

Final Report (Project Code): C5650

Holderness Offshore rMCZ 2012 Survey Report

Author: Sue Ware

Issue date: January 2016

Publication date: January 2023

Holderness Offshore rMCZ 2012 Survey Report

Sue Ware

Issue date: January 2016
(Published January 2023)

This report should be cited:

Ware, S. 2023. Holderness Offshore rMCZ 2012 Survey Report. [Contracted] Report by Cefas for Defra and JNCC (Project Code: C5650).



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

www.cefas.defra.gov.uk

Cefas is an executive agency of Defra

Table of Contents

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	4
2.1	Survey planning and design	4
2.2	Sample collection and processing methods	4
3	Survey Narrative	7
4	Preliminary Results	8
4.1	Acoustic Maps	8
4.2	Seabed Imagery	9
4.3	Grab Samples and sediment types	15
4.4	Preliminary observation of Features of Conservation Interest (FOCI)	16
5	Annexes	17
5.5	Metadata	19
5.6	Daily Progress Report	23

1 Background and Introduction

1.1 Survey Project Team

The Holderness Offshore rMCZ survey was carried out during 23rd – 25th May 2012 on the RV Cefas Endeavour. The survey team included Cefas marine ecologists, marine survey specialists and Marine Protected Area (MPA) specialists.

1.2 Site Description

Holderness Offshore rMCZ is located approximately 11.4 km off the Holderness Coast, East Yorkshire (Figure 1). **(For a detailed site description see *NetGain Final Report and Recommendations for Marine Conservation Zones 2011*)**

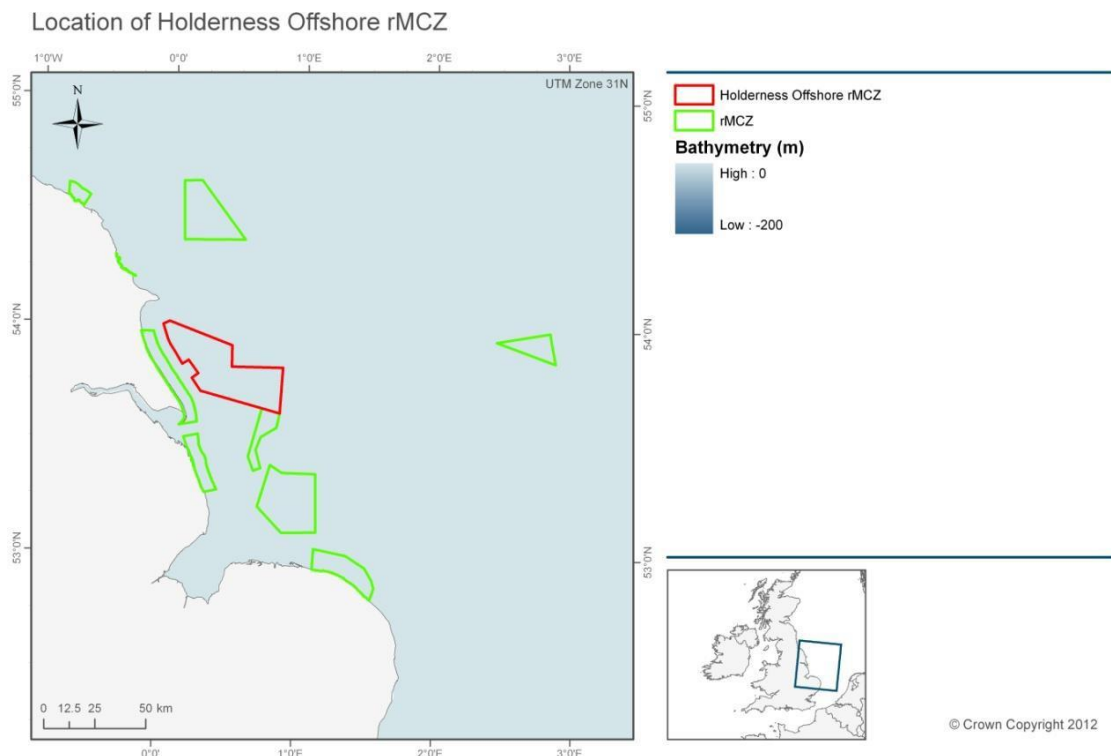


Figure 1. Location of Holderness Offshore rMCZ.

1.3 Geological and Biological Context

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

Table 1. Features proposed for designation within Holderness Offshore rMCZ.

Feature Type	Feature Name
Broad Scale Habitat (BSH)	A5.1: Subtidal coarse sediment A5.4: Subtidal mixed sediments
Features of Conservation Interest (FOCI)	
Habitats	N/A
Species	N/A
Geomorphological Feature	N/A

A number of additional species FOCI had previously been identified as present within the Holderness Offshore rMCZ but were not proposed for designation (Table 2).

Table 2. Features not proposed for designation within Holderness Offshore rMCZ.

Feature Type	Feature Name
Broad Scale Habitat (BSH)	A5.2: Subtidal sand
Features of Conservation Interest (FOCI)	
Habitats	Subtidal sands and gravels* <i>Sabellaria spinulosa</i> reefs
Species	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

A number of existing data sets were identified to inform survey planning. The Humber Regional Environmental Characterisation (REC) was particularly instrumental in informing the area of search for the 2012 survey effort (Figure 2). As the Humber REC survey effectively covered the southern portion of the Holderness Offshore rMCZ, the 2012 survey focused on the northern portion of the site where previous survey data were scarce or lacking.

