Marine Conservation Zone Assessment

Site name:	Hartland Point to Tintagel MCZ UKMO 20160010
Protected feature(s):	Moderate energy infralittoral rock High energy infralittoral rock Moderate energy circalittoral rock High energy circalittoral rock Subtidal coarse sediment Subtidal sand Fragile sponge & anthozoan communities on subtidal rocky habitats Pink sea-fan (*Eunicella verrucosa*) Honeycomb worm (*Sabellaria alveolata*) reefs

Fishing activities assessed at this site:
Stage 1 Assessment

Dredges (towed): Scallops; Mussels, Clams, Oysters

Devon & Severn IFCA
Inshore Fisheries and Conservation Authority

D&S IFCA Reference
HPT-MCZ-006

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Version	Date	Author(s)	Reviewer(s)
1	December 2018	Lauren Parkhouse	Sarah Clark

1. Introduction

This assessment has been undertaken by Devon & Severn Inshore Fisheries and Conservation Authority (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

Hartland Point to Tintagel MCZ is an inshore site on the north coast of Devon and Cornwall in the south west of England. The site covers 304 km² and follows the coastline along the mean high-water mark from Tintagel Head to Hartland Point. This assessment only covers the area of the MCZ in Devon and Severn IFCA's District.

Further information regarding the MCZ and its protected feature can be found in the Hartland Point to Tintagel MCZ Draft Conservation Advice (Natural England, 2017).

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
Moderate energy infralittoral rock	Maintain in favourable condition
High energy infralittoral rock	Maintain in favourable condition
Moderate energy circalittoral rock	Recover to favourable condition
High energy circalittoral rock	Recover to favourable condition
Subtidal coarse sediment	Recover to favourable condition
Subtidal sand	Recover to favourable condition
Fragile sponge & anthozoan communities on subtidal rocky habitats	Recover to favourable condition
Pink sea-fan (*Eunicella verrucosa*)	Recover to favourable condition
Honeycomb worm (*Sabellaria alveolata*) reefs	Maintain in favourable condition

The conservation objectives for these features are that they are brought to, and remain in, favourable condition.

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

The management measures for towed (demersal) gear on circalittoral and infralittoral rock are under consideration.

5. Activities under consideration

- Dredges (towed): Scallops; Mussels, Clams, Oysters

There is no known dredge fishery occurring in this area. However, the activities cannot be completely ruled out as they may occur at low undetected levels or could occur in the future.

See Curtin (2018) more information regarding fishing activities occurring in the Hartland Point to Tintagel 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 was used (Natural England, 2017). Table 2 displays the fishing activities and pressures included for assessment. The justifications for the pressures chosen for inclusion in this assessment can be seen below.**Error! Reference source not found.**

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

Activity	Pressures
Dredges	Abrasion/disturbance of the substrate on the surface of the seabed
	Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion
	Removal of target species
	Removal of non-target species

The relevant targets for favourable condition were identified within Natural England's conservation advice, supplementary advice tables (Natural England, 2017). Table 33 displays 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
Moderate energy infralittoral rock; High energy infralittoral rock	Distribution: presence and spatial distribution of 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 influential 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
Moderate energy circalittoral rock; High energy circalittoral rock; Subtidal coarse sediment; Subtidal sand	Distribution: presence and spatial distribution of communities	Recover 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 influential 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	Recover the species composition of component communities
Pink sea-fan (*Eunicella verrucosa*)	Presence and spatial distribution of the species	Recover the presence and spatial distribution of the species
	Population: population size	Recover the population size within the site.
	Population: recruitment and reproductive capability	Recover the reproductive and recruitment capability of the species.
	Supporting habitats: extent and distribution	Maintain the distribution and abundance of the following supporting habitats: reef
Fragile sponge & anthozoan communities on subtidal rocky habitats	Extent and distribution	Maintain the total extent and spatial distribution of fragile sponge and anthozoan communities on subtidal rocky habitat.
	Distribution: presence and spatial distribution of communities	Recover the presence and spatial distribution of fragile sponge and anthozoan communities.
	Structure and function: presence and abundance of key structural and influential 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: physical structure of rocky substrate	Maintain the surface and structural complexity, and the stability of the subtidal rock structure
	Structure: species composition of component communities	Recover the species composition of component communities
Honeycomb worm (*Sabellaria alveolata*)	Extent and distribution	Maintain the total extent and spatial distribution of intertidal *Sabellaria* reef at 0.38 Ha, and spatial distribution.
	Structure and function: presence and abundance of key structural and influential 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: population density	Maintain the density of Sabellaria species across the feature.
	Structure: Species composition of the community	Maintain the species composition of the *Sabellaria* reef community.

