

Statutory Nature Conservation Body joint advice
on marine debris removal as compensation
for impacts to benthic habitats from development

JNCC, Natural England,
Natural Resources Wales, NatureScot, DAERA

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1. Summary

As part of the Development Consent Orders of several recently consented offshore wind farms in English waters, marine debris removal has been stipulated as a compensation measure, against the advice of Statutory Nature Conservation Bodies (SNCBs). Whilst compensation has only been required in English waters thus far, we can foresee that this methodology may be proposed by developers as compensation across the devolved administrations. This paper brings together SNCB advice and recent evidence from completed marine debris removal campaigns and confirms the shared view of SNCBs that marine debris removal is not an ecologically effective compensation measure for large scale developments.

The SNCBs (JNCC, Natural England, Natural Resources Wales, NatureScot, DAERA) do not consider the removal of anthropogenic marine debris to offer adequate compensation for long term/permanent change/loss of benthic habitat within Marine Protected Areas from cable protection, either as:

- Compensation for Adverse Effect on Integrity (AEoI) to Special Areas of Conservation (SAC) under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, The Conservation (Natural Habitats, etc.) (EU Exit) (Scotland) (Amendment) Regulations 2019, the Conservation (Natural Habitats, etc.) (Amendment) (Northern Ireland) (EU Exit) Regulations 2019 or the Conservation of Offshore Marine Habitats and Species Regulations 2017.
- Measures of Equivalent Environmental Benefit for Marine Conservation Zones (MCZs) designated in accordance with the Marine and Coastal Access Act (2009), or the Marine Act (Northern Ireland) 2013.
- Measures of Equivalent Environmental Benefit for Nature Conservation Marine Protected Areas designated in accordance with the Marine and Coastal Access Act (2009) and the Marine (Scotland Act) 2010.

2. Background

Recently the Secretary of State for the Department for Business, Energy and Industrial Strategy (BEIS) has considered and granted development consent for Hornsea Project Three (December 2020), Norfolk Boreas (December 2021) and Norfolk Vanguard (February 2022) Offshore Wind Farms.

The SNCBs consistently advised the Planning Inspectorate and Secretary of State for BEIS throughout the examination processes for these projects that the collection of marine debris/litter did not offer a suitable method of compensation for the impacts to benthic habitats^{1 2 3 4 5 6 7 8 9} and that, on an ecological basis, other compensation measures were preferable.

The Secretary of State for BEIS undertook a Habitat Regulation Assessment (HRA) under the Conservation of Habitats and Species Regulations 2017 (“the Habitats Regulations”) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (“the Offshore Habitats Regulations”) in respect of the Development Consent Order (DCO) and Deemed Marine Licences (dMLs) of these projects. The HRAs could not conclude, beyond reasonable scientific doubt, the absence of an adverse effect from the projects, in

¹ [EN010079-004441-EN010079 374820 Norfolk Vanguard Annex 5 NE overview of appraisal of compensation measures.pdf \(planninginspectorate.gov.uk\)](#)

² [EN010087-002853-EN010087 351731 Norfolk Boreas Post Examination Consultation Natural England response letter final1.pdf \(planninginspectorate.gov.uk\)](#)

³ [EN010080-003633-EN010080 Hornsea Three SBIP SNCB comments letter Final.pdf \(planninginspectorate.gov.uk\)](#)

⁴ [EN010087-002852-EN010087 351731 Norfolk Boreas Annex 1 Natural England advice on HHW SAC in principle compensation measures final.pdf \(planninginspectorate.gov.uk\)](#)

⁵ [EN010087-002862-EN010087 351731 Norfolk Boreas Annex 4 Natural England advice on DCO compensation requirements.pdf \(planninginspectorate.gov.uk\)](#)

⁶ [EN010087-002861-EN010087 351731 Norfolk Boreas Annex 5 Natural England overview of appraisal of compensation measures.pdf \(planninginspectorate.gov.uk\)](#)

