Natural England Commissioned Report NECR314

West of Walney MCZ 2018 Survey Report

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Foreword

Natural England commission a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England.

Background

Following designation, Natural England started a baseline monitoring programme across all marine protected areas.

This report was commissioned as part of an inshore benthic marine survey of the West of Walney MCZ.

This report should be cited as:

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Keywords – Marine, Inshore seabed survey, grab survey, MPA, MCZ

Further information
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West of Walney MCZ 2018 Survey Report

Project Code: MB0120

Author: Richard Pritchard

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Document Control

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Approved by & date:	Silke Kröger, 29/08/2018
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R. Pritchard	08/03/2018	Draft submitted to MPAG Reporting Sub-group for preliminary review.	0.1
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R. Pritchard	29/08/2018	Minor comments addressed from MPAG review, submitted to Defra for finalisation.	2

West of Walney MCZ
2018 Survey Report

Project Code: MB0120

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Acknowledgements

During the survey planning phase for the West of Walney MCZ, the following marine specialists generously contributed their valuable time and expertise:

Laurence Browning	Natural England Lead Marine Advisor
Anna Downie	Cefas Senior Habitat Mapper
Ben Green	Natural England/Environment Agency Marine Ecology Technical Specialist
Clare Miller	Natural England/Environment Agency Marine Ecology Technical Specialist
Mike Young	Natural England Senior Marine Specialist

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1. Introduction

The Marine and Coastal Access Act 2009 requires the UK Government to create a coherent network of Marine Conservation Zones (MCZs) in British waters. MCZs will exist alongside other Marine Protected Areas (MPAs), including Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and Ramsar sites to help conserve marine biodiversity, in particular habitats and species of European and national importance.

The West of Walney MCZ was designated on 17th January 2016[1]. The site has been specifically designated to protect an important area of subtidal sand and subtidal mud supporting Sea-pens and burrowing megafauna communities (Table 1). Mud shrimps and fish burrow in to the sediment, creating a complex habitat which shelters smaller animals such as worms and brittlestars. (Natural England, 2016).

Table 1: Features of the West of Walney MCZ protected by the site designation order[1]

Protected Features	Feature Type	General Management Approach
A5.2 Subtidal sand	Broadscale Habitat	Recover to favourable condition
A5.3 Subtidal mud	Broadscale Habitat	Recover to favourable condition
Sea-pen and burrowing megafauna communities	Habitat Feature of Conservation Importance	Recover to favourable condition

In January 2018, Natural England commissioned a survey of the reef and subtidal sediment subfeatures within the West of Walney MCZ. The survey was conducted as part of the MCZ monitoring programme, designed to assess the condition of the protected features over time. The intent was to gather data on the distribution, extent and range of communities associated with the subfeatures of the designated subtidal Annex I habitats: 'A5.2 Subtidal sands' and 'A5.3 Subtidal mud'. The MCZ designated habitat Feature of Conservation Importance (FOCI), Sea-pen and burrowing megafauna communities, was not the primary focus of the survey, however incidental records would provide point records of the presence of habitat FOCI.

This survey report details the sampling conducted by the Environment Agency within the West of Walney MCZ to gather evidence to help inform the condition monitoring of the protected sedimentary habitats. The data will be used by Natural England to report on condition of the designated features and support future management of the MCZ.

[1] http://www.legislation.gov.uk/ukmo/2016/22/pdfs/ukmo_20160022_en.pdf [accessed 12/06/2018]

1.1 Site Description

The West of Walney MCZ is located in the Irish Sea, off the coast of Cumbria, and to the west of Walney Island. (Figure 2). The site has a surface area of 388 km^2 and was designated in January 2016. There are currently four operational wind farms (Ormonde, West of Duddon Sands, and Walney 1 & 2) and one wind farm under construction (Walney extension) which overlap with the MCZ. A *Nephrops norvegicus* fishery overlaps the site. A small area of the site to the south-east extends beyond the 12 nm boundary and as such conservation advice is jointly provided by Natural England and JNCC.

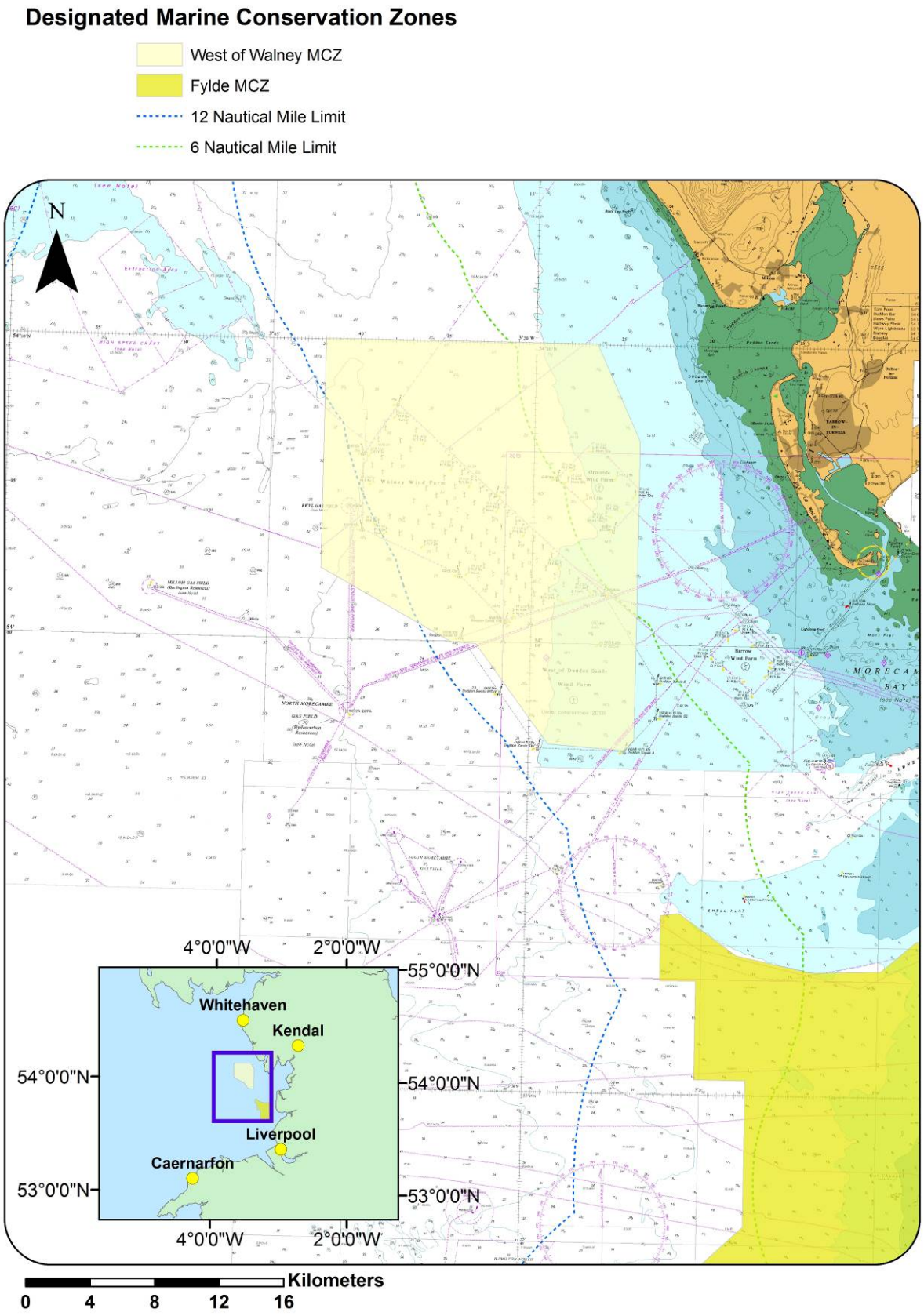


Figure 1. Location of the West of Walney Marine Conservation Zone (MCZ) in the context of other designated MCZs off the North West of England.

