</sup> <http://publications.naturalengland.org.uk/publication/4567444756627456>

## 1.3 Pagham Harbour SPA

- 1.3.1 Pagham Harbour SPA is located South East of Chichester between Selsey and Bognor Regis and supports internationally important populations of regularly occurring Annex 1 bird species and regularly occurring migratory bird species. The site covers some 636.68ha (**Figure F-3**).
- 1.3.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - SPA Data form for Pagham Harbour SPA (dated February 1999)<sup>7</sup>; and
  - Pagham Harbour SPA Citation (dated August 1998)<sup>8</sup>.

### Qualifying features

- 1.3.3 The Pagham Harbour SPA is designated for the following qualifying features:
- A046a *Branta bernicla bernicla*; Dark-bellied brent goose (non-breeding);
  - A151 *Philomachus pugnax*; Ruff (non-breeding);
  - A193 *Sterna hirundo*; Common tern (breeding); and
  - A195 *Sterna albifrons*; Little tern (breeding).

### The characteristics of the European site

- 1.3.4 Pagham Harbour SPA comprises an extensive central area of saltmarsh and tidal mudflats, with surrounding habitats including lagoons, shingle, open water, reed swamp and wet permanent grassland. All are supporting habitats for the breeding SPA bird species common tern and little tern and over-wintering brent goose and ruff. Species identified for possible future consideration include Pintail and Black-tailed godwit.

### Conservation advice

- 1.3.5 Advice on operations and Management measures can be found within:
- The Supplementary Advice<sup>9</sup> (dated September 2019);
  - The Site Improvement Plan<sup>10</sup> (dated November 2014);

<sup>7</sup> <http://publications.naturalengland.org.uk/publication/3143422>

<sup>8</sup> <http://publications.naturalengland.org.uk/publication/6147434560356352>

<sup>9</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9012041&SiteName=pagham&SiteNameDisplay=Pagham+Harbour+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&NumMarineSeasonality=4>

<sup>10</sup> <http://publications.naturalengland.org.uk/publication/5799069091889152>

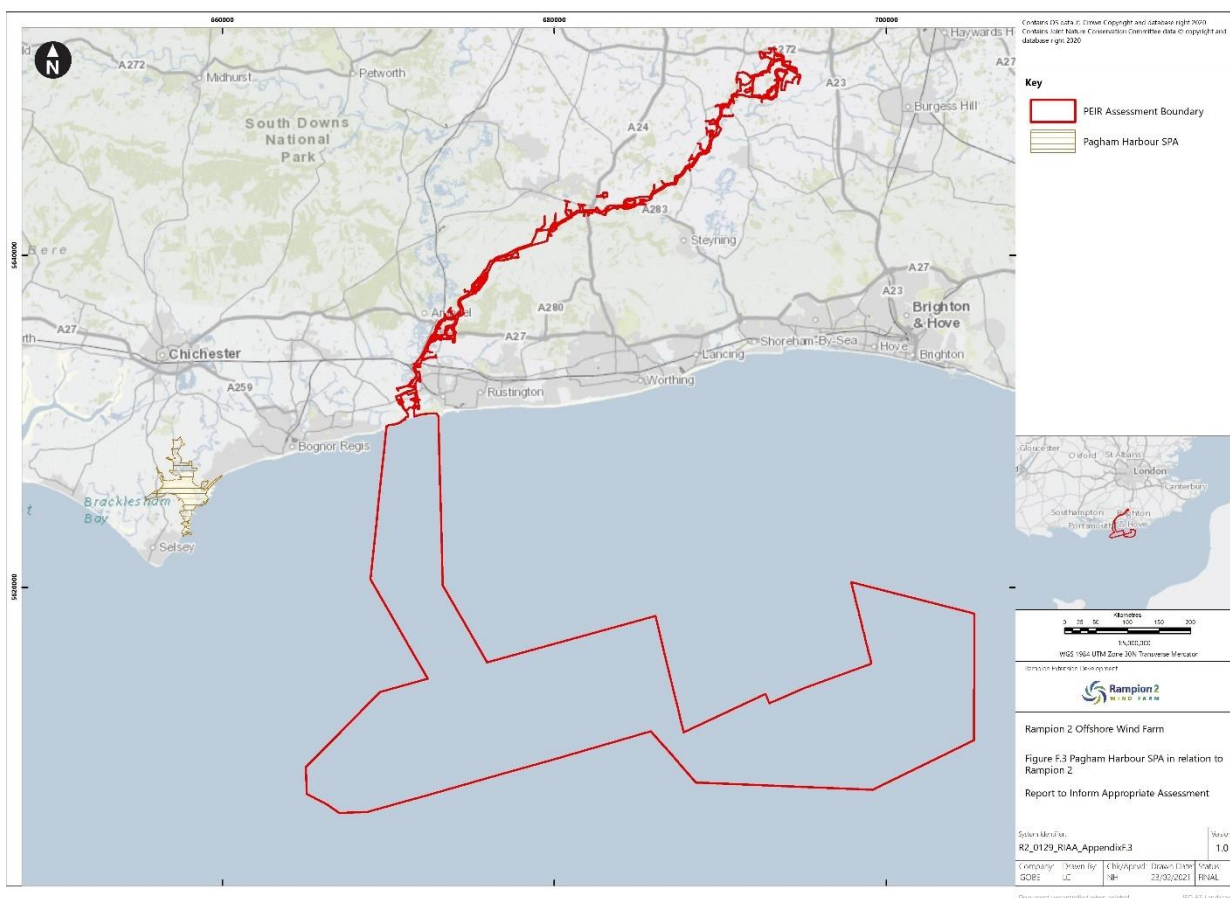


- Pagham Harbour SPA Reg 33 Conservation advice Package (January 2001)<sup>11</sup>; and
- The Conservation Objectives<sup>12</sup> (dated February 2019).

1.3.6 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features; and
  - ▶ the distribution of the qualifying features within the site.

Figure F-3 Pagham Harbour SPA in relation to Rampion 2



<sup>11</sup> <http://publications.naturalengland.org.uk/publication/3143422>

<sup>12</sup> <http://publications.naturalengland.org.uk/publication/6147434560356352>

## 1.4 Pagham Harbour Ramsar

- 1.4.1 Portsmouth Harbour Ramsar is located on the south coast of England and supports internationally or nationally important wintering populations of migratory waterfowl. The site covers 637 ha (Error! Reference source not found.).
- 1.4.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - Pagham Harbour Ramsar Wetlands Information Sheet<sup>13</sup> (dated March 1998); and
  - Pagham Harbour Information Sheet on Ramsar Wetlands<sup>14</sup> (dated March 1998).

### Qualifying features

- 1.4.3 The site is designated owing to the following criteria:
- **Criteria 6:** Species with peak counts in winter:
    - ▶ dark-bellied brent goose, *Branta bernicla bernicla*,

### The characteristics of the European site

- 1.4.4 An estuarine harbour with shingle beaches, intertidal mudflats and saltmarsh, giving way to brackish marsh supporting reedbeds and damp pasture. The site includes a nationally important vegetation community and small amounts of ancient woodland. Nationally and internationally important numbers of wintering or breeding waterbirds or waders use the site.

### Conservation advice

- 1.4.5 A management agreement and a site management statement/plan has been implemented for the site.

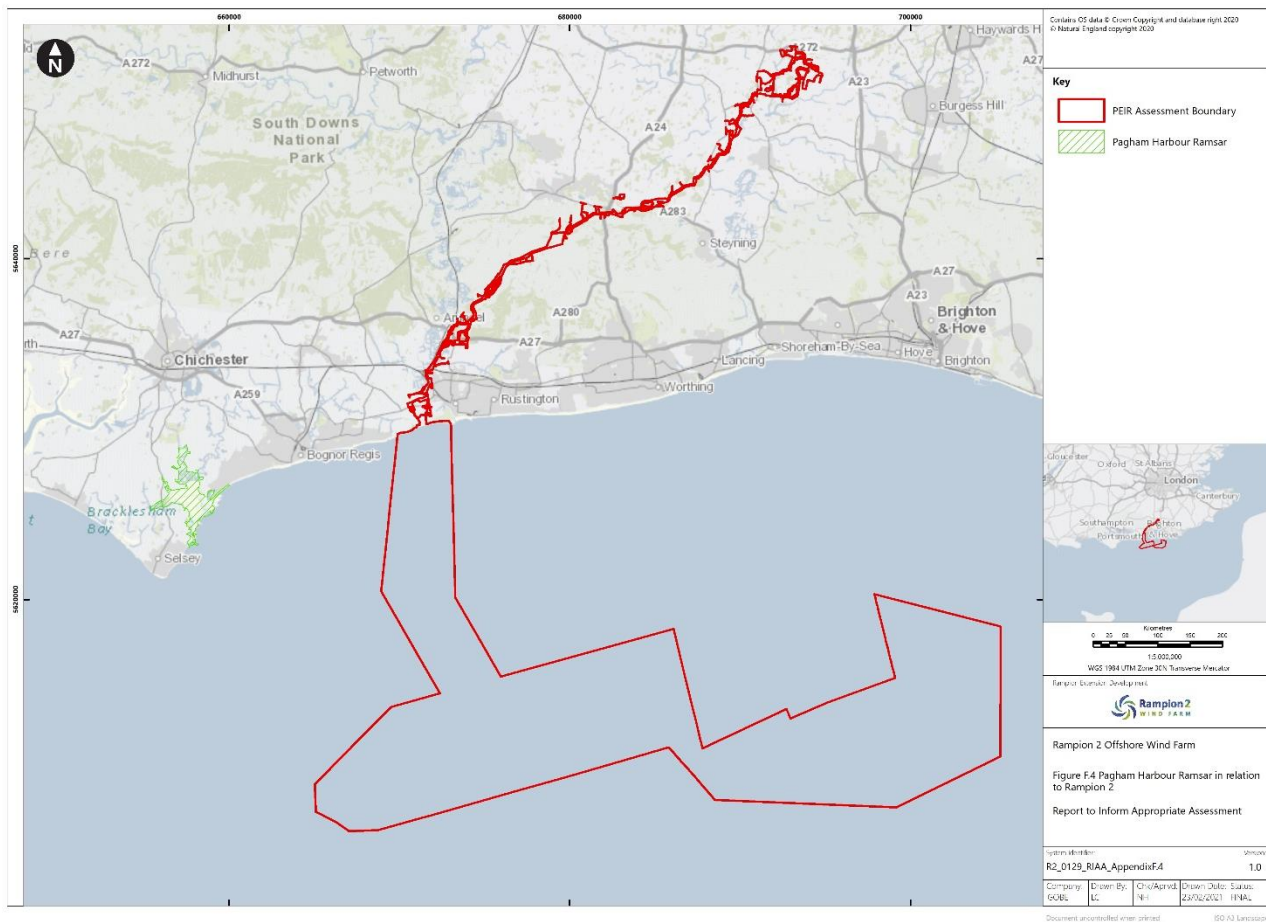
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<sup>13</sup> <https://rsis Ramsar.org/ris/396>

<sup>14</sup> <https://jncc.gov.uk/jncc-assets/RIS/UK11052.pdf>



Figure F4 Pagham Harbour Ramsar in relation to Rampion 2



## 1.5 The Mens SAC

1.5.1 The Mens SAC is a terrestrial site in Sussex, designated for Annex I Beech forest habitat which features barbastelle bat maternity roosts (an Annex II species). The site covers some 203.2ha (**Figure F-5**). Key literature sources, including relevant project literature, are as follows:

- **PEIR Volume 2, Chapter 14: Nature conservation;**
- **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
- The Mens SAC Citation<sup>15</sup> (dated June 2005); and
- The Mens SAC Data Form<sup>16</sup> (dated December 2012).

### Qualifying features

1.5.2 The site is designated for the following Annex I habitat:

<sup>15</sup> <http://publications.naturalengland.org.uk/publication/5642356338458624>

<sup>16</sup> <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0012716.pdf>

- Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion roburi-petraeae* or *Ilici-Fagenion*). (Beech forests on acid soils)

1.5.3 The site is also designated for the following Annex II species:

- Barbastelle bat *Barbastella barbastellus*.

## The characteristics of the European site

1.5.4 The Mens is an extensive area of mature beech *Fagus sylvatica* woodland rich in lichens, bryophytes, fungi and saproxylic (dead wood) invertebrates. It is developing a near-natura high forest structure, in response to only limited silvicultural intervention over the 20th century, combined with the effects of natural events such as the 1987 great storm. The site also supports an important population of barbastelle bat *Barbastella barbastellus*.

## Conservation advice

1.5.5 Advice on operations and Management measures can be found within:

- The Site Improvement Plan<sup>17</sup> (dated March 2015);
- Mens SAC Conservation Objectives Supplementary Advice<sup>18</sup> (dated February 2019); and
- The Conservation Objectives<sup>19</sup> (dated November 2018).

1.5.6 The conservation objectives for the site are as follows:

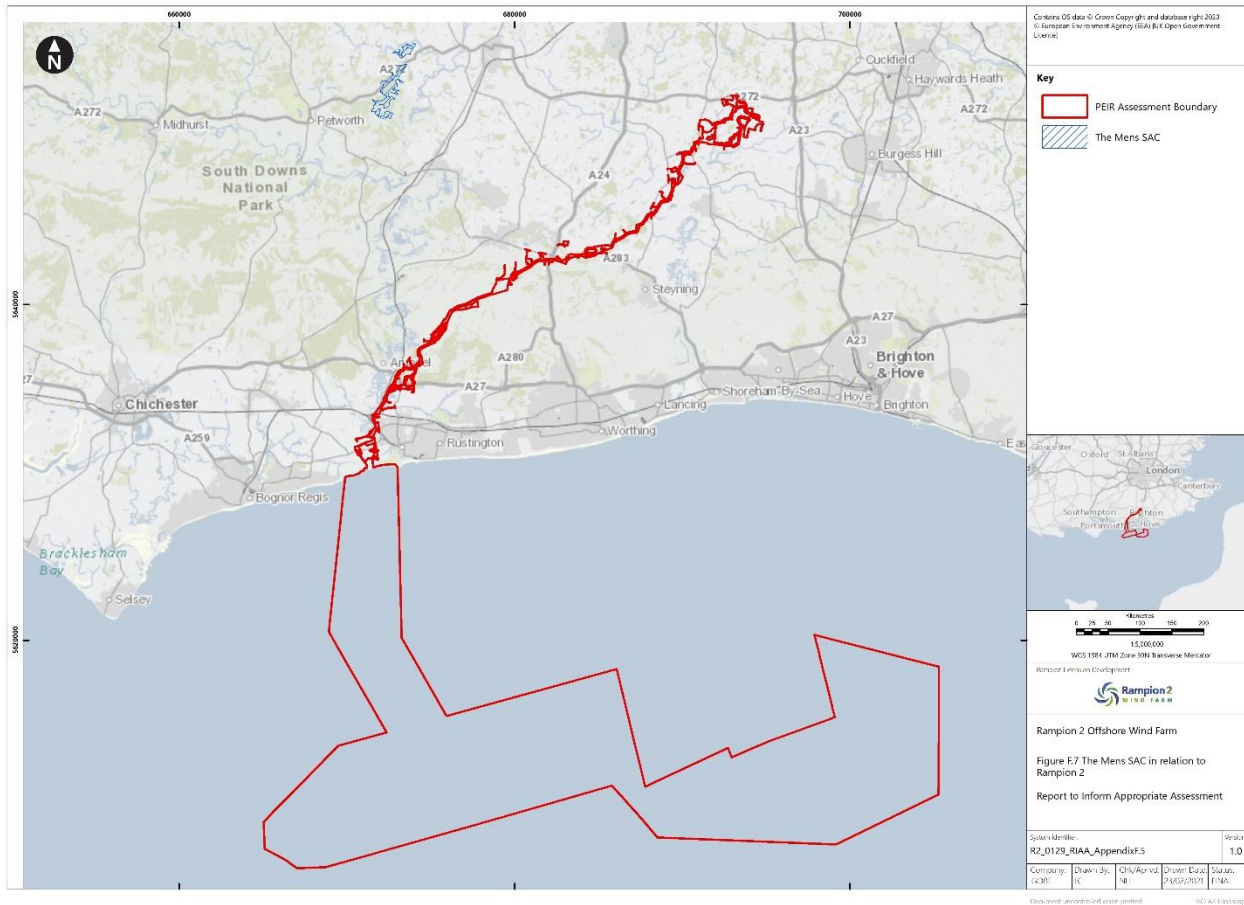
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying features, by maintaining or restoring;
  - ▶ the extent and distribution of qualifying natural habitats and habitats of qualifying species;
  - ▶ the structure and function (including typical species) of qualifying natural habitats;
  - ▶ the structure and function of the habitats of qualifying species;
  - ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
  - ▶ the populations of qualifying species; and
  - ▶ the distribution of qualifying species within the site.

<sup>17</sup> <http://publications.naturalengland.org.uk/publication/5548316158853120>

<sup>18</sup> <http://publications.naturalengland.org.uk/file/5113429933424640>

<sup>19</sup> <http://publications.naturalengland.org.uk/publication/5642356338458624>

Figure F-5 The Mens SAC in relation to Rampion 2



## 1.6 Solent and Isle of Wight lagoons SAC

- 1.6.1 The Solent and Isle of Wight lagoons SAC on the south coast of England is designated for Annex I coastal lagoon habitat and supports a range of rare or scarce faunal lagoon species. The site covers 36.2ha (**Figure F-6**).
- 1.6.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 14: Nature conservation;**
  - **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - The Solent and Isle of Wight lagoons SAC Citation<sup>20</sup> (dated June 2005); and
  - The Solent and Isle of Wight lagoons SAC Data Form<sup>21</sup> (dated December 2015).

### Qualifying features

- 1.6.3 The site is designated for the following Annex I habitat:

<sup>20</sup> <http://publications.naturalengland.org.uk/publication/5646122018144256>

<sup>21</sup> <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0017073.pdf>

- Coastal lagoons.

## The characteristics of the European site

- 1.6.4 The Solent encompasses a series of coastal lagoons, including percolation, isolated and sluiced lagoons. The site includes a number of lagoons in the marshes in the Keyhaven – Pennington area, at Farlington Marshes in Langstone Harbour, behind the sea-wall at Bembridge Harbour and at Gilkicker, near Gosport. The lagoons show a range of salinities and substrates, ranging from soft mud to muddy sand with a high proportion of shingle, which support a diverse fauna including large populations of three notable species: the nationally rare foxtail stonewort *Lamprothamnium papulosum*, the nationally scarce lagoon sand shrimp *Gammarus insensibilis*, and the nationally scarce starlet sea anemone *Nematostella vectensis*. The lagoons in Keyhaven – Pennington Marshes are part of a network of ditches and ponds within the saltmarsh behind a sea-wall. Farlington Marshes is an isolated lagoon in marsh pasture that, although separated from the sea by a sea-wall, receives sea water during spring tides. Gilkicker Lagoon is a sluiced lagoon with marked seasonal salinity fluctuation and supports a high species diversity. The lagoons at Bembridge Harbour have formed in a depression behind the sea-wall and sea water enters by percolation and by man-made culverts. Species diversity in these lagoons is high and the fauna includes very high densities of *N. vectensis* and the nationally rare Bembridge water beetle *Paracymus aeneus*.

## Conservation advice

- 1.6.5 Advice on operations and Management measures can be found within:
- advice on operations<sup>22</sup> (dated March 2020);
  - The Site Improvement Plan<sup>23</sup> (dated November 2014); and
  - The Conservation Objectives<sup>24</sup> (dated November 2018).
- 1.6.6 The conservation objectives for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying features, by maintaining or restoring;
    - ▶ the extent and distribution of qualifying natural habitats;
    - ▶ the structure and function (including typical species) of qualifying natural habitats; and

<sup>22</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0017073&SiteName=solent&SiteNameDisplay=Solent+and+Isle+of+Wight+Lagoons+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&NumMarineSeasonality=>

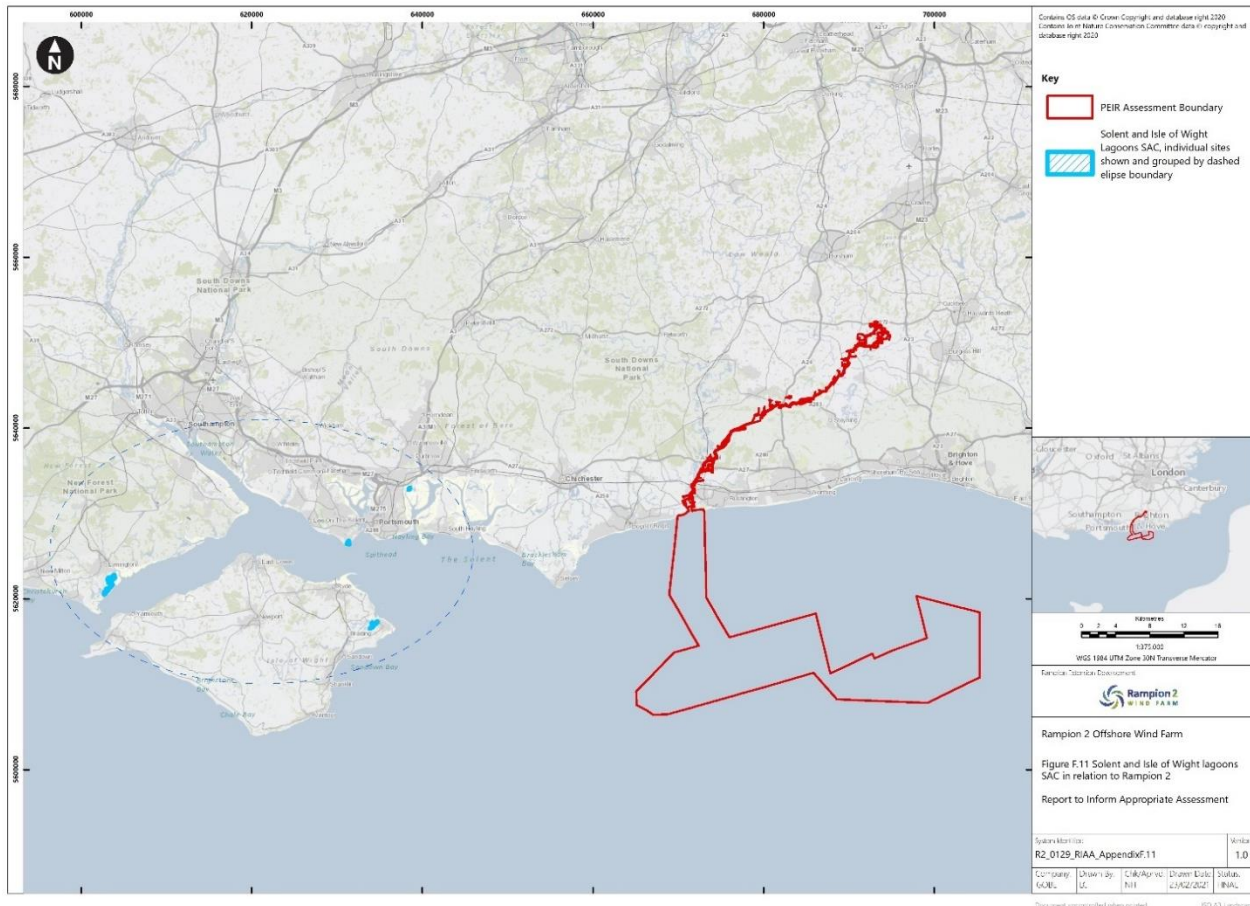
<sup>23</sup> <http://publications.naturalengland.org.uk/publication/5670639268528128>

<sup>24</sup> <http://publications.naturalengland.org.uk/publication/5646122018144256>



- ▶ the supporting processes on which qualifying natural habitats rely.

Figure F-6 Solent and Isle of Wight lagoons SAC in relation to Rampion 2



## 1.7 Portsmouth Harbour SPA

- 1.7.1 Portsmouth Harbour SPA is located on the south coast of England and supports internationally or nationally important wintering populations of migratory waterfowl. The site covers 1249.6ha (**Figure F-7**).
- 1.7.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12 Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14 Nature conservation;**
  - Portsmouth Harbour SAC Citation<sup>25</sup> (dated August 1998); and
  - Portsmouth Harbour SPA Data Form<sup>26</sup> (dated December 2015).

<sup>25</sup> <http://publications.naturalengland.org.uk/publication/4857883850178560>

<sup>26</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9011051.pdf>

## Qualifying features

- 1.7.3 The site is designated for the following qualifying features:
- A046a *Branta bernicla bernicla*; Dark-bellied brent goose (non-breeding);
  - A069 *Mergus serrator*; Red-breasted merganser (non-breeding);
  - A149 *Calidris alpina alpina*; Dunlin (non-breeding); and
  - A156 *Limosa limosa islandica*; Black-tailed godwit (non-breeding).

## The characteristics of the European site

- 1.7.4 Portsmouth Harbour is a large, industrialised estuary. Together with the adjacent Chichester and Langstone Harbours, it forms one of the most important sheltered intertidal areas on the south coast of England. Portsmouth Harbour SPA is composed of extensive intertidal mudflats and sandflats with seagrass beds, areas of saltmarsh, shallow coastal waters, coastal lagoons and coastal grazing marsh. There is comparatively little freshwater input to Portsmouth Harbour. The estuarine sediments support rich populations of intertidal invertebrates, which provide an important food source for overwintering birds.
- 1.7.5 There are approximately 77ha of seagrass beds in Portsmouth Harbour, and include both *Zostera marina* (found on the low shore) and *Zostera noltii* (on the upper to mid shore). The seagrass beds are amongst the most extensive in Britain and are an important food source for dark-bellied Brent goose. The saltmarsh areas are mainly comprised of cordgrass (*Spartina*) swards and provide feeding and roosting areas for overwintering birds.
- 1.7.6 Areas outside the SPA contain important supporting habitats for the birds that use the site, including coastal grazing marsh and agricultural land.

## Conservation advice

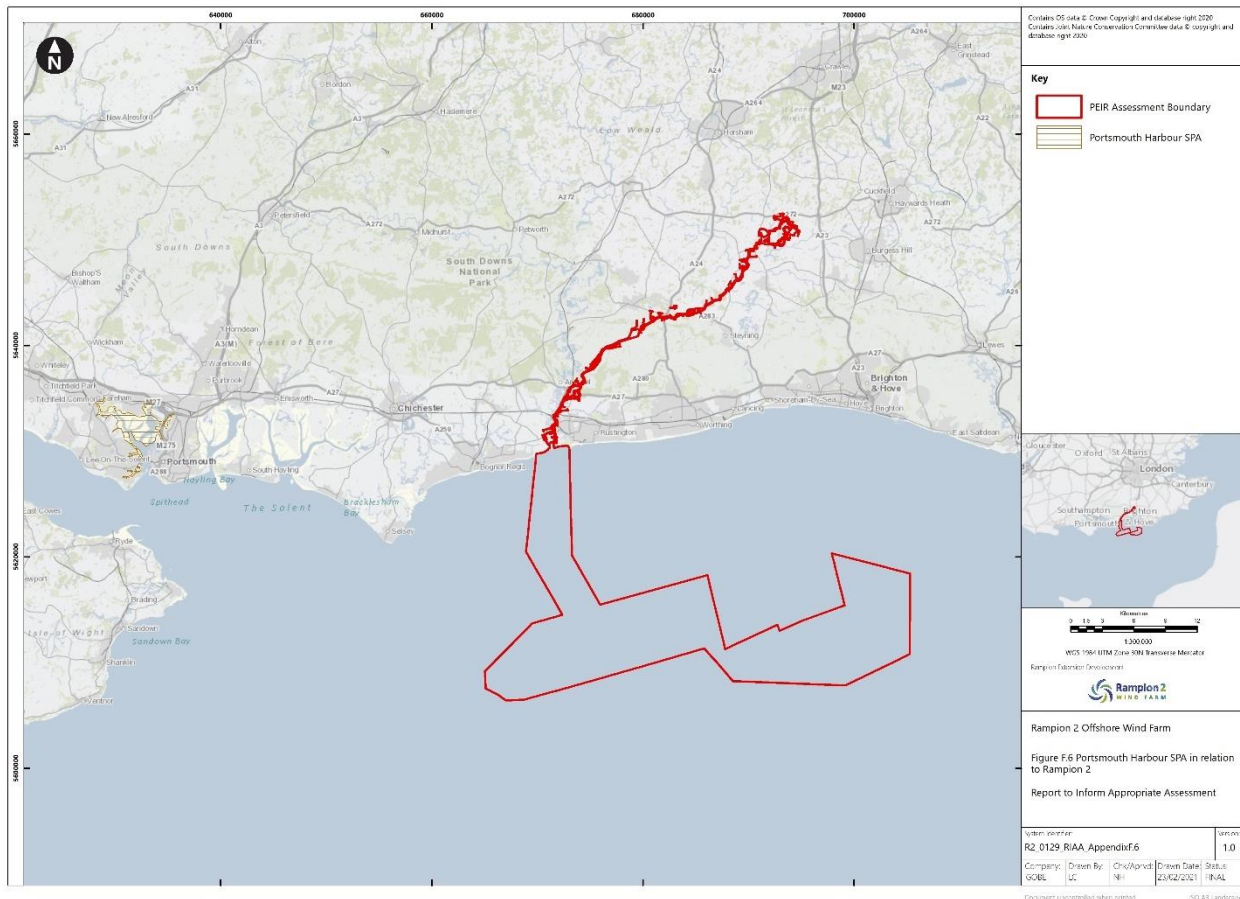
- 1.7.7 Advice on operations and Management measures can be found within:
- The Site Improvement Plan<sup>27</sup> (dated November 2014); and
  - The Conservation Objectives<sup>28</sup> (dated February 2019).
- 1.7.8 The conservation objectives for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
    - ▶ the extent and distribution of the habitats of the qualifying features;
    - ▶ the structure and function of the habitats of the qualifying features;
    - ▶ the supporting processes on which the habitats of the qualifying features rely;

<sup>27</sup> <http://publications.naturalengland.org.uk/publication/4692013588938752>

<sup>28</sup> <http://publications.naturalengland.org.uk/publication/4857883850178560>

- ▶ the population of each of the qualifying features; and
- ▶ the distribution of the qualifying features within the site.

Figure F-7 Portsmouth Harbour SPA in relation to Rampion 2



## 1.8 Portsmouth Harbour Ramsar

- 1.8.1 Portsmouth Harbour Ramsar is located on the south coast of England and supports internationally or nationally important wintering populations of migratory waterfowl. The site covers 1249.6ha (**Figure F-8**).
- 1.8.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - Portsmouth Harbour Ramsar Wetlands Information Sheet<sup>29</sup> (dated February 1995); and

<sup>29</sup> <https://jncc.gov.uk/jncc-assets/RIS/UK11055.pdf>

- Portsmouth Harbour Ramsar Sites Information Service<sup>30</sup> (dated February 1995).

## Qualifying features

- 1.8.3 The site is designated for the following criteria:
- Criteria 6: Qualifying: Species with peak counts in winter:
    - ▶ dark-bellied brent goose, *Branta bernicla bernicla*.

## The characteristics of the European site

- 1.8.4 Portsmouth Harbour is a large industrialised estuary consisting of a saltmarsh, vast expanses of mudflats, and tidal creeks on the south coast. The mudflats, supporting extensive beds of eelgrass, green algae, and sea lettuce, provide feeding grounds for internationally important numbers of wintering Dark-bellied Brent Geese. A unique and high quality flora and fauna occur at the site. Nationally important numbers of Gray Plover, dunlin, and Black-tailed Godwit are supported. Set in an urban area, there is a major port facility, and large-scale military activities occur at the site.

## Conservation advice

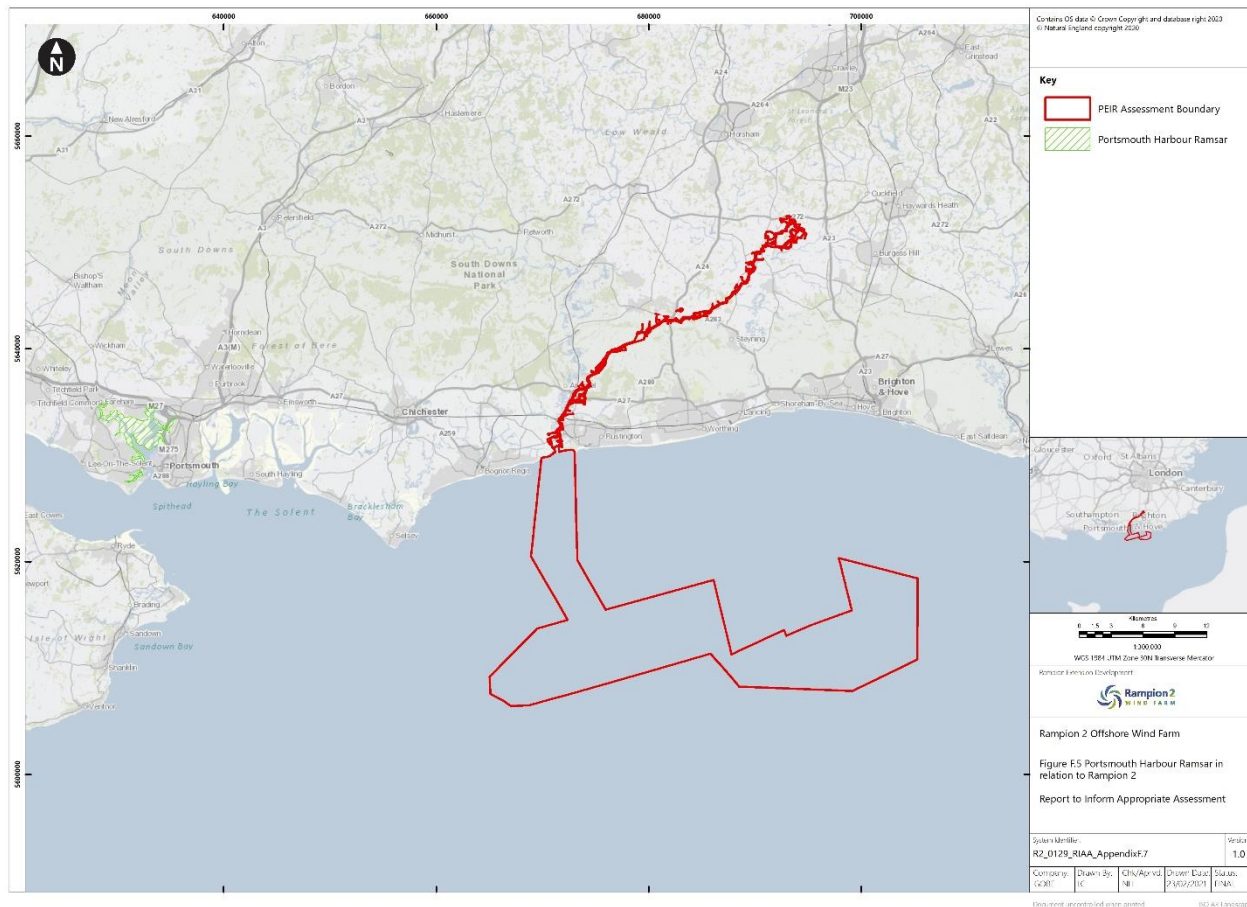
- 1.8.5 Land uses at the site include habitat/nature conservation and harbour use. There is a proposal for the development of 800 residential units at Priddy's Hard, immediately adjacent to an area of inter-tidal mudflats that has been proposed as an extension to the existing Portsmouth Harbour SSSI. The environmental effects of this proposal will be fully assessed before a decision is reached. A study is in preparation for a shoreline management plan.
- 1.8.6 A management agreement and a site management statement/plan has been implemented for the site.

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<sup>30</sup> <https://rsis Ramsar.org/ris/720>



Figure F-8 Portsmouth Harbour Ramsar in relation to Rampion 2



## 1.9 River Itchen SAC

- 1.9.1 The River Itchen SAC on the south coast of England is designated for the presence of the Annex I habitat 'Rivers with floating vegetation often dominated by water crowfoot'. The site covers 309.26ha (**Figure F-9**).
- 1.9.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The River Itchen SAC Citation<sup>31</sup> (dated June 2005); and
  - The River Itchen SAC Data Form<sup>32</sup> (dated December 2015).

### Qualifying features

- 1.9.3 The site is designated for the following Annex I habitat:

<sup>31</sup> <http://publications.naturalengland.org.uk/publication/5130124110331904>

<sup>32</sup> <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0012599.pdf>

- Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation. (Rivers with floating vegetation often dominated by watercress).

1.9.4 The site is also designated for hosting the following Annex II species:

- Atlantic salmon *Salmo salar*;
- Brook lamprey *Lampetra planeri*;
- Bullhead *Cottus gobio*;
- Otter *Lutra lutra*;
- Southern damselfly *Coenagrion mercuriale*; and
- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*.

## The characteristics of the European site

1.9.5 The Itchen typifies the classic chalk river and shows a greater uniformity in physical characteristics along its entire length than other rivers of this type. Since the river is mainly spring-fed, there is only a narrow range of seasonal variation in physical and chemical characteristics. The river's vegetation is dominated by higher plants, and the aquatic flora is exceptionally species rich with many of the typical chalk stream plants present in abundance. The majority of species are present throughout the system and downstream changes are less than in most other rivers. The river is dominated throughout by aquatic *Ranunculus* spp. The headwaters contain pond water-cress *Ranunculus peltatus*, while two *Ranunculus* species occur further downstream: stream water-cress *R. penicillatus* ssp. *pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-cress *R. fluitans*. The fish fauna of the Itchen is typical of lowland chalk rivers. Strong populations of bullhead *Cottus gobio* and brook lamprey *Lampetra planeri* are notable elements of the natural fish fauna. The river's runs of Atlantic salmon *Salmo salar* fluctuate markedly. The upper and mid river provides much suitable habitat for otters. A localised population of Atlantic stream crayfish *Austropotamobius pallipes* remains in a headwater of the river. Meadow ditches support strong populations of southern damselfly *Coenagrion mercuriale*. The numbers recorded place the site amongst the most important in Britain for this species.

## Conservation advice

1.9.6 Advice on operations and Management measures can be found within:

- The Supplementary Advice<sup>33</sup> (dated March 2019);
- The Conservation Objectives<sup>34</sup> (dated November 2018); and
- The Site Improvement Plan<sup>35</sup> (dated November 2014).

<sup>33</sup> <http://publications.naturalengland.org.uk/file/6521108551696384>

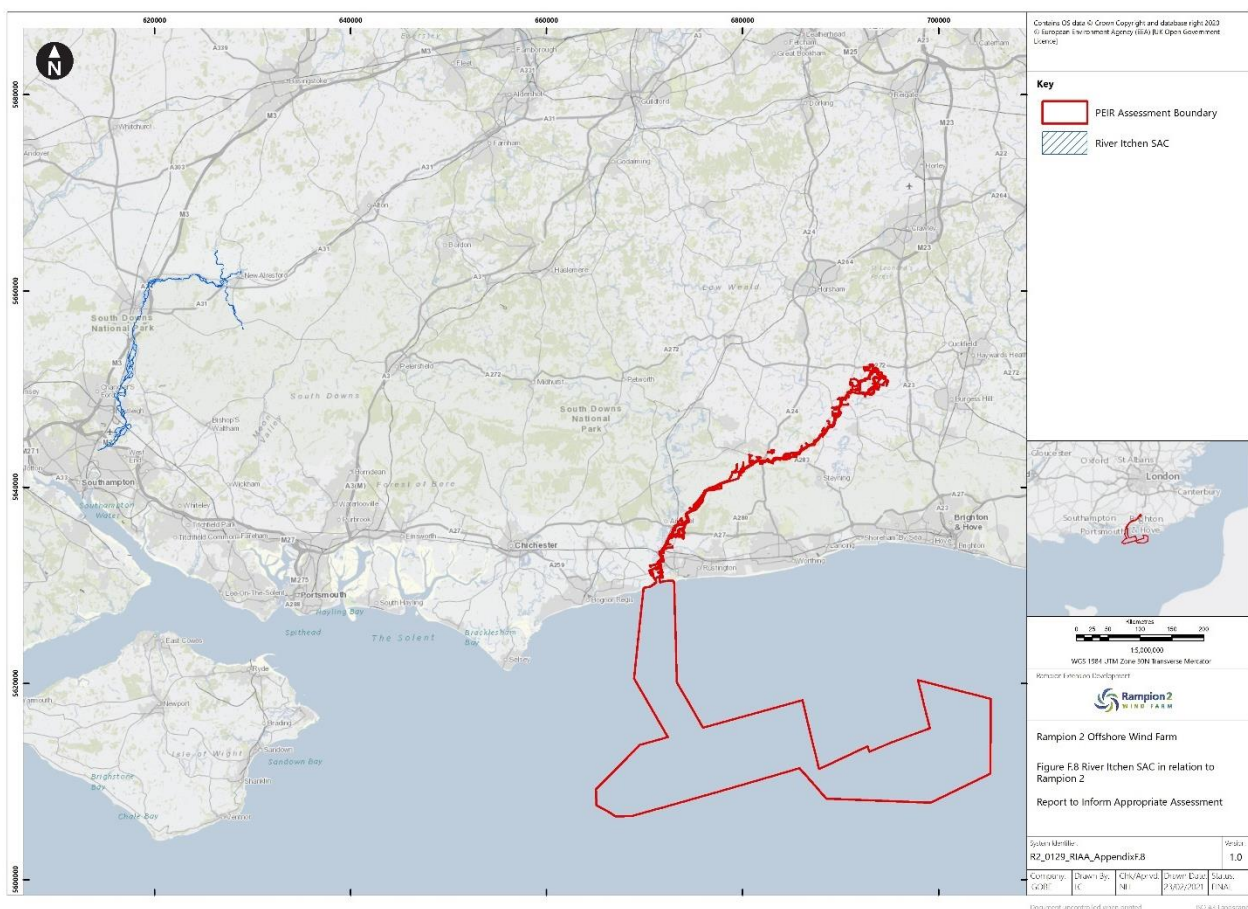
<sup>34</sup> <http://publications.naturalengland.org.uk/publication/5130124110331904>

<sup>35</sup> <http://publications.naturalengland.org.uk/publication/5404054607888384>

1.9.7 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying features, by maintaining or restoring;
  - ▶ the extent and distribution of qualifying natural habitats and habitats of qualifying species;
  - ▶ the structure and function (including typical species) of qualifying natural habitats;
  - ▶ the structure and function of the habitats of qualifying species;
  - ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
  - ▶ the populations of qualifying species; and
  - ▶ the distribution of qualifying species within the site.

### Figure F-9 River Itchen SAC in relation to Rampion 2



## 1.10 Solent Maritime SAC

- 1.10.1 The Solent Maritime SAC is a major estuarine system on the south coast of England which hosts a wide range of coastal habitats as well as associated fauna. The site covers 11325.09ha (Error! Reference source not found.).
- 1.10.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9 Benthic and Intertidal;**
  - **PEIR Volume 2, Chapter 14 Nature Conservation;**
  - The Solent Maritime SAC Citation<sup>36</sup> (dated June 2005); and
  - The Solent Maritime SAC Data Form<sup>37</sup> (dated December 2015).

### Qualifying features

- 1.10.3 The site is designated for the following Annex I habitats:
- estuaries;
  - spartina swards (*Spartinion maritimae*);
  - Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*);
  - annual vegetation of drift lines;
  - coastal lagoons;
  - mudflats and sandflats not covered by seawater at low tide (Intertidal mudflats and sandflats);
  - perennial vegetation of stony banks. (Coastal shingle vegetation outside the reach of waves);
  - salicornia and other annuals colonising mud and sand (Glasswort and other annuals colonising mud and sand);
  - sandbanks which are slightly covered by sea water all the time (Subtidal sandbanks); and
  - shifting dunes along the shoreline with *Ammophila arenaria* (white dunes). (Shifting dunes with marram).
- 1.10.4 The site is also designated for hosting the following Annex II species:
- Desmoulin's whorl snail *Vertigo moulinsiana*.

### The characteristics of the European site

- 1.10.5 The Solent encompasses a major estuarine system with four coastal plain estuaries and four bar-built estuaries. The Solent and its inlets are unique in

<sup>36</sup> <http://publications.naturalengland.org.uk/publication/5762436174970880>

<sup>37</sup> <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030059.pdf>



Britain and Europe for their hydrographic regime with its double tides, as well as for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, intertidal areas, sand and shingle spits, natural shoreline transitions and sand dunes.

- 1.10.6 The site supports a number of coastal lagoons both on the Isle of Wight and along the Hampshire coast providing examples of a variety of successional stages and salinity regimes including quite brackish conditions.
- 1.10.7 Desmoulin's whorl snail *Vertigo moulinsiana*, which is rare in Great Britain and usually occurs within base-rich wetlands where there are long established swamps, fens and marshes, is found in reedbeds in Chichester Harbour.

## Conservation advice

- 1.10.8 Advice on operations and Management measures can be found within:
- The Supplementary Advice<sup>38</sup> (dated March 2020);
  - Advice on Operations<sup>39</sup> (dated March 2020);
  - The Conservation Objectives<sup>40</sup> (dated November 2018); and
- The Site Improvement Plan<sup>41</sup> (dated November 2014).
- 1.10.9 The conservation objectives for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying features, by maintaining or restoring:
    - ▶ the extent and distribution of qualifying natural habitats and habitats of qualifying species;
    - ▶ the structure and function (including typical species) of qualifying natural habitats;
    - ▶ the structure and function of the habitats of qualifying species;
    - ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
    - ▶ the populations of qualifying species; and,

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<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030059&SiteName=solent&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0>

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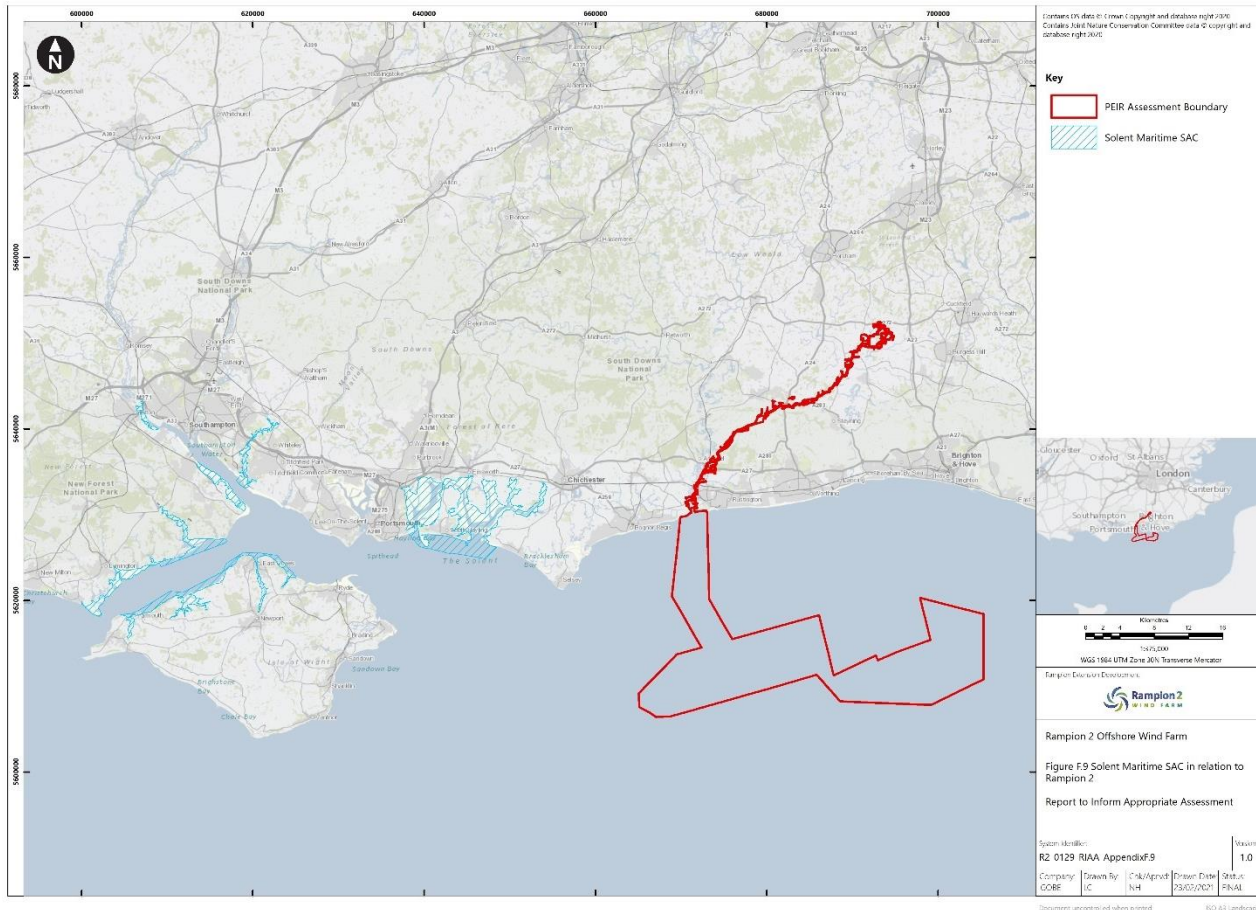
<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030059&SiteName=solent%20maritime&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0>

<sup>40</sup> <http://publications.naturalengland.org.uk/publication/5762436174970880>

<sup>41</sup> <http://publications.naturalengland.org.uk/publication/4692013588938752>

- ▶ the distribution of qualifying species within the site.

