

Torbay MCZ Seagrass Survey

2014



Devon & Severn Inshore Fisheries and Conservation Authority

December 2014



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1. Introduction

Torbay MCZ is an inshore site located in the south west of the UK. The site covers an area of coastline in South Devon between Oddicombe Beach and Sharkham Point, protecting a total area of approximately 20 km². Beginning at the coastline, the boundary extends between 1 – 2.5 km out to sea and encompasses Hope's Nose near Torquay and Berry Head near Brixham (Defra, 2012). The MCZ was created under the Ministerial Order No.25 The Torbay Marine Conservation Zone Designation Order 2013 and came into force on 12th December 2013 (Annex 2).

Nine different habitats were designated as protected features of this MCZ, including seagrass beds, along with two species of marine fauna.. Seagrass beds provide important food for wildfowl, and nutrients to support animal communities on the seabed. Their roots catch and trap sediments, reducing coastal erosion. Submerged seagrass beds are also used as a nursery area, protecting young fish and shellfish, and provide a sheltered home for many other animals, such as pipefish and seahorses (JNCC). The Conservation Objective given to the designated seagrass beds is to “recover to favourable condition”.

In order to ensure that the management in place, through the Devon & Severn Inshore Fisheries and Conservation Authority (D&S IFCA) Mobile Fishing Permit Byelaw for demersal fishing gear activities within the MCZ, is appropriate to protect the seagrass beds, all the known seagrass beds within Torbay were surveyed.

1.1 Objectives

- Gain a greater understanding of the distribution, spatial extent and condition of seagrass beds throughout the Torbay MCZ.
- GIS mapping on the extent and locations of seagrass beds in Torbay, with the production of charts showing these areas.
- Gather information on the condition and density of the beds
- Inform the management of demersal fishing gear through the D&S IFCA Mobile Fishing Permit Byelaw to ensure the designated beds within the MCZ are fully protected from the possible impacts of towed fishing gear.
- Inform future management of other fishing activities that currently take place within the MCZ.

2. Methodology

An underwater camera with integrated LED lights was towed from the vessel. The camera was housed in a cradle to help weigh it down; the cradle also had fins attached to create smoother flying through the water column. An umbilical cable ran back from the camera to a surface monitor, to allow the footage to be viewed in real time. It was also recorded for future analysis.

Transects were carried out across known seagrass beds within the Torbay area. Each transect was approximately 50m apart, and followed the natural path in which the vessel drifted according to the tide/wind. This was done to ensure the vessel would be travelling slow enough to get a clear image.

Along each transect data was recorded either every minute (approximately) or whenever the substrate or habitat changed, whichever came first. At each point the following information was recorded:

- Transect number
- Coordinates
- Substrate
- Habitat
- Seagrass density
- Depth
- Time

All information was recorded on a standard survey form (Annex 1). Transects continued until the edge of the seagrass bed was found.

The data was then plotted using MapInfo GIS software to show the route of each transect, the density of seagrass along each transect, and the extent of each bed.

3. Results

The areas of each seagrass bed are summarised in the table 1 below, and shown in Figures 1-2. Figure 1 shows the seagrass density changes across each bed, while Figure 2 shows a 50m buffer area around each bed which has used for management purposes and included within the Mobile Fishing Permit Byelaw chart for the whole of the Lyme Bay and Torbay SAC and Torbay MCZ.

| Seagrass Bed | 2012 Area (ha) | 2012 Max Depth (m) | 2014 Area (ha) | 2014 Max Depth (m) | change in bed extent (ha) | %age change in bed extent (%) |
|--------------------------|----------------|--------------------|------------------|--------------------|---------------------------|-------------------------------|
| Hope's Nose | 3.721 | 8.8 | 2.261 | 8.3 | -1.46 | -39% |
| Thatchers Rock | 0.569 | 7.8 | 0.04197 | 4.5 | -0.52703 | -93% |
| Millstones | 4.19 | 7.8 | 2.666 | 8.3 | -1.524 | -36% |
| Torre Abbey Sands | 90.78 | 8.5 | 72.02 | 8.6 | -18.76 | -21% |
| Broadsands-Elberry | 44.37 | 8.7 | 27.8966 | 7.6 | -16.4734 | -37% |
| Fishcombe | 1.462 | 8.6 | 0.1848 | 7.1 | -1.2772 | -87% |
| Breakwater to Shoalstone | 5.434 | 10.5 | 0.03982 | 6.5 | -5.39418 | -99% |
| Total | 150.526 | | 105.11019 | | -45.41581 | -30% |

