Supplementary Advice on Conservation Objectives for Solan Bank Reef Special Area of Conservation

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The information provided in this document sets out JNCC and NatureScot's supplementary advice on the conservation objectives set for Solan Bank Reef Special Area of Conservation (SAC), hereafter referred to as 'the site'. This document forms part of JNCC and NatureScot's formal conservation advice package for the site and must be read in conjunction with all parts of the package as listed below:

- **Background Document** explaining where to find the most up to date version of the advice package, JNCC and NatureScot's role in the provision of conservation advice, how the advice has been prepared, when to refer to it and how it can be applied;
- **Conservation Objectives and Management Advice** document setting out the broad ecological aims (conservation objectives) for the site and JNCC and NatureScot's advice on;
    - qualifying feature condition;
    - conservation benefits that the site can provide if managed effectively; and
    - conservation measures that JNCC and NatureScot consider are required to support achievement of the conservation objectives stated for the site.
- **Advice on Operations** providing information on those human activities that, if taking place within or near the site, can adversely affect the site's integrity, presenting a risk of not achieving the conservation objectives stated for the site.

The most up-to-date conservation advice package for the site can be downloaded from the conservation advice section of the Site Information Centre (SIC) on JNCC's website.

The advice presented here describes the ecological characteristics or 'attributes' of the site's qualifying Annex I feature: Reefs, specified in the site's conservation objectives. These attributes include extent and distribution, structure and function and supporting processes.

Figure 1 below illustrates the concept of how a qualifying feature's attributes are interlinked: with impacts on one potentially having knock-on effects on another e.g. the impairment of any of the supporting processes on which a feature relies can result in changes to its extent and distribution and structure and function.

Collectively, the attributes set out in Table 1 below, along with the objectives set for each of them, describe the desired ecological condition (favourable) for the site's qualifying features. The condition of the contributes to its favourable conservation status more widely, as well as

the site's integrity. All attributes listed in Table 1 must be taken into consideration when assessing impacts from an activity.

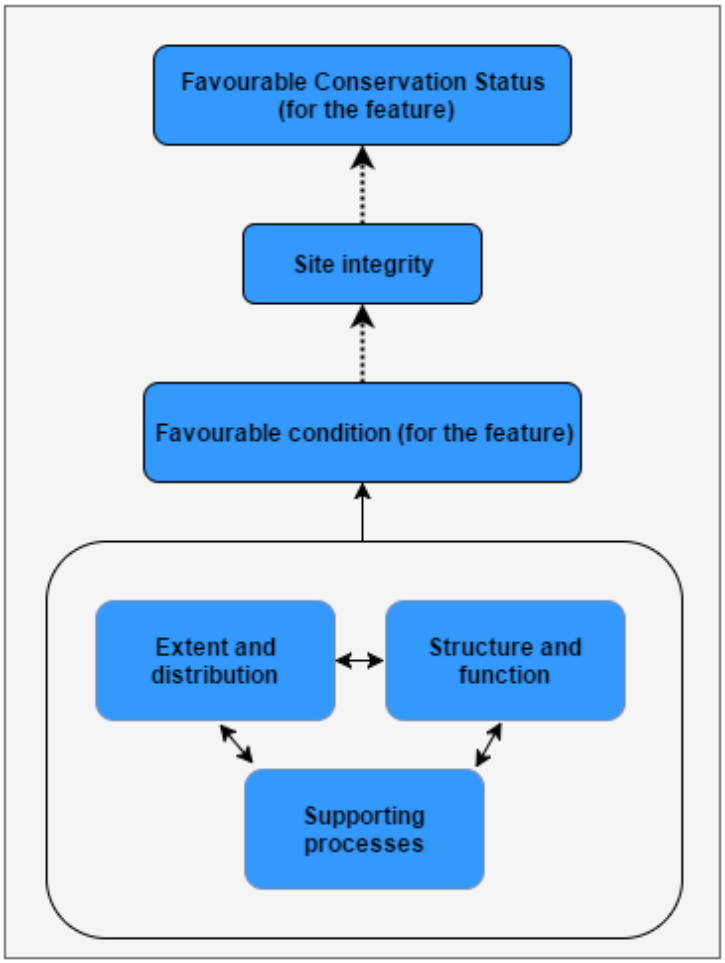

Figure 1. Conceptual diagram showing how qualifying feature attributes are interlinked, describing favourable condition and contribute to site integrity and more widely a qualifying feature's favourable conservation status.

In Table 1 below, the attributes for the reef habitat protected feature of the site are listed. An objective of restore or maintain is set, reflecting our current understanding of available evidence e.g. whether it indicates some of the protected feature's extent is lost and needs to be restored or that extent is not lost and needs to be maintained to ensure the protected feature is in overall favourable condition. Where a restore objective is advised and there is considerable uncertainty as to whether restoration is possible, this will be noted alongside the objective.

The rationale for setting an objective is provided in the summary of evidence column and supporting references listed in the reference section at the end of this document.

Note: when a maintain objective is set, this does not preclude the need for management, now or in the future to ensure the protected feature remains in favourable condition.