Figure F-10 Solent Maritime SAC in relation to Rampion 2



## 1.11 South Wight Maritime SAC

- 1.11.1 The South Wight Maritime SAC is located on the south coast of England and is characterised by contrasting Cretaceous hard cliffs, semi-stable soft cliffs and mobile soft cliffs. The site covers 19866.12ha (Error! Reference source not found.).
- 1.11.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
  - The South Wight Maritime SAC Citation<sup>42</sup> (dated June 2005); and
  - The Solent Maritime SAC Data Form<sup>43</sup> (dated December 2015).

<sup>42</sup> <http://publications.naturalengland.org.uk/publication/6242150467502080>

<sup>43</sup> <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030061.pdf>

## Qualifying features

1.11.3 The site is designated for the following Annex I habitats:

- reefs;
- submerged or partially submerged sea caves; and
- vegetated sea cliffs of the Atlantic and Baltic coasts.

## The characteristics of the European site

1.11.4 South Wight Maritime SAC contains contrasting Cretaceous hard cliffs, semi-stable soft cliffs and mobile soft cliffs. The western and eastern extremities of the site consist of high chalk cliffs with species-rich calcareous grassland vegetation, the former exposed to maritime influence and the latter comparatively sheltered.

1.11.5 The longest section is composed of slumping acidic sandstones and neutral clays with an exposed south-westerly aspect. These cliffs are minimally affected by sea defence works and together they form one of the longest lengths of naturally-developing soft cliffs on the UK coastline. The exposure of this coast to high wave energy has allowed the erosion of the cliffs to form sea caves. This site also contains the only known location of subtidal chalk caves in the UK. The large intertidal caves in the chalk cliffs are of ecological importance, with many hosting rare algal species, which are restricted to this type of habitat. To the west and south-west some of the most important subtidal chalk reefs in British waters occur, including the extensive tide-swept reef off the Needles and examples at Culver Cliff and Freshwater Bay. These support a diverse range of species in both the subtidal and intertidal. The bedrock is extensively bored by bivalves.

## Conservation advice

1.11.6 Advice on operations and Management measures can be found within:

- The Supplementary Advice<sup>44</sup> (dated March 2020);
- Advice on Operations<sup>45</sup> (dated March 2020);
- The Conservation Objectives<sup>46</sup> (dated November 2018); and
- The Site Improvement Plan<sup>47</sup> (dated November 2014).

1.11.7 The conservation objectives for the site are as follows:

<sup>44</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030061&SiteName=solent&SiteNameDisplay=South+Wight+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0>

<sup>45</sup>

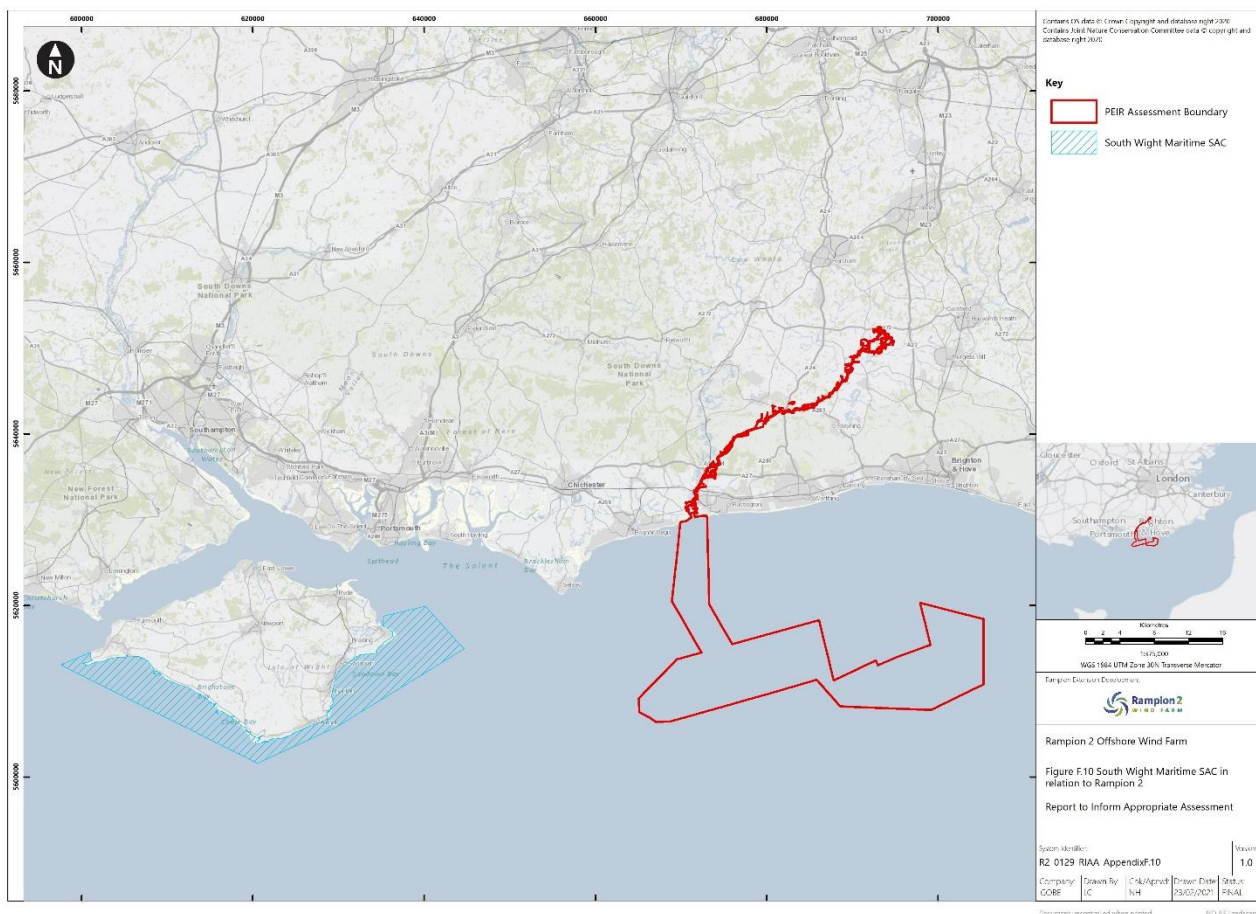
<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030061&SiteName=solent&SiteNameDisplay=South+Wight+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0>

<sup>46</sup> <http://publications.naturalengland.org.uk/publication/6242150467502080>

<sup>47</sup> <http://publications.naturalengland.org.uk/publication/6628806274056192>

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying features, by maintaining or restoring;
  - ▶ the extent and distribution of qualifying natural habitats;
  - ▶ the structure and function (including typical species) of qualifying natural habitats; and
  - ▶ the supporting processes on which qualifying natural habitats rely.

Figure F-11 South Wight Maritime SAC in relation to Rampion 2



## 1.12 Dungeness, Romney Marsh and Rye Bay SPA

- 1.12.1 The Dungeness, Romney Marsh and Rye Bay SPA is a coastal site located in East Sussex, in Kent. The SPA protects intertidal and marine habitats for internationally important breeding and wintering waterbirds, birds of prey, passage warblers and breeding seabirds. The site covers 42417.53ha (Error! Reference source not found.).
- 1.12.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**



- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
- **PEIR Volume 2, Chapter 14: Nature conservation;**
- **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
- The Dungeness, Romney Marsh and Rye Bay SPA Citation<sup>48</sup> (dated March 2016); and
- Dungeness, Romney Marsh and Rye Bay SPA Data Form<sup>49</sup> (dated November 2017).

## Qualifying features

1.12.3 The site is designated for the following Annex I species:

- A021 *Botaurus stellaris*; Great bittern (non-breeding);
- A037 *Cygnus columbianus bewickii*; Bewick's swan (non-breeding);
- A056 *Anas clypeata*; Northern shoveler (non-breeding);
- A081 *Circus aeruginosus*; Eurasian marsh harrier (breeding);
- A082 *Circus cyaneus*; Hen harrier (non-breeding);
- A132 *Recurvirostra avosetta*; Pied avocet (breeding);
- A140 *Pluvialis apricaria*; European golden plover (non-breeding);
- A151 *Philomachus pugnax*; Ruff (non-breeding);
- A176 *Larus melanocephalus*; Mediterranean gull (breeding);
- A191 *Sterna sandvicensis*; Sandwich tern (breeding);
- A193 *Sterna hirundo*; Common tern (breeding);
- A195 *Sterna albifrons*; Little tern (breeding);
- A294 *Acrocephalus paludicola*; Aquatic warbler (non-breeding); and
- waterbird assemblage.

## The characteristics of the European site

1.12.4 Dungeness, Romney Marsh and Rye Bay is a large area with a diverse coastal landscape comprising a number of habitats, which appear to be unrelated to each other. However, all of them exist today because coastal processes have formed and continue to shape a barrier of extensive shingle beaches and sand dunes across an area of intertidal mud and sand flats. Today this area is still fringed by important intertidal habitats, and contains relict areas of saltmarsh, extensive

<sup>48</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/509225/dungeness-romney-rye-spa-documents.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/509225/dungeness-romney-rye-spa-documents.pdf)

<sup>49</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/uk9012091.pdf>

grazing marshes and reedbeds. Human activities have further modified the site, resulting in the creation of extensive areas of wetland habitat due to gravel extraction. As a whole, Dungeness, Romney Marsh and Rye Bay is important for breeding and wintering waterbirds, birds of prey, passage warblers and breeding seabirds.

## Conservation advice

1.12.5 Advice on operations and Management measures can be found within:

- The Supplementary Advice<sup>50</sup> (dated September 2019);
- Advice on Operations<sup>51</sup> (dated March 2020); and
- The Conservation Objectives<sup>52</sup> (dated February 2019).

1.12.6 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features; and
  - ▶ the distribution of the qualifying features within the site.

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<sup>50</sup>

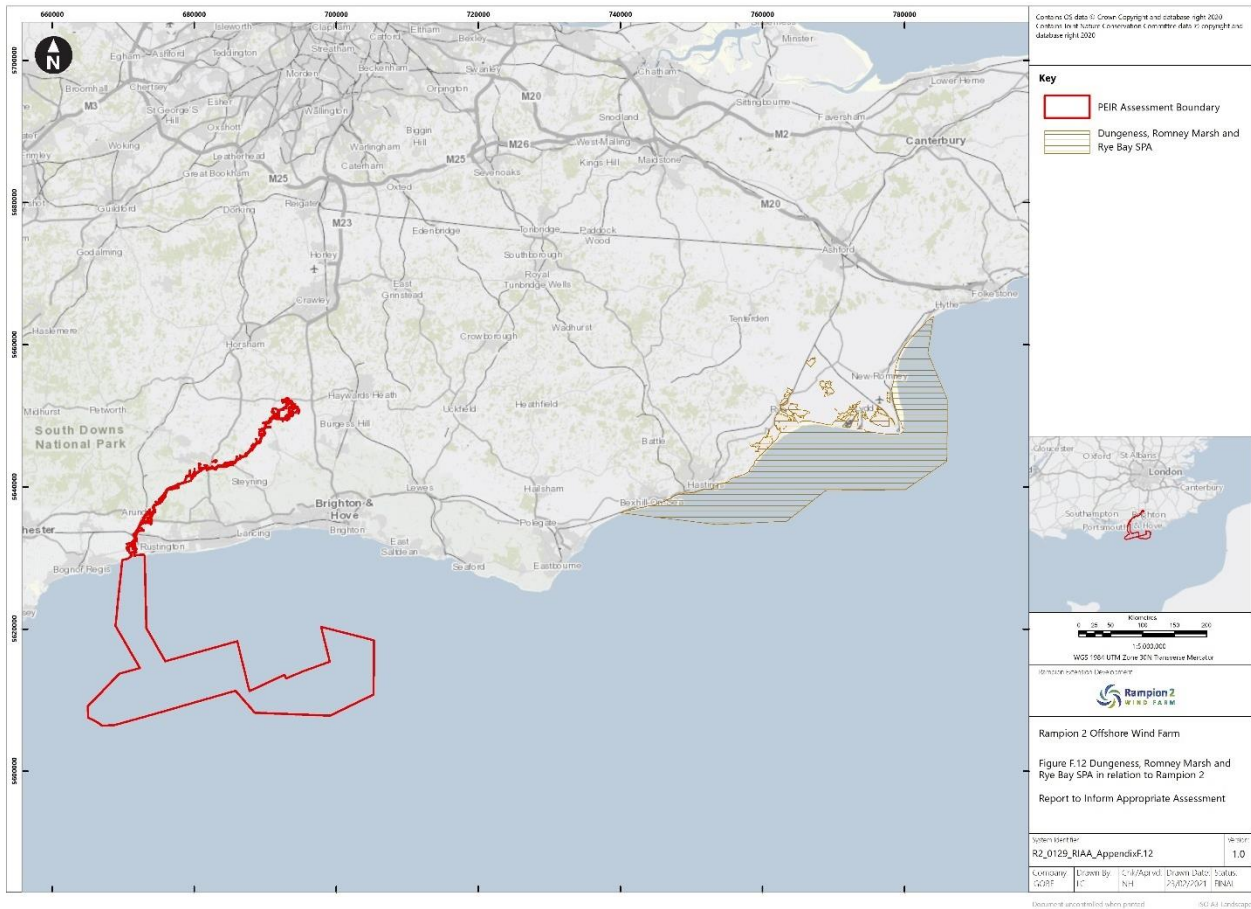
<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9012091&SiteName=dunge&SiteNameDisplay=Dungeness%2c+Romney+Marsh+and+Rye+Bay+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=13>

<sup>51</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9012091&SiteName=dunge&SiteNameDisplay=Dungeness%2c+Romney+Marsh+and+Rye+Bay+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=13>

<sup>52</sup> <http://publications.naturalengland.org.uk/publication/5208885390475264>

Figure F-12 The Dungeness, Romney Marsh and Rye Bay SPA in relation to Rampion 2



## 1.13 Solent and Dorset Coast SPA

- 1.13.1 The Solent and Dorset Coast SPA stretches from the Isle of Purbeck in the West to Bognor Regis in the East, following the coastline on either side to the Isle of Wight and into Southampton Water. The site provides protection for internationally important birds (features) and their supporting habitats and covers 255.2nm<sup>2</sup> (Figure F-13).
- 1.13.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Solent and Dorset Coast pSPA Consultation Report<sup>53</sup> (dated June 2017); and

53

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/866228/solent-dorset-coast-consultation-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/866228/solent-dorset-coast-consultation-report.pdf)

- The Solent and Dorset Coast SPA Departmental Brief<sup>54</sup> (dated January 2016).

## Qualifying features

1.13.3 The site is designated for the following Annex I species:

- Sandwich tern (breeding) *Sterna sandvicensis*;
- Common tern (breeding) *Sterna hirundo*; and
- Little tern (breeding) *Sternula albifrons*.

## The characteristics of the European site

1.13.4 The site boundary was established as a composite of the usage of the area within adjacent SPAs. From west to east, the adjacent SPAs with these tern species as qualifying interest features (in parentheses) are: Poole Harbour (common tern) Solent and Southampton Water SPA (common, Sandwich and little tern) and Chichester & Langstone Harbours SPA (common, Sandwich and little tern). In addition to these species at these sites, Sandwich terns at the Poole Harbour SPA are included in determining the details of the pSPA.

## Conservation advice

- 1.13.5 Natural England is currently in the process of developing a Conservation advice package and advice on operations within the site.
- 1.13.6 The Solent Site Improvement Plan<sup>55</sup> (dated November 2014) covers the SPA.

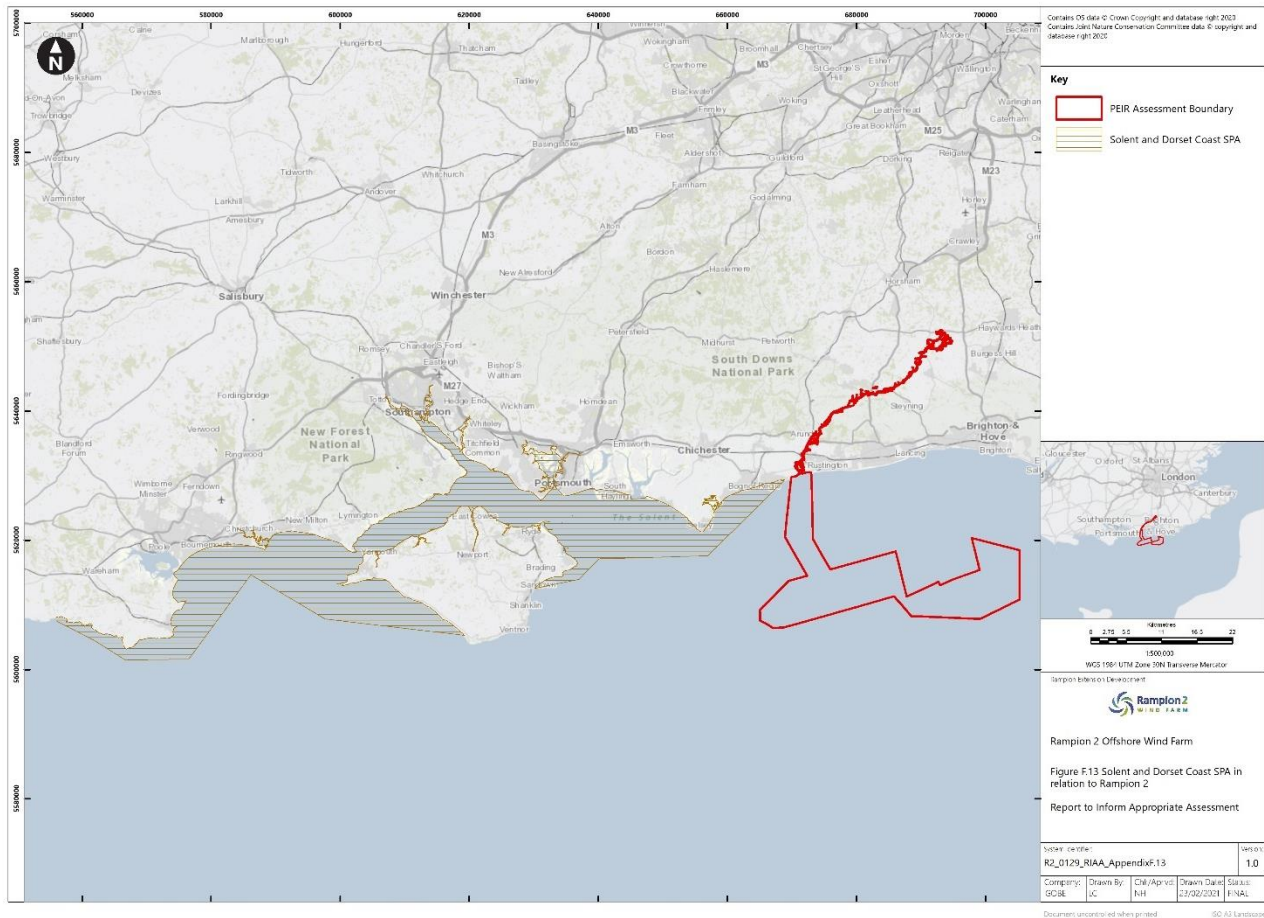
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54

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/560622/solent-dorset-departmental-brief.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/560622/solent-dorset-departmental-brief.pdf)

<sup>55</sup> <http://publications.naturalengland.org.uk/publication/4692013588938752>

Figure F-13 The Solent and Dorset Coast SPA in relation to Rampion 2



## 1.14 Chichester and Langstone Harbours SPA

- 1.14.1 The Chichester and Langstone Harbours SPA covers two large, estuarine basins. Together, with neighbouring Portsmouth Harbour, the area forms one of the most sheltered intertidal areas on the South Coast of England. These habitats support internationally and nationally important numbers of overwintering and breeding bird species. The site covers 5810.95ha (**Figure F-14**).
- 1.14.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Chichester and Langstone Harbours SPA Citation<sup>56</sup> (dated January 1996); and

<sup>56</sup> <http://publications.naturalengland.org.uk/publication/5789102905491456>



- The Chichester and Langstone Harbours SPA Data Form<sup>57</sup> (dated December 2015).

## Qualifying features

1.14.3 The site is designated for the following Annex I species:

- A046a *Branta bernicla bernicla*; Dark-bellied brent goose (non-breeding);
- A048 *Tadorna tadorna*; Common shelduck (non-breeding);
- A050 *Anas penelope*; Eurasian wigeon (non-breeding);
- A052 *Anas crecca*; Eurasian teal (non-breeding);
- A054 *Anas acuta*; Northern pintail (non-breeding);
- A056 *Anas clypeata*; Northern shoveler (non-breeding);
- A069 *Mergus serrator*; Red-breasted merganser (non-breeding);
- A137 *Charadrius hiaticula*; Ringed plover (non-breeding);
- A141 *Pluvialis squatarola*; Grey plover (non-breeding);
- A144 *Calidris alba*; Sanderling (non-breeding);
- A149 *Calidris alpina alpina*; Dunlin (non-breeding);
- A157 *Limosa lapponica*; Bar-tailed godwit (non-breeding);
- A160 *Numenius arquata*; Eurasian curlew (non-breeding);
- A162 *Tringa totanus*; Common redshank (non-breeding);
- A169 *Arenaria interpres*; Ruddy turnstone (non-breeding);
- A191 *Sterna sandvicensis*; Sandwich tern (breeding);
- A193 *Sterna hirundo*; Common tern (breeding);
- A195 *Sterna albifrons*; Little tern (breeding); and
- waterbird assemblage.

## The characteristics of the European site

- 1.14.4 Chichester and Langstone Harbours SPA covers two large, estuarine basins containing extensive intertidal mudflats and sandflats with areas of seagrass beds, saltmarsh, shallow coastal waters, coastal lagoons, coastal grazing marsh and shingle ridges and islands.
- 1.14.5 The sediments support rich populations of intertidal invertebrates, which together with 300 ha of seagrass beds provide an important food source for overwintering

<sup>57</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9011011.pdf>

birds. Areas outside the SPA contain important supporting habitats for the birds, including coastal grazing marsh, amenity grassland and agricultural land.

## Conservation advice

- 1.14.6 Chichester Harbour Conservancy manages the majority of Chichester Harbour whilst the Langstone Harbour Board manages Langstone Harbour. However, there are also numerous private ownerships of the intertidal area.
- 1.14.7 Advice on operations and management measures can be found within:
- The Solent Site Improvement Plan<sup>58</sup> (dated November 2014);
  - Advice on Operations<sup>59</sup> (dated March 2020);
  - Supplementary Advice on the Conservation Objectives<sup>60</sup> (dated September 2019); and
  - The Conservation Objectives<sup>61</sup> (dated February 2019).
- 1.14.8 The conservation objectives for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
    - ▶ the extent and distribution of the habitats of the qualifying features;
    - ▶ the structure and function of the habitats of the qualifying features;
    - ▶ the supporting processes on which the habitats of the qualifying features rely;
    - ▶ the population of each of the qualifying features; and
    - ▶ the distribution of the qualifying features within the site.

<sup>58</sup> <http://publications.naturalengland.org.uk/publication/4692013588938752>

<sup>59</sup>

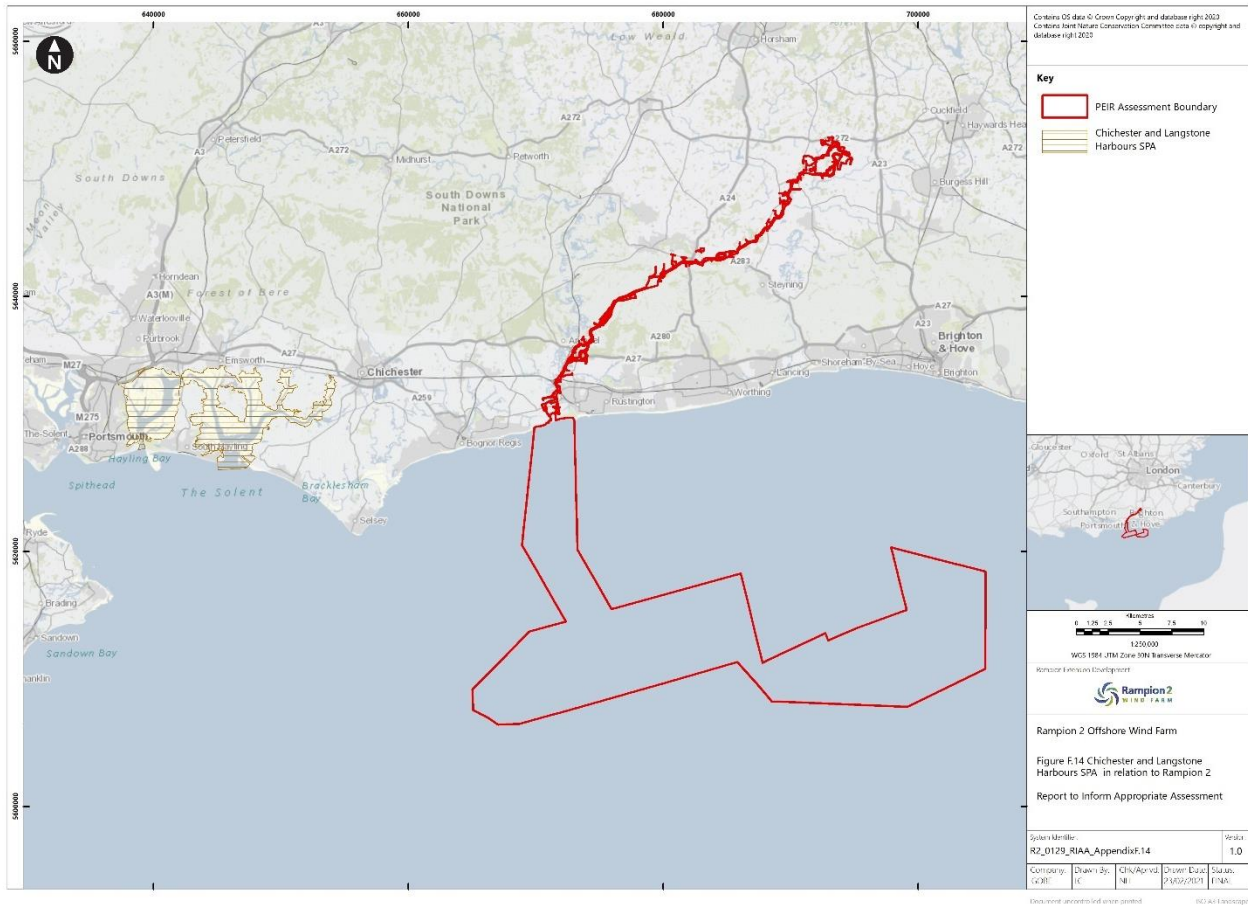
<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9011011&SiteName=chichester%20and%20langstone&SiteNameDisplay=Chichester+and+Langstone+Harbours+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=18>

<sup>60</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9011011&SiteName=chichester%20and%20langstone&SiteNameDisplay=Chichester+and+Langstone+Harbours+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=18>

<sup>61</sup> <http://publications.naturalengland.org.uk/publication/5294923917033472>

Figure F-14 The Chichester and Langstone Harbour SPA in relation to Rampion 2



### 1.15 Chichester & Langstone Harbours Ramsar

- 1.15.1 The Chichester and Langstone Harbours Ramsar covers two large, estuarine basins. Together, with neighbouring Portsmouth Harbour, the area forms one of the most sheltered intertidal areas on the South Coast of England. These habitats support internationally and nationally important numbers of overwintering and breeding bird species. The site covers 5810.95 ha (**Error! Reference source not found.**).
- 1.15.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology**;
  - **PEIR Volume 2, Chapter 14: Nature conservation**; and
  - The Chichester and Langstone Harbours Ramsar Site Information<sup>62</sup> (dated January 1999).

<sup>62</sup> <https://rsis Ramsar.org/ris/378>



## Qualifying features

1.15.3 The site is designated for the following species:

- *Branta bernicla bernicla*; Dark-bellied brent goose (non-breeding);
- *Charadrius hiaticula*; Ringed plover (non-breeding);
- *Pluvialis squatarola*; Grey plover (non-breeding);
- *Calidris alpina alpina*; Dunlin (non-breeding);
- *Limosa lapponica*; Bar-tailed godwit (non-breeding);
- *Tadorna tadorna*; Common shelduck (non-breeding);
- *Tringa totanus*; Common redshank (non-breeding);
- *Sterna hirundo*; Common tern (breeding);
- *Sterna albifrons*; Little tern (breeding); and
- waterbird assemblage.

## The characteristics of the European site

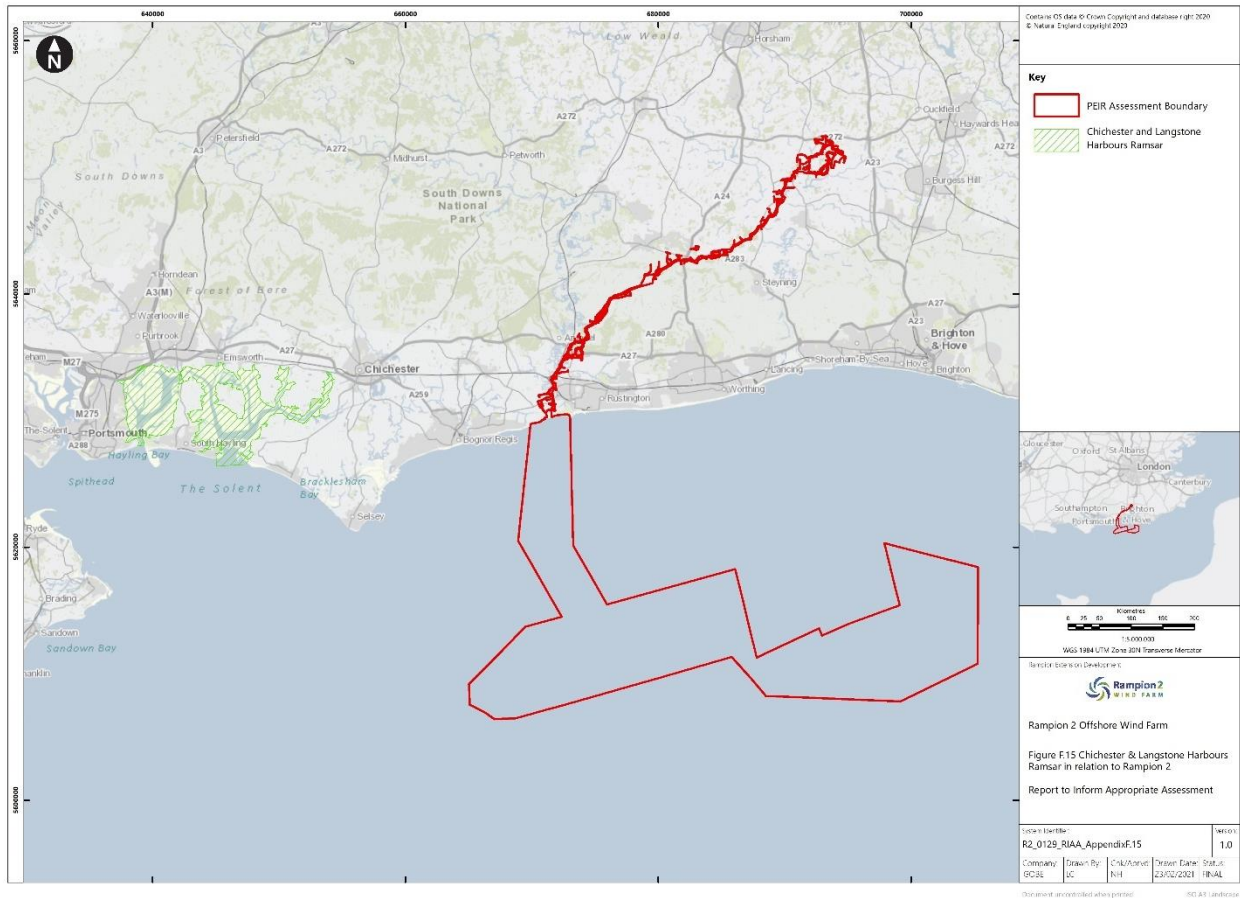
1.15.4 Formed by two large estuarine basins linked by a channel and including extensive intertidal mudflats, saltmarsh, sand and shingle spits, and dunes supporting reedbeds and some grassland. Numbers of wintering waterbirds regularly exceed 20,000 individuals and include internationally and nationally important numbers of several species. Human activities include recreation and dredging for oysters and clams.

## Conservation advice

- 1.15.5 Chichester Harbour Conservancy manages the majority of Chichester Harbour whilst the Langstone Harbour Board manages Langstone Harbour. However, there are also numerous private ownerships of the intertidal area.
- 1.15.6 The 1990 UK National report provided information concerning recreational disturbance and pollution from sewage effluent. However, measures aimed at improving the site's water quality are under way; one major source of untreated sewage effluent has already been removed through the construction of a new off-shore outfall.
- 1.15.7 Langstone Harbour is subject to dredging for oysters and clams. The alien seaweed *Sargassum muticum* has colonised both harbours. It is thought that the species spread to southern England from France, following accidental introduction with Pacific oysters *Magallana gigas*.
- 1.15.8 Both a management agreement and site management statement/plan have been implemented for the site. The Solent Site Improvement Plan<sup>63</sup> (dated November 2014).

<sup>63</sup> <http://publications.naturalengland.org.uk/publication/4692013588938752>

Figure F-15 The Chichester and Langstone Harbour Ramsar in relation to Rampion 2



## 1.16 Solent and Southampton Water SPA

- 1.16.1 The Solent and Southampton Water SPA is a coastal site characterised by a series of estuaries and adjacent coastal habitats important for breeding gulls and terns and wintering waterfowl. The site covers 5401.12ha (**Figure F-16**).
- 1.16.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Solent and Southampton Water SPA Citation<sup>64</sup> (dated November 1998); and
  - The Solent and Southampton Water SPA Data Form<sup>65</sup> (dated December 2015).

### Qualifying features

- 1.16.3 The site is designated for the following Annex I species:
- Black-tailed godwit *Limosa limosa islandica*, non-breeding;
  - Common tern *Sterna hirundo*, Breeding;
  - Dark-bellied brent goose *Branta bernicla bernicla*, non-breeding;
  - Little tern *Sternula albifrons*, Breeding;
  - Mediterranean gull *Ichthyaetus melanocephalus*, Breeding;
  - Ringed plover *Charadrius hiaticula*, non-breeding;
  - Roseate tern *Sterna dougallii*, Breeding;
  - Sandwich tern *Thalasseus sandvicensis*, Breeding;
  - Teal *Anas crecca*, non-breeding; and
  - waterbird assemblage, non-breeding.

### The characteristics of the European site

- 1.16.4 The Solent and Southampton Water is located in one of the only major sheltered channels in Europe, lying between the Isle of Wight and the mainland, on the south coast of England. This area is a complex major estuarine system consisting of coastal plain and bar-built estuaries. The Solent and its inlets are unique in Britain and Europe for their unusual tidal regime, including double tides and long periods of tidal stand at high and low tide. The Solent and Southampton Water is composed of extensive intertidal mudflats and sandbanks, inter- and subtidal rock, areas of saltmarsh, coastal lagoons, coastal reed beds, shingle banks, and grazing marsh. Estuarine sediments within the site support rich populations of invertebrates that provide an important food source for wintering birds.

<sup>64</sup> <http://publications.naturalengland.org.uk/publication/6567218288525312>

<sup>65</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9011061.pdf>

## Conservation advice

1.16.5 Advice on operations and Management measures can be found within:

- The Site Improvement Plan<sup>66</sup> (dated November 2014);
- The Supplementary Advice<sup>67</sup> (dated September 2019);
- Advice on Operations<sup>68</sup> (dated March 2020); and
- The Conservation Objectives<sup>69</sup> (dated February 2019).

1.16.6 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the populations of each of the qualifying features; and
  - ▶ the distribution of qualifying features within the site.

<sup>66</sup> <http://publications.naturalengland.org.uk/publication/4692013588938752>

<sup>67</sup>

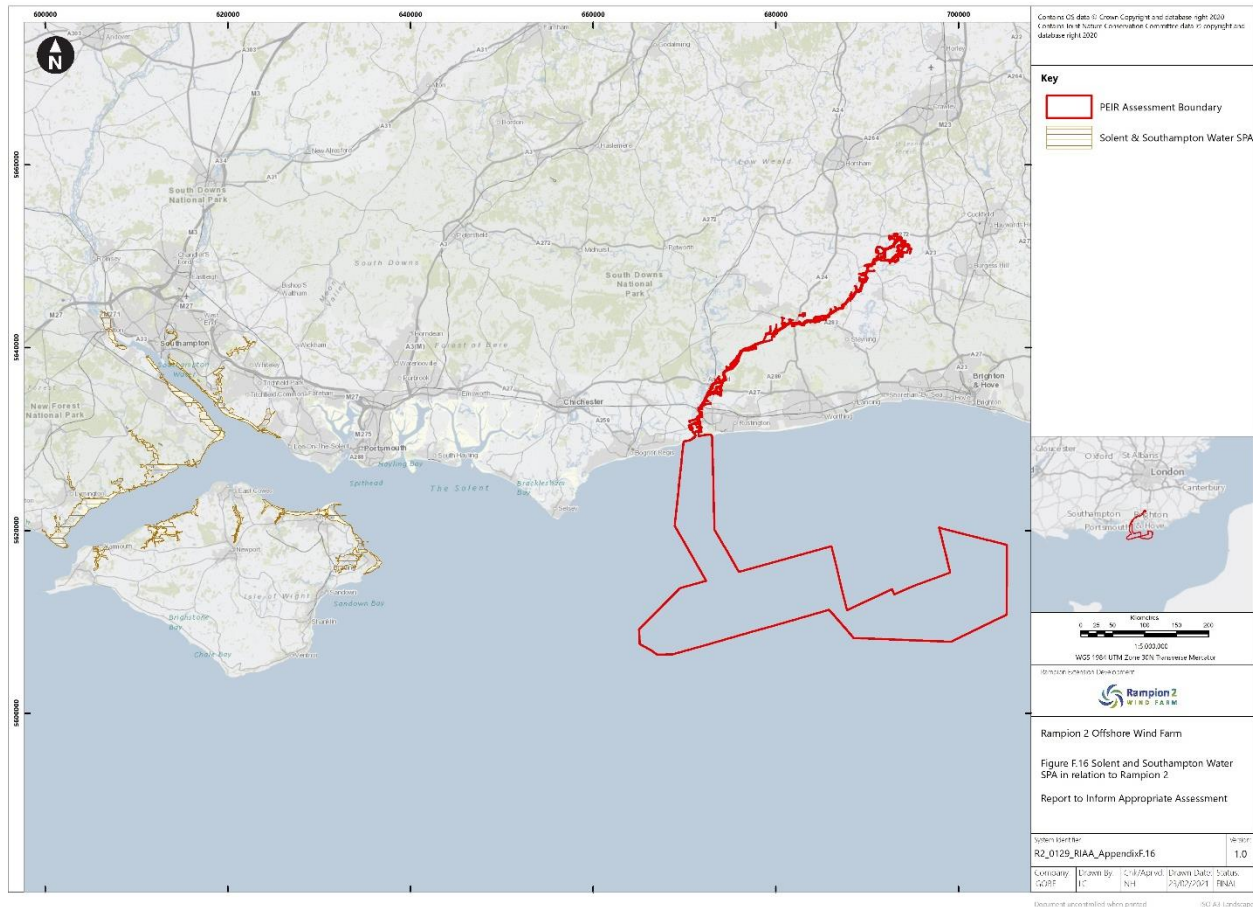
<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9011061&SiteName=&SiteNameDisplay=Solent+and+Southampton+Water+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=9>

<sup>68</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9011061&SiteName=&SiteNameDisplay=Solent+and+Southampton+Water+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=9>

<sup>69</sup> <http://publications.naturalengland.org.uk/publication/6567218288525312>

Figure F-16 Solent and Southampton Water SPA in relation to Rampion 2



## 1.17 Solent and Southampton Water Ramsar

- 1.17.1 The Solent and Southampton Water SPA is a coastal site located characterised by a series of estuaries and adjacent coastal habitats important for breeding gulls and terns and wintering waterfowl. The site covers 5401.12ha (**Figure F-17**).
- 1.17.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
  - The Solent and Southampton Water Ramsar Site Information<sup>70</sup> (dated January 1999); and
  - The Solent Information Sheet on Ramsar Wetlands<sup>71</sup> (dated October 1998)

<sup>70</sup> <https://rsis.ramsar.org/ris/965>

<sup>71</sup> <https://jncc.gov.uk/jncc-assets/RIS/UK11063.pdf>



## Qualifying features

1.17.3 The site is designated for the following Ramsar criteria.

- **Criterion 1** - The site is one of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow and has long periods of slack water at high and low tide. It includes many wetland habitats characteristic of the biogeographic region: saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs.
- **Criterion 2** - The site supports an important assemblage of rare plants and invertebrates. At least 33 British Red Data Book invertebrates and at least eight British Red Data Book plants are represented on site. The higher plants *Orobanche purpurea* and *Spartina maritima* are considered vulnerable and endangered, respectively, in the GB Red Book. The Mediterranean gull (*Larus melanocephalus*) is included in CITES Appendix I.
- **Criterion 5** - Assemblages of international importance: Species with peak counts in winter: 51,343 waterfowl (5 year peak mean 1998/99-2002/2003).
- **Criterion 6** - Species/populations occurring at levels of international importance. Species with peak counts in winter:
  - ▶ Black-tailed godwit, *Limosa limosa islandica*;
  - ▶ Dark-bellied brent goose, *Branta bernicla bernicla*; and
  - ▶ Eurasian teal, *Anas crecca*.

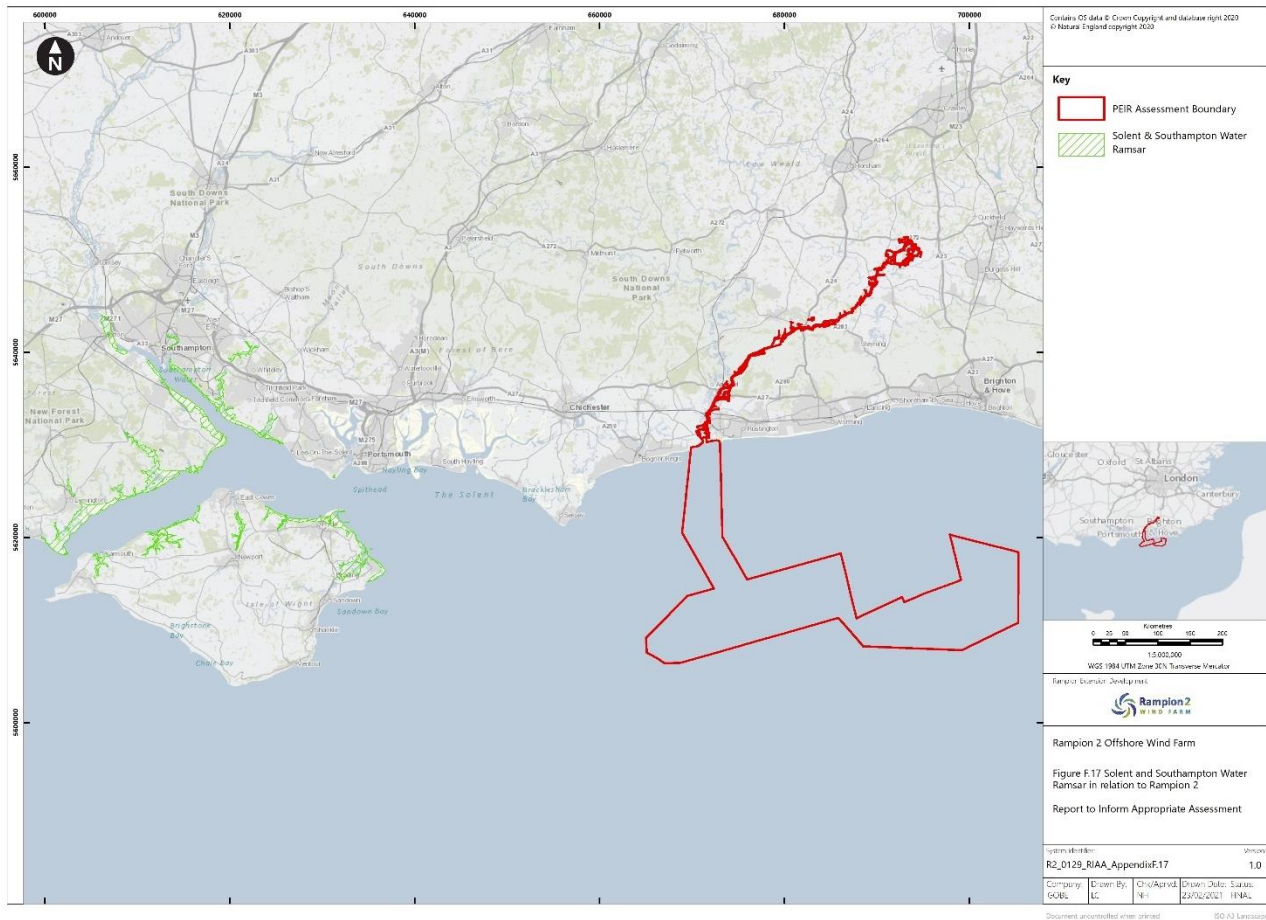
## The characteristics of the European site

1.17.4 The Ramsar site extends from Hurst Spit to Gilkicker Point along the south coast of Hampshire and along the north coast of the Isle of Wight. The site comprises of estuaries and adjacent coastal habitats including intertidal flats, saline lagoons, shingle beaches, saltmarsh, reedbeds, damp woodland, and grazing marsh. The diversity of habitats support internationally important numbers of wintering waterfowl, important breeding gull and tern populations and an important assemblage of rare invertebrates and plants.

## Conservation advice

1.17.5 A management agreement exists for the site whilst a management plan is in preparation.

Figure F-17 The Solent and Southampton Water Ramsar in relation to Rampion 2



## 1.18 Medway Estuary and Marshes SPA

- 1.18.1 The Medway Estuary and Marshes is a wetland of international importance in North Kent that provides breeding and wintering habitats for assemblages of bird species, particularly wildfowl and waders. The site covers 4686.32 ha (Error! Reference source not found.).
- 1.18.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Medway Estuary and Marshes SPA Citation<sup>72</sup> (dated August 1999); and
  - The Medway Estuary and Marshes SPA Data Form<sup>73</sup> (dated December 2015).

<sup>72</sup> <http://publications.naturalengland.org.uk/publication/6672791487119360>

<sup>73</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9012031.pdf>



## Qualifying features

- 1.18.3 The site is designated for the following Annex I species:
- A046a *Branta bernicla bernicla*; Dark-bellied brent goose (non-breeding);
  - A048 *Tadorna tadorna*; Common shelduck (non-breeding);
  - A054 *Anas acuta*; Northern pintail (non-breeding);
  - A132 *Recurvirostra avosetta*; Pied avocet (breeding);
  - A132 *Recurvirostra avosetta*; Pied avocet (non-breeding);
  - A137 *Charadrius hiaticula*; Ringed plover (non-breeding);
  - A141 *Pluvialis squatarola*; Grey plover (non-breeding);
  - A143 *Calidris canutus*; Red knot (non-breeding);
  - A149 *Calidris alpina alpina*; Dunlin (non-breeding);
  - A162 *Tringa totanus*; Common redshank (non-breeding);
  - A195 *Sterna albifrons*; Little tern (breeding);
  - waterbird assemblage; and
  - breeding bird assemblage.

## The characteristics of the European site

- 1.18.4 The Medway Estuary forms a single tidal system with the Swale and joins the southern part of the Thames Estuary between the Isle of Grain and Sheerness. The site has a complex arrangement of tidal channels, which drain around large islands of salt marsh and peninsulas of grazing marsh. There are large areas of mudflat, which have high densities of invertebrates providing a good food source for wading birds. Grazing marsh can also be found landward of some sea walls in the area.
- 1.18.5 The complex and diverse mixes of coastal habitats support important numbers of waterbirds throughout the year. In summer, the estuary supports breeding waders and terns, whilst in winter it holds important numbers of geese, ducks, grebes and waders. The middle and outer parts of the estuary represent the most important areas for the birds. The islands within the Medway also provide good habitat for SPA birds, in particular some of the breeding species.

## Conservation advice

- 1.18.6 Advice on operations and Management measures can be found within:
- Greater Thames Complex Site Improvement Plan<sup>74</sup> (dated November 2014);

<sup>74</sup> <http://publications.naturalengland.org.uk/publication/6270737467834368>

- The Supplementary Advice<sup>75</sup> (dated September 2019);
- Advice on Operations<sup>76</sup> (dated March 2020); and
- The Conservation Objectives<sup>77</sup> (dated February 2019).

1.18.7 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring.
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features; and
  - ▶ the distribution of the qualifying features within the site.

