

**Final Report: C5433**

# **South of Celtic Deep rMCZ Survey Report**

**Authors: Paul Whomersley, Sue Ware & Koen Vanstaen**

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# 1 Background and Introduction

## 1.1 Survey Project Team

The South of Celtic Deep survey was carried out during 12<sup>th</sup> – 13<sup>th</sup> February (Part A) and 19<sup>th</sup> – 20<sup>th</sup> February 2012 (Part B) on the RV *CEFAS Endeavour* cruise CEND 03/12. The survey team for the duration of the fieldwork included Cefas marine ecologists, marine surveyors, marine habitat mappers and GIS specialists along with MPA specialists from the JNCC (see below).

### Part A

Cefas-Marine Ecologist	Cefas-Marine Surveyor
Cefas-Marine Ecologist	Cefas-Marine Surveyor and GIS
Cefas-Marine Ecologist	Cefas-Habitat Mapper
Cefas-Marine Ecologist	JNCC-MPA Specialist
Cefas-Marine Ecologist	JNCC-MPA Specialist
Cefas-GIS Specialist	JNCC-MPA Specialist
Cefas-Marine Surveyor	JNCC-MPA Specialist
Cefas-Marine Surveyor	Fisheries Liaison Officer

### Part B

Cefas-Marine Ecologist	Marine Surveyor
Cefas Sedimentologist	Cefas-Marine Surveyor
Cefas-Sedimentologist	Cefas-Marine Surveyor
Cefas-Marine Ecologist	JNCC-Marine Assessment Scientist
Cefas-Fisheries Surveys Manager	JNCC-MPA Specialist
Cefas-Fisheries Scientist	JNCC-Survey Lead
Cefas-Plankton Ecologist	Fisheries Liaison Officer

## 1.2 Site Description

The South of Celtic Deep rMCZ's western boundary aligns with the UK EEZ. The south-eastern tip of the site is approximately 90 km north-west of the Land's End peninsula with a depth range of between 50 and 100 m (Figure 1).

***(For a detailed site description see Finding Sanctuary Final Report and Recommendations for Marine Conservation Zones 2011).***

Location of South of Celtic Deep rMCZ

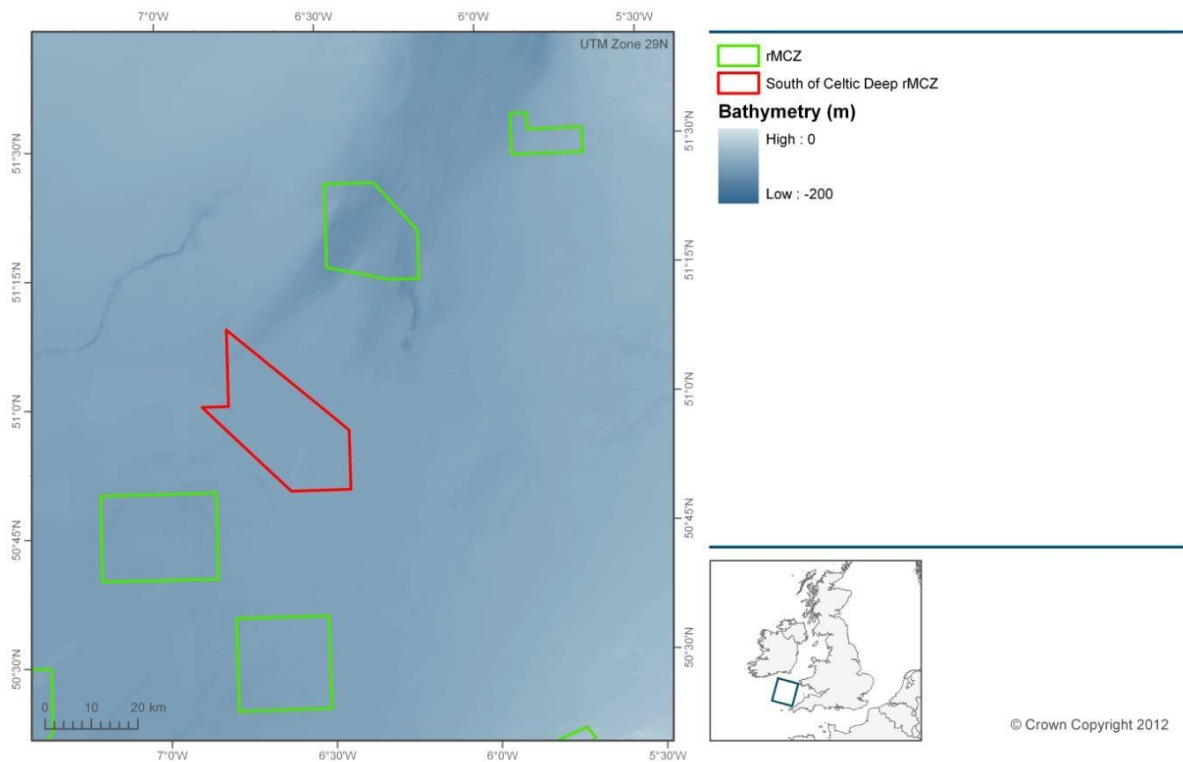


Figure 1. Location of North of Celtic Deep rMCZ. [Bathymetry is from the Defra Digital Elevation Model (Astrium 2011)].

### 1.3 Geological and Biological Context

A number of Broad Scale Habitat (BSH) features and Features of Conservation Interest (FOCI) have been proposed by the regional project for designation within the rMCZ (Table 1).

Table 1. Features proposed for designation within South of Celtic Deep rMCZ.

Feature Type	Feature Name
<b>Broad Scale Habitat (BSH)</b>	A5.1 Subtidal coarse sediment A5.2 Subtidal sand A5.3 Subtidal mixed sediments
<b>Features of Conservation Interest (FOCI)</b>	
<b>Habitats</b>	Subtidal sands and gravels*
<b>Species</b>	N/A
<b>Geomorphological Feature</b>	N/A

*\*Subtidal sands and gravels are considered to be adequately protected by its component habitat features subtidal sand and/or subtidal coarse sediment, and is no longer included within MCZ designations.*

### 1.4 Existing data and information utilised to inform survey planning

Apart from the information contained within the SAD map, no existing data were identified which could be used to inform the survey planning for this site.

## 2 Survey Design and Methods

### 2.1 *Survey planning and design*

Selection and positioning of groundtruthing stations was informed by acoustic bathymetric and backscatter data collected opportunistically during the survey and the predicted broadscale habitat map from the Site Assessment Document (SAD). Sampling stations within the predicted sedimentary habitats were positioned using a triangular lattice grid overlaid on the habitat map. Stations within the area predicted as subtidal coarse and sand sediments were at a grid spacing of 3.5 km and while stations within the less extensive area predicted as subtidal mixed sediment were at a grid spacing of 2 km.

Within the predicted sedimentary habitats, the selection of stations where the camera sledge would be used in addition to the grab was informed by the sediment type present in the grab sample (e.g., where the grab sample confirmed the presence of a given BSH the camera was deployed to allow characterisation of the surface sediment types and epifaunal communities). The number of camera deployments per BSH varied depending on the uniformity of the habitat and its spatial extent.

'Intelligent' station codes were constructed, each with 3 elements; SCD indicating the South Celtic Deep site followed by a letter indicating the predicted substrate type for that location according to the SAR (C for coarse sediment, S for sand and Mx for mixed sediment), then a sequential number (e.g. SCD\_C\_5, SCD\_S\_5)

### 2.2. *Sample collection and processing methods*

#### 2.2.1 *Sedimentary Broad Scale Habitats*

Sedimentary habitats were ground-truthed by grab and underwater camera. The grab system comprised a 0.1 m<sup>2</sup> mini Hamon grab fitted with a video camera (Figure 2), the combined gear being known as a HamCam. This allowed an image of the undisturbed seabed surface to be obtained for each grab sample. On recovery, the grab was emptied into a large plastic bin and a representative sub-sample of sediment (approx. 0.5 litres) taken for Particle Size Analysis (PSA). The sample was stored in a labelled plastic container and frozen ready for transfer to a laboratory ashore.

The remaining sample was photographed, and the volume of sediment measured and recorded. Benthic fauna were collected by washing the sample with sea-water over a 1 mm sieve. The retained >1 mm fraction was transferred to a labelled container and preserved in 4% buffered formaldehyde for later analysis ashore.



**Figure 2. Mini Hamon grab with video camera (HamCam).**

The camera sledge system comprised a video camera with capability to also capture still images (Figure 3). Illumination was provided by three Cefas high intensity LED striplights and a flash unit. The camera was fitted with a four-spot laser-scaling device to provide a reference scale in the video image. Set-up and operation followed the MESH 'Recommended Operating Guidelines (ROG) for underwater video and photographic imaging techniques'. Video was recorded simultaneously to a Sony GV-HD700 DV tape recorder and a computer hard drive. A video overlay was used to provide station metadata, time and GPS position (of the vessel) in the recorded video image.

Camera tows lasted a minimum of 10 minutes, with the sledge being towed at ~ 0.5 knots ( $\sim 0.25 \text{ ms}^{-1}$ ) across a 50 m 'bullring' centred on the sampling station. Still images were captured at regular one minute intervals and opportunistically if specific features of interest were encountered. The sledge was controlled by a winch operator with sight of the video monitor and note made of the amount of tow cable deployed to allow a 'lay back' to be applied to estimate the distance of the sledge behind the vessel.



Figure 3. Camera sledge with video and still imaging system.

