



Devon and Severn IFCA
Response to MMML2367 General Consultation

13th March 2024

Introduction and Scope of Response

The Inshore Fisheries and Conservation Authorities (IFCAs), including Devon and Severn IFCA (D&S IFCA), are statutory regulators. The IFCAs are responsible for the sustainable management of sea fisheries resources in English waters from baselines out to six nautical miles. D&S IFCA 's District includes waters from baselines to six nautical miles on the south and north coasts of Devon and north Somerset, and the waters of the Severn Estuary out to the median line with Wales (as shown in Figure 1). As the proposal is within and adjacent to those boundaries, and the project may generate effects which interact with D&S IFCA's core role, it is appropriate that D&S IFCA comments on the proposals.

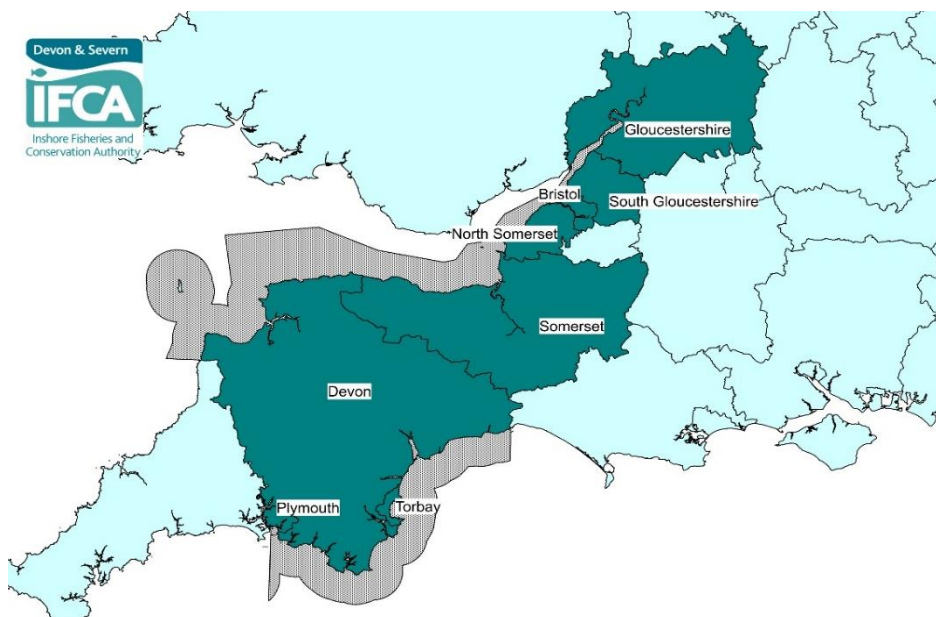


Figure 1. Map of Devon and Severn IFCA's District, showing in grey the sea area from baselines to 6nm (or the median line with Wales).

The ten regional IFCAs have a shared vision: “*Inshore Fisheries and Conservation Authorities will lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry.*”

The powers and duties of the IFCAs are provided by the Marine and Coastal Access Act (2009; the Act). The IFCAs' main legal duties are described in Section 153 of the Act. They must manage the exploitation of sea fisheries resources in their Districts, balancing the social and economic benefits of exploiting the resources of sea fisheries in their Districts with the need to protect the marine environment, or help it recover from past exploitation.

Under Section 154 of the Act, IFCAs must seek to ensure the conservation objectives of any MCZs in the District are furthered. IFCAs are also deemed Relevant Authorities for marine areas and EMS, under the Conservation of Habitats and Species Regulations 2017. D&S IFCA is therefore a Relevant Authority, for example, for the Severn Estuary Special Area of Conservation (SAC).

Under Section 153(2c) of the Marine and Coastal Access Act (2009) IFCAs must also take any other steps which in the authority's opinion are necessary or expedient for the purpose of making a contribution to the achievement of sustainable development when performing its

duty to manage the exploitation of sea fisheries. Furthermore, the IFCA Vision includes championing inshore fisheries, which rely on healthy, sustainable inshore populations of fish.

D&S IFCA has identified the need for an Ecosystem Approach to the management of all activities in the marine environment, including consideration of marine developments in (or otherwise affecting, e.g. via cross-border sites) its District. D&S IFCA's primary role in such matters is to ensure that fisheries, fish and fish habitat are considered thoroughly and meaningfully by marine managers and developers.