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<sup>75</sup>

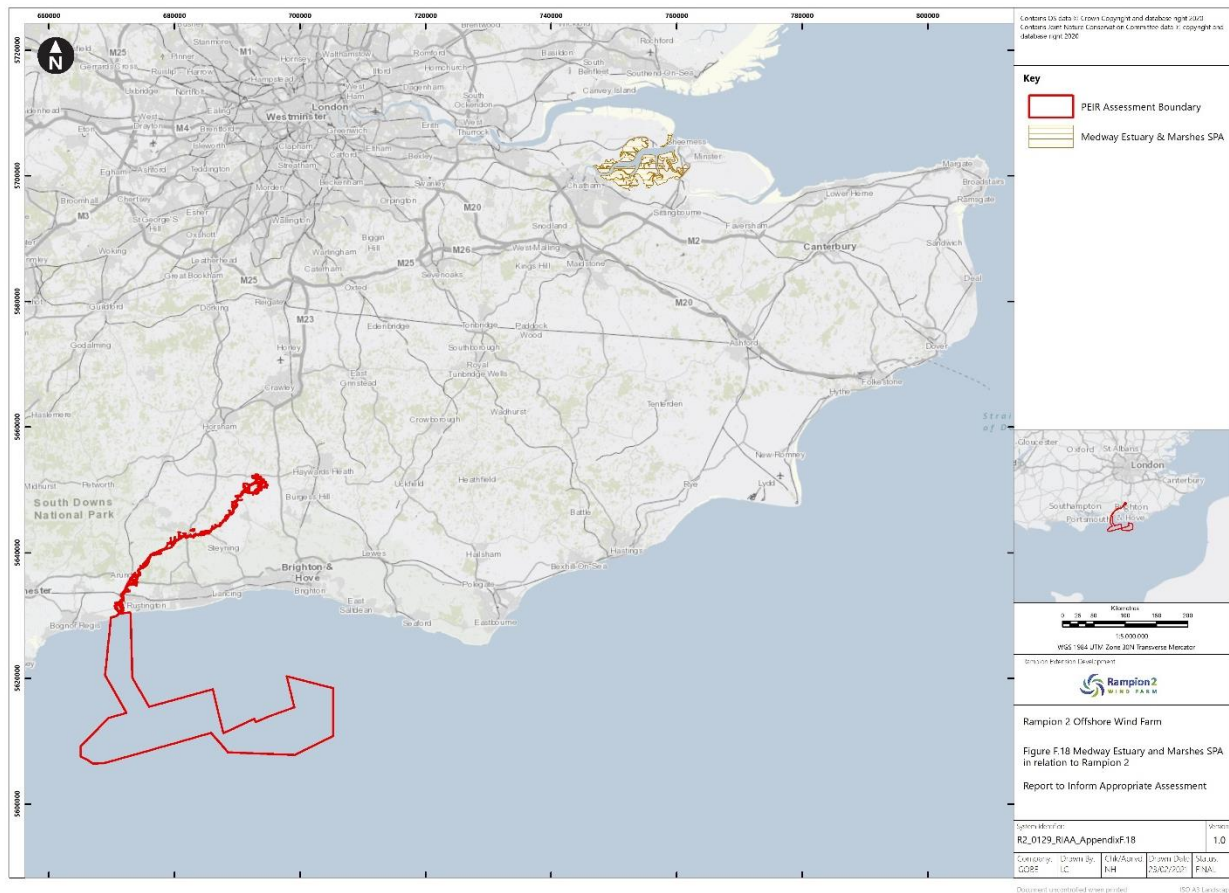
<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9012031&SiteName=medway%20estuary&SiteNameDisplay=Medway+Estuary+and+Marshes+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&NumMarineSeasonality=11>

<sup>76</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9012031&SiteName=medway%20estuary&SiteNameDisplay=Medway+Estuary+and+Marshes+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&NumMarineSeasonality=11>

<sup>77</sup> <http://publications.naturalengland.org.uk/publication/6672791487119360>

Figure F-18 Medway Estuary and Marshes SPA in relation to Rampion 2



## 1.19 Littoral seino-marin (FR) SPA

- 1.19.1 The Littoral seino-marin SPA is a coastal site in France. The major ecological interest of the site is the presence of large numbers of migratory seabirds. The site covers 180050 ha (**Figure F-22**).
- 1.19.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;** and
  - The Littoral seino-marin SPA Data Form<sup>78</sup> (dated August 2008).

## Qualifying features

- 1.19.3 The site is designated for the following qualifying species:
- A168 Common Sandpiper *Actitis hypoleucos*;

<sup>78</sup> <https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=FR2310045#4>

- A200 Razorbill *Alca torda*;
- A394 Anser *albifrons albifrons*;
- A043 Greylag Goose *Anser anser*;
- A222 Short-eared Owl *Asio flammeus*;
- A148 Purple Sandpiper *Calidris maritima*;
- A082 Hen Harrier *Circus cyaneus*;
- A026 Little Egret *Egretta garzetta*;
- A098 Merlin *Falco columbarius*;
- A103 Peregrine *Falco peregrinus*;
- A009 Fulmar *Fulmarus glacialis*;
- A002 Black-throated Diver *Gavia arctica*;
- A003 Great Northern Diver *Gavia immer*;
- A001 Red-throated Diver *Gavia stellate*;
- A189 Gull-billed Tern *Gelochelidon nilotica*;
- A014 Storm Petrel *Hydrobates pelagicus*;
- A184 Herring Gull *Larus argentatus*;
- A183 Lesser Black-backed Gull *Larus fuscus*;
- A187 Great Black-backed Gull *Larus marinus*;
- A176 Mediterranean Gull *Larus melanocephalus*;
- A177 Little Gull *Larus minutus*;
- A246 Woodlark *Lullula arborea*;
- A066 Velvet Scoter *Melanitta fusca*;
- A065 Common Scoter *Melanitta nigra*;
- A069 Red-breasted Merganser *Mergus serrator*;
- A016 Gannet *Morus bassanus*;
- A015 Leach's Storm-petrel *Oceanodroma leucorhoa*;
- A072 Honey Buzzard *Pernis apivorus*;
- A018 Shag *Phalacrocorax aristotelis*;
- A017 Cormorant *Phalacrocorax carbo*;
- A034 Spoonbill *Platalea leucorodia*;
- A007 Slavonian Grebe *Podiceps auratus*;
- A005 Great Crested Grebe *Podiceps cristatus*;

- A008 Black-necked Grebe *Podiceps nigricollis*;
- A013 Manx Shearwater *Puffinus puffinus*;
- A384 Manx Shearwater *Puffinus puffinus mauretanicus*;
- A132 Avocet *Recurvirostra avosetta*;
- A188 Kittiwake *Rissa tridactyla*;
- A063 Eider *Somateria mollissima*;
- A173 Artic Skua *Stercorarius parasiticus*;
- A172 Pomarine Skua *Stercorarius pomarinus*;
- A175 Great Skua *Stercorarius skua*;
- A195 Little Tern *Sterna albifrons*;
- A193 Common Tern *Sterna hirundo*;
- A194 Arctic Tern *Sterna paradisaea*;
- A191 Sandwich Tern *Sterna sandvicensis*;
- A048 Shelduck *Tadorna tadorna*;
- A199 Guillemot *Uria aalge*; and
- A178 Sabine's Gull *Xema sabini*.

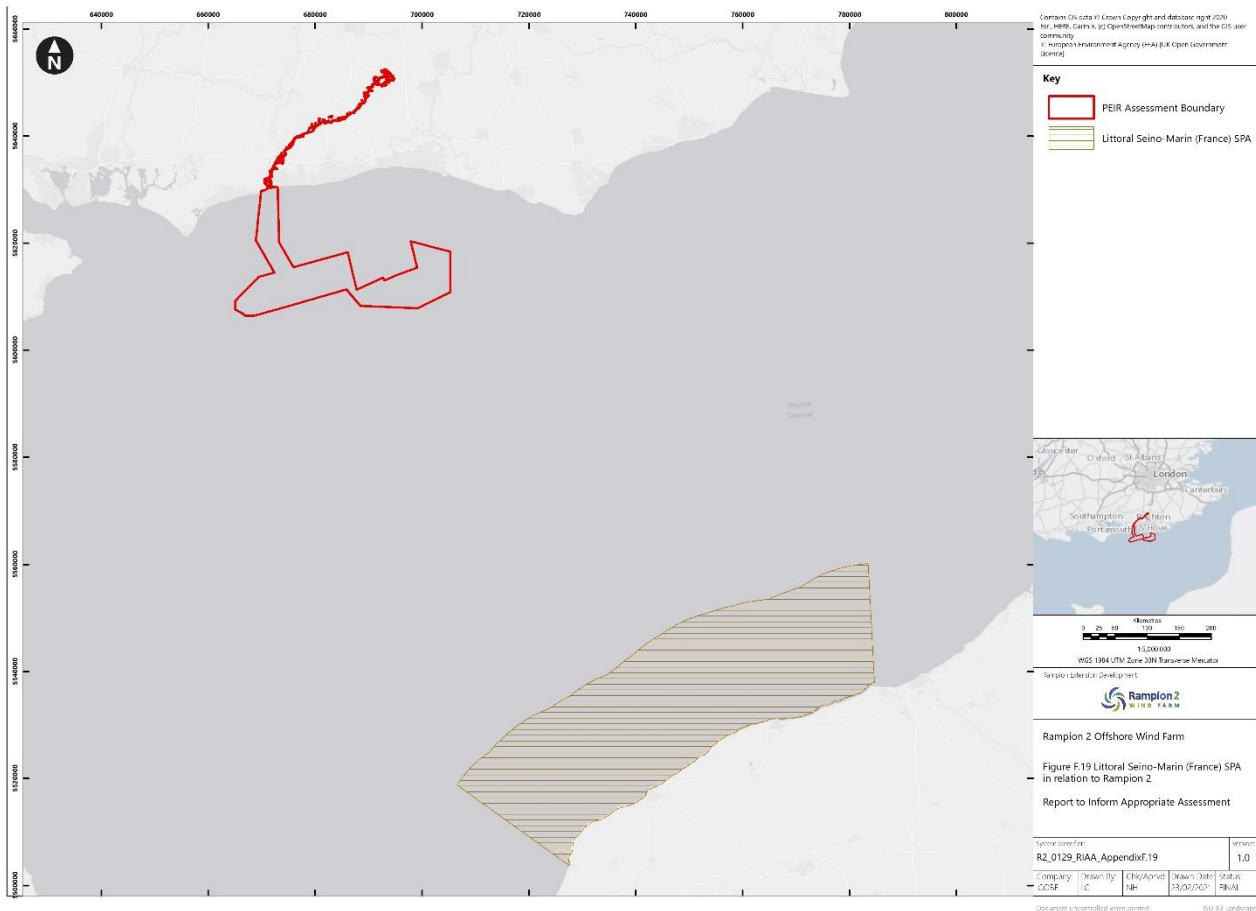
## The characteristics of the European site

- 1.19.4 The majority of the site is with a small area of coast comprising beaches, cliffs and cliff tops. Very large numbers of migrating passerines can be observed making the area the most important point in France for the migration of passerines. The most common species are the Skylark, Chaffinch and Pipits. Off the cliffs, the SPA is also an important migration sector for seabirds, mainly Terns (sandwich and common), Northern Gannets, Brent Geese, Gulls (pygmies, kittiwakes, *melanocephali*), anatidae and shorebirds. The cliffs of Cap Fagnet are home to several interesting nesting populations including kittiwakes, fulmar and peregrine falcons. Off the coast, the sea constitutes a wintering area for seabirds, including divers (mainly red-throated but also arctic) great crested grebe and kittiwakes.

## Conservation advice

- 1.19.5 No conservation advice or objectives were found for this site.

Figure F-19 Littoral seino-marin (FR) SPA in relation to Rampion 2



## 1.20 Foulness (Mid-Essex Coast Phase 5) SPA

- 1.20.1 The Foulness (Mid-Essex Coast Phase 5) SPA is found on the Mid-Essex coast and comprises an extensive complex of estuaries that support internationally and nationally important bird species. The site also supports a diverse range of plants and invertebrates, including those that are nationally rare, scarce, or important. The site covers 10968.97 ha (**Figure F-20**).
- 1.20.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
  - The Foulness (Mid-Essex Coast Phase 5) SPA Citation<sup>79</sup> (dated September 1993); and
  - The Foulness (Mid-Essex Coast Phase 5)<sup>80</sup> (dated November 2014).

<sup>79</sup> <http://publications.naturalengland.org.uk/publication/5131941422563328>

<sup>80</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9009246.pdf>



## Qualifying features

- 1.20.3 The site is designated for the following Annex I species:
- A046a *Branta bernicla bernicla*; Dark-bellied brent goose (non-breeding);
  - A082 *Circus cyaneus*; Hen harrier (non-breeding);
  - A130 *Haematopus ostralegus*; Eurasian oystercatcher (non-breeding);
  - A132 *Recurvirostra avosetta*; Pied avocet (breeding);
  - A137 *Charadrius hiaticula*; Ringed plover (breeding);
  - A141 *Pluvialis squatarola*; Grey plover (non-breeding);
  - A143 *Calidris canutus*; Red knot (non-breeding);
  - A157 *Limosa lapponica*; Bar-tailed godwit (non-breeding);
  - A162 *Tringa totanus*; Common redshank (non-breeding);
  - A191 *Sterna sandvicensis*; Sandwich tern (breeding);
  - A193 *Sterna hirundo*; Common tern (breeding);
  - A195 *Sterna albifrons*; Little tern (breeding); and
  - Waterbird assemblage.

## The characteristics of the European site

- 1.20.4 Foulness SPA lies on the north shore of the Thames Estuary and is made up of extensive intertidal sand silt flats, saltmarsh, beaches, grazing marshes, rough grass and scrubland.
- 1.20.5 The site is of international importance for six species and national importance for three species of wintering wildfowl, with the islands, creeks and grazing land forming an integral part of the sheltered feeding and roosting sites. The shell banks support nationally important breeding colonies of little terns, common terns and sandwich terns. Avocets also breed on this site in nationally important numbers.
- 1.20.6 The complex matrix of habitats supports a diverse range of plants and invertebrates, including two nationally rare and twenty-one nationally scarce plants and seventy one nationally important invertebrates.

## Conservation advice

- 1.20.7 Advice on operations and Management measures can be found within:
- The Supplementary Advice<sup>81</sup> (dated March 2020);

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[https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009246&SiteName=foulness&SiteNameDisplay=Foulness+\(Mid-](https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009246&SiteName=foulness&SiteNameDisplay=Foulness+(Mid-)



- Essex Estuaries Site Improvement Plan<sup>82</sup> (dated December 2014);
- Advice on Operations<sup>83</sup> (dated March 2020); and
- The Conservation Objectives<sup>84</sup> (dated February 2019).

1.20.8 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features.
  - ▶ the structure and function of the habitats of the qualifying features.
  - ▶ the supporting processes on which the habitats of the qualifying features rely.
  - ▶ the populations of each of the qualifying features; and
  - ▶ the distribution of qualifying features within the site.

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Essex+Coast+Phase+5)+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=12

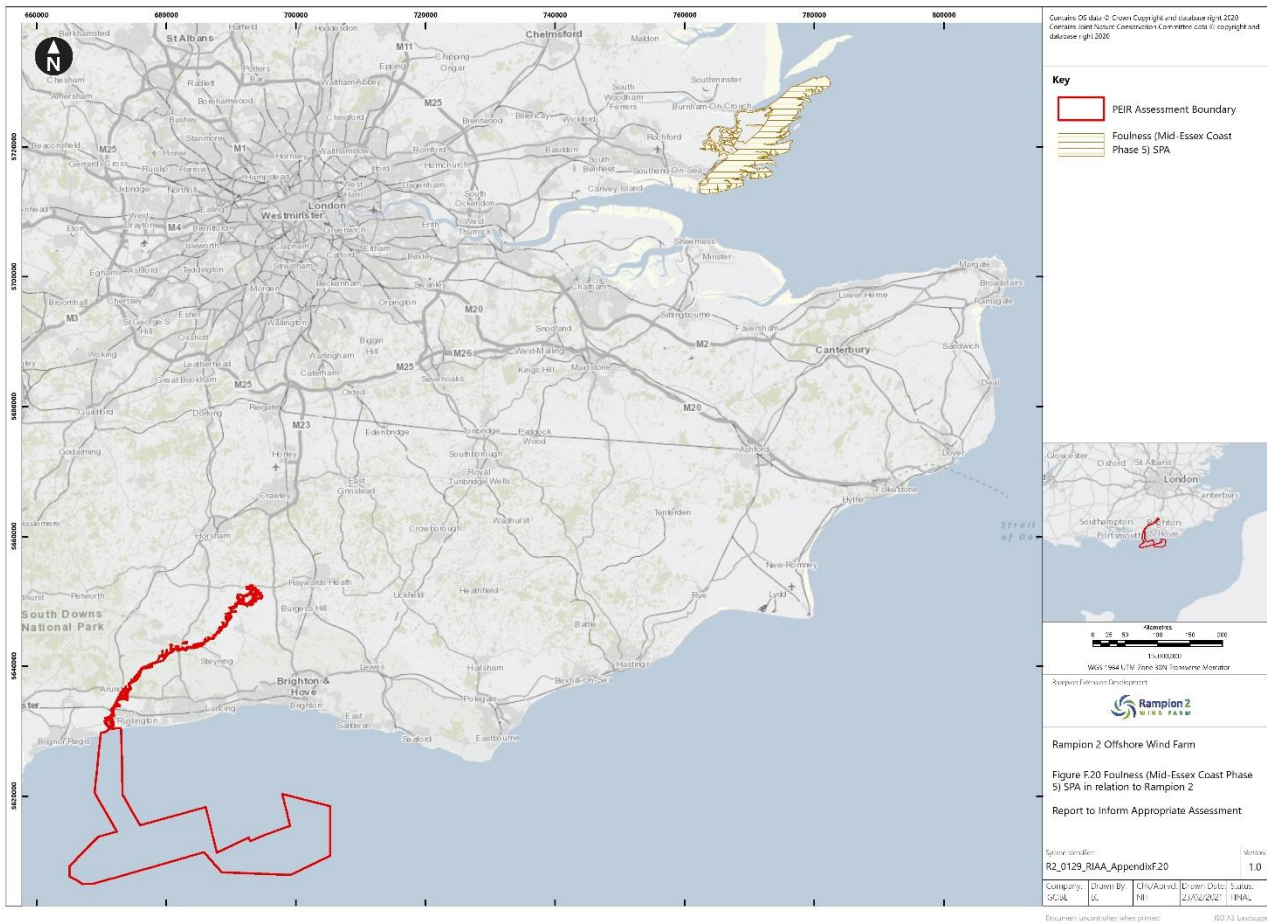
<sup>82</sup> <http://publications.naturalengland.org.uk/publication/5459956190937088>

<sup>83</sup>

[https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9009246&SiteName=foulness&SiteNameDisplay=Foulness+\(Mid-Essex+Coast+Phase+5\)+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=12](https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9009246&SiteName=foulness&SiteNameDisplay=Foulness+(Mid-Essex+Coast+Phase+5)+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=12)

<sup>84</sup> <http://publications.naturalengland.org.uk/publication/5131941422563328>

Figure F-20 Foulness (Mid-Essex Coast Phase 5) SPA in relation to Rampion 2



## 1.21 Falaise du Bessin Occidental SPA

- 1.21.1 The Falaise du Bessin Occidental SPA is a coastal site on the north coast of France. The major ecological interest of the site is the presence of seabirds. The site covers 1,200ha (**Figure F-21**).
- 1.21.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - European Environment Agency<sup>85</sup> (no date); and
  - The Falaise du Bessin Occidental SPA Natura 2000 Data Form<sup>86</sup> (dated November 1993).

## Qualifying features

- 1.21.3 The site is designated for the following qualifying species:

<sup>85</sup> <https://eunis.eea.europa.eu/sites/FR2510099#tab-designations>

<sup>86</sup> <https://inpn.mnhn.fr/docs/natura2000/fsdpdf/FR2510099.pdf>

- A200 Razorbill *Alca torda*;
- A222 Short-eared Owl *Asio flammeus*;
- A103 Peregrine *Falco peregrinus*;
- A009 Fulmar *Fulmarus glacialis*;
- A001 Red-throated Diver *Gavia stellate*;
- A184 Herring Gull *Larus argentatus*;
- A183 Lesser Black-backed Gull *Larus fuscus*;
- A069 Red-breasted Merganser *Mergus serrator*;
- A018 Shag *Phalacrocorax aristotelis*;
- A017 Cormorant *Phalacrocorax carbo*;
- A188 Kittiwake *Rissa tridactyla*;
- A302 Dartford Warbler *Sylvia undata*; and
- A199 Guillemot *Uria aalge*.

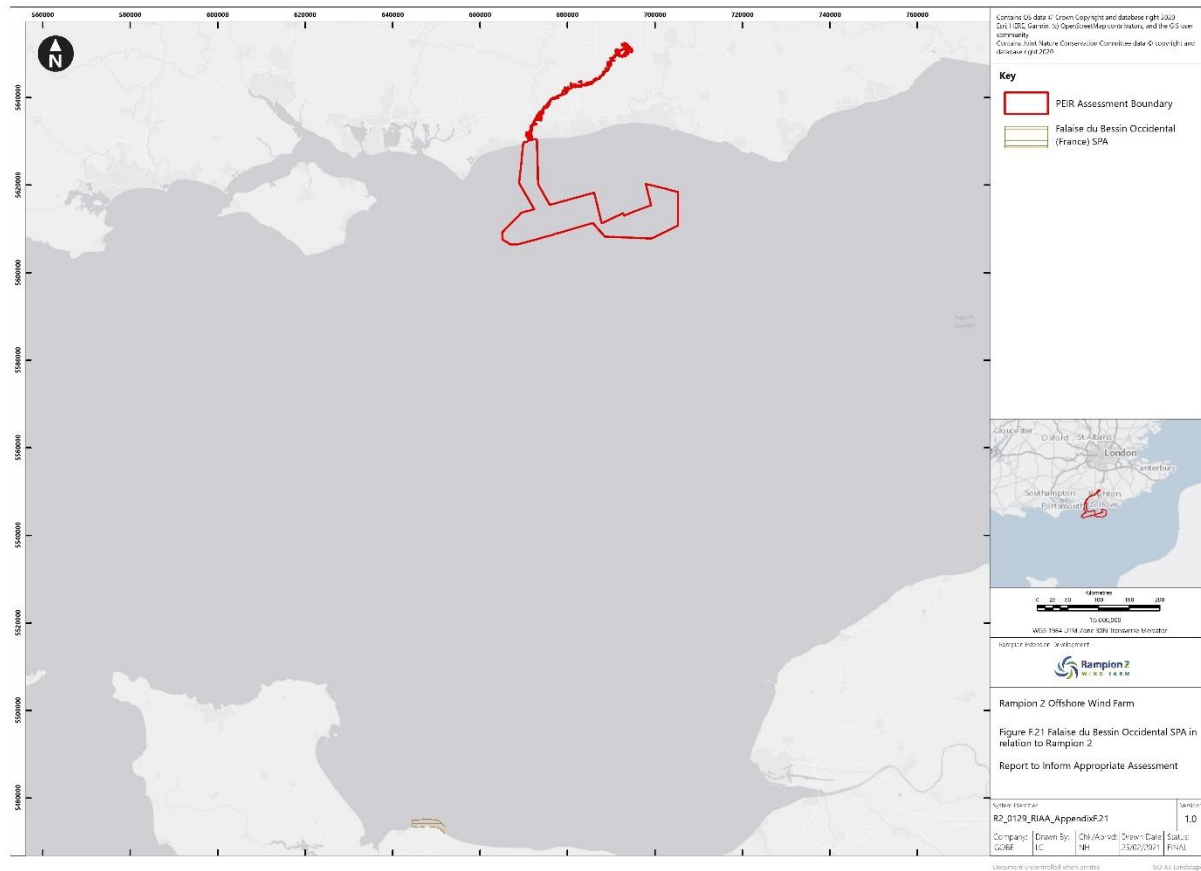
## The characteristics of the European site

- 1.21.4 Information on the site is extremely limited. 95% of the site is marine with a small area of coast.

## Conservation advice

- 1.21.5 No conservation advice or objectives were found for this site.

Figure F-21 Falaise du Bessin Occidental (FR) SPA in relation to Rampion 2



## 1.22 Alderney West Coast and Burhou Islands Ramsar

- 1.22.1 The Ramsar comprises the western coast of Alderney and adjacent shallow waters and islets in the strongly tidal, high-energy system of the northern Channel Islands that support important breeding bird assemblages. The site covers some 15,629ha (**Figure F-22**).
- 1.22.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
  - The Alderney West Coast and Burhou Islands Ramsar Information Sheet<sup>87</sup> (dated August 2005); and
  - The Alderney West Coast and Burhou Islands Ramsar Sites Information Service<sup>88</sup> (January 1976).

<sup>87</sup> <https://rsis.ramsar.org/RISapp/files/RISrep/GB1587RIS.pdf>

<sup>88</sup> <https://rsis.ramsar.org/ris/1587>

## Qualifying features

1.22.3 The site is designated owing to the following qualifying criterion:

- **Criterion 1:** Among global priority habitats, seagrass beds occur at and below low water mark; there is also a small area of dune slack wet-grasslands at Platte Saline. These form part of a rich complex of habitats, including vegetated shingle banks, sand dunes, dune and coastal grassland, soft cliffs, sandy, gravelly and rocky shores (including the offshore islands of Burhou, Les Etacs and Ortac)
- **Criterion 3:** Burhou island has a flora and fauna relatively little modified by man. Large nesting seabird populations, which include the only European storm-petrel *Hydrobates pelagicus* colony in the Channel Islands, Atlantic puffin *Fratercula arctica*, lesser black-backed gull *Larus fuscus* and great black-backed gull *Larus marinus*. Les Etacs and Ortac support the only northern gannet *Morus bassanus* colonies in the Channel Islands. The intertidal rocky shore supports many rare species of fauna including ormers *Haliotis tuberculata*, which, within the UK, are found only in the Channel Islands.
- **Criterion 4:** The site is an important breeding area for several bird species.
- **Criterion 6:** A large nesting population of northern gannets *Morus bassanus* are established on the Garden Rocks (Les Etacs) and Ortac. Here there are 11,900 breeding birds, about 1,000 non-breeding birds, and perhaps 5950 immature birds. This constitutes 1.5% of the world population.
- **Criterion 7:** Many rare species, which include a representative sample of northwest European fish fauna, are found in the marine area of the site. Although ormers *Haliotis tuberculata* are the most significant, there is also a high diversity of fish and shellfish.

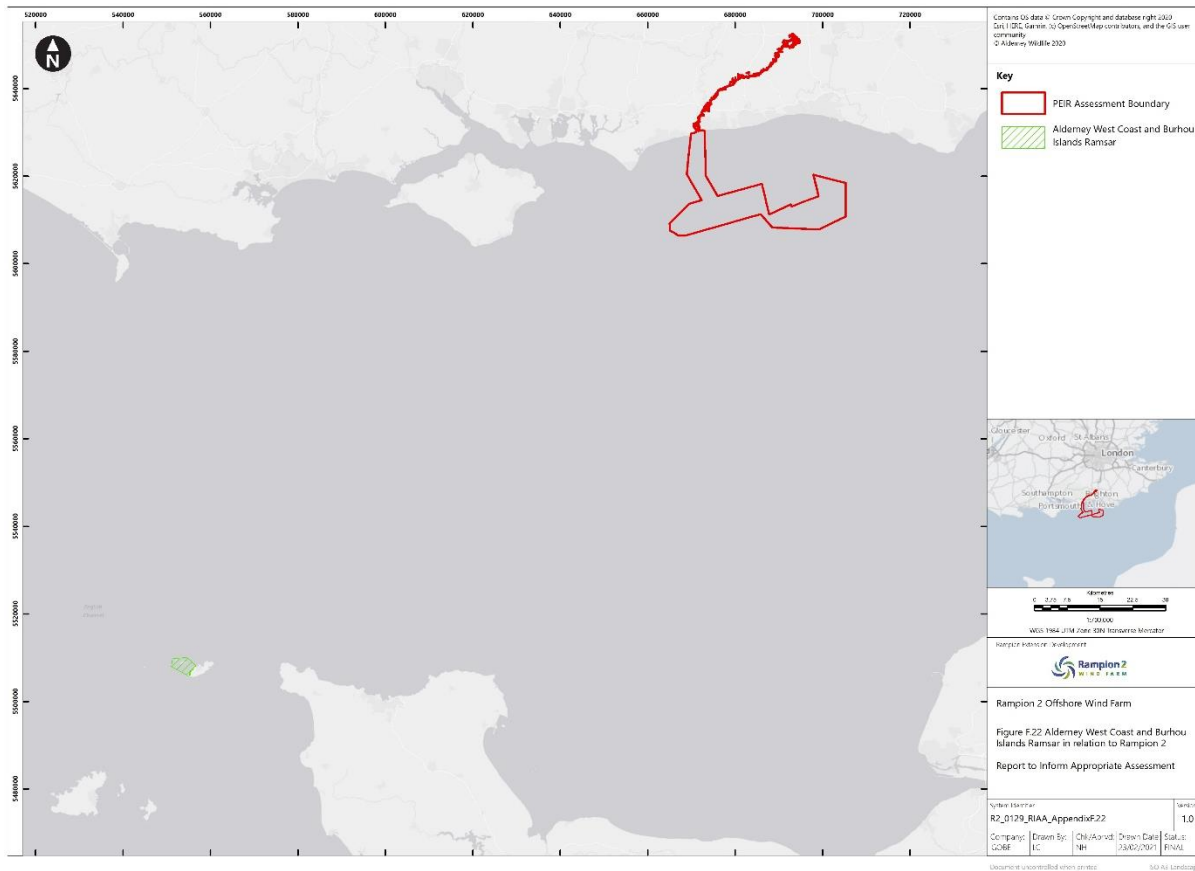
## The characteristics of the European site

1.22.4 The SPA includes diverse and inter-related ecosystems such as sandy beaches with shingle banks, marine subtidal aquatic beds, rockpools, sandbars, and pebble beach and rocky marine shores, including sea cliff and rocky offshore islands. The rocky islets are a very important bird breeding place. A large nesting population of northern gannets are established. It also provides habitat for a seal colony and some fish and shellfish species such as e.g. lobsters, bass and plaice. The site hosts about 100 species of seaweeds, which play very an important role in supporting all the marine fauna and thus the large nesting bird population.

## Conservation advice

1.22.5 A Land Use Plan protects the terrestrial part of the area within the site, including intertidal rock formations. Besides commercial and non-commercial fishing, tourism is the main activity: there is a visitor centre which provides both educational measures for children and information materials for the general public. Common visitor activities are birdwatching, walking and rockpooling over the summer months.

Figure F-22 Alderney West Coast and Burhou Islands Ramsar in relation to Rampion 2



## 1.23 Alde-Ore Estuary (UK) SPA

- 1.23.1 The Alde Ore and Butley SPA is a coastal site found on the east coast of Suffolk. The site comprises a complex of estuaries that support internationally and nationally important breeding and wintering birds. The site covers 2416.87ha (Figure F-24).
- 1.23.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Alde Ore and Butley SPA Citation<sup>89</sup> (dated August 1990); and
  - The Alde Ore and Butley SPA Data Form<sup>90</sup> (dated March 1998).

### Qualifying features

- 1.23.3 The site is designated for the following qualifying features:

<sup>89</sup> <http://publications.naturalengland.org.uk/publication/5170168510545920>

<sup>90</sup> <http://publications.naturalengland.org.uk/file/3765770>



- Avocet *Recurvirostra avosetta*, Breeding;
- Avocet *Recurvirostra avosetta*, non-breeding;
- Lesser black-backed gull *Larus fuscus*, Breeding;
- Little tern *Sternula albifrons*, Breeding;
- Marsh harrier *Circus aeruginosus*, Breeding;
- Redshank *Tringa totanus*, non-breeding;
- Ruff *Calidris pugnax*, non-breeding; and
- Sandwich tern *Thalasseus sandvicensis*, Breeding.

## The characteristics of the European site

- 1.23.4 The SPA is located on the Suffolk coast between Aldeburgh to the North and Bawdsey to the South. The site includes Havergate Island and Orford Ness, as well as the estuaries of the rivers Alde, Butley and Ore.
- 1.23.5 The Alde-Ore Estuary SPA is composed of Atlantic salt meadows *Glaucopuccinellietalia maritimae*, intertidal mudflats, shingle, coastal lagoons and estuarine fish communities. Bird usage of habitats within the SPA varies seasonally, with different areas being utilised for nesting and feeding at different times of the year.
- 1.23.6 As well as feeding habitat the site also provides good nesting habitat. The shingle areas around Orford Ness are important for nesting little and Sandwich tern. The saltmarsh that is particularly widespread at Havergate Island, Orford Ness and along the Butley and Alde rivers, is important for nesting marsh harrier, avocet and lesser black-backed gull.

## Conservation advice

- 1.23.7 Advice on operations and Management measures can be found within:
- The Supplementary Advice<sup>91</sup> (dated September 2019);
  - Alde-Ore Estuaries Site Improvement Plan<sup>92</sup> (dated October 2014);
  - Advice on Operations<sup>93</sup> (dated March 2020); and

<sup>91</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009112&SiteName=alde-ore&SiteNameDisplay=Alde-Ore+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&NumMarineSeasonality=8>

<sup>92</sup> <http://publications.naturalengland.org.uk/publication/4884745984933888>

<sup>93</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9009112&SiteName=alde-ore&SiteNameDisplay=Alde-Ore+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&NumMarineSeasonality=8>

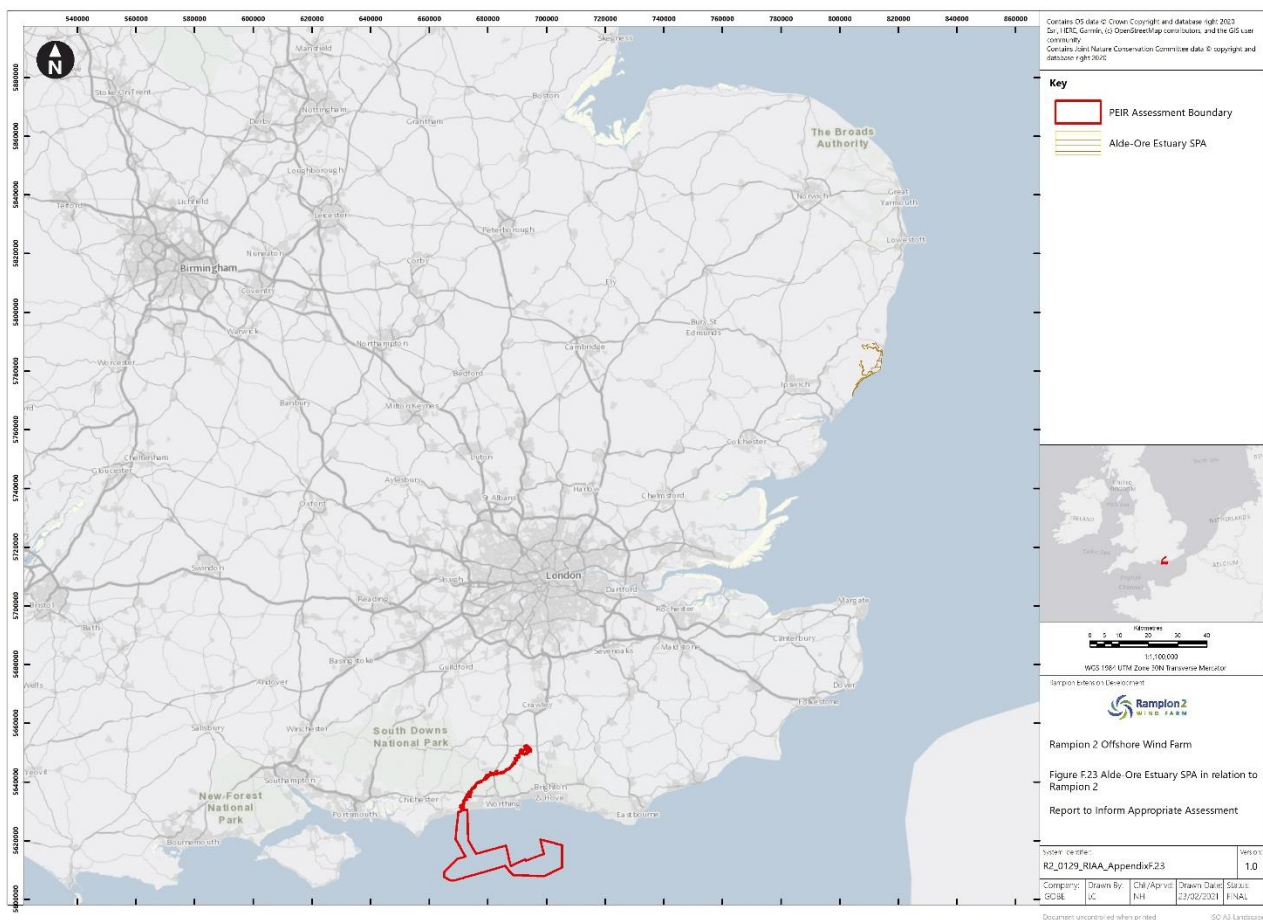


- The Conservation Objectives<sup>94</sup> (dated February 2019).

1.23.8 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of qualifying natural habitats and habitats of the qualifying species.
  - ▶ the structure and function (including typical species) of qualifying natural habitats.
  - ▶ the structure and function of the habitats of the qualifying species.
  - ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.
  - ▶ the populations of each of the qualifying species; and
  - ▶ the distribution of qualifying species within the site.

Figure F-23 Alde-Ore Estuary SPA in relation to Rampion 2



<sup>94</sup> <http://publications.naturalengland.org.uk/publication/5170168510545920>

## 1.24 Alde-Ore Estuary (UK) Ramsar

- 1.24.1 The Alde Ore Estuary Ramsar is found on the east coast of Suffolk. The site comprises a complex of estuaries that support internationally and nationally important breeding and wintering birds. The site covers 2547ha (**Figure F-24**).
- 1.24.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - Ramsar Sites Information Service<sup>95</sup> (dated November 1996); and
  - The Alde-Ore Estuary Information Sheet on Ramsar Wetlands<sup>96</sup> (dated October 1996).

### Qualifying features

- 1.24.3 The site is designated owing to the following qualifying criteria:
- **Criterion 2:** The site supports a number of nationally-scarce plant species and British Red Data Book invertebrates;
  - **Criterion 3:** The site supports a notable assemblage of breeding and wintering wetland birds;
  - **Criterion 6:** Species regularly supported during the breeding season:
    - ▶ Lesser black-backed gull, *Larus fuscus graellsii*
  - Species with peak counts in winter:
    - ▶ Pied avocet, *Recurvirostra avosetta*; and
    - ▶ Common redshank, *Tringa totanus tetanus*.

### The characteristics of the European site

- 1.24.4 The Ramsar is located on the Suffolk coast and is formed by an estuary complex of three rivers comprising various habitats including intertidal mudflats, saltmarsh, a vegetated shingle spit, saline lagoons, and semi-intensified grazing marsh. The site supports nationally scarce plants and invertebrates and notable assemblages of breeding and wintering wetland birds.
- 1.24.5 Human activities include recreation, fishing, livestock grazing, and hunting.

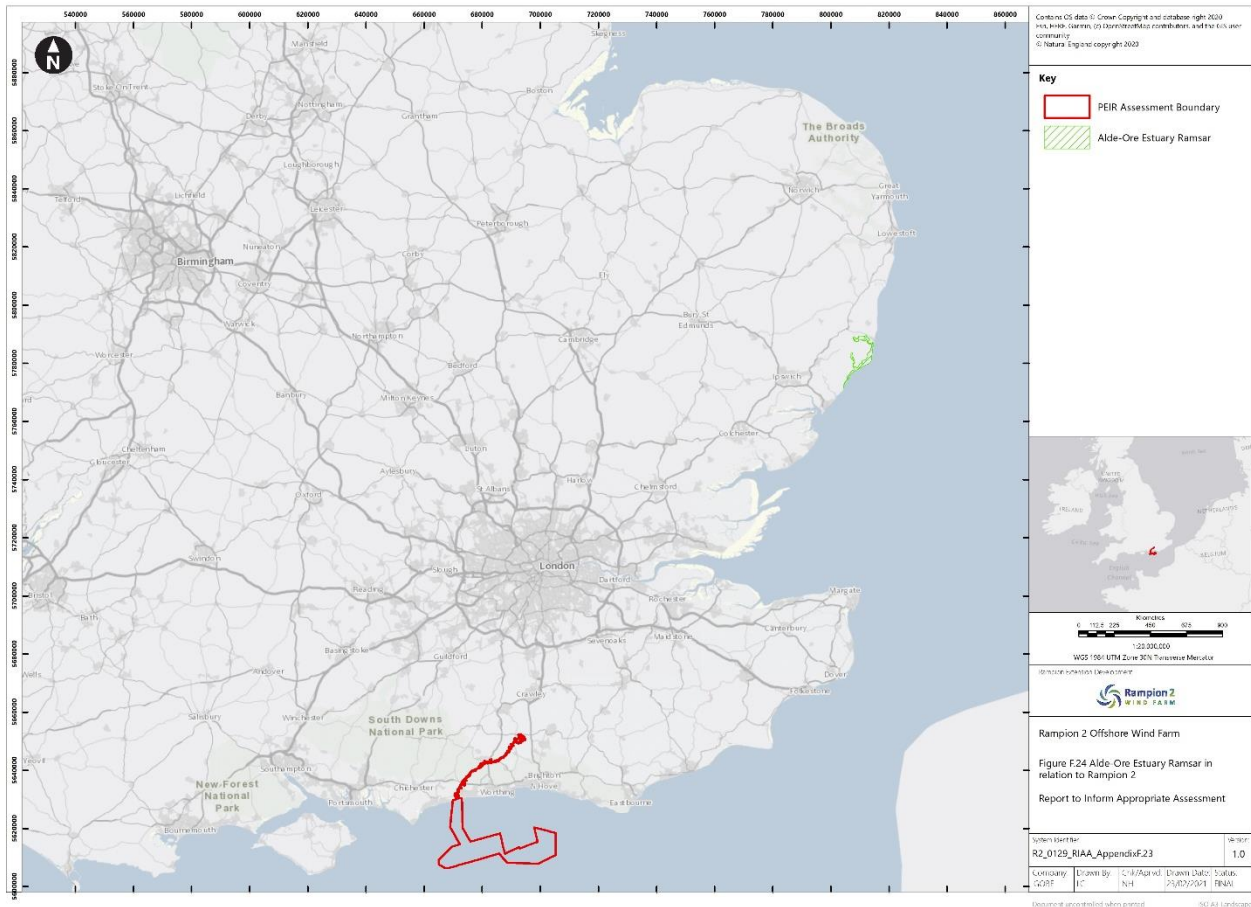
### Conservation advice

- 1.24.6 A site management statement/plan has been implemented for the site whilst a management plan is in preparation.

<sup>95</sup> <https://rsis.ramsar.org/ris/862>

<sup>96</sup> <https://jncc.gov.uk/jncc-assets/RIS/UK11002.pdf>

Figure F-24 Alde-Ore Estuary Ramsar in relation to Rampion 2



## 1.25 The Wash SPA

- 1.25.1 The Wash SPA is a coastal site found on the east coast of England and is designated for its importance as a supporting habitat for nationally and internationally important bird assemblages. The site covers 62044.14ha (Error! Reference source not found.).
- 1.25.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Wash SPA Citation<sup>97</sup> (uploaded July 2014 – no date); and
  - The Wash SPA Data Form<sup>98</sup> (dated November 2015).

## Qualifying features

- 1.25.3 The site is designated for the following qualifying features:

<sup>97</sup> <http://publications.naturalengland.org.uk/publication/5747661105790976>

<sup>98</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9008021.pdf>

- A037 *Cygnus columbianus bewickii*; Bewick's swan (non-breeding);
- A040 *Anser brachyrhynchus*; Pink-footed goose (non-breeding);
- A046a *Branta bernicla bernicla*; Dark-bellied brent goose (non-breeding);
- A048 *Tadorna tadorna*; Common shelduck (non-breeding);
- A050 *Anas penelope*; Eurasian wigeon (non-breeding);
- A051 *Anas strepera*; Gadwall (non-breeding);
- A054 *Anas acuta*; Northern pintail (non-breeding);
- A065 *Melanitta nigra*; Black (common) scoter (non-breeding);
- A067 *Bucephala clangula*; Common goldeneye (non-breeding);
- A130 *Haematopus ostralegus*; Eurasian oystercatcher (non-breeding);
- A141 *Pluvialis squatarola*; Grey plover (non-breeding);
- A143 *Calidris canutus*; Red knot (non-breeding);
- A144 *Calidris alba*; Sanderling (non-breeding);
- A149 *Calidris alpina alpina*; Dunlin (non-breeding);
- A156 *Limosa limosa islandica*; Black-tailed godwit (non-breeding);
- A157 *Limosa lapponica*; Bar-tailed godwit (non-breeding);
- A160 *Numenius arquata*; Eurasian curlew (non-breeding);
- A162 *Tringa totanus*; Common redshank (non-breeding);
- A169 *Arenaria interpres*; Ruddy turnstone (non-breeding);
- A193 *Sterna hirundo*; Common tern (breeding);
- A195 *Sterna albifrons*; Little tern (breeding); and
- waterbird assemblage.

## The characteristics of the European site

- 1.25.4 The site encompasses the largest embayment in the UK, as well as extensive intertidal sand and mudflats, subtidal sandbanks, biogenic and geogenic reef, saltmarsh and a barrier beach system unique in the UK.
- 1.25.5 The Wash is numerically the most important area in Britain for wintering waterfowl, taking waders and wildfowl together. It is also the most important area in Britain in early autumn for moulting waders. The Wash is important also to certain wintering passerines, to breeding waders and terns, and to certain seabirds.

## Conservation advice

- 1.25.6 Advice on operations and Management measures can be found within:

- The Supplementary Advice<sup>99</sup> (dated September 2019);
- Advice on Operations<sup>100</sup> (dated March 2020);
- The Wash and North Norfolk Coast Site Improvement Plan<sup>101</sup> (dated December 2014); and
- The Conservation Objectives<sup>102</sup> (dated February 2019).

1.25.7 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of qualifying natural habitats and habitats of the qualifying species;
  - ▶ the structure and function (including typical species) of qualifying natural habitats;
  - ▶ the structure and function of the habitats of the qualifying species;
  - ▶ the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
  - ▶ the populations of each of the qualifying species; and
  - ▶ the distribution of qualifying species within the site.

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99

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9008021&SiteName=the%20wash%20spa&SiteNameDisplay=The+Wash+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=21>

100

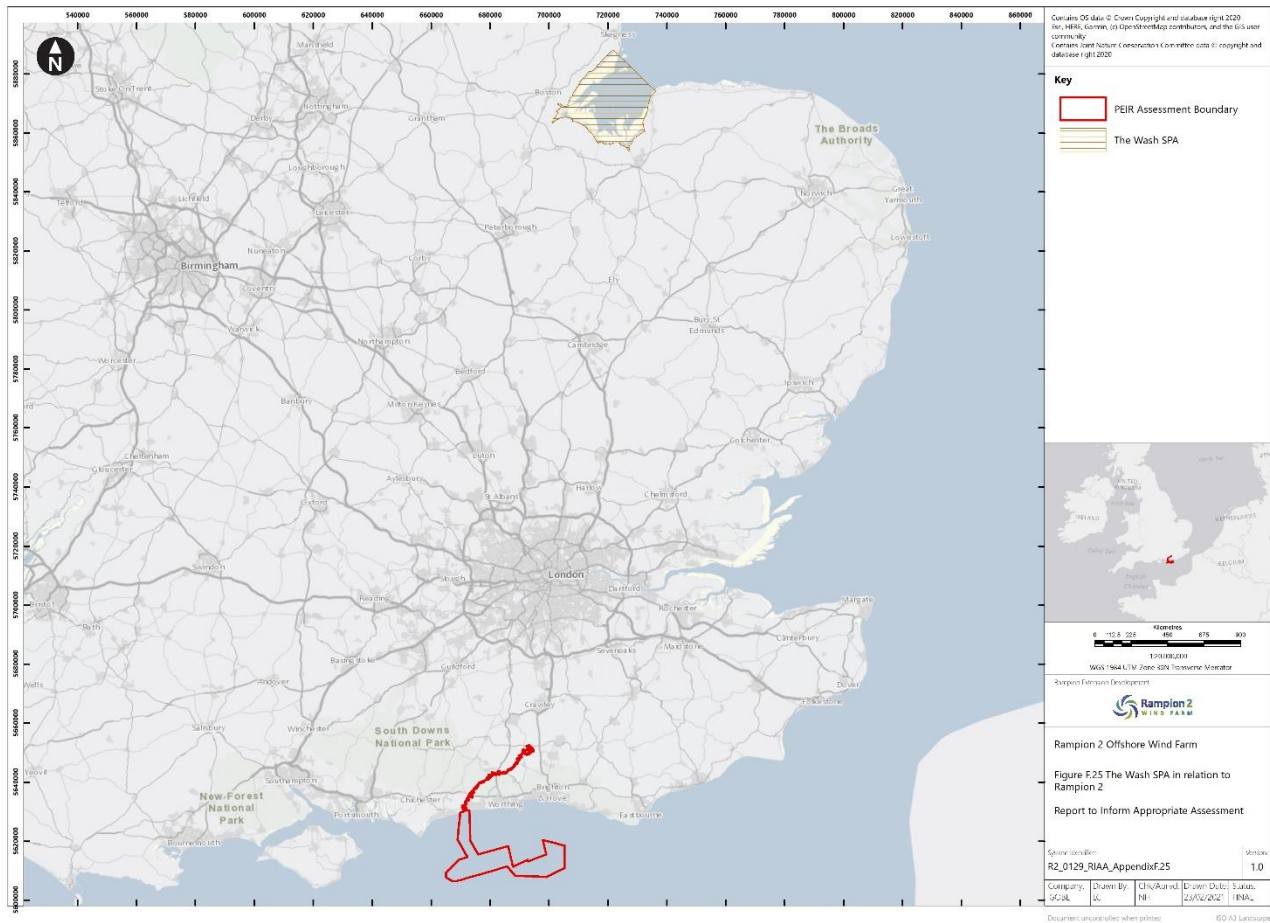
<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9008021&SiteName=the%20wash%20spa&SiteNameDisplay=The+Wash+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=21>

<sup>101</sup> <http://publications.naturalengland.org.uk/publication/5327498292232192>

<sup>102</sup> <http://publications.naturalengland.org.uk/publication/5747661105790976>



Figure F-25 The Wash SPA in relation to Rampion 2



## 1.26 Breydon Water SPA

- 1.26.1 The Breydon Water SPA is a coastal site found on the east coast of Norfolk. The site comprises estuarine habitats that support internationally and nationally important breeding and wintering birds. The site covers 1202.94ha (**Figure F-26**).
- 1.26.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Breydon Water SPA Citation<sup>103</sup> (dated January 2000); and
  - The Breydon Water SPA Data Form<sup>104</sup> (dated December 2014).

