

Benthic Habitat Research for Marine Natura 2000 Site Designation

LIFE12 NAT/MT/000845

Report of 1st expedition - Fundación Oceana



OCEANA / Enrique Talledo © LIFE BaHAR for N2K

OCEANA



MALTA

Action A3: Marine Habitat Surveys

October 2015

© LIFE BaHAR for N2K Project, 2015. Reproduction and distribution is allowed for educational or non-profit purposes, provided that in such cases the copyright shall be quoted, and the source acknowledged.

INDEX

1. INTRODUCTION.....	4
2. PRELIMINARY DESCRIPTION OF THE STUDY AREA	4
3. OBJECTIVE.....	5
4. METHODOLOGY.....	6
5. DESCRIPTION OF THE SURVEYED AREA.....	7
6. PRELIMINARY RESULTS	9
ANNEX I.....	13
ANNEX II	15

1. INTRODUCTION

Natura 2000 is the centerpiece of the Habitats Directive, and thus of EU nature and biodiversity policy. It is intended to preserve particular habitats and species, with the aim that it should function as a network of sites. In order to comply with this European policy, Malta has already identified 5 Sites of Community Importance (SCIs) for inclusion in the Natura 2000 Network as Special Areas of Conservation (SAC). The SCIs in Malta are located mostly around the coast of the Maltese Islands, covering roughly an area of 190.79 km² and mainly intended to protect *Posidonia oceanica* beds (1120). Consequently, other key habitats and species listed in Annexes I and II of the Habitats Directive are underrepresented in Maltese sites, as identified through the last EU Biogeographical process held in 2010. It is acknowledged that a dearth of data on marine habitats has impeded further designation efforts, because of the complex, costly, and resource-intensive nature of carrying out this type of research.

The Project LIFE BaHAR “*Benthic Habitat Research for Marine Natura 2000 Site Designation*” is coordinated by the Malta Environment and Planning Authority (MEPA), in partnership with Fundación Oceana, the Ministry for Sustainable Development, Environment and Climate Change (MSDEC) & Ministry for Sustainable Development, Environment and Climate Change, Department of Fisheries and Aquaculture and the University of Malta - Department of Biology (UoM-DoB). It is intended to explore Maltese waters, identifying Annex I marine habitats listed in the Habitats Directive, primarily: ‘*Reefs*’ (1170), ‘*Submerged and partially submerged caves*’ (8330), and ‘*Sandbanks which are slightly covered by sea water all the time*’ (1110).

Under the **Action A3: Marine Habitat Surveys**, carried out by Fundación Oceana, a number of coastal and offshore areas were pre-selected to be surveyed during two at-sea campaigns, during 2015 and 2016. This report describes the study area, objective, methodology, and preliminary results from the first expedition, which was carried out in June-July 2015 in Maltese waters. The chosen areas for survey for 2015 were selected during A2 Phase I, and following the outcomes of A3 Phase I the areas for 2016 surveys will be redefined.