⁷ [EN010079-004445-EN010079 374820 Norfolk Vanguard Re-determination Consultation Natural England response letter.pdf \(planninginspectorate.gov.uk\)](#)

⁸ [EN010079-004446-EN010079 374820 Norfolk Vanguard Annex 1 NE advice on HHW SAC in principle compensation measures.pdf \(planninginspectorate.gov.uk\)](#)

⁹ [EN010079-004440-EN010079 374820 Norfolk Vanguard Annex 4 NE advice on DCO compensation requirements.pdf \(planninginspectorate.gov.uk\)](#)

combination with other projects, on the integrity of Annex I Sandbanks, within North Norfolk Sandbanks and Saturn Ridge (NNSSR) SAC, The Wash and North Norfolk Coast SAC (WNNC), or Haisborough, Hammond and Winterton (HHW) SAC due to the placement of cable protection within the SACs. Similarly, the HRAs could not conclude, beyond reasonable scientific doubt, the absence of an adverse effect from the projects, in combination with other projects, on the integrity of Annex I reef from the installation of Norfolk Boreas and Norfolk Vanguard cables within HHW SAC.

In their decision, the Secretary of State conditioned that for these three Offshore Wind Farm projects that compensation was required for benthic habitats in accordance with the Habitats Regulations and that, of the suite of measures proposed, a marine debris removal and awareness campaign would be taken forward, to ensure the overall coherence of the National Site Network could be secured.

Marine debris removal programmes were required as stipulated within project Sand Bank Implementation Plans (SBIPs), which were to be developed through discussion with steering groups.

We note that the removal of marine debris and awareness campaigns continue to be included within compensation/MEEB options for upcoming offshore windfarm projects and within plan level and strategic compensation considerations. For example, the Crown Estates Offshore Wind Round 4 Plan level Habitat Regulation Assessment, which cannot rule out an AEoI to the Annex I Sandbank feature of Dogger Bank SAC, from preferred projects 1 and 2 (Dogger Bank South West and Dogger Bank South East¹⁰), includes an option for marine debris removal.

3. Definition of marine debris

The SNCBs recognise the importance of reducing marine litter at source as indicated in Defra's [25 Year Environment Plan](#), the [Environmental Improvement Plan](#), the [Litter Strategy for England](#), [A Marine Litter Strategy for Scotland](#), the [Marine Litter Action Plan for Wales](#),

¹⁰ [2022, The Crown Estate, 2020 Offshore Wind Round 4 Plan, Habitats Regulations Assessment | Marine Data Exchange](#)

[Northern Ireland Marine Litter Strategy](#), and as included within the Marine Management Organisation (MMOs) Marine Plans and the Draft Marine Plan for Northern Ireland. We recognise that the reduction and removal of marine litter may contribute to Good Environmental Status under the EU Marine Strategy Framework Directive, offer environmental improvements as part of wider nature recovery initiatives, and could potentially be considered as 'Net Gain'.

However, based on the evidence available, we do not consider marine debris collection fit for purpose to provide compensation for the AEoI of benthic habitats from proposed development within the marine environment. This is because the removal of marine debris as proposed does not fulfil the criteria within Defra's principles for compensatory measures.

Marine litter has been defined as “any persistent, manufactured or processed solid material discarded, disposed of, or abandoned in the marine and coastal environment. Marine litter consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; accidentally lost, including material lost at sea in bad weather (fishing gear, cargo); or deliberately left by people on beaches and shores.¹¹”

For the purpose of the SBIP compensation measures, 'marine debris' consists of any lost or abandoned, non-natural or introduced material on the seabed which does not offer a practical purpose, has low biodiversity value, and may detract from the extent and functionality of the designated features of the SAC.

