Final Report (Project Code): C5433

East of Haig Fras rMCZ 2012 and 2013 Survey Report (CEND0312 and CEND0513)

Authors: Sue Ware, Paul Whomersley and Koen Vanstaen

Issue date: January 2016
Publication date: January 2023

East of Haig Fras rMCZ 2012 and 2013 Survey Report (CEND0312 and CEND0513)

Authors: Sue Ware, Paul Whomersley and Koen Vanstaen

Issue date: January 2016
(Published January 2023)

This report should be cited:
Ware, S., Whomersley, P. & Vanstaen, K. 2023. East of Haig Fras rMCZ 2012 and 2013 Survey Report (CEND0312 and CEND0513) [Contracted] Report by Cefas for Defra and JNCC.
(Project/Survey No. C5433).

Head office

Centre for Environment, Fisheries
& Aquaculture SciencePakefield
Road, Lowestoft, Suffolk NR33
0HT, UK

Tel +44 (0) 1502 56 2244 Fax +44 (0) 1502 51 3865

www.cefas.defra.gov.uk

Table of Contents

Part 1: Survey CEND0312 ..... **1**
1 Background and Introduction **1**
1.1 Survey Project Team 1
1.2 Site Description 1
1.3 Geological and Biological Context 2
1.4 Existing data and information utilised to inform survey planning 2
2 Survey Design and Methods **2**
2.1 Survey planning and design 2
2.2 Sample collection and processing methods 2
3 Survey Narrative **4**
4 Preliminary Results **5**
4.1 Acoustic Maps 5
4.2 Seabed Imagery 7
4.3 Grab samples and sediment types 11
4.4 Features of Conservation Interest (FOCI): Records in the rMCZ from historic surveys and thecurrent survey 12
Part 2: Survey CEND0513 ..... **12**
1 Background and Introduction **12**
1.1 Survey Project Team 12
2 Survey Design and Methods **12**
2.1 Survey planning and design 12
3 Survey Narrative **13**
3.1 Survey narrative 13
4 Preliminary Results **13**
4.1 Acoustic map 13
4.2 Seabed Imagery 13
Annexes **14**
Metadata 16
Daily Progress Reports 22

Part 1: Survey CEND0312

1 Background and Introduction

1.1 Survey Project Team

The East of Haig Fras rMCZ survey (CEND0312) was carried out during 9th-12th February 2012 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.

1.2 Site Description

The East Haig Fras rMCZ is located approximately 40 km east of the Greater Haig Fras rMCZ (Figure 1).

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

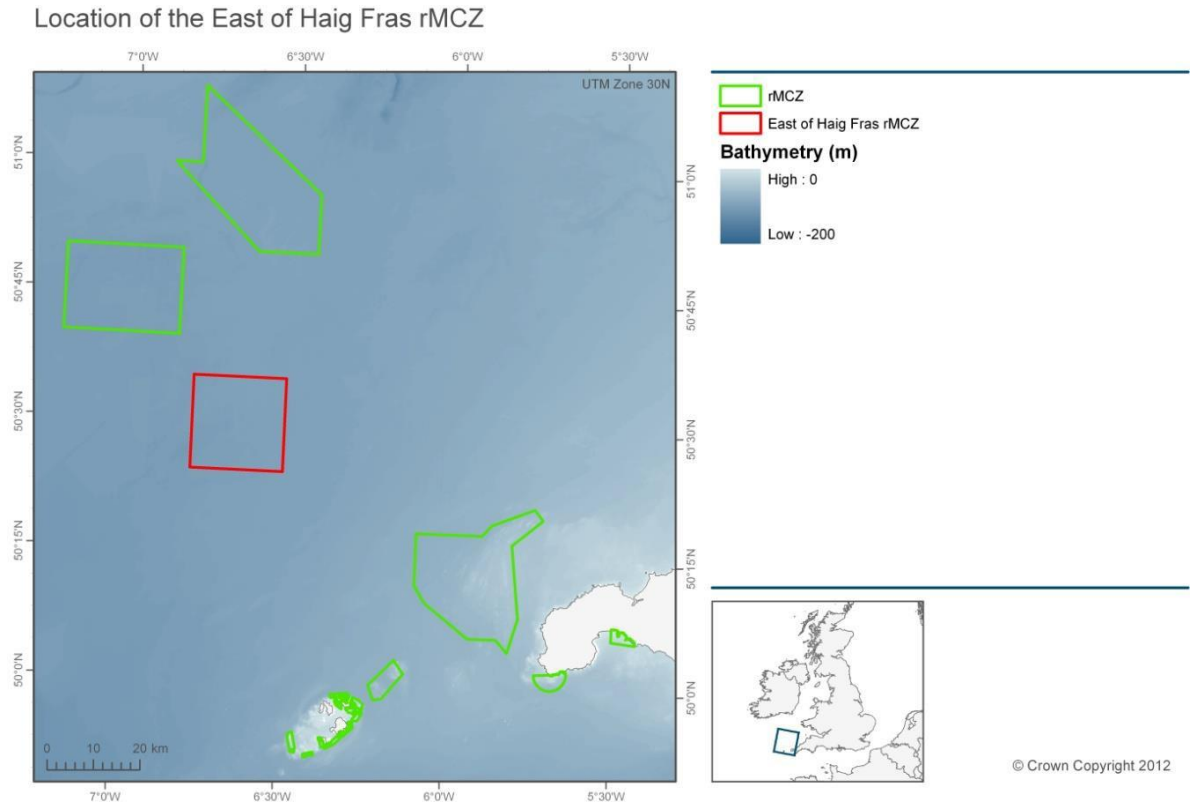


Figure 1. Location of East of Haig Fras rMCZ. [Bathymetry is from the Defra Digital Elevation Model (Astrium, 2011)].

1.3 Geological and Biological Context

A number of Broad Scale Habitat (BSH) features have been proposed by the regional project for designation within the East of Haig Fras rMCZ (Table 1).

Table 1. Features proposed for designation within the East Haig Fras rMCZ.

Feature Type	Feature Name
Broad Scale Habitat (BSH)	A4.2 Moderate energy circalittoral rock A5.1 Subtidal coarse sediment A5.2 Subtidal sand

A number of additional features have also been identified within this rMCZ however, these were not proposed for designation (Table 2).

Table 2. Features present but not proposed for designation within the East of Haig Fras rMCZ.

Feature Type	Feature Name
Features of Conservation Interest (FOCI)	
Habitats	Subtidal sands and gravels*

****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

The survey approach adopted a systematic grid design for the purpose of validating the presence and extent of the broadscale habitat features identified in the Site Assessment Document (SAD) habitat map.

2 Survey Design and Methods

2.1 Survey planning and design

Selection and positioning of groundtruthing stations was informed by the predicted broadscale habitats derived from the habitat map in the SAD. Stations were positioned within the sedimentary habitats using a triangular lattice grid overlaid on the predictive habitat map. Stations within the predicted subtidal coarse and sand sediments were at a grid spacing of 3 km.

'Intelligent' station codes were constructed, each with 3 elements; EHF indicating the East of Haig Fras site followed by a letter indicating the predicted substrate type for that location according to the SAD (R for rock, C for coarse sediment, S for sand), then a sequential number (e.g., EHF_C_5, EHF_S_21).

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 (i.e., 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

2.2 Sample collection and processing methods

2.2.1 Sedimentary Broad Scale Habitats

Sedimentary habitats were groundtruthed by grab and underwater camera. The grab system comprised a 0.1 m^2 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 foreach grab sample. On recovery, the grab was emptied into a large plastic bin and a representativesub-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 1mm sieve. The retained >1mm fraction was transferred to a labelled container and preserved in 4% buffered formaldehydefor 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 two Cefas high intensity LED striplights and a flash unit. Thecamera 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 recorded 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 (~0.25 ms^{-1}) across a 50 m 'bullring' centred on the sampling station. Stills images were captured at regularone-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.

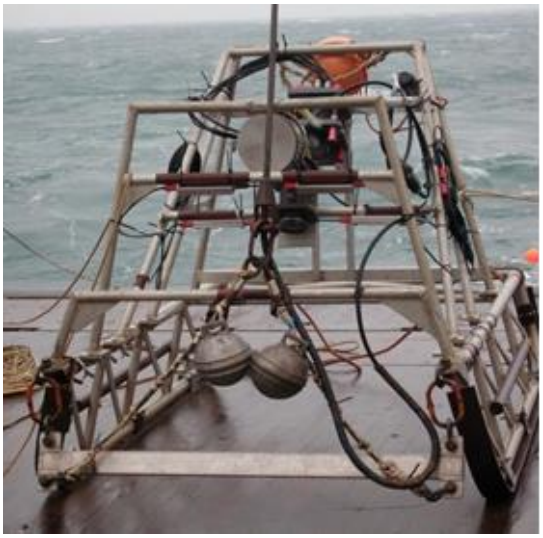


Figure 3. Camera sledge with video and still imaging system.

2.2.2 Circalittoral Rock Broad Scale Habitats

A drop-camera system was available for sampling stations where a hard substrate was predicted by the SAD. However, at the East of Haig Fras rMCZ site the station located in the predicted circalittoral rock habitat proved suitable for sampling with the camera sledge.

3 Survey Narrative

Survey work commenced at the East of Haig Fras rMCZ on 09/02/12 at 22:30. A CTD was deployed to obtain the sound velocity profile (SVP) for calibration of the multibeam. Multibeam bathymetry and backscatter data were collected during transits between stations. The survey began with collection of video and still images at station R1 within the predicted circalittoral rock habitat in the south-west portion of the rMCZ polygon. The camera sledge was deemed suitable for deployment within this area as the acoustic data collected on transit through the station indicated that any rock habitat consisted of low-lying rock exposures with a thin veneer of overlying sediment.

Following completion of the camera work at station R1 sampling continued in the predicted BSHs using the HamCam. The camera sledge was deployed at every third station to ensure an adequate density and spatial coverage of video and still imagery across the rMCZ.

The HamCam and camera survey continued until 16:30 on 10/02/12 when the video camera on the grab stopped working due seawater ingress into the integrated winch cable. The remainder of the grab sampling was conducted without the camera attached. To mitigate the loss of the grab camera, deployments of the camera sledge were increased to one every other station. During the course of the survey at the East of Haig Fras rMCZ a total of 50 grab samples were acquired across the three predicted BSHs (Figure 1). Additionally, 20 camera stations were completed to assist in the assessment of presence and spatial extent (along with future characterisation) of the BSHs for which the rMCZ is being proposed. A total of 167.9 line-kilometres of multibeam acoustic data were acquired and processed (Figure 4 and Figure 5).