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
- The D&S IFCA Mobile Fishing Permit byelaw can gauge where any future changes or developments may occur.
- Monitor the activity with iVMS.
- Changes can be made to the permit conditions, via consultation, if D&S IFCA deems it to be necessary. This could include spatial/temporal restrictions. The permitting system allows for adaptive management.

8. Referenced supporting information to inform assessment

Dredges- Rock features:
Towed dredges may impact on reef communities by damaging and removing epifauna, and by modifying and homogenising the substrate, as soft rocks may be broken up (Attrill et al, 2011) and rolling/moving boulders (Hall-Spencer and Moore, 2000), and reducing habitat complexity. Sessile organisms and epifauna such as erect bryozoans, sponges and anemones which live on substratum; are long lived and slow growing are most likely to be negatively impacted on by dredges (Hinz et al, 2011). The impacts of scallop dredging can be variable depending on the intensity of the activity and the environmental conditions. Boulcott and Howell, 2011 found that experimental scalloping over uneven rocky reef resulted in a patchy distribution of impacts.

Dredges- Sediment features:
There is currently no site-specific evidence on the presence and spatial distribution of the biological communities. Therefore, this assessment will draw on more general evidence for potential impacts on the two sediment features, subtidal coarse sediment and subtidal sand.

Dredging for scallops can have a number of impacts on benthic systems, including a reduced seabed habitat complexity and heterogeneity, shifts in community structure and trophic interactions, alterations to the physical structure of the sea floor, and an impact on by-catch species (Sciberras et al, 2013). Scallop dredges can cause homogenization of sediments and the seabed topography by penetrating, mixing and flattening the sediment. This mixing reduces spatial heterogeneity in benthic communities, altering the density of mega fauna and therefore affecting recruitment in a population (Collie et al, 2000; Craven et al, 2012; Kaiser et al, 2002; Beukers-Stewart, 2009). Scallop dredges have teeth on them which are designed to dig into the sediment, and therefore have been considered to be potentially among the most damaging (Veale et al, 2000).

Gravel, mixed sand and mud habitats tend to support diverse benthic communities of high biomass and are the main focus of scallop fisheries in the UK. These habitats are known to be relatively sensitive to disturbance by scallop fisheries. The degree of disturbance is dictated by; the fishing gear used, the intensity of fishing effort, the type of species present, the natural stability and energy levels of the seabed (Beukers-Stewart, 2009). Benthic communities in gravel and mixed sand substrates will recover if closed to fishing, with recovery times varying. Summer closed seasons can allow certain hydroid species to start to re-establish and provide an important settlement habitat for invertebrate species (Beukers-Stewart, 2009).

Bradshaw et al (2001) studied the effect of scallop dredging on benthos off the coast of the Isle of Man. The seabed in the study area comprises a mixture of mud and sand with a variable amount of dead shell and stone. Twice yearly grab samples were taken from experimentally dredged plots inside and outside the closed area to compare benthic infauna and epifauna. The results showed evidence that scallop dredging alters benthic communities and can lead to reduced habitat complexity. They found that the closure of areas to commercial dredging allows the development of heterogeneous communities and habitat complexity. They did however hypothesis that although upright sessile species are more prone to be directly damaged; sponges and encrusting bryozoan on stones can recolonise if turned over. The response to dredging depends on variables related to species, local hydrography, intensity, frequency and time of year of dredging.

Veale et al (2000) examined spatial differences of by-catch assemblages from the scallop fishing ground in the North Irish Sea, during 1995. They found that species diversity and richness, total number of species, and the total number of individuals all decreased significantly with increasing fishing effort. However, the study did not provide proof of a causative relationship between fishing effort and community structure.