Given the potential harm to protected sites and fish populations in D&S IFCA's District, this response outlines D&S IFCA's concerns in relation to the consultation, in line with the context provided above.

Within the proposal there is potential for impacts to features of Marine Protected Areas. D&S IFCA defers to the advice and comments of the relevant Statutory Nature Conservation Body in connection with these potential impacts, except where there may be an interaction with D&S IFCA's core remit.

In particular, D&SIFCA has concerns regarding the potential impacts to the following features of marine protected areas:

- Annex I habitats, specifically H1110 (Subtidal sandbanks) and H1140 (Intertidal mudflats and sandflats) within the Severn Estuary Special Area of Conservation (SAC)
- Severn Estuary Site of Special Scientific Interest (SSSI)
- Marine fish assemblage (sub-feature of Estuaries feature) of the Severn Estuary SAC

Annex I Habitats

D&S IFCA is concerned about the lack of consideration apparently given to the Annex I habitats (particularly H1110 and H1140). D&S IFCA believes that, by the nature of the aggregate extraction process, the conservation objectives for these features will be directly impacted.

The conservation objective for the "subtidal sandbanks" (H1110) feature of the Severn Estuary SAC is to maintain the feature in favourable condition (Countryside Council for Wales and Natural England, 2009). The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

- i. the total extent of the subtidal sandbanks within the site is maintained;
- ii. the extent and distribution of the individual subtidal sandbank communities within the site is maintained;
- iii. the community composition of the subtidal sandbank feature within the site is maintained;
- iv. the variety and distribution of sediment types across the subtidal sandbank feature is maintained;
- v. the gross morphology (depth, distribution and profile) of the subtidal sandbank feature within the site is maintained

(Countryside Council for Wales and Natural England, 2009)

As outlined in the Regulation 33 advice for the Severn SAC, in particular relating to H1110 "*The extent of the Annex 1 habitat is considered to include both the actual sandbanks and their associated sediments [...] Associated sediments have been defined as any area of subtidal sand-sized sediment within the same sediment environment as a subtidal sandbank.*

Mobile sediments that form temporary sandbanks are considered to be associated sediments that should be retained in the system, but their location may change. Areas of holocene valley infill (relict sediment) are not mobile under present day estuarine conditions. Therefore, where Holocene infill is exposed, it is not considered to form part of the associated sediments. However, any mobile sand deposited over the infill does contribute to the associated sediments.” (Countryside Council for Wales and Natural England, 2009).

The Applicant has noted that “*A sediment budget for the Middle Grounds has been compiled through previous studies (HR Wallingford, 2003a; Velegrakis et al., 2001), by comparing the sediment base with historic bathymetric charts. The average volume of the Middle Grounds between 1832 and 1972 was calculated at 1.8 billion m³, providing evidence of a massive sand store, several orders of magnitude greater than the presently permitted extraction volume.*”

This is used to suggest that the levels of aggregate removal will not affect the extent or distribution of the feature. However, although the extraction volume (~5million m³) is less than 1% of the volume of the sediment budget calculated for the Middle Grounds and Bedwyn Sands (1.8 billion m³), the vertical distribution of sediments is also important to consider, including the distribution of Holocene infill.

As noted by the Applicant: “*Both Bedwyn Sands and NMG [...] constitute an interconnected series of banks and flats, forming part of the same geomorphologic system. The sand resources within this system lie within a ‘sediment sink’ of Holocene deposits, whereby sand is the dominant material (HR Wallingford, 2003).*”

Given that “*where Holocene infill is exposed, it is not considered to form part of the associated sediments*” (Countryside Council for Wales and Natural England, 2009), presumably the 1.8 billion m³ sediment budget is a significant overestimate (since it includes some volume of those underlying sediments), and therefore the potential impact to the designated features has been underestimated.

It therefore appears that the lower strata should not be considered within assessments of impact, and that the Applicant proposes to remove a considerable amount from the surface layers of an area that previous studies have suggested to be a finite resource (HR Wallingford, 2003) – a finite resource which has already been subjected to extractive dredging. On average, there would be an approximate 35cm lowering across the entire 14.21 km² licence area (area excluding exclusion zones), which appears to be a significant change to a designated feature.

