Natural England Commissioned Report NECR315

Inner Dowsing, Race Bank and North Ridge SAC and Haisborough, Hammond and Winterton SAC Survey Report 2016

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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 Inner Dowsing, Race Bank and North Ridge SAC and Haisborough, Hammond and Winterton SAC.

This report should be cited as:

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Further information
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1 Introduction

The Joint Nature Conservation Committee (JNCC), Natural England (NE), the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and the Environment Agency (EA) conducted a survey on board the RV *Cefas Endeavour* (cruise code CEND1116) and the *Humber Guardian/Solent Guardian* (cruise codes 2ENC30616/2GDK70616) to gather evidence to monitor and inform assessment of condition of the designated features in three Special Areas of Conversation (SAC) (all designated as cSAC/SCIs at the time of survey): North Norfolk Sandbanks and Saturn Reef (NNSSR); Inner Dowsing, Race Bank and North Ridge (IDRBNR); and Haisborough, Hammond and Winterton (HHW).

The RV *Cefas Endeavour* was restricted to operating within the greater than 15 m depth contour (with deployed multi beam echo sounder system) and was therefore tasked with sampling NNSSR, with the shallower-drafted EA vessels focusing on the shallower IDRBNR and HHW sites.

1.1 Survey project team

This report details the operations carried out on board the coastal survey vessels *Humber Guardian* and *Solent Guardian* between the 31st May and 27th June 2016 (cruise codes 2ENC30616/2GDK70616). The survey team for the duration of the fieldwork consisted of marine scientists and surveyors from the EA, JNCC, Cefas and NE.

Figure 1. Briggs Marine research vessels *Humber Guardian* and *Solent Guardian*

1.2 Site descriptions

IDRBNR SAC is located off the south Lincolnshire coast to the east of Skegness and extends eastwards and north from Burnham Flats on the North Norfolk coast (Figure 2). The site occupies The Wash Approaches and covers an area of approximately 845 km^2. Water depths are generally shallow and less than 30 metres. It was selected and submitted to the Europe Commission as a Special Area of Conservation (SAC) because it contains two Annex I habitats; 'Sandbanks slightly covered by sea water all the time' and 'Reef'. These features lie almost entirely on the glacial till (sediment deposited by glacial activity) of the Bolders Bank Formation, which is responsible for much of the seabed topography.

HHW SAC lies off the north-east coast of Norfolk and covers an area of approximately 1,467 km^2 (Figure 2). It was selected and submitted to Europe as an SAC because it contains two Annex I habitats; 'Sandbanks slightly covered by sea water all the time' and 'Reef'. The main sandbank system within the site consists of: Haisborough Sand; Haisborough Tail; Hammond Knoll; Winterton Ridge; and Hearty Knoll. Hewett Ridge and Smith's Knoll form an older sequence of sandbank ridges located along the outer site boundary. The Newarp Banks and North and Middle Cross Sands features lie on the south west corner of the site. *Sabellaria spinulosa* reefs are located at Haisborough Tail, Haisborough Gat and between Winterton Ridge and Hewett Ridge.

Both sites cross the 12 nautical mile boundary and therefore lie partly in UK territorial and partly in offshore waters. The RV *Cefas Endeavour* was tasked mainly with surveying the North Norfolk Sandbanks and Saturn Reef SAC, which is located in the southern North Sea, extending from approximately 40 km off the north-east coast of Norfolk.

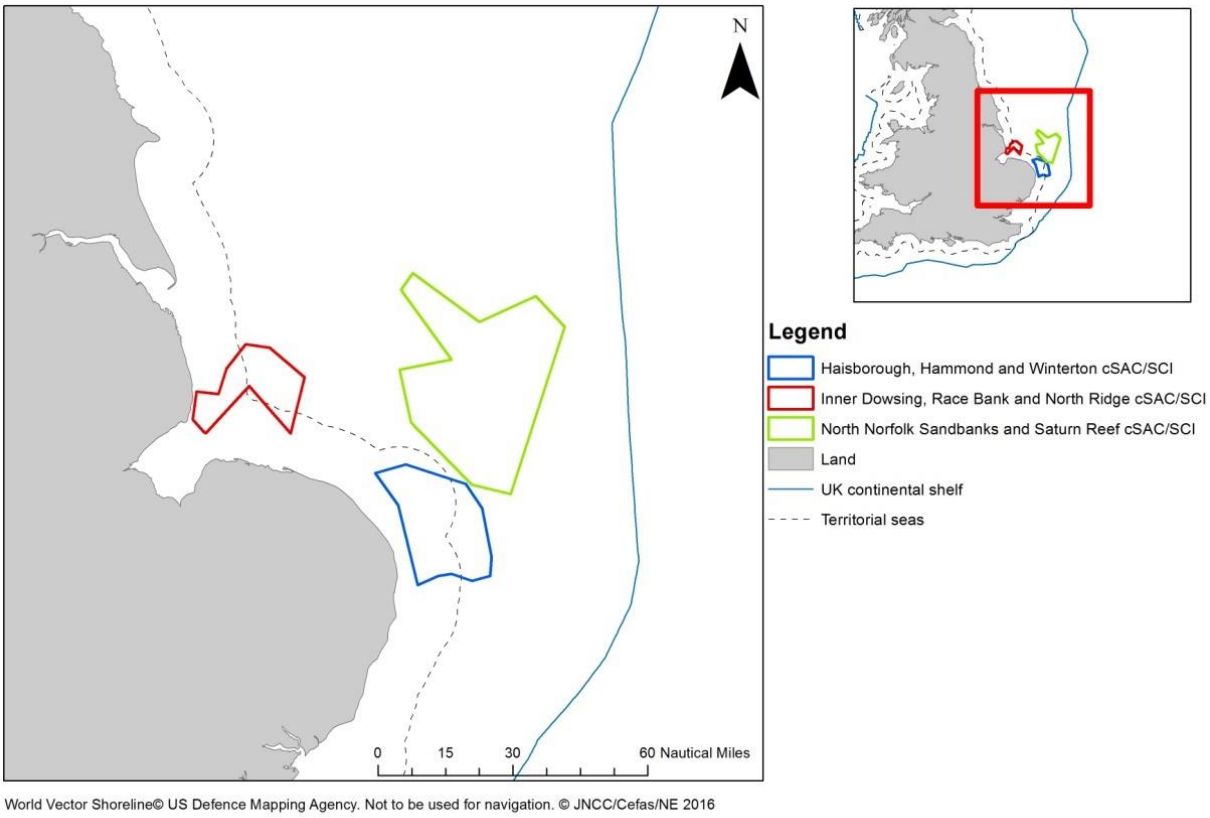


Figure 2. Location of the North Norfolk sandbank candidate Special Areas of Conservation (cSACs).

2 Survey design and methods

2.1 Survey planning

The *Humber Guardian* and *Solent Guardian* component of this survey consisted of sampling four 'Case Study Areas' (CSAs) (to acquire acoustic Multibeam echosounder (MBES) data, sediment and epifauna samples) and ten 'Wider Characterising Transects' (WCTs) (to acquire MBES data and sediment samples) across IDRBNR and HHW SACs (Figure 3). Two of the CSAs selected to characterise the 'beyond slope' regions (Inner Dowsing and Smith's Knoll) were to be jointly surveyed by the *Humber Guardian* and *Solent Guardian* (MBES, sediment and epifauna sampling), and the *RV Cefas Endeavour* (sediment and epifauna sampling). The RV *Cefas Endeavour* also acquired sidescan sonar and video data from areas of *Sabellaria spinulosa* reef within HHW and IDRBNR. All operations conducted aboard the RV Cefas Endeavour are detailed in McIlwaine et al., 2017.

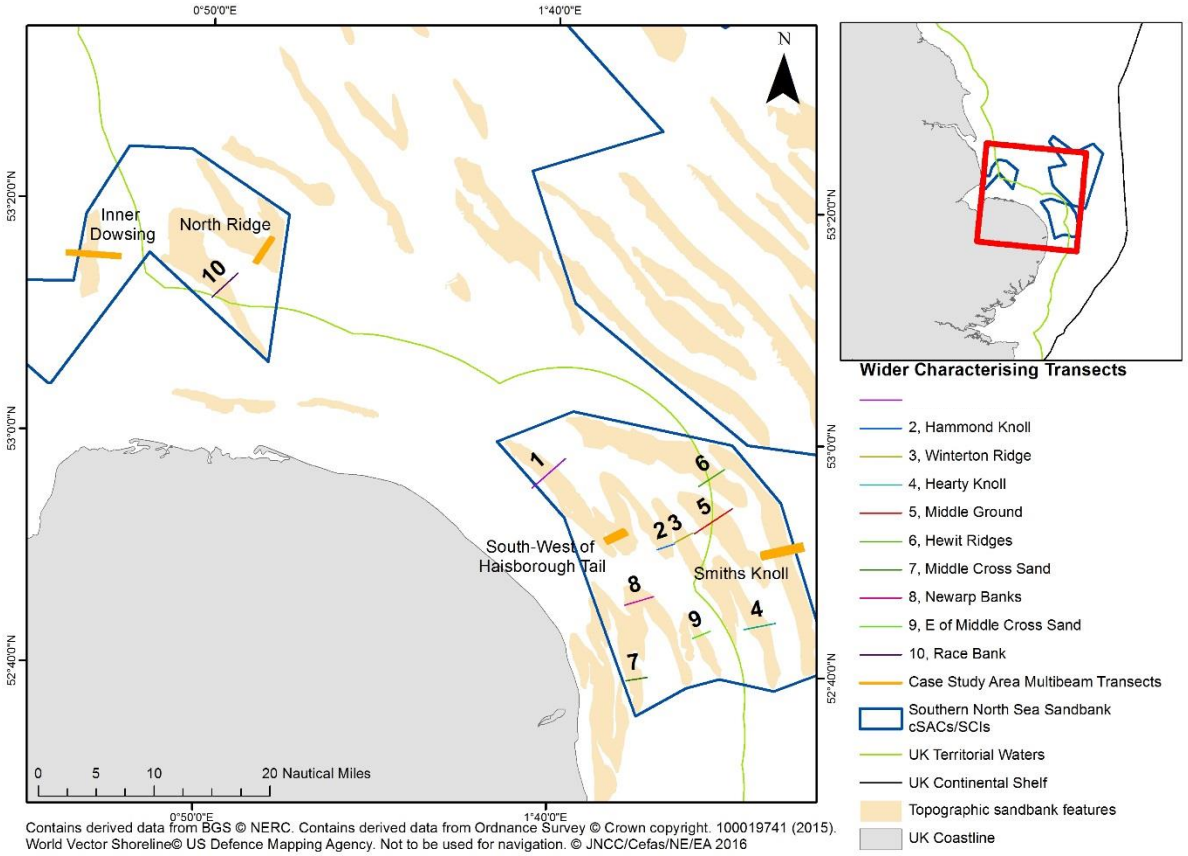


Figure 3. Wider Characterising Transects and Case Study Areas sampled aboard *Humber Guardian* and *Solent Guardian* within the Inner Dowsing, Race Bank and North Ridge and the Haisborough, Hammond and Winterton SACs.

2.1.1 Survey objectives

The survey objectives are listed below in order of priority:

Objective 1. Acquire acoustic data to identify locations of topographical features of a series of sandbanks across NNSSR, IDRBNR & HHW SAC.

Objective 1 has three sub-objectives:

i. **Collect acoustic corridors covering each of the CSAs;**
ii. **Collect acoustic corridors across each of the WCTs; and**
iii. **Collect acoustic corridors covering 'beyond sandbank' areas at two of the CSAs.**

The data acquired will:

a) enable positioning of sandbank sampling stations and epifaunal trawls during the survey based on bathymetry and backscatter data;
b) provide data for a monitoring time series, to monitor changes in the location of sandbank topographic features over time; and
c) enable a *post-hoc* comparison with acoustic data acquired in previous surveys (e.g. CEND 22/13 & CEND 05/11) to assist with determining changes in position of sandbank topographic features.

Objective 2. Collect data to investigate the structure, function and distribution of biological communities in and between sandbanks across NNSSR, IDRBNR & HHW.

Objective 2 has three sub-objectives:

i. **Intensive sampling at each CSA;**
ii. **Lower intensity sampling along the WCTs; and**
iii. **Targeted investigation of the transition between delineated sandbank and trough areas.**

The data acquired will:

a) contribute to a monitoring time series;
b) improve understanding of the structural and functional aspects of sandbank ecology (e.g. differences in communities between different topographical zones and orientations); and
c) provide information for condition assessment of the Annex I Sandbanks feature.

2.1.2 Acoustic data

2.1.2.1 Multibeam echosounder

Multibeam echosounder (MBES) data were acquired using a Kongsberg EM3002 dual head transducer and Kongsberg SIS software (version 4.1.3). Survey lines from the CSAs were run at varied intervals between 150-250 m to allow the placement of sampling stations over the sandbank strata in each location. The pulse length was set to medium continuous wave to optimise the quality of the backscatter data and both the multi beam and backscatter quality were monitored at all times during acquisition. A sound velocity profile was collected prior to acquiring the MBES data from each CSA and WCT. These data were uploaded into the MBES acquisition software to ensure accurate sound velocity offset calculations. MBES data were processed on board for bathymetry and backscatter using Caris HIPS and SIPS software and FMGT. Bathymetry data were tidally corrected using tides derived from 2 POS MV GPS receivers. POS PAC software was used to process the tides and then the data was reduced to chart datum using a VORF model in Caris HIPS and SIPS.

All MBES data was recorded on the SIS data acquisition system. The data was backed up regularly to hard drives at the end of each survey day. At the end of the survey, an additional data back-up was carried out on a second external hard drive. The survey was split between each site and the calibrations were separated from the main dataset. The MBES data acquisition was conducted in between ground truth surveying, so there are time gaps between the days of survey. Data processing was undertaken using Caris HIPS and SIPS and profiles were created over the sandbanks during the survey. The rest of the data were processed on return to the Cefas laboratory in Lowestoft.

2.1.3 Sediment sampling

A Mini-Hamon Grab (Figure 4), with a surface area of 0.1 m^2, was deployed from the stern gantry of the vessel to collect sediment samples from the seabed, as described by Ware and Kenny (2011). Sampling positions were recorded (fixed) using Hydropro data acquisition software when the gear contacted the seabed, with the mid-point of the vessel's stern gantry being used as the default offset for position fixing (see Annex 6.1 for further details). Once recovered, the sample was emptied into a suitable container, photographed, and the sample volume measured. A minimum of three attempts to obtain a valid grab sample were made at each station before the station was abandoned. A minimum sample volume of 5 litres was required to qualify as a valid sample. Samples of <5 litres were ordinarily discarded, unless the lead scientist deemed it representative of the habitat present. For valid samples, a small scoop was used to remove a sub-sample (approx. 0.5 L) of sediment for particle size analysis (PSA). The remaining sample was washed over a 1 mm sieve to retain the faunal fraction (Figure 4), photographed and preserved with a buffered 8% formaldehyde solution for transfer ashore to a specialist laboratory for analysis. If the volume of sediment collected was insufficient for faunal analysis in each grab attempt made at a particular station, a photograph was taken and, if possible, material removed for PSA.

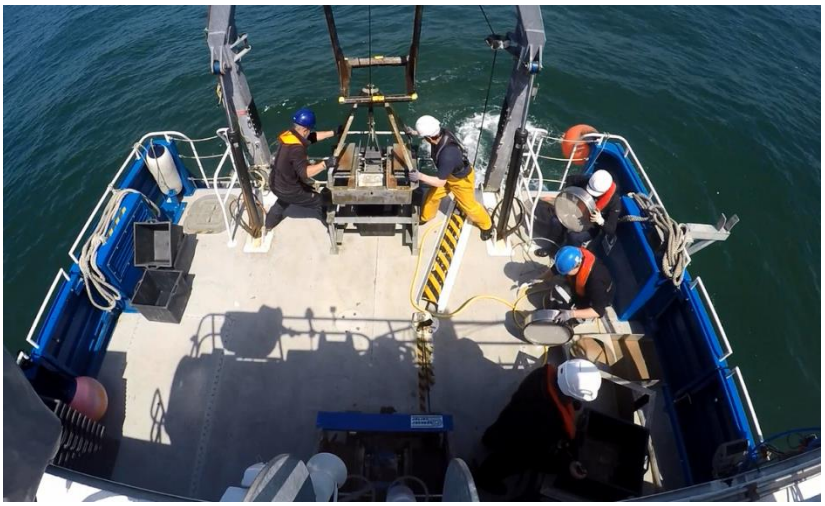


Figure 4. Mini-Hamon Grab and equipment for sieving benthic fauna samples.

2.1.4 Seabed imagery

Drop video camera equipment was deployed in accordance with the MESH 'Recommended operating guidelines (ROG) for underwater video and photographic imaging techniques' (Coggan *et al*., 2007).

The STR SeaSpyder camera system was deployed from the stern of the survey vessel, as shown in Figure 5. Real time navigation data acquisition and manual position fixing when the gear contacted the seabed was captured via Trimble® HYDRO*pro*™ software and logged by the survey officer. The mid-point of the vessel's stern gantry was used as the default offset for position fixing (see Annex 6.1 for further details). Video files and digital still images were transmitted via the sea cable to be captured and saved directly to a computer in the survey cabin. The video footage was annotated with time and position using a GPS (SIMRAD MX512 DGPS) referenced video overlay (uncorrected position data). Images of the seabed were captured approximately every 10 to 15 metres over a distance of > 150 metres. The drop frame depth was controlled via a winch operator receiving instructions from the survey cabin.

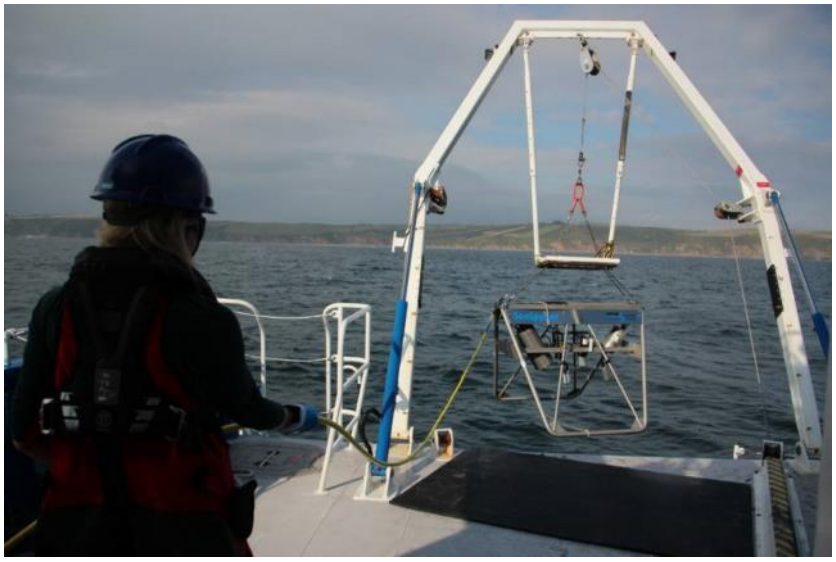


Figure 5. STR SeaSpyder drop camera system being deployed from the stern of the coastal survey vessel.

During each drop camera deployment, a member of the survey team continuously monitored the real-time video feed, recording general station notes, habitat information and fauna observations.

2.1.5 Scientific (Jennings) beam trawl

The beam trawl (on loan from Cefas) used during this survey follows the design detailed in Jennings *et al.* (1999) for work in the North Sea and is used as standard by Cefas for sampling epibenthic fauna (Figure 6). It has the advantage of being robust, easy to deploy and produces manageable sample volumes. The design includes a heavy-duty steel beam, a chain mat to prevent the collection of large boulders, and chafers to limit net damage. In muddy sediments, the chain mat

may be removed, as it tends to cause the net to fill with sediment. A 4 mm knotless mesh liner is used in the cod-end to retain smaller organisms.

Figure 6. Recovery of the scientific (Jennings) 2 m beam trawl and sample processing on the back deck of the *Solent Guardian*.

All tows were carried out in a straight line, against the tide, over a distance of approximately 150 metres (Figure 7). Tow duration was measured from the time that the warp had ceased paying out ('LOCK') to the time that hauling began ('HAUL'). The amount of warp that was paid out varied depending on the total water depth.

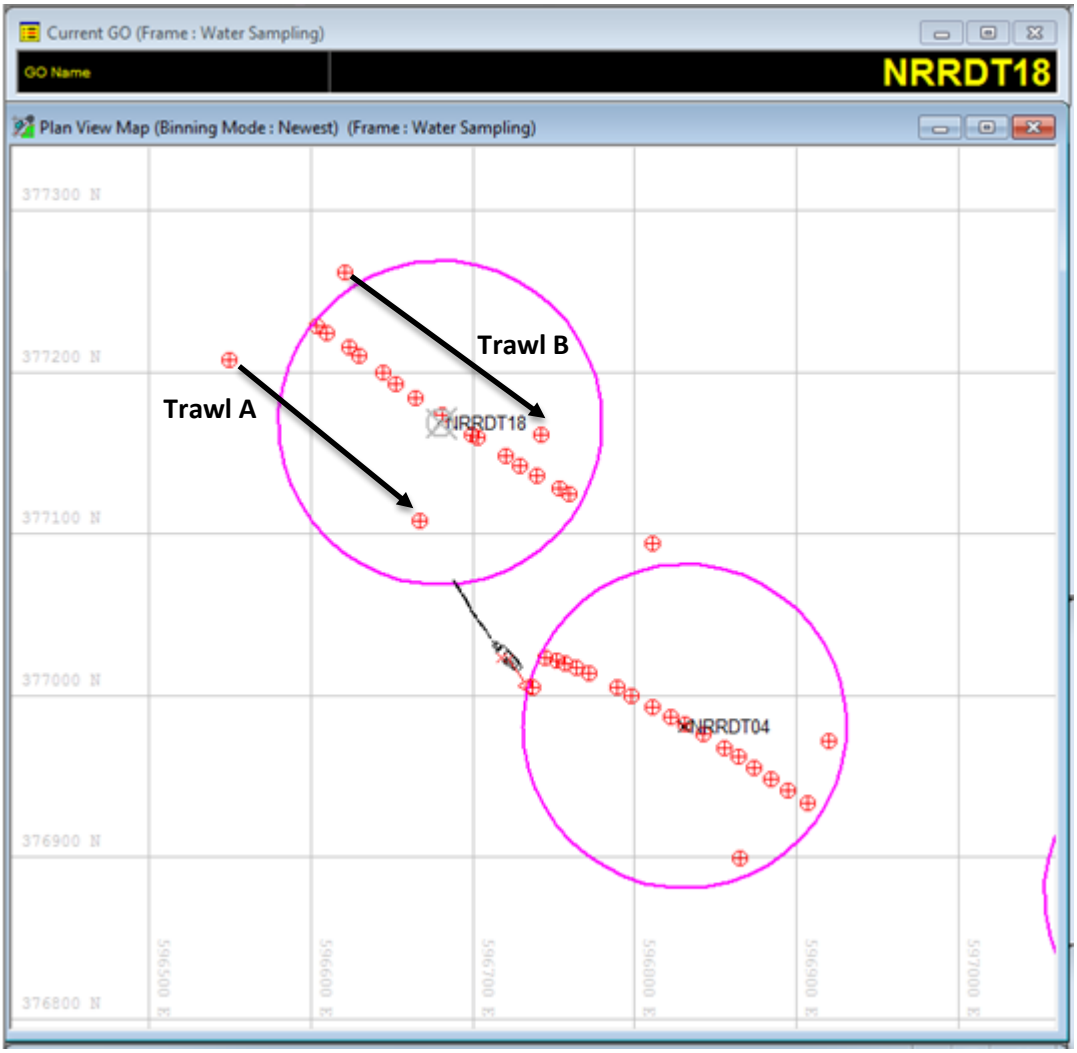


Figure 7. Hydropro vessel editor screen displaying manual position fixes recorded during the 2016 collaborative North Norfolk Sandbanks SAC monitoring survey. A drop camera was towed across each sampling area to mitigate for the presence of *Sabellaria* prior to the deployment of the 2 m scientific (Jennings) beam trawl (black arrows). Diameter of purple target circle = 200 metres.

The catch from each successful tow was photographed and rinsed over a 5 mm screening mesh. Taxa were identified to the highest taxonomic level possible (species) and biomass (wet weight in g) was recorded for every enumerable individual. Colonial organisms were weighed by identified taxa. Sub-samples of fish and invertebrates were retained from each sandbank feature for subsequent stomach contents and stable isotope analyses.

2.1.6 Sabellaria spinulosa Damage Mitigation Protocol

A *Sabellaria* damage mitigation protocol was drafted by marine specialists at the JNCC and Natural England to minimise damage to any reef structures present through the deployment of the sampling

gears (Table 1). During grab sampling, if *Sabellaria* tubes containing live animals indicative of reef presence were discovered in the sample, no further deployments were conducted at that station. Prior to deployment of the 2 m scientific (Jennings) beam trawl, each target area was surveyed with an underwater video camera to check for the presence of *Sabellaria*. If none was observed, the first 150 m trawl was carried out. The catch was sorted carefully to check for the presence of *Sabellaria* tubes. If no *Sabellaria* was found or the total volume present was not indicative of significant tracts of reef, the second replicate trawl was deployed.

Table 1. Protocol for the mitigation of trawling *Sabellaria* reef.

Equipment	Assessment	EA survey vessels				RV Cefas Endeavour			
		Available	Sequence			Available	Sequence		
Drop camera	***Seabed imagery, visual*** *(presence and reef elevation)*	**Yes**	**Successful deployment and present**	**Successful deployment and absent**	**Unsuccessful deployment**	**Yes**	**Successful deployment and present**	**Successful deployment and absent**	**Unsuccessful deployment**
			Abandon station	Complete trawl	Go to next step		Abandon station	Complete trawl	Go to next step
Side scan sonar	***Remote sensing*** *(presence and extent of acoustic signature)*	**No**	N/A			**Yes**	**Present**		**Absent**
							Abandon station		Complete trawl
Grab	***Visual*** *(presence, tube height, occupancy*	**Yes**	**Present**		**Absent**	**Yes**	**Present**		**Absent**
			Abandon station		Complete trawl		Abandon station		Complete trawl
Beam trawl	***Visual*** *(presence, tube height, occupancy*	**Yes**	**Present in first trawl**		**Absent in first trawl**	**Yes**	**Present in first trawl**		**Absent in first trawl**
			Abandon second trawl		Complete second trawl		Abandon second trawl		Complete second trawl

3 Survey narrative

All times are reported in GMT.

EA, JNCC, Natural England and Cefas scientists mobilised to the survey vessel *Humber Guardian* berthed in Grimsby on Tuesday 31st May, 2016. MBES equipment was loaded, assembled and initial checks performed. Unsuitable weather conditions delayed survey efforts for the next five days.