The benthic communities most resilient to scallop fisheries are those in shallow sand areas which are subjected to high levels of natural disturbance. Although benthic species do suffer negative effects from fishing disturbance, the relative impact tends to be lower and recovery quicker than in other habitats (Beukers-Stewart, 2009). Løkkeborg (2005) found that impacts of bottom trawling are less pronounced on mobile sediments due to the high levels of natural disturbance which makes them better adapted to general disturbance.

Sciberras et al (2013), undertook underwater camera surveys and Hamon grab samples in an area closed to scallop dredging, and a seasonally fished area in Cardigan Bay to investigate any differences in scallop abundance and epibenthic community structure between the two management areas. They did not detect differences in the abundance of scallops and the epibenthic community composition between the permanently closed area and the seasonally fished area. They discuss a number of possible reasons for the lack of fishing effect firstly, the natural seasonal fluctuations in species abundance. Secondly, the relatively high level of natural disturbance at the study area, which may obscure the effect of fishing on benthic communities. The features of the MCZ are at depths of less than 25m and the site is characterised by moderate to high energy/exposure. The majority of the coast is west facing, exposed to the prevailing wind and wave direction, including storm waves generated in the Atlantic (Natural England, 2017). The tidal range in this location is very high with tides of over 8m on springs. This wave scour at shallow depths, wave-induced mortality is known to impact community structure to a water depth of approximately 50m, along with the moderate to high energy levels at the seabed in this area may lead to natural morality of some species (Sciberras et al, 2013). These environmental factors can lead to the benthic communities being more resilient.

Scallop dredging can have negative impacts on target and non-target species, including post-fishing mortality of species which come into contact with the gear, especially the teeth of the dredge. These can cause damage to the scallop shells, and to non-target species (Bradshaw, 2001; Beukers-Stewart, 2009). Fatal damage can vary from 2% to more than 20%, depending on the fishing grounds, for captured and non-captured undersized scallops (Beukers-Stewart, 2009). Along with fatal damage to discarded scallops, there is evidence of a reduced predator escape response in discarded juvenile scallops, this is coupled with an influx of predators and scavengers taking advantage of the damage caused (Craven et al, 2012; Shephard et al, 2008; Bradshaw, 2001).

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 Hartland Point to Tintagel 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)**
Towed (demersal)	There are currently two vessel that are known to use otter trawls in the area. Due to no known dredge activity taking place, no in-combination effect thought to be possible.	Abrasion/disturbance of the substrate on the surface of the seabed.

Commercial diving; Beach seine/ ringnets; Longlines; Fyke & stakenets;	Due to the low level of activities, no in-combination effect thought to be possible.	Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion. Removal of target species. Removal of non-target species.
Static nets - fixed; Drift nets demersal	At the current level of fishing activity it is thought that no in-combination effects will lead to the conservation objectives not being met for the features assessed.	
Static pots & traps	At the current level of fishing activity it is thought that no in-combination effects will lead to the conservation objectives not being met for the features assessed.	
Handworking; Crab tiling; Bait digging; Shrimp push net	Activities occur on the intertidal, no in-combination effect thought to be possible.	

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

10. NE consultation response

Natural England were contacted in January 2017 to determine when Tranche 2 MCZ draft conservation advice packages would be available. In absence of draft conservation advice for Hartland Point to Tintagel MCZ, as there is a certain degree of standardisation within the packages, advice on operations and supplementary advice tables for other sites with similar features were used, alongside site specific information. A draft conservation advice package was available in September 2017 and this assessment has been updated using that package.

11. Conclusion

Dredges- Rock & Sediment features:

It has been shown that dredging for scallops can have a number of impacts on benthic systems, including a reduced seabed habitat complexity and heterogeneity, shifts in community structure and trophic interactions, alterations to the physical structure of the sea floor, an impact on sessile benthic species, and an impact on by-catch species.

The level of effort within the Devon and Severn IFCA section of the Hartland Point to Tintagel MCZ is currently none. At the current levels of effort (i.e. no activity), it can be concluded that there will be no likely significant impact from dredging on the MCZ features. However, if the activity were to occur on the features listed in this assessment, the evidence suggests there could be an impact on the site integrity and the magnitude of this impact is currently unknown. This impact could lead to the conservation objectives for the site not being met. It is unlikely that dredging would have an impact on the subtidal sand feature of the site, however this feature is small and interlaced between the other features and therefore it would be difficult to manage separately.

