

FIVE ESTUARIES OFFSHORE WIND FARM

10.63 APPLICANT'S COMMENTS ON NATURAL ENGLAND'S DEADLINE 7 SUBMISSIONS

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DEFINITION OF ACRONYMS

TERM	DEFINITION	
AEol	Adverse Effect on Integrity	
ANS	Artificial Nesting Structure	
AOE	Alde Ore Estuary	
AONB	Area of Outstanding Natural Beauty	
BIMP	Benthic Implementation and Monitoring Plan	
COWSC	Collaboration on Offshore Wind Strategic Compensation	
CQ	Compensation Quantum	
CSIP	Cable Specification and Installation Plan	
DAS	Digital Aerial Survey	
DBS	Dogger Bank South Offshore Wind Farm	
DCO	Development Consent Order	
DESNZ	Department for Energy Security and Net Zero	
DML	Deemed Marine Licence	
ECC	Export Cable Corridor	
EIA	Environmental Impact Assessment	
EPS	European Protected Species	
ES	Environmental Statement	
FFC	Flamborough and Filey Coast	
GRIMP	Guillemot and Razorbill Implementation and Monitoring Plan	
HRA	Habitats Regulations Assessment	
INNS	Invasive Non-Native Species	
KIMP	Kittiwake Implementation and Monitoring Plan	
LBBG	Lesser Black Backed Gull	
LEMP	Landscape and Ecological Management Plan	
LIMP	Lesser Black Backed Gull Implementation and Monitoring Plan	
LSE	Likely Significant Effect	
MDS	Maximum Design Scenario	



TERM	DEFINITION	
MLS	Margate and Long Sands	
MMMP	Marine Mammal Mitigation Protocol	
MMO	Marine Management Organisation	
MPA	Marine Protected Area	
MRF	Marine Recovery Fund	
NAS	Noise Abatement System	
NE	Natural England	
NERC	Natural Environment Research Council	
OLEMP	Outline Landscape and Ecological Management Plan	
OOEG	Offshore Ornithology Engagement Group	
OTB	Outer Trials Bank	
OWF	Offshore Wind Farm	
PADSS	Principal Area of Disagreement	
PVA	Population Viability Analysis	
REIS	Report on the Implications for European Sites	
RSPB	Royal Society for the Protection of Birds	
RTD	Red Throated Diver	
SAC	Special Area of Conservation	
SIP	Site Integrity Plan	
SLVIA	Seascape, Landscape and Visual Impact Assessment	
SNS	Southern North Sea	
SPA	Special Protected Area	
SSSI	Sites of Specific Scientific Interest	
UXO	Unexploded Ordnance	
WCS	Worst Case Scenario	
VE	Five Estuaries Offshore Wind Farm	
WTG	Wind Turbine Generator	



1. NATURAL ENGLAND – COVERING LETTER [REP7-102]

Ref	Summary of Deadline 6 submission OR Excerpt of Deadline 6 submission	Applicant's response
NE-01	Marine Mammals – iPCoD modelling Natural England welcomes the additional results that have been provided by the Applicant as requested. However, we have outstanding concerns regarding the results of the modelling and the lack of variability in the results, particularly for seals for the project alone. Therefore, we believe there is value in undertaking iPCoD modelling in-combination with other plans and projects which may indicate a greater level of variability and potential population level impacts. For harbour seal, this should be undertaken based on a declining population. Please see Appendix H7 for more detailed advice.	Please see Appendix 1: Marine Mammal iPCoD Modelling for a detailed response regarding the results of the iPCoD modelling and the lack of variability in the results for seals. Natural England agreed with the Applicant's approach to only carrying out Project alone iPCoD modelling in their Deadline 4 response [REP4-062] - "We note that the modelling was conducted for project alone due to the uncertainties/lack of data on the piling schedules of projects included in the in-combination assessment. We don't have objections to the Applicant position on this." It is
		now not possible for the Applicant to run in-combination iPCoD modelling with such limited time left until the end of Examination.
NE-02	Seabird compensatory measures calculations Identifying a robust and proportionate approach to quantifying the compensation requirements for offshore windfarms impacting seabird SPAs has proved challenging. Multiple methods have been used but there is no clear consensus on the most appropriate method to use. On behalf of Collaboration on Offshore Wind Strategic Compensation (COWSC), Natural England has commissioned the British Trust for Ornithology (BTO) to carry out an independent review both existing and alternative approaches to compensation calculations, to help resolve the issue and establish a level playing field for projects. If possible, the BTO will provide recommendations to COWSC regarding the most appropriate method to use for black-legged kittiwake. The BTO review will also consider whether the recommendations are relevant to other seabird species. A final report to COWSC is scheduled for the end of March 2025. We recognise that this will be after the close of the Five Estuaries Examination and so to assist the Examining Authority in reaching their recommendations, we will provide some 'interim' advice specific to Five Estuaries at Deadline 8/8a.	This is noted by the Applicant.
NE-03	ExA Schedule of Proposed Changes to the draft Development Consent Order (DCO) Natural England has reviewed the Schedule of Proposed Changes and has no comment to make with regards to the changes proposed. We would note that the proposed changes do not alter Natural England's position on outstanding issues with the draft DCO.	This is noted by the Applicant.



2. APPENDIX B7 – NATURAL ENGLAND'S MARINE PROCESSES ADVICE ON THE APPLICANT'S DEADLINE 5 AND 6 DOCUMENTS [REP7-103]

Ref	Summary of Deadline 6 submission OR Excerpt of Deadline 6 submission	Natural England's Advice to Resolve Issue	Applicant's response
NE-04	We advise that the Applicant should make every effort at the consenting phase to minimise decommissioning impacts and to consider changes to the pre-construction baseline and original environmental impact assessment. We also advise that the Applicant should make every effort to retain dredge material within the local sedimentary system at Margate and Long Sands Special Area of Conservation (MLS SAC).	Please see our previous advice in relation to there being 3 disposal sites rather than the 2 included within 9.8 Dredge disposal site characterisation report. Natural England notes in Section 3.1.6 of [REP6-038] 10.20.1 Technical Note for Determining MDS (Offshore) that the 5,400m2 MDS for cable protection within MLS SAC includes provision for cable protection over the lifetime of the project. Please see Annex E1 of Appendix E to natural England's Relevant Representation on Benthic and Intertidal Ecology [PD2-007] which clearly sets out the expectations in relation to cable protection during the O&M phase from cable repair/replacement. Please note that any new areas of cable protection would need a separate marine licence.	This is noted by the Applicant
9.31 Sc	hedule of Mitigation – Roadmap – Revision B	·	
NE-05	We welcome the Applicant's consideration of the environmental impacts of decommissioning. The Applicant states that removal of infrastructure above the seabed at the end of the operational lifetime of Five Estuaries could lead to greater environmental impact than leaving some components in situ, in which case certain components may be cut off at or below the seabed.	We advise that every effort should be made at the consenting phase to ensure that decommissioning impacts can and will be minimised as much as possible through project design commitments. Baseline conditions at the end of project life may differ significantly from those at pre-construction and the value of receptors may also have changed over the lifetime of the project. Therefore, the pre-construction baseline will need to be updated, supported with up-to-date surveys. An updated EIA should also be carried out to assess potential long-term impacts to the physical environment and marine processes, of any assets left in situ.	The Applicant understands that, prior to decommissioning, the project will need to conduct new surveys and an updated EIA, which will reflect the baseline conditions for decommissioning.
NE-06	Natural England is disappointed that rock placement is still included along the entire ECC.	Natural England advises that within MLS SAC that other external cable protection options should be progressed which are less likely to cause wider environmental impacts and support recovery than rock.	The Applicant has committed to not rock dumping and using cable protection (if required) that is more easily removed in the 9.13 MLS SAC Benthic Mitigation Plan [APP-243].
9.13 Ma	argate and Long Sands Special Area of Conservation	on Benthic Mitigation Plan – Revision D	
NE-07	We welcome the Applicant's commitment to deposit material from MLS SAC using a discharge pipe or downpipe to ensure that sediment is retained within the local sediment transport system.	We advise that the Applicant should aim to discharge removed materials solely during periods of slack water and upstream of the cable trench to maximise the disposal of material in the desired location (i.e. MLS SAC) and to minimise fluidisation/dispersion of material into the water column and away from the SAC'. This will help retain as much of the material in the SAC as possible.	The Applicant responded regarding the request to disposal of material upstream at Deadline 7 [REP7-086]. The Applicant does not consider this a realistic proposal. Firstly, depending on the location of the cables within the SAC, depositing updrift may require activities outside of the order limits, secondly this level of precision is likely unachievable, thirdly there may be considerable time between these operations, and natural processes will then render any limited benefit of this approach null.
			It is noted that Natural England are now also requesting that this is done only during periods of slack water. The Applicant has committed to all realistically achievable mitigation with regard to the MLS SAC but considers that the mitigation now being requested by Natural England (whose advice on this topic has evolved over the course of



Ref	Summary of Deadline 6 submission OR Excerpt of Deadline 6 submission	Natural England's Advice to Resolve Issue	Applicant's response
			this examination) is not possible to deliver and therefore the Applicant is unable to commit to it.
10.20.1	Technical Note – Methodology for Determining MD	OS (Offshore) – Revision C	
NE-08	Natural England notes that in Table 2.1 [APP-071], the estimated total volume of sediment disturbed due to inter-array and export cable installation was based on the assumption that 50% of material is ejected from the trench whilst the remainder of the material is fluidised, but retained as sediment cover in the trench. However, in the updated MDS Technical Note [REP6-038], the Applicant states that the 50% assumption was used because in most cases during simultaneous lay and bury activities less than 100% of material in the trench is expected to be ejected into the water column. It is also stated that pre-lay trenching may be used (for cable installation), in which case the full 100% volume of material will be excavated. However, is also stated that it is unrealistic that the maximum depth of 3.5m will be required or achieved for the pre-lay trench and will actually tend towards a typical average burial depth of 1.75m. Due to continued uncertainty in relation to assessment undertaken by the Applicant, Natural England is unable to advise on the worse-case scenario with any confidence.	Natural England advises that firstly, the Applicant should clarify whether the most realistic worst case burial depth is 1.75m or 3.5m. Furthermore, given that the geotechnical properties across the array areas and offshore export cable corridor are yet to be confirmed, and the possibility that a combination of cable burial techniques may be used, we advise that the Applicant should adopt a worst-case cable burial depth and percentage of sediment disturbance in their calculations and assessments. This is in line with other recent OWF marine processes EIAs (see [APP-013] Hornsea Project Four). (This is the same advice provided in Appendix P7 to our Deadline 7 submission).	The Applicant can confirm that the maximum design scenario (realistic worst case) burial depth is 3.5m and that the final assessment is based on 100% release of material from trench cross section. The dimensions of the excavated trench that are required to achieve this burial depth, and the associated volume or rate of sediment actually disturbed and ejected from the trench are also important factors in the assessment, and may vary in practice locally with factors such as choice of cable burial technique and geotechnical properties of the seabed. In all cases, conservatively realistic dimensions, properties and proportions (100% volume) have been used to inform the final assessment.
NE-09	Natural England notes that the Applicant has stated that the total length of cable protection of 5,400m2 includes any cable protection required as a result of cable repair or cable exposure during operation. Natural England advises that this approach is inconsistent with standard best practice advice on the placement of cable protection within designated sites and commitments made by the Applicant in the DCO/dML to seek a separate marine licence for the placement of cable protection over the lifetime of the project. It therefore remains unclear what the MDS is for cable protection is.	Natural England advises that the Applicant should provide further clarification on the Maximum design scenario for cable protection. Please see Annex E1 of Appendix E to Natural England's Relevant Representation on Benthic and Intertidal Ecology [PD2-007] which clearly sets out the expectations in relation to cable protection during the O&M phase from cable repair/replacement. Please note that any new areas of cable protection would need a separate marine licence.	The MDS of 5,400 m² of cable protection is the total maximum within the M&LS SAC. It is not per-cable, but a total figure. The total of 5,400 m² is the total amount that may be required within the M&S SAC over the lifetime of the project. It is not possible to determine if protection would be required during construction of during the O&M phase, however the total MDS for cable protection within the SAC is 5,400 m². The Applicant is aware that another ML will be required for placement of cable protection within the SAC after the end of the construction period. A breakdown of able protection required per phase is now included as part of Section 7, as per Annex E1 of Appendix E to Natural England's Relevant Representation on Benthic and Intertidal Ecology [PD2-007].



3. APPENDIX C7 – NATURAL ENGLAND'S OFFSHORE ORNITHOLOGY ADVICE ON THE APPLICANT'S DEADLINE 5 DOCUMENTS [REP7-104]

Ref	Key Concern and/or Update	Natural England's Advice to Resolve Issue	Applicant's response
5.4.3 H	RA Screening Matrices – Revision B		
NE-10	For the Alde Ore Estuary Special Protection Area (SPA), Marsh harrier have been screened out of migratory Collision Risk Modelling (CRM) on the assumption migratory movements would always be directed south of the AOE SPA.	The evidence from ringing and tracking studies does not support this assumption. Natural England consider it better to assume birds could arrive from any sector south of the site's latitude. Post-breeding dispersal of adults and juveniles can also be in any direction (BTO 2025, Strandberg et al. 2008). Natural England recommends that this species should be included in the migratory CRM.	Marsh harrier was included in the mCRM report and was screened out as the results of the Migropath modelling predicted that no marsh harriers would fly through the array area, see Table 5.1 of the [APP-116] 6.5.4.14 Migratory Collision Risk Modelling. Only species where <1% of the migratory population was predicted to pass through the array area was screened in for CRM, therefore marsh harrier did not meet the threshold.
NE-11	For the Minsmere-Walberswick SPA, both marsh harrier and nightjar have been screened out of the migratory CRM on the assumption no migratory/dispersal movements will be directed to and from the east. Yet the SPA lies to the north of the Project Development Area (PDA) and very much along a southward migratory route to and from it. The Applicant's reasoning also contradicts their conclusions for the Minsmere-Walberswick Ramsar site – for example, the suggestion that marsh harrier from the Ramsar site is at risk of collision but not from the SPA. If this is not an error, then we advise the SPA population should be treated the same as the over-lapping Ramsar site's population in the assessment.	See comment above, but Natural England also note this SPA lies further to the North than the AOE SPA and not west of the PDA as stated by the Applicant. Therefore, by the Applicant's own reasoning, both these species should be screened into the migratory CRM. On this basis, we recommend both species should be screened into the assessment. However, we recognise that the Applicant takes a different view and give this is not a high-risk issue, Natural England is content to 'agree to disagree'.	The Applicant has noted Natural England's position and is happy to 'agree to disagree'. However, it should be noted that both marsh harrier and nightjar were included in the 6.5.4.14 Migratory Collision Risk Modelling [App-116] submitted at the Application stage.
NE-12	Evidence supporting the conclusions for direct displacement and disturbance of auks is not shown.	Provide relevant supporting evidence.	The justification for the conclusions of Auks was missing from the screening matrix for Flamborough and Filey Coast SPA, this has now been added in and corresponds with the screening report. For other sites where the wording was ambiguous, clarity has been added.
NE-13	The table does not include all the Isles of Scilly SPA qualifying features (only two species from the designated breeding seabird assemblage, fulmar and manx shearwater). Evidence for disregarding the other qualifying species is absent. If this is because the foraging ranges of the disregarded species do not extend to the PDA then this information should be shown.	The Applicant needs to indicate which other qualifying features are designated at the SPA and state why they would be screened in or not – as is shown for other the other SPAs.	The screening matrix for Isles of Scilly SPA has been updated to include all qualifying features. The features which had not been included were outside of the MMD+1SD and have been screened out on this basis.
NE-14	The Stour and Orwell SPA waterbird assemblage has not been screened into the migratory CRM	In the non-breeding season this SPA supports important numbers of migratory waterfowl that may migrate across the PDA from breeding grounds on the continent (BTO 2025). Natural England recommends that these species should be screened into the assessment.	The mCRM report (6.5.4.14 Migratory Collision Risk Modelling Revision B (Tracked)) has been updated to include waterbird assemblage species for The Stour and Orwell SPA and submitted at Deadline 8. The increase in baseline mortality for all species assessed in the mCRM is very low, ranging from 0.00% to 0.04% for the UK SPA population. There were no citation counts for these species as they are part of an assemblage.