On the morning of Monday 6th June, 2016, following a safety induction for the scientific staff aboard, *Humber Guardian* departed Grimsby Fish Docks and transited to the Inner Dowsing (INND) CSA. The team successfully acquired 4.5 lines (41 km) of MBES data in four hours. Post-acquisition processing of the data informed placement of groundtruthing locations, as detailed in the survey objectives. During the following day (Tuesday 7th June, 2016), the team returned to the INND CSA and recovered forty viable samples for faunal, particle size and stable isotope analyses from forty-two target stations. The sediment samples for stable isotope analysis recovered from one crest and one flank station were immediately frozen to preserve the integrity of the samples. The other two stations were discarded as an insufficient volume of sediment was collected, despite multiple grab deployments. For increased survey efficiency, the team aboard the *RV Cefas Endeavour* visited the remaining eleven INND stations to complete the sediment sampling while conducting the 'Beyond Slope' objectives at the CSA (McIlwaine *et al.,* 2016). Sediment samples were successfully acquired between 22:00 hrs (7th June 2016) and 18:44 hrs on the 8th June, 2016.

With sampling at the INND CSA complete, *Humber Guardian* transited to North Ridge (NRRD) CSA on Wednesday 8th June, 2016 departing Grimsby at 07:15 hrs, arriving on station at 11:15 hrs. Five lines (24.5 km) of MBES data were captured during the next three hours. The plan was then to relocate to one of the nearby WCTs, however the MBES deployment arm sheared at a weld point during the transit, halting survey operations for that day. The survey team returned to port for the mount to be fixed. While the MBES arm was being repaired and strengthened, the team opted to use *Humber Guardian*'s Kongsburg echo sounder unit for SBES data acquisition to enable survey operations to continue. Using the NRRD CSA MBES data, fifty stations were identified for follow-up groundtruthing with the Mini-Hamon Grab (MHM). Forty stations were attempted on Thursday 9th June 2016 and from these, thirty-nine viable samples were recovered plus material for stable isotope analysis from the sandbank crest, flank and trough. The following day (Friday 10th June, 2016) the remaining ten NRRD grab stations were completed successfully before the team relocated to the Race Bank (RCBK) WCT. With the MBES deployment arm still in for repair, SBES data were acquired (5.76 km) as per the survey objectives and used to inform the location of five ground truth stations within the different

sandbank sub-features: one crest, two flank (east and west) and two trough (east and west). Viable samples for faunal and particle size analyses were collected from four of the five stations (one station was abandoned due to the inability to acquire a viable sample) before the vessel returned to port, coming alongside at 18:30 hrs.

Following the completion of the survey objectives within the Inner Dowsing, Race Bank & North Ridge SAC, the survey vessel transited from Grimsby to Lowestoft on Saturday 11th June, 2016. MBES and grab survey activity would now be focused within the Haisborough, Hammond & Winterton SAC. With the MBES deployment arm repaired and equipment reinstalled, the vessel headed out from Hamilton Dock in Lowestoft at 13:05 hrs on Sunday 12th June, 2016 to run calibrations and test the system at sea. By 15:05 hrs, weather conditions had deteriorated forcing the team to return to port. The following morning (Monday 13th June, 2016), with reduced swell and a more favourable weather forecast, *Humber Guardian* transited out to the Smith's Knoll (SMKN) CSA. Throughout the day, five lines (34.7 km) of MBES data were acquired and fifteen sandbank ground-truth stations successfully sampled. A survey personnel change-over occurred on Tuesday 14th June, 2016. A safety induction covering the vessel and survey operations was conducted for the newly joined scientists prior to departure. To maximise survey efficiency, the team opted to head north up the coast to the more inshore South-West of Haisborough Tail (SWHT) CSA. The five required lines (18.1 km) of MBES data were acquired and twenty-five out of the fifty-three target stations were successfully sampled with the MHM before *Humber Guardian* returned to Lowestoft. On Wednesday 15th June, 2016 the vessel returned to SWHT CSA and by 12:30 hrs the team had successfully completed grabbing operations at the remaining twenty-eight stations. Time then allowed for *Humber Guardian* to transit to the Haisborough Sand WCT to commence running MBES lines. A single line (7.4 km) was completed before the MBES deployment arm sheared during recovery. The decision was made to collect all remaining bathymetry data for the duration of the survey using the Kongsberg single beam echosounder (SBES). Sufficient MBES data had been acquired at the WCT prior to the failure of the deployment arm to inform the follow-up grabbing at the five sandbank sub-feature stations. The following day (Thursday 16th June, 2016) *Humber Guardian* returned to the SMKN CSA arriving on station at 10:50 hrs. Through the morning, twenty-nine grab stations were successfully sampled. At the same time, the team aboard the *RV Cefas Endeavour* collected the remaining SMKN CSA samples from the flank, trough and beyond sandbank stations to the east of the bank. Sediment samples were successfully obtained from all SMKN target stations by 12:30 hrs. During the afternoon aboard *Humber Guardian*, survey objectives (one line of bathymetric data and five MHM samples) were completed at each of the East of Middle Cross Sand and Middle Cross Sand WCTs. On Friday 17th June 2016, the team working out of Lowestoft completed a further five WCTs: Newarp Bank, Hammond

Knoll, Winterton Ridge, Hewit Ridges and Middle Ground. North-westerly wind speeds of between 16 and 21 mph combined with a swell height of 1.6 m recorded at Chapel Point halted survey operations on Saturday 18th June, 2016. By the morning, the wind strength had decreased and altered to a more south-westerly direction. *Humber Guardian* transited out to the Hearty Knoll WCT located in the south-eastern corner of the SAC. The team completed the SBES data acquisition and collected five viable grab samples. By 12:00 hrs, conditions at sea were once again deteriorating and the Skipper made the decision to return to port. In total, 166 km of bathymetry data and 188 viable grab samples were obtained within the four CSA areas between the 6th June, 2016 and 19th June, 2016 on *Humber Guardian*. Ten WCTs were also surveyed during this time.

Coastal monitoring commitments necessitated a vessel and staff changeover on Monday 20th June, 2016, in preparation for the drop video and trawling survey operations. EA and Natural England staff mobilised to *Solent Guardian* in Lowestoft and spent the day loading, assembling and testing the survey equipment. Following a vessel safety induction and activity brief for all scientists aboard, a successful wet test of the camera system was conducted in Hamilton Dock. On the morning of Tuesday 21st June, 2016, Solent Guardian left the berth at 07:00 hrs and headed out to the Smith's Knoll CSA. Several Harbour porpoises (*Phocoena phocoena*) were sighted on route at 08:34 hrs. Between 09:50 hrs and 14:20 hrs, the team undertook camera drops at three stations per sub-feature (beyond slope, trough and flank) on both sides of the sandbank. Grab sample locations were used to pinpoint each area of interest. The video deployment methodology used conformed to the collaborative *Sabellaria* mitigation protocol. The team observed no evidence of *Sabellaria* presence across the SMKN CSA, though there was poor visibility at some stations.

The following day (Wednesday 22nd June, 2016), the team headed north to the South West of Haisborough Tail CSA arriving on station at 09:45 hrs. Sea conditions were optimal, with light 9 mph southerly winds and a swell height of 0.48 m recorded by the Lowestoft Waverider buoy. Camera drops to mitigate for the presence of *Sabellaria* were conducted along the sandbank troughs and flanks. 'Beyond slope' stations were not required at the SWHT CSA. Large sand megaripples and a fast tide proved challenging during the deployments. In addition, a large wooden object suspected to be wreck debris was videoed in the western trough leading the team to reject the station for follow-up trawling. Despite the difficulties, a combination of sand and coarse habitats was observed with no evidence of *Sabellaria*. At 12:45 hrs, the trawl gear was rigged and trawling operations commenced along the SWHT CSA crest at 14:00 hrs. Tows at two stations (2 x 150 m replicate tows per station) were completed with small catches recovered and processed. Fish species observed were Sandeels (*Ammodytes* sp.), Lesser weevers (*Echiicthys vipera*) and Plaice (*Pleuronectes platessa*), with a range

of invertebrates that included Hermit crabs, Brown shrimp and Bryozoans. When the gear was hauled onboard after the fifth tow, the cod end was found to contain a large quantity of coarse sand. The net proved difficult to clear without significant sample loss occurring and so the catch was discarded. Trawling operations at the SWHT CSA ceased for the day at 16:05 hrs. The team returned to the SWHT CSA to continue trawling on Thursday 23rd June, 2016. Throughout the morning, the crest and western flank stations were sampled. Two tows were discarded, as the gear had rotated upside-down; the team suspected that this happened due to the sand mega-ripples and fast tide. A third tow was rejected, as once again the net was completely full of coarse sand. At 14:00 hrs, the first trough station (SWHTT06) was attempted on the western side of the sandbank. Shortly before the end of the tow, the vessel speed over ground decreased sharply from 2.0 knots to 0.6 knots, indicating that the gear had possibly snagged. Upon recovery, it was discovered that the net had completely detached from the beam. The crew rigged one of the spare nets and sampling operations recommenced 30 minutes later at a new station; SWHTT06 was abandoned. Time allowed for a further three tows before the vessel returned to Lowestoft, arriving alongside at 18:50 hrs. Beam trawling at the SWHT CSA recommenced the following day (Friday 24th June) at the final western trough station. The catch consisted of a smaller quantity of gravel and sand than had been recovered on previous days, enabling the team to complete the processing without sample loss occurring. No fauna was found except for a single Greater sandeel (*Hyperoplus lanceolatus*). The vessel was then relocated to the more exposed eastern side of the sandbank. Throughout the day, epibenthic faunal samples were recovered from all the flank and trough stations. The trawling at SWHTT19 proved particularly challenging, with two attempts discarded as the net completely filled with sediment. Trawling operations at the SWHT CSA were successfully completed by 16:00 hrs and the team headed up in to The Wash to berth *Solent Guardian* in Wells-next-the-Sea dock basin. The vessel would be based out of Wells-next-the-Sea for the remainder of the survey to reduce transit time to the North Ridge (NRRD) CSA.

At 10:40 hrs on the morning of Saturday the 25th June 2016, *Solent Guardian* departed Wells-next-the-Sea dock basin and transited north to the NRRD CSA. The vessel arrived on station at 12:30 hrs and the *Sabellaria* mitigation camera tows commenced immediately. The sea conditions were optimal allowing the vessel to drift over the ground at a speed below 1 knot. All flank and trough stations were surveyed with no evidence of *Sabellaria* observed. The habitat across the CSA was found to be predominantly rippled sand with very little epifauna, except for sporadic Hermit crab sightings. However, greater faunal diversity was observed at the more sheltered western trough stations with abundant *Flustra foliacea*, *Alcyonidium* sp., starfish and crabs recorded. Once the camera transects were complete, the trawl gear was rigged and trawling operations commenced at 16:15 hrs. During

late afternoon, time allowed the team to sample two of the eastern trough stations before returning to Wells-next-the-Sea for 21:00 hrs. Access to the dock basin was restricted to 1.5 hrs either side of high water. On Sunday the 26th June, 2016 the team returned to the North Ridge CSA to continue beam trawling operations. All crest, western flank and western trough stations (18 samples) were completed by 19:30 hrs. As observed on the underwater video footage, the samples collected from the inshore trough were more biodiverse and subsequently took much longer to process. Additionally, small isolated clusters of *Sabellaria* tubes attached to pebbles and shells were also found to be present (maximum tube lengths not exceeding 5 cm), though not thought to be indicative of significant tracts of reef. The vessel arrived in Wells-next-the-Sea at 21:30 hrs and sample processing was completed by 23:15 hrs.

The following morning (Monday 27th June, 2016), the vessel departed Wells-next-the-Sea at 11:50 hrs for the final day of Sandbanks survey activity. The plan was to complete the trawling at the NRRD CSA and, if time allowed, transit to the Inner Dowsing (INND) CSA to trawl at the crest stations. The team transited approximately 30 mins north of Wells-next-the-Sea, however, it was agreed that the sea conditions were not suitable for beam trawling survey operations and the vessel returned to port. The remainder of the day was spent dismantling survey equipment and cleaning the vessel. All staff demobilised from *Solent Guardian* by 17:30 hrs. A total of forty-two drop camera deployments were undertaken to mitigate for the presence of *Sabellaria* and inform the trawl locations. Forty-six viable beam trawl samples were collected, with the most biodiverse sample (NRRDT04) containing 38 different species.

Between the 31st May and 27th June, 2016, the collaborative Inner Dowsing, Race Bank & North Ridge and Haisborough, Hammond & Winterton SAC monitoring survey on *Humber Guardian* and *Solent Guardian* took 21 'on-task' days to complete. A detailed progress report for each survey day is available in Annex 6.5.

4 Data acquisition

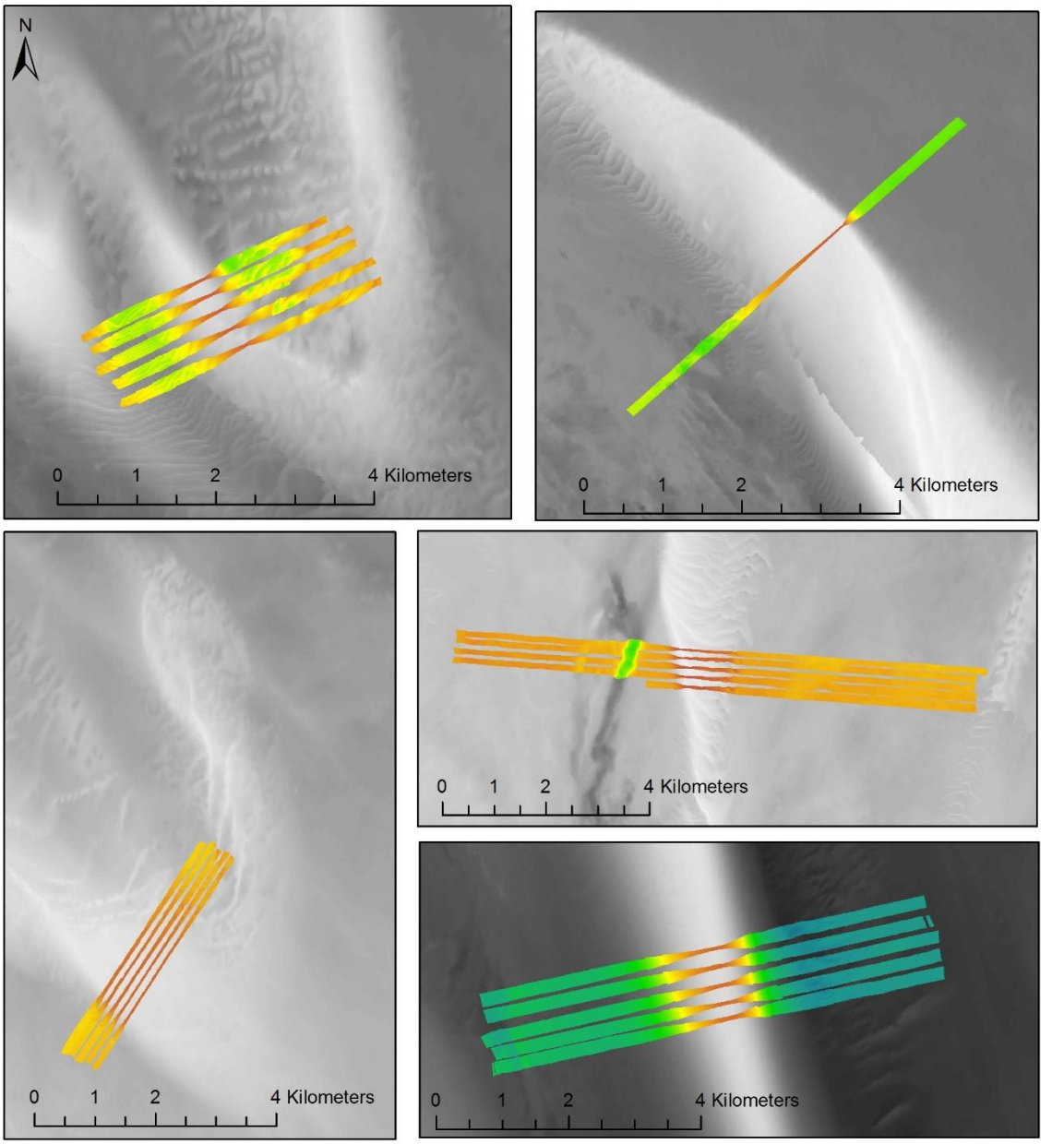
4.1 Acoustic data

A total of 126.2 km of MBES data and 40.06 km of SBES data were acquired (Table 2 and Figure 7) in accordance with objective one. The data was preliminarily processed on board and used to inform the locations of the follow-up grab sampling and trawling.

Table 2. Bathymetry data acquired during the 2016 collaborative sandbanks SAC survey. Multibeam echosounder (MBES), Single beam echosounder (SBES).

Sampling Area Type	Sampling Area	Km	Lines
Case Study Area (CSA)	Inner Dowsing (INND)	41	4.5 (MBES)
	North Ridge (NRRD)	25	5 (MBES)
	Smith's Knoll (SMKN)	34.7	5 (MBES)
	South-West of Haisborough Tail (SWHT)	18.1	5 (MBES)
Wider Characterising Transect (WCT)	Haisborough Sand (HBSD)	7.4	1 (MBES)
	East of Middle Cross Sand (EMCS)*	2.7	1 (SBES)
	Middle Cross Sand (MDCS)*	3.3	1 (SBES)
	Newarp Bank (NWBK*)	4.4	1 (SBES)
	Hammond Knoll (HMKN)*	2.8	1 (SBES)
	Winterton Ridge (WNRD)*	3.5	1 (SBES)
	Middle Ground (MDGR)*	7.5	1 (SBES)
	Hewit Ridge (HWRD)*	4.7	1 (SBES)
	Hearty Knoll (HRKN)*	5.4	1 (SBES)
	Race Bank (RCBK)*	5.76	1 (SBES)

* vessel Kongsburg EA400 single beam echo sounder used to acquire data at nine WCTs due to technical issues with the MBES equipment.



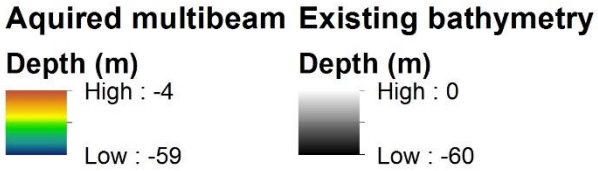


Figure 8. Multibeam echosounder data acquired at Inner Dowsing, Race Bank and North Ridge SAC, and Haisborough, Hammond and Winterton SAC during the 2016 collaborative sandbanks survey.

4.2 Sediment sampling

A total of 225 sediment samples were collected using the 0.1 m^2 Mini-Hamon Grab for particle size analysis distribution and infauna community analyses (Table 3 and Figure 9 to Figure 14), in accordance with objective two of the survey. All target stations along the crest, flank and trough sandbank features were attempted within the NRRD and SWHT CSAs (total 50 per CSA). Viable samples were recovered at all but two of the North Ridge stations. These stations were abandoned due to unsuitable/insufficient sediment. Grabbing operations at the INND and SMKN CSAs (crest, flank, trough and beyond slope features) were divided between the two teams aboard *Humber Guardian* and the *RV Cefas Endeavour* based on each vessel's capability to navigate the areas safely. Sampling activity aboard *Humber Guardian* primarily focused on the shallower or more sheltered stations (total 70 per CSA). A few of the samples recovered had a sediment volume of < 5.0 litres, but were deemed to be viable (e.g., no loss of sediment during recovery) and representative of the habitat present by the Scientist in Charge (SIC). At each CSA, up to four additional samples were collected (crest, eastern flank and eastern trough stations) and frozen immediately for stable isotope analysis.

Table 3. 0.1 m² Mini-Hamon Grab samples collected during the 2016 collaborative Sandbanks SAC survey for particle size, infauna community and stable isotope analyses.

Sampling Area Type	Sampling Area	Samples Collected
Case Study Area (CSA)	Inner Dowsing (INND)	38[a] (+2 for stable isotope analysis)
	North Ridge (NRRD)	48[a] (+3 for stable isotope analysis)
	Smith's Knoll (SMKN)	40 (+4 for stable isotope analysis)
	South-West of Haisborough Tail (SWHT)	50 (+3 for stable isotope analysis)
Wider Characterising Transect (WCT)	Haisborough Sand (HBSD)	5
	East of Middle Cross Sand (EMCS)	5
	Middle Cross Sand (MDCS)	5
	Newarp Bank (NWBK)	5
	Hammond Knoll (HMKN)	5
	Winterton Ridge (WNRD)	5
	Middle Ground (MDGR)	5
	Hewit Ridge (HWRD)	5
	Hearty Knoll (HRKN)	5
	Race Bank (RCBK)	4

[a]Two stations were abandoned due to unsuitable/insufficient sediment.

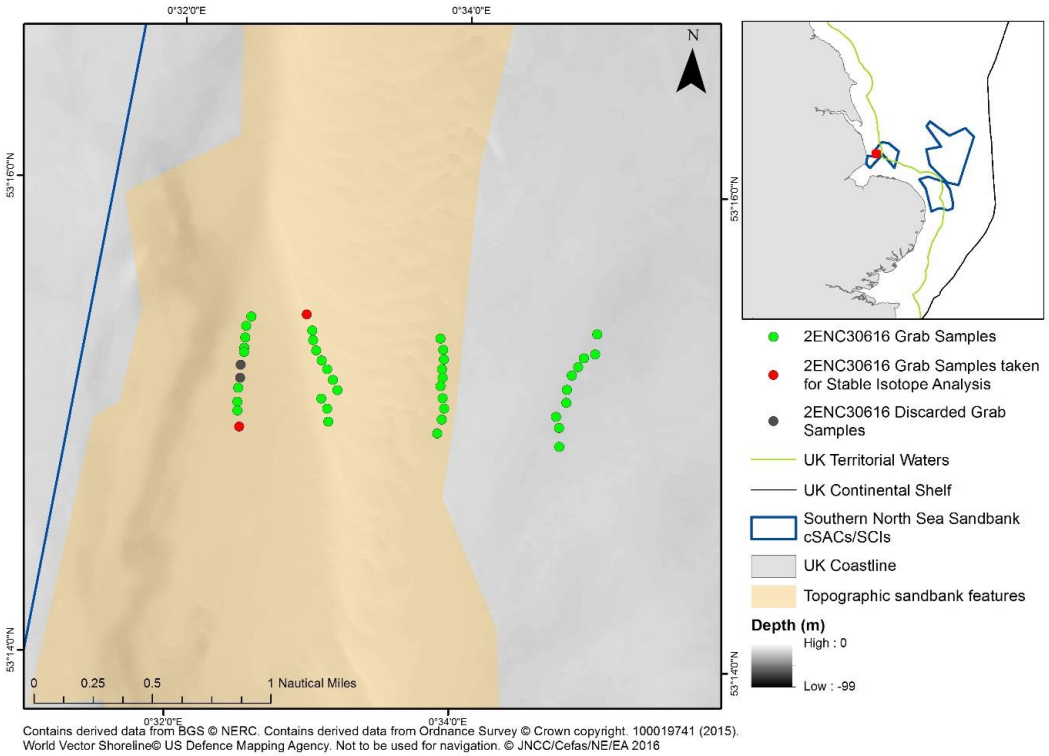


Figure 9. Inner Dowsing case study area; 0.1 m² Mini-Hamon Grab samples collected from within the Inner Dowsing, Race Bank and North Ridge SAC, during the 2016 collaborative sandbanks survey.

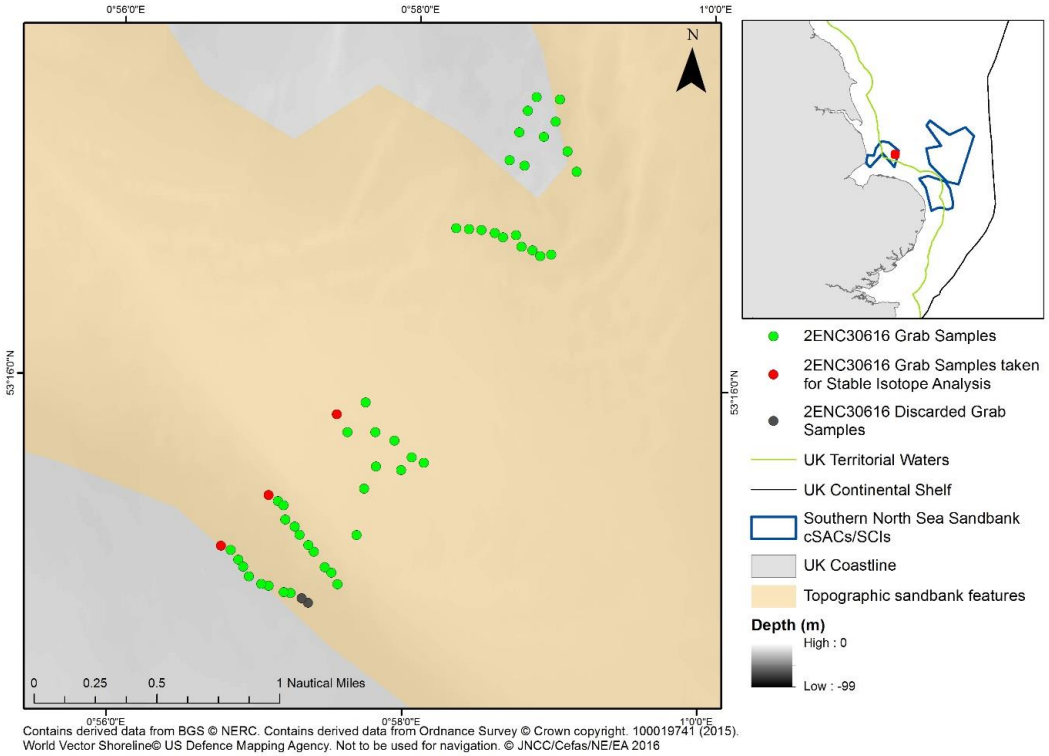


Figure 10. North Ridge case study area; 0.1 m² Mini-Hamon Grab samples collected from within the Inner Dowsing, Race Bank and North Ridge SAC, during the 2016 collaborative sandbanks survey.