4 Preliminary Results

4.1 Acoustic Maps

The acoustic data collected opportunistically during transit between stations were processed for bathymetry and backscatter (Figure 4 and Figure 5). A 100% acoustic survey was carried out concurrently with the groundtruthing survey under sub-contract. These data were not available toinform the planning of the groundtruthing survey.

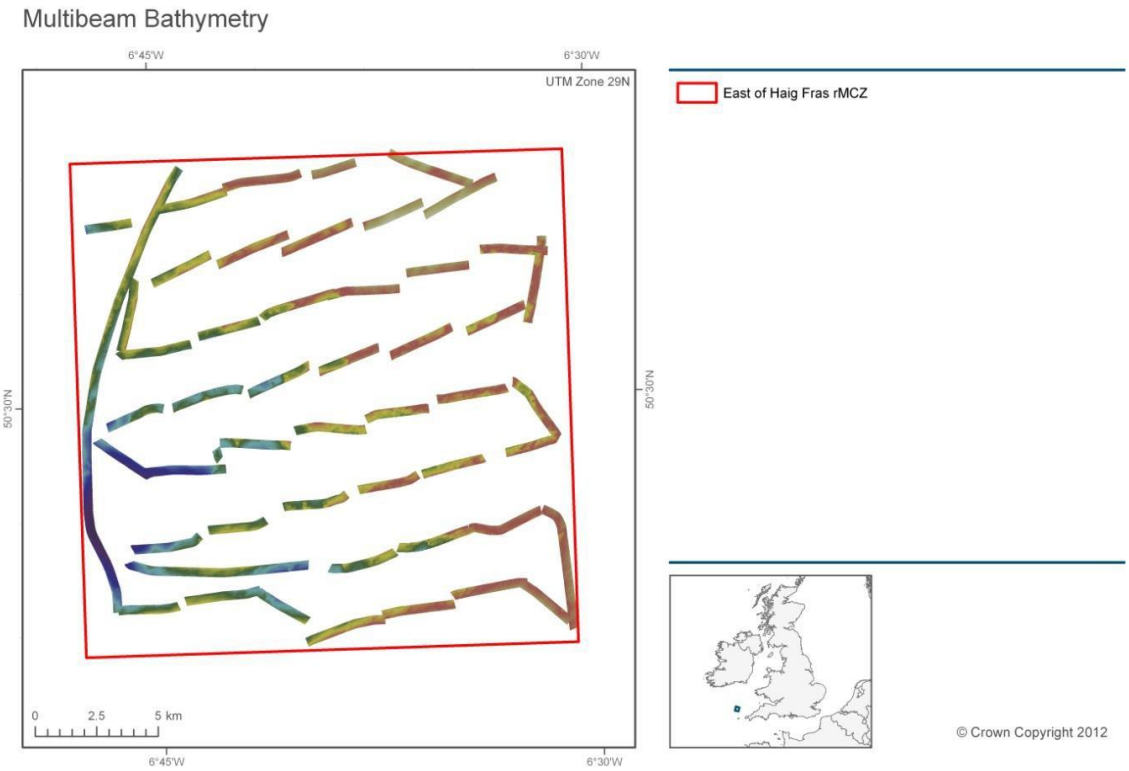


Figure 4. East of Haig Fras rMCZ overlaid with multibeam bathymetry.

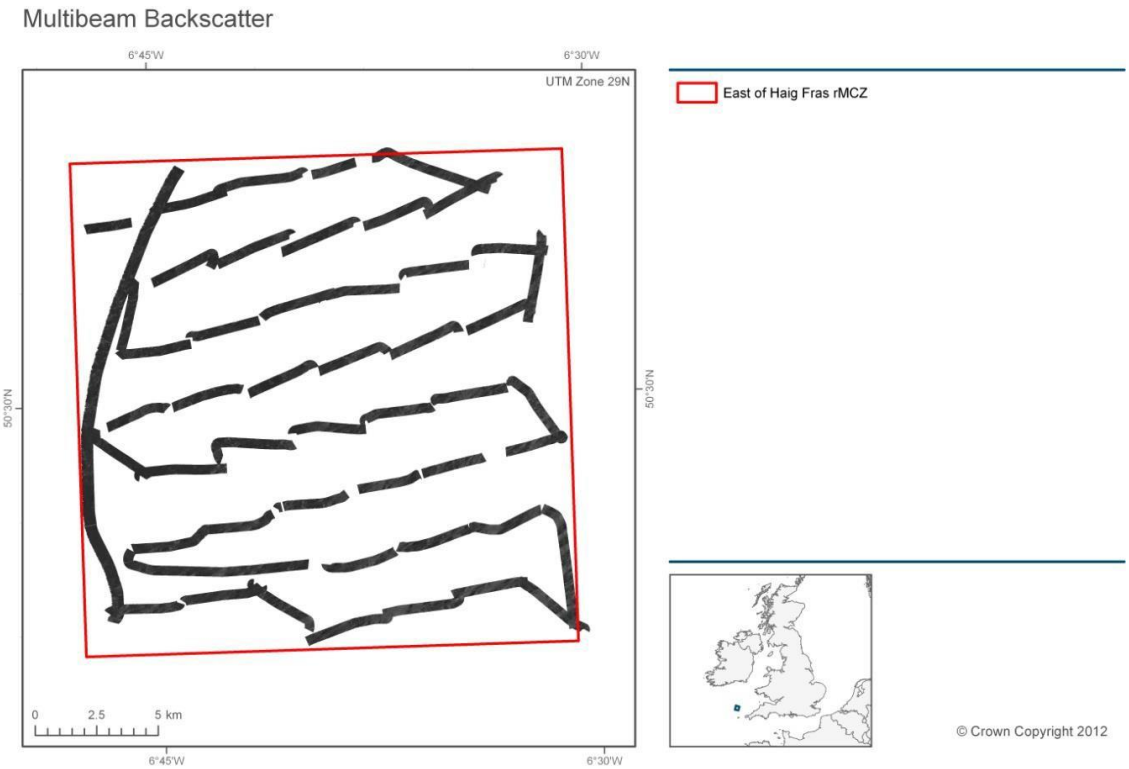
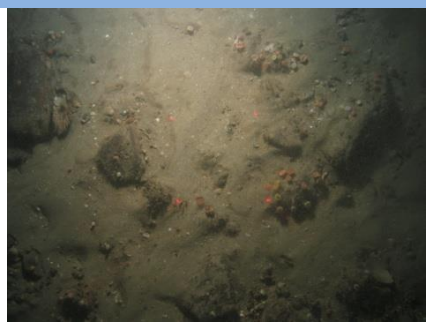
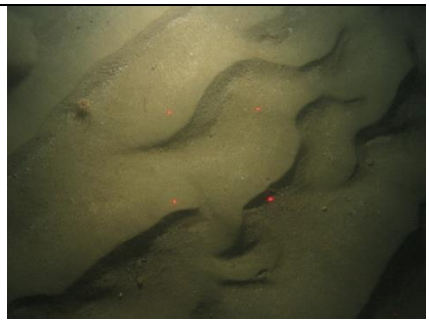
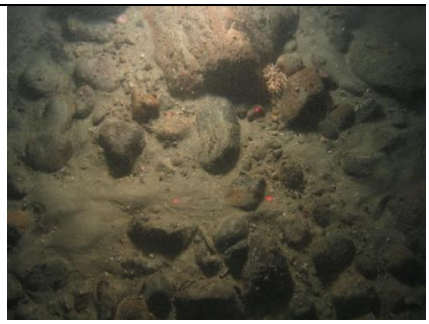
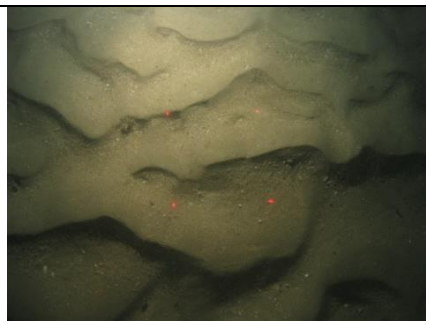
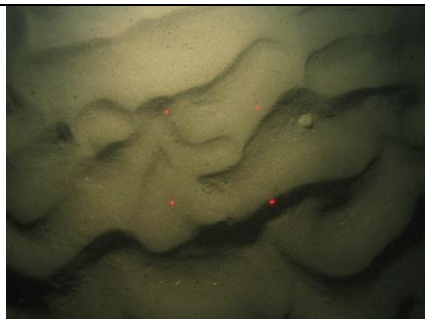
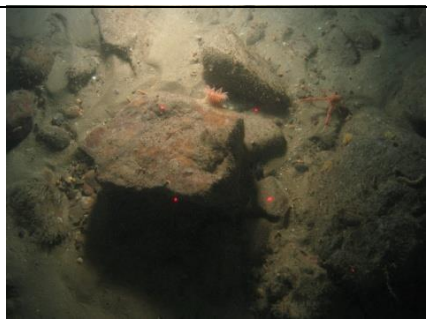


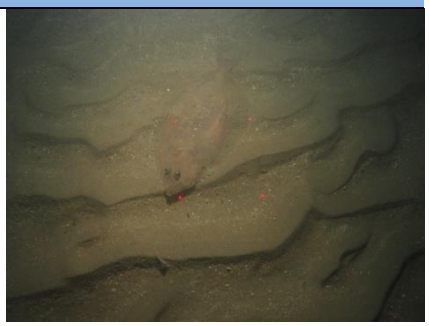
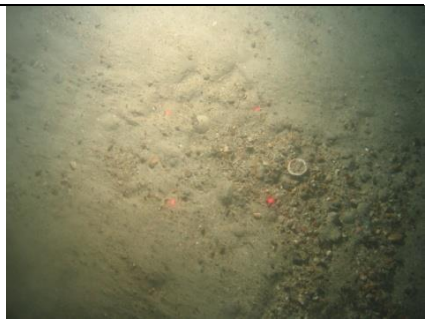
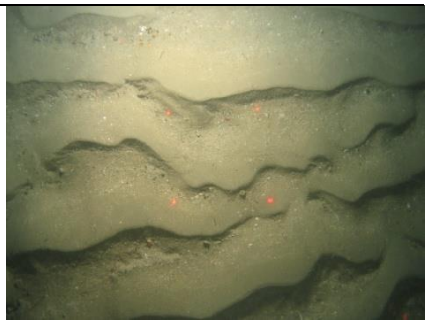
Figure 5. East of Haig Fras rMCZ overlaid with multibeam backscatter.