1.2 Survey Aim and Objectives

Overall Survey Aim

To undertake a benthic grabbing survey of the designated subtidal Broadscale Habitat features of the West of Walney MCZ, in order to obtain improved evidence, potentially ascribe condition and provide a baseline dataset (T0), which can then be used to detect change over time and support future monitoring.

Survey objectives

- To undertake a survey to assess the relative extent, distribution and community composition of subtidal sand and subtidal mud features.
- To provide point records for the presence of habitat FOCI.
- To provide T0 data for a monitoring time series for subtidal sand and subtidal mud features.
- To provide groundtruthing samples to enable the verification of an acoustically-derived habitat map of the extent of the site outside of the wind farms.

1.3 West of Walney MCZ Survey Team

The West of Walney MCZ was surveyed between the 9th and 11th of January, 2017. The survey team comprised of a collaboration of marine monitoring specialists as listed below. The coastal survey vessel *Mersey Guardian*, staffed and operated by Briggs Marine (Figure 2, Annex 7.1) was used to conduct the survey work reported here.

Environment Agency Estuarine and Coastal Monitoring & Assessment Service Survey Officers	Mike Fraser Rachel Linaker Richard Pritchard
Natural England Marine Specialist	Maija Marsh
APEM Taxonomy Specialist	Georgina Brackenreed-Johnston

Figure 2. Coastal survey vessel Mersey Guardian, operated by Briggs Marine.

2. Survey Design and Methods

2.1 Survey Design and Planning Phase

Acoustic data covering the site has recently been gathered during wind farm development (2009 – 2013), along with a dedicated multibeam echosounder (MBES) survey in 2016, to infill gaps in the north of the site. Cefas developed an acoustically derived habitat map following the 2016 MBES survey and interpreted habitat maps from existing evidence have also been created by Natural England. There was no MCZ verification survey undertaken at this site, but a grab (box corer and Day Grab), 2 m beam trawl and drop video survey was undertaken by Bangor University in 2016 (Monnington, 2017), which provided useful habitat information. All available data sources were used to inform the survey design.

A densely sampled survey design inside the MCZ was considered a suitable survey methodology, to provide as much information as possible on the distribution of Broadscale Habitats across the north of the site. Due to the large area of the MCZ (388 km^2), this baseline survey was designed to focus on the area in the north of the MCZ, where the existing data is limited. This will enable an accurate habitat map to be developed for the whole MCZ site.

One hundred stations were sampled for particle size analysis (PSA) and infauna using a 0.1 m^2 Day Grab. The sampling sites were stratified by bathymetry and MBES data collected by Cefas habitat mappers (Figure 3). The stratification comprised five strata defined by bathymetry and sedimentary habitat type; mud <25 m, mud 25-30 m, mud 30 m, sand <25 m and sand 20-30 m. Five stations were also sampled for sediment contaminant analysis (heavy metals, polycyclic aromatic hydrocarbons, polychlorinated biphenyls and tributyltin) using the Day Grab, alongside a comparative infauna and PSA sample. Sample stations were not placed within 100 m of undersea cables or wind farm installations for safety reasons. The Day Grab was chosen to allow comparison to historical data collected by industry for wind farm developments and by Bangor University.

A ‘notification of an exempt activity form’ was submitted to the Marine Management Organisation prior to the survey being carried out.

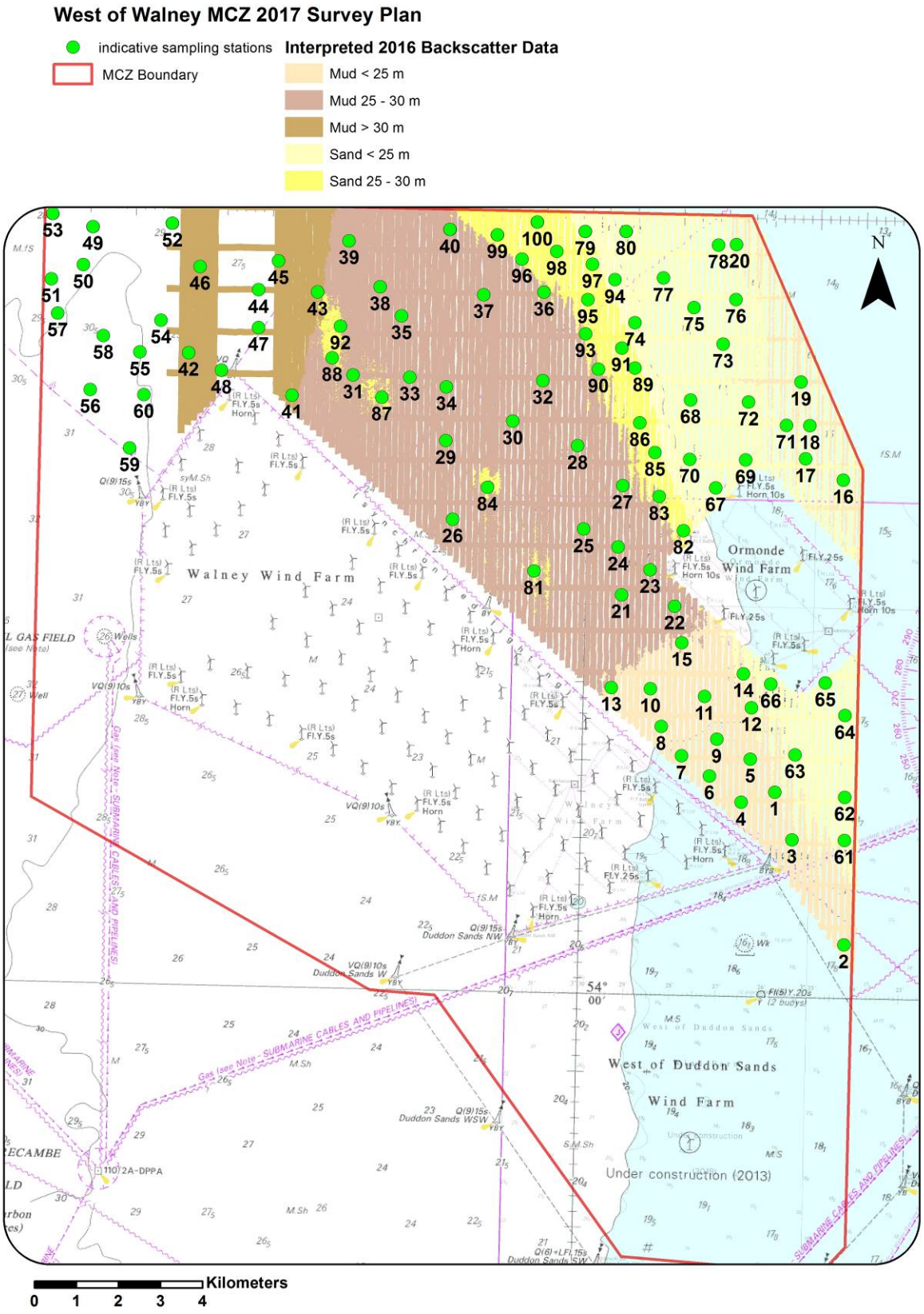


Figure 3. West of Walney MCZ 2018 baseline survey plan, mapped over strata interpreted from MBES backscatter data.