Table 1: Supplementary Advice on Conservation Objectives for the reefs protected feature of the site

In summary, the reef protected feature of the site is considered to be in favourable condition. This is because, to the best of JNCC and NatureScot's knowledge, the only known activity taking place which could impact the reef habitat protected feature (fishing) actively avoids interaction with reefs within the site due to potential damage to fishing gear. Please see the Conservation Objectives and Management Advice document available in the conservation advice section of the SIC for JNCC and NatureScot's advice on the management of activities which JNCC and NatureScot consider is needed to maintain the reefs protected feature. Further information on activities capable of affecting the qualifying features of the site can be found in the Advice on Operations workbook available also in the conservation advice section of the SIC.

Attribute	**Summary of evidence** Further information on activities capable of affecting the protected feature of the site can be found in the Advice on Operations workbook available also in the conservation advice section of the SIC.	**View of attribute condition & objective**	**Confidence in attribute condition**
Extent and distribution	Extent of reefs refers to the total area in the site occupied by the biogenic habitat and must include consideration of its distribution, i.e. how it is spread out within the site. A reduction in extent has the potential to alter the biological and physical functioning of biogenic habitats. The total estimated extent of reef habitat within the site is 385.1 km^2 within a total site area of 856 km^2. This comprises both bedrock and stoney reef habitat sub-types of Annex 1 reef (Goudge *et al.,* 2016). To the best of JNCC and NatureScot's knowledge, the only activity known to be taking place within the site which could impact the reefs protected feature is fishing activity. Vessel Monitoring System (VMS) data up to 2020 shows a consistent trend of fishing data to be relatively low, with active avoidance of reef. This is because the fishing sector avoid fishing over the reef feature due to potential damage to fishing gear.	Favourable – needs to be maintained	Moderate – JNCC and NatureScot have a baseline understanding of the extent and distribution of reef habitats in this site, which is derived from a drop camera photo/video survey completed in 2014 (Froján, 2016). This has been further integrated with a modelled habitat map that covers the remaining site area that has not been surveyed, as part of a composite predictive habitat mapping product known as 'EUSeaMap' (EUSeaMap, 2023). Whilst evidence for impact is indirect, based on our understanding of the sensitivity of reef habitats to pressures associated with human activities known to have taken place in the site; namely fishing (Tyler-Walters et al., 2023 and JNCC 2018), active avoidance of fishing from the reef protected feature itself leads JNCC and NatureScot

	On this basis, JNCC consider that the extent and distribution of the protected feature within the site is likely to be in favourable condition and should be maintained.		conclude that a moderate confidence level can be assigned to the condition of this attribute.
Structure and function	The structure of reef habitats encompasses: • Coral composition - namely the species, morphology and size of the coral colonies that characterise the community; • Density of the coral colonies characterising the feature; • Physical structure of the reef – including the topography of the reef and the available macrohabitats; • Key and influential species; and • Characteristic communities present Functions are ecological processes that include sediment processing, secondary production, habitat modification, supply of recruits, bioengineering and biodeposition. These functions rely on the supporting natural processes and the growth and reproduction of corals, and associated biological communities (Armstrong et al., 2014). JNCC and NatureScot do not consider that there is enough evidence to assess the conservation status of the key species and characteristic communities of this site feature. Based on the same evidence presented under the extent and distribution attribute, JNCC and NatureScot conclude that the structure and function of the feature is not likely to have been adversely affected by activities occurring in the site. JNCC and NatureScot therefore advise a maintain objective.	Favourable – needs to be maintained	Moderate – as per extent and distribution above.

Supporting processes	Biogenic habitats and the communities they support such as reefs rely on a range of natural processes to support function (ecological processes) and help any recovery from adverse impacts. Supporting processes with respect to reef habitats include hydrodynamic regime, physical topography, supporting habitat, water and sediment quality. Physical topography and supporting habitat condition have been reflected in the assessment of extent and distribution, and structure and function, and therefore are not also considered within this assessment against the supporting processes attribute. There is no evidence to suggest that human activities are having an adverse impact on the typical hydrodynamic regime to which the site is exposed. The site is located on the border of the Celtic Seas (OSPAR region III) and Greater North Sea (OSPAR region II) regions; whilst it is noted the regions which the site is located within have been assessed to have a poor contaminant status (Larson 2022), this is insufficient evidence to assess water or sediment quality in the site. Overall, there is no evidence to suggest that supporting processes that operate at this site are being impeded with respect to supporting the presence of reefs. JNCC and NatureScot therefore advises a maintain objective on this basis.	Favourable – needs to be maintained	Low - The evidence-base supporting JNCC's assessment against this attribute draws upon data from the wider Celtic Sea and Greater North Sea Regions (Larsen et al., 2022), rather than any evidence available from within, or in close proximity to, the site itself. The lack of data pertaining to water and sediment quality within this site limits this assessment. Moreover, there is a lack of time series data information about water quality and on how human activities may have impacted this.

References

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VMS MMO internal underlying dataset variant of Fishing Activity for over 15 metre vessels which covers 2007 – 2020.