



THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES
2010

Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms

[Appendix 1](#)

**Natural England's [End of Updated Post Examination](#) Position on the
Applicant's Proposed Compensatory Measures**

For:

-The construction and operation of the Sheringham Shoal Extension and Dudgeon Extension Offshore Wind Farms located approximately 16km and 27km respectively from the Norfolk Coast in the Southern North Sea.

Planning Inspectorate Reference: EN010109

[20th](#) February 2024

Appendix 1 Natural England's Updated Position on the Applicant's Proposed Compensatory Measures February 2024

1. Background

Natural England have engaged constructively and in detail with the Applicant on matters relating to compensation throughout the Evidence Plan Process and into the Examination period. Since the close of Examination on 17 July 2023, at the request of the Applicant, Natural England attended a compensation update meeting. We are also in the process of and has providing ~~ed~~ advice to the Applicant's scope for the literature review for the Blakeney predator management proposal as a supplementary measure for Sandwich tern. Using this information provided along with the Applicant's response to the SoS consultation, Natural England has updated this position document on the proposed compensation measures.

Prior to submission, the Applicant determined that an adverse effect on integrity (AEol) in combination with other plans or projects cannot be ruled out for black-legged kittiwake *Rissa tridactyla* (hereafter, kittiwake) at Flamborough & Filey Coast Special Protection Area (FFC SPA) and Sandwich tern *Thalasseus sandvicensis* at North Norfolk Coast SPA/Greater Wash SPA (NNC SPA). This will require compensatory measures to be secured.

~~For species where AEol remains disputed, namely common guillemot *Uria aalge albionis* (hereafter, guillemot) and razorbill *Alca torda* from FFC SPA, the Applicant previously has proposed compensatory measures for common guillemot *Uria aalge albionis* (hereafter, guillemot) and razorbill *Alca torda* from FFC SPA are proposed 'without prejudice'. Since the close of examination, the Applicant has removed razorbill from their auk compensation proposals. Natural England still consider that AEol cannot be ruled out for both guillemot alone and razorbill species in combination with other consented plans and projects, thus requiring compensation to be secured for both these species.~~

For FFC SPA Northern gannet *Morus bassanus* (hereafter, gannet) in principle measures were also identified, although following updates to the impact assessment for that species, Natural England has ruled out the potential for in-combination AEol.

The Applicant has progressed several compensatory measures, with the aim of compensating for predicted impacts on kittiwake by augmenting an existing artificial nest site (ANS) at Gateshead, on Sandwich tern through a package of measures including habitat creation to restore a colony at Loch Ryan and interventions at extant colonies at Farne Islands SPA and Blakeney Point (within NNC SPA). For guillemot ~~and razorbill~~, the proposal is to address the impacts through reducing bycatch mortality and involvement in partnership work undertaking predator (rat) eradication.

2. Natural England's summary position on the proposed compensatory measures

[Appendix Annex 1](#) sets out our detailed positions on the principal compensatory measures for each impacted SPA feature, taking FFC SPA guillemot and razorbill together as the same measures ~~are~~were previously proposed for both species. Our updated position (February 2024) on each of the compensation packages can be summarised as follows:

Sandwich tern at NNC SPA

- Loch Ryan – as noted in our [Relevant Representation \[RR-063\]](#), Natural England considers that Loch Ryan is a suitable general location for the restoration of a Sandwich tern colony and therefore as the primary compensation measure. This remains our general view. [The Applicant has recently provided a more detailed design concept at their chosen site location \[Link\] and has made some progress towards securing the land with a letter of support provided by the landowner and subject to planning permission, support from the Dumfries and Galloway Council.](#)
- [Natural England retain some concerns regarding the design of the site with regards to suitability for Sandwich terns, including proximity to an area of woodland and the openness of the landscape. –A visit to Loch Ryan is currently planned for beginning of March 2024, and it is hoped that some of these concerns may be allayed by being able to see the site in person and provide advice on potential improvements. However, at this stage we maintain that a more expansive approach to habitat creation would provide more resilience to the proposal and that without this we are likely to have insufficient confidence that the habitats created will be sufficiently attractive.](#)
 - ~~However, despite making some progress towards identifying a site, the Applicant has not confirmed or agreed tenure for a specific location nor provided a detailed concept design concept to the Examination. In the absence of such information, Natural England advises that the measure cannot be considered secured. Furthermore, the concerns in Natural England's relevant representations regarding the design principles that relate to the setting of the proposed nesting islands (open water or open land) have not been addressed during the Examination, meaning that without the Applicant adopting a more expansive approach to habitat creation, we have insufficient confidence that the habitats created will be sufficiently attractive.~~
- Farne Islands SPA – Natural England maintain our view that the proposed measures offer only minimal benefits to Sandwich tern beyond the proposed management of the site. Whilst we welcome the ~~more recent~~[Applicant's commitment in 13.7.1 Habitats Regulations Assessment Derogation and Compensatory Measures Update \(Revision B\) \[REP3-096\]](#) to wider involvement in management of the site, this commitment is not detailed. Natural England also highlight National Trust's reservations regarding the measure as the colony manager.
- Blakeney Point – as noted in our ExA WQ4 response Q4.14.1.7 (EN010109 440231 SEP DEP Appendix L4 – Natural England's Response to ExA Fourth Written Questions Deadline 37) Natural England is broadly supportive of the inclusion of trialling of predator management measures at Blakeney Point, in order to identify and implement measures that address the intractable issues of rats at this location. [We reiterate our position that expert consultation should inform any literature reviews and data gathering to ensure the work is targeted and useful, and it is currently not clear whether this has been undertaken.](#)