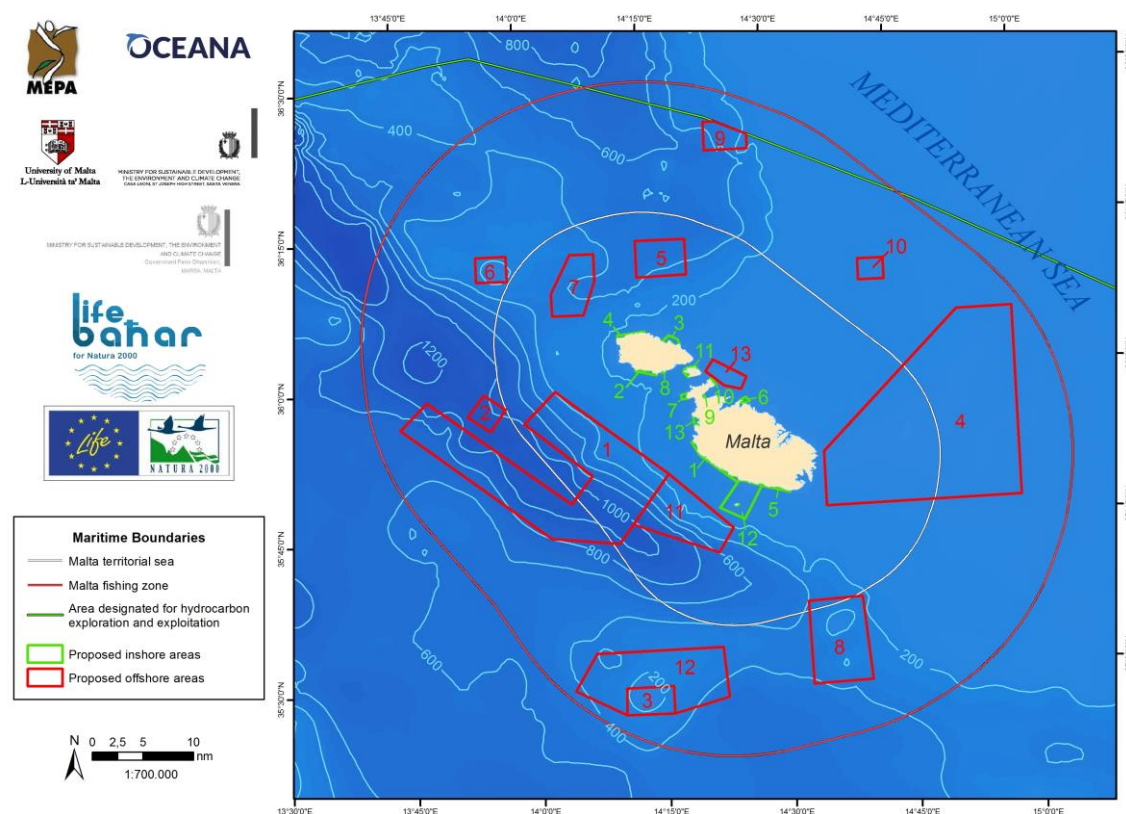
2. PRELIMINARY DESCRIPTION OF THE STUDY AREA

After a detailed review of the available literature, and data review by DFA during Action A1, twenty-six areas were selected for research, according to the likelihood of occurrence of at least one of the three relevant habitat types, based on characteristics such as substrate, human pressures, topography, absence of knowledge, and the report under action A2 done by UoM DoB, where all the details on the approach and methodology for site-selection are spelled out¹. While some useful data exist for inshore areas, information for offshore zones is mostly lacking. Furthermore, it is likely that such offshore areas are only relevant for the *Reefs* habitat-type, since *Sandbanks* and *Marine caves* are typically located closer to shore.

¹ Borg, J. A., Evans, J., Knittweis, L., Schembri, P. J. (2015). Report on the initial analysis of findings following the 2015 marine habitat surveys carried out through Action A3. *ACTION A2: Data Analysis and Interpretation. LIFE BaHar for N2K (LIFE12 NAT/MT/000845)*. University of Malta, Faculty of Science, Department of Biology.

In addition, while shallower areas (up to 50 m depth) may be surveyed directly using SCUBA diving, remote sensing techniques are necessary for deeper areas. Given these differences, it was considered appropriate to treat inshore and offshore areas separately, and therefore two sets of sampling areas (thirteen inshore and thirteen offshore) were selected. In total, the inshore areas occupy a surface of 49.89 km², while the offshore ones cover an area of 231.81 km²; all areas are within the 25 nm zone. Figure 1 shows the distribution of the sampling areas, and two tables specifying the geographical coordinates of their boundaries can be found in Annex I.

Figure 1. Malta sampling areas



3. OBJECTIVE

LIFE BaHAR for N2K will enable Malta to conserve important habitats, comply with EU Directives and international commitments, and establish a coherent network of marine protected areas by 2017². The benefits from this protection will contribute to the overarching goals of several EU directives, including the Habitats and Birds Directives (92/43/CEE and 79/409/CEE) and the Marine Strategy Framework Directive (2008/56/CE), as well as the EU Biodiversity Strategy for 2020 and other Multilateral Environmental Agreements to which Malta is signatory.

² A request to extend the project deadline until 2018 is to be submitted

Therefore, the main aim of this project is to **survey, identify and evaluate the most valuable habitats in Maltese waters with the preliminary objective of identifying and designating new marine SCIs (or extend the sites already identified) for their protection.**

Thus, the habitats that will be further investigated within the scope of the project are the aforementioned ones which are listed in Annex I of the Habitats Directive:

- *Sandbanks which are slightly covered by sea water all the time* (1110)
- *Reefs* (1170)
- *Submerged and partially submerged sea caves* (8330)

It should be noted that sandbanks are not common in the Mediterranean, and that in Maltese waters, there are only a few areas where this habitat type might potentially be found.

4. METHODOLOGY

The first at-sea campaign undertaken as part of Action A3 within the framework of the LIFE BaHAR Project was carried out onboard the vessel *Oceana Ranger*, a Ketch catamaran with thirteen crew members. During the months of June and July 2015, underwater video footage was recorded from 94 transects along the Maltese seabed, down to a maximum depth of ca. 1000 m.

For the image recording, a Saab Seaeye Falcon DR ROV was used, equipped with a High Definition Video (HDV) camera of 480 TVL with Minimum Scene Illumination 2.0 LUX (F1.4), Pick Up Device ½” CCD, Image Sensor, and spherical ½ of 3.8 mm and wide-angle lenses.

During ROV transects, *Oceana Ranger* sailed at an average speed of 0.2 knots, filming both in HD and low resolution, and simultaneously recording position, depth, course and time. Considering the average speed and the wide angle of the camera (i.e., it was able to film transects of ca. 1.5 meters width), the ROV allowed the observation of around 650 m² (±6 m²) per hour of seabed.