Due to the conclusions drawn, D&S IFCA will carry out a review of the Mobile Gear Permit Byelaw conditions to bring in appropriate management to prohibit the use of dredges in the Devon section of the site to protect the features listed in this assessment and ensure the conservation objectives are furthered. The review of the Mobile Fishing Permit Byelaw and permit conditions will take place in 2019/2020.

12. Summary table

Feature or habitat of Conservation interest	**Conservation objectives/ Target Attributes** (Natural England, 2015)	**Activity**	**Potential pressures from activity and sensitivity of habitats to pressures.** (Natural England, 2015)	**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**
Moderate energy infralittoral rock; High energy infralittoral rock; Moderate energy circalittoral rock; High energy circalittoral rock; Subtidal coarse sediment; Subtidal sand	Extent and distribution Presence and spatial distribution of communities Presence and abundance of key structural and influential species Species composition of component communities	Commercial fishing; Dredges (towed)	•Abrasion/disturbance of the substrate on the surface of the seabed •Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion •Removal of target species •Removal of non-target species See Annex 2 for pressures audit trail	Yes, dredges (towed) fisheries can currently take place within the MCZ.	Yes, D&S IFCA will review the Mobile Fishing Permit Byelaw to bring in the appropriate management to ensure the conservation objectives are met.	Yes, Management measures could include: 1. Monitor activity levels 2. Enforcement of byelaws 3. Monitoring and review of current byelaws
Fragile sponge & anthozoan communities on subtidal rocky habitats; Honeycomb worm (*Sabellaria alveolata*) reefs; Pink sea-fan (*Eunicella verrucosa*)	Presence & spatial distribution of the species/ communities Population size or density	Commercial fishing; Dredges (towed)	• Abrasion/disturbance of the substrate on the surface of the seabed •Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion •Removal of target species •Removal of non-target species See Annex 2 for pressures audit trail	See above	See above	See above

	Recruitment & reproductive capability Extent & distribution Species composition of the community Presence & abundance of key structural and influential species					

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Annex 1: Site Map(s)