2.2 Sample Collection Methodology

2.2.1 Broadscale Habitat Characterisation

A Day Grab (Figure 4), with a surface sampling area of 0.1 m^2 was deployed from the stern gantry of the survey vessel to recover sediment from the seabed, as described in Ware and Kenny (2011). Sampling positions were recorded (fixed) using Hydropro data acquisition software when the gear made contact with the seabed, and the mid-point of the vessel's stern gantry was used as the default offset for position fixing (see Annex 7.2.2 for further details). On recovery, a photograph was taken of the undisturbed surface and the depth of material within the grab was measured using a probe. A sample depth of 5 cm was required to qualify as a valid sample (Environment Agency, 2014). The sample was inspected to measure the depth of the apparent Redox Potential Discontinuity (aRPD) or 'black layer', if present. A core sub-sample (50 – 250 ml) was then removed for PSA. The remaining faunal sample was then processed by washing over a 1.0 mm sieve (Figure 4). The retained material was photographed and preserved in a buffered 4% formaldehyde solution for transfer ashore to a specialist laboratory for analysis. A minimum of three attempts was made at each station to obtain a valid grab sample before the station was abandoned. Samples were considered invalid where loss of sample occurred during recovery of the grab, due to large sediment particles preventing closure of the bucket. Samples of < 5 cm depth were discarded.

2.2.2 Sediment Contaminants

At five stations, additional grabs were collected to retrieve material for contaminant analyses following the methodology detailed in the Environment Agency operational instruction 10_01 (2007). Surface scrapes (i.e. the recently deposited sediment) were removed from each grab to a maximum depth of 1 cm (avoiding the anoxic layer). A metal scoop was used to collect material for organic contaminant analyses and a plastic scoop for heavy metals. The remaining material was then discarded. The upper 1 cm was used, as this provides a record of the most recent contaminant levels deposited in the sediment. All samples were stored frozen at -20°C after collection.

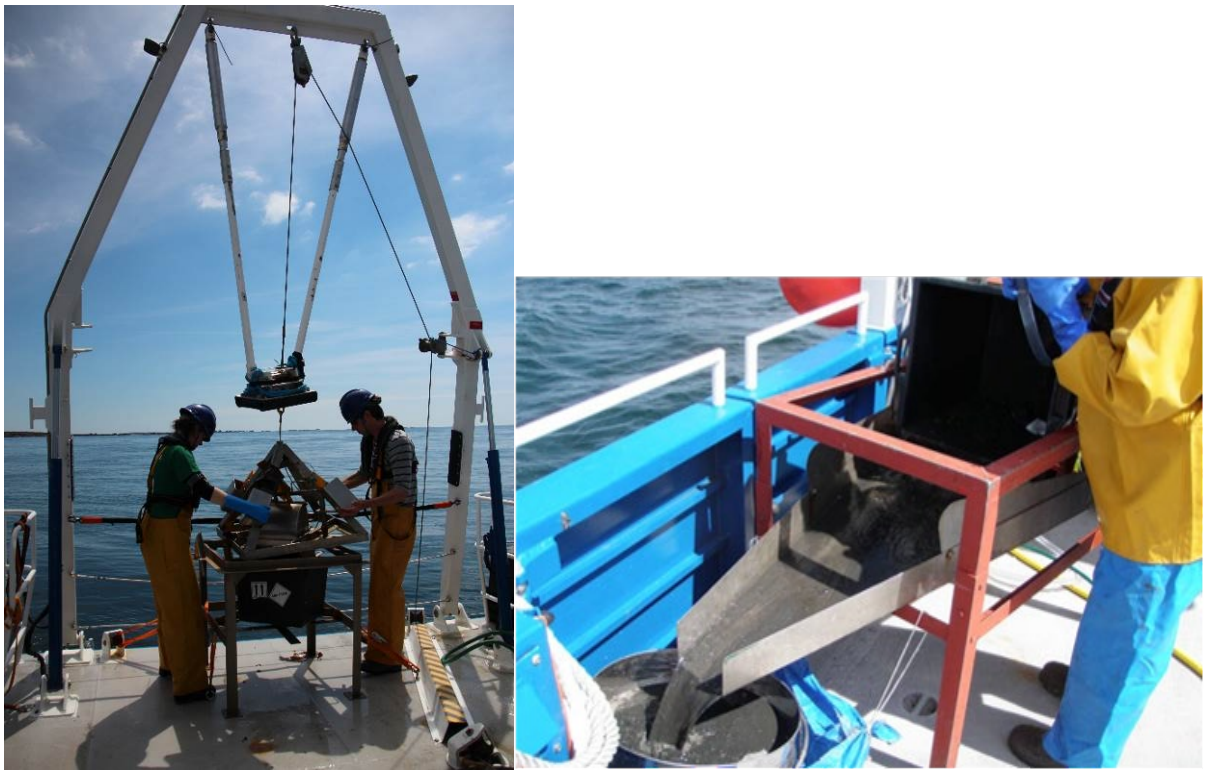


Figure 4. Day Grab (left), and equipment for sieving benthic fauna samples (right)

3. Survey Narrative

The West of Walney MCZ baseline survey was carried out between the 8th and 12th of January 2018. Environment Agency staff and other survey personnel mobilised to the survey vessel *Mersey Guardian,* berthed in Fleetwood Marina, on the 8th of January, 2018. Following a safety briefing for the scientific staff on the 9th January, the vessel departed Fleetwood Marina at 04:30 UTC and steamed to the MCZ survey area. On arrival at the first station, the scientist in charge made the decision to abort the survey due to the moderate sea state and strong south-easterly winds generating unsuitable conditions for grab deployment. *Mersey Guardian* headed in to Morecambe Bay for shelter and returned to Fleetwood Marina at 15:30 UTC. Light variable winds and a reduced swell allowed Day Grab survey activity to resume on the 10th January. Following a safety brief for a new member of the survey team, *Mersey Guardian* departed Fleetwood Marina at 06:00 UTC. Fifty stations were successfully completed within the West of Walney MCZ baseline survey area before returning to Fleetwood Marina at 18:00 UTC. With continuing favourable winds and a slight sea state, *Mersey Guardian* departed Fleetwood Marina the following day (11th January) at 07:00 UTC to continue the Day Grab survey. The remaining fifty stations were completed within the West of Walney MCZ by 16:00 UTC and the vessel returned back to Fleetwood Marina at 18:00 UTC.

Between the 8th and the 12th of January 2018, the West of Walney MCZ baseline survey took two 'on-task' days to complete. A detailed progress report for each survey day can be found in Annex 7.3.

4. Sampling Summary

4.1 Sediment Samples

Viable grab samples for both infaunal and particle size analyses were collected at 100 stations, using the Day Grab (Figure 5). Five stations were also successfully sampled for sediment contaminants analyses. The samples were photographed before and after the on-board processing phase.

Definitive classification of the habitat features is not possible prior to the results of the more detailed sample analyses carried out in the laboratory.