Most of the taxonomic identification of observed species was done visually, as it was selected to be the most suitable method according to the characteristics of the project. Samples of key habitat-forming species were also collected (by means of the robotic arm of the ROV, a Van Veen grab, and directly by SCUBA divers) for detailed analyses to confirm preliminary identification. A total of 86 samples were collected by these means, and processed in the onboard laboratory, which is equipped with microscopes, dissecting microscopes, specialised software, etc.

Moreover, those areas designated for cave identification were surveyed during 12 SCUBA dives, carried out by a professional team equipped with underwater photo and video cameras. Lastly, local scientist and fish experts also provided onboard expertise and support during the expedition.

5. DESCRIPTION OF THE SURVEYED AREA

A total of 94 ROV transects were conducted in Maltese waters during the 2015 campaign. These transects include a limited number of short dives that were carried out in locations where the onboard depth sounder detected bottom perturbations, in order to verify the presence or absence of *Reefs* for further research. All of the sites where ROV transects were carried out are represented in Figure 2, and more information about the exact positions and depths can be found in Annex II.

Inshore surveys

Four of the inshore areas were surveyed using both SCUBA and ROV dives. The 12 SCUBA dives along the submerged part of the emergent vertical rock faces revealed that most of the area consisted of a steep vertical wall with few to several emergent and submerged marine caves in areas 1, 2, 3, 4, 8 and 11. Three ROV dives performed in deeper areas (80-150m) showed substrates formed by large rocky boulders, small rocky escarpments and overhangs, interspersed with muddy and sandy bottoms.

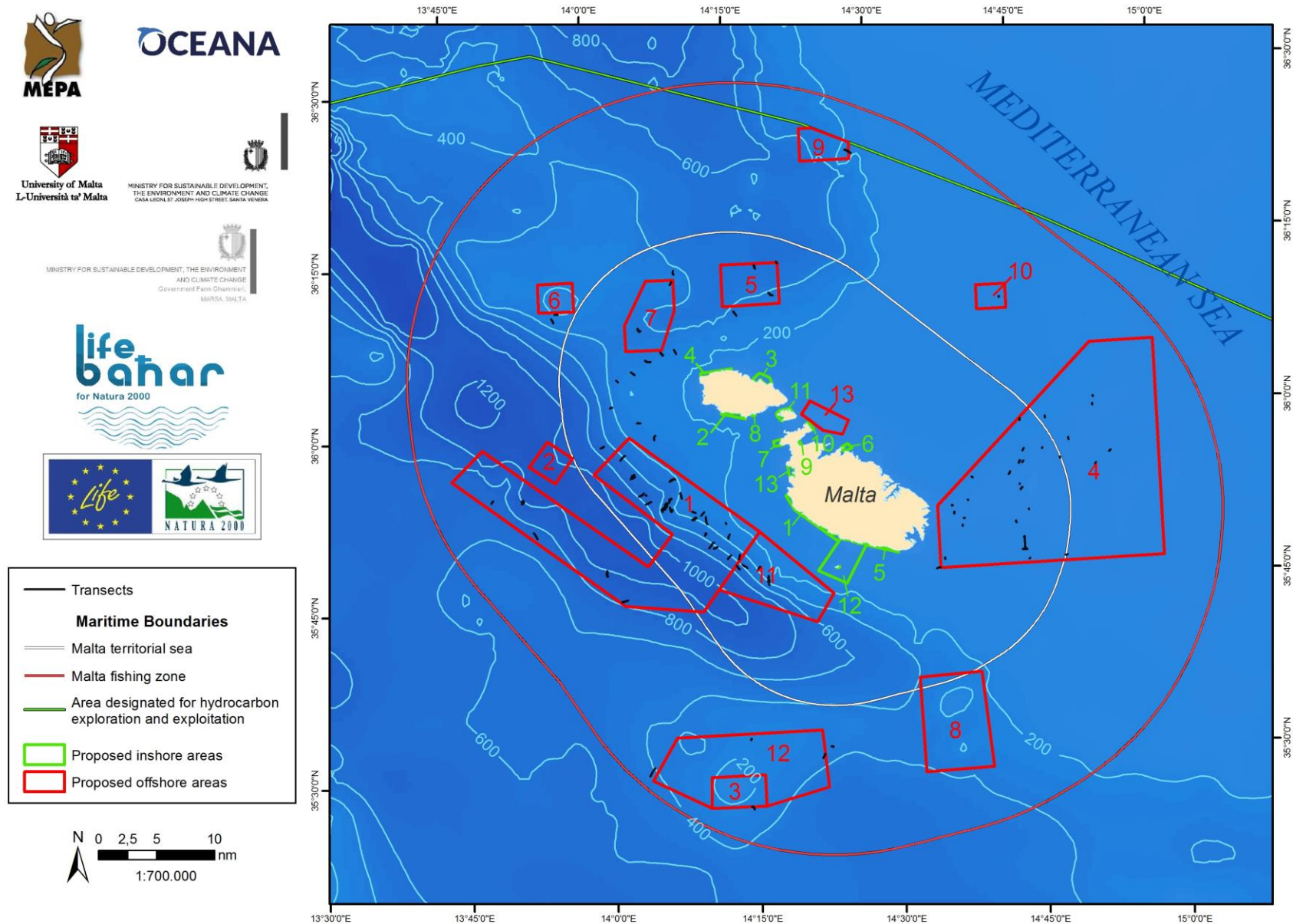
In order to locate sandbanks, two SCUBA dives were carried out over a *Cymodocea nodosa* meadow in area 11, and a single ROV dive was carried out over a *Posidonia oceanica* meadow in area 3. No sandbanks were found in either area. During the 2016 expedition, further surveys aimed at identifying sandbanks will be carried out in the two main areas where this habitat type could potentially occur.