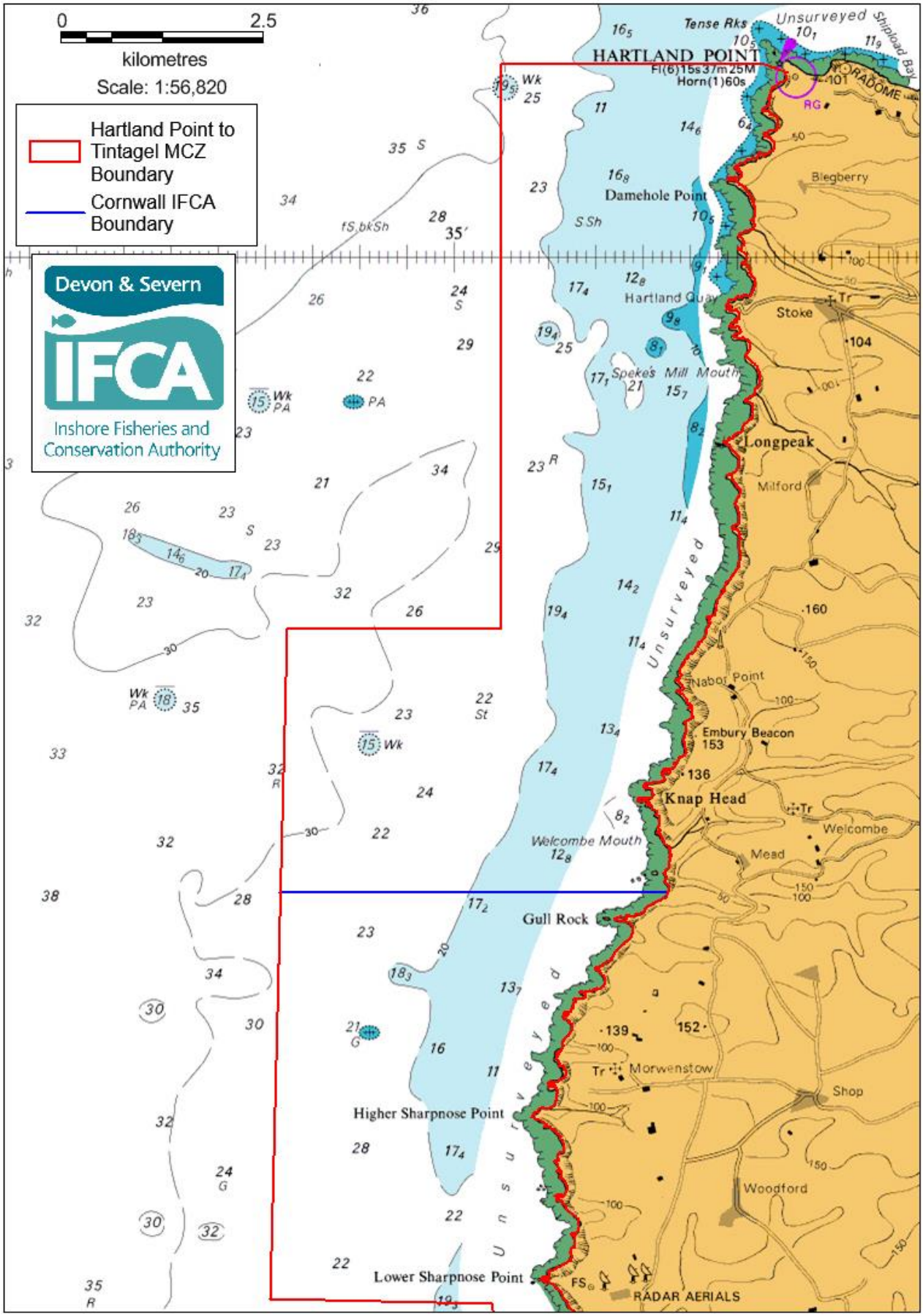

Figure 1 – Hartland Point to Tintagel MCZ

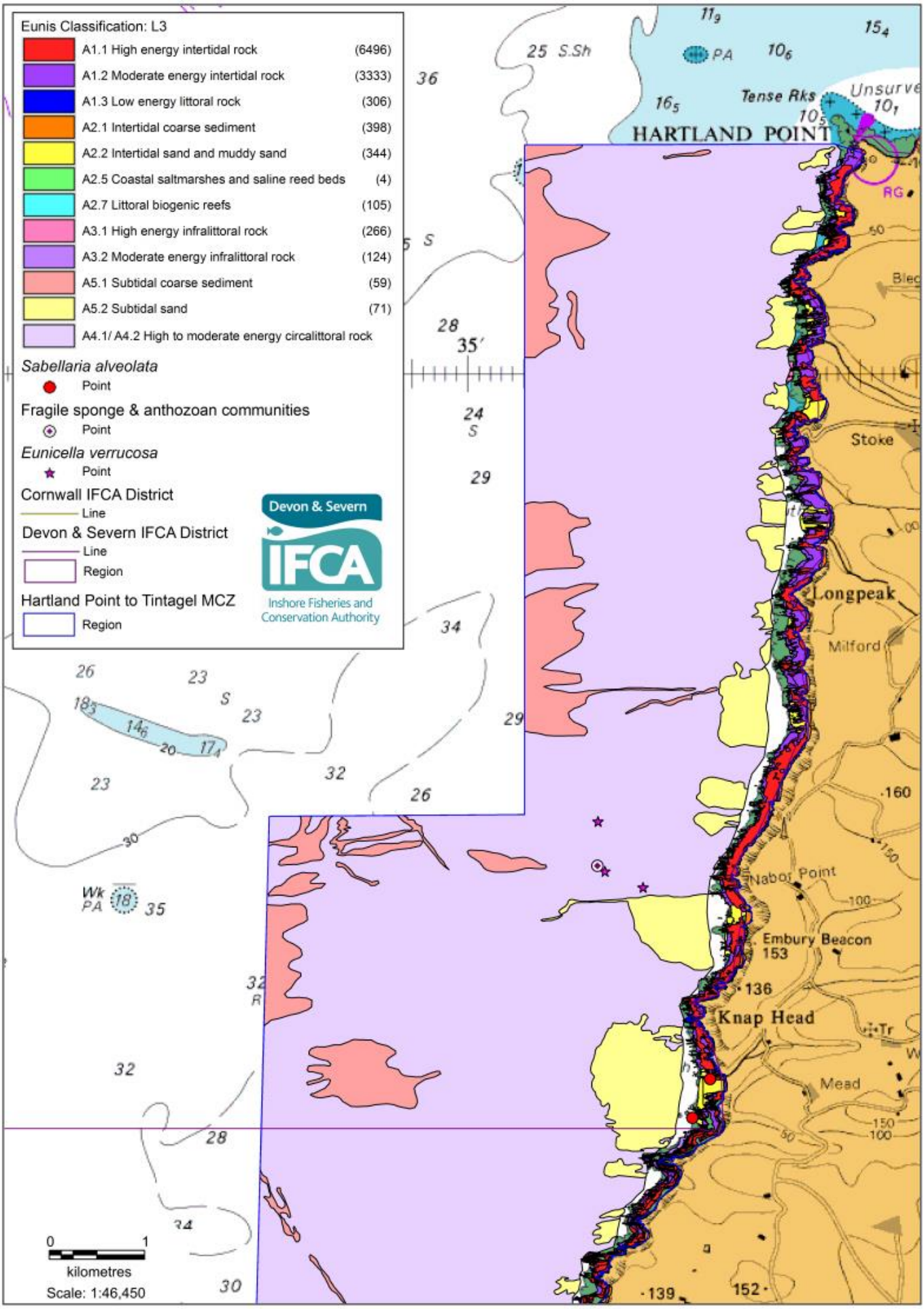

Figure 2 - Hartland Point to Tintagel MCZ Features

Annex 2: Fishing Activity Map

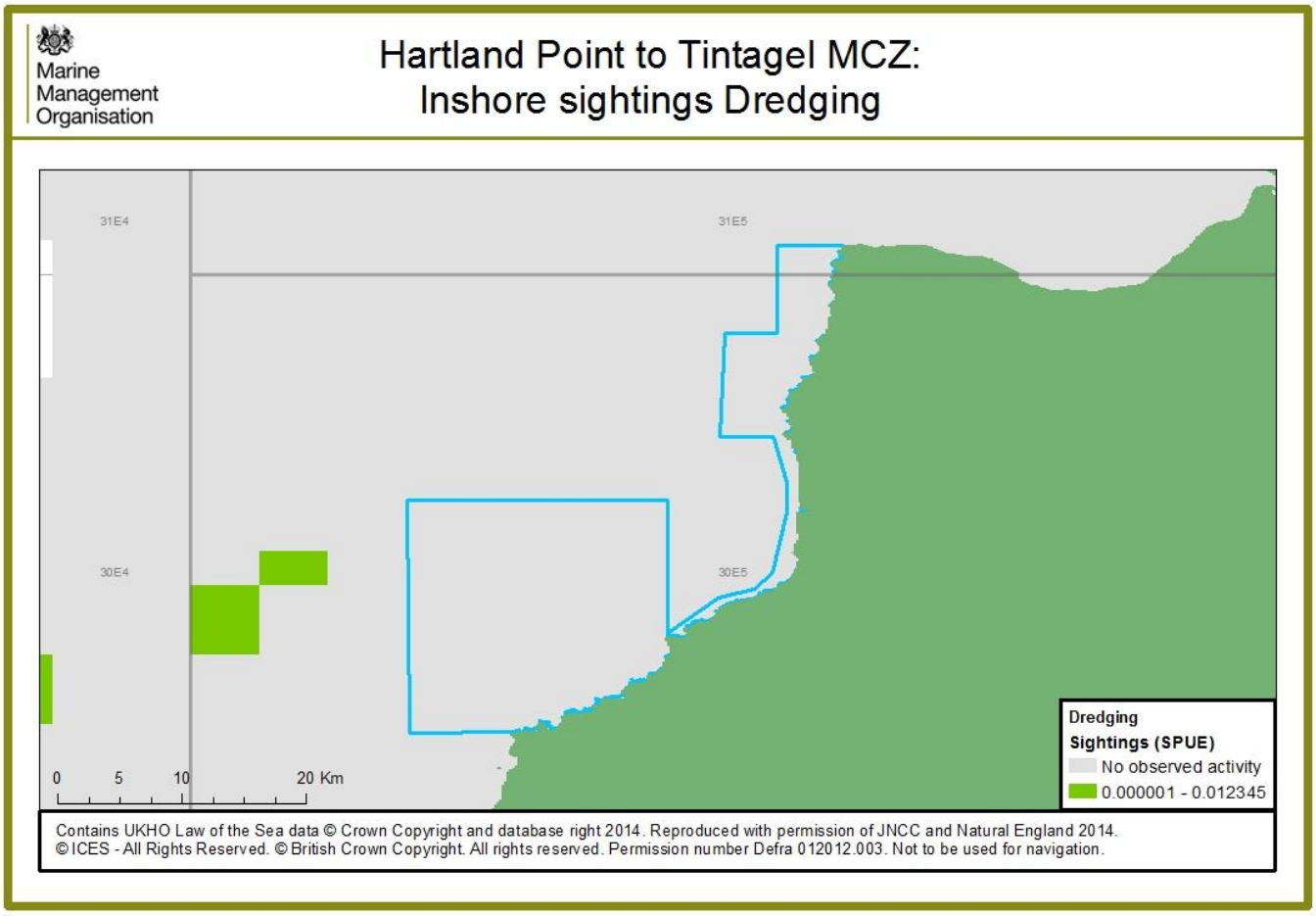

Figure 3 MMO dredge sighting data

Annex 2: Pressures Audit Trail

Fishing Activity Pressures: Dredges	High energy intertidal rock	Low energy intertidal rock	Moderate energy intertidal rock	Honeycomb worm reefs	Intertidal coarse sediment	Intertidal sand and muddy sand	High energy infralittoral rock	Moderate energy infralittoral rock	Subtidal coarse sediment	Subtidal sand	Fragile sponge and anthozoan communities on subtidal rocky habitats	High energy circalittoral rock	Moderate energy circalittoral rock	Pink sea-fan	**Screening Justification**
Abrasion/disturbance of the substrate on the surface of the seabed		S	S	S	NS	S	S	S	S	S	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	NS	S	S	S	NS	S	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	NS	S		S	S	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	S	S	S	S	S	S	S	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Removal of target species						NA	NA	NA		NA		NA	NA		IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure

