Marine Conservation Zone Assessment

Site name: Otter Estuary MCZ
UKMCZ0065

Protected feature(s):
Intertidal coarse sediment
Intertidal mud

Fishing activities assessed at this site:
Stage 1 Assessment
Seine nets & other: Beach seine/ring

Devon & Severn IFCA
Inshore Fisheries and Conservation Authority

D&S IFCA Reference
OTT-MCZ-005

Contents

Version control history			
Author/ Reviewer	**Date**	**Comment**	**Version**
Sarah Curtin	October 2021	Draft assessment	0.1
Sarah Curtin	February 2021	Updating assessments with call for information data	0.2
Sarah Clark	January 2023	Final review	1.0

1. Introduction

This assessment has been undertaken by Devon & Severn Inshore Fisheries and Conservation Authority (D&S IFCA) in order to document and determine whether management measures are required to achieve the conservation objectives of marine conservation zones (MCZs). The IFCA's responsibilities in relation to management of MCZs are laid out in Sections 124 to 126, & 154 to 157 of the Marine and Coastal Access Act 2009.

2. MCZ site name(s), and location

The Otter Estuary MCZ is a small inshore site covering an area of approximately 0.11km^2. The estuary is located on the south coast of Devon near the town Budleigh Salterton. The site extends from the mouth of the river up to the aqueduct near East Budleigh.

Although the Otter Estuary is small, it is an important ecosystem supporting a range of habitats and wildlife. It is an essential link from the sea to the River Otter where it acts as a migratory route for European eel, Atlantic salmon, Sea trout and Shad. The mouth of the estuary is dominated by a shingle bank of intertidal coarse sediment extending from the west coast of the river. The sheltered areas behind the bank consist of highly productive intertidal mudflats and saltmarshes.

The Otter Estuary is one of the most extensive saltmarsh networks in Devon, providing important foraging grounds for wading birds and wildfowl and a sheltered refuge from high tide. Several species of specialised salt and flood-tolerant flowering plants can be found within the saltmarshes as well as an abundance of worms, crustaceans, and tiny snails.

The intertidal muds are a highly productive habitat and support a diverse range of species including ragworms, mudshrimps and the commercially important cockle. At low tide these areas form vital feeding grounds for wading and migratory birds, while at high tide flatfish and others migrate to these areas to forage for food (Defra, 2019).

Further information regarding the MCZ and its protected features can be found in the Otter Estuary MCZ Factsheet.

3. Feature(s) / habitat(s) of conservation importance (FOCI/HOCI) and conservation objectives

Table 1 - Protected features relevant to this assessment

Feature	General management approach
Intertidal coarse sediment	Maintain in favourable condition
Intertidal mud	Maintain in favourable condition

The conservation objectives for these features are that they remain in favourable condition.

4. Gear/feature interaction in the MCZ categorised as 'red' risk and overview of management measure

None - There are no gear/feature interactions in the MCZ that are categorised as 'red' risk.

5. Activities under consideration

- Seine nets & other: Beach seine.

See Curtin (2021) for more information regarding fishing activities occurring in the Otter Estuary MCZ.

6. Is there a risk that activities are hindering the conservation objectives of the MCZ?

Yes,
Evidence:
To determine whether each pressure is capable of affecting (other than insignificantly) the site's feature(s), the sensitivity assessments and risk profiling of pressures from the advice on operations section of the Natural England conservation advice package were used (Natural England, 2021). Table 22 shows the fishing activities and pressures included for assessment. The justifications for the pressures chosen for inclusion in this assessment can be seen in Annex 2.

Table 2 - Fishing activities and pressures included in this assessment.

Activity	Pressures
Seine nets and other: Beach seine	Abrasion/disturbance of the substrate on the surface of the seabed Changes in suspended solids (water clarity) Penetration and/or disturbance of the substratum below the surface of the seabed including abrasion Smothering and siltation rate changes (Light)

The relevant targets for favourable condition were identified within Natural England's conservation advice supplementary advice tables (Natural England, 2021). Table 33 shows which targets were identified as relevant to the activity assessed. The impacts of pressures on features were assessed against these targets to determine whether the activities causing the pressures are compatible with the site's conservation objectives.

Table 3 - Relevant favourable condition targets for identified pressures.