Overall package – Resilience is provided by having a supporting measure at an existing colony as well as a primary measure. However, Natural England considers this cannot ‘make good’ the current lack of confidence in the suitability of the chosen site at Loch Ryan, and detail regarding the location and design of the inland pool at Loch Ryan and the level of ambition displayed. The Applicant has clarified that it is proposing to deliver supporting measures at only one of the two existing colonies (North Norfolk Coast and Farne Islands) as part of its proposed package of measures, alongside the primary measure at Loch Ryan. Natural England’s strong preference would be for the Blakeney Point proposal to be progressed. We note that the Deadline 7 submissions are not altogether consistent as regards whether the package contains initiatives at both Farne Islands and Blakeney Point or just one of the two. If measures on only one of these sites is to be delivered, Natural England’s strong preference would be for the Blakeney Point proposal to be progressed.

Kittiwake at FFC SPA

- Gateshead Saltmeadows tower augmentation – Natural England is not generally supportive of further onshore ANS. However, given the modest contribution of SADEP to the in-combination AEOI on FFC SPA kittiwake, and the evidence provided of a likely pool of kittiwakes currently experiencing low/limited productivity in the Newcastle Gateshead area, we consider that augmenting the existing tower is a suitable compensatory measure, and Natural England consider the proposed design appropriate. Given the positive engagement with Gateshead Council, it seems likely that implementation can be achieved. ~~However, the lack of detail presented regarding the likely design does leave residual concerns regarding the effectiveness of the measure.~~

Guillemot and razorbill at FFC SPA

- Fishery bycatch reduction

We do not consider the proposed bycatch reduction technology to be proven and bycatch rates of auks within the selected fishery have not been reported due to restrictions on data sharing. There has been no evidence of razorbill being bycaught in the target fishery. Even with proven methods, bycatch reduction is inherently difficult to implement successfully, particularly over long timelines given the dynamic nature of fisheries. Despite these issues, we remain supportive of ongoing *trials* of ~~the Looming Eye Buoy (LEB)~~potential auk bycatch reduction measures – however at this stage, it cannot be said that the measure will provide effective compensation.

- Predator eradication (collaborative)

The Applicant ~~is only proposing~~has confirmed that proposed delivery of this measure is only part of a 'collaborative delivery model', whereby the Applicant would seek to deliver the measure as compensation or adaptive management through a partnership arrangement with one or more other OWF developers. No further detail is provided (and therefore this measure is not assessed in Appendix-Annex 1. Reference ~~has been~~is made to the Hornsea 4 predator eradication proposals on the Channel Islands, but at this stage there has been no commitment from Hornsea 4 for collaboration with the Applicant. In addition, gGiven Natural England's view that these proposals are highly unlikely to address the compensatory requirements for Hornsea 4, it is hard to see how they could offer compensation opportunities to SADEP.

Our concerns regarding the auk compensatory measures highlight the requirement to ensure any implementation plan contains a clear commitment to adaptive management, which would if needed have to include different kinds of or locations of measures, and also for the plan to set targets that would trigger adaptive management should they not be met.

3. Wider considerations

- **Connectivity to the National Site Network**

Other than the supporting measures for Sandwich tern at Blakeney Point, the proposed measures are to be implemented remotely to the impacted sites, and the accrual of any material benefit to the national site network (unless the Loch Ryan site is ultimately incorporated into the network) remains uncertain. While Natural England are not opposed to

the implementation of seabird compensation at a species bio-geographic population scale, the likely level of benefit to the national site network should be carefully considered in conjunction with uncertainty around method effectiveness and project impacts when appraising the proposed scale of the compensatory measures.