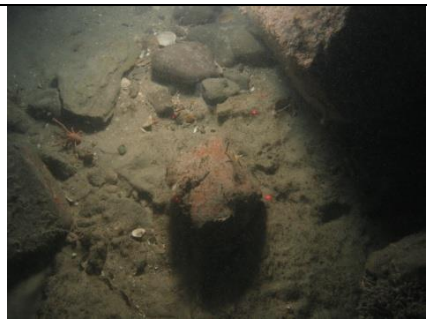
4.2 Seabed Imagery

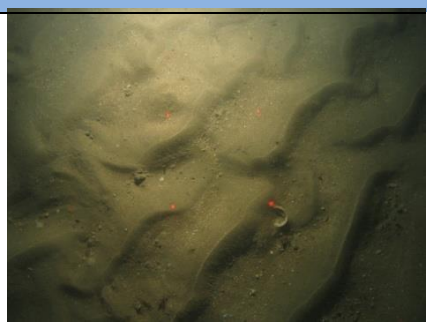
Table 3. Preliminary summary of the seabed substrate and epifaunal communities observed in video and stills images.

Stn Code	BSH Habitat/Faunal Summary	Still Image
CR1	**Cobble and pebble on gravelly sand** (*Pagurus* sp., *Abietinaria* sp., *Henricia oculata*, *Caryophyllia smithii*, *Cerianthus lloydii*, *Urticinafelina*)	
C3	**Rippled sand** (*Pagurus* sp., *Cerianthus lloydii*, *Sabellapavonina*)	
C6	**Rippled sand with cobble and pebble** (*Porania pulvillus*, *Urticina felina*, *Pecten maximus*, *Ascidea mentula*, *Porella compressa*)	
C10	**Rippled sand**	
C13	**Rippled Sand with occasional cobble and pebble** (*Loligo* sp., *Luidia ciliaris*, *Henricia oculata*)	

Stn Code	BSH Habitat/Faunal Summary	Still Image
C14	**Rippled sand with occasional cobble and small boulders** (*Pagurus prideauxi*, *Parazoanthus* sp.)	
C18	**Rippled sand** (*Cerianthus lloydii*, *Pagurus* sp.)	
C20	**Rippled sand with cobbles and small boulders** (*Henricia oculata*, *Trispoterus luscus*, *Sabella pavonina*, *Echinus esculentus*, *Astropecten irregularis*)	
C22	**Rippled sand with occasional cobble and small boulders** (*Pagurus prideauxi*, *Urticina felina*, *Henriciaoculata*, *Abietinaria* sp., *Echinus esculentus*,*Munida rugosa*)	
C24	**Rippled sand with cobble** (*Urticina felina*, *Pagurus prideaxi*, *Caryophyllia smithii*, *Luidia ciliaris*, *Sagartia elegans*,*Poraniapulvillus*, *Munida rugosa, Pecten maximus*, *Henricia oculata, Scyliorhinus caniculus*)	

Stn Code	BSH Habitat/Faunal Summary	Still Image
C25	**Rippled sand** (*Lepidorhombus whiffiagonis*)	
C27	**Rippled sand with gravel patches and cobble** (*Ophiura* sp., *Pagurus* sp.)	
C29	**Rippled sand with burrows** (Hydroid turf)	
S1	**Rippled sand with patches of cobble and small boulders** (*Crossaster papposus*, *Pagurus* sp., *Caryophylliasmithii*, *Pomatoceros* sp., *Porania pulvillus*)	
S6	**Rippled sand with cobble and pebble** (*Cerianthus lloydii*, *Astropecten irregularis*,*Uticina felina*)	

Stn Code	BSH Habitat/Faunal Summary	Still Image
S9	**Rippled sand with cobble and small boulders** (*Antedon bifida*, *Sagartia elegans*, *Sepiola atlantica*, *Nemertesia ramosa*, *Caryophyllia smithii*, *Munida rugosa*, Octopodidae)	
S11	**Rippled sand with burrows**	
S13	**Cobble and pebble on muddy sand** (*Scyliorhinus canicula*, *Pagurus prideaxi*, *Calliostoma* sp., *Nemertesia antennina*, *Macropodia* sp., *Echinus esculentus*, *Munidarugosa*, *Abietinaria* sp.)	
S15	**Rippled sand with rock outcrops and boulders** (*Astropecten irregularis*, *Pagurus* sp., *Cerianthus lloydii*, *Porania pulvillus*, *Munida rugosa, Lepidorhombus whiffiagonis*)	
S17	**Rippled sand with burrows and pebbles** (*Astropecten irregularis*, *Cerianthus lloydii*)	

Stn Code	BSH Habitat/Faunal Summary	Still Image
S19	**Rippled sand with pebbles** (*Urticina felina*, *Astropecten irregularis*)	

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 emphasised that this assignment of EUNIS classification is purely subjective and could change as a result of subsequent laboratory analysis and interpretation.

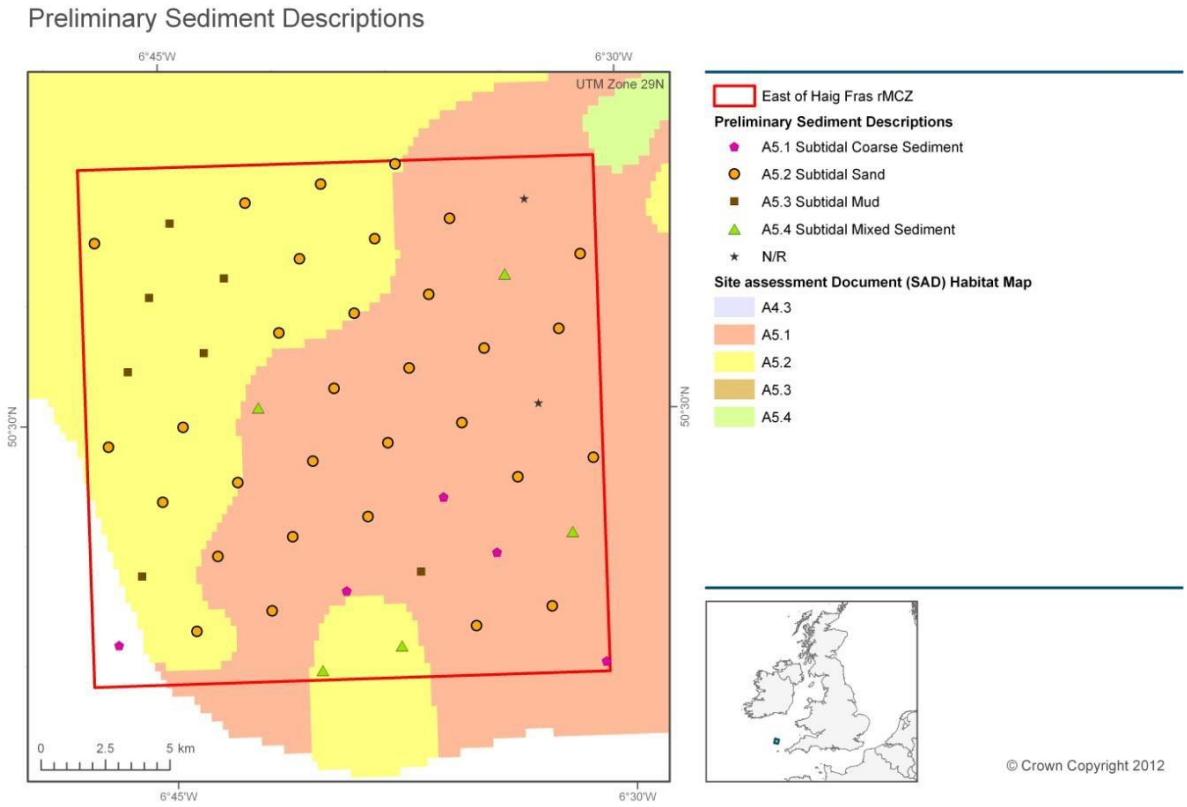


Figure 6. SAD habitat map overlaid with preliminary observations of sediment type, as determined by visual assessment of grab samples (N/R = Not Recorded, this indicates that it was not possible for the field scientist to confidently assign a preliminary sediment description based only on observation of the grab sample).

4.4 Features of Conservation Interest (FOCI): Records in the rMCZ from historic surveys and thecurrent survey

No records of FOCI species were identified from historic surveys or were observed during the currentsurvey (CEND3/12).

Part 2: Survey CEND0513

1 Background and Introduction

1.1 Survey Project Team

The East of Haig Fras rMCZ survey (CEND0513) was carried out on 23rd April 2013 on the RV *CEFASEndeavour* cruise CEND0513. 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.

2 Survey Design and Methods

2.1 Survey planning and design

East of Haig Fras has been the focus of two recent MCZ surveys since the initial evidence assessment: CEND0312 and a Gardline Geosurvey Ltd remote-sensing survey carried out through theInvitation To Tender (ITT) process. During the CEND0312 survey, a 3km sampling grid was placed over the predicted subtidal coarse and sand sediments from UKSeaMap. At each station, a grab sample was taken using a mini-Hamon grab (0.1m^2) fitted with a camera for biological and PSA analysis. At approximately every third station, a camera tow was undertaken for 10 minutes with statistical stills taken at 1min intervals. In addition, the ITT survey generated detailed full-coverage bathymetry and backscatter layers for the site. From these new data, Cefas produced a revised broadscale habitat map, including areas of predicted circalittoral rock (Figure 7).

Due to the localised and patchy distribution of circalittoral rock within the site, additional groundtruthing was planned to validate the revised habitat map, allowing confirmation of presence of circalittoral rock and an estimation of its extent. In order to achieve this, two lines of sidescan sonar and a targeted groundtruthing survey using the DC was planned (Figure 7).