On page 133 of the Environmental Statement, the Applicant states: “*It is important to note that, as discussed in Section 5, the trailer dredging activity creates relatively shallow furrows which are often infilled on the next tide, with the bed reverting to something close to its pre-dredged state*”, but goes on to state that “*It is worth highlighting standard industry mitigation measures at this juncture, as summarised in Section 3.5 above. Firstly, sediments are not dredged completely (down to bedrock), but a minimum of 0.5 m in depth (on average across the dredge area) is left. Furthermore, the seabed sediment post- dredging is left in a similar physical condition to that present before dredging.*”

These two sub-paragraphs appear to be conflicting – if dredging only creates relatively shallow furrows which are infilled on the next tide, it is not clear why there is a need to stipulate a minimum sediment depth. Do post-dredging conditions allow cumulative reductions in local sediment depth? In addition, if there is almost-immediate infilling of

dredged areas, this raises the question of what would happen to the sediment if there was no dredging, and whether natural processes are being disrupted?

This is particularly important in light of what the Applicant has said in document R4241 (the Coastal Impact Study) about there being a wide expanse of exposed seabed without any major sediment cover, over an area extending from the Inner Bristol Channel into the lower reaches of the Severn Estuary.

The Applicant highlights that “*The present position of the bedload parting zone is now considered to be approximately at the boundary between the Inner Bristol Channel and the Severn Estuary, just to the west of the islands of Steep Holm and Flat Holm*”, and has noted that “*The boundary of the estuary with the Inner Bristol Channel is essentially a geological divide, corresponding to a denuded spine of Carboniferous Limestone. This solid geology extends between the headland feature of Brean Down, to the islands of Steep Holm and Flat Holm, and across to Lavernock Point, which is a further headland formed of Lower Lias mudstones. The seabed at this location remains sediment starved, with large areas of exposed rocky seabed.*” The Applicant also states that “*NMG is located at the up-drift end of a sediment transport pathway, which extends through the Severn Estuary (McLaren and Collins, 1989)*”.

If the area downstream of this sediment transport pathway is sediment-starved, does the dredging of surface sediment from areas of that pathway risk removal of what previous studies have suggested to be a finite resource (e.g. HR Wallingford, 2003)? If so, does this Project (alone and in-combination with other similar Projects) pose a risk to the extent of the feature, maintenance of the variety and distribution of sediment types, or the gross morphology (depth, distribution and profile) across the subtidal sandbank feature within the site?

The Annex I Habitats H1140 have a similar conservation objective and definition of favourable condition as that of H1110 (below), so the above should be considered in relation to both features.

The conservation objective for “mudflats and sandflats” (H1140) feature of the Severn Estuary SAC is to maintain the feature in favourable condition (Countryside Council for Wales and Natural England, 2009). The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

- i. The total extent of the mudflats and sandflats feature is maintained;
- ii. the variety and extent of individual mudflats and sandflats communities within the site is maintained;
- iii. the distribution of individual mudflats and sandflats communities within the site is maintained;
- iv. the community composition of the mudflats and sandflats feature within the site is maintained;
- v. the topography of the intertidal flats and the morphology (dynamic processes of sediment movement and channel migration across the flats) are maintained.

(Countryside Council for Wales and Natural England, 2009)

Fauna of the Annex I Habitats

Regarding impacts to benthic species and habitat receptors from seabed removal, the Applicant (p. 88 ES) has stated that: *“The Renewal Areas (PIZ) and the SIZs predominantly consist of highly impoverished mobile clean sand habitat with almost no benthic fauna recorded (e.g. Henderson et al., 2006; Brazier et al., 2007; ABPmer,2022b) (see Section 8.2). The community present consists of species well adapted to living in a dynamic and disturbed tide-swept environment. These disturbance-tolerant species have high recoverability rates and are capable of rapidly recolonising disturbed habitat (e.g. Budd, 2006; Budd and Curtis 2007; Budd and Hughes, 2005). The duration of the impact associated with dredging in the Renewal Areas is considered intermediate (throughout the duration of the 15-year licence period) as it will be intermittent in nature, resulting in a medium probability of occurrence.”*

However, the duration of the impact is not simply the 15-year licence period but will be a cumulative effect taking into account the dredging that has occurred at Bedwyn Sands since 2008, and at North Middle Grounds since 2011.