- **Strategic approaches to compensation**

Natural England believe that the situation with the Applicant's overall compensation package as it stands clearly demonstrates that compensatory measures are best delivered strategically, as set out in our '*Approach to Offshore Wind*'¹. We consider that project level measures, necessarily restricted in scope by the predicted impacts of the specific project, retain high levels of uncertainty regarding delivery, appropriate timescales, potential for adaptive management, and scalability. Further, the burden of developing such measures where technological solutions may not yet exist is significant and may prove overly restrictive in the context of individual project timelines.

We note that the Applicant is similarly aligned in their view that compensation is best delivered strategically, enabling compensation projects to be scaled up, significantly increasing potential benefits while reducing uncertainty of delivery. We consider the benefits of the bycatch reduction and predator eradication measures in particular could be significantly enhanced if expanded in the future to a strategic level. Fisheries management is also more likely to be feasible and effective as a strategic measure.

The British Energy Security Strategy (BESS) commits to speeding up the deployment of offshore wind and Natural England broadly welcome the measures proposed in the Offshore Wind Environmental Improvement Package policy paper, including strategic compensatory measures and a centralised Marine Recovery Fund (MRF) to help facilitate delivery of those measures. However, it appears highly unlikely that this system will be in place in time for contributions to the MRF to be considered as an appropriately secured measure for SADEP at the point of the consent decision.

The ongoing highly pathogenic avian influenza (HPAI) epidemic currently impacting seabird populations around the UK (and the world) should also be borne in mind when considering the impacts of offshore wind NSIPs on seabirds. Now more than ever, our threatened seabird populations need to be protected from significant pressures so that they are able to recover from what may be devastating impacts for some species populations. In relation to offshore wind this requires a delicate balancing act with the requirement to combat climate change, which is a significant pressure acting on England's seabirds, by scaling up the provision of renewable energy. Strategic compensation has the potential to reduce pressures on seabirds so that they may better cope with stochastic events such as HPAI while accommodating impacts arising from offshore wind development.

¹ Natural England. 2021. Natural England's Approach to Offshore Wind. Natural England Technical Information Note, TIN181.

Appendix Annex 1: Detailed positions on the principal compensatory measures

This Appendix Annex provides Natural England's final position on our confidence in each of the principal compensation measures. We have used the following criteria to assess each category in the summaries:

	NE has broad confidence in this aspect of the measure, though there may be some uncertainties that need addressing.
	There are significant concerns/uncertainties regarding this aspect of the measure, but they have the potential to be resolvable.
	Major uncertainties remain with this aspect of the measure, which if not resolved would make compensation undeliverable. NE cannot be confident at this stage that the measure is deliverable.

Advice on the proposed compensation measures

NNC SPA Sandwich tern: colony restoration at Loch Ryan

As noted in our relevant representations and subsequent submissions, Natural England supports the principle of restoring a lost Sandwich Tern colony at Loch Ryan and considers that if a sufficiently attractive lagoon with islands could be created, there is a reasonable prospect of colonisation. Our concerns therefore relate to the level of ambition demonstrated by the Applicant and ~~in particular~~ the limited progress made in ~~identifying and~~ securing a specific land parcel for the lagoon ~~that would facilitate a more ambitious approach and the lack of a detailed concept design for such a parcel.~~

~~Since the close of examination, the Applicant has selected a location for the proposed colony restoration measures, and provided a concept design drawing showing their proposed design including the setting of the lagoon and islands within the surrounding area.~~

~~Following Natural England's Deadline 6 submission reiterating these concerns, in their Deadline 7 submission, [REP7 018] 5.5.2.1.1 Annex 2A Outline Sandwich Tern Compensation, Implementation and Monitoring Plan (Revision B), the Applicant has sought to demonstrate the feasibility of the scheme by identifying four illustrative land parcels within their preferred part of the area of search. Each is of at least 2 hectares in which a pool of at least 1 hectare will sit. A buffer area of either water or land would surround the pool, all of which would sit inside a predator proof fence.~~

Whilst this extra information is helpful, ~~and the locations generally appropriate, they do appear to justify it remains~~ Natural England's concerns, expressed from our Relevant Representations onwards, that the proposals are insufficiently attractive to ~~have provide full~~ sufficient confidence ~~that Sandwich terns will be induced~~ Sandwich terns to colonise ~~the site.~~ ~~Of the four areas considered by the Applicant, the site in the north was chosen primarily due to issues with the southern areas related to concerns with potential impacts on sensitive ground-water receptors. Natural England have some concerns regarding the chosen site, including the lack of an open aspect and the proximity of the site to an area of woodland in the north-west corner.~~

Whilst the small size of St. John's Pool is cited as evidence that larger areas of habitat are not necessary, we observe that other Sandwich tern colonies in the UK are on inaccessible islets some distance from the mainland (e.g. Isle of May, Coquet Island), coastal habitats with wide, open aspects and low vegetation (e.g. Sands of Forvie, Scolt Head) or are on islands situated within much larger lagoons than 1ha (e.g. Hodbarrow, Cemlyn). Therefore Natural England considers that the *setting* of the islands in a sizeable area of open water and/or low ground with only low vegetation appears to be an important factor, and that thus far these requirements are not adequately reflected in the Applicant's proposals. ~~As such, we reiterate our Relevant~~

Representations advise urging the Applicant take a more ambitious approach to lagoon habitat creation.