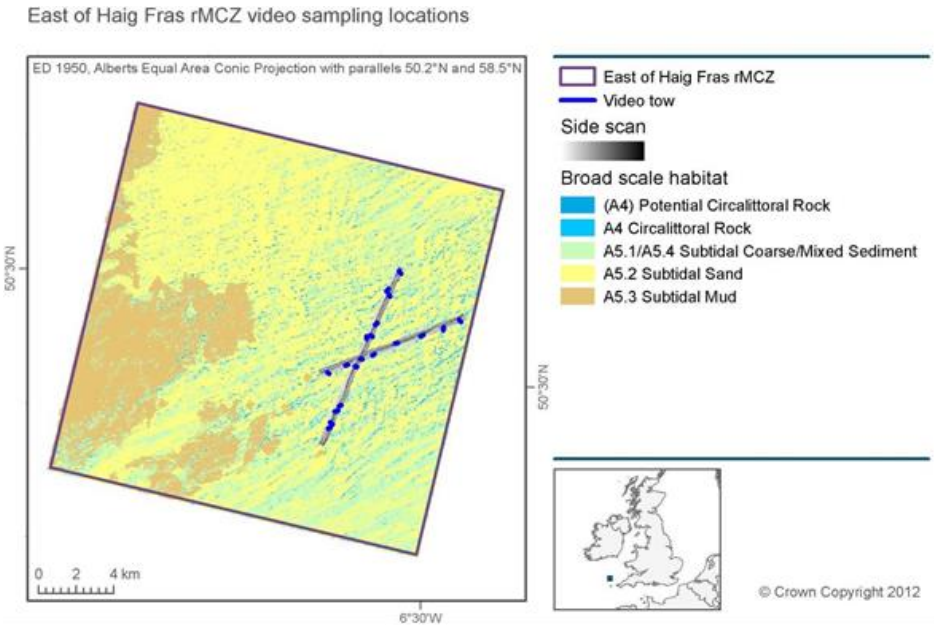


Figure 7. Proposed and actual sampling effort for East of Haig Fras rMCZ.

3 Survey Narrative

3.1 Survey narrative

Cefas Endeavour arrived at East of Haig Fras recommended Marine Conservation Zone (rMCZ) at 07:00, 23/04/13. On arrival a Sound Velocity Profile (SVP) cast was carried to ensure all acoustic systems were correctly calibrated before beginning the planned Sidescan sonar (SS) and Multibeam (MB) survey. Two planned acoustic lines were successfully surveyed (10:39, 23/04/13). On completion of the acoustic survey a Drop Camera (DC) ground truthing survey was planned based on preliminary interpretation of the acquired acoustics data. In total 19 DC stations were planned and successfully surveyed (23:59, 23/04/13).

4 Preliminary Results

4.1 Acoustic map

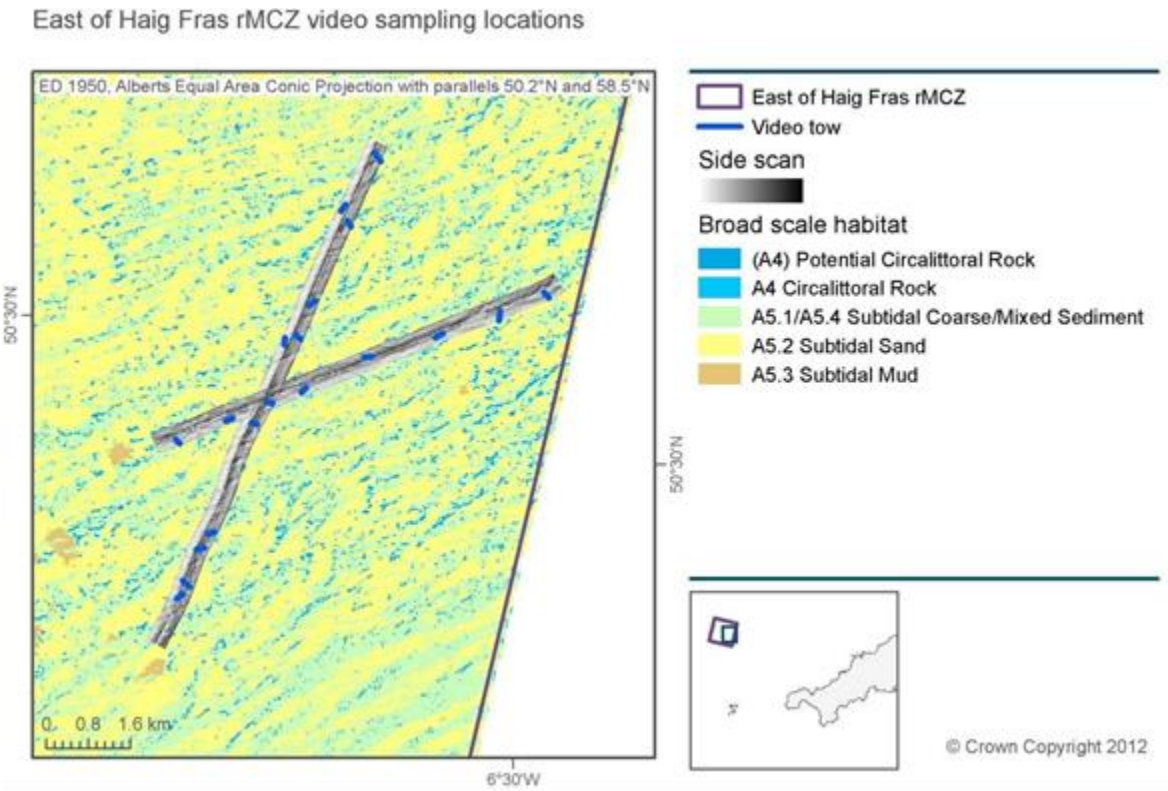


Figure 8. Map showing the acoustic sidescan lines and adaptive ground-truthing stations.

4.2 Seabed Imagery

A wide range of habitats were observed during the DC survey. These included high and moderate energy circalittoral rock and subtidal mixed, coarse and sand sedimentary habitats.

Common epifaunal species observed during the survey included the sea urchin *Echinus esculentus*, star fish *Astropecten irregularis* and *Asterias rubens,* the hermit crab *Pagurus* sp, encrusting sponges and bryozoa.

Annexes

RV CEFAS Endeavour

Port of registry	Lowestoft
Length OA	73.00 m (excluding stern roller)
Length extreme	73.916 m
Breadth (MLD)	15.80 m
Depth (MLD)	8.20 m
Design draft	5.00 m
Deep draught	5.50 m
LBP	66.50 m
Gross tonnage	2983 tonnes
Net register tonnage	894 tonnes
Net lightship	2436 tonnes
Deadweight @ 5.00 m	784 tonnes
Deadweight @ 5.50 m	1244 tonnes
Displacement @ 5.00 m	3210 tonnes
Displacement @ 5.50 m	3680 tonnes
Builder	Ferguson Shipbuilders Limited, Port Glasgow
Commissioned	2003
Communications	In port BT Tel. Cellphone Voice/Fax/Data Radio TELEX Inmarsat C Fleet 77 (Inmarsat F) and VSAT (eutelsat) internet access
Endurance	42 days
Complement	En-suite accommodation for 16 crew and 19 scientists with dedicated hospital facility
Propulsion System	AC/DC Diesel Electric 3 x diesel electric AC generators, individually raft mounted 2 xtandom electric DC motors Single screw
Power generation	3240 Kw
Power propulsion	2230 Kw
Thrusters	Bow thruster (flush mounted azimuthing) Stern thruster (tunnel)
Trial speed	14.4 knots
Bollard pull	29 tonnes
Call sign	VQHF3
Official number	906938
MMSI	235005270
Lloyds/IMO number	9251107

Side Gantry	7.5 tonne articulated side A-frame
Stern Gantry	25 tonne stern A-frame
Winches	3 x cranes 35 tM, heave compensated 2 x trawlwinches 2 x drum winches, (1 double) Double barrel survey winch with motion compensationand 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)
Transducers/Sea tube	Drop keel to deploy transducers outside the hullboundary layer in addition to hull mounted transducers 1.2 m diameter sea tube/moon-pool
Acoustic equipment	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
Boats	2 x 8m rigid work and rescue boats with suite ofnavigational equipment deployed on heave-compensated davits
Laboratories	8 networked laboratories designed for optimumflexibility of purpose 4 serviced deck locations for containerised laboratories
Special features	Dynamic positioning system Intering anti-roll system Local Area Network with scientific datamanagement system Ship-wide general information system CCTV
Class	LRS 100A1+LMC UMS SCM CCS ICC IP ES(2) DP(CM) ICE class 2

Camera Sledge

Flash model: Kongsberg 11-242
Underwater lights – Cefas high power LED strip lights
Video and stills camera settings variable depending on underwater visibility and ambientlight levels.

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.

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.

Metadata

Station metadata for the East of Haig Fras rMCZ survey on cruise CEND 03/12 are provided below. NB. Stn No is a sequential event number for the cruise, so changes each time a new gear is used or anew location is sampled. Stn Code is used to identify the location of the sampling station.

CTD=Conductivity, Temperature, Depth micrologger, MB=Multibeam, HC=HamCam, CS=Camera Sledge, DC=Drop Camera.

Cruise	Date	Stn No.	Station code	Gear	Latitude	Longitude
CEND 03/12	09/02/2012	345	EHF_C1	CS	51.91949	-5.91615
CEND 03/12	09/02/2012	345	EHF_C1	CS	51.92070	-5.91654
CEND 03/12	09/02/2012	348	EHF_CTD	CTD	50.58570	-6.72600
CEND 03/12	10/02/2012	350	EHF_R1	HC	50.42311	-6.78009
CEND 03/12	10/02/2012	351	EHF_R1	CS	50.42089	-6.77877
CEND 03/12	10/02/2012	351	EHF_R1	CS	50.42267	-6.77994
CEND 03/12	10/02/2012	352	R1-S3	MB	50.42400	-6.78030
CEND 03/12	10/02/2012	352	R1-S3	MB	50.42717	-6.73952
CEND 03/12	10/02/2012	353	EHF_S3	HC	50.42718	-6.73756
CEND 03/12	10/02/2012	354	S3-S4	MB	50.42768	-6.73754
CEND 03/12	10/02/2012	354	S3-S4	MB	50.43217	-6.69252
CEND 03/12	10/02/2012	355	EHF_C4	HC	50.43348	-6.69611
CEND 03/12	10/02/2012	356	C4-S1	MB	50.43350	-6.69729
CEND 03/12	10/02/2012	356	C4-S1	MB	50.41590	-6.66655
CEND 03/12	10/02/2012	357	EHF_S1	HC	50.41227	-6.66946
CEND 03/12	10/02/2012	358	EHF_S1	CS	50.41260	-6.66893
CEND 03/12	10/02/2012	358	EHF_S1	CS	50.41412	-6.66742
CEND 03/12	10/02/2012	359	S1-S2	MB	50.41177	6.66787
CEND 03/12	10/02/2012	359	S1-S2	MB	50.42000	6.62084
CEND 03/12	10/02/2012	360	EHF_S2	HC	50.41992	-6.62591
CEND 03/12	10/02/2012	361	S2-C2	MB	50.42093	-6.62800
CEND 03/12	10/02/2012	361	S2-C2	MB	50.42600	-6.58000
CEND 03/12	10/02/2012	362	EHF_C2	HC	50.42614	-6.58488
CEND 03/12	10/02/2012	363	C2-C3	MB	50.42700	-6.58350
CEND 03/12	10/02/2012	363	C2-C3	MB	50.43110	-6.53950
CEND 03/12	10/02/2012	364	EHF_C3	HC	50.43210	-6.54330
CEND 03/12	10/02/2012	365	EHF_C3	CS	50.43201	-6.54346
CEND 03/12	10/02/2012	365	EHF_C3	CS	50.43200	-6.54570
CEND 03/12	10/02/2012	366	C3-C1	MB	50.43160	-6.54640
CEND 03/12	10/02/2012	366	C3-C1	MB	50.41200	-6.50800
CEND 03/12	10/02/2012	367	EHF_C1	HC	50.41234	-6.51459

