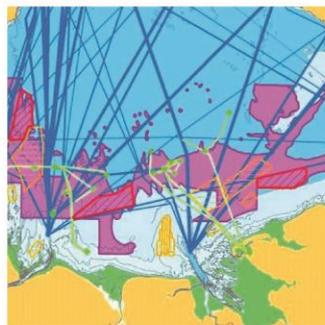
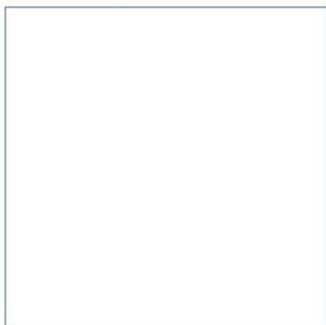


White Paper

UK Offshore Wind Expansion

Meeting the challenges of Article 6(4) of the Habitats Directive

January 2020



Innovative Thinking - Sustainable Solutions



Page intentionally left blank

UK Offshore Wind Expansion

Meeting the challenges of Article 6(4) of the Habitats Directive

January 2020



Document Information

Document History and Authorisation		
Title	UK Offshore Wind Expansion	
	Meeting the challenges of Article 6(4) of the Habitats Directive	
Commissioned by	White Paper	
Issue date	January 2020	
Date	Version	Revision Details
05.03.2019	1	Issued for circulation

Suggested Citation

ABPmer, (2020). UK Offshore Wind Expansion, Meeting the challenges of Article 6(4) of the Habitats Directive, ABPmer White Paper, January 2020.

Contributing Authors

Dr Stephen Hull, Colin Scott, Dr Natalie Frost & Sion Roberts,

Notice

All images copyright ABPmer except where noted

ABPmer

Quayside Suite, Medina Chambers, Town Quay, Southampton, Hampshire SO14 2AQ
T: +44 (0) 2380 711844 W: <http://www.abpmer.co.uk/>

Introduction

This White Paper considers the challenge of offshore wind expansion in UK waters in the context of Article 6(4) of the Habitats Directive, based on the authors combined experience of more than 60 years of working with the Directive's requirements.

The Birds and Habitats Directives seek to establish a network of sites (the 'Natura 2000' network) to protect habitats and species of European importance. The network comprises sites classified under the Birds Directive to protect key bird species and their habitats (Special Protection Areas (SPAs)) and sites designated under the Habitats Directive to protect habitats and non-avian species (Special Areas of Conservation (SACs)).

The Directives establish strict procedures for taking decisions potentially affecting protected sites

The Directives, and associated case law and guidance over the last 25 years, establish strict procedures that must be followed by competent authorities when taking decisions on plans and projects potentially affecting features protected by site designations.

Article 6(3) of the Habitats Directive (which also applies to features protected under the Birds Directive) requires that, before authorising a plan or project, competent authorities satisfy themselves that a plan or project (alone or in-combination with other projects or plans) will not affect the integrity of one or more Natura sites.

Where the Article 6(3) test is not met then, for a plan or project to proceed, the requirements of Article 6(4) must be complied with. The Article 6(4) tests include consideration of less damaging alternatives, whether there are imperatives of over-riding public interest for the plan or project to proceed, and the provision of compensatory measures to ensure the overall coherence of the Natura 2000 network is maintained.

Large scale offshore wind farm (OWF) development has the potential to interact with features protected under the Directives. This can occur directly where OWFs are positioned within Natura 2000 sites, or indirectly where environmental pressures associated with the construction and operation of OWFs extend beyond the footprint of the development, or where mobile species (such as fish, birds or marine mammals) protected by site designations travel beyond the boundaries of the relevant protected site(s) and are exposed to significant pressures.



Kittiwake in flight

Increasing scientific understanding of the interactions between mobile features and the construction and operation of OWFs is identifying potential risks to seabirds (as a result of collision risk and displacement) and marine mammals such as harbour porpoise, bottlenose dolphin and grey seal (associated with piling noise during construction). In the UK, such risks have already led to project cancellations (Docking Shoal), unsuccessful legal challenges (Scottish East Coast windfarms) and delays (Hornsea 3).

Scientific advice from statutory nature conservation bodies indicates the consenting of OWFs currently in the planning system may result in unsustainable collision mortality for seabirds, including kittiwake and gannet, in key offshore wind development areas such as the Moray Firth and East Coast of Scotland¹ and Southern North Sea.² This is potentially a significant constraint on further development in these regions.

There is currently around 9.8 GW³ of installed and operational OWF capacity, with a further 26 GW^{4,5} either in construction or planning. With the UK commitment to net zero greenhouse gas emissions by 2050⁶ and the rapid cost reduction achieved by recent OWF projects,⁷ significant further expansion of offshore wind development in UK waters now seems likely.

Consenting of planned OWF may result in unsustainable collision mortality for seabirds on the East coast

The Crown Estate has recently announced plans to lease a further 2.8 GW of capacity under Round (R) 2/3 extensions⁸ and at least 7 GW under R4 in English, Welsh and Northern Ireland waters.⁹ Scottish Government has also launched a public consultation on a revised Scottish offshore wind plan which could see up to 10 GW of new installed capacity in Scottish waters between 2030 and 2045.¹⁰ The Committee on Climate Change¹¹ recently suggested 75 GW of offshore wind might be required in UK waters by 2050 to achieve net zero. Further development rounds would be necessary to achieve this level of deployment.

Some of the potential development zones being offered by The Crown Estate directly overlap with SPAs and SACs (Appendix A), although in Scotland, the Draft Plan Options avoid direct overlap with Natura sites (Appendix A).

Some future UK OWF projects may not satisfy Article 6(3)

Given the currently identified constraints on OWF development and plans to more than double existing planned capacity including potentially some areas within the direct footprint of Natura sites, it is probable that some future UK OWF projects will not satisfy the test of Article 6(3) of the Directive and so, to proceed, will need to comply with Article 6(4).

This White Paper highlights key issues and challenges for the OWF industry in seeking to meet the requirements of Article 6(4), drawing on our extensive experience applying these requirements to other marine and coastal developments in the UK, particularly focusing on the requirements for compensatory measures.

¹ <https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-habitat-regulations-appraisal/>

² <https://infrastructure.planninginspectorate.gov.uk/document/EN010080-003105..>

³ <https://www.gov.uk/government/statistics/energy-trends-section-6-renewables>

⁴ https://www.thecrownestate.co.uk/media/3370/offshorewindprojectlisting_20191010.pdf

⁵ <https://www.gov.scot/publications/draft-offshore-wind-policy-statement/>

⁶ <https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law>

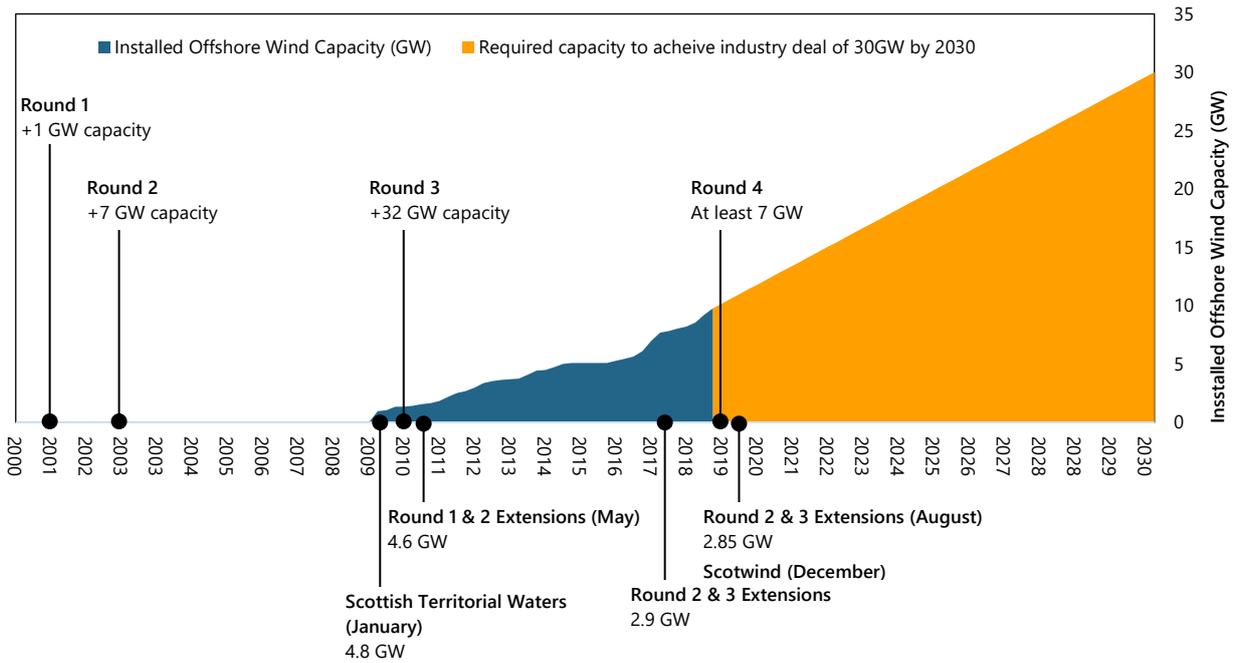
⁷ <https://home.kpmg/uk/en/home/insights/2019/09/contract-for-difference-subsidiary-auction.html>

