

Marine Conservation Zone Assessment

Site name: Erme Estuary MCZ
UKMCZ0059

Protected feature(s):
High energy intertidal rock
Low energy intertidal rock
Moderate energy intertidal rock
Estuarine rocky habitats

Fishing activities assessed at this site:

Stage 1 Assessment

Seine nets & other: Beach seine



D&S IFCA Reference
ERM-MCZ-005

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Version control history			
Author	Date	Comment	Version
Sarah Curtin	October 2021	Draft assessment	0.1
	February 2022	Updated using other estuarine MCZ advice packages with similar habitat	0.2
	November 2022/ January 2023	Finalised assessment (J. Stewart) and review (S. Clark)	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 Erme Estuary MCZ is an inshore site of approximately 1km² in size. The Erme is located in South Devon and opens into the Western Channel and Celtic Sea region. The MCZ designation covers the whole estuary from the mouth of the river to the limits of the tidal influence near the village of Ermington. The MCZ falls within the Erme Estuary Site of Special Scientific Interest as well as overlapping with the Prawle Point to Plymouth Sound and Eddystone Site of Community Importance at the mouth of the river.

The wide variety of habitats found within the Erme Estuary support a large number of important species including several that are rare, such as the tentacled lagoon worm, *Alkmaria romijni*. This tiny bristleworm grows up to 5mm in length and creates and lives in tubes within the mud habitats of the estuary. These worms have tentacles around their mouths used for gathering food from the surrounding muddy sediments. The tentacled lagoon worm is particularly vulnerable to activities that cause changes in its habitat.

Estuaries create important areas for wading and migratory birds to feed and rest and form nurseries for juvenile species of fish. The large areas of mudflats and muddy gravel produce films of algae which become exposed at low tide, making them important foraging grounds for several species. The estuarine rocky habitats provide a hard surface for algae and animals to attach in an area dominated by sand and mud with variable salinity. At low tide these areas become foraging grounds for birds and crustaceans and at high tide they create shelter for juvenile species of fish.

At the mouth of the river exposed rocks provide a hard surface for mussels, limpets and barnacles to attach to in areas dominated by sediment and muddy gravel (Defra, 2019).

Further information regarding the MCZ and its protected features can be found in the Erme 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
High energy intertidal rock	Maintain to favourable condition
Low energy intertidal rock	Maintain in favourable condition
Moderate energy intertidal rock	Maintain in favourable condition
Estuarine rocky habitats	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.

Seine netting is permitted under the Netting Permit Byelaw permit conditions but has restrictions relating to length of net, limited catch for sandeels only, mesh size and deployment of the nets. However, there are no records of this currently occurring. See Curtin (2022) for more information regarding fishing activities occurring in the Erme 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 Removal of non-target species Smothering and siltation rate changes (Light)

It should be noted that no conservation advice package is currently available (November 2022) for the Erme Estuary MCZ. Therefore, relevant advice on operations and supplementary advice tables for other sites with similar features were used (Table 3) alongside considering site specific information.

Table 3 - Relevant favourable condition targets for identified pressures.

Feature	Conservation advice package used
High energy intertidal rock	No alternative CA package found, moderate energy intertidal rock used as proxy
Low energy intertidal rock	Dart Estuary MCZ
Estuarine rocky habitats	
Moderate energy intertidal rock	Devon Avon Estuary MCZ

Section 8 provides detail on the activity and literature review to support this assessment.

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). 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 (South Africa). 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 haul. Snagging can result in seine rolling, reducing capture efficiency (Pierce *et al.*, 1990). It is therefore unlikely that this activity will affect the rocky features of the site.

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 2 - 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 Erme 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 currently occurring. Additionally, as the	Abrasion/disturbance of the substrate on the