4.2 Evidence of anthropogenic impacts

No anthropogenic activities were identified during the survey within the West of Walney MCZ

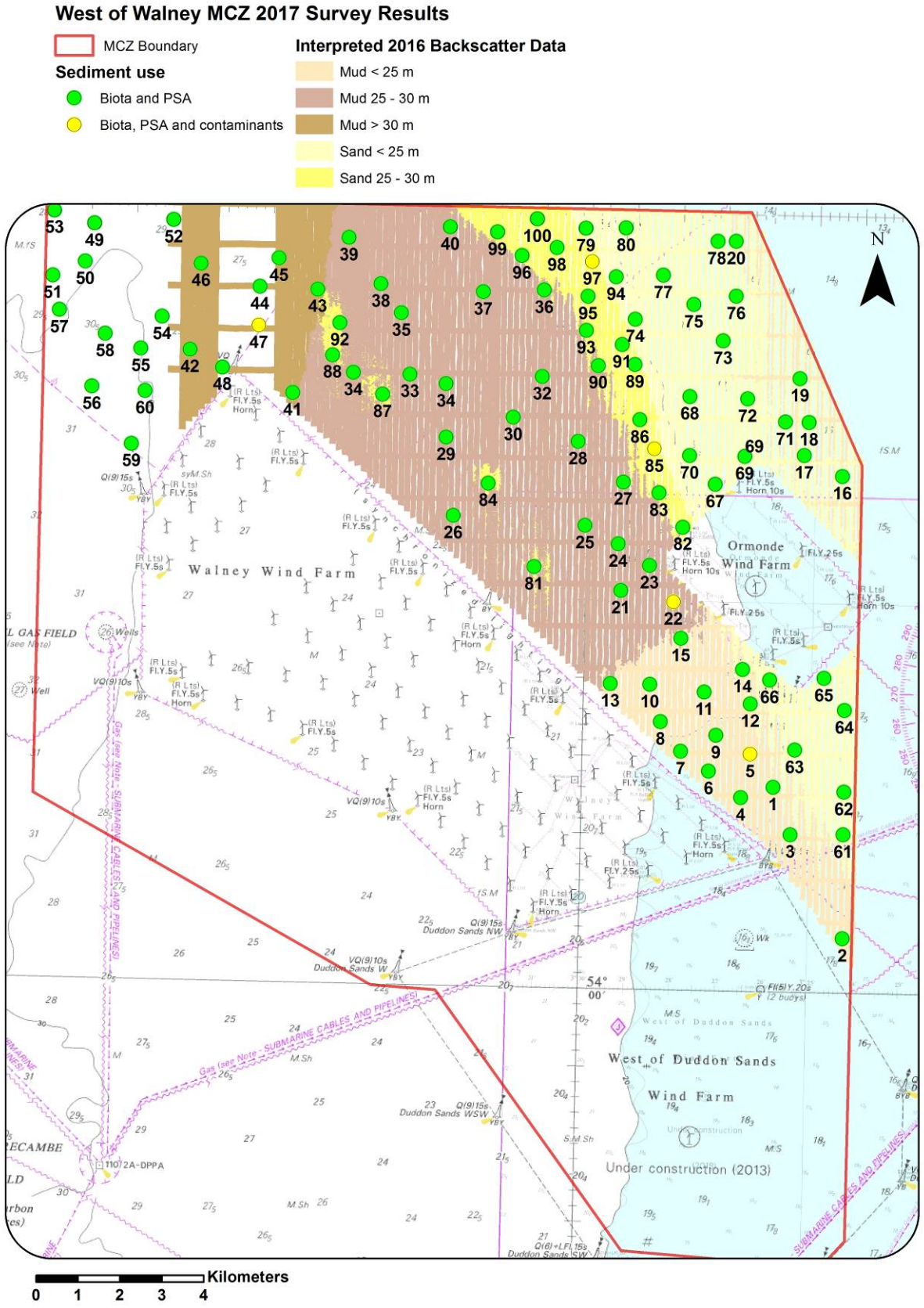


Figure 5. West of Walney MCZ 2018 stations successfully sampled, mapped over strata interpreted from MBES data.

5. References

Environment Agency, (2007). Sediment sampling in water for chemical and particle size analyses. Operational Instruction 10_01 (internal document). Environment Agency, Bristol, UK.

Environment Agency, (2014). Sampling and processing marine benthic invertebrates. Operational Instruction 009_07 (internal document). Environment Agency, Bristol, UK.

Monnington, J., (2017). Establishing a baseline of data for condition assessment of the features subtidal mud, subtidal sand and Sea-Pens and burrowing megafauna communities in the West of Walney Marine Conservation Zone: megafauna summary report. University of Bangor and Natural England – unpublished.

Natural England, (2016). West of Walney MCZ Factsheet https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/492471/mcz-west-walney-factsheet.pdf [Accessed 23/02/2018]

Ware, S.J. and Kenny, A.J., (2011). Guidelines for the Conduct of Benthic Studies at Marine Aggregate Extraction Sites (2nd Edition). Marine Aggregate Levy Sustainability Fund, 80 pp.

6. General List of Abbreviations

BSH	Broadscale Habitat
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CHP	Civil Hydrography Programme
CS	Camera Sledge
CSV	Coastal Survey Vessel
DC	Drop Video Camera
Defra	Department for Environment, Food and Rural Affairs
DG	Day Grab
EA	Environment Agency
ECMAS	Estuarine and Coastal Monitoring & Assessment Service
ENG	Ecological Network Guidance
FOCI	Features Of Conservation Importance
IFCA	Inshore Fisheries and Conservation Authority
MCZ	Marine Conservation Zone
MESH	Mapping European Seabed Habitats
MHM	Mini-Hamon Grab
mSNCI	marine Sites of Nature Conservation Importance
PSA	Particle Size Analysis
REC	Regional Environmental Characterisation
rMCZ	recommended Marine Conservation Zone
RSG	Regional Stakeholder Group
SAC	Special Area of Conservation
SAD	Site Assessment Document
SNCB	Statutory Nature Conservation Body
SOP	Standard Operating Procedure
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UTC	Coordinated Universal Time

7. Annexes

7.1 Coastal Survey Vessel General Information

Briggs Marine and Environmental Services Ltd.
Seaforth House, Seaforth Place, Burtisland, Fife, KY3 9AX.
Tel: +44(0)1592 872939
Email: marketing@briggsmarine.com