## Qualifying features

- 1.26.3 The site is designated for the following qualifying features:

<sup>103</sup> <http://publications.naturalengland.org.uk/publication/6376690053808128>

<sup>104</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9009181.pdf>

- A037 *Cygnus columbianus bewickii*; Bewick's swan (non-breeding);
- A132 *Recurvirostra avosetta*; Pied avocet (non-breeding);
- A140 *Pluvialis apricaria*; European golden plover (non-breeding);
- A142 *Vanellus vanellus*; Northern lapwing (non-breeding);
- A151 *Philomachus pugnax*; Ruff (non-breeding);
- A193 *Sterna hirundo*; Common tern (breeding); and
- waterbird assemblage.

## The characteristics of the European site

- 1.26.4 The SPA incorporates a number of important supporting habitats such as, intertidal mudflats, saltmarsh and freshwater grazing marsh. Shallow tidal waters provide key feeding and roosting habitat for many of the bird species using this site. The extensive areas of intertidal mudflats support dense populations of marine invertebrate species which provide a food source for large populations of waterbirds (wildfowl and waders). As a result, Breydon Water is a key estuary in the UK for wintering waterfowl. Saltmarsh provides important high tide roost sites and nesting sites for many of the bird species.

## Conservation advice

- 1.26.5 Advice on operations and Management measures can be found within:
- The Supplementary Advice<sup>105</sup> (dated September 2019);
  - Advice on Operations<sup>106</sup> (dated March 2020);
  - Breydon Water Site Improvement Plan<sup>107</sup> (dated January 2015); and
  - The Conservation Objectives<sup>108</sup> (dated February 2019).
- 1.26.6 The conservation objectives for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
    - ▶ the extent and distribution of the habitats of the qualifying features;

<sup>105</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009181&SiteName=breydon%20water&SiteNameDisplay=Breydon+Water+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=6>

<sup>106</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9009181&SiteName=breydon%20water&SiteNameDisplay=Breydon+Water+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=6>

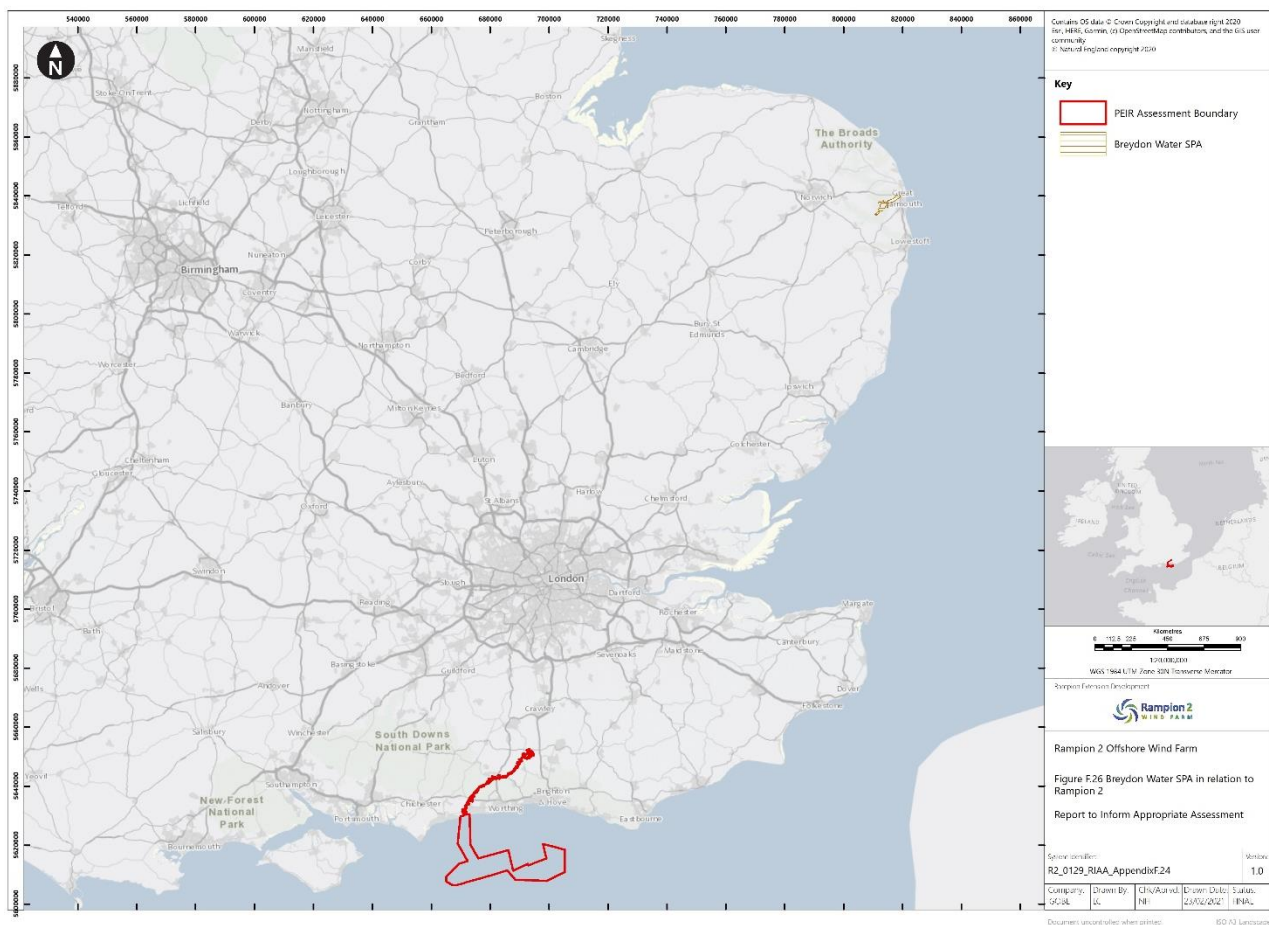
<sup>107</sup> <http://publications.naturalengland.org.uk/publication/6364048115367936>

<sup>108</sup> <http://publications.naturalengland.org.uk/publication/6376690053808128>



- ▶ the structure and function of the habitats of the qualifying features;
- ▶ the supporting processes on which the habitats of the qualifying features rely;
- ▶ the population of each of the qualifying features; and
- ▶ the distribution of the qualifying features within the site.

Figure F-26 Breydon Water SPA in relation to Rampion 2



## 1.27 Greater Wash SPA

- 1.27.1 The Greater Wash SPA is found on the east coast of England and its boundary extends beyond 12 nautical miles off the coast. It is designated for its importance as a supporting habitat for nationally and internationally important bird assemblages. The site covers 35,3600ha (Error! Reference source not found.).
- 1.27.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**

- The Greater Wash SPA Citation<sup>109</sup> (dated March 2018); and
- The Greater Wash Data Form<sup>110</sup> (dated September 2018).

## Qualifying features

1.27.3 The site is designated for the following qualifying features:

- A001 *Gavia stellata*; Red-throated diver (non-breeding);
- A065 *Melanitta nigra*; Common scoter (non-breeding);
- A177 *Hydrocoloeus minutus*; Little gull (non-breeding);
- A191 *Sterna sandvicensis*; Sandwich tern (breeding);
- A193 *Sterna hirundo*; Common tern (breeding); and
- A195 *Sternula albifrons*; Little tern (breeding).

## The characteristics of the European site

1.27.4 The Greater Wash SPA is located in the mid-southern North Sea between Bridlington Bay in the north and the Outer Thames Estuary SPA in the south. To the north, seabed habitats primarily comprise coarse sediments, with occasional areas of sand, mud and mixed sediments. Subtidal sandbanks occur at the mouth of the Humber Estuary, primarily comprising sand and coarse sediments. Offshore, soft sediments dominate, with extensive areas of subtidal sandbanks off The Wash as well as north and east Norfolk coasts. Closer inshore at The Wash and north Norfolk coast, sediments comprise a mosaic of sand, muddy sand, mixed sediments and coarse sediments, as well as occasional Annex I reefs. The area off the Suffolk coast continues the mosaic habitats mostly dominated by soft sediment.

## Conservation advice

1.27.5 Natural England is currently in the process of developing a Conservation advice package for the Greater Wash SPA, but limited information can be found within:

- The Conservation Objectives<sup>111</sup> (dated February 2019); and
- The Wash and North Norfolk Coast Site Improvement Plan<sup>112</sup> (dated December 2014).

1.27.6 The Conservation Objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

<sup>109</sup> <http://publications.naturalengland.org.uk/publication/4597871528116224>

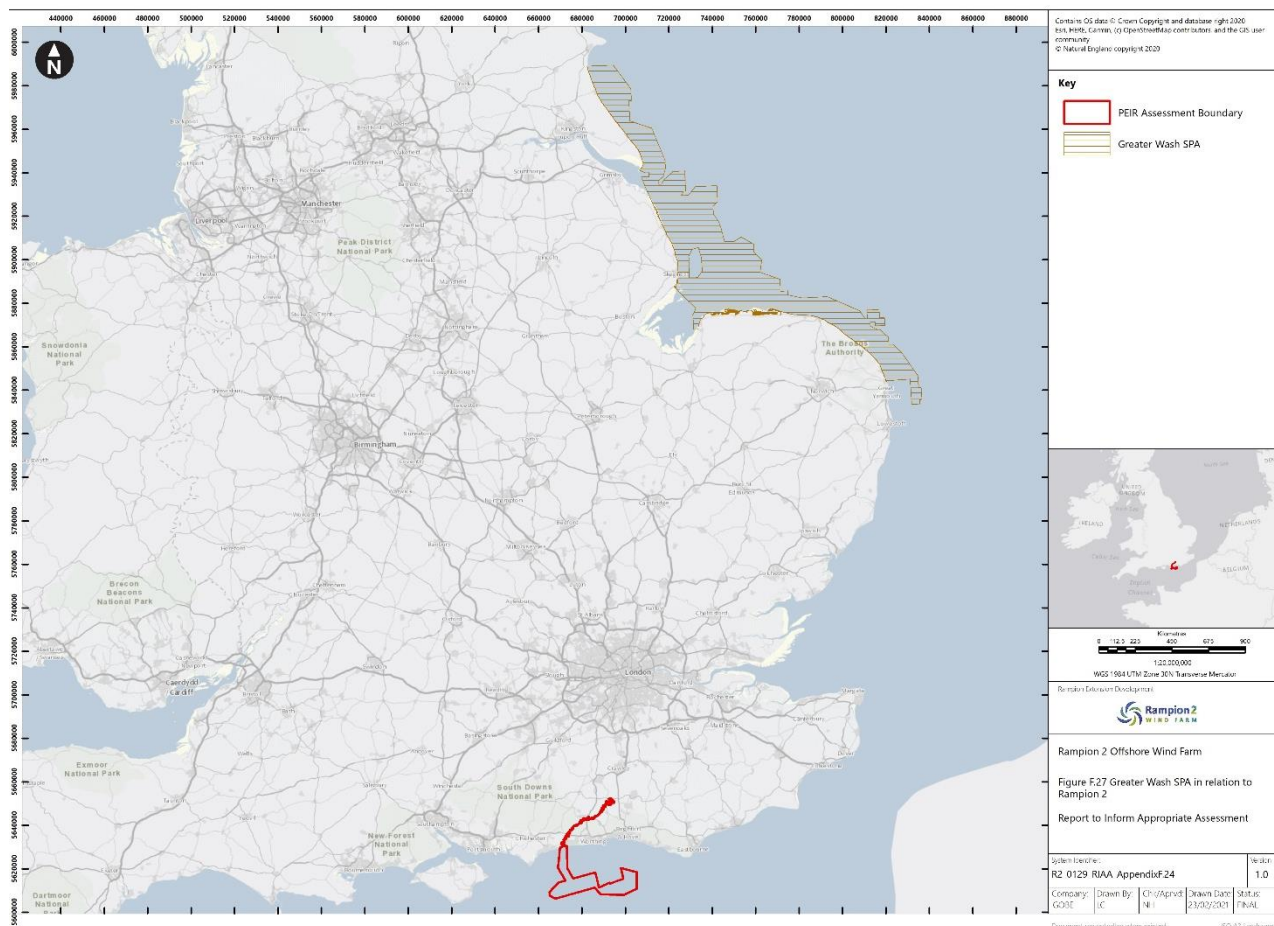
<sup>110</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9020329.pdf>

<sup>111</sup> <http://publications.naturalengland.org.uk/publication/4597871528116224>

<sup>112</sup> <http://publications.naturalengland.org.uk/publication/6364048115367936>

- ▶ the extent and distribution of the habitats of the qualifying features;
- ▶ the structure and function of the habitats of the qualifying features;
- ▶ the supporting processes on which the habitats of the qualifying features rely;
- ▶ the population of each of the qualifying features; and
- ▶ the distribution of the qualifying features within the site.

Figure F-27 The Greater Wash SPA in relation to Rampion 2



## 1.28 North Norfolk Coast SPA

- 1.28.1 The North Norfolk Coast SPA is located east of The Wash on the northern coastline of Norfolk, eastern England and includes a great variety of coastal habitats. The site is the fourth most important wetland site for waterfowl in Britain and is also important for saltmarsh. The site covers 7886.79ha (**Figure F-29**).
- 1.28.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 12: Offshore ornithology;**

- **PEIR Volume 2, Chapter 14: Nature conservation;**
- **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
- The North Norfolk Coast SPA Citation<sup>113</sup> (dated January 1996); and
- The North Norfolk Coast SPA Data Form<sup>114</sup> (dated December 2015).

## Qualifying features

1.28.3 The site is designated for the following qualifying features:

- A021 *Botaurus stellaris*; Great bittern (breeding);
- A040 *Anser brachyrhynchus*; Pink-footed goose (non-breeding);
- A046a *Branta bernicla bernicla*; Dark-bellied brent goose (non-breeding);
- A050 *Anas penelope*; Eurasian wigeon (non-breeding);
- A081 *Circus aeruginosus*; Eurasian marsh harrier (breeding);
- A084 *Circus pygargus*; Montagu's harrier (breeding);
- A132 *Recurvirostra avosetta*; Pied avocet (breeding);
- A143 *Calidris canutus*; Red knot (non-breeding);
- A191 *Sterna sandvicensis*; Sandwich tern (breeding);
- A193 *Sterna hirundo*; Common tern (breeding);
- A195 *Sterna albifrons*; Little tern (breeding); and
- waterbird assemblage.

## The characteristics of the European site

- 1.28.4 The SPA comprises a great variety of coastal habitats including intertidal mudflats and sandflats, coastal waters, saltmarshes, shingle, sand dunes, freshwater grazing marshes and reedbeds. The site is important within Europe as one of the largest areas of undeveloped coastal habitat of its type. It is the fourth most important wetland site for waterfowl in Britain. The site is particularly important for saltmarsh containing some of the best examples of this habitat type in Europe. The intertidal mud and sand flats support high densities of invertebrates important for breeding birds and supporting high numbers of wading birds and wildfowl throughout the year. Large numbers of waterbirds use the site throughout the year. The site is also important to migrating birds in the spring and autumn passage periods.
- 1.28.5 The pursuit of traditional activities, including those of common rights, and those embraced by the Longshore Economy such as samphire gathering, bait digging and wildfowling is widely recognised by Natural England and the other relevant authorities as a particularly important aspect of the local cultural heritage and

<sup>113</sup> <http://publications.naturalengland.org.uk/publication/4732349359063040>

<sup>114</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9009031.pdf>

economy at this site. Such activities are generally seasonal in nature, localised in their occurrence, employ traditional methods and place a strong emphasis on the principles of sustainability. The Wells, Boston and King's Lynn Advisory Groups' understanding of the levels of these activities since Regulation 33 advice was published in 2000, is that they have had no adverse effect on the sites condition and that there is evidence that some activities, particularly reed cutting and mussel cultivation, can make a positive contribution to the favourable condition of the site. It is thus agreed that such activities, including all the Common Rights on the north Norfolk coast between Holme and Holkham, as currently and historically practiced under law relating to Commons and carried out using traditional methods, are compatible with the need to maintain condition of the site's features.

## Conservation advice

1.28.6 Advice on operations and Management measures can be found within:

- The Supplementary Advice<sup>115</sup> (dated September 2019);
- Advice on Operations<sup>116</sup> (dated March 2020);
- The Wash and North Norfolk Coast Site Improvement Plan<sup>117</sup> (dated December 2014); and
- The Conservation Objectives<sup>118</sup> (dated February 2019).

1.28.7 The Conservation Objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features; and
  - ▶ the distribution of the qualifying features within the site.

<sup>115</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009031&SiteName=North%20norfolk%20coast%20spa&SiteNameDisplay=North+Norfolk+Coast+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=11>

<sup>116</sup>

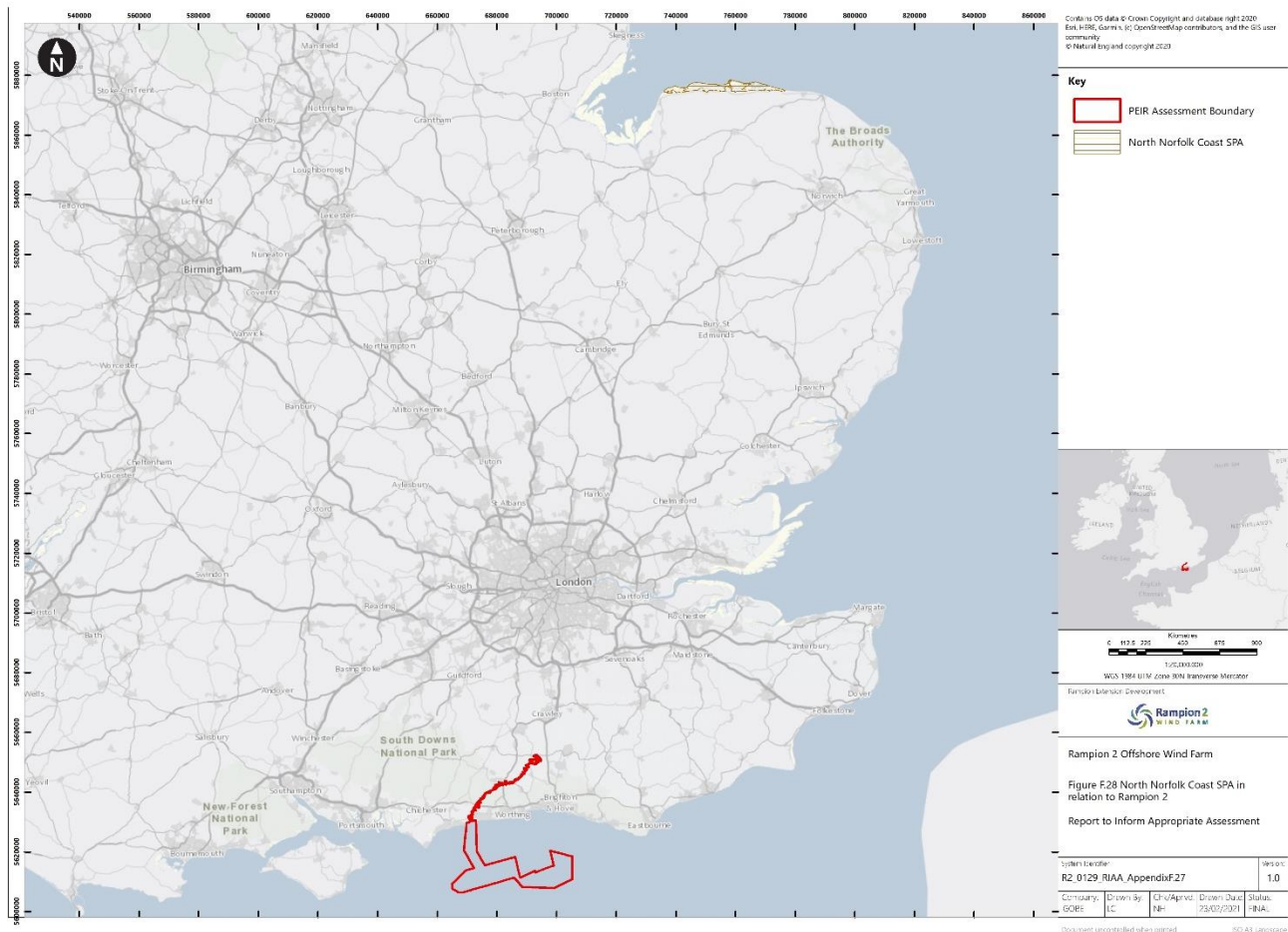
<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9009031&SiteName=North%20norfolk%20coast%20spa&SiteNameDisplay=North+Norfolk+Coast+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=11>

<sup>117</sup> <http://publications.naturalengland.org.uk/publication/6364048115367936>

<sup>118</sup> <http://publications.naturalengland.org.uk/publication/4732349359063040>



Figure F-28 North Norfolk Coast SPA in relation to Rampion 2



## 1.29 North Norfolk Coast Ramsar

- 1.29.1 The North Norfolk Coast Ramsar is located east of The Wash on the northern coastline of Norfolk, eastern England and includes a great variety of coastal habitats. The site is the fourth most important wetland site for waterfowl in Britain and is also important for saltmarsh. The site covers 7700 ha (**Figure F-29**).
- 1.29.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - **PEIR Volume 2, Chapter 23: Terrestrial ecology and nature conservation;**
  - The North Norfolk Coast Ramsar<sup>119</sup> (dated January 1976); and
  - The North Norfolk Coast Ramsar Information Sheet<sup>120</sup> (January 1976).

<sup>119</sup> <https://rsis.ramsar.org/ris/76>

<sup>120</sup> <https://jncc.gov.uk/jncc-assets/RIS/UK11048.pdf>

## Qualifying features

1.29.3 The site is designated for the following qualifying criteria.

- **Criterion 1:** The site is one of the largest expanses of undeveloped coastal habitat of its type in Europe. It is a particularly good example of a marshland coast with intertidal sand and mud, saltmarshes, shingle banks and sand dunes. There are a series of brackish-water lagoons and extensive areas of freshwater grazing marsh and reed beds.
- **Criterion 2:** Supports at least three British Red Data Book and nine nationally scarce vascular plants, one British Red Data Book lichen and 38 British Red Data Book invertebrates.
- **Criterion 5:** Species with peak counts in winter: 98462 waterfowl (5 year peak mean 1998/99-2002/2003).
- **Criterion 6:** Species/populations occurring at levels of international importance.
- **Criterion 6:** Species regularly supported during the breeding season:
  - ▶ Sandwich tern, *Sterna (Thalasseus) sandvicensis sandvicensis*,
  - ▶ Common tern, *Sterna hirundo hirundo*,
  - ▶ Little tern, *Sterna albifrons albifrons*,
- **Criterion 6:** Species with peak counts in spring/autumn:
  - ▶ Red knot, *Calidris canutus islandica*
- Species with peak counts in winter:
  - ▶ Pink-footed goose, *Anser brachyrhynchus*
  - ▶ Dark-bellied brent goose, *Branta bernicla bernicla*,
  - ▶ Eurasian wigeon, *Anas penelope*,
  - ▶ Northern pintail, *Anas acuta*
- Species with peak counts in spring/autumn:
  - ▶ Ringed plover, *Charadrius hiaticula*,
  - ▶ Sanderling, *Calidris alba*,
  - ▶ Bar-tailed godwit, *Limosa lapponica lapponica*,

## The characteristics of the European site

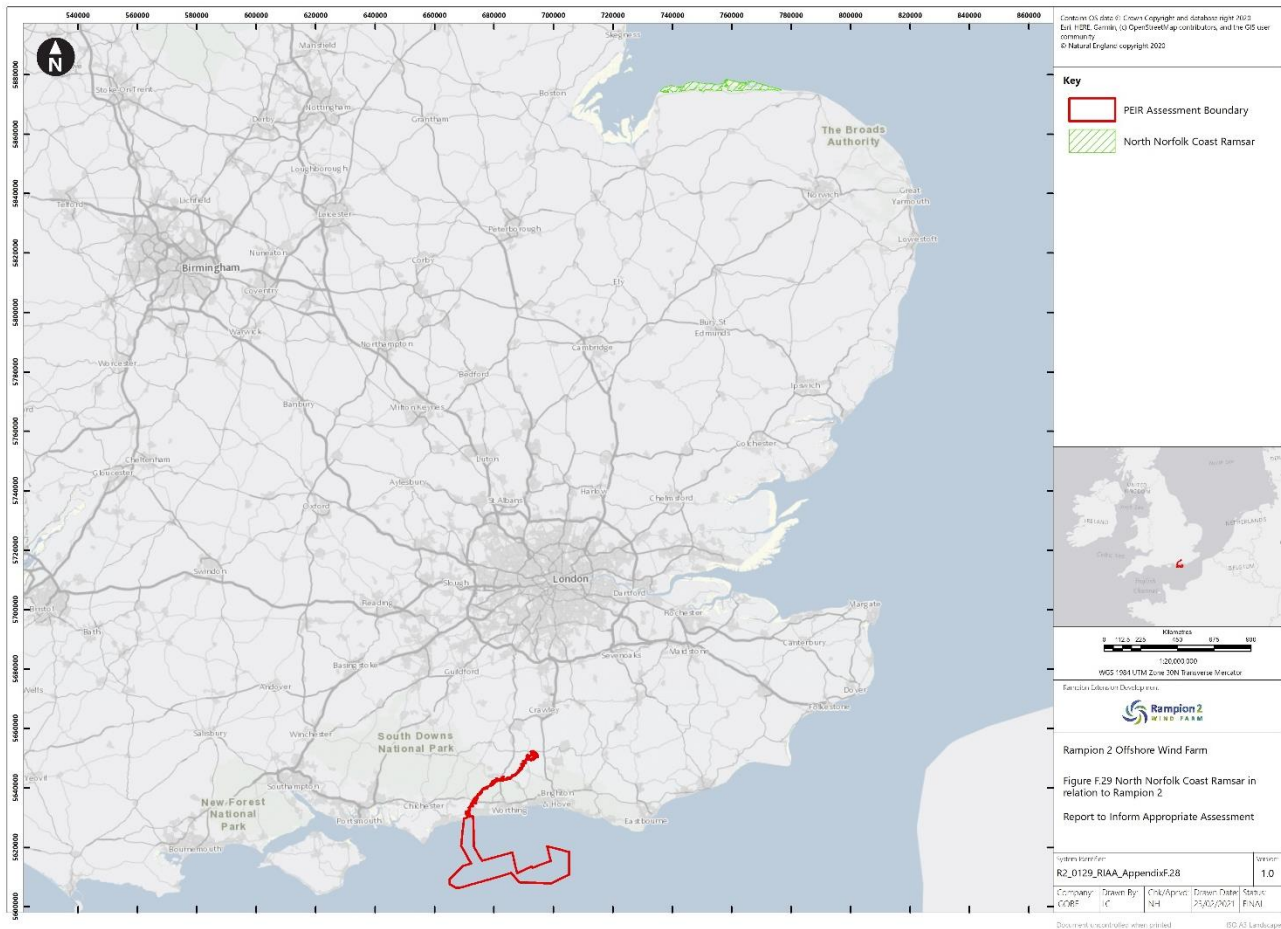
1.29.4 A stretch of coastline consisting of shingle beaches, dunes, saltmarsh, intertidal mud and sand flats, brackish lagoons, reedbeds, and grazing marshes. The site supports nationally and internationally important numbers of various species of breeding or wintering waterbirds. It also includes several important botanical areas and is a centre for tourism and general recreation; a visitors' centre, trails and hides are available.



## Conservation advice

1.29.5 A site management statement/plan has been implemented for the site.

Figure F-29 North Norfolk Coast Ramsar in relation to Rampion 2



## 1.30 Côte de Granit Rose-Sept Iles SPA

- 1.30.1 The Côte de Granit Rose-Sept Iles SPA is a coastal site on the north coast of France. The site is designated owing to the presence of a wide range of coastal and marine habitats and associated fauna. The site covers 72140.36ha (**Figure F-30**).
- 1.30.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 9: Benthic and intertidal;**
  - **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;** and
  - European Environment Agency<sup>121</sup> (no date).

<sup>121</sup> <https://eunis.eea.europa.eu/sites/FR5300009>

## Qualifying features

1.30.3 The site is designated for the following qualifying species:

- 1421 Killarney fern *Trichomanes speciosum*;
- 1102 Allis shad *Alosa alosa*;
- 1103 Shad *Alosa fallax*;
- 1095 Great sea lamprey *Petromyzon marinus*;
- 1106 Black salmon *Salmo salar*;
- 1441 Shore dock *Rumex rupestris*;
- 1007 Escargot snail *Elona quimperiana*;
- 1083 Stag beetle *Lucanus cervus*;
- 1364 Grey seal *Halichoerus grypus*;
- 1365 Common seal *Phoca vitulina*;
- 1351 Common Porpoise *Phocoena phocoena*;
- 1304 Greater horseshoe bat *Rhinolophus ferrumequinum*; and
- 1349 Bottlenose dolphin *Tursiops truncatus*.

1.30.4 The site is designated for the following qualifying habitats:

- 1110 Sandbanks which are slightly covered by sea water all the time;
- 1140 Mudflats and sandflats not covered by seawater at low tide;
- 1150 Coastal lagoons;
- 1160 Large shallow inlets and bays;
- 1170 Reefs;
- 1210 Annual vegetation of drift lines;
- 1220 Perennial vegetation of stony banks;
- 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts;
- 1310 Salicornia and other annuals colonizing mud and sand;
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritima*);
- 1410 Mediterranean salt meadows (*Juncetalia maritimi*);
- 1430 Halo-nitrophilous scrubs (*Pegano-Salsolietea*);
- 2110 Embryonic shifting dunes;
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ;
- 2130 Fixed coastal dunes with herbaceous vegetation ('grey dunes');
- 2150 Atlantic decalcified fixed dunes (*Calluno-Ulicetalia*);

- 2190 Humid dune slacks;
- 3110 Oligotrophic waters containing very few minerals of sandy plains ;
- 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* -type vegetation;
- 4030 European dry heaths;
- 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils ;
- 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels;
- 8220 Siliceous rocky slopes with chasmophytic vegetation;
- 8230 Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dilleniid*;
- 9130 *Asperulo-Fagetum* beech forests; and
- 9180 *Tilio-Acerion* forests of slopes, screes and ravines.

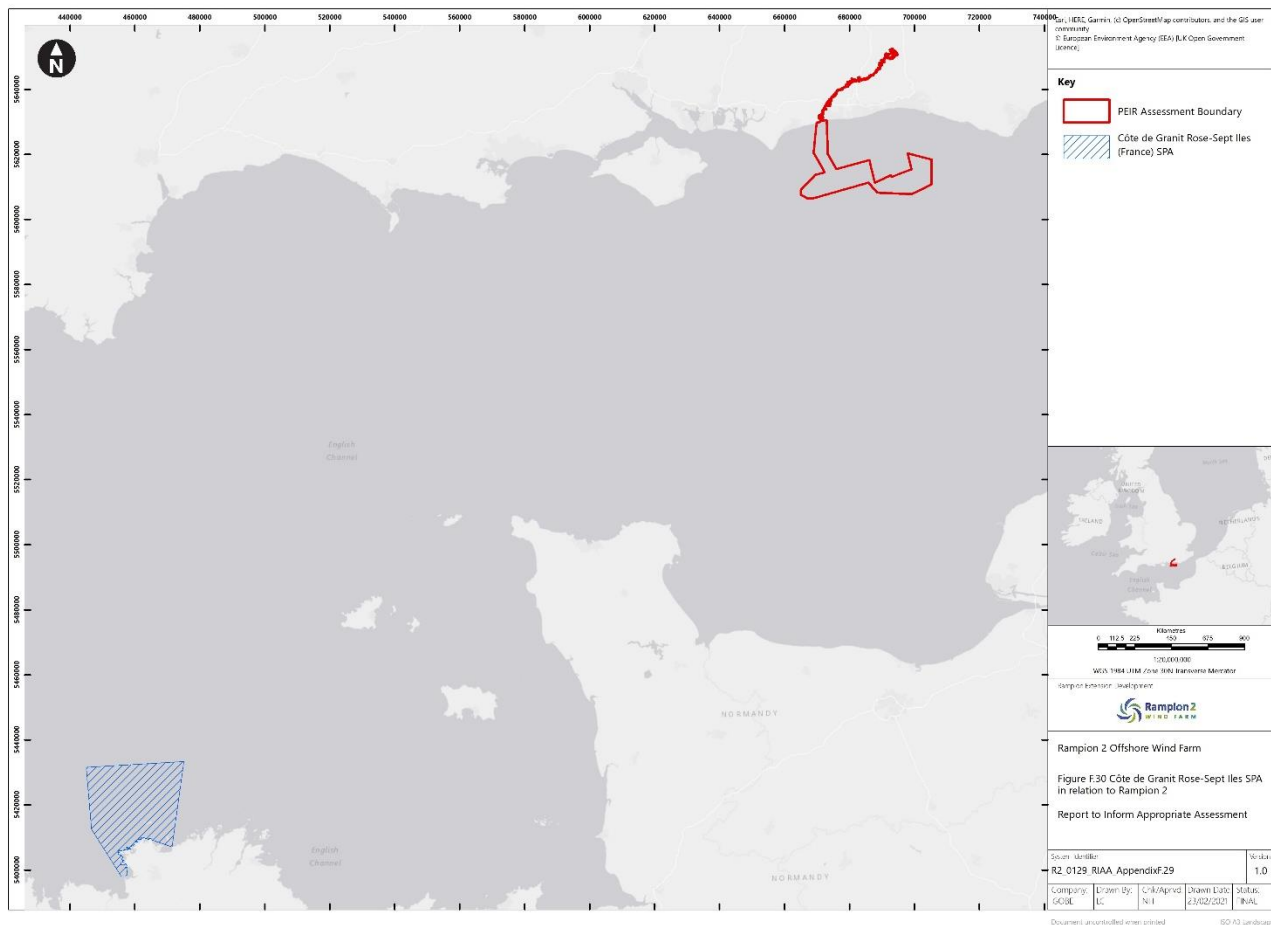
## The characteristics of the European site

- 1.30.5 Information on the site is extremely limited. 99% of the site is marine with a small area of coast.

## Conservation advice

- 1.30.6 No conservation advice or objectives were found for this site.

Figure F-30 Côte de Granit Rose-Sept Iles SPA (FR) SPA in relation to Rampion 2



## 1.31 Grassholm SPA

- 1.31.1 The Grassholm SPA is a remote offshore island about 10 miles west of the mainland coast of Pembrokeshire in south-west Wales, which supports breeding gannet. The site covers 1744ha (Error! Reference source not found.).
- 1.31.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Grassholm SPA Citation<sup>122</sup> (no date); and
  - The Grassholm SPA Data Form<sup>123</sup> (dated December 2015).

## Qualifying features

- 1.31.3 The site is designated for the following qualifying feature:

<sup>122</sup> <https://cdn.cyfoethnaturiol.cymru/media/1551/grassholm-potential-spa-citation.pdf?mode=pad&rnd=131625760790000000>

<sup>123</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9014041.pdf>

- Gannet *Sula bassana*.

## The characteristics of the European site

- 1.31.4 Grassholm is a low-lying basalt island, situated approximately 18km off the south-west Wales coast. The island has limited terrestrial vegetation owing to the effects of the large number of breeding seabirds and the influence of salt spray and exposure, and its foreshore and sublittoral habitats are amongst the most wave and tide-exposed in Britain. From January to October Grassholm Island, supports the third largest breeding population of the north Atlantic gannet (*Morus bassanus*) in the world. Gannets use the marine waters immediately adjacent to the colony for a number of essential activities, such as preening, bathing and displaying. The nesting seabirds using the site also feed both within and outside the SPA in surrounding marine areas, as well as more distantly.

## Conservation advice

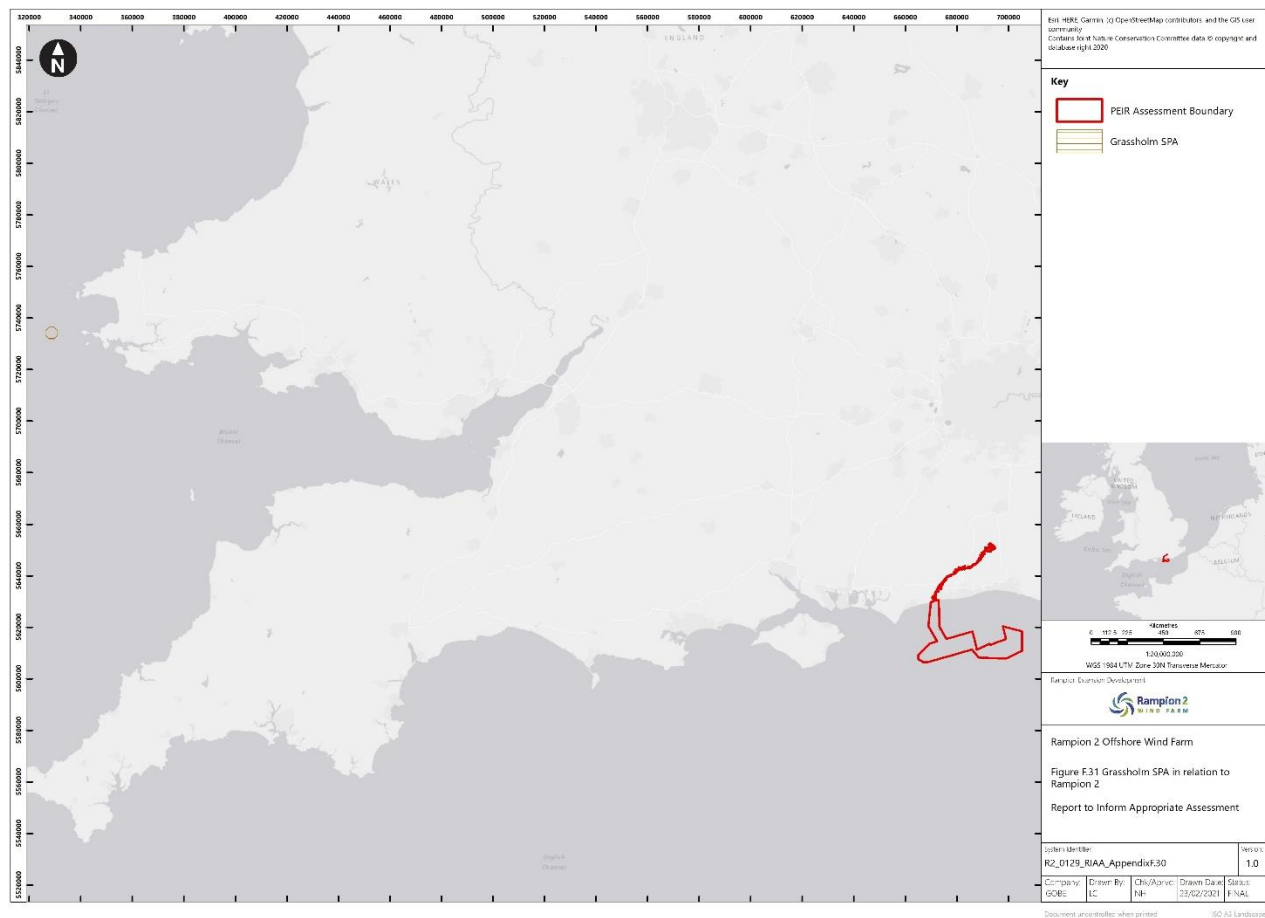
- 1.31.5 Advice on operations and Management measures can be found within:
- Core Management Plan Including Conservation Objectives for Grassholm SPA<sup>124</sup> (dated April 2008).
- 1.31.6 The conservation objectives for the site are as follows:
- the vision for this feature (Gannet) is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
  - the population will not fall below 30,000 pairs in three consecutive years;
    - ▶ it will not drop by more than 25% of the previous year's figures in any one year; and
    - ▶ there will be no decline in this population significantly greater than any decline in the North Atlantic population as a whole.

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124

[https://naturalresources.wales/media/674134/Grassholm%20SPA%20Management%20Plan%2021%5B1%5D.4.08%20\(English\).pdf](https://naturalresources.wales/media/674134/Grassholm%20SPA%20Management%20Plan%2021%5B1%5D.4.08%20(English).pdf)

Figure F-31 Grassholm SPA in relation to Rampion 2



## 1.32 Flamborough and Filey Coast SPA

- 1.32.1 Flamborough and Filey Coast SPA is located on the Yorkshire coast in northeast England. The site covers a slender strip of cliffs and hinterland along the coastline that support internationally and nationally important migratory, breeding and seabird assemblages. The site covers 7857.99ha (**Figure F-32**).
- 1.32.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Flamborough and Filey Coast SPA Citation<sup>125</sup> (dated August 2018); and
  - The Flamborough and Filey Coast SPA Data Form<sup>126</sup> (dated September 2018).

## Qualifying features

- 1.32.3 The site is designated for the following qualifying feature:

<sup>125</sup> <http://publications.naturalengland.org.uk/publication/5400434877399040>

<sup>126</sup> <https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=UK9006101>



- A188 *Rissa tridactyla*; Black-legged kittiwake (breeding).

## The characteristics of the European site

- 1.32.4 The SPA includes the cliffs of Flamborough Head which rise to 135 metres and are composed of chalk and other sedimentary rocks. These soft cliffs have been eroded into a series of bays, arches, pinnacles and gullies with an extensive system of caves at sea-level. The cliffs from Filey Brigg to Cunstane Nab comprise a range of sedimentary rocks including shales and sandstones. The cliff top vegetation comprises maritime grassland vegetation growing alongside species more typical of chalk grassland. The intertidal area below the cliffs is predominantly rocky and part of a series of reefs that extend into the subtidal area. The adjacent sea out to 2 km off Flamborough Head as well as Filey Brigg to Cunstane Nab is characterised by reefs supporting kelp forest communities in the shallow subtidal and faunal turf communities below 2 metre water depths. The southern side of Filey Brigg shelves off gently from the rocks to the sandy bottom of Filey Bay.

## Conservation advice

- 1.32.5 Advice on operations and Management measures can be found within:
- The Supplementary Advice<sup>127</sup> (dated March 2020);
  - Flamborough and Filey Coast SPA Site Improvement Plan<sup>128</sup> (dated February 2015);
  - Advice on Operations<sup>129</sup> (dated March 2020); and
  - The Conservation Objectives<sup>130</sup> (dated February 2019).
- 1.32.6 The conservation objectives for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
    - ▶ the extent and distribution of the habitats of the qualifying features;
    - ▶ the structure and function of the habitats of the qualifying features;
    - ▶ the supporting processes on which the habitats of the qualifying features rely;

<sup>127</sup> <https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9006101&SiteName=flamb&SiteNameDisplay=Flamborough+and+Filey+Coast+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=4>

<sup>128</sup> <http://publications.naturalengland.org.uk/publication/6404364100960256>

<sup>129</sup>

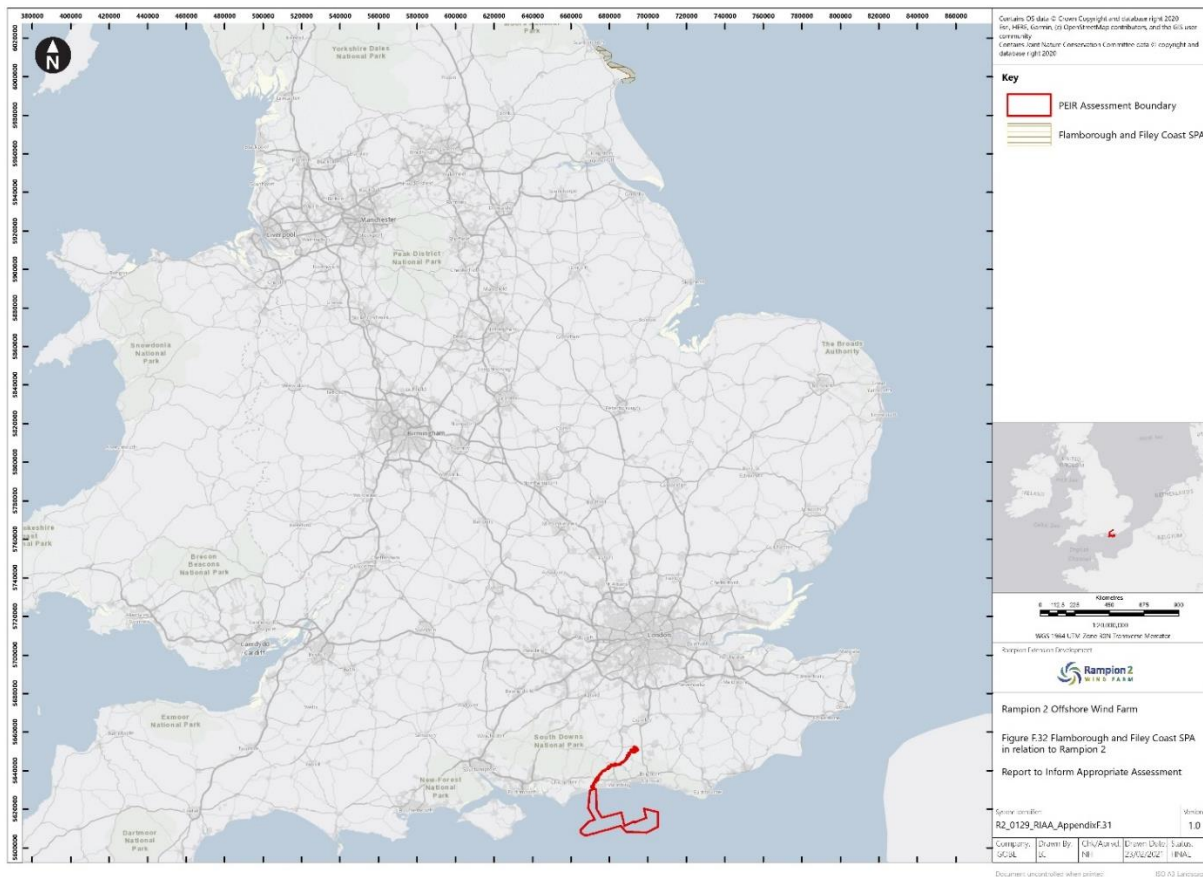
<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9006101&SiteName=flamb&SiteNameDisplay=Flamborough+and+Filey+Coast+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=4>

<sup>130</sup> <http://publications.naturalengland.org.uk/publication/5400434877399040>



- ▶ the population of each of the qualifying features; and
- ▶ the distribution of the qualifying features within the site.

Figure F-32 Flamborough and Filey Coast SPA in relation to Rampion 2



### 1.33 Northumbria Coast SPA

- 1.33.1 The Northumbria Coast SPA is located in north-east England and includes much of the coastline between the Tees and Tweed Estuaries and supports internationally important populations of breeding birds and wintering waders. The site covers 1097.45ha (Error! Reference source not found.).
- 1.33.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Northumbria Coast SPA Citation<sup>131</sup> (dated January 2018); and
  - The Northumbria Coast SPA Data Form<sup>132</sup> (dated May 2006).

<sup>131</sup> <http://publications.naturalengland.org.uk/publication/6372874327687168>

<sup>132</sup> <http://publications.naturalengland.org.uk/publication/4528018>

## Qualifying features

- 1.33.3 The site is designated for the following qualifying features:
- A148 *Calidris maritima*; Purple sandpiper (non-breeding);
  - A169 *Arenaria interpres*; Ruddy turnstone (non-breeding); and
  - A195 *Sterna albifrons*; Little tern (breeding).

## The characteristics of the European site

- 1.33.4 The Northumbria Coast SPA consists of mainly discrete sections of rocky shore with associated boulder and cobble beaches. The SPA also includes parts of three artificial pier structures which are used as high tide roosts and a small section of sandy beach. In summer, the site supports internationally important breeding populations, wintering waders also occur in internationally important numbers. The beaches of fine sand, vegetated banks of sea rocket and dunes of marram and lyme grass also provide good conditions for nesting.