⁸ <https://www.thecrownestate.co.uk/en-gb/media-and-insights/news/2019-28-gw-of-offshore-wind-extension-projects-to-progress-following-completion-of-plan-level-habitats-regulations-assessment/>

⁹ <https://www.thecrownestate.co.uk/media/3378/tce-r4-information-memorandum.pdf>

¹⁰ <https://consult.gov.scot/marine-scotland/draft-sectoral-marine-plan-for-offshore-wind/>

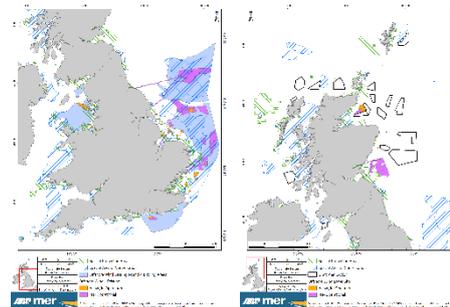
¹¹ <https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf>



Potential OWF Expansion

Previous UK leasing rounds may result in up to 36 GW of installed capacity.

In 2017, The Crown Estate initiated a further leasing round for Round 2/3 project extensions in English and Welsh waters. In August 2019, it was confirmed that seven sites would be awarded agreements to lease, with a total installed capacity of 2.85 GW (Appendix A).⁸



OWF sites and designated areas – see Appendix A for full resolution

In 2019, The Crown Estate launched a further leasing round for Round 4 projects in English, Welsh and Northern Ireland waters (Appendix A),⁹ with a focus on water depths shallower than 60m suitable for fixed foundation turbines. The leasing round is proposed to deliver at least 7 GW of new capacity.

Scottish Government launched a public consultation in December 2019 on an updated sectoral plan for offshore wind, which identifies opportunities for fixed foundation and floating projects in Scottish waters, planning to 2045 with potential additional capacity of up to 10 GW¹⁰ (Appendix A).

Up to 212 GW offshore wind capacity could be installed in the North Sea by 2050

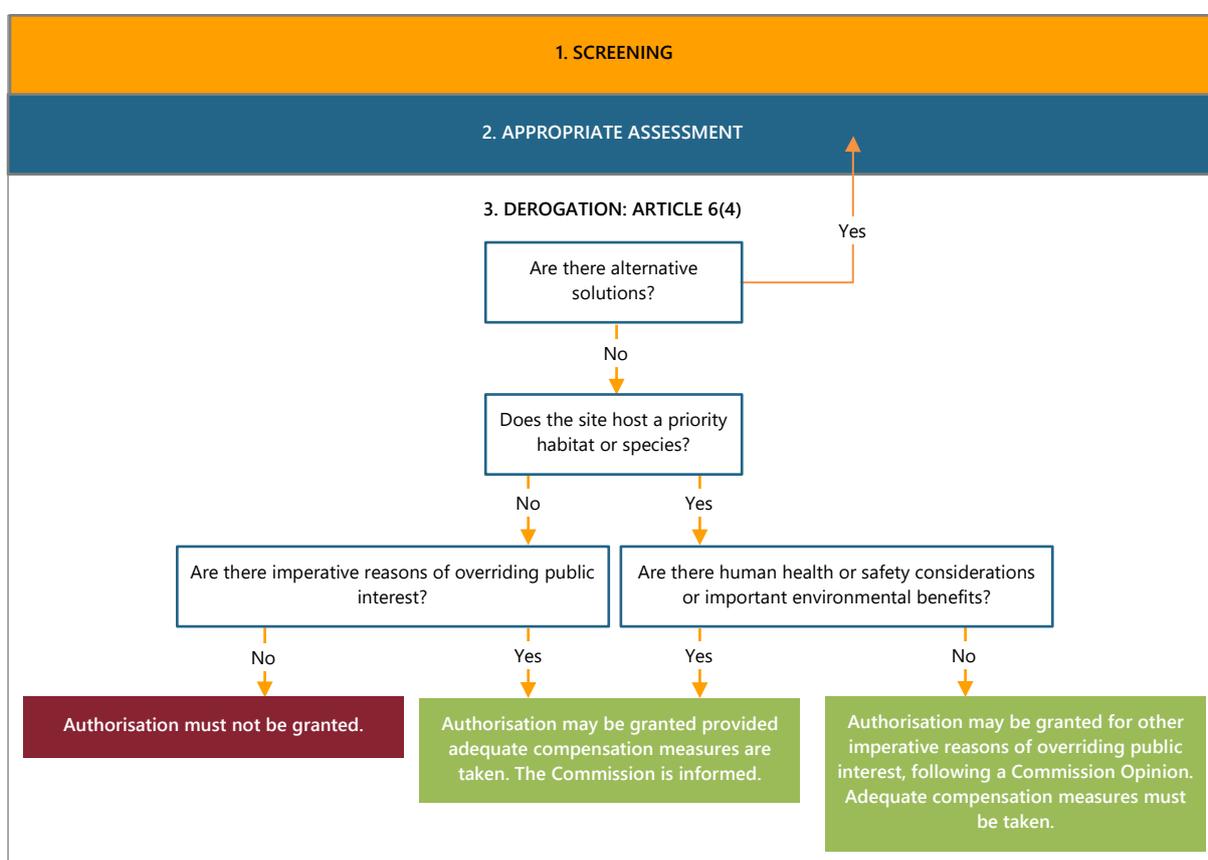
Similarly, across Europe the offshore wind sector is expected to expand, with continued investment in Germany and new investment in France and the Netherlands expected to yield significant development. Several projects are planned in Ireland, including several within the Irish Sea¹² with a target of achieving 3.5 GW installed offshore renewable energy capacity by 2030.

¹² <https://www.housing.gov.ie/planning/marine-planning/public-consultation-draft-national-marine-planning-framework>

The European Wind Energy Association has suggested up to 212 GW of offshore wind capacity could be installed in the North Sea by 2050, with a further 83 GW in the Irish and Celtic Seas¹³.

Requirements of Article 6(4)

Article 6(4) of the Habitats Directive sets out a requirement if a ‘competent authority’ cannot conclude that a plan or project will not have an adverse effect on the integrity of a European or Ramsar site (either alone or in combination with other plans or projects). The plan or project can only proceed no alternative solutions are ascertained, and it is necessary for Imperative Reasons of Overriding Public Interest (IROPI). In such cases, compensatory measures must be ‘secured’ before the plan or project can proceed to ensure the overall coherence of the network of Natura 2000 sites is maintained. These tests must be interpreted strictly and can only be formally considered once an appropriate assessment in line with Article 6(3) of the Directive has been undertaken. The tests must be applied sequentially and in order.



There is extensive case law and guidance on these requirements. Key guidance includes:

- European Commission (EC) (2000) - Managing Natura 2000 sites – The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC (21/11/18) EC (2000, updated in 2018) 7621 final¹⁴;
- EC (2001) - Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC¹⁴;

¹³ <https://windeurope.org/wp-content/uploads/files/about-wind/reports/WindEurope-Our-Energy-Our-Future.pdf>
¹⁴ https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf

- EU (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC¹⁵;
- EU Guidance on Energy Transmission Infrastructure and EU nature legislation¹⁶; and
- Defra guidance - Habitats and wild birds directives: guidance on the application of article 6(4)¹⁷.

The UK is due to leave the EU on 31 January 2020. At this time, the provisions of the existing Habitats Regulations will be replaced by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019¹⁸, which mirror existing provisions. However, the UK will no longer be subject to the jurisdiction of the European Court of Justice or the Commission's opinion, and under the terms of the European Union (Withdrawal Agreement) Bill¹⁹ currently passing through Parliament, Ministers/decision-makers would have discretion concerning the extent to which EU case law was followed. For the purposes of this White Paper, it is assumed that the requirements of the Directive will continue to apply, although there is potential scope for some level of divergence in relation to interpretation in the future.

The Alternative Solutions Test

Under Article 6(4) of the Habitats Directive, where it cannot be concluded that a plan or project (alone or in-combination) would avoid an adverse effect on integrity on one or more Natura 2000 sites, other 'feasible' ways of (alternative solutions for) delivering the objective of the plan or project, which could be less damaging to the integrity of European sites, need to be considered.