Feature	Attribute	Target
Intertidal coarse sediment; Intertidal mud;	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of communities
	Extent and distribution	Maintain the total extent of feature and spatial distribution
	Structure and function; presence and abundance of key structural and influence species	(Maintain OR Recover OR Restore) the abundance of listed species to enable each of them to be a viable component of the habitat
	Structure; species composition of component communities	Maintain the species composition of component communities

7. Can D&S IFCA exercise its functions to further the conservation objectives of the site?

Yes,
Evidence: Monitoring and Control Arrangements

- Enforcement of current byelaws
- Monitoring and review of current byelaws
- Monitoring of fishing activity in the Estuary
- Changes can be made to the permit conditions, via consultation, if the D&S IFCA deems it to be necessary. This could include limitations or spatial/temporal restrictions. The permitting system allows for adaptive management.

8. Referenced supporting information to inform assessment

Abrasion, removal of target and non-target species

The effects of fishing on a benthic community will depend on the type of gear used, the nature of the substratum and the sensitivity of individual species concerned (Lamberth *et al.*, 1995). Ring nets are used within the water column and theoretically would not interact with the features considered. Beach seine nets may interact with the features considered when the net is drawn ashore. Possible direct effects of a net being dragged over the seafloor include damage to sedentary organisms or entrapment, and removal of non-target species. Indirect effects include alteration of substratum, and sediment resuspension which could result in smothering (Caddy, 1973; de Groot, 1979).

Lamberth *et al.,* (1995) looked at the impact of beach seine netting on the benthic flora and fauna of False Bay. They found no difference in the abundance or species composition between sites inside and outside the seine area. Macrophyte and invertebrate bycatches were infrequent as fishers try to avoid such catches due to reduced capture efficiency of target species. They therefore concluded that beach seine netting does not have a detrimental effect on the benthic flora and invertebrate fauna in False Bay.

Beach seine fishermen generally avoid netting in areas where there is rocky habitat and large quantities of suspended macrophyte as this can cause bottom snags and slow down the speed of the haul. Snagging can result in seine rolling reducing capture efficiency (Pierce *et al.*, 1990).

Beach seine nets are usually worked clear of the seabed or with very light contact, therefore any impacts of abrasion are thought to be minimal (Seafish, 2020). Due to the small quantities of substrate that would be disturbed, it is therefore not expected that the features will be affected (other than insignificantly).

9. In-combination assessment

Table 4 - Relevant activities occurring in or close to the site

Plans and Projects		
Activity	**Description**	**Potential Pressure(s)**
No other plans or projects known to be occurring within Otter Estuary MCZ	The impact of future plans or projects will require assessment in their own right, including accounting for any in-combination effects, alongside existing activities.	N/A
Other activities being considered		
Activity	**Description**	**Potential Pressure(s)**
Crab tiling	There is no evidence that this activity is occurring. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect	Abrasion/disturbance of the substrate on the surface of the seabed

Bait digging	There is no evidence that this activity is occurring. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect	Habitat structure changes – removal of substratum (extraction) Removal of target species Removal of non-target species Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion Smothering and siltation rate changes (Light) Genetic modification & translocation of indigenous species Introduction of microbial pathogens Introduction or spread of invasive non-indigenous species (NIS)
Hand working (access from land/access from vessel)	There is no evidence that this activity is occurring. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect	
Static – pots/traps: Pots/creels, cuttlepots, fish traps	As there is little to no level of this activity in the Otter Estuary MCZ, no in-combination effect thought to be possible. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect.	
Static – fixed nets: Gill nets, Trammels, Entangling	This activity is currently not permitted to take place within the Otter Estuary MCZ as it falls under the D&S IFCA Netting Permit Byelaw. In the estuary landward of the coordinates set out in Annex 1, Figure 3, a permit holder or named representative is not authorised to use any net other than a seine net. Therefore, no in-combination effect is thought to be possible. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect.	
Passive – nets: Drift nets (demersal)	This activity is currently not permitted to take place within the Otter Estuary MCZ as it falls under the D&S IFCA Netting Permit Byelaw. In the estuary landward of the coordinates set out in Annex 1, Figure 3, a permit holder or named representative is not authorised to use any net other than a seine net. Therefore, no in-combination effect is thought to be possible. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect.	
Seine nets and other; Shrimp push nets, fyke and stakenets, ring nets.	This activity is currently not permitted to take place within the Otter Estuary MCZ as it falls under the D&S IFCA Netting Permit Byelaw. In the estuary landward of the coordinates set out in Annex 1, Figure 3, a permit holder or named representative is not authorised to use any net other than a seine net. Therefore, no in-combination effect is thought to be possible. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect.	
Lines: Longlines (demersal)	As there is little to no level of this activity in the Otter Estuary MCZ, no in-combination effect thought to be possible. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect.	

