



Burnham, Berrow and Brean Angling Zone in Devon & Severn IFCA's District



Shore Angling (2016 – 2017) Report

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1. Introduction

Recreational Sea Angling (RSA) is a popular sport, with approximately 8.7 million fishers taking part in recreational fishing in Europe (Roberts *et al.*, 2017). It is increasingly being recognised as an essential part of the economic structure within the leisure industry in the UK (Hood-Cree, 2010). A report by Defra on the 'Sea Angling 2012' project estimated that in 2012 there were 884,000 sea anglers in England, with the sport worth approximately £1.23 billion per year to the UK economy. The angling trade includes manufacturers, wholesalers and companies trading in angling tackle and equipment (Armstrong *et al.*, 2013) as well as having economic benefits to coastal tourism through boat charters and accommodation. Sea Angling 2012 also identified the social benefits of sea angling, which provides a sense of place and community, allows people to experience nature and improves individuals' well-being.

Devon and Severn Inshore Fisheries and Conservation Authority (D&S IFCA) has a duty to seek to balance the different needs of persons engaged in the exploitation of sea fisheries resources in its District. RSA was one of three core work areas in D&S IFCA's Annual Plans between 2012 and 2015. Following the publication of its first Recreational Sea Angling Strategy, D&S IFCA sought to introduce fisheries management that would proactively develop the sector. Initial scoping of potential sites was carried out with the assistance of the RSA representatives on the IFCA. Three potential pilot study areas were identified to assess the impact of introducing management measures to improve sea angling: the Emsstrom wreck site close to Torbay, the Skerries Bank in Start Bay and Burnham, Berrow and Brean beaches in Somerset.

Burnham, Berrow and Brean beaches in Somerset form a continuous seven mile stretch of sand and mudflats. Fishing is possible from the sea wall in Burnham at high tide, whilst beach casting is popular along the rest of the shoreline. Berrow and Brean are popular sites for more experienced anglers, who often fish at night. Species targeted here include cod, codling, conger, whiting, sole, flounders, thornback rays and bass. This area is also popular with a private boat owners' sea angling association which operates out of Burnham-on-Sea. These beaches now lie within an area that is subject to spatial and temporal prohibitions on certain netting types under the Netting Permit Byelaw conditions which were introduced in 2018.

No commercial activity is known to occur in the vicinity of Burnham-on-Sea, Berrow and Brean. Occasional stake nets had been reported below the Lower Light on Burnham beach and stakes had been noted by boat users at the entrance to the Parrett. Stake nets were thought to occur periodically around Brean Down and a gill net fishery for salmon occurred in the 1980s around this area; these reports pre-date the introduction of the Netting Permit Byelaw. Due to the low level of commercial activity in the area, the Authority held a series of consultation events over a six-week period during 2014, before the development of the Netting Permit Byelaw. This involved a series of questionnaires and workshops with stakeholders on the proposal to develop RSA interests in Burnham, Berrow and Brean by removing longlining and monofilament netting activities along this stretch of coastline (Figure 1).