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NE-15	Abberton Reservoir SPA waterbird assemblage has not been screened into the migratory CRM	In the non-breeding season this SPA supports important numbers of migratory waterfowl that may migrate across the PDA from breeding grounds on the continent (BTO 2025). Natural England recommends that these species should be scrieened into the assessment.	assemblage The increas	Revision tures of the and sures of the a	B (Track he Abbe bmitted eline mo low, ra	ked)) ha erton Re at Dead ortality fo nging fro	s been upo eservoir SP Iline 8. or all speci om 0.00%	dated to 'A waterbird es assessed to 0.04% for
5.5.3 LE	BBG Compensation – Evidence, Site Selection and Road	map – Rev C						
NE-16	The figures cited in sections 1.1.21 and 1.1.22 under 'Natural England's preferred approach' do not wholly match those presented in Table 1.3. As a result, it is unclear if the compensation requirement for the mean/central impact value is 53.5 birds or 42.2 birds.	We advise that the Applicant should clarify the compensation requirement for the mean/central impact value calculated using Natural England's preferred approach.	Compensat Revision D,	tion – Ev submitt	idence, ed at De	Site Sel	lection and	e 5.5.3 LBBG Roadmap – ct value
NE-17	The Applicant has used the Hornsea Four (HOW4) method to calculate the Compensation Quantum (CQ) but has not applied an adjustment to consider natal dispersal and philopatry.	The Applicant has used the HOW4 method to calculate the CQ but without including an adjustment to take into account natal dispersal/philopatry. Natural England generally consider it appropriate to apply the natal dispersal rate presented by Horswill and Robinson (2015) to the CQ calculation. This is because it is unlikely all fledged young that survive to adulthood will recruit to the AOE SPA population. For the Orfordness site, within the AOE SPA, some dispersal of fledged young into breeding colonies outside the SPA is likely. Conversely, for Outer Trial Bank, located outside the AOE SPA, a proportion of fledged young will choose to remain at the site to breed and not disperse elsewhere and potentially into the SPA. However, noting that the proposed measures at 'VE2' are taking place within the SPA, thereby accruing conservation benefits directly to it, were the Applicant to progress both the 'VE2' and Outer Trial Bank sites, Natural England is mindenot to pursue an additional step factoring in philopatry for Alde-Ore Estuary SPA in this particular instance. As noted in our cover letter, identifying a robust and proportionate approach to quantifying the compensation requirements for offshore windfarms impacting seabird SPAs has proved challenging. Natural England is working to address this issue with its partners. We will provide more detailed advice and this matter at Dandling 200 but in the moenting places and	Revision D, submitted at Deadline 8, the impact value should be 42.2 birds. The Applicant has calculated the CQ taking into account the natal philopatry (see table below) and does not feel that the resulting CQs are realistic or sustainable for an impact of 5.7 birds. The Applicant still maintains that the use of the HOW4 method is the most realistic and appropriate approach currently, as set out in 10.20.12 Methodological Differences Between The Applicant and Natural England on Ornithology Matters [REP7-076]. LBBG compensation quantum with Natal dispersal Mortalities = 5.7 and 11.31 (mean) & 26.74 and 53.07 (UCI) Methods		s not feel ble for an ns that the and 0.20.12 licant and			
		on this matter at Deadline 8/8a, but in the meantime, please see REP5-095 for Natural England's over-arching advice on this matter in the meantime.		more ro	bust ap		•	are working ng the CQs
NE- 17a	Orfordness site, within the AOE SPA, some dispersal of fledged young into breeding colonies outside the SPA is likely. Conversely, for Outer Trial Bank, located outside the AOE SPA, a proportion of fledged young will choose to remain at the site to breed and not disperse elsewhere and potentially into the SPA.	Clarify the correct CQ calculated using the mean impact value derived using Natural England's preferred approach - see comment in Appendix C4 [REP4-058].	The Applicant has updated the numbers in the 5.5.3 LBBC Compensation – Evidence, Site Selection and Roadmap – Revision D, submitted at Deadline 8, the impact value should be 42.2 birds.			Roadmap –		



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	However, noting that the proposed measures at 'VE2' are taking place within the SPA, thereby accruing conservation benefits directly to it, were the Applicant to progress both the 'VE2' and Outer Trial Bank sites, Natural England is mindenot to pursue an additional step factoring in philopatry for Alde-Ore Estuary SPA in this particular instance. As noted in our cover letter, identifying a robust and proportionate approach to quantifying the compensation requirements for offshore windfarms impacting seabird SPAs has proved challenging. Natural England is working to address this issue with its partners. We will provide more detailed advice on this matter at Deadline 8/8a, but in the meantime, please see REP5-095 for Natural England's over-arching advice on this matter in the		
NE-18	meantime. The Applicant's plan to bring forward one compensation site at Orfordness does not consider significant uncertainty in the likely occupancy rate and risks failing to achieve its target without appropriate adaptive management or the addition of a suitable alternative site.	Natural England note that if, as the Applicant anticipates, the LBBG nesting densities (400 pairs/Ha) are achieved at the 6 hectare Orfordness site and occupancy at OTB can reach historic high counts (approximately 1500 pairs more than present, c.f. Section 4.1.18, and [REP5-022] Sections 3.2.3 and 3.3.2), then either site could theoretically provide enough nesting space alone to cover the Upper Confidence Interval (UCI) impact requirements estimated by either the Applicant's or Natural England's approach to the CQ calculation and scaled 3:1 (see Table 1.3). However, importantly, there are major uncertainties regarding the ability of each site to deliver such increases. Therefore, retaining a two-site option continues to have merit (c.f. Appendix C4, REP4-058), for the following reasons: The scale of compensation sought after (see comments below regarding the calculation of the compensation quantum) would be more easily accommodated and likely delivered from two sites even though either site has the potential to reach the compensation target alone. This is because some uncertainty remains in the Applicant's CQ calculations. The Applicant has adopted the HOW4 method to calculate the CQ which does not take into account natal philopatry or natural losses and the need to maintain the new colony without reducing the metapopulation. Therefore, more pairs may be needed than shown and the larger number of nest spaces delivered from two sites could help buffer this uncertainty. Operating two compensation sites offers a ready alternative should one site fail or under-achieve. The Applicant's preferred compensation site at Orfordness has been designed based on the assumption that its enhanced habitat will attract high nesting densities (400pairs/Ha or 0.04 nest/m2), but this occupancy rate is far from guaranteed. Evidence from the RSPB management of Havergate Island suggests that densities of 200 nests per	The Applicant maintains that either Orford Ness or Outer Trial Bank has the potential to fully compensate for the impacts of the projects. Both sites are continuing to be developed to provide resilience, however it is intended that only one would be taken forward. Collaboration with North Falls is ongoing regarding Outer Trial Bank, however it is understood that they are exploring a number of options at Orford Ness.



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		hectare are more realistic in good habitat (c.f. North Falls HRA	
		derogation: Provision of evidence, Annex 1A HRA compensation	
		consultation, doc. 7.2.1.1) [APP-046] and could be as few as 20	
		nests per hectare, particularly in mixed habitat.	
		•Furthermore, whilst Gull densities can be high in optimal	
		locations (both in terms of the nesting site and in terms of	
		surrounding conditions such as food supply), this may not be	
		achievable in a location where LBBG have undergone a	
		significant decline. As part of our advice into the Norfolk	
		Vanguard pre-determination (EN010079-004448-EN010079	
		374820 Norfolk Vanguard Annex 3 NE advice on AOE SPA in	
		principle compensation measures.pdf, Natural England	
		estimated nesting densities from four sub-colonies colonies in	
		the Walney area (data from Sarah Dalrymple at Cumbria Wildlife Trust, pers comm). These showed a range of density values of	
		0.002 to 0.047 pairs/m2. Natural England also highlights that	
		large gulls often nest in mixed species colonies, and it is	
		therefore likely that some of the nest sites will be used by herring gull rather than LBBG. Therefore, failure to occupy or	
		, ,	
		lower than expected occupancy rates are a risk and must	
		remain a consideration. We highlight that the nearby Norfolk	
		OWFs projects' compensation site has had zero-occupancy	
		after two breeding seasons and has yet to prove successful,	
		despite the design and management being supported by the	
		compensation steering group, which includes Natural England.	
		Progressing an additional site such as OTB could therefore	
		provide essential concurrent 'adaptive management' should the	
		key site within the SPA fail to deliver or nesting densities at that	
		site remain too low to reach the compensation target.	
		The work proposed at OTB will likely benefit its nesting gull	
		population. However, how much the birds will benefit remains	
		unclear. The actual impact the rats have on the birds is unknown	
		and so it can only be assumed their clearance will boost	
		productivity and attract more nesting pairs over time. But this is	
		to some degree uncertain as other unknown factors such as	
		local food abundance could be the main driver of current trends	
		in numbers at the site.	
		•The establishment of two compensatory sites has the potential	
		to minimise the lead in time required to achieve the	
		compensation target population. The two-site option presents	
		less risk should substantial mortality debt accrue through	
		delayed or inadequate occupancy at either site or complete	
		failure at one site. Moreover, if the Applicant implements the	
		compensation measure only 3 years prior to operations, as	
		proposed, a mortality debt will be incurred anyway. (c.f. REP5 -	
		024 Doc 5.5.6, section 5.5.3)	
		•Establishing a two-site option, in collaboration with North Falls	
		OWF, would assist both developers in the delivery of their LBBG	
		compensation compared to establishing one site each. The	



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		costs to the Applicant of managing both sites or sharing one alternative site such as OTB, could also be reduced if the costs were spread between each developer. Natural England, therefore, consider a 'two sites, two projects' approach to delivering LBBG compensation to be the most appropriate option.	
5.5.4 Ki	ttiwake – Evidence, Site Selection and Roadmap – Rev C		
NE-19	Clear governance proposals for the post-consent phase are not yet prepared and will be left to develop with stakeholders post-consent. This presents a theoretical risk, should no agreement be reached with stakeholders.	Written documentation has been provided to show that an appropriate agreement will be negotiable with DBS OWF post-consent, but an appropriate outcome has not yet been secured.	The Applicant continues discussions regarding the compensation for Kittiwake and intends to continue updating NE on this matter post consent.
NE-20	The Applicant's presented impact (0.82 birds) was calculated using a nocturnal activity factor (NAF) that is no longer appropriate. Therefore, the compensation quanta (CQ) requirements calculated using this impact are likely to be inadequate.	In line with previous advice from Natural England, the Applicant applied both a lower (25%) and upper (50%) nocturnal activity factor (NAF) to their CRMs for kittiwake. However, the Applicant has used the impact estimated using the lower (25%) NAF (0.82 birds) to calculate the CQ. However, based on new evidence, Natural England advice has changed. We now recommend a 40% NAF should be applied to CRM for kittiwake rather than an upper and lower percentage (JNCC, 2024). Therefore, we recommend the predicted collision impact on kittiwake be revised by applying the new NAF percentage to the CRM or, the impact estimated using the more similar 50% NAF (i.e. 1.1 birds) should be used to estimate the compensation quanta instead. Also, Natural England recommend the Applicant scales their CQ (calculated using the HOW3 stage 2 approach) to enable compensation of the number of pairs needed for the UCI impact value at a ratio of 2:1 or 3:1 with the aim of achieving the central impact value at a ratio of 1:1. For example, using the Applicant's results presented for the HOW3 stage 2 method in Table 1.3, to compensate the UCI impact at a ratio of 3:1 would require a project capable of delivering 46 pairs with the aim of achieving a target of 6 pairs (based on the central impact value). We highlight that the Applicant is attempting to secure approximately 48 nesting spaces on the Dogger Bank South kittiwake tower [REP5-018]. For a more detailed rationale for Natural England's approach, please see REP5-095.	The Applicant has responded to the NAF query from Natural England in 10.59.1 Applicant's Comments 0n Natural England's Deadline 6 Submissions [REP7-086]. The differences in impact numbers, which Natural England refer to here, has been discussed in 10.34.1 Applicant's Comments On Natural England's Deadline 4 Submissions [REP5-074] and the confusion regarding the impact numbers was addressed there. The mean collision estimate of 0.82 has always been in the 5.4 RIAA (updated at D8) and 5.5.7 KIMP [REP5-023]. The differences in the numbers between the Applicant and NE are not due to updated nocturnal activity factor (NAF) values, the 0.82 number has been derived using the StochLab methods in the CRM report [APP-110] where a NAF of 37.5% was used not the lower value as assumed by Natural England. Therefore,0.82 mortalities is the correct figure. As such. the Applicant maintains that the required CQ is 6 pairs and is securing enough nesting spaces in the kittiwake tower to ensure that this is achievable.
5.5.5 G	uillemot and Razorbill - Evidence, Site Selection and Ro	admap – Rev C	
NE-21	The Applicant has used the HOW4 approach to calculate the CQ. Natural England recommends the HOW3 stage 2 method which it regards as more ecological appropriate.	Natural England recommends the HOW3 stage 2 approach to CQ calculation but appreciate that in some circumstances, notably for species with low natal dispersal rates such as razorbill, it can yield excessively large CQ requirements, particularly when scaled at ratios higher than 1:1. We note that the compensation requirement reported by the Applicant for guillemot (GU) and razorbill (RA) are very large compared to their impacts, although the figures we have calculated have not matched the Applicant's findings.	The Applicant has noted that Natural England is seeking to resolve this issue regarding the CQ for guillemot and razorbill. Until the Applicant has seen the figures calculated by Natural England and further discussions have occurred the Applicant will continue to consider the HOW4 approach to the most suitable method for calculating the CQ.



Ref	Key Concern and/or Update	Natural England's Advice to Resolve Issue	Applicant's response
		Natural England has no intention of seeking unrealistic/unachievable compensation targets and is seeking to resolve this issue with the Applicant and other partners.	
NE-22	The Applicant suggests 39 adult guillemots would be required to return the current populations to their historic high counts at the three chosen compensation sites. The Applicant also states that the delivery of this number of adults would be shared with Rampion 2 OWF but, according to the CQ calculations presented in Table 3, 39 adults would only adequately cover the CQ required by the Applicant (if based on the UCI impact value and scaled at 3:1).	Whilst some uncertainty remains regarding the best approach to the auk CQ calculation, the scale of compensation presented so far appears sufficient only for the Applicant's impacts on FFC SPA. We advise that further, more ambitious compensation should be brought forward if Five Estuaries intend to deliver their derogation case in collaboration with Rampion 2 OWF. In addition, as set out in our response to the RIES (Appendix P7), we advise that the Applicant consider the inclusion of their Farne Islands SPA guillemot impacts within the compensation proposals, given the potential for in-combination effects.	The figure for the number of adults required to return the current populations to their historic high counts at the three compensation sites was calculated using a precautionary approach (based on historical population sizes only). Further calculations incorporating the benefit to auk productivity and additional nesting spaces have found that the potential benefit of the measure (measured as the number of additional adult pairs) is between 60 and 92 pairs. The Applicant considers these numbers to be well in excess of the required CQ for VE and Rampion 2 combined. The Applicant has updated the 5.5.5 Guillemot and
			Razorbill - Evidence, Site Selection and Roadmap to Revision B, at Deadline 8, with the inclusion on the impacts of the Farne Islands and the new potential benefit of the measures (calculated as additional number of breeding pairs) for the three shortlisted sites.
5.5.6 Le	esser Black Backed Gull Implementation and Monitoring	Plans - Rev C	
NE-23	The Applicant has applied the HOW4 method to calculate the CQ but not included an adjustment for natal philopatry and dispersal (c.f. comment NE ref for doc 5.5.3 above). This is important because it is unlikely all fledged young that survive to adulthood will recruit to the AOE SPA population. For the Orfordness site, within the AOE SPA, some dispersal of fledged young into breeding colonies outside the SPA is likely, particularly given the preponderance of LBBG switching to urban nesting habitats (Burnell, 2023). Conversely, for the OTB site, outside the AOE SPA, a proportion of fledged young will choose to remain at the site to breed and not disperse elsewhere and potentially into the SPA.	Natural England generally consider it would be appropriate to apply the natal dispersal rate presented by Horswill and Robinson (2015) to the CQ calculation. However, see comment above NE ref. 2 [REP5-016]	See response above to NE-17.
NE-24	In determining an appropriate CQ to target, the Applicant has scaled the CQs derived from the central impact value. Natural England advise scaling compensation based on the UCI impact with the aim of achieving a target CQ based on the central/mean impact value (without scaling). Please see REP5-095 for Natural England's full advice on this matter. Following this advice and referring to the CQ figures presented in Table 3.1, using the scaling chosen by the Applicant for each compensation site, the compensation measure at Orfordness (scaled at 2:1) would require capacity for 399 pairs and the compensation measure at	Natural England generally advises that seabird compensatory measures are scaled against the 95% upper confidence limit (UCI) predicted impact value, rather than the central impact value. Natural England highlight that the CQ figures presented by the Applicant do not consider natal dispersal rates (see comment 2 above). Nevertheless, the target CQ figures proposed so far by the Applicant for either the Natural England's or Applicant's preferred approaches are not dissimilar. What is of primary concern is the scale of compensation (based on the UCI impact value) and whether the site at Orfordness is sufficient to cater for this requirement (see comment above NE ref. 4 [REP5-016]).	See response above to NE-17. The Applicant maintains that the mean figure of 42.8 pairs is an appropriate and proportionate CQ for an impact of 5.7 birds and that either the site at Orfordness or the OTB site is sufficient to accommodate this. Even taking into account the worst case scenario of providing compensation at a 3:1 ratio for the UCI number the Applicant considers there is enough room to deliver the compensation at either site.



Ref	Key Concern and/or Update	Natural England's Advice to Resolve Issue	Applicant's response
	Outer Trial Bank (scaled at 3:1) would require capacity for 598 pairs. Both with the joint objective of achieving the central impact value of 42.4 pairs (or 53.5 pairs – referring to note below on a discrepancy in the presented figures in Table 3.1, c.f. NE ref. 3).		
NE-25	We note the estimated CQ cited in this table for the mean impact value calculated using the Natural England preferred approach (42.4 pairs) does not match the CQ cited in Sections 1.1.21 and 1.1.22 [REP5 – 016] (53.5 pairs). It is therefore unclear what CQ based on the central impact value (and our preferred approach) the Applicant should be aiming to achieve.	Clarify the correct CQ calculated using the mean impact value derived using Natural England's preferred approach – see NE ref 2 [REP5-016]	The Applicant believes that this relates to the roadmap not the implementation plan and the Applicant has updated the numbers in the 5.5.3 LBBG Compensation – Evidence, Site Selection and Roadmap – Rev D, submitted at Deadline 8, the impact value should be 42.2 birds.
NE-26	Whilst the Applicant plans to work with the Norfolk projects compensation site to help deliver their compensation, which we welcome. We note that this collaboration does not include North Falls OWF. Natural England consider collaboration with North Falls OWF will be important as both projects would be better placed to achieve their compensation requirements by working together to deliver their own measures in the AOE SPA and jointly at Outer Trial Bank.	Natural England advise the Applicant to share relevant information, and coordinate works with North Falls OWF. This could help both projects achieve their aims whilst minimising disturbance to the establishing LBBG population. We also encourage the Applicant to work in partnership with North Falls to deliver additional compensation at Outer Trial Bank.	The Applicant continues to work collaboratively with North Falls as far as possible on these measures. With regard to OTB, the projects are progressing this measure jointly and plan to undertake surveys this summer.
NE-27	The Applicant proposes implementing the compensation measure 3 years before operations and, in so doing, risks, accruing mortality debt as the benefits will not arise until after the project's impacts commence. We re-iterate that in so doing the Applicant risks accruing additional mortality debt unless they extend this period to 4 years. This is because LBBG typically do not start to breed until their 5th year (Horswill and Robinson 2015). Therefore, any chicks fledged from the compensation site and surviving to adulthood will need a minimum of 4 years to recruit to the SPA breeding population. More generally, where it is unavoidable that the benefits of a compensatory measure are not predicted to arise until after the impacts commence, guidance indicates that this should be factored into the design of the measures e.g. multiple interventions, increased level of provision (c.f. [Rep5-016] comment NE ref. 4 - on the inclusion of Outer Trial Bank as appropriate recompense in this case).	Natural England advises that the compensation measures should be implemented 4 years prior to operations commencing.	This is noted by the Applicant.
NE-28	Fence checks form part of the maintenance plan to ensure it remains predator proof.	Natural England welcomes that these important tasks lie within the IMP.	This is noted by the Applicant.
	ttiwake Implementation and Monitoring Plans – Rev C		
NE-29	The compensation requirements have been based on an inappropriate impact figure.	Natural England recommends that the collision impacts for kittiwake are revised by applying a 40% NAF to the CRM or the CQ should be re-calculated instead using the impact that was estimated at 50% NAF (i.e. 1.1 birds). We regard the current impact figure (0.82 birds) less reliable as it is based on a CRM	The Applicant has responded to the NAF query from Natural England In 10.59.1 Applicant's Comments on Natural England's Deadline 6 Submissions [REP7-086]. The differences in impact numbers, which Natural England
		derived with the 25% NAF which is supported less by current	refer to here, has been discussed in 10.34.1 Applicant's Comments On Natural England's Deadline 4 Submissions