The competent authority has the duty to determine the range and type of possible alternatives that should be considered, and is to use its judgement to decide what is reasonable in any particular case. Where necessary it may consult others on potential alternative solutions and, in the case of projects, may need to consider options that have not been identified by the applicant. For projects, the responsibility to produce the Assessment of Alternative Solutions to inform the competent authority's decision-making lies with the applicant. For this reason, it is important for the applicant to define the objectives of the plan or project clearly at the outset, and to consult with the competent authority as to what alternatives should reasonably be considered and which can be excluded.

Alternative solutions have to be considered objectively, broadly and may need to include options that could be delivered by someone other than the applicant (including, for example, alternative transport modes), or at a different location, using different routes, at a different scale of development and using different methods or timing. Alternatives can also involve different ways of operating a development or facility. Equally, the 'do-nothing' option must be considered.

However, alternatives should be limited to those which would deliver the same overall objective as the original proposal. Hence, the requirement to carefully define the need for the development and its specific objectives. If the competent authority determines that there are feasible alternatives which would have lesser effects on a European site, it cannot give consent¹⁶.

While guidance and case law is reasonably clear, some uncertainty remains around the edges of the guidance in terms of its application to offshore wind projects. For example, it has generally been the industry's contention that alternatives should be limited to the consideration of alternative offshore

¹⁵ https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_en.pdf

¹⁶ <https://ec.europa.eu/environment/nature/natura2000/management/docs/Energy%20guidance%20and%20EU%20Nature%20legislation.pdf>

¹⁷ <https://www.gov.uk/government/publications/habitats-and-wild-birds-directives-guidance-on-the-application-of-article-6-4>

¹⁸ <https://www.legislation.gov.uk/ukdsi/2019/9780111179512/contents>

¹⁹ <https://services.parliament.uk/bills/2019-20/europeanunionwithdrawalagreement.html>

wind projects, but this might be seen as an unduly narrow interpretation which does not consider alternative means of achieving project objectives².

Consideration of feasibility is also key. While increased costs *per se* would not render an alternative infeasible, significantly higher costs which make a project unviable could be relevant.

From experience, where Article 6(4) is engaged, it is likely to increase the focus given to the consideration of alternatives, as the tests in the Directive are strict compared to the broader consideration of alternatives that might be applied within EIA.

Article 6(4) is likely to increase consideration of alternative solutions

To reduce the risk of protracted discussions on individual projects, it is vital that plan-level processes carefully consider alternatives - once potential development zones have been identified as part of plan-level processes, there is perhaps a false sense of security that project-level consent will be forthcoming. However, if plan-level processes fail to adequately address Habitats Directive requirements, it will likely cause delay and frustration at project level.

It is of interest that the Scottish Government's draft offshore wind energy plan has adopted a precautionary approach in its development of alternative plan options, particularly taking account of Habitats Directive requirements¹. For example, none of the plan options overlap with Natura 2000 sites and some potential development areas are subject to a moratorium until better evidence is available on potential site, and cumulative, impacts to seabirds. This approach acknowledges options at plan level for offshore wind expansion and is designed to avoid developments triggering the Article 6(4) process. However, this potentially limits scope for short-term development in attractive development locations in the Moray Firth and off Scottish East coast.

In addition to considering the potential location of offshore wind projects, there are recognised uncertainties associated with the indirect effects of the plan (especially on migratory bird species such as Kittiwake). To be assured, with requisite high level of certainty needed under the Directives, that there will be no adverse effects therefore, the plan will be implemented in an adaptive manner involving regular reference to monitoring and research results as projects are pursued¹.

In contrast, the approach being adopted by The Crown Estate for R4 provides (exceptionally) for the granting of an agreement to lease even where an adverse effect on integrity cannot be ruled out. Given the current potential constraints on capacity, particularly in the North Sea, and areas of potential overlap with Natura sites, it will be interesting to see how many exceptions may be granted an agreement to lease. In such circumstances, given the agreements to lease for these sites will be offered on the basis of a process for which the final step is a blind auction determined by financial considerations⁹, it may be challenging for developers to demonstrate compliance with the alternative solutions test in Article 6(4).

The IROPI Test

When identifying IROPI, a competent authority must consider whether the different defining elements of the term have been met¹⁶:

- **Imperative:** it must be essential (whether urgent or otherwise), weighed in the context of the other elements below, that the plan or project proceeds.

- **Overriding:** the interest served by the plan or project must outweigh the harm (or risk of harm) to the integrity of the site(s) identified in the appropriate assessment (in light of the weight to be given to the protection of such sites under the Regulations).
- **Public Interest:** a public benefit must be delivered, rather than a solely private interest, and should be long-term.

The guidance¹⁶ notes that public interest can occur at national, regional or even local level, provided the other elements of the test are met.

The grounds for demonstrating IROPI depend on the nature of the site affected:

- If the site hosts a priority habitat or species (“priority feature”), the competent authority can only consider imperative reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or other IROPI only after having regard to the EC’s opinion (or in the UK, post-Brexit, after having regard to the appropriate authority’s opinion).
- For other sites (i.e. in the absence of priority features or where they are present but would not be affected by the plan or project), the competent authority can consider IROPI including those relating to social or economic benefit in addition to those of human health, public safety, or beneficial consequences of primary importance to the environment.

In most cases, offshore wind projects are unlikely to affect priority habitats or species such that social and economic benefits can be relevant considerations in IROPI.

In practice, plans and projects which enact or are consistent with national strategic plans or policies (e.g. covered by or consistent with a National Policy Statement or identified within the National Infrastructure Plan) are more likely to show a high level of public interest. However, consideration still needs to be given to whether, in a specific case, that interest outweighs the harm to the affected site(s) and therefore whether IROPI can be demonstrated. Therefore, offshore wind projects seeking to make an IROPI case will need to provide clear information on the specific grounds for IROPI.

The nature and scale of offshore wind projects means they are likely to meet IROPI requirements

Past port and coastal defence projects have shown that IROPI can be demonstrated where there are no less damaging alternatives. The expectation would be that major offshore wind projects - where the principal objective is to provide renewable energy to mitigate climate change impacts – would also be considered suitable candidates for IROPI where there were no less damaging alternatives.

Compensatory Measures Test

With the Habitats Directive having been in place for more than a quarter century, a large amount of guidance, case-law and empirical examples is available which details the principles and practices for delivering compensation where proposal projects meet the alternatives and IROPI tests.

One of the key guidance documents addressing the scope of compensatory measures to maintain the coherence of the *Natura 2000* Network is the ‘Managing *Natura 2000* Sites’ document (EC, 2000, updated in 2018)¹⁴. This was followed by a further document on Article 6(4) of the ‘Habitats Directive’ (EC, 2007)¹⁶, which clarified the concepts of alternatives, IROPI and compensatory measures. This document states that:

“to ensure the overall coherence of Natura 2000, the compensatory measures proposed for a project should address, in comparable proportions, the habitats and species negatively affected; concern the same biogeographical region in the same Member State; and provide functions comparable to those which had justified the selection criteria of the original site”.

The ‘Managing Natura 2000 Sites’ document (EC, 2000)¹⁴ also indicates (Section 5.4.2) that:

“Compensatory measures sensu stricto have to ensure the maintenance of the contribution of a site to the conservation at favourable status of one or several natural habitats within the biogeographical region concerned”.

It indicates that appropriate measures could include new habitat creation or *“work to improve the biological value of an area (to be designated) or of an SPA (designated) so that the carrying capacity or the food potential are increased by a quantity corresponding to the loss on the site affected by the project”.* It further indicates that, in terms of the Habitats Directive, the compensation could similarly consist of the re-creation of a comparable habitat, the biological improvement of a substandard habitat or even the addition to *Natura 2000* of an existing site the proposal of which under the Directive had not been deemed essential at the time of drawing up the biogeographical list.

The 2007 report (EC, 2007)¹⁶ generally confirmed these requirements, and expanded on some aspects, for example providing guidance on the criteria for designing compensatory measures. The guidance states (Section 1.5.1) that:

“Compensatory measures under the Habitats Directive must be established according to reference conditions that are defined after the characterisation of the biological integrity of the site likely to be lost or deteriorated, and according to the likely significant negative effects that would remain after mitigation. Biological integrity can be defined as all those factors that contribute to the maintenance of the ecosystem including structural and functional assets. In the framework of the Habitats Directive, the biological integrity of a site is linked to the conservation objectives for which the site was designated as part of the Natura 2000 network.”

This guidance makes strong links to a site’s conservation objectives and those aspects of structure and function that affect biological integrity. EC 2007¹⁶ (Section 1.5.5) includes a further requirement that the area selected for compensation:

“...must have - or must be able to develop - the specific features attached to the ecological structure and functions, and required by the habitats and species populations. This relates to qualitative aspects like the uniqueness of the assets impaired and demands the consideration of local ecological conditions”.