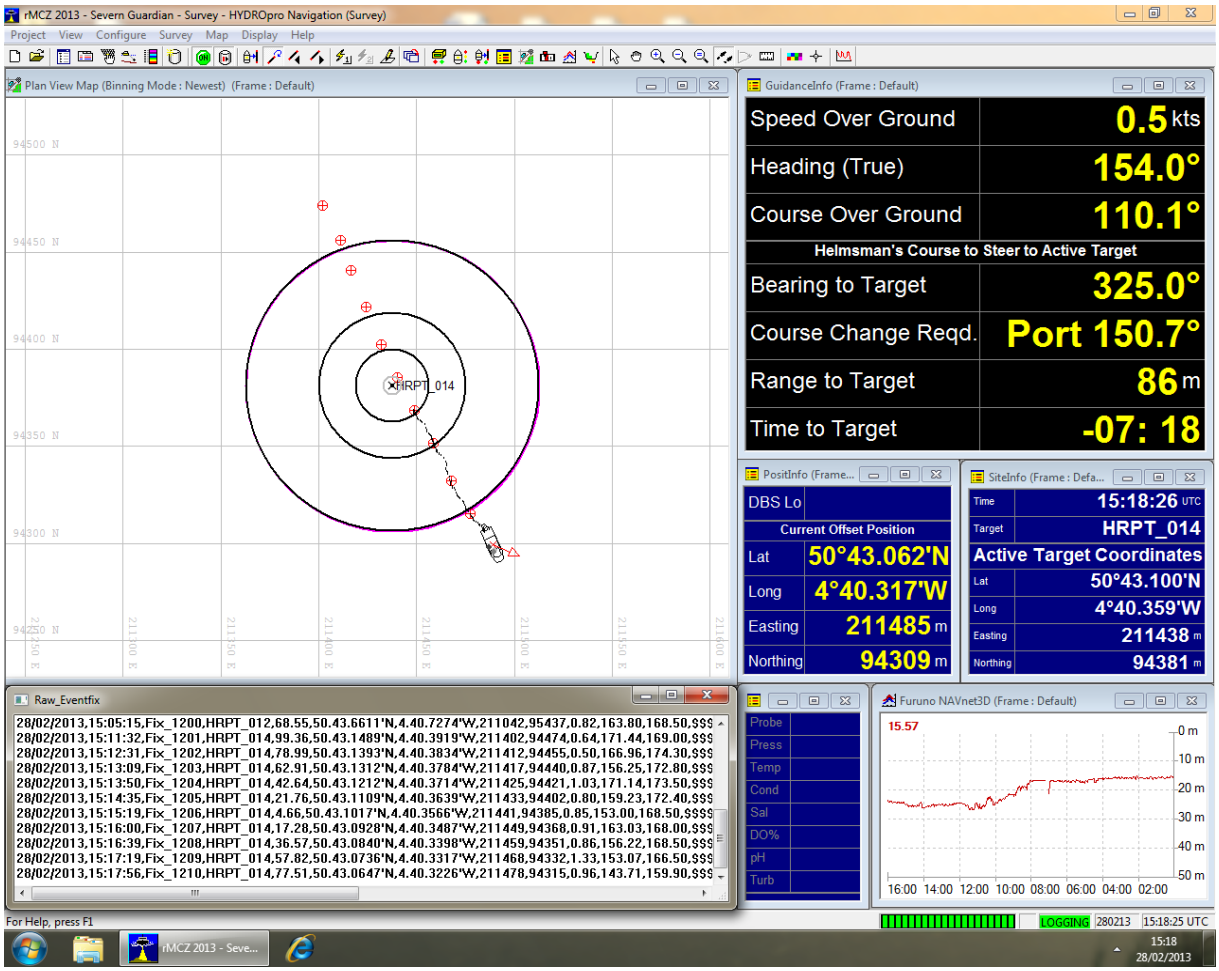
Mersey Guardian

General Information	Main Equipment
Length: 18.3 m	**Main Engines:** 2 x Volvo D9-MH 261 bkW @ 2200 rpm. Twin Disc MGX-5075 integral vee-drive
Beam: 6.3 m	
Draft (baseline): 1.15 m	**Crew:** 7
Draught (skegs): 2.2 m	**Scientific Officers:** Up to 10
Displacement (light ship): 22 T	**Accommodation:** 3 x twin cabins and mess
Displacement (full load): 30 T	Data network to share information around vessel
Service Speed: 16 knots	Wet lab/bench for processing water, sediment and ecology samples
Maximum Speed: 18 knots	
	Fridge/freezer for sample storage
	Dry lab space for two computers and data processing
	Large aft deck working area
	A frame – 2 T SWL
	Double Independent Drum Trawl Winch – 2 T SWL
	Hydraulic crane

7.2 Survey Equipment

Navigation and Positioning

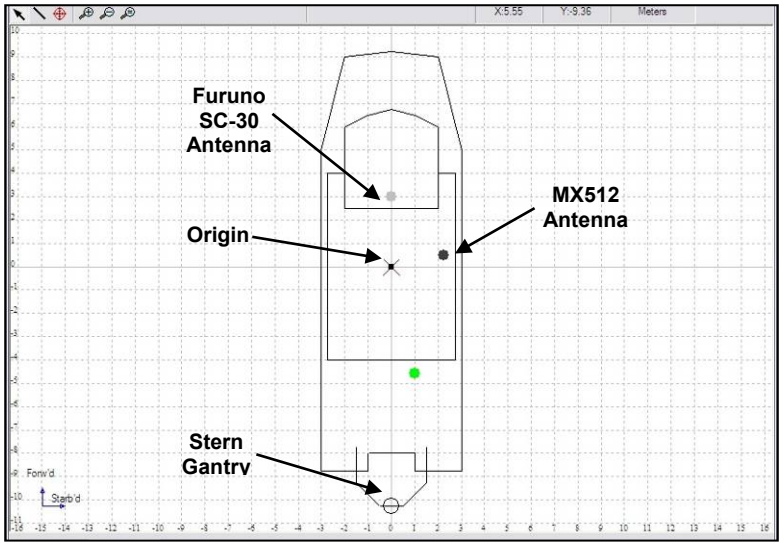
Trimble® HYDRO*pro*™ software is utilised for real-time navigation and survey data acquisition.



Trimble® HYDRO*pro*™ software screen grab displaying real-time navigation and survey data acquisition for a MCZ drop camera survey line.

Navigational and survey equipment offsets on the Coastal Survey Vessel *Mersey Guardian* (Environment Agency Estuarine and Coastal Monitoring & Assessment Service).

NMEA Device	*Make/Model*	*Offset Name*	*Offset (m)*		
			X (Starb'd)	*Y (Forw'd)*	*Z +ve (Up)*
Gyrocompass	*Simrad Robertson RGC50*	*n/a*	*-*	*-*	*-*
Navigation Echosounder	*Furuno DFF1, 525ST-MSD transducer*	*n/a*	*-*	*-*	*-*
Survey Echosounder	*Kongsberg EA400*	*n/a*	*-*	*-*	*-*
Origin	*n/a*	*Origin*	*0.0*	*0.0*	*0.0*
Navigation GPS (Secondary)	*Furuno SC-30 DGPS*	*Furuno SC-30 Antenna*	*0.0*	*3.0*	*0.0*
Survey GPS (Primary)	*SIMRAD MX512 DGPS*	*MX512 Antenna*	*2.25*	*0.5*	*0.0*
n/a	*n/a*	*Sediment Grab (Stern Gantry)*	*0.0*	*-10.25*	*0.0*



Trimble® HYDROpro™ vessel editor screen showing survey equipment offsets from the origin (Environment Agency Estuarine and Coastal Monitoring & Assessment Service).

7.3 Daily Progress Reports

Estuarine & Coastal Monitoring & Assessment Service

DAILY PROGRESS REPORT № 1

Date	Vessel	Project
08 January 2018	***Mersey Guardian***	**West of Walney MCZ Baseline**

Survey start location	Survey end location
Fleetwood	Fleetwood

Vessel personnel list

Role	Name	Organisation	Role	Name	Organisation
SIC	Richard Pritchard	Environment Agency	Scientist	Mike Fraser	Environment Agency
Scientist	Rachel Linaker	Environment Agency	Scientist	Georgina Brackenree	APEM Ltd
Master	Albert Atkinson	Briggs	First Mate	Paul Blundell	Briggs

Safety	Today	To date	Remarks
№ of safety briefings or drills		0	
№ of incidents or injuries		0	
№ of near miss reports		0	

Summary of operations

Start UTC	End UTC	Type	Remarks
12:00	17:00	Other	Travelled to Mersey Guardian
17:00	18:00	Mobilisation	Prepared & mobilised bottles

Weather	0000 – 0600 UTC	0600 – 1200 UTC	1200 – 1800 UTC	1800 – 0000 UTC
Wind				
Sea state				
Swell				
Visibility				

Operational progress (h:mm)

Type	Today	To date	Remarks
Mobilisation	1:00	1:00	
Survey equipment calibration			
Total operation survey (camera)			
Total operation sampling (grab)			
Survey equipment downtime			
Vessel or plant downtime			
Down-weathered			
Transit			
Standby in port			
Demobilisation			
Other	5:00	5:00	Travel
Total	**6:00**	**6:00**	

Survey progress	Hamon	Day grab	camera	Remarks
№ of stations completed today	0	0	0	
№ of stations completed to date	0	0	0	
Initial № of target stations	0	100	0	
№ of stations to be completed	0	100	0	

Weather forecast for the next 24 hours

West 4 or 5, Sea state: Slight or moderate. Weather: mainly fair. Visibility: Good.

Planned operations for the next 24 hours

Begin Day Grab survey.