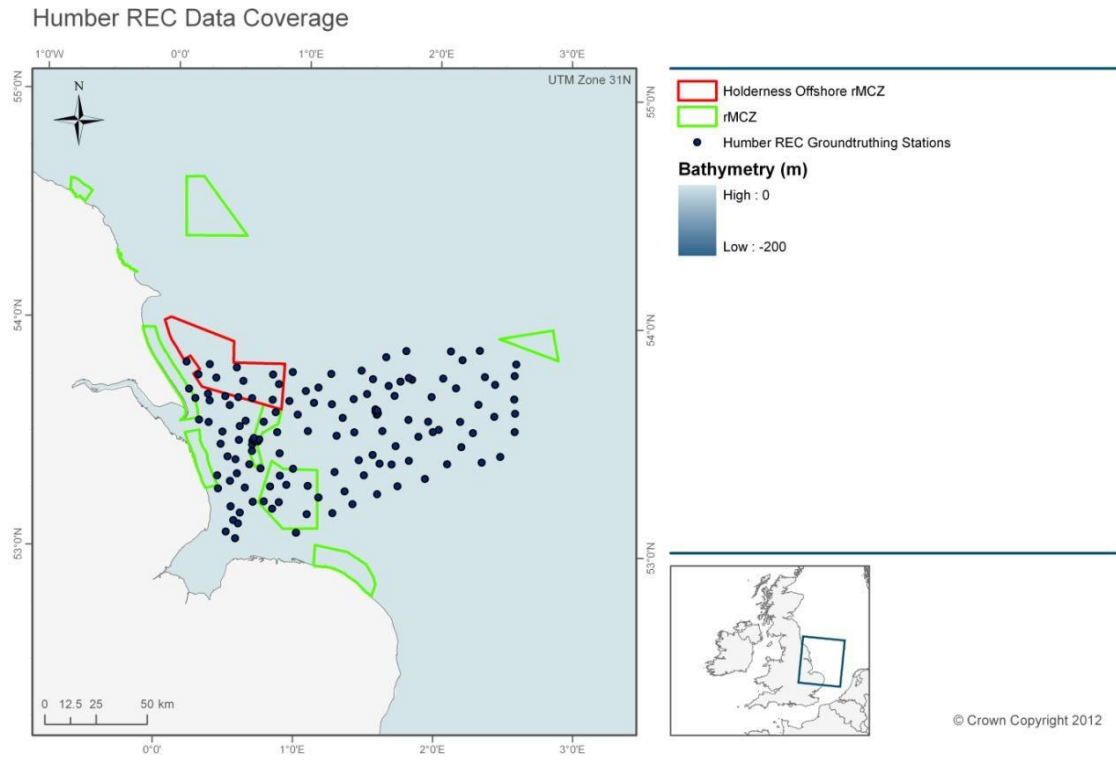


Figure 2. Datasets available from the Humber Regional Environmental Characterisation (REC).

2 Survey Design and Methods

2.1 *Survey planning and design*

2.1.1 *Acoustic survey*

Multibeam bathymetry and backscatter data were collected opportunistically on transit between the ground-truth sampling stations.

2.1.2 *Groundtruthing*

Selection and positioning of ground-truthing stations was informed using the predicted BSH extents derived from the Site Assessment Document (SAD) habitat map. Grab sampling stations were positioned within the sedimentary habitats using a triangular lattice grid overlaid on the predictive habitat map. Stations within the predicted subtidal coarse sediments were at a 4 km grid spacing and those within the predicted sand and mixed sediments were at a grid spacing of 1.5 km.

Within the predicted sedimentary habitats, the selection of stations where the drop camera 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 *Grab Sampling*

Sedimentary habitats were groundtruthed by grab and underwater camera. The grab system comprised a 0.1 m² mini Hamon grab fitted with a video camera (Figure 3), 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 1mm sieve. The retained

>1mm fraction was transferred to a labelled container and preserved in 4% buffered formaldehyde for later analysis ashore.



Figure 3. Mini Hamon grab with video camera (HamCam).

2.2.2 Video and Still Imagery

The drop-camera comprised a rectangular frame fitted with a video camera with capability to also capture still images (Figure 4). Illumination was provided by two Cefas high intensity LED spotlights 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.

Drop-camera deployments lasted a minimum of 10 minutes, with the vessel executing a controlled drift at ~ 0.5 knots ($\sim 0.25 \text{ m s}^{-1}$) across a 50 m 'bullring' centred on the sampling station. Stills images were captured at regular one-minute intervals and opportunistically if specific features of interest were encountered. The camera was deployed from the side gantry, amidships, with the height of the camera off the seabed being controlled by a winch operator with sight of the video monitor.



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

3 Survey Narrative

Survey at Holderness Offshore rMCZ began at 07:30 on 23/05/12. Hamon grab samples (for PSA and infaunal analysis) were collected at all planned stations and video and still images were collected at approximately every third station. Multibeam bathymetry and backscatter data were acquired opportunistically on transit between stations (Figure 5 and Figure 6). Over the course of the survey 57 stations were occupied, 44 were sampled by grab and 25 by drop camera. Twelve of the stations were sampled by both techniques. The survey finished at 01:00 on 25/05/12.

4 Preliminary Results

4.1 Acoustic Maps

Multibeam Backscatter

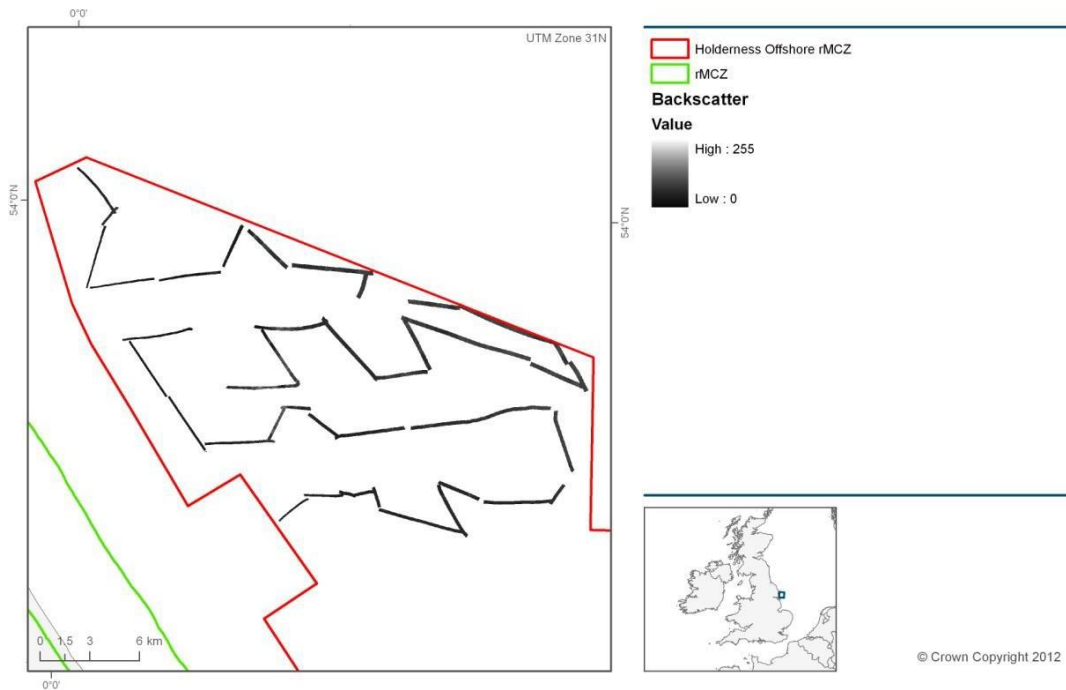


Figure 5. Backscatter from opportunistic survey at Holderness Offshore rMCZ.