Marine debris/litter as referred to in this paper consists of anthropogenic litter or debris that is found sub tidally on the seabed. Due to the methods used to initially locate litter (side scan sonar) and subsequently safely remove it from the seabed to the deck of a vessel by crane, litter in this instance refers to objects between a minimum of 1m² and a maximum of 10m². It does not include coastal litter or microplastics which may wash up on the foreshore. It does not include the removal of derelict structures (e.g., pipelines, outfalls etc.) or decommissioning, as these are considered as separate measures. Furthermore, it does not

¹¹ [Marine litter | UNEP - UN Environment Programme](#)

include the removal of any anthropogenic objects placed on the seabed as part of a project Development Consent Order or Marine License.

4. Principles of Compensatory Measures

SNCBs have considered the extent to which marine litter removal meets the draft principles of compensatory measures set out in Defra's '[Best practice guidance for developing compensatory measures in relation to Marine Protected Areas](#)' (July 2021).

Defra's best practice guidance provides a set of over-arching principles to guide applicants and decision-makers. The principles state that compensatory measures should:

- a) Link to the conservation objectives for the site or feature and address the specific damage caused by the permitted activity;
- b) Focus on providing the same ecological function for the species or habitat that the activity is damaging OR, where this is not technically possible, provide functions and properties that are comparable to those that originally justified designation;
- c) Not negatively impact on any other sites or features;
- d) Ensure the overall coherence of designated sites and the integrity of the MPA network; and
- e) Be able to be monitored to demonstrate that they have delivered effective and sustainable compensation for the impact of the project. The monitoring and management strategy must require further action to be taken if the compensation is not successful.

SNCBs advise that marine litter removal as included within SBIPs does not align with the above principles of compensatory measures. Moreover, marine litter removal does not offer adequate compensation for the AEoI, caused by the lasting/permanent change/loss to Annex I Sandbank feature or Reef feature from cable protection within designated sites. The consideration of collection of debris is considered against each of the principles in the following sections.

a) Link to the conservation objectives for the site or feature and address the specific damage caused by the permitted activity

The Conservation Objectives, or Supplementary Advice on Conservation Objectives for NNSR¹², WNNC¹³, HHW¹⁴ SACs do not include marine litter as a pressure concern for those sites and is therefore not considered a hindrance to the conservation objectives of these sites. Nor is marine litter identified as a current or predicted issue affecting the condition of the sites within Site Improvement Plans¹⁵¹⁶. SNCBs do not believe that one off litter removal campaigns will make a positive or discernible difference to the conservation objectives of SACs, or the management of features of MCZs, and therefore cannot be considered an appropriate compensation measure for SACs under the Habitats Regulations or Measure of Equivalent Environmental Benefit for MCZs. Consequently, the SNCBs advise that the removal of marine litter would not compensate for the impacts of loss of benthic habitat arising from development. This would result in the overall coherence of the national site network not being maintained.

There are several datasets in relation to marine debris including the Oil and Gas Authorities subsurface infrastructure layer, Cefas's North East Atlantic Seafloor Marine Litter Data layer (where the litter is noted as being fishing line, synthetic rope, or metallic deposits) and OSPAR's IA2017 seabed litter layer showing relative number of litter items per square km.

Based on the evidence within these datasets SNCBs do not consider that there are sufficient quantities of benthic marine litter which could be collected by Plans or Projects, either within specific impacted sites or across the MPA network, to make discernible improvements to the conservation objectives of restoring the extent and distribution of Annex I Sandbanks or Reef or restoring the structure and function of habitats to offset the specific damage of long

¹² [North Norfolk Sandbanks and Saturn Reef MPA – Conservation Advice | JNCC Resource Hub](#)

¹³ [The Wash and North Norfolk Coast SAC](#)

¹⁴ [Haisborough Hammond and Winterton SAC](#)

¹⁵ [Site Improvement Plan: Haisborough, Hammond and Winterton - SIP097 \(naturalengland.org.uk\)](#)

¹⁶ [Site Improvement Plan: The Wash and North Norfolk Coast - SIP245 \(naturalengland.org.uk\)](#)

term/permanent habitat loss of several hectares of benthic habitat from the placement of cable protection.