Ref	Key Concern and/or Update	Natural England's Advice to Resolve Issue	Applicant's response
		evidence (i.e. 0.82 birds). See comment to doc. 5.5.4.(NE ref. 2).	[REP5-074] and the confusion regarding the impact numbers were addressed there.
			The mean collision estimate of 0.82 has always been in the RIAA and KIMP. The differences in the numbers between the Applicant and NE are not due to updated nocturnal activity factor (NAF) values, the 0.82 number has been derived using the StochLab methods in the CRM report [APP-110] where a NAF of 37.5% was used not the lower value as assumed by Natural England.
			Therefore, the Applicant still considers 0.82 mortalities to be the correct figure and considers that this matter is resolved.
			The Applicant maintains that the required CQ is 6 pairs and is securing more than enough nesting spaces in the kittiwake tower to ensure that this is achievable.
NE-30	The Applicant has misinterpreted Natural England's general advice regarding the impact values to be used to calculate the CQ. Natural England generally advises that seabird compensatory measures are scaled against the 95& Upper Confidence Limit (UCL) predicted value, rather than the central impact value. We see this as necessary to ensure that, given the uncertainty regarding OWF impacts, the decision-maker can still have confidence that the compensatory measures can provide sufficient benefit should the impacts exceed those of the central prediction. Please see REP5-095 for Natural England's full advice on this matter.	Natural England generally advises that seabird compensatory measures are scaled against the 95% upper confidence limit (UCL) predicted impact value, rather than the central impact value – For NE over-arching advice on this matter - see [REP5 095] We advise that using Natural England's preferred approach and the data presented by the Applicant so far (noting our position on that data stated above), to compensate the UCI impact at a ratio of 3:1 would require a project scaled with sufficient space for 46 pairs with the aim of achieving the central impact value of 6 pairs. Although, as advised above, we highlight that the Applicant is attempting to secure approximately 48 nesting spaces on the Dogger Bank South kittiwake tower [REP5-018].	Whilst the Applicant disagrees with the Natural England approach to calculating quantum, the Applicant is in discussions to secure sufficient spaces to deliver 6 pairs as compensation for the project impacts on a without prejudice basis.
NE-31	The Applicant has applied the HOW4 method to calculate the kittiwake CQ requirement. Natural England guidelines advise using the HOW3 stage 2 method is more appropriate. Please see REP5-095 for the rationale behind Natural England's preferred approach.	Natural England's current position is to recommend CQs for kittiwake are calculated using the HOW3 stage 2 approach and not the HOW4 method preferred by the Applicant. This is because Natura England considers the Hornsea 3 stage 2 method the most ecologically realistic.	The Applicant submitted at Deadline 7 10.20.12 Methodological differences between the Applicant and Natural England on ornithology matters [REP7-76], which outlines the layering of levels of precaution used in the assessment calculations and the Hornsea 3 stage 2 CQ calculations that results in the unrealistic and unsustainable results. The Applicant maintains that the HOW4 method is the most appropriate approach, especially considering the low impact of 0.8 kittiwake. The calculation of the impact (0.8 birds) also had
			significant levels of precaution in the assessment which are outlined in the aforementioned document.
	uillemot and Razorbill Implementation and Monitoring Pla		
NE-32	Stakeholder participation has not been fully secured and remains under negotiation, although Natural England	In addition to these discussions, we advise that participation by local businesses and stakeholders will be key to the success of	The Applicant has attended a meeting with a potential delivery partner alongside other OWF projects involved



Ref	Key Concern and/or Update	Natural England's Advice to Resolve Issue	Applicant's response
	welcomes the Applicant's ongoing discussions with Cornwall Council, Cornwall Wildlife Trust and the Seal Research Unit. Natural England also welcomes the collaboration between VE and other OWF developments seeking similar auk compensation in the region.	this measure and to bring about the behavioural change sought. The Applicant was looking to form links with the Cornwall Marine and Coastal Partnership, however, it is unknown what, if any progress has been made. We would welcome any update on this before the Examination closes.	and will continue to engage with these stakeholders after examination. Should the Applicant receive an update that can be published prior to the close of examination, this will be submitted.
NE-33	The Applicant proposes implementing the compensation measure 3 years before operations and, in so doing, risks, accruing mortality debt as the benefits will not arise until after the project's impacts commence. For guillemot and razorbill, the age of first breeding typically occurs in their 6th and 5th year, respectively. Therefore, any benefits on productivity from a compensation measure will not likely result in an increase in the local breeding auk population until 4 or 5 years after it begins. If compensation measures are implemented just 3 years prior to OWF operations beginning, then the project will accrue mortality debt.	To limit mortality debt Natural England advises the Applicant should implement the compensation measure at least 4 years prior to operations. More generally, where it is unavoidable that the benefits of a compensatory measure are not predicted to arise until after the impacts commence, guidance indicates that this should be factored into the design of the measures e.g. multiple interventions and an increased level of provision.	The Applicant's proposed without prejudice compensation measure at the three sites in the SW have the potential for 66 additional pairs. Over the period of compensation (40 years) the compensation measure has the potential to generate an additional 2,100 birds therefore the Applicant considers a mortality debt of 0.8 to 1.6 birds will be capable of being compensated for.
NE-34	The approach to bird monitoring has been given in broad terms (i.e. following seabird monitoring programme guidelines) and will be finalised through discussion at OOEG meetings post-consent. It is unclear if camera/drone use would be necessary and, if so, whether it would be feasible. Natural England agree the approach to monitoring should follow Seabird Monitoring Programme (SMP) guidelines but are concerned the planned observations from vantage points may provide insufficient views to adequately monitor some sites. Where this occurs the use of adaptive or innovative measures such as drones or cameras may be necessary to collect all data necessary. At present it is unclear if such techniques/equipment will be needed/used. We note the use of remote cameras may be beneficial for monitoring boat-based and other anthropogenic activity near colonies (assuming no legal restrictions in doing so) but no description of how these activities would be monitored is given.	Natural England advises that the Applicant needs to provide further details of the proposed monitoring techniques. We also advise that they may need to consider the use of adaptive or innovative techniques such as drones/cameras for monitoring. Remote cameras may be beneficial for monitoring boat-related or other anthropogenic activities near colonies.	The Applicant has updated the 5.5.8 Guillemot and Razorbill IMP at Deadline 8 with the potential to use innovative monitoring techniques as part of adaptive management measures.
NE-35	The Applicant states lower productivity would result in higher recruitment, but the converse would be more likely. If the colonies have lower productivity rates, then the number of adults delivered into the regional population would decrease (not increase) and the compensation may take longer to raise the population to historic highs. Adaptive measures may also need to put in place.	The Applicant should consider the alternative scenario described by Natural England.	The Applicant's approach was that colonies with low productivity at present would benefit from the compensation measures and with reduced pressures on the colony the productivity will increase and result in higher recruitment. The Applicant has updated the Guillemot and Razorbill IMP to reflect potential adaptive management measures as noted by Natural England.



Ref	Key Concern and/or Update	Natural England's Advice to Resolve Issue	Applicant's response
NE-36	The Applicant seeks to use change in human behaviour	Natural England recommend success be measured by seeking	The Applicant has committed to monitoring of the colonies,
	as a measure of success but does not describe how they	to see positive changes in bird numbers and/or productivity as	including colony counts, productivity and disturbance.
	would measure this in the IMP.	well as changes in human behaviour. A comprehensive	
		monitoring programme that includes human activity will be	
		needed to identify these changes when they may occur.	



4. APPENDIX E7 – NATURAL ENGLAND'S BENTHIC ECOLOGY ADVICE ON THE APPLICANT'S DEADLINE 5 DOCUMENTS [REP7-105]

Ref	Key Concerns and/or Updates	Natural England's Advice to Resolve Issue	Applicant's response
	RA Screening Matrices - Revision B		
NE-37	Screening matrices updated - pathways of effect to physical processes now only included within operational impacts for M&LS SAC, Essex Estuaries SAC.	No change that makes a material difference to the benthic receptors.	This is noted by the Applicant.
5.5.2 O	utline Benthic Implementation and Monitoring Plan - Rev	vision B	
NE-38	We note the Applicant has added a commitment to a project alone BIMP for benthic compensation, if strategic compensation is found not to be possible, however, the Applicant maintains that there is no certain requirement for compensation.	Natural England welcomes the commitment and will provide further advice if a project level BIMP is deemed necessary by the Secretary of State.	This is noted by the Applicant.
9.13 Ma	argate and Long Sands Special Area of Conservation Be	nthic Mitigation Plan - Revision D	
NE-40	Para 5.1.3: A weak commitment of "consideration will also be given to avoidance of other features (such as Priority Habitats under Section 41) and will consider any potential to subsequently reduce the recoverability time during final routing" has been added.	This commitment is not sufficient to address Natural England's Concerns. Natural England advises that not only are impacts to NERC Habitats considered, but also avoided to provide the necessary mitigation measures.	The wording within the Margate and Long Sands Special Area of Conservation Benthic Mitigation Plan has now been updated (Revision F), to: The final routing of cables through the M&LS SAC will avoid other features (such as Priority Habitats under Section 41) where practicable.
			For example, 'Subtidal sands and gravel' are present within a number of areas of the offshore ECC, including the M&LS SAC, where it will not be possible to avoid this habitat. To note there are no other Priority Habitats known to be present within the M&LS SAC.
NE-41	Para 7.1.1: Natural England welcomes the commitment to employ "readily removable" cable protection within M&LS SAC, together with a commitment to remove cable protection at the "end of life of the cables". However, readily removable options should also take into account the environmental impacts from the removal operations.	Natural England welcome these commitments but advise that they are not sufficient to address our concerns. We note that "end of life of cables" is ambiguous, it should be confirmed that end of cable life is the same as "end of project" (noting that cable lifespan can extend to 50 years or more). We continue to advise that unless it can be demonstrated otherwise, the scale of impacts is likely to hinder the 'maintain' habitat feature conservation objective of the site whilst cable protection is in situ, and potentially beyond, due to limitations in the ability to remove the infrastructure. Natural England advises that environmental impacts from the removal of cable protection should be considered at the consenting phase and only those external protection options that would minimise the environmental impacts included within the Rochdale envelope.	The wording within the Margate and Long Sands Special Area of Conservation Benthic Mitigation Plan has now been updated (Revision F, submitted at Deadline 8), to: The cable protection will be removed from within M&LS SAC at the end of the life of the project. The Applicant has considered the need to remove cable protection from within the M&LS SAC as part of the assessment and only considers cable protection options that can be removed (such as mattresses).



5. APPENDIX H7 – NATURAL ENGLAND'S MARINE MAMMAL ADVICE ON THE APPLICANT'S DEADLINE 5 DOCUMENTS [REP7-106]

Ref	Key Concerns and/or Updates	Issue resolved?	Applicant's response
	Marine Mammal iPCoD Modelling for Project alone - Revision E		
NE-42	Natural England welcomes the inclusion of the median and 95% CIs to the iPCoD results tables. However, we note that there is no variation for median, mean and CI values for both species of seals between impacted and unimpacted populations (Tables 5.2.and 5.3). It is our understanding that the iPCoD model runs the simulations 1000 times for each scenario thus there is an expectation that the output values would show some variation. The outputs could potentially be the same if the population size is large (please note, a slight variation is present in the modelling scenarios for harbour porpoise whose population is significantly larger than those of seals), however the starting population for harbour seals is small and even considering a declining population does not demonstrate any level of variation between the impacted and unimpacted populations. In light of this, we have concerns around the variability of the outputs for the project alone and we believe that there is value in undertaking in-combination iPCoD modelling which may indicate a greater level of variation and potential population	Issue progressed.	Please see 10.13 Marine Mammal iPCoD Modelling for Project alone - Revision B [REP5-070] for a detailed response regarding the results of the iPCoD modelling and the lack of variability in the results for seals. Natural England agreed with the Applicant's approach to only carrying out Project alone iPCoD modelling in their Deadline 4 response [REP4-062] - "We note that the modelling was conducted for project alone due to the uncertainties/ lack of data on the piling schedules of projects included in the incombination assessment. We don't have objections to the Applicant position on this." It is now not possible for the Applicant to run in-combination iPCoD modelling with such limited time left until the end of Examination.
	level impacts warranting further investigation.		
	Applicant's Comments on Natural England's Deadline 4 Subr	nissions - Revision A	
NE-43 5.4.3 H	The Defra Marine Noise Policy paper has been published (Reducing marine noise - GOV.UK). It outlines the expectation that from January 2025: 'all offshore wind pile driving activity across all English waters will be required to demonstrate that they have utilised best endeavours to deliver noise reductions through the use of primary and/or secondary noise reduction methods in the first instance'. Thus, Natural England reiterate our original advice on the need to commit to Noise Abatement System (NAS) within the Marine Mammal Mitigation Protocol (MMMP) and Site Integrity Plan (SIP) and update them accordingly. RA Screening Matrices - Revision B	Issue not resolved.	The Applicant has already committed to demonstrate that it has utilised best endeavours to deliver noise reductions through the use of primary and/or secondary noise reduction methods in the first instance within the Outline Marine Mammal Mitigation Protocol – Piling [REP7-044] and the In-Principle SNS SAC SI0 [REP6-023) in line with Defra (2025) policy. The Applicant highlights that noise reduction can be achieved by several methods and Noise Abatement Systems are not the only option. Therefore, the Applicant is confident that the current commitment is in line with policy and does not agree any updates are necessary.
		Issue not resolved.	As not the response at Deadline 1 [DED1 051], the Applicant
NE-44	Natural England notes only minor edits in the matrices for marine mammal SACs. We would reiterate that all harbour porpoise SACs within the Management Unit should be screened into assessment.	issue not resolved.	As per the response at Deadline 1 [REP1-051], the Applicant reiterates that following industry standard precedent on similar projects (including Hornsea Project Four and Sheringham and Dudgeon Extension projects), the potential impacts to transboundary sites are not considered to be significant based on the distance to site from VE. The Applicant has attempted to consult with transboundary consultees on the site selection and screening, with limited responses. In the absence of detailed responses from consultees, the approach used is considered appropriate



6. APPENDIX J7 – NATURAL ENGLAND'S COMMENTS ON THE APPLICANT'S DEADLINE 5 DOCUMENTS RELATED TO THE PROPOSED LBBG COMPENSATION SITE [REP7-107]

Ref	Key Concerns and/or Updates	Issue resolved?	Applicant's response
10.34.1	Applicant's Comments on Natural England's Deadline	4 Submissions – Rev A	
NE-45	NE39 (J4) Natural England notes that the Applicant intends to consult the Environment Agency's NCERM2 map on SMP Explorer, as follows: https://environment.data.gov.uk/shoreline-planning/unit/SMP7/ORF15.2?ncerm-layers=complex-cliff-zone%2Ccomplex-cliff-recession%2Cncerm-smp-0-2055%2Cncerm-smp-0-2105. We are content that the NCERM2 map predicts there is no coastal erosion risk at the PCS over the next 50-100 years. This issue is, however, only partially resolved because seasonally appropriate baseline surveys covering the PCS still need to be carried out to inform mitigation measures prior to the installation of the fence. Please see our Deadline 6 cover letter for more details [REP6-066].	Issue partially resolved.	The Applicant has agreed to carry out additional onshore ecology surveys at the appropriate time/season, to validate the existing assessment, and will confirm the mitigation requirements or present updated mitigation proposals for the SAC/SSSI/Ramsar Site. Depending on the availability of access to the compensation site, the surveys will either be completed in summer 2025 or undertaken as pre-construction surveys. The mitigation requirements will be reviewed when the surveys are completed.
NE-46	NE40 (J8) As advised above, based on the NCERM2 map the Proposed Compensation Site (PCS) area is not predicted to erode over the next 50-100 years. Therefore, this issue is resolved.	Yes.	This is noted by the Applicant.
NE-47	NE46 (J23) –Natural England's original concern [Rel Reps, J23] was that increased nutrients may arise due to a gull colony being established at the Orford Ness compensation site, which could affect SAC features within the site. In [REP5-074], the Applicant states that 'any increase in nutrients would be no more than that derived from the stated conservation objective to restore the gull breeding colony within the SPA'. However, arisings from sward management should be removed both to deliver optimal nesting habitat and ensure unintended impacts on the SAC do not arise, and that does need to be secured.	Issue partially resolved.	The Applicant commits to removing the arisings from the nesting habitat where necessary and to remove them from the SAC in proportion to the number of gulls nesting within the PCS and informed by water quality monitoring of the saline lagoons.
NE-48	NE52 – The Applicant states that a commitment to remove arisings is made within Section 5.4 of 5.5.6 LBBG Implementation and monitoring Plan – Revision C submitted at Deadline 5. However, in paragraph 5.4.2 of [REP5-022] (updated LIMP), it is stated that 'consideration may be given to removing cut vegetation from the site and any blockages from the fencing'. We advise that whilst this 'consideration' is welcome, it is not a commitment.	Issue not resolved.	As above, the Applicant commits to removing the arisings from the nesting habitat where necessary and to remove them from the SAC in proportion to the number of gulls nesting within the PCS and informed by water quality monitoring of the saline lagoons. The Applicant has also committed to the following mitigation, as stated in the Lesser Black Backed Gull Compensation Site – Habitats Regulations Assessment Revision D: "Regular checks will be carried out at all points where the fence crosses an existing drainage channel. Any debris within the channel or trapped on the fence will be removed".