However, EC (2007)¹⁶ also recognises (Section 1.5.3) that:

“According to current knowledge, it is highly unlikely that the ecological structure and function as well as the related habitats and species populations can be reinstated up to the status they had before the damage by a plan or project. To overcome the intrinsic difficulties standing in the way of full success for the reinstatement of ecological conditions, compensatory measures must be designed:

- *following scientific criteria and evaluation in accordance with best scientific knowledge; and*
- *taking into account specific requirements of the ecological features to be reinstated (e.g. soil, humidity, exposure, genetic pool, existing threats and other conditions critical to the success of reinstatement).*

The critical aspects to technical feasibility will determine the suitability of the location of compensatory measures (spatial feasibility), the appropriate timing and their required extent."

Section 1.4.1 of the 2007 guidance¹⁶ also notes that:

Compensatory measures should be additional to normal practice under the Habitats and Birds Directives

"Compensatory measures should be additional to the actions that are normal practice under the Habitats and Birds Directives or obligations laid down in EC law. For example, the implementation of a management plan, or the proposal/designation of a new area, already inventoried as of Community importance, constitute "normal" measures for a Member State. Thus, compensatory measures should go beyond the normal/standard measures required for the protection and management of Natura 2000 sites".

This issue of additionality is potentially significant for some possible compensatory measures that may be important for offshore wind development (see below).

Typically, the development of proposals for compensatory measures should be based on a clear understanding of the nature of the potential impacts. Experience has shown that it is beneficial to develop proposals for compensatory measures in a structured manner against Directive requirements, with the objective of fully offsetting the specific predicted impacts. This provides a clear audit trail for decision-making and justification for any departure from an 'ideal' solution.

Providing a clear audit trail of how compensatory measures proposals have developed in accordance with the Directive is vital in gaining stakeholder acceptance

Key messages:

- A sound understanding of the baseline at designation and at the current time is required.
- Understanding of impacts, and their minimisation, needs to be founded in scientific knowledge.
- Compensatory measures should address, in comparable proportions, the habitats and species negatively affected – so-called 'like-for-like' compensation.
- Compensatory measures need to reflect the extent, functionality and respective conservation objectives for affected interest features.

Determining the Extent Compensation Required

The 2007 EC guidance¹⁶ indicates that:

“The extent required for the compensatory measures to be effective has a direct relationship to the quantitative and qualitative aspects inherent to the elements of integrity (i.e. including structure and functionality and their role in the overall coherence of the Natura 2000 network) likely to be impaired and to the estimated effectiveness of the measures. Consequently, compensation ratios are best set on a case-by-case basis and must be initially determined in the light of the information managed during Article 6(3) assessment and ensuring the minimum requirements to meet ecological functionality. The ratios may then be redefined according to the results observed when monitoring the effectiveness, and the final decision on the proportion of compensation must be justified.”



Gannet in flight

The guidance further states the following in respect of ‘compensation ratios’:

“There is wide acknowledgement that ratios should be generally well above 1:1. Thus, compensation ratios of 1:1 or below should only be considered when it is demonstrated that with such an extent, the measures will be 100% effective in reinstating structure and functionality within a short period of time (e.g. without compromising the preservation of the habitats or the populations of key species likely to be affected by the plan or project).”

Typically, where compensation is provided to offset intertidal habitat losses, a ratio of at least 2:1 has been applied

Replacement ratios should be based on factors that relate to both the type and extent of the predicted impacts and the nature of the compensation proposed. With respect to the impacts predicted, whether they are expected to be direct and indirect (of major or minor significance) or are precautionary, will have a significant influence on the extent of compensatory measures determined to be required. That is, as per the guidance, the ratio of required measures to impact quantum should be determined case-by-case, based on the value and function of the features to be affected and created.

UK experience of compensation for marine impacts has been limited to coastal impacts, focused on impacts to intertidal areas, water birds and migratory fish. Typically, where compensation is being provided to offset intertidal habitat losses, a ratio of at least 2:1 has been applied where the required habitat gains are associated with the compensatory requirements for an identified development. However, in rare circumstances a ratio of around 4:1 has been agreed. This has been where assurances of achieving the required functionality cannot be resolved by smaller ratios and/or where the compensation measures are applied at relatively long distances from the Natura site where the losses occurred.

For instance, a 2:1 ratio was applied for the compensation measure that the UK Government undertook for the Lappel Bank and Fagbury Flats habitat loss. This was justified by the large delay between the losses in that case (arising from port developments in the 1980s and early 1990s) and the delivery of

the compensation habitats (from the Allfleet's Marsh realignment on Wallasea Island (Crouch Estuary) in 2006)²⁰.

A 4:1 ratio was applied to the Morecambe Town coastal defences and associated habitat mitigation works which affected around 11 ha of sandflat habitat. There was deemed to be no opportunity for implementing compensatory managed realignment measures near where the habitat losses occurred (i.e. within Morecambe Bay) and especially none that would create sandflat specifically. Therefore, the Hesketh Out Marsh West realignment was progressed on the Ribble Estuary to deliver compensatory saltmarsh habitat.

Where impacts to intertidal habitats have also affected water birds, the compensatory measures have generally been designed to offset these impacts.

A Defra 2016²¹ review concluded there is no one model that has been/could be applied to defining compensation requirements. This rightly reflects the fact that several cases have involved varying combinations of direct or indirect loss of habitat functionality and possible reductions in carrying capacity for breeding and over-wintering water birds. In addition, consideration has been given to the time lapse between the timing of habitat loss and the point where replacement habitat is predicted to become functional, as well as distance of the replacement habitat from the site of the effect.

Identifying Types of Compensatory Measures

To date, compensatory habitat has largely been provided on the basis of like-for-like²², closely following Directive requirements.

To date, compensatory habitat has largely been provided on the basis of like-for-like

More broadly, some consideration is being given to placing a greater emphasis on ecosystem functioning, such as in the Government review (for England only) into the implementation of the Habitats and Wild Birds Directives in England.²²

The concept behind ecosystem functioning involves considering the full range of benefits that the natural environment provides. The Government's Natural Environment White Paper (2011)²³ sets out how an ecosystems approach will result in better informed and integrated decisions. The 25 Year Environment Plan²⁴ also promotes the application of a natural capital approach to inform environmental decision-making, while working within the existing legislative framework. In essence, this means that requirements under the Birds and Habitats Directives will continue to take precedence.

Separately, exploratory discussions between the then Department of Energy and Climate Change (DECC) and the EC in the context of a possible Severn Tidal Power scheme considered the scope for providing 'measures of equivalent value' in circumstances where it was not possible to compensate on a like-for-like basis²⁵. The outcome of these discussions was that the commission accepted that such measures could be appropriate as a measure of last resort. However, to date, there are limited examples of where a like-for-like principle has not been applied.

²⁰ <https://www.icevirtuallibrary.com/doi/abs/10.1680/maen.2008.161.2.61>

²¹ <http://www.humbournature.co.uk/admin/resources/13694wc1076finalreport-1.pdf>

²² <https://www.gov.uk/government/publications/report-of-the-habitats-and-wild-birds-directives-implementation-review>

²³ <https://www.gov.uk/government/publications/the-natural-choice-securing-the-value-of-nature>

²⁴ <https://www.gov.uk/government/publications/25-year-environment-plan>

²⁵ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/63969/15_Potential_for_Compensatory_Measures.pdf

One example is the compensation provided for the Cardiff Barrage (not typically seen as a good example of compensation provision). This involved the creation of wet grassland and saline lagoon habitats, as well as enhancing existing ornithological interests in the reedbeds to compensate for the enclosure of a 200 ha area of intertidal mudflats and saltmarsh at the mouth of the Severn Estuary (noting that the bay itself was not European protected, but only designated as a Site of Special Scientific Interest)²⁶.

Key messages:

- There are no set rules for defining compensation ratios due to the wide range of contributory factors and nor should there be.
- For development projects, a ratio of 2:1 would be considered typical. This could increase (or decrease) based on levels of uncertainty and distance of the replacement habitat from the site of the effect.
- To date, compensatory habitat has typically been provided broadly on a like-for-like basis. While a wider ecosystems approach is now being encouraged, this remains subject to the strict requirements of the Habitats Directive.

Timing of Compensatory Measures

The other key variable, as noted above, is the timing of compensatory measures when compared against the commencement of adverse effects. The EC (2007) guidance¹⁶² establishes as a general principle that:

“a site should not be irreversibly affected by a project before the compensation is in place”.

However, the guidance recognises that there may be situations where it will not be possible to fulfil this condition. It recommends that ‘best efforts’ should be made to assure compensation is in place beforehand. Where this is not achievable, the competent authorities should consider extra compensation for the interim losses that would occur in the meantime.

EC (2007)¹⁶ also (in Section 1.5.6) provides further specific guidance on the timing of compensatory measures. It highlights the importance of:

“the continuity of the ecological processes essential for maintaining the biological structure and functions that contribute to the overall coherence of the Natura 2000 network”. It further requires “a tight coordination between the implementation of the plan or project and the implementation of the measures, and relies on issues such as the time required for habitats to develop and/or for species populations to recover or establish in a given area”.