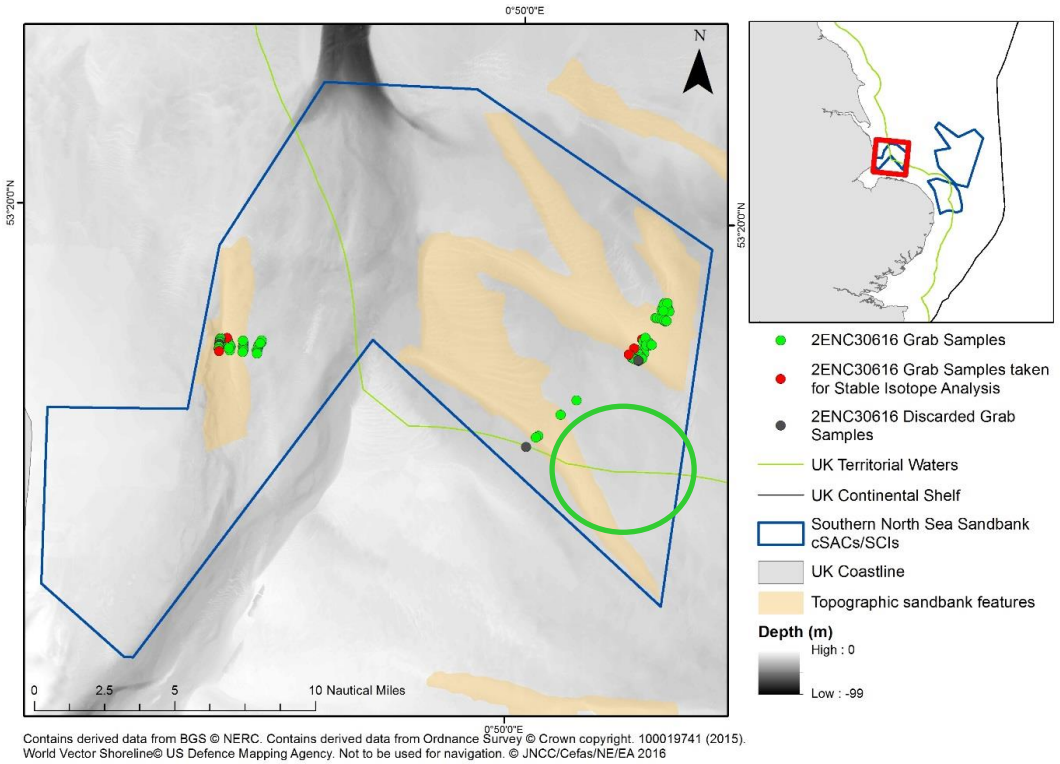


Figure 11. Race Bank wider characterising transect (circled); 0.1 m² Mini-Hamon Grab samples collected from within the Inner Dowsing, Race Bank and North Ridge SAC, during the 2016 collaborative sandbanks SAC survey.

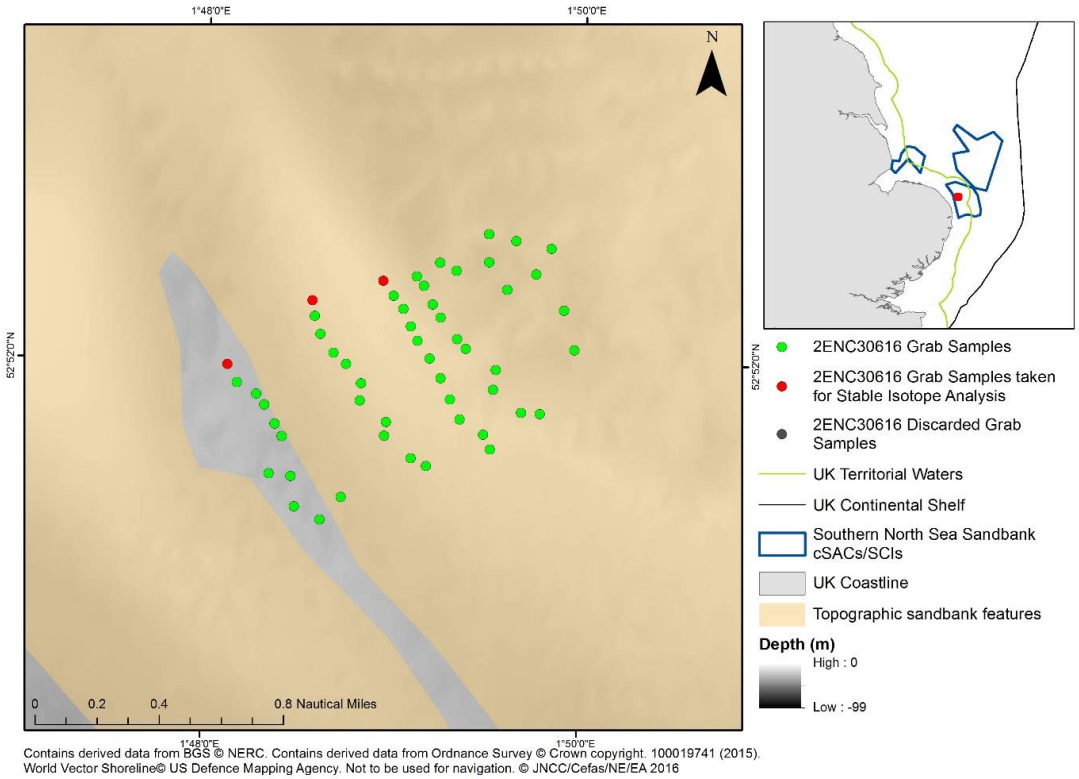


Figure 12. South-West of Haisborough Tail case study area; 0.1 m² Mini-Hamon Grab samples collected from within the Haisborough, Hammond and Winterton SAC, during the 2016 collaborative sandbanks SAC survey.

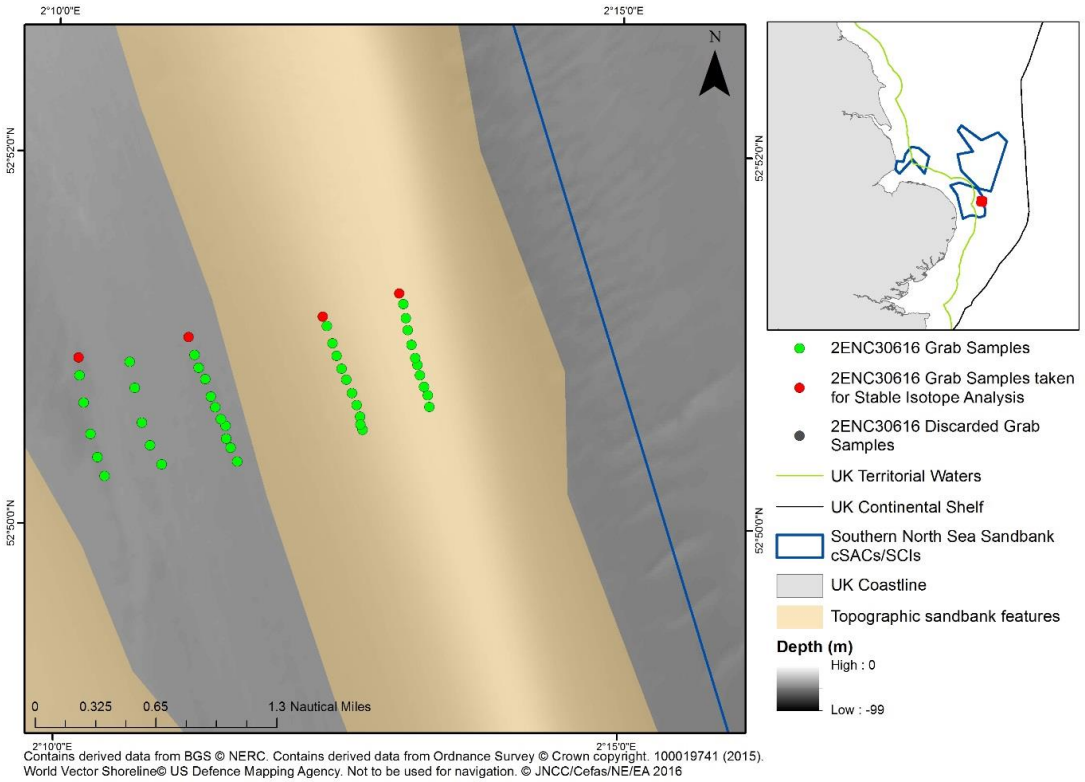


Figure 13. Smith's Knoll case study area; 0.1 m² Mini-Hamon Grab samples collected from within the Haisborough, Hammond and Winterton SAC, during the 2016 collaborative sandbanks SAC survey.

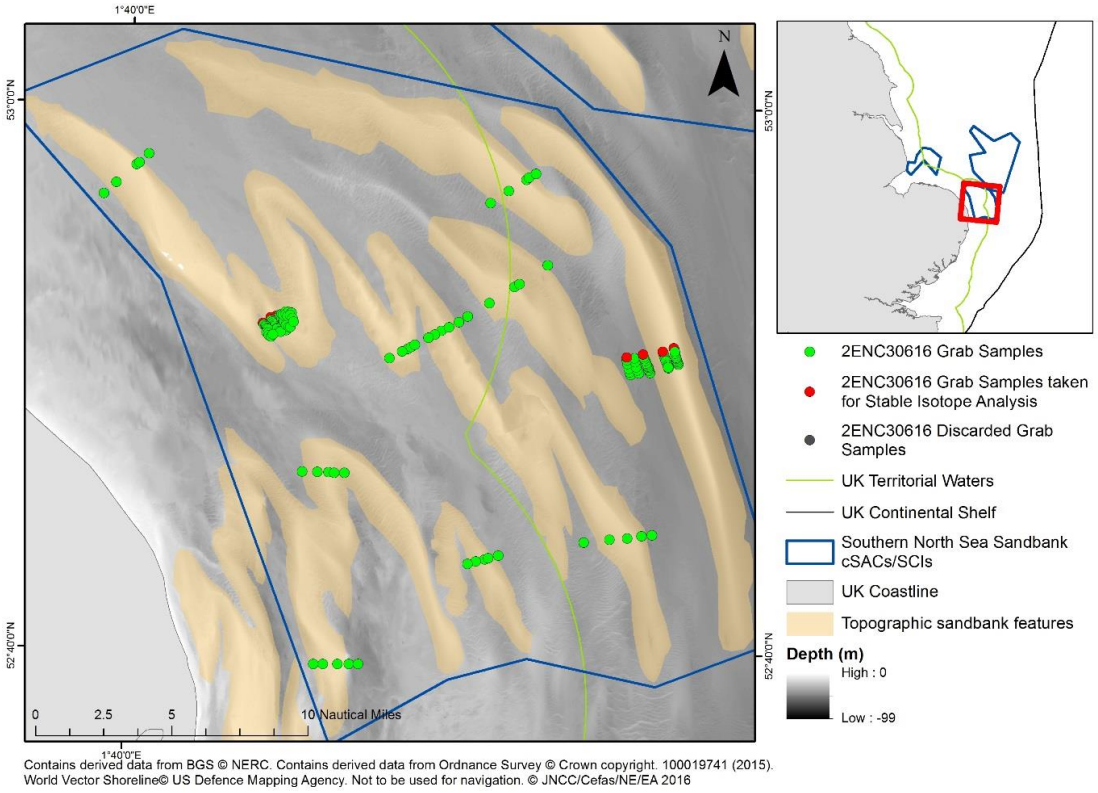


Figure 14. Wider characterising transect; 0.1 m² Mini-Hamon Grab samples collected from within the Haisborough, Hammond and Winterton SAC, during the 2016 collaborative sandbanks SAC survey.

4.3 Seabed imagery

In preparation for beam trawling, a total of 4.25 hours of video footage and 376 stills were captured during 42 *Sabellaria* damage mitigation tows within the South West of Haisborough Tail (SWHT), North Ridge (NRRD) and Smith's Knoll (SMKN) CSAs (Figure 15 to 17). No *Sabellaria* was observed during the preliminary assessment of the seabed video and still images. Time constraints due to unfavourable weather resulted in no video data capture at the Inner Dowsing (INND) CSA crest stations.

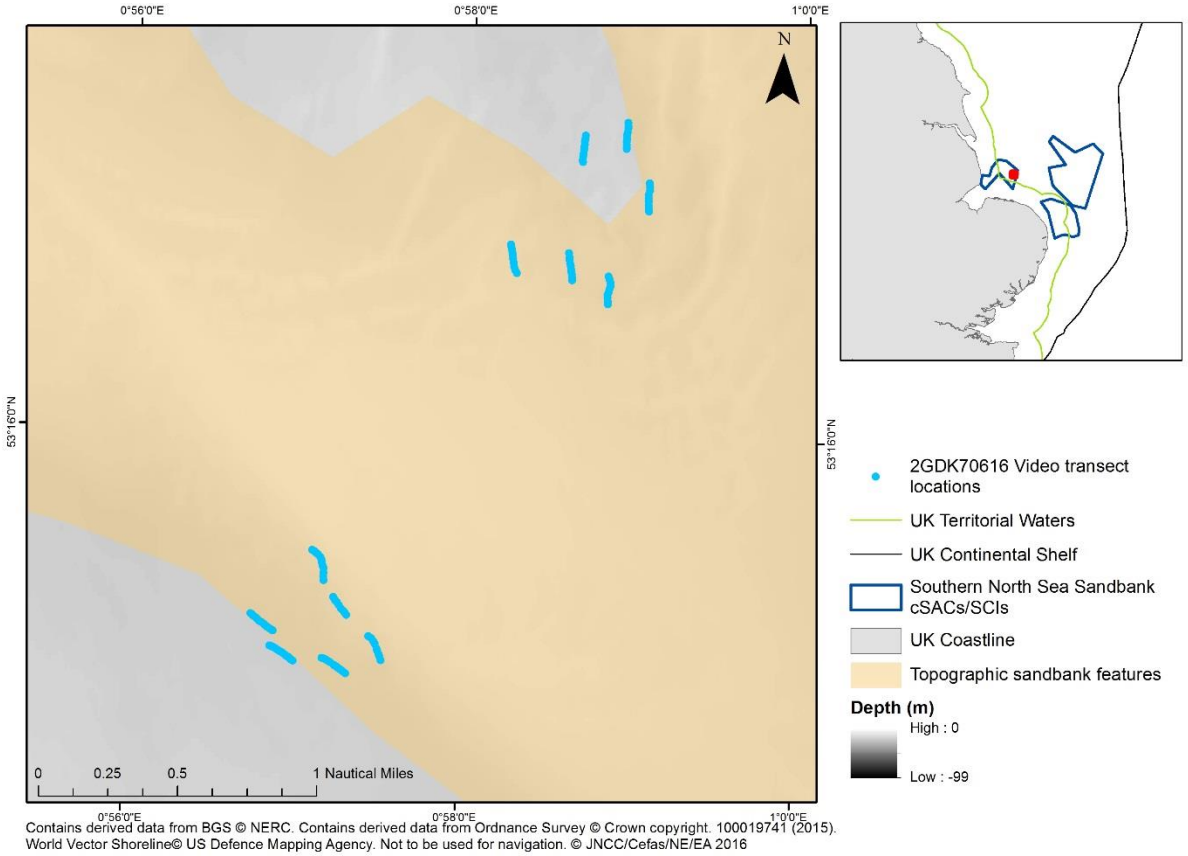


Figure 15. North Ridge case study area where drop camera images were captured within the Inner Dowsing, Race Bank and North Ridge SAC, during the 2016 collaborative sandbanks survey.

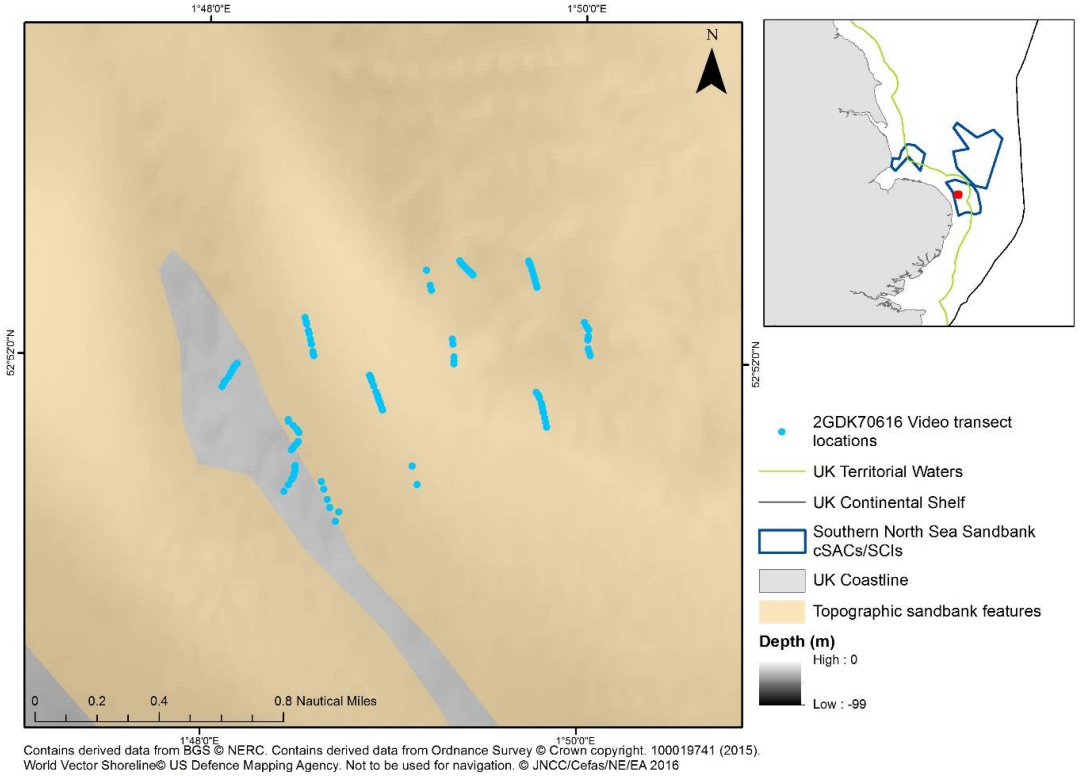


Figure 16. South-West of Haisborough Tail case study area where drop camera images were captured within the Haisborough, Hammond and Winterton SAC, during the 2016 collaborative sandbanks SAC survey.

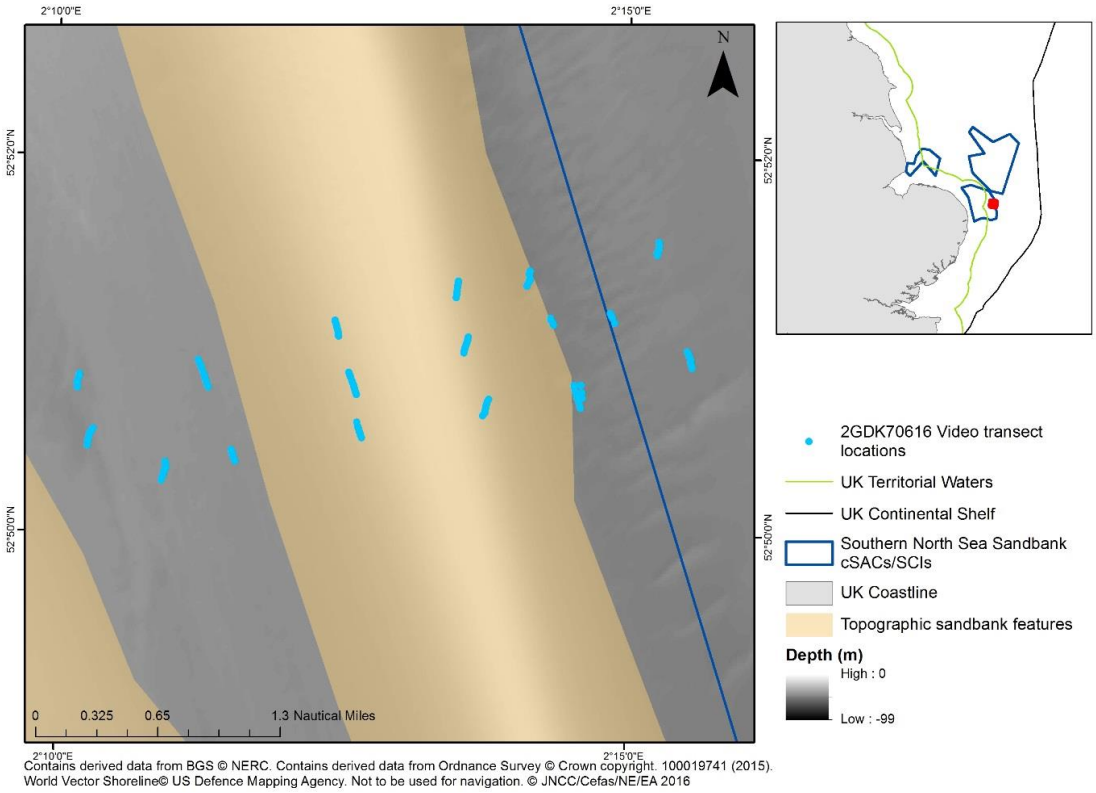


Figure 17. Smith's Knoll case study area where drop camera images were captured within the Haisborough, Hammond and Winterton SAC, during the 2016 collaborative sandbanks SAC survey.

4.4 Scientific (Jennings) beam trawl

Weather down-time at the beginning of June 2016 reduced the time available for survey operations during the final week. In consultation with all collaborative partner organisations, the team decided to make the best use of the remaining time available, with beam trawling survey activity being limited to the two CSAs closest to port: namely SW of Haisborough Tail (SWHT) and North Ridge (NRRD). For a summary of the beam trawl epifauna samples collected and maps of the trawl locations within each CSA see Table 4 and Figure 18 and Figure 19.

Table 4. Epifauna samples collected during the 2016 collaborative sandbanks SAC survey using a 2 metre scientific (Jennings) beam trawl.

Sampling Area Type	Sampling Area	Epifauna Samples Collected
Case Study Area (CSA)	North Ridge (NRRD)	23 samples (Eastern Trough, Crest, Western Flank and Western Trough sandbank features) Partially completed.
	South-West of Haisborough Tail (SWHT)	24 samples (Crest, Trough and Flank sandbank features) Partially completed

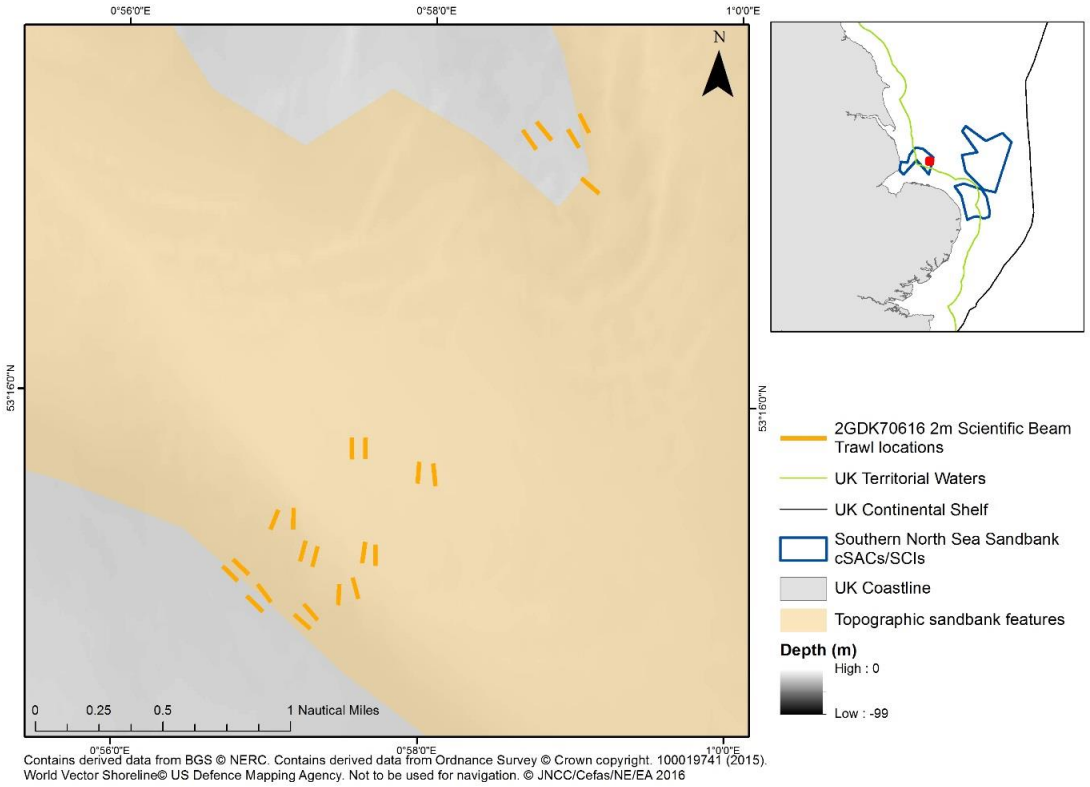


Figure 18. North Ridge case study area. 2 m beam trawls conducted within the Inner Dowsing, Race Bank and North Ridge SAC, during the 2016 collaborative sandbanks survey.

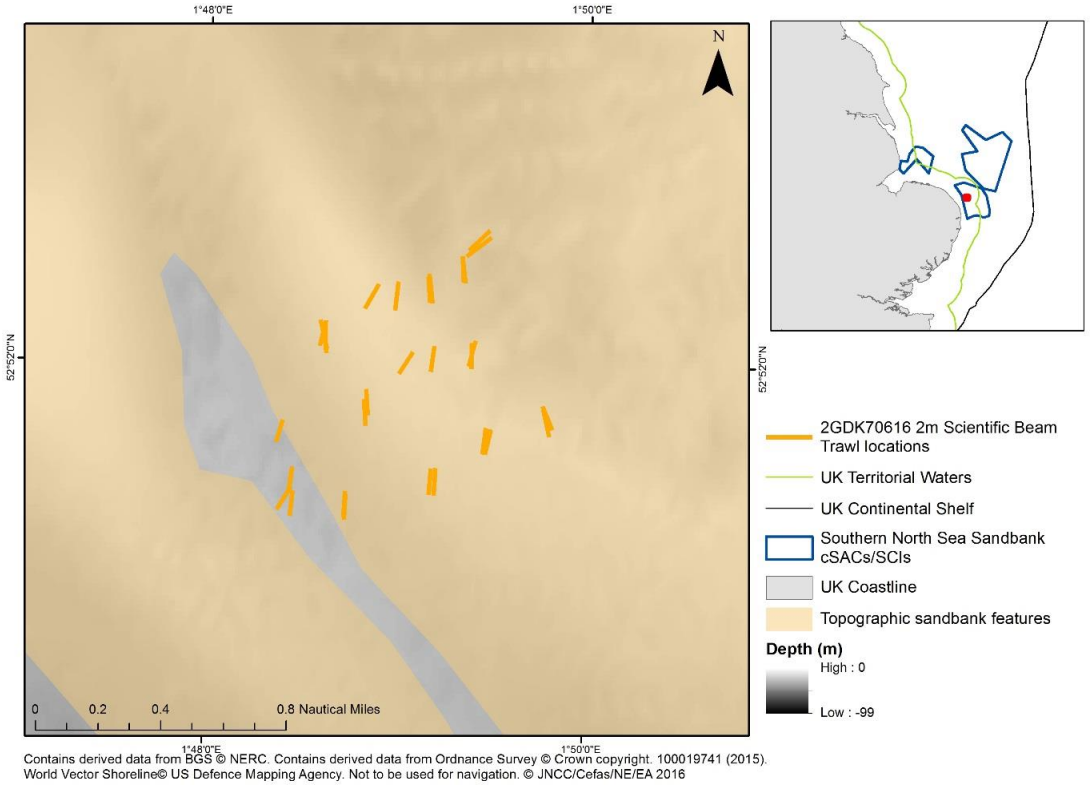


Figure 19. South-West of Haisborough Tail case study area. 2 m beam trawls conducted within the Haisborough, Hammond and Winterton SAC, during the 2016 collaborative North Norfolk Sandbanks SAC survey.