Table 1 Comparison of Seagrass bed area between 2012 and 2014

There has been a reduction in the extent of the seagrass beds in Torbay at all sites. In some locations this is significant e.g. Breakwater to Shoalstone beds and Fishcombe and Thatchers Rock where the loss of the extent of the beds was over 80%. Overall the total loss of sea grass area within Torbay MCZ was 45.42 ha.

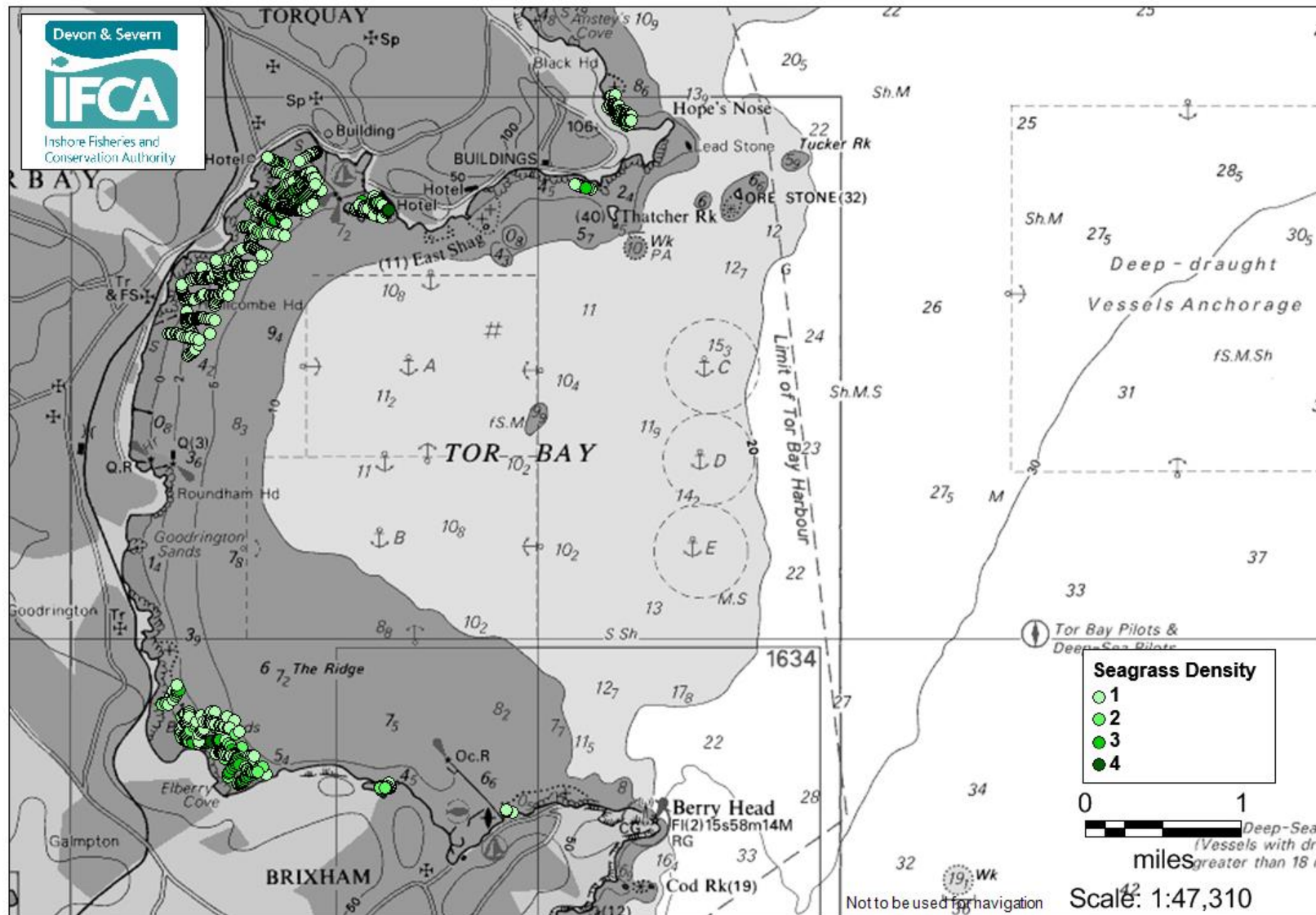


Figure 1 Variation in seagrass density across all beds

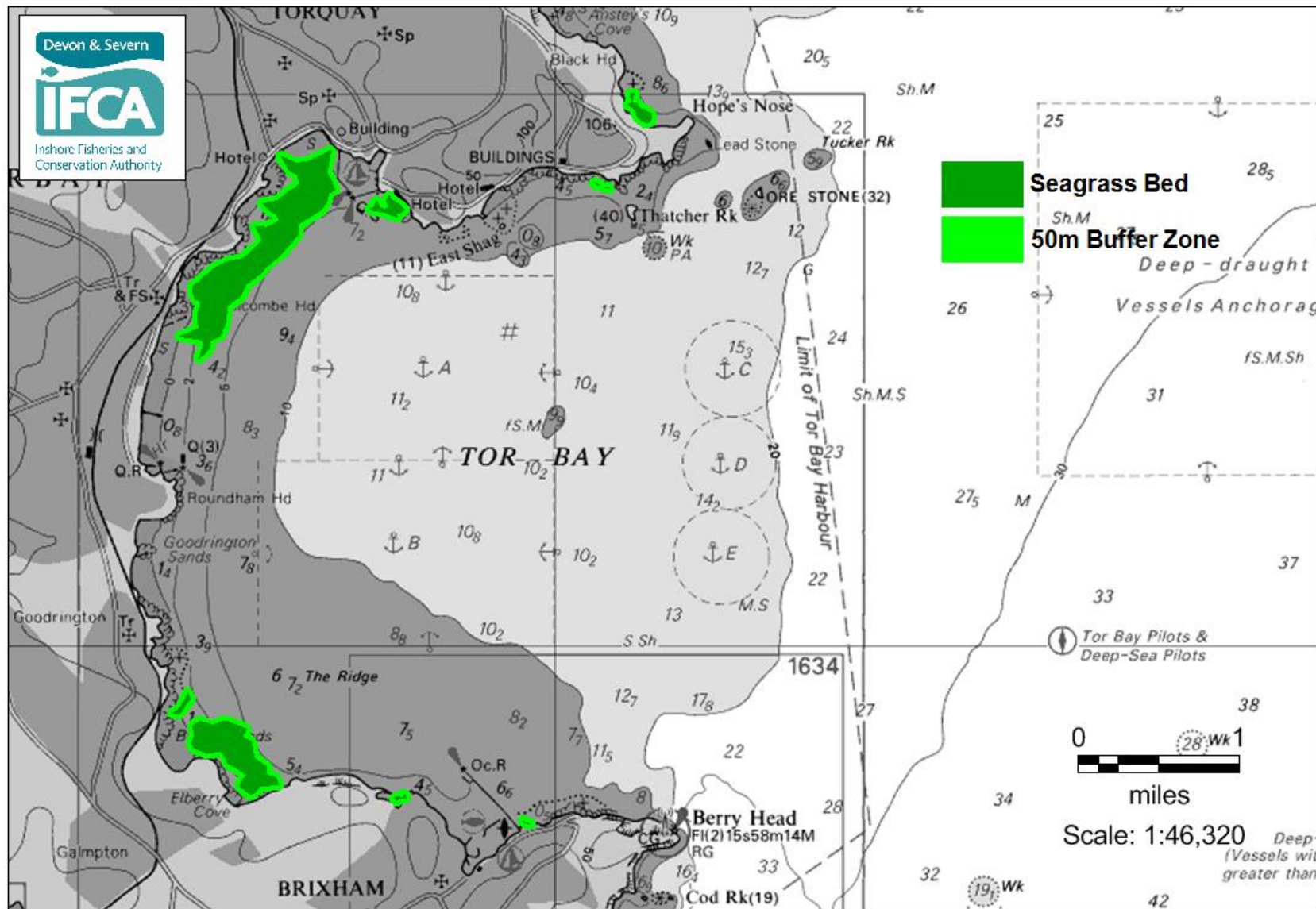


Figure 2 Area of seagrass beds, with 50m buffer zone

4. Discussion/Recommendations

It is recommended that this survey is repeated regularly, every two years, to monitor the condition and size of the seagrass beds over time. Changes to the extent of the beds over time could then be identified using this study and the 2012 survey results.. This will also feed into the condition assessment of the Torbay MCZ, which has the conservation objective of “recover to favourable condition” for seagrass.