In summary, the guidance identifies that other factors and processes must also be considered:

- A site must not be irreversibly affected before compensation is in place;
- The result of compensation should be effective at the time the damage occurs on the site concerned. Under certain circumstances where this cannot be fully achieved, overcompensation would be required for the interim losses;

²⁶ <https://www.bto.org/our-science/publications/peer-reviewed-papers/impact-cardiff-bay-barrage-wintering-waterbirds>

- Time lags might only be admissible when it is ascertained that they would not compromise the objective of 'no net losses' to the overall coherence of the Natura 2000 network;
- Time lags must not be permitted, for example, if they lead to population losses for any species protected in the site under Annex II of (Habitats) Directive 92/43/EEC or Annex I of (Birds) Directive 79/409/EEC, requiring particular attention when it entails priority species; and
- It may be possible to scale down in time compensatory measures according to whether the significant negative effects would arise in the short, medium or long term.

The guidance emphasises that:

"all necessary provisions, technical, legal or financial, necessary to implement the compensatory measures must be completed before the plan or project implementation starts, so as to prevent any unforeseen delays that may hinder the effectiveness of the measures".

The Bristol Port Company's compensation agreement for the consented Bristol Deep Sea Container Terminal (BDSCT) constituted the first agreement where advance timing was stipulated. The managed realignment site which is to compensate for the BDSCT is to be:

"fully operational and have been subject to tidal inundation for a minimum of two winters, and 'winter' meaning the minimum period of December to February (inclusive)"

prior to impacts being realised.

In general, based on UK experience, a minimum requirement to demonstrate that measures have been 'secured' entails having sufficient control over the land where measures are to be applied – ideally ownership of land where proposed habitat creation is to occur – and the necessary permissions to undertake any works required to deliver the measures (e.g. planning permission and/or a marine licence).

Key messages:

- The timing of securing compensatory measures is critical to the overall consenting programme for a proposed development.
- Potential delays in the provision of functioning compensatory habitat could increase the compensation ratio required.

Location of Compensatory Measures

The 'Managing *Natura 2000* Sites' guidance document (EC, 2000)¹⁴⁰ states that the compensatory measures proposed for a project should:

"concern the same biogeographical region in the same Member State".

EC (2001)¹¹ further indicates that the compensatory provision should:

“be in as close proximity as possible to the habitat that has been adversely affected by the project or plan”.

The EC 2007 guidance¹⁶ repeats the requirements for compensatory measures to be within the same biogeographic region (for Habitat Directive sites) or within the same range, migration route or wintering area for bird species (site designated under the Birds Directive) in the Member State concerned.

Compensatory measures should be as close as possible to the location of damage

In addition, there is general agreement that the local conditions necessary to reinstate the ecological assets at stake are most likely to be found ‘as close as possible to the area affected by the plan or project’. Therefore, locating compensation near to the *Natura 2000* site in which an adverse effect will arise, in a location where the conditions are suitable for the measures to be successful, seems to be the preferred option. However, this is not always possible, and it is necessary for a range of priorities to be applied when searching locations that meet the requirements of the Habitats Regulations. EC (2007) guidance¹⁶ states that the priorities (in order of preference) are:

- Compensation within the *Natura 2000* site, provided the necessary elements to ensure ecological coherence and network functionality exist within the site;
- Compensation outside the *Natura 2000* site concerned, but within a common topographical or landscape unit, provided the same contribution to the ecological structure and/or network function is feasible. The new location can be another site designated as a *Natura 2000* site or a non-designated location. In the latter case, the area must be designated as *Natura 2000* site itself in due course and be subject to all the requirements of the ‘nature’ Directives; and
- Compensation outside the *Natura 2000* site, in a different topographical or landscape unit. The new location can be another site designated as *Natura 2000*. If compensation takes place on a non-designated location, the area must be designated as *Natura 2000* site itself in due course and be subject to all the requirements of the ‘nature’ Directives.



Chowder Ness managed realignment

In most previous cases, compensation sites have been near the point of impact. Where this has not been possible (e.g. Hesketh Outmarsh, and Medmerry managed realignments), the choice of location has been based on careful analysis of local geography, land ownership, willingness to sell, the sustainability of the location in the face of sea level rise and the potential for success (including a successful consenting process for the compensation site)²².

For some projects, such as the Immingham Outer Harbour development in the Humber Estuary, the relevant compensatory measures (realignments at Welwick and Chowder Ness) were delivered within the Humber. Similarly, the compensatory measure for the proposed Able Marine Energy Park is located at Cherry Cobb Sands in the Humber. Indeed, on the Humber, which has an abundance of relatively low-lying, rural, coastal floodplains, the typical policy has been to seek to deliver compensation according to the location within the estuary system (inner-middle-outer) that the impacts occur.

For some other projects there has been a need, for practicality, to search for compensation site(s) further afield from the location of impact. The Government's compensation for impacts at Lappel Bank and Fagbury Flats was located between the areas where these losses occurred (circa 22km and 50km away). However, the search for the best site covered the whole of the Greater Thames area from north Kent to southern Suffolk.



*Pagham Spit January 2014
Photo: John Akerman*

Key messages:

- Compensation should be provided as close to the adverse effect as possible.
- Where this is not possible, higher compensation ratios are likely to be required.
- A full audit trail will be required to justify all decisions reached.

Objective Setting, Monitoring and Legal Agreements to Ensure Success

One of the defining principles associated with the implementation of compensatory measures is the need to have the requisite confidence that, once implemented, there will be no adverse effect on integrity. This can be delivered through the timing of delivery and the ratio of compensation provided (as described above), as well as the form of compensation, but it is also achieved by setting appropriate objectives and implementing monitoring and management programmes (in which adverse effects and the success of compensation are both monitored and compared).

The approach to implementation is important in providing confidence in delivery of the compensatory measures

There are several examples of such an approach being adopted and underpinned by a legal agreement which, in turn, has allowed the relevant Statutory Nature Conservation Body to have the confidence needed to support the compensation proposed. These include:

- Harwich Haven Channel Deepening Mitigation and Monitoring Plan, active since 1998;
- Trinity Terminal III Phase 2 Extension Compensation, Mitigation and Monitoring Agreement at the Port of Felixstowe (2003);
- Lappel Bank and Fagbury Flats - Environmental Monitoring and Management Plan for Allfleet's Marsh (2003)
- Immingham Outer Harbour Environmental Monitoring and Management Plan on the Humber (2004);
- Seaforth River Terminal Monitoring and Mitigation Plan on the Mersey (2005);
- London Gateway Port Compensation, Mitigation and Monitoring Agreement (2008);
- The Bristol Port Company's (TBPC) Steart Habitat Creation Scheme (2008);

- Able Marine Energy Park (2013); and
- Pagham Harbour coastal protection works (2017).

The securing of adaptive processes within legal agreements, therefore, has been increasingly used for large-scale projects.

These legal agreements are generally accompanied by objectives for habitat delivery, or for the specific numbers of target species to be accommodated (typically invertebrates and/or birds), where applicable.

The extent to which these objectives are being met is generally regularly reviewed through monitoring, with more formally defined review periods typically in the region of five to 10 years (see examples below). For most UK compensatory sites with specific compensation objectives it is, however, uncertain how these sites will be 'signed off' and the habitat deemed acceptable compensation for that which was lost.

For all sites considered within the Defra 2016 review²², no official sign off procedure was put in place from the outset, so in practice it is uncertain what will happen at the sites at the end of the review period. This is further complicated by the issues surrounding understanding natural variability in dynamic systems, as well as other external influences.



*Allfleet's Marsh Managed Realignment
May 2011 – Photo: RSPB*

Regarding the managed realignment sites on the Humber Estuary, which were undertaken to offset impacts of multiple Associated British Ports' developments, data is collected each year and reviewed against objectives at six monthly Environmental Steering Committee meetings. These meetings remain ongoing and now focus on agreeing a sign-off procedure set against the realised impacts and the agreed compensation objectives. Similarly, at Defra's Allfleet's Marsh site at Wallasea, a Technical Advisory Panel met to review the data after the original five-year monitoring period.

For the Trimley Marsh managed realignment, changes to the monitoring regime occurred over the years and were agreed at meetings with a Regulators Group and recorded in the minutes. This Regulators Group also agreed the final site sign off at the end of the monitoring period. Trimley Marsh was incorporated into the adjacent SPA, providing added confirmation that the site had met its objectives and that the regulators were happy with the site.

Finally, it should be noted that the increased consideration of overall ecosystem functioning (as described above) may bring different approaches to setting objectives; such an approach has yet to be implemented however.