Offshore surveys

All of the selected offshore polygons were surveyed, with the exception of areas 2, 8 and 13. The most intensively researched ones were areas 1 and 4, with 24 and 27 dives, respectively.

In general, offshore areas comprised a mixture of muddy bottoms with occasional small rocky outcrops and small escarpments (such as in areas 5, 9 and 10). In contrast, areas such as 1, 12 or 6, were dominated by hard substrata which forms steep rocky escarpments with overhangs and crevices, occasionally interspersed with muddy terraces.

Figure 2. ROV transects during the 2015 expedition



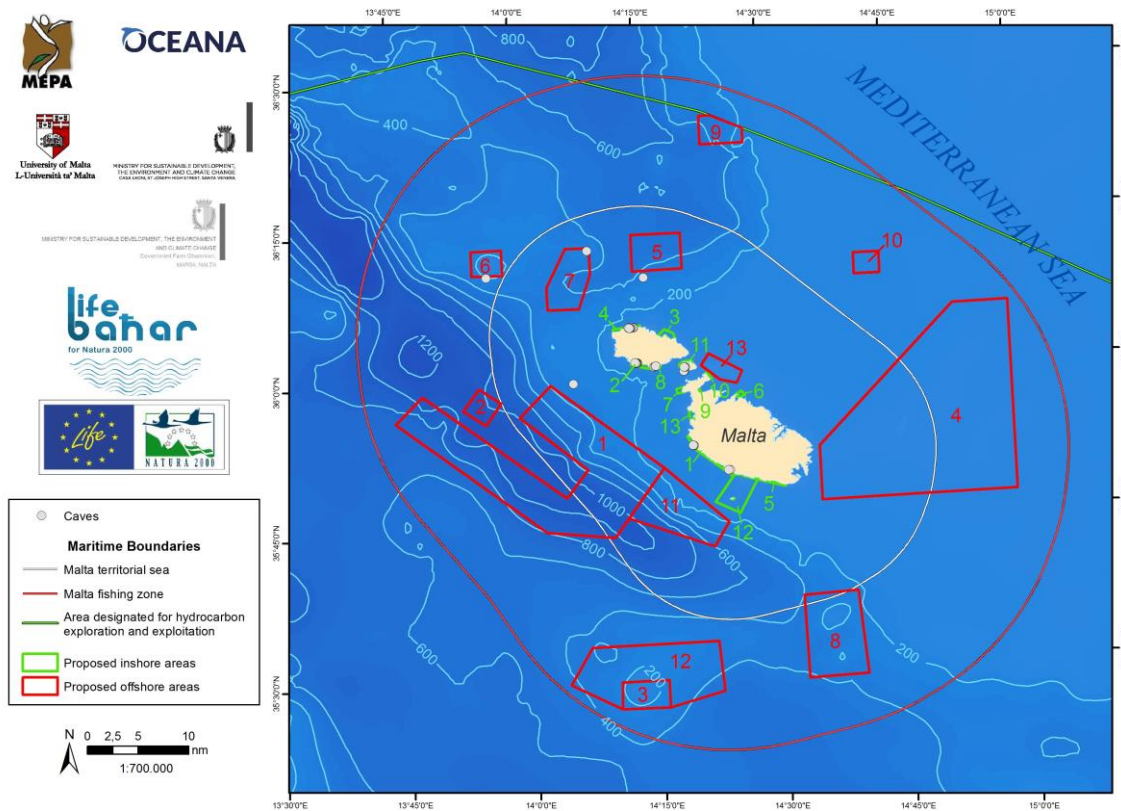
The LIFE BaHAR for N2K (LIFE12 NAT/MT/000845) Project is 50% co-financed by the EU LIFE+ Funding Programme

6. PRELIMINARY RESULTS

Presented below are the main preliminary findings from the 2015 at-sea campaign, based on more than 118 hours of ROV footage and 16 hours of SCUBA dives:

- Caves:** up to 34 caves were found in inshore areas 1, 2, 4, 8, and 11. These formations were not only detected close to shore; four caves and crevices were found in deep, offshore areas: area 1 at 270 m deep, area 5 at 300 m deep, area 6 at 341 m deep and area 7 at 320 m deep. The location of all of these geological features is indicated in Figure 3.