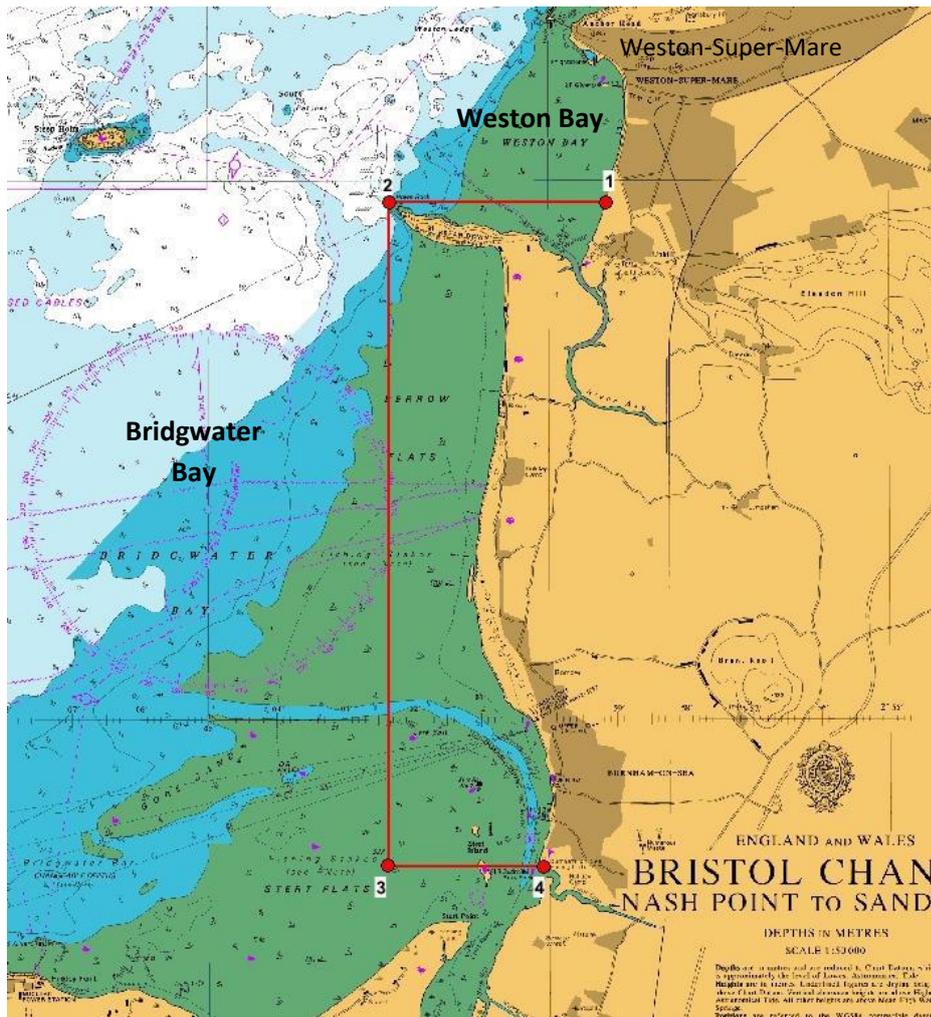


Figure 1. Position of the Burnham, Berrow and Brean Angling Zone

The consultation responses received suggested that the initial assumption of low commercial activity was correct as no specific concerns were raised by the commercial sector. As a result of the consultation the Authority agreed to the establishment of a voluntary Code of Conduct for the Burnham, Berrow and Brean beaches. The code aimed to promote and protect the area for current and future angling activities. The Code of Conduct states that no netting or longlining should occur within the Angling Zone (Figure 1). In addition, minimum sizes and non-retention species must be adhered to, and all fish must be handled with care.

In order to supplement anecdotal information gained through the stakeholder engagement phase and to provide a baseline for monitoring the impacts of implementing small-scale spatial management to benefit the RSA sector, D&S IFCA determined that detailed information regarding the use and compliance of the site was required. This would allow the IFCA to understand how different sectors use the site throughout the year and monitor compliance with the voluntary code of conduct.

2. Methodology

Data presented in this report were obtained through shore-based surveys conducted at Burnham, Berrow and Brean beaches between February 2016 to February 2017. Surveys were conducted once a week recording shore angling activity levels. A total of 22 surveys

were carried out across all three sites. It should be noted that, during the majority of the surveys, all three locations were surveyed and therefore the survey time was split between Berrow, Brean and Burnham. Therefore, a total of 109 visits were carried out during the survey period (45 to Burnham, 33 to Berrow, and 31 to Brean).

The number of shore anglers and rods were recorded as well as any other fishing activity or sightings of commercial, charter and private RSA boats observed from the shore. Interviews with anglers were conducted where possible to obtain data on fishing effort, species targeted, compliance and awareness of the Angling Zone and Code of Conduct. Kruskal-Wallis tests were used to assess differences in angling effort between locations, and to assess differences in angling effort between seasons within locations. For these analyses, seasons are defined as follows: Spring is March to May, Summer is June to August, Autumn is September to November and Winter is December to February. The proportion of recreational anglers targeting specific species were also calculated for each site. All plotting and analyses contained in this report were completed in R statistical software, version 4.0.4 or later (R Core Team, 2021).