Cruise	Date	Stn No.	Station code	Gear	Latitude	Longitude
CEND 03/12	10/02/2012	368	C1-C9	MB	50.41300	-6.51500
CEND 03/12	10/02/2012	368	C1-C9	MB	50.45700	-6.53000
CEND 03/12	10/02/2012	369	EHF_C9	HC	50.45777	-6.53075
CEND 03/12	10/02/2012	370	C9-C7	MB	50.45700	-6.53700
CEND 03/12	10/02/2012	370	C9-C7	MB	50.45120	-6.57270
CEND 03/12	10/02/2012	371	EHF_C7	HC	50.45145	-6.57237
CEND 03/12	10/02/2012	372	C7-C6	MB	50.45117	-6.57307
CEND 03/12	10/02/2012	372	C7-C6	MB	50.44530	-6.61390
CEND 03/12	10/02/2012	373	EHF-C6	HC	50.44552	-6.61412
CEND 03/12	10/02/2012	374	C6	CS	50.44600	-6.61515
CEND 03/12	10/02/2012	374	C6	CS	50.44545	-6.61419
CEND 03/12	10/02/2012	375	C-6TOC-5	MB	50.44378	-6.61599
CEND 03/12	10/02/2012	375	C-6TOC-5	MB	50.43969	-6.65534
CEND 03/12	10/02/2012	376	C5	HC	50.43963	-6.65503
CEND 03/12	10/02/2012	377	C-5TOS4	MB	50.43990	-6.66660
CEND 03/12	10/02/2012	377	C-5TOS4	MB	50.44693	-6.76657
CEND 03/12	10/02/2012	378	S4	HC	50.44682	-6.76651
CEND 03/12	10/02/2012	379	S-4TOC-8	MB	50.44754	-6.76541
CEND 03/12	10/02/2012	379	S-4TOC-8	MB	50.45870	-6.68500
CEND 03/12	10/02/2012	380	C8	HC	50.45300	-6.72484
CEND 03/12	10/02/2012	381	C10	HC	50.45908	-6.68367
CEND 03/12	10/02/2012	382	C10	CS	50.45886	-6.68407
CEND 03/12	10/02/2012	382	C10	CS	50.45901	-6.68391
CEND 03/12	10/02/2012	383	C-10TOC-11	MB	50.46000	-6.68230
CEND 03/12	10/02/2012	383	C-10TOC-11	MB	50.46538	-6.64242
CEND 03/12	10/02/2012	384	C11	HC	50.46527	-6.64228
CEND 03/12	10/02/2012	385	C-11TOC-12	MB	50.46681	-6.63486
CEND 03/12	10/02/2012	385	C-11TOC-12	MB	50.47133	-6.60068
CEND 03/12	10/02/2012	386	C12	HC	50.47123	-6.60064
CEND 03/12	10/02/2012	387	C-13TOC15	MB	50.47168	-6.59873
CEND 03/12	10/02/2012	387	C-13TOC15	MB	50.47703	-6.56364
CEND 03/12	10/02/2012	388	C13	HC	50.47741	-6.55969
CEND 03/12	10/02/2012	389	C13	CS	50.47773	-6.55936
CEND 03/12	10/02/2012	389	C13	CS	50.47745	-6.55812
CEND 03/12	10/02/2012	390	C13-C15	MB	50.47864	-6.55023
CEND 03/12	10/02/2012	390	C13-C15	MB	50.48333	-6.51807
CEND 03/12	10/02/2012	391	C15	HC	50.48331	-6.51814
CEND 03/12	10/02/2012	393	C19	HC	50.50290	-6.54718

Cruise	Date	Stn No.	Station code	Gear	Latitude	Longitude
CEND 03/12	10/02/2012	394	C19-C18	MB	50.50217	-6.54923
CEND 03/12	10/02/2012	394	C19-C18	MB	50.49734	-6.58882
CEND 03/12	10/02/2012	395	C18	CS	50.49733	-6.58880
CEND 03/12	10/02/2012	395	C18	CS	50.49616	-6.58770
CEND 03/12	10/02/2012	396	EHF-C18	HC	50.49689	-6.58932
CEND 03/12	10/02/2012	397	C18-C17	MB	50.49610	-6.59197
CEND 03/12	10/02/2012	397	C18-C17	MB	50.49118	-6.63089
CEND 03/12	10/02/2012	398	EHF-C17	HC	50.49069	-6.63015
CEND 03/12	10/02/2012	399	C17-C16	MB	50.48872	-6.63078
CEND 03/12	10/02/2012	399	C17-C16	MB	50.48787	-6.67244
CEND 03/12	10/02/2012	400	EHF-C16	HC	50.48512	-6.67139
CEND 03/12	10/02/2012	401	EHFC16-C14	MB	50.48386	-6.67182
CEND 03/12	10/02/2012	401	EHFC16-C14	MB	50.47884	-6.71359
CEND 03/12	10/02/2012	402	EHF-C14	HC	50.47850	-6.71269
CEND 03/12	10/02/2012	403	EHFC14	CS	50.47864	-6.71316
CEND 03/12	10/02/2012	403	EHFC14	CS	50.47840	-6.71146
CEND 03/12	11/02/2012	404	C14-S5	MB	50.47590	-6.71159
CEND 03/12	11/02/2012	404	C14-S5	MB	50.47380	-6.76032
CEND 03/12	11/02/2012	405	EHF S5	HC	50.47239	-6.75401
CEND 03/12	11/02/2012	406	S5-S6	MB	50.47373	-6.75432
CEND 03/12	11/02/2012	406	S5-S6	MB	50.49195	-6.78525
CEND 03/12	11/02/2012	407	EHF S6	HC	50.49210	-6.78275
CEND 03/12	11/02/2012	408	EHFS6	CS	50.49221	-6.78270
CEND 03/12	11/02/2012	408	EHFS6	CS	50.49176	-6.78142
CEND 03/12	11/02/2012	409	S6-S7	MB	50.49214	-6.77799
CEND 03/12	11/02/2012	409	S6-S7	MB	50.49845	-6.74343
CEND 03/12	11/02/2012	410	EHF S7	HC	50.49827	-6.74165
CEND 03/12	11/02/2012	411	S7-C20	MB	50.49864	-6.74045
CEND 03/12	11/02/2012	411	S7-C20	MB	50.50450	-6.70078
CEND 03/12	11/02/2012	412	EHF C20	HC	50.50427	-6.70027
CEND 03/12	11/02/2012	413	EHF C20	CS	50.50426	-6.70005
CEND 03/12	11/02/2012	413	EHF C20	CS	50.50303	-6.69864
CEND 03/12	11/02/2012	414	C20-C21	MB	50.50280	-6.69660
CEND 03/12	11/02/2012	414	C20-C21	MB	50.51160	-6.65897
CEND 03/12	11/02/2012	415	EHF C21	HC	50.51021	-6.65855
CEND 03/12	11/02/2012	416	C21-C22	MB	50.51032	-6.65567
CEND 03/12	11/02/2012	416	C21-C22	MB	50.51644	-6.61619
CEND 03/12	11/02/2012	417	EHF_C22	HC	50.51647	-6.61725

Cruise	Date	Stn No.	Station code	Gear	Latitude	Longitude
CEND 03/12	11/02/2012	418	EHF C22	CS	50.51653	-6.61708
CEND 03/12	11/02/2012	418	EHF C22	CS	50.51543	-6.61694
CEND 03/12	11/02/2012	419	C22-C23	MB	50.51543	-6.61400
CEND 03/12	11/02/2012	419	C22-C23	MB	50.52308	-6.57542
CEND 03/12	11/02/2012	420	EHF_C23	HC	50.52253	-6.57591
CEND 03/12	11/02/2012	421	C23-C24	MB	50.52356	-6.56941
CEND 03/12	11/02/2012	421	C23-C24	MB	50.52962	-6.53417
CEND 03/12	11/02/2012	422	EHF_C24	HC	50.52851	-6.53475
CEND 03/12	11/02/2012	423	EHF_C24	CS	50.52948	-6.53461
CEND 03/12	11/02/2012	423	EHF_C24	CS	50.52773	-6.53597
CEND 03/12	11/02/2012	424	C24-C28	MB	50.52500	-6.53600
CEND 03/12	11/02/2012	424	C24-C28	MB	50.55800	-6.52500
CEND 03/12	11/02/2012	425	EHF_C28	HC	50.55426	-6.52174
CEND 03/12	11/02/2012	426	C28-C27	MB	50.55200	-6.52300
CEND 03/12	11/02/2012	426	C28-C27	MB	50.55000	-6.56400
CEND 03/12	11/02/2012	427	EHF_C27	HC	50.54815	-6.56338
CEND 03/12	11/02/2012	428	EHF_C27	CS	50.54818	-6.56298
CEND 03/12	11/02/2012	428	EHF_C27	CS	50.54794	-6.56110
CEND 03/12	11/02/2012	429	C27-C26	MB	50.54700	-6.56900
CEND 03/12	11/02/2012	429	C27-C26	MB	50.54300	-6.60600
CEND 03/12	11/02/2012	430	EHF-C26	HC	50.54188	-6.60522
CEND 03/12	11/02/2012	432	C26-C25	MB	50.53900	-6.60900
CEND 03/12	11/02/2012	432	C26-C25	MB	50.53600	-6.65290
CEND 03/12	11/02/2012	433	EHF-C25	HC	50.53615	-6.64630
CEND 03/12	11/02/2012	434	C25	CS	50.53617	-6.64684
CEND 03/12	11/02/2012	434	C25	CS	50.53638	-6.64559
CEND 03/12	11/02/2012	435	C25-S10	MB	50.53873	-6.64602
CEND 03/12	11/02/2012	435	C25-S10	MB	50.53008	-6.68781
CEND 03/12	11/02/2012	436	EHF-S10	HC	50.53008	-6.68781
CEND 03/12	11/02/2012	437	S10-S9	MB	50.52951	-6.68975
CEND 03/12	11/02/2012	437	S10-S9	MB	50.52416	-6.72963
CEND 03/12	11/02/2012	438	EHF-S9	HC	50.52383	-6.72916
CEND 03/12	11/02/2012	439	EHF-59	CS	50.52319	-6.72825
CEND 03/12	11/02/2012	439	EHF-59	CS	50.52417	-6.72939
CEND 03/12	11/02/2012	440	S10-S9	MB	50.52165	-6.72913
CEND 03/12	11/02/2012	440	S10-S9	MB	50.51799	-6.77056
CEND 03/12	11/02/2012	441	EHF-S8	HC	50.51801	-6.77091
CEND 03/12	11/02/2012	442	S8-S11	MB	50.52011	-6.76920

