Supplementary Advice on Conservation Objectives for Swallow Sand Marine Conservation Zone

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JNCC

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The information provided in this document sets out JNCC's supplementary advice on the conservation objectives set for **Swallow Sands Marine Conservation Zone (MCZ)**, hereafter referred to as 'the site'. This document forms part of JNCC'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 advice package, JNCC'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 for the site and JNCC's advice on;
    - protected feature condition;
    - conservation benefits that the site can provide if managed effectively; and
    - conservation measures that JNCC 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 impact it and hinder the achievement of 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 protected features: **Subtidal coarse sediment**, **Subtidal sand** and **North Sea glacial tunnel valleys (Swallow Hole)**, specified in the site's conservation objectives listed in the site's Designation Order. These attributes include extent and distribution, structure and function and supporting processes.

Figure 1 below illustrates the concept of how a protected 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 protected features.

All attributes listed in Table 1 must be taken into consideration when assessing impacts from an activity.

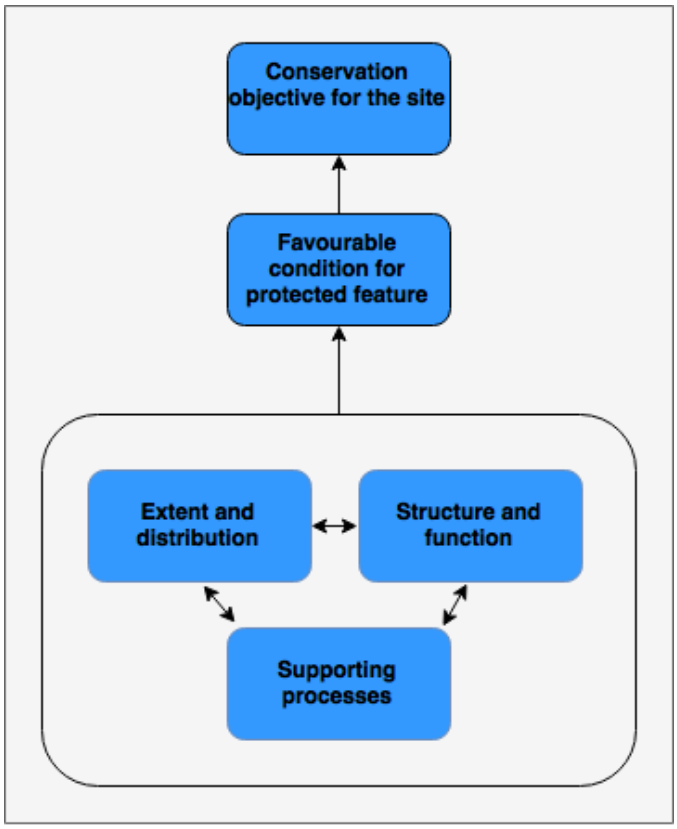

Figure 1. Conceptual diagram showing how feature attributes are interlinked and collectively describe favourable condition and contribute to the conservation objectives stated for the site.

In Table 1 below, the attributes for the Subtidal coarse sediment and subtidal protected features are listed. An objective of recover or maintain is set for each protected feature attribute, reflecting our current understanding of available evidence e.g. whether it indicates some of a protected feature's extent is lost and needs to be recovered or that extent is not lost and needs to be maintained to ensure the protected feature is in overall favourable condition. Where a recover objective is advised and there is considerable uncertainty as to whether recovery 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 a protected feature remains in favourable condition.

Table 1: Supplementary Advice on Conservation Objectives for subtidal coarse sediment and subtidal sand protected features of the site

In summary, the subtidal coarse sediment and subtidal sand protected features are in favourable condition. Management of human activities is required to maintain the protected feature's extent and distribution, structure and function and supporting processes. Please see the Conservation Objectives and Management Advice document available in the conservation advice section of the SIC for JNCC's advice on the management of activities which JNCC consider is needed to maintain the subtidal coarse sediment and subtidal sand protected features of the site. Further information on activities capable of affecting the protected 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	View of attribute condition & objective	Confidence in attribute condition
Extent and distribution	Extent and distribution of the subtidal coarse sediment and subtidal sand protected features are defined by their sediment composition (grain size and type) and biological assemblages within the site. A significant change in sediment composition and/or biological assemblages within an MPA brought about by human activities may impact the conservation status of these features. Vessel Monitoring System (VMS) evidence up to 2021 (MMO, 2022) indicates that fishing activities occur within the site, including historical gillnet activity and a low-level of demersal trawls, however these are concentrated to the non-designated mud feature in the northwest region of the site. The designated subtidal sand and subtidal coarse sediment features receive only a fraction of the level of demersal fisheries activity (<20hr of mostly UK based trawls between 2020-2022). Demersal fishing is associated with pressures including abrasion, removal of non-target species and penetration of seabed, however the level of exposure is so low that the features are considered not to be exposed, therefore pressures are not capable of impacting either the sediment composition or associated assemblages. Other human activities present across the protected features include the presence of telecoms cables and three oil and gas pipelines (KIS-ORCA, 2025). The laying of telecoms cables are	Favourable – needs to be maintained	Moderate - The feature extent and distribution of subtidal sediments within the Swallow sands MCZ is fairly well mapped from multiple surveys and analysis conducted in 2012 (Lark R. M. 2014) and 2016 (Curtis M. Hawes, et al., 2020). An additional survey in 2014 provided verification on the presence of subtidal mud in the northwest of the site, for which the site is not designated (McIlwaine, P. 2023).