Furthermore, there is unlikely to be sufficient benthic marine litter/debris for all future development to rely on marine debris collection as an appropriate compensation measure. SNCBs recommend that other measures which provide a strategic approach to compensation are preferable.

b) Focus on providing the same ecological function for the species or habitat that the activity is damaging OR, where this is not technically possible, provide functions and properties that are comparable to those that originally justified designation

Further discussion is needed to agree approaches on compensating for AEoI to Sandbanks and Reefs by different sub features to those being impacted and where/ when this could be an acceptable approach. Whilst discussions are still to be had in relation to 'like for like' strategic compensation, SNCBs remain of the opinion that marine debris removal will not provide the same ecological function for Sandbanks that is caused by the long-term permanent loss of habitat from scour protection.

Marine litter removal as proposed by projects within SBIPs consists of a one-off campaign prior to construction. There will be no ongoing litter removal and nothing to stop any litter returning after the campaign. It is very unlikely that a one-off campaign will offset the long-term/permanent change/loss of benthic habitats. Furthermore, once an area has been surveyed for litter it would be unlikely that additional campaigns throughout the life of the project would provide sufficient benefit to the ecological function and properties that are comparable to those that originally justified designation. It is not clear that litter removal will be able to demonstrably improve ecological function of or coherence of the network sufficiently to offset the AEoI identified.

[EC Guidance on Article 6 \(4\) of the Habitats Directive](#) states that “*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*”. The high degree of uncertainty associated with the effectiveness of marine litter removal as a compensation measure therefore casts significant doubt over the suitability of adopting a 1:1 ratio, and that in line with the precautionary principle a higher ratio should be adopted.

The time required for projects to identify and remove sufficient pieces of marine litter to equate to an equivalent area of Annex I habitat that would be long term/permanently changed/lost under cable protection, especially given the uncertainty of the method and higher compensation ratios required in accordance with guidance, is likely to extend into several years (if not decades) and may become prohibitive and unachievable within proposed project development timeframes. There is the potential for the delivery of inadequate compensation to become a limiting factor to the speed of the offshore wind development programme.

SNCBs advise that, as it has not been demonstrated that marine debris removal within SBIPs will be 100% effective in reinstating structure and functionality of Annex I Reef or Sandbank feature within the designated site and/or maintain the coherence of the national site network, it may not be possible for projects to deliver marine debris removal in line with compensation ratios and deliver projects in a timely manner in support of the British Energy Security Strategy.

c) Not negatively impact on any other sites or features

SNCBs are concerned that the removal of marine debris from designated sites by third parties could potentially have unintended impacts on designated features. For example, if debris is located within Annex I Rocky Reef, there is the potential that removal methods could damage the epifaunal or under boulder communities, or where Annex I Sabellaria reef has formed around old/buried debris, this could be impacted upon removal. However, if marine litter removal is undertaken in line with agreed SBIPs, with trained ecologists on board with awareness of Annex I and MCZ habitat identification, and in line with industry guidance and best practice ^{17,18} we are satisfied that marine debris removal can be undertaken without impacting other sites or features.

¹⁷ [Offshore wind – best practice advice to facilitate sustainable development - Natural England \(blog.gov.uk\)](https://www.blog.gov.uk/2018/06/06/offshore-wind-best-practice-advice-to-facilitate-sustainable-development/)

¹⁸ [Monitoring guidance for marine benthic habitats \(Revised June 2018\) | JNCC Resource Hub](https://www.jncc.gov.uk/resources/monitoring-guidance-for-marine-benthic-habitats-revised-june-2018)

d) Ensure the overall coherence of designated sites and the integrity of the MPA network

'An ecologically coherent network consists of sites designated for the protection of relevant habitats and/or species. It should support habitats and populations of species in favourable conservation status across the whole of their natural range; and contribute significantly to the biological diversity of the biogeographic region' ([Catchpole, 2013](#)).