Aquaculture	There is no evidence that this activity is occurring. Additionally, as the activities assessed (section 5) are not occurring, it is thought there is no in-combination effect	

D&S IFCA concludes there is no likelihood of significant adverse effect on the interest features from in-combination effects addressed within **Error! Reference source not found.**.

10. NE consultation response

N/A Natural England has not been consulted at this stage.

11. Conclusion

The activities assessed are not believed to be occurring within the MCZ. Therefore, D&S IFCA concludes that there is no significant risk of the activities hindering the achievement of the conservation objectives for Otter Estuary MCZ.

12. Summary table

Feature or habitat of Conservation interest	**Conservation objectives/ Target Attributes** (Natural England, 2021)	**Activity**	**Potential pressures from activity and sensitivity of habitats to pressures.** (Natural England, 2021)	**Potential exposure to pressures and mechanism of impact significance**	**Is there a risk that the activity could hinder the achievement of conservation objectives of the site?**	**Can D&S IFCA exercise its functions to further the conservation objectives of the site?** **If Yes, list management options**
Intertidal coarse sediment	Maintain the presence and spatial distribution of intertidal coarse sediment communities Maintain the total extent and spatial distribution of intertidal coarse sediment [Maintain OR Recover OR Restore] the abundance of listed species to enable each of them to be a viable component of the habitat Maintain the species	Commercial fishing; Seine nets and other: Beach seine/ring nets	• Abrasion/disturbance of the substrate on the surface of the seabed • Changes in suspended solids (water clarity) • Penetration and/or disturbance of the substratum below the surface of the seabed including abrasion • Smothering and siltation rate changes (Light) See Annex 2 for pressures audit trail	The effects of fishing on a benthic community will depend on the type of gear used, the nature of the substratum and the sensitivity of individual species concerned (Lamberth *et al.*, 1995). Beach seine nets may interact with the features considered when the net is drawn ashore. Possible direct effects of a net being dragged over the seafloor include damage to sedentary organisms or	Activities not believed to be occurring or occurring at a very low level. At the current levels of activity, D&S IFCA conclude that there is no significant risk of the activities hindering the achievement of the conservation objectives.	Yes, Management measures could include: • Enforcement of current byelaws • Monitoring and review of current byelaws • Monitoring of fishing activity in the Estuary • Changes can be made to the permit conditions, via consultation, if the D&S IFCA deems it to be necessary. This could include limitations or spatial/temporal restrictions. The permitting system allows for adaptive management. •

	composition of component communities			entrapment, and removal of non-target species. Indirect effects include alteration of substratum, and sediment resuspension which could result in smothering (Caddy, 1973; de Groot, 1979). Lamberth *et al.,*(1995) looked at the impact of beach seine netting on the benthic flora and fauna of False Bay. They found no difference in the abundance or species composition between sites inside and outside the seine area. Macrophyte and invertebrate bycatches were infrequent as fishers try to avoid such catches due to reduced capture efficiency		

Intertidal mud	Maintain the presence and spatial distribution of intertidal mud communities Maintain the total extent and spatial distribution of intertidal mud [Maintain OR Recover OR Restore] the abundance of listed species to enable each of them to be a viable component of the habitat Maintain the species composition of component communities	Commercial fishing; Seine nets and other: Beach seine/ring nets	• Abrasion/disturbance of the substrate on the surface of the seabed • Changes in suspended solids (water clarity) • Penetration and/or disturbance of the substratum below the surface of the seabed including abrasion • Smothering and siltation rate changes (Light) See Annex 2 for pressures audit trail	See above	See above	See above

13. References

Caddy, J. F. 1973. Underwater Observations on Tracks of Dredges and Trawls and Some Effects of Dredging on a Scallop Ground. Journal of the Fisheries Research Board of Canada, 30: 173–180. NRC Research Press.

Curtin, S. (2021) Otter Estuary MCZ Fishing Activity Report. Devon and Severn IFCA Report.