7. APPENDIX L7 – NATURAL ENGLAND'S UPDATED PADSS [REP7-108]

NE Ref	The principal issue in question	The concern held by Natural England	What actions have been taken and what still needs to change to overcome the disagreement	Likelihood of the concern being addressed during examination	RAG rating at D6	Applicant's position
Develo	pment Consent Order (DCO)					
P1	The during construction monitoring conditions within the deemed Marine Licences (dML) Schedules 10 and 11 do not secure that piling must cease in the event the monitoring highlights the noise impact is significantly in excess of the predicted impacts assessed.	This is a key mitigation for marine mammals and has been included in previous DCOs for various offshore wind farms, such as the recent East Anglia One North project or the Sheringham and Dudgeon Extension Project.	Natural England notes new wording has been included in the updated DCO submitted at Deadline 4 which partially addresses our concerns. We have outstanding concerns relating to the timing of the reports and the wording used to trigger a stop of works.	Potential resolution.		The Applicant responded to this at Deadline 7, confirming that the dML addresses the trigger for the stop of works, however the timing of 9 weeks for reporting is considered reasonable.
P2	Margate and Long Sands Special Area of Conservation (MLS SAC) Benthic Mitigation Plan is not secured within the transmission deemed Marine Licence (dML).	This plan includes key mitigation for the SAC which needs to be updated to include relevant up-to-date information on the final designs and up to date mitigation techniques.	No change. Please see our response to the RIES in Appendix P7.	Potential resolution.		This plan is secured to the dML. Final details will be set out in the CSIP and must accord with the MLS SAC Benthic Mitigation Plan.
P3	Schedule 14 includes only impacts to Alde-Ore Estuary Special Protection Area (SPA) Lesser Black Backed Gull (LBBG), but not affected features of MLS SAC or Flamborough and Filey Coast (FFC) SPA.	We cannot rule out Adverse Effect on Integrity (AEoI) on MLS SAC and FFC SPA and advise that compensation may be required for these sites, if the Secretary of State (SoS) determines that it is required.	Without prejudice schedules have been provided for all areas of disagreement. Natural England provided comments on the schedules at Deadline 6. Some issues remain.	Potential resolution.		The Applicant responded to Natural England's comments at Deadline 7.
Marine	Geology, oceanography and	d Physical Processes				
P4	Disruption of sediment transport processes at MLS SAC due to the placement of cable protection	Insufficient information to assess the magnitude and significance of potential impacts to sediment transport processes within MLS SAC.	No change. Please also see our response to the RIES in Appendix P7.	Potential resolution.		The Applicant can confirm the conclusion that only very minor changes to the sediment transport regime are expected due to the presence of MDS cable protection measures at the northern tip of MLS SAC. Around the northern tip of MLS SAC and the cable route in this area, sediment transport processes and pathways are at a length scale in the order of kilometres, which is much larger than the very localised potential effect of any cable protection (length scales in the order of metres) during operation. The Applicant therefore concludes that no measurable change will occur to the magnitude or pattern of natural processes and bedforms that are active within the MLS SAC.



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						It is possible to confidently assess and conclude that any effects of cable protection near to the MLS SAC will be of small magnitude and localised extent. On this basis, it is not necessary (nor practicable) to assess the effect of an immeasurably small change on an energetic natural sediment transport regime, at more distant locations.
P5	Construction and Operation and Maintenance Impacts to SPA/SAC supporting habitats, and priority habitats	Incomplete consideration of potential impacts to seabed morphology and magnitude and significance of their effect.	We advise that uncertainty remains regarding the factors that influence the rate of sandwave/sandbank mobility and, in turn, cable burial success and scour at WTG foundations. This includes the assessment of long-term morphological change of the seabed and larger sandbank features, assessment of static vs mobile seabed areas, identification of erosional and accretional areas, assessment of the impact of normal and extreme wave conditions on seabed level, and thickness of the mobile sediment layer. Updated assessments will be needed pre-construction to inform detailed engineering and design and validate ES predictions and conclusions regarding impacts to seabed morphology. These should be carried out following completion of further geophysical and geotechnical surveys.	Potential resolution.		To inform the Environmental Impact Assessments, the Applicant has considered the presence and mobility of seabed sediments and bedforms over a range of sizes, e.g. ripples, sandwaves and sandbanks, and the processes controlling the historic, present day and future evolution of these features. The Applicant has already conducted geophysical surveys of mobile sediment thickness (presented in the Environmental Statement). The natural rate and timescale for migration or evolution of larger features is found to be typically very slow, relative to the lifetime of the wind farm. The expected magnitude and extent of any effects from the MDS infrastructure is typically very small, relative to the scale of the natural processes controlling the behaviour of the natural environment at wider local to regional scale. As such, the processes and features present in the natural system are simply expected to continue to occur and evolve, not measurably affected by the construction or presence of the wind farm. Additional studies will be used to inform the final engineering design of the wind farm infrastructure, in conjunction with any relevant survey data. The assessments already consider the MDS and so any update based on a lesser design would result in a smaller potential impact conclusion.
Offsho	re Ornithology			I		
P6	Potential incorrect estimates for Alde-Ore Estuary (AOE) SPA lesser black backed gull (LBBG) mortalities.	At present, the estimates for mortalities due to collision at both the north and south VE arrays appear incorrect.	Resolved. The Applicant has stated that PVA could not be run with burn-in for LBBG due to issues with the PVA tool and the available data. This is acceptable to NE [REP4-040].	This issue has been resolved.		The Applicant welcomes this position from Natural England.
P7	Apportioning of adults (other than AOE SPA LBBG) during the breeding season based on generic data rather than sitespecific data.	We advise that the evidence used to inform adult apportioning is not sufficient. The data on the number of adult- or adult-type birds present is generic. Seasonal variations should also be considered.	This issue has been resolved.	This issue has been resolved.		The Applicant welcomes this position from Natural England.



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P8	In-combination impacts on the FFC SPA populations of guillemot and razorbill are at a level where adverse effects cannot be ruled out and VE will be adding to this.	The Applicant has applied their preferred displacement (50%) and mortality (1%) rates to the guillemot and razorbill populations at risk at each offshore wind farm (OWF) project included in the in-combination assessment for the FFC SPA. As well as departing from Natural England advice on this matter, in so doing the Applicant disregards the in-combination values that have been used by DESNZ for recent consents.	The in-combination assessment of impacts on guillemot and razorbill at FFC SPA have received no further updates since deadline 1. The need to update the incombination assessment remains a live issue and should include the latest figures from recent projects key to the assessment e.g. Outer Dowsing, SADEP, Rampion 2, DBS and North Falls OWFs.	Potential resolution. This should be submitted into the Examination to resolve this issue.		The Applicant has updated the in-combination assessment for guillemot and razorbill at FFC SPA in the updated 5.4 RIAA – Revision C submitted at Deadline 7
Ornith	ology Compensation					
P9	AOE SPA LBBG - concerns regarding the suitable level of compensation and the effectiveness of measures proposed at the two sites.	As well as the above issue regarding the impact calculation for AOE SPA LBBG, the compensation requirement is based on the mean number of mortalities rather than the 95% upper confidence interval (UCI) value. The proposed compensatory measures have potential merit, however further information is needed to provide sufficient confidence that the measures can be secured and will be effective.	Impacts, CQ and an appropriate scale of compensation delivered through a two site proposal all still need to be agreed.	Uncertain. If the assessment is updated and the compensation based on the 95% UCI, the compensation requirements issue may be resolved. However, unless findings are presented promptly following the 2024 breeding season, the uncertainties around the proposed compensation are unlikely to be resolved during Examination.		This was responded to at Deadline 7 in 10.59.1 Applicant's comments on Natural England's Deadline 6 Submissions. The compensation quantums have been calculated using both the Applicants preferred approach and Natural England's preferred approach in 5.5.3 Lesser Black Backed Gull Compensation - Evidence, Site Selection and Roadmap - Revision C (Clean) [REP5-015]. With regards to further surveys, and as highlighted above in Section 2 in response to Natural England's cover letter, the Applicant has agreed to carry out additional onshore ecology surveys at the appropriate time/season, to validate the existing assessment, and will confirm the mitigation requirements or present updated mitigation proposals for the SAC/SSSI/Ramsar Site. With regards to OTB further surveys were carried out during the 2024 breeding season by Natural England at the Outer Trial Bank and signs of rat predation were discovered again during the surveys. The full results were submitted in 10.49 Natural England Outer Trial Bank Survey Report 2024 [REP6-053]. The Applicant has also submitted further evidence in 10.27 Digital Aerial Surveys - Outer Trials Bank [REP3-026]. The Applicant has provided further consolidated evidence of the differences between its approach and Natural England's approach to calculating the quantum of compensation in



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						10.20.12 Methodological Differences Between the Applicant and Natural England on Ornithology Matters at Deadline 7. Using the NE approach for Lesser Black Backed Gull requires over 1200 pairs for an impact of 11 birds (using NE's own methods), noting the Applicant's preferred method calculates the impact as 5 birds. This is especially true as the measure is being implemented at the impacted site. The Applicant does not agree that a provision of >1,200 breeding pairs is under any circumstances proportionate to the impact, and that either site is more than capable of securing sufficient capacity for compensation. The Orford Ness compensation site has been included within the Order Limits (a first for any offshore wind project) to provide a high security of deliverability, and the Applicant has provided a letter of comfort from The Crown Estate relating to the Outer Trial Bank (OTB) site, and notes that two consecutive years of surveys indicated a population significantly declined from its historic peak, and clear evidence of rat predation. Whilst further survey work would be benefit prior to implementing a measure at OTB, the Applicant considers this measure would likely have a high degree of success. In summary, the Applicant has proposed two mutually exclusive measures, either of which have the capacity to full compensate (using the Applicant's preferred methods), are secured or
P10	Uncertainty regarding adequacy of implementing disturbance management at southwest colonies for FFC SPA guillemot and razorbill.	Whilst we consider this measure to be technically feasible, candidate locations have been identified but not secured. Impact levels are also still to be agreed.	Progress continues. Awaiting further details on the collaboration with local organisations and other OWF projects.	Uncertain Monitoring will take time so unless findings are presented promptly following the 2024 breeding season, this issue is unlikely to be resolved during Examination.		evidently securable, and are clearly deliverable. This was responded to at Deadline 7 in 10.59.1 Applicant's comments on Natural England's Deadline 6 Submissions. The monitoring from the 2024 breeding season was presented in the [REP1-054] 10.11 Guillemot and Razorbill – Surveys Report at Deadline 1. Discussions are ongoing with a proposed delivery partner in the South West and the Applicant will provide an update once this is available. Nonetheless these measures are also deliverable by the Applicant alone or in collaboration with other developers
P11	FFC SPA kittiwake Artificial Nesting Structure (ANS).	As with LBBG above, the compensation requirements are to be calculated using the central impact value. There is also some uncertainty regarding the	Progressed but not resolved. Information on the sharing arrangement and apportioning of benefits for the Gateshead ANS has now been provided. However whilst the roadmap presents	Potential to Resolve. If further details can be provided, then it is likely that		The differences in impact numbers, which Natural England refer to here, has been discussed in 10.34.1 Applicant's Comments On Natural England's Deadline 4 Submissions and the confusion regarding the impact numbers were addressed there.



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		nature of the sharing agreement with DBS OWF for their ANS at Gateshead.	calculations regarding the 95% UCI, these relate to outputs using the lower of the two Nocturnal Activity Factors (NAF), whereas the higher one should be used. Progressed but not resolved. We consider that the Applicant has addressed the 'division of benefits' approach, and they have presented the 95% UCI values which we welcome (albeit still arguing for use of the Central Impact Value and a 1:1 ration). However, the issue of using the lower of the two NAFs remains outstanding - NE considers the central impact value should be 1.1 not 0.82. The Applicant is still using 0.82 birds as the central impact value, rather than the 1.1 based on Natural England's advice. The compensation quantum is based on this impact and have been presented using the HOW4 (their preference) and HOW3 stage methods (our preference).	this issue can be resolved.		The mean collision estimate of 0.82 has always been in the RIAA and KIMP. The differences in the numbers between the Applicant and NE are not due to updated nocturnal activity factor (NAF) values, the 0.82 number has been derived using the StochLab methods in the CRM report [APP-110] where a NAF of 37.5% was used not the lower value as assumed by Natural England. Therefore, 0.82 mortalities is the correct figure and considers that this matter should be resolved.
Benth	ic Ecology					
P12	AEoI on Annex I sandbank feature of Margate and Long Sands Special Area of Conservation (MLS SAC).	We disagree with the Applicant on the scale and significance of the impact.	The Applicant has provided clarification on the scale of the impact [REP6-029], however, we do not agree on the significance of the effect.	Unlikely		The Applicant maintains the position that the very small amount of cable protection that may be required would not constitute an AEol. However, should the SoS ultimately decide compensation is required, the Applicant has provided a 'without prejudice' Benthic Compensation Strategy Roadmap.
P13	Mitigation measures fail to consider potential presence of Section 41 NERC Act habitats.	The Applicant has failed to consider Section 41 NERC Act habitats in their assessment.	Progressed. We note the Applicant has provided an updated IPMP [REP6-029]. We will provide an updated response at Deadline 8.	Potential resolution		The Applicant has updated wording for Section 41 NERC Act habitats. See response to Table 4 (ref 9.13) above.
P14	Methods and evidence used to determine MDS for cable protection within MLS SAC and WCS potentially not realistic.	Natural England is unable to advise on the scale and significance of the impacts and therefore compensatory requirements.	In progress. The Applicant has provided further clarification in [REP6-044] which has resolved many of the inconsistencies. However, section 3.1.6 is inconsistent with standard best	Potential resolution		A breakdown of cable protection required per phase is now included as part of Section 7 (Margate and Long Sands SAC Benthic Mitigation Plan (Revision F)), as per Annex E1 of Appendix E to Natural England's Relevant Representation on Benthic and Intertidal Ecology [PD2-007]. Please also see response to Table 2 (ref 10.20.1) above.



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			practice advice on cable protection within designated sites and commitments made by the Applicant to seek a separate marine licence for the placement of cable protection over the lifetime of the project. It therefore remains unclear what the MDS for cable protection is.			
P15	"Without Prejudice" Benthic Compensation	Further progress is required on each measure to have confidence that they are achievable and would deliver effective compensation for project impacts.	No change. Please see our REIS response to question 4.4.2 and 4.4.3 in Appendix P7	Uncertain. Further review is likely to be undertaken during examination and with no guarantee this issue will be resolved within the examination timeframe.		The Applicant would like to reiterate that the strategic compensation measure is the preferred compensation option, should compensation ultimately be required, which would deliver effective compensation for the project impacts. Following the WMS, the ExA and NE should have confidence that this option is achievable. However, if for whatever reason strategic compensation was not ultimately possible, information is provided within the Roadmap for other project alone measures that could be implemented, should compensation ultimately be required. To note, further details have been added to the Roadmap (Revision C) on monitoring proposals and potential adaptive management for each of the project alone measures presented.
Marine	Mammal Ecology					
P16	Southern North Sea Special Area of Conservation (SNS SAC) – harbour porpoise underwater noise impacts - Outline Site Integrity Plan (SIP)	Current approach to SIP implementation is unlikely to prevent impact thresholds from being exceeded in the SNS SAC. The Applicant has not committed to using Noise Abatement Systems (NAS) at this stage, increasing the risk that an adverse effect on site integrity (AEoI) cannot be avoided.	Natural England notes minor updates in the Outline SNS SAC SIP – Revision B and a mention of the Defra Policy Paper. However, the Applicant has not committed to NAS but they will "demonstrate that they have utilised best endeavours to deliver noise reduction for pile driving activity". Thus, we do not consider that this issue is fully resolved.	Potential Resolution. If changes can be made to the Outline MMMP, it is likely this issue can be resolved		The Applicant has already committed to demonstrate that they have utilised best endeavours to deliver noise reductions through the use of primary and/or secondary noise reduction methods in the first instance within the Outline Marine Mammal Mitigation Protocol – Piling [REP7-043] and the In-Principle SNS SAC SIP [REP6-023] in line with Defra (2025) policy. The Applicant highlights that noise reduction can be achieved by several methods and Noise Abatement Systems are not the only option. Therefore, the Applicant is confident the current commitment is in line with policy and does not agree any updates are necessary.
P17	EIA/HRA Conclusions	Lack of robust evidence supporting the conclusions made.	Natural England has provided comments on the updated documents see Appendix H7. The issue has progressed but not been resolved.	Potential Resolution. If the Applicant carries out population modelling and		Please see Appendix 1 – Marine Mammal iPCoD Modelling for a detailed response regarding the results of the iPCoD modelling and the lack of variability in the results for seals. Natural England agreed with the Applicant's approach to only carrying out Project alone iPCoD modelling in their Deadline 4 response [REP4-062] - "We note that the modelling was"



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				updates their EIA/HRA assessment it may be possible to resolve this issue.		conducted for project alone due to the uncertainties/ lack of data on the piling schedules of projects included in the incombination assessment. We don't have objections to the Applicant position on this." It is now not possible for the Applicant to run in-combination iPCoD modelling with such limited time left until the end of Examination.
Seasca	ape, Landscape and Visual					
P18	Suffolk and Essex Coast & Heaths National Landscape/AONB and Suffolk Heritage Coast (SHC) – seascape impacts.	The special qualities of the National Landscape/AONB and the SHC will be affected by the proposed development. This is of particular concern at Orford Ness. We are concerned that the most northerly 8 WTGs will 'close the gap' and create a distinct grouping between the existing Galloper and Greater Gabbard OWF arrays, and the to be built EA2 array. In addition, the size difference between the VE and other WTGs in the area will result in a visually jarring 'cluttering' effect.	The SLVIA needs to be updated to properly assess the potential impacts on the AONB and SHC, particularly with respect to the most northerly WTG and the potential for the array to cause 'curtaining' and 'cluttering' effects. Once the assessment is updated, further consideration of NE advice on embedded mitigation is required, drawing on our three proposed design principles. No change. The Applicant needs to provide an updated assessment.	Uncertain. There is potential for the applicant to update the assessments during the examination. However, it is likely that the issues raised will not be resolved through. assessment alone and will require design changes in line with our proposed principles to be addressed.		See previous response from the Applicant at P18 within 10.34.1 Applicant's Comments on Natural England's Deadline 4 Submissions [REP5-074].
Onsho	re Ecology					
P19	Potential impacts to designated sites and features at the proposed LBBG compensation site on Orford Ness.	Insufficient baseline data on the saline lagoon, shingle vegetation shingle sediment structure and morphology to advise on potential impacts.	The Applicant needs to commit to carrying out seasonally appropriate surveys pre-construction to complete the baseline characterisation of the Proposed Compensation Site, and inform the mitigation proposals for the SAC/SSSI/Ramsar also need to be presented. The requirement to confirm adequacy of the mitigation should be secured within the DCO. If the Applicant agrees to this approach then we would support a conclusion of no AEoI on site integrity.	Uncertain. If the Applicant can commit to carrying out predetermination surveys and providing further information, as required, then this issue could be resolved during Examination		Seasonally appropriate surveys have been committed to in the Outline LBBG Implementation and Monitoring Plan (secured to the DCO in Schedule 14) and this information will be provided to Natural England and other stakeholders as part of the OOEG and the development of these measures post-consent.



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P20	Operational and maintenance facility impacts have not been considered.	No consideration has been given to the potential impacts from the operational port on the environment.	No change.	Uncertain. The Applicant needs to include the O&M port in its EIA/HRA to resolve this issue during Examination.		The Applicant has not included an O&M port in the assessments as the port has not been identified. This will be part of the supply chain process that will take place post consent, with any necessary consents secured at the time.