Recent environmental assessments for offshore wind farms Plans and Projects have concluded that it has not been possible beyond scientific doubt, to rule out an AEoI to Annex I feature within the North Norfolk Sandbanks and Saturn Ridge SAC, The Wash and North Norfolk Coast SAC, the Haisborough Hammond and Winterton SAC and the Dogger Bank SAC.

The impacts from long term/permanent benthic habitat loss from these projects in combination may therefore not only effect designated features and sites but may also affect the coherence of the MPA network.

['The Ten Point Plan for a Green Industrial Revolution,'](#) laid out Government's ambition to quadruple Offshore Wind capacity by 2030, and the British Energy Security Strategy includes a vision for 40 GW by 2030. The exponential growth of offshore wind energy and the associated cable infrastructure will mean that impacts to benthic habitats are increasingly observed across the National MPA network. It is therefore essential that compensation measures are suitable, effective, and achievable within the timeframe.

SNCBs are concerned that following the completion of monitoring from individual projects reporting to the Secretary of State, should marine debris removal be found to offer inadequate compensation there is the potential for exponentially increasing areas of benthic habitat loss from cable protection. The reduction in extent and function of designated sites features would not only impact the integrity of the designated sites affected, but also the coherence of the national site network.

- e) **Be able to be monitored to demonstrate that they have delivered effective and sustainable compensation for the impact of the project. The monitoring and management strategy must require further action to be taken if the compensation is not successful**

The SNCBs have outstanding concerns that the monitoring as proposed by projects within SBIPs will be unable to provide the necessary evidence to demonstrate that an AEoI has been adequately compensated for.

Due to size of the individual marine debris objects which can be retrieved (between 1-10m²), Offshore wind farm projects have already indicated they may not be able to accurately relocate those areas where litter was removed from and therefore will not be able to confidently demonstrate the impact of the removal on the ecological functioning of habitats, and whether they have in fact recovered. We suggest that this will form a monitoring evidence gap.

Projects have also indicated that were it is possible to relocate areas where litter was removed, only a small proportion will be monitored¹⁹. SNCBs consider that the monitoring of a small number of sites will not be sufficient to confidently conclude, with any statistical power, that the permanent loss of several hectares of benthic habitat feature within the NNSSR, WNNC, HHW SACs has been compensated for by projects.

Moreover, should monitoring not be able to demonstrate successful compensation for habitat loss, as currently worded, the DCOs and DMLs do not stipulate what further action should be taken^{20, 21, 22}.

¹⁹ [EN010080-003641-Hornsea Three Sandbank Implementation Plan NNSSR.pdf \(planninginspectorate.gov.uk\)](https://planninginspectorate.gov.uk/EN010080-003641-Hornsea%20Three%20Sandbank%20Implementation%20Plan%20NNSSR.pdf)

²⁰ [The Hornsea Three Offshore Wind Farm Order 2020 \(planninginspectorate.gov.uk\)](https://planninginspectorate.gov.uk/The%20Hornsea%20Three%20Offshore%20Wind%20Farm%20Order%202020)

²¹ [The Norfolk Vanguard Offshore Wind Farm Order 2022 \(planninginspectorate.gov.uk\)](https://planninginspectorate.gov.uk/The%20Norfolk%20Vanguard%20Offshore%20Wind%20Farm%20Order%202022)

²² [The Norfolk Boreas Offshore Wind Farm Order 2021 \(planninginspectorate.gov.uk\)](https://planninginspectorate.gov.uk/The%20Norfolk%20Boreas%20Offshore%20Wind%20Farm%20Order%202021)

Monitoring and management strategies must require further action to be taken if the compensation is not successful²³. EC guidance (2011)²⁴ relevant to the implementation of the Habitats Regulations in estuarine and coastal zones includes the following helpful clarification on the importance of adaptive management approaches in addressing uncertainty. ‘An adaptive approach for the implementation of a Plan or Project or a compensation scheme may be particularly useful to address cases where, due to uncertainty associated with different contributory factors (location, confidence, unexpected delays), it is impossible to define all the effects of the Plan or Project or of a compensation scheme in sufficient details and if such uncertainty cannot be factored in through increased ratios. In such a situation, a rigorous monitoring scheme and a pre-defined validated package of appropriated corrective measures must be foreseen. Such measures must allow to adjust mitigation and/or compensatory measures to the reality of the impacts and by that way, make sure that the initially unforeseen adverse effects are being neutralized.