3. Results

3.1 Angling effort, location and seasonality

Angling effort was higher at Burnham (2.10 anglers per survey hour) than at Berrow (1.26 anglers per survey hour) and Brean (0.86 anglers per hour) (Kruskal-Wallis $X^2=26.55$, $p<0.001$). Pairwise comparisons using Dunn's test indicated that activity varied significantly between all three sites (Berrow - Brean $p<0.001$, Berrow - Burnham $p<0.001$, Brean - Burnham $p<0.001$). A total of 138 anglers were observed at Burnham across the entire survey period, using 230 rods. At Berrow 45 anglers were observed using 77 rods and at Brean 33 anglers were observed across the entire survey period using 59 rods. The marked increase may be the result of a competition taking place in Burnham in August 2016 where 22 anglers were seen during one survey. Anglers were seen on 27 out of 71 visits: 16 out of 31 in Burnham, 10 out of 20 in Berrow, and 1 out of 10 in Brean during entire survey period.

Though angling activity appears to vary seasonally across all three sites (Fig.2), there was substantial within-season variability in number of anglers, and seasonal differences in mean number of anglers per hour were not statistically significant at either Burnham (Kruskal-Wallis $X^2=3.16$, $p=0.368$), Berrow (Kruskal-Wallis $X^2=0.15$, $p=0.985$) or Brean (Kruskal-Wallis $X^2=1.20$, $p=0.754$; Fig.2)

3.2 Target species

During the interviews, anglers indicated that a wide variety of species are targeted across Burnham, Berrow and Brean with cod being the most important species for all three sites (Fig.3). Bass, codling and sole are also popular species targeted at Berrow.

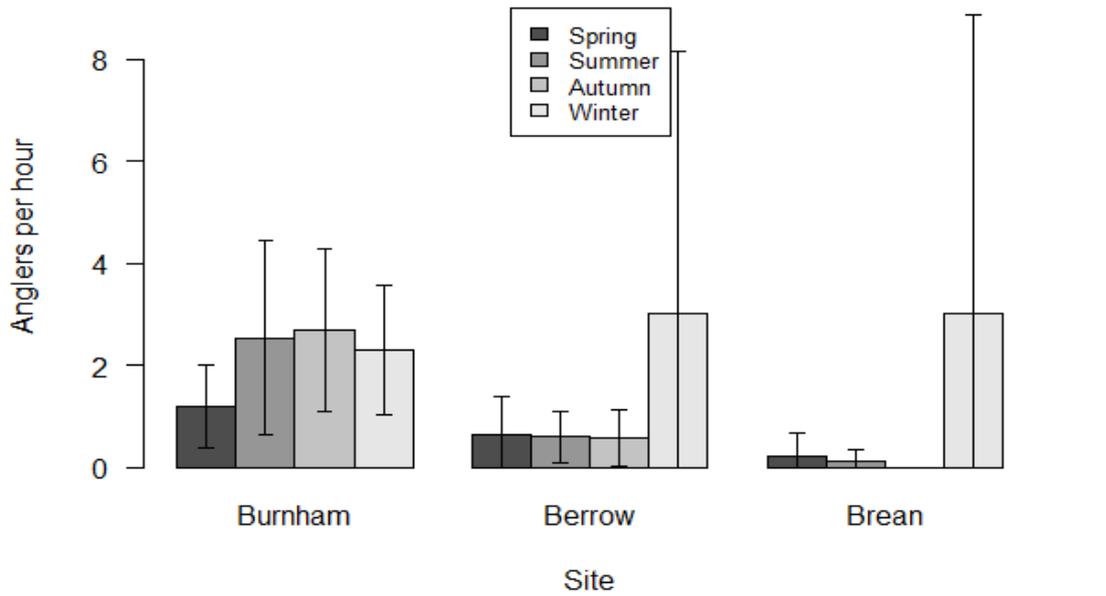


Figure 2. Seasonal mean number of anglers per hour at each site, showing 95% confidence intervals as error bars.