## Conservation advice

- 1.33.5 Advice on operations and Management measures can be found within:
- The Supplementary Advice<sup>133</sup> (dated September 2019);
  - Site Improvement Plan<sup>134</sup> (dated April 2015);
  - Advice on Operations<sup>135</sup> (dated March 2020); and
  - The Conservation Objectives<sup>136</sup> (dated February 2019).
- 1.33.6 The conservation objectives for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
    - ▶ the extent and distribution of the habitats of the qualifying features
    - ▶ the structure and function of the habitats of the qualifying features;
    - ▶ the supporting processes on which the habitats of the qualifying features rely;

<sup>133</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9006131&SiteName=Northumbr&SiteNameDisplay=Northumbria+Coast+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=4>

<sup>134</sup> <http://publications.naturalengland.org.uk/publication/5340976100933632>

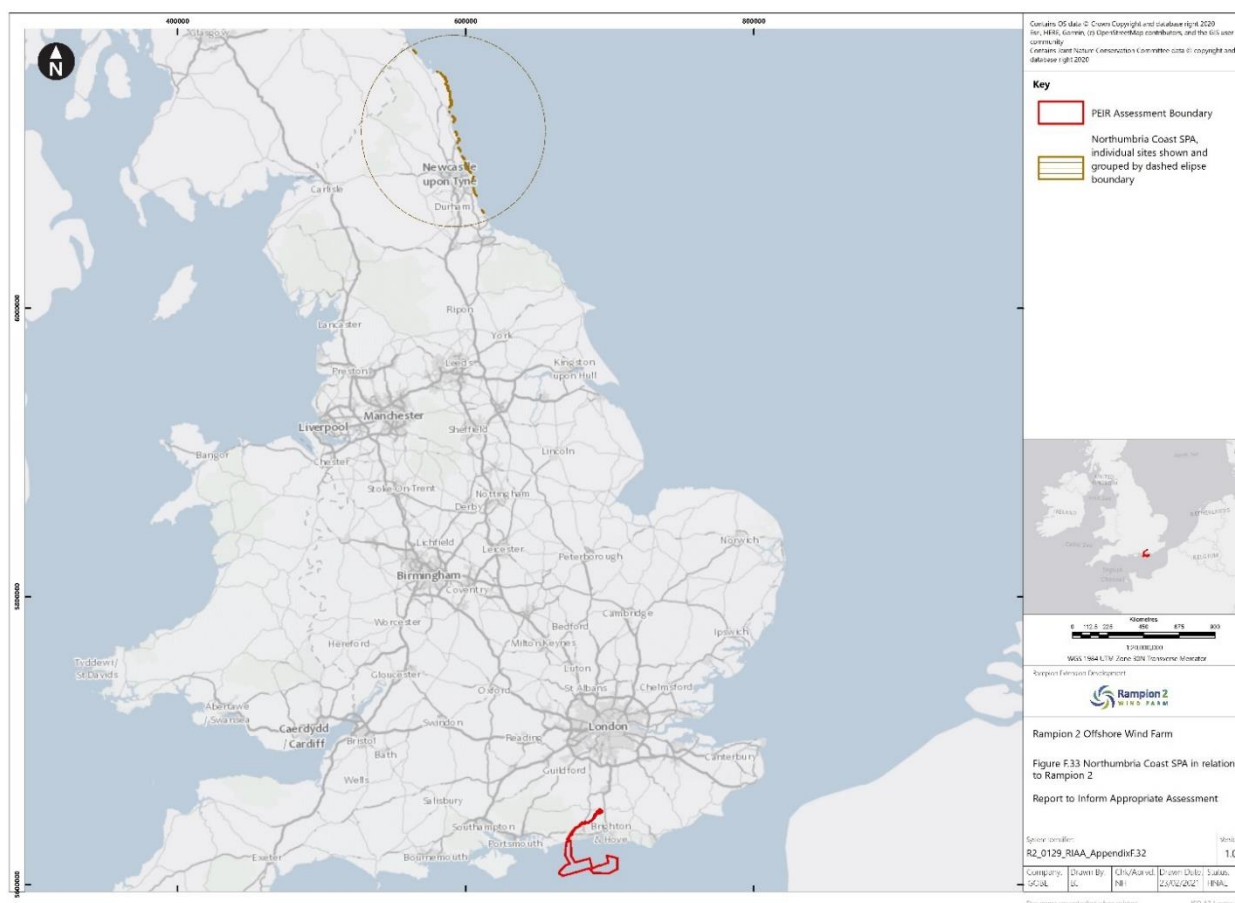
<sup>135</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9006131&SiteName=Northumbr&SiteNameDisplay=Northumbria+Coast+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=4>

<sup>136</sup> <http://publications.naturalengland.org.uk/publication/6372874327687168>

- ▶ the population of each of the qualifying features; and
- ▶ the distribution of the qualifying features within the site.

Figure F-33 Northumbria Coast SPA in relation to Rampion 2



## 1.34 Northumbria Coast Ramsar

- 1.34.1 The Northumbria Coast Ramsar is located in north-east England and includes much of the coastline between the Tees and Tweed Estuaries and supports internationally important populations of breeding birds and wintering waders. The site covers 1108ha (**Figure F-34**).
- 1.34.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Northumbria Coast Ramsar Site Information<sup>137</sup> (dated February 2000); and
  - The Northumbria Coast Ramsar Information Sheet<sup>138</sup> (dated January 2000).

<sup>137</sup> <https://rsis.ramsar.org/ris/1019>

<sup>138</sup> <https://rsis.ramsar.org/RISapp/files/RISrep/GB1019RIS.pdf>

## Qualifying features

1.34.3 The site is designated for the following qualifying criterion:

- **Criterion 6:** The site supports internationally important wintering populations of turnstone *Arenaria interpres* (2.6 % of the Eastern Atlantic Flyway population) and purple sandpiper *Calidris maritima* (1.6% of the Eastern Atlantic Flyway population).

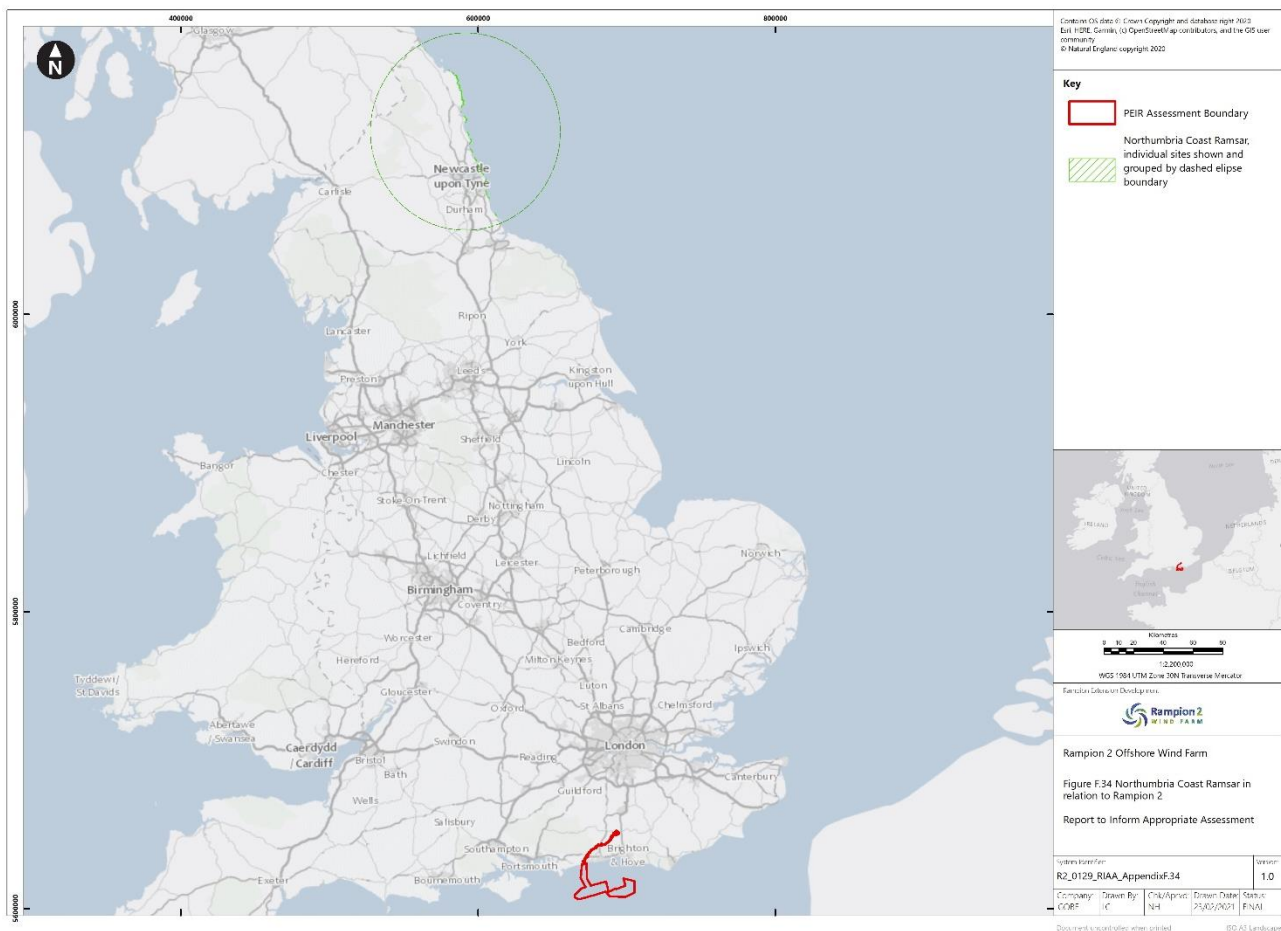
## The characteristics of the European site

1.34.4 The Northumbria Coast Ramsar site comprises several discrete sections of rocky foreshore between Spittal, in the North of Northumberland, and an area just south of Blackhall Rocks in County Durham. These stretches of coast regularly support internationally important numbers of purple sandpiper and turnstone. The Ramsar site also includes an area of sandy beach at Low Newton, which supports a nationally important breeding colony of little tern, and parts of three artificial pier structures which form important roost sites for purple sandpiper.

## Conservation advice

1.34.5 A site management statement/plan has been implemented for the site.

Figure F-34 Northumbria Coast Ramsar in relation to Rampion 2



## 1.35 Coquet Island SPA

- 1.35.1 Coquet Island SPA is located 1 km off the coast of Northumberland in north-east England. It is a small flat-topped island with a plateau extent of approximately 7 hectares. The SPA covers 19.92ha (**Figure F-35**).
- 1.35.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Coquet Island SPA Citation<sup>139</sup> (dated January 2018); and
  - The Coquet Island SPA Data Form<sup>140</sup> (dated).

### Qualifying features

- 1.35.3 The site is designated for the following qualifying features:
- A191 *Sterna sandvicensis*; Sandwich tern (breeding);
  - A192 *Sterna dougallii*; Roseate tern (breeding);
  - A193 *Sterna hirundo*; Common tern (breeding); and
  - A194 *Sterna paradisaea*; Arctic tern (breeding).

### The characteristics of the European site

- 1.35.4 The island consists of sandy soil and peat over a soft sandstone base. Low cliffs of approx. 2.4-3.7m high result from earlier quarrying. Surrounding the island is a rocky upper shore and intertidal covering 15ha when fully exposed. There is a sandy beach on the south west of the island and the southeast corner is shingle and rock. A small, shallow, man-made well lies in the centre of the plateau, which is fed by non-potable surface water. The peaty soil of the plateau supports short fescue, with docks and ragwort. Maritime species such as sea campion and thrift are scarce. Where nutrient input from seabird colonies is greatest, there are dense stands of taller species, including nettles that provide cover for some of the nesting terns.

### Conservation advice

- 1.35.5 Advice on operations and Management measures can be found within:
- The Supplementary Advice<sup>141</sup> (dated September 2019);

<sup>139</sup> <http://publications.naturalengland.org.uk/publication/5446040786305024>

<sup>140</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/uk9006031.pdf>. January 2001.

<sup>141</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9006031&SiteName=coquet&SiteNameDisplay=Coquet+Island+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=4>



- Northumberland Coastal Site Improvement Plan<sup>142</sup> (dated January 2015);
- Advice on Operations<sup>143</sup> (dated March 2020); and
- The Conservation Objectives<sup>144</sup> (dated February 2019).

1.35.6 The conservation objectives for the site are as follows:

- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
  - ▶ the extent and distribution of the habitats of the qualifying features;
  - ▶ the structure and function of the habitats of the qualifying features;
  - ▶ the supporting processes on which the habitats of the qualifying features rely;
  - ▶ the population of each of the qualifying features; and
  - ▶ the distribution of the qualifying features within the site.

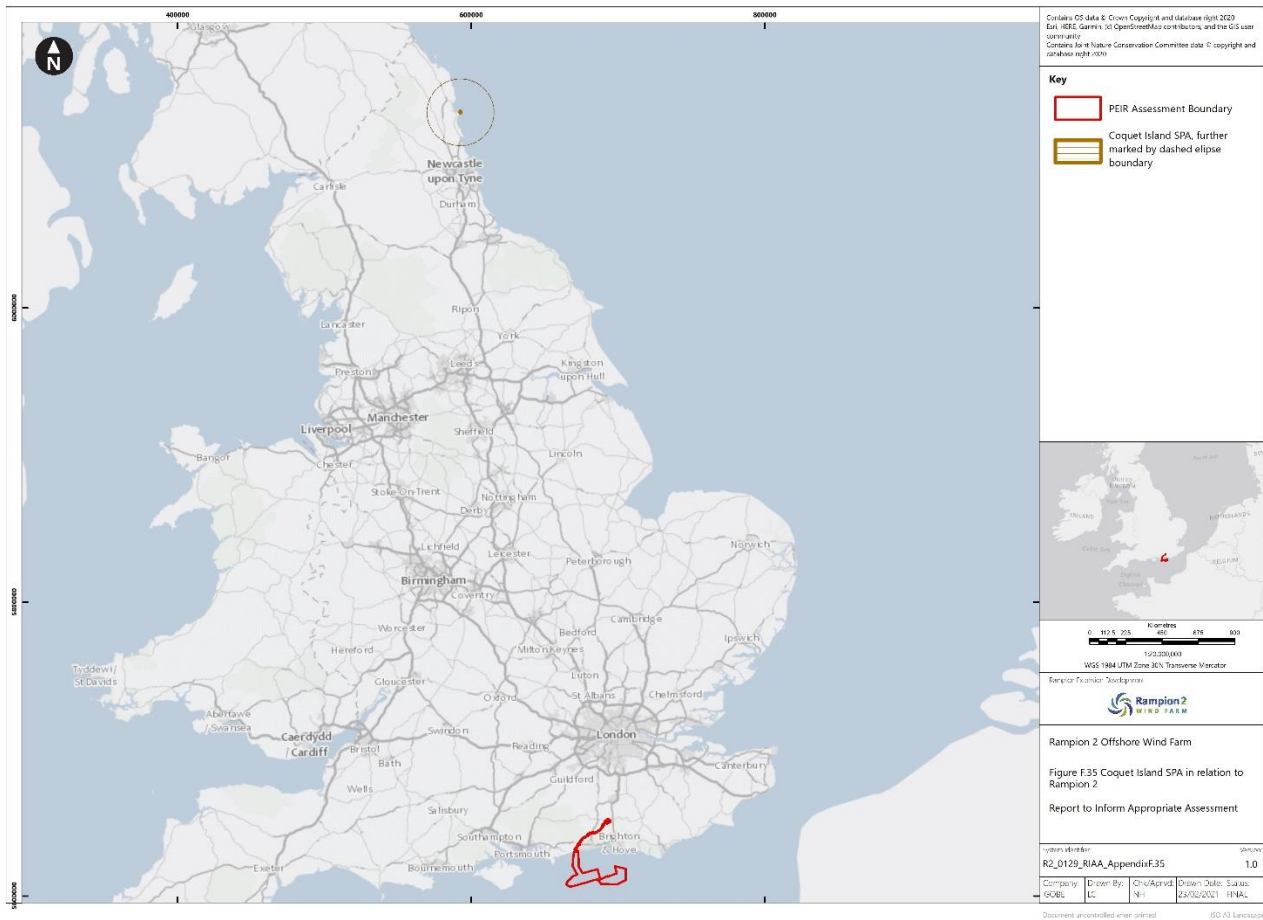
<sup>142</sup> <http://publications.naturalengland.org.uk/publication/5340976100933632>

<sup>143</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9006031&SiteName=coquet&SiteNameDisplay=Coquet+Island+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&NumMarineSeasonality=4>

<sup>144</sup> <http://publications.naturalengland.org.uk/publication/5446040786305024>

Figure F-35 Coquet Island SPA in relation to Rampion 2



## 1.36 Farne Islands SPA

- 1.36.1 The Farne Islands are a group of low-lying islands 2-6km off the coast of Northumberland in northeast England. The site support internationally and nationally important breeding and seabird assemblages. The site covers 101.86ha (**Figure F-36**Error! Reference source not found.).
- 1.36.2 Key literature sources, including relevant project literature, are as follows:
- **PEIR Volume 2, Chapter 12: Offshore ornithology;**
  - **PEIR Volume 2, Chapter 14: Nature conservation;**
  - The Farne Islands SPA Citation<sup>145</sup> (dated January 2018); and
  - The Farne Islands SPA Data Form<sup>146</sup> (dated September 2018).

## Qualifying features

- 1.36.3 The site is designated for the following qualifying features:

<sup>145</sup> <http://publications.naturalengland.org.uk/publication/4521874151178240>

<sup>146</sup> <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9006021.pdf>



- A191 *Sterna sandvicensis*; Sandwich tern (breeding);
- A192 *Sterna dougallii*; Roseate tern (breeding);
- A193 *Sterna hirundo*; Common tern (breeding);
- A194 *Sterna paradisaea*; Arctic tern (breeding);
- A199 *Uria aalge*; Common guillemot (breeding); and
- seabird assemblage.

## The characteristics of the European site

- 1.36.4 The islands form the easternmost outcroppings of the Great Whin Sill of quartz dolerite, and although some islands retain cappings of boulder clay or peaty deposits, vegetation is limited to pioneer communities. Vegetation is further affected by the maritime conditions and large numbers of seabirds. The islands are important as nesting areas for these birds, especially terns, gulls and auks. The seabirds feed outside the SPA in nearby waters, as well as more distantly in the North Sea.

## Conservation advice

- 1.36.5 Advice on operations and Management measures can be found within:
- Northumberland Coastal Site Improvement Plan<sup>147</sup> (dated January 2015);
  - The Supplementary Advice<sup>148</sup> (dated September 2019);
  - Advice on Operations<sup>149</sup> (dated March 2020); and
  - The Conservation Objectives<sup>150</sup> (dated February 2019).
- 1.36.6 The conservation objectives for the site are as follows:
- ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
    - ▶ the extent and distribution of the habitats of the qualifying features;
    - ▶ the structure and function of the habitats of the qualifying features;

<sup>147</sup> <http://publications.naturalengland.org.uk/publication/5340976100933632>

<sup>148</sup>

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9006021&SiteName=farne%20island&SiteNameDisplay=Farne+Islands+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=5>

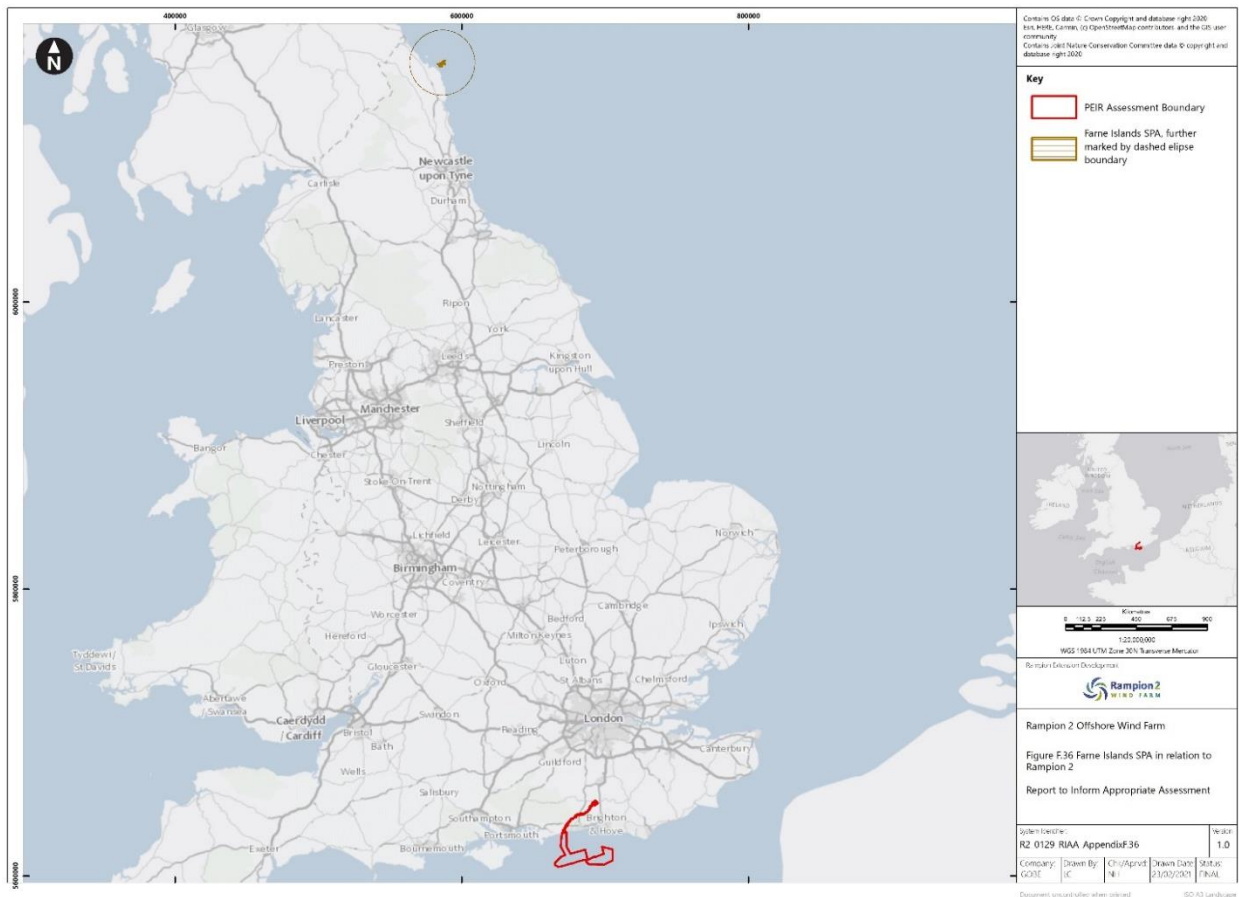
<sup>149</sup>

<https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9006021&SiteName=farne%20island&SiteNameDisplay=Farne+Islands+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=5>

<sup>150</sup> <http://publications.naturalengland.org.uk/publication/4521874151178240>

- ▶ the supporting processes on which the habitats of the qualifying features rely;
- ▶ the population of each of the qualifying features; and
- ▶ the distribution of the qualifying features within the site.

Figure F-36 Farne Islands SPA in relation to Rampion 2



## Appendix G     HRA integrity matrices

# 1. Integrity matrices

This document presents the 36 integrity matrices produced to support the Habitats Regulations Assessment required for the proposed Rampion 2 offshore wind farm.

## 1.1 Background and guidance

- 1.1.1 The Planning Inspectorate (PINS) recommends<sup>1</sup> that matrices are completed and submitted alongside Development Consent Order (DCO) applications. Such matrices are required for all European sites where a Likely Significant Effect could not be ruled out at the previous, Screening stage.
- 1.1.2 The Integrity Matrices presented in this document have been produced accordingly and should be read in conjunction with the Report to Inform the Appropriate Assessment for the proposed Rampion 2 Offshore Wind Farm (Rampion 2) (RED, 2020).
- 1.1.3 The matrices are based on the template provided in PINS Advice Note 10 (Appendix 2: template for integrity matrices). Evidence for Adverse Effects on the Integrity of European sites (AEOI) is detailed within the tables to the matrices.
- 1.1.4 The information provided is intended to assist the Examining Authority and Competent Authority by summarising assessment conclusions and signposting evidence contained in other application documents. No new assessment information is introduced in the matrices.

## 1.2 Matrix key

- 1.2.1 Evidence for the conclusions reached on integrity is detailed with reference to the key below.

Key to the Integrity Matrices	
✓	Adverse Effects on [European] Site Integrity (AEOI) cannot be excluded
Xa	Adverse Effects on [European] Site Integrity (AEOI) can be excluded
C	Construction
O	Operation (which refers to the Operational and Maintenance phase)
D	Decommissioning
	Where effects are not applicable to a particular feature they are greyed out.

<sup>1</sup> The Planning Inspectorate's Advice Note 10 Habitat Regulations Assessment relevant to nationally significant infrastructure projects. Version 8. November 2017

## 1.3 European sites

1.3.1 In accordance with Advice Note 10, the European sites included within the Appropriate Assessments are listed below.

### Contents

Matrix / page no		European site	Matrix / page no		European site
<b>1</b>	p9	Arun Valley Ramsar	<b>19</b>	p50	Littoral seino-marin (FR) SPA
<b>2</b>	p10	Arun Valley SPA	<b>20</b>	p52	Foulness (Mid-Essex Coast Phase 5 SPA
<b>3</b>	p14	Pagham Harbour SPA	<b>21</b>	p54	Falaise du Bessin Occidental SPA
<b>4</b>	p14	Pagham Harbour Ramsar	<b>22</b>	p56	Alderney West Coast and Burhou Islands Ramsar
<b>5</b>	p17	The Mens SAC	<b>23</b>	p58	Alde-Ore Estuary (UK) SPA
<b>6</b>	p199	Portsmouth Harbour SPA	<b>24</b>	p60	Alde-Ore Estuary (UK) Ramsar
<b>7</b>	p21	Portsmouth Harbour Ramsar	<b>25</b>	p62	The Wash SPA
<b>8</b>	p22	River Itchen SAC	<b>26</b>	p66	Breydon Water SPA
<b>9</b>	p24	Solent Maritime SAC	<b>27</b>	p68	Greater Wash SPA
<b>10</b>	p27	South Wight Maritime SAC	<b>28</b>	p70	North Norfolk Coast SPA
<b>11</b>	p29	Solent and Isle of Wight lagoons SAC	<b>29</b>	p72	North Norfolk Coast Ramsar
<b>12</b>	p29	Dungeness, Romney Marsh and Rye Bay SPA	<b>30</b>	p74	Côte de Granit Rose-Sept Iles SPA
<b>13</b>	p31	Solent and Dorset Coast SPA	<b>31</b>	p78	Grassholm SPA

Matrix / page no	European site	Matrix / page no	European site
14 p36	Chichester & Langstone Harbours Ramsar	32 p79	Flamborough and Filey Coast SPA
15 p38	Chichester & Langstone Harbours SPA	33 p83	Northumbria Coast SPA
16 p46	Solent and Southampton Water SPA	34 p84	Northumbria Coast Ramsar
17 p46	Solent and Southampton Water Ramsar	35 p85	Coquet Island SPA
18 p47	Medway Estuary and Marshes SPA	36 p88	Farne Islands SPA

## 1.4 Effects considered

- 1.4.1 The potential effects on all the European sites considered, also need to be detailed within the submitted information to support the Report to Inform the Appropriate Assessment for the Habitats Regulation Assessment (HRA) of Rampion 2. These effects are set out in **Table 1-1**.

Table 1-1 The potential effects on all the European sites considered

Designation	Effects described in submission information	Presented in screening matrices as
Effects considered within the Integrity Matrices for wetland or over-wintering birds at the site		
Arun Valley Ramsar Arun Valley SPA	Additional mortality due to collisions with WTGs at offshore wind farm sites	Collison risk (migration) Noise and vibration Changes in hydrology Fragmentation of habitats Land take /cover change In-combination
Effects considered within the Integrity Matrices for wetland birds to which potential connectivity is via species on migration only.		
Pagham Harbour Ramsar Portsmouth Harbour Ramsar Portsmouth Harbour SPA Chichester and Langstone Harbours Ramsar Solent and Southampton Water Ramsar	Additional mortality due to collisions with WTGsin offshore wind farm sites	Collison risk (migration) In-combination effects
Effects considered within the Integrity Matrices for Barbastelle bat		
The Mens SAC		Fragmentation or severance of habitats Increased light levels In-combination effects
Effects considered within the Integrity Matrices for migratory fish		
River Itchen SAC	Interference to passage of migratory fish deflected away from migration routes. Behavioural disturbance /Physical injury Noise generated by the Proposed Development Together with noise sources generated by other plans and projects	Underwater noise In-combination effects



Designation	Effects described in submission information	Presented in screening matrices as
Effects considered within the Integrity Matrices for sites with both wetland and seabird features		
Pagham Harbour SPA		Collision risk (migration) Collision risk (breeding) Changes in prey availability and behaviour Indirect impacts through the effects on prey species In-combination
Chichester and Langstone Harbours SPA Solent and Southampton Water SPA	Additional mortality due to collisions with wind turbine generators (WTGs) in offshore wind farm sites.  Potential barrier effect as a consequence of array area being between breeding and foraging areas.  Potential consequent mortality resulting from displacement due to activities associated with construction and demolition phases and from the array area during operation and maintenance phase.	Collision risk (breeding) Collision risk (migration) Barrier effects Disturbance/displacement
Effects considered within the Integrity Matrices for offshore ornithology within range of potential direct effects		
Solent and Dorset Coast SPA	Potential consequent mortality resulting from displacement due to activities associated with construction and demolition phases and from the array area during operation and maintenance phase.	Disturbance/displacement
Dungeness, Romney Marsh & Rye Bay SPA	Additional mortality due to collisions with WTGs in offshore wind farm sites.  Potential consequent mortality resulting from displacement due to activities associated with construction and demolition phases and from the array area during operation and maintenance phase.	Collision risk (breeding) Collision risk (migration) Disturbance/displacement
Effects considered within the Integrity Matrices for offshore ornithology with potential pathway to LSE only in the breeding season		
Littoral seino-marin (FR) SPA Falaise du Bessin Occidental SPA	Additional mortality due to collisions with WTG in offshore wind farm sites.	Collision risk (breeding) In-combination
Effects considered within the Integrity Matrices for offshore ornithology with potential connectivity via migrating species only		
Medway Estuary and Marshes SPA Foulness (Mid-Essex Coast Phase 5 SPA	Additional mortality due to collisions with WTGs in offshore wind farm sites.	Collision risk (migration) In-combination

Designation	Effects described in submission information	Presented in screening matrices as
Alde-Ore Estuary (UK) SPA Alde-Ore Estuary (UK) Ramsar The Wash SPA Breydon Water SPA Greater Wash SPA North Norfolk Coast SPA North Norfolk Coast Ramsar Northumbria Coast SPA Northumbria Coast Ramsar Coquet Island SPA		
Effects considered within the Integrity Matrices for offshore ornithology with features vulnerable to collision and displacement		
Farne Islands SPA	Additional mortality due to collisions with WTGs in offshore wind farm sites.  Potential consequent mortality resulting from displacement due to activities associated with construction and demolition phases and from the array area during operation and maintenance phase.	Collision risk (migration) Disturbance/displacement (migration)
Côte de Granit Rose-Sept Iles SPA Alderney West Coast & Burhou Islands Ramsar	Additional mortality due to collisions with WTGs in offshore wind farm sites.  Potential consequent mortality resulting from displacement due to activities associated with construction and demolition phases and from the array area during operation and maintenance phase.	Collision risk (migration) Disturbance/displacement In-combination
Flamborough & Filey Coast SPA	Additional mortality due to collisions with WTGs in offshore wind farm sites.  Potential consequent mortality resulting from displacement due to activities associated with construction and demolition phases and from the array area during operation and maintenance phase.	Collision risk (migration) Disturbance/displacement (migration) Disturbance/displacement (Breeding) Collision risk (breeding) In-combination
Grassholm SPA	Additional mortality due to collisions with WTGs in offshore wind farm sites.	Collision risk (migration) Disturbance/displacement (migration)
Solent Maritime SAC South Wight Maritime SAC Solent & Isle of Wight lagoons SAC	Effects (e.g., erosion or accretion) on habitats or processes supporting habitats from changes in the hydrodynamic regime and/or coastal morphology (i.e., waves, currents and local sediment processes).	Physical processes Suspended sediment and deposition Invasive Non-Native Species

Designation	Effects described in submission information	Presented in screening matrices as
	<p>Habitat modification and/ or smothering of benthic communities due to suspended sediment dispersion and deposition.</p> <p>Effects associated with non-native marine species anthropogenically introduced or spread around new habitats by the Proposed Development.</p> <p>Effects associated with introduction of hard substrates and man-made underwater structures that act as local vectors for the spread of marine introduced species.</p> <p>Changes to water quality associated with the introduction of harmful contaminants to the environment.</p> <p>The above effects combined with similar effects with other plans and projects acting in-combination.</p>	<p>Pollution</p> <p>In-combination</p>

2. Matrix 1: Arun Valley Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:				Arun Valley (UK) Ramsar											
EU Code:				UK11004											
Distance to Proposed Development				2.8km from onshore cable corridor											
Likely Effects of Proposed Development															
Effect	Land take / cover change			Fragmentation of habitats			Noise and vibration			Collision risk (migration)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 6 Northern pintail <i>Anas acuta</i>	Xa		Xb	Xc		Xb	Xd		Xb				Xf	Xg	Xb
Ramsar criterion 5 Assemblage of wintering waterfowl of international importance	Xa		Xb	Xc		Xb	Xd		Xb				Xf	Xg	Xb
Ramsar criterion 2 Seven wetland invertebrate species listed in British Red Data Book															
Ramsar criterion 2 Four nationally rare and four nationally scarce plant species															
Ramsar criterion 3 Particularly diverse and rich ditch flora															

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# Matrix 1: Arun Valley Ramsar (cont.)

## Evidence supporting conclusions

Evidence for Integrity Matrix 1, supporting conclusions for Arun Valley Ramsar

Matrix 1: Arun Valley Ramsar (cont. from previous page)	
Xa	<p><b>Northern pintail / wintering waterfowl – land take / land cover change – Construction.</b> No pintail, shoveler, teal, or ruff have been recorded using functionally linked land within or close to the PEIR Assessment Boundary as it crosses the Arun Valley floodplain during surveys between September 2020 and March 2021; wigeon have been recorded using waterbodies at a single location approximately 100m from the PEIR Assessment Boundary on a number of occasions. Despite these survey results it is acknowledged that all species may use habitats within the PEIR Assessment Boundary on occasion. However, the small extent of the active construction area (noting the cable ducts are installed in sections, as opposed to in a single operation across the whole cable route), the limited potential for temporal overlap due to the implementation of environmental measure C-117 (<b>Table 6.1</b> in the Rampion 2 HRA), the reinstatement of the pasture and arable fields within which construction takes place (C-103 (<b>Table 6.1</b> in the Rampion 2 HRA)) and the trenchless crossing of the River Arun (thereby protecting bankside and foreshore habitats), provide assurance that any interactions between construction works with pintail and the wintering waterfowl assemblage from the Arun Valley Ramsar site will be limited and not great enough to alter the fitness of individual birds, and hence the population associated with the designation. No AEol are therefore anticipated.</p>
Xb	<p>Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of no AEol is appropriate.</p>
Xc	<p><b>Northern pintail / wintering waterfowl - fragmentation of habitats – Construction.</b> No pintail, shoveler, teal or ruff have been recorded using functionally linked land within or close to the PEIR Assessment Boundary as it crosses the Arun Valley floodplain during surveys between September 2020 and March 2021; wigeon have been recorded using waterbodies at a single location approximately 100m from the PEIR Assessment Boundary on a number of occasions. Despite these survey results it is acknowledged that all species listed may still be present within or close to the PEIR Assessment Boundary on occasion. The presence of construction activity could result in pintail and the wintering waterfowl assemblage being prevented from crossing the working area to reach other available foraging habitat, thereby limiting resources available. However, the small extent of the active construction area (noting the cable ducts are installed in sections, as opposed to in a single operation across the whole cable route), the limited potential for temporal overlap due to the implementation of environmental measure C-117 (<b>Table 6.1</b> in the Rampion 2 HRA), the reinstatement of the pasture and arable fields within which construction takes place (C-103 (<b>Table 6.1</b> in the Rampion 2 HRA)) and the presence of existing settlements and roads (i.e. other forms of disturbance) that are regularly crossed by these species provide assurance that any interactions between construction works and designated features of the Arun Valley Ramsar site will be limited and not great enough to alter the fitness of individual birds, and hence the population associated with the designation. Therefore, no potential for AEol is identified.</p>
Xd	<p><b>Northern pintail / wintering waterfowl – Noise and vibration (disturbance) – Construction.</b> No pintail, shoveler, teal or ruff have been recorded using functionally linked land within or close to the PEIR Assessment Boundary as it crosses the Arun Valley floodplain during surveys between September 2020 and March 2021; wigeon have been recorded using waterbodies at a single location approximately 100m from the PEIR Assessment Boundary on a number of occasions. Despite these survey results it is acknowledged that all species described may still be present within or close to the PEIR Assessment Boundary on occasion. The presence of construction activity could result in individual birds being disturbed, but the small extent of the active construction area (noting the cable ducts are installed in sections, as opposed to in a single operation across the whole cable route) and the limited potential for temporal overlap due to the implementation of environmental measure C-117 (<b>Table 6.1</b> in the Rampion 2 HRA) provide assurance that detectable changes in energy intake, energy expenditure and therefore deterioration of the fitness of individual birds would not be realised. This being due to the opportunity for any birds to relocate to other suitable foraging habitat with very short movements (both on foot and via short flights) to other suitable agricultural fields in the immediate vicinity. In conclusion, it is found there is no potential for an AEol.</p>

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Matrix 1: Arun Valley Ramsar (cont.)

Evidence Supporting Conclusions

Evidence for Integrity Matrix 1, supporting conclusions for Arun Valley Ramsar

Xe	<p><b>Northern pintail / wintering waterfowl - Collision risk on migration – operation and maintenance.</b> The collision risk to all waterbird species is assessed in Section 7.6 of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that no or very few individuals of any species per annum would be subject to collision consequent mortality from this SPA screened in for Rampion 2. Therefore, the loss of none or well under one individual of any species per annum represents a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for any waterbird species. There is, therefore, no adverse effect as a result of collision risk to these waterbird species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to any waterbird species. Therefore, no potential for AEol is identified.</p>
Xf	<p><b>Northern pintail / wintering waterfowl - in-combination – Construction.</b> No in-combination effects associated with construction are expected as there are very limited other proposed plans or projects that lie within the floodplain of the Arun Valley. Works associated with the flood defence works at Climping Beach could disturb some of the same species as listed within the Ramsar information sheet for the Arun Valley, however as this location is over 12km from the designation boundary it is unlikely that there is a relationship between the two areas. Further, these works are likely to be completed prior to construction works for the Proposed Development commencing. The construction of the A-27 Arundel By-pass would result in the loss of functionally linked land within the floodplain of the Arun Valley. However, this would represent a small proportion of the available functionally linked land and the addition of some temporary losses associated with the Proposed Development would be negligible, particularly as the losses are both temporary and timed to occur (where practicable) outside of the winter period. A conclusion of no AEol is made on this evidence.</p>
Xg	<p><b>Northern pintail / wintering waterfowl Northern pintail - In-combination — operation and maintenance.</b> For the assessment of all waterbird species alone for this designated site and its features, it was concluded that there would be there would be no effect or no detectable change to baseline mortality as a result of Rampion 2, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on these waterbird species and make no detectable contribution to an in-combination effect resulting from collision risk to these waterbird species at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of no AEol is appropriate.</p>

End of Matrix 1

3. Matrix 2: Arun Valley Special Protection Area (SPA). HRA Integrity Matrix for Rampion 2

Name of European site:	Arun Valley (UK) Special Protection Area											
EU Code:	UK9020281											
Distance to Proposed Development	2.8km from onshore cable corridor											
Likely Effects of Proposed Development												
Effect	Land take/cover change			Fragmentation of habitats			Noise and vibration			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Bewick's swan <i>Cygnus columbianus</i>	Xa		Xb	Xc		Xb	Xd		Xb	Xe		Xe
Non-breeding waterfowl assemblage including Shoveler <i>Spatula clypeata</i> ,, Eurasian teal <i>Anas crecca</i> , Wigeon, <i>Mareca penelope</i> , and Bewick's swan <i>Cygnus columbianus bewickii</i>	Xa		Xb	Xc		Xb	Xd		Xb	Xe		Xe

Evidence Supporting Conclusions

Evidence for Integrity Matrix 2, supporting conclusions for Arun Valley SPA

Matrix 2: Arun Valley SPA

Xa	<b>Bewick's swan / non-breeding waterbird assemblage – land take / land cover change – Construction.</b> No Bewick's swan, shoveler or teal have been recorded using functionally linked land within or close to the PEIR Assessment Boundary as it crosses the Arun Valley floodplain during surveys between September 2020 and March 2021; wigeon have been recorded using waterbodies at a single location approximately 100m from the PEIR Assessment Boundary on a number of occasions. Despite these survey results it is acknowledged that all species may use habitats within the PEIR Assessment Boundary on occasion. However, the small extent of the active construction area (noting the cable ducts are installed in sections, as opposed to in a single operation across the whole cable route), the limited potential for temporal overlap due to the implementation of environmental measure C-117 ( <b>Table 6.1</b> in the Rampion 2 HRA), the reinstatement of the pasture and arable fields within which construction takes place (C-103 ( <b>Table 6.1</b> in the Rampion 2 HRA)) and the trenchless crossing of the River Arun (thereby protecting bankside and foreshore habitats), provide assurance that any interactions between construction works Bewick's swan and the non-breeding waterbird assemblage from the Arun Valley SPA will be limited and not great enough to alter the fitness of individual birds, and hence the population associated with the designation. Therefore, a finding of no AEOI is appropriate.
Xb	Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of no AEOI is appropriate.

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Matrix 2: Arun Valley SPA

Xc	<p><b>Bewick’s swan / non-breeding waterbird assemblage - fragmentation of habitats – Construction.</b> No Bewick’s swan, shoveler and teal have been recorded using functionally linked land within or close to the PEIR Assessment Boundary as it crosses the Arun Valley floodplain during surveys between September 2020 and March 2021; wigeon have been recorded using waterbodies at a single location approximately 100m from the PEIR Assessment Boundary on a number of occasions. Despite these survey results it is acknowledged that all species listed may still be present within or close to the PEIR Assessment Boundary on occasion. The presence of construction activity could result in Bewick’s swan and the non-breeding waterbird assemblage being prevented from crossing the working area to reach other available foraging habitat, thereby limiting resources available. However, the small extent of the active construction area (noting the cable ducts are installed in sections, as opposed to in a single operation across the whole cable route), the limited potential for temporal overlap due to the implementation of environmental measure C-117 (<b>Table 6.1</b> in the Rampion 2 HRA), the reinstatement of the pasture and arable fields within which construction takes place (C-103 (<b>Table 6.1</b> in the Rampion 2 HRA)) and the presence of existing settlements and roads (i.e. other forms of disturbance) that are regularly crossed by these species provide assurance that any interactions between construction works and designated features of the Arun Valley SPA will be limited and not great enough to alter the fitness of individual birds, and hence the population associated with the designation. No potential for an AEoI is identified.</p>
Xd	<p><b>Bewick’s swan / non-breeding waterbird assemblage – Noise and vibration (disturbance) – Construction.</b> No Bewick’s swan, shoveler or teal have been recorded using functionally linked land within or close to the PEIR Assessment Boundary as it crosses the Arun Valley floodplain during surveys between September 2020 and March 2021; wigeon have been recorded using waterbodies at a single location approximately 100m from the PEIR Assessment Boundary on a number of occasions. Despite these survey results it is acknowledged that all species described may still be present within or close to the PEIR Assessment Boundary on occasion. The presence of construction activity could result in individual birds being disturbed, but the small extent of the active construction area (noting the cable ducts are installed in sections, as opposed to in a single operation across the whole cable route) and the limited potential for temporal overlap due to the implementation of environmental measure C-117 (<b>Table 6.1</b> in the Rampion 2 HRA) provide assurance that detectable changes in energy intake, energy expenditure and therefore deterioration of the fitness of individual birds would not be realised. This being due to the opportunity for any birds to relocate to other suitable foraging habitat with very short movements (both on foot and via short flights) to other suitable agricultural fields in the immediate vicinity. On this evidence, a finding that no AEoI would result is determined.</p>
Xe	<p><b>Bewick’s swan / non-breeding waterbird assemblage - in-combination – Construction.</b> No in-combination effects associated with construction are expected as there are very limited other proposed plans or projects that lie within the floodplain of the Arun Valley. Works associated with the flood defence works at Climping Beach could disturb some of the same species as listed within the SPA designation information for the Arun Valley, however as this location is over 12km from the designation boundary it is unlikely that there is a relationship between the two areas. Further, these works are likely to be completed prior to construction works for the Proposed Development commencing. The construction of the A-27 Arundel by-pass would result in the loss of functionally linked land within the floodplain of the Arun Valley. However, this would represent a small proportion of the available functionally linked land and the addition of some temporary losses associated with the Proposed Development would be negligible, particularly as the losses are both temporary and timed to occur (where practicable) outside of the winter period. No potential for AEoI has been identified.</p>

End of Matrix 2

4. Matrix 3: Pagham Harbour Special Protection Area. HRA Integrity Matrix for Rampion 2

Name of European site:	Pagham Harbour (UK) SPA														
EU Code:	UK9012041														
Distance to Proposed Development	15.3km from array, 9.2km to both offshore and onshore cable route														
Likely Effects of Proposed Development															
	Collision risk (breeding)			Collision risk (migration)			Changes in prey availability & behaviour			Indirect impacts via effects on prey			In-combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern <i>Sterna hirundo</i>		Xa												Xb	
Ruff <i>Calidris pugnax</i>					Xc									Xd	
Little tern <i>Sternula albifrons</i>															
Dark-bellied brent goose <i>Branta bernicla</i>					Xe									Xf	

Evidence Supporting Conclusions

Evidence for Integrity Matrix 3, supporting conclusions for Pagham Harbour SPA

Matrix 3: Pagham Harbour SPA

Common tern

- Xa

**Common tern - collision during breeding season – operation and maintenance.** The collision risk to common terns during the breeding bio-seasons, is assessed in **paragraph 7.6.16** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero individuals during the breeding bio-season would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern. A finding of no AEoI is appropriate.
- Xb

**Common tern - collision risk during breeding season- Proposed Development in-combination — operation and maintenance.** The collision risk to common terns during the breeding bio-seasons, is assessed in **paragraph 7.6.16** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero individuals during the breeding bio-season would be subject to collision consequent mortality from Rampion 2. Therefore, it can be concluded that Rampion 2 will have no adverse effect on common tern and make no contribution to an in-combination effect resulting from collision risk to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is appropriate.

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Matrix 3: Pagham Harbour SPA (cont.)

Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 3, supporting conclusions for Pagham Harbour SPA

Matrix 3: Pagham Harbour SPA (cont. from previous page)

Ruff

- Xc

**Ruff - collision risk on migration - Proposed Development alone – operation and maintenance.** The collision risk to all waterbird species is assessed in **paragraph 7.6.28** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. The risk-based Screening process undertaken for Rampion 1 (APEM, 2013) screened out ruff from detailed CRM on the grounds that impacts are likely to be minimal and lower than for species that were screened in. Given that the impacts on species screened in are low or trivial, and the likely impacts on ruff lower still, any impact is likely to be negligible and any potential effect would not be considered to be the cause of detectable change to the baseline mortality of this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to ruff. A finding of no AEol is appropriate.
- Xd

**Ruff - collision risk on migration - Proposed Development in- combination – operation and maintenance.** For the assessment of ruff alone for this designated site and feature, it was concluded that there would be no detectable change to baseline mortality as a result of Rampion 2, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on ruff and make no detectable contribution to an in-combination effect resulting from collision risk to ruff at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is appropriate.

Dark-bellied brent goose

- Xe

**Dark-bellied brent goose – Collision risk on migration - alone – operation and maintenance.** The collision risk to all waterbird species, including dark-bellied brent goose, is assessed in **paragraph 7.6.31** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.11) individual (with a range of between 0.05 and 0.22 birds) per annum would be subject to collision consequent mortality from all four SPA populations screened in for Rampion 2. The combined populations of dark-bellied brent geese from the four SPA sites totals 29,960 individuals. The baseline mortality rate for brent goose is 10% (Robinson, 2005), which would mean 2,996 SPA individuals would be lost from this populations per annum. Therefore, the loss of under one (0.11) individual (with a range of between 0.05 and 0.22 birds) per annum represents a 0.001% increase in mortality relative to baseline mortality, which is a level of effect that would not be considered to be significant and not be a detectable change to the overall annual natural baseline mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to dark-bellied brent goose. A finding of no AEol is appropriate.
- Xf

**Dark-bellied brent goose -- Collision risk on migration In-combination — operation and maintenance.** For the assessment of dark-bellied brent goose alone for this designated site and feature, it was concluded that there would be no detectable change to baseline mortality as a result of Rampion 2, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on dark-bellied brent goose and make no detectable contribution to an in-combination effect resulting from collision risk to dark-bellied brent goose at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. On this evidence, it is concluded that there is no potential for an AEol to result from this interaction.