Whilst recognising the four areas are illustrative only, Natural England notes that they are close to or abut each other. We consider that a lagoon habitat creation proposal across multiple areas of such size (or a single area of equivalent size) is more likely to prove attractive to prospective Sandwich terns. As such, we reiterate our Relevant Representations advice urging the Applicant take a more ambitious approach to lagoon habitat creation.

In any event, and notwithstanding the most recent welcome letter of support from Corsewall Estates, it remains the case that a specific the chosen site has not been fully secured for the delivery of the measures.

Colony restoration at Loch Ryan	
Overall confidence in the measure	<p>Natural England consider the principle of the measure to be ecologically appropriate and consider the benefits of restoring the range of Sandwich terns in the UK to be substantial. The scale of compensation sought is acceptable.</p> <p><u>A site location for the inland pool and concept design has been provided by the Applicant, along with a letter of support from the landowner, Corsewall Estates, and commercial terms of lease are currently being progressed. Until the land/rights have been acquired, Natural England would not consider the measure fully secured. A broad area of search has been identified and within that area, a letter of support has been received from a specific landowner, albeit the specific land held is not identified.</u></p> <p><u>Design principles have been brought forward.</u> Natural England considers <u>these the proposed design offer four</u> islands within <u>the proposed</u> lagoon <u>is</u> broadly appropriate but consider that the principles relating to the extent of the lagoon itself and/or the buffering land do not inspire confidence that the setting of the islands will be sufficiently extensive or attractive to Sandwich tern.</p> <p><u>These concerns are enhanced by the lack of a specified land parcel or a detailed concept design, and whilst four indicative areas have been presented within the area of search, these reflect the unambitious principles as regards the setting of the nesting islands.</u></p>
End of Examination position	
Theoretical merit to deliver compensation	Natural England consider that the measure has the potential to restore a Sandwich tern colony in part of its previous range, and also increase the number of recruits into the wider Sandwich tern population, although the scale of benefit from the latter aspect may be hard to quantify.
Technical feasibility	<u>Whilst the principles behind lagoon and island creation to benefit nesting seabirds are well understood, the lack of a specific location and a detailed concept design mean that key feasibility elements such as sufficient water supply, predator control and minimising human disturbance cannot be assessed, meaning confidence is limited. The concept design has been provided by the Applicant in addition to further information on hydrology, engineering and maintenance of the site, though more detail will follow within the detailed design. However, aAt this stage, the proposals seem likely to be technically feasible.</u>
Agreed compensation level	The compensation requirement of 17 adult Sandwich terns per annum is gauged against the 95% upper confidence limit prediction of the CRM, based on design-based estimates. This is in line with Natural England's advice.

Colony restoration at Loch Ryan	
Scale/extent of measure	The Applicant proposes to restore a colony of around 120-150 nesting pairs, which whilst likely to be challenging, is an appropriate target. However, whilst the proposed size and number of islands appears appropriate, <u>Natural England remains concerned that the proposed size of the lagoon is 'at least 1 hectare' 1.55ha and the overall size of the habitat restoration (lagoon and buffer) is 'at least 2 hectares' 3.9ha.</u> Natural England would have greater confidence in the success of the scheme if a substantially larger area of water/buffering land surrounded the nesting islands and continue to urge the Applicant to consider this.
Timing: Deliverable before impact	The Applicant has committed to a lead-in time of 2 full breeding seasons before turbine operation. Colony establishment would likely be occurring in the early years of operation, and until the target population/productivity is met a mortality debt will accumulate. Therefore, although the measure will be in place prior to operation, a decreased lead in time increases the likelihood that the measure will not be delivering compensation at the scale required before impacts occur.
Location of measure	A comprehensive UK-wide assessment of Sandwich tern colonies and the potential to deliver compensatory measures has been carried out, which yielded Loch Ryan as a suitable candidate for colony restoration. The area of search within the general Loch Ryan area was also appropriate. <u>The Applicant has now chosen a site for the habitat creation, at the northern end of the area of search, which Natural England has some concerns over. These relate to proximity of the site to an area of mature woodland, although the evidence provided by the Applicant does demonstrate that this does not necessary preclude use by sandwich tern, –and the lack of an open aspect. However, at the end of Examination it remains the case that a specific land parcel has not been identified, which remains of significant concern to Natural England.</u>
Long term implementation	<u>In the absence of a detailed concept design it is not possible to assess how practicable it will be to maintain and/or if needed carry out adaptive management. Alongside the more detailed concept design recently provided by the Applicant is further information on the maintenance and adaptive management considerations, including details on how water quality will be maintained, and access routes for maintenance of the islands. However, some detail is still lacking, specifically with regards to maintenance of the predator-proof fence and vegetation on the islands.</u>
Success criteria/Ability to prove additionality	The size and productivity of a restored colony of Sandwich tern should be readily monitored, and colour ringing of chicks has the potential to provide information regarding whether birds from Loch Ryan are recruited into other SPAs within the national site network.
Suitable as sole measure for target species	Based on the information submitted into the Examination <u>and subsequently</u> , Natural England cannot conclude that the measure would be suitable as a sole measure. However, the proposals for additional measures at Blakeney Point (within the NNC SPA) do provide some resilience in the event of the primary measure not being effective.