	likely through entrenchment, rather than subject to rock dump, so potential associated pressures including change of sediment/feature composition will not have occurred across the features. Oil and gas pipelines present predate the creation of MPA, with limited data to confirm the laying procedure for the pipelines. It is likely that the method of entrenchment would be via sediment burial, limiting the risk of pressures from changes to sediment feature composition. To the best of our knowledge JNCC do not consider the activities currently present within the site to be capable of impacting the extent or distribution of the protected features (subtidal coarse sediment and subtidal sand) in the site at the time of writing. Therefore, JNCC advise a maintain objective.		
Structure and function	Structure and function associated to the subtidal sediment features of the site are defined by their physical structure (finer scale topography) and sediment composition and their biological structure (the presence of key and influential species and characteristic communities). The topography and sediment composition of the swallow sands site has been established through multiple PSA and acoustic surveys and assessments, with the majority of the site being dominated by subtidal sand, interspersed with patchy regions of coarse subtidal sediment in the western and central site portions. Biological structure has been established through community analysis studies, which have identified the presence of characteristic infaunal and epifaunal species associated with protected sediments, alongside identifying the presence of sea pen and burrowing megafauna communities (SPBMFC) and *Arctica Islandica* within the site (these species and habitats of biodiversity importance have not been added as additional designated features of the site as they are already largely encompassed within the existing protected feature areas). The subtidal sand and subtidal coarse sediment features have the potential to deliver a range of ecosystem services (See the COMA for more detail) Where the structure and function of these habitats are impaired, a corresponding reduction in service	Favourable – needs to be maintained	Moderate - Feature extent and distribution is fairly well mapped from multiple surveys and analysis including a dedicated community analysis review from the 2012 survey (Allen, C, *et al* 2016). Confidence weakened due to inability to see most recent VMS data (post 2020) to ensure new demersal activities are not taking place and capable of impacting attributes. Confidence is weakened as our understanding of the sensitivity and vulnerability of the subtidal sand and subtidal coarse sediment and their associated biological to pressures caused by human activities known to be taking place in the site (in this case bottom contact fisheries and oil and gas infrastructure presence) was used to ascertain condition, rather than direct evidence (Tyler-Walters et al., 2023 and JNCC, 2018)

	delivery is expected, although the magnitude of change is not always well evidenced. The activities occurring in the site (extremely limited demersal trawl or gillnet fishing and the presence of limited cabling and oil and gas infrastructure) are associated with relevant pressures to structure and function including abrasion, penetration, removal of target & non-target species and change of sediment composition and suspended solids. Due to the extremely limited level of exposure imparted by the activities on this site, JNCC conclude that these pressures are not at a level capable of altering the structure and function attributes.		
Supporting processes	Supporting processes associated with subtidal sediments include water quality and hydrodynamic regime. The relatively low level of hydrodynamic regime within the North Sea area has been established through modelling of the site (Curtis M. Hawes, et al., 2020), with JNCC concluding that the current level of pressures and activities are incapable of impacting the large-scale regime. Testing of contaminants in greater region of northern North Sea is collected as part of the OSPAR quality status report (Larsen, M *et al*., 2023) for both sediment and fish samples. The most recent report indicates South-North sea heavy metal levels to be above background assessment concentrations. However, it is unknown, but highly unlikely that any of the activities occurring within the site are associated with exposure to contaminants. Therefore, the sub-attribute features are assessed to not be impacted.	Favourable – needs to be maintained	Low - Only regional data on contaminants is available via the OSPAR Quality status report (Larsen, M *et al*., 2023) for the north North Sea region, rather than drawing on evidence derived from inside, or in close proximity to, the site. Thresholds associated with water quality and heavy metals are not fully established and while levels indicate above baseline concentrations for the region, It is unlikely that the low levels of activities present within the site contribute towards this contaminant indicator.

References

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Allen, C., Axelsson, M. & Dewey, S. (2016). Community Analysis of Offshore MCZ Grab and Video Data (2014), JNCC Report No. 588

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Larsen, M. and Hjermann, D. (2022). Status and Trend for Heavy Metals (Mercury, Cadmium and Lead) in Fish, Shellfish and Sediment. In: OSPAR, 2023: The 2023 Quality Status Report for the Northeast Atlantic. *OSPAR Commission, London*. Available at: https://oap.ospar.org/en/ospar-assessments/quality-status-reports/qsr-2023/indicator-assessments/heavy-metals-biota-sediment

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McIlwaine, P. (2023). Swallow Sand MCZ Survey Report. [Contracted] Report by Cefas for Defra and JNCC (Project Code: C5785).

KIS-ORCA cabling and renewables data layer products (October 2025);

Vessel Monitoring System (VMS) data layers and fisheries abrasion layers derived from the Marine Management Organisations (MMO's) VMS data products for years 2009 to 2022

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