	activities assessed (section 5) are not believed to be occurring, it is thought there is no in-combination effect.	surface of the seabed
Bait digging	Activity is occurring, but only at low levels and limited locations. Additionally, as the activities assessed (section 5) are not believed to be occurring within the MCZ, it is thought there is no in-combination effect.	Habitat structure changes – removal of substratum (extraction)
Hand working (access from land/access from vessel)	Activity is occurring but at very low levels, additionally as the activities assessed (section 5) are not believed to be occurring, it is thought there is no in-combination effect.	Removal of target species
Static – pots/traps: Pots/creels, cuttlepots, fish traps	As there is little to no level of this activity in the Erme Estuary MCZ, no in-combination effect thought to be possible.	Removal of non-target species
Static – fixed nets: Gill nets, Trammels, Entangling	This activity is currently not permitted to take place within the Erme Estuary MCZ in accordance with D&S IFCA's 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.	Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion
Passive – nets: Drift nets (demersal)	This activity is currently not permitted to take place within the Erme Estuary MCZ in accordance with D&S IFCA's 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.	Smothering and siltation rate changes (Light)
Lines: Longlines (demersal)	As there is little to no level of this activity in the Erme Estuary MCZ, no in-combination effect thought to be possible. Additionally, as the activities assessed (section 5) are not believed to be occurring, it is thought there is no in-combination effect.	Genetic modification & translocation of indigenous species
Seine nets and other; Shrimp push nets, fyke and stakenets, ring nets	This activity is currently not permitted to take place within the Erme Estuary MCZ in accordance with D&S IFCA's 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.	Introduction of microbial pathogens
Aquaculture	There is no evidence that this activity is currently occurring. Additionally, as the activities assessed (section 5) are not believed to be occurring, it is thought there is no in-combination effect.	Introduction or spread of invasive non-native species (INNS)

D&S IFCA concludes there is no likelihood of significant adverse effect on the interest features from in-combination effects addressed within Table 2.

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 Erme 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
High energy intertidal rock	<p>Maintain the presence and spatial distribution of intertidal rock communities</p> <p>Maintain the total extent and spatial distribution of intertidal rock subject to natural variation in sediment veneer</p> <p>[Maintain OR Recover OR Restore] the abundance of listed species to enable each of them to be a viable component of the habitat</p>	<p>Commercial fishing;</p> <p>Seine nets and other: Beach seine/ring</p>	<ul style="list-style-type: none"> •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 •Removal of non-target species •Removal of target species •Smothering and siltation rate changes (Light) <p>See Annex 2 for pressures audit trail</p>	<p>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).</p> <p>Lamberth <i>et al.</i>, (1995) looked at the impact of</p>	<p>Activities not believed to be occurring</p> <p>D&S IFCA concludes that there is no significant risk of the activities hindering the achievement of the conservation objectives.</p>	<p>Yes,</p> <p>Management measures could include:</p> <ul style="list-style-type: none"> • 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.

				beach seine netting on the benthic flora and fauna of False Bay (South Africa). 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		
Low energy intertidal rock	<p>Maintain the presence and spatial distribution of intertidal rock communities</p> <p>Maintain the total extent and spatial distribution of intertidal rock subject to natural variation in sediment veneer</p>	<p>Commercial fishing;</p> <p>Seine nets and other: Beach seine/ring</p>	<ul style="list-style-type: none"> • 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 • Removal of non-target species • Removal of target species • Smothering and siltation rate changes (Light) <p>See Annex 2 for pressures audit trail</p>	See above	See above	See above

	[Maintain OR Recover OR Restore] the abundance of listed species to enable each of them to be a viable component of the habitat					
Moderate energy intertidal rock	<p>Maintain the presence and spatial distribution of intertidal rock communities</p> <p>Maintain the total extent and spatial distribution of intertidal rock subject to natural variation in sediment veneer</p> <p>[Maintain OR Recover OR Restore] the abundance of listed species to enable each of them to be a viable component of the habitat</p>	<p>Commercial fishing;</p> <p>Seine nets and other: Beach seine/ring</p>	<ul style="list-style-type: none"> •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 •Removal of non-target species •Removal of target species •Smothering and siltation rate changes (Light) <p>See Annex 2 for pressures audit trail</p>	See above	See above	See above

Estuarine rocky habitats	<p>Maintain the presence and spatial distribution of intertidal rock communities</p> <p>Maintain the total extent and spatial distribution of intertidal rock subject to natural variation in sediment veneer</p> <p>[Maintain OR Recover OR Restore] the abundance of listed species to enable each of them to be a viable component of the habitat</p>	<p>Commercial fishing;</p> <p>Seine nets and other: Beach seine/ring</p>	<ul style="list-style-type: none"> •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 •Removal of non-target species •Removal of target species •Smothering and siltation rate changes (Light) <p>See Annex 2 for pressures audit trail</p>	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.
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- 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.
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- 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)