### 2.2.2 *Circolittoral Rock Broad Scale Habitats and Mixed sediments*

A drop-camera system was available for sampling stations where a hard substrate was predicted by the SAD or observed in the acoustic survey. The system specification was similar to that used on the camera sledge (as described above) but mounted in a rectangular drop-frame (Figure 4) and deployed from the side gantry, amidships. Deployments lasted a minimum of 10 minutes, with the vessel executing a controlled drift at  $\sim 0.5$  knots ( $\sim 0.25 \text{ ms}^{-1}$ ) across a 50 m 'bullring' centered on the sampling station. Stills images were captured at regular one-minute intervals and opportunistically if specific features of interest were encountered. The height of the camera off the seabed was controlled by a winch operator with sight of the video monitor.



Figure 4. Drop camera frame fitted with video and still imaging system.



### 3 Survey Narrative

#### 3.1 Part A: 12/02/12 to 13/02/12

The *CEFAS Endeavour* arrived at station (C1) in the southern most tip of the site at 04:20, 12/02/12 and carried out a sound velocity profile (SVP) cast for calibration the multibeam. The groundtruthing survey of the site commenced with the HamCam (HC) and the Camera sledge (CS). Due to the predicted occurrence of a patch of mixed sediments in the south of the site it was decided to leave these stations until the end of the survey to avoid having to frequently swap between the sledge and the Drop Camera. The HamCam failed to collect valid samples at several stations in the southeast of the site even though the predicted habitat was coarse sediment or sand. During camera deployments it was revealed that the seabed habitat was actually sand with patches of cobble and small boulders.

The *CEFAS Endeavour* continued transiting in a north-west direction collecting grab samples and underwater stills and video from the planned stations. Multibeam acoustic data was collected opportunistically on transit between these stations. Camera deployments were scheduled for every third station unless the habitat type observed during the HamCam deployment was different to the predicted habitat, in which case additional camera deployments were carried out. Any interesting sedimentary features identified by the multibeam data were also targeted with additional camera deployments.

On 13/02/12 the Kongsberg camera used on the sledge and drop frame and was found to be un-repairable. Consequently, the remaining groundtruth sampling was limited to the HamCam only. The remaining planned camera stations within the predicted mixed, coarse and sand broadscale habitats were collected during part B of the cruise.

#### 3.2 Part B: 19/02/12 to 20/02/12

The survey at South Celtic Deep resumed on 19/02/12 (18:40) with a drop camera deployed at station S8 (where previous attempts at Hamon grabbing had failed). The remaining stations (mainly predicted to consist of mixed sediments) were surveyed using a combination of Hamon grabbing (where the sediments were suitable) and drop camera techniques where the ground was too coarse to allow a grab sample to be obtained. The survey within the South Celtic Deep rMCZ continued until 13:40 on 20/02/12 during which time a total of 13 drop camera stations, 15 HamCam stations and two multibeam transit lines were completed.

## 4 Preliminary Results

### 4.1 Acoustic Maps

The multibeam acoustic data acquired during transits between stations were processed for bathymetry (Figure 5) and backscatter.






Multibeam Bathymetry

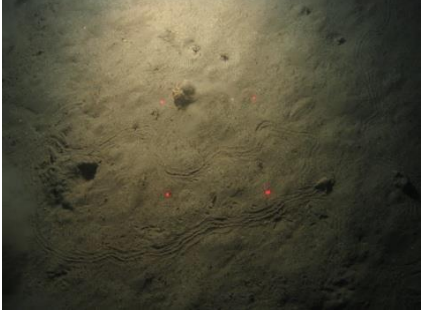
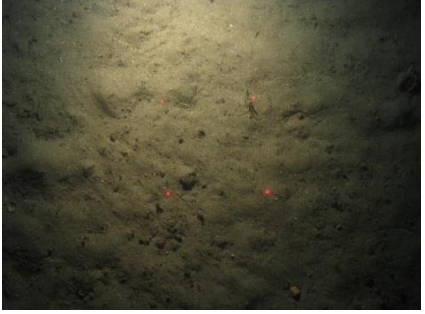






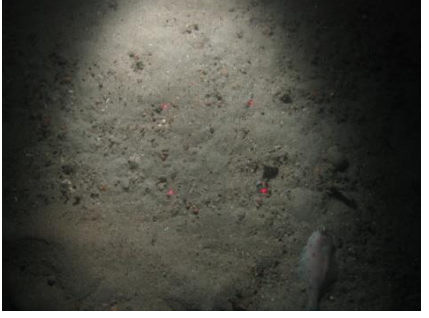



Figure 5. Chart of the South Celtic Deep rMCZ overlaid with multibeam bathymetry.

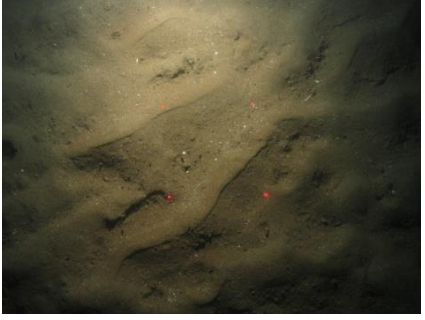
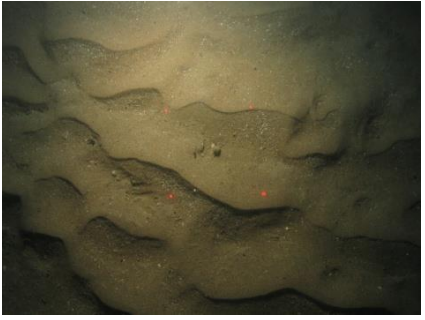



## 4.2 Seabed Imagery






Table 2. Preliminary summary of surface sediments and epifaunal species derived from video and still imagery.


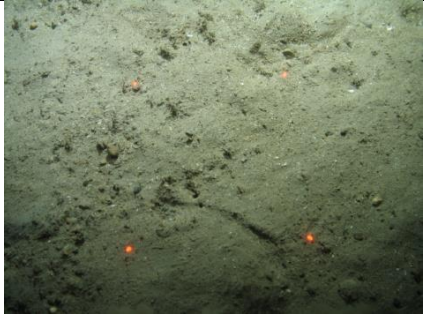
Stn Code	BSH Habitat/Faunal Summary	Still Image
C1	<p><b>Rippled gravelly sand with occasional cobble and small boulders</b>  <i>Urticina felina</i>, <i>Zeus faber</i></p>	
C2	<p><b>Gravelly sand with patches of cobble and small boulders</b>  <i>Nemertesia antennina</i>, <i>Inachus</i> sp., <i>Porella compressa</i>, <i>Chiton</i></p>	
C3	<p><b>Rippled sand</b>  <i>Paguridae</i>, <i>Microchirus variegatus</i>, <i>Lanice conchilega</i></p>	
C8	<p><b>Gravelly sand with occasional areas of exposed bedrock and small boulders</b>  <i>Stichastrella rosea</i>, <i>Asterias rubens</i>,  <i>Astropecten irregularis</i>, <i>Luidia sarsi</i></p>	
C10	<p><b>Rippled sand with patches of cobble</b>  <i>Astropecten irregularis</i>, <i>Luidia ciliaris</i>, <i>Porania pulvillus</i>, <i>Echinus esculentus</i>, <i>Pecten maximus</i></p>	

Stn Code	BSH Habitat/Faunal Summary	Still Image
C12	<p><b>Muddy sand with burrows</b>  <i>Pagurus</i> sp., <i>Buccinum undatum</i></p>	
C15	<p><b>Muddy sand with shell and cobbles</b>  <i>Alcyonium digitatum</i>, <i>Galathea</i> sp., <i>Inachus</i> sp., <i>Pagurus</i> sp., <i>Cerianthus lloydii</i>)</p>	
C18	<p><b>Rippled sand with occasional cobble</b>  <i>Scyliorhinus canicula</i>, <i>Pagurus</i> sp., <i>Inachus</i> sp.</p>	
C24	<p><b>Rippled sand</b>  <i>Trisopterus luscus</i>, <i>Buccinum undatum</i>,  <i>Pagurus</i> sp., <i>Epizoanthus incrustatus</i></p>	
C25	<p><b>Rippled sand</b>  <i>Scyliorhinus canicula</i>, <i>Pagurus</i> sp., <i>Asterias rubens</i>, <i>Nemertesia antennina</i></p>	

Stn Code	BSH Habitat/Faunal Summary	Still Image
C27	<p><b>Rippled sand with patches of cobble</b></p> <p><i>Asterias rubens</i>, <i>Inachus</i> sp., <i>Callionymus</i> sp., <i>Urticina felina</i>, Octopodidae, <i>Porania pulvillus</i></p>	
S1	<p><b>Rippled sand with patches of cobble and small boulders</b></p> <p><i>Astropecten irregularis</i>, <i>Porella compressa</i>, <i>Urticina felina</i>, <i>Pagurus</i> sp., <i>Cerianthus lloydii</i>, <i>Hippoglossoides platessoides</i></p>	
S5	<p><b>Shelly sand with patches of cobble</b></p> <p><i>Echinus esculentus</i>, <i>Urticina felina</i></p>	
S8	<p><b>Shelly sand with patches of cobble</b></p> <p><i>Asterias rubens</i>, <i>Diazona violacea</i>, <i>Urticina felina</i>, <i>Cerianthus lloydii</i></p>	
S11	<p><b>Shelly muddy sand with occasional cobble</b></p> <p><i>Urticina felina</i>, <i>Porella compressa</i>, <i>Porania pulvillus</i>, <i>Pagurus</i> sp., <i>Lepidorhombus whiffiagonis</i>, <i>Omalosecosa ramulosa</i></p>	