Cruise	Date	Stn No.	Station code	Gear	Latitude	Longitude
CEND 03/12	11/02/2012	442	S8-S11	MB	50.54604	-6.75983
CEND 03/12	11/02/2012	443	EHF-S11	HC	50.54364	-6.75805
CEND 03/12	11/02/2012	444	EHF-S11	CS	50.54389	-6.75790
CEND 03/12	11/02/2012	444	EHF-S11	CS	50.54299	-6.75786
CEND 03/12	11/02/2012	445	S11-S12	MB	50.54438	-6.74951
CEND 03/12	11/02/2012	445	S11-S12	MB	50.54950	-6.71600
CEND 03/12	11/02/2012	446	EHF-S12	HC	50.54959	-6.71690
CEND 03/12	11/02/2012	447	S12-S13	MB	50.55060	-6.77120
CEND 03/12	11/02/2012	447	S12-S13	MB	50.56054	-6.66953
CEND 03/12	11/02/2012	448	EHF-S13	HC	50.55564	-6.67529
CEND 03/12	11/02/2012	449	EHF-S13	CS	50.55591	-6.67485
CEND 03/12	11/02/2012	449	EHF-S13	CS	50.55429	-6.67694
CEND 03/12	11/02/2012	450	S13 - S14	MB	50.55420	-6.67480
CEND 03/12	11/02/2012	450	S13 - S14	MB	50.56400	-6.63200
CEND 03/12	11/02/2012	451	EHF-S14	HC	50.56179	-6.63379
CEND 03/12	11/02/2012	452	S14 - C29	MB	50.56270	-6.62690
CEND 03/12	11/02/2012	452	S14 - C29	MB	50.56870	-6.59210
CEND 03/12	11/02/2012	453	EHF-C29	HC	50.56803	-6.59243
CEND 03/12	11/02/2012	454	EHF-C29	CS	50.56819	-6.59197
CEND 03/12	11/02/2012	454	EHF-C29	CS	50.56767	-6.59283
CEND 03/12	11/02/2012	455	C29 - C30	MB	50.56609	-6.59246
CEND 03/12	11/02/2012	455	C29 - C30	MB	50.57887	-6.54933
CEND 03/12	11/02/2012	456	EHF_C30	HC	50.57414	-6.55127
CEND 03/12	11/02/2012	457	C30-S19	MB	50.57452	-6.55537
CEND 03/12	11/02/2012	457	C30-S19	MB	50.58750	-6.62132
CEND 03/12	11/02/2012	458	EHF_S19	HC	50.58759	-6.62130
CEND 03/12	11/02/2012	459	EHF_S19	CS	50.58751	-6.62079
CEND 03/12	11/02/2012	459	EHF_S19	CS	50.58748	-6.62290
CEND 03/12	11/02/2012	460	S19-S18	MB	50.58606	-6.63191
CEND 03/12	11/02/2012	460	S19-S18	MB	50.58191	-6.65715
CEND 03/12	11/02/2012	461	EHF_S18	HC	50.58142	-6.66240
CEND 03/12	11/02/2012	462	S18-S17	MB	50.58291	-6.66144
CEND 03/12	11/02/2012	462	S18-S17	MB	50.57636	-6.71108
CEND 03/12	11/02/2012	463	EHF_S17	HC	50.57561	-6.70412
CEND 03/12	11/02/2012	464	EHF001.csv	CS	50.57549	-6.70449
CEND 03/12	11/02/2012	464	EHF001.csv	CS	50.57608	-6.70352
CEND 03/12	12/02/2012	465	S17-S16	MB	50.57700	-6.70640
CEND 03/12	12/02/2012	465	S17-S16	MB	50.57000	-6.74853

Cruise	Date	Stn No.	Station code	Gear	Latitude	Longitude
CEND 03/12	12/02/2012	466	EHF_S16	HC	50.56923	-6.74562
CEND 03/12	12/02/2012	467	S16-S15	MB	50.56600	-6.76100
CEND 03/12	12/02/2012	467	S16-S15	MB	50.56400	-6.78700
CEND 03/12	12/02/2012	468	EHF_S15	HC	50.56311	-6.78712
CEND 03/12	12/02/2012	469	EHF_S15	CS	50.56321	-6.78705
CEND 03/12	12/02/2012	469	EHF_S15	CS	50.56350	-6.78454

CEND0513

Cruise	Date	Stn No.	Stn Code	Gear	SOL Lat	SOL Long	EOL Lat	EOL Long
CEND0513	23/04/2013	103	A1/A2	SS/MB	50.52061	-6.52804	50.54147	-6.57557
CEND0513	23/04/2013	115	EOHF01	DC	50.45877	-6.59777	50.45791	-6.59897
CEND0513	23/04/2013	116	EOHF02	DC	50.4604	-6.59661	50.46110	-6.59857
CEND0513	23/04/2013	117	EOHF03	DC	50.4668	-6.59699	50.46735	-6.59500
CEND0513	23/04/2013	118	EOHF04	DC	50.46981	-6.59482	50.47043	-6.59347
CEND0513	23/04/2013	119	EOHF05	DC	50.48993	-6.59048	50.48993	-6.58889
CEND0513	23/04/2013	112	EOHF06	DC	50.49405	-6.58634	50.49407	-6.58783
CEND0513	23/04/2013	120	EOHF07	DC	50.50416	-6.5868	50.50536	-6.58704
CEND0513	23/04/2013	121	EOHF08	DC	50.50628	-6.58442	50.50578	-6.58289
CEND0513	23/04/2013	122	EOHF09	DC	50.51166	-6.58283	50.51274	-6.58148
CEND0513	23/04/2013	123	EOHF10	DC	50.52644	-6.5768	50.52722	-6.57800
CEND0513	23/04/2013	124	EOHF11	DC	50.52864	-6.58035	50.52986	-6.57957
CEND0513	23/04/2013	125	EOHF12	DC	50.53838	-6.57302	50.53953	-6.57493
CEND0513	23/04/2013	107	EOHF13	DC	50.52316	-6.52231	50.52250	-6.52073
CEND0513	23/04/2013	108	EOHF14	DC	50.5183	-6.53257	50.51674	-6.53230
CEND0513	23/04/2013	109	EOHF15	DC	50.51233	-6.54611	50.51141	-6.54775
CEND0513	23/04/2013	110	EOHF16	DC	50.5057	-6.56334	50.50530	-6.56516
CEND0513	23/04/2013	111	EOHF17	DC	50.498	-6.57844	50.49700	-6.57940
CEND0513	23/04/2013	113	EOHF18	DC	50.48995	-6.59573	50.48927	-6.59732
CEND0513	23/04/2013	114	EOHF19	DC	50.48367	-6.60784	50.48415	-6.60917

Daily Progress Reports

DAILY LOG
STATUS REPORT
Name of Area Survey
Rv Cefas Endeavour – JNCC – DPR No. 8 – Thursday 9th 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. 8 Date: 9th Feb. 2012	Location at 24:00: 50° 25.4N 006° 45.5W

To Company:	Person:	E-mail:
Cefas	[redacted]	
JNCC		
JNCC		
JNCC		
JNCC		
Cefas		

Safety

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

Summary of operations 0000-2400

Time UTC (start)	Time UTC (end)	Type	Comments
00:00	00:49	ToSa	Hamon Grab and Camera Sledge at C12. Too murky on the video to see anything so aborted after 5 minutes
00:49	01:23	ToSu	Multibeam on transit from C12 to C15
01:23	01:30	ToSa	Hamon Grab at C15
01:30	02:16	ToSu	Multibeam on transit from C15 to C18
02:16	02:18	ToSa	Hamon Grab at C18
02:18	02:22	Offshore Calibrations	CTD at C18
02:22	03:00	ToSu	Multibeam on transit from C18 to C14
03:00	03:20	ToSa	Hamon Grab at C14
03:20	03:53	ToSu	Multibeam on transit from C14 to C11
03:53	04:00	ToSa	Hamon Grab at C11
04:00	04:30	ToSu	Multibeam on transit from C11 to C8
04:30	04:39	ToSa	Hamon Grab at C8
04:39	05:12	ToSu	Multibeam on transit from C8 to C4
05:12	06:00	ToSa	Hamon Grab and Camera Sledge at C4
06:00	06:32	ToSu	Multibeam on transit from C4 to C7
06:32	06:43	ToSa	Hamon Grab at C7
06:43	07:13	ToSu	Multibeam on transit from C7 to C10
07:13	07:30	ToSa	Hamon Grab at C10
07:30	08:01	ToSu	Multibeam on transit from C10 to C9
08:01	09:05	ToSa	Hamon Grab and Camera Sledge at C9
09:05	09:41	ToSu	Multibeam on transit from C9 to C6
09:41	09:49	ToSa	Hamon Grab at C6
09:49	10:21	ToSu	Multibeam on transit from C6 to C3
10:21	10:27	ToSa	Hamon Grab at C3
10:27	10:57	ToSu	Multibeam on transit from C3 to C2
10:57	11:04	ToSa	Hamon Grab at C2
11:04	11:33	ToSu	Multibeam on transit from C2 to C5

DAILY LOG
STATUS REPORT

11:33	11:39	ToSa	Hamon Grab at C5
11:39	12:06	ToSu	Multibeam on transit from C5 to C1
12:06	13:15	ToSa	Hamon Grab and Camera Sledge at C1
13:15	22:00	Transit	Transit to East Haig Fras rMCZ
22:00	22:44	Offshore calibrations	CTD
22:44	24:00	ToSu	Multibeaming from north-east corner to south-east corner of East of Haig Fras rMCZ – to cover moderate energy circalittoral rock.