Kittiwake: Gateshead Saltmeadows tower modifications

Adding ~~three~~ nesting faces to the existing kittiwake tower on the River Tyne at Gateshead is proposed as the primary compensation measure for kittiwake.

Natural England's advice to offshore windfarm developers has been that due to the number of projects already required to provide artificial nest structures (ANS) along the East Anglian and North East coastlines as compensation, further ANS should be located offshore rather than onshore. This remains Natural England's general position. However, Natural England consider that ~~in~~ ~~in~~ this instance, an onshore measure (augmenting the existing Gateshead Saltmeadows tower on the Tyne with ~~three~~ new nest faces) has the potential to provide appropriate compensation for SEP and DEP. This is for the following reasons:

- The predicted contribution of SEP and DEP to the in-combination adverse effect are comparatively small – a predicted central value of 6.4 adult collisions per annum. This indicates that the compensation will only need to produce a modest number of additional recruits into the national site network, in turn indicating that an onshore ANS, whilst compromised by the likely availability of other nest spaces in the general area, still has the potential to be successful.
- The Applicant, whilst not demonstrating that nest space availability is currently a limitation at the Tyne colony, does make a reasonable case that every year a substantial number of kittiwakes fail to produce any young on the Tyne and therefore may seek an alternative nest site the following year. Whilst some of those unsuccessful kittiwakes may relocate to another colony entirely, it is plausible that others will seek new sites on the Tyne.
- None of the consented offshore wind projects requiring compensation are developing ANS proposals on the Tyne, whereas Lowestoft, the Suffolk coast and elsewhere in the North East are scheduled to see substantial provision in the future. Planning permission has been granted for an experimental 'kittiwakery' directly adjacent to the Gateshead Saltmeadows tower, which is of a similar scale to the SEP and DEP intervention. In light of the evidence presented regarding a substantial number of failing breeders on the Tyne every year, we consider that the presence of the 'kittiwakery' is, on balance, unlikely to preclude the SEP and DEP intervention from providing compensatory benefits.

The Applicant has engaged with Gateshead Council as both the landowner and the local planning authority and received a letter of support for the measures, and there appears to be good prospects of securing 'tenure' and subject to public consultation achieving the required permissions for implementation. The Applicant has also consulted local experts as regards the design of the additional faces, and has submitted their final preferred design which consists of three new panels below the existing three (all of which will be retained or refurbished). Natural England are supportive of the proposed design, but though would welcome further engagement with the Applicant through the proposed Kittiwake Compensation Steering Group, particularly with regards to how kittiwake will be encouraged to recolonise the structure following removal, refurbishment and replacement of the existing faces and ledges, and any necessary measures for reducing the spread of HPAI when reusing old nests. ~~However, at this stage, the Examination has not received a great deal of detailed information regarding the proposed design. Given the relative simplicity of the measure, this reduces confidence in the effectiveness of the measure to a limited degree, but there remains residual uncertainty regarding the design of the structure.~~

Natural England continues to advise that the modifications should be in place four breeding seasons in advance of turbine operation, and notes that ANS relating to OWF installed before the 2023

breeding season have not been colonised this year, giving further weight to the need to promptly install the modifications.