Stn Code	BSH Habitat/Faunal Summary	Still Image
S15	<p><b>Rippled sand with occasional cobble and small boulders</b></p> <p><i>Urticina felina</i>, <i>Asterias rubens</i>, <i>Pagarus</i> sp.</p>	
S16	<p><b>Rippled sand</b></p> <p><i>Asterias rubens</i></p>	
S18	<p><b>Rippled sand with burrows</b></p> <p><i>Inachus</i> sp., <i>Asterias rubens</i>, <i>Urticina felina</i></p>	
S19	<p><b>Rippled sand with small boulders</b></p> <p><i>Asterias rubens</i>, <i>Munida rugosa</i>, <i>Inachus</i> sp., <i>Callionymus lyra</i>, <i>Trispoterus luscus</i></p>	
Mx1	<p><b>Gravelly sand</b></p> <p><i>Luidia ciliaris</i></p>	

Stn Code	BSH Habitat/Faunal Summary	Still Image
Mx2, 656	<p><b>Rippled sand with patches of cobble and small boulders</b></p> <p><i>Sagartia elegans, Pecten maximus</i></p>	
Mx3	<p><b>Rippled sand with patches of cobble</b></p> <p><i>Porella compressa, Urticina felina, Pecten maximus, Porania pulvillus, Echinus esculentus, Macropodia sp.</i></p>	
Mx7	<p><b>Rippled sand with patches of pebble and cobble</b></p> <p>Hydroid turf on cobble</p>	
Mx11	<p><b>Shelly rippled sand</b></p> <p><i>Urticina felina, Stichastrella rosea</i></p>	
Mx14	<p><b>Slightly gravelly rippled sand</b></p> <p><i>Stichastrella rosea, Agonus cataphractus</i></p>	

Stn Code	BSH Habitat/Faunal Summary	Still Image
Mx15	Slightly gravelly rippled sand <i>Astropecten irregularis</i>	
Mx13	Slightly gravelly rippled sand <i>Asterias rubens</i>	

### 4.3 Grab samples and sediment types

Preliminary observations of the spatial distribution of sediment types (EUNIS Level 3) for each grab sample are presented in Figure 6. It should be emphasized that this assignment of EUNIS classification is purely subjective and could change as a result of subsequent laboratory analysis and interpretation.

Preliminary Sediment Descriptions

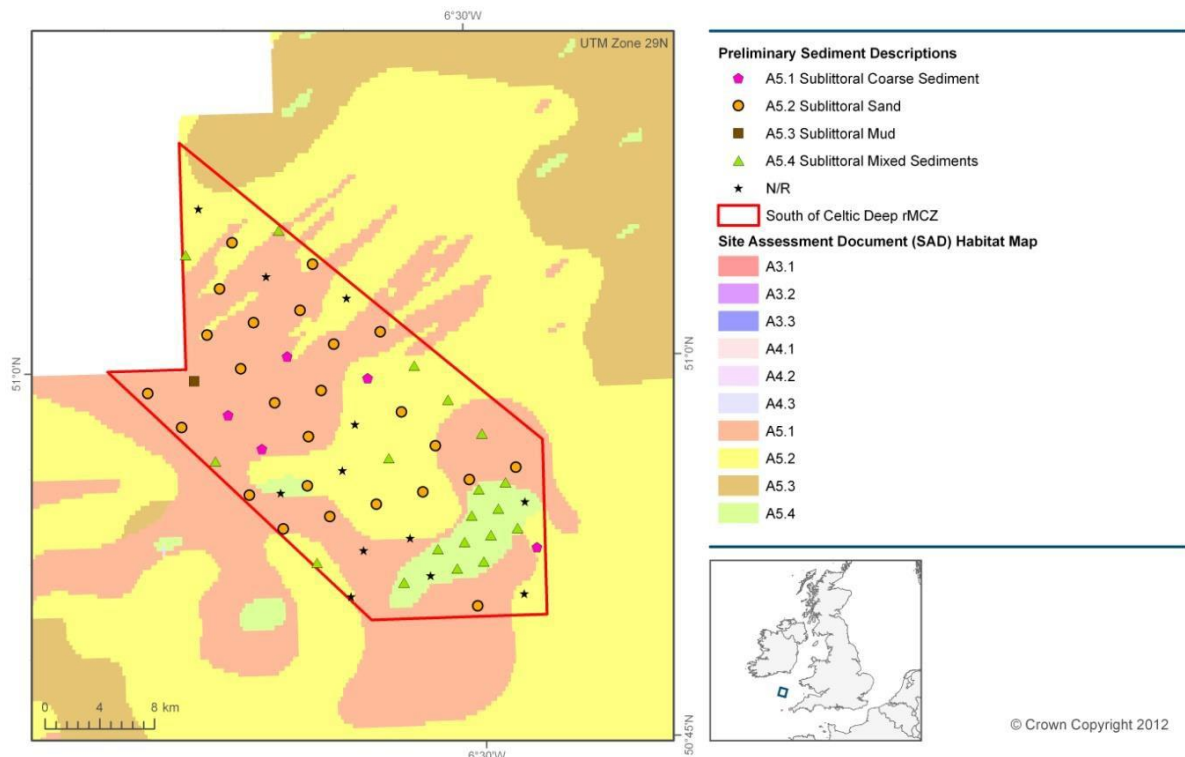


Figure 6. Preliminary observations of sediment type (EUNIS classification) derived from Hamon grab samples.



**4.4 Features of Conservation Interest (FOCI): Records in the rMCZ from historic surveys and the current survey (CEND3/12)**

No occurrences of species FOCI were identified from historic surveys records or during the current survey (CEND3/12). Species FOCI may subsequently be identified in samples collected at this rMCZ following sample processing.

## 5 Annexes

### 5.1 RV Cefas Endeavour



<b>Port of registry</b>	Lowestoft
<b>Length OA</b>	73.00 m (excluding stern roller)
<b>Length extreme</b>	73.916 m
<b>Breadth (MLD)</b>	15.80 m
<b>Depth (MLD)</b>	8.20 m
<b>Design draft</b>	5.00 m
<b>Deep draught</b>	5.50 m
<b>LBP</b>	66.50 m
<b>Gross tonnage</b>	2983 tonnes
<b>Net register tonnage</b>	894 tonnes
<b>Net lightship</b>	2436 tonnes
<b>Deadweight @ 5.00 m</b>	784 tonnes
<b>Deadweight @ 5.50 m</b>	1244 tonnes
<b>Displacement @ 5.00 m</b>	3210 tonnes
<b>Displacement @ 5.50 m</b>	3680 tonnes
<b>Builder</b>	Ferguson Shipbuilders Limited, Port Glasgow
<b>Commissioned</b>	2003
<b>Communications</b>	In port BT Tel. Cellphone Voice/Fax/Data Radio TELEX Inmarsat C Fleet 77 (Inmarsat F) and VSAT (eutelsat) internet access
<b>Endurance</b>	42 days
<b>Complement</b>	En-suite accommodation for 16 crew and 19 scientists with dedicated hospital facility
<b>Propulsion System</b>	AC/DC Diesel Electric 3 x diesel electric AC generators, individually raft mounted 2 x tandem electric DC motors Single screw
<b>Power generation</b>	3240 Kw
<b>Power propulsion</b>	2230 Kw
<b>Thrusters</b>	Bow thruster (flush mounted azimuthing) Stern thruster (tunnel)
<b>Trial speed</b>	14.4 knots
<b>Bollard pull</b>	29 tonnes
<b>Call sign</b>	VQHF3
<b>Official number</b>	906938
<b>MMSI</b>	235005270

<b>Lloyds/IMO number</b>	9251107
<b>Side Gantry</b>	7.5 tonne articulated side A-frame
<b>Stern Gantry</b>	25 tonne stern A-frame
<b>Winches</b>	3 x cranes 35 tM, heave compensated 2 x trawl winches 2 x drum winches, (1 double) Double barrel survey winch with motion compensation and slip rings Double barrel survey winch with slip rings Double barrel towing winch with slip rings Side-scan sonar winch with slip rings 3 x Gilson winches (one fitted to stern A-frame)
<b>Transducers/Sea tube</b>	Drop keel to deploy transducers outside the hull boundary layer in addition to hull mounted transducers 1.2 m diameter sea tube/moon-pool
<b>Acoustic equipment</b>	Kongsberg Simrad: HiPAP 500 positioning sonar EK60, 38/120 kHz scientific sounder EA 600, 50/200 kHz scientific sounder Scanmar net mensuration system SH80 high frequency omni- directional sonar EM3002 swathe bathymetry sounder Hull mounted Scanmar fishing computer transducers
<b>Boats</b>	2 x 8m rigid work and rescue boats with suite of navigational equipment deployed on heave-compensated davits
<b>Laboratories</b>	8 networked laboratories designed for optimum flexibility of purpose 4 serviced deck locations for containerised laboratories
<b>Special features</b>	Dynamic positioning system Intering anti-roll system Local Area Network with scientific data management system Ship-wide general information system CCTV
<b>Class</b>	LRS 100A1+LMC UMS SCM CCS ICC IP ES(2) DP(CM) ICE class 2

## 5.2 Camera Sledge and Drop Camera

Flash model: Kongsberg 11-242

Underwater lights – Cefas high power LED strip lights

Video and stills camera settings variable depending on underwater visibility and ambient light levels.