5 References

Coggan, R., Mitchell, A., White, J. and Golding, N. (2007). Recommended operating guidelines (ROG) for underwater video and photographic imaging techniques. Mapping European Seabed Habitats (MESH) video working group report v.11.2 [online].
Available from: http://www.searchmesh.net/default.aspx?page=1915 [Accessed 06/06/2018]

Jennings, S., Alvsvåg, J., Cotter, A.J., Ehrich, S., Greenstreet, S.P.R., Jarre-Teichmann, A., Mergardt, N., Rijnsdorp, A.D. and Smedstad, O. (1999). Fishing effects in northeast Atlantic shelf seas: patterns in fishing effort, diversity and community structure. III. International fishing effort in the North Sea: an analysis of temporal and spatial trends. Fisheries Research **40**: 125–134.

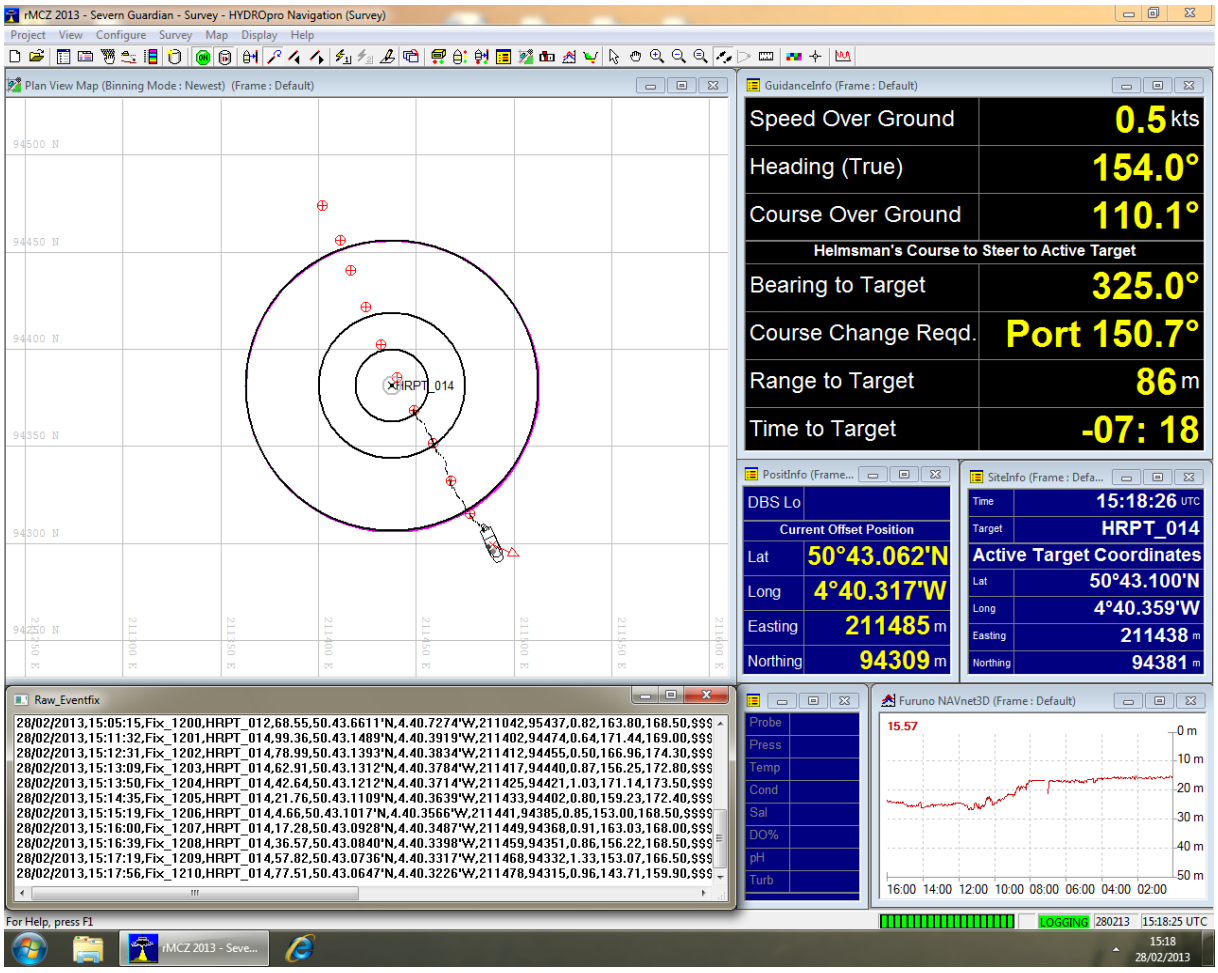
McIlwaine, P., Brown, L. and Eggett, A. (2016). Cruise Report for the North Norfolk Sandbanks & Saturn Reef, Inner Dowsing, North Ridge & Race Bank and Haisborough, Hammond & Winterton and SAC Monitoring survey 2016, 115 pp.

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 Annexes

6.1 Positioning software and offsets

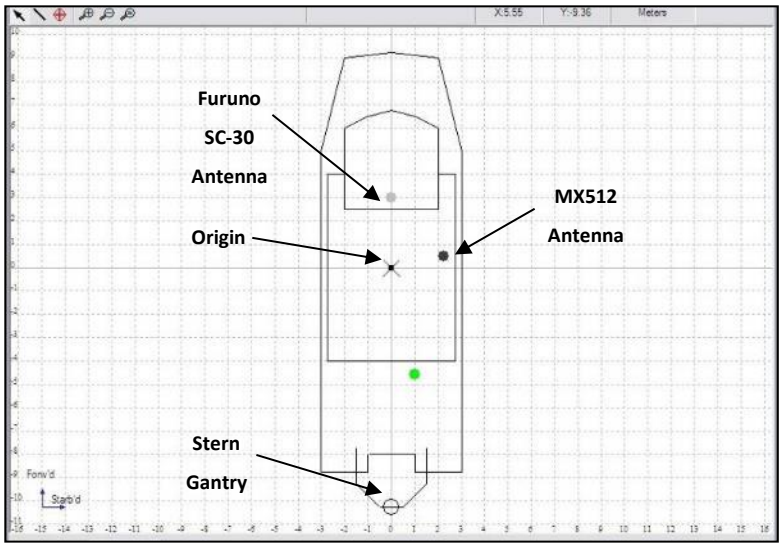
Trimble® HYDRO*pro*™ software was utilised for real-time navigation and survey data acquisition.



Trimble® HYDROpro™ software screen grab displaying real-time navigation and survey data acquisition for an example drop camera survey line.

Navigational and survey equipment offsets on the Coastal Survey Vessels (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**).**

6.2 Acoustic system specifications

Multibeam echosounder (MBES) data was acquired using a Kongsberg EM3002 dual head transducer (300 kHz) and Kongsberg SIS software (version 4.1.3). Swathe width was limited to a maximum of 90 metres in each transducer in equidistant mode. Latency correction – 1pps synchronised time system utilised on vessel. Backscatter recorded within raw *.all file and acquired with fixed gains to optimise image. GPS height from a POS MV GPS receivers. Tides reduced to chart datum using the VORF model and applied to the bathymetry.

6.2.1 MBES Calibration Logs.

Calibration type	Date of calibration	Document name	Remarks
Dimensional control survey	18/05/2016	EOP6251 – Humber Guardian offset survey report	
Multibeam head calibration	04/06/2016 05/06/2016 12/06/2016		
Patch test	04/06/2016 05/06/2016 12/06/2016		
Gyro calibration	03/06/2016	N/A	GAMS
Alongside position check	03/06/2016		

6.3 Research vessels

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

Humber Guardian and Solent Guardian

General Information
Length: 18.3 m
Beam: 6.3 m
Draft (baseline): 1.15 m
Draught (skegs): 2.2 m
Displacement (light ship): 22 T
Displacement (full load): 30 T
Service Speed: 16 knots
Maximum Speed: 18 knots

Main Equipment
Main Engines: 2 x Volvo D9-MH 261 bkW @ 2200 rpm. Twin Disc MGX-5075 integral vee-drive
Crew: 7
Scientific Officers: Up to 10
Accommodation: 3 x twin cabins and mess
Data network to share information around vessel
Wet lab/bench for processing water, sediment and ecology samples
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

6.4 Bounding co-ordinates of the survey area

Bounding co-ordinates (decimal degrees WGS84) for the sampling area.

	North	South	East	West
Sandbanks 2016	53.715	53.268	2.708	0.493
*Note these bounding co-ordinates encompass all planned sampling stations and do not demark the candidate Special Areas of Conservation.				

6.5 Daily progress reports

Each day a survey progress report was delivered from the SIC aboard *Humber Guardian* and *Solent Guardian* to a comprehensive distribution list including Natural England, the JNCC, EA, Cefas and EIFCA staff. All DPRs are available upon request.

6.6 Metadata

6.6.1 Grab Metadata

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
07/06/2016	05:30:00	Departed from Grimsby Fish Docks							
07/06/2016	08:23:25	INNDC01	53.25644°N	0.54929°E	1	Fix_3036	9.40	12.80	Biota + PSA
07/06/2016	08:49:51	INNDC03	53.25575°N	0.54947°E	2	Fix_3037	9.54	12.00	Biota + PSA
07/06/2016	08:53:07	INNDC02	53.25504°N	0.54970°E	3	Fix_3038	9.49	0.00	Grab misfired
07/06/2016	08:53:56	INNDC02	53.25503°N	0.54985°E	3	Fix_3039	9.91	10.40	Biota + PSA
07/06/2016	08:57:22	INNDC05	53.25435°N	0.55053°E	4	Fix_3040	8.95	11.20	Biota + PSA
07/06/2016	09:00:24	INNDC04	53.25379°N	0.55138°E	5	Fix_3041	9.68	0.00	Grab misfired
07/06/2016	09:02:09	INNDC04	53.25374°N	0.55121°E	5	Fix_3042	9.20	8.80	Biota + PSA
07/06/2016	09:28:23	INNDC07	53.25302°N	0.55190°E	6	Fix_3043	9.78	8.80	Biota + PSA
07/06/2016	09:33:20	INNDC06	53.25231°N	0.55237°E	7	Fix_3044	9.08	0.00	Discarded
07/06/2016	09:36:15	INNDC06	53.25230°N	0.55247°E	7	Fix_3045	8.69	9.60	Biota + PSA
07/06/2016	09:40:16	INNDC10	53.25166°N	0.55066°E	8	Fix_3046	8.88	8.80	Biota + PSA
07/06/2016	09:44:13	INNDC08	53.25097°N	0.55136°E	9	Fix_3047	8.88	8.80	Biota + PSA
07/06/2016	09:47:21	INNDC09	53.25005°N	0.55155°E	10	Fix_3048	9.29	11.20	Biota + PSA
07/06/2016	09:54:00	INNDF19	53.24948°N	0.56434°E	11	Fix_3049	18.54	9.60	Biota + PSA
07/06/2016	09:58:44	INNDF18	53.25025°N	0.56498°E	12	Fix_3050	18.48	0.00	Discarded
07/06/2016	10:02:24	INNDF18	53.25048°N	0.56482°E	12	Fix_3051	18.11	9.60	Biota + PSA
07/06/2016	10:07:09	INNDF17	53.25125°N	0.56508°E	13	Fix_3052	18.40	6.40	Biota + PSA
07/06/2016	10:12:06	INNDF16	53.25197°N	0.56483°E	14	Fix_3053	18.06	8.00	Biota + PSA
07/06/2016	10:17:41	INNDF15	53.25281°N	0.56454°E	15	Fix_3054	18.54	9.60	Biota + PSA
07/06/2016	10:22:07	INNDF14	53.25336°N	0.56488°E	16	Fix_3055	17.99	0.00	Discarded

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
07/06/2016	10:25:02	INNDF14	53.25343°N	0.56476°E	16	Fix_3056	18.02	12.00	Biota + PSA
07/06/2016	10:58:45	INNDF13	53.25426°N	0.56472°E	17	Fix_3057	17.20	0.00	Discarded
07/06/2016	11:01:19	INNDF13	53.25401°N	0.56465°E	17	Fix_3058	17.20	6.40	Biota + PSA
07/06/2016	11:05:21	INNDF12	53.25470°N	0.56484°E	18	Fix_3059	17.12	11.20	Biota + PSA
07/06/2016	11:09:37	INNDF11	53.25538°N	0.56471°E	19	Fix_3060	16.50	8.80	Biota + PSA
07/06/2016	11:14:13	INNDF20	53.25604°N	0.56465°E	20	Fix_3061	16.56	0.00	Grab misfired
07/06/2016	11:16:18	INNDF20	53.25616°N	0.56434°E	20	Fix_3062	16.31	9.60	Biota + PSA
07/06/2016	11:22:55	INNDT18	53.25683°N	0.58269°E	21	Fix_3063	20.89	12.80	Biota + PSA
07/06/2016	11:27:20	INNDT17	53.25543°N	0.58254°E	22	Fix_3064	20.43	6.40	Biota + PSA
07/06/2016	11:33:14	INNDT19	53.25511°N	0.58122°E	23	Fix_3065	19.81	10.40	Biota + PSA
07/06/2016	11:37:08	INNDT16	53.25450°N	0.58061°E	24	Fix_3066	19.27	0.00	Biota + PSA
07/06/2016	11:43:56	INNDT15	53.25387°N	0.57989°E	25	Fix_3067	19.29	9.60	Biota + PSA
07/06/2016	11:47:17	INNDT14	53.25288°N	0.57937°E	26	Fix_3068	19.45	6.40	Biota + PSA
07/06/2016	11:50:20	INNDT13	53.25195°N	0.57934°E	27	Fix_3069	19.43	12.80	Biota + PSA
07/06/2016	11:53:38	INNDT12	53.25094°N	0.57820°E	28	Fix_3070	19.34	0.00	Biota + PSA
07/06/2016	12:15:50	INNDT11	53.25016°N	0.57860°E	29	Fix_3071	18.96	8.80	Biota + PSA
07/06/2016	12:20:00	INNDT20	53.24884°N	0.57870°E	30	Fix_3072	17.88	12.00	Biota + PSA
07/06/2016	12:37:50	INNDC11 ISO	53.25754°N	0.54861°E	31	Fix_3073	4.48	12.80	Biota stable isotope
07/06/2016	12:42:38	INNDF01	53.25725°N	0.54220°E	32	Fix_3074	16.28	0.00	Discarded
07/06/2016	12:45:42	INNDF01	53.25717°N	0.54194°E	32	Fix_3075	16.72	0.00	Grab misfired
07/06/2016	12:47:19	INNDF01	53.25727°N	0.54210°E	32	Fix_3076	16.64	11.20	Biota + PSA
07/06/2016	12:54:36	INNDF02	53.25658°N	0.54157°E	33	Fix_3077	16.54	10.40	Biota + PSA
07/06/2016	13:11:22	INNDF03	53.25590°N	0.54115°E	34	Fix_3078	16.93	0.00	Discarded
07/06/2016	13:16:19	INNDF03	53.25578°N	0.54147°E	34	Fix_3079	16.61	6.40	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
07/06/2016	13:21:43	INNDF04	53.25504°N	0.54142°E	35	Fix_3080	16.83	0.00	Grab misfired
07/06/2016	13:23:14	INNDF04	53.25505°N	0.54143°E	35	Fix_3081	16.87	6.08	Biota + PSA
07/06/2016	13:29:17	INNDF05	53.25459°N	0.54098°E	36	Fix_3082	16.35	0.00	Discarded
07/06/2016	13:33:03	INNDF05	53.25451°N	0.54117°E	36	Fix_3083	16.08	0.00	Discarded
07/06/2016	13:35:49	INNDF05	53.25474°N	0.54139°E	36	Fix_3084	16.35	12.00	Biota + PSA
07/06/2016	13:38:53	INNDF06	53.25385°N	0.54108°E	37	Fix_3085	16.94	0.00	Discarded
07/06/2016	13:42:31	INNDF06	53.25383°N	0.54097°E	37	Fix_3086	16.79	0.00	Discarded
07/06/2016	13:45:29	INNDF06	53.25388°N	0.54130°E	37	Fix_3087	16.59	0.00	Discarded
07/06/2016	13:50:03	INNDF07	53.25294°N	0.54106°E	38	Fix_3088	16.50	0.00	Discarded
07/06/2016	13:54:31	INNDF07	53.25293°N	0.54129°E	38	Fix_3089	16.45	0.00	Discarded
07/06/2016	13:58:19	INNDF07	53.25287°N	0.54112°E	38	Fix_3090	16.39	0.00	Discarded
07/06/2016	14:01:36	INNDF08	53.25223°N	0.54124°E	39	Fix_3091	16.37	0.00	Discarded
07/06/2016	14:04:48	INNDF08	53.25222°N	0.54088°E	39	Fix_3092	16.56	11.20	Biota + PSA
07/06/2016	14:09:39	INNDF09	53.25125°N	0.54083°E	40	Fix_3093	17.04	0.00	Biota + PSA
07/06/2016	14:13:14	INNDF10	53.25064°N	0.54085°E	41	Fix_3094	16.65	4.80	Biota + PSA
07/06/2016	14:18:03	INNDF21 ISO	53.24951°N	0.54091°E	42	Fix_3095	16.69	0.00	Discarded
07/06/2016	14:21:16	INNDF21 ISO	53.24951°N	0.54115°E	42	Fix_3096	16.58	9.60	Biota stable isotope
07/06/2016	14:24:15	End of survey - continued sieving on passage							
09/06/2016	07:30:00	Departed from Grimsby Fish Docks							
09/06/2016	10:56:50	NRRDC08	53.26528°N	0.96173°E	43	Fix_3097	11.00	8.00	Biota + PSA
09/06/2016	11:01:15	NRRDC03	53.26329°N	0.96291°E	44	Fix_3098	11.14	5.60	Biota + PSA
09/06/2016	11:05:02	NRRDC07	53.26276°N	0.96513°E	45	Fix_3099	11.52	6.40	Biota + PSA
09/06/2016	11:09:35	NRRDC10	53.26166°N	0.96712°E	46	Fix_3100	11.61	5.60	Biota + PSA
09/06/2016	11:13:32	NRRDC11	53.26130°N	0.96851°E	47	Fix_3101	11.91	6.40	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
09/06/2016	11:17:07	NRRDC06	53.26079°N	0.96597°E	48	Fix_3102	11.45	7.20	Biota + PSA
09/06/2016	11:20:46	NRRDC09	53.26096°N	0.96310°E	49	Fix_3103	10.44	6.40	Biota + PSA
09/06/2016	11:24:18	NRRDC04	53.25941°N	0.96192°E	50	Fix_3104	11.45	0.00	Grab misfired
09/06/2016	11:25:54	NRRDC04	53.25945°N	0.96185°E	50	Fix_3105	11.43	6.40	Biota + PSA
09/06/2016	11:31:02	NRRDC02	53.26323°N	0.95977°E	51	Fix_3106	10.36	9.60	Biota + PSA
09/06/2016	11:34:50	NRRDC01 ISO	53.26442°N	0.95853°E	52	Fix_3107	9.57	8.00	Biota stable isotope
09/06/2016	11:40:29	NRRDF21 ISO	53.25884°N	0.95108°E	53	Fix_3108	16.84	6.40	Biota stable isotope
09/06/2016	11:43:56	NRRDF01	53.25845°N	0.95216°E	54	Fix_3109	14.60	6.40	Biota + PSA
09/06/2016	11:46:53	NRRDF16	53.25817°N	0.95278°E	55	Fix_3110	15.10	6.40	Biota + PSA
09/06/2016	11:50:27	NRRDF04	53.25722°N	0.95304°E	56	Fix_3111	16.57	7.20	Biota + PSA
09/06/2016	11:53:59	NRRDF17	53.25675°N	0.95412°E	57	Fix_3112	16.87	9.60	Biota + PSA
09/06/2016	11:57:02	NRRDF05	53.25621°N	0.95468°E	58	Fix_3113	17.51	8.00	Biota + PSA
09/06/2016	12:04:03	NRRDF18	53.25552°N	0.95573°E	59	Fix_3114	16.99	N/A	Biota + PSA
09/06/2016	12:07:54	NRRDF07	53.25508°N	0.95638°E	60	Fix_3115	17.17	7.20	Biota + PSA
09/06/2016	12:12:09	NRRDF19	53.25405°N	0.95764°E	61	Fix_3116	16.55	7.20	Biota + PSA
09/06/2016	12:15:56	NRRDF09	53.25371°N	0.95841°E	62	Fix_3117	17.34	7.20	Biota + PSA
09/06/2016	12:20:30	NRRDF20	53.25294°N	0.95914°E	63	Fix_3118	17.38	9.60	Biota + PSA
09/06/2016	12:27:17	NRRDC05	53.25629°N	0.96116°E	64	Fix_3119	10.01	8.00	Biota + PSA
09/06/2016	12:33:54	NRRDT21 ISO	53.25531°N	0.94587°E	65	Fix_3120	21.12	4.32	Biota stable isotope
09/06/2016	12:37:35	NRRDT21	53.25524°N	0.94598°E	65	Fix_3121	21.00	0.00	Discarded
09/06/2016	12:41:04	NRRDT21	53.25544°N	0.94594°E	65	Fix_3122	20.59	0.00	Discarded
09/06/2016	12:45:55	NRRDT18	53.25504°N	0.94697°E	66	Fix_3123	20.58	4.80	Biota + PSA
09/06/2016	12:50:37	NRRDT01	53.25466°N	0.94776°E	67	Fix_3124	21.02	0.00	Discarded
09/06/2016	12:54:19	NRRDT01	53.25440°N	0.94786°E	67	Fix_3125	20.13	4.48	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
09/06/2016	12:59:40	NRRDT17	53.25405°N	0.94840°E	68	Fix_3126	20.57	0.00	Discarded
09/06/2016	13:03:56	NRRDT17	53.25394°N	0.94843°E	68	Fix_3127	20.50	4.80	Biota + PSA
09/06/2016	13:08:09	NRRDT04	53.25330°N	0.94912°E	69	Fix_3128	20.47	4.32	Biota + PSA
09/06/2016	13:12:31	NRRDT16	53.25282°N	0.95054°E	70	Fix_3129	19.92	4.48	Biota + PSA
09/06/2016	13:17:37	NRRDT05	53.25270°N	0.95139°E	71	Fix_3130	20.80	4.80	Biota + PSA
09/06/2016	13:21:29	NRRDT19	53.25229°N	0.95283°E	72	Fix_3131	20.04	0.00	Discarded
09/06/2016	13:24:50	NRRDT19	53.25242°N	0.95272°E	72	Fix_3132	20.21	0.00	Discarded
09/06/2016	13:28:40	NRRDT19	53.25229°N	0.95311°E	72	Fix_3133	19.55	4.80	Biota + PSA
09/06/2016	13:33:08	NRRDT07	53.25224°N	0.95398°E	73	Fix_3134	20.21	0.00	stone in jaw
09/06/2016	13:38:15	NRRDT07	53.25237°N	0.95398°E	73	Fix_3135	20.09	0.00	Discarded
09/06/2016	13:41:53	NRRDT07	53.25217°N	0.95408°E	73	Fix_3136	19.94	0.00	Discarded
09/06/2016	13:46:19	NRRDT07	53.25225°N	0.95388°E	73	Fix_3137	19.67	4.48	Biota + PSA
09/06/2016	13:51:26	NRRDT20	53.25191°N	0.95513°E	74	Fix_3138	19.78	0.00	Discarded
09/06/2016	13:57:17	NRRDT20	53.25181°N	0.95530°E	74	Fix_3139	19.92	0.00	Discarded
09/06/2016	14:01:24	NRRDT20	53.25208°N	0.95528°E	74	Fix_3140	20.08	0.00	Discarded
09/06/2016	14:06:10	NRRDT09	53.25163°N	0.95588°E	75	Fix_3141	20.14	0.00	Discarded
09/06/2016	14:10:00	Hamon grab jaw maintenance to improve closure							
09/06/2016	14:17:39	NRRDT09	53.25163°N	0.95631°E	75	Fix_3142	20.24	0.00	Discarded
09/06/2016	14:20:59	NRRDT09	53.25164°N	0.95627°E	75	Fix_3143	20.04	0.00	Discarded
09/06/2016	14:34:33	NRRDF15	53.27564°N	0.98224°E	76	Fix_3144	15.09	10.40	Biota + PSA
09/06/2016	14:38:09	NRRDF10	53.27551°N	0.98099°E	77	Fix_3145	15.84	7.20	Biota + PSA
09/06/2016	14:41:04	NRRDF14	53.27604°N	0.98017°E	78	Fix_3146	16.34	0.00	Grab misfired
09/06/2016	14:42:52	NRRDF14	53.27590°N	0.98009°E	78	Fix_3147	16.44	12.00	Biota + PSA
09/06/2016	14:45:29	NRRDF08	53.27613°N	0.97883°E	79	Fix_3148	15.99	N/A	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
09/06/2016	14:48:35	NRRDF13	53.27690°N	0.97818°E	80	Fix_3149	16.29	4.48	Biota + PSA
09/06/2016	14:51:57	NRRDF06	53.27672°N	0.97672°E	81	Fix_3150	15.29	4.00	Biota + PSA
09/06/2016	14:55:04	NRRDF12	53.27700°N	0.97577°E	82	Fix_3151	15.03	6.40	Biota + PSA
09/06/2016	14:57:36	End of sampling							
09/06/2016	18:50:00	Arrived at Grimsby Fish Docks							
10/06/2016	07:00:00	Departed from Grimsby Fish Docks							
10/06/2016	10:55:58	NRRDF03	53.27719°N	0.97428°E	83	Fix_3152	18.04	9.60	Biota + PSA
10/06/2016	10:58:58	NRRDF11	53.27721°N	0.97286°E	84	Fix_3153	17.15	8.00	Biota + PSA
10/06/2016	11:01:53	NRRDF02	53.27725°N	0.97141°E	85	Fix_3154	17.08	8.80	Biota + PSA
10/06/2016	11:06:10	NRRDT12	53.28196°N	0.97723°E	86	Fix_3155	22.78	4.80	Biota + PSA
10/06/2016	11:09:38	NRRDT15	53.28163°N	0.97895°E	87	Fix_3157	21.87	8.80	Biota + PSA
10/06/2016	11:12:47	NRRDT03	53.28349°N	0.98128°E	88	Fix_3158	22.07	0.00	Discarded
10/06/2016	11:17:00	NRRDT03	53.28359°N	0.98102°E	88	Fix_3159	22.42	7.20	Biota + PSA
10/06/2016	11:20:49	NRRDT02	53.28387°N	0.97825°E	89	Fix_3160	22.87	8.00	Biota + PSA
10/06/2016	11:24:47	NRRDT13	53.28533°N	0.97912°E	90	Fix_3161	22.57	5.60	Biota + PSA
10/06/2016	11:28:22	NRRDT11	53.28629°N	0.98010°E	91	Fix_3162	21.92	4.80	Biota + PSA
10/06/2016	11:31:58	NRRDT14	53.28617°N	0.98272°E	92	Fix_3163	21.79	6.40	Biota + PSA
10/06/2016	11:39:43	NRRDT10	53.28465°N	0.98234°E	93	Fix_3164	21.78	7.20	Biota + PSA
10/06/2016	11:42:49	NRRDT06	53.28266°N	0.98375°E	94	Fix_3165	22.54	7.20	Biota + PSA
10/06/2016	11:45:52	NRRDT08	53.28130°N	0.98484°E	95	Fix_3166	21.20	6.40	Biota + PSA
10/06/2016		Passage to Race Bank WCT							
10/06/2016	12:11:19	Start of RCBK line	53.23298°N	0.90603°E		Fix_3167	20.81		
10/06/2016	12:28:24	End of RCBK line	53.19695°N	0.84438°E		Fix_3168	21.32		
10/06/2016		Plot RCBK profile and select target grab stations							