NRW has produced guidance on using adaptive management for marine developments²⁵ and the requirements for proposals for project level adaptive management²⁶. Whilst this advice was not developed specifically for the consideration of compensation many of the same principles apply. Given that the SNCBs collectively do not consider that marine debris collection has provided adequate compensation for the loss of benthic habitats it is unclear what adaptive management measures are available, or the process for triggering the identification and implementation of further adaptive management measures.

In the absence of enforceable conditions that are attached to compensation requirements which could remedy this situation, we draw attention to the ongoing general duty placed on all competent and public authorities by regulation 9(3) of the Habitats Regulations or by section 125 of Marine and Coastal Access Act 2009 in relation to MCZs.

²³ [OES-Environmental 2020 State of the Science Report \(pnnl.gov\)](#)

²⁴ [The implementation of the Birds and Habitats Directives in estuaries and coastal zones \(pnnl.gov\)](#)

²⁵ [Natural Resources Wales / Using adaptive management for marine developments](#)

²⁶ [Natural Resources Wales / Marine development: submitting proposals for project level adaptive management](#)

As regards European Sites, the regulation 9(3) duty encompasses the general obligation on competent authorities to take appropriate steps – as and where necessary - to avoid the deterioration of European Sites as well as any significant disturbance of their designated species. This ongoing obligation applies more widely than the HRA duty, including to situations such as this where a plan or project which has previously been assessed and authorised in accordance with the Habitats Regulations subsequently gives rise or proves likely to give rise to such deterioration or disturbance of a site, thereby adversely affecting its integrity and the overall coherence of the wider network.

We would highlight Government's guidance to competent authorities regarding this general [Duty to protect, conserve and restore European sites](#).

Given regulatory duties towards European Sites and the supporting Government guidance, SNCBs advise the competent authority authorising the project that action is required to consider this evidence and take the appropriate steps to remedy this situation. These steps should seek to avoid, reduce, and mitigate the observed impacts to a level which maintains the original conclusion of No Adverse Effect on Site Integrity from projects. SNCBs will be pleased to provide further advice and assistance as necessary.

5. Conclusions and Lessons Learned

The provision of compensation for adverse effects to benthic marine habitats is a relatively new requirement, with only a few examples internationally. SNCBs understand that new and novel techniques must be trialled to gather evidence of success in offering adequate compensation.

Developers have worked closely and productively with SNCBs throughout the process as part of the Sand Bank Implementation Plan steering groups. Through the Steering Groups SNCBs are aware of initial results and emerging evidence from project marine debris campaigns, which supports the SNCB position that marine debris collection only meets one of the five principles of compensatory measures.

In light of the information set out in this paper considering the marine debris removal against the principals of compensatory measures, and early indications from projects on the success of campaigns, SNCBS therefore do not support the use of marine debris collection as a

suitable compensation measure for the adverse effects to Sandbanks or Reefs from cable protection.

SNCBs will update this joint advice document once the results of the campaigns have been published, are in the public domain, and can be referenced within the evidence base, or as further evidence emerges.

6. Development of Alternative Compensatory Measures

The SNCBs are working proactively with stakeholders including BEIS, Defra, the Crown Estate, and the Crown Estate Scotland, across devolved administrations their agencies and regulators and directly with offshore wind developers to develop strategic approaches to marine mitigation and compensation. SNCBs look forward to engaging further and identifying appropriate strategic compensation for marine renewables and offshore development which facilitates the delivery of both Net Zero, the 25 Year Environment Plan, and Environmental Improvement Plan 2023 targets. Achieving these will help tackle the simultaneous climate and biodiversity emergencies.