End of Matrix 3

5. Matrix 4: Pagham Harbour (UK) Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:	Pagham Harbour (UK) Ramsar					
EU Code:	UK11052					
Distance to Proposed Development	15.3km from array, 9.2km to both offshore and onshore cable route					
Likely Effects of Proposed Development						
Effect	Collision risk (migration)			In-combination		
Stage of Development	C	O	D	C	O	D
Ramsar criterion 6: Dark-bellied brent goose, <i>Branta bernicla</i>		Xa			Xb	

Evidence Supporting Conclusions

Evidence for Integrity Matrix 4, supporting conclusions for Pagham Harbour Ramsar

Matrix 4: Pagham Harbour Ramsar

Dark-bellied Brent goose

Xa	<p><b>Dark-bellied brent goose - collision risk on migration – Proposed Development alone - operation and maintenance.</b> The collision risk to all waterbird species, including dark-bellied brent goose, is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.11) individual (with a range of between 0.05 and 0.22 birds) per annum would be subject to collision consequent mortality from all four Ramsar populations screened in for Rampion 2. The combined populations of dark-bellied brent geese from the four Ramsar sites totals 29,452 individuals. The baseline annual mortality rate for brent goose is 10% (Robinson, 2005), which would mean 2,945 Ramsar individuals would be lost from this populations per annum. Therefore, the loss of under one (0.11) individual (with a range of between 0.05 and 0.22 birds) per annum represents a 0.001% increase in mortality relative to baseline mortality, which is a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for this species. There is, therefore, no potential for an adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this site as a consequence of potential collision risk to dark-bellied brent goose. No AEol is concluded.</p>
Xb	<p><b>Dark-bellied brent goose / -- Collision risk on migration – In-combination – operation and maintenance.</b> For the assessment of dark-bellied brent goose alone for this designated site and feature, it was concluded that there would be no detectable change to baseline mortality as a result of Rampion 2, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on dark-bellied brent goose and make no detectable contribution to an in-combination effect resulting from collision risk to dark-bellied brent goose at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. No AEol is concluded.</p>

End of Matrix 4

6. Matrix 5: The Mens Special Conservation Area (SAC). HRA Integrity Matrix for Rampion 2

Name of European site:							The Mens (UK) SAC					
EU Code:							UK0012716					
Distance to Proposed Development							11 km from onshore cable corridor					
Likely Effects of Proposed Development												
Effect	Land take / land cover change			Fragmentation or severance of habitats			Increased light levels			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Barbastelle bat <i>Barbastella barbastellus</i>	Xa		Xb	Xc		Xb	Xd		Xb	Xe		Xb
Atlantic acidophilous beech forests with Ilex and sometimes Taxus in the shrub layer <i>Quercion robori-petraeae</i> or <i>Ilici-Fagenion</i>												

Evidence Supporting Conclusions

Evidence for Integrity Matrix 5, supporting conclusions for The Mens SAC

Matrix 5: The Mens SAC	
Barbastelle bat	
Xa	<b>Barbastelle bat - Land take / land cover change – Construction.</b> There is 35ha of area within the PEIR Assessment Boundary that overlaps with the 12km buffer placed around The Mens SAC by the draft Sussex Bat Protocol (SDNPA & Natural England, 2018). This 35ha is dominated by habitats that are sub-optimal for barbastelle bat (e.g., open arable fields) and represents only a very small proportion of the habitat available to these wide-ranging bats. Further, around 50% or more of the area within the PEIR Assessment Boundary would not be subject to any works, its size and layout currently reflecting the stage of Proposed Development design, and any losses would be temporary and reinstated rapidly (C-103 ( <b>Table 6.1</b> in the Rampion 2 HRA)). It can therefore be concluded that there would be no AEOI on barbastelle bats of The Mens SAC.
Xb	Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of no AEOI is appropriate.

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# Matrix 5: The Mens SAC (cont.)

## Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 5, supporting conclusions for The Mens SAC

### Matrix 5: The Mens SAC (cont. from previous page)

Barbastelle bat	
Xc	<b>Barbastelle bat - fragmentation of habitats - construction</b> – The active construction works could fragment the landscape for barbastelle bats as they may avoid crossing excavations. Further, recently planted hedgerows and treelines that will be established following the installation of cables are likely to be less attractive to commuting barbastelle bats, than more mature versions of these habitats. However, the disruptions to these linking habitats will be localised, leaving other areas of similar habitats intact, and restricted to between 30 and 50m in length; a distance over which barbastelle bats are likely to regularly traverse across more open ground (a situation that is inevitable if individual bats want to move between The Mens SAC and the PEIR Assessment Boundary when within 12km). Further, areas that connect habitats north and south of the Proposed Development will be maintained intact as they will be crossed using a trenchless technique (i.e., Sullington Hill). It can therefore be concluded that there would be no AEOI on barbastelle bats of The Mens SAC.
Xd	<b>Barbastelle bat - increased light levels (disturbance) - construction.</b> The presence of artificial light could displace barbastelle bats from areas within which they might commute or forage. However, lighting will only be used in specific local areas such as at HDD compounds (where 24-hour working may be necessary) and at construction compounds (for security purposes). Although there is allowance for temporary movable lighting to be used for normal construction activities, the need for this will be highly seasonally dependent (given the typical specified working hours of 07:00 to 18:00). Therefore, the amount of habitat that may be lit will be small, localised and temporary. Further the lighting design will be designed sensitively following best practice (C-105 (Table 6.1 in the Rampion 2 HRA)). Given the small areas affected by increased light levels, their temporary nature and the design guidance that will be followed no AEol on barbastelle bats of The Mens SAC is predicted.
Xe	<b>Barbastelle bat - in-combination</b> - No plans or projects have been identified that would result in in-combination effects on the barbastelle bats of The Mens SAC associated with the Proposed Development.

End of Matrix 5



7. Matrix 6: Portsmouth Harbour Special Protection Area. HRA Integrity Matrix for Rampion 2

Name of European site:	Portsmouth Harbour (UK) SPA						
EU Code:	UK9011051						
Distance to Proposed Development	36.1km to array, 34.1km to both offshore and onshore cable route						
Likely Effects of Proposed Development							
Effect	Collision risk (migration)			In-combination			
Stage of Development	C	O	D	C	O	D	
Red-breasted merganser <i>Mergus serrator</i>		Xa			Xb		
Black-tailed godwit <i>Limosa</i>		Xa			Xb		
Dunlin <i>Calidris alpina</i>		Xa			Xb		
Dark-bellied brent goose <i>Branta bernicla</i>		Xa			Xb		

Evidence Supporting Conclusions

Evidence for Integrity Matrix 6, supporting conclusions for Portsmouth Harbour SPA

Matrix 6: Portsmouth Harbour SPA	
Waterbird species	
Xa	<p><b>Collison risk on migration (NB) - alone – operation and maintenance.</b> The collision risk to all waterbird species is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that no or very few individuals of any species per annum would be subject to collision consequent mortality from this SPA screened in for Rampion 2. For the assessment of all waterbird features of this designated site, it was concluded that there would be no detectable change to baseline mortality as a result of Rampion 2. Therefore, the loss of none or well under one individual of any species per annum represents a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for any waterbird species. There is, therefore, no adverse effect as a result of collision risk to these waterbird species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to any waterbird species. A finding of no AEoI is concluded.</p>

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# Matrix 6: Portsmouth Harbour SPA (cont.)

## Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 6, supporting conclusions for Portsmouth Harbour SPA

Xb	<p><b>Collision risk on migration (NB) – Proposed Development in-combination – operation and maintenance.</b> For the assessment of all waterbird species alone for this designated site and it's features, it was concluded that there would be there would be no effect or no detectable change to baseline mortality as a result of Rampion 2, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on these waterbird species and make no detectable contribution to an in-combination effect resulting from collision risk to these waterbird species at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is concluded.</p>
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End of Matrix 6

8. Matrix 7: Portsmouth Harbour Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:	Portsmouth Harbour (UK) Ramsar								
EU Code:	UK11055								
Distance to Proposed Development	36.1km to array, 34.1km to both offshore and onshore cable route								
Likely Effects of Proposed Development									
Effect				Collision risk			In-combination		
Stage of Development				C	O	D	C	O	D
Dark-bellied brent goose <i>Branta bernicla</i>					Xa			Xb	

Evidence Supporting Conclusions

Evidence for Integrity Matrix 7, supporting conclusions for Portsmouth Harbour Ramsar

Matrix 7: Portsmouth Harbour Ramsar

Dark-bellied brent goose

Xa	<b>Dark-bellied brent goose - collision risk on migration – Proposed Development alone – operation and maintenance.</b> The collision risk to all waterbird species, including dark-bellied brent goose, is assessed in <b>Section 7.6</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.11) individual (with a range of between 0.05 and 0.22 birds) per annum would be subject to collision consequent mortality from all four Ramsar populations screened in for Rampion 2. The combined populations of dark-bellied brent geese from the four Ramsar sites totals 29,452 individuals. The baseline mortality rate for brent goose is 10% (Robinson, 2005), which would mean 2,945 Ramsar individuals would be lost from this populations per annum. Therefore, the loss of under one (0.11) individual (with a range of between 0.05 and 0.22 birds) per annum represents a 0.001% increase in mortality relative to baseline mortality, which is a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to dark-bellied brent goose. A determination of no AEol is concluded.
Xb	<b>Dark-bellied brent goose - risk on migration – Proposed Development in-combination – operation and maintenance.</b> For the assessment of dark-bellied brent goose alone for this designated site and feature, it was concluded that there would be no detectable change to baseline mortality as a result of Rampion 2, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on dark-bellied brent goose and make no detectable contribution to an in-combination effect resulting from collision risk to dark-bellied brent goose at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A determination of no AEol is concluded.

End of Matrix 7

9. Matrix 8: River Itchen Special Area Conservation (SAC). HRA Integrity Matrix for Rampion 2

Name of European site:				River Itchen (UK) SAC					
EU Code:				UK0012599					
50.5 km to mouth of the Southampton Water (the estuary connecting River Itchen to marine environment)									
Likely Effects of Proposed Development									
Effect				Underwater noise			In-combination		
Stage of Development				C	O	D	C	O	D
Atlantic salmon <i>Salmo sala</i>				Xa		Xb	Xc		Xc
Otter <i>Lutra lutra</i>									
White-clawed (or Atlantic stream) crayfish <i>Austropotamobius pallipes</i>									
Brook lamprey <i>Lampetra planeri</i>									
Bullhead <i>Cottus gobio</i>									
Southern damselfly <i>Coenagrion mercuriale</i>									
Water courses of plain to montane levels with Ranunculion fluitantis & Callitricho-Batrachion vegetation									

Evidence Supporting Conclusions (on next page)

Cont. on next page

Matrix 8: River Itchen SAC (cont.)

Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 8, supporting conclusions for River Itchen SAC

Matrix 8: River Itchen SAC (cont. from previous page)

Atlantic salmon

- Xa

**Atlantic salmon – underwater noise (physical harm and disturbance) - construction.** Atlantic salmon would not be attracted waters within the PEIR Assessment Boundary, present within it in significant numbers (as per the baseline reported in **Chapter 8: Fish and shellfish ecology**), or resident within or around the array. As such, the likelihood of exposure to lethal or injurious sounds levels (i.e., with 210m of the array see **Table 7-1** in the Rampion 2 HRA Error! Reference source not found.) is expected to be low and limited to sporadic, low numbers of passing migrants (at most). As such, mortalities and/or recoverable injuries due to exposure to underwater noise are not expected to manifest at levels that could (with reference to the site’s target objectives) undermine the viability of the SAC population. Recoverable injury or behavioural changes to Atlantic salmon resulting in barriers to migration due to exposure to underwater noise generated during construction are not expected as exposure to lethal or injurious sounds levels is expected to be low (and would only occur within 5.9 km of the PEIR Assessment Boundary (the noise modelling assessment is reported in full in **Chapter 8: Fish and shellfish ecology**). Furthermore, due to the intermittent nature of any potential noise impacts, significant effects on migration, including barrier effects, effects on coastal migrations or movement to/from coastal habitats during key migration periods are also not expected. Commitments relating to soft start / ramp up methods will also be adopted. Therefore, considering the Proposed Development alone there is no potential for an AEol
- Xb

**Atlantic salmon – underwater noise (physical harm and disturbance) - decommissioning.** Underwater noise effects during decommissioning are expected to be much less than pile driving and therefore impacts would be less than as assessed during the construction phase. The noise resulting from WTGWTG decommissioning employing abrasive cutting is unlikely to result in any injury, avoidance or significant disturbance. Some temporary minor disturbance might be experienced in the immediate vicinity . Therefore, considering the Proposed Development alone there is no potential for an AEol.
- Xc

**Atlantic salmon – underwater noise (physical harm and disturbance) - in-combination.** Further information on other developments will continue to be collected prior to the finalisation of the RIAA. On current information, with respect to mortality, injury, behavioural changes and auditory masking arising from noise and vibration one project, the Planned Perpetuus Tidal Energy Centre (PTEC) – a tidal energy demonstration facility – has been considered within the in-combination assessment as the only project within a 100km search area with the potential for spatial and temporal overlap. For both PTEC and Rampion 2, injury or mortality of Atlantic salmon as a result of underwater noise during construction would only be expected within the immediate vicinity of piling operations for relatively short durations. Therefore, even in-combination impacts on Atlantic salmon are not expected to be significant and underwater noise levels are unlikely to greatly exceed background levels. It is expected that fish will resume to normal behaviour and distribution within a short time period and as such, significant effects (in EIA terms) are also not expected to occur in terms of cumulative duration of exposure. There is, therefore, no potential for an AEol to the conservation objectives of the Atlantic salmon feature of River Itchen SAC in relation to effects (mortality, injury or behavioural changes) from underwater noise in-combination.

End of Matrix 8

10. Matrix 9: Solent Maritime Special Area Conservation. HRA Integrity Matrix for Rampion 2

Name of European site:				Solent Maritime (UK) SAC															
EU Code:				UK0030059															
Distance to Proposed Development				15.7km to array															
Likely Effects of Proposed Development																			
Effect	Suspended sediment & deposition			Physical habitat loss and disturbance			Invasive Non-Native Species			Physical processes			Pollution			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Sandbanks which are slightly covered by sea water all the time	Xa	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi	
Atlantic salt meadows <i>Glauco-Puccinellietalia maritimae</i>	Xa	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi	
Coastal lagoons	Xa	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi	
Mudflats and sandflats not covered by seawater at low tide	Xa	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi	
Estuaries	Xa	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi	
Salicornia and other annuals colonising mud and sand	Xa	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi	
Spartina swards <i>Spartinion maritimae</i>	Xa	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi	
Perennial vegetation of stony banks																			
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (“White dunes”)																			
Annual vegetation of drift lines																			
Desmoulin's whorl snail <i>Vertigo moulinsiana</i>																			

Evidence Supporting Conclusions (on next page)

Cont. on next page

Matrix 9: Solent Maritime SAC (cont.)

Evidence Supporting Conclusions

Evidence for Integrity Matrix 9, supporting conclusions for Solent Maritime SAC

Matrix 9: Solent Maritime SAC (cont. from previous page)	
×a	<b>Benthic / coastal habitats - suspended sediment – Proposed Development alone – construction</b> - Foundation and cable installation and seabed preparation (including sandwave clearance) would cause a temporary, localised increase in suspended sediment in benthic / coastal habitats. Prior analysis of sediment plumes resulting from comparable activities in the vicinity of Rampion 2 have shown that effects are expected to be short term and localised. Nonetheless, commitments have been secured to minimise seabed disturbance and reduce sediment suspension. In view of these commitments there is no potential for an AEoI from the Proposed Development alone during construction.
×b	<b>Benthic / coastal habitats - suspended sediment – Proposed Development alone – operation and maintenance</b> - Given that a determination of no AEoI was made for suspended sediment effects (of a greater magnitude) on benthic/coastal features during construction, and the limited capacity and intermittent nature of sediment dispersal during operation and maintenance works, no potential for an AEoI has been determined for the operational phase of the Proposed Development alone.
×c	<b>Benthic / coastal habitats – all pathways – Proposed Development alone – decommissioning.</b> Effects on benthic/coastal habitats during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of no AEoI is appropriate for the Proposed Development alone during decommissioning.
×d	<b>Benthic / coastal habitats - invasive non-native species – Proposed Development alone – construction</b> - During construction, invasive and non-native species could be accidentally imported to benthic/coastal habitats via vessels; through fouling on the hulls, or the release of organisms in ballast water, should any such vessels be used. Some protection against bio-invasion risk is provided by assumed compliance with international legislation, guidelines, and methodologies, whilst commitment measures to avoid the introduction or spread of INNS will also be adhered to. The commitments will ensure there is no potential for AEoI on benthic / coastal habitats as a result of invasive species during the construction of the Proposed Development alone.
×e	<b>Benthic / coastal habitats - invasive non-native species – Proposed Development alone – operation and maintenance</b> - The introduction of hard substrates and man-made underwater structures could act as local vectors (new habitats) for INNS. By creating new opportunities for organisms to settle, new substrates could encourage invasive species to spread and out-compete native species adversely affecting benthic/coastal habitats. Commitment measures to mitigate against and control invasive species will be incorporated into a Project Environmental Monitoring Programme (PEMP). The commitments will ensure there is no potential for AEoI on benthic / coastal habitats as a result of invasive species during the operation of the Proposed Development alone.
×f	<b>Benthic / coastal habitats – physical processes – operation and maintenance</b> - Potential effects on benthic / coastal habitats could result from changes to physical processes. For example, array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g., to wave action). The coastal processes assessment for Rampion 2’s PEIR ( <a href="#">Chapter 6: Coastal processes</a> ) has determined that the impacts on hydrodynamic and wave regimes from cumulative impacts would not result in any significant changes to sediment transport and consequently will not have any significant adverse impacts on benthic ecology. There is, therefore, no potential for an AEoI during the operation of the Proposed Development alone, or in-combination.
×g	<b>Benthic / coastal habitats - pollution – Proposed Development alone – Construction</b> - Potential contamination of benthic / coastal habitats resulting from the spillage of fluids, fuels or construction materials from vessels and or /machinery during construction may result in a degradation of water quality and / or uptake of contaminants resulting in deleterious effects. Due to the limited potential for effects and the application of pollution prevention Commitments, unplanned oil or chemical spillages from vessels would not result in an AEoI during the construction of the Proposed Development alone.

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# Matrix 9: Solent Maritime SAC (cont.)

## Evidence Supporting Conclusions

Evidence for Integrity Matrix 10, supporting conclusions for Solent Maritime SAC

Matrix 9: Solent Maritime SAC (cont. from previous page)	
×h	<b>Benthic / coastal habitats - pollution – Proposed Development alone – operation and maintenance</b> - The potential for pollution impacts on benthic / coastal habitats associated with accidental pollution events during the operation is associated with 33,390 vessel return trips per year over the 30-year design lifetime. A number of Commitments would reduce the risk to negligible levels. There is therefore no potential for AEol from the Proposed Development alone during its operation.
×i	<b>Benthic / coastal habitats - in-combination</b> - With reference to the conclusions of the alone assessments it is determined there is no realistic potential for in-combination effects from the Proposed Development together with other plans or projects for any of the three pathways considered. As all site features are located well beyond the secondary zone of influence for potential effects (15km) and given the requirement to adhere to best practice measures, the Commitments secured by the Applicant (for Rampion 2) (see <b>Section 6</b> of the Rampion 2 HRA) and that similar measures would be required for external developments, it is considered that there is no potential for suspended sediment, accidental spills or MINNS to contribute to AEol in combination.

End of Matrix 9



11. Matrix 10: South Wight Maritime SAC. HRA Integrity Matrix for Rampion 2

Name of European site:	South Wight Maritime (UK) SAC																	
EU Code:	UK0030061																	
Distance to Proposed Development	20.5km to Array																	
Likely Effects of Proposed Development																		
Effect	Suspended sediment and deposition			Physical habitat loss & disturbance			Invasive Non-Native Species			Physical processes			Pollution			In-combination		
Stage of Proposed Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Reefs	Xa	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi
Submerged or partially submerged sea caves	Xj	Xb	Xc				Xd	Xe	Xc		Xf		Xg	Xh	Xc	Xi	Xi	Xi
Vegetated sea cliffs of the Atlantic and Baltic Coasts																		

Evidence Supporting Conclusions

Evidence for Integrity Matrix 11, supporting conclusions for South Wight Maritime SAC

Matrix 10: South Wight Maritime SAC

Xa	<b>Benthic / coastal habitats - suspended sediment – Proposed Development alone – Construction</b> - Foundation and cable installation and seabed preparation (including sandwave clearance) would cause a temporary, localised increase in suspended sediment. The ‘submerged or partially submerged sea caves’ feature comprises mostly of cave systems located at the south western end of the Isle of Wight. The closest of these caves is 60.1 km from the closet boundary of the Proposed Development. The two/three caves on the south coast at the eastern end of the Isle are approximately 30 km from the array and offshore cable corridor. Based on distance and the predicted extents of any plumes, connectivity between the Proposed Development and the reefs and sea caves, is extremely limited. Neither features are considered particularly sensitive to suspended sediment. Adverse effects are therefore not anticipated. Therefore, there is no potential for an AEol from the Proposed Development alone during the construction phase.
Xb	<b>Benthic / coastal habitats - suspended sediment – Proposed Development alone – operation and maintenance</b> - The assessment of the potential effects from the dispersal of sediment during operation and maintenance mirrors that provided for the construction phase above. Adverse effects are not anticipated and therefore, there is no potential for an AEol from the Proposed Development alone during the operational phase.
Xc	<b>Benthic / coastal habitats – all pathways - Proposed Development during decommissioning.</b> Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, there is no potential for an AEol from the Proposed Development alone during the decommissioning phase.

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# HRA Integrity Matrix 10 South Wight Maritime (cont.)

## Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 10, supporting conclusions for South Wight Maritime SAC

### Matrix 10: South Wight Maritime SAC

Xd	<b>Benthic / coastal habitats - invasive non-native species – Proposed Development alone – construction</b> - During construction, invasive and non-native species could be accidentally imported to benthic/coastal habitats via vessels; through fouling on the hulls, or the release of organisms in ballast water, should any such vessels be used. Some protection against bio-invasion risk is provided by assumed compliance with international legislation, guidelines, and methodologies, whilst commitment measures to avoid the introduction or spread of INNS will also be adhered to. The commitments will ensure there is no potential for AEoI on benthic / coastal habitats as a result of invasive species during the construction of the Proposed Development alone.
Xe	<b>Benthic / coastal habitats - invasive non-native species – Proposed Development alone – operation and maintenance</b> - The introduction of hard substrates and man-made underwater structures could act as local vectors (new habitats) for INNS. By creating new opportunities for organisms to settle, new substrates could encourage invasive species to spread and out-compete native species adversely effecting benthic/coastal habitats. Commitment measures to mitigate against and control invasive species will be incorporated into a Project Environmental Monitoring Programme (PEMP). The commitments will ensure there is no potential for AEoI on benthic / coastal habitats as a result of invasive species during the operation of the Proposed Development alone.
Xf	<b>Benthic / coastal habitats — physical processes – operation and maintenance</b> - Potential effects on benthic / coastal habitats could result from changes to physical processes. For example, array structures and/ or sub-surface cables could influence the rate of erosion and deposition of sediment and / or prompt changes in water movement (e.g., to wave action). The coastal processes assessment for Rampion 2's PEIR ( <a href="#">Chapter 6: Coastal processes</a> ) has determined that the impacts on hydrodynamic and wave regimes from cumulative impacts would not result in any significant changes to sediment transport and consequently will not have any significant adverse impacts on benthic ecology. There is, therefore, no potential for an AEoI during the operation of the Proposed Development alone, or in-combination.
Xg	<b>Benthic / coastal habitats - Pollution – Proposed Development alone – construction</b> - Potential contamination of benthic / coastal habitats resulting from the spillage of fluids, fuels or construction materials from vessels and or /machinery during construction may result in a degradation of water quality and / or uptake of contaminants resulting in deleterious effects. Due to the limited potential for effects and the application of pollution prevention Commitments, unplanned oil or chemical spillages from vessels would not result in an AEoI during the construction of the Proposed Development alone.
Xh	<b>Benthic / coastal habitats - Pollution – Proposed Development alone – operation and maintenance</b> - The potential for pollution impacts on benthic / coastal habitats associated with accidental pollution events during the operation is associated with 33,390 vessel return trips per year over the 30-year design lifetime. A number of Commitments would reduce the risk to negligible levels. There is therefore no potential for AEoI from the Proposed Development alone during its operation.
Xi	<b>Benthic / coastal habitats - in-combination</b> - With reference to the conclusions of the alone assessments it is determined there is no realistic potential for in-combination effects from the Proposed Development together with other plans or projects for any of the three pathways considered. As all site features are located well beyond the secondary zone of influence for potential effects (15km) and given the requirement to adhere to best practice measures, the Commitments secured by the Applicant (for Rampion 2) (see <b>Section 6</b> of the HRA) and that similar measures would be required for external developments, it is considered that there is no potential for suspended sediment, accidental spills or MINNS to contribute to AEoI in combination.

End of Matrix 10

12. Matrix 11: Solent and Isle of Wight lagoons Special Area Conservation (SAC). HRA Integrity Matrix for Rampion 2

Name of European site:	Solent and Isle of Wight lagoons SAC																		
EU Code:	UK0017073																		
Distance to Proposed Development	30.0km to Array																		
Likely Effects of Proposed Development																			
Effect	Suspended sediment /deposition			Physical habitat loss disturbance			Invasive Non-Native Species			Physical processes			Pollution			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Coastal lagoon (priority feature)	Xa	Xb	Xc				X	Xa	Xa		Xa		Xa	Xa	Xa	Xa	Xb	Xa	

Evidence Supporting Conclusions

Evidence for Integrity Matrix 12, supporting conclusions for Solent and Isle of Wight lagoons SAC

Matrix 11: Solent and Isle of Wight lagoons	
Xa	12.1.1 Coastal habitats – all pathways – Proposed Development alone – construction. Site information indicates (e.g., English Nature, 2005) that many of the coastal lagoons within the SAC are isolated or sluiced lagoons and many are separated from the sea by a sea-wall. This includes, Gilkicker Lagoon (a sluiced lagoon), the lagoons in Keyhaven (within the saltmarsh behind a sea-wall) and the lagoons at Bembridge Harbour (formed in a depression behind the sea-wall) (see Bamber and Robbins, 2010). Although sea water does enter some of the lagoons by percolation, or during spring tides, connectivity to the marine environment is considered to be extremely weak. Noting the distance, between Rampion 2 and these features the temporary, intermittent, transient, nature of effects and secured commitments (to minimise seabed disturbance and reduce sediment suspension) it I found there is no potential for an AEol to results from the Proposed Development alone or combination on the lagoon feature during construction.
Xb	Benthic / coastal habitats – all pathways – Proposed Development alone – operation and maintenance. Given that a determination of no AEol was made for suspended sediment effects (of a greater magnitude) on lagoon features during construction, and the limited capacity and intermittent nature of sediment dispersal during operation and maintenance works, no potential for an AEol has been determined for the operation and maintenance phase of the Proposed Development alone, or in-combination.
Xc	Coastal habitats – all pathways - Proposed Development during decommissioning. Effects of suspended sediment on lagoon features during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of no AEol is appropriate for the Proposed Development during decommissioning for effects alone and in-combination.

End of Matrix 11

13. Matrix 12: Dungeness, Romney Marsh & Rye Bay SPA. HRA Integrity Matrix for Rampion 2

Name of European site:	Dungeness, Romney Marsh and Rye Bay (UK) SPA											
EU Site Code:	UK9012091											
Distance to Proposed Development	36.1km from array, 67.4 to onshore cable route and 46.4 to offshore cable route											
Likely Effects of Proposed Development												
Effect	Collision risk (breeding)			Collision risk (migration)			Direct disturbance and displacement			In-combination		
Stage of Proposed Development	C	O	D	O	O	D	C	O	D	C	O	D
Common tern <i>Sterna hirundo</i>					Xa						Xb	
Sandwich tern <i>Thalasseus sandvicensis</i>		Xc			Xd		Xe	Xf	Xg	Xh	Xi	Xj
Shoveler <i>Spatula clypeata</i>												
Marsh harrier <i>Circus aeruginosus</i>												

Evidence Supporting Conclusions

Evidence for Integrity Matrix 13, supporting conclusions for (Dungeness, Romney Marsh and Rye Bay SPA

Matrix 12: Dungeness, Romney Marsh and Rye Bay SPA

Common tern

Xa	<b>Common tern - collision risk on migration - Proposed Development alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in <b>paragraph 7.6.61</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual (with a range of between 0.07 and 4.00 birds) ‘commic’ tern (common and Arctic terns) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common and Arctic terns and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern. This resulted in a determination of no AEoI.
Xb	<b>Common tern – collision on migration - in-combination – operation and maintenance.</b> The collision risk to common terns during migration, is assessed in <b>paragraph 7.6.61</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that well under one individual (0.61) during migration split between 12 designated sites would be subject to collision consequent mortality from Rampion 2. Therefore, it can be concluded that Rampion 2 will have no adverse effect on common tern and be the cause of no detectable change to any in-combination effect resulting from collision risk to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. This has resulted in a determination of no AEoI.

Cont. on next page (Page 1 of 3)

## Matrix 12: Dungeness, Romney Marsh and Rye Bay SPA (cont.)

### Evidence Supporting Conclusions

Evidence for Integrity Matrix 12, supporting conclusions for Dungeness, Romney Marsh and Rye Bay SPA

#### Matrix 12: Dungeness, Romney Marsh and Rye Bay SPA (cont. from previous page)

##### Sandwich tern

Xc	<b>Sandwich tern - collision during breeding season – Proposed Development alone – operation and maintenance.</b> The collision risk to Sandwich terns during the breeding bio-season, is assessed in <b>paragraph 7.6.64</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero individuals during the breeding bio-season would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern. This resulted in a determination of no AEoI.
Xd	<b>Sandwich tern - collision risk on migration - Proposed Development alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including Sandwich tern, is assessed in <b>paragraph 7.6.64</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.84) individual (with a range of between 0.14 and 4.94 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the seven designated sites screened in for Sandwich tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern. No AEoI is anticipated.
Xe	<b>Sandwich tern - disturbance/displacement - Proposed Development alone – construction.</b> The potential impact from disturbance and displacement to Sandwich terns during the breeding season is assessed in <b>paragraph 7.6.49</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. In the offshore cable corridor, displacement from construction activities will be spatially and temporally restricted to the immediate vicinity of the construction vessel(s) and therefore likely to have no detectable displacement effect on Sandwich terns. In the array area, it is estimated that zero birds would be subject to mortality resulting from displacement during the construction phase. There is, therefore, no adverse effect as a result of displacement to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement to Sandwich tern. This resulted in a determination of no AEoI.
Xf	<b>Sandwich tern - disturbance/displacement - Proposed Development alone – operation and maintenance.</b> The potential impact from disturbance and displacement to Sandwich terns during the breeding season is assessed in <b>paragraph 7.6.49</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero birds per annum would be subject to displacement consequent mortality from all SPA populations screened in for Rampion 2. There is, therefore, no adverse effect as a result of displacement to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement to Sandwich tern. Therefore, no AEoI is concluded.
Xg	<b>Sandwich tern - Disturbance/displacement - Proposed Development alone – decommissioning.</b> Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of no AEoI is appropriate.
Xh	<b>Sandwich tern - disturbance and displacement (breeding) – in-combination – construction.</b> For the assessment of Sandwich tern alone for this designated site and feature, it was concluded that as there would be zero mortalities and therefore, no adverse effect as a result of displacement to this species from Rampion 2. Therefore, it can be concluded that Rampion 2 will have no adverse effect on Sandwich tern it will not contribute to any in-combination effect resulting from displacement of Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is concluded.
Xi	<b>Sandwich tern - disturbance and displacement – in-combination – operation and maintenance.</b> For the assessment of Sandwich tern alone for this designated site and feature, it was concluded that as there would be zero mortalities and therefore, no adverse effect as a result of displacement to this species from Rampion 2. Therefore, it can be concluded that Rampion 2 will have no adverse effect on Sandwich tern it will not contribute to any in-combination effect resulting from displacement of Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is concluded.
Xj	<b>Sandwich tern - disturbance and displacement (breeding) – in-combination – decommissioning.</b> Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of no AEoI is appropriate.

Cont. on next page (Page 2 of 3)



Matrix 12: Dungeness, Romney Marsh and Rye Bay SPA (cont.)

Name of European site:	Dungeness, Romney Marsh and Rye Bay SPA									
EU Code:	UK9012091									
Distance to Proposed Development	36.1km from array, 67.4 to onshore cable route and 46.4 to offshore cable route									
Likely Effects of Proposed Development										
Effect	Collision risk			Direct disturbance displacement			In-combination			
Hen harrier <i>Cygnus columbianus</i>										
Avocet										
Golden plover <i>Pluvialis apricaria</i>										
Ruff <i>Calidris pugnax</i>										
Mediterranean gull <i>Ichthyaetus melanocephalus</i>										
Bittern <i>Cygnus columbianus</i>										
Bewick's swan <i>Cygnus columbianus</i>										
Little tern <i>Sternula albifrons</i>										
<b>Waterbird assemblage</b> - Non-breeding: Including Bewick's swan <i>Cygnus columbianus</i> , Bittern <i>Botaurus stellaris</i> , Hen harrier <i>Circus cyaneus</i> , golden plover <i>Pluvialis apricaria</i> , Ruff <i>Calidris pugnax</i> , aquatic warbler <i>Acrocephalus paludicola</i> , Shoveler <i>Spatula clypeata</i> , European white-fronted goose <i>Anser albifrons</i> , Wigeon <i>Mareca penelope</i> , Gadwall <i>Mareca strepera</i> , pochard <i>Aythya ferina</i> , little grebe <i>Tachybaptus ruficollis</i> , great crested grebe <i>Podiceps cristatus</i> , cormorant <i>Phalacrocorax carbo</i> , coot <i>Fulica atra</i> , Sanderling, <i>Calidris alba</i> , whimbrel <i>Numenius phaeopus</i> and common sandpiper <i>Actitis hypoleucos</i>										

End of Matrix 12 (Page 3 of 3)

14. Matrix 13: Solent and Dorset Coast SPA. HRA Integrity Matrix for Rampion 2

Name of European site:		Solent and Dorset Coast (UK) SPA					
EU Code:		UK9020330					
Distance to Proposed Development		13km km from array, 0.63km to both onshore cable route and offshore cable route					
Likely Effects of Proposed Development							
Effect	Direct disturbance and displacement			In-combination			
Stage of Development		C	O	D	C	O	D
Common tern <i>Sterna hirundo</i>		×a			×b		
Sandwich tern <i>Thalasseus sandvicensis</i>		×c	×d	×e	×f	×g	×h
Little tern <i>Sternula albifrons</i>		×i			×j		

Evidence Supporting Conclusions

Evidence for Integrity Matrix 14, supporting conclusions for Solent and Dorset Coast pSPA

Matrix 13: Solent and Dorset Coast pSPA

Common tern	
×a	<b>Common tern - disturbance/displacement - alone - construction.</b> The potential impact from disturbance and displacement to common terns during the breeding season is assessed in <b>paragraph</b> Error! Reference source not found. <b>‘Migratory Waterbirds – English South Coast SPAs’</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. In the offshore cable corridor, displacement from construction activities will be spatially and temporally restricted to the immediate vicinity of the construction vessel(s) and therefore likely to have no detectable displacement effect on common terns. In the array area, it is estimated that zero birds would be subject to mortality resulting from displacement during the construction phase. There is, therefore, no adverse effect as a result of displacement to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement to common tern. This resulted in a determination of no AEol

Cont. on next page (Page 1 of 3)



## Matrix 13: Solent and Dorset SPA (cont.)

### Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 13, supporting conclusions for Solent and Dorset Coast pSPA

**Matrix 13: Solent and Dorset Coast pSPA (cont. from previous page)**

**Common tern**

Xb

**Common tern – in-combination – construction.** The potential impact from disturbance and displacement to common terns during the breeding season is assessed in **paragraph Error!** Reference source not found. **‘Migratory Waterbirds – English South Coast SPAs’** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero birds would be subject to mortality resulting from displacement from the array area during the construction phase, and there is estimated to be no detectable impact from displacement in the offshore cable corridor. Therefore, it can be concluded that Rampion 2 will have no adverse effect on common tern and make no detectable contribution to an in-combination effect resulting from displacement risk to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. This has resulted in a determination of no AEol.

**Sandwich tern**

- Xc

**Sandwich tern - Disturbance/displacement - construction.** The potential impact from disturbance and displacement to Sandwich terns during the breeding season is assessed in **Section 7.5** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. In the offshore cable corridor, displacement from construction activities will be spatially and temporally restricted to the immediate vicinity of the construction vessel(s) and therefore likely to have a negligible displacement impact on Sandwich terns. In the array area, it is estimated that zero birds would be subject to mortality resulting from displacement during the construction phase. Overall, this represents a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for Sandwich tern. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to Sandwich terns. This has resulted in a determination of no AEol.
- Xd

**Sandwich tern - Disturbance/displacement – operation and maintenance.** The potential impact from disturbance and displacement to Sandwich terns during the breeding season is assessed in **Section 7.5** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero birds per annum would be subject to displacement consequent mortality from all SPA populations screened in for Rampion 2. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to Sandwich tern. This has resulted in a determination of no AEol.
- Xe

**Sandwich tern – Decommissioning** - Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of no AEol is appropriate.
- Xf

**Sandwich tern – In-combination – construction.** The potential impact from disturbance and displacement to Sandwich terns during the breeding season is assessed in **Section 7.5** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. In the offshore cable corridor, displacement from construction activities will be spatially and temporally restricted to the immediate vicinity of the construction vessel(s) and therefore likely to have a negligible displacement impact on Sandwich terns. In the array area, it is estimated that zero birds would be subject to mortality resulting from displacement during the construction phase. Therefore, it can be concluded that Rampion 2 will have no adverse effect on Sandwich tern and make no detectable contribution to an in-combination effect resulting from displacement risk to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. This has resulted in a determination of no AEol.
- Xg

**Sandwich tern – In-combination – operation and maintenance.** The potential impact from disturbance and displacement to Sandwich terns during the breeding season is assessed in **Section 7.5** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero birds per annum would be subject to displacement consequent mortality as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will cause no contribution to any in-combination effect at this designated site and so will not be the cause of any potential adverse effect on the integrity of this species or designated site. This has resulted in a determination of no AEol.
- Xh

**Sandwich tern – In-combination – decommissioning.** Effects during decommissioning are expected to be the same as or less than effects during construction, which were assessed as being negligible in the offshore cable corridor and zero in the array area. Therefore, it can be concluded that Rampion 2 will have no adverse effect on Sandwich tern and will not cause any detectable change to a in-combination effect to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. This has resulted in a determination of no AEol.

Cont. on next page (Page 2 of 3)

Matrix 13: Solent and Dorset Coast SPA (cont.)

Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 13, supporting conclusions for Solent and Dorset Coast pSPA

Matrix 13: Solent and Dorset Coast pSPA (cont. from previous page)

Little tern	
Xi	<b>Little tern - Disturbance/displacement - construction.</b> The potential impact from disturbance and displacement to little terns during the breeding season is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. In the offshore cable corridor, displacement from construction activities will be spatially and temporally restricted to the immediate vicinity of the construction vessel(s) and therefore likely to have zero impact and no detectable effect on little terns. The offshore cable corridor is also beyond the maximum foraging range (Woodward <i>et al.</i> , 2019) from any colonies within the SPA. In the array area, it is estimated that zero birds would be subject to mortality resulting from displacement during the construction phase. Overall, this represents zero impact and no adverse effect for little tern. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to little terns. A finding of no AEoI is determined.
Xj	<b>Little tern– In-combination – construction.</b> The potential impact from disturbance and displacement to little terns during the breeding season is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. In the offshore cable corridor, displacement from construction activities will be spatially and temporally restricted to the immediate vicinity of the construction vessel(s) and therefore likely to have zero impact and no detectable effect on little terns. The offshore cable corridor is also beyond the maximum foraging range (Woodward <i>et al.</i> , 2019) from any colonies within the SPA. In the array area, it is estimated that zero birds would be subject to mortality resulting from displacement during the construction phase. Overall, this represents zero impact and no adverse effect for little tern. Therefore, it can be concluded that Rampion 2 will cause no detectable contribution to any in-combination effect and so not be the cause of any potential adverse effect on the integrity of this species or designated site. This has resulted in a determination of no AEoI.

End of Matrix 13 (Page 3 of 3)

15. Matrix 14: Chichester and Langstone Harbours Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:	Chichester and Langstone Harbours (UK) Ramsar								
EU Code:	UK11013								
Distance to Proposed Development	22.2km from array								
Likely Effects of Proposed Development									
				Collision risk (migration)		In-combination			
Stage of Development				C	O	D	C	O	D
Ringed plover <i>Charadrius hiaticula</i>					Xa			Xb	
Black-tailed godwit <i>Limosa limosa</i>					Xa			Xb	
Redshank <i>Tringa totanus</i>					Xa			Xb	
Dark-bellied brent goose <i>Branta bernicla bernicla</i>					Xa			Xb	
Shelduck <i>Tadorna tadorna</i>					Xa			Xb	
Grey plover <i>Pluvialis squatarola</i>					Xa			Xb	
Dunlin <i>Calidris alpina alpina</i>					Xa			Xb	
Waterbird assemblage - Wintering (species not listed in Ramsar criteria).					Xa			Xb	

Evidence Supporting Conclusions (on next page)

Cont. on next page

# Matrix 14: Chichester and Langstone Harbours Ramsar (cont.)

## Evidence Supporting Conclusions

Evidence for Integrity Matrix 15, supporting conclusions for (Chichester and Langstone Harbours Ramsar

### Matrix 14: Chichester and Langstone Harbours Ramsar

Waterbird species.

- Xa

**Collision risk on migration (NB) - alone – operation and maintenance.** The collision risk to all waterbird species is assessed in **paragraph** Error! Reference source not found. **‘Migratory Waterbirds – English South Coast SPAs’** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that no or very few individuals of any species per annum would be subject to collision consequent mortality, across all SPAs screened in for Rampion 2. Therefore, the loss of none or well under one individual of any species per annum represents a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for any waterbird species. There is, therefore, no adverse effect as a result of collision risk to these waterbird species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to any waterbird species. A finding of no AEol is determined.
- Xb

**Collision risk on migration (NB) – Proposed Development in-combination – operation and maintenance.** It is predicted that Rampion 2 will lead to the loss of none, or well under one individual of any species per annum, which represents a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for any waterbird species. Therefore, it can be concluded that Rampion 2 will have no adverse effect on these waterbird species and so will cause no detectable change to any in-combination effect. Therefore, Rampion 2 will not cause any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is determined.

End of Matrix 14

16. Matrix 15: Chichester and Langstone Harbours SPA. HRA Integrity Matrix for Rampion 2

Name of European site:	Chichester and Langstone Harbours (UK) SPA														
EU Code:	UK9011011														
Distance to Proposed Development	23.1km from Array to Landward Boundary														
Likely Effects of Proposed Development															
	Collision risk (breeding)			Collision risk (migration)			Barrier effect			Direct disturbance displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common tern <i>Sterna hirundo</i>		Xa												Xb	
Sandwich tern <i>Thalasseus sandvicensis</i>		Xc						Xd			Xe			Xf	
Common Shelduck <i>Tadorna tadorna</i>					Xg									Xh	
Wigeon <i>Mareca penelope</i>					Xg									Xh	
Teal <i>Anas crecca</i>					Xg									Xh	
Northern pintail <i>Anas acuta</i>					Xg									Xh	
Shoveler <i>Spatula clypeata</i>					Xg									Xh	

Cont . on next page (Part 1 of 5)

Matrix 15: Chichester and Langstone Harbours SPA (cont.)

Name of European site:	Chichester and Langstone Harbours (UK) SPA														
EU Code:	UK9011011														
Distance to Proposed Development	23.1km from Array to Landward Boundary														
Likely Effects of Proposed Development															
	Collision risk (breeding)			Collision risk (migration)			Barrier effect			Direct disturbance displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Red-breasted merganser <i>Mergus serrator</i>															
Ringed plover <i>Charadrius hiaticula</i>															
Grey plover <i>Pluvialis squatarola</i>															
Sanderling <i>Calidris alba</i>															
Bar-tailed godwit <i>Limosa lapponica</i>															
Eurasian curlew <i>Numenius arquata</i>															
Redshank <i>Tringa totanus</i>															
Ruddy turnstone <i>Arenaria interpres</i>															

Cont . on next page (Part 2 of 5)

Matrix 15: Chichester and Langstone Harbours SPA (cont.)

Name of European site:	Chichester and Langstone Harbours (UK) SPA														
EU Code:	UK9011011														
Distance to Proposed Development	22.2.1km from array, 15.6 to both onshore and offshore cable routes														
Likely Effects of Proposed Development															
	Collision risk (breeding)			Collision risk (migration)			Barrier effect			Direct disturbance displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Little tern <i>Sternula albifrons</i>															
Dunlin <i>Calidris alpina alpina</i>															
Dark-bellied brent goose <i>Branta bernicla bernicla</i>															
<b>Waterbird assemblage-</b> Wintering: Including Bar-tailed godwit <i>Limosa lapponica</i> , Eurasian curlew <i>Numenius arquata</i> , dark-bellied Brent geese, Dunlin <i>Calidris alpina alpina</i> , grey plover, Northern pintail <i>Anas acuta</i> , red-breasted merganser, Redshank <i>Tringa totanus</i> , Ringed plover <i>Charadrius hiaticula</i> , Sanderling <i>Calidris alba</i> , Shelduck <i>Tadorna tadorna</i> , Shoveler <i>Spatula clypeata</i> , teal, Ruddy turnstone <i>Arenaria interpres</i> and Wigeon <i>Mareca penelope</i> .															

Cont . on next page (Part 3 of 5)



# Matrix 15: Chichester and Langstone Harbours SPA (cont.)

## Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 16, supporting conclusions for Integrity Matrix 15 (Chichester & Langstone Harbours SPA)

Matrix 15: Chichester & Langstone Harbours SPA	
Common tern	
Xa	<b>Common tern - collision during breeding season – operation and maintenance.</b> Collision risk to common terns during the breeding bio-season is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero individuals during the breeding bio-season would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern. A finding of no AEoI is determined.
Xb	<b>Common tern - In-combination -operation and maintenance.</b> Collision risk to common terns during the breeding bio-season is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero individuals during the breeding bio-season would be subject to collision consequent mortality as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will have no adverse effect on common tern and make no contribution to an in-combination effect resulting from collision risk to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is appropriate.
Sandwich tern	
Xc	<b>Sandwich tern - Collision risk - alone – operation and maintenance.</b> Collision risk to Sandwich terns during the breeding bio-seasons, is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero individuals in the breeding bio-season would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern. A finding of no AEoI is determined.
Xd	<b>Sandwich tern - Barrier – alone – operation and maintenance.</b> The potential impact from a barrier effect to Sandwich terns during the breeding season is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. Modelling by JNCC (Wilson et al., 2014) suggests Sandwich terns from the colonies at Chichester and Langstone Harbours mostly forage near the coast or within the Solent. Aerial digital surveys found zero Sandwich terns in the proposed array area during the breeding bio-season, and Sandwich terns observed within the 4km buffer were in between the array area and the breeding colonies. The evidence is therefore that Sandwich terns from the colonies at Chichester and Langstone Harbours do not routinely forage in the waters beyond Rampion 2 and do not routinely commute through the proposed array area. Therefore, no barrier effect is predicted. A finding of no AEoI is determined.
Xe	<b>Sandwich tern - Disturbance displacement – alone – operation and maintenance.</b> The potential impact from disturbance and displacement to Sandwich terns during the breeding season is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero birds per annum would be subject to displacement consequent mortality from all SPA populations screened in for Rampion 2. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to Sandwich tern. A finding of no AEoI is determined.
Xf	<b>Sandwich tern - In-combination - operation and maintenance.</b> For the assessment of Sandwich tern alone for this designated site and feature, it was concluded that there would be zero risk from collision, zero risk from displacement, and zero or negligible risk as a result of a barrier effect. Therefore, it can be concluded that Rampion 2 will have no adverse effect on Sandwich tern and make no contribution to any in-combination effect on Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is appropriate. A finding of no AEoI is determined.

# Matrix 15: Chichester and Langstone Harbours SPA (cont.)

## Evidence Supporting Conclusions (cont.)

### Wintering species

Xg	<p><b>Collision risk on migration (NB) - alone – operation and maintenance.</b> The collision risk to all waterbird species is assessed in <b>Section 7.6 (paragraph 7.6.220)</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that no or very few individuals of any species per annum would be subject to collision consequent mortality from this SPA screened in for Rampion 2. Therefore, the loss of none or well under one individual of any species per annum represents a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for any waterbird species. There is, therefore, no adverse effect as a result of collision risk to these waterbird species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to any waterbird species. A finding of no AEol is therefore concluded.</p>
Xh	<p><b>Collision risk on migration (NB) – Proposed Development in-combination – operation and maintenance.</b> For the assessment of all waterbird species alone for this designated site and its features, it was concluded that there would be there would be no effect or no detectable change to baseline mortality as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will have no adverse effect on these waterbird species and make no detectable contribution to an in-combination effect resulting from collision risk to these waterbird species at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.</p>

End of Matrix 15 (Page 5 of 5)

17. Matrix 16: Solent and Southampton Water SPA. HRA Integrity Matrix for Rampion 2

Name of European site:	Solent and Southampton Water (UK)SPA														
EU Code:	UK9011061														
Distance to Proposed Development	28.4km from array, 31.1km to onshore cable route and 35.2 to offshore														
Likely Effects of Proposed Development															
Effect	Collision risk (migration)			Collision risk (breeding)			Barrier			Direct disturbance displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern <i>Thalasseus sandvicensis</i>					Xa			Xb			Xc			Xd	
Ringed plover <i>Charadrius hiaticula</i>		Xe												Xf	
Teal <i>Anas crecca</i>		Xe												Xf	
Black-tailed <i>godwit Limosa limosa</i>		Xe												Xf	
Dark-bellied brent goose <i>Branta bernicla bernicla</i>		Xe												Xf	
<b>Waterbird assemblage</b> – Wintering: Including black-tailed godwit <i>Limosa limosa</i> , dark-bellied Brent goose <i>Branta bernicla</i> , Ringed plover <i>Charadrius hiaticula</i> , and teal <i>Anas crecca</i> .		Xe												Xf	

Evidence Supporting Conclusions (on next page)

Cont . on next page (Part 1 of 3)

## Matrix 16: Solent and Southampton Water SPA (cont.)

### Evidence Supporting Conclusions

Evidence for Integrity Matrix 17, supporting conclusions for Solent and Southampton Water SPA

#### Matrix 16: Solent and Southampton Water SPA

##### Sandwich tern

- Xa** **Sandwich tern - collision during breeding season – Proposed Development alone – operation and maintenance.** The collision risk to Sandwich terns during the breeding bio-season, is assessed in **paragraph 7.6.130** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero individuals during the breeding bio-season would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern.
- Xb** **Sandwich tern - barrier – alone – operation and maintenance.** The potential impact from a barrier effect to Sandwich terns during the breeding season is assessed in **Section 7.5 (paragraph 7.6.144)** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. Modelling by JNCC (Wilson et al., 2014) suggests Sandwich terns from the colonies at Chichester and Langstone Harbours mostly forage near the coast or within the Solent. Aerial digital surveys found zero Sandwich terns in the proposed array area during the breeding bio-season, and Sandwich terns observed within the 4km buffer were in between the array area and the breeding colonies. The evidence is therefore that Sandwich terns from the colonies at Chichester and Langstone Harbours do not routinely forage in the waters beyond Rampion 2 and do not routinely commute through the proposed array area. Therefore, no adverse effect to Sandwich terns from a barrier effect is predicted. A finding of no AEol is therefore concluded.
- Xc** **Sandwich tern - disturbance displacement – alone – operation and maintenance.** The potential impact from disturbance and displacement to Sandwich terns during the breeding season is assessed in **Section 7.5 (paragraph 7.6.138)** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero birds per annum would be subject to displacement consequent mortality from all SPA populations screened in for Rampion 2. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern. A finding of no AEol is therefore concluded.
- Xd** **Sandwich tern - in-combination - operation and maintenance.** For the assessment of Sandwich tern alone for this designated site and feature, it was concluded that there would be zero risk from collision, zero risk from displacement, and zero or negligible risk as a result of a barrier effect. Therefore, it can be concluded that Rampion 2 will have no adverse effect on Sandwich tern and make no contribution to any in-combination effect on Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is appropriate.