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
10/06/2016	12:49:37	RCBKT02	53.19872°N	0.84721°E	96	Fix_3169	21.83	0.00	Discarded
10/06/2016	12:52:35	RCBKT02	53.19864°N	0.84698°E	96	Fix_3170	21.39	0.00	Discarded
10/06/2016	12:55:22	RCBKT02	53.19870°N	0.84708°E	96	Fix_3171	21.58	0.00	Discarded
10/06/2016	13:00:18	RCBKF02	53.20440°N	0.85667°E	97	Fix_3172	16.02	11.20	Biota + PSA
10/06/2016	13:04:00	RCBKC01	53.20545°N	0.85878°E	98	Fix_3173	11.48	9.60	Biota + PSA
10/06/2016	13:12:15	RCBKF01	53.21825°N	0.88037°E	99	Fix_3174	16.55	8.80	Biota + PSA
10/06/2016	13:19:04	RCBKT01	53.22707°N	0.89557°E	100	Fix_3175	20.18	7.20	Biota + PSA
10/06/2016	13:24:00	End of survey							
10/06/2016	17:30:00	Arrived at Grimsby Fish Docks							
13/06/2016	05:00:00	Departed from Hamilton Dock, Lowestoft							
13/06/2016	07:22:00	Started Smith's Knoll MBES							
13/06/2016		Ended Smith's Knoll MBES							
13/06/2016	12:13:08	SMKNC10 ISO	52.85420°N	2.21730°E	101	Fix_3176	10.48	7.20	Biota stable isotope
13/06/2016	12:15:41	SMKNC09	52.85324°N	2.21794°E	102	Fix_3177	9.87	6.40	Biota + PSA
13/06/2016	12:18:23	SMKNC11	52.85200°N	2.21832°E	103	Fix_3178	10.15	6.40	Biota + PSA
13/06/2016	12:20:43	SMKNC08	52.85093°N	2.21861°E	104	Fix_3179	10.49	7.20	Biota + PSA
13/06/2016	12:23:00	SMKNC07	52.84960°N	2.21918°E	105	Fix_3180	10.51	8.00	Biota + PSA
13/06/2016	12:25:27	SMKNC06	52.84843°N	2.21975°E	106	Fix_3181	10.66	7.20	Biota + PSA
13/06/2016	12:27:38	SMKNC05	52.84781°N	2.22012°E	107	Fix_3182	10.45	9.60	Biota + PSA
13/06/2016	12:30:11	SMKNC04	52.84672°N	2.22080°E	108	Fix_3183	10.40	0.00	Grab misfired
13/06/2016	12:31:50	SMKNC04	52.84691°N	2.22049°E	108	Fix_3184	10.04	9.60	Biota + PSA
13/06/2016	12:34:17	SMKNC03	52.84586°N	2.22113°E	109	Fix_3185	10.48	8.80	Biota + PSA
13/06/2016	12:36:40	SMKNC02	52.84510°N	2.22169°E	110	Fix_3186	10.59	5.60	Biota + PSA
13/06/2016	12:39:07	SMKNC01	52.84407°N	2.22195°E	111	Fix_3187	10.80	8.00	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
13/06/2016	12:43:55	SMKNF01	52.84196°N	2.21211°E	112	Fix_3188	27.77	9.60	Biota + PSA
13/06/2016	12:47:26	SMKNF11	52.84243°N	2.21177°E	113	Fix_3189	28.24	6.40	Biota + PSA
13/06/2016	12:50:44	SMKNF10	52.84314°N	2.21171°E	114	Fix_3190	27.30	8.00	Biota + PSA
13/06/2016	12:54:03	SMKNF09	52.84416°N	2.21118°E	115	Fix_3191	27.53	6.40	Biota + PSA
13/06/2016	12:57:24	End of survey							
14/06/2016	06:45:00	Departed from Hamilton Dock, Lowestoft							
14/06/2016	07:30:00	Picked up survey personnel							
14/06/2016	08:49:00	Arrived on first MBES lines							
14/06/2016	11:34:31	Completed MBES							
14/06/2016	12:00:12	SWHTCO2 ISO	52.87094°N	1.81577°E	116	Fix_3192	7.49	9.60	Biota stable isotope
14/06/2016	12:07:43	SWHTCO1	52.87015°N	1.81669°E	117	Fix_3193	7.66	9.60	Biota + PSA
14/06/2016	12:14:46	SWHTCO3	52.86945°N	1.81758°E	118	Fix_3194	7.89	9.60	Biota + PSA
14/06/2016	12:17:45	SWHTC04	52.86852°N	1.81826°E	119	Fix_3195	8.25	8.80	Biota + PSA
14/06/2016	12:20:31	SWHTC05	52.86776°N	1.81888°E	120	Fix_3196	8.43	9.60	Biota + PSA
14/06/2016	12:23:18	SWHTC06	52.86682°N	1.81998°E	121	Fix_3197	8.37	12.80	Biota + PSA
14/06/2016	12:26:13	SWHTC07	52.86578°N	1.82097°E	122	Fix_3199	8.93	9.60	Biota + PSA
14/06/2016	12:31:12	SWHTC08	52.86465°N	1.82183°E	123	Fix_3200	8.60	9.60	Biota + PSA
14/06/2016	12:34:17	SWHTC09	52.86357°N	1.82273°E	124	Fix_3201	9.03	8.00	Biota + PSA
14/06/2016	12:36:56	SWHTC10	52.86278°N	1.82479°E	125	Fix_3202	8.32	11.20	Biota + PSA
14/06/2016	12:39:50	SWHTC11	52.86200°N	1.82545°E	126	Fix_3203	9.89	9.60	Biota + PSA
14/06/2016	12:43:55	SWHTF21	52.86393°N	1.82980°E	127	Fix_3204	19.42	8.80	Biota + PSA
14/06/2016	12:46:59	SWHTF20	52.86400°N	1.82816°E	128	Fix_3205	18.81	9.60	Biota + PSA
14/06/2016	12:50:43	SWHTF19	52.86520°N	1.82563°E	129	Fix_3206	18.49	9.60	Biota + PSA
14/06/2016	12:53:59	SWHTF18	52.86625°N	1.82587°E	130	Fix_3207	21.76	11.20	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
14/06/2016	12:58:43	SWHTF17	52.86736°N	1.82317°E	131	Fix_3208	19.42	9.60	Biota + PSA
14/06/2016	13:02:16	SWHTF16	52.86788°N	1.82237°E	132	Fix_3209	19.58	9.60	Biota + PSA
14/06/2016	13:06:35	SWHTF15	52.86902°N	1.82089°E	133	Fix_3210	19.32	10.40	Biota + PSA
14/06/2016	13:09:39	SWHTF14	52.86972°N	1.82016°E	134	Fix_3211	19.99	8.80	Biota + PSA
14/06/2016	13:12:46	SWHTF13	52.87075°N	1.81938°E	135	Fix_3212	19.90	0.00	Grab misfired
14/06/2016	13:14:55	SWHTF13	52.87072°N	1.81937°E	135	Fix_3213	21.88	10.40	Biota + PSA
14/06/2016	13:36:42	SWHTF12	52.87121°N	1.81871°E	136	Fix_3214	18.01	8.80	Biota + PSA
14/06/2016	13:40:37	SWHTT12	52.87198°N	1.82077°E	137	Fix_3215	32.43	12.00	Biota + PSA
14/06/2016	13:44:58	SWHTT13	52.87155°N	1.82222°E	138	Fix_3216	30.28	9.60	Biota + PSA
14/06/2016	13:49:12	SWHTT15	52.87203°N	1.82513°E	139	Fix_3217	30.49	9.60	Biota + PSA
14/06/2016	13:53:12	SWHTT14	52.87354°N	1.82507°E	140	Fix_3218	31.23	7.20	Biota + PSA
14/06/2016	13:59:20	SWHTT16	52.87319°N	1.82749°E	141	Fix_3219	31.26	10.40	Biota + PSA
14/06/2016	14:01:00	End of survey operations							
14/06/2016	16:08:06	Arrived in Hamilton Dock, Lowestoft							
15/06/2016	07:00:00	Departed from Hamilton Dock, Lowestoft							
15/06/2016	09:20:52	SWHTT10	52.85810°N	1.81043°E	142	Fix_3220	27.81	12.80	Biota + PSA
15/06/2016	09:26:05	SWHTT09	52.85877°N	1.80815°E	143	Fix_3221	27.86	11.20	Biota + PSA
15/06/2016	09:29:52	SWHTT08	52.86040°N	1.80780°E	144	Fix_3222	29.33	8.00	Biota + PSA
15/06/2016	09:33:36	SWHTT07	52.86053°N	1.80587°E	145	Fix_3223	29.28	12.80	Biota + PSA
15/06/2016	09:37:37	SWHTT06	52.86254°N	1.80695°E	146	Fix_3224	29.89	11.20	Biota + PSA
15/06/2016	09:41:06	SWHTT05	52.86319°N	1.80631°E	147	Fix_3225	27.42	9.60	Biota + PSA
15/06/2016	09:44:49	SWHTT04	52.86421°N	1.80538°E	148	Fix_3226	28.09	10.40	Biota + PSA
15/06/2016	09:47:49	SWHTT03	52.86480°N	1.80464°E	149	Fix_3227	28.44	9.60	Biota + PSA
15/06/2016	09:51:34	SWHTT02	52.86539°N	1.80291°E	150	Fix_3228	29.09	12.00	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
15/06/2016	09:55:02	SWHTT01 ISO	52.86635°N	1.80206°E	151	Fix_3229	29.33	7.20	Biota stable isotope
15/06/2016	10:00:41	SWHTF01 ISO	52.86985°N	1.80950°E	152	Fix_3230	17.98	8.80	Biota stable isotope
15/06/2016	10:03:57	SWHTF01	52.86902°N	1.80972°E	153	Fix_3231	19.23	8.80	Biota + PSA
15/06/2016	10:07:37	SWHTF02	52.86804°N	1.81027°E	154	Fix_3232	19.84	5.60	Biota + PSA
15/06/2016	10:11:45	SWHTF03	52.86706°N	1.81144°E	155	Fix_3233	20.21	10.40	Biota + PSA
15/06/2016	10:14:43	SWHTF04	52.86641°N	1.81236°E	156	Fix_3234	18.25	0.00	Discarded
15/06/2016	10:19:01	SWHTF04	52.86641°N	1.81197°E	156	Fix_3235	21.15	0.00	Discarded
15/06/2016	10:22:19	SWHTF04	52.86646°N	1.81257°E	156	Fix_3236	18.62	9.60	Biota + PSA
15/06/2016	10:25:15	SWHTF05	52.86543°N	1.81393°E	157	Fix_3237	19.57	9.60	Biota + PSA
15/06/2016	10:28:36	SWHTF06	52.86451°N	1.81383°E	158	Fix_3238	21.29	9.60	Biota + PSA
15/06/2016	10:32:39	SWHTF07	52.86339°N	1.81619°E	159	Fix_3239	17.85	8.00	Biota + PSA
15/06/2016	10:35:46	SWHTF08	52.86265°N	1.81605°E	160	Fix_3240	20.26	9.60	Biota + PSA
15/06/2016	10:39:14	SWHTF09	52.86147°N	1.81842°E	161	Fix_3241	18.66	11.20	Biota + PSA
15/06/2016	10:42:27	SWHTF10	52.86105°N	1.81979°E	162	Fix_3242	19.62	9.60	Biota + PSA
15/06/2016	10:46:44	SWHTT11	52.85952°N	1.81217°E	163	Fix_3243	26.01	0.00	Grab misfired
15/06/2016	10:50:28	SWHTT11	52.85966°N	1.81204°E	163	Fix_3244	28.07	0.00	Grab misfired
15/06/2016	10:54:36	SWHTT11	52.85929°N	1.81231°E	163	Fix_3245	27.90	0.00	Discarded
15/06/2016	10:58:18	SWHTT11	52.85933°N	1.81229°E	163	Fix_3246	28.69	8.80	Biota + PSA
15/06/2016	11:07:33	SWHTT21	52.86738°N	1.83280°E	164	Fix_3247	28.87	11.20	Biota + PSA
15/06/2016	11:11:16	SWHTT20	52.86955°N	1.83143°E	165	Fix_3248	30.36	0.00	Discarded
15/06/2016	11:15:56	SWHTT20	52.86949°N	1.83183°E	165	Fix_3249	29.19	11.20	Biota + PSA
15/06/2016	11:21:45	SWHTT17	52.87057°N	1.82676°E	166	Fix_3250	29.73	8.80	Biota + PSA
15/06/2016	11:25:50	SWHTT19	52.87141°N	1.82932°E	167	Fix_3251	29.40	9.60	Biota + PSA
15/06/2016	11:29:19	SWHTT18	52.87293°N	1.83048°E	168	Fix_3252	30.82	0.00	Discarded

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
15/06/2016	11:33:47	SWHTT18	52.87281°N	1.83062°E	168	Fix_3253	30.60	9.60	Biota + PSA
15/06/2016	12:14:01	Start of line							
15/06/2016	13:18:41	End of line							
15/06/2016	13:30:21	MBES arm sheared							
15/06/2016	14:05:49	HBSDT01	52.94399°N	1.63901°E	169	Fix_3254	33.21	9.60	Biota + PSA
15/06/2016	14:12:38	HBSDF01	52.95091°N	1.65129°E	170	Fix_3255	21.38	8.00	Biota + PSA
15/06/2016	14:20:22	HBSDC01	52.96201°N	1.67149°E	171	Fix_3256	2.38	7.20	Biota + PSA
15/06/2016	14:23:32	HBSDF02	52.96324°N	1.67418°E	172	Fix_3257	23.37	11.20	Biota + PSA
15/06/2016	14:29:16	HBSDT02	52.96870°N	1.68383°E	173	Fix_3258	32.83	6.40	Biota + PSA
15/06/2016	17:16:22	Arrived at Hamilton Dock, Lowestoft							
16/06/2016	08:12:00	Departed from Hamilton Dock, Lowestoft							
16/06/2016	09:51:00	Started Hamon grabbing operations at Smith's Knoll (SMKN)							
16/06/2016	09:51:10	SMKNB01	52.83759°N	2.17403°E	174	Fix_3259	44.53	8.80	Biota + PSA
16/06/2016	09:55:46	SMKNB03	52.83923°N	2.17292°E	175	Fix_3260	45.06	12.80	Biota + PSA
16/06/2016	10:00:02	SMKNB05	52.84133°N	2.17189°E	176	Fix_3262	45.36	9.60	Biota + PSA
16/06/2016	10:04:11	SMKNB07	52.84410°N	2.17079°E	177	Fix_3263	43.20	5.60	Biota + PSA
16/06/2016	10:10:53	SMKNB09	52.84655°N	2.17014°E	178	Fix_3264	43.54	8.00	Biota + PSA
16/06/2016	10:15:40	SMKNB11 ISO	52.84816°N	2.16996°E	179	Fix_3265	43.79	7.20	Biota stable isotope
16/06/2016	10:21:55	SMKNB10	52.84782°N	2.17755°E	180	Fix_3266	41.33	7.52	Biota + PSA
16/06/2016	10:26:41	SMKNB08	52.84548°N	2.17832°E	181	Fix_3267	41.61	8.00	Biota + PSA
16/06/2016	10:32:10	SMKNB06	52.84239°N	2.17946°E	182	Fix_3269	41.66	8.00	Biota + PSA
16/06/2016	10:36:41	SMKNB04	52.84038°N	2.18071°E	183	Fix_3270	42.46	5.60	Biota + PSA
16/06/2016	10:41:06	SMKNB02	52.83867°N	2.18246°E	184	Fix_3271	42.56	7.20	Biota + PSA
16/06/2016	10:50:20	SMKNT01	52.83895°N	2.19326°E	185	Fix_3272	42.84	0.00	Discarded

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
16/06/2016	10:54:27	SMKNT01	52.83881°N	2.19323°E	185	Fix_3273	43.16	0.00	Discarded
16/06/2016	10:58:25	SMKNT01	52.83899°N	2.19363°E	185	Fix_3274	43.01	10.40	Biota + PSA
16/06/2016	11:02:41	SMKNT02	52.84022°N	2.19274°E	186	Fix_3275	42.66	0.00	Discarded
16/06/2016	11:08:04	SMKNT02	52.84024°N	2.19262°E	186	Fix_3276	43.14	9.60	Biota + PSA
16/06/2016	11:12:24	SMKNT03	52.84103°N	2.19195°E	187	Fix_3277	42.78	8.80	Biota + PSA
16/06/2016	11:16:17	SMKNT04	52.84218°N	2.19182°E	188	Fix_3278	42.67	10.40	Biota + PSA
16/06/2016	11:20:43	SMKNT05	52.84277°N	2.19115°E	189	Fix_3279	42.91	8.00	Biota + PSA
16/06/2016	11:24:26	SMKNT06	52.84383°N	2.19028°E	190	Fix_3280	42.72	6.40	Biota + PSA
16/06/2016	11:28:43	SMKNT07	52.84477°N	2.18961°E	191	Fix_3281	42.27	8.00	Biota + PSA
16/06/2016	11:33:13	SMKNT08	52.84633°N	2.18873°E	192	Fix_3282	42.16	8.00	Biota + PSA
16/06/2016	11:37:41	SMKNT09	52.84735°N	2.18776°E	193	Fix_3283	42.20	8.00	Biota + PSA
16/06/2016	11:41:57	SMKNT10	52.84850°N	2.18711°E	194	Fix_3284	42.02	8.80	Biota + PSA
16/06/2016	11:46:41	SMKNT11 ISO	52.85008°N	2.18623°E	195	Fix_3285	42.16	8.80	Biota stable isotope
16/06/2016	11:56:11	SMKNF07 ISO	52.85205°N	2.20605°E	196	Fix_3286	26.35	6.40	Biota stable isotope
16/06/2016	12:00:16	SMKNF06	52.85122°N	2.20667°E	197	Fix_3287	26.32	9.60	Biota + PSA
16/06/2016	12:03:51	SMKNF05	52.84968°N	2.20750°E	198	Fix_3288	26.39	8.00	Biota + PSA
16/06/2016	12:07:11	SMKNF04	52.84854°N	2.20814°E	199	Fix_3289	26.85	6.40	Biota + PSA
16/06/2016	12:10:24	SMKNF03	52.84740°N	2.20889°E	200	Fix_3290	26.52	8.00	Biota + PSA
16/06/2016	12:13:49	SMKNF08	52.84643°N	2.20960°E	201	Fix_3291	26.10	8.00	Biota + PSA
16/06/2016	12:17:02	SMKNF02	52.84524°N	2.21049°E	202	Fix_3292	26.22	8.80	Biota + PSA
16/06/2016	12:20:00	Grabbing operations at Smith's Knoll completed							
16/06/2016	12:28:00	Single beam data acquisition at East of Middle Cross Sand (EMCS) wider characterisation transect and subsequent grab samples							
16/06/2016	13:28:18	EMCS Start Line	52.72638°N	2.04348°E		Fix_3293	34.71		
16/06/2016	13:36:40	EMCS End Line	52.71982°N	2.00443°E		Fix_3294	27.82		

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
16/06/2016	13:59:55	EMCST01	52.72625°N	2.04287°E	203	Fix_3295	34.74	9.60	Biota + PSA
16/06/2016	14:06:43	EMCSF01	52.72446°N	2.03265°E	204	Fix_3296	91.36	11.20	Biota + PSA
16/06/2016	14:11:05	EMCSC01	52.72377°N	2.02918°E	205	Fix_3297	18.47	8.80	Biota + PSA
16/06/2016	14:15:31	EMCSF02	52.72243°N	2.02005°E	206	Fix_3298	25.23	10.40	Biota + PSA
16/06/2016	14:22:19	EMCST02	52.72096°N	2.01192°E	207	Fix_3299	33.22	8.80	Biota + PSA
16/06/2016	14:55:00	Single beam data acquisition at Middle Cross Sand (MDCS) wider characterisation transect and subsequent grab samples							
16/06/2016	14:55:56	MDCS Start Line	52.65903°N	1.90682°E		Fix_3300	41.94		
16/06/2016	15:06:07	MDCS End Line	52.65818°N	1.85767°E		Fix_3301	28.73		
16/06/2016	15:27:47	MDCST02	52.65828°N	1.85788°E		Fix_3302	26.86	0.00	Grab misfired
16/06/2016	15:29:38	MDCST02	52.65830°N	1.85808°E	208	Fix_3303	26.35	11.20	Biota + PSA
16/06/2016	15:34:04	MDCSF02	52.65846°N	1.86760°E	209	Fix_3304	13.29	12.80	Biota + PSA
16/06/2016	15:39:04	MDCSC01	52.65848°N	1.88276°E	210	Fix_3305	7.60	0.00	Grab misfired
16/06/2016	15:40:42	MDCSC01	52.65861°N	1.88253°E	210	Fix_3306	5.78	11.20	Biota + PSA
16/06/2016	15:44:50	MDCSF01	52.65865°N	1.89401°E	211	Fix_3307	24.43	11.20	Biota + PSA
16/06/2016	15:49:22	MDCST01	52.65867°N	1.90304°E	212	Fix_3308	42.70	7.20	Biota + PSA
16/06/2016	17:05:00	Arrived at Hamilton Dock, Lowestoft							
17/06/2016	06:34:29	Bunkering completed							
17/06/2016	07:05:32	Departed from Hamilton Dock, Lowestoft							
17/06/2016	09:15:53	Start of line NWBK	52.77577°N	1.84214°E		Fix_3310	35.30		
17/06/2016	09:28:43	End of line NWBK	52.77535°N	1.90748°E		Fix_3312	18.14		
17/06/2016	09:46:37	NWBKT02	52.77557°N	1.88661°E	213	Fix_3313	33.71	9.60	Biota + PSA
17/06/2016	09:52:10	NWBKF02	52.77543°N	1.87628°E	214	Fix_3314	20.90	8.80	Biota + PSA
17/06/2016	09:55:05	NWBKC01	52.77565°N	1.87046°E	215	Fix_3315	14.35	11.20	Biota + PSA
17/06/2016	09:59:17	NWBKF01	52.77586°N	1.85914°E	216	Fix_3316	24.91	8.00	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
17/06/2016	10:04:38	NWBKT01	52.77585°N	1.84391°E	217	Fix_3317	35.92	10.40	Biota + PSA
17/06/2016	10:33:14	Start of line HMKN	52.84239°N	1.91859°E		Fix_3318	32.13		
17/06/2016	10:41:45	End of line HMKN	52.85440°N	1.95652°E		Fix_3319	31.44		
17/06/2016	10:42:01	Start of line WNRD	52.85448°N	1.95674°E		Fix_3320	31.73		
17/06/2016	10:52:20	End of line WNRD	52.87010°N	2.00309°E		Fix_3321	37.94		
17/06/2016	10:52:32	Start of line MDGR	52.87019°N	2.00329°E		Fix_3322	37.81		
17/06/2016	11:14:57	End of line MDGR	52.90540°N	2.09302°E		Fix_3323	38.29		
17/06/2016	11:34:12	Start of line HWRD	52.95977°N	2.07623°E		Fix_3324	33.60		
17/06/2016	11:49:24	End of line HWRD	52.93621°N	2.01670°E		Fix_3325	37.75		
17/06/2016	12:10:50	HWDRT02	52.94161°N	2.03025°E	218	Fix_3326	37.39	5.60	Biota + PSA
17/06/2016	12:18:39	HWDRF02	52.94910°N	2.04856°E	219	Fix_3327	23.23	8.80	Biota + PSA
17/06/2016	12:24:54	HWDRC01	52.95605°N	2.06636°E	220	Fix_3328	11.65	8.00	Biota + PSA
17/06/2016	12:27:39	HWDRF01	52.95739°N	2.06906°E	221	Fix_3329	26.08	8.00	Biota + PSA
17/06/2016	12:31:46	HWDRT01	52.95980°N	2.07602°E	222	Fix_3330	33.21	7.20	Biota + PSA
17/06/2016	12:57:13	MDGRT02	52.90403°N	2.08915°E	223	Fix_3331	39.15	6.40	Biota + PSA
17/06/2016	13:07:57	MDGRF02	52.89244°N	2.06031°E	224	Fix_3332	26.33	0.00	Grab misfired
17/06/2016	13:10:40	MDGRF02	52.89223°N	2.06058°E	224	Fix_3333	27.08	11.20	Biota + PSA
17/06/2016	13:14:56	MDGRC01	52.89050°N	2.05569°E	225	Fix_3334	15.50	9.60	Biota + PSA
17/06/2016	13:23:29	MDGRF01	52.88037°N	2.03051°E	226	Fix_3335	27.46	8.80	Biota + PSA
17/06/2016	13:33:54	MDGRT01	52.87210°N	2.00867°E	227	Fix_3336	38.78	8.00	Biota + PSA
17/06/2016	13:39:48	WNRDT02	52.86847°N	1.99985°E	228	Fix_3337	38.89	9.60	Biota + PSA
17/06/2016	13:45:10	WNRDF02	52.86528°N	1.99008°E	229	Fix_3338	24.26	14.40	Biota + PSA
17/06/2016	13:49:26	WNRDC01	52.86310°N	1.98241°E	230	Fix_3339	15.34	9.60	Biota + PSA
17/06/2016	13:53:07	WNRDF01	52.86081°N	1.97569°E	231	Fix_3340	25.60	8.80	Biota + PSA