Key messages:

- Environmental Steering Groups form an important component of agreeing, and monitoring, compensatory measures.
- When defining compensation objectives and setting objectives, consideration should be given to the final sign off process and how successful implementation will be defined.

Potential Compensation for Offshore Wind

As described in the preceding section, the requirements, and mechanisms for, the delivery of compensation for coastal developments are now well established - albeit there is still a need to better understand, agree, and communicate the success or, where relevant, failures and limitations of past projects. There is, however, no equivalent or substantive experience delivering compensatory measures for offshore wind projects.

There is a lack of experience delivering compensatory measures for offshore wind projects

The experience within the marine environment is still largely limited to impacts to coastal features, primarily intertidal habitats and associated water birds. Some consideration has been given to compensatory measures for resident and migratory fish associated with coastal development, but no measures have yet been implemented in the UK.

It is still the case that no substantive consideration has been given to compensatory measures in relation to seabirds or marine mammals. Some measures adopted as mitigation may be relevant as compensatory measures for offshore wind projects, for example mitigation of impacts to nesting/roosting habitat for some seabirds through the creation of alternative sites.

Some thinking in relation to potential offsetting measures in the marine environment has been taken forward in the context of other marine infrastructure projects, particularly tidal barrage²⁴ and tidal lagoon projects²⁷, and in relation to wider marine ecological enhancement opportunities^{28,29,30}. The Improvement Programme for England's Natura 2000 sites (IPENS), also identifies opportunities to achieve target conservation status of Natura 2000 sites in England including coastal sites³¹.

²⁷ <http://www.tidallagoonpower.com/wp-content/uploads/2016/08/Ecosystems-Enhancement-Programme-EEP.pdf>

²⁸ <https://cdn.naturalresources.wales/media/689255/nrw-evidence-report-no-357-supporting-the-implementation-of-the-welsh-national-marine-plan-enhancing-marine-ecosystems.pdf>

²⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/798829/20190430_MMO1135_Identifying_sites_for_habitat_creation_datalayers_Report_a.pdf

³⁰ https://www.researchgate.net/publication/279951206_Marine_Biodiversity_Offsetting_-_UK_Scoping_Study

³¹ <https://www.gov.uk/government/publications/improvement-programme-for-englands-natura-2000-sites-ipens-summary-report>

More broadly, Marine Protected Area (MPA) designation and management proposals include measures to support achievement of site conservation objectives, including for offshore sites with subtidal habitat, sea bird and marine mammal features^{32,33}. Such measures relate to the reduction or removal of existing human activity pressures to achieve 'favourable condition' of the relevant features. Similar measures could be considered compensatory measures under the Habitats Directive, where these are additional to measures required to achieve 'favourable condition'.

The options for key receptor groups - habitats, migratory fish, seabirds and marine mammals – together with their strengths and weaknesses, are discussed below.

Habitats



Rocky Reef, Kimmeridge

Offshore wind development primarily affects subtidal habitats, although export cables can affect intertidal habitats at the landfall site. Where offshore development has occurred within Natura 2000 sites, the principal habitat affected has tended to be subtidal sandbank.

This section focuses on possible measures for subtidal habitats as there is already good knowledge and experience in providing compensatory measures for damage to intertidal sites – see for example ABPmer's OMREG website³⁴.

Type of intervention	Strengths	Limitations	Relevant Examples
Infrastructure enhancement e.g. bioblocks, EConcrete®	Proven to deliver ecological enhancement	Unlikely to provide like-for-like compensation for OWF impacts	Colwyn Bay
Subtidal habitat recreation – oyster, seagrass, reefs	Provide valued ecosystem components	Unlikely to provide like-for-like compensation for OWF impacts. No successful UK examples / not proven / difficult to deliver.	European Native Oyster Restoration Initiative, Blackwater Estuary. Seagrass Restoration Project, Dale Bay, Pembrokeshire.
Sediment placement	Can create suitable sediment characteristics for target habitat	May not be compatible with long-term physical processes regime; Will smother existing subtidal habitat.	No offshore examples for habitat creation.
Reduction/removal of existing pressure	Directly benefits feature	Risk of challenge on grounds of additionality (additional to measures required to achieve favourable condition).	No examples of use as compensatory measure but many examples of MPA management measures but with little monitoring of effectiveness.
Designate additional habitat	Provides additional protection	Potentially long timescale to designate new site and introduce management measures.	No examples of use as compensatory measure.

³² <https://www.gov.scot/publications/marine-protected-areas-mobile-marine-species-consultation-proposals-designate-four-new-marine-protected-areas-scottish-waters/>

³³ <https://www.gov.scot/publications/proposed-special-protection-areas-scottish-marine-birds-supplementary-consultation-sea-site-classification/>

³⁴ <https://www.omreg.net/>

The range of opportunities to compensate for subtidal habitat impacts is limited, particularly in delivering like-for-like habitat. The best opportunities are likely to relate to removal of other human activity pressures. Like MPA management measures, this might target reduction/removal of fishing gear pressures or extractive pressures (e.g. aggregate extraction), for which compensation payments might be required. There may also be opportunities associated with oil and gas or OWF decommissioning to facilitate natural restoration of affected habitat.

Fish

Offshore wind development, being located offshore, generally does not interact significantly with fish features for which Natura 2000 sites are designated. The main concerns have generally been in relation to the potential to injure or disturb key migratory species.

Various measures can be applied with reasonably good evidence from fisheries management in relation to their success.

Type of intervention	Strengths	Limitations	Relevant Examples
Stock enhancement	Proven measure to support stocks of e.g. salmon and sea trout	May affect natural gene pool	No examples of use as compensatory measure but widely used in fisheries management e.g. River Tyne, River Dee
Removing/reducing barriers to migration; improvements to spawning habitat	Proven measure to support stock recovery of e.g. salmon and sea trout	-	No examples of use as compensatory measure but widely used in fisheries management e.g. Rivers Tyne, Calder, Mersey and Don
Reduction/removal of existing pressure	Directly benefits feature	Risk of challenge on grounds of additionality	No examples of use as compensatory measure but reduction in commercial netting pressure used in fisheries management e.g. Solway, Severn
Designate additional sites	Provides additional protection	Potentially long timescale to designate new site and introduce management measures	No examples of use as compensatory measure

While there are no examples of compensatory measures for migratory fish for marine developments, there are examples from wider fisheries management for some migratory species, e.g. salmon and sea trout.

Any measures proposed would need to be additional to those required to achieve favourable condition. It is unlikely that such measures would be required for offshore wind projects based on experience.



*Fish Pass, Boroughbridge, River Ure
Photo: M Barratt*

Seabirds

Offshore wind development has the potential to affect a range of seabirds as a result of collision mortality or displacement from feeding areas. Various options exist for compensatory measures, some of which have reasonable evidence for their effectiveness.

Type of intervention	Strengths	Limitations	Relevant Examples
Predator control, habitat management	Proven measure to reduce egg/chick predation and improve breeding success	Risk of challenge on grounds of additionality	No examples of use as compensatory measure, but used in SPA management e.g. Lindisfarne, Lundy Island ³⁵
Wardening	Proven measure to protect nesting birds	Risk of challenge on grounds of additionality	No examples of use as compensatory measure, but used in SPA management e.g. North Denes (Norfolk) and Chesil Beach (Dorset)
Artificial nesting (Terns/Kittewake)	Proven measure to support breeding success	Risk of challenge on grounds of additionality	In Pagham Harbour tern habitat restoration has been proposed as compensation (not yet implemented). No major examples of use of these types of structures as compensatory measure, but used for site management and/or mitigation measures e.g. Hayling Island, Medmerry, Mumbles Pier
Reduce or remove pressure from collision risk/disturbance e.g. (early) decommissioning of relevant R1 OWF projects or re-routeing commercial and/recreational vessels to reduce disturbance	Directly benefits feature	Quantifying benefits subject to same uncertainties as quantifying impacts	No examples
Reduce or remove pressure from fisheries by-catch (long-lines, nets)	Directly benefits feature	Risk of challenge on grounds of additionality, very limited information on fisheries by-catch. Detailed monitoring required to establish benefit	No examples of use as compensatory measure but reduction in commercial fishing by-catch proposed as possible measure for some offshore SPAs
Reduce or remove pressure on sea bird prey resources (e.g. reduction in commercial fishing pressure)	Directly benefits feature	Risk of challenge on grounds of additionality. Link between food availability and population viability difficult to monitor	No examples of use as compensatory measure but reduction in commercial fishing pressure proposed as possible measure for some offshore SPAs
Designate additional sites	n/a	Birds Directive requires Member States to classify all suitable territories, so no scope for further designations	n/a

³⁵ <https://www.bbc.co.uk/news/uk-england-devon-48430483>



RSPB's successful tern rafts, Hayling Island 2018. Photo: RSPB

While compensatory measures for seabirds have not been implemented in the UK, the creation of tern nests was accepted as a compensatory measure for proposed coastal defence works at Pagham (although the scheme has not yet been implemented).