##### Wintering species

- Xe** **Collision risk on migration (NB) - alone – operation and maintenance.** The collision risk to all waterbird species is assessed in **(paragraph 7.6.463 'Migratory Waterbirds – English South Coast SPAs** and onwards). of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that no or very few individuals of any species per annum would be subject to collision consequent mortality from this SPA screened in for Rampion 2. Therefore, the loss of none or well under one individual of any species per annum represents a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for any waterbird species. There is, therefore, no adverse effect as a result of collision risk to these waterbird species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to any waterbird species. A finding of no AEol is therefore concluded.
- Xf** **Collision risk on migration (NB) – In-combination – operation and maintenance.** For the assessment of all waterbird species alone for this designated site and its features, it was concluded that there would be there would be no effect or no detectable change to baseline mortality as a result of Rampion 2, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on these waterbird species and make no detectable contribution to an in-combination effect resulting from collision risk to these waterbird species at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

Cont . on next page (Part 2 of 3)

Matrix 16: Solent and Southampton Water SPA (cont.)

	Solent and Southampton Water (UK)SPA														
EU Code:	UK9011061														
Distance to Proposed Development	28.4km from array, 31.1km to onshore cable route and 35.2 to offshore														
Likely Effects of Proposed Development															
Effect	Collision risk (migration)			Collision risk (breeding)			Barrier			Direct disturbance displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Mediterranean gull <i>Ichthyaetus melanocephalus</i>															
Roseate tern <i>Sterna dougalli</i>															
Common tern <i>Sterna hirundo</i>															
Little tern <i>Sternula albifrons</i>															

End of Matrix 16 (Part 3 of 3)

18. Matrix 17 Solent and Southampton Water Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:	Solent and Southampton Water (UK) Ramsar						
EU Code:	UK11063						
Distance to Proposed Development	28.4km from array, 31.1km to onshore cable route and 35.2km to offshore cable route						
Likely Effects of Proposed Development							
Effect	Collision risk (migration)			In-combination			
Stage of Development	C	O	D	C	O	D	
Ringed plover <i>Charadrius hiaticula</i>		Xa			Xb		
Dark-bellied brent goose <i>Branta bernicla bernicla</i>		Xa			Xb		
Teal <i>Anas crecca</i>		Xa			Xb		
Black-tailed godwit <i>Limosa limosa</i>		Xa			Xb		
Waterbird assemblage - Wintering (species not listed in Ramsar criteria).		Xa			Xb		

Evidence Supporting Conclusions

Evidence for Integrity Matrix 18, supporting conclusions for (Solent and Southampton Water Ramsar

Matrix 17: Solent and Southampton Water Ramsar

Waterbird species	
Xa	<b>Collison risk on migration (NB) - alone – operation and maintenance.</b> The collision risk to all waterbird species is assessed in <b>Section 7.5 (paragraph 7.6.220)</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that no or very few individuals of any species per annum would be subject to collision consequent mortality from this SPA screened in for Rampion 2. Therefore, the loss of none or well under one individual of any species per annum represents a level of effect that would not be a detectable change to the overall annual natural baseline mortality rate for any waterbird species. There is, therefore, no adverse effect as a result of collision risk to these waterbird species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to any waterbird species. A finding of no AEoI is therefore concluded.
Xb	<b>Collision risk on migration (NB) – in-combination – operation and maintenance.</b> For the assessment of all waterbird species alone for this designated site and it’s features, it was concluded that there would be there would be no effect or no detectable change to baseline mortality as a result of Rampion 2, therefore no detectable change to any in-combination effect could occur also. Therefore, it can be concluded that Rampion 2 will have no adverse effect on these waterbird species and make no detectable contribution to an in-combination effect resulting from collision risk to these waterbird species at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

End of Matrix 17

19. Matrix 18: Medway Estuary and Marshes SPA. HRA Integrity Matrix for Rampion 2

Name of European site:	Medway Estuary and Marshes (UK) SPA						
EU Code:	UK9012031						
Distance to Proposed Development	95.1km from array, 71.21km to onshore cable route and 102.2km to offshore cable route						
Likely Effects of Proposed Development							
Effect	Collision risk (migration)			In- combination			
Stage of Development	C	O	D	C	O	D	
Common tern <i>Sterna hirundo</i>		Xa			Xb		
Shelduck <i>Tadorna tadorna</i>							
Northern pintail <i>Anas acuta</i>							
Avocet <i>Recurvirostra avosetta</i>							
Ringed plover <i>Charadrius hiaticula</i>							
Grey plover <i>Pluvialis squatarola</i>							

Evidence Supporting Conclusions (on next page).

Cont. on next page



Matrix 18: Medway Estuary and Marsh (cont.)

Evidence for Integrity Matrix 19, supporting conclusions for Medway Estuary and Marsh SPA

Matrix 18: Medway Estuary and Marsh

Common tern	
Xa	<b>Common tern - collision risk on migration - Proposed Development alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in <b>section 7.6 (paragraph ‘Migratory Waterbirds – English South Coast SPAs and Ramsars’)</b> onwards of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern. A finding of no AEol is therefore concluded.
Xb	<b>Common tern - in-combination – operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

Matrix 18: Medway Estuary and Marsh (cont.)

Name of European site:	Medway Estuary and Marshes (UK) SPA							
EU Code:	UK9012031							
Distance to Proposed Development	91.5km to Array							
Likely Effects of Proposed Development								
Effect				Collision risk (migration)			In-combination	
Stage of Development	C	O	D	C	O	D		
Red knot <i>Calidris canutus</i>								
Redshank <i>Tringa totanus</i>								
Little tern <i>Sternula albifrons</i>								
Dunlin <i>Calidris alpina alpina</i>								
Dark-bellied brent goose <i>Branta bernicla bernicla</i>								
<b>Breeding bird assemblage:</b> Including Oystercatcher <i>Haematopus ostralegus</i> , lapwing, Ringed plover <i>Charadrius hiaticula</i> , Redshank <i>Tringa totanus</i> , Shelduck <i>Tadorna tadorna</i> , mallard, teal, Shoveler <i>Spatula clypeata</i> , pochard, Common tern <i>Sterna hirundo</i> , Avocet <i>Recurvirostra avosetta</i> , mute swan, tufted duck and Gadwall <i>Mareca strepera</i> .								
Waterbird assemblage: Non-breeding: Including dark-bellied brent goose, Shelduck <i>Tadorna tadorna</i> , Wigeon <i>Mareca penelope</i> , teal, Northern pintail <i>Anas acuta</i> , Ringed plover <i>Charadrius hiaticula</i> , grey plover, Red knot <i>Calidris canutus</i> , great crested grebe, Shoveler <i>Spatula clypeata</i> , Dunlin <i>Calidris alpina alpina</i> , black-tailed godwit <i>Limosa limosa</i> , Oystercatcher <i>Haematopus ostralegus</i> , Eurasian curlew <i>Numenius arquata</i> , Redshank <i>Tringa totanus</i> , greenshank and Ruddy turnstone <i>Arenaria interpres</i> .								

End of Matrix 18

20. Matrix 19: Littoral seino-marin Special Protection Area. HRA Integrity Matrix for Rampion 2

Name of European site:	Littoral seino-marin (FR) SPA						
EU Code:	FR2310045						
Distance to Proposed Development	72.2km to Array						
Likely Effects of Proposed Development							
Effect				Collision risk (breeding)		In-combination	
Stage of Development	C	O	D	C	O	D	
Kittiwake <i>Rissa tridactyla</i>		Xa			Xc		
Lesser black-backed gull <i>Larus fuscus</i>		Xb			Xd		
Great black-backed gull <i>Larus marinus</i>							
Fulmar <i>Fulmarus glacialis</i> code							

Evidence Supporting Conclusions

Evidence for Integrity Matrix 20, supporting conclusions for Littoral seino-marin SPA

Matrix 19: Littoral seino-marin (FR) SPA

Kittiwake	
Xa	<b>Kittiwake – collision risk during breeding bio-season – operation and maintenance.</b> Collision risk to kittiwake is assessed in <b>Section 7.6 (paragraph 7.6.123)</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.85) individual per annum would be subject to collision risk, of which 0.44 individuals per annum may be breeding adults associated with Littoral seino-marin SPA. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to kittiwake. A finding of no AEoI is therefore concluded.
Xb	<b>Kittiwake – in-combination - operation and maintenance.</b> For the assessment of kittiwake alone for this designated site and feature, it was estimated that Rampion 2 will cause the mortality of 0.44 individuals, which will not be a detectable change to the natural baseline mortality for this species. Therefore, it can be concluded that Rampion 2 will cause no adverse effect to kittiwake and will make no detectable contribution to any in-combination effect to kittiwake at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

Lesser black-backed gull

Xc	<p><b>Lesser black-backed gull - collision risk during breeding bio-season – operation and maintenance.</b> Collision risk to lesser black-backed gulls is assessed in <b>Section 7.6 (paragraph 7.6.132)</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.34) individual per annum would be subject to collision risk, of which 0.11 individuals per annum may be breeding adults associated with Littoral seino-marin SPA. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to lesser black-backed gull. A conclusion of no AEol in concluded.</p>
Xd	<p><b>Lesser black-backed gull - in-combination – operation and maintenance.</b> For the assessment of lesser black-backed gull alone for this designated site and feature, it was estimated that Rampion 2 will cause the mortality of 0.11 individuals, which will not be a detectable change to the natural baseline mortality for this species. Therefore, it can be concluded that Rampion 2 will cause no adverse effect to lesser black-backed gull and will make no detectable contribution to any in-combination effect to lesser black-backed gull at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.</p>

End of Matrix 19

21. Matrix 20: Foulness (Mid-Essex Coast Phase 5) SPA. HRA Integrity Matrix for Rampion 2

Name of European site:	Foulness (Mid-Essex Coast Phase 5) (UK) SPA							
EU Code:	UK9009246							
Distance to Proposed Development	109.9km to Array							
Likely Effects of Proposed Development								
Effect				fsectio			In-combination	
Stage of Development	C	O	D	C	O	D		
Common tern <i>Sterna hirundo</i>		Xa			Xb			
Sandwich tern <i>Thalasseus sandvicensis</i>		Xc			Xd			
Avocet <i>Recurvirostra avosetta</i>								
Fulmar <i>Fulmarus glacialis</i> code								

Evidence Supporting Conclusions

Evidence for Integrity Matrix 21, supporting conclusions for Foulness (Mid-Essex Coast Phase) SPA

Matrix 20: Foulness (Mid-Essex Coast Phase 5) SPA

Common tern

Xa	<b>Common tern - collision risk on migration - Proposed Development alone – operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in in <b>Section 7.6 (paragraph 7.6.286)</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual per annum (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that wouldf not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern. A finding of no AEol is therefore concluded.
Xb	<b>Common tern – in-combination – operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will

make no detectable contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

Sandwich tern

Xc	<p><b>Sandwich tern - collision risk on migration - Proposed Development alone – operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including Sandwich tern, is assessed in <b>Section 7.6 (paragraph 7.6.298)</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.84) individual per annum (with a range of between 0.14 and 4.94 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the seven designated sites screened in for Sandwich tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern. A finding of no AEol is therefore concluded.</p>
Xd	<p><b>Sandwich tern - in-combination – operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.84) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.</p>

End of Matrix 20

22. Matrix 21: Falaise du Bessin Occidental Special Protection Area (SPA). HRA Integrity Matrix for Rampion 2

Name of European site:	Falaise du Bessin Occidental (FR) Special Protection Area						
EU Code:	FR2510099						
Distance to Proposed Development	132.6km to Array						
Likely Effects of Proposed Development							
Effect	Collision risk (breeding)			In- combination			
Stage of Development	C	O	D	C	O	D	
Kittiwake <i>Rissa tridactyla</i>		Xa			Xb		
Fulmar <i>Fulmarus glacialis</i>							
Guillemot <i>Uria aalge</i>							
Lesser black-backed gull <i>Larus fuscus</i>							
Razorbill <i>Alca torda</i>							
Herring gull <i>Larus argentatus</i>							

Evidence Supporting Conclusions

Evidence for Integrity Matrix 22, supporting conclusions for Falaise du Bessin Occidental SPA

Matrix 21: Falaise du Bessin Occidental SPA

Kittiwake

- Xa

**Kittiwake - Collision risk during breeding bio-season – operation and maintenance.** Collision risk to kittiwakes is assessed in **Section 7.6 (paragraph 7.6.141)** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.85) individual would be subject to collision risk per annum, of which 0.41 individuals may be breeding adults associated with Falaise du Bessin Occidental SPA. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to kittiwake. A finding of no AEol is therefore concluded.
- Xb

**Kittiwake - in-combination – operation and maintenance.** For the assessment of kittiwake alone for this designated site and feature, it was estimated that Rampion 2 will cause the mortality of 0.41 individuals, which will not be a detectable change to the natural baseline mortality for this species. Therefore, it can be concluded that Rampion 2 will cause no adverse effect to kittiwake and will make no detectable contribution to any in-combination effect to kittiwake at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

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Matrix: 21 Falaise du Bessin Occidental SPA (cont.)

Name of European site:	Falaise du Bessin Occidental (FR) Special Protection Area						
EU Code:	FR2510099						
Distance to Proposed Development	132.6km to Array						
Likely Effects of Proposed Development							
Effect	Collision risk (breeding)			In-combination			
Stage of Development	C	O	D	C	O	D	
Short-eared owl <i>Asio flammeus</i>							
Peregrine falcon <i>Falco peregrinus</i>							
Red-throated diver <i>Gavia stellata</i>							
Red-breasted merganser <i>Mergus serrator</i>							
Shag <i>Phalacrocorax aristotelis</i>							
Short-eared owl <i>Asio flammeus</i>							
Cormorant <i>Phalacrocorax carbo</i>							
Dartford Warbler <i>Curruca undata</i>							

End of Matrix 21

23. Matrix 22: Alderney West Coast and Burhou Islands Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:	Alderney West Coast and Burhou Islands Ramsar																				
EU Code:	UK22002																				
Distance to Proposed Development	148.1km from Array																				
Likely Effects of Proposed Development																					
Effect							Collision risk (breeding)			Collision risk (migration)			Direct disturbance displacement (breeding)			Direct disturbance displacement (migration)			In-combination		
Stage of Development							C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Northern gannet <i>Morus bassanus</i>								Xa			Xb			Xc			Xd			Xe	

Evidence Supporting Conclusions

Evidence for Integrity Matrix 23, supporting conclusions for Alderney West Coast and Burhou Islands Ramsar

Matrix 22: Alderney West Coast and Burhou Islands Ramsar

Northern gannet

Xa	<p><b>Northern gannet - collision risk during breeding season alone – operation and maintenance.</b> Collision risk to gannet is assessed in <b>Section 7.6 (paragraph 7.6.201)</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately 10 individuals per annum would be subject to collision risk in the breeding season, of which 3.79 individuals may be breeding adults associated with Alderney West Coast and Burhou Islands Ramsar. The population of the Ramsar site is 18,850 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 1,527 breeding adults. The addition of 3.79 adults therefore increases the mortality relative to the baseline mortality by 0.24%. This is a level of effect that would not be considered to be significant and not of a material contribution to the overall annual natural mortality rate for this species. A finding of no AEoI is therefore concluded.</p>
Xb	<p><b>Northern gannet - collision risk during non-breeding season alone – operation and maintenance.</b> Collision risk to gannets is assessed in <b>Section 7.6 (paragraph 7.6.202)</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately five individuals would be subject to collision risk in the non-breeding seasons, of which 0.24 individuals may be breeding adults associated with Alderney West Coast and Burhou Islands Ramsar. The population of the Ramsar site is 18,850 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 1,527 breeding adults. The addition of 0.24 adults therefore increases the mortality relative to the baseline mortality by 0.016%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality</p>

rate for this species. There is, therefore, no adverse effect as a result of collision risk to gannet during the non-breeding season and no adverse effect on the integrity of this designated site as a consequence of potential collision risk in the non-breeding season. A finding of no AEol is concluded.

**Northern gannet - direct disturbance displacement during breeding season alone – operation and maintenance.** Displacement risk to gannet is assessed in **Section 7.6 (paragraph 7.6.213)** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately one individual per annum would be subject to mortality as a result of displacement in the breeding season, of which 0.38 individuals may be breeding adults associated with Alderney West Coast and Burhou Islands Ramsar. The population of the Ramsar site is 18,850 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 1,527 breeding adults. The addition of 0.38 adults therefore increases the mortality relative to the baseline mortality by 0.01%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to gannet. A finding of no AEol is concluded.

**Northern gannet - direct disturbance displacement during non-breeding season alone – operation and maintenance.** Displacement risk to gannets is assessed in **Section 7.6 (paragraph 7.6.215)** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately one individual per annum would be subject to mortality as a result of displacement in the migratory seasons, of which 0.04 individuals may be breeding adults associated with Alderney West Coast and Burhou Islands Ramsar. The population of the Ramsar site is 18,850 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 1,527 breeding adults. The addition of 0.04 adults therefore increases the mortality relative to the baseline by 0.001%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to gannet. A finding of no AEol is concluded.

**Northern gannet - in-combination – collision risk plus direct disturbance displacement during non-breeding season alone and in-combination – operation and maintenance.** The total annual mortality as a result of collision risk and displacement risk in the breeding season and non-breeding season of adult birds associated with Alderney West Coast and Burhou Islands Ramsar is 4.45 breeding adults. The population of the Ramsar site is 18,850 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 1,527 breeding adults. The addition of 4.45 breeding adults therefore increases the mortality relative to the baseline mortality by 0.29%. This is a level of effect that would not be considered to be significant and not a material contribution to the overall annual natural mortality rate for this species from Rampion 2 alone. A finding of no AEol is concluded.

When considered in-combination with other OWFs, the total annual mortality as a result of collision risk and displacement risk in the breeding season and non-breeding season of adult birds associated with Alderney West Coast and Burhou Islands Ramsar is approximately 56 adults. The population of the Ramsar site is 18,850 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 1,527 breeding adults. The addition of 56 adults therefore increases the mortality relative to the baseline by 3.69%. There is, therefore, potential for an AEol from Rampion 2 in-combination with other OWFs. However, following further population level modelling of potential effects it is anticipated that there will actually not be an AEol to the conservation objectives of the gannet feature of this Ramsar site (see Section 8.5 of the Rampion 2 HRA: Report to Inform Appropriate Assessment). A finding of no AEol is concluded.

End of Matrix 22

24. Matrix 23: Alde-Ore Estuary Special Protection Area. HRA Integrity Matrix for Rampion 2

Name of European site:	Alde-Ore Estuary (UK) Special Protection Area					
EU Code:	UK9009112					
Distance to Proposed Development	181.5km to Array					
Likely Effects of Proposed Development						
Effect	Collision risk (migration)			In-combination		
Stage of Development	O	O	D	C	O	D
Lesser black-backed gull <i>Larus fuscus</i>		Xa			Xb	
Sandwich tern <i>Thalasseus sandvicensis</i>		Xc			Xd	
Ruff <i>Calidris pugnax</i>						
Redshank <i>Tringa totanus</i>						
Avocet <i>Recurvirostra avosetta</i>						
Marsh harrier <i>Circus aeruginosus</i>						
Little tern <i>Sternula albifrons</i>						

Evidence Supporting Conclusions on next page

Cont. on next page

## Matrix 23: Alde-Ore Estuary SPA (cont.)

### Evidence Supporting Conclusions

Evidence for Integrity Matrix 24, supporting conclusions for Alde-Ore Estuary SPA

Lesser black-backed gull

Xa	<b>Lesser black-backed gull - collision risk on migration - Proposed Development alone – operation and maintenance.</b> Collision risk to all gull species during the migratory bio-seasons, including lesser black-backed gull, is assessed in <b>Section 7.6 (paragraph 7.6.229 onwards)</b> in the <b>Migratory Waterbirds – English South Coast SPAs and Ramsars section</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that well under one (0.01) adult bird apportioned to Alde-Ore Estuary SPA in the non-breeding bio-seasons would be subject to collision consequent mortality per annum, which is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to lesser black-backed gull. A finding of no AEol is concluded.
Xb	<b>Lesser black-backed gull - collision risk - in-combination - operation and maintenance.</b> For the assessment of lesser black-backed gull alone for this designated site and feature, it was estimated that Rampion 2 will cause the mortality of 0.01 individuals, which will not be a detectable change to the natural baseline mortality for this species. Therefore, it can be concluded that Rampion 2 will cause no adverse effect to lesser black-backed gull and will make no detectable contribution to any in-combination effect to lesser black-backed gull at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

Sandwich tern

Xc	<b>Sandwich tern - collision risk on migration - alone – operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including Sandwich tern, is assessed in <b>Section 7.6 (paragraph Error! Reference source not found. onward onwards)</b> in the <b>Migratory Waterbirds – English South Coast SPAs and Ramsars section</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.84) individual per annum (with a range of between 0.14 and 4.94 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the seven designated sites screened in for Sandwich tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern. A finding of no AEol is concluded.
Xd	<b>Sandwich tern - in-combination – operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.84) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

End of Matrix 23

25. Matrix 24: Alde-Ore Estuary (UK) Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:	Alde-Ore Estuary (UK) Ramsar						
EU Code:	UK11002						
Distance to Proposed Development	181.5km to Array						
Likely Effects of Proposed Development							
Effect	Collision risk (migration)			In-combination			
Stage of Development	C	O	D	C	O	D	
Lesser black-backed gull <i>Larus fuscus</i>		Xa			Xb		
<i>Avocet Recurvirostra avosetta</i>							
Redshank <i>Tringa totanus</i>							
Waterbird assemblage- Wintering (species not listed in Ramsar criteria)							
Wetland bird assemblage- Breeding (species not listed in Ramsar criteria)							

Evidence Supporting Conclusions on next page

Cont. on next page

## Matrix 24: Alde-Ore Ramsar SPA (cont.)

### Evidence Supporting Conclusions

Evidence for Integrity Matrix 25, supporting conclusions for Alde-Ore Estuary (UK) Ramsar

Matrix 24: Alde-Ore Estuary (UK) Ramsar

Lesser black-backed gull	
Xa	<b>Lesser black-backed gull - collision risk on migration - alone – operation and maintenance.</b> Collision risk to all gull species during the migratory bio-seasons, including lesser black-backed gull, is assessed in <b>Section 7.6 (paragraph 7.6.229 onwards)</b> in the <b>Migratory Waterbirds – English South Coast SPAs and Ramsars</b> section of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.01) adult bird per annum apportioned to Alde-Ore Estuary SPA in the non-breeding bio-seasons would be subject to collision consequent mortality. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to lesser black-backed gull. A finding of no AEol is concluded.
Xb	<b>Lesser black-backed gull - collision risk - in-combination – operation and maintenance.</b> For the assessment of lesser black-backed gull alone for this designated site and feature, it was estimated that Rampion 2 will cause the mortality of 0.01 individuals, which will not be a detectable change to the natural baseline mortality for this species. Therefore, it can be concluded that Rampion 2 will cause no adverse effect to lesser black-backed gull and will make no detectable contribution to any in-combination effect to lesser black-backed gull at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

End of Matrix 24



26. Matrix 25: The Wash Special Protection Area (SPA). HRA Integrity Matrix for Rampion 2

Name of European site:	The Wash (UK) SPA							
EU Code:	UK9008021							
Distance to Proposed Development	235.4km from Offshore cable corridor							
Likely Effects of Proposed Development								
Effect				Collision risk (migration)			In-combination	
Stage of Development	C	O	D	C	O	D		
Common tern <i>Sterna hirundo</i>		Xa			Xb			
Pink-footed goose <i>Anser brachyrhynchus</i>								
Shelduck <i>Tadorna tadorna</i>								
Wigeon <i>Mareca penelope</i>								
Gadwall <i>Mareca strepera</i>								
Northern pintail <i>Anas acuta</i>								
Common scoter <i>Melanitta nigra</i>								

Evidence Supporting Conclusions

Cont. on next page

Matrix 25: The Wash SPA (cont.)

Evidence for Integrity Matrix 26, supporting conclusions for The Wash SPA

Matrix 25: The Wash (UK) SPA	
Common tern	
Xa	<b>Common tern - collision risk on migration - alone – operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in <b>Section 7.6 (paragraph 7.6.229 onwards)</b> in the Migratory Waterbirds – English South Coast <b>SPAs and Ramsars</b> section of the Rampion 2 HRA: Report to Inform Appropriate Assessment It is predicted that under one (0.61) individual per annum (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern.
Xb	<b>Common tern - in-combination – collision — operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

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Matrix 25: The Wash SPA (cont.)

Name of European site:	The Wash (UK) SPA								
EU Code:	UK9008021								
Distance to Proposed Development	235.4km from Offshore cable route								
Likely Effects of Proposed Development									
Effect				Collision risk (migration)			In-combination		
Stage of Development				C	O	D	C	O	D
Grey plover <i>Pluvialis squatarola</i> ;									
Red knot <i>Calidris canutus</i>									
Sanderling <i>Calidris alba</i>									
Bar-tailed godwit <i>Limosa lapponica</i>									
Eurasian curlew <i>Numenius arquata</i>									
Redshank <i>Tringa totanus</i>									
Ruddy turnstone <i>Arenaria interpres</i>									
Common Goldeneye <i>Bucephala clangula</i>									
Oystercatcher <i>Haematopus ostralegus</i>									

Cont. on next page

Matrix 25: The Wash SPA (cont.)

Name of European site:	The Wash (UK) SPA							
EU Code:	UK9008021							
Distance to Proposed Development	235.4km from Offshore cable corridor							
Likely Effects of Proposed Development								
Effect				Collision risk (migration)			In-combination	
Bewick's swan <i>Cygnus columbianus bewicki</i>								
Little tern <i>Sternula albifrons</i>								
Black-tailed godwit <i>Limosa limosa</i>								
Dunlin <i>Calidris alpina alpina</i>								
Dark-bellied brent goose <i>Branta bernicla bernicla</i>								
Waterbird assemblage- Non-breeding: Including <i>Avocet Recurvirostra avosetta</i> , golden plover, lapwing, Ringed plover <i>Charadrius hiaticula</i> , black-tailed godwit <i>Limosa limosa</i> , Bar-tailed godwit <i>Limosa lapponica</i> , Oystercatcher <i>Haematopus ostralegus</i> , grey plover, Dunlin <i>Calidris alpina alpina</i> , Red knot <i>Calidris canutus</i> , Sanderling <i>Calidris alba</i> , Eurasian curlew <i>Numenius arquata</i> , whimbrel, Redshank <i>Tringa totanus</i> , Ruddy turnstone <i>Arenaria interpres</i> , little grebe, cormorant, whooper swan, white-fronted goose, pink-footed goose, dark-bellied brent goose, Shelduck <i>Tadorna tadorna</i> , Northern pintail <i>Anas acuta</i> , Wigeon <i>Mareca penelope</i> , teal, mallard, eider, <i>Common scoter Melanitta nigra</i> , black-headed gull, lesser black-headed gull, herring gull and great black-backed gull.								

End of Matrix 25

27. Matrix 26: Breydon Water Special Protection Area (SPA). HRA Integrity Matrix for Rampion 2

Name of European site:	Breydon Water (UK) SPA						
EU Code:	UK9009181						
Distance to Proposed Development	239.3km to Array						
Likely Effects of Proposed Development							
Effect	Collision risk (migration)			In-combination			
Stage of Development	C	O	D	C	O	D	
Common tern <i>Sterna hirundo</i>		Xa			Xb		
Avocet <i>Recurvirostra avosetta</i>							
Golden plover <i>Pluvialis apricaria</i>							
Lapwing <i>Vanellus vanellus</i>							
Ruff <i>Calidris pugnax</i>							
Bewick's swan <i>Cygnus columbianus bewickii</i>							
Waterbird assemblage: Non-breeding Including cormorant <i>Phalacrocorax carbo</i> , European white-fronted goose <i>Anser albifrons</i> , Wigeon <i>Mareca penelope</i> , Shoveler <i>Spatula clypeata</i> , black-tailed godwit <i>Limosa limosa</i> , Redshank <i>Tringa totanus</i> and snipe <i>Gallinago gallinago</i> .							

Evidence Supporting Conclusions

Evidence for Integrity Matrix 27, supporting conclusions for Breydon Water SPA

Matrix 26: Breydon Water (UK) SPA

Common tern

Xa	<b>Common tern - collision risk on migration - alone – operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in <b>Section 7.6</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual per annum (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern.
Xb	<b>Common tern - in-combination – collision — operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

End of Matrix 26

28. Matrix 27: Greater Wash Special Protection Area (SPA). HRA Integrity Matrix for Rampion 2

Name of European site:	Greater Wash (UK) SPA						
EU Code:	UK9020329						
Distance to Proposed Development	249.1 km from Array						
Likely Effects of Proposed Development							
Effect	Collision risk (migration)			In-combination			
Stage of Development	C	O	D	C	O	D	
Common tern <i>Sterna hirundo</i>		Xa			Xb		
Sandwich tern <i>Thalasseus sandvicensis</i>		Xc			Xd		
Little gull <i>Hydrocoloeus minutus</i>							
Red-throated diver <i>Gavia stellata</i>							
Common scoter <i>Melanitta nigra</i>							
Little tern <i>Sternula albifrons</i>							
Common tern <i>Sterna hirundo</i>							



Evidence Supporting Conclusions

Evidence for Integrity Matrix 28, supporting conclusions for Greater Wash SPA

Matrix 27: Greater Wash (UK) SPA

Common tern

Xa	<b>Common tern - collision risk on migration - alone – operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual per annum (with a <b>Section 7.5</b> range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern.
Xb	<b>Common tern - in-combination – collision – operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

Sandwich tern

Xc	<b>Sandwich tern - collision risk on migration - alone – operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including Sandwich tern, is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.84) individual per annum (with a range of between 0.14 and 4.94 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the seven designated sites screened in for Sandwich tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern.
Xd	<b>Sandwich tern - in-combination - operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.84) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

End of Matrix 27

29. Matrix 28 North Norfolk Coast Special Protection Area. HRA Integrity Matrix for Rampion 2

Name of European site:	North Norfolk Coast (UK) Special Protection Area						
EU Code:	UK9009031						
Distance to Proposed Development	256.6 km from Array						
Likely Effects of Proposed Development							
Effect	Collision risk (migration)			In-combination			
Stage of Development	C	O	D	C	O	D	
Common tern <i>Sterna hirundo</i>		Xa			Xb		
Sandwich tern <i>Thalasseus sandvicensis</i>		Xc			Xd		
Eurasian Wigeon <i>Mareca penelope</i>							
Marsh harrier <i>Circus aeruginosus</i>							
Avocet <i>Recurvirostra avosetta</i>							
Knot <i>Calidris canutus</i>							
Bittern <i>Botaurus stellaris</i>							
Pink-footed goose <i>Anser brachyrhynchus</i>							
Little tern <i>Sternula albifrons</i>							
Dark-bellied brent goose <i>Branta bernicla bernicla</i>							
Montagu's harrier <i>Circus pygargus</i>							
<b>Waterbird assemblage - Non-breeding:</b> Including pink-footed goose <i>Anser brachyrhynchus</i> , dark-bellied brent goose <i>Brant bernicla bernicla</i> , wigeon <i>Mareca penelope</i> , knot <i>Calidris canutus</i> , white-fronted goose <i>Anser albifrons</i> , shelduck <i>Tadorna tadorna</i> , pintail <i>Anas acuta</i> , oystercatcher <i>Haematopus ostralegus</i> , Ringed plover <i>Charadrius hiaticula</i> , grey plover <i>Pluvialis squatarola</i> and redshank <i>Tringa tetanus</i> .							

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### 30. Matrix 28: North Norfolk Coast SPA (cont.)

#### Evidence Supporting Conclusions

Evidence for Integrity Matrix 29, supporting conclusions for Greater Wash SPA

Matrix 28: North Norfolk Coast SPA

Common tern

- Xa

**Common tern - collision risk on migration - Proposed Development alone – operation and maintenance.** Collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in **Section 7.5** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual per annum (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern.
- Xb

**Common tern - in-combination – collision – operation and maintenance.** It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

Sandwich tern

- Xc

**Sandwich tern - collision risk on migration - Proposed Development alone – operation and maintenance.** Collision risk to all tern species during the migratory bio-seasons, including Sandwich tern, is assessed in **Section 7.5** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.84) individual per annum (with a range of between 0.14 and 4.94 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the seven designated sites screened in for Sandwich tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern.
- Xd

**Sandwich tern - in-combination – operation and maintenance.** It is predicted that Rampion 2 will lead to the mortality of under one (0.84) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

End of Matrix 28

31. Matrix 29 North Norfolk Coast Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:	North Norfolk Coast (UK) Ramsar						
EU Code:	UK11048						
Distance to Proposed Development	256.6 km from Array						
Likely Effects of Proposed Development							
Effect	Collision risk (migration)			In-combination			
Stage of Development	C	O	D	C	O	D	
Common tern <i>Sterna hirundo</i>		Xa			Xb		
Sandwich tern <i>Thalasseus sandvicensis</i>		Xc			Xd		
Eurasian Wigeon <i>Mareca penelope</i>							
Pintail <i>Anas acuta</i>							
Red knot <i>Calidris canutus</i>							
Pink-footed goose <i>Anser brachyrhynchus</i>							
Little tern <i>Sternula albifrons</i>							
Dark-bellied brent goose <i>Branta bernicla</i>							
Waterbird assemblage - Wintering (species not listed in Ramsar criteria)							

# Matrix 29: North Norfolk Coast Ramsar (cont.)

## Evidence Supporting Conclusions

Evidence for Integrity Matrix 30, supporting conclusions for North Norfolk Coast Ramsar

### Matrix 29: North Norfolk Coast Ramsar

Common tern	
×a	<b>Common tern - collision risk on migration - alone – operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in <b>paragraph 7.6.513</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual per annum (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern.
×b	<b>Common tern - in-combination – collision – operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.
Sandwich tern	
×c	<b>Sandwich tern - collision risk on migration - alone - operation and maintenance.</b> Collision risk to all tern species during the migratory bio-seasons, including Sandwich tern, is assessed in <b>paragraph 7.6.513</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.84) individual per annum (with a range of between 0.14 and 4.94 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2. This is a level of effect that would not be considered to be significant when split between the seven designated sites screened in for Sandwich tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern.
×d	<b>Sandwich tern - in-combination - operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.84) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

End of Matrix 29

32. Matrix 30: Côte de Granit Rose-Sept Iles SPA. HRA Integrity Matrix for Rampion 2

Name of European site:	Côte de Granit Rose-Sept Iles (FR) SPA																	
EU Code:	FR5310011																	
Distance to Proposed Development	257.8km to array																	
Likely Effects of Proposed Development																		
Effect				Collision risk (breeding)			Collision risk Non-breeding			Direct disturbance displacement (breeding)			Direct disturbance displacement (Non-breeding)			In-combination		
Stage of Development		C	O	D		C	O	D		C	O	D		C	O	D		
Northern gannet <i>Morus bassanus</i>			Xa				Xb				Xc				Xd			
Manx shearwater <i>Puffinus puffinus</i>																		
Fulmar <i>Fulmarus glacialis</i>																		
European storm petrel <i>Hydrobates pelagicus</i>																		



Evidence Supporting Conclusions

Evidence for Integrity Matrix 31, supporting conclusions for Côte de Granit Rose-Sept Iles SPA

Matrix 30: Côte de Granit Rose-Sept Iles SPA

Northern gannet

Xa	<p><b>Northern gannet - collision risk during breeding season alone – operation and maintenance.</b> Collision risk to gannets is assessed in <b>paragraph 7.6.274</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately 10 individuals per annum would be subject to collision risk in the breeding season, of which 2.21 may be breeding adults associated with Côte de Granit Rose-Sept Iles SPA. The population of the SPA is 39,052 breeding adults and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 3,163 breeding adults. The addition of 2.21 adults therefore increases the mortality relative to the baseline mortality by 0.07%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to gannet. A finding of no AEol is concluded.</p>
Xb	<p><b>Northern gannet - collision risk during non-breeding season - alone – operation and maintenance.</b> Collision risk to gannets is assessed in <b>paragraph 7.6.274</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately five individuals per annum would be subject to collision risk in the non-breeding seasons, of which 0.50 individuals may be breeding adults associated with Côte de Granit Rose-Sept Iles SPA. The population of the SPA is 39,052 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 3,163 breeding adults. The addition of 0.50 adults therefore increases the mortality relative to the baseline by 0.016%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to gannet. A finding of no AEol is concluded.</p>
Xc	<p><b>Northern gannet - direct disturbance displacement during breeding season - Proposed Development alone – operation and maintenance.</b> The displacement risk to gannets is assessed in <b>paragraph 7.6.285</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately one individual per annum would be subject to mortality as a result of displacement in the breeding season, of which 0.22 individuals may be breeding adults associated with Côte de Granit Rose-Sept Iles SPA. The population of the SPA is 39,052 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 3,163 breeding adults. The addition of 0.22 adults therefore increases the mortality relative to the baseline by 0.007%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to gannet. A finding of no AEol is concluded.</p>
Xd	<p><b>Northern gannet - direct disturbance displacement during non-breeding season - alone – operation and maintenance</b> The displacement risk to gannets is assessed in <b>paragraph 7.6.285</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately one individual per annum would be subject to mortality as a result of displacement in the non-breeding seasons, of which 0.09 individuals may be breeding adults associated with Côte de Granit Rose-Sept Iles SPA. The population of the SPA is 39,052 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 3,163 breeding adults. The addition of 0.09 adults therefore increases the mortality relative to the baseline by 0.003%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to gannet. A finding of no AEol is concluded.</p>
Xe	<p><b>Northern gannet - in-combination – operation and maintenance.</b> For the assessment of gannet alone for this designated site, it was concluded that the magnitude of change would be so low as to cause be no detectable increase to the overall annual baseline natural mortality to this species as a result of either displacement or collision risk from Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to gannet at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is concluded.</p>

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Matrix: 30 - Côte de Granit Rose-Sept Iles SPA (cont.)

Name of European site:	Côte de Granit Rose-Sept Iles (FR) SPA									
EU Code:	FR5310011									
Distance to Proposed Development	257.8 km to Array									
Likely Effects of Proposed Development										
Effect	Collision risk (breeding)			Direct disturbance displacement (breeding)			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	
Razorbill <i>Alca torda</i>										
Brent goose <i>Branta bernicla</i>										
Purple sandpiper <i>Calidris maritima</i>										
Ringed plover <i>Charadrius hiaticula</i>										
Puffin <i>Fratercula arctica</i>										
Oystercatcher <i>Haematopus ostralegus</i> ·										
Herring gull <i>Larus Argentatus</i>										
Common gull <i>Larus canus</i>										
Lesser black-backed gull <i>Larus Fuscus</i>										
Great black-backed gull <i>Larus marinus</i>										
Mediterranean gull <i>Ichthyaetus melanocephalus</i>										

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Matrix: 30 Côte de Granit Rose-Sept Iles SPA (cont.)

Name of European site:	Côte de Granit Rose-Sept Iles (FR) SPA										
EU Code:	FR5310011										
Distance to Proposed Development	257.8 km to Array										
Likely Effects of Proposed Development											
Effect				Collision risk (breeding)			Direct disturbance displacement (breeding)			In-combination	
Stage of Development	C	O	D	C	O	D	C	O	D		
Red-breasted merganser <i>Mergus serrator</i>											
Common shag <i>Phalacrocorax aristotelis</i>											
Slavonian grebe <i>Podiceps auritus</i> ·											
Great-crested grebe <i>Podiceps cristatus</i>											
Balearic shearwater <i>Puffinus mauretanicus</i>											
Kittiwake <i>Rissa tridactyla</i>											
Little tern <i>Sternula albifrons</i>											
Roseate tern <i>Sterna dougallii</i>											
Common tern <i>Sterna hirundo</i>											
Sandwich tern <i>Thalasseus sandvicensis</i>											
Shelduck <i>Tadorna tadorna</i>											
Guillemot <i>Uria aalge</i>											

End of Matrix 30

33. Matrix 31: Grassholm Special Protection Area (SPA). HRA Integrity Matrix for Rampion 2

Name of European site:	Grassholm (UK) SPA											
EU Code:	UK9014041											
Distance to Proposed Development	355.3 km from array											
Likely Effects of Proposed Development												
Effect				Collision risk (Non-breeding)			Direct disturbance displacement (non-breeding)			In-combination		
Stage of Development				C	O	D	C	O	D	C	O	D
Northern gannet <i>Morus bassanus</i>					Xa			Xb			Xc	

Evidence Supporting Conclusions

Evidence for Integrity Matrix 32, supporting conclusions for Grassholm SPA

Matrix 31: Grassholm (UK) SPA

Northern Gannet

Xa	<b>Northern gannet - collision risk during non-breeding season alone – operation and maintenance.</b> Collision risk to gannets is assessed in <b>paragraph 7.6.339</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately five individuals per annum would be subject to collision risk in the non-breeding seasons, of which zero individuals may be breeding adults associated with Grassholm SPA. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to gannet. A finding of no AEol is concluded.
Xb	<b>Northern gannet - direct disturbance displacement during non-breeding season - alone – operation and maintenance.</b> The displacement risk to gannets is assessed in <b>paragraph 7.6.345</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately one individual per annum would be subject to mortality as a result of displacement in the breeding season, of which zero individuals may be breeding adults associated with Grassholm SPA. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to gannet. A finding of no AEol is concluded.
Xc	<b>Northern gannet - In-combination – operation and maintenance.</b> For the assessment of gannet alone for this designated site, it was concluded that the magnitude of change would be so low as to cause be no detectable increase to the overall annual baseline natural mortality to this species as a result of either displacement or collision risk from Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to gannet at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is concluded.

End of Matrix 31

34. Matrix 32: Flamborough and Filey Coast SPA. HRA Integrity Matrix for Rampion 2

Name of European site:	Flamborough and Filey Coast (UK) SPA											
EU Code:	UK9006101											
Distance to Proposed Development	376.4 km from Array											
Likely Effects of Proposed Development												
Effect	Collision risk (migration)			Direct disturbance displacement (non- breeding season)			Direct disturbance displacement (breeding season)			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Gannet <i>Morus bassanus</i> (Feature and component of seabird assemblage)		Xa			Xb						Xc	
Guillemot (designated Feature and component of seabird assemblage)				Xd	Xe	Xf				Xg	Xh	Xi
Razorbill (designated Feature and component of seabird assemblage)				Xj	Xk	Xl				Xm	Xn	Xo
Kittiwake (designated Feature and component of seabird assemblage)		Xp									Xq	
Herring gull (component of seabird assemblage only)		Xr									Xs	
Fulmar (Component of seabird assemblage only)												
Shag (component of seabird assemblage only)												
Cormorant (component of seabird assemblage only)												
Puffin (component of seabird assemblage only)												
Breeding seabird assemblage feature		Xt									Xu	

Cont. on next page

## Matrix 32: Flamborough and Filey Coast SPA (cont.)

### Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 33, supporting conclusions for Flamborough and Filey Coast SPA

#### Matrix 33: Flamborough and Filey Coast SPA

##### Northern gannet

- Xa Northern gannet - collision risk during non-breeding season - alone – operation and maintenance.** Collision risk to gannet is assessed in **Section 7.6** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately five individuals would be subject to collision risk in the non-breeding seasons, of which 0.20 individuals may be breeding adults associated with Flamborough and Filey Coast SPA. The population of the SPA is 16,938 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 1,372. The addition of 0.02 individuals therefore increases the mortality relative to the baseline by 0.014%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to gannet. Therefore, a finding of **no AEOL** is appropriate.
- Xb Northern gannet - Direct disturbance displacement during non-breeding season - alone – operation and maintenance.** The displacement risk to gannets is assessed in **Section 7** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately one individual would be subject to mortality as a result of displacement in the non-breeding seasons, of which 0.04 individuals may be breeding adults associated with Flamborough and Filey Coast SPA. The population of the SPA is 16,938 breeding adults, and the baseline mortality rate is 0.081 per annum. The baseline mortality for this site is therefore 1,372. The addition of 0.04 individuals therefore increases the mortality relative to the baseline by 0.002%. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to gannet. Therefore, a finding of **no AEOL** is appropriate.
- Xc Northern gannet - In-combination – operation and maintenance.** For the assessment of gannet alone for this designated site, it was concluded that the magnitude of change would be so low as to cause be no detectable increase to the overall annual baseline natural mortality to this species as a result of either displacement or collision risk from Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to gannet at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of **no AEOL** is appropriate.

##### Guillemot

- Xd Guillemot - Direct disturbance displacement during non-breeding season – alone – Construction.** The risk from disturbance and displacement during construction is recognised as being lower than that during operation, due to the spatially and temporally restricted nature of the works. As no adverse effect to the species is expected during the operation phase, it follows that no adverse effect to the species and therefore **no AEOL** to this feature of the designated site is expected during the construction phase. Therefore, a finding of **no AEOL** is appropriate.
- Xe Guillemot - Direct disturbance displacement during non-breeding season – alone – operation and maintenance.** The displacement risk to auks (including guillemots) is assessed in **Section 7** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately 65 individuals would be subject to mortality as a result of displacement in the non-breeding seasons, of which 2.87 individuals may be breeding adults associated with Flamborough and Filey Coast SPA. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to guillemot. Therefore, a finding of **no AEOL** is appropriate.
- Xf Guillemot - Direct disturbance displacement during non-breeding season – alone – decommissioning.** Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of **no AEOL** is appropriate.

## Matrix 33: Flamborough and Filey Coast SPA

Xg	<b>Guillemot - Direct disturbance displacement during non-breeding season – in-combination – construction</b> For the assessment of guillemot alone for this designated site, it was concluded that the magnitude of change would be so low as to cause be no detectable increase to the overall annual baseline natural mortality to this species as a result of displacement risk from Rampion 2. Therefore, it can be concluded that Rampion 2 will cause no detectable adverse effect on this species and make no contribution to an in-combination effect to guillemot at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of <b>no AEOI</b> is appropriate.
Xh	<b>Guillemot - Direct disturbance displacement during non-breeding season – in-combination – operation and maintenance.</b> For the assessment of guillemot alone for this designated site, it was concluded that the magnitude of change would be so low as to cause be no detectable increase to the overall annual baseline natural mortality to this species as a result of displacement risk from Rampion 2. Therefore, it can be concluded that Rampion 2 will cause no detectable adverse effect on this species and make no contribution to an in-combination effect to guillemot at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of <b>no AEOI</b> is appropriate.
Xi	<b>Guillemot - Direct disturbance displacement during non-breeding season – in-combination – decommissioning.</b> For the assessment of guillemot alone for this designated site, it was concluded that the magnitude of change would be so low as to cause be no detectable increase to the overall annual baseline natural mortality to this species as a result of displacement risk from Rampion 2. Therefore, it can be concluded that Rampion 2 will cause no detectable adverse effect on this species and make no contribution to an in-combination effect to guillemot at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of <b>no AEOI</b> is appropriate.
<b>Razorbill</b>	
Xj	<b>Razorbill - Direct disturbance displacement during non-breeding season - alone – construction.</b> The risk from disturbance and displacement during construction is recognised as being lower than that during operation, due to the spatially and temporally restricted nature of the works. As no AEol is expected during the operation phase, it follows that no AEol is expected during the construction phase.
Xk	<b>Razorbill - Direct disturbance displacement during non-breeding season - alone – operation and maintenance.</b> The displacement risk to auks (including razorbills) is assessed in Section 7.6 of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately 11 individuals would be subject to mortality as a result of displacement in the non-breeding seasons, of which 0.37 individuals may be breeding adults associated with Flamborough and Filey Coast SPA. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is, therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to razorbill.
Xl	<b>Razorbill - Direct disturbance displacement during non-breeding season – alone – decommissioning.</b> Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of <b>no AEOI</b> is appropriate.
Xm	<b>Razorbill - Direct disturbance displacement during non-breeding season – in-combination – construction.</b> For the assessment of razorbill alone for this designated site, it was concluded that the magnitude of change would be so low as to cause be no detectable increase to the overall annual baseline natural mortality to this species as a result of displacement risk from Rampion 2. Therefore, it can be concluded that Rampion 2 will cause no detectable adverse effect on this species and make no contribution to an in-combination effect to razorbill at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of <b>no AEOI</b> is appropriate.
Xn	<b>Razorbill - Direct disturbance displacement during non-breeding season – in-combination – operation and maintenance.</b> For the assessment of razorbill alone for this designated site and feature, it was concluded that there would be no adverse effect to this species as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will cause no detectable adverse effect on this species and make no contribution to an in-combination effect to razorbill at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of <b>no AEOI</b> is appropriate.
Xo	<b>Razorbill - Direct disturbance displacement during non-breeding season – in-combination – decommissioning.</b> For the assessment of razorbill alone for this designated site, it was concluded that the magnitude of change would be so low as to cause be no detectable increase to the overall annual baseline natural mortality to this species as a result of displacement risk from Rampion 2. Therefore, it can be concluded that Rampion 2 will cause no detectable adverse effect on this species and make no contribution to an in-combination effect to razorbill at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of <b>no AEOI</b> is appropriate.