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	STN no.	Hpro fix no.	Water depth (m)	Sediment vol. (litres) calculated	Sediment use
17/06/2016	13:57:33	WNRDT01	52.85874°N	1.96921°E	232	Fix_3341	33.10	9.60	Biota + PSA
17/06/2016	14:03:50	HMKNT02	52.85436°N	1.95573°E	233	Fix_3342	57.02	7.20	Biota + PSA
17/06/2016	14:07:36	HMKNF02	52.85298°N	1.95202°E	234	Fix_3343	20.75	8.80	Biota + PSA
17/06/2016	14:10:55	HMKNC01	52.85173°N	1.94862°E	235	Fix_3344	16.80	8.80	Biota + PSA
17/06/2016	14:15:40	HMKNF01	52.85009°N	1.94285°E	236	Fix_3345	23.96	9.60	Biota + PSA
17/06/2016	14:21:14	HMKNT01	52.84603°N	1.93035°E	237	Fix_3346	32.95	6.40	Biota + PSA
17/06/2016	16:35:55	Arrived at Hamilton Dock, Lowestoft							
19/06/2016	04:58:59	Departed from Hamilton Dock, Lowestoft							
19/06/2016	07:04:44	Start of Line	52.73439°N	2.12331°E			36.60		
19/06/2016	07:20:04	End of line	52.74049°N	2.20237°E			43.65		
19/06/2016	07:33:58	HRKNT02	52.73977°N	2.19736°E	238		43.96	6.50	Biota + PSA
19/06/2016	07:40:48	HRKNF02	52.73907°N	2.18665°E	239		31.81	4.00	Biota + PSA
19/06/2016	07:47:17	HRKNC01	52.73762°N	2.17234°E	240		19.95	5.50	Biota + PSA
19/06/2016	07:54:13	HRKNF01	52.73671°N	2.15468°E	241		29.72	3.50	Biota + PSA
19/06/2016	08:03:00	HRKNT01	52.73484°N	2.12875°E	242		37.37	3.50	Biota + PSA
19/06/2016	10:56:00	Arrived at Hamilton Dock, Lowestoft							

6.6.2 Video Metadata

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro Fix No.	Fix description	Still Label
21/06/2016	06:00:00	vessel departed Hamilton Dock (Lowestoft)								
21/06/2016	07:34:00	Harbour Porpoises sighted								
21/06/2016	08:50:00	arrived Smith's Knoll CSA								
21/06/2016	08:56:20	SMNKT12	52.84658	2.24231	1.90	49.40	243	4880	Start of Line (SoL)	no image
21/06/2016	08:56:37	SMNKT12	52.84644	2.24236	1.84	49.00	243	4881		SMKN_2GDK70616_T12_STN243_A1_0001_085635.JPG
21/06/2016	08:57:19	SMNKT12	52.84612	2.24250	1.66	49.00	243	4882		SMKN_2GDK70616_T12_STN243_A1_0002_085718.JPG
21/06/2016	08:57:45	SMNKT12	52.84594	2.24259	1.55	49.00	243	4883		SMKN_2GDK70616_T12_STN243_A1_0003_085745.JPG
21/06/2016	08:58:31	SMNKT12	52.84563	2.24271	1.44	49.00	243	4884		SMKN_2GDK70616_T12_STN243_A1_0004_085831.JPG
21/06/2016	08:59:04	SMNKT12	52.84541	2.24281	1.52	49.00	243	4885		SMKN_2GDK70616_T12_STN243_A1_0005_085904.JPG
21/06/2016	08:59:46	SMNKT12	52.84511	2.24299	1.63	49.00	243	4886		SMKN_2GDK70616_T12_STN243_A1_0006_085946.JPG
21/06/2016	09:00:37	SMNKT12	52.84474	2.24320	1.64	49.00	243	4887		SMKN_2GDK70616_T12_STN243_A1_0007_090037.JPG
21/06/2016	09:01:03	SMNKT12	52.84454	2.24330	1.68	49.00	243	4888	End of Line (EoL)	SMKN_2GDK70616_T12_STN243_A1_0008_090104.JPG
21/06/2016	09:21:09	SMKNF08	52.84753	2.20936	0.96	26.66	244	4889	SoL	SMKN_2GDK70616_F08_STN244_A1_0009_092109.JPG
21/06/2016	09:21:42	SMKNF08	52.84738	2.20944	0.98	26.82	244	4890		SMKN_2GDK70616_F08_STN244_A1_0010_092143.JPG
21/06/2016	09:22:21	SMKNF08	52.84721	2.20955	1.12	26.80	244	4891		SMKN_2GDK70616_F08_STN244_A1_0011_092223.JPG
21/06/2016	09:22:50	SMKNF08	52.84708	2.20966	1.11	26.87	244	4892		SMKN_2GDK70616_F08_STN244_A1_0012_092250.JPG
21/06/2016	09:23:46	SMKNF08	52.84678	2.20984	1.37	26.88	244	4893		SMKN_2GDK70616_F08_STN244_A1_0013_092347.JPG
21/06/2016	09:24:20	SMKNF08	52.84659	2.20995	1.36	27.08	244	4894		SMKN_2GDK70616_F08_STN244_A1_0014_092419.JPG
21/06/2016	09:24:56	SMKNF08	52.84639	2.21006	1.31	27.15	244	4895		no image
21/06/2016	09:25:19	SMKNF08	52.84627	2.21013	1.22	26.83	244	4896		SMKN_2GDK70616_F08_STN244_A1_0015_092519.JPG
21/06/2016	09:25:47	SMKNF08	52.84612	2.21020	1.24	27.06	244	4897		SMKN_2GDK70616_F08_STN244_A1_0016_092548.JPG
21/06/2016	09:26:32	SMKNF08	52.84587	2.21032	1.12	27.26	244	4898		SMKN_2GDK70616_F08_STN244_A1_0017_092633.JPG
21/06/2016	09:26:57	SMKNF08	52.84574	2.21040	1.21	27.26	244	4899		SMKN_2GDK70616_F08_STN244_A1_0018_092657.JPG
21/06/2016	09:27:28	SMKNF08	52.84558	2.21048	1.21	27.42	244	4900	EoL	SMKN_2GDK70616_F08_STN244_A1_0019_092728.JPG
21/06/2016	09:31:36	SMKNF11	52.84313	2.21058	1.34	31.07	245	4901	SoL	SMKN_2GDK70616_F11_STN245_A1_0020_093136.JPG
21/06/2016	09:32:42	SMKNF11	52.84277	2.21074	1.15	30.47	245	4902		SMKN_2GDK70616_F11_STN245_A1_0021_093243.JPG

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro Fix No.	Fix description	Still Label
21/06/2016	09:32:59	SMKNF11	52.84268	2.21079	1.20	30.43	245	4903		SMKN_2GDK70616_F11_STN245_A1_0022_093259.JPG
21/06/2016	09:33:27	SMKNF11	52.84254	2.21088	1.29	30.66	245	4904		SMKN_2GDK70616_F11_STN245_A1_0023_093326.JPG
21/06/2016	09:34:10	SMKNF11	52.84232	2.21099	1.13	30.88	245	4905		SMKN_2GDK70616_F11_STN245_A1_0024_093410.JPG
21/06/2016	09:34:38	SMKNF11	52.84218	2.21107	1.11	30.84	245	4906		SMKN_2GDK70616_F11_STN245_A1_0025_093438.JPG
21/06/2016	09:35:17	SMKNF11	52.84198	2.21119	1.18	30.55	245	4907		SMKN_2GDK70616_F11_STN245_A1_0026_093517.JPG
21/06/2016	09:36:05	SMKNF11	52.84177	2.21132	0.93	30.32	245	4908	EoL	SMKN_2GDK70616_F11_STN245_A1_0027_093607.JPG
21/06/2016	09:45:00	SMKNF06	52.85210	2.20725	0.82	24.89	246	4909	SoL	SMKN_2GDK70616_F06_STN246_A1_0028_094502.JPG
21/06/2016	09:45:49	SMKNF06	52.85196	2.20735	0.66	25.40	246	4910		SMKN_2GDK70616_F06_STN246_A1_0029_094548.JPG
21/06/2016	09:46:26	SMKNF06	52.85184	2.20743	0.83	25.01	246	4911		SMKN_2GDK70616_F06_STN246_A1_0030_094626.JPG
21/06/2016	09:46:56	SMKNF06	52.85172	2.20749	0.87	25.09	246	4912		SMKN_2GDK70616_F06_STN246_A1_0031_094656.JPG
21/06/2016	09:47:23	SMKNF06	52.85160	2.20754	0.92	24.93	246	4913		SMKN_2GDK70616_F06_STN246_A1_0032_094723.JPG
21/06/2016	09:47:57	SMKNF06	52.85147	2.20759	0.81	25.21	246	4914		no image
21/06/2016	09:48:29	SMKNF06	52.85136	2.20763	0.85	25.45	246	4915		SMKN_2GDK70616_F06_STN246_A1_0033_094828.JPG
21/06/2016	09:49:26	SMKNF06	52.85115	2.20771	0.76	25.29	246	4916		SMKN_2GDK70616_F06_STN246_A1_0034_094926.JPG
21/06/2016	09:50:06	SMKNF06	52.85101	2.20775	0.73	25.61	246	4917		SMKN_2GDK70616_F06_STN246_A1_0035_095008.JPG
21/06/2016	09:50:41	SMKNF06	52.85089	2.20777	0.65	25.40	246	4918		SMKN_2GDK70616_F06_STN246_A1_0036_095040.JPG
21/06/2016	09:51:12	SMKNF06	52.85080	2.20778	0.64	25.61	246	4919		SMKN_2GDK70616_F06_STN246_A1_0037_095112.JPG
21/06/2016	09:51:37	SMKNF06	52.85072	2.20780	0.75	25.56	246	4920	EoL	no image
21/06/2016	10:00:19	SMKNT10	52.84848	2.18736	1.12	43.88	247	auto	SoL	SMKN_2GDK70616_T10_STN247_A1_0038_100019.JPG
21/06/2016	10:01:36	SMKNT10	52.84818	2.18760	1.01	43.52	247	4922		SMKN_2GDK70616_T10_STN247_A1_0039_100135.JPG
21/06/2016	10:02:19	SMKNT10	52.84795	2.18776	1.21	43.56	247	4923		SMKN_2GDK70616_T10_STN247_A1_0040_100218.JPG
21/06/2016	10:02:53	SMKNT10	52.84779	2.18786	1.06	43.69	247	4924		SMKN_2GDK70616_T10_STN247_A1_0041_100255.JPG
21/06/2016	10:04:31	SMKNT10	52.84736	2.18810	1.04	44.02	247	4925		SMKN_2GDK70616_T10_STN247_A1_0042_100431.JPG
21/06/2016	10:05:22	SMKNT10	52.84713	2.18823	1.02	43.46	247	4926		SMKN_2GDK70616_T10_STN247_A1_0043_100521.JPG
21/06/2016	10:06:14	SMKNT10	52.84691	2.18836	0.95	43.71	247	4927		SMKN_2GDK70616_T10_STN247_A1_0044_100615.JPG
21/06/2016	10:07:18	SMKNT10	52.84664	2.18852	1.00	43.60	247	4928		SMKN_2GDK70616_T10_STN247_A1_0045_100717.JPG
21/06/2016	10:08:13	SMKNT10	52.84640	2.18865	0.99	43.87	247	4929		SMKN_2GDK70616_T10_STN247_A1_0046_100813.JPG
21/06/2016	10:09:22	SMKNT10	52.84610	2.18884	1.07	43.63	247	4930	EoL	SMKN_2GDK70616_T10_STN247_A1_0047_100921.JPG
21/06/2016	10:15:58	SMKNT02	52.84060	2.19232	1.10	44.31	248	4931	SoL	no image
21/06/2016	10:16:33	SMKNT02	52.84043	2.19239	1.09	44.37	248	auto		SMKN_2GDK70616_T02_STN248_A1_0048_101633.JPG

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro Fix No.	Fix description	Still Label
21/06/2016	10:17:03	SMKNT02	52.84029	2.19245	1.16	44.14	248	4933		SMKN_2GDK70616_T02_STN248_A1_0049_101702.JPG
21/06/2016	10:17:39	SMKNT02	52.84014	2.19251	0.97	44.13	248	4934		SMKN_2GDK70616_T02_STN248_A1_0050_101741.JPG
21/06/2016	10:18:05	SMKNT02	52.84004	2.19257	0.85	44.26	248	4935		SMKN_2GDK70616_T02_STN248_A1_0051_101805.JPG
21/06/2016	10:18:48	SMKNT02	52.83986	2.19267	0.99	43.95	248	4936		SMKN_2GDK70616_T02_STN248_A1_0052_101849.JPG
21/06/2016	10:19:19	SMKNT02	52.83974	2.19273	0.82	44.42	248	4937		SMKN_2GDK70616_T02_STN248_A1_0053_101919.JPG
21/06/2016	10:20:08	SMKNT02	52.83958	2.19283	0.80	44.55	248	4938	EoL	SMKN_2GDK70616_T02_STN248_A1_0054_102010.JPG
21/06/2016	10:27:51	SMKNB02	52.83948	2.18266	1.18	43.71	249	4939	SoL	SMKN_2GDK70616_B02_STN249_A1_0055_102751.JPG
21/06/2016	10:28:16	SMKNB02	52.83937	2.18266	0.93	43.45	249	4940		SMKN_2GDK70616_B02_STN249_A1_0056_102816.JPG
21/06/2016	10:28:59	SMKNB02	52.83921	2.18269	0.78	43.75	249	4941		SMKN_2GDK70616_B02_STN249_A1_0057_102859.JPG
21/06/2016	10:29:35	SMKNB02	52.83909	2.18273	0.68	43.64	249	4942		SMKN_2GDK70616_B02_STN249_A1_0058_102937.JPG
21/06/2016	10:30:03	SMKNB02	52.83900	2.18277	0.79	43.88	249	4943		SMKN_2GDK70616_B02_STN249_A1_0059_103003.JPG
21/06/2016	10:30:30	SMKNB02	52.83891	2.18279	0.69	43.66	249	4944		SMKN_2GDK70616_B02_STN249_A1_0060_103030.JPG
21/06/2016	10:31:22	SMKNB02	52.83874	2.18260	1.03	43.71	249	4945		SMKN_2GDK70616_B02_STN249_A1_0061_103123.JPG
21/06/2016	10:32:10	SMKNB02	52.83853	2.18248	0.93	43.51	249	4946		SMKN_2GDK70616_B02_STN249_A1_0062_103209.JPG
21/06/2016	10:33:00	SMKNB02	52.83834	2.18242	0.89	44.00	249	4947		no image
21/06/2016	10:33:23	SMKNB02	52.83826	2.18241	0.71	43.88	249	4948		SMKN_2GDK70616_B02_STN249_A1_0063_103323.JPG
21/06/2016	10:33:55	SMKNB02	52.83812	2.18228	1.14	44.03	249	4949		SMKN_2GDK70616_B02_STN249_A1_0064_103355.JPG
21/06/2016	10:34:55	SMKNB02	52.83784	2.18215	0.85	43.73	249	4950	EoL	SMKN_2GDK70616_B02_STN249_A1_0065_103454.JPG
21/06/2016	10:43:38	SMKNB05	52.84235	2.17210	0.71	44.71	250	4951	SoL	SMKN_2GDK70616_B05_STN250_A1_0066_104339.JPG
21/06/2016	10:44:01	SMKNB05	52.84228	2.17204	0.81	44.80	250	4952		SMKN_2GDK70616_B05_STN250_A1_0067_104404.JPG
21/06/2016	10:44:25	SMKNB05	52.84221	2.17190	1.12	44.88	250	4953		SMKN_2GDK70616_B05_STN250_A1_0068_104425.JPG
21/06/2016	10:45:03	SMKNB05	52.84202	2.17171	1.23	46.19	250	4954		SMKN_2GDK70616_B05_STN250_A1_0069_104503.JPG
21/06/2016	10:45:22	SMKNB05	52.84193	2.17164	1.06	45.67	250	4955		SMKN_2GDK70616_B05_STN250_A1_0070_104522.JPG
21/06/2016	10:45:46	SMKNB05	52.84180	2.17153	1.39	46.15	250	4956		SMKN_2GDK70616_B05_STN250_A1_0071_104546.JPG
21/06/2016	10:46:31	SMKNB05	52.84149	2.17145	1.36	46.10	250	4957		SMKN_2GDK70616_B05_STN250_A1_0072_104631.JPG
21/06/2016	10:46:53	SMKNB05	52.84138	2.17141	1.01	45.61	250	4958		SMKN_2GDK70616_B05_STN250_A1_0073_104653.JPG
21/06/2016	10:47:28	SMKNB05	52.84122	2.17134	1.00	45.36	250	4959		SMKN_2GDK70616_B05_STN250_A1_0074_104727.JPG
21/06/2016	10:47:44	SMKNB05	52.84113	2.17134	1.00	45.47	250	4960		SMKN_2GDK70616_B05_STN250_A1_0075_104745.JPG
21/06/2016	10:48:32	SMKNB05	52.84085	2.17130	1.14	45.17	250	4961	EoL	SMKN_2GDK70616_B05_STN250_A1_0076_104832.JPG
21/06/2016	10:56:25	SMKNB09	52.84716	2.17000	0.47	44.94	251	4962	SoL	no image

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro Fix No.	Fix description	Still Label
21/06/2016	10:57:12	SMKNB09	52.84701	2.16999	0.69	44.99	251	4963		SMKN_2GDK70616_B09_STN251_A1_0077_105712.JPG
21/06/2016	10:57:53	SMKNB09	52.84686	2.16993	0.83	45.06	251	4964		SMKN_2GDK70616_B09_STN251_A1_0078_105753.JPG
21/06/2016	10:58:55	SMKNB09	52.84662	2.16980	0.76	44.88	251	4965		SMKN_2GDK70616_B09_STN251_A1_0079_105855.JPG
21/06/2016	10:59:23	SMKNB09	52.84654	2.16973	0.83	45.44	251	4966		SMKN_2GDK70616_B09_STN251_A1_0080_105922.JPG
21/06/2016	10:59:48	SMKNB09	52.84644	2.16970	0.84	45.24	251	4967		SMKN_2GDK70616_B09_STN251_A1_0081_105948.JPG
21/06/2016	11:00:07	SMKNB09	52.84638	2.16969	0.72	45.17	251	4968		SMKN_2GDK70616_B09_STN251_A1_0082_110006.JPG
21/06/2016	11:00:45	SMKNB09	52.84621	2.16968	1.06	45.64	251	4969		SMKN_2GDK70616_B09_STN251_A1_0083_110045.JPG
21/06/2016	11:01:33	SMKNB09	52.84601	2.16974	0.77	45.57	251	4970		SMKN_2GDK70616_B09_STN251_A1_0084_110132.JPG
21/06/2016	11:01:48	SMKNB09	52.84596	2.16976	0.83	45.69	251	4971	EoL	SMKN_2GDK70616_B09_STN251_A1_0085_110148.JPG
21/06/2016	11:19:37	SMKNF21	52.85568	2.22523	0.59	31.29	252	4972	SoL	SMKN_2GDK70616_F21_STN252_A1_0086_111937.JPG
21/06/2016	11:20:05	SMKNF21	52.85561	2.22523	0.59	31.01	252	4973		SMKN_2GDK70616_F21_STN252_A1_0087_112005.JPG
21/06/2016	11:21:03	SMKNF21	52.85545	2.22521	0.76	30.48	252	4974		SMKN_2GDK70616_F21_STN252_A1_0088_112103.JPG
21/06/2016	11:21:41	SMKNF21	52.85528	2.22515	1.04	29.98	252	4975		SMKN_2GDK70616_F21_STN252_A1_0089_112141.JPG
21/06/2016	11:22:16	SMKNF21	52.85511	2.22512	1.05	29.31	252	4976		SMKN_2GDK70616_F21_STN252_A1_0090_112216.JPG
21/06/2016	11:23:12	SMKNF21	52.85483	2.22506	1.01	28.55	252	4977		SMKN_2GDK70616_F21_STN252_A1_0091_112312.JPG
21/06/2016	11:23:53	SMKNF21	52.85466	2.22503	0.88	28.22	252	4978		SMKN_2GDK70616_F21_STN252_A1_0092_112352.JPG
21/06/2016	11:24:18	SMKNF21	52.85457	2.22501	0.86	27.94	252	4979		SMKN_2GDK70616_F21_STN252_A1_0093_112418.JPG
21/06/2016	11:24:47	SMKNF21	52.85444	2.22497	1.06	27.35	252	4980		SMKN_2GDK70616_F21_STN252_A1_0094_112447.JPG
21/06/2016	11:25:48	SMKNF21	52.85423	2.22494	0.70	26.80	252	4981	EoL	SMKN_2GDK70616_F21_STN252_A1_0095_112548.JPG
21/06/2016	11:30:54	SMKNF17	52.85075	2.22675	0.95	29.46	253	4982	SoL	SMKN_2GDK70616_F17_STN253_A1_0096_113054.JPG
21/06/2016	11:31:42	SMKNF17	52.85053	2.22669	1.02	28.72	253	4983		SMKN_2GDK70616_F17_STN253_A1_0097_113142.JPG
21/06/2016	11:32:07	SMKNF17	52.85043	2.22666	0.87	27.96	253	4984		SMKN_2GDK70616_F17_STN253_A1_0098_113206.JPG
21/06/2016	11:32:54	SMKNF17	52.85020	2.22657	0.98	27.40	253	4985		SMKN_2GDK70616_F17_STN253_A1_0099_113256.JPG
21/06/2016	11:33:33	SMKNF17	52.85004	2.22646	1.01	26.79	253	4986		SMKN_2GDK70616_F17_STN253_A1_0100_113332.JPG
21/06/2016	11:33:57	SMKNF17	52.84993	2.22639	1.15	25.82	253	4987		SMKN_2GDK70616_F17_STN253_A1_0101_113357.JPG
21/06/2016	11:34:15	SMKNF17	52.84984	2.22635	1.11	26.17	253	4988		SMKN_2GDK70616_F17_STN253_A1_0102_113415.JPG
21/06/2016	11:34:37	SMKNF17	52.84972	2.22628	1.27	25.24	253	4989		SMKN_2GDK70616_F17_STN253_A1_0103_113437.JPG
21/06/2016	11:35:07	SMKNF17	52.84954	2.22621	1.18	24.81	253	4990		SMKN_2GDK70616_F17_STN253_A1_0104_113507.JPG
21/06/2016	11:35:55	SMKNF17	52.84934	2.22613	0.82	24.02	253	4991	EoL	SMKN_2GDK70616_F17_STN253_A1_0105_113554.JPG
21/06/2016	11:41:26	SMKNF12	52.84529	2.22984	0.52	32.58	254	4992	SoL	no image

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro Fix No.	Fix description	Still Label
21/06/2016	11:42:17	SMKNF12	52.84507	2.22967	1.15	31.98	254	4993		SMKN_2GDK70616_F12_STN254_A1_0106_114216.JPG
21/06/2016	11:42:58	SMKNF12	52.84486	2.22955	1.20	31.24	254	4994		SMKN_2GDK70616_F12_STN254_A1_0107_114258.JPG
21/06/2016	11:43:11	SMKNF12	52.84480	2.22952	1.11	31.03	254	4995		SMKN_2GDK70616_F12_STN254_A1_0108_114310.JPG
21/06/2016	11:43:57	SMKNF12	52.84461	2.22944	0.77	30.21	254	4996		SMKN_2GDK70616_F12_STN254_A1_0109_114356.JPG
21/06/2016	11:44:20	SMKNF12	52.84452	2.22942	0.90	30.04	254	4997		SMKN_2GDK70616_F12_STN254_A1_0110_114420.JPG
21/06/2016	11:45:20	SMKNF12	52.84429	2.22937	0.86	29.43	254	4998		SMKN_2GDK70616_F12_STN254_A1_0111_114519.JPG
21/06/2016	11:46:09	SMKNF12	52.84407	2.22929	1.04	28.36	254	4999		SMKN_2GDK70616_F12_STN254_A1_0112_114608.JPG
21/06/2016	11:46:32	SMKNF12	52.84399	2.22921	0.76	27.83	254	5000		SMKN_2GDK70616_F12_STN254_A1_0113_114631.JPG
21/06/2016	11:47:30	SMKNF12	52.84381	2.22897	0.79	26.61	254	5001	EoL	SMKN_2GDK70616_F12_STN254_A1_0114_114729.JPG
21/06/2016	11:58:42	SMKNT17	52.85248	2.23880	0.75	49.50	255	5002	SoL	no image
21/06/2016	11:59:30	SMKNT17	52.85235	2.23881	0.56	49.50	255	5003		no image
21/06/2016	11:59:31	SMKNT17	52.85235	2.23881	0.59	49.50	255	5004		erroneous fix
21/06/2016	12:00:33	SMKNT17	52.85218	2.23898	0.78	49.50	255	5005		no image
21/06/2016	12:01:09	SMKNT17	52.85207	2.23912	0.79	49.50	255	5006		SMKN_2GDK70616_T17_STN255_A1_0115_120109.JPG
21/06/2016	12:02:01	SMKNT17	52.85188	2.23921	0.74	49.50	255	5007	EoL	SMKN_2GDK70616_T17_STN255_A1_0116_120203.JPG
21/06/2016	12:09:57	SMKNT21	52.85666	2.23572	0.61	49.28	256	5008	SoL	SMKN_2GDK70616_T21_STN256_A1_0117_120957.JPG
21/06/2016	12:10:27	SMKNT21	52.85659	2.23570	0.42	49.00	256	5009		SMKN_2GDK70616_T21_STN256_A1_0118_121027.JPG
21/06/2016	12:11:41	SMKNT21	52.85639	2.23565	0.49	49.00	256	5010		SMKN_2GDK70616_T21_STN256_A1_0119_121140.JPG
21/06/2016	12:12:20	SMKNT21	52.85630	2.23561	0.67	49.00	256	5011		SMKN_2GDK70616_T21_STN256_A1_0120_121219.JPG
21/06/2016	12:12:57	SMKNT21	52.85615	2.23570	1.04	49.00	256	5012		SMKN_2GDK70616_T21_STN256_A1_0121_121257.JPG
21/06/2016	12:13:50	SMKNT21	52.85593	2.23576	0.79	49.00	256	5013		no image
21/06/2016	12:14:20	SMKNT21	52.85584	2.23570	0.66	49.00	256	5014		no image
21/06/2016	12:15:12	SMKNT21	52.85572	2.23561	0.69	49.00	256	5015		SMKN_2GDK70616_T21_STN256_A1_0122_121512.JPG
21/06/2016	12:15:12	SMKNT21	52.85572	2.23560	0.69	49.00	256	5016		erroneous fix
21/06/2016	12:15:12	SMKNT21	52.85572	2.23560	0.69	49.00	256	5017		erroneous fix
21/06/2016	12:15:12	SMKNT21	52.85572	2.23560	0.69	49.00	256	5018		erroneous fix
21/06/2016	12:15:12	SMKNT21	52.85572	2.23560	0.69	49.00	256	5019		erroneous fix
21/06/2016	12:15:50	SMKNT21	52.85562	2.23549	0.78	49.00	256	5020		SMKN_2GDK70616_T21_STN256_A1_0123_121550.JPG
21/06/2016	12:16:50	SMKNT21	52.85546	2.23535	0.50	49.00	256	5021		SMKN_2GDK70616_T21_STN256_A1_0124_121650.JPG
21/06/2016	12:17:34	SMKNT21	52.85531	2.23527	0.85	49.00	256	5022	EoL	SMKN_2GDK70616_T21_STN256_A1_0125_121734.JPG