8. APPENDIX P7 – NATURAL ENGLAND'S COMMENTS ON THE REPORT ON THE IMPLICATIONS FOR EUROPEAN SITES (RIES) [REP7-110]

Ref	RIES Question	Natural England Comment	RAG	Applicant's response
NE-49	Q2.2.3 [To NE and all IPs] Other than the sites and features listed above, the ExA is not aware of any representations from IPs identifying any additional UK European sites or qualifying features for inclusions in the Applicant's HRA. IPs are requested to advise if they consider that additional sites or qualifying features could be affected by the Proposed Development.	We refer the Examining Authority to Table 5.1 in the Cover Letter of Natural England's Relevant Representation [RR-081].		This is welcomed by the Applicant.
NE-50	Collision Risk to Marsh Harrier, AOE SPA, Minsmere to Walberswick SPA and Ramsar Site. QT2.1.3 [To NE] The Applicant argues that marsh harrier and nightjar migrate to southern Europe and sub-Saharan Africa (in a southerly direction) and therefore considers it highly unlikely that migrating marsh harrier and nightjar from the AOE and Minsmere Walberswick SPAs have connectivity with the Proposed Development's array located to the east. On what basis does NE consider there is a risk that these species would migrate east and encounter the array?	The project arrays lie to the South South-East (SSE) of Minsmere to Walberswick SPA and well within a broad southward migratory pathway. Therefore, in line with the Applicant's own reasoning, Marsh Harrier will be at risk and should be screened into the migratory Collision Risk Modelling (CRM). The Applicant has also chosen to screen in Marsh Harrier for the overlapping Ramsar site, so it should also screen in the SPA population as they are the same population. Regarding marsh harrier from the AOE SPA, Natural England consider it prudent to assume the birds could arrive from any sector south of the SPAs latitude in spring but have more concern for the post-breeding dispersal of adults and young which can be any direction prior to the southward migration in autumn (BTO 2025, Strandberg 2008). On this evidence, and the closer proximity of the AOE SPA to the proposed arrays, Natural England advise the raptor should be screened into the assessment.		Marsh harrier was included in the mCRM report and was screened out as the results of the Migropath modelling predicted that no marsh harriers would fly through the array area, see Table 5.1 of the [APP-116] 6.5.4.14 Migratory Collision Risk Modelling.
NE-51	Collision Risk to Nightjar, Minsmere to Walberswick SPA Please see above question.	For the Minsmere-Walberswick SPA, both marsh harrier and nightjar have been screened out of the migratory Collision Risk Modelling (CRM) on the assumption no migratory/dispersal movements will be directed to and from the east. However, the SPA lies to the north of the Project Development Area (PDA) and very much along a southward migratory route to and from it. The Applicant's reasoning also contradicts their conclusions for the Minsmere-Walberswick Ramsar site – for example, the suggestion that marsh harrier from the Ramsar site is at risk of collision but not from the SPA. If this is not an error, then we advise the SPA population should be treated the same as the over-lapping Ramsar site's population in the assessment. Natural England also note that this SPA lies further to the North than the AOE SPA and not west of the PDA as stated by the Applicant. Therefore, by the Applicant's own reasoning, nightjar should be screened into the migratory CRM. On this basis, we recommend that nightjar should be screened into the assessment. As highlighted in our Risk and Issues Log at Deadline 6 [REP6-070] we are content to 'agree to disagree'.		The Applicant has noted Natural England's position and is happy to 'agree to disagree'. However, it should be noted that both marsh harrier and nightjar were included in the 6.5.4.14 Migratory Collision Risk Modelling submitted at the Application stage.
NE-52	Impacts to Benthic Habitats supporting SPA and SAC	Natural England advises that best practice is for implications		This is welcomed by the Applicant.
	qualifying features (prey availability), Red Throated	to the wider ecosystem, as a result of impacts to benthic		



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
	Diver, Outer Thames Estuary SPA. The ExA notes that [REP5-011] screens out LSE for red-throated diver of OTE SPA for prey availability. It therefore understands NE's comments to relate to the Applicant's screening of LSE but would welcome clarification if this is not the case. QT2.1.5 [To NE] Confirm if these matters are resolved. If not, confirm for which European sites and qualifying features you are not content and identify what further assessment you consider is required from the Applicant.	receptors, to be assessed within the benthic EIA chapters and where appropriate HRA. Of particular concern is where there is overlap with an SPA and potential for changes in prey availability. However, we note that there is an assessment of prey availability in the Ornithology ES chapter [APP-073], and that LSE for OTE SPA red-throated diver in regard to prey availability is screened out. Therefore, for this project an assessment of impacts to supporting benthic habitat to Outer Thames SPA within the benthic ES chapter is unlikely to materially change this assessment. Accordingly, we confirm that no further action on this matter by the Applicant is required		
NE-53	AEol to MLS SAC Based on [PD2-004] and [PD2-007], the ExA understands that NE's advice is that AEol to the MLS SAC cannot be excluded for the following pathways assessed in the RIAA [REP1-016] because of installation, maintenance and decommissioning of cable and associated cable protection: • physical habitat loss or disturbance (construction (C), operation (O) and decommissioning (D)) • suspended sediment or deposition (C, O and D) • changes to physical processes (O) Q3.3.1 [To NE] Confirm if the ExA's understanding is correct or, if not, clarify which other activities are of concern and which pathways it considers cannot be excluded from AEol and provide an explanation for each.	Natural England is largely in agreement with the ExA's understanding of the impact pathways identified, with the exception of changes to suspended sediment concentrations due to project-related activities/impacts which are considered likely to be short-term/temporary. We would also advise that the first bullet point or impact pathway (physical habitat loss/disturbance) includes 'alteration' (i.e. of designated subtidal sandbanks or supporting benthic communities and species). Similarly, we would advise that the third bullet point, or impact pathway, includes 'geomorphological' processes. We consider that mitigation measures could be adopted, [although, these have not been fully presented, agreed and secured] to minimise the impacts to acceptable levels for all but habitat change/loss from the placement of cable protection, for which a without prejudice derogations case and compensation measures have been provided by the Applicant.		This is noted by the Applicant. The Applicant has committed to all reasonable mitigation measures in the MLS SAC Benthic Mitigation Plan.
NE-54	Sediment Disturbance from Cable Trenching QT3.1.3 [To NE and the Applicant] Advise if this matter is resolved, based on the Applicant's confirmation modelling of cable trenching assumed up to 100% of material being fluidised.	In Table 2.1 [APP-071], the estimated total volume of sediment disturbed due to inter-array and export cable installation was based on the assumption that 50% of material is ejected from the trench whilst the remainder of the material is fluidised, but retained as sediment cover in the trench. However, in the updated MDS Technical Note [REP6-038], the Applicant states that the 50% assumption was used because in most cases during simultaneous lay and bury activities less than 100% of material in the trench is expected to be ejected into the water column. It is also stated that pre-lay trenching may be used (for cable installation), in which case the full 100% volume of material will be excavated. However, it is also stated that it is unrealistic that the maximum depth of 3.5m will be required or achieved for the pre-lay trench and will actually tend towards a typical average burial depth of 1.75m. Consequently, we advise that firstly, the Applicant should clarify whether the most realistic worst case burial depth is 1.75m or 3.5m. Furthermore, given that the geotechnical properties across the array areas and offshore export cable corridor are yet to be confirmed, and it is possible that a combination of cable burial		The Applicant can confirm that the maximum design scenario (realistic worst case) burial depth is 3.5m and that the final assessment is based on 100% release of material from trench cross section. The dimensions of the excavated trench that are required to achieve this burial depth, and the associated volume or rate of sediment actually disturbed and ejected from the trench are also important factors in the assessment, and may vary in practice locally with factors such as choice of cable burial technique and geotechnical properties of the seabed. In all cases, conservatively realistic dimensions, properties and proportions (100% volume) have been used to inform the final assessment. Following normal practice for OWF marine processes EIAs, the maximum design scenario is chosen so that the resulting description of effects (e.g. magnitude, extent, duration) would not be exceeded by other



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		techniques may be used; we advise that the Applicant should adopt a worst-case cable burial depth and percentage of sediment disturbance in their calculations and assessments. This is in line with other recent OWF marine processes EIAs (see [APP-013] Hornsea Project Four). Therefore, this issue remains unresolved.		realistic combinations of the identified options and range of conditions.
NE-55	Boulder Clearance and UXO Clearance, and Pre-Lay Grapnel Run NE noted [REP5-097] that [REP4-034] sets out clarification on boulder clearance and pre-lay grapnel run but [REP4-061] and [REP5-096] continue to show these as not agreed. QT3.1.4 [To NE and the Applicant] Confirm if this matter is resolved based on information provided by the Applicant including in [REP4-034]. If the matter has not been resolved, explain why that continues to be the case.	In [APP-071] the Applicant has provided an indicative total maximum seabed preparation area/volume for the proposed export cable laydown areas, including dredging, boulder removal, and UXO clearance. However, a similar estimate including pre-lay grapnel run, boulder removal, and/or UXO clearance (and other seabed preparation activities) has not been provided for sandbanks and designated areas of seabed (e.g. Table 2.8, APP-071). The updated [REP4-035 and REP-038] have only repeated the MDS for boulder clearance from the Project Description and, hence, the indicative total maximum seabed preparation area/volume for sandbanks and designated areas of seabed remains unclear.		The Applicant is unable to determine a realistic MDS for sandbanks and designated areas of seabed at this stage and will only have confirmation of this at detailed design stage.
NE-56	Indirect Effects to SAC NE (E32 [PD2-007]) advised that the sandbank feature of the SAC extends beyond the SAC boundary and there was potential for indirect effects from impacts to sandbank outside of the SAC. The Applicant [REP1-051] states that evidence suggests the sandbank feature does not extend beyond the SAC boundary other than to the east. QT3.1.6 [To NE] Noting the Applicant's response in [REP1-051], confirm if this matter is resolved. If not, provide any evidence you hold that the Proposed Development could result in indirect effects for the SAC.	Natural England advises that supporting habitats to Annex I sandbanks and the overall sandbank system extend beyond the designated site. However, based on the Applicant's response at [REP1-051] and other responses Natural England believes that the risk of indirect impacts occurring to MLS SAC from the proposed activities is low. Therefore, no further action is required on this issue.		This is welcomed by the Applicant.
NE-57	HVDC Relates to: NE (E19 [PD2-007]) noted that the option to adopt HVDC within the ECC was ruled out and advises the Applicant to consider further mitigation to reduce impacts. QT3.1.7 [To NE] Noting the Applicant's response in [REP1-051], confirm if this matter is resolved. If not, provide any evidence you hold that use of HVDC cable would further mitigate impacts.	Natural England advises that this issue is part of an overarching one in relation to ensuring that every effort has been made to use the mitigation hierarchy to minimise the impacts as per the Defra guidance for marine compensatory measures, even if compensation measures are being implemented (Best practice guidance for developing compensatory measures in relation to Marine Protected Areas, 2021). This is further supported by 090224 OWEIP Consultation on updated policies to inform guidance for MPA assessments, which includes a step wise approach to avoiding, reducing, and minimising impacts and the scale of compensation required. In relation to HVDC, Natural England acknowledges and welcomes the Applicants reasoning for concluding that there would be 'no reduction in impact from an HVDC solution'. However, it remains that the Applicant has not sought to progress a coordinated approach with North Falls and/or any of the interconnectors which could help mitigate the impacts from multiple projects. As per our previous advice (E19 in [REP1-051]) we believe that a coordinated approach should still be considered as part of the		The Applicant has investigated the potential of an offshore connection and responded on this matter at section 2 of 10.4 Applicant's Response to Relevant Representations [PD4-006]. The conclusion was that this is not a suitable or deliverable alternative, and therefore the ExA can be satisfied that the tests required for HRA have been met in this regard.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		Examination and note this approach to mitigation has not been considered or addressed in the Applicant's response within [REP1-051].		
NE-58	Operational and Maintenance Activities QT3.1.8 [To NE] Confirm what additional information about operational activities you consider is required in the Outline OOMP [APP-248]	Natural England advises at section 2.14 of the Outline OOMP [APP-248] it is not clear how often preventative maintenance will occur and therefore the impacts are unable to be fully assessed. In addition, there is no distinction between activities inside and outside of MLS SAC. Therefore, it is unclear what the permitted activities would be within the site over the lifetime of the project and advise on the scale and significance of the impacts in relation to designated site features and implications on recovery should O&M activities occur.		The Applicant notes Natural England's concern. The MLS SAC Benthic Mitigation Plan contains commitments relating to the carrying out of activities within the SAC during operation. The final OOMP will accord with these commitments.
NE-59	Disruption of Sediment Transport due to Cable Protection QT3.1.9 [To NE] Provide any evidence you hold to suggest the Applicant's conclusions on sediment transport are not realistic. Identify any alternative benchmarks to MarESA that would be appropriate for use. Submit any relevant evidence you hold from London Array monitoring.	(a) Sediment Transport Natural England advises that we do not hold the monitoring reports associated with Marine Licence condition discharge. However, we note that the BritNed cable crossing MLA docs are available on the MMO Public Register. Natural England has included extracts from our advice to the MMO on both London Array and BritNed monitoring reports. London Array OWF Post-Construction Monitoring Reports (2015, 2016, and 2017) The MarineSpace (2015) London Array OWF Year 1 Post-Construction Monitoring Report presented bathymetric survey data that showed a greater degree of scour had occurred at the export cables, WTG foundations, and offshore substations, than was predicted in the Environmental Statement (ES) (2005). The greatest scour observed was at the BritNed cable crossing where the 2014 seabed level was up to 9m lower than pre-construction levels and resulted in exposed and freespanning cable. The 2014 survey showed scour pits around every WTG surveyed. The deepest depression recorded around a WTG was almost 9m deeper in 2014 than in 2010, with a diameter of 69m (the ES predicted scour holes of 5.0-7.2m depth around monopiles). The Years 2 and 3 Post-Construction Monitoring Reports (2016 and 2017, respectively) also showed levels of localised scour and cable exposure at both the cables and WTGs greater than predicted within the ES. London Array BritNed Cable Crossing – Remedial Rock Installation (MLA/2014/00502 and MLA/2016/00129) The London Array/BritNed cable crossing is located at the eastern end of Kentish Flats subtidal sandbank, within MLS SAC. Following a review of the pre- and post-installation survey data for the London Array export cables, areas of scour were identified at the cable crossing with the BritNed cable, in addition to the development of exposures on the London Array export cables. At the BritNed cable crossing, the seabed level was found to be up to 9m lower than pre-construction levels, resulting in exposure and free-spanning cable. HR Wallingford		The Applicant thanks NE for highlighting these location and design specific examples from the London Array OWF. From the same reports referenced by NE, we note that local scour in the order of 5-9m was observed to occur at the ends of the 4 short protection berms at the BritNed crossing. Remedial scour protection (if and where applied) would have been within a short distance of the planned and consented crossing location. The occurrence of scour in this case appears to be related to the design of the crossing (an insufficient extent of scour protection included at the time of initial construction). It is likely that the EIA (based on more general preliminary design details) would have reasonably assumed that the final scour protection design would be sufficient to prevent such primary scour, and that only secondary edge scour would be likely. We note that the bathymetry surveys of the scour illustrate that the scour is localised to the immediate vicinity of the crossing and does not have any apparent effect on the surrounding seabed (no interruption to meso- to macro-scale bedforms). In the same period of time, similar surveys of the Kentish Flats OWF cable crossing on the same route indicated periods of natural sediment accumulation and residual trench infilling, and "no statistically significant change in elevation along the sections of rock dump from 2013 to April 2014". Where there is a risk or actual occurrence of problematic scour associated with cables, cable crossings, and WTG foundations, scour protection is usually applied as a pre-emptive or remedial measure,



Ref RIES Question	Natural England Comment	RAG	Applicant's response
Tillo Quosiion	(2014) assessed options for the short-term remediation of the		designed for that purpose. The presence of adequate
	scour pits and applicability of methods for longer-term cable		correctly designed scour protection should prevent the
	protection to prevent further scour, or risk to the London Array		occurrence of primary scour.
	cables. This assessment concluded that 'Do Nothing' was not		` ´
	advisable because:		The Applicant cannot comment directly on the
	 Unburied cables would be left vulnerable to 		predictions of scour depth for WTGs made in the
	environmental/third party damage.		London Array ES. The standard relationship provides a
	Cable freespans would continue to grow.		central estimate of scour depth (as used in the Five
	 Scour would grow uncontrollably. 		Estuaries assessment) as 1.3 times the monopile
	•Rock berms would collapse into the scour pits.		diameter. For a nominal 10m diameter monopile, the
	•A new subtidal channel would form resulting in destabilisation		scour depth around an unprotected foundation with a
	of the subtidal sandbank.		unlimited depth of erodible sediment, is 13m. The
	HR Wallingford (in Offshore Wind Consultants, 2016) stated		corresponding minimum extent is ~2.25 times the
	that if, as stated above, nothing was done to mitigate the		diameter (22.5m from the edge of a 10m foundation, or
	further evolution of the scour pits in the remedial work zone, it		55m overall diameter). For both depth and extent,
	is possible that the subtidal sandbank (at the cable crossing)		these are central estimates – in practice, values can be
	may fragment with the formation of a new channel. Moreover,		smaller or larger within a range around this central
	if "this were to be the case then part of the functionality of the		value, but not predictably so.
	Annex I habitat at the location would be adversely		The petual built diamentar of access in Leader Ave
	affected."(Offshore Wind Consultants, 2016). It was concluded		The actual built diameter of monopiles in London Array
	that the introduction of rock fill would stabilise the scour,		OWF is 4.7-5.7m, corresponding to estimated scour
	restrict further scour development, and restore sandbank		depths of 6.1-7.4m and minimum overall diameters 26 -
	integrity. In turn, mitigating an increased impact on the		31m. The surveyed dimensions of scour (maximum 9m depth and 69m diameter for all WTGs surveyed, but all
	hydrodynamics, sediment transport and geomorphology of the wider Outer Thames Estuary region and associated		others less) are still within the uncertainty bounds for
	sandbanks. Following this first phase of remediation works, a		this type of relationship.
	second phase of rock placement works and third phase of		this type of relationship.
	rock dump reprofiling works have been carried out.		The observations from London Array illustrate
	Cumulative Impacts		expected scour behaviour where insufficient or no
	We know that there are other marine activities, within the		scour protection has been applied. The general
	SAC, such as offshore wind farm infrastructure, cable		presentation and dimensions of the scour are generally
	installation, rock placement, aggregate extraction, and		consistent with normal scour theory and do not imply
	ongoing fishing, in particular the use of bottom-towed gear,		special environmental conditions, mechanisms of scour
	which may alter the extent, natural composition, and		or interruption to sediment transport that is not already
	processes. Currently, however, there is insufficient monitoring		considered and assessed in relation to Five Estuaries.
	data to ascertain the full extent of impact from anthropogenic		
	activities (see MLS SAC Condition Assessment (31 January		It is further noted that the sedimentary environment for
	2025)).		London Array and Five Estuaries are different.
	References		Whereas the greater Thames area has a larger
	Offshore Wind Consultants Ltd. (2016) Remedial Rock		thickness of erodible sediment present (allowing
	Installation Works. Supporting Information Document. Report		deeper scour to occur), the Five Estuaries study area is
	No. OWC-LO-C1543-001R-Rev A (31 March 2016).		characterised by a thinner veneer of erodible sediment
	(b) Alternative to MarESA		overlying erosion resistant layers, that will naturally
	Natural England note that the relevant MarESA benchmark is		limit the depth of scour in many locations. The
	"Change in sediment type by one Folk class". We highlight		assessments of scour dimensions in the Five Estuaries
	that no other accepted benchmarks exist, but we advise that		ES conservatively assume an unlimited thickness of
	the degree of acceptable change in sediment character is		erodible sediment for the purpose of scour
	highly dependent on the communities present. For example,		assessment.
	small changes in given fractions (such as silt and clay) may be		