Weather

Weather/sea state conditions	0000-0600	0600-1200	1200-1800	1800-2400	Remarks
Wind	S 4	W 6	WSW 5	WSW 5	
Sea state	Slight	Slight	Slight	Slight	
Swell	Slight	Slight	Slight	Slight	
Vis	Good	Good	Good	Good	
Baro	1049	1048	1046	1045.6	

Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		10:12	
Offshore Calibrations	00:48	05:22	
Total Operation Survey (TOSu)	08:57	65:11	
Total Operation Sampling (TOSa)	05:30	78:22	
Equipment/Downtime		01:17	
Ship/Plant Downtime		02:11	
Waiting On Weather			
Transit	08:45	28:55	
Standby Port			
Others		00:30	
Total:	24:00	192:00	

Overall Progress Geophysical Data Acquisition MBES/Sidescan

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
Acoustic: Multibeam				
Multibeam EM3002	68.9	539.5		

Overall Progress Groundtruthing Samples

Action	***Today (Lkm/samples)***	***Accum. (Lkm/samples)***	Remarks
Hamon grab (0.1m^2)	15	147	
Camera sledge	3	14	
Drop camera	0	37	

DAILY LOG
STATUS REPORT

Weather forecast for the next 24 hours

Wind southeast 5 or 6, decreasing 4 at times. Sea state slight or moderate.

Planned operation for the next 24 hours (00:00 to 24:00 on 10th February 2012)

Continue to survey East of Haig Fras rMCZ.

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. 9 – Friday 10th 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. 9 Date: 10th Feb. 2012	Location at 24:00: 50° 28.6N, 006° 42.7

To Company:	Person:	E-mail:
Cefas	[redacted]	
JNCC		
JNCC		
JNCC		
JNCC		
Cefas		

Safety

	Today	To Date
Accidents/Incidents	0	0
Near Misses	0	0
Safety Drills/Induction	1	2
Additional comments:	Fire drill, with casualty.	

Summary of operations 0000-2400

Time UTC (start)	Time UTC (end)	Type	Comments
00:00	00:15	ToSu	Multibeam from boundary to R1, East of Haig Fras rMCZ
00:15	01:15	ToSa	Hamon Grab and Camera Sledge at R1. Cobbles and pebbles with sand stretches in between
01:15	01:43	ToSu	Multibeam on transit from R1 to S3
01:43	01:48	ToSa	Hamon Grab at S3
01:48	02:19	ToSu	Multibeam on transit from S3 to C4
02:19	02:24	ToSa	Hamon Grab at C4
02:24	02:59	ToSu	Multibeam on transit from C4 to S1
02:59	04:07	ToSa	Hamon Grab and Camera Sledge at S1
04:07	04:36	ToSu	Multibeam on transit from S1 to S2
04:36	04:44	ToSa	Hamon Grab at S2
04:44	05:09	ToSu	Multibeam on transit from S2 to C2
05:09	05:23	ToSa	Hamon Grab at C2
05:23	05:49	ToSu	Multibeam on transit from C2 to C3
05:49	06:27	ToSa	Hamon Grab and Camera Sledge at C3
06:27	06:52	ToSu	Multibeam on transit from C3 to C1
06:52	06:58	ToSa	Hamon Grab at C1
06:58	07:26	ToSu	Multibeam on transit from C1 to C9
07:26	07:37	ToSa	Hamon Grab at C9
07;37	08:02	ToSu	Multibeam on transit from C9 to C7
08:02	08:08	ToSa	Hamon Grab at C7
08:08	08:31	ToSu	Multibeam on transit from C7 to C6
08:31	09:36	ToSa	Hamon Grab and Camera Sledge at C6
09:36	10:03	ToSu	Multibeam on transit from C6 to C5
10:03	10:34	ToSa	Hamon Grab at C5
10:34	11:15	ToSu	Multibeam on transit from C5 to S4
11:15	11:23	ToSa	Hamon Grab at S4
11:23	11:44	ToSu	Multibeam on transit from S4 to C8
11:44	12:57	ToSa	Hamon grab at C8 and Hamon grab and camera sledge at

DAILY LOG
STATUS REPORT

			C10
12:57	13:30	ToSu	Multibeam from C10 to C11
13:30	13:45	ToSa	Hamon grab at C11
13:45	14:03	ToSu	Multibeam from C11 to C12
14:03	14:40	ToSa	Hamon grab at C12. Three failed attempts due to boulders in jaw of grab. Forth attempt successful.
14:40	15:07	ToSu	Multibeam from C12 to C13
15:07	15:44	ToSa	Hamon grab and camera sledge at C13
15:44	16:00	ToSu	Multibeam from C13 to C15
16:00	16:30	Other	Fire drill
16:30	16:54	Equipment downtime	Trying to fix HamCam which was not working.
16:54	17:03	TaSa	Hamon grab at C15 (w/o camera)
17:03	17:33	ToSu	Multibeam from C15 to C19
17:33	18:40	Equipment downtime	Trying to fix HamCam (Komsberg camera). Initial diagnosis was a suspected blown fuse, but once removed from Hamon grab further investigation revealed a faulty connector and remote. Both are reparable, and camera will be loaded back onto the Hamon grab when it is fixed.
18:40	19:01	ToSa	Attempted Hamon grab at C19 (w/o camera). Hamon grab failed 3 times, no sample collected.
19:01	19:25	ToSu	Multibeam from C19 to C18
19:25	20:59	ToSa	Camera sledge and Hamon Grab at C18 (w/o camera)
20:59	21:45	ToSu	Multibeam from C18 to C17
21:45	22:01	ToSa	Hamon grab at C17
22:01	22:29	ToSu	Multibeam from C17 to C16
22:29	22:37	ToSa	Hamon grab at C16
22:37	23:03	ToSu	Multibeam from C16 to C14
23:03	24:00	ToSa	Hamon grab (w/o camera) and camera sledge at C14. HamCam broken again, suspected connection failure. Will be checked on next multibeam transit.

Weather

Weather/sea state conditions	0000-0600	0600-1200	1200-1800	1800-2400	Remarks
Wind	WNW 5	NNW 3	SE 6	SE 6	
Sea state	Slight	Slight	Slight	Slight	
Swell	Slight	Slight	Slight	Slight	
Vis	Good	Good	Good	Good	
Baro	1043.0	1042.0	1040.8	1042.8	

Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		10:12	
Offshore Calibrations		05:22	
Total Operation Survey (TOSu)	10:27	75:38	
Total Operation Sampling (TOSa)	11:32	89:54	
Equipment/Downtime	01:31	02:48	
Ship/Plant Downtime		02:11	
Waiting On Weather		00:00	
Transit		28:55	
Standby Port		00:00	

DAILY LOG
STATUS REPORT

Others	00:30	01:00	
Total:	24:00	216:00	

Overall Progress Geophysical Data Acquisition MBES/Sidescan

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
Acoustic: Multibeam				
Multibeam EM3002	73.1	612.6		

Overall Progress Groundtruthing Samples

Action	***Today (Lkm/samples)***	***Accum. (Lkm/samples)***	Remarks
Hamon grab (0.1m^2)	23	178	
Camera sledge	7	21	
Drop camera	0	37	

Weather forecast for the next 24 hours

Wind variable 3 or 4. Sea state slight or moderate.

Planned operation for the next 24 hours (00:00 to 24:00 on 11th February 2012)

Continue to survey East of Haig Fras rMCZ.

Agreed Changes to Scope/Survey operation priorities

CEFAS/JNCC Comments

Kongsberg camera on the Hammon grab broke due to suspected faulty connector. Repair made, but camera became non-functional again after two grabs. Continued to use Hamon grab in absence of HamCam, and night shift team will investigate the fault further.

CEFAS SIC…[redacted]…… JNCC Rep: ……[redacted]……

DAILY LOG
STATUS REPORT
Name of Area Survey
Rv Cefas Endeavour – JNCC – DPR No. 10 – Saturday 11th 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. 10 Date: 11th Feb. 2012	Location at 24:00: 50° 34.8N, 006° 52.2W

To Company:	Person:	E-mail:	
Cefas	[redacted]		
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	00:04	ToSa	Camera Sledge at C14, East of Haig Fras
00:04	00:39	ToSu	Multibeam from C14 to S5
00:39	00:47	ToSa	Hamon Grab at S5 (Ham Cam working so just grab at all today's stations)
00:47	01:24	ToSu	Multibeam from S5 to S6
01:24	02:17	ToSa	Hamon Grab and Camera Sledge at S6
02:17	02:45	ToSu	Multibeam from S6 to S7
02:45	02:52	ToSa	Hamon Grab at S7
02:52	03:15	ToSu	Multibeam from S7 to C20
03:15	03:53	ToSa	Hamon Grab and Camera Sledge at C20
03:53	04:20	ToSu	Multibeam from C20 to C21
04:20	04:40	ToSa	Hamon Grab at C21
04:40	05:30	ToSu	Multibeam from C21 to C22
05:30	06:16	ToSa	Hamon Grab and Camera Sledge at C22
06:16	06:43	ToSu	Multibeam from C22 to C23
06:43	06:53	ToSa	Hamon Grab at C23
06:53	07:14	ToSu	Multibeam from C23 to C24
07:14	08:44	ToSa	Hamon Grab and Camera Sledge at C24
08:44	09:15	ToSu	Multibeam from C24 to C28
09:15	09:24	ToSa	Hamon Grab at C28
09:24	10:00	ToSu	Multibeam from C28 to C27
10:00	10:46	ToSa	Hamon Grab and Camera Sledge at C27
10:46	11:28	ToSu	Multibeam from C27 to C26
11:28	11:40	ToSa	Hamon Grab at C26
11:40	12:37	ToSu	Multibeam from C26 to C25
12:37	13:17	ToSa	Hamon grab and camera sledge at C25
13:17	13:49	ToSu	Multibeam from C25 to S10
13:49	13:55	ToSa	Hamon grab at S10
13:55	14:18	ToSu	Multibeam from S10 to S9