## 5.3 Positioning Software-Tower

Vessel offsets are defined from the pitch roll centre of the vessel – the Common Reference Point (CRP) used by the Tower CEMAP software to calculate offsets.

## 5.4 Multibeam Bathymetry

Model: Kongsberg EM3002D

Frequency: 300kHz; swathe width variable running in hi res equidistant mode

Latency correction not determined – 1pps synchronised time system utilised on vessel.

### 5.5 Survey Metadata

Station metadata for the South of Celtic Deep rMCZ survey on CEND 03/12 are provided below. Stn No is a sequential event number for the cruise, so changes each time a new gear is used or a new location sampled. Stn Code is used to identify the sampling location. CTD=Conductivity, Temperature, Depth micrologger, MB=Multibeam, HC=HamCam, CS=Camera Sledge, DC=Drop Camera.

Cruise	Date	Stn No	Stn Code	Gear	Latitude	Longitude
CEND 03/12	12/02/2012	470	SCD_C1	CTD	50.83942	-6.50485
CEND 03/12	12/02/2012	471	SCD C1	HC	50.83937	-6.50469
CEND 03/12	12/02/2012	472	SCD C1	CS	50.83928	-6.50517
CEND 03/12	12/02/2012	472	SCD C1	CS	50.83856	-6.50618
CEND 03/12	12/02/2012	473	c1-s1	MB	50.837	-6.504
CEND 03/12	12/02/2012	473	c1-s1	MB	50.849	-6.454
CEND 03/12	12/02/2012	474	s1	HC	50.84635	-6.45608
CEND 03/12	12/02/2012	475	s1	CS	50.84607	-6.45634
CEND 03/12	12/02/2012	475	s1	CS	50.84498	-6.45813
CEND 03/12	12/02/2012	476	c1-s1	MB	50.846	-6.458
CEND 03/12	12/02/2012	476	c1-s1	MB	50.879	-6.439
CEND 03/12	12/02/2012	477	scd_s4	HC	50.87635	-6.441
CEND 03/12	12/02/2012	478	s4-c7	MB	50.879	-6.442
CEND 03/12	12/02/2012	478	s4-c7	MB	50.92931	-6.45955
CEND 03/12	12/02/2012	479	c7	HC	50.92897	-6.4607
CEND 03/12	12/02/2012	480	C7-C10	MB	50.92902	-6.46242
CEND 03/12	12/02/2012	480	C7-C10	MB	50.9523	-6.49236
CEND 03/12	12/02/2012	481	c10	HC	50.95206	-6.49432
CEND 03/12	12/02/2012	482	c10	CS	50.95189	-6.49459
CEND 03/12	12/02/2012	482	c10	CS	50.9514	-6.49689
CEND 03/12	12/02/2012	483	C10-S13	MB	50.95097	-6.50048
CEND 03/12	12/02/2012	483	C10-S13	MB	50.97535	-6.52776
CEND 03/12	12/02/2012	484	SCD-S13	HC	50.97502	-6.52861
CEND 03/12	12/02/2012	485	S13-S15	MB	50.973	-6.5312
CEND 03/12	12/02/2012	485	S13-S15	MB	50.9981	-6.5569
CEND 03/12	12/02/2012	486	SCD-S15	HC	50.99816	-6.56231
CEND 03/12	12/02/2012	487	SCD-C21	HC	51.02082	-6.59638
CEND 03/12	12/02/2012	488	C-21TOS-16	MB	51.02306	-6.59926
CEND 03/12	12/02/2012	488	C-21TOS-16	MB	51.04182	-6.63279
CEND 03/12	12/02/2012	490	SCD-S16	CS	51.04378	-6.63058
CEND 03/12	12/02/2012	490	SCD-S16	CS	51.04424	-6.62981
CEND 03/12	12/02/2012	491	S-16TOS-17	MB	51.04642	-6.63125
CEND 03/12	12/02/2012	491	S-16TOS-17	MB	51.04699	-6.66575
CEND 03/12	12/02/2012	492	SCD-S17	HC	51.0666	-6.66486
CEND 03/12	12/02/2012	493	S-17TOS-27	MB	51.06827	-6.6672
CEND 03/12	12/02/2012	493	S-17TOS-27	MB	51.08722	-6.6994
CEND 03/12	12/02/2012	494	SCD-C27	HC	51.08945	-6.69881
CEND 03/12	12/02/2012	495	SCD-C27	CS	51.0894	-6.69892
CEND 03/12	12/02/2012	495	SCD-C27	CS	51.09029	-6.69841
CEND 03/12	12/02/2012	496	c27-s20	MB	51.0921	-6.7052
CEND 03/12	12/02/2012	496	c27-s20	MB	51.1033	-6.7744
CEND 03/12	12/02/2012	497	SCD-C27	HC	51.10515	-6.78225
CEND 03/12	12/02/2012	498	s20-s18	MB	51.103	-6.7024
CEND 03/12	12/02/2012	498	s20-s18	MB	51.07497	-6.7966

Cruise	Date	Stn No	Stn Code	Gear	Latitude	Longitude
CEND 03/12	12/02/2012	499	SCD-S18	HC	51.07495	-6.79666
CEND 03/12	12/02/2012	500	S18	CS	51.07517	-6.79692
CEND 03/12	12/02/2012	500	S18	CS	51.07465	-6.79839
CEND 03/12	12/02/2012	501	s18-s19	MB	51.07558	-6.7998
CEND 03/12	12/02/2012	501	s18-s19	MB	51.08355	-6.74768
CEND 03/12	12/02/2012	502	S19	CS	51.08216	-6.74738
CEND 03/12	12/02/2012	502	S19	CS	51.08241	-6.74986
CEND 03/12	12/02/2012	503	SCD-S19	HC	51.08234	-6.74837
CEND 03/12	12/02/2012	504	s19-c26	MB	51.08176	-6.7444
CEND 03/12	12/02/2012	504	s19-c26	MB	51.06114	-6.70697
CEND 03/12	12/02/2012	505	SCD C26	HC	51.05973	-6.71335
CEND 03/12	12/02/2012	506	c26-c25	MB	51.05191	-6.71592
CEND 03/12	12/02/2012	506	c26-c25	MB	51.05211	-6.76121
CEND 03/12	12/02/2012	507	SCD C25	HC	51.05256	-6.76203
CEND 03/12	12/02/2012	508	SCD C25	CS	51.05251	-6.76224
CEND 03/12	12/02/2012	508	SCD C25	CS	51.05254	-6.76252
CEND 03/12	12/02/2012	509	c25-c22	MB	51.65096	-6.76759
CEND 03/12	12/02/2012	509	c25-c22	MB	51.02236	-6.7736
CEND 03/12	12/02/2012	510	SCD C22	HC	51.02221	-6.77716
CEND 03/12	12/02/2012	511	c22-c23	MB	51.02335	-6.7753
CEND 03/12	12/02/2012	511	c22-c23	MB	51.02726	-6.72709
CEND 03/12	12/02/2012	512	SCD C23	HC	51.02957	-6.72835
CEND 03/12	12/02/2012	513	c23-c24	MB	51.0307	-6.72694
CEND 03/12	12/02/2012	513	c23-c24	MB	51.63208	-6.68548
CEND 03/12	12/02/2012	514	SCD C24	HC	51.03659	-6.67955
CEND 03/12	12/02/2012	515	SCD C24	CS	51.03666	-6.67968
CEND 03/12	12/02/2012	515	SCD C24	CS	51.03759	-6.67966
CEND 03/12	13/02/2012	516	c24-c20	MB	51.03887	-6.67851
CEND 03/12	13/02/2012	516	c24-c20	MB	51.01164	-6.64988
CEND 03/12	13/02/2012	517	SCD C20	HC	51.01361	-6.64519
CEND 03/12	13/02/2012	518	c20-c19	MB	51.01385	-6.64763
CEND 03/12	13/02/2012	518	c20-c19	MB	51.00378	-6.69352
CEND 03/12	13/02/2012	519	SCD C19	HC	51.00661	-6.6938
CEND 03/12	13/02/2012	520	c19-c18	MB	51.00678	-6.69575
CEND 03/12	13/02/2012	520	c19-c18	MB	50.99789	-6.74298
CEND 03/12	13/02/2012	521	SCD C18	HC	50.99947	-6.74279
CEND 03/12	13/02/2012	522	SCD C18	CS	50.99948	-6.74291
CEND 03/12	13/02/2012	522	SCD C18	CS	51.00038	-6.74275
CEND 03/12	13/02/2012	523	c18-c17	MB	51.00091	-6.74576
CEND 03/12	13/02/2012	523	c18-c17	MB	50.99051	-6.78991
CEND 03/12	13/02/2012	524	SCD C17	HC	50.99225	-6.79147
CEND 03/12	13/02/2012	525	c17-c16	MB	50.99261	-6.79277
CEND 03/12	13/02/2012	525	c17-c16	MB	50.98491	-6.84038
CEND 03/12	13/02/2012	526	SCD C16	HC	50.98512	-6.84024
CEND 03/12	13/02/2012	527	c16-c12	MB	50.98551	-6.83873
CEND 03/12	13/02/2012	527	c16-c12	MB	50.958	-6.81
CEND 03/12	13/02/2012	528	SCD C12	HC	50.96238	-6.80601
CEND 03/12	13/02/2012	529	scd c12	CS	50.96329	-6.80641
CEND 03/12	13/02/2012	529	scd c12	CS	50.96329	-6.80641
CEND 03/12	13/02/2012	530	c12-c13	MB	50.96421	-6.8054
CEND 03/12	13/02/2012	530	c12-c13	MB	50.96722	-6.75561
CEND 03/12	13/02/2012	531	scd c13	HC	50.96957	-6.75753
CEND 03/12	13/02/2012	532	c13-c14	MB	50.97008	-6.75631