Gateshead Saltmeadows tower modifications	
Overall confidence in the measure	Natural England consider the measure to be ecologically and technically viable. A location for repurposing a structure has been identified and steps taken towards securing tenure and permissions. The scale of compensation required is broadly agreed between Natural England and the Applicant, and we are reasonably confident that the measure can deliver against Natural England's advised impact values. However, the lack of a detailed concept design does leave some residual concern Natural England are supportive of the proposed design consisting of three new panels below the existing three, though would welcome ongoing discussions regarding how kittiwake will be encouraged to recolonise following refurbishment of the tower, and how the risk of the spread of HPAI will be mitigated for. but However we retain some concerns as does the with the proposed lead in time of 3 breeding seasons, compared to the 4 breeding seasons secured in the DCOs for other OWF projects. Were a commitment to 4 breeding seasons made, the RAG assessment would have been Green. We would also welcome ongoing discussions regarding how kittiwake will be encouraged to recolonise following refurbishment of the tower, and how the risk of the spread of HPAI will be mitigated for.
End of Examination position	
Theoretical merit to deliver compensation	Natural England considers that the measure has the potential to increase the number of recruits into the wider kittiwake population, although the scale of benefit to the impacted site (or indeed the national site network) will be indirect and is likely to be unquantifiable.
Technical feasibility	The measure seems likely to be technically feasible.
Agreed compensation level	The Applicant has based their calculations on Natural England's advised Collision Risk Modelling (CRM) parameters and has calculated the level of compensation to 17 breeding, FFC SPA adult kittiwakes per year. This is based on the upper 95% confidence limit value of the CRM, and those birds apportioned to FFC SPA.
Scale/extent of measure	The metric used is the number of chicks fledged successfully per year and is based on the use and productivity of existing faces, rather than theoretical numbers that might be possible to be produced on each face. The calculation requires that the number of chicks produced are corrected for survival, hence the number of adults (17) is equivalent to the production of twice as many chicks (34), and needs to be further corrected for the proportion of birds that will recruit into the national sites network (approximately half - 57%). This results in a requirement that the compensation would result in a minimum of 68 chicks fledging successfully per year. The replacement of the less successful face with two re-orientated ones is predicted to ultimately result in a 'gross' increase of about 140 chicks per year once fully colonised, (noting the 'net' increase may be less as some pairs will likely re-locate from less successful breeding sites). The updated design of retaining all of the existing panels/ledges in addition to three new panels is expected to increase the benefits above that as quantified by the Applicant in Gateshead Kittiwake Tower Modification Quantification of Productivity Benefits (Revision B) [REP3-087] sign of retaining all of the existing panels/ledges in addition to three new panels, is expected to increase the benefits above that as quantified by the Applicant in Gateshead Kittiwake Tower Modification Quantification of Productivity Benefits (Revision B) [REP3-087] Natural England consider this level of provision to be broadly acceptable. Although the proposed approach to scale the requirements with respect to producing recruits into the national site network is a simple one, it has ensured the scale at least in part reflects the requirement to bolster the network rather than the wider biogeographic population.

Gateshead Saltmeadows tower modifications	
Timing: Deliverable before impact	The Applicant has committed to a lead in time of 3 full breeding seasons. We reiterate that kittiwake do not usually breed until they are 4+ years old, and therefore recruits will not enter the breeding population until that point. It remains Natural England's view that the modification should be in place 4 breeding seasons before the turbines are operational. Colony establishment would likely be occurring in the early years of operation, and until the target population/productivity is met a mortality debt will accumulate. Therefore, although the measure will be in place prior to operation, a decreased lead in time increases the likelihood that the measure will not be delivering compensation at the scale required before impacts occur. Furthermore, we understand that ANSs erected before and during the 2023 breeding season have not been colonised, indicating that colony establishment may not be immediate or straightforward.
Location of measure	As noted above, Natural England is not generally supportive of further onshore ANS as compensation for OWF impacts. However, given the modest contribution of SADEP to the in-combination AEOI on FFC SPA kittiwake, and the evidence provided of a likely pool of kittiwakes currently experiencing low/limited productivity in the Newcastle Gateshead area, we consider that augmenting the existing tower is appropriate in the case of SADEP.
Long term implementation	Given the accessibility of the site and the potential modularity of the intervention, it seems reasonable to conclude that adaptive management will be possible in the face of a lack of colonisation or under-occupation. However, in the absence of detailed designs it is not possible to confirm this.
Success criteria/Ability to prove additionality	As nest availability has not been proven to be a limiting factor, new colonies will need to produce additional recruits into the wider population than would otherwise be. Maintaining the overall size of the Tyneside colony with no productivity increase or relocating existing successfully breeding birds would not deliver compensatory benefits. To account for this, monitoring efforts will need to be wider in scope than just the modified structure, and the current understanding of the Tyneside colony and potentially other local colonies will need to be used as a baseline to evidence the additional benefit of a new or repurposed structure. However, quantifying benefits to the FFC SPA kittiwake population or indeed other sites in the national site network is unlikely to be possible.
Suitable as sole measure for target species	In the context of the predicted level of impact to FFC SPA, a sole compensatory measure for FFC SPA kittiwake is appropriate.

FFC SPA Guillemot and Razorbill

The principal compensatory measure proposed for auk compensation is bycatch reduction. Whilst this measure has theoretical merit, it cannot be considered adequately secured due to outstanding uncertainties regarding feasibility, effectiveness, scale, and location.