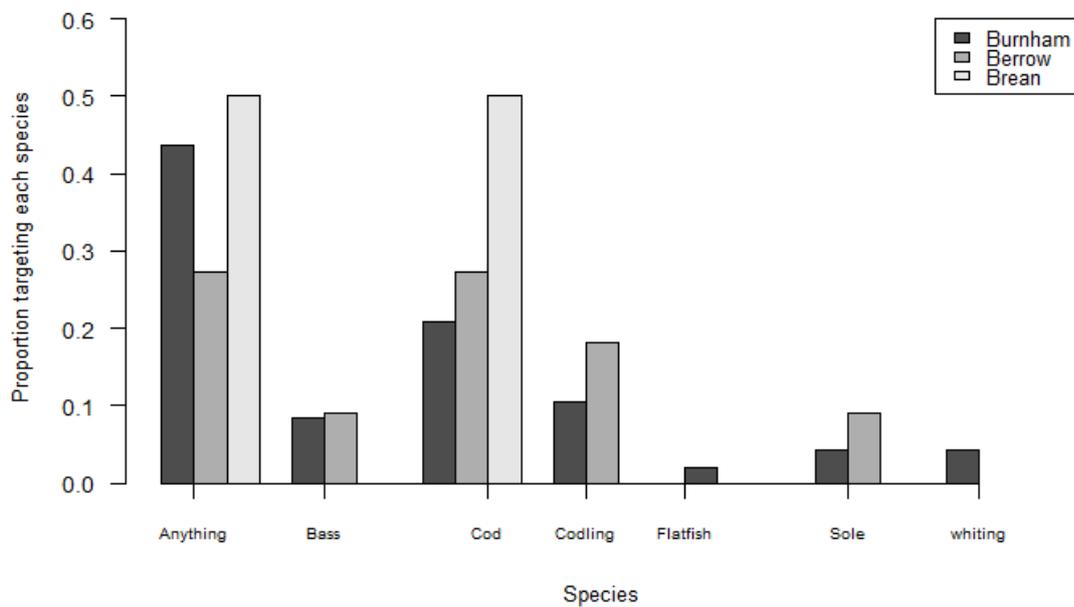


Figure 3. Proportion of anglers targeting each species at Burnham, Berrow and Brean, as identified in 48,11, and 2 interviews at each site respectively.

3.3. Angler behaviour

Approximately half of recreational sea anglers interviewed (32 out of 61) advised they were local to the area, with over 40% of anglers (26 out of 61) confirming they have been fishing these sites for several years. Approximately one third of interviewed anglers (22 out of 61) fish the areas for both sport and food. At Berrow one angler expressed concerns that cod and whiting had become patchier over the years. However, at Burnham, there were

conflicting reports in terms of fish abundance, with six anglers expressing concerns that abundance had decreased, four anglers advising fish abundance had increased (particularly cod) and six anglers advising that fish abundance either hasn't changed or is variable.

Interviews included sections on compliance and on the level of knowledge of the work of D&S IFCA. Out of 58 respondents, a similar proportion was aware (48%) compared to unaware (50%) of D&S IFCA. Of the 28 individuals that were aware of D&S IFCA, 8 belonged to a Sea Angling Club (14% of all respondents). The level of awareness of the Angling Zone and the Code of Conduct was low: only 21% of respondents were aware of the Angling Zone and the Code of Conduct.

4. Discussion and Conclusions

Recreational Sea Angling (RSA) is a highly participatory activity with significant economic and social benefits. However, increased demands from multiple sectors, including marine leisure activities, recreational and commercial fishing, means that understanding and managing these various sectors is essential in order for fisheries management to be successful. This is particularly important when there is conflict between the sectors (Arlinghaus *et al.*, 2019; Brownscombe *et al.*, 2019). Several studies suggest that involving stakeholders and adopting a co-management approach to inshore fisheries management leads to a sustainable fishery (Costanza *et al.*, 1998; Rodwell *et al.*, 2014; Ostrom, 2015).

A common perception amongst recreational fishers is that commercial netters use large nets that take up too much space and remove a large proportion of the fish, therefore damaging their RSA opportunities (Boucquey, 2017). However, during the initial consultations the level of commercial activity occurring was thought to be low and the introduction of the voluntary Code of Conduct discourages commercial longlining and netting. Between data collection and the writing of this report, the Netting Permit Byelaw has been introduced. This Byelaw and associated Conditions prohibit the use of fixed nets for a significant section of the site between 1 October to 31 March every year (Annex 1). In addition, there is no access for netting landward of the River Axe (Somerset) closing line, other than with a seine net in accordance with paragraph 3.2 of the Netting Permit Conditions (Annex 2). This legislation will therefore help to reduce any conflict between recreational fishers and commercial netters.

Due to the importance of the area for several adult and juvenile fish species, the Code of Conduct was thought to be the most appropriate method of management at the time. The introduction of the Netting Permit Byelaw in addition to the Code of Conduct may help reduce any conflict between recreational fishers and commercial netters and further the development of RSA opportunities. However, the level of awareness of the Code of Conduct and Angling Zone is low. This general lack of knowledge within the RSA sector may lead to increased non-compliance undermining any effectiveness of the Code of Conduct.