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		insignificant in mixed sediments, but highly significant in sands where the invertebrate and/or fish communities being supported are sensitive to the presence of finer and/or coarse fractions. The Wentworth scale is a useful way of presenting data and understanding the significance of changes in sediment character, but no defined benchmarks for those changes exist.		Regarding potential change of seabed sediment type, the Applicant has assessed that only coarser sands and gravels will settle sufficiently rapidly to become redeposited to the seabed in locally measurable thicknesses/quantities. Finer material will naturally remain in suspension for longer, becoming more dispersed before resettlement, in very small thicknesses, not measurable in practice. There is therefore very limited potential for sediment disturbance to measurably increase the proportion of fines in the seabed.
NE-60	Impacts to Seabed Morphology from Tidal Change due to Array Area Infrastructure QT3.1.10a [To NE] Provide any evidence you hold that the Applicant's modelling is not a reliable basis from which to assess impacts from tidal change. Clarify if your advice is that tidal change from presence of array infrastructure could result in AEoI of the MLS SAC.	Natural England has no evidence that the Applicant's modelling is not a reliable basis from which to assess impacts from tidal change. We also advise that, on the basis of the Applicant's modelling results, no measurable change in residual current speed or direction is predicted either within the array areas, or elsewhere. It is also anticipated that any potential interaction with Galloper OWF WTG foundations wakes would be limited and not aligned with MLS SAC. Therefore, based on the evidence presented we believe that MLS SAC is sufficiently distant from, and to the west, of the arrays as to be unaffected by any changes to the tidal regime due to the presence of VE array infrastructure.		This is noted by the Applicant.
NE-61	Scale of Impact within the [MLS] SAC	We note this is not a question and agree that the ExA understanding is correct. However, we wish to draw the ExA attention to the fact that the Applicant's case example of Triton Knoll (TK) Electrical system, which was consented in 2016, is not comparable with this case for the following reasons: (i) Subsequent to the TK decision our knowledge and understanding of impacts from the placement of cable protection has evolved based on monitoring evidence. We no longer advise that the structure and function and feature extent of benthic designated site interest features can be maintained where cable protection is placed within a designated site. (ii)Inner Dowsing Race Bank and North Ridge SAC was not designated until 2017 and, therefore, conservation advice packages were not available to inform the decision-making process. (iii)Conservation advice packages and condition assessment are available now with both IDRBNR SAC and MLS SAC found to be in unfavourable condition due to anthropogenic activities with restore objectives. (iv)Our advice on TK would have been different if the Project was in its consenting phase at the present time. Consequently, we feel it is more likely that the decision-making process for TK would be similar to that for Dudgeon and Sheringham extension projects, in terms of scale of impacts and condition of designated site.		This is noted by the Applicant.



Ref	RIES Question	Natural England Comme	nt		RAG	Applicant's response
NE-62	MLS SAC Condition Assessment QT3.1.14 [To NE] Submit an extract of the information uploaded to the designated sites system or summary of the condition	Taken from the updated M Condition Assessment: Feature condition:		Sands SAC		This is noted by the Applicant. The updated condition assessment is now included
	assessment to enable the Applicant to review and update its RIAA [REP1-016] before the Examination's close.	Feature Assessme date	t Unfavourable Declining	Confidence		within the RIAA (Revision C).
		H1110 Sandbanks which are slightly covered by sea water all the time Feature Details: Condition assessment is la		Inerability		
		assessment, marine activi monitoring data. The cond when new evidence becor Sandbank feature, the sub	y information with tion assessment nes available. The	limited direct will be updated Annex 1		
		sub-features, and their print be in unfavourable condition from anthropogenic activiti	icipal attributes, h on as the SAC is ι es with impacts g	ave been found to inder pressure reater than		
		originally perceived. The introduction of hard strata at the offshore windfarm array and power cables, are having greater than predicted impacts on the form and function and composition of designated Annex 1 Sandbanks within the SAC. While cabling is present in the site, there is a risk from further external cable protection being required due to the highly mobile nature of the site. Natural England considers that cable protection and scour within designated sites, which				
NE-63	The Applicant Concluded no AEoI from Invasive Non-Native Species QT3.1.15 [To NE] Can NE confirm that	interact with site features, will result in a lasting change to the habitat feature. Natural England can confirm that this matter is agreed, and we have no further comment to make in relation to this matter.				This is welcomed by the Applicant.
NE-64	this matter is agreed. The Applicant [APP-040] concluded no AEoI from accidental pollution based on implementation of measures in the PEMP. QT3.1.16 [To NE] Can NE confirm that this matter is agreed.	Natural England can confirm that this matter is agreed, and we have no further comment to make in relation to this matter.				This is welcomed by the Applicant.
NE-65	The Applicant [APP-040] concluded no AEoI from EMF due to the lack of conclusive evidence of adverse effects from EMF upon benthic communities and project commitments to mitigate risk through cable burial or use of cable protection. T3.1.17 [To NE] Can NE confirm that this matter is agreed.	Natural England can confirm that this matter is agreed, and we have no further comment to make in relation to this matter.				This is welcomed by the Applicant.
NE-66	Effectiveness of Mitigation QT3.1.18b [To NE] The Applicant confirmed that compliance with the MLS SAC Benthic Mitigation Plan [REP5-027] would be secured via the DML in Schedule 11 of the dDCO [REP5-007].	Natural England has raise and approach as the Appli to submit an updated MLS to works commencing. Ou unresolved. Please see Pa	cant has stated the SAC Benthic Miti concerns on this	ey do not intend gation Plan prior remain		The Applicant considers that all reasonable mitigation that can be committed to has been, and therefore the final cable installation details will reflect these commitments in the CSIP.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
	Is NE content with that approach. If not, explain your remaining concerns.	and Written Reps issues A2, A3, A14 and A16. As previously advised the benthic mitigation plan should be appropriately reviewed based on bespoke details and updated surveys immediately prior to works to ensure the mitigation is sufficient		
NE-67	OWFs with Benthic Compensation QT3.1.19a [To NE] Clarify your view on the implications for decision making if the final benthic compensation levels on other OWFs are not recorded.	Natural England highlights that the Secretary of State decisions for Hornsea Project Three, Norfolk Vanguard and Norfolk Boreas was that benthic compensation was required for the 'lasting' impacts over the lifespan of the projects from the placement of cable protection. And that there was a requirement to remove the cable protection at the decommissioning phase. The justification for this was because the restore conservation objectives would be hindered whilst the protection is in situ and take the site further away from its restore trajectory. Whilst the conservation advice package for MLS SAC currently has 'maintain' objectives, the recently published condition assessment acknowledges that the conservation advice package should be updated to 'restore'. Therefore, if the same rationale is applied to Five Estuaries windfarm the Applicant's position would not align with the recent Secretary of State Decisions. In addition, we draw the ExA attention to Defra's guidance for marine compensatory measures, (Best practice guidance for developing compensatory measures in relation to Marine Protected Areas, 2021) where it is stated that compensation and Measures of Equivalent Ecological Benefit (MEEB) should be treated the same. Therefore, we disagree with the Applicant on the relevance of DEP and SEP decision to their project and emphasise that MEEB/Compensation was required for 1800m2 of cable protection within a marine protected area which is currently in unfavourable condition.		This is noted by the Applicant.
NE-68	Marine Mammal Population Modelling QT3.2.1 [To NE] Confirm if the updated iPCoD modelling in [REP5-071] addresses your concerns. If not, confirm what further evidence you consider is needed.	Natural England welcomes the addition of the median and 95% Confidence Intervals (CIs) values to the report. However, we note that there is no variation for median, mean and CI values for both species of seals between impacted and unimpacted populations (Tables 5.2.and 5.3). It is our understanding that the iPCoD model runs the simulations 1000 times for each scenario thus there is an expectation that the output values would show some variation. The outputs could potentially be the same if the population size is large (please note, a slight variation is present in the modelling scenarios for harbour porpoise whose population is significantly larger than those of seals), however the starting population for harbour seals is small and even considering a declining population does not demonstrate any level of variation between the impacted and unimpacted populations. In light of this, we have concerns around the variability of the outputs for the project alone and we believe that there is value in undertaking in-combination iPCoD modelling which may		Please see Appendix 1: Marine Mammal iPCoD Modelling for a detailed response regarding the results of the iPCoD modelling and the lack of variability in the results for seals.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		indicate a greater level of variation and potential population level impacts warranting further investigation.		
NE-69	Inclusion of Seismic Surveys in the In-Combination Assessment QT3.2.2 [To NE] Confirm if this matter is resolved based on the information provided in [REP1-051] and the RIAA [REP1-016]?	No further information has been provided by the Applicant thus our advice remains the same.		Seismic surveys are considered within the assessment following the methodology stated within paragraph 9.2.27. For example, Table 12.3 and 12.4 consider four seismic surveys within the in-combination assessment of the SNS SAC, however due to the high level nature of information surrounding the surveys they were not able to be considered at the same level as other projects hence the low tier in which they sit. The Applicant update the RIAA [REP1-061] at Deadline 1 to include seismic surveys in the Tier.
NE-70	Population Modelling QT3.2.4 [To NE] Comment on any outstanding concerns for population modelling of the harbour seal feature of the Wash and North Norfolk Coast SAC in your response to QT3.2.1.	Natural England maintains our original advice that the only relevant scenario for modelling is the declining population of harbour seals. No changes have been made by the Applicant and both scenarios remain in the report. Please see our comment above relating to the concerns around the lack of variability of the outputs in modelling scenarios for harbour seals.		Please see Appendix 1 – Marine Mammal iPCoD Modelling for a detailed response regarding the results of the iPCoD modelling and the lack of variability in the results for seals.
NE-71	Collision Risk to Gannet QT3.3.6 [to the NE] NE and the Applicant have stated their agreement over the apportioning of adult gannets to the FFC SPA. In light of this, NE is requested to provide an update on its position regarding AEoI to the gannet feature of FFC SPA, alone and in combination.	In light of the agreement over the apportioning of adult gannet to the Flamborough & Filey Coast (FFC SPA) and the subsequent evidence provided by the Applicant, on the basis of best available evidence Natural England can rule out an AEoI either alone or in-combination.		This is welcomed by the Applicant.
NE-72	QT3.3.8b [to NE] Is NE content that there would be no adverse effects on the site integrity of Farne Isles SPA, alone and in combination, by virtue of effects on the guillemot feature? If not explain why that is the case.	Natural England agree with the Applicant and regard the estimated scale of the impact on the Farne Island SPA breeding population of guillemot and its effect on their baseline mortality sufficiently low to conclude no adverse effect on site integrity alone. However, the predicted contribution of the project to in-combination effects, whilst small at approximately 2 adults from Farne Islands SPA (based on 70% displacement and 2% mortality), warrants further consideration, given that Natural England has advised that AEol cannot be ruled out from the Berwick Bank OWF project alone. Given the Berwick Bank OWF proposal has still not been determined, it may not be possible for the Secretary of State to rule out adverse effects in-combination for Farne Islands SPA. We consider therefore that there would be merit in the Applicant including the Farne Islands SPA guillemot in the scope of their compensatory proposals, as Rampion 2 OWF has in their in-principle compensation proposals (EN010117-002193-8.65 Guillemot & Razorbill Roadmap Rev C (tracked).pdf).		The Applicant has updated 5.5.5 Guillemot and Razorbill - Evidence, Site Selection and Roadmap at Deadline 8 with the inclusion on the impacts of the Farne Islands and the new potential additional number of pairs numbers for the three shortlisted sites. However, the Applicant does not agree with an AEoI for the Farne Islands based on the reasoning from Natural England, Berwick Bank has not been approved and the connectivity to Farne Islands from VE is tenuous with the colony being over 470km from the array area.
NE-73	QT3.3.10 [to NE] What further evidence is NE seeking in order to demonstrate that auks are dispersing throughout the affected area? Specify deficiencies in Applicant's own evidence in this regard.	In this case, Natural England questioned the Applicant's characterisation of the area regarding it as highly speculative when based on the snapshot of evidence provided by the digital aerial surveys (DAS). Nevertheless, Natural England is		This is welcomed by the Applicant.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		seeking no update to the quantification of impacts, as the DAS data provided meet best practice standards and has been sufficient to assess impacts on Farne Islands SPA and FFC SPA guillemot and razorbill population during the winter.		
NE-74	Vessel Disturbance Risk on Red Throated Diver QT3.3.11 [To NE and the RSPB] Other than on the basis of a precautionary approach, can NE and the RSPB explain why the Applicant's proposed mitigation for effects on red throated diver would not be sufficient to mitigate adverse effects?	Natural England welcome the seasonal restriction on export cable installation within the OTE SPA to mitigate impacts on red-throated diver (RTD), between 1st November and 31st March but continue to advise that the restriction should be applied within the boundary of the SPA with a 2km buffer. This remains consistent with our advice given elsewhere and ensures the designated RTD population can be appropriately safeguarded up to the SPA boundary. One of the high-level conservation objectives of the OTE SPA is to maintain or restore 'the distribution of the qualifying features within the site', with underpinning supplementary advice targets to 'Maintain the extent, distribution and availability of suitable habitat' and 'Reduce the frequency, duration and/or intensity of disturbance'. If RTD are displaced from an area inside the SPA over an extended period of time, then the site's conservation objectives could be compromised and AEol could not be ruled out, particularly given the existing and consented pressures on the SPA. The scientific rationale for mitigation extending 2km beyond the SPA boundary is based on evidence indicating that vessel movements within 2km of the SPA could impair use of the site by RTD by causing displacement (Burt et al. 2017, Schwemmer et al. 2011, Fleissbach et al. 2019) and, for a proportion of the population may extend much further (Burger et al 2019, Mendel et al 2019). Imposing a 2km buffer is therefore pragmatic and not over-precautionary. The export cable corridor (ECC) route that abuts the northern edge of the SPA and lies within the 2km buffer surrounding the boundary. A key area of concern is the mid-northern sector of the SPA, where evidence from DAS indicates high densities of RTD are present in the SPA and, as the Applicant has stated, these high densities extend close to the SPA boundary where they abruptly fall off in the vicinity of the VTS route and high shipping activity (see marked areas of Applicant's Doc 10.48 Fig. 2.2 [REP6-052] and Irwin (2019)). Of less con		The Applicant welcomes Natural England's position that strict adherence to the 2km buffer where densities are low. The Applicant would like further clarification as to where the 'mid-northern edge' relates to and whether restrictions would be limited to that area solely and is meeting with Natural England on 12 March 2025 to discuss. The Applicant will aim to submit an update on this matter at Deadline 8a.



will be more tolerant of vessels than others, it is the proportion	
will be those tolerant of vessels than others, it is the proportion	
that are not that is important to consider. We note the	
proximity of the Margate and Long Sands SAC sandbank in	
this sector and the favourable foraging conditions it provides	
may well account for the high numbers of RTD in the area	
despite the relative proximity of the busy VTS.	
The Applicant has suggested the cable laying vessels will be	
less disturbing anyway as the movement of the tide relative to	
the vessels will make them appear stationary to a bird on the	
water. However, this might only be true when the tidal current	
flowed in the same direction as the vessels' movement, the	
converse would apply when the tide turns. Furthermore, there	
is evidence that slow-moving as well as fast-moving vessels	
are more disturbing to divers than vessels moving at a	
moderate speed (Burger et al., 2019).	
We highlight that the cable laying operation does not involve	
just a single vessel but a suite of auxiliary vessels too. During	
construction up to 35 vessels may be present on site	
simultaneously during the construction phase of the ECC (c.f.	
Doc. 6.2.9 Shipping and Navigation [APP-078]), with up to 12	
vessels involved in cable laying (Doc. 6.2.4 Offshore	
Ornithology [APP-073]). Those associated with the cable	
laying, travelling at 150-450m per day, will require at least 35	
days to cover the 16km of ECC within the OTE SPA.	
Considering this worst-case scenario and the other areas of	
SPA impacted in addition to the likely timing, frequency and	
duration of cable laying along the corridor (i.e. for sequential	
periods lasting 5-15 days over 5 years) without further	
mitigation, Natural England are not persuaded that adverse	
effects on site integrity in-combination could only be ruled out	
where DAS data indicated RTD densities were ranked low	
(<1.0 birds/km2).	
As it stands, the current mitigation offered by the Applicant	
does not fully address the potential impacts on the high	
densities of divers' present near the northern boundary of the	
SPA. That stated Natural England has no intention of seeking	
unreasonable mitigation recognising, in this case, the variation	
in diver distribution shown by the DAS presents potential	
opportunities for a lower level of restriction along parts of the	
ECC but also that strict adherence to the 2km buffer would	
unnecessarily limit access to the port at Harwich. Subject to	
confirmation of likely vessel activity in the sector, it may be	
viable to modify the seasonal restriction (but still apply vessel	
best practice to reduce wildlife disturbance) along section(s) of	
the ECC that traverse the 2km SPA buffer where RTD	
densities are lower e.g. inshore near the port of Harwich (see	
Applicant's annotated map, Doc 10.48, Fig. 2.2). In this regard	
we would welcome further discussion with the Applicant to	
resolve the issue.	