Defra. 2019. Otter Estuary Marine Conservation Zone factsheet. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915660/mcz-otter-estuary-2019.pdf.

de Groot, S. J. 1979. An assessment of the potential environmental impact of large-scale sand-dredging for the building of artificial islands in the North Sea. Ocean Management, 5: 211–232.

Lamberth, S. J., Bennett, B. A., Clark, B. M., and Janssens, P. M. 1995. The impact of beach-seine netting on the benthic flora and fauna of False Bay, South Africa. South African Journal of Marine Science, 15: 115–122.

Natural England (2021) Draft Conservation Advice for Otter Estuary Marine Conservation Zone (MCZ)

Pierce, C., Rasmussen, J., and Leggett, W. 1990. Sampling Littoral Fish with a Seine: Corrections for Variable Capture Efficiency. Canadian Journal of Fisheries and Aquatic Sciences - CAN J FISHERIES AQUAT SCI, 47: 1004–1010.

Seafish. 2022. Beach Seine. https://www.seafish.org/responsible-sourcing/fishing-gear-database/gear/beach-seine/ (Accessed 18 August 2020).

Annex 1: Site Map(s)

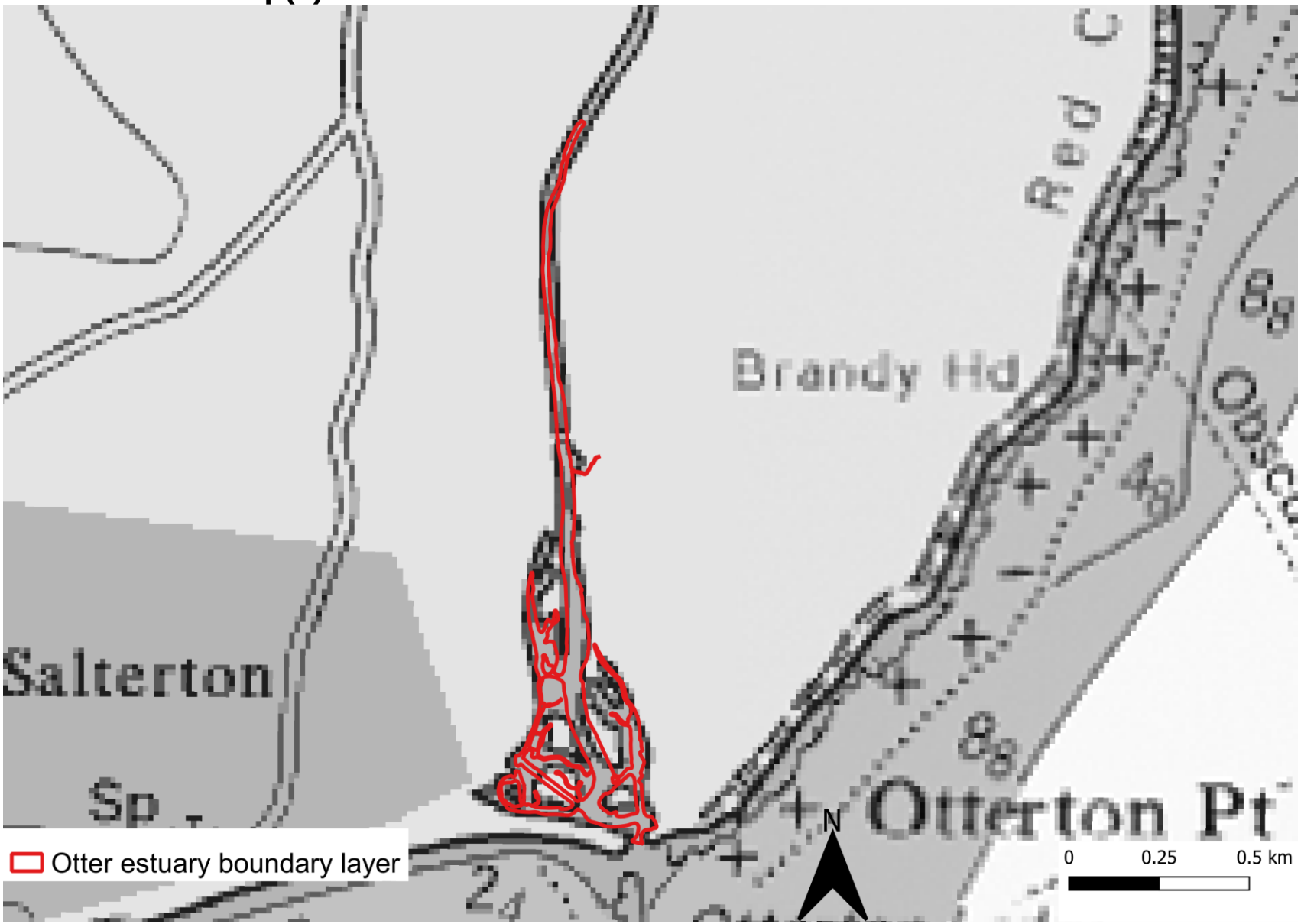


Figure 1 – Otter Estuary MCZ

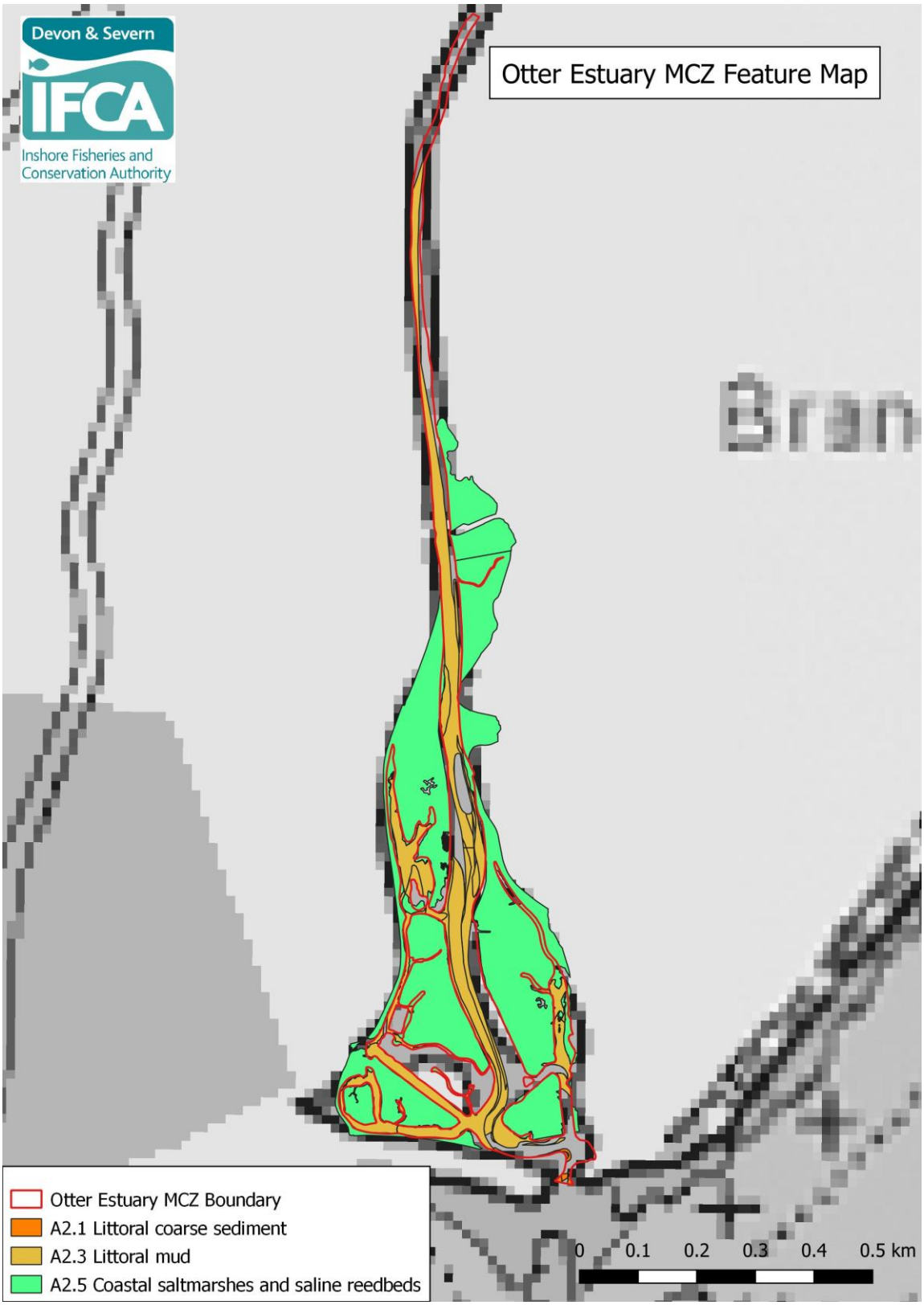
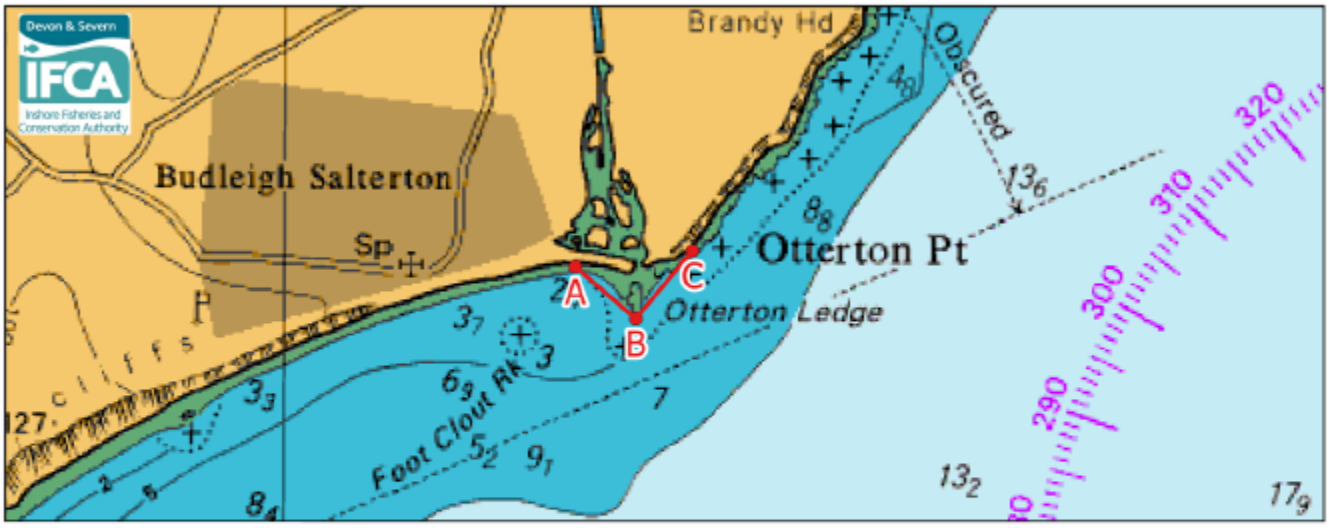