Agreed changes to survey scope and priorities

None

Any other remarks

None

DPR distribution list

Recipient	Organisation	Email
Luke Martina	Environment Agency	luke.martina@environment-agency.gov.uk
Ben Green	Environment Agency	ben.green@environment-agency.gov.uk
Clare Miller	Environment Agency	clare.miller@environment-agency.gov.uk
Nina Godsell	Environment Agency	nina.godsell@environment-agency.gov.uk

Estuarine & Coastal Monitoring & Assessment Service

DAILY PROGRESS REPORT № 2

Date	Vessel	Project
09 January 2018	***Mersey Guardian***	**West of Walney MCZ Baseline**

Survey start location	Survey end location
Fleetwood	Fleetwood

Vessel personnel list

Role	Name	Organisation	Role	Name	Organisation
SIC	Richard Pritchard	Environment Agency	Scientist	Mike Fraser	Environment Agency
Scientist	Rachel Linaker	Environment Agency	Scientist	Georgina Brackenree	APEM Ltd
Master	Albert Atkinson	Briggs Marine	First Mate	Paul Blundell	Briggs Marine

Safety	Today	To date	Remarks
№ of safety briefings or drills	2	2	Safety Induction & tool box talk
№ of incidents or injuries	0	0	
№ of near miss reports	0	0	

Summary of operations

Start UTC	End UTC	Type	Remarks
04:30	11:00	Transit	We transited to the furthest station, but conditions were too poor throughout the survey area to complete
11:00	15:30	Down-weathered	Anchored in Morecambe Bay.

Weather	0000 – 0600 UTC	0600 – 1200 UTC	1200 – 1800 UTC	1800 – 0000 UTC
Wind		SE veering W later 6/7. Decreasing 4/5		
Sea state		Moderate (1.25 - 2.5 m)		
Swell		Moderate		
Visibility		Moderate (2 - 5 NM)		

Operational progress (h:mm)

Type	Today	To date	Remarks
Mobilisation		1:00	
Survey equipment calibration			
Total operation survey (camera)			
Total operation sampling (grab)			
Survey equipment downtime			
Vessel or plant downtime			
Down-weathered	4:30	4:30	
Transit	6:30	6:30	
Standby in port			
Demobilisation			
Other		5:00	Travel
Total	**11:00**	**17:00**	

Survey progress	Hamon	Day grab	camera	Remarks
№ of stations completed today	0	0	0	
№ of stations completed to date	0	0	0	
№ of new target stations added today	0	0	0	
Total № of target stations	0	100	0	
№ of stations to be completed	0	100	0	

Weather forecast for the next 24 hours

West 4 or 5, becoming variable 3 or less. Sea state: Slight or moderate, becoming smooth or slight. Weather:

Planned operations for the next 24 hours

Weather conditions look much more favourable to complete Day grab activities tomorrow.

Agreed changes to survey scope and priorities

None

Any other remarks

None

DPR distribution list

Recipient	Organisation	Email
Luke Martina	Environment Agency	luke.martina@environment-agency.gov.uk
Ben Green	Environment Agency	ben.green@environment-agency.gov.uk
Clare Miller	Environment Agency	clare.miller@environment-agency.gov.uk
Nina Godsell	Environment Agency	nina.godsell@environment-agency.gov.uk

Estuarine & Coastal Monitoring & Assessment Service

DAILY PROGRESS REPORT № 3

Date	Vessel	Project
10 January 2018	***Mersey Guardian***	**West of Walney MCZ Baseline**

Survey start location	Survey end location
Fleetwood	Fleetwood

Vessel personnel list

Role	Name	Organisation	Role	Name	Organisation
SIC	Richard Pritchard	Environment Agency	Scientist	Maija Marsh	Natural England
Scientist	Rachel Linaker	Environment Agency	Scientist	Georgina Brackenree	APEM Ltd
Master	Albert Atkinson	Briggs Marine	First Mate	Paul Blundell	Briggs Marine

Safety	Today	To date	Remarks
№ of safety briefings or drills	2	4	Safety Induction & tool box talk
№ of incidents or injuries	0	0	
№ of near miss reports	0	0	

Summary of operations

Start UTC	End UTC	Type	Remarks
06:00	07:45	Transit	
07:45	15:45	Total operation sampling (grab)	50 stations sampled
15:45	18:00	Transit	PSA's labelled, bagged & placed in freezer

Weather	0000 – 0600 UTC	0600 – 1200 UTC	1200 – 1800 UTC	1800 – 0000 UTC
Wind		Variable 3 or 4	Variable 3 or 4	
Sea state		Smooth (0.1 - 0.5 m)	Variable 3 or 4	
Swell		Light	Light	
Visibility		Moderate (2 - 5 NM)	Moderate (2 - 5 NM)	

Operational progress (h:mm)

Type	Today	To date	Remarks
Mobilisation		1:00	
Survey equipment calibration			
Total operation survey (camera)			
Total operation sampling (grab)	8:00	8:00	
Survey equipment downtime			
Vessel or plant downtime			
Down-weathered		4:30	
Transit	4:00	10:30	
Standby in port			
Demobilisation			
Other		5:00	Travel
Total	**12:00**	**29:00**	

Survey progress	Mini-Hamon	Day grab	Drop camera	Remarks
№ of stations completed today	0	50	0	
№ of stations completed to date	0	50	0	
№ of new target stations added today	0	0	0	
Total № of target stations	0	100	0	
№ of stations to be completed	0	50	0	

Weather forecast for the next 24 hours

Wind-Variable 3 or 4, becoming SE 4 or 5, occasionally 6 later.

Planned operations for the next 24 hours

Complete survey i.e 50 stations

Agreed changes to survey scope and priorities

None

Any other remarks

None

DPR distribution list

Recipient	Organisation	Email
Luke Martina	Environment Agency	luke.martina@environment-agency.gov.uk
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Clare Miller	Environment Agency	clare.miller@environment-agency.gov.uk
Nina Godsell	Environment Agency	nina.godsell@environment-agency.gov.uk

Estuarine & Coastal Monitoring & Assessment Service

DAILY PROGRESS REPORT № 4

Date	Vessel	Project
11 January 2018	***Mersey Guardian***	**West of Walney MCZ Baseline**

Survey start location	Survey end location
Fleetwood	Fleetwood

Vessel personnel list

Role	Name	Organisation	Role	Name	Organisation
SIC	Richard Pritchard	Environment Agency	Scientist	Maija Marsh	Natural England
Scientist	Rachel Linaker	Environment Agency	Scientist	Georgina Brackenree	APEM Ltd
Master	Albert Atkinson	Briggs Marine	First Mate	Paul Blundell	Briggs Marine

Safety	Today	To date	Remarks
№ of safety briefings or drills		4	
№ of incidents or injuries		0	
№ of near miss reports		0	

Summary of operations

Start UTC	End UTC	Type	Remarks
07:00	09:15	Transit	
09:15	16:00	Total operation sampling (grab)	50 Stations sampled
16:00	18:00	Transit	PSA's labelled, bagged & placed in freezer & demobbed.

Weather	0000 – 0600 UTC	0600 – 1200 UTC	1200 – 1800 UTC	1800 – 0000 UTC
Wind		Variable 3 or 4	Variable 3 or 4	
Sea state		Smooth (0.1 - 0.5 m)	Smooth (0.1 - 0.5 m)	
Swell		Light	Light	
Visibility		Good (>5 NM)	Good (>5 NM)	

Operational progress (h:mm)

Type	Today	To date	Remarks
Mobilisation		1:00	
Survey equipment calibration			
Total operation survey (camera)			
Total operation sampling (grab)	6:45	14:45	
Survey equipment downtime			
Vessel or plant downtime			
Down-weathered		4:30	
Transit	4:15	14:45	
Standby in port			
Demobilisation			
Other		5:00	Travel
Total	**11:00**	**40:00**	

Survey progress	Mini-Hamon	Day grab	Drop camera	Remarks
№ of stations completed today	0	50	0	
№ of stations completed to date	0	100	0	
№ of new target stations added today	0	0	0	
Total № of target stations	0	100	0	
№ of stations to be completed	0	0	0	

Weather forecast for the next 24 hours

N/A

Planned operations for the next 24 hours

Routine WQ survey.