The lack of awareness may be as a result of few individuals being aware of the work of D&S IFCA, and also few individuals being members of a sea angling club. Sea angling clubs and angling trusts can be pivotal stakeholders in the engagement process with the RSA sector, as these types of organisations campaign on environmental and conservation issues and advocate best fishing practices within the angling community (Guckian *et al.*, 2018; Arlinghaus *et al.*, 2019). Studies have shown that education, fisher participation in the management process and positive perceptions of conservation can all contribute to

increased compliance (Smallwood and Beckley, 2012; Arias and Sutton, 2013; Pita *et al.*, 2013).

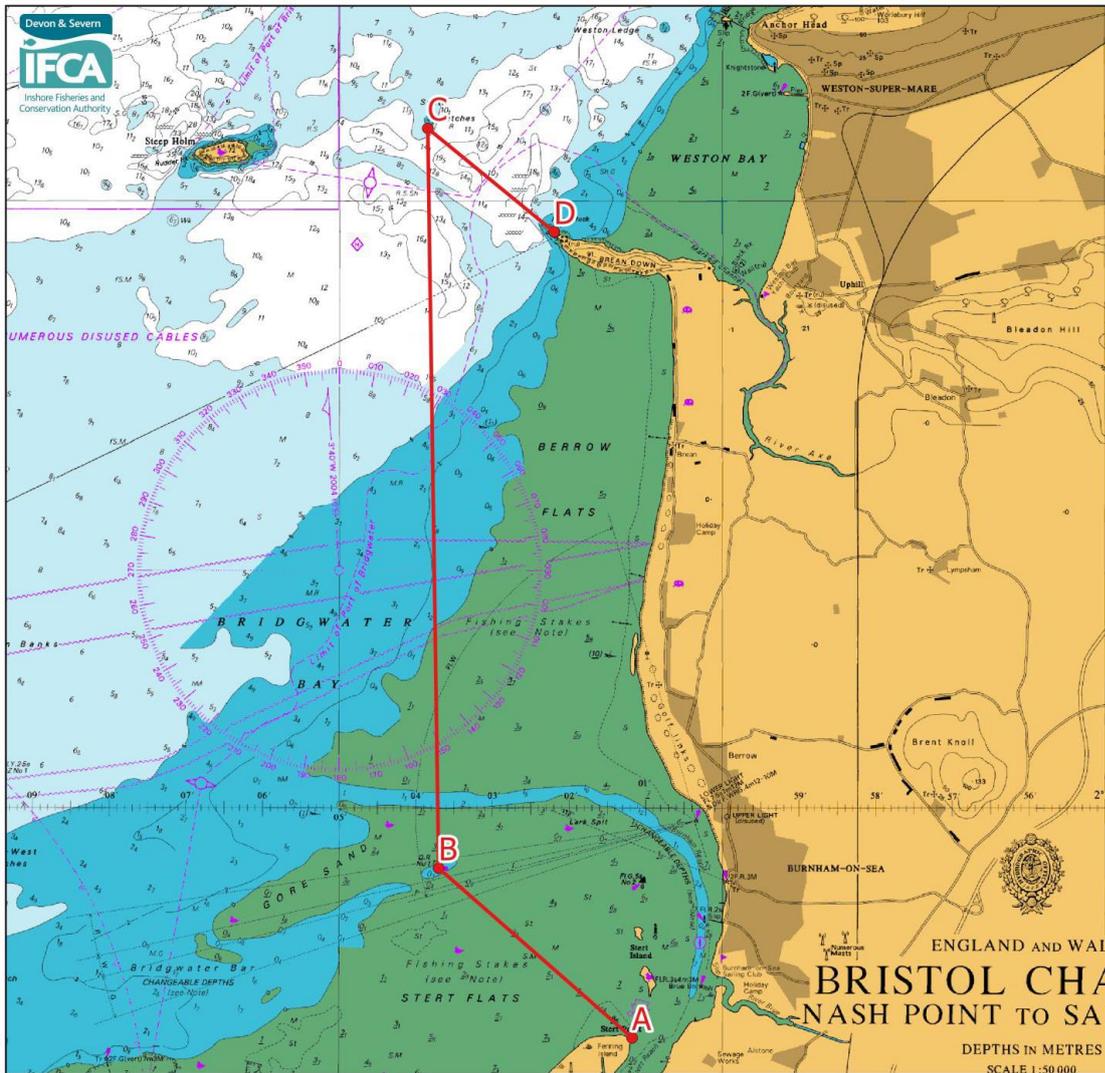
This shore report is the first step in monitoring the Burnham, Berrow and Brean Angling Zone. It was beyond the scope of this report to undertake any socio-economic or environmental assessment of the benefits and impacts of the different activities, though such an assessment would help to balance the costs and benefits of the exploitation of these sea fisheries resources across multiple user groups. In addition, further engagement work is required in order to account for the Netting Permit Byelaw conditions and how the use of the site by anglers and commercial fishers may have changed under the Code of Conduct vs the Netting Permit Byelaw. The comparison will provide valuable information on changes in use and perceived value of the area, and whether the current management measures are sufficient in promoting RSA opportunities, helping to balance the needs of multiple users of these resources. D&S IFCA are in the process of drafting a call for information for the Skerries Bank Angling Zone in order to repeat the engagement work that took place in 2014. Lessons learned from this engagement process will inform further development of D&S IFCA's RSA work, potentially including a similar approach to the Burnham, Berrow and Brean Angling Zone.