Other measures are routinely employed to support a range of nesting seabirds including Terns, Kittiwake, Puffin, Manx Shearwater, Razorbills and Guillemots. Measures have included predator control, vegetation management, wardening and provision of nesting sites. There are examples of success for all these types of initiative and growing experience of factors contributing to their success.

Removal of collision risk pressure through decommissioning of existing OWFs is untested but could be assessed through the application of cumulative collision risk modelling. If new development was timed with the decommissioning of early offshore wind farms, this could be a means to avoid triggering Article 6(4).



Pier development at Swansea Bay and site enhancement through Kittiwake nesting platforms at Mumbles Pier

The removal/reduction of pressure on seabird prey species could provide benefit to seabirds but is likely to be difficult to demonstrate cause and effect, affecting confidence in the effectiveness of the measure.

Any measures proposed would need to be additional to those required to achieve favourable condition.

Overall, implementing effective measures for seabirds is likely to prove challenging, particularly if it remains necessary to demonstrate additionality.

Marine Mammals

Offshore wind development has the potential to affect marine mammals – primarily harbour porpoise, bottlenose dolphin and grey and common seal - particularly during construction where percussive piling is used to install foundations. To our knowledge, there is no experience of providing compensatory measures for these features.

Type of intervention	Strengths	Limitations	Relevant examples
Wardening of breeding/haul-out sites for seals	Could be used to reduce disturbance at breeding/haul-out sites	Benefits uncertain. Risk of challenge on grounds of additionality	No examples of use as compensatory measure but wardens in place for some colonies to manage disturbance
Reduce or remove pressure on fisheries by-catch	Directly benefits feature	Risk of challenge on grounds of additionality. Quantifying benefits subject to same uncertainties as quantifying by-catch impacts	No examples of use as compensatory measure but reduction in commercial fishing by-catch forms part of Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas, (ASCOBANS)
Reduce or remove pressure on marine mammal prey resources (e.g. reduction in commercial fishing pressure)	Directly benefits feature	Risk of challenge on grounds of additionality. Link between food availability and population viability difficult to monitor	No examples of use as compensatory measure but reduction in commercial fishing pressure proposed as possible measure for some marine mammal MPAs
Reduce other pressures on marine mammals (e.g. underwater noise from oil and gas exploration or collision risk from commercial shipping)	Directly benefits feature	Risk of challenge on grounds of additionality. Quantification of benefit difficult to assess	No examples of use as compensatory measure. Some examples of speed restriction measures for commercial vessels to reduce collision risk
Designate additional sites	Provides additional protection	Potentially long timescale to designate new site and introduce management measures	No examples of use as compensatory measure

While there are no examples of compensatory measures in the UK, there are some of feature-based measures to limit anthropogenic impact. Reduction in fisheries by-catch is possibly the most tangible measure, but clear monitoring of the effectiveness of such measures would be needed. Any measures proposed would need to be additional to those required to achieve favourable condition

Overall, implementing effective measures for marine mammals is likely to prove challenging, particularly if it remains necessary to demonstrate additionality.



Grey seal, Donna Nook

Conclusions

Tackling climate change is the environmental issue of our generation. Achieving net zero carbon emissions by 2050 or sooner will have massive and long-term environmental, social and economic benefits. There is an urgent need to decarbonise electricity and heat generation.

The UK has an excellent offshore wind resource. Correctly sited and scaled offshore wind development can have acceptably low environmental impacts. With recent reductions in cost, offshore wind provides a realistic means of providing a large proportion of our electricity needs as part of a renewable energy mix.

The Directives remain a fundamental consideration in planning for and delivering offshore wind projects.

The Birds and Habitats Directives provide strong protection to habitats and species of European importance. The Directives have been successful in avoiding and limiting damage to designated features associated with Natura 2000 sites over a period of nearly 30 years. A cornerstone of this success has been the strict application of Articles 6(3) and 6(4) of the Habitats Directive in relation to decision-making on plans and projects that have the potential to adversely affect features associated with Natura 2000 sites.

Notwithstanding the urgent need to progress offshore wind expansion to meet climate change objectives and targets, the Directives remain a fundamental consideration in planning for and delivering offshore wind projects.

Given the likely future scale of offshore wind development in UK waters and the challenges already encountered by projects in the planning system, it is likely that at least some future projects will not be able to sufficiently demonstrate that they avoid adverse effects on site integrity (the Article 6(3) test), so to proceed, these projects would need to satisfy the strict sequential tests of Article 6(4) of the Directive.

There is extensive experience, case law and guidance concerning the application of the Article 6(4) tests relating to alternatives, IROPI and compensatory measures. Where offshore wind projects follow Article 6(4) process, the required processes will need to be strictly followed and met for such projects to proceed.

Consideration of less damaging alternatives is likely to be a key issue for projects following the Article 6(4). For projects to pass the alternatives test, it is essential that the plan-level processes through which option areas are determined are robust and in compliance with Directive requirements. This has been a principal consideration in the development of plan options for Scottish waters but there are potentially significant weaknesses in the R4 process being pursued for English, Welsh and Northern Ireland waters which may make it difficult for project promoters to demonstrate that the alternatives test has been met in the context of current guidance and case law where required.

Consideration of less damaging alternatives is likely to be a key issue for projects

Where projects can demonstrate compliance with the alternatives test, experience of application of the IROPI test to other marine and coastal sectors suggest offshore wind projects should be able to satisfy this test, subject to providing a robust and detailed project-specific assessment.

The provision of compensatory measures in compliance with Directive requirements is likely to be challenging for offshore wind projects. While there is extensive experience of providing compensatory measures for intertidal habitats and dependent water birds, there is very limited experience providing such measures for the offshore habitats, migratory fish, seabirds or marine mammals that may be affected by offshore wind development.

The provision of compensatory measures in compliance with Directive requirements is likely to be challenging for offshore wind projects

While our review highlights potential measures, the effectiveness of many of these is uncertain, and challenges may be encountered in delivering like-for-like compensation and in demonstrating their effectiveness. There is also a potential issue concerning the additionality for some measures. It might be argued that governments should already be taking some of the measures to support achievement of site conservation objectives, therefore their implementation as compensatory measures might not be seen as additional.

All of this, coupled with experience, indicates that compliance with Article 6(4) for offshore wind projects has the potential to be a protracted and expensive process.

One of the key factors currently constraining the location of offshore wind development is foundation choice linked to project cost. All existing commercial projects have used fixed bottom foundations, primarily monopiles, although a small number of floating offshore wind demonstration projects have been progressed in Scottish waters. Fixed bottom foundations generally limit development to water depths less than 60m, in locations generally closer inshore or on offshore banks which tend to be more heavily utilised by seabirds.

Floating offshore wind can potentially be in water depths up to 800m and would significantly increase the area of sea space available for development. The updated offshore wind plan for Scottish waters seeks to include some option areas that may be suitable for floating offshore wind projects. However, such projects are unlikely to be able to compete for contracts-for-difference in the short-term, owing to greater cost. Government should consider establishing mechanisms to encourage early commercial scale floating offshore wind projects as a way of progressing offshore wind expansion while avoiding/minimising risks to seabirds.

Measures of equivalent value might be considered as a last resort

To address challenges in the delivery of like-for-like compensation, further consideration might be given to the possibility of delivering measures of equivalent value. UK Government had positive discussions with the EC on this issue as part of the Severn Tidal Power Feasibility Study. With the UK's departure from the EU, might the UK make use of greater flexibility in this area, for example, by adopting the process that applies to MCZ in England (s126(7) of the Marine & Coastal Access Act 2009) as a measure of last resort in circumstances where achieving like-for-like compensation was agreed to be impractical? Such a process could be used to deliver significant ecological benefit within a wider context of sustainable development.

Further consideration might also be given to the issue of additionality. While there are actions that governments could and should be taking to achieve site conservation objectives, as, for example, identified within IPENS, the realities of government funding priorities (including climate change) mean that many useful conservation actions are likely to remain unfunded. Where these actions could be

Difficulties around 'additionality' still need to be addressed

delivered as part of a package of compensatory measures, this would provide an opportunity to deliver valuable ecological improvements which otherwise might not happen, although this might raise issues of strict compliance with Directive requirements. However, in such circumstances, might the Directive be better seen as a means to achieving an end rather than an end in itself, allowing more pragmatic decisions to be taken to deliver ecological gains?

While noting the points above and notwithstanding the urgency of tackling climate change, it would not be right that the existing rules were simply bent for offshore wind development as a matter of expediency. Government should give careful thought to how best to achieve shared environmental outcomes in a post-Brexit world while fully engaging with relevant stakeholders.