Multibeam Bathymetry

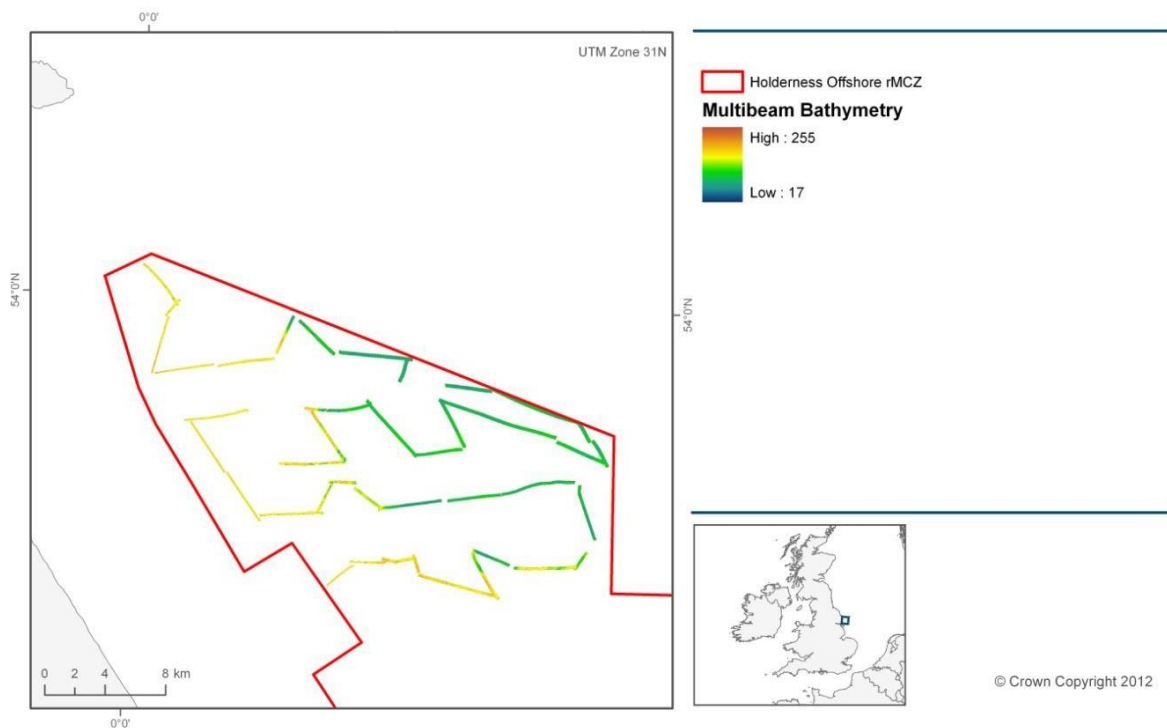





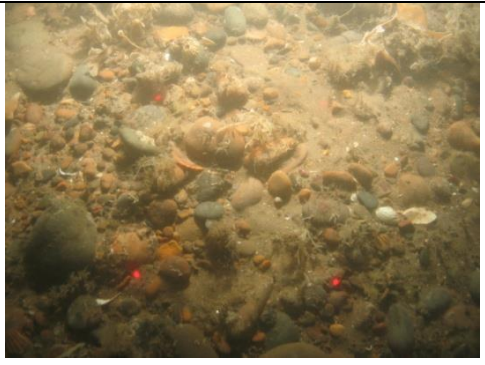
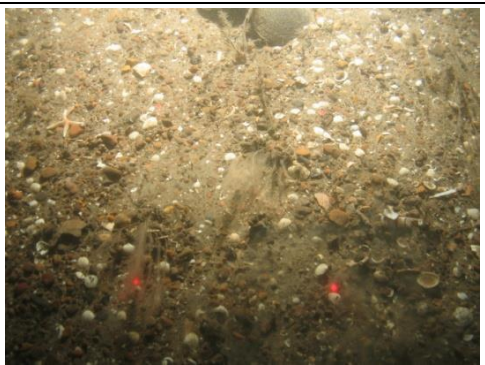
Figure 6. Bathymetry from opportunistic survey at Holderness Offshore rMCZ.





4.2 Seabed Imagery




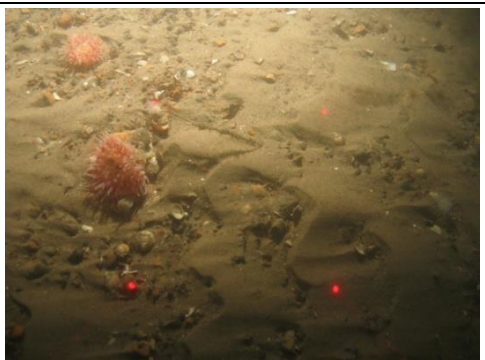
A preliminary summary of the seabed substrate and epifaunal communities observed in video and still images is given below for each of the predicted BSH's on the SAD habitat map.

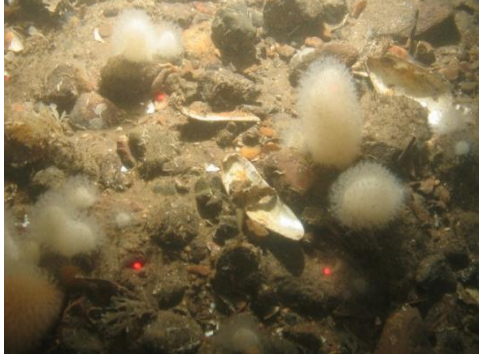
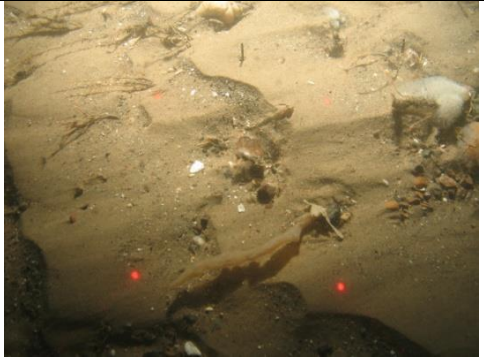


4.2.1 Stations in predicted coarse sediment.

Stn Code	BSH Habitat/Faunal Summary	Still Image
HO_C1	<p>Gravelly sand with cobble and boulder (<i>Asterias rubens</i>, <i>Flustra foliacea</i>, <i>Necora puber</i>, <i>Liocarcinus</i> spp., <i>Nemertesia</i> spp., <i>Henricia</i> sp.)</p>	





Stn Code	BSH Habitat/Faunal Summary	Still Image
<p>HO_C2</p>	<p>Gravelly sand with cobble and boulder <i>(Asterias rubens, Flustra foliacea, Necora puber, Pholis gunnellus, Liocarcinus spp.)</i></p>	
<p>HO_C3</p>	<p>Gravelly sand with cobble and boulder <i>(Asterias rubens, Flustra foliacea, Echinus esculentus, Nemertesia spp.)</i></p>	
<p>HO_C4</p>	<p>Gravelly sand with cobble <i>(Flustra foliacea, Alcyonium digitatum, Nemertesia spp.)</i></p>	
<p>HO_C6</p>	<p>Gravelly sand <i>(Asterias rubens, Flustra foliacea, Nemertesia spp.)</i></p>	

Stn Code	BSH Habitat/Faunal Summary	Still Image
HO_C8	<p>Gravelly sand with cobble and boulder <i>(Pholis gunnellus, Flustra foliacea, Asterias rubens, Liocarcinus spp., Henricia sp., Necora puber, Callionymus lyra, Urticina felina, Echinus esculentus, Alcyonium digitatum)</i></p>	
HO_C10	<p>Gravelly sand <i>(Pholis gunnellus, Flustra foliacea, Asterias rubens, Alcyonidium diaphanum, Alcyonium digitatum, Agonus cataphractus, Urticina felina)</i></p>	
HO_C11	<p>Gravelly sand <i>(Flustra foliacea, Asterias rubens, Alcyonidium diaphanum, Liocarcinus sp., Cancer pagurus)</i></p>	
HO_C15	<p>Gravelly sand with cobble and boulder <i>(Flustra foliacea, Munida rugosa, Echinus esculentus, Alcyonium digitatum, Urticina felina, Liocarcinus sp.)</i></p>	