The applicant goes on to state that *“A relatively small spatial extent of the seabed (and the biotopes present) would be affected by dredging in the areas (in the context of the widespread nature of these habitats in the region). Both Renewal Areas have been dredged previously and as the communities present are subject to natural high levels of disturbance through the hydrodynamic processes exhibited in the Estuary, will recolonise in the short term. Thus, a small magnitude of change is assigned resulting in a low exposure to change”*.

It is not clear from the evidence presented that the magnitude and exposure to change are low as suggested by the Applicant. There is no consideration of the cumulative stressors on the biological communities from long-term dredging in addition to the dynamic nature of the local environment, or recognition that the dredging may reduce resilience to natural changes in the dynamic environment, in addition to variable climate-related stressors. Furthermore, the evidence presented by the Applicant is not clear as to whether there is evidence of recolonisation in the short to medium term after such extensive disturbance. Although the Applicant refers to a Five-year substantive review (document R3836), there are several issues with the evidence gathering and interpretation in this report that indicate the need for a much more precautionary approach to licencing of the proposals and more thorough evidence gathering in future Projects; these are dealt with below.

Estimation of Impact, and the five-year substantive review

The Applicant refers to a five year substantive review (5YSR; document R.3836), in which a “baseline” has been compared to recent survey data, for example in terms of particle size distribution (PSD) and macrofaunal presence across the dredged areas and adjacent “context” areas. Firstly it should be noted that the few years of dredging considered in the report are at lower levels than the levels of aggregate extraction proposed or projected in the licence. This makes projections of future impact difficult to infer from the data presented.

In addition, Bedwyn Sands has been dredged since 2008, while NMG has been dredged since 2011, meaning that the 2016/17 “baseline” considered in the 5YSR is far from an appropriate baseline. Therefore, it is not possible to know what damage may have been caused to the habitat feature or associated communities (including *Sabellaria*) since dredging began, or whether ongoing dredging is preventing re-establishment.

Figure 15 of the 5YSR demonstrates poor sampling methodology which is not sufficient to capture changes in macrofaunal assemblages due to very low number of sampling points for

macrofauna within the dredged area. Therefore, there is no real scope for a robust comparison between dredged and undredged areas. The Environmental Statement states (in relation to the 5YSR) that “*In 2020, the only grab sample stations which displayed any notable changes in community structure and abundance were limited to those outside the Renewal Areas.*” This is not surprising given that only two macrofaunal samples were taken within the renewal areas, and one of those was within an exclusion area.

When looking at PSD and macrofaunal assemblages between dredged/undredged areas, the sampling points within the licence area should include specific targeting of areas that have been dredged (as shown by vessel tracking) rather than only random placement in areas that may not have been dredged. In addition, more macrofaunal sampling should be undertaken within the dredged areas to compare with adjacent context areas.

The 5YSR states that “*S. alveolata was also found at stations 341 and 376 however, at each station, only a single individual was recorded and therefore S. alveolata was not found in significant numbers. Despite station 376 being within the Bedwyn Sands Licence area, dredging activity is not considered to impact S. alveolata at either of these locations due to the low numbers of S. alveolata recorded and the species is not considered to constitute an Annex 1 reef feature in these locations.*” However, figure 14 of the 5YSR shows that no sample was taken at station 376 in 2017 so the potential impact of dredging on *Sabellaria* is unknown, particularly as limited sampling in areas of low lying *Sabellaria* reef may not be expected to find many individuals. Furthermore, as dredging has occurred at Bedwyn Sands for many years prior to the “baseline” monitoring, it is not clear if *Sabellaria* has previously been impacted and is now being prevented from recovering.

The Environmental Statement states that: “*The recoverability of benthic resources following the cessation of dredging is influenced by several environmental factors including sediment type and hydrodynamics (e.g. Foden et al., 2009). Generally, it occurs faster in unstable dynamic environments such as shallow water mobile sands where typical recovery times range from a few months to two to four years. Conversely, for stable environments, such as deep-water stable gravels, recovery can take up to 15 years due to the presence of long-lived species (Tillin et al., 2011).*”

It is not clear how recovery times are impacted by multiple disturbances, particularly where the depth of sediment removed is high. In addition to these cumulative effects of multiple potential passes of a dredger, recovery may not occur until several years after the end of the licence period (over 15 years), which itself may be further extended and is an extension from the beginning of dredging in 2008 and 2011. Therefore, the overall period of impact may be considered to be in excess of thirty years. Data are not available on the impacts of such long-term dredging activities, either for designated habitat features or the macrofaunal communities. Therefore, a precautionary approach is required in projecting biodiversity impacts from this Proposal.