Figure 2: Extent of features, intertidal coarse, intertidal mud, and coastal saltmarshes and saline reedbeds) designated in the Otter Estuary MCZ

Annex 2 Chart of River Otter closing line - No access for the use of nets other than a seine net in accordance with paragraph 3.2 of the Netting Permit Conditions



Estuary closing line

River Otter closing line latitude and longitude positions:

Point	Latitude	Longitude
A	50° 37.791'N	003° 18.676'W
B (Otterton Ledge)	50° 37.626'N	003° 18.399'W
C (Otterton Point)	50° 37.821'N	003° 18.143'W

Figure 3: River Otter closing line latitude and longitude, from Annex 2 to the Netting Permit Byelaw. No access landward of the line to the use of nets other than a seine net in accordance with paragraph 3.2 of the Netting Permit Conditions.

Annex 2: Pressures Audit Trail

Fishing Activity Pressures: Seine nets	**Intertidal coarse sediment**	**Intertidal mud**	**Screening Justification**
Abrasion/disturbance of the substrate on the surface of the seabed	NS	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Changes in suspended solids (water clarity)	NS	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion	NS	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Removal of non-target species		S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Smothering and siltation rate changes (Light)	NS	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Deoxygenation	NS	NS	OUT - Not applicable
Hydrocarbon & PAH contamination	NA	NA	OUT - Not applicable
Introduction of light		NS	OUT - Not applicable
Introduction or spread of invasive non-indigenous species (INIS)		S	OUT – Insufficient activity levels to pose risk at level of concern
Litter	NA	NA	OUT – Insufficient activity levels to pose risk at level of concern
Nutrient enrichment	NS	NS	OUT - Not applicable
Organic enrichment	NS	NS	OUT - Not applicable
Physical change (to another sediment type)	S	S	
Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals)	NA	NA	OUT - Not applicable
Transition elements & organo-metal (e.g., TBT) contamination	NA	NA	OUT - Not applicable