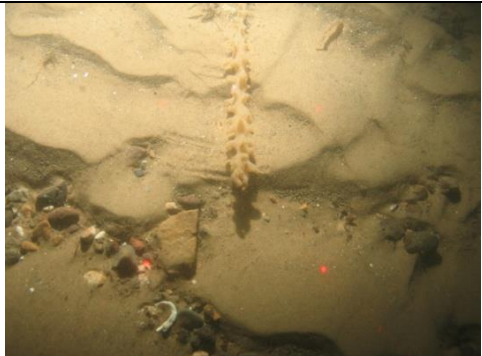
Stn Code	BSH Habitat/Faunal Summary	Still Image
HO_C17	<p>Gravelly sand <i>(Urticina felina, Henricia sp., Alcyonium digitatum, Nemertesia spp.)</i></p>	
HO_C19	<p>Gravelly sand with cobble and boulder <i>(Alcyonium digitatum, Flustra foliacea, Necora puber, Urticina felina, Cancer pagurus, Munida rugosa, Echinus esculentus, Asterias rubens)</i></p>	
HO_C21	<p>Gravelly sand <i>(Alcyonium digitatum, Flustra foliacea)</i></p>	
HO_C22	<p>Slightly gravelly rippled sand <i>(Flustra foliacea, Urticina felina, Alcyonium digitatum, Paguridae).</i></p>	

Stn Code	BSH Habitat/Faunal Summary	Still Image
<p>HO_C23</p>	<p>Gravelly sand with cobble and boulder <i>(Flustra foliacea, Alcyonium digitatum, Echinus esculentus, Munida rugosa, Cancer pagurus, Pecten maximus)</i></p>	
<p>HO_24</p>	<p>Slightly gravelly rippled sand <i>(Alcyonium digitatum, Alcyonidium diaphanum, Flustra foliacea, Asterias rubens)</i></p>	
<p>HO_C28</p>	<p>Rippled sand <i>(Alcyonidium diaphanum, Urticina felina, Tubularia sp.)</i></p>	
<p>HO_C29</p>	<p>Gravelly shelly sand with cobble and boulder <i>(Alcyonium digitatum, Echinus esculentus, Cancer pagurus, Henricia sp., Crossaster papposus)</i></p>	

4.2.2 Stations in predicted mixed sediment.

Stn Code	BSH Habitat/Faunal Summary	Still Image
HO_Mx1	<p>Shelly gravelly sand <i>(Urticina felina, Crossaster papposus)</i></p>	
HO_Mx2	<p>Gravelly shelly sand with cobble and boulder <i>(Urticina felina, Cancer pagurus, Asterias rubens, Alcyonium digitatum)</i></p>	
HO_Mx4	<p>Gravelly sand with cobble <i>(Necora puber, Alcyonium digitatum, Flustra foliacea, Asterias rubens, Nemertesia spp.)</i></p>	
HO_Mx5	<p>Gravelly sand <i>(Alcyonium digitatum, Flustra foliacea, Asterias rubens, Henricia sp.)</i></p>	

4.2.3 Stations in predicted sand sediment.

Stn Code	BSH Habitat/Faunal Summary	Still Image
HO_S1	Gravelly rippled sand with cobble and boulder (<i>Alcyonidium diaphanum</i> , <i>Flustra foliacea</i> , <i>Urticina felina</i> , <i>Echinus esculentus</i>)	
HO_S3	Slightly gravelly rippled sand (<i>Urticina felina</i> , <i>Tubularia sp.</i> , <i>Alcyonidium diaphanum</i> , <i>Flustra foliacea</i> , <i>Alcyonium digitatum</i>)	
HO_S4	Shelly sandy gravel with cobble and boulder (<i>Asterias rubens</i> , <i>Flustra foliacea</i> , <i>Alcyonium digitatum</i> , <i>Liocarcinus sp.</i> , <i>Buccinum undatum</i> , <i>Echinus esculentus</i>)	
HO_S6	Slightly gravelly rippled sand (<i>Urticina felina</i> , <i>Alcyonidium diaphanum</i> , <i>Macropodia sp.</i> , <i>Alcyonium digitatum</i> , <i>Tubularia sp.</i> , <i>Pagurus bernhardus</i> , <i>Ophiura albida</i>)	

4.3 Grab Samples and sediment types

Preliminary observations of the spatial distribution of sediment types (EUNIS Level 3) for each grab sample were also summarised (Figure 7). 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.

Preliminary Sediment Descriptions

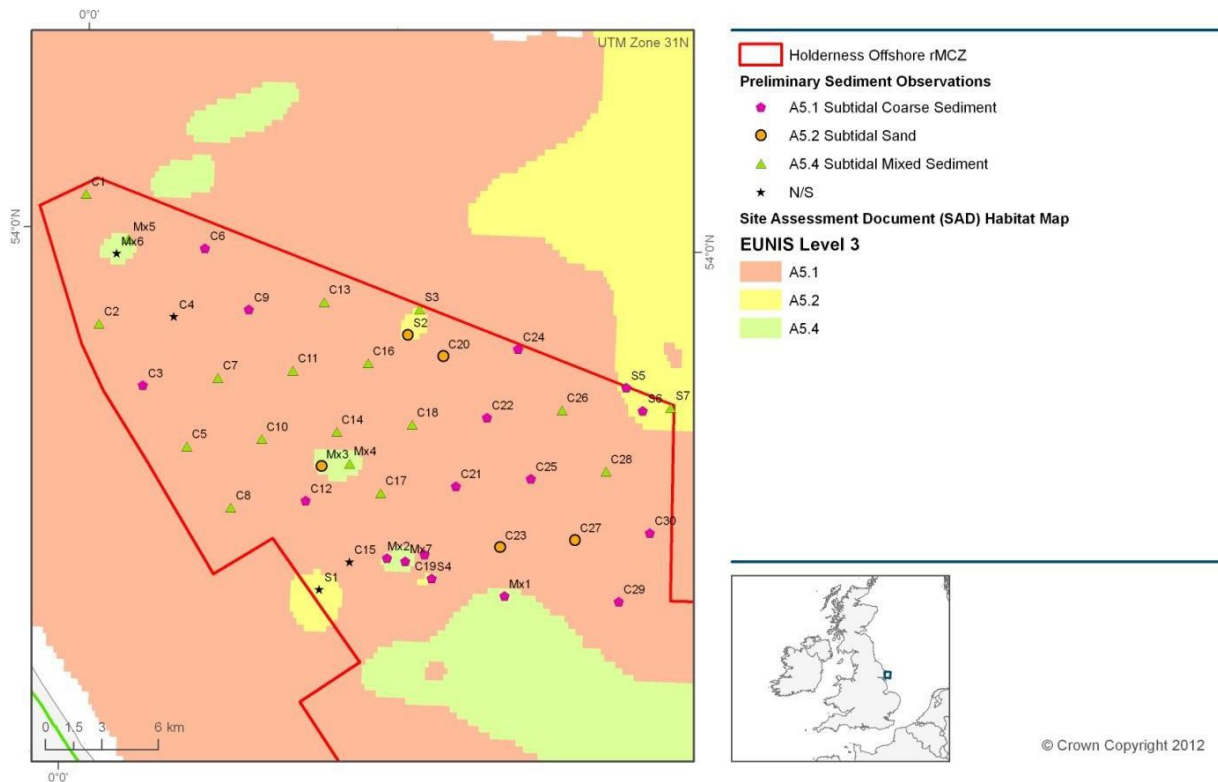


Figure 7. Preliminary sediment observations for Hamon grab samples (N/S indicates stations where it was not possible to obtain a grab sample due to the coarse nature of the sediment).