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21/06/2016	12:29:11	SMKNB13	52.85930	2.25452	0.68	46.53	257	5023	SoL	SMKN_2GDK70616_B13_STN257_A1_0126_122911.JPG
21/06/2016	12:30:18	SMKNB13	52.85920	2.25457	0.48	46.64	257	5024		SMKN_2GDK70616_B13_STN257_A1_0127_123018.JPG
21/06/2016	12:30:18	SMKNB13	52.85920	2.25457	0.48	46.74	257	5025		erroneous fix
21/06/2016	12:31:33	SMKNB13	52.85899	2.25456	0.53	47.43	257	5026		SMKN_2GDK70616_B13_STN257_A1_0128_123133.JPG
21/06/2016	12:32:35	SMKNB13	52.85881	2.25458	1.08	47.68	257	5027		SMKN_2GDK70616_B13_STN257_A1_0129_123235.JPG
21/06/2016	12:33:25	SMKNB13	52.85863	2.25455	0.80	47.64	257	5028		SMKN_2GDK70616_B13_STN257_A1_0130_123325.JPG
21/06/2016	12:34:12	SMKNB13	52.85848	2.25443	0.67	47.71	257	5029		SMKN_2GDK70616_B13_STN257_A1_0131_123412.JPG
21/06/2016	12:35:07	SMKNB13	52.85835	2.25427	0.75	47.80	257	5030		SMKN_2GDK70616_B13_STN257_A1_0132_123507.JPG
21/06/2016	12:36:05	SMKNB13	52.85812	2.25432	0.88	46.02	257	5031	EoL	SMKN_2GDK70616_B13_STN257_A1_0133_123605.JPG
21/06/2016	12:45:55	SMKNB16	52.85211	2.24815	1.41	49.59	258	5032	SoL	no image
21/06/2016	12:47:01	SMKNB16	52.85252	2.24789	1.31	49.14	258	5033		no image
21/06/2016	12:47:28	SMKNB16	52.85267	2.24777	1.31	49.03	258	5034		SMKN_2GDK70616_B16_STN258_A1_0134_124728.JPG
21/06/2016	12:48:04	SMKNB16	52.85287	2.24761	1.39	48.74	258	5035		SMKN_2GDK70616_B16_STN258_A1_0135_124803.JPG
21/06/2016	12:48:20	SMKNB16	52.85296	2.24753	1.42	47.90	258	5036	EoL	SMKN_2GDK70616_B16_STN258_A1_0136_124824.JPG
21/06/2016	12:57:36	SMKNB21	52.84818	2.25955	1.34	47.93	259	5037	SoL	SMKN_2GDK70616_B21_STN259_A1_0137_125736.JPG
21/06/2016	12:58:23	SMKNB21	52.84841	2.25947	1.17	47.94	259	5038		SMKN_2GDK70616_B21_STN259_A1_0138_125823.JPG
21/06/2016	12:58:23	SMKNB21	52.84841	2.25947	1.17	47.78	259	5039		erroneous fix
21/06/2016	12:59:23	SMKNB21	52.84867	2.25938	0.72	48.21	259	5040		SMKN_2GDK70616_B21_STN259_A1_0139_125923.JPG
21/06/2016	13:00:10	SMKNB21	52.84883	2.25936	0.70	47.72	259	5041		SMKN_2GDK70616_B21_STN259_A1_0140_130010.JPG
21/06/2016	13:00:42	SMKNB21	52.84894	2.25931	0.60	47.86	259	5042		SMKN_2GDK70616_B21_STN259_A1_0141_130042.JPG
21/06/2016	13:01:45	SMKNB21	52.84919	2.25918	0.87	48.16	259	5043		SMKN_2GDK70616_B21_STN259_A1_0142_130144.JPG
21/06/2016	13:01:59	SMKNB21	52.84924	2.25914	0.94	47.68	259	5044		SMKN_2GDK70616_B21_STN259_A1_0143_130159.JPG
21/06/2016	13:02:46	SMKNB21	52.84943	2.25899	0.93	48.35	259	5045		SMKN_2GDK70616_B21_STN259_A1_0144_130246.JPG
21/06/2016	13:03:33	SMKNB21	52.84964	2.25884	0.90	48.16	259	5046	EoL	SMKN_2GDK70616_B21_STN259_A1_0145_130333.JPG
21/06/2016	13:14:52	SMKNT12_A2	52.84545	2.24354	1.28	49.31	260	5047	SoL	SMKN_2GDK70616_T12_STN260_A2_0146_131452
21/06/2016	13:16:17	SMKNT12_A2	52.84592	2.24352	1.48	49.57	260	5048		SMKN_2GDK70616_T12_STN260_A2_0147_131617
21/06/2016	13:17:41	SMKNT12_A2	52.84659	2.24334	1.82	49.00	260	5049		SMKN_2GDK70616_T12_STN260_A2_0148_131741
21/06/2016	13:17:41	SMKNT12_A2	52.84659	2.24334	1.82	49.00	260	5050	EoL	erroneous fix
21/06/2016	13:20:00	*Sabellaria* mitigation camera drops completed at Smith's Knoll CSA								
21/06/2016	16:40:00	vessel alongside in Lowestoft								

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22/06/2016	06:00:00	vessel departed Hamilton Dock (Lowestoft)								
22/06/2016	08:45:00	arrived SW of Haisborough Tail CSA								
22/06/2016	08:54:51	SWHTT11	52.85958	1.81164	2.01	31.88	261	4879		no image - camera software issue
22/06/2016	08:56:59	SWHTT11_A2	52.85838	1.81215	2.40	30.61	262	4880	SoL	no image - camera software issue
22/06/2016	09:04:40	SWHTT11_A2	52.85999	1.81056	2.40	31.43	262	auto		SWHT_2GDK70616_T11_STN262_A2_0002_090440
22/06/2016	09:05:20	SWHTT11_A2	52.85959	1.81079	2.31	30.06	262	4882		no image
22/06/2016	09:06:16	SWHTT11_A2	52.85905	1.81109	2.21	29.37	262	4883		no image
22/06/2016	09:07:04	SWHTT11_A2	52.85862	1.81134	2.05	27.83	262	4884		SWHT_2GDK70616_T11_STN262_A2_0003_090704
22/06/2016	09:08:37	SWHTT11_A2	52.85788	1.81186	1.87	30.25	262	4885	EoL	no image
22/06/2016	09:19:13	SWHTF10	52.86092	1.81857	1.95	23.92	263	4886	SoI	no image
22/06/2016	09:21:10	SWHTF10	52.85992	1.81904	1.86	24.15	263	4887	EoI	SWHT_2GDK70616_F10_STN263_A1_0004_092110
22/06/2016	09:31:17	SWHTF06	52.86575	1.81468	1.77	19.09	264	4888	SoL	SWHT_2GDK70616_F06_STN264_A1_0005_093117
22/06/2016	09:31:29	SWHTF06	52.86566	1.81474	1.65	19.15	264	4889		SWHT_2GDK70616_F06_STN264_A1_0006_093129
22/06/2016	09:31:38	SWHTF06	52.86559	1.81479	1.64	18.40	264	4890		SWHT_2GDK70616_F06_STN264_A1_0007_093138
22/06/2016	09:32:01	SWHTF06	52.86543	1.81488	1.61	18.14	264	4891		SWHT_2GDK70616_F06_STN264_A1_0008_093201
22/06/2016	09:32:34	SWHTF06	52.86518	1.81506	1.93	18.37	264	4892		SWHT_2GDK70616_F06_STN264_A1_0009_093234
22/06/2016	09:33:14	SWHTF06	52.86486	1.81527	1.85	19.12	264	4893		SWHT_2GDK70616_F06_STN264_A1_0010_093315
22/06/2016	09:33:38	SWHTF06	52.86468	1.81539	1.63	20.00	264	4894		SWHT_2GDK70616_F06_STN264_A1_0011_093338
22/06/2016	09:33:55	SWHTF06	52.86456	1.81546	1.65	20.50	264	4895		SWHT_2GDK70616_F06_STN264_A1_0012_093355
22/06/2016	09:34:10	SWHTF06	52.86444	1.81554	1.71	20.24	264	4896		no image
22/06/2016	09:34:29	SWHTF06	52.86430	1.81562	1.79	20.12	264	4897		SWHT_2GDK70616_F06_STN264_A1_0013_093430
22/06/2016	09:34:45	SWHTF06	52.86418	1.81570	1.81	20.06	264	4898		SWHT_2GDK70616_F06_STN264_A1_0014_093445
22/06/2016	09:35:10	SWHTF06	52.86398	1.81582	1.87	19.98	264	4899		SWHT_2GDK70616_F06_STN264_A1_0015_093510
22/06/2016	09:35:20	SWHTF06	52.86390	1.81587	1.82	19.96	264	4900	EoL	SWHT_2GDK70616_F06_STN264_A1_0016_093521
22/06/2016	09:43:42	SWHTF02	52.86879	1.80887	1.85	22.44	265	4901	SoL	SWHT_2GDK70616_F02_STN265_A1_0017_094348
22/06/2016	09:44:14	SWHTF02	52.86854	1.80899	1.81	22.42	265	4902		SWHT_2GDK70616_F02_STN265_A1_0018_094414
22/06/2016	09:44:27	SWHTF02	52.86844	1.80904	1.73	22.40	265	4903		SWHT_2GDK70616_F02_STN265_A1_0019_094427
22/06/2016	09:45:13	SWHTF02	52.86808	1.80920	1.76	23.75	265	4904		SWHT_2GDK70616_F02_STN265_A1_0020_094513
22/06/2016	09:45:30	SWHTF02	52.86793	1.80926	1.87	24.08	265	4905		SWHT_2GDK70616_F02_STN265_A1_0021_094530
22/06/2016	09:46:05	SWHTF02	52.86763	1.80938	1.85	25.11	265	4906		SWHT_2GDK70616_F02_STN265_A1_0022_094606

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22/06/2016	09:46:37	SWHTF02	52.86737	1.80947	1.81	25.19	265	4907		SWHT_2GDK70616_F02_STN265_A1_0023_094637
22/06/2016	09:47:26	SWHTF02	52.86696	1.80962	1.98	24.78	265	4908		SWHT_2GDK70616_F02_STN265_A1_0024_094726
22/06/2016	09:47:38	SWHTF02	52.86686	1.80966	1.83	24.84	265	4909		SWHT_2GDK70616_F02_STN265_A1_0025_094738
22/06/2016	09:47:51	SWHTF02	52.86675	1.80971	1.89	24.74	265	4910	EoL	SWHT_2GDK70616_F02_STN265_A1_0026_094751
22/06/2016	09:57:54	SWHTF13	52.87144	1.81957	2.34	27.79	266	4911	SoL	no image
22/06/2016	09:59:24	SWHTF13	52.87062	1.81992	1.98	24.71	266	4912		SWHT_2GDK70616_F13_STN266_A1_0027_095926
22/06/2016	09:59:52	SWHTF13	52.87037	1.82002	2.00	24.11	266	4913	EoL	SWHT_2GDK70616_F13_STN266_A1_0028_095952
22/06/2016	10:05:07	SWHTF17	52.86776	1.82197	1.98	19.17	267	4914	SoL	SWHT_2GDK70616_F17_STN267_A1_0029_100507
22/06/2016	10:05:35	SWHTF17	52.86750	1.82202	2.07	18.18	267	4915		SWHT_2GDK70616_F17_STN267_A1_0030_100535
22/06/2016	10:06:52	SWHTF17	52.86681	1.82212	1.93	15.50	267	4916		SWHT_2GDK70616_F17_STN267_A1_0031_100652
22/06/2016	10:07:18	SWHTF17	52.86659	1.82214	1.88	14.65	267	4917		SWHT_2GDK70616_F17_STN267_A1_0032_100718
22/06/2016	10:07:38	SWHTF17	52.86644	1.82215	1.63	13.77	267	4918	EoL	SWHT_2GDK70616_F17_STN267_A1_0033_100738
22/06/2016	10:12:19	SWHTF21	52.86496	1.82950	1.95	23.10	268	4919	SoL	SWHT_2GDK70616_F21_STN268_A1_0034_101219
22/06/2016	10:12:37	SWHTF21	52.86484	1.82964	1.83	22.06	268	4920		SWHT_2GDK70616_F21_STN268_A1_0035_101237
22/06/2016	10:13:02	SWHTF21	52.86468	1.82978	1.55	21.49	268	4921		SWHT_2GDK70616_F21_STN268_A1_0036_101303
22/06/2016	10:13:40	SWHTF21	52.86440	1.82993	1.75	21.49	268	4922		SWHT_2GDK70616_F21_STN268_A1_0037_101340
22/06/2016	10:13:59	SWHTF21	52.86426	1.83000	1.68	20.61	268	4923		SWHT_2GDK70616_F21_STN268_A1_0038_101359
22/06/2016	10:14:15	SWHTF21	52.86414	1.83006	1.55	20.10	268	4924		SWHT_2GDK70616_F21_STN268_A1_0039_101415
22/06/2016	10:14:43	SWHTF21	52.86396	1.83013	1.39	19.48	268	4925		SWHT_2GDK70616_F21_STN268_A1_0040_101443
22/06/2016	10:14:54	SWHTF21	52.86388	1.83016	1.52	19.15	268	4926		SWHT_2GDK70616_F21_STN268_A1_0041_101454
22/06/2016	10:15:28	SWHTF21	52.86362	1.83027	1.70	18.14	268	4927		SWHT_2GDK70616_F21_STN268_A1_0042_101528
22/06/2016	10:15:59	SWHTF21	52.86337	1.83037	1.80	17.71	268	4928		SWHT_2GDK70616_F21_STN268_A1_0043_101559
22/06/2016	10:16:30	SWHTF21	52.86312	1.83044	1.81	16.73	268	4929	EoI	SWHT_2GDK70616_F21_STN268_A1_0044_101630
22/06/2016	10:23:12	SWHTT21	52.86876	1.83363	1.85	19.55	269	4930	SoI	SWHT_2GDK70616_T21_STN269_A1_0045_102312
22/06/2016	10:23:46	SWHTT21	52.86856	1.83381	1.23	25.29	269	4931		SWHT_2GDK70616_T21_STN269_A1_0046_102346
22/06/2016	10:24:03	SWHTT21	52.86849	1.83389	1.01	26.33	269	4932		SWHT_2GDK70616_T21_STN269_A1_0047_102403
22/06/2016	10:24:36	SWHTT21	52.86838	1.83405	1.00	26.79	269	4933		SWHT_2GDK70616_T21_STN269_A1_0048_102436
22/06/2016	10:25:43	SWHTT21	52.86803	1.83403	1.31	27.78	269	4934		SWHT_2GDK70616_T21_STN269_A1_0049_102542
22/06/2016	10:26:06	SWHTT21	52.86791	1.83399	1.22	28.74	269	4935		SWHT_2GDK70616_T21_STN269_A1_0050_102606
22/06/2016	10:26:20	SWHTT21	52.86783	1.83397	1.19	28.72	269	4936		SWHT_2GDK70616_T21_STN269_A1_0051_102620

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22/06/2016	10:27:38	SWHTT21	52.86737	1.83399	1.28	29.21	269	4937		SWHT_2GDK70616_T21_STN269_A1_0052_102738
22/06/2016	10:28:18	SWHTT21	52.86714	1.83413	1.41	27.40	269	4938		SWHT_2GDK70616_T21_STN269_A1_0053_102818
22/06/2016	10:28:44	SWHTT21	52.86699	1.83422	1.27	26.47	269	4939	EoL	SWHT_2GDK70616_T21_STN269_A1_0054_102844
22/06/2016	10:37:18	SWHTT19	52.87201	1.82860	1.08	31.15	270	4940	SoL	SWHT_2GDK70616_T19_STN270_A1_0055_103721
22/06/2016	10:37:41	SWHTT19	52.87191	1.82869	1.00	30.26	270	4941		SWHT_2GDK70616_T19_STN270_A1_0056_103741
22/06/2016	10:38:22	SWHTT19	52.87175	1.82882	0.93	28.93	270	4942		SWHT_2GDK70616_T19_STN270_A1_0057_103822
22/06/2016	10:39:16	SWHTT19	52.87154	1.82893	0.97	31.32	270	4943		SWHT_2GDK70616_T19_STN270_A1_0058_103916
22/06/2016	10:40:02	SWHTT19	52.87133	1.82904	1.05	30.60	270	4944		SWHT_2GDK70616_T19_STN270_A1_0059_104002
22/06/2016	10:40:44	SWHTT19	52.87115	1.82913	0.94	29.35	270	4945		SWHT_2GDK70616_T19_STN270_A1_0060_104044
22/06/2016	10:41:32	SWHTT19	52.87096	1.82922	0.83	27.79	270	4946		SWHT_2GDK70616_T19_STN270_A1_0061_104132
22/06/2016	10:42:24	SWHTT19	52.87076	1.82932	0.87	30.88	270	4947		SWHT_2GDK70616_T19_STN270_A1_0062_104224
22/06/2016	10:43:08	SWHTT19	52.87061	1.82938	0.73	31.52	270	4948	EoI	SWHT_2GDK70616_T19_STN270_A1_0063_104308
22/06/2016	10:49:50	SWHTT13	52.87197	1.82252	0.67	33.22	271	auto	SoL	SWHT_2GDK70616_T13_STN271_A1_0064_104950
22/06/2016	10:50:09	SWHTT13	52.87191	1.82257	0.80	33.16	271	4950		no image
22/06/2016	10:50:35	SWHTT13	52.87184	1.82267	0.87	32.82	271	4951		SWHT_2GDK70616_T13_STN271_A1_0065_105035
22/06/2016	10:51:16	SWHTT13	52.87172	1.82284	0.84	32.51	271	4952		SWHT_2GDK70616_T13_STN271_A1_0066_105116
22/06/2016	10:52:03	SWHTT13	52.87159	1.82305	0.77	31.85	271	4953		SWHT_2GDK70616_T13_STN271_A1_0067_105203
22/06/2016	10:52:43	SWHTT13	52.87150	1.82321	0.69	31.00	271	4954		SWHT_2GDK70616_T13_STN271_A1_0068_105243
22/06/2016	10:53:20	SWHTT13	52.87142	1.82335	0.66	30.57	271	4955		SWHT_2GDK70616_T13_STN271_A1_0069_105320
22/06/2016	10:53:44	SWHTT13	52.87137	1.82345	0.70	30.31	271	4956		SWHT_2GDK70616_T13_STN271_A1_0070_105344
22/06/2016	10:53:57	SWHTT13	52.87134	1.82350	0.67	29.92	271	4957		SWHT_2GDK70616_T13_STN271_A1_0071_105358
22/06/2016	10:54:35	SWHTT13	52.87126	1.82362	0.54	29.64	271	4958		SWHT_2GDK70616_T13_STN271_A1_0072_105435
22/06/2016	10:54:58	SWHTT13	52.87122	1.82370	0.60	29.50	271	4959	EoL	SWHT_2GDK70616_T13_STN271_A1_0073_105458
22/06/2016	11:04:50	SWHTT02	52.86627	1.80289	1.16	30.29	272	4960	SoL	no image
22/06/2016	11:05:14	SWHTT02	52.86617	1.80276	1.37	30.61	272	4961		SWHT_2GDK70616_T02_STN272_A1_0074_110514
22/06/2016	11:05:47	SWHTT02	52.86602	1.80260	0.92	30.62	272	4962		SWHT_2GDK70616_T02_STN272_A1_0075_110547
22/06/2016	11:06:02	SWHTT02	52.86597	1.80255	0.98	31.02	272	4963		SWHT_2GDK70616_T02_STN272_A1_0076_110602
22/06/2016	11:06:40	SWHTT02	52.86578	1.80242	1.17	30.91	272	4964		SWHT_2GDK70616_T02_STN272_A1_0077_110640
22/06/2016	11:07:02	SWHTT02	52.86570	1.80233	0.60	30.85	272	4965		SWHT_2GDK70616_T02_STN272_A1_0078_110702
22/06/2016	11:07:47	SWHTT02	52.86554	1.80218	1.06	30.63	272	4966		SWHT_2GDK70616_T02_STN272_A1_0079_110750

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22/06/2016	11:08:48	SWHTT02	52.86532	1.80188	0.90	30.78	272	auto		SWHT_2GDK70616_T02_STN272_A1_0080_110848
22/06/2016	11:09:01	SWHTT02	52.86528	1.80183	0.86	30.85	272	4968		no image
22/06/2016	11:09:20	SWHTT02	52.86521	1.80177	1.00	30.67	272	auto		SWHT_2GDK70616_T02_STN272_A1_0081_110920
22/06/2016	11:10:05	SWHTT02	52.86501	1.80162	1.04	31.10	272	4970	EoI	no image
22/06/2016	11:20:34	SWHTT06	52.86329	1.80754	0.41	31.74	273	4971	SoL	SWHT_2GDK70616_T06_STN273_A1_0082_112035
22/06/2016	11:21:22	SWHTT06	52.86319	1.80756	0.40	30.50	273	4972		SWHT_2GDK70616_T06_STN273_A1_0083_112122
22/06/2016	11:22:52	SWHTT06	52.86297	1.80801	1.17	28.72	273	4973		SWHT_2GDK70616_T06_STN273_A1_0084_112254
22/06/2016	11:23:51	SWHTT06	52.86277	1.80832	1.09	28.83	273	4974		SWHT_2GDK70616_T06_STN273_A1_0085_112351
22/06/2016	11:24:26	SWHTT06	52.86262	1.80849	1.09	30.84	273	4975		SWHT_2GDK70616_T06_STN273_A1_0086_112426
22/06/2016	11:25:47	SWHTT06	52.86214	1.80843	0.80	29.97	273	4976		SWHT_2GDK70616_T06_STN273_A1_0087_112547
22/06/2016	11:26:07	SWHTT06	52.86208	1.80842	0.66	29.39	273	4977		SWHT_2GDK70616_T06_STN273_A1_0088_112607
22/06/2016	11:26:51	SWHTT06	52.86195	1.80821	1.13	28.36	273	4978		SWHT_2GDK70616_T06_STN273_A1_0089_112651
22/06/2016	11:27:39	SWHTT06	52.86179	1.80801	0.75	29.06	273	4979		SWHT_2GDK70616_T06_STN273_A1_0090_112739
22/06/2016	11:28:12	SWHTT06	52.86167	1.80785	1.32	29.50	273	4980	EoL	no image
22/06/2016	11:36:15	SWHTT08 (new)	52.85944	1.80725	1.07	28.71	274	4981	SoL	no image
22/06/2016	11:38:03	SWHTT08 (new)	52.85979	1.80763	0.57	26.71	274	4982		no image
22/06/2016	11:39:33	SWHTT08 (new)	52.86008	1.80788	0.78	30.57	274	4983		SWHT_2GDK70616_T08_STN274_A1_0091_113934
22/06/2016	11:40:15	SWHTT08 (new)	52.86024	1.80804	0.98	30.27	274	4984		no image
22/06/2016	11:40:50	SWHTT08 (new)	52.86040	1.80813	1.09	30.04	274	4985		SWHT_2GDK70616_T08_STN274_A1_0092_114050
22/06/2016	11:41:24	SWHTT08 (new)	52.86055	1.80820	0.99	28.20	274	4986		SWHT_2GDK70616_T08_STN274_A1_0093_114128
22/06/2016	11:41:48	SWHTT08 (new)	52.86065	1.80821	0.82	29.86	274	4987		SWHT_2GDK70616_T08_STN274_A1_0094_114148
22/06/2016	11:42:20	SWHTT08 (new)	52.86078	1.80821	0.89	27.79	274	4988		SWHT_2GDK70616_T08_STN274_A1_0095_114220
22/06/2016	11:42:35	SWHTT08 (new)	52.86084	1.80821	0.88	28.64	274	4989	EoL	SWHT_2GDK70616_T08_STN274_A1_0096_114235
22/06/2016	15:05:00	vessel departed SWHT CSA								
22/06/2016	17:50:00	alongside Lowestoft								
25/06/2016	09:40:00	vessel departed Wells-next-the-Sea Dock Basin								
25/06/2016	11:30:00	vessel on station at North Ridge CSA								
25/06/2016	11:34:49	NRRDT07	53.25305	0.95309	1.05	22.71	313	4919	SoL	NRRD_2GDK70616_T07_STN313_A1_0001_113450
25/06/2016	11:35:04	NRRDT07	53.25304	0.95321	1.12	22.74	313	4920		NRRD_2GDK70616_T07_STN313_A1_0002_113506
25/06/2016	11:35:29	NRRDT07	53.25299	0.95341	1.08	22.76	313	4921		NRRD_2GDK70616_T07_STN313_A1_0003_113536