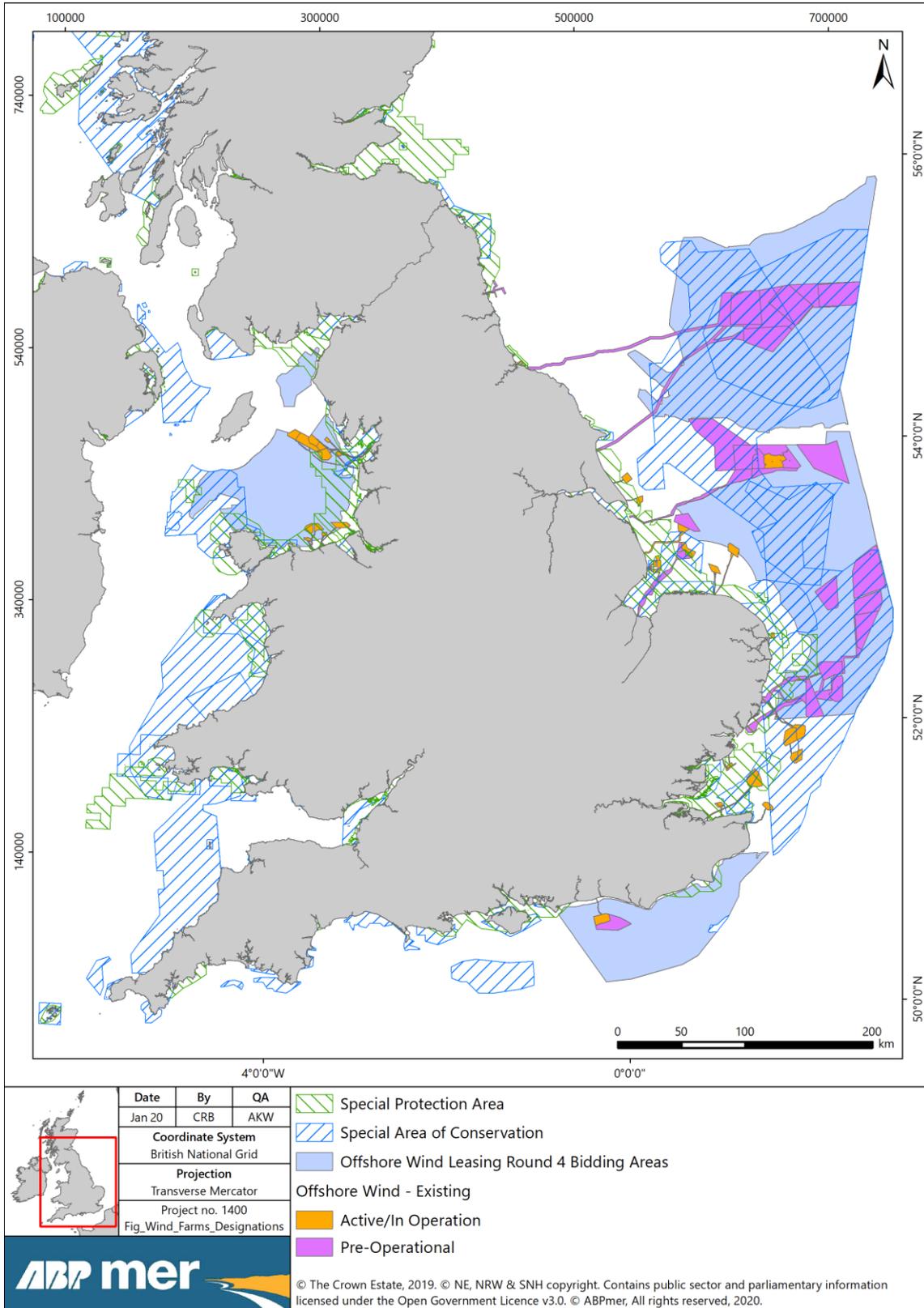
Providing clarity in this area will be important, as there are key choices to be made concerning future offshore wind project locations and choice of technologies, as well as wider considerations such as the best processes to use to deliver overall environmental benefit. For example, might the concept of Net Gain^{36,37} provide a better framework within which to pursue sustainable offshore wind development? This might allow greater flexibility in how benefits are delivered and ensure such large-scale investment contributes to environmental priorities.

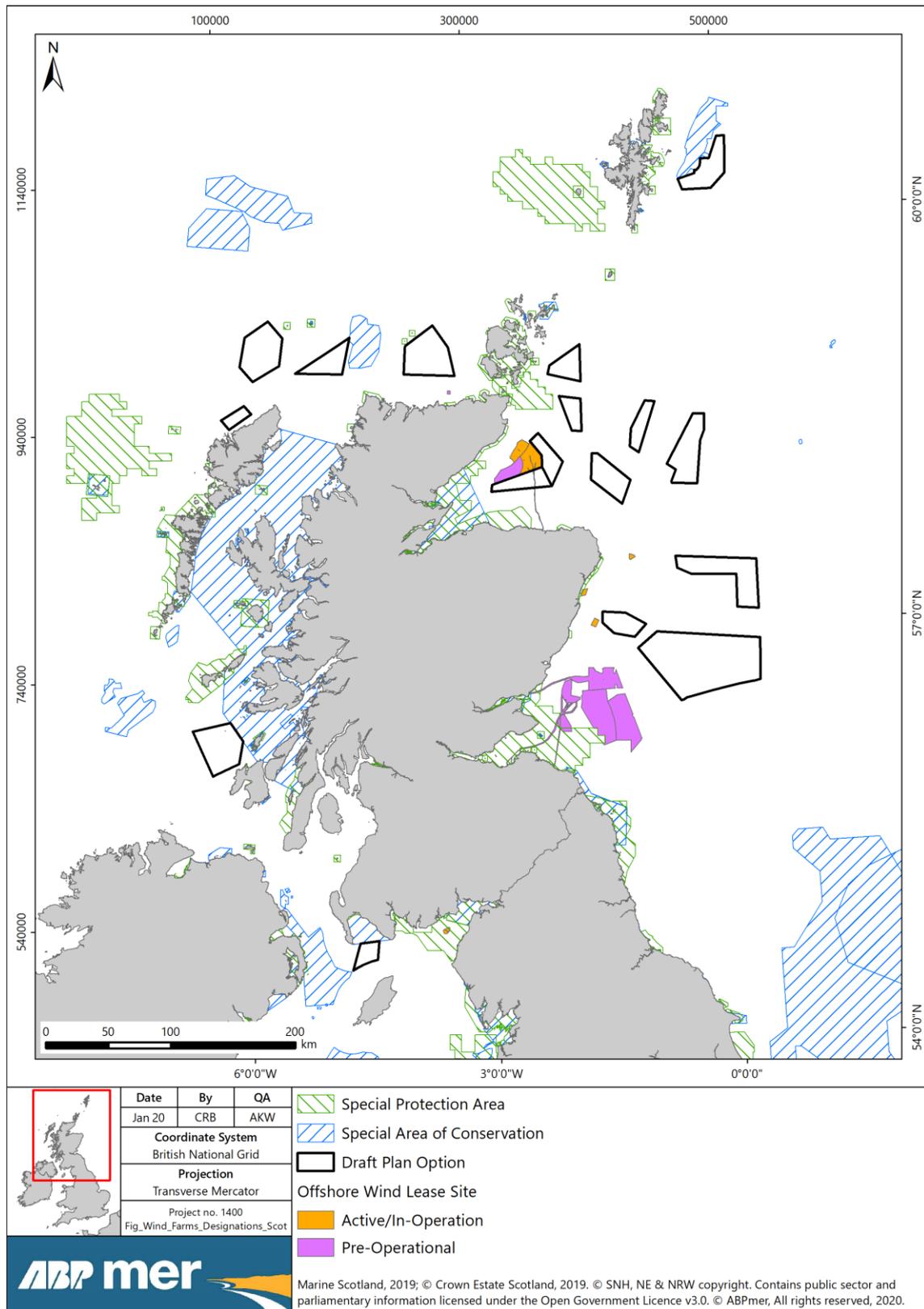
How might the concept of Net Gain facilitate sustainable offshore wind development?

Ultimately, all these considerations will affect how much public subsidy is required to support the achievement of net zero in the face of competing spending priorities. If clarity is not forthcoming, there is a risk of legal challenges and delays, increasing costs and risks to the achievement of net zero by 2050.

³⁶ <http://www.abpmer.co.uk/buzz/white-paper-why-we-need-a-statutory-system-of-marine-environmental-net-gain/>
³⁷ <http://www.abpmer.co.uk/buzz/white-paper-adapting-net-gain-for-the-marine-environment/>

Appendix A: OWF Sites and Designated Areas, The Crown Estate





Contact Us

ABPmer

Quayside Suite,
Medina Chambers
Town Quay, Southampton
SO14 2AQ

T +44 (0) 23 8071 1840

F +44 (0) 23 8071 1841

E enquiries@abpmer.co.uk

www.abpmer.co.uk