Agreed changes to survey scope and priorities

None

Any other remarks

None

DPR distribution list

Recipient	Organisation	Email
Luke Martina	Environment Agency	luke.martina@environment-agency.gov.uk
Ben Green	Environment Agency	ben.green@environment-agency.gov.uk
Clare Miller	Environment Agency	clare.miller@environment-agency.gov.uk
Nina Godsell	Environment Agency	nina.godsell@environment-agency.gov.uk

Estuarine & Coastal Monitoring & Assessment Service

DAILY PROGRESS REPORT № 5

Date	Vessel	Project
12 January 2018	***Mersey Guardian***	**West of Walney MCZ Baseline**

Survey start location	Survey end location
Fleetwood	Fleetwood

Vessel personnel list

Role	Name	Organisation	Role	Name	Organisation
SIC	Richard Pritchard	Environment Agency	Scientist	Maija Marsh	Natural England
Scientist	Rachel Linaker	Environment Agency	Scientist	Georgina Brackenree	APEM Ltd
Master	Albert Atkinson	Briggs Marine	First Mate	Paul Blundell	Briggs Marine

Safety	Today	To date	Remarks
№ of safety briefings or drills		4	
№ of incidents or injuries		0	
№ of near miss reports		0	

Summary of operations

Start UTC	End UTC	Type	Remarks
09:00	14:00	Other	Travelled home

Weather	0000 – 0600 UTC	0600 – 1200 UTC	1200 – 1800 UTC	1800 – 0000 UTC
Wind				
Sea state				
Swell				
Visibility				

Operational progress (h:mm)

Type	Today	To date	Remarks
Mobilisation		1:00	
Survey equipment calibration			
Total operation survey (camera)			
Total operation sampling (grab)		14:45	
Survey equipment downtime			
Vessel or plant downtime			
Down-weathered		4:30	
Transit		14:45	
Standby in port			
Demobilisation			
Other	5:00	10:00	Travel
Total	**5:00**	**45:00**	

Survey progress	Mini-Hamon	Day grab	Drop camera	Remarks
№ of stations completed today	0	0	0	
№ of stations completed to date	0	100	0	
№ of new target stations added today	0	0	0	
Total № of target stations	0	100	0	
№ of stations to be completed	0	0	0	

Weather forecast for the next 24 hours

None

Planned operations for the next 24 hours

None

Agreed changes to survey scope and priorities

None

Any other remarks

None

DPR distribution list

Recipient	Organisation	Email
Luke Martina	Environment Agency	luke.martina@environment-agency.gov.uk
Ben Green	Environment Agency	ben.green@environment-agency.gov.uk
Clare Miller	Environment Agency	clare.miller@environment-agency.gov.uk
Nina Godsell	Environment Agency	nina.godsell@environment-agency.gov.uk