There are clear differences from 2012 data compared to 2014, for example in density and in spatial extent of the beds. A statistical analysis of the data would show the decline in seagrass. All but one sea grass have reduced in size from 2012. The severe stormy winter of 2013/2014 may be the likely cause of the decline in the extent and density of the beds. These storms damaged static fishing gear and benthic habitats along the south coast of Devon and are therefore likely to have caused degradation of the seagrass beds in Torbay (Sheehan, 2015). It is important therefore to undertake this survey regularly to identify these changes and if necessary change the management of fishing activities occurring in the MCZ.

5. References

Defra, 2012. Marine Conservation Zones: Consultation on proposals for designation in 2013. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82723/mcz-annex-a1-part3-121213.pdf

JNCC. MCZ Features Catalogues. <http://jncc.defra.gov.uk/page-5540>

Emma Sheehan Plymouth University: Research currently being undertaken and reported on in Coastal Futures Conference January 2015.

Annex 2. Torbay MCZ Designation Order

 MINISTERIAL ORDER

2013 No. 25**WILDLIFE****ENVIRONMENTAL PROTECTION****MARINE MANAGEMENT****The Torbay Marine Conservation Zone Designation Order 2013***Made**21st November 2013**Coming into force**12th December 2013*

The Secretary of State thinks it desirable to make this Order for the purpose of conserving the marine habitats and the species of marine fauna specified in Schedule 2 to this Order.

The Secretary of State has had regard to any obligations under EU or international law that relate to the conservation or improvement of the marine environment in accordance with section 123(5) of the Marine and Coastal Access Act 2009(a).

The Secretary of State has—

- (a) published notice of the proposal to make this Order in accordance with section 119(2) and (3) of that Act; and
- (b) consulted persons who are likely to be interested in, or affected by, the making of this Order in accordance with section 119(4) of that Act.

The Secretary of State makes the following Order in exercise of the powers conferred by sections 116(1), 117(1), (2) and (7), 118(1) and (6), and 123(1) of that Act.

Citation and commencement

1. This Order may be cited as the Torbay Marine Conservation Zone Designation Order 2013 and comes into force on 12th December 2013.

Interpretation

2. In this Order—

- “co-ordinate” means a co-ordinate on the World Geodetic System 1984(b);
- “protected feature”, in relation to the Zone, has the meaning given by article 4; and
- “the Zone” means the area designated by article 3(1) as a marine conservation zone.

(a) 2009 c.23. For the definition of the “appropriate authority” see sections 116(5) and 147(1) of that Act.

(b) For the definition of “World Geodetic System 1984” see the National Geospatial-Intelligence Agency Technical Report TR8350.2, “Department of Defense World Geodetic System 1984, Its Definition and Relationships With Local Geodetic Systems”, Third Edition, 4 July 1997.

Area designated

3.—(1) The area described in paragraph (2) is designated as a marine conservation zone.

(2) The area is the marine area enclosed by the 16 boundary lines which are described in Schedule 1, in each case by reference to—

- (a) the co-ordinates of the points joined by the line; and
- (b) a topographical description of the line.

(3) In paragraph (2), “marine area”, in relation to the area designated, means—

- (a) any area of seabed or other land (whether or not covered by water) seaward of the mean high water line within that area; and
- (b) all of the water covering any part of that seabed or other land.

(4) The Zone may be referred to as “the Torbay Marine Conservation Zone”.

Protected features

4. The protected features of the Zone are specified in Schedule 2.

Conservation objective

5.—(1) The conservation objective of the Zone is that the protected features—

- (a) so far as already in favourable condition, remain in such condition; and
- (b) so far as not already in favourable condition, be brought into such condition, and remain in such condition.

(2) In paragraph (1), “favourable condition”—

- (a) with respect to a broadscale marine habitat or a marine habitat within the Zone, means that—
 - (i) its extent is stable or increasing; and
 - (ii) its structures and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it remains in a condition which is healthy and not deteriorating;
- (b) with respect to a species of marine fauna within the Zone, means that the quality and quantity of its habitat and the composition of its population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive.