Severn Estuary SSSI

As outlined in the citation for the Severn Estuary SSSI, “*the immense tidal range (the second highest in the world) and classic funnel shape make the Severn Estuary unique in Britain and very rare worldwide*”, and “*the intertidal zone of mudflats, sand banks, rocky platforms and saltmarsh is one of the largest and most important in Britain*” (Natural England, 2023).

There are several operations requiring Natural England’s consent:

- The killing or removal of any wild animal ['animal' includes any mammal, reptile, amphibian, bird, fish or invertebrate; this will occur through entrainment in the draghead];
- Modification of the structure of watercourses (eg rivers, streams, springs, ditches, dykes and drains), including their banks and beds, as by re-alignment, re-grading and dredging;
- Extraction of minerals, including peat, shingle, sand and gravel, topsoil, subsoil, lime, limestone pavement, shells and spoil.

These highlight the potential for harm to an area of intertidal flats and banks that is “*one of the largest and most important in Britain*” (Natural England, 2023). In addition, in the listed “Views About Management” of the site, it is stated that “*The sediment budget within the estuarine or coastal system should not be restricted by anthropogenic influences*”. As outlined above, in relation to designated features of the SAC, there are questions around previous calculations of the sediment budget, how this relates to Holocene infill, and what the implications are in the context of the sediment-starved area downstream of the sediment transport pathway. Answers to these questions should also be sought in relation to potential harm to the SSSI.

Marine fish assemblage of the Severn Estuary SAC

Whiting (*Merlangius merlangus*) is important in its own right as a component of the marine fish assemblage of the SAC (as part of the over-arching *Estuaries* feature), but also as a component of the regional foodweb. The Applicant has identified Environment Agency TraC data indicating relatively high otter trawl catches of whiting in the vicinity of the licence areas, and have also highlighted that whiting “*is considered highly abundant, reaching a peak in the inner Severn Estuary between September and mid-November (Henderson and Bird, 2010; Henderson, 2019). The Severn Estuary is also considered a nursery ground for whiting (Ellis et al., 2012) [...]*” (Environmental Statement page 107).

However, based on a Marine Aggregate Levy Sustainability Fund study, the Applicant has concluded that the “*mobile nature of the majority of fish species and the widespread availability of prey throughout the region, together with the fact that most species are opportunistic and generalist feeders, means that most are not reliant on a single prey item. Therefore, a change in dietary composition as a result of aggregate dredging may not be damaging to the fish population as the majority of species are likely to switch to alternate prey sources in the event of an impact on their preferred prey, providing sufficient biomass is available to support them*” (Environmental Statement section 9.3.1).

It is not clear that the Applicant has thoroughly considered the potential impacts to such fish species (e.g. whiting, cod) of reduced prey availability in an area thought to be relatively “impoverished” of benthic fauna – particularly in terms of the aggregate dredging activities reducing resilience of fish species to other exogenous pressures, which may cumulatively impact upon their fitness.

On page 486 of the Environmental Statement document, the Applicant has stated that “*Local trawlers catch plaice, turbot, whiting and rays from the [Severn Estuary]’s sandbanks*”. Welsh Government will be able to advise on fishing activity in Welsh waters, but it is important to note that the operation of mobile fishing gear has not been permitted in the English waters of the Severn Estuary since the introduction of D&S IFCA’s Mobile Fishing Permit Byelaw in January 2014, and tidal conditions limit the operation of fishing vessels in much of the area throughout the year.

D&S IFCA's remaining concerns regarding the marine fish assemblage relate primarily to impacts on sandeel (*Ammodytes tobianus*), which is important in its own right as a component of the marine fish assemblage of the SAC (as part of the over-arching *Estuaries* feature), but also as a key component of the regional foodweb.