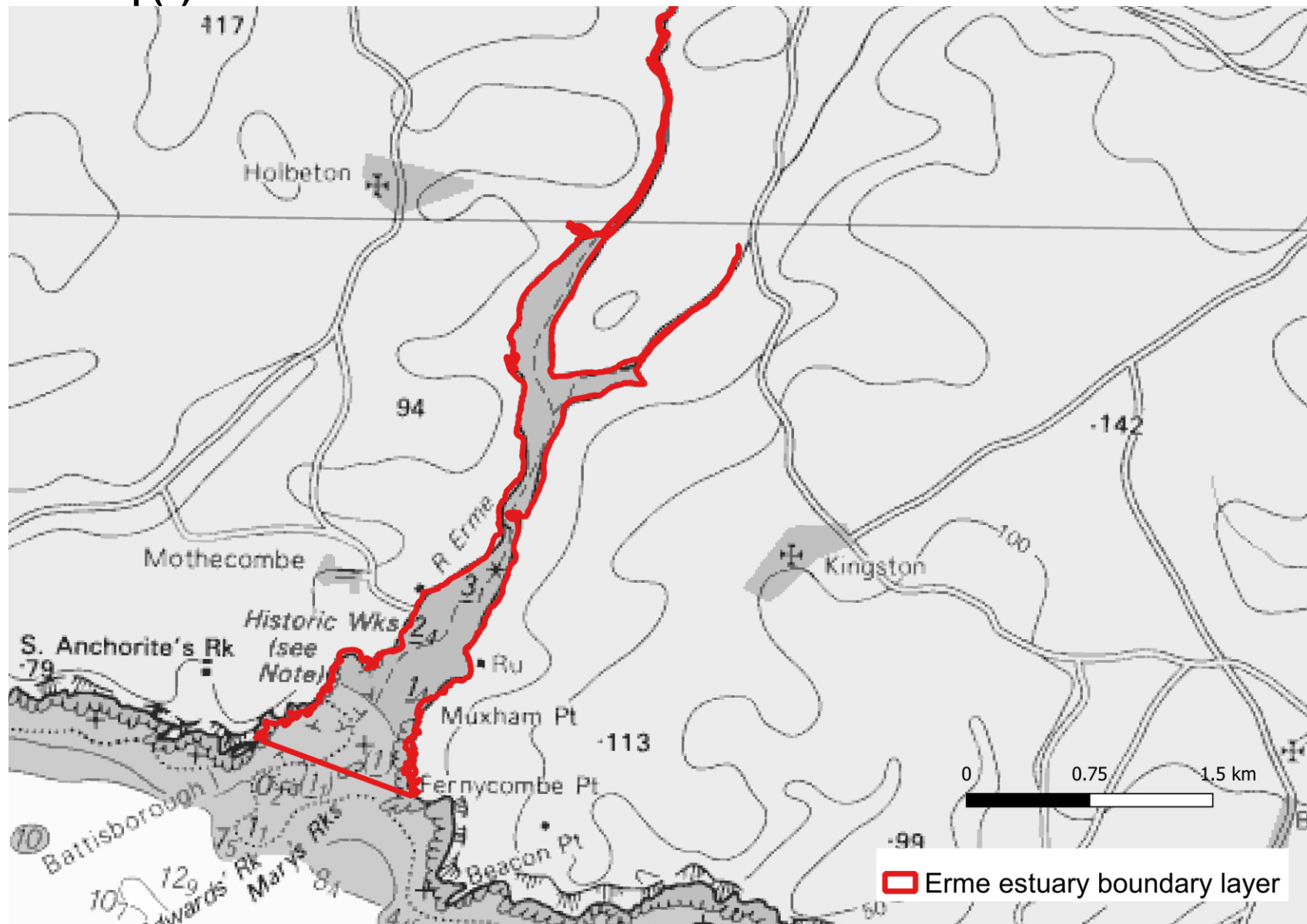


Figure 1 – Erme Estuary MCZ