Figure 3. Caves and crevices found in inshore and offshore sampling areas



- **Coral reefs** were found in areas 1, 7, 11 and 12. These reefs were typical cnidarian-dominated megabenthic communities on deep-water hard substrata with a mixture of habitat-forming species of scleractinians, gorgonians and antipatharians. Examples of identified species are scleractinians (such as the white corals *Madrepora oculata* and *Lophelia pertusa* and the solitary coral *Desophyllum dianthus*); gorgonians (such as *Callogorgia verticillata* and *Swiftia pallida*), and antipatharians (such as *Leiopathes glaberrima* and *Antipathes dichotoma*).



Callogorgia verticillata, *Madrepora oculata*, *Swiftia pallida*, *Acanthogorgia hirsuta* / Oceana © LIFE BaHAR for N2K

- **Anthozoans** were found along several transects carried out in the rocky bottoms of area 1. Here, a new depth record for *Corallium rubrum* was set, at 1116 m. Due to the characteristics of the ROV's fibre optic cable, which is limited to ca. 1000 m, it was not possible to continue sampling the area at greater depths. However, it appeared likely that red coral might be found in even deeper waters within this area.



Corallium rubrum, *Madrepora oculata* / Oceana © LIFE BaHAR for N2K

- **Rhodolith beds:** extensive areas covered with rhodoliths, some of which may represent maërl bottoms, of various species were recorded in area 4, over both muddy bottoms and soft bottoms with rocky outcrops, between depths of approximately 75-100. Occasional patches were covered with the green algae *Flabellia petiolata*, and calcareous algae of *Mesophyllum* genus. This area is regularly used as an anchorage and bunkering ground for commercial vessels.



Hacelia superva, Rhodolith beds, *Flabellia petiolata* / Oceana © LIFE BaHAR for N2K

- **Fossilised lithistid reef:** the *Oceana Ranger* depth sounder detected the presence of a reef, located 0.3 nm south from area number 7. Based on ROV footage and the depth sounder data, the presence of a ca. 7 km long reef with dead lithistid sponges was revealed.



Fossil lithistid reef, *Callathias ruber* / Oceana © LIFE BaHAR for N2K

- **Main threats:** during nearly all dives conducted in Maltese waters, both with SCUBA divers and ROV, various types of marine debris and domestic garbage were recorded. The most noteworthy examples were plastic near to the shore, and lost fishing gear (e.g., fishing lines and weights) on offshore bottoms. The latter type of debris was regularly found entangled in macrobenthic fauna, such as gorgonians, causing obvious and significant damage.



Callogorgia verticillata / Oceana © LIFE BaHAR for N2K

ANNEX I

Geographical coordinates (WGS84 datum) indicating the boundaries of the inshore areas selected for surveying during the first Action A3 expedition. Area numbers correspond to those shown in Figure 1.

AREA	LATITUDE	LONGITUDE	AREA	LATITUDE	LONGITUDE
1	35° 53,794' N	14° 19,727' E	7	35° 58,683' N	14° 19,399' E
	35° 53,678' N	14° 19,521' E		35° 58,53' N	14° 18,492' E
	35° 52,415' N	14° 20,359' E		35° 58,057' N	14° 18,556' E
	35° 49,472' N	14° 24,748' E		35° 58,119' N	14° 19,396' E
	35° 49,699' N	14° 24,996' E	8	36° 0,959' N	14° 16,261' E
2	36° 1,285' N	14° 13,159' E		36° 0,848' N	14° 16,354' E
	36° 1,111' N	14° 13,119' E		36° 0,866' N	14° 16,676' E
	36° 0,583' N	14° 15,694' E		36° 0,983' N	14° 16,717' E
	36° 0,698' N	14° 15,695' E	9	35° 58,508' N	14° 21,139' E
3	36° 3,927' N	14° 16,516' E		35° 58,013' N	14° 21,457' E
	36° 4,48' N	14° 17,339' E	10	35° 59,254' N	14° 22,555' E
	36° 4,073' N	14° 18,431' E		35° 59,356' N	14° 22,78' E
	36° 3,541' N	14° 18,615' E		35° 59,905' N	14° 22,009' E
4	36° 4,469' N	14° 11,199' E		35° 59,99' N	14° 22,255' E
	36° 4,775' N	14° 11,168' E	11	36° 0,237' N	14° 19,459' E
	36° 5,052' N	14° 14,435' E		36° 0,695' N	14° 18,947' E
	36° 4,852' N	14° 14,442' E		36° 0,964' N	14° 18,98' E
5	35° 49,206' N	14° 27,791' E		36° 1,228' N	14° 19,38' E
	35° 49,012' N	14° 27,66' E		36° 1,332' N	14° 20,38' E
	35° 48,258' N	14° 31,049' E		36° 0,948' N	14° 20,645' E
	35° 48,404' N	14° 31,046' E	12	35° 49,699' N	14° 24,996' E
6	35° 57,611' N	14° 25,526' E		35° 47,057' N	14° 22,524' E
	35° 57,973' N	14° 26,262' E		35° 45,755' N	14° 25,475' E
	35° 57,57' N	14° 26,743' E		35° 49,206' N	14° 27,791' E
	35° 57,298' N	14° 25,981' E	13	35° 56,298' N	14° 19,847' E
	35° 57,433' N	14° 25,573' E		35° 55,335' N	14° 20,005' E

Geographical coordinates (WGS84 datum) indicating the boundaries of the offshore areas selected for surveying during the first Action A3 expedition. Area numbers correspond to those shown in Figure 1.