Page 133 of the Applicant's Environmental Statement states that "[...] sandeel are likely to be present, in at least low densities, in most areas of suitable habitat across Bedwyn Sands and NMG", while on pages 133-134 the Applicant states that "During aggregate dredging, there is the potential for fish and fish eggs to be directly taken up by the action of the draghead. Dredging often takes place during daytime, and sandeel would thus often be in the water column when dredging takes place, when they can move away from the direct impact. However, sandeel would very frequently be buried in the sediment (whilst resting, during the night and in the colder autumn and winter months). Thus, the likelihood of sandeels being taken up by the dredger is fairly high."

It is important to note that dredging is proposed to occur on a near-continuous 24/7 schedule, meaning that there is substantial risk of entrainment of sheltering sandeel if present in the area. Furthermore, a typical startle response in sandeel leads to burial behaviours, meaning that entrainment during the daytime remains a considerable risk if sandeel are present.

The Applicant goes on to state: "Based on the above information, sandeel are likely to be present, in at least low densities, in most areas of suitable habitat across Bedwyn Sands and NMG. In terms of sandeel eggs, as outlined above, Bedwyn Sands and NMG predominantly consists of potential sandeel 'preferred' habitat sediment. Sandeel spawning is understood to take place between November and February (Cefas, 2001). Should spawning take place on the areas of suitable seabed within Bedwyn Sands and NMG, and dredging coincide with the spawning season, then there is a potential for eggs to be taken up by the draghead in the area of active dredging, and consequently eggs could be lost (i.e. eggs are highly sensitive to uptake). Overall, it is considered that in any given year or season, relatively small areas of Bedwyn Sands and NMG are likely to be affected"

If present, entrainment sensitivity would likely be high, and it is clear that there is not sufficient data to describe the actual distribution of sandeel in the area. Therefore, though only relatively small areas of the licence areas are likely to be affected, it is not clear what proportion of habitat containing sandeel is likely to be affected.

Finally, on page 87 of the Environmental Statement, the Applicant states that "Individuals entrained are not necessarily killed. Some may survive the entrainment process and be returned to the sea in outwash or during screening. The proportion of individuals that escape, and their subsequent survival rate, is not known (Tillin et al., 2011)." As there are such large uncertainties here, a precautionary approach should assume that all individuals that are entrained are killed. This may have implications for the conclusion of the assessment. Depending on the outcome of the final Appropriate Assessment with regard to sandeel, the Applicant may need to consider knock-on effects on bird species that use sandeel as a source of food (particularly those bird species that are designated under the Special Protection Area).

Monitoring and interpretation of data

If this Project is licenced, then ongoing monitoring and interpretation may benefit from additional approaches. For example, in Figure 6 of report R2807 (Bedwyn Sands Monitoring 2015 and 2016 - Years 8 and 9 of Monitoring Programme) the applicant presents Folk

trilinear plots for PSA samples from surveys between 2009 to 2016. However, it is difficult to assess any potential interannual change for a given sampling location, and such data may be better presented with a trilinear plot for each sampling location, showing each year of data as an individual point on the same plot. Ease of interpretation should be considered when presenting any monitoring data.

A related point is that the PSA analysis presented in R2807 only has two sampling points within the extraction area (one of which is in an exclusion zone), with multiple sampling locations outside of the extraction area. Future analysis of both PSA and macrofauna is likely to benefit from more thorough sampling across dredged areas; this could involve multiple samples from individual sampling points, which would help in quantifying existing fine-scale spatial variation in both PSA and faunal assemblages, and in distinguishing this from temporal change in these variables.

Also in report R2807, the Applicant presents data showing the bathymetry of the licence area, and how this has changed over a specified time period. However, this is not contextualised in relation to the location of aggregate dredging (either within that year or cumulative dredging activity over n preceding years). Based on the data available to the Applicant it should be possible to present data showing bathymetry change as a function of dredging effort over the sampled area. This would provide additional useful context to regulators when considering the potential impacts on designated habitat features.

References

- Countryside Council for Wales, and Natural England. 2009. Severn Estuary SAC, SPA and Ramsar Site. Natural England and Countryside Council for Wales' advice given under Regulation 33 (2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended.
- HR Wallingford. 2003. Dredging Sand from North Middle Grounds (Areas 455 and 459) and Bedwyn Sands, Welsh Grounds. Environmental Statement. Report EX 4574.
- Natural England. 2023. SSSI Citation for Severn Estuary SSSI, available at <https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1002284&SiteName=severn&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=>.