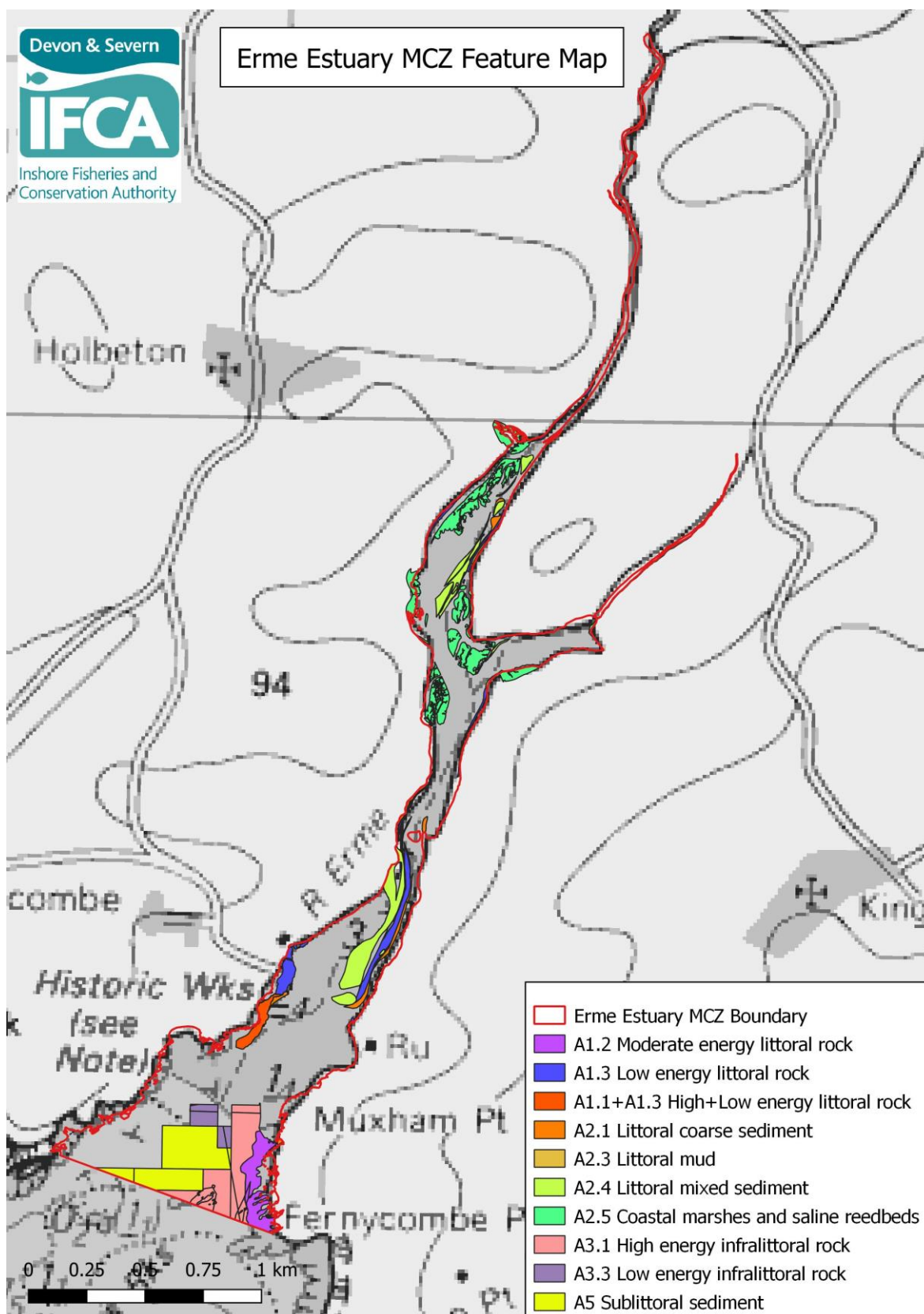
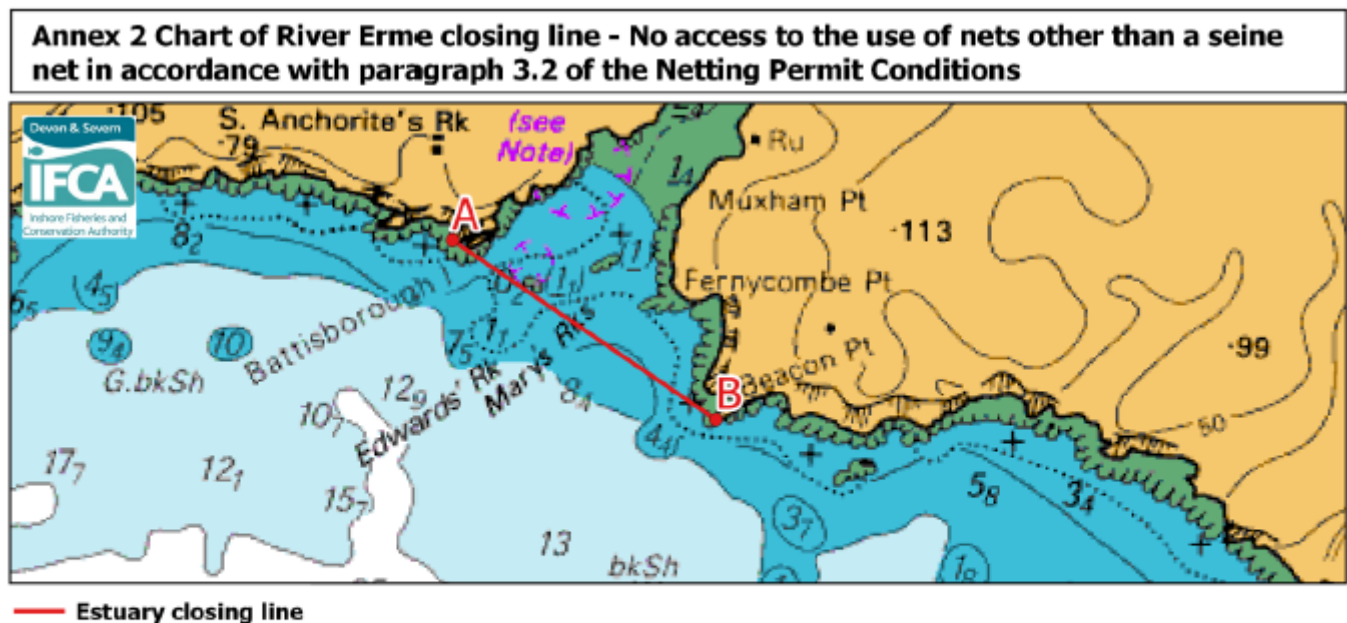