Ref	RIES Question	Natural England Comment	PAG	Applicant's response
NE-75	QT3.3.13a [to NE] The Applicant has referred to evidence in the identified academic study to support its approach to modelling collision risk to dark bellied brent goose [REP1-051]. However, NE's position has not changed in the issues log [REP4-061]. Provide an updated position or explain why NE's view remains unchanged.	Natural England Comment Natural England note the Applicant's comment in [REP1-051] and acknowledge the BTO review cited by them is acceptable evidence. Natural England has updated its Risk and Issues log accordingly.	RAG	Applicant's response This is welcomed by the Applicant.
NE-76	All pathways relevant to qualifying habitats, plants and invertebrates. QT3.4.1 [To NE] What potential impacts from the proposed works at the compensation site could lead to an AEol and which conservation objective(s) could be affected?	Orfordness Shingle Street SAC is designated for three Annex I coastal habitat types: [1150] Coastal lagoons, [1210] Annual vegetation of drift lines and [1220] Perennial vegetation of stony banks. These features are geographically contracted in range and reliant on natural processes to maintain hydrological, morphological, and sedimentary functions. Impacts on extent, structure, composition, and spatial distribution could lead to fragmentation and reduce the viability of the habitats to support the diversity of species connected with them. Installation and maintenance of a predator exclusion fence and PCS site has the potential to result in disturbance and changes within the shingle feature area. Disturbance to the mix of sediment and ratio of coarse to fine material of the shingle damages the shingle matrix and alters the communities the habitats are able to support. This disturbance would include compaction from vehicle and pedestrian movements across the habitats, physical changes to morphology and elevation from fence installation, reduction in grazing changing community structure, changes in nutrient levels, hydrological changes as fencing is blocked by material effectively forming a dam, etc. These habitats are the result of natural processes with natural sorting of sediments by wave action a key feature and have a characteristic range of natural features representing natural succession. There is no evidence that restoration and manual re-sorting of the sediment matrix can be successful, particularly for the landward edge of the shingle banks where coastal process are no longer active. Therefore, based on the evidence provided to date an adverse effect on the integrity of the designated features of the Orfordness and Shingle Street SAC cannot be ruled out. Invertebrates associated with coastal lagoons are a noted feature in the Ramsar citation along with the unique lichen communities of East Anglian beaches and shingle habitats. Evidence would be necessary to ensure that these communities along with oth		It is important to understand that the shingle habitats at the PCS are now modified due to previous activity at the site (1970s). This area does not support natural, wave-formed shingle ridges, with natural sediment sorting, which are the natural form of this habitat type. All areas within and around the PCs have been levelled, showing evidence of vehicle tracks, and the banks comprise spoil excavated to make or maintain ditches. The area is dominated by Sea Couch; a coarse grass which recovers quickly from disturbance. Therefore, the PCS is not as vulnerable to adverse effects arising from maintenance and management as might be the case elsewhere and such effects can be mitigated sufficiently to avoid adverse effects on the integrity of Orfordness-Shingle Street SAC and the Alde Ore Estuary Ramsar Site. During the installation of fence, ground disturbance will be the minimum necessary, to minimise damage to the shingle habitat. As far as possible, reinstatement of the shingle will match the existing topography. This not an attempt to restore natural shingle ridges but to return the shingle to as closely as possible to its current state, as described above. With reference to the attributes that define the conservation objectives for [1220] Perennial vegetation of stony banks and therefore site integrity for this habitat, in the absence of mitigation, the PCS will not: > change the distribution of the habitat. > change the extent of the habitat. > change the distribution of the habitat. > change the sediment and sediment supply including connectivity with the wider coastal sediment system > reduce nutrient availability > change the sediment range and type. affect air quality affect the ability to manage the SAC. affect the ability of manage the SAC. affect sedimentary processes affect the water quality within this habitat.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		However, we have advised (in Section 3 in our Deadline 6 Cover Letter [REP6-066]) that the need remains for the Applicant to complete their baseline characterisation of their Proposed Compensation Site pre-construction, to close the evidence gap and inform mitigation measures and to undertake their surveys at the optimum times of year. If these pre-construction survey data indicate the need for further mitigation, then this should be agreed with the relevant SNCB and regulator prior to the commencement of any works by the Applicant. The requirement to confirm adequacy of the mitigation should also be secured within the DCO. If the Applicant agrees to this approach, commits to carrying out the necessary onshore ecology pre-construction surveys at the appropriate time/season, and present updated mitigation proposals for the SAC/SSSI/Ramsar Site if needed in the post-consent phase then we would be able to support a conclusion of no adverse effect on site integrity.		management, using existing tracks for vehicular access, and low ground pressure vehicles only off existing tracks, and employing biosecurity measures to prevent the introduction of INNS. > negatively affect species composition, for the same reasons as above. > negatively affect patterns of vegetation with naturally bare ground, for the same reasons as above. > negatively affect vegetation zonation and transitions, for the same reasons as above. > Introduce or spread undesirable species, by employing biosecurity measures to prevent the introduction of INNS > negatively affect hydrology, because any fence lines crossing ditches will be inspected and cleared of debris. > Increase nutrients to damaging levels because vegetation arisings will be removed from the SAC prior to this. > Affect shingle morphology, because this will be reinstated following the installation of the fence and only low ground pressure vehicles will be used off existing tracks (considering that this area has previously been levelled, as described above). Therefore, adverse effects on the integrity of this habitat can be ruled out.
				Notwithstanding, the Applicant has agreed to carry out additional onshore ecology surveys at the appropriate time/season, to validate the existing assessment, and will confirm the mitigation requirements or present updated mitigation proposals for the SAC/SSSI/Ramsar Site. Depending on the availability of access to the compensation site, the surveys will either be completed in summer 2025 or undertaken as pre-construction surveys. The mitigation requirements will be reviewed when the surveys are completed.
NE-77	Damage to qualifying habitats during management of vegetation. QT3.4.3 [to NE] What does NE mean by "best practice options "specifically? Elaborate on your recommended mitigation measures for maintaining vegetation community and diversity.	This relates to access where existing trackways are not present. Specifically for the fence line itself during installation, maintenance and monitoring activities and accessing the PCS area to manage the vegetation. This should include: •best practice pollution prevention measures related to the use of vehicles on sensitive habitats (e.g. access/egress routes clearly defined; vehicle movements minimised; no storage of equipment; use of materials that are not toxic; measures to ensure no leakage of materials in the sensitive environment), •ensuring good biosecurity measures to prevent the introduction and/or increase of INNS across the SAC, •The use of light weight, low vibration, vehicles with tracks fitted to spread weight wherever practical.		These measures have or will be incorporated into the final 5.5.6 LIMP (updated at Deadline 8).
NE-78	Increases in nutrients from bird faeces affecting vegetation composition and water quality. QT3.4.4 [To	Natural England welcomes the proposed vegetation management (removal of arisings from cutting) within the		This is noted by the Applicant.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
	NE] Following the clarification from the Applicant, is NE	LBBG IMP; however, we advise that this commitment needs to		
	satisfied with its approach in this regard?	be secured within the LIMP.		
NE-79	Changes to Topography Leading to Overtopping and	In [AS-040] Section 4.1.12 states that one larger and one		The PCS is now to the west of the ditch whereas
	Sediment Transfer Processes	smaller lagoon are considered to be percolation lagoons but		surveys covered land to the west and east of the ditch.
	ExA's understanding of our position on coastal lagoons	the map in [AS-054], (Drawing 4) identifies 5 saline lagoons		There are five saline lagoons in the survey area but
	at the proposed LBBG compensation site at Orford	within the PCS area that has been surveyed. The 3 other		only one of these is to the west of the ditch and in the
	Ness	lagoons have not been stated as being fed by percolation and		PCS, with the remaining four to the east, outside the
		one lagoon is adjacent to the fence line and ditch on the		PCS but inside the survey area.
		western side. Paragraph 4.2.1 of report 4.5. states that		All the lagoons are percolation lagoons; the slightly
		damage to ditch banks could impact smaller coastal lagoons		higher ground around them including, in places, the
		as they could have a function in retaining water If the fence		ditch bank, determines their extent. The lagoons that
		installation impacts the bank that separates the lagoon and		have been surveyed are visible on aerial imagery and,
		the ditch there is potential for an impact. There is also no		on the same imagery, there are no obvious lagoons
		evidence to confirm the presence, absence or location of		present in the parts of the PCS which have not been
		lagoons in the area of the PCS that have not been surveyed.		surveyed.
		However, as we have advised above to Q3.4.1 (and in Section		Not with standing the small southers are added as well as
		3 in our Deadline 6 Cover Letter [REP6-066]), the need		Notwithstanding, the applicant has agreed to carry out
		remains for the Applicant to complete their baseline characterisation of their Proposed Compensation Site pre-		additional onshore ecology surveys at the appropriate
		construction, to close the evidence gap and inform mitigation		time/season, to validate the existing assessment, and will confirm the mitigation requirements or present
		measures and to undertake their surveys at the optimum times		updated mitigation proposals for the
		of year. If these pre-construction survey data indicate the need		SAC/SSSI/Ramsar Site.
		for further mitigation, then this should be agreed with the		Depending on the availability of access to the
		relevant SNCB and regulator prior to the commencement of		compensation site, the surveys will either be completed
		any works by the Applicant. The requirement to confirm		in summer 2025 or undertaken as pre-construction
		adequacy of the mitigation should also be secured within the		surveys. The mitigation requirements will be reviewed
		DCO. If the Applicant agrees to this approach, commits to		when the surveys are completed.
		carrying out the necessary onshore ecology pre-construction		
		surveys at the appropriate time/season, and presents updated		
		mitigation proposals for the SAC/SSSI/Ramsar Site if needed		
		in the post-consent phase then we would be able to support a		
		conclusion of no adverse effect on site integrity.		
NE-80	Cumulative Impacts to Dunlin QT3.4.8 [to NE] in light of	J19. We advise that this issue remains unresolved. The		J19. Our previous response was For 5.4 Report to
	the information provided by the Applicant in [REP1-	Applicant needs to include methodology in an updated		Inform Appropriate Assessment [APP-040], the
	051], NE to confirm whether issues J19, J20 and J21	plan/document to show what actions will be taken in the event		relevant species is the breeding population of avocet in
	remain unresolved. If so, what additional evidence is	that the proposed buffer zones for Schedule 1 bird species		Holland Haven Marshes SSSI. The extent of the buffer
	required to address your concern?	and other breeding species fail. J20. We advise that this issue remains unresolved. The		zones will be established by the ECOW based on
		Applicant needs to provide a range of mitigation measures		guidance and experience, and the effect will be observed. Although not explicitly stated at 11.6.98 of
		appropriate to the nature of the unscheduled maintenance		5.4 Report to Inform Appropriate Assessment [APP-
		works are committed to and secured to ensure that a		040], the ECOW will increase the buffer zone if
		precautionary approach is taken towards black-tailed godwit.		construction activity disturbs breeding avocet. The
		J21. This element is now considered resolved. Following		OLEMP – Revision E, submitted at this deadline
		further clarification provided in document '10.4.1 Applicant's		includes details in section 4 of the measures in place to
		response to Natural England's Relevant Representation		protect non-breeding birds within Holland Haven SSSI.
		[REP1-051], Natural England concurs with the applicant's		The full detail of this will be included, and expanded
		conclusion that there will be no adverse effect on the integrity		upon, in the final Landscape and Ecology Management
		of the designated sites with specific regards to impacts upon		Plan (LEMP) associated with the landfall works once
		Dunlin, either alone or in combination.		



Ref	RIES Question	Natural England Comment RAG	Applicant's response
1101		Tratarar England Commont	final details of the works are known, including their location and seasonal timings.
			J20. Our previous response was As set out in paragraph 11.5.192 of 5.4 Report to Inform Appropriate Assessment [APP-040], mitigation is proposed for black-tailed godwit (and other species) to address disturbance arising from unscheduled maintenance. It states that there will be screening of unscheduled maintenance works in the vicinity of Holland Haven Marshes SSSI (where this species occurs), in the same way as detailed for construction in paragraph 11.5.128 of 5.4 Report to Inform Appropriate Assessment [APP-40]. This is regardless of our conclusions on the conservation objectives for populations of this species that are in favourable condition, and whether mitigation is needed to maintain that condition. The OLEMP – Revision E, submitted at this deadline includes a new section on unplanned maintenance in section 10.2. It states: "10.2.5 Where unplanned operational or maintenance works are required, advice from an Ecologist will be sought to determine if ecological impacts are possible. Appropriate mitigation measures would be developed and agreed with relevant consultees and any necessary consents (such as in respect of protected species) would be obtained prior to works taking place. 10.2.6 Any required mitigation for unplanned corrective maintenance during operation would be advised by an Ecologist to ensure that relevant legislation is complied with at the time." J21. Resolved. This is noted by the Applicant.
NE-81	[Export] Cable Routeing and Coordination Q4.2.2 [To NE] Confirm what further information you consider is needed to achieve a substantive consideration of alternatives	Natural England welcomes the Applicant's further justification to support their position on suitable alternatives. It is now for the Secretary of State as the competent authority to determine if this is sufficient.	This is noted by the Applicant.
NE-82	Compensatory Measures 'Without Prejudice' Wording Q4.4.1 [To NE] Provide any comments you wish to make on the draft "without prejudice" wording for securing compensation measures included in [REP5-090].	Natural England provided comment on the without prejudice wording within our Deadline 6 cover letter [REP6-066] and has no further comment to raise at this juncture.	This is noted by the Applicant.
NE-83	Q4.4.2 [To NE and the Applicant] Comment on any Implications the (Written Ministerial Statement) WMS and DESNZ Guidance Published on 31 January 2025 have for the Applicant's Proposed Benthic Strategic Compensation Option.	Please see our Deadline 6 covering letter [REP6-066]. Following the written Ministerial Statement (29-January-2025) in support of progressing strategic benthic compensation in the form of Marine Protected Area (MPA) designation and/or extension of existing sites and the publication of guidance in regard to the Marine Recovery Fund (MRF); Natural England	This is welcomed by the Applicant.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
NE-84	Ratio of Compensation for AEoI to MLS SAC Annex I	welcomes the Applicant's inclusion of strategic benthic compensation for their project. We will aim to agree the level of impact which requires compensation in order to apply to the Marine Recovery Fund (MRF). However, we note the application is likely to be in the post consent phase for this project. It is Natural England's understanding based on the published Marine Recover Fund Guidance (Jan 2025), that DEFRA and DESNZ have included provision for the Five Estuaries project within the strategic compensation MPA designation and extension process. With the commitment within the Written Ministerial Statement to progress strategic benthic compensation, which as previously stated the Statutory Nature Conservation Bodies (SNCB's) believe has the greatest likelihood of maintaining the coherence of the National Site Network; we do not believe there is merit in further progressing project specific compensation measures at this time. As advised in our Relevant/Written representation [RR-081]		This is noted by the Applicant.
INL-04	Sandbank. Q4.4.3 [To NE] Confirm your advice on what ratio of compensation would be required in respect of potential AEoI to the Annex I sandbank of the MLS SAC if project-led measures were used. Explain why, if 5,400m2 was to be secured as the maximum volume of cable protection over the lifetime of the Proposed Development, that would not represent a sufficient MDS to determine the level of compensation.	compensation ratios will need to be set and agreed in DEFRA policy/guidance to ensure consistency across all marine OWF projects when considering how 'like for like' the proposed compensation is i.e. the likelihood of the compensation measure offsetting the impacts to Annex I features to maintain network coherence and the time lag between impacts occurring and delivery of the compensation. Therefore, we are unable to provide further advice on this matter at this time.		This is noted by the Applicant.
NE-85	Q4.4.4 [To NE and the Applicant] Comment on the implications of the (Written Ministerial Statement) WMS and DESNZ guidance published on 31 January 2025 for the Applicant's proposed use of the strategic compensation through the MRF.	The Written Ministerial Statement principally relates to benthic compensation measures and so is not relevant to offshore ornithology. However, the DESNZ interim guidance also provides advice to developers who are developing their own avian compensation packages on how to ensure that their consent documents include the option to switch to sourcing their avian compensation through the Marine Recovery Fund (MRF) when it is in place. Applicants wishing to use predator reduction (which includes exclusion fencing) as a compensation measure ahead of the MRF being operational will need to deliver the measure themselves, as the Applicant is proposing. Nevertheless, the Applicant may also wish to include a provision allowing for a contribution to be made into the MRF in substitution for delivering the predator control compensation measure themselves, should the MRF have relevant measures available at that time.		This is noted by the Applicant. The option to use the MRF where suitable measures are available is included for the without prejudice derogation case for kittiwake, guillemot and razorbill. For LBBG, the Applicant is aware that there are no measures proposed to be included the library of measures, and has therefore sought to secure this on a project led basis.
NE-86	Compensation Level QT4.2.3b [To NE] Comment on the Applicant's arguments relating to the compounding effect of adding precaution to calculations and the relevance of natal philopatry in relation to auks.	In reference to the Applicant's concern [REP5-074] of 'compounding precaution during the assessment, apportioning and compensation calculation process', Natural England advise that these represent separate elements of the Habitat Regulation Assessment (HRA) process, the first being the need for precaution within the assessment of impacts to		The Applicant welcomes Natural England's conclusion that the compensatory measures proposed by the Applicant are likely to be proportionate to the level of risk.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		Special Protection Areas (SPAs) (including via apportioning) and the second being the need to consider the efficacy or likelihood of success of the proposed compensation measures, and that both are required to have the requisite confidence that any proposed compensatory measures will result in the Project's impacts being offset within its lifetime. Regarding the need to address the uncertainty of success of measures within the compensation calculations Natural England refers the Applicant and Examining Authority to our response to [REP5-018] and [REP5-023], as well as our advice to the Outer Dowsing OWF Examination (EN010130-001392-Appendix G1 Natural England's Advice on Seabird Compensation Calculations see EN010130-001392-Appendix G1 Natural England's Advice on Seabird Compensation Calculations.pdf) [Five Estuaries Examination Ref No. REP5-095] for further detail on our position. Regarding the relevance of natal philopatry to the auk CQ calculation, NE consider it appropriate to consider it in this case. This is because it is unlikely all fledged young from the SW colonies that survive to adulthood will recruit to SPA populations and contribute to the national site network. Whilst the proposed compensation could benefit the regional auk meta-population, importantly, to be wholly successful it must also compensate for the impacts at FFC SPA by helping to maintain (i.e. add to) the coherence of the NSN. In general, Natural England also considers that the Hornsea 3 stage 2 method of CQ calculation should be used for all compensatory measures where it is necessary to know the requirement in terms of the number of breeding pairs. This is because the Hornsea 3 method is considered the most ecologically realistic (see advice NE advice on compensation calculations above). Where it is not possible to adequately populate the Hornsea 3 method is considered the most ecologically realistic (see advice NE advice on compensation requirements information regarding the species under consideration, the Hornsea 4 method could		The Applicant submitted at Deadline 7 10.20.12 Methodological differences between the Applicant and Natural England on Ornithology Matters [REP7-076], which outlines the layering of levels of precaution used in the assessment calculations and the Hornsea 3 stage 2 CQ calculations that results in the unrealistic and unsustainable results. Therefore, the Applicant maintains that the HOW4 approach provides the most realistic CQs for the level of impacts. The Applicant also notes that in Natural England's response NE-17, the additional step of factoring in natal philopatry is not required at the Orfordness site.