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Annex 1: Copy of a section of Annex 5 of the Netting Permit Byelaw conditions that is relevant to Berrow Flats.

Annex 5 Chart of Berrow Flats - No access to fixed nets in accordance with paragraph 3.6 except where paragraph 4.1 of the Netting Permit Conditions applies

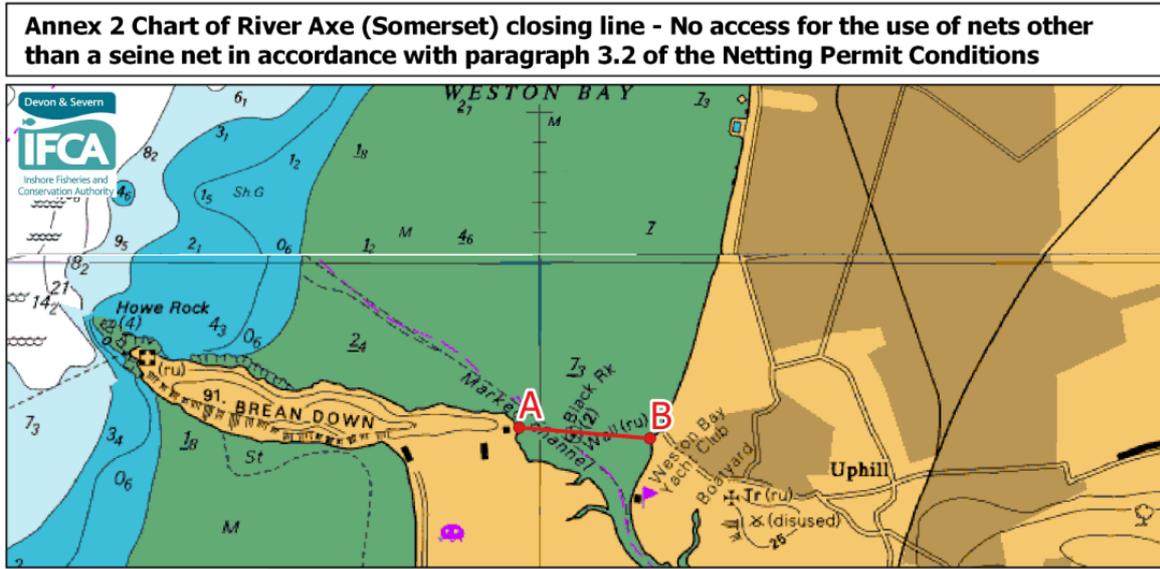


— No Netting Area

Berrow Flats closing line latitude and longitude positions:

Point	Latitude	Longitude
A (Stert Point)	51° 13.102'N	003° 01.177'W
B (Stert Flats)	51° 14.500'N	003° 03.700'W
C	51° 20.600'N	003° 03.850'W
D (Brean Down)	51° 19.747'N	003° 02.199'W

Annex 2: Copy of a section of Annex 2 of the Netting Permit Byelaw conditions that is relevant to the River Axe (Somerset).



— Estuary closing line

River Axe (Somerset) closing line latitude and longitude positions:

Point	Latitude	Longitude
A	51° 19.450'N	003° 00.108'W
B	51° 19.417'N	002° 59.418'W