Cruise	Date	Stn No	Stn Code	Gear	Latitude	Longitude
CEND 03/12	13/02/2012	532	c13-c14	MB	50.97304	-6.70617
CEND 03/12	13/02/2012	533	scd c14	HC	50.97668	-6.70853
CEND 03/12	13/02/2012	534	c13-c14	MB	50.97766	-6.7039
CEND 03/12	13/02/2012	534	c13-c14	MB	50.98338	-6.65938
CEND 03/12	13/02/2012	535	scd c15	HC	50.98389	-6.65958
CEND 03/12	13/02/2012	536	scd c15	CS	50.98383	-6.65973
CEND 03/12	13/02/2012	536	scd c15	CS	50.98557	-6.66013
CEND 03/12	13/02/2012	537	c15-c14	MB	50.98741	-6.65789
CEND 03/12	13/02/2012	537	c15-c14	MB	50.9894	-6.61011
CEND 03/12	13/02/2012	538	scd s14	HC	50.99086	-6.61085
CEND 03/12	13/02/2012	539	s14-s15	MB	50.99181	-6.61048
CEND 03/12	13/02/2012	539	s14-s15	MB	50.9981	-6.5552
CEND 03/12	13/02/2012	540	scd s15	CS	50.99908	-6.56091
CEND 03/12	13/02/2012	540	scd s15	CS	50.99903	-6.56317
CEND 03/12	13/02/2012	541	s15-s12	MB	50.997	-6.567
CEND 03/12	13/02/2012	541	s15-s12	MB	50.968	-6.569
CEND 03/12	13/02/2012	542	scd s12	HC	50.96818	-6.57683
CEND 03/12	13/02/2012	543	s12-s11	MB	50.968	-6.579
CEND 03/12	13/02/2012	543	s12-s11	MB	50.9606	-6.6243
CEND 03/12	13/02/2012	544	scd s11	HC	50.96062	-6.62584
CEND 03/12	13/02/2012	545	scd s11	CS	50.96059	-6.62605
CEND 03/12	13/02/2012	545	scd s11	CS	50.96123	-6.62708
CEND 03/12	13/02/2012	546	s11-c11	MB	50.9616	-6.6296
CEND 03/12	13/02/2012	546	s11-c11	MB	50.953	-6.673
CEND 03/12	13/02/2012	547	scd c11	HC	50.95392	-6.67458
CEND 03/12	13/02/2012	548	c11-c9	MB	50.953	-6.675
CEND 03/12	13/02/2012	548	c11-c9	MB	50.945	-6.721
CEND 03/12	13/02/2012	549	scd c9	HC	50.94664	-6.72323
CEND 03/12	13/02/2012	549	scd c9	HC	50.94664	-6.72317
CEND 03/12	13/02/2012	550	c9-c8	MB	50.946	-6.727
CEND 03/12	13/02/2012	550	c9-c8	MB	50.93927	-6.77226
CEND 03/12	13/02/2012	551	scd c8	HC	50.93951	-6.77207
CEND 03/12	13/02/2012	552	scd c8	CS	50.93935	-6.7721
CEND 03/12	13/02/2012	552	scd c8	CS	50.94026	-6.7725
CEND 03/12	13/02/2012	553	c8-c5	MB	50.94009	-6.76868
CEND 03/12	13/02/2012	553	c8-c5	MB	50.91582	-6.73822
CEND 03/12	13/02/2012	554	scd c5	HC	50.91674	-6.73773
CEND 03/12	13/02/2012	555	c5-s8	MB	50.91791	-6.73135
CEND 03/12	13/02/2012	555	c5-s8	MB	50.93014	-6.64067
CEND 03/12	13/02/2012	557	scd s8	CS	50.93086	-6.64066
CEND 03/12	13/02/2012	558	s8-s9	MB	50.9319	-6.63781
CEND 03/12	13/02/2012	558	s8-s9	MB	50.93547	-6.59239
CEND 03/12	13/02/2012	559	scd s9	HC	50.9381	-6.59148
CEND 03/12	13/02/2012	560	s9-s10	MB	50.93923	-6.58478
CEND 03/12	13/02/2012	560	s9-s10	MB	50.94374	-6.54227
CEND 03/12	13/02/2012	561	scd s10	HC	50.9451	-6.54324
CEND 03/12	13/02/2012	562	scd c6	HC	50.92228	-6.50914
CEND 03/12	13/02/2012	563	c6-s7	MB	50.91756	-6.53092
CEND 03/12	13/02/2012	563	c6-s7	MB	50.91519	-6.55755
CEND 03/12	13/02/2012	564	scd_s7	HC	50.91532	-6.55744
CEND 03/12	13/02/2012	565	s7-s6	MB	50.91496	-6.55937
CEND 03/12	13/02/2012	565	s7-s6	MB	50.90529	-6.60594
CEND 03/12	13/02/2012	566	scd s6	HC	50.90807	-6.60617

Cruise	Date	Stn No	Stn Code	Gear	Latitude	Longitude
CEND 03/12	13/02/2012	567	c6-c4	MB	50.90742	-6.60904
CEND 03/12	13/02/2012	567	c6-c4	MB	50.89779	-6.65455
CEND 03/12	13/02/2012	568	scd c4	HC	50.90076	-6.65504
CEND 03/12	13/02/2012	569	c4-c3	MB	50.9	-6.66039
CEND 03/12	13/02/2012	569	c4-c3	MB	50.88968	-6.70337
CEND 03/12	13/02/2012	570	scd c3	HC	50.89388	-6.70346
CEND 03/12	13/02/2012	571	c5-c3	MB	50.89342	-6.70424
CEND 03/12	13/02/2012	571	c5-c3	MB	50.88943	-6.67053
CEND 03/12	13/02/2012	572	scd s3	HC	50.87079	-6.6701
CEND 03/12	13/02/2012	573	s3-s2	MB	50.86883	-6.66531
CEND 03/12	13/02/2012	573	s3-s2	MB	50.84577	-6.63712
CEND 03/12	13/02/2012	574	scd s2	HC	50.84795	-6.63538
CEND 03/12	13/02/2012	575	s2-c2	MB	50.89922	-6.63377
CEND 03/12	13/02/2012	575	s2-c2	MB	50.87785	-6.211
CEND 03/12	13/02/2012	576	scd c2	HC	50.8779	-6.62101
CEND 03/12	13/02/2012	577	c2-s5	MB	50.8757	-6.62501
CEND 03/12	13/02/2012	577	c2-s5	MB	50.88472	-6.57236
CEND 03/12	13/02/2012	578	scd s5	HC	50.88499	-6.57239
CEND 03/12	19/02/2012	626	SCD_S8	DC	50.93058	-6.64001
CEND 03/12	19/02/2012	627	SCD_S8	DC	50.93156	-6.64211
CEND 03/12	19/02/2012	627	SCD_MX_5	DC	50.92205	-6.67878
CEND 03/12	19/02/2012	628	SCD_Mx15	HC	50.9216	-6.67749
CEND 03/12	19/02/2012	629	SCD_MX_13	DC	50.91707	-6.70533
CEND 03/12	19/02/2012	629	SCD_MX_13	DC	50.91776	-6.70646
CEND 03/12	19/02/2012	631	SCD_C3	DC	50.89428	-6.70412
CEND 03/12	19/02/2012	631	SCD_C3	DC	50.89568	-6.70503
CEND 03/12	19/02/2012	632	SCD_C2	DC	50.87796	-6.62067
CEND 03/12	19/02/2012	632	SCD_C2	DC	50.87857	-6.62288
CEND 03/12	19/02/2012	633	SCD_S5	DC	50.88516	-6.57215
CEND 03/12	19/02/2012	633	SCD_S5	DC	50.88576	-6.57435
CEND 03/12	20/02/2012	634	SCD_MX1	DC	50.85626	-6.57965
CEND 03/12	20/02/2012	634	SCD_MX1	DC	50.85625	-6.58166
CEND 03/12	20/02/2012	635	SDC_MX1	HC	50.85627	-6.58016
CEND 03/12	20/02/2012	636	SCD_Mx2	HC	50.86027	-6.55246
CEND 03/12	20/02/2012	637	SCD_Mx5	HC	50.87767	-6.54397
CEND 03/12	20/02/2012	638	SCD_MX3	DC	50.86433	-6.52399
CEND 03/12	20/02/2012	638	SCD_MX3	DC	50.8637	-6.52607
CEND 03/12	20/02/2012	639	SCD_Mx3	HC	50.8643	-6.52463
CEND 03/12	20/02/2012	640	SCD_Mx4	HC	50.86849	-6.49665
CEND 03/12	20/02/2012	641	SCD_Mx6	HC	50.88133	-6.51612
CEND 03/12	20/02/2012	642	SCD_MX7	DC	50.88572	-6.48745
CEND 03/12	20/02/2012	642	SCD_MX7	DC	50.88493	-6.48935
CEND 03/12	20/02/2012	643	SCD_MX7	HC	50.88535	-6.48863
CEND 03/12	20/02/2012	644	SCD_MX9	HC	50.89862	-6.50791
CEND 03/12	20/02/2012	645	SCD_MX12	DC	50.91602	-6.49804
CEND 03/12	20/02/2012	645	SCD_MX12	DC	50.9154	-6.49998
CEND 03/12	20/02/2012	646	SCD_Mx12	HC	50.91566	-6.49953
CEND 03/12	20/02/2012	647	SCD_Mx10	HC	50.90269	-6.47978
CEND 03/12	20/02/2012	648	SCD_MX8	HC	50.8895	-6.46083
CEND 03/12	20/02/2012	649	SCD_MX11	DC	50.90677	-6.45192
CEND 03/12	20/02/2012	649	SCD_MX11	DC	50.90666	-6.45394
CEND 03/12	20/02/2012	650	SCD_MX11	HC	50.90636	-6.45257
CEND 03/12	20/02/2012	651	SCD_MX14	DC	50.91988	-6.47159