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		Nevertheless, Natural England has no intention of seeking unrealistic/unachievable targets and are actively seeking how to resolve this issue. We fully recognise that the Applicant's contributions to the in-combination totals for FFC SPA guillemot and razorbill are modest and consider that the compensatory measures proposed by the Applicant, whilst requiring further refinement, are likely to be proportionate to the level of risk.		
NE-87	Monitoring QT4.2.6 [to NE] NE to comment on the latest Auk Roadmap and GRIMP and explain specifically what details it seeks from the Applicant in terms of monitoring methods.	Natural England agree the approach to monitoring should follow Seabird Monitoring Programme (SMP) guidelines (Walsh et al. 1995) but are concerned the planned observations from vantage points may provide insufficient views to adequately monitor some sites. Where this occurs the use of adaptive or innovative measures such as drones or cameras may be necessary to supplement traditional methods and collect all data necessary. The potential need to use such equipment has not been addressed by the Applicant and therefore requires further consideration. We note the use of remote cameras may be beneficial for monitoring birds but also boat-based and other anthropogenic activity near colonies (assuming no legal restrictions in doing so) but no description of how these activities would be monitored are given. The Applicant seeks to use change in human behaviour as a measure of success but does not describe how they would measure this in the IMP. Natural England recommend success be measured by seeking to see positive changes in bird numbers and/or productivity as well as changes in human behaviour. A comprehensive monitoring programme that includes recording human activity will be needed to identify these changes when they may occur.		The Applicant has updated the Guillemot and Razorbill IMP with the potential to use innovative monitoring techniques as part of adaptive management measures. All of three are being considered within the proposed measures and the best method of monitoring will be decided on a site-by-site basis. However, all three of the Applicant's shortlisted sites have excellent visibility from land therefore do not require innovative techniques to monitor colony counts and productivity.
NE-88	Compensation Ratio QT4.2.17b [to NE] NE recommends a 3:1 compensation ratio for LBBG. Is this also NE's recommended ratio for the auk species and kittiwake? Provide justification for the recommended ratio.	Uncertainty regarding the success of a compensatory measure should be taken into account when developing compensation proposals, including the use of ratios where appropriate, alongside multiple interventions, locations, different designs etc. Guidance is clear that 1:1 ratios are only appropriate where there is high confidence in the likelihood of success (Defra 2021), which given that seabird compensation is still in its infancy, is unlikely to be the case for seabird compensation measures. The ratio applied to the number of pairs to address the uncertainty of success are set qualitatively, on a case-by-case basis. Measures with high likelihood of success and flexibility for adaptive management e.g. island predator eradication may allow a lower ratio than for where the measure is less well tested and there are greater constraints on adaptive management e.g. Artificial Nesting Structures (ANS). Other factors such as the scale of the predicted impact and the		The Applicant has considered the 3:1 ratio as being a suitable ratio for kittiwake and guillemot and razorbill compensation quantums based on using the HOW4 approach [REP5-017] 5.5.4 Kittiwake - Evidence, Site Selection and Roadmap - Revision C (Clean) and [REP5-019] 5.5.5 Guillemot and Razorbill - Evidence, Site Selection and Roadmap - Revision C (Clean). In the [REP5-015] 5.5.3 Lesser Black Backed Gull Compensation - Evidence, Site Selection and Roadmap - Revision C (Clean) the Applicant considers that a 2:1 ratio for the site at Orfordness due to the connectivity to the impacts associated with the AOE SPA, with the degree of uncertainty involved the 1:1 ratio was ruled out. The Applicant realises that there is less connectivity with the OTB site therefore considers a 3:1 ratio suitable for the site. Both these are based on the assumption that the ratio is used in relation to



Ref	RIES Question	Natural England Comment	RAG	Applicant's response
		sensitivity of the impacted species will also need to be factored in. In this case, Natural England regard the ratio of 3:1 suitable for kittiwake. This is because uncertainty remains around the likely occupancy rate over the lifetime of the project, in particular whether available nest spaces will be occupied prior to operations and the amount of mortality debt that may accrue if not. Further, the likely level of connectivity with the FFC SPA colony is inevitably uncertain, and as stated above, for ANS there are more constraints on adaptive management too. We also note negotiations with Dogger Bank South OWF for space on the Gateshead ANS are incomplete. For auks Natural England regards a similar ratio appropriate in this case as likelihood of success is dependent on several factors with uncertain outcomes, notably adequate stakeholder participation, meaningful public adherence to the proposed advocacy and the likely recruitment of new birds into the NSN. The applicant is also proposing to apply their auk compensation 3 years prior to operations and in so doing risks accruing mortality debt for both razorbill and guillemot (which typically do not start breeding until their 5th and 6th year, respectively). Where it is unavoidable that the benefits of a compensatory measure are not predicted to arise until after the impacts commence, guidance indicates that this should be factored into the design of the measures e.g. multiple interventions and an increased level of provision (Defra 2021). However as noted in 4.2.3 above, there is a risk that for species such as razorbill, injudicious use of calculation values can result in excessively large requirements. Natural England has no intention of seeking unrealistic/unachievable compensation targets and is seeking to resolve this issue with the Applicant.		the HOW4 approach results as they will represent the most realistic CQ for the level of impact. By accepting these ratios the Applicant has already accounted for a degree of uncertainty and therefore it is not reasonable to have two compensation sites for LBBG.



9. APPENDIX M5 – NATURAL ENGLAND'S COMMENTS ON THE EXAMINING AUTHORITY'S WRITTEN QUESTIONS 3 [REP7-109]

Ref	Summary of Deadline 6 submission OR Excerpt of Deadline 6 submission	Applicant's response
ME.3.03	Migratory bats Can you advise as to whether or not a license would be required in relation to any disturbance or harm to migratory bats that might be associated with the Proposed Development. If a licence would be required, would such a license be likely to be issue?	Please see 10.58 Applicant's response to ExQ3 ME.3.0.3; an EPS licence for operational impacts to bats has not been requested for offshore wind in the UK, and there is not evidence that Five Estuaries should be any different in this regard.
	Currently there is a significant evidence gap in our understanding of how migratory bats interact and overlap spatially with offshore wind projects. Natural England advises that this evidence gap needs to be addressed to inform any licensing process. It would be very difficult to robustly assess against the required tests needed if a licence application was received. In this event, we would expect the MMO to assess and decide on any licence applications given the offshore marine location of any turbines. However, Natural England's Wildlife Licensing Team could support on aspects of the technical assessment, particularly where/if there are commonalities with terrestrial bat licensing and ecology.	
EO.3.01	Natural England has not previously made any representations relating to "Obstacle OOX-31". We recognise that use of aerial photography and drone technology are emerging and improving tools for the purpose of ecological data collection and management, but also that it may be of variable quality in identifying grassland habitats and that more traditional [pre construction] field survey may be required for acceptable accuracy and precision for many Priority Habitats and to inform on the appropriateness of any mitigation measures.	Please see 10.58 Applicant's response to ExQ3 EO.3.01.



10. APPENDIX 1: MARINE MAMMAL IPCOD MODELLING

- 10.1.1 The following information has been provided to address Natural England's concerns around the lack of variability in the outputs from iPCoD for the project alone. The following text describes in detail how the iPCoD model works and what is required for an impact to be forecasted by the model.
- 10.1.2 To determine the impacts of impulsive noise on key UK marine mammal species, each iPCoD model simulation is run with matched pairs of populations, 1 un-impacted population and 1 impacted population (Note: we recommend 1,000 simulations of this kind are run for each scenario of interest). These matched-pairs experience exactly the same environmental and demographic stochasticity within one simulation of the model. The only variable element between the matched pair is that one population is subjected to a stressor (impulsive noise) and therefore demonstrates the potential effect of disturbance(this is considered to be the impacted population in the pair, the other population in the pair receives no exposure to a stressor and is considered the un-impacted population).
- 10.1.3 In iPCoD, all individuals within the impacted population (within a pair) are assumed to be equally likely to be disturbed by a particular piling operation1. On each day of piling, iPCoD performs a binomial trial for each simulated individual using the probability of being disturbed (calculated as the total number of animals predicted to be disturbed by a particular piling operation (numDT), as specified by the user, divided by the size of the total population (pmean) to determine whether or not that individual will be disturbed. This results in a calendar record of the days during the simulated year on which each individual is disturbed. The probability of each animal being disturbed on a given day is independent from the probability of this individual being disturbed previously. The total number of disturbed days is then used to determine if or how individual survival and birth rates are altered (dictated by the transfer functions in iPCoD).
- 10.1.4 The potential for a change in an individual's vital rates is determined by the number of repeated piling days that an individual experiences. The probability distributions that form the transfer functions in iPCoD provide the number of days of repeated disturbance an animal is expected to experience before the disturbance can have any effect on its vital rates (and many individuals need to have their vital rates markedly impacted before any change in the population is observed).
- 10.1.5 The probability density functions for seals resulting from the expert elicitation are provided below (Figures provided at the end of the Appendix).
- For an individual harbour seals a minimum of 20 days of repeated disturbance (to that same individual in any one year) is required before there is any effect on fertility - Figure 10A from Booth et al (2019)
- For an individual grey seal, a minimum of 100 days of repeated disturbance (to the same individual in any one year) is required before there is any effect on fertility - Figure 11A from Booth et al (2019).

^{1 (}unless vulnerable sub-populations are specified – which was not the case for Five Estuaries)



- > For both species of seal, a minimum of 10 days of repeated disturbance to the same individual seal is required before there is any effect on the survival rate of 'weaned of the year survival' Figure 12A from Booth et al (2019).
- > N.B. even if there is some change to an individual's vital rates, there is no guarantee it will affect the individual's overall performance or the population's trajectory.
- 10.1.6 The Five Estuaries project is piling for 81 days, which means the model will not result in any change to grey seal fertility rates, irrespective of the number of grey seals disturbed per day, because there are not enough piling days to reach the threshold of repeated days to induce a change in this vital rate.
- 10.1.7 A piling schedule of 81 days can, however, affect the weaned of the year survival of that species (Figure 12A from Booth et al (2019)) and theoretically can then affect population size. However, pup survival changes have very little effect on population trajectories. Marked changes in individual adult survival or fertility could affect a population but only if it occurs in a very significant proportion of the population.
- 10.1.8 If the level of disturbance modelled (number of piling days and number of animals disturbed per piling day and the number of repeated days of disturbance) is not sufficient to result in changes to vital rates of individual animals and thus no change to the population size, then the results for the matched pair will be identical (the impacted population size mean, median and 95% CIs will match those of the unimpacted population). Thus, it is valid for the impacted and unimpacted population sizes to be identical, if there is no effect of disturbance.
- 10.1.9 In the Five Estuaries scenario, only 1 single harbour seal is predicted to be disturbed on any day of piling. Thus, for each simulated individual the probability of being disturbed on a piling day is 0.000205 (0.02%). The probability of a single harbour seal being disturbed on ≥1 days over the 81 day piling schedule is 0.0160711 (1.6%). The probability of a single harbour seal being disturbed on ≥10 days over the 81 day piling schedule is 0.
- 10.1.10 In the Five Estuaries scenario, 102 grey seals are predicted to be disturbed on any day of piling. Thus, for each simulated individual the probability of being disturbed on a piling day is 0.001557 (0.16%). The probability of a single grey seal being disturbed on ≥1 days over the 81 day piling schedule is 0.1216444 (12.16%). The probability of a single grey seal being disturbed on ≥10 days over the 81 day piling schedule is ~0.

Table 10.1 Probability of disturbance from Five Estuaries piling

Species	Population size	Number disturbed per piling day	Probability of being disturbed on a piling day	Probability of being disturbed on ≥1 day	Probability of being disturbed on ≥10 days	
Harbour seal	4,868	1	0.0002	0.0160711	0	
Grey seal	65,505	102	0.0016	0.1216444	0.000000000 000002220446	



- 10.1.11 To demonstrate that the results depend, in part, on the proportion of the population impacted, a completely theoretical and extreme scenario was modelled, in which 50% of the grey seal and 50% of the harbour seal population was disturbed per piling day throughout the Five Estuaries 81 day piling schedule. The results do show an effect of disturbance at the population level (see tables below). This highlights that iPCoD will generate results with variability it is just unrealistic when using the Five Estuaries 81 day piling schedule (i.e. a very high proportion of the seal population would need to be exposed and disturbed on each piling day before there is a detectable change at the population level).
- 10.1.12 The Five Estuaries iPCoD scenarios for porpoise do show very small effects of disturbance because a) a higher proportion of the population is impacted per day compared to seals and b) very few days of disturbance were expected to result in a change to porpoise calf survival rates (Figure 9A from Booth et al (2019)) meaning in porpoise model scenarios, this threshold is likely to be exceeded for some animals, resulting in changes in population size in forecasts appearing in the median or 95% confidence intervals of simulation results (Eberhardt, 2002).

Table 10.2 Grey Seal variability - 177 disturbed per day, 81 piling days

	un- impacted pop mean	impacted pop mean	Impacted mean as % un- impacted	un- impacted pop median	impacted pop median	Impacted median as % un- impacted	un- impacted pop lower 2.5%	un- impacted pop upper 97.5%	impacted pop lower 2.5%	impacted pop upper 97.5%
Start 2029 (before piling)	52356	52356	100.00%	52356	52356	100.00%	52356	52356	52356	52356
End 2029 (end piling)	52615	52597	99.97%	52840	52819	99.96%	47954	56086	47954	56086
2030 (1 year after piling)	52978	52940	99.93%	53258	53242	99.97%	47074	57424	47059	57340
2035 (6 years after piling)	54611	54567	99.92%	54928	54904	99.96%	44849	63275	44724	63194
2041 (12 years after piling)	56767	56724	99.92%	56614	56603	99.98%	43784	69566	43784	69548
2047 (18 years after piling)	58843	58797	99.92%	58714	58714	100.00%	43445	75512	43445	75477



Table 10.3 Harbour Seal variability - 2,434 disturbed per day, 81 piling days

	un- impacted pop mean	impacted pop mean	Impacted mean as % un- impacted	un- impacted pop median	impacted pop median	Impacted median as % un- impacted	un- impacted pop lower 2.5%	un- impacted pop upper 97.5%	impacted pop lower 2.5%	impacted pop upper 97.5%
Start 2029 (before piling)	4866	4866	100.00%	4866	4866	100.00%	4866	4866	4866	4866
End 2029 (end piling)	4861	4857	99.92%	4869	4866	99.94%	4454	5184	4446	5182
2030 (1 year after piling)	4867	4859	99.84%	4874	4868	99.88%	4404	5306	4376	5302
2035 (6 years after piling)	4874	4869	99.90%	4856	4851	99.90%	4094	5708	4092	5708
2041 (12 years after piling)	4880	4875	99.90%	4835	4830	99.90%	3956	5962	3947	5962
2047 (18 years after piling)	4889	4884	99.90%	4846	4838	99.83%	3692	6236	3688	6236



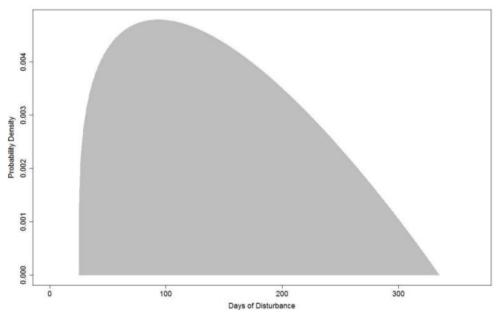


Figure 10A from Booth et al (2019) - Probability distributions showing the consensus of the EE for the effect of disturbance on harbour seal fertility— the number of days of disturbance a pregnant female could 'tolerate' before disturbance has any effect on fertility

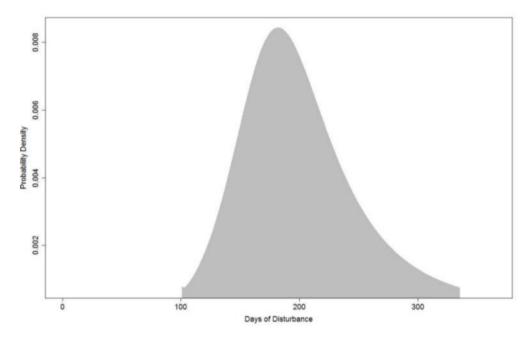


Figure 11A from Booth et al (2019) - Probability distributions showing the consensus of the EE for the effect of disturbance on grey seal fertility— the number of days of disturbance a pregnant female could 'tolerate' before disturbance has any effect on fertility



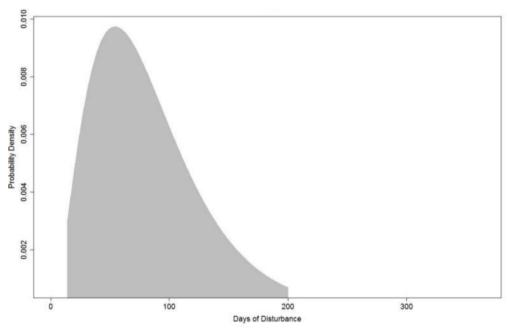


Figure 12A from Booth et al (2019) - Probability distributions showing the consensus of the EE for the effect of disturbance on harbour and grey seal 'weaned of the year' survival – the number of days of disturbance such a seal could 'tolerate' before it has any effect on survival

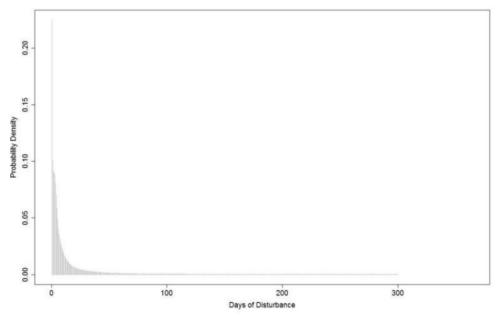


Figure 9A from Booth et al (2019) - Probability distributions showing the consensus of the EE for the effect of disturbance on harbour porpoise calf survival – the number of days of disturbance (of 6 hours zero energy intake) a mother:calf pair could 'tolerate' before it has any effect on survival



REFERENCES

Booth, C. G., F. Heinis, and H. J. 2019. Updating the Interim PCoD Model: Workshop Report - New transfer functions for the effects of disturbance on vital rates in marine mammal species. Report Code SMRUC-BEI-2018-011, submitted to the Department for Business, Energy and Industrial Strategy (BEIS), February 2019 (unpublished).

Eberhardt, L. L. (2002). A paradigm for population analysis of long-lived vertebrates. Ecology, 83(10), 2841-2854.



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