DAILY LOG
STATUS REPORT

14:18	15:12	ToSa	Hamon grab and camera sledge at S9
15:12	15:33	ToSu	Multibeam from S9 to S8
15:33	15:50	ToSa	Hamon grab at S8
15:50	16:17	ToSu	Multibeam from S8 to S11
16:17	16:55	ToSa	Hamon grab and camera sledge at S11
16:55	17:41	ToSu	Multibeam from S11 to S12
17:41	17:51	ToSa	Hamon grab at S12
17:51	18:16	ToSu	Multibeam from S12 to S13
18:16	18:57	ToSa	Hamon grab and camera sledge at S13
18:57	19:18	ToSu	Multibeam from S13 to S14
19:18	19:30	ToSa	Hamon grab at S14
19:30	19:49	ToSu	Multibeam from S14 to C29
19:49	20:31	ToSa	Hamon grab and camera sledge at C29
20:31	20:56	ToSu	Multibeam from C29 to C30
20:56	21:21	ToSa	Hamon grab C30 (three failed attempts)
21:21	21:48	ToSu	Multibeam from C30 to S19
21:48	22:33	ToSa	Hamon grab and camera sledge S19
22:33	22:55	ToSu	Multibeam from S19 to S18
22:55	23:03	ToSa	Hamon grab at S18
23:03	23:25	ToSu	Multibeam from S18 to S17
23:25	24:00	ToSa	Hamon grab and camera sledge S17

Weather

Weather/sea state conditions	0000-0600	0600-1200	1200-1800	1800-2400	Remarks
Wind	SE 4	SSE 4	SSE 4	S 3	
Sea state	Slight	Slight	Slight	Slight	
Swell	Slight	Slight	Slight	Slight	
Vis	Good	Good	Good	Good	
Baro	1042.5	1044.8	1045.0	1046.4	

Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		10:12	
Offshore Calibrations		05:22	
Total Operation Survey (TOSu)	12:04	87:42	
Total Operation Sampling (TOSa)	11:56	101:50	
Equipment/Downtime		02:48	
Ship/Plant Downtime		02:11	
Waiting On Weather			
Transit		28:55	
Standby Port			
Others		01:00	
Total:	24:00	240:00	

Overall Progress Geophysical Data Acquisition MBES/Sidescan

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
Acoustic: Multibeam				

DAILY LOG
STATUS REPORT

Multibeam EM3002	76.0	688.6		

Overall Progress Groundtruthing Samples

Action	***Today (Lkm/samples)***	***Accum. (Lkm/samples)***	Remarks
Hamon grab (0.1m^2)	23	193	
Camera sledge	13	34	
Drop camera	0	37	

Weather forecast for the next 24 hours

Wind variable 3 or 4, becoming north- westerly 4 or 5 later. Sea state slight or moderate.

Planned operation for the next 24 hours (00:00 to 24:00 on 12th February 2012)

Complete 2 remaining stations at East of Haig Fras rMCZ and then transit to South of Celtic Deeps rMCZ to being surveying.

Agreed Changes to Scope/Survey operation priorities

As the weather forecast is looking good the decision was taken to move to the South of Celtic Deep rMCZ as this is another exposed site. This site has also been included in the Cefas ITT and as such will have 100% multibeam data collected.

CEFAS/JNCC Comments

The camera suffered another fault very late on 10th February. Investigations during the early hours of 11th February discovered that the tow cable had suffered multiple lacerations and water had entered the cable causing damage to the Kongsberg camera. The Kongsberg camera is now non-functional. The cable is to be re-terminated and a back-up HD camera will be set up as the new HamCam. However the repair will take many hours as we have to wait 12 hours for compound to set. The new HamCam is likely to operational again by early evening on Sunday 12th February.

In the meantime the Hamon grab has been moved to different winch, and we have increased the frequency of camera sledge tows from one at every fourth station to one at every second station to compensate for the absence of HamCam.

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

DAILY LOG
STATUS REPORT
Name of Area Survey
Rv Cefas Endeavour – JNCC – DPR No. 11 – Saturday 12th 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: 12th Feb. 2012	Location at 24:00: 51° 02.2N, 006° 40.8W

To Company:	Person:	E-mail:
Cefas	[redacted]	
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	
Total:	24:00	264:00	

Overall Progress Geophysical Data Acquisition MBES/Sidescan

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

Overall Progress Groundtruthing Samples

Action	***Today (Lkm/samples)***	***Accum. (Lkm/samples)***	Remarks
Hamon grab ($0.1m^2$)	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 13th 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
CEND 05/13 rMCZ survey
Cefas Endeavour – JNCC – DPR No. 6 – 23rd April 2013

Vessel: Cefas Endeavour GSM : 07799773456 07827237014	Project: CEND 05/13 South Dorset, East of Haig Fras, North of St George's Channel and Mid St George's Channel rMCZ survey Satellite Voice Bridge: int 871763998027 int 871600309716
Daily Progress Report No. 6	Location at 00.00: 49° 56.5'N 005° 24.4W
Date: 23rd April 2013	

To Company:	Person:	E-mail:
Cefas	[redacted]	
Cefas		
JNCC		
JNCC		
JNCC		
NE		
NE		
NE		

Safety

	Today	To Date
Accidents/Incidents		
Near Misses		
Safety Drills/Induction		2

Summary of operations 0000-2400

Time UTC	Type	Comments
00:00	Transit	
07:58	TOSu	EOHF2 SS
08:41	Transit	
09:34	TOSu	EOHF1 SS
10:39	Transit	
11:47	TOSa	EOHF13 DC
12:09	Transit	
12:26	TOSa	EOHF14 DC
12:45	Transit	
13:09	TOSa	EOHF15 DC
13:26	Transit	
13:51	TOSa	EOHF16 DC
14:06	Transit	
14:26	TOSa	EOHF17 DC
14:40	Transit	
14:59	TOSa	EOHF6 DC
15:10	Transit	
15:31	TOSa	EOHF18 DC
15:46	Transit	
16:35	TOSa	EOHF19 DC
16:47	Transit	
17:14	TOSa	EOHF01 DC
17:27	Transit	
17:45	TOSa	EOHF02 DC
18:02	Transit	
18:20	TOSa	EOHF03 DC
18:37	Transit	
18:51	TOSa	EOHF04 DC
19:05	Transit	
19:44	TOSa	EOHF05 DC

DAILY LOG
STATUS REPORT

19:57	Transit	
20:30	TOSa	EOHF07 DC
20:45	Transit	
21:01	TOSa	EOHF08 DC
21:14	Transit	
21:39	TOSa	EOHF09 DC
21:56	Transit	
22:31	TOSa	EOHF10 DC
22:44	Transit	
23:07	TOSa	EOHF11 DC
23:23	Transit	
23:45	TOSa	EOHF12 DC
24:00		

Weather

Weather/sea state conditions	0000-0600	0600-1200	1200-1800	1800-2400	Remarks
	240° 22kn 1m swell 1028 vis. 6	290° 14kn 2m swell 1031 vis. 7	260° 11kn 2m swell 1035 vis. 4	Light airs 2m swell 1035 vis. 2	

Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)		Remarks
Mob/Demob	00:00	15:15		
Offshore Calibrations	00:00	00:17		
Total Operation Survey (TOSu)	01:48	01:48		
Total Operation Sampling (TOSa)	04:48	37:58		
Equipment/Downtime	00:00	00:00		
Ship/Plant Downtime	00:00	00:00		
Waiting On Weather	00:00	00:00		
Transit	17:24	88:42		
Standby Port	00:00	00:00		
Others	00:00	00:00		
Total:	**24:00**	**120:00**		

Overall Progress Geophysical Data Acquisition MBES/Sidescan

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
Acoustic: Sidescan Sonar				
Gear type:	200	200	200	

Overall Progress Groundtruthing Samples

Action	Number of samples (today)	Lengths	Current total	Remarks
HamCam			42	
Camera sledge		10min	12	
Drop camera	19		83	

Weather forecast for the next 24 hours

Southwest 5 to 7, decreasing 4 for a time.
Moderate or rough.

DAILY LOG
STATUS REPORT

Rain or showers.
Moderate or good, occasionally poor.

Planned operation for the next 24 hours (00:00 to 24:00)
Transit to and begin work at North St George's Channel

Agreed Changes to Scope/Survey operation priorities
No changes

Cefas/JNCC Comments

Cefas SIC:
JNCC Rep: [redacted]

Fisheries Liaison Officer (FLO) Report (CEND03/12)
The following vessels were observed operating in the rMCZ during the CEND03/12) survey.

Mobile Fishing Gear

Vessel	Home Port	Gear Type	Target Species
FV Effera.	Guilvinec.	Stern Trawl.	Mixed
FV Azur.	Saint Malo.	Stern Trawl.	Mixed
FV Scuderia.	Saint Brieuc.	Stern Trawl.	Mixed
FV Ecume Des Jours.	Saint Brieuc.	Stern Trawl.	Mixed
FV Maranello.	Saint Brieuc.	Stern Trawl.	Mixed
FV Boree al.	Saint Malo.	Stern Trawl.	Mixed
FV Alexanda.	Saint Malo.	Stern Trawl.	Mixed
FV Testarossa.	Saint Brieuc.	Stern Trawl.	Mixed
FV Emer-Jane.	Wexford.	Beam Trawl.	Mixed
FV Erispoe.	Saint Brieuc.	Stern Trawl.	Mixed
FV Mor Breiz.	Saint Brieuc.	Stern Trawl.	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)

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)

.

Customer focus

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

Our existing customers are drawn from a broad spectrumwith 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

Head office
Centre for Environment, Fisheries & Aquaculture Science
Pakefield Road, Lowestoft,
Suffolk NR33 0HT UK

Tel +44 (0) 1502 56 2244
Fax +44 (0) 1502 51 3865

Web www.cefas.defra.gov.uk

Centre for Environment, Fisheries & Aquaculture Science
Barrack Road, The Nothe
Weymouth, DT4 8UB

Tel +44 (0) 1305 206600
Fax +44 (0) 1305 206601

printed on paper made from a minimum 75% de-inked