Cruise	Date	Stn No	Stn Code	Gear	Latitude	Longitude
CEND 03/12	20/02/2012	651	SCD_MX14	DC	50.91875	-6.47333
CEND 03/12	20/02/2012	652	SCD_MX14	HC	50.91975	-6.47195
CEND 03/12	20/02/2012	653	SCD_MX14	CTD	50.91974	-6.47194
CEND 03/12	20/02/2012	654	MB Transit	MB	50.883	-6.473
CEND 03/12	20/02/2012	654	MB Transit	MB	50.885	-6.4872
CEND 03/12	20/02/2012	655	MB Transit	MB	50.883	-6.492
CEND 03/12	20/02/2012	655	MB Transit	MB	50.866	-6.553



## 5.6 Daily Progress Reports

**DAILY LOG  
STATUS REPORT**  
Name of Area Survey  
**Rv Cefas Endeavour – JNCC – DPR No. 11 – Saturday 12<sup>th</sup> February 2012**

Vessel: RV Cefas Endeavour GSM : 07799 773456	Project: MCZ Site Verification CEND 3/12 Satellite Voice Bridge: 00 870 (or 00871) 763998027
Daily Progress Report No. 11 Date: 12 <sup>th</sup> Feb. 2012	Location at 24:00: 51° 02.2N, 006° 40.8W

To Company:	Person:	E-mail:
Cefas		
JNCC		
JNCC		
JNCC		
JNCC		
Cefas		

**Safety**

	Today	To Date
Accidents/Incidents	0	0
Near Misses	0	0
Safety Drills/Induction	0	2
Additional comments:		

**Summary of operations 0000-2400**

Time UTC (start)	Time UTC (end)	Type	Comments
00:00	00:45	ToSu	Multibeam on transit from S17 to S16, East of Haig Fras rMCZ
00:45	01:01	ToSa	Hamon Grab at S16
01:01	01:22	ToSu	Multibeam on transit from S16 to S15
01:22	02:00	ToSa	Hamon Grab and Camera Sledge at S15
02:00	04:20	Transit	Transit from East of Haig Fras to South of Celtic Deep
04:20	04:25	Offshore Calibrations	CTD taken at SCD-C1, South of Celtic Deep
04:25	05:03	ToSa	Hamon Grab and Camera Sledge at C1
05:03	05:29	ToSu	Multibeam taken on transit from C1 to S1
05:29	06:24	ToSa	Three failed Hamon grabs (rocks in the grab) and camera sledge at S1. At all the first few stations at this site it looks primarily like sand on the video but may be rock just under the surface with sand veneer as grabbing has been very difficult.
06:24	06:51	ToSu	Multibeam taken on transit from S1 to S4
06:51	07:29	ToSa	Three failed Hamon grabs at S4 (rocks in grab) – decided after three attempts to sieve the second one as there were several cobbles/pebbles and a small amount of finer sediment. Lights on camera sledge broken so decided to move to next station and fix lights on transit.
07:29	08:07	ToSu	Multibeam on transit from S4 to C7
08:07	08:27	ToSa	Hamon grab at C7 (two failed grabs, third one got a small amount - ~1.5 litres - of sediment so analysed that).
08:27	08:52	ToSu	Multibeam on transit from C7 to C10
08:52	09:59	ToSa	Three failed Hamon grabs (rocks in grab) and camera sledge at C10 – decided after three attempts to sieve the second Hamon grab as there was a small sample.
09:59	10:25	ToSu	Multibeam on transit from C10 to S13

## DAILY LOG STATUS REPORT

10:25	10:48	ToSa	Three failed Hamon grabs at S13 (rocks in grab). Decided after three attempts to sieve the first grab as there was a small sample.
10:48	11:13	ToSu	Multibeam on transit from S13 to S15
11:13	11:30	ToSa	Hamon grab at S15. Failed camera sledge as lights faulty.
11:30	11:50	Equipment downtime	Trying to fix lights on camera. Not a quick fix so decided to move to the next station and come back to camera if required.
11:50	12:24	ToSu	Transit from S15 to C21
12:24	12:43	ToSa	Hamon grab at C21
12:43	13:05	ToSu	Multibeam from C21 to S16
13:05	13:58	ToSa	Hamon grab and camera sledge S16
13:58	14:20	ToSu	Multibeam from S16 to S17
14:20	14:29	ToSa	Hamon grab at S17
14:29	14:52	ToSu	Multibeam from S17 to C27
14:52	15:33	ToSa	Hamon grab and camera sledge at C27
15:33	16:03	ToSu	Multibeam from C27 to S20
16:03	16:34	ToSa	Hamon grab at S20
16:34	16:55	ToSu	Multibeam from S20 to S18
16:55	18:13	ToSa	Hamon grab and camera sledge at S18
18:13	18:40	ToSu	Multibeam from S18 to S19
18:40	19:45	Equipment downtime	Hamon grab winch broken, due to faulty emergency brake
19:45	20:01	ToSa	Hamon grab at S19
20:01	20:32	ToSu	Multibeam from S 19 to C26
20:32	20:40	ToSa	Hamon grab at C26
20:40	21:05	ToSu	Multibeam from C26 to C25
21:05	21:47	ToSa	Hamon grab and camera sledge at C25
21:47	22:25	ToSu	Multibeam from C25 to C22
22:25	22:35	ToSa	Hamon grab at C22 – with HamCam
22:35	22:59	ToSu	Multibeam from C22 to C23
22:59	23:11	ToSa	Hamon grab at C23 with HamCam
23:11	23:26	ToSu	Multibeam from C23 to C24
23:26	24:00	ToSa	Hamon grab and camera sledge at C24

### Weather

Weather/sea state conditions	0000-0600	0600-1200	1200-1800	1800-2400	Remarks
Wind	WSW 2	W 5	NW 5	NW 4	
Sea state	Smooth	Smooth	Smooth	Smooth	
Swell	Smooth	Smooth	Smooth	Smooth	
Vis	Good	Good	Good	Good	
Baro	1047.0	1047.4	1046.5	1047.0	

### Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		10:12	
Offshore Calibrations	00:05	05:27	
Total Operation Survey (TOSu)	09:05	96:47	
Total Operation Sampling (TOSa)	11:05	112:55	
Equipment/Downtime	01:25	04:13	
Ship/Plant Downtime		02:11	

**DAILY LOG  
STATUS REPORT**

Waiting On Weather			
Transit	02:20	31:15	
Standby Port			
Others		01:00	
<b>Total:</b>	<b>24:00</b>	<b>264:00</b>	

**Overall Progress Geophysical Data Acquisition MBES/Sidescan**

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
<b>Acoustic: Multibeam</b>				
Multibeam EM3002	62.4	751.0		

**Overall Progress Groundtruthing Samples**

Action	Today (Lkm/samples)	Accum. (Lkm/samples)	Remarks
Hamon grab (0.1m <sup>2</sup> )	20	213	
Camera sledge	10	44	
Drop camera	0	37	

**Weather forecast for the next 24 hours**

Wind northerly or north-westerly 4 or 5, increasing 5 to 7. Sea state slight or moderate, becoming moderate or rough.

**Planned operation for the next 24 hours (00:00 to 24:00 on 13<sup>th</sup> February 2012)**

Continue with survey of South of Celtic Deep rMCZ.

**Agreed Changes to Scope/Survey operation priorities**

**CEFAS/JNCC Comments**

Lights on camera sledge had component failure, and have been replaced with contingency strip lights. Repairs to winch cable for Hamon grab have been completed, and a new camera fitted to the Hamon grab.

CEFAS SIC.. [REDACTED] ..... JNCC Rep: .... [REDACTED] .....