AREA	LATITUDE	LONGITUDE
1	35° 58,946' N	13° 47,815' E
	35° 56,315' N	13° 44,477' E
	35° 44,835' N	14° 2,14' E
	35° 43,996' N	14° 10,32' E
	35° 50,72' N	14° 16,556' E
	35° 59,436' N	14° 3,337' E
	35° 56,38' N	13° 59,468' E
	35° 50,883' N	14° 7,405' E
2	35° 48,193' N	14° 4,709' E
	35° 59,453' N	13° 54,689' E
	35° 57,354' N	13° 52,672' E
	35° 55,779' N	13° 55,366' E
3	35° 57,946' N	13° 57,26' E
	35° 29,543' N	14° 10,338' E
	35° 29,51' N	14° 15,946' E
	35° 26,741' N	14° 15,931' E
4	35° 26,795' N	14° 10,206' E
	35° 52,074' N	14° 35,382' E
	35° 46,662' N	14° 35,412' E
	35° 46,704' N	14° 58,896' E
5	36° 5,604' N	14° 58,89' E
	36° 5,598' N	14° 52,236' E
	36° 14,094' N	14° 13,822' E
	36° 10,439' N	14° 13,802' E
6	36° 10,472' N	14° 19,803' E
	36° 14,062' N	14° 19,783' E
	36° 13,205' N	13° 54,398' E
	36° 13,205' N	13° 58,09' E
7	36° 10,682' N	13° 58,109' E
	36° 10,714' N	13° 54,398' E

AREA	LATITUDE	LONGITUDE
7	36° 12,994' N	14° 5,827' E
	36° 12,994' N	14° 8,69' E
	36° 10,342' N	14° 8,696' E
	36° 6,963' N	14° 7,173' E
	36° 7,001' N	14° 3,396' E
	36° 9,259' N	14° 3,38' E
8	35° 37,424' N	14° 39,134' E
	35° 29,096' N	14° 39,891' E
	35° 28,961' N	14° 32,818' E
	35° 37,262' N	14° 32,62' E
9 ³	36° 25,607' N	14° 22,731' E
	36° 22,739' N	14° 22,731' E
	36° 22,739' N	14° 27,929' E
	36° 25,607' N	14° 27,929' E
10	36° 11,098' N	14° 40,59' E
	36° 11,098' N	14° 43,66' E
	36° 8,996' N	14° 43,649' E
	36° 9,012' N	14° 40,561' E
11	35° 50,72' N	14° 16,556' E
	35° 45,029' N	14° 24,041' E
	35° 42,582' N	14° 22,208' E
	35° 45,837' N	14° 12,029' E
12	35° 33,091' N	14° 6,923' E
	35° 29,587' N	14° 4,231' E
	35° 26,795' N	14° 10,206' E
	35° 29,543' N	14° 10,338' E
	35° 29,51' N	14° 15,946' E
	35° 26,741' N	14° 15,931' E
	35° 28,138' N	14° 22,555' E
	35° 33,091' N	14° 22,123' E
13	36° 12,994' N	14° 5,827' E
	36° 12,994' N	14° 8,69' E
	36° 10,342' N	14° 8,696' E
	36° 6,963' N	14° 7,173' E
	36° 7,001' N	14° 3,396' E

³ The polygon corresponding to area 9 was amended to lie within the continental shelf designated area for hydrocarbon exploration