The bycatch reduction measure aims to support auks by reducing their levels of bycatch in commercial fisheries and thus retain more birds in the population. A target fishery has been identified as a potential auk bycatch hotspot, and there is some evidence to suggest that reducing direct mortality here might possibly form a basis for compensatory measures. We retain concerns that whilst delivering compensation via bycatch reduction is theoretically viable, significant uncertainties remain which we consider to be extremely high risk.

Natural England highlights that the Applicant's bycatch reduction relies on the use of the looming eyes buoy (LEB). The Applicant has reported on the first year of Hornsea 4 OWF's trial of this technology; however, we must reiterate that Natural England do not consider a single year of data collection to be sufficient to draw meaningful conclusions on LEB efficacy.

The Hornsea 4 Applicant calculated a relative 25% reduction in bycatch of guillemot by comparison of the percentage of LEB treated nets (42.9%) versus control nets (57.1%) that caught one or more guillemot. **Natural England consider this calculation to be methodologically inappropriate and of no value in assessing the efficacy of the LEB.** To put the value of this calculation into context, with no underlying data on actual bycatch being presented, we could assume that the trial may have found 3 guillemots bycaught in treated nets compared to 4 in the control nets for a 25% reduction. We can surmise this is not the case using the [Hornsea 4](#) Applicant's calculations of the number of vessels that would be required to compensate their predicted impacts.

However, the fact remains that the trial data is highly opaque, and such a simple comparison of the treated and untreated nets pooled across the entire trial period is not informative and is potentially misleading. Furthermore, there is no assessment of statistical significance and therefore even the reduction in bycatch as reported may be coincidental or due to some other factor(s). It is hard to escape the conclusion that the data analysis appears to be fundamentally flawed. Accordingly, we are concerned that the results are in no way comparable to the findings of peer-reviewed studies that utilise established bycatch data analysis techniques.

Natural England maintain that **it is not possible to assess the potential scale of the measure** without a proven implementation method with fully quantified and independently ratified success rates, and a quantified assessment of actual bycatch rates at the target fishery with consideration given to variation across vessels and other co-variables (e.g., gear specifics, environmental conditions). Calculation of the absolute bycatch reduction that might be possible will be required to understand the upper limits of compensation potential (maximum number of individuals that could be saved from direct mortality as bycatch). We cannot currently advise on the potential for bycatch reduction to compensate for any given level of impact. It is also unclear whether the confidentially agreements that have (necessarily) hampered the Hornsea 4 OWF analysis would continue to be required once the measure was implemented, preventing the data from ever being publicly available even within the confines of a steering group. Natural England would not be able to support this approach both on the grounds of transparency and the inability to form meaningful success criteria and/or demonstrate with independent verification that the compensation was delivering.

In summary, we do not consider the Hornsea 4 LEB trial and subsequent data analysis to be sufficiently transparent or robust at the current time to draw any conclusion on the technologies ability to significantly reduce bycatch. [A multi-year trial and subsequent appropriate statistical analysis of the data will be required.](#) Further, Natural England will need to be able to undertake a

sufficient audit of that data and analysis or be suitably assured that an independent third party has reviewed and approved the findings of the trial. [Furthermore, recent results from the RSPB/Cornwall Inshore Fisheries Conservation Authority \(CIFCA\) trial of LEBs and predator-shaped kites did not demonstrate that LEBs were effective at reducing bycatch of guillemot \(Y. Rouxel, pers. comm\), and a recent peer-reviewed publication from trials in Iceland equally did not show a bycatch reduction of guillemot species when using LEBs on fishing nets \(Rouxel et al. 2023\).](#) Natural England do remain fully supportive of the ongoing [LEB trialling of measures to reduce auk bycatch](#) and hopeful that [some form of bird deterrent method or alternative mitigation measures](#) it will ultimately be capable of delivering quantifiable reductions in bycatch of auks and other marine birds. However, auk bycatch reduction is not currently demonstrated as being a viable compensation measure.