**DAILY LOG  
STATUS REPORT  
Name of Area Survey  
Rv Cefas Endeavour – JNCC – DPR No. 12 – Monday 13<sup>th</sup> February 2012**

Vessel: RV Cefas Endeavour GSM : 07799 773456	Project: MCZ Site Verification CEND 3/12 Satellite Voice Bridge: 00 870 (or 00871) 763998027
Daily Progress Report No. 12 Date: 13 <sup>th</sup> Feb. 2012	Location at 24:00: 50° 55'513 N, 006° 31'708 W

To Company:	Person:	E-mail:
Cefas		
JNCC		
JNCC		
JNCC		
JNCC		
Cefas		

**Safety**

	Today	To Date
Accidents/Incidents	0	0
Near Misses	0	0
Safety Drills/Induction	0	2
Additional comments:		

**Summary of operations 0000-2400**

Time UTC (start)	Time UTC (end)	Type	Comments
00:00	00:16	ToSa	Camera sledge at C24, South of Celtic Deep rMCZ
00:16	00:44	ToSu	Multibeam on transit from C24 to C20
00:44	00:53	ToSa	Hamon Grab at C20
00:53	01:21	ToSu	Multibeam on transit from C20 to C19
01:21	01:30	ToSa	Hamon Grab at C19
01:30	01:54	ToSu	Multibeam on transit from C19 to C18
01:54	02:30	ToSa	Hamon Grab and Camera Sledge at C18
02:30	02:56	ToSu	Multibeam on transit from C18 to C17
02:56	03:03	ToSa	Hamon Grab at C17
03:03	03:28	ToSu	Multibeam on transit from C17 to C16
03:28	03:36	ToSa	Hamon Grab at C16
03:36	04:04	ToSu	Multibeam on transit from C16 to C12
04:04	04:41	ToSa	Hamon Grab and Camera Sledge at C12
04:41	05:08	ToSu	Multibeam on transit from C12 to C13
05:08	05:15	ToSa	Hamon Grab at C13
05:15	05:42	ToSu	Multibeam on transit from C13 to C14
05:42	05:50	ToSa	Hamon Grab at C14
05:50	06:14	ToSu	Multibeam on transit from C14 to C15
06:14	06:52	ToSa	Hamon Grab and Camera Sledge at C15
06:52	07:17	ToSu	Multibeam on transit from C15 to S14
07:17	07:31	ToSa	Hamon Grab at S14
07:31	08:20	ToSu	Multibeam on transit from S14 to S15
08:20	08:43	ToSa	Camera Sledge at S15 (where Hamon Grab failed three times yesterday and couldn't camera because the lights were broken...)
08:43	09:12	ToSu	Multibeam on transit from S15 to S12
09:12	09:17	ToSa	Hamon Grab at S12
09:17	09:48	ToSu	Multibeam on transit from S11
09:48	10:43	ToSa	Hamon Grab and Camera Sledge at S11

## DAILY LOG STATUS REPORT

10:43	11:08	ToSu	Multibeam from S11 to C11
11:08	11:14	ToSa	Hamon grab at C11
11:14	11:38	ToSu	Multibeam from C11 to C9
11:38	12:00	ToSa	Hamon grab at C9
12:00	12:39	ToSu	Multibeam from C9 to C8
12:39	13:15	ToSa	Hamon grab and camera sledge at C8
13:15	13:44	ToSu	Multibeam from C8 to C5
13:44	13:54	ToSa	Hamon Grab at C4
13:54	14:34	ToSu	Multibeam from C4 to S8
14:34	15:37	ToSa	Attempted Hamon grab at S8 but it failed 4 times so tried camera sledge, however aborted this because it was too rocky and wanted to avoid camera damage.
15:37	16:04	ToSu	Multibeam from S8 to S9
16:04	16:24	ToSa	Hamon grab at S9. Camera on camera sledge not working.
16:24	17:39	ToSu	Multibeam from S9 to S10
17:39	17:56	ToSa	Hamon grab at S10 and C6
17:56	18:15	ToSu	Multibeam from C6 to S7
18:15	18:28	ToSa	Hamon grab at S7
18:28	18:55	ToSu	Multibeam from S7 to S6
18:55	19:03	ToSa	Hamon grab at S6
19:03	19:29	ToSu	Multibeam from S6 to C4
19:29	19:38	ToSa	Hamon grab at C4
19:38	20:05	ToSu	Multibeam from C4 to C3
20:05	20:13	ToSa	Hamon grab at C3
20:13	20:46	ToSu	Multibeam from C3 to S3
20:46	21:24	ToSa	Hamon grab at S3
21:24	21:50	ToSu	Multibeam from S3 to S2
21:50	21:57	ToSa	Hamon grab at S2
21:57	22:23	ToSu	Multibeam from S2 to C2
22:23	22:48	ToSa	Attempted Hamon grab at C2 x 3 but no sample was obtained
22:48	23:20	ToSu	Multibeam from C2 to S5
23:20	23:40	ToSa	Hamon grab at S5. The grab sample failed two times, and HamCam showed the ground to be very rocky. This was the last station before moving to the mixed sediment stations – which we expect to be very rocky. As such, the decision was taken to move to East of Celtic Deep rMCZ where we could commence multibeam work.
23:40	24:00	Transit	Transit to East of Celtic Deep rMCZ

### Weather

Weather/sea state conditions	0000-0600	0600-1200	1200-1800	1800-2400	Remarks
Wind	N 6	NNW 6	NW 7	N 7	
Sea state	Slight	Slight	Slight	Moderate	
Swell	Slight	Slight	Slight	Moderate	
Vis	Good	Good	Good	Good	
Baro	1046.0	1044.8	1042.5	1042.0	

### Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		10:12	
Offshore Calibrations		05:27	
Total Operation Survey (TOSu)	14:06	110:53	

**DAILY LOG  
STATUS REPORT**

Total Operation Sampling (TOSa)	09:34	122:29	
Equipment/Downtime		04:13	
Ship/Plant Downtime		02:11	
Waiting On Weather		00:00	
Transit	00:20	31:35	
Standby Port		00:00	
Others		01:00	
<b>Total:</b>	<b>24:00</b>	<b>288:00</b>	

**Overall Progress Geophysical Data Acquisition MBES/Sidescan**

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
<b>Acoustic: Multibeam</b>				
Multibeam EM3002	96.8	847.8		

**Overall Progress Groundtruthing Samples**

Action	Today (Lkm/samples)	Accum. (Lkm/samples)	Remarks
Hamon grab (0.1m <sup>2</sup> )	25	238	
Camera sledge	7	51	
Drop camera	0	37	

**Weather forecast for the next 24 hours**

Wind north or northwest 5 to 7, decreasing 4 at times later. Sea state moderate or rough.

**Planned operation for the next 24 hours (00:00 to 24:00 on 14<sup>th</sup> February 2012)**

Transit to East of Celtic Deep rMCZ, and commence multibeam survey work in this site.

**Agreed Changes to Scope/Survey operation priorities**

In the absence of a functioning camera for the camera sledge or drop camera we agreed to continue surveying stations in South of Celtic Deep rMCZ with the Hamon grab only (HamCam fixed to Hamon grab). However, the ground became too rocky for the Hamon grab – especially close to the patch of mixed sediment in southern section of the site. As such, we agreed to stop surveying stations at South of Celtic Deep and move to East of Celtic Deep where we could commence with multibeam survey. This decision leaves approximately 20 stations requiring camera tows at South of Celtic Deep, with 18 of these stations completely un-sampled. If the weather remains good enough then Phase B of the survey could return to South of Celtic Deep rMCZ to collect the remaining 20 camera tows.

**CEFAS/JNCC Comments**

The second Kongsberg camera on the camera sledge failed in the afternoon, due to an irreparable component malfunction. This was the back-up camera for the drop camera and camera sledge, so we are now unable to collect any video footage or stills due to the primary camera and back-up camera becoming non-functional. We will continue to take grabs using the Hamon grab (with the HamCam), but will be unable to collect samples from rocky ground.

CEFAS SIC.. [REDACTED] ..... JNCC Rep: .... [REDACTED] .....

**DAILY LOG  
STATUS REPORT**  
Name of Area Survey  
**Rv Cefas Endeavour – JNCC – DPR No. 18 – Saturday 19<sup>th</sup> February 2012**

Vessel: RV Cefas Endeavour GSM : 07799 773456	Project: MCZ Site Verification CEND 3/12 Satellite Voice Bridge: 00 870 (or 00871) 763998027
Daily Progress Report No. 18 Date: 19 <sup>th</sup> Feb. 2012	Location at 24:00: 50° 52.9' N 06° 34.6' W

To Company:	Person:	E-mail:
Cefas		
JNCC		
JNCC		
JNCC		
JNCC		
Cefas		

**Safety**

	Today	To Date
Accidents/Incidents	0	0
Near Misses	0	1
Safety Drills/Induction	0	3
Additional comments:		

**Summary of operations 0000-2400**

Time UTC (start)	Time UTC (end)	Type	Comments
00:00	01:36	Weather	Waiting on weather
01:36	02:11	ToSa	Hamon Grab East of Celtic Deep EC_4
02:11	02:44	ToSa	Hamon Grab EC_5
02:44	03:06	ToSa	Hamon Grab EC_14
03:06	03:31	ToSa	Hamon Grab EC_23
03:31	03:56	ToSa	Hamon Grab EC_25
03:56	04:19	ToSa	Hamon Grab EC_16
04:19	04:39	ToSa	Hamon Grab EC_7
04:39	05:01	ToSa	Hamon Grab EC_1
05:01	05:30	ToSa	Hamon Grab EC_9
05:30	05:54	ToSa	Hamon Grab EC_18
05:54	06:57	ToSa	Hamon Grab EC_20
06:57	07:17	ToSa	Hamon Grab EC_11
07:17	08:23	ToSa	Hamon Grab EC_3
08:23	09:09	ToSa	Hamon Grab EC_C1
09:09	10:01	ToSa	Drop Camera EC_C1
10:01	10:51	ToSa	Camera Sledge EC_18
10:51	11:51	ToSa	Camera Sledge EC_7
11:51	12:50	ToSa	Camera Sledge EC_21
12:50	13:55	ToSa	Camera Sledge EC_4
13:55	14:30	ToSa	Camera Sledge EC_6 Finished at East Celtic Deep
14:30	16:25	Transit	Transit from East Celtic Deep to Mud collection strn
16:25	16:40	ToSa	Hamon Grab MUD_1
16:40	18:41	Transit	Transit to South Celtic Deep
18:41	19:29	ToSa	Drop Camera SC_S8 START work South Celtic Deep
19:29	19:59	ToSa	Drop Camera SC_Mx15
19:59	20:34	ToSa	Hamon Grab SC_Mx15
20:34	21:16	ToSa	Drop Camera SC_Mx13
21:16	21:53	ToSa	Hamon Grab unsuccessful at SC_MX13