ANNEX II

Data on ROV and SCUBA sampling transects during 2015 expedition

N.	DATE	TRANSECT	POSITION (LAT, LON)		DEPTH (M)
1	1/6/2015	Malta 9	36° 23,5053' N	14° 27,6191' E	258,2
2	2/6/2015	Malta 5	36° 11,3540' N	14° 18,8306' E	391,8
3	2/6/2015	Malta 5.1	36° 13,9154' N	14° 17,3330' E	477
4	3/6/2015	Malta 10	36° 09,9376' N	14° 41,9567' E	136
5	4/6/2015	Malta 1	35° 53,3500' N	14° 05,9106' E	977
6	5/6/2015	Malta 1.1	35° 52,2682' N	14° 08,9549' E	792
7	5/6/2015	Malta 1.2	35° 54,0579' N	14° 08,5441' E	410
8	6/6/2015	Malta 7	36° 08,7098' N	14° 04,9930' E	534
9	6/6/2015	Malta 7.1	36° 06,6757' N	14° 07,0981' E	391
10	7/6/2015	Malta 1.3	35° 47,5196' N	14° 00,4257' E	648
11	7/6/2015	Malta 1.4	35° 45,2558' N	14° 02,1084' E	706
12	8/6/2015	Malta 1	35° 52,1820' N	14° 21,2100' E	-
13	9/6/2015	Malta 11	35° 46,2732' N	14° 17,2850' E	680
14	9/6/2015	Malta 11.1	35° 47,3935' N	14° 16,2192' E	298
15	10/6/2015	Malta 1.5	35° 55,9608' N	14° 03,3277' E	853
16	10/6/2015	Malta 1.6	35° 55,5563' N	14° 07,5045' E	409
17	11/6/2015	Malta 1.7	35° 51,5478' N	13° 52,9156' E	657
18	12/6/2015	Malta 6	36° 09,9088' N	13° 55,8423' E	545
19	14/6/2015	Malta 11	36° 00,5510' N	14° 19,4830' E	16
20	15/6/2015	Malta 1.8	35° 54,2313' N	13° 51,9061' E	502
21	16/6/2015	Malta 1.9	35° 58,7178' N	14° 00,3964' E	939
22	16/6/2015	Malta 1.10	35° 57,7367' N	14° 02,4764' E	714
23	17/6/2015	Malta 1.11	35° 54,4160' N	14° 04,7611' E	701
24	19/6/2015	Malta 1.11	35° 52,4524' N	14° 10,6017' E	353
25	20/6/2015	Malta 2	36° 00,8129' N	14° 15,9816' E	68
26	22/6/2015	Malta 7.2	36° 13,7720' N	14° 08,7335' E	240
27	22/6/2015	Malta 7.3	36° 06,1005' N	14° 05,4460' E	406
28	23/6/2015	Malta 1.12	35° 52,9268' N	14° 07,4819' E	845
29	23/6/2015	Malta 1.13	35° 50,2357' N	14° 13,2412' E	316
30	24/6/2015	Malta 6.1	36° 10,1718' N	13° 54,6815' E	266
31	24/6/2015	Malta 7.4	36° 05,1217' N	14° 03,9236' E	491
32	26/6/2015	Malta 1.14	35° 52,6618' N	14° 09,8678' E	411
33	28/6/2015	Malta 11.2	35° 47,5585' N	14° 14,2889' E	880
34	28/6/2015	Malta 11.3	35° 47,6836' N	14° 15,0408' E	491
35	29/6/2015	Malta 1.15	35° 54,6026' N	14° 04,6260' E	806
36	30/6/2015	Malta 3	35° 26,7951' N	14° 14,5199' E	622
37	30/6/2015	Malta 12	35° 29,9174' N	14° 03,9122' E	660
38	1/7/2015	Malta 12.1	35° 30,7252' N	14° 22,0646' E	453
39	1/7/2015	Malta 12.2	35° 31,6617' N	14° 23,2163' E	274
40	1/7/2015	Malta 12.3	35° 32,5913' N	14° 14,6102' E	339
41	2/7/2015	Malta 4	-	-	7
42	3/7/2015	Malta 1.16	35° 54,5743' N	13° 48,7533' E	488,5
43	3/7/2015	Malta 7.5	36° 02,1819' N	14° 40,6687' E	252
44	4/7/2015	Malta 7.6	36° 12,6169' N	14° 08,3633' E	372
45	4/7/2015	Malta 7.7	36° 06,9352' N	14° 08,4809' E	389
46	5/7/2015	Malta 1.17	35° 49,9464' N	14° 11,6331' E	709
47	5/7/2015	Malta 1.18	35° 51,5287' N	14° 13,1152' E	246
48	6/7/2015	Malta 4	35° 53,3760' N	14° 39,2318' E	108
49	6/7/2015	Malta 4.1	35° 52,4464' N	14° 38,5672' E	76
50	6/7/2015	Malta 4.2	35° 52,0380' N	14° 36,8749' E	81
51	6/7/2015	Malta 4.3	35° 54,6675' N	14° 43,1713' E	78
52	6/7/2015	Malta 4.4	35° 55,5546' N	14° 43,6200' E	95
53	6/7/2015	Malta 4.5	35° 55,5962' N	14° 41,2866' E	95
54	7/7/2015	Malta 11.4	35° 48,6977' N	14° 13,3588' E	805
55	7/7/2015	Malta 11.5	35° 48,3820' N	14° 14,2119' E	417
56	8/7/2015	Malta 1.19	35° 59,2944' N	14° 05,9265' E	418
57	8/7/2015	Malta 1.20	36° 00,7130' N	14° 04,5810' E	238
58	9/7/2015	Malta 5.2	36° 13,9751' N	14° 19,7852' E	475
59	9/7/2015	Malta 5.3	36° 09,9748' N	14° 14,9075' E	369
60	9/7/2015	Malta 3	36° 04,2996' N	14° 17,2771' E	39
61	11/7/2015	Malta 13	35° 53,5402' N	14° 19,9285' E	88
62	11/7/2015	Malta 13.1	35° 52,6120' N	14° 20,0433' E	146
63	11/7/2015	Malta 13.2	35° 53,9048' N	14° 19,5682' E	115
64	12/7/2015	Malta 1.21	35° 56,7943' N	14° 02,9012' E	817
65	12/7/2015	Malta 1.22	35° 53,8048' N	14° 05,2613' E	867