4.4 Preliminary observation of Features of Conservation Interest (FOCI)

No species FOCI were identified within the Holderness Offshore rMCZ during survey CEND 8/12.

5 Annexes

5.1 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 x tandom 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 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)
Transducers/Sea tube	Drop keel to deploy transducers outside the hull boundary 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 of navigational equipment deployed on heave-compensated davits
Laboratories	8 networked laboratories designed for optimum flexibility of purpose 4 serviced deck locations for containerised laboratories
Special features	Dynamic positioning system Intering anti-roll system Local Area Network with scientific data management system Ship-wide general information system CCTV
Class	LRS 100A1+LMC UMS SCM CCS ICC IP ES(2) DP(CM) ICE class 2

5.2 *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 EM2040

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

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

5.5 Metadata

(NB. Station No is a sequential event number for the cruise, so changes each time a new gear is used or a new location is sampled. Station Code is used to identify the location of the sampling station.) MB=Multibeam, HC=HamCam, DC-Drop Camera).

Cruise	Date	Stn No.	Stn. Code	Gear	Latitude	Longitude
CEND 8/12	23/05/2012	616	HO_C1	HC	54.01671	0.00349
CEND 8/12	23/05/2012	617	HO_C1	DC	54.01639	0.00367
CEND 8/12	23/05/2012	617	HO_C1	DC	54.01714	0.00297
CEND 8/12	23/05/2012	618	HOC1-HOMX5	MB	53.99454	0.04081
CEND 8/12	23/05/2012	618	HOC1-HOMX5	MB	54.01852	0.00462
CEND 8/12	23/05/2012	621	HOMX5-HOMX6	MB	53.98807	0.02895
CEND 8/12	23/05/2012	621	HOMX5-HOMX6	MB	53.99813	0.04235
CEND 8/12	23/05/2012	623	HOMX6-HOC2	MB	53.95377	0.01722
CEND 8/12	23/05/2012	623	HOMX6-HOC2	MB	53.98771	0.03187
CEND 8/12	23/05/2012	624	HO-C2	HC	53.95513	0.01821
CEND 8/12	23/05/2012	625	HO-C2	DC	53.95529	0.01825
CEND 8/12	23/05/2012	625	HO-C2	DC	53.96038	0.07874
CEND 8/12	23/05/2012	626	HOC2-HOC4	MB	53.96030	0.07982
CEND 8/12	23/05/2012	626	HOC2-HOC4	MB	53.95406	0.02066
CEND 8/12	23/05/2012	628	HO-C4	HC	53.96067	0.07869
CEND 8/12	23/05/2012	628	HO-C4	HC	53.95991	0.07928
CEND 8/12	23/05/2012	629	HOC4-HOC9	MB	53.96530	0.14640
CEND 8/12	23/05/2012	629	HOC4-HOC9	MB	53.95960	0.08390
CEND 8/12	23/05/2012	631	HOC9-HOC6	MB	53.99109	0.15845
CEND 8/12	23/05/2012	631	HOC9-HOC6	MB	53.96840	0.14220
CEND 8/12	23/05/2012	632	HO-C6	HC	53.99010	0.15750
CEND 8/12	23/05/2012	633	HO_C6	DC	53.99020	0.15720
CEND 8/12	23/05/2012	633	HO_C6	DC	53.99013	0.15852
CEND 8/12	23/05/2012	634	HOC6-HOC13	MB	53.96920	0.20090
CEND 8/12	23/05/2012	634	HOC6-HOC13	MB	53.98960	0.16368
CEND 8/12	23/05/2012	635	HO-C13	HC	53.96975	0.19908
CEND 8/12	23/05/2012	636	HOC13-HOS3	MB	53.98600	0.27990
CEND 8/12	23/05/2012	636	HOC13-HOS3	MB	53.97060	0.20490
CEND 8/12	23/05/2012	637	HO-S3	HC	53.96823	0.27652
CEND 8/12	23/05/2012	639	HO_S3	DC	53.96827	0.27653
CEND 8/12	23/05/2012	639	HO_S3	DC	53.96900	0.27662
CEND 8/12	23/05/2012	640	HOS3-HOS2	MB	53.95440	0.26690
CEND 8/12	23/05/2012	640	HOS3-HOS2	MB	53.96690	0.27340
CEND 8/12	23/05/2012	641	HO-S2	HC	53.95546	0.26827
CEND 8/12	23/05/2012	642	HOS2-HOC24	MB	53.95080	0.36070
CEND 8/12	23/05/2012	642	HOS2-HOC24	MB	53.95341	0.31381
CEND 8/12	23/05/2012	643	HO-C24	HC	53.95088	0.35770
CEND 8/12	23/05/2012	644	HO-C24	HC	53.95153	0.35706