7.4 Grab Survey Metadata

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment use
10/01/2018	07:40	WSWA02	54.01163	-3.40383	1	4363	24.94	Biota/PSA
10/01/2018	07:52	WSWA61	54.03392	-3.40431	2	4364	25.13	Biota/PSA
10/01/2018	08:01	WSWA03	54.03375	-3.42352	3	4365	25.51	Biota/PSA
10/01/2018	08:12	WSWA62	54.04311	-3.40431	4	4366	24.75	Biota/PSA
10/01/2018	08:22	WSWA01	54.04382	-3.43011	5	4367	25.12	Biota/PSA
10/01/2018	08:29	WSWA04	54.04149	-3.44185	6	4368	25.23	Biota/PSA
10/01/2018	08:37	WSWA06	54.04707	-3.45383	7	4369	25.42	Biota/PSA
10/01/2018	08:45	WSWA05	54.05087	-3.43880	8	4370	24.94	Biota/PSA
10/01/2018	08:50	WSWA05	54.05074	-3.43909	8	4371	25.00	Contaminants
10/01/2018	08:55	WSWA05 Water Quality Dip	54.05128	-3.43940	8	4372	25.32	N/A
10/01/2018	09:03	WSWA63	54.05195	-3.42256	9	4373	24.65	Biota/PSA
10/01/2018	09:12	WSWA64	54.06063	-3.40466	10	4374	23.02	Biota/PSA
10/01/2018	09:19	WSWA65	54.06747	-3.41240	11	4375	23.31	Biota/PSA
10/01/2018	09:27	WSWA66	54.06686	-3.43216	12	4376	24.65	Biota/PSA
10/01/2018	09:35	WSWA12	54.06166	-3.43908	13	4377	24.75	Biota/PSA
10/01/2018	09:43	WSWA09	54.05478	-3.45139	14	4378	24.55	Biota/PSA
10/01/2018	09:51	WSWA07	54.05120	-3.46416	15	4379	24.17	Biota/PSA
10/01/2018	09:58	WSWA08	54.05746	-3.47173	16	4380	24.55	Biota/PSA
10/01/2018	10:19	WSWA13	54.06543	-3.49024	17	4381	24.65	Biota/PSA
10/01/2018	10:27	WSWA10	54.06539	-3.47588	18	4382	24.36	Biota/PSA
10/01/2018	10:34	WSWA11	54.06400	-3.45598	19	4383	24.26	Biota/PSA
10/01/2018	10:42	WSWA14	54.06902	-3.44216	20	4384	23.98	Biota/PSA
10/01/2018	10:52	WSWA15	54.07542	-3.46489	21	4385	24.46	Biota/PSA
10/01/2018	11:03	WSWA22	54.08324	-3.46781	22	4386	24.46	Biota/PSA
10/01/2018	11:04	WSWA22	54.08321	-3.46752	22	4387	24.36	Contaminants
10/01/2018	11:07	WSWA22 Water Quality Dip	54.08331	-3.46826	22	4388	24.46	N/A
10/01/2018	11:17	WSWA21	54.08543	-3.48714	23	4389	24.63	Biota/PSA
10/01/2018	11:27	WSWA23	54.09095	-3.47689	24	4390	24.65	Biota/PSA
10/01/2018	11:44	WSWA82	54.09929	-3.46499	25	4391	24.24	Biota/PSA
10/01/2018	11:54	WSWA67	54.10863	-3.45346	26	4392	22.54	Biota/PSA
10/01/2018	12:02	WSWA69	54.11475	-3.44286	27	4393	21.58	No-Insufficient vol
10/01/2018	12:05	WSWA69	54.11475	-3.44282	27	4394	21.67	Biota/PSA
10/01/2018	12:17	WSWA16	54.11086	-3.40711	28	4395	19.56	Biota/PSA
10/01/2018	12:25	WSWA17	54.11518	-3.42112	29	4396	20.62	Biota/PSA
10/01/2018	12:33	WSWA18	54.12231	-3.41961	30	4397	20.14	Biota/PSA
10/01/2018	12:40	WSWA71	54.12230	-3.42826	31	4398	20.81	Biota/PSA
10/01/2018	12:48	WSWA19	54.13168	-3.42329	32	4399	20.43	Biota/PSA
10/01/2018	12:57	WSWA72	54.12709	-3.44226	33	4400	21.48	Biota/PSA
10/01/2018	13:08	WSWA68	54.12735	-3.46334	34	4401	22.92	Biota/PSA
10/01/2018	13:17	WSWA70	54.11470	-3.46302	35	4402	23.21	Biota/PSA
10/01/2018	13:25	WSWA83	54.10657	-3.47398	36	4403	24.75	Biota/PSA
10/01/2018	13:34	WSWA24	54.09545	-3.48848	37	4405	25.23	Biota/PSA
10/01/2018	13:45	WSWA81	54.09014	-3.51898	38	4405	26.09	Biota/PSA
10/01/2018	13:56	WSWA25	54.09923	-3.50080	39	4406	25.99	Biota/PSA
10/01/2018	14:05	WSWA27	54.10875	-3.48704	40	4407	25.80	Biota/PSA
10/01/2018	14:11	WSWA85	54.11597	-3.47595	41	4408	25.42	Biota/PSA
10/01/2018	14:19	WSWA85	54.11599	-3.47583	41	4409	25.37	Contaminants
10/01/2018	14:23	WSWA85 Water Qulity Dip	54.11602	-3.47592	41	4410	25.61	N/A
10/01/2018	14:30	WSWA86	54.12218	-3.48153	42	4411	25.80	Biota/PSA
10/01/2018	14:43	WSWA73	54.13945	-3.45159	43	4412	23.31	Biota/PSA
10/01/2018	14:55	WSWA89	54.13399	-3.48372	44	4413	25.99	Biota/PSA
10/01/2018	15:01	WSWA90	54.13361	-3.49714	45	4414	27.15	Biota/PSA
10/01/2018	15:10	WSWA32	54.13100	-3.51750	46	4415	28.30	Biota/PSA
10/01/2018	15:17	WSWA30	54.12212	-3.52778	47	4416	28.30	Biota/PSA
10/01/2018	15:25	WSWA28	54.11723	-3.50387	48	4417	28.01	Biota/PSA
10/01/2018	15:36	WSWA84	54.10787	-3.53645	49	4418	28.49	Biota/PSA
10/01/2018	15:43	WSWA26	54.10078	-3.54889	50	4419	29.05	Biota/PSA
11/01/2018	09:24	WSWA29	54.11752	-3.55216	51	4420	28.87	Biota/PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment use
11/01/2018	09:32	WSWA34	54.12903	-3.55264	52	4421	28.84	Biota/PSA
11/01/2018	09:44	WSWA37	54.14892	-3.53974	53	4422	28.97	Biota/PSA
11/01/2018	09:52	WSWA99	54.16183	-3.53501	54	4423	28.11	Biota/PSA
11/01/2018	09:59	WSWA40	54.16268	-3.55227	55	4424	29.55	Biota/PSA
11/01/2018	10:08	WSWA38	54.15014	-3.57722	56	4425	29.64	Biota/PSA
11/01/2018	10:14	WSWA35	54.14401	-3.56946	57	4426	29.26	Biota/PSA
11/01/2018	10:21	WSWA33	54.13089	-3.56583	58	4427	28.73	Biota/PSA
11/01/2018	10:27	WSWA87	54.12646	-3.57565	59	4428	28.87	Biota/PSA
11/01/2018	10:34	WSWA34	54.13104	-3.58660	60	4429	29.45	Biota/PSA
11/01/2018	10:42	WSWA41	54.12639	-3.60860	61	4430	30.31	Biota/PSA
11/01/2018	10:50	WSWA88	54.13467	-3.59430	62	4431	29.74	Biota/PSA
11/01/2018	10:56	WSWA92	54.14161	-3.59184	63	4432	29.64	Biota/PSA
11/01/2018	11:03	WSWA43	54.14870	-3.60029	64	4433	30.22	Biota/PSA
11/01/2018	11:11	WSWA39	54.15993	-3.58920	65	4434	29.64	Biota/PSA
11/01/2018	11:20	WSWA45	54.15519	-3.61462	66	4435	31.08	Biota/PSA
11/01/2018	11:26	WSWA44	54.14901	-3.62144	67	4436	31.18	Biota/PSA
11/01/2018	11:32	WSWA47	54.14069	-3.62148	68	4437	30.79	Benthic/PSA
11/01/2018	11:38	WSWA47	54.14102	-3.62141	68	4438	30.89	Contaminants
11/01/2018	11:40	WSWA47 Water Quality Dip	54.14055	-3.62126	68	4439	30.89	N/A
11/01/2018	11:48	WSWA48	54.13151	-3.63446	69	4440	31.47	Biota/PSA
11/01/2018	12:00	WSWA59	54.11469	-3.66702	70	4441	34.15	Biota/PSA
11/01/2018	12:08	WSWA60	54.12607	-3.66257	71	4442	33.58	Biota/PSA
11/01/2018	12:14	WSWA55	54.13518	-3.66448	72	4443	33.77	Biota/PSA
11/01/2018	12:21	WSWA42	54.13516	-3.64646	73	4444	32.33	Biota/PSA
11/01/2018	12:28	WSWA54	54.14211	-3.65694	74	4445	32.81	Biota/PSA
11/01/2018	12:37	WSWA46	54.15369	-3.64313	75	4446	32.14	Biota/PSA
11/01/2018	12:44	WSWA52	54.16291	-3.65352	76	4447	32.71	Biota/PSA
11/01/2018	12:53	WSWA49	54.16180	-3.68237	77	4448	32.81	Biota/PSA
11/01/2018	12:59	WSWA53	54.16437	-3.69714	78	4449	32.14	Biota/PSA
11/01/2018	13:08	WSWA50	54.15357	-3.68549	79	4450	33.00	Biota/PSA
11/01/2018	13:14	WSWA51	54.15040	-3.69725	80	4451	32.62	Biota/PSA
11/01/2018	13:20	WSWA57	54.14304	-3.69449	81	4452	33.58	Biota/PSA
11/01/2018	13:27	WSWA58	54.13816	-3.67760	82	4453	34.15	Biota/PSA
11/01/2018	13:34	WSWA56	54.12678	-3.68198	83	No Fix	34.73	Biota/PSA
11/01/2018	14:11	WSWA100	54.16481	-3.52055	84	4454	25.13	Biota/PSA
11/01/2018	14:18	WSWA79	54.16301	-3.50260	85	4455	23.98	Biota/PSA
11/01/2018	14:24	WSWA80	54.16325	-3.48796	86	4456	23.31	Biota/PSA
11/01/2018	14:33	WSWA78	54.16081	-3.45423	87	4457	21.10	Biota/PSA
11/01/2018	14:38	WSWA20	54.16088	-3.44756	88	4458	20.43	Biota/PSA
11/01/2018	14:47	WSWA76	54.14908	-3.44717	89	4459	21.29	Biota/PSA
11/01/2018	14:56	WSWA77	54.15329	-3.47399	90	4460	23.50	Biota/PSA
11/01/2018	15:03	WSWA94	54.15271	-3.49123	91	4461	24.44	Biota/PSA
11/01/2018	15:08	WSWA97	54.15590	-3.50004	92	4462	24.94	Biota/PSA
11/01/2018	15:13	WSWA97	54.15602	-3.50003	92	4463	24.94	Contaminants
11/01/2018	15:15	WSWA97 Water Quality Dip	54.15560	-3.49955	92	4464	25.13	N/A
11/01/2018	15:22	WSWA98	54.15872	-3.51313	93	4465	25.80	Biota/PSA
11/01/2018	15:28	WSWA96	54.15686	-3.52588	94	4466	26.76	Biota/PSA
11/01/2018	15:35	WSWA36	54.14956	-3.51746	95	4467	26.86	Biota/PSA
11/01/2018	15:40	WSWA95	54.14844	-3.50135	96	4468	26.09	Biota/PSA
11/01/2018	15:46	WSWA93	54.14106	-3.50178	97	4469	26.67	Biota/PSA
11/01/2018	15:52	WSWA91	54.13821	-3.48854	98	4470	25.90	Biota/PSA
11/01/2018	15:58	WSWA74	54.14373	-3.48390	99	4471	25.13	Biota/PSA
11/01/2018	16:04	WSWA75	54.14710	-3.46266	100	4472	23.69	Biota/PSA

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