N.	DATE	TRANSECT	POSITION (LAT, LON)		DEPTH (M)
66	13/7/2015	Malta 4.6	35° 59,2204' N	14° 44,4927' E	122
67	13/7/2015	Malta 4.7	35° 59,3204' N	14° 47,1543' E	116
68	13/7/2015	Malta 4.8	36° 00,1880' N	14° 52,1938' E	78
69	13/7/2015	Malta 4.9	36° 00,7952' N	14° 52,3170' E	84
70	14/7/2015	Malta 1.23	35° 50,8204' N	14° 10,9251' E	813
71	14/7/2015	Malta 1.24	35° 51,6544' N	14° 11,0504' E	544
72	15/7/2015	Malta 6.2	36° 10,5494' N	13° 56,0631' E	302
73	15/7/2015	Malta 7.8	36° 04,4185' N	14° 02,3811' E	308
74	18/7/2015	Malta 1.25	-	-	-
75	18/7/2015	Malta 4.10	-	-	-
76	18/7/2015	Malta 4.11	-	-	-
77	20/7/2015	Malta 4.12	35° 51,4770' N	14° 37,1173' E	70
78	20/7/2015	Malta 4.13	35° 50,8579' N	14° 38,1599' E	75
79	20/7/2015	Malta 4.14	35° 50,1968' N	14° 37,9156' E	93
80	20/7/2015	Malta 4.15	35° 50,2716' N	14° 43,5718' E	86
81	20/7/2015	Malta 4.16	35° 51,3124' N	14° 43,9376' E	72
82	20/7/2015	Malta 4.17	35° 53,5672' N	14° 45,1223' E	53
83	21/7/2015	Malta 4.18	35° 53,0706' N	14° 50,1978' E	86
84	21/7/2015	Malta 4.19	35° 55,0000' N	14° 52,2183' E	91
85	21/7/2015	Malta 4.20	35° 56,0545' N	14° 53,8373' E	96
86	21/7/2015	Malta 4.21	35° 57,3981' N	14° 49,4717' E	91
87	21/7/2015	Malta 4.22	35° 55,7271' N	14° 48,5089' E	61
88	21/7/2015	Malta 4.23	35° 55,6055' N	14° 46,7007' E	90
89	21/7/2015	Malta 4.24	35° 56,6694' N	14° 44,7473' E	104
90	22/7/2015	Malta 4.25	35° 48,0019' N	14° 47,3698' E	95
91	22/7/2015	Malta 4.26	35° 47,1711' N	14° 48,7089' E	92
92	22/7/2015	Malta 4.27	35° 47,0348' N	14° 44,7830' E	107
93	22/7/2015	Malta 4.28	35° 47,8497' N	14° 44,0664' E	100
94	22/7/2015	Malta 1.3	-	-	-

SCUBA dives

N	Date	Area	T (min)	Start dive (Lat, Lon)		End dive (Lat, Lon)		Z (m)
1	08/06/ 2015	01 inshore	62	35 51 5780N	014 21 7800E	35 51 3380N	014 22 2000E	32.4
2	08/06/2015	01 inshore	72	35 52 0210N	014 21 1740E	35 51 9360N	014 21 4270E	27.2
3	14/06/2015	11 inshore	111	36 00 4480N	014 19 7290E	35 00 2100N	014 19 4400E	15.5
4	14/06/2015	11 inshore	79	36 00 6030N	014 19 6670E	36 00 6540N	014 19 5610E	12.7
5	15/06/2015	02 inshore	95	36 01 2620N	014 13 9130E	36 01 2500N	014 13 8220E	15.3
6	26/06/2015	02 inshore	85	36 01 2500N	014 13 8120E	36 01 2620N	014 13 5060E	15.8
7	02/07/2015	04 inshore	88	36 04 8490N	014 13 7180E	36 04 8490N	014 13 7180E	33.3
8	02/07/2015	04 inshore	103	36 04 8450N	014 13 3710E	36 04 7880N	014 13 1490E	17.9
9	08/07/2015	04 inshore	111	36 04 8140N	014 13 0870E	36 04 8440N	014 12 9780E	22.5
10	10/07/2015	02 inshore	83	36 00 7460N	014 15 7750E	36 00 8800N	014 16 1320E	28.7
11	19/07/2015	01 inshore	96	35 50 0650N	014 24 6710E	35 50 1420N	014 24 2960E	25.9
12	19/07/2015	01 inshore		35 52 7460N	014 20 2570E	35 52 9260N	014 20 1830E	27.2