Cruise	Date	Stn No.	Stn. Code	Gear	Latitude	Longitude
CEND 8/12	23/05/2012	645	HOC24-HOS5	MB	53.93410	0.44840
CEND 8/12	23/05/2012	645	HOC24-HOS5	MB	53.95220	0.36090
CEND 8/12	23/05/2012	646	HO-S5	HC	53.93435	0.44609
CEND 8/12	23/05/2012	647	HOS5-HOS6	MB	53.92260	0.46120
CEND 8/12	23/05/2012	647	HOS5-HOS6	MB	53.93410	0.44920
CEND 8/12	23/05/2012	648	HO-S6	HC	53.92371	0.46025
CEND 8/12	23/05/2012	649	HO_S6	DC	53.92342	0.46037
CEND 8/12	23/05/2012	649	HO_S6	DC	53.92416	0.45965
CEND 8/12	23/05/2012	650	HOS6-HOS7	MB	53.90840	0.47990
CEND 8/12	23/05/2012	650	HOS6-HOS7	MB	53.92390	0.46360
CEND 8/12	23/05/2012	651	HO-S7	HC	53.90950	0.47894
CEND 8/12	23/05/2012	652	HOS7-HOC26	MB	53.92226	0.42740
CEND 8/12	23/05/2012	652	HOS7-HOC26	MB	53.91060	0.47640
CEND 8/12	23/05/2012	653	HO-C26	HC	53.92213	0.42889
CEND 8/12	23/05/2012	654	HOC26-HOC20	MB	53.94470	0.30710
CEND 8/12	23/05/2012	654	HOC26-HOC20	MB	53.92460	0.42700
CEND 8/12	23/05/2012	655	HO-C20	HC	53.94441	0.30921
CEND 8/12	23/05/2012	656	HO_C20 - HO_C22	MB	53.91670	0.32570
CEND 8/12	23/05/2012	656	HO_C20 - HO_C22	MB	53.94330	0.31025
CEND 8/12	23/05/2012	657	HO-C22	HC	53.91785	0.33469
CEND 8/12	23/05/2012	658	HO-C22	HC	53.91741	0.33526
CEND 8/12	23/05/2012	659	HO_C22 - HO_C18	MB	53.91158	0.28505
CEND 8/12	23/05/2012	659	HO_C22 - HO_C18	MB	53.91570	0.33320
CEND 8/12	23/05/2012	660	HO_C18	HC	53.91117	0.28745
CEND 8/12	23/05/2012	661	HO_C18 - HO_C16	MB	53.94287	0.23468
CEND 8/12	23/05/2012	661	HO_C18 - HO_C16	MB	53.91093	0.28646
CEND 8/12	24/05/2012	662	HO_C16	HC	53.94133	0.23686
CEND 8/12	24/05/2012	663	HO_C16 - HO_C11	MB	53.93696	0.17283
CEND 8/12	24/05/2012	663	HO_C16 - HO_C11	MB	53.94140	0.23725
CEND 8/12	24/05/2012	664	HO_C11	HC	53.93668	0.17645
CEND 8/12	24/05/2012	665	HO_C11	DC	53.93696	0.17618
CEND 8/12	24/05/2012	665	HO_C11	DC	53.93637	0.17720
CEND 8/12	24/05/2012	666	HO_C11 - HO_C14	MB	53.90721	0.21589
CEND 8/12	24/05/2012	666	HO_C11 - HO_C14	MB	53.93529	0.17955
CEND 8/12	24/05/2012	667	HO_C14	HC	53.90804	0.21356
CEND 8/12	24/05/2012	667	HO_C14	HC	53.90804	0.21357
CEND 8/12	24/05/2012	668	HO_C14 - HO_c10	MB	53.40349	0.14990
CEND 8/12	24/05/2012	668	HO_C14 - HO_c10	MB	53.90700	0.21501
CEND 8/12	24/05/2012	669	HO_C10	HC	53.90326	0.15344
CEND 8/12	24/04/2012	670	HO_C10	DC	53.90300	0.15307
CEND 8/12	24/04/2012	670	HO_C10	DC	53.90371	0.15363
CEND 8/12	24/05/2012	671	HO_10 - HO_C07	MB	53.90478	0.11383
CEND 8/12	24/05/2012	671	HO_10 - HO_C07	MB	53.90478	0.15419

Cruise	Date	Stn No.	Stn. Code	Gear	Latitude	Longitude
CEND 8/12	24/05/2012	672	HO_C7	HC	53.93136	0.11575
CEND 8/12	24/05/2012	673	HO_C07 - HO_C3	MB	53.92615	0.05190
CEND 8/12	24/05/2012	673	HO_C07 - HO_C3	MB	53.93354	0.11559
CEND 8/12	24/05/2012	674	HO_C3	HC	53.92633	0.05572
CEND 8/12	24/05/2012	675	HO_C3	DC	53.92600	0.05556
CEND 8/12	24/05/2012	675	HO_C3	DC	53.92710	0.05547
CEND 8/12	24/05/2012	676	HO_C3 - HO_C5	MB	53.89672	0.09498
CEND 8/12	24/05/2012	676	HO_C3 - HO_C5	MB	53.92531	0.05975
CEND 8/12	24/05/2012	677	HO_C5	HC	53.89830	0.09331
CEND 8/12	24/05/2012	678	HO_C5-HO-C8	MB	53.86856	0.13255
CEND 8/12	24/05/2012	678	HO_C5-HO-C8	MB	53.89666	0.09745
CEND 8/12	24/05/2012	679	HO_C8	HC	53.86972	0.13058
CEND 8/12	24/05/2012	680	HO_C8	DC	53.87035	0.13008
CEND 8/12	24/04/2012	681	HO_C8 - HO_C12	MB	53.87416	0.19530
CEND 8/12	24/04/2012	681	HO_C8 - HO_C12	MB	53.87210	0.13203
CEND 8/12	24/05/2012	683	HO_C12 - HO_Mx3	MB	53.89320	0.20452
CEND 8/12	24/05/2012	683	HO_C12 - HO_Mx3	MB	53.87572	0.19031
CEND 8/12	24/05/2012	684	HO_Mx3	HC	53.89188	0.20204
CEND 8/12	24/05/2012	685	HOMX3-HOMX4	MB	53.89352	0.22770
CEND 8/12	24/05/2012	685	HOMX3-HOMX4	MB	53.89275	0.20097
CEND 8/12	24/05/2012	686	HO_Mx4	HC	53.89348	0.22491
CEND 8/12	24/05/2012	687	HO_Mx4	DC	53.89367	0.22536
CEND 8/12	24/05/2012	687	HO_Mx4	DC	53.89301	0.22449
CEND 8/12	24/05/2012	688	HOMX4-HOC17	MB	53.87909	0.25401
CEND 8/12	24/05/2012	688	HOMX4-HOC17	MB	53.89034	0.22593
CEND 8/12	24/05/2012	689	HO_C17	HC	53.87998	0.25089
CEND 8/12	24/05/2012	690	HO_C17	DC	53.88018	0.25126
CEND 8/12	24/05/2012	690	HO_C17	DC	53.87943	0.25055
CEND 8/12	24/05/2012	691	HOC17-HOC21	MB	53.88523	0.31423
CEND 8/12	24/05/2012	691	HOC17-HOC21	MB	53.87793	0.25078
CEND 8/12	24/05/2012	692	HO-C21	HC	53.88469	0.31101
CEND 8/12	24/05/2012	693	HO_C21	DC	53.88409	0.31159
CEND 8/12	24/05/2012	694	HOC21-HOC25	MB	53.88970	0.37380
CEND 8/12	24/05/2012	694	HOC21-HOC25	MB	53.88490	0.32020
CEND 8/12	24/05/2012	695	HO-C25	HC	53.88965	0.37155
CEND 8/12	24/05/2012	697	HOC25-HOC28	MB	53.89860	0.44750
CEND 8/12	24/05/2012	697	HOC25-HOC28	MB	53.88980	0.37400
CEND 8/12	24/05/2012	698	HO-C28	HC	53.89973	0.45023
CEND 8/12	24/05/2012	699	HO-C28	HC	53.89929	0.45103
CEND 8/12	24/05/2012	700	HOC28-HOC30	MB	53.86500	0.47020
CEND 8/12	24/05/2012	700	HOC28-HOC30	MB	53.89720	0.47020
CEND 8/12	24/05/2012	701	HO-C30	HC	53.86588	0.46911
CEND 8/12	24/05/2012	702	HOC30-HOC29	MB	53.84670	0.45020