Matrix 33: Flamborough and Filey Coast SPA

Kittiwake

Xp

**Kittiwake–collision risk during non-breeding season - alone - operation and maintenance.** The collision risk to all gull species during the migratory bio-seasons, including kittiwake, is assessed in Section 7.6 of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) adult bird apportioned to Flamborough and Filey Coast SPA in the non-breeding bio-seasons would be subject to collision consequent mortality, which is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to kittiwake.

Xq

**Kittiwake collision risk during non-breeding season - in-combination – operation and maintenance.** For the assessment of kittiwake alone for this designated site and feature, it was estimated that Rampion 2 will cause the mortality of 0.61 individuals, which will not be a detectable change to the natural baseline mortality for this species. Therefore, it can be concluded that Rampion 2 will cause no adverse effect to kittiwake and will make no detectable contribution to any in-combination effect to kittiwake at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

Herring gull

Xr

**Herring gull –collision risk during non-breeding season - – alone – operation and maintenance.** The collision risk to all gull species during the migratory bio-seasons, including herring gull, is assessed in **Section 7.5** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.01) adult bird apportioned to Flamborough and Filey Coast SPA in the non-breeding bio-seasons would be subject to collision consequent mortality, which is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to herring gull.

Xs

**Herring gull collision risk during non-breeding season - – In-combination – operation and maintenance.** For the assessment of herring gull alone for this designated site and feature, it was estimated that Rampion 2 will cause the mortality of 0.01 individuals, which will not be a detectable change to the natural baseline mortality for this species. Therefore, it can be concluded that Rampion 2 will cause no adverse effect to herring gull and will make no detectable contribution to any in-combination effect to kittiwake at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

Seabird Assemblage

Xt

**Seabird assemblage – alone – operation and maintenance.** The seabird assemblage comprises Northern gannet, fulmar, kittiwake, guillemot, razorbill, puffin, herring gull, shag and cormorant. Five of these species have been assessed as individual named features (gannet, kittiwake, guillemot, and razorbill) or named species within the assemblage (herring gull) as discussed above and it was found that Rampion 2 would lead to no detectable increase to baseline natural mortality. The components not individually assessed were screened out through the screening process due to very low connectivity or very low vulnerability to impacts. The impacts on components screened out for individual assessment are accordingly expected to be significantly lower than for those components screened in and therefore no detectable increase to natural baseline mortality is expected for any component. Therefore, on the basis that there are not considered to be any risks of adverse effects to the individual components of the seabird assemblage feature it can be concluded that there will be **no AEol** on the seabird assemblage feature itself.

Xu

**Seabird Assemblage – in-combination – operation and maintenance.** For the assessment of the seabird assemblage alone for this designated site, it was concluded that there would be no detectable increase in baseline mortality for any species and so no adverse effect as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to any in-combination effect to the seabird assemblage at this designated site and so not be the cause of any potential adverse effect on the integrity of this feature or designated site. A finding of no AEol is therefore concluded.

End of Matrix 31



35. Matrix 33: Northumbria Coast Special Protection Area. HRA Integrity Matrix for Rampion 2

Name of European site:	Northumbria Coast (UK) SPA								
EU Code:	UK9006131								
Distance to Proposed Development	453.8km from Array								
Likely Effects of Proposed Development									
Effect				Collision risk (migration)			In-combination		
Stage of Development				C	O	D	C	O	D
Artic tern <i>Sterna paradisaea</i>					xa			×b	

Evidence Supporting Conclusions (cont.)

Evidence for Integrity Matrix 34 for Northumbria Coast SPA

Matrix 33: Northumbria Coast (UK) SPA

Artic tern	
Xa	<b>Artic tern - Collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including Arctic tern, is assessed in Section 7.5 of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the four designated sites screened in for Arctic tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Arctic tern. A finding of no AEoI is therefore concluded.
×b	<b>Artic tern - Collision risk during non-breeding season – in-combination– operation and maintenance</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Arctic tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.

End of Matrix 33

36. Matrix 34: Northumbria Coast Ramsar. HRA Integrity Matrix for Rampion 2

Name of European site:	Northumbria Coast (UK) Ramsar							
EU Code:	UK11049							
Distance to Proposed Development	439.8km from Offshore cable corridor							
Likely Effects of Proposed Development								
Effect				Collision risk (migration)			In-combination	
Stage of Development	C	O	D	C	O	D		
Artic tern <i>Sterna paradisaea</i>		Xa			Xb			
Turnstone								
Purple sandpiper								
Little tern								

Evidence Supporting Conclusions

Evidence for Integrity Matrix 35, for Northumbria Coast Ramsar

Matrix 33: Northumbria Coast Ramsar

Artic tern	
Xa	<b>Artic tern - Collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including Arctic tern, is assessed in <b>Section 7</b> .of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the four designated sites screened in for Arctic tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Arctic tern. A finding of no AEol is therefore concluded.
Xb	<b>Artic tern - Collision risk during non-breeding season – in-combination– operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Arctic tern at this d A finding of no AEol is therefore concluded.esignated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.

End of Matrix 34

37. Matrix 35: Coquet Island Special Protection Area (SPA). HRA Integrity Matrix for Rampion 2

Name of European site:	Coquet Island (UK) SPA					
EU Code:	UK9006031					
Distance to Proposed Development	522.8 km from Array					
Likely Effects of Proposed Development						
Effect	Collision risk (migration)			In-combination		
Stage of Development	C	O	D	C	O	D
Sandwich tern <i>Thalasseus sandvicensis</i> (designated feature and component of seabird assemblage)		Xa			Xb	
Artic tern <i>Sterna paradisaea</i> (designated feature and component of seabird assemblage)		Xc			Xd	
Common tern <i>Sterna hirundo</i> (designated feature and component of seabird assemblage)		Xe			Xf	
Herring gull <i>Larus argentatus</i> (component of seabird assemblage only)		Xg			Xh	
Lesser black-backed gull <i>Larus fuscus</i> (component of seabird assemblage only)		Xi			Xj	
Kittiwake <i>Rissa tridactyla</i> (component of seabird assemblage only)		Xk			Xl	
Roseate tern <i>Sterna dougallii</i> (designated feature and component of seabird assemblage)						
Puffin <i>Fratercula arctica</i> (component of seabird assemblage only)						
Black-headed gull <i>Chroicocephalus ridibundus</i> (component of seabird assemblage only)						
Fulmar <i>Fulmarus glacialis</i> (component of seabird assemblage only)						
Internationally important seabird assemblage of over 20,000 individuals Including the 4 qualifying species listed above plus: Atlantic puffin <i>Fratercula arctica</i> and black-headed gull <i>Chroicocephalus ridibundus</i> as main components.		Xm			Xn	

Evidence Supporting Conclusions (on next page)

Matrix 35: Coquet Island SPA (cont.)

Evidence Supporting Conclusions

Evidence for Integrity Matrix 36, supporting conclusions for Coquet Island SPA

Matrix 35: Coquet Island SPA

Xa	<b>Sandwich tern - Collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including Sandwich tern, is assessed in <b>Section 7.6</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.84) individual (with a range of between 0.14 and 4.94 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the seven designated sites screened in for Sandwich tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern.
Xb	<b>Sandwich tern - Collision risk during non-breeding season – in-combination– operation and maintenance.</b> For the assessment of Sandwich tern alone for this designated site and feature, it was concluded that there would be no adverse effect to this species as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site.
Xc	<b>Arctic tern - Collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including Arctic tern, is assessed in <b>Section 7.6</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the four designated sites screened in for Arctic tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Arctic tern.
Xd	<b>Arctic tern - Collision risk during non-breeding season – in-combination– operation and maintenance.</b> For the assessment of Arctic tern alone for this designated site and feature, it was concluded that there would be no adverse effect to this species as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to Arctic tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.
Xe	<b>Common tern Sterna hirundo - Collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in <b>Section 7.6</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern. A finding of no AEoI is therefore concluded.
Xf	<b>Common tern Sterna hirundo - Collision risk during non-breeding season – in-combination– operation and maintenance.</b> For the assessment of common tern alone for this designated site and feature, it was concluded that there would be no adverse effect to this species as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEoI is therefore concluded.
Xg	<b>Herring gull - collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all gull species during the migratory bio-seasons, including herring gull, is assessed in <b>Section 7.6</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero adult birds subject to collision consequent mortality would be apportioned

### Matrix 35: Coquet Island SPA

	to Coquet Island SPA in the non-breeding bio-seasons. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to herring gull.
Xh	<b>Herring gull - collision risk during non-breeding season – in-combination– operation and maintenance.</b> For the assessment of herring gull alone for this designated site and feature, it was concluded that there would be no adverse effect to this species as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to herring gull at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site.
Xi	<b>Lesser black-backed gull- - Collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all gull species during the migratory bio-seasons, including lesser black-backed gull, is assessed in <b>Section 7.6</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that zero adult birds subject to collision consequent mortality would be apportioned to Coquet Island SPA in the non-breeding bio-seasons. There is, therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to lesser black-backed gull.
Xj	<b>Lesser black-backed gull- - Collision risk during non-breeding season – in-combination– operation and maintenance.</b> For the assessment of lesser black-backed gull alone for this designated site and feature, it was concluded that there would be no adverse effect to this species as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to lesser black-backed gull at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site.
Xk	<b>Kittiwake - collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all gull species during the migratory bio-seasons, including kittiwake, is assessed in <b>Section 7.6</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.01) adult bird apportioned to Coquet Island SPA in the non-breeding bio-seasons would be subject to collision consequent mortality, which is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to kittiwake.
Xl	<b>Kittiwake - collision risk during non-breeding season – in-combination– operation and maintenance.</b> For the assessment of kittiwake alone for this designated site and feature, it was concluded that there would be no adverse effect to this species as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to kittiwake at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site.
Xm	<b>Seabird Assemblage – alone – operation and maintenance.</b> The main features of the seabird assemblage are Sandwich tern, Arctic tern, common tern, roseate tern, Atlantic puffin and black-headed gull. Of these, Sandwich tern, Arctic tern and common tern have been individually assessed above and it was found that Rampion 2 would lead to no detectable increase to baseline natural mortality. The components not individually assessed were screened out through the screening process due to very low connectivity or very low vulnerability to impacts. The impacts on components screened out for individual assessment are accordingly expected to be significantly lower than for those components screened in and therefore no detectable increase to natural baseline mortality is expected for any component. Therefore, on the basis that there are not considered to be any risks of adverse effects to the individual components of the seabird assemblage feature it can be concluded that there will be <b>no AEol</b> on the seabird assemblage feature itself.
Xn	<b>Seabird Assemblage – in-combination– operation and maintenance.</b> For the assessment of the seabird assemblage alone for this designated site, it was concluded that there would be no adverse effect to this feature as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to the seabird assemblage at this designated site and so not be the cause of any potential adverse effect on the integrity of this feature or designated site.

End of Matrix 35



38. Matrix 36: Farne Islands Special Protection Area (SPA). HRA Integrity Matrix for Rampion 2

Name of European site:	Farne Islands (UK) SPA									
EU Code:	UK9006021									
Distance to Proposed Development	555.0 km from Array									
Likely Effects of Proposed Development										
Effect	Collision risk (Migration)			Direct disturbance displacement (Migration)			In-combination			
Stage of Development	C	O	D	C	O	D	C	O	D	
Sandwich tern <i>Thalasseus sandvicensis</i> (designated feature and component of seabird assemblage)		Xa						Xb		
Black-legged kittiwake <i>Rissa tridactyla</i> (component of seabird assemblage only)		Xc						Xd		
Guillemot <i>Uria aalge</i> (designated feature and component of seabird assemblage)				Xe	Xf	Xg	Xh	Xi	Xj	
Common tern <i>Sterna hirundo</i> (designated feature and component of seabird assemblage)		Xk						Xl		
Artic tern <i>Sterna paradisaea</i> (designated feature and component of seabird assemblage)		Xm						Xn		
Common shag <i>Phalacrocorax aristotelis</i> (component of seabird assemblage only)										
Cormorant <i>Phalacrocorax carbo</i> (component of seabird assemblage only)										
Puffin <i>Fratercula arctica</i> (component of seabird assemblage only)										
Roseate tern <i>Sterna dougallii</i> (designated feature and component of seabird assemblage)										
Internationally important seabird assemblage of over 20,000 individuals Common tern <i>Sterna hirundo</i> , Arctic tern <i>Sterna paradisaea</i> , Roseate tern <i>Sterna dougallii</i> ,, Sandwich tern <i>Sterna sandvicensis</i> , Common guillemot <i>Uria aalge</i> ,. Also, Atlantic puffin <i>Fratercula arctica</i> , great cormorant <i>Phalacrocorax carbo</i> , European shag <i>Phalacrocorax aristotelis</i> and Black-legged kittiwake <i>Rissa tridactyla</i> as main components of the assemblage (Natural England, 2015)							Xo	Xp	Xq	

Evidence Supporting Conclusions (on next page)

# Matrix 36 Farne Islands SPA (cont.)

## Evidence Supporting Conclusions

Evidence for Integrity Matrix 37, supporting conclusions for **Farne Islands SPA**

### Matrix 36: Farne Islands

×a	<b>Sandwich tern – collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all tern species during the migratory bio-seasons, including Sandwich tern, is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.84) individual (with a range of between 0.14 and 4.94 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the seven designated sites screened in for Sandwich tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Sandwich tern.
×b	<b>Sandwich tern – collision risk during non-breeding season – in-combination – operation and maintenance.</b> It is predicted that Rampion 2 will lead to the mortality of under one (0.84) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Sandwich tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEol is therefore concluded.
×c	<b>Kittiwake – collision risk during non-breeding season – alone – operation and maintenance.</b> The collision risk to all gull species during the migratory bio-seasons, including kittiwake, is assessed in Section 7.6 of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.06) adult bird apportioned to Farne Islands SPA in the non-breeding bio-seasons would be subject to collision consequent mortality, which is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to kittiwake.
×d	<b>Kittiwake – collision risk during non-breeding season – in-combination – operation and maintenance.</b> For the assessment of kittiwake alone for this designated site and feature, it was estimated that Rampion 2 would lead to the mortality of under one (0.06) adult birds attributable to this SPA. This represents a magnitude of change which would cause no detectable increase to the natural baseline mortality and therefore Rampion 2 will cause no detectable adverse effect on this species at this site. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to kittiwake at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site.
×e	<b>Guillemot – direct disturbance displacement during non-breeding season – alone – Construction.</b> The risk from disturbance and displacement during construction is recognised as being lower than that during operation, due to the spatially and temporally restricted nature of the works. As no AEol is expected during the operation phase, it follows that no AEol is expected during the construction phase.
×f	<b>Guillemot –direct disturbance displacement during non-breeding season – In-combination – operation and maintenance.</b> The displacement risk to auks (including guillemots) is assessed in <b>Section 7.5</b> of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that a total of approximately 65 individuals would be subject to mortality as a result of displacement in the non-breeding seasons, of which 2.43 individuals may be breeding adults associated with Farne Islands SPA. This is a level of effect that would not be considered to be significant and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of displacement risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential displacement risk to guillemot.
×g	<b>Guillemot – direct disturbance displacement during non-breeding season – alone – decommissioning.</b> Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, a finding of <b>no AEol</b> is appropriate.



## Matrix 36: Farne Islands

- ×h **Guillemot – direct disturbance displacement during non-breeding season – in-combination – construction** The risk from disturbance and displacement during construction is recognised as being lower than that during operation, due to the spatially and temporally restricted nature of the works. It is predicted that Rampion 2 will lead to no detectable adverse effect and cause no contribution to any in-combination effect in the operational phase. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to guillemot at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site in the construction phase. Therefore, a finding of **no AEOL** is appropriate.
- ×i **Guillemot – direct disturbance displacement during non-breeding season – in-combination – operation and maintenance.** For the assessment of guillemot alone for this designated site and feature, it was estimated that Rampion 2 would lead to the mortality of 2.43 adult birds attributable to this SPA. This represents a magnitude of change which would cause no detectable increase to the natural baseline mortality and therefore Rampion 2 will cause no detectable adverse effect on this species at this site. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to guillemot at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. Therefore, a finding of **no AEOL** is appropriate.
- ×j **Guillemot – direct disturbance displacement during non-breeding season – in-combination – decommissioning.** The risk from disturbance and displacement during decommissioning is recognised as being the same as or lower than that during construction. It is predicted that Rampion 2 will lead to no detectable adverse effect and cause no contribution to any in-combination effect in the construction phase. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to guillemot at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site in the decommissioning phase. Therefore, a finding of **no AEOL** is appropriate.
- ×k **Common tern – collision risk during non-breeding season – alone – operation and maintenance.** The collision risk to all tern species during the migratory bio-seasons, including common tern, is assessed in **Section 7.6** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the 12 designated sites screened in for common tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to common tern. Therefore, a finding of **no AEOL** is appropriate.
- ×l **Common tern – collision risk during non-breeding season – in-combination– operation and maintenance.** For the assessment of common tern alone for this designated site and feature, it is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to common tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEOL is therefore concluded.
- ×m **Arctic tern – Collision risk during non-breeding season – alone – operation and maintenance.** The collision risk to all tern species during the migratory bio-seasons, including Arctic tern, is assessed in **Section 7.6** of the Rampion 2 HRA: Report to Inform Appropriate Assessment. It is predicted that under one (0.61) individual (with a range of between 0.07 and 4.00 birds) in the migratory bio-seasons would be subject to collision consequent mortality from all SPA populations screened in for Rampion 2, which is a level of effect that would not be considered to be significant when split between the four designated sites screened in for Arctic tern and deemed to be a level of change that would not be detectable to the overall annual baseline natural mortality rate for this species. There is therefore, no adverse effect as a result of collision risk to this species and no adverse effect on the integrity of this designated site as a consequence of potential collision risk to Arctic tern.
- ×n **Arctic tern – collision risk during non-breeding season – in-combination– operation and maintenance.** For the assessment of Arctic tern alone for this designated site and feature, It is predicted that Rampion 2 will lead to the mortality of under one (0.61) individual in total, across all SPA populations. This is a level of change that would not be a detectable change to the overall annual baseline natural mortality rate for this species at this site. Therefore, it can be concluded that Rampion 2 will make no detectable contribution to an in-combination effect to Arctic tern at this designated site and so not be the cause of any potential adverse effect on the integrity of this species or designated site. A finding of no AEOL is therefore concluded.
- Seabird Assemblage – alone.** The main features of the seabird assemblage are common tern, Arctic tern, roseate tern, Sandwich tern, guillemot, puffin, cormorant, shag and kittiwake. Of these, kittiwake, guillemot, Sandwich tern, Arctic tern and common tern have been individually assessed above and it was found that Rampion 2 would lead to no detectable increase to baseline natural mortality. The components not individually assessed were screened out through the screening process due to very low connectivity or very low vulnerability to impacts. The impacts on

Matrix 36: Farne Islands

components screened out for individual assessment are accordingly expected to be significantly lower than for those components screened in and therefore no detectable increase to natural baseline mortality is expected for any component. Therefore, on the basis that there are not considered to be any risks of adverse effects to the individual components of the seabird assemblage feature it can be concluded that there will be **no AEol** on the seabird assemblage feature itself.

- ×o

**Seabird Assemblage – in-combination – Construction.** The risk from disturbance and displacement during construction is recognised as being lower than that during operation, due to the spatially and temporally restricted nature of the works. There is no risk from collision during the construction phase. For the assessment of the seabird assemblage alone for this designated site, it was concluded that there would be no detectable increase to baseline natural mortality to any species and therefore no adverse effect to this feature as a result of Rampion 2 during the Operational phase as a result of either displacement or collision. Therefore, it can be concluded that Rampion 2 cause no adverse effect and will make no contribution to an in-combination effect to the seabird assemblage at this designated site during the construction phase and so not be the cause of any potential adverse effect on the integrity of this feature or designated site. A finding of **no AEol** is therefore concluded.
- ×p

**Seabird Assemblage – in-combination – operation and maintenance.** For the assessment of the seabird assemblage alone for this designated site, it was concluded that Rampion 2 will not lead to any detectable increase in baseline mortality to any species as a result of displacement or collision, and therefore Rampion 2 will cause no adverse effect to this feature as a result of Rampion 2. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to the seabird assemblage at this designated site and so not be the cause of any potential adverse effect on the integrity of this feature or designated site.
- ×q

**Seabird Assemblage – in-combination – Decommissioning.** Effects during decommissioning are expected to be the same as, or less than effects during construction. Therefore, it can be concluded that Rampion 2 will make no contribution to an in-combination effect to the seabird assemblage at this designated site during the decommissioning phase and so not be the cause of any potential adverse effect on the integrity of this feature or designated site.

End of Matrix 36

END OF INTEGRITY MATRICES

# Appendix H      Glossary for Habitats Regulations Assessment

## Glossary to the Draft RIAA

Term	Description
<b>Above Ordnance Datum</b>	Ordnance Datum is the vertical datum used by the Ordnance Survey as the basis for deriving the height of ground level on maps. Topography may be described using the level in comparison to 'above' ordnance datum.
<b>Advice on Operations</b>	A potential component of the conservation advice package produced for a European site by advising authorities. The Advice on Operations provides information on activities capable of affecting site integrity, and achievement of the site's conservation objectives and feature-specific pressure thresholds for those activities.
<b>Adverse Effect on Integrity (AEol)</b>	If likely significant effects cannot be ruled out, an Appropriate Assessment needs to determine whether there will be an 'adverse effect on integrity' on any sites, with reference to their conservation objectives.
<b>Agreement for Lease</b>	The Proposed Development is located within an extension area afforded an Agreement for Lease by The Crown Estate which also extends across part of residual Round 3 Zone 6 offshore wind farm zone.
<b>Annex I habitat</b>	Annexes to the Habitats Directive list those habitats to which the Directives apply and to which the European Commission can propose amendments. Annex I outlines the habitats protected ('Annex I habitats'). Following the United Kingdom's departure from the European Union, the UK 'network objectives' still refer to "habitats listed on Annex II". However, the UK may amend the schedules to the Habitats Regulations (2017) (as amended) and the habitats protected under them in the UK (Defra, 2021)
<b>Annex II species</b>	Annexes to the Habitats Directive list those species to which the Directives apply and to which the European Commission can propose amendments. Annex II outlines the species protected ('Annex II species'). Following the United Kingdom's departure from the European Union, the UK 'network objectives' still refer to "species listed on Annex II". However, the UK may amend the schedules to the Habitats Regulations (2017) (as amended) and the species protected under them in the UK (Defra, 2021)
<b>Appropriate Assessment</b>	The assessment of the implications for each qualifying feature of each potentially affected European site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation

Term	Description
	objectives. The Appropriate Assessment should be undertaken by the competent authority.
<b>Barrier effect</b>	Barrier effect is experienced by bird species which intend forage beyond or migrate past the array but due to avoidance behaviour, have to navigate around the array. Barrier effect is often not discernible from displacement behaviour.
<b>Baseline</b>	Refers to existing conditions as represented by latest available survey and other data which is used as a benchmark for making comparisons to assess the impact of development.
<b>Baseline conditions</b>	The environment as it appears (or would appear) immediately prior to the implementation of the Proposed Development together with any known or foreseeable future changes that will take place before completion of the Proposed Development.
<b>Benthic ecology</b>	Benthic ecology encompasses the study of the organisms living in and on the sea floor, the interactions between them and impacts on the surrounding environment
<b>Beyond all reasonable scientific doubt.</b>	For HRA, case law establishes that the Appropriate Assessment of effects on the integrity of a European site must produce certainty “beyond all reasonable [scientific] doubt”
<b>Biologically Defined Minimum Population (BDMPS)</b>	The total number of birds in each spatially distinct biologically defined minimum population scales (BDMPS) population during that defined season
<b>Birds Directive</b>	‘Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds’ is binding for all Member States of the European Union for the protection of wild birds. The United Kingdom’s is no longer an European Union Member State. However, the Habitats Regulations (2017) (as amended) continue to provide the legislative backdrop for Habitats Regulations Assessment and the National Site Network shall include the Special Protection Areas classified pursuant to the Birds Directive (Defra,21).
<b>Cetacean</b>	A whale, dolphin, or porpoise of the order Cetacea. Bottlenose dolphins and harbour porpoises are the only cetaceans listed in Annex II of the Habitats Directive.
<b>Coastal processes</b>	The processes that interact to control the physical characteristics of a natural environment, for example: winds; waves; currents; water levels; sediment transport; turbidity; coastline and seabed morphology.

Term	Description
<b>Code of Construction Practice</b>	The code sets out the standards and procedures to which developers and contractors must adhere to when undertaking construction of major projects. This will assist with managing the environmental impacts and will identify the main responsibilities and requirements of developers and contractors in constructing their projects.
<b>Competent authority</b>	Any Minister, government department, public or statutory undertaker, public body of any description or person holding a public office. For Rampion 2's Development Consent Order, the Secretary of State for Department for Business Energy and Industrial Strategy is the relevant competent authority
<b>Conservation Advice</b>	Detailed advice for public authorities and stakeholders is provided by the Statutory Nature Conservation Bodies on in the form of 'conservation advice.' This advice provides the framework for Habitats Regulation Assessment. It should the conservation objectives for each European site and an understanding of the designated features and the factors contributing to site integrity.
<b>Connectivity</b>	Connectivity (and the potential for likely significant effects) is established where the distributions of ecological features (habitats, species and ecosystems, including functional processes) spatially overlap with the potential ecological effects of the Proposed Development (the zone of influence) which could affect them.
<b>Condition Assessment</b>	Under the Habitats Directive the United Kingdom was obliged to report (every 6 years) on the conservation status (feature condition) of the habitats and species within protected sites. Since leaving the European Union, this report is made to the Secretary of State.
<b>Conservation objectives</b>	The achievement of Favourable Conservation Status for all species and habitat protected under the Habitats Directive is translated into site-level Conservation Objectives. These define the condition to be achieved by species and habitat types for which a European site has been designated and the (targets) parameters that define them. 'High level' Conservation Objectives set the high-level objectives and priorities for the European-wide network of designations.
<b>Cumulative Effects Assessment</b>	The requirement for cumulative effects assessment is required under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and refers to effects that may result from the incremental changes caused by other past, present and reasonably foreseeable human activities, and natural processes, together with the Proposed Development.



Term	Description
	The 'in-combination assessment' in the Habitats Regulations Assessment will draw from the Cumulative Effects Assessment as far as is appropriate under the respective Regulations.
<b>Cumulative Effects</b>	Additional changes caused by a Proposed Development in conjunction with other similar developments or as a combined effect of a set of developments, taken together' (SNH, 2012)
<b>Development Consent Order</b>	This is the means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects, under the Planning Act 2008.
<b>DCO Application</b>	An application for consent to undertake a Nationally Significant Infrastructure Project made to the Planning Inspectorate who will consider the application and make a recommendation to the Secretary of State, who will decide on whether development consent should be granted for the Proposed Development.
<b>Decommissioning</b>	The period during which a development and its associated processes are removed from active operation.
<b>Department for Business, Energy &amp; Industrial Strategy</b>	The Government department responsible for business; industrial strategy; science; research and innovation; energy and clean growth; and climate change.
<b>Department for Environment, Food and Rural Affairs</b>	The lead UK Government Department for environmental policy.
<b>Disturbance</b>	Disturbance can occur when a bird's normal pattern of activity is affected by an anthropogenic activities in the construction, operation, and decommissioning phases (JNCC 2017).
<b>Displacement</b>	In relation to offshore wind farm development, Furness et al. (2013) define displacement as 'a reduced number of birds occurring within or immediately adjacent to an offshore wind farm' which can result in habitat loss (e.g., loss of foraging or rafting areas).
<b>Draft Report to Inform an Appropriate Assessment (draft RIAA)</b>	Under the Habitats Regulations, it is the responsibility of the relevant competent authority to undertake the Appropriate Assessment. It is for the Applicant to provide such information as may reasonably be required to undertake the assessment. This information is provided by the Applicant to the competent authority in a 'Report to Inform' the Appropriate Assessment. The report is in 'draft,' during the pre-application stage.



Term	Description
<b>Effect</b>	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
<b>European Commission</b>	The executive branch of the European Union, responsible for proposing legislation, implementing decisions, upholding the EU treaties and oversees the day-to-day business ( <a href="http://europa.eu/institutions/inst/comm/_en.htm">europa.eu/institutions/inst/comm/_en.htm</a> )
<b>Court of Justice of the European Union</b>	The highest court of the European Union in matters of Union law. Since 31 December 2020 ("completion day"), the UK has not been bound by EU law. In accordance with the European Union (Withdrawal) Act, the environmental principles established by the decisions of the CJEU made prior to completion day will continue to bind the lower national courts. The Supreme Court could decide not to follow the rulings of the CJEU (so far as it only rarely decides to depart from prior CJEU decisions).
<b>EIA Regulations, 2017</b>	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. The EIA regulations require that the effects of a project, where these are likely to have a significant effect on the environment, are taken into account in the decision-making process for the project.
<b>Electromagnetic field (EMF)</b>	An electromagnetic field is an electric and magnetic force field that surrounds a moving electric charge.
<b>Embedded environmental measures</b>	Equate to 'mitigation' or protective measures that form part of a project and are intended to avoid or reduce adverse effects as established under <i>Grace v An Bord Pleanala</i> (C-164/17).
<b>Environmental Impact Assessment</b>	The process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or 'baseline'). The information in the Environmental Impact Assessment informs the Applicant's Habitat Regulations Assessment in accordance with European Commission guidance (2016) on streamlining these separate and distinct assessments.
<b>Environmental Statement</b>	The written output presenting the full findings of the Environmental Impact Assessment.
<b>Expert Technical Group</b>	Throughout the pre-application period, the Applicant has arranged Expert Technical Group meetings to discuss topic specific issues with relevant stakeholders

Term	Description
<b>EU Exit</b>	The United Kingdom's departure from the European Union on 31 December 2020 ('completion day') after which, the United Kingdom's is no longer an European Union Member State.
<b>EU Exit Regulations</b>	The 'Conservation of Habitats and species Amendment (EU Exit) Regulations 2019' came into force on 'completion day' (31 December 2020). The amendments therein secure existing protections for habitats and species under the Habitats Directive and the Habitats Regulations (2017) (as amended) other than for some 'operability changes, continue to function following the United Kingdom's departure from the European Union.
<b>European site</b>	European sites are those previously designated (via national legislation as appropriate) under the Habitats Directive and Birds Directive and future sites designated under the Habitats Regulations (2017) (as amended).—European sites European sites in England are considered to be SPAs, SACs, candidate SACs and Sites of Community Importance (SCI). Potential SPAs (pSPA), possible SACs (pSACs), Ramsar sites (designated under international convention) and proposed Ramsar sites. References to "European sites" are retained following the United Kingdom's departure from the European Union (as Defra see no operability reason for this to change) and the sites covered by the term (as above) have not changed.
<b>European Union</b>	The union of 27 European member states.
<b>Evidence Base</b>	The sources of information used to make an assessment. For the Habitats Regulations Assessment, the Applicant must provide to the competent authority, information that is <i>sufficient</i> to inform the Appropriate Assessment and represents the best scientific knowledge in the field (paragraph 54 of Waddenzee).
<b>Evidence Plan Process</b>	A voluntary consultation process with specialist stakeholders to agree the approach and the information required to support the EIA and HRA for certain aspects.
<b>External plans or projects'</b>	Projects other than the Proposed Development and projects proposed by other development plans that may affect a European site concurrently or consecutively with the Proposed Development and referred to as being assessed in the In-combination Assessment.
<b>Favourable Condition Status</b>	The achievement of Favourable Condition Status is the explicit aim of the EU Habitats Directive for the habitats and species protected under it. Broadly, it concerns the long-term distribution and abundance of populations of species in their

Term	Description
	natural range, and for the long-term natural distribution, structure and functions of habitats and long-term survival of its typical species.
<b>Fragmentation</b>	The process by which larger expanses of natural habitat are divided into smaller, more isolated pieces resulting in a reduction in the available habitat. Typically, the result of direct habitat loss, or anthropogenic barriers that divide the habitat, or movement between areas.
<b>Functionally Linked habitat</b>	Areas of land or sea occupied or utilised by the qualifying interests (species) of a European site that lie beyond the boundary of the site. Such areas support activities such as feeding, roosting and migration.
<b>Habitats Directive</b>	Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora. The UK is no longer bound by European legislation. However, the Habitats Regulations (2017) (as amended) continue to provide the legislative backdrop for Habitats Regulations Assessment and the National Site Network shall include the Special Protection Areas classified pursuant to the Birds Directive (Defra, 2021).
<b>Habitats Regulation Assessment (HRA)</b>	The assessment of the potential implications of implementing a plan or project on European sites. With reference to the conservation objectives of the sites, the process helps to determine likely significant effects and (where appropriate) assesses adverse effects on site integrity. The process consists of up to four stages of assessment: screening, appropriate assessment, assessment of alternative solutions and assessment of imperative reasons of over-riding public interest.
<b>Habitats Regulations 2017 (as amended)</b>	An umbrella term that refers to the legislative strands that originally transposed the Habitats Directive into UK law (i.e., The Conservation of Habitats and Species Regulations 2017, the Scottish and Northern Ireland Regulations and the Offshore Marine Habitats and Species Regulations 2017) and the amendments to the 2017 Habitats Regulations by the 'Conservation of Habitats and species Amendment (EU Exit) Regulations 2019.
<b>HRA Screening</b>	The initial stage of the Habitats Regulations Assessment process to identify the likely significant effects arising from the Proposed Development.
<b>HRA Stage One</b>	Habitats Regulations Assessment is generally accepted to be a four-stage sequential process (see Planning Inspectorate Advice Note Ten). The first stage is the 'Screening' , a process

Term	Description
	that identifies the likely impacts of a plan or project upon a European site, whether these impacts are significant and therefore, where further consideration, (an 'Appropriate Assessment') is required. The Screening process represents the first stage of the Habitats Regulations Assessment process (Stage One (AA)).
<b>Stage Two (AA)</b>	Habitats Regulations Assessment is generally accepted to be a four-stage sequential process (see Planning Inspectorate Advice Note Ten). Appropriate Assessment (AA) is required when a plan or project is likely to have a significant effect on a European site and represents the second stage of the Habitats Regulations Assessment process (Stage Two (AA)).
<b>Horizontal Directional Drill (HDD)</b>	An engineering technique avoiding open trenches.
<b>Hydrodynamic regime</b>	The characteristic patterns and statistics of variation in water levels and currents for a given location or area. Potentially includes tidal, surge and other residual flow processes; (does not include waves).
<b>Impact</b>	The changes resulting from an action.
<b>Impact pathway</b>	A change descriptively assessed by one aspect, used by another aspect to inform a related assessment.
<b>In-combination effects</b>	Effects that may arise from the Proposed Development in combination with external plans and projects proposed/consented but not yet built and operational (i.e., those developments that are separate from the baseline).
<b>In-combination assessment</b>	The assessment required under the Habitats Regulations and presented in the Habitats Regulations Assessment reports, of the combined effect of the Proposed Development in combination with the effects from a external plans and projects, on the same feature.
<b>Indirect effects</b>	Effects that result indirectly from the Proposed Development as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
<b>Informal consultation</b>	Informal consultation refers to the voluntary consultation that RED undertake in addition to the formal consultation requirements.

Term	Description
<b>Integrity</b>	The coherence of a site's ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it [is or] was classified
<b>Integrity matrices</b>	The Planning Inspectorate's Advice Note Ten (Habitats Regulations Assessment for Nationally significant Infrastructure Projects) provides (as Appendix 2) a template for 'integrity matrices' which should be prepared by the Applicant to inform the decision-making process.
<b>Integrity test</b>	The test applied at Stage Two of a Habitats Regulations Assessment. The purpose of the Appropriate Assessment is to determine whether an adverse effect on site integrity (AEOI) can be ruled out (the integrity test).
<b>Intertidal</b>	The area of the shoreline which is covered at high tide and uncovered at low tide.
<b>Joint Nature Conservation Committee</b>	JNCC is the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.
<b>Land cover</b>	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.
<b>Landfall</b>	The point at which all the export cables will be landed and is the transitional area between the offshore export cabling and the onshore export cabling.
<b>Likely Significant Effects</b>	Under the Habitat Regulations an effect is likely if, on the basis of objective information, it cannot be excluded that the effect that could undermine a European site's conservation objectives.
<b>'Likely Significance Effects Test'</b>	The test applied at Stage One of a Habitats Regulations Assessment to determine if there is a real (not hypothetical) risk (meaning 'possibility') of a significant effect on a European site that cannot be excluded on the basis of objective information and might undermine the site's conservation objectives.
<b>Likely Significant Effects In-combination</b>	In-combination (inter-relationship) effects are included (and described as Likely Significant Effects In-Combination) where the interaction between effects of the Proposed Development combine with effects from external plans and projects to affect a receptor such that a Likely Significant Effect (not identified as

Term	Description
	likely to result from the Proposed Development acting alone) could result.
<b>In-combination effects</b>	The in-combination effects of different effects on the same receptor.
<b>Management Unit (MU)</b>	The Inter-Agency Marine Mammal Working Group (IAMMWG) management units (MU) (JNCC, 2015) provide an indication of the spatial scales at which impacts of plans and projects alone and in-combination, need to be assessed for the key cetacean species in UK waters.
<b>Marine Mammal Mitigation Protocol</b>	To include measures to minimise the risk of injury (PTS) in marine mammals.
<b>Marine Management Organisation</b>	MMO is an executive non-departmental public body, sponsored by the Department for Environment, Food & Rural Affairs. MMO license, regulate and plan marine activities in the seas around England.
<b>Maximum Design Scenario</b>	The parameters (or combination of parameters) that represent the greatest effect for an individual impact for a receptor, resulting in the Rochdale Envelope assessed for the Proposed Development
<b>Maximum Temporal Design Scenario</b>	The maximum temporal design scenario represents the longest duration of effects
<b>Mean-High Water Springs (MHWS)</b>	The average height of mean high waters during spring tides in a year.
<b>Mean-maximum +1 standard deviation (SD)</b>	The foraging ranges published in Woodward et al. 2019 (used to establish potential connectivity to Special Protection Areas) provide the following foraging range metrics: mean-mean maximum, mean-maximum +1 standard deviation (which accounts for the variation around the mean) and maximum.
<b>National Site Network</b>	Prior to 31 December 2020, sites designated under the Nature Directives in the UK contributed to Natura 2000 network. Since the UK's departure from the European Union, such sites the 'National Site Network.' This network comprises former Natura 2000 sites (onshore, marine and offshore) located in the UK that already existed on 31 December 2020 (or were proposed to the European Commission before that date) but not Ramsar sites (Defra, 2021). An appropriate authority is only responsible for managing and adapting the National Site Network to secure the favourable condition status of a feature of importance of the UK.



Term	Description
<b>Network Objectives</b>	Management objectives are established for the national site network (the 'Network Objectives'). Appropriate authorities are required to manage, and where necessary, adapt the national site network and co-operate with each other to meet the management of objectives of the National Site Network.
<b>National Policy Planning Framework</b>	The National Policy Planning Framework sets out the Governments planning policies for England and how these are expected to be applied. It provides a framework within which local plans can be developed which reflect the community's needs.
<b>Nationally Significant Infrastructure Project</b>	Nationally Significant Infrastructure Projects are major infrastructure developments in England and Wales which are consented by DCO. These include proposals for renewable energy projects with an installed capacity greater than 100MW.
<b>Natura 2000 Network</b>	The network of nature protection areas in the territory of the European Union for selected species and habitats listed in the Habitats and Birds Directives
<b>Natural England</b>	The government advisor for the natural environment in England and the statutory nature conservation body for Habitats Regulations Assessment. Natural England helps to agree the process (such as the selection of sites and the scope of the appraisal) and work with the competent authority on agreeing the outcomes and mitigation proposals
<b>Nature Directives</b>	The Birds (Directive 2009/147/EC) and the Habitats Directive (Directive 92/43/EEC) that together provide the framework for the European Union's nature conservation policy.
<b>Onshore of offshore cable corridor</b>	To be used when referring to the cable corridor. To be defined in width for each stage (Scoping, PEIR and ES).
<b>Offshore</b>	The sea further than two miles from the coast.
<b>Offshore part of the PEIR Assessment Boundary</b>	An area that encompasses all planned offshore infrastructure.
<b>Offshore Wind Farm</b>	An offshore wind farm is a group of wind turbines in the same location (offshore) in the sea which are used to produce electricity.
<b>Onshore part of the PEIR Assessment Boundary</b>	An area that encompasses all planned onshore infrastructure.



Term	Description
<b>Permanent Threshold Shift</b>	A permanent reduction in an animals sensitivity to sound.
<b>Planning Act 2008</b>	The legislative framework for the process of approving major new infrastructure projects.
<b>Planning Inspectorate</b>	The Planning Inspectorate deals with planning appeals, national infrastructure planning applications, examinations of local plans and other planning-related and specialist casework in England and Wales.
<b>PINS advice notes</b>	A series of advice notes published by the Planning Inspectorate that provide guidance on matters relating to Nationally Significant Infrastructure Projects under the Planning Act 2008 regime, including in relation to Habitats Regulations Assessment and assessment matrices (Advice Note Ten), cumulative effects assessment (Advice note 17) and use of the 'Rochdale Envelope' (Advice note 9)
<b>Precautionary Principle</b>	Established under Waddenzee (C-127/02) it is a fundamental premise of Habitats Regulations Assessment that where there is doubt as to the absence of significant effects, an appropriate assessment must be carried out.
<b>Preliminary Environmental Information Report</b>	The written output of the Environmental Impact Assessment undertaken to date for the Proposed Development. It is developed to support formal consultation and presents the preliminary findings of the assessment to allow an informed view to be developed of the Proposed Development, the assessment approach that has been undertaken, and the preliminary conclusions on the likely significant effects of the Proposed Development and environmental measures proposed.
<b>Proposed Development</b>	The development that is subject to the application for development consent, as described in Chapter 2.
<b>Qualifying features</b>	Also referred to as 'interest features', or 'designated features', qualifying features are those habitats or species that are the reason for selection and designation of a European site.
<b>Rampion 1</b>	The existing Rampion Offshore Wind Farm located in the English Channel in off the south coast of England.
<b>Rampion 2</b>	The onshore and offshore infrastructure associated with the offshore wind farm comprising of installed capacity of up to 1200 MW, located in the English Channel in off the south coast of England (the Proposed Development).

Term	Description
<b>Ramsar site</b>	Areas designated by the UK Government under the International Ramsar Convention (the Convention on Wetlands of International Importance) 1971.
<b>Receptor</b>	Qualifying interest features of European sites, or habitats or processes that support qualifying features, that may be at risk from adverse effects which could potentially arise as a result of the Proposed Development.
<b>Rochdale Approach</b>	The Rochdale Approach is a parameter-based approach to environmental assessment which aims to take account of the need for flexibility in the evolution of detailed design.
<b>Seal Management Units</b>	The appropriate assessment/ management units for seals are the Seal Management Units (SMU) provided by the Special Committee on Seals (SCOS) (SCOS, 2019), based on the latest scientific information provided to SCOS by the Sea Mammal Research Unit. These sub-divisions (units) are based on a balance of current biological knowledge; major haul-out locations, environmental conditions, and historical data and distinct from the Management Units provided for cetaceans (IAMMWG, 2021)
<b>Secretary of State</b>	The body that makes the decision to grant development consent.
<b>Sediment deposition</b>	Settlement of sediment in suspension back to the seabed, causing a localised accumulation.
<b>Sediment transport</b>	The movement of sediment by natural processes, as individual grains or as a collective volume.
<b>Scour</b>	A localised sediment erosion feature caused by local enhancement of flow speed and turbulence due to interaction with an obstacle.
<b>Sensitivity</b>	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor.
<b>Scoping Opinion</b>	A Scoping Opinion is adopted by the Secretary of State for a Proposed Development.
<b>Screening</b>	The first stage of a Habitats Regulations Assessment which involves an initial analysis to determine whether a plan or project is likely to have a significant effect on any European sites

Term	Description
<b>Screening matrices</b>	The Planning Inspectorate's Advice Note Ten (Habitats Regulations Assessment for Nationally significant Infrastructure Projects) provides (as Appendix 1) a template for 'Screening matrices' which should be completed by the Applicant to inform the decision-making process.
<b>Significance</b>	A measure of the importance of the environmental effect for a receptor. For the purposes of Habitats Regulations Assessment an effect that could undermine a site's conservation objectives. .
<b>Site integrity</b>	<i>"The coherence of its ecological structure and function across its whole area, or the habitats and/or populations of species for which the site has been (or will be) designated (Defra, 2012)".</i> Any part of the site, even parts which are not designated features, are relevant to the consideration of site integrity. European Commission associated a high degree of site integrity with the capacity for self-repair and self-renewal under dynamic conditions, where a minimum of external management support is required'(EC, 2000; para 4.6.3)
<b>Spatial Scope</b>	Spatial scope is the area over which changes to the environment are predicted to occur as a consequence of the Proposed Development.
<b>Special Area of Conservation (SAC)</b>	A conservation site for the protection of habitats and certain species historically designated under the Habitats Directive and Habitats Regulations (2017). Following the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and under the Habitats Regulations (2017) (as amended) there is an amended process for the designation of SACs in the UK and scope to alter the schedule of habitats and species (the annexes of the Nature Directives) to which the Habitats Regulations apply. <del>International designation implemented under the Habitats Regulations for the protection of habitats and (non-bird) species. Sites designated to protect habitats and species on Annexes I and II of the Habitats Directive. Sufficient habitat to maintain favourable conservation status of the particular feature in each member state needs to be identified and designated.</del>
<b>Special Protection Area (SPA)</b>	Sites designated under EU Directive (79/409/EEC) to protect habitats of migratory birds and certain threatened birds under the Birds Directive
<b>Stakeholder</b>	Person or organisation with a specific interest (commercial, professional or personal) in a particular issue.

Term	Description
<b>Statutory consultee</b>	Consultees for which there is a legal requirement to consult. Where an appropriate assessment is required, the competent authority must consult Natural England.
<b>Statutory Nature Conservation Bodies (SNCB)</b>	The organisations charged respective governments to advise on nature conservation matters for jurisdictions within the spatial scope of the Habitats regulations Assessment. For example, Natural England (in England) and Scottish Natural Heritage (in Scotland)
<b>Subtidal</b>	The region of shallow waters which are below the level of low tide.
<b>Supplementary Advice</b>	A potential component of a conservation advice package produced by advising authorities. The Supplementary Advice provides more detail on the ecological attributes (target attributes) on which the qualifying habitats and species depend and contribute to a site's overall integrity.
<b>Suspended sediment concentration</b>	The mass concentration (mass/ volume) of sediment in suspension.
<b>Sweetman ruling</b>	The European court ruling that established that projects or plans that are likely to have a significant effect on a European site should be subject to an Appropriate Assessment, <i>regardless</i> of any proposed mitigation measures intended to avoid or reduce those effects.
<b>Temporal Scope</b>	The temporal scope covers the time period over which changes to the environment and the resultant effects are predicted to occur and are typically defined as either being temporary or permanent.
<b>Temporary or permanent effects</b>	Effects may be considered as temporary or permanent. In the case of wind energy development, the application is for a 30 year period after which the assessment assumes that decommissioning will occur and that the site will be restored. For these reasons the development is referred to as long term and reversible.
<b>Temporary Threshold Shift</b>	A temporary reduction in an animals sensitivity to sound.
<b>The Applicant</b>	Rampion Extension Development Limited (RED)
<b>Proposed Development / Rampion 2</b>	The onshore and offshore infrastructure associated with the offshore wind farm comprising of installed capacity of up to 1200 MW, located in the English Channel in off the south coast of England.

Term	Description
<b>Transboundary effects</b>	Assessment of changes to the environment caused by the combined effect of past, present and future human activities and natural processes on other European Economic Area Member States.
<b>Planning Act 2008</b>	The legislative framework for the process of approving major new infrastructure projects.
<b>Unexploded Ordnance</b>	Unexploded ordnance are explosive weapons (bombs, shells, grenades, land mines, naval mines, etc.) that did not explode when they were employed and still pose a risk of detonation, potentially many decades after they were used or discarded.
<b>Wave regime</b>	The characteristic patterns and statistics of variation in waves for a given location or area.
<b>Zone of Influence</b>	The area surrounding the Proposed Development which could result in likely significant effects.