Smothering and siltation rate changes (Light)		S	S	NS	NS	S	NS	S	NS	NS	NS	NS	S	S	IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Visual disturbance						NS				NS			NS	NA	OUT – Not applicable
Collision BELOW water with static or moving objects not naturally found in the marine environment														NS	OUT – Not applicable
Deoxygenation		S	S	S	NS	S	IE	S	S	S	S	S	S	NS	OUT - Insufficient activity levels to pose risk of large scale pollution event
Hydrocarbon & PAH contamination		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	OUT - Insufficient activity levels to pose risk of large scale pollution event
Introduction of light		S	S	IE		S	S	S	IE	S	NS	NS	IE	NA	OUT – Not applicable
Introduction of microbial pathogens		S	S	IE		S	S	S	IE	IE	S	S	S	NS	OUT - Insufficient activity levels to pose risk at level of concern
Introduction or spread of invasive non-indigenous species (INIS)		S	S	S		S	S	S	IE	IE	S	S	S	S	OUT - Insufficient activity levels to pose risk at level of concern
Litter		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	OUT - Insufficient activity levels to pose risk at level of concern
Nutrient enrichment		IE	NS	NS	NS	NS	S	NS	NS	NS	NS	NS	NS	NS	OUT - Insufficient activity levels to pose risk of large scale pollution event
Organic enrichment		S	S	NS	NS	NS	S	S	NS	S	NS	S	S	NS	OUT - Insufficient activity levels to pose risk of large scale pollution event
Physical change (to another seabed type)		S	S	S			S	S			S	S	S	S	OUT - Insufficient activity levels to pose risk at level of concern
Physical change (to another sediment type)					S	S			S	S				S	OUT - Insufficient activity levels to pose risk at level of concern

Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	OUT - Insufficient activity levels to pose risk of large scale pollution event
Transition elements & organo-metal (e.g. TBT) contamination		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NA	OUT - Insufficient activity levels to pose risk of large scale pollution event
Underwater noise changes		IE								NS	NS	NS		NS	OUT – Not applicable