Cruise	Date	Stn No.	Stn. Code	Gear	Latitude	Longitude
CEND 8/12	24/05/2012	702	HOC30-HOC29	MB	53.85730	0.46190
CEND 8/12	24/05/2012	703	HO-C29	HC	53.84765	0.45192
CEND 8/12	24/05/2012	704	H0-C29	DC	53.84774	0.45149
CEND 8/12	24/05/2012	704	H0-C29	DC	53.84775	0.45305
CEND 8/12	24/05/2012	705	HOC29-HOC27	MB	53.84650	0.38690
CEND 8/12	24/05/2012	705	HOC29-HOC27	MB	53.84850	0.45260
CEND 8/12	24/05/2012	706	HO-C27	HC	53.84682	0.39041
CEND 8/12	24/05/2012	707	HO_C27-HO_C23	MB	53.85620	0.34710
CEND 8/12	24/05/2012	707	HO_C27-HO_C23	MB	53.84790	0.38000
CEND 8/12	24/05/2012	708	HO-C23	HC	53.85620	0.34888
CEND 8/12	24/05/2012	709	H0-C23	DC	53.85670	0.34834
CEND 8/12	24/05/2012	710	HO_C23-HO_Mx1	MB	0.00000	0.00000
CEND 8/12	24/05/2012	710	HO_C23-HO_Mx1	MB	0.00000	0.00000
CEND 8/12	24/05/2012	711	HO-MXI	HC	53.82798	0.37536
CEND 8/12	24/05/2012	712	HO-MX1	DC	53.82851	0.37505
CEND 8/12	24/05/2012	713	HO_Mx1-HO_54	MB	0.00000	0.00000
CEND 8/12	24/05/2012	713	HO_Mx1-HO_54	MB	0.00000	0.00000
CEND 8/12	24/05/2012	714	HO-S4	HC	53.84040	0.29481
CEND 8/12	24/05/2012	715	HO-S4	DC	53.84015	0.29478
CEND 8/12	24/05/2012	715	HO-S4	DC	53.84101	0.29426
CEND 8/12	24/05/2012	717	HO-C19	HC	53.85139	0.28826
CEND 8/12	20/05/2012	718	HO_C19	DC	53.85149	0.28779
CEND 8/12	20/05/2012	718	HO_C19	DC	53.85151	0.28927
CEND 8/12	24/05/2012	719	HO_C19-Mx7	MB	0.00000	0.00000
CEND 8/12	24/05/2012	719	HO_C19-Mx7	MB	0.00000	0.00000
CEND 8/12	24/05/2012	720	H0-MX7	HC	53.84791	0.27324
CEND 8/12	24/05/2012	722	H0-MX2	HC	53.84914	0.25804
CEND 8/12	24/05/2012	723	H0_Mx2	DC	53.84904	0.25817
CEND 8/12	24/05/2012	723	H0_Mx2	DC	53.84826	0.25888
CEND 8/12	24/05/2012	725	HO_725	HC	53.84652	0.22808
CEND 8/12	24/05/2012	726	HO_C15	DC	53.84673	0.22808
CEND 8/12	24/05/2012	726	HO_C15	DC	53.84599	0.22877
CEND 8/12	25/05/2012	728	HO_51	HC	53.83306	0.20447
CEND 8/12	25/05/2012	729	HO_S1	DC	53.83328	0.20439
CEND 8/12	25/05/2012	729	HO_S1	DC	53.83261	0.20530

5.6 **Daily Progress Report**

**DAILY LOG
STATUS REPORT
Holderness Offshore rMCZ
RV Cefas Endeavour – JNCC – DPR No. 25 – Wednesday 23rd May 2012**

Vessel: RV Cefas Endeavour GSM : 07799 773456	Project: MCZ Site Verification CEND 8/12 Satellite Voice Bridge: 00 870 (or 00871) 763998027
Daily Progress Report No. 25 Date: 23/05/12	Location at 24:00: 55° 43.1 N 0° 7.4 E

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

Safety

	Today	To Date
Accidents/Incidents		
Near Misses		
Safety Drills/Induction		4
Additional comments:		

Summary of operations 0000-2400

Time UTC (start)	Time UTC (end)	Type	Comments
00:00	07:10	Transit	
07:10	07:17	CTD	
07:17	07:38	Hamon Grab	
07:38	07:54	Drop Camera	
07:54	08:14	Multibeam	
08:14	08:38	Hamon Grab	
08:38	08:54	Drop Camera	
08:54	09:02	Multibeam	
09:02	09:37	Hamon Grab	
09:37	09:59	Multibeam	
09:59	10:40	Hamon Grab	
10:40	10:55	Drop Camera	
10:55	11:16	Multibeam	
11:16	11:53	Hamon Grab	
11:53	12:11	Drop Camera	
12:11	12:32	Multibeam	
12:32	12:55	Hamon Grab	
12:55	13:10	Multibeam	
13:10	13:33	Hamon Grab	
13:33	13:49	Drop Camera	
13:49	14:07	Multibeam	
14:07	14:24	Hamon Grab	
14:24	14:51	Multibeam	

DAILY LOG STATUS REPORT

14:51	15:15	Hamon Grab	
15:15	15:26	CTD	
15:26	15:45	Drop Camera	
15:45	15:52	Multibeam	
15:52	16:55	Hamon Grab	
16:55	17:12	Multibeam	
17:12	17:41	Hamon Grab	
17:41	17:58	Camera sledge	
17:58	18:30	Multibeam	
18:30	18:46	Hamon Grab	
18:46	18:54	Multibeam	
18:54	19:18	Hamon Grab	
19:18	19:35	Camera sledge	
19:35	19:45	Multibeam	
19:45	20:14	Hamon Grab	
20:14	20:33	Multibeam	
20:33	20:56	Hamon Grab	
20:56	21:40	Multibeam	
21:40	21:57	Hamon Grab	
21:57	22:15	Multibeam	
22:15	22:39	Hamon Grab	
22:39	22:54	Camera sledge	
22:54	23:11	Multibeam	
23:11	23:30	Hamon Grab	
23:30	23:58	Multibeam	
23:58	24:00	Hamon Grab	

Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		38:15	
Offshore Calibrations		02:49	
Total Operation Survey (TOSu)	05:52	250:07	
Total Operation Sampling (TOSa)	10:58	180:12	
Equipment/Downtime		02:45	
Ship/Plant Downtime			
Waiting On Weather		02:30	
Transit	07:10	72:30	
Standby Port			
Others			
Total:	24:00	549:09	

DAILY LOG STATUS REPORT

Overall Progress Geophysical Data Acquisition MBES/Sidescan

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
Acoustic: Multibeam				
EM2040	65	2539		
Acoustic: Sidescan Sonar				
Edgetech 4200	24	35		

Overall Progress Groundtruthing Samples

Action	HC	CS	DC	Remarks
Groundtruthing	19		9	
Groundtruthing (accumulated)	242	92	51	

Weather forecast for the next 24 hours

Variable 3 or 4, becoming northeast 4 or 5, occasionally 6 later. Slight or moderate sea state. Fog patches at first, thundery showers. Moderate or good visibility, occasionally very poor at first.