(3) In paragraph (2)(a)(ii), the reference to the composition of the characteristic biological communities of a habitat includes a reference to the diversity and abundance of species forming part of or inhabiting that habitat.

(4) For the purposes of paragraph (2)(a)(ii), any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

(5) For the purposes of paragraph (2)(b), any temporary reduction of numbers is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery.

(6) For the purpose of determining whether a protected feature is in favourable condition within the meaning of paragraph (2), any alteration to that feature brought about entirely by natural processes is to be disregarded.

21st November 2013

George Eustice
Parliamentary Under Secretary of State
Department for Environment, Food and Rural Affairs

SCHEDULE 1

Article 3

Area designated – boundary lines

| <i>Boundary line</i> | <i>Set of co-ordinates of points which boundary line joins</i> | <i>Topographical description of boundary line</i> |
|----------------------|--|---|
| 1. | A, B | Geodesic line |
| 2. | B, C | Geodesic line |
| 3. | C, D | Geodesic line |
| 4. | D, E | Geodesic line |
| 5. | E, F | Geodesic line |
| 6. | F, G | Geodesic line |
| 7. | G, H | Geodesic line |
| 8. | H, I | Geodesic line |
| 9. | I, J | Geodesic line |
| 10. | J, K | Mean high water line |
| 11. | K, L | Geodesic line |
| 12. | L, M | Mean high water line |
| 13. | M, N | Geodesic line |
| 14. | N, O | Mean high water line |
| 15. | O, P | Geodesic line |
| 16. | P, A | Mean high water line |

where—

“A” is 50° 28' 56.577" N and 03° 30' 53.713" W;

“B” is 50° 28' 56.672" N and 03° 30' 41.504" W;

“C” is 50° 27' 36.776" N and 03° 27' 16.558" W;

“D” is 50° 26' 56.267" N and 03° 27' 16.201" W;

“E” is 50° 27' 04.566" N and 03° 32' 03.667" W;

“F” is 50° 25' 32.303" N and 03° 32' 49.579" W;

“G” is 50° 24' 51.681" N and 03° 32' 09.958" W;

“H” is 50° 24' 04.093" N and 03° 28' 36.757" W;

“I” is 50° 22' 54.176" N and 03° 28' 43.575" W;

“J” is 50° 22' 53.948" N and 03° 29' 46.345" W;

“K” is 50° 24' 20.277" N and 03° 30' 46.261" W;

“L” is 50° 24' 11.481" N and 03° 31' 10.201" W;

“M” is 50° 25' 57.664" N and 03° 33' 20.724" W;

“N” is 50° 25' 57.698" N and 03° 33' 22.789" W;

“O” is 50° 27' 27.653" N and 03° 31' 44.030" W; and

“P” is 50° 27' 26.162" N and 03° 31' 44.055" W.

SCHEDULE 2

Article 4

Protected features

| <i>Protected feature</i> | <i>Type of feature</i> |
|---|---------------------------|
| Intertidal coarse sediment | Broadscale marine habitat |
| Intertidal mixed sediments | Broadscale marine habitat |
| Intertidal mud | Broadscale marine habitat |
| Intertidal sand and muddy sand | Broadscale marine habitat |
| Low energy intertidal rock | Broadscale marine habitat |
| Moderate energy intertidal rock | Broadscale marine habitat |
| Subtidal mud | Broadscale marine habitat |
| Intertidal underboulder communities | Marine habitat |
| Seagrass beds | Marine habitat |
| Long-snouted seahorse (<i>Hippocampus guttulatus</i>) | Species of marine fauna |
| Native oyster (<i>Ostrea edulis</i>) | Species of marine fauna |

EXPLANATORY NOTE

(This note is not part of the Order)

This Order designates an area as a marine conservation zone (which may be referred to as “the Torbay Marine Conservation Zone”). The area designated is defined in article 3 and Schedule 1. The protected features of that Zone are specified by article 4 and in Schedule 2. The conservation objective of that Zone is set out in article 5.

A full impact assessment of the effect that this instrument will have on the costs of business and the voluntary sector may be seen at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82721/mcz-designate-ia-20121213.pdf.