Figure 2: Extent of features designated in the Erme Estuary MCZ



River Erme closing line latitude and longitude positions:

Point	Latitude	Longitude
A (Battisborough Island)	50° 18.243'N	003° 57.834'W
B (Beacon Point)	50° 17.750'N	003° 56.657'W

Figure 3: River Erme 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: Demersal seines	High energy intertidal rock	Low energy intertidal rock	Moderate energy intertidal rock	Estuarine rocky habitats	Screening Justification
Abrasion/disturbance of the substrate on the surface of the seabed	S	S	S	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Changes in suspended solids (water clarity)	S	S	S	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	S	S	S	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Removal of non-target species	S	S	S	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Smothering and siltation rate changes (Light)	S	S	S	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Deoxygenation	S	S	S	NS	OUT – Insufficient activity levels to pose risk at level of concern
Hydrocarbon & PAH contamination	NA	NA	NA	NA	OUT – Not applicable
Introduction of light	S	S	S	S	OUT – Insufficient activity levels to pose risk at level of concern
Introduction or spread of invasive non-indigenous species (INIS)	S	S	S	S	OUT – Insufficient activity levels to pose risk at level of concern
Litter	NA	NA	NA	NA	OUT – Not applicable
Nutrient enrichment	IE	IE	IE	IE	OUT – Not applicable
Organic enrichment	S	S	S	S	OUT – Insufficient activity levels to pose risk at level of concern
Physical change (to another seabed type)	S	S	S	S	OUT – Insufficient activity levels to pose risk at level of concern
Physical change (to another sediment type)					OUT – Not applicable
Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals)	NA	NA	NA	NA	OUT – Not applicable
Transition elements & organo-metal (e.g. TBT) contamination	NA	NA	NA	NA	OUT – Not applicable
Visual disturbance	NS		NS		OUT – Not applicable
Underwater noise changes		IE		IE	OUT – Not applicable