## DAILY LOG STATUS REPORT

21:53	22:53	ToSa	Drop Camera SC_C3
22:53	23:42	ToSa	Drop Camera SC_C2
23:42	24:00	ToSa	Drop Camera SC_S5

### Weather

Weather/sea state conditions	0000-0600	0600-1200	1200-1800	1800-2400	Remarks
Wind	NW6	NW5	NW3	SW2	
Sea state	Moderate	Moderate	Slight	Slight	
Swell	Moderate	Moderate	Moderate	Slight	
Vis	Good	Good	Good	Good	
Baro	1035	1039	1041	1043	

### Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		35:37:00	
Offshore Calibrations		06:02:00	
Total Operation Survey (TOSu)		157:21:00	
Total Operation Sampling (TOSa)	18:28:00	151:09:00	
Equipment/Downtime		09:45:00	
Ship/Plant Downtime		02:11:00	
Waiting On Weather	01:36:00	11:33:00	
Transit	03:56:00	56:52:00	
Standby Port		0	
Others		01:30:00	
<b>Total:</b>	<b>24:00:00</b>	<b>432:00:00</b>	

### Overall Progress Geophysical Data Acquisition MBES/Sidescan

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
<b>Acoustic: Multibeam</b>				
Multibeam EM3000D / EM2040	0	1330.3		

### Overall Progress Groundtruthing Samples

Action	Today (Lkm/samples)	Accum. (Lkm/samples)	Remarks
Hamon grab (0.1m <sup>2</sup> )	17	270	
Camera sledge	5	60	
Drop camera	7	44	

### Weather forecast for the next 24 hours

Lundy, Fastnet, Irish Sea  
Southwesterly 4, increasing 5 to 7. Moderate, occasionally rough, but slight at first in Irish Sea. Showers, then occasional rain. Moderate or good



## DAILY LOG STATUS REPORT

**Planned operation for the next 24 hours (00:00 to 24:00 on 20<sup>th</sup> February 2012)**

Complete ground truthing at South of Celtic Deep rMCZ, followed my passage to Western Channel and further ground truthing

**Agreed Changes to Scope/Survey operation priorities**

**CEFAS/JNCC Comments**

CEFAS SIC... [REDACTED] .... JNCC Rep: ... [REDACTED] .....

**DAILY LOG  
STATUS REPORT  
Name of Area Survey  
Rv Cefas Endeavour – JNCC – DPR No. 19 – Monday 20<sup>th</sup> February 2012**

Vessel: RV Cefas Endeavour GSM : 07799 773456	Project: MCZ Site Verification CEND 3/12 Satellite Voice Bridge: 00 870 (or 00871) 763998027
Daily Progress Report No. 19 Date: 20 <sup>th</sup> Feb. 2012	Location at 24:00: 49° 14.8' N 05° 28.8W

To Company:	Person:	E-mail:
Cefas		
JNCC		
JNCC		
JNCC		
JNCC		
Cefas		

**Safety**

	Today	To Date
Accidents/Incidents	0	0
Near Misses	0	1
Safety Drills/Induction	0	3
Additional comments:		

**Summary of operations 0000-2400**

Time UTC (start)	Time UTC (end)	Type	Comments
00:00	00:47	ToSa	Continuation from previous day. Location South of Celtic Deep
00:47	01:00	ToSa	Drop Camera SCD_Mx1
01:00	02:12	ToSa	Hamon Grab SCD_Mx1
02:12	02:46	ToSa	Hamon Grab Mx5
02:46	03:13	ToSa	Drop Camera Mx3
03:13	03:43	ToSa	Hamon Grab Mx3
03:43	04:07	ToSa	Hamon Grab Mx4
04:07	04:38	ToSa	Hamon Grab Mx6
04:38	05:12	ToSa	Drop Camera Mx7
05:12	05:30	ToSa	Hamon Grab Mx7
05:30	05:59	ToSa	Hamon Grab Mx9
05:59	06:23	ToSa	Drop Camera Mx12
06:23	06:46	ToSa	Hamon Grab Mx12
06:46	06:56	ToSa	Hamon Grab Mx10 x
06:56	07:04	ToSa	Hamon Grab Mx10 x
07:04	07:28	ToSa	Hamon Grab Mx10
07:28	08:13	ToSa	Hamon Grab Mx8 x
08:13	08:49	ToSa	Hamon Grab Mx8
08:49	09:31	ToSa	Drop Camera Mx11
09:31	09:59	ToSa	Drop Camera Mx11 (repeat)
09:59	10:06	ToSa	Hamon Grab Mx11 x
10:06	11:00	ToSa	Hamon Grab Mx11 x
11:00	11:28	ToSa	Drop Camera Mx14
11:28	11:45	ToSa	Hamon Grab Mx14
		Offshore	
11:45	12:02	Calibrations	CTD
12:02	12:42	ToSu	Multibeam on transit to Mx7
12:42	12:56	ToSa	Drop Camera Mx7

### DAILY LOG STATUS REPORT

12:56	13:29	ToSu	Multibeam on transit to Mx2
13:29	14:00	ToSa	Drop Camera Mx2
14:00	23:30		Transit to Western Channel
23:30	24:00	ToSa	Attempted Grabbing at WC19 Western Channel

**Weather**

Weather/sea state conditions	0000-0600	0600-1200	1200-1800	1800-2400	Remarks
Wind	SW5	SW6	SW7	SW5	
Sea state	Slight	Slight	Moderate	Moderate	
Swell	Moderate	Slight	Moderate	Moderate	
Vis	Good	Good	Good	Good	
Baro	1042	1041	1041	1041	

**Overall Progress**

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		35:37	
Offshore Calibrations	00:17	06:19	
Total Operation Survey (TOSu)	01:13	158:34	
Total Operation Sampling (TOSa)	13:00	164:09	
Equipment/Downtime		09:45	
Ship/Plant Downtime		02:11	
Waiting On Weather		11:33	
Transit	09:30	66:22	
Standby Port		00:00	
Others		01:30	
<b>Total:</b>	<b>24:00</b>	<b>456:00</b>	

**Overall Progress Geophysical Data Acquisition MBES/Sidescan**

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
<b>Acoustic: Multibeam</b>				
Multibeam EM3000D / EM2040	8.7	1339		

**Overall Progress Groundtruthing Samples**

Action	Today (Lkm/samples)	Accum. (Lkm/samples)	Remarks
Hamon grab (0.1m <sup>2</sup> )	16	286	
Camera sledge	0	60	
Drop camera	9	53	

**Weather forecast for the next 24 hours**

Southwest 4 or 5, increasing 6 or 7 at times. Moderate or Rough. Mainly fair. Moderate or good.
---

## DAILY LOG STATUS REPORT

**Planned operation for the next 24 hours (00:00 to 24:00 on 21<sup>th</sup> February 2012)**

Ground truthing (Hamon Grab and camera sledge) in Western Channel rMCZ

**Agreed Changes to Scope/Survey operation priorities****CEFAS/JNCC Comments**

CEFAS SIC: [REDACTED] ..... JNCC Rep: [REDACTED] .....

### 5.7 Fisheries Liaison Officer (FLO) Report

The vessels detailed below were observed to be operating within the south of Celtic deep rMCZ during the survey CEND 03/12.

#### Mobile Fishing Gear

Vessel	Home Port	Gear Type	Target Species
FV Johnny-K.	Wexford.	Beam Trawl.	Mixed
FV Emer-Jane.	Wexford.	Beam Trawl.	Mixed
FV Saltees Ter-n.	Wexford.	Beam Trawl.	Mixed

#### Static Fishing Gear

Vessel	Home Port	Gear Type	Target Species
FV Sparkling Line	Padstow.	Gill Nets.	Mixed
FV Carisma.	Padstow.	Gill Nets.	Mixed



## About us

Cefas is a multi-disciplinary scientific research and consultancy centre providing a comprehensive range of services in fisheries management, environmental monitoring and assessment, and aquaculture to a large number of clients worldwide.

We have more than 500 staff based in 2 laboratories, our own ocean-going research vessel, and over 100 years of fisheries experience.

We have a long and successful track record in delivering high-quality services to clients in a confidential and impartial manner.  
([www.cefas.defra.gov.uk](http://www.cefas.defra.gov.uk))

Cefas Technology Limited (CTL) is a wholly owned subsidiary of Cefas specialising in the application of Cefas technology to specific customer needs in a cost-effective and focussed manner.

CTL systems and services are developed by teams that are experienced in fisheries, environmental management and aquaculture, and in working closely with clients to ensure that their needs are fully met.  
([www.cefastechnology.co.uk](http://www.cefastechnology.co.uk))

## Customer focus

With our unique facilities and our breadth of expertise in environmental and fisheries management, we can rapidly put together a multi-disciplinary team of experienced specialists, fully supported by our comprehensive in-house resources.

Our existing customers are drawn from a broad spectrum with wide ranging interests. Clients include:

- international and UK government departments
- the European Commission
- the World Bank
- Food and Agriculture Organisation of the United Nations (FAO)
- oil, water, chemical, pharmaceutical, agro-chemical, aggregate and marine industries
- non-governmental and environmental organisations
- regulators and enforcement agencies
- local authorities and other public bodies

We also work successfully in partnership with other organisations, operate in international consortia and have several joint ventures commercialising our intellectual property

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