Planned operation for the next 24 hours (00:00 to 24:00 on 30th April 2012)

Transit to Holderness Offshore. Arrive at around 10am and begin survey. Multibeam between grab and camera sledge stations

Agreed Changes to Scope/Survey operation priorities

Head to Barmades Bank to complete drop camera and multibeam survey when finished at Holderness Offshore. Due to finish Holderness Offshore at around midnight on Thursday.

CEFAS/JNCC Comments

CEFAS SIC.. [REDACTED]

JNCC Rep: [REDACTED]

**DAILY LOG
STATUS REPORT
Holderness Offshore rMCZ
RV Cefas Endeavour – JNCC – DPR No. 26 – Thursday 24th May 2012**

Vessel: RV Cefas Endeavour GSM : 07799 773456	Project: MCZ Site Verification CEND 8/12 Satellite Voice Bridge: 00 870 (or 00871) 763998027
Daily Progress Report No. 26 Date: 24/05/12	Location at 24:00: 53° 54.9 N 0° 19.3 E

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

Safety

	Today	To Date
Accidents/Incidents		
Near Misses		
Safety Drills/Induction		4
Additional comments:		

Summary of operations 0000-2400

Time UTC (start)	Time UTC (end)	Type	Comments
00:00	00:17	Hamon Grab	
00:17	00:42	Multibeam	
00:42	01:07	Hamon Grab	
01:07	01:23	Drop Camera	
01:23	01:45	Multibeam	
01:45	02:08	Hamon Grab	
02:08	02:33	Multibeam	
02:33	02:55	Hamon Grab	
02:55	03:49	Drop Camera	
03:49	04:13	Multibeam	
04:13	04:59	Hamon Grab	
04:59	05:20	Multibeam	
05:20	05:50	Hamon Grab	
05:50	06:10	Multibeam	
06:10	07:08	Hamon Grab	
07:08	07:24	Drop Camera	
07:24	07:47	Multibeam	
07:47	08:14	Hamon Grab	
08:14	08:26	Multibeam	
08:26	08:42	Hamon Grab	
08:42	08:53	Multibeam	
08:53	09:13	Hamon Grab	
09:13	09:30	Drop Camera	

DAILY LOG STATUS REPORT

09:30	09:43	Multibeam	
09:43	10:08	Hamon Grab	
10:08	10:24	Drop Camera	
10:24	10:49	Multibeam	
10:49	11:44	Hamon Grab	
11:44	12:03	Drop Camera	
12:03	12:22	Multibeam	
12:22	12:55	Hamon Grab	
12:55	13:20	Multibeam	
13:20	13:41	Hamon Grab	
13:41	13:57	Drop Camera	
13:57	14:19	Multibeam	
14:19	14:43	Hamon Grab	
14:43	14:51	Multibeam	
14:51	15:26	Hamon Grab	
15:26	15:45	Drop Camera	
15:45	16:08	Multibeam	
16:08	16:29	Hamon Grab	
16:29	16:44	Multibeam	
16:44	18:16	Hamon Grab	
18:16	18:44	Drop Camera	
18:44	19:03	Multibeam	
19:03	19:44	Hamon Grab	
19:44	20:13	Multibeam	
20:13	20:48	Hamon Grab	
20:48	21:01	Drop Camera	
21:01	21:09	Multibeam	
21:09	21:29	Hamon Grab	
21:29	21:45	Drop Camera	
21:45	21:52	Multibeam	
21:52	22:20	Hamon Grab	
22:20	22:26	Multibeam	
22:26	22:48	Hamon Grab	
22:48	23:02	Drop Camera	
23:02	23:16	Multibeam	
23:16	23:48	Hamon Grab	
23:48	24:00	Drop Camera	

Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		38:15	
Offshore Calibrations		02:49	
Total Operation Survey (TOSu)	06:56	257:03	
Total Operation Sampling (TOSa)	17:04	197:16	
Equipment/Downtime		02:45	
Ship/Plant Downtime			
Waiting On Weather		02:30	
Transit		72:30	

DAILY LOG STATUS REPORT

Standby Port			
Others			
Total:	24:00	573:09	

Overall Progress Geophysical Data Acquisition MBES/Sidescan

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
Acoustic: Multibeam				
EM2040	77	2616		
Acoustic: Sidescan Sonar				
Edgetech 4200	24	35		

Overall Progress Groundtruthing Samples

Action	HC	CS	DC	Remarks
Groundtruthing	23		13	
Groundtruthing (accumulated)	263	92	55	

Weather forecast for the next 24 hours

Wind east or northeast 4. Slight sea state. Fair weather. Good visibility.

Planned operation for the next 24 hours (00:00 to 24:00 on 30th April 2012)

Transit to Barmades Bank and complete drop camera stations and multibeaming.

Agreed Changes to Scope/Survey operation priorities

CEFAS/JNCC Comments

CEFAS SIC: [REDACTED]

JNCC Rep: [REDACTED]

**DAILY LOG
STATUS REPORT
Barmades Bank
RV Cefas Endeavour – JNCC – DPR No. 27 – Friday 25th May 2012**

Vessel: RV Cefas Endeavour GSM : 07799 773456	Project: MCZ Site Verification CEND 8/12 Satellite Voice Bridge: 00 870 (or 00871) 763998027
Daily Progress Report No. 27 Date: 25/05/12	Location at 24:00: 53° 50.8 N 0° 26 E

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

Safety

	Today	To Date
Accidents/Incidents		
Near Misses		
Safety Drills/Induction		4
Additional comments:		

Summary of operations 0000-2400

Time UTC (start)	Time UTC (end)	Type	Comments
0:00	00:29	Multibeam	
00:29	00:45	Hamon Grab	
00:45	0:55	Drop Camera	
0:55	7:07	Transit	
7:07	16:00	Drop Camera	
16:00	21:00	Multibeam	
21:00	0:00	Transit	

Overall Progress

Type	Today (hh:mm)	Accum (hh:mm)	Remarks
Mob/Demob		38:15	
Offshore Calibrations		02:49	
Total Operation Survey (TOSu)	05:29	262:32	
Total Operation Sampling (TOSa)	09:19	206:35	
Equipment/Downtime		02:45	
Ship/Plant Downtime		00:00	
Waiting On Weather		02:30	
Transit	09:12	81:42	
Standby Port		00:00	
Others		00:00	
Total:	24:00	597:09	

DAILY LOG STATUS REPORT

Overall Progress Geophysical Data Acquisition MBES/Sidescan

Segment/Area/Line	Today (Lkm)	Accum. (Lkm)	Current estimated total (Lkm)	Remarks
Acoustic: Multibeam				
EM2040	35	2651		
Acoustic: Sidescan Sonar				
Edgetech 4200	24	35		

Overall Progress Groundtruthing Samples

Action	HC	CS	DC	Remarks
Groundtruthing	1		11	
Groundtruthing (accumulated)	264	92	75	

Weather forecast for the next 24 hours

Wind east or northeast 4. Slight or moderate sea state. Fair weather. Moderate or good visibility.

Planned operation for the next 24 hours (00:00 to 24:00 on 30th April 2012)

Transit to Lowestoft

Agreed Changes to Scope/Survey operation priorities

CEFAS/JNCC Comments

CEFAS SIC: ██████████

JNCC Rep: ██████████

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)

- 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