Bycatch reduction	
Overall confidence in the measure	<p>Whilst delivering compensation via bycatch reduction is theoretically viable, Natural England remain of the view that there is currently no proven method to reduce bycatch of auks and hence deliver the compensation. The measure relies on a single method which we consider to still be at the trial phase. We cannot make any assessment of the scale of measure that might be achievable without a proven implementation method, and a quantified assessment of bycatch levels at the target fishery.</p> <p>However, Natural England are supportive of the ongoing trials of the LEB technology and consider that efforts to develop and deliver bycatch reduction for auks could represent an important component in the eventual provision of compensatory measures for these species.</p>
End of Examination position	
Theoretical merit to deliver compensation	<p>The approach has theoretical merit, assuming bycatch mortality can be identified and subsequently reduced at an appropriate scale to deliver sufficient population level benefits to auks. SADEP's modest contribution to the in-combination AEOI on FFC SPA guillemot and razorbill gives some comfort regarding this.</p> <p>We welcome the work undertaken so far to develop a method to reduce auk bycatch. We remain hopeful that the implementation of this or an alternative bycatch reduction methods could provide compensation for auk species, but it must be noted that we consider the trial phase to be ongoing and the technology to be unproven at this time. We also highlight that the results of the RSPB and RSPB/CIFCA trials appear to indicate that in these instances LEBs were not effective.</p>
Technical feasibility	<p>The Hornsea Four LEB trials demonstrate that the LEB technology can be implemented on a number of vessels in an active fishery, although long-term application and LEB efficacy remains unproven.</p> <p>We retain concerns that the required scale of implementation might not be possible, i.e., there may not be enough vessels operating in relevant fisheries to adequately compensate for the predicted impacts of Hornsea 4 and then SADEP, particularly if the reduction in bycatch is small and, as indicated by the RSPB and RSPB/CIFCA trials, may not arise at all in some circumstances.</p>
Agreed compensation level	<p>The Applicant considers that compensation measures should be judged against their ability to compensate for 6 guillemot and 3 razorbill mortalities at FFC SPA per annum. We do not agree with these values. Following Natural England's advised approach, we consider the relevant values are 16 guillemot and 7 razorbill mortalities at FFC SPA per annum. However, the Applicant does evaluate the number of vessels needed to address Natural England's impact values for guillemot (6 and 24 respectively), though for the reasons set out above we do not consider these calculations based on robust evidence.</p>
Scale/extent of measure	<p>Natural England cannot estimate the potential scale of compensation that could be delivered for guillemot by the measure. Bycatch rates in the fishery are not available (the Applicant has assumed a current level of bycatch within the fishery based on questionnaires with fishers on both the northeast and southwest coasts of England which is neither specific to the fishery in question nor can be considered reliable quantification) and the evidence available on LEB efficacy remains, unknown at best, inconclusive.</p>

Bycatch reduction	
	<p>There is currently no evidence that the measure could reduce razorbill bycatch and contribute to compensation for this species.</p> <p>For both species, the need to 'save' sufficient adult auks to ensure that the national site network is protected (rather than the just the overall population of those species) is considered qualitatively in the Applicant's Deadline 7 submission but is not factored into the scale of the measure in any quantified way, as it has been for kittiwake.</p>
Timing: Deliverable before impact	<p>Natural England advise that in order to be certain that the measure can be implemented prior to impact, both the efficiency of the measure and the level of bycatch within the fishery both need to be reliably quantified, a multi-year trial of the LEB must be undertaken before any assessment of efficacy for delivering compensation can be made. As the results of this trial cannot be known until it is reported on and reviewed, it is uncertain that the measure can be implemented prior to impact.</p> <p>If proven successful <u>these two requirements can be met</u>, we consider that compensation would arise as an immediate and direct population effect, i.e., birds are retained in the population, thus compensating on a like for like basis with due consideration to the age profile and connectivity with the national site network of birds that are not bycaught as a result of the intervention.</p>
Location of measure	<p>Natural England agree with the reasoning for selection of the identified locations.</p> <p>We consider that without a full understanding of the potential scale of implementation and delivery it is not possible to determine if the fisheries identified are sufficient to deliver the required level of compensation. Further locations (fisheries) may need to be identified.</p> <p>The bycatch reduction method will need to be proven in the specific fishery for us to have confidence in the efficacy of the method. If multiple fisheries are targeted, existing bycatch within those specific fisheries will also need to be fully understood.</p>
Long term implementation	<p>Fisheries are highly dynamic. Gear use, fishing intensity, and focal species may change within or between seasons according to a variety of market drivers and regulation. This could alter bycatch levels, require new fisheries to be identified and/or require new bycatch reduction methods to be developed.</p> <p>Adaptive management must consider the risk that the target fisheries will not persist over the lifetime of the project.</p>
Success criteria/Ability to prove additionality	<p>If bycatch reduction can be achieved, then success criteria are relatively straightforward to define as the method reduces direct mortality.</p> <p>However, the question of additionality may become pertinent if other bycatch reduction initiatives are rolled out at the industry level.</p>

References

[Rouxel Y, Arnardóttir H, Oppel S. 2023 Looming-eyes buoys fail to reduce seabird bycatch in the Icelandic lumpfish fishery: depth-based fishing restrictions are an alternative. R. Soc. Open Sci. 10: 230783. https://doi.org/10.1098/rsos.230783](https://doi.org/10.1098/rsos.230783)