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25/06/2016	11:35:52	NRRDT07	53.25295	0.95358	1.01	22.74	313	4922		NRRD_2GDK70616_T07_STN313_A1_0004_113554
25/06/2016	11:36:35	NRRDT07	53.25284	0.95385	0.97	22.48	313	4923		NRRD_2GDK70616_T07_STN313_A1_0005_113637
25/06/2016	11:36:50	NRRDT07	53.25281	0.95393	0.95	22.78	313	4924		NRRD_2GDK70616_T07_STN313_A1_0006_113651
25/06/2016	11:37:54	NRRDT07	53.25266	0.95433	0.93	22.46	313	4925		NRRD_2GDK70616_T07_STN313_A1_0007_113756
25/06/2016	11:38:06	NRRDT07	53.25263	0.95440	0.93	22.46	313	4926		
25/06/2016	11:38:45	NRRDT07	53.25254	0.95463	0.92	22.53	313	4927		NRRD_2GDK70616_T07_STN313_A1_0008_113847
25/06/2016	11:39:15	NRRDT07	53.25247	0.95480	0.92	22.59	313	4928		NRRD_2GDK70616_T07_STN313_A1_0009_113917
25/06/2016	11:39:43	NRRDT07	53.25240	0.95497	0.96	22.68	313	4929		NRRD_2GDK70616_T07_STN313_A1_0010_113947
25/06/2016	11:40:07	NRRDT07	53.25234	0.95511	0.96	22.73	313	4930		
25/06/2016	11:40:28	NRRDT07	53.25228	0.95524	0.96	22.79	313	4931		NRRD_2GDK70616_T07_STN313_A1_0011_114031
25/06/2016	11:41:12	NRRDT07	53.25217	0.95549	0.93	22.73	313	4932	EoL	NRRD_2GDK70616_T07_STN313_A1_0012_114114
25/06/2016	11:49:10	NRRDT04	53.25370	0.94786	0.88	22.36	314	4933	SoL	NRRD_2GDK70616_T04_STN314_A1_0013_114913
25/06/2016	11:49:25	NRRDT04	53.25369	0.94797	0.86	22.22	314	4934		NRRD_2GDK70616_T04_STN314_A1_0014_114926
25/06/2016	11:49:39	NRRDT04	53.25367	0.94805	0.84	22.19	314	4935		
25/06/2016	11:49:56	NRRDT04	53.25364	0.94815	0.80	22.16	314	4936		NRRD_2GDK70616_T04_STN314_A1_0015_114959
25/06/2016	11:50:18	NRRDT04	53.25360	0.94827	0.80	22.17	314	4937		NRRD_2GDK70616_T04_STN314_A1_0016_115020
25/06/2016	11:51:05	NRRDT04	53.25352	0.94851	0.76	22.12	314	4938		NRRD_2GDK70616_T04_STN314_A1_0017_115107
25/06/2016	11:51:32	NRRDT04	53.25348	0.94865	0.75	22.18	314	4939		NRRD_2GDK70616_T04_STN314_A1_0018_115135
25/06/2016	11:52:11	NRRDT04	53.25341	0.94884	0.73	22.17	314	4940		NRRD_2GDK70616_T04_STN314_A1_0019_115213
25/06/2016	11:52:44	NRRDT04	53.25335	0.94901	0.72	22.13	314	4941		NRRD_2GDK70616_T04_STN314_A1_0020_115246
25/06/2016	11:53:10	NRRDT04	53.25330	0.94913	0.73	22.15	314	4942		NRRD_2GDK70616_T04_STN314_A1_0021_115312
25/06/2016	11:53:45	NRRDT04	53.25324	0.94930	0.75	22.03	314	4943		NRRD_2GDK70616_T04_STN314_A1_0022_115347
25/06/2016	11:54:28	NRRDT04	53.25316	0.94949	0.67	21.99	314	4944		NRRD_2GDK70616_T04_STN314_A1_0023_115431
25/06/2016	11:54:57	NRRDT04	53.25311	0.94961	0.66	22.05	314	4945		NRRD_2GDK70616_T04_STN314_A1_0024_115500
25/06/2016	11:55:34	NRRDT04	53.25305	0.94976	0.61	22.02	314	4946		NRRD_2GDK70616_T04_STN314_A1_0025_115536
25/06/2016	11:56:12	NRRDT04	53.25298	0.94991	0.63	21.92	314	4947		NRRD_2GDK70616_T04_STN314_A1_0026_115614
25/06/2016	11:56:51	NRRDT04	53.25291	0.95007	0.66	21.96	314	4948		NRRD_2GDK70616_T04_STN314_A1_0027_115653
25/06/2016	11:57:36	NRRDT04	53.25284	0.95024	0.57	21.86	314	4949	EoL	NRRD_2GDK70616_T04_STN314_A1_0028_115741
25/06/2016	12:06:01	NRRDT18	53.25560	0.94588	1.12	21.93	315	4950	SoL	NRRD_2GDK70616_T18_STN315_A1_0029_120603
25/06/2016	12:06:16	NRRDT18	53.25556	0.94597	0.92	21.79	315	4951		NRRD_2GDK70616_T18_STN315_A1_0030_120618

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25/06/2016	12:07:01	NRRDT18	53.25547	0.94617	0.63	21.89	315	4952		NRRD_2GDK70616_T18_STN315_A1_0031_120703
25/06/2016	12:07:30	NRRDT18	53.25542	0.94626	0.51	21.77	315	4953		NRRD_2GDK70616_T18_STN315_A1_0032_120732
25/06/2016	12:08:20	NRRDT18	53.25533	0.94647	0.69	21.82	315	4954		NRRD_2GDK70616_T18_STN315_A1_0033_120824
25/06/2016	12:08:45	NRRDT18	53.25526	0.94659	0.95	21.80	315	4955		NRRD_2GDK70616_T18_STN315_A1_0034_120846
25/06/2016	12:09:16	NRRDT18	53.25517	0.94676	1.02	21.80	315	4956		NRRD_2GDK70616_T18_STN315_A1_0035_120918
25/06/2016	12:10:02	NRRDT18	53.25508	0.94700	0.72	21.89	315	4957		NRRD_2GDK70616_T18_STN315_A1_0036_121003
25/06/2016	12:10:57	NRRDT18	53.25496	0.94727	0.62	21.84	315	4958		NRRD_2GDK70616_T18_STN315_A1_0037_121100
25/06/2016	12:11:11	NRRDT18	53.25494	0.94732	0.56	21.83	315	4959		NRRD_2GDK70616_T18_STN315_A1_0038_121113
25/06/2016	12:12:06	NRRDT18	53.25483	0.94758	0.76	21.87	315	4960		NRRD_2GDK70616_T18_STN315_A1_0039_121208
25/06/2016	12:12:38	NRRDT18	53.25477	0.94770	0.60	21.92	315	4961		NRRD_2GDK70616_T18_STN315_A1_0040_121240
25/06/2016	12:13:12	NRRDT18	53.25471	0.94786	0.80	21.98	315	4962		NRRD_2GDK70616_T18_STN315_A1_0041_121314
25/06/2016	12:13:45	NRRDT18	53.25464	0.94806	0.90	21.81	315	4963		NRRD_2GDK70616_T18_STN315_A1_0042_121348
25/06/2016	12:14:02	NRRDT18	53.25461	0.94815	0.78	21.80	315	4964	EoL	NRRD_2GDK70616_T18_STN315_A1_0043_121404
25/06/2016	12:21:40	NRRDF01	53.25948	0.95187	1.10	12.05	316	4965	SoL	NRRD_2GDK70616_F01_STN316_A1_0044_122142
25/06/2016	12:22:10	NRRDF01	53.25940	0.95210	1.13	12.31	316	4966		NRRD_2GDK70616_F01_STN316_A1_0045_122212
25/06/2016	12:22:36	NRRDF01	53.25933	0.95227	0.93	12.80	316	4967		NRRD_2GDK70616_F01_STN316_A1_0046_122238
25/06/2016	12:23:18	NRRDF01	53.25922	0.95248	0.93	12.67	316	4968		NRRD_2GDK70616_F01_STN316_A1_0047_122320
25/06/2016	12:24:21	NRRDF01	53.25908	0.95269	0.80	13.00	316	4969		NRRD_2GDK70616_F01_STN316_A1_0048_122423
25/06/2016	12:25:16	NRRDF01	53.25893	0.95282	0.82	13.02	316	4970		NRRD_2GDK70616_F01_STN316_A1_0049_122518
25/06/2016	12:26:17	NRRDF01	53.25877	0.95286	0.48	13.51	316	4971		NRRD_2GDK70616_F01_STN316_A1_0050_122619
25/06/2016	12:27:24	NRRDF01	53.25859	0.95295	0.83	13.68	316	4972		NRRD_2GDK70616_F01_STN316_A1_0051_122726
25/06/2016	12:28:38	NRRDF01	53.25842	0.95304	0.58	14.38	316	4973		NRRD_2GDK70616_F01_STN316_A1_0052_122840
25/06/2016	12:30:11	NRRDF01	53.25816	0.95306	0.95	14.95	316	4974		NRRD_2GDK70616_F01_STN316_A1_0053_123013
25/06/2016	12:30:59	NRRDF01	53.25793	0.95304	1.18	14.93	316	4975		NRRD_2GDK70616_F01_STN316_A1_0054_123101
25/06/2016	12:31:44	NRRDF01	53.25769	0.95309	1.26	16.05	316	4976	EoL	NRRD_2GDK70616_F01_STN316_A1_0055_123146
25/06/2016	12:34:47	NRRDF05	53.25671	0.95408	1.41	16.87	317	4977	SoL	NRRD_2GDK70616_F05_STN317_A1_0056_123449
25/06/2016	12:35:09	NRRDF05	53.25660	0.95420	1.27	17.10	317	4978		NRRD_2GDK70616_F05_STN317_A1_0057_123511
25/06/2016	12:35:27	NRRDF05	53.25650	0.95432	1.50	17.44	317	4979		NRRD_2GDK70616_F05_STN317_A1_0058_123529
25/06/2016	12:35:44	NRRDF05	53.25642	0.95443	1.31	17.44	317	4980		NRRD_2GDK70616_F05_STN317_A1_0059_123546
25/06/2016	12:36:15	NRRDF05	53.25626	0.95464	1.36	16.43	317	4981		NRRD_2GDK70616_F05_STN317_A1_0060_123617

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25/06/2016	12:37:05	NRRDF05	53.25603	0.95493	1.29	16.91	317	4982		NRRD_2GDK70616_F05_STN317_A1_0061_123706
25/06/2016	12:37:39	NRRDF05	53.25589	0.95514	1.36	17.06	317	4983		NRRD_2GDK70616_F05_STN317_A1_0062_123741
25/06/2016	12:38:06	NRRDF05	53.25579	0.95527	0.99	16.97	317	4984		NRRD_2GDK70616_F05_STN317_A1_0063_123808
25/06/2016	12:38:35	NRRDF05	53.25566	0.95543	1.38	17.10	317	4985	EoL	NRRD_2GDK70616_F05_STN317_A1_0064_123836
25/06/2016	12:42:29	NRRDF09	53.25442	0.95768	1.10	16.01	318	4986	SoL	NRRD_2GDK70616_F09_STN318_A1_0065_124231
25/06/2016	12:43:10	NRRDF09	53.25430	0.95802	1.38	16.53	318	4987		NRRD_2GDK70616_F09_STN318_A1_0066_124312
25/06/2016	12:43:46	NRRDF09	53.25412	0.95823	1.24	16.63	318	4988		NRRD_2GDK70616_F09_STN318_A1_0067_124348
25/06/2016	12:44:20	NRRDF09	53.25399	0.95835	1.03	17.28	318	4989		NRRD_2GDK70616_F09_STN318_A1_0068_124422
25/06/2016	12:45:24	NRRDF09	53.25370	0.95855	0.97	17.79	318	4990		NRRD_2GDK70616_F09_STN318_A1_0069_124526
25/06/2016	12:45:55	NRRDF09	53.25358	0.95863	1.01	17.45	318	4991		NRRD_2GDK70616_F09_STN318_A1_0070_124557
25/06/2016	12:46:36	NRRDF09	53.25338	0.95877	1.00	17.89	318	4992		NRRD_2GDK70616_F09_STN318_A1_0071_124638
25/06/2016	12:47:04	NRRDF09	53.25327	0.95884	0.76	18.21	318	4993		NRRD_2GDK70616_F09_STN318_A1_0072_124706
25/06/2016	12:48:02	NRRDF09	53.25303	0.95902	0.84	17.99	318	4994	EoL	NRRD_2GDK70616_F09_STN318_A1_0073_124804
25/06/2016	13:06:01	NRRDF10	53.27466	0.98067	0.65	15.94	319	4995	SoL	NRRD_2GDK70616_F10_STN319_A1_0074_130603
25/06/2016	13:06:57	NRRDF10	53.27481	0.98064	0.56	16.78	319	4996		NRRD_2GDK70616_F10_STN319_A1_0075_130659
25/06/2016	13:08:29	NRRDF10	53.27504	0.98062	0.51	17.17	319	4997		NRRD_2GDK70616_F10_STN319_A1_0076_130831
25/06/2016	13:09:35	NRRDF10	53.27521	0.98061	0.56	15.31	319	4998		NRRD_2GDK70616_F10_STN319_A1_0077_130937
25/06/2016	13:10:18	NRRDF10	53.27535	0.98068	0.61	17.22	319	4999		NRRD_2GDK70616_F10_STN319_A1_0078_131020
25/06/2016	13:11:37	NRRDF10	53.27559	0.98080	0.95	18.28	319	5000		NRRD_2GDK70616_F10_STN319_A1_0079_131139
25/06/2016	13:12:37	NRRDF10	53.27574	0.98090	0.62	18.50	319	5001		NRRD_2GDK70616_F10_STN319_A1_0080_131239
25/06/2016	13:13:44	NRRDF10	53.27592	0.98087	0.61	18.15	319	5002		NRRD_2GDK70616_F10_STN319_A1_0081_131346
25/06/2016	13:14:54	NRRDF10	53.27613	0.98078	0.69	18.32	319	5003		NRRD_2GDK70616_F10_STN319_A1_0082_131456
25/06/2016	13:15:55	NRRDF10	53.27631	0.98066	0.63	18.34	319	5004	EoL	NRRD_2GDK70616_F10_STN319_A1_0083_131557
25/06/2016	13:22:04	NRRDF06	53.27602	0.97703	0.63	16.54	319	5005	SoL	NRRD_2GDK70616_F06_STN320_A1_0084_132205
25/06/2016	13:22:58	NRRDF06	53.27619	0.97702	0.66	16.46	320	5006		NRRD_2GDK70616_F06_STN320_A1_0085_132300
25/06/2016	13:24:02	NRRDF06	53.27638	0.97698	0.64	15.57	320	5007		NRRD_2GDK70616_F06_STN320_A1_0086_132404
25/06/2016	13:24:56	NRRDF06	53.27653	0.97694	0.64	16.42	320	5008		NRRD_2GDK70616_F06_STN320_A1_0087_132458
25/06/2016	13:25:44	NRRDF06	53.27666	0.97690	0.61	16.83	320	5009		NRRD_2GDK70616_F06_STN320_A1_0088_132546
25/06/2016	13:26:54	NRRDF06	53.27686	0.97685	0.57	16.92	320	5010		NRRD_2GDK70616_F06_STN320_A1_0089_132656
25/06/2016	13:27:50	NRRDF06	53.27702	0.97680	0.67	16.61	320	5011		NRRD_2GDK70616_F06_STN320_A1_0090_132752

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro Fix No.	Fix description	Still Label
25/06/2016	13:29:03	NRRDF06	53.27723	0.97675	0.65	16.48	320	5012		NRRD_2GDK70616_F06_STN320_A1_0091_132905
25/06/2016	13:29:52	NRRDF06	53.27737	0.97671	0.65	16.26	320	5013		NRRD_2GDK70616_F06_STN320_A1_0092_132954
25/06/2016	13:31:20	NRRDF06	53.27764	0.97665	0.67	15.63	320	5014	EoL	NRRD_2GDK70616_F06_STN320_A1_0093_133122
25/06/2016	13:35:14	NRRDF02	53.27637	0.97149	0.96	13.33	321	5015	SoL	NRRD_2GDK70616_F02_STN321_A1_0094_133516
25/06/2016	13:36:06	NRRDF02	53.27656	0.97132	0.89	13.36	321	5016		NRRD_2GDK70616_F02_STN321_A1_0095_133608
25/06/2016	13:36:58	NRRDF02	53.27675	0.97121	0.91	12.25	321	5017		NRRD_2GDK70616_F02_STN321_A1_0096_133700
25/06/2016	13:37:53	NRRDF02	53.27699	0.97115	0.97	13.89	321	5018		NRRD_2GDK70616_F02_STN321_A1_0097_133756
25/06/2016	13:38:53	NRRDF02	53.27723	0.97109	0.84	14.34	321	5019		NRRD_2GDK70616_F02_STN321_A1_0098_133855
25/06/2016	13:39:51	NRRDF02	53.27745	0.97103	0.82	14.59	321	5020		NRRD_2GDK70616_F02_STN321_A1_0099_133953
25/06/2016	13:40:35	NRRDF02	53.27761	0.97099	0.80	14.61	321	5021		NRRD_2GDK70616_F02_STN321_A1_0100_134037
25/06/2016	13:41:17	NRRDF02	53.27777	0.97095	0.85	14.51	321	5022		NRRD_2GDK70616_F02_STN321_A1_0101_134116
25/06/2016	13:42:05	NRRDF02	53.27794	0.97089	0.75	13.32	321	5023		NRRD_2GDK70616_F02_STN321_A1_0102_134207
25/06/2016	13:42:34	NRRDF02	53.27805	0.97084	0.85	13.74	321	5024	EoL	NRRD_2GDK70616_F02_STN321_A1_0103_134236
25/06/2016	13:49:11	NRRDT02	53.28311	0.97780	0.74	19.71	322	5025	SoL	no image
25/06/2016	13:49:43	NRRDT02	53.28322	0.97775	0.83	20.08	322	5026		NRRD_2GDK70616_T02_STN322_A1_0104_134945
25/06/2016	13:50:38	NRRDT02	53.28343	0.97778	0.80	20.07	322	5027		NRRD_2GDK70616_T02_STN322_A1_0105_135040
25/06/2016	13:51:15	NRRDT02	53.28359	0.97782	1.00	20.73	322	5028		NRRD_2GDK70616_T02_STN322_A1_0106_135118
25/06/2016	13:52:25	NRRDT02	53.28386	0.97787	0.72	20.65	322	5029		NRRD_2GDK70616_T02_STN322_A1_0107_135227
25/06/2016	13:53:05	NRRDT02	53.28402	0.97788	0.77	20.66	322	5030		NRRD_2GDK70616_T02_STN322_A1_0108_135307
25/06/2016	13:53:38	NRRDT02	53.28416	0.97790	1.00	20.64	322	5031		NRRD_2GDK70616_T02_STN322_A1_0109_135338
25/06/2016	13:54:25	NRRDT02	53.28435	0.97792	0.92	20.30	322	5032		NRRD_2GDK70616_T02_STN322_A1_0110_135427
25/06/2016	13:55:06	NRRDT02	53.28452	0.97796	0.93	19.60	322	5033		NRRD_2GDK70616_T02_STN322_A1_0111_135507
25/06/2016	13:55:58	NRRDT02	53.28470	0.97800	0.84	19.55	322	5034	EoL	NRRD_2GDK70616_T02_STN322_A1_0112_135601
25/06/2016	14:00:43	NRRDT10	53.28396	0.98212	0.91	19.55	323	5035	SoL	NRRD_2GDK70616_T10_STN323_A1_0113_140046
25/06/2016	14:01:07	NRRDT10	53.28407	0.98212	1.10	19.71	323	5036		NRRD_2GDK70616_T10_STN323_A1_0114_140109
25/06/2016	14:01:42	NRRDT10	53.28421	0.98210	1.11	19.48	323	5037		NRRD_2GDK70616_T10_STN323_A1_0115_140145
25/06/2016	14:02:37	NRRDT10	53.28440	0.98208	0.79	20.04	323	5038		NRRD_2GDK70616_T10_STN323_A1_0116_140239
25/06/2016	14:03:21	NRRDT10	53.28457	0.98212	0.82	19.72	323	5039		NRRD_2GDK70616_T10_STN323_A1_0117_140323
25/06/2016	14:04:09	NRRDT10	53.28479	0.98212	0.85	20.07	323	5040		NRRD_2GDK70616_T10_STN323_A1_0118_140412
25/06/2016	14:04:46	NRRDT10	53.28495	0.98216	0.74	19.86	323	5041		NRRD_2GDK70616_T10_STN323_A1_0119_140447

Date	Time UTC	Station Code	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro Fix No.	Fix description	Still Label
25/06/2016	14:05:46	NRRDT10	53.28519	0.98224	0.76	19.40	323	5042		NRRD_2GDK70616_T10_STN323_A1_0120_140549
25/06/2016	14:06:22	NRRDT10	53.28535	0.98223	1.04	19.46	323	5043		NRRD_2GDK70616_T10_STN323_A1_0121_140625
25/06/2016	14:07:16	NRRDT10	53.28553	0.98221	0.61	19.60	323	5044	EoL	NRRD_2GDK70616_T10_STN323_A1_0122_140720
25/06/2016	14:13:23	NRRDT08	53.28027	0.98452	0.26	17.40	324	5045	SoL	NRRD_2GDK70616_T08_STN324_A1_0123_141325
25/06/2016	14:14:22	NRRDT08	53.28044	0.98447	0.60	18.10	324	5046		NRRD_2GDK70616_T08_STN324_A1_0124_141426
25/06/2016	14:15:06	NRRDT08	53.28063	0.98447	0.82	16.14	324	5047		NRRD_2GDK70616_T08_STN324_A1_0125_141508
25/06/2016	14:16:17	NRRDT08	53.28085	0.98444	0.63	18.21	324	5048		NRRD_2GDK70616_T08_STN324_A1_0126_141619
25/06/2016	14:16:31	NRRDT08	53.28091	0.98444	0.91	18.16	324	5049		NRRD_2GDK70616_T08_STN324_A1_0127_141633
25/06/2016	14:17:33	NRRDT08	53.28108	0.98444	0.72	18.39	324	5050		NRRD_2GDK70616_T08_STN324_A1_0128_141735
25/06/2016	14:18:21	NRRDT08	53.28125	0.98445	0.76	18.90	324	5051		NRRD_2GDK70616_T08_STN324_A1_0129_141826
25/06/2016	14:19:19	NRRDT08	53.28152	0.98455	1.28	18.76	324	5052		NRRD_2GDK70616_T08_STN324_A1_0130_141920
25/06/2016	14:19:58	NRRDT08	53.28173	0.98454	1.12	19.07	324	5053		NRRD_2GDK70616_T08_STN324_A1_0131_142002
25/06/2016	14:20:39	NRRDT08	53.28195	0.98449	1.17	18.95	324	5054	EoL	NRRD_2GDK70616_T08_STN324_A1_0132_142040
25/06/2016	20:00:00	alongside Wells-next-the-Sea Dock Basin								

6.6.3 Trawl Metadata

Date	Time UTC	Site Name _Rep	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro fix no.	Fix description (e.g. Lock)	Tow duration	Mean Speed Over Ground (knots)	Tow length (m)
22/06/2016	11:45:00	DDV operations completed at SW Haisborough Tail - Beam Trawl rigged										
22/06/2016	13:01:52	SWHTC01_A1	52.87104	1.81672	0.70	8.18	275	4990	Lock	04:50	1.21	181
22/06/2016	13:06:42	SWHTC01_A1	52.86950	1.81646	1.70	7.02	275	4991	Haul			
22/06/2016	13:23:03	SWHTC01_B1	52.87089	1.81500	0.95	6.76	276	4992	Lock	03:22	1.63	169
22/06/2016	13:26:25	SWHTC01_B1	52.86957	1.81379	2.06	9.86	276	4993	Haul			
22/06/2016	14:01:06	SWHTC06_A1	52.86764	1.81997	0.80	8.76	277	4880	Lock	04:21	1.35	181
22/06/2016	14:05:27	SWHTC06_A1	52.86626	1.81967	1.12	7.35	277	4881	Haul			
22/06/2016	14:15:18	SWHTC06_B1	52.86730	1.81808	1.65	7.39	278	4882	Lock	03:28	1.50	161

Date	Time UTC	Site Name _Rep	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro fix no.	Fix description (e.g. Lock)	Tow duration	Mean Speed Over Ground (knots)	Tow length (m)
22/06/2016	14:18:46	SWHTC06_B1	52.86613	1.81689	1.50	10.95	278	4883	Haul			
22/06/2016	14:28:07	SWHTC10_A1	52.86356	1.82476	1.05	9.65	279	4884	Lock	04:25	1.14	155
22/06/2016	14:32:32	SWHTC10_A1	52.86240	1.82455	1.38	8.38	279	4885	Haul			
22/06/2016	14:40:00	net completely full of coarse sediment - emptied and washed out										
22/06/2016	17:50:00	alongside Lowestoft										
23/06/2016	06:00:00	scientists boarded vessel										
23/06/2016	06:15:00	vessel bunkered										
23/06/2016	07:10:00	vessel departed Hamilton Dock (Lowestoft)										
23/06/2016	09:53:22	SWHTC10_A2	52.86190	1.82455	1.75	11.47	280	4880	Lock	04:28	1.26	174
23/06/2016	09:57:50	SWHTC10_A2	52.86322	1.82504	1.11	12.00	280	4881	Haul			
23/06/2016	10:07:03	SWHTC10_B1	52.86197	1.82442	1.38	11.34	281	4882	Lock	03:50	1.36	161
23/06/2016	10:10:53	SWHTC10_B1	52.86326	1.82495	1.19	11.68	281	4883	Haul			
23/06/2016	10:19:46	SWHTC10_B2	52.86193	1.82432	1.46	11.27	282	4884	Lock	03:16	1.63	164
23/06/2016	10:23:02	SWHTC10_B2	52.86333	1.82460	1.09	11.92	282	4885	Haul			
23/06/2016	10:34:41	SWHTF10_A1	52.85972	1.81966	2.20	22.50	283	4886	Lock	02:34	1.99	158
23/06/2016	10:37:15	SWHTF10_A1	52.86113	1.81980	2.04	19.46	283	4887	Haul			
23/06/2016	10:50:47	SWHTF10_B1	52.85969	1.82010	1.98	22.65	284	4888	Lock	03:14	1.66	166
23/06/2016	10:54:01	SWHTF10_B1	52.86116	1.82024	1.42	18.42	284	4889	Haul			
23/06/2016	11:06:41	SWHTF06_A1	52.86334	1.81402	2.61	24.50	285	4890	Lock	02:38	2.00	163
23/06/2016	11:09:19	SWHTF06_A1	52.86477	1.81383	1.97	21.96	285	4891	Haul			
23/06/2016	11:24:04	SWHTF06_B1	52.86389	1.81420	2.39	22.26	286	4892	Lock	02:56	1.78	161
23/06/2016	11:27:00	SWHTF06_B1	52.86530	1.81402	1.32	20.05	286	4893	Haul			
23/06/2016	11:39:47	SWHTF02_A1	52.86734	1.81040	1.65	21.79	287	4894	Lock	03:53	1.53	183
23/06/2016	11:43:40	SWHTF02_A1	52.86891	1.81037	0.73	18.91	287	4895	Haul			
23/06/2016	12:12:31	SWHTF02_A2	52.86740	1.81053	2.35	21.41	288	4896	Lock	02:04	2.75	175
23/06/2016	12:14:35	SWHTF02_A2	52.86894	1.80992	2.82	19.31	288	4897	Haul			
23/06/2016	12:28:29	SWHTF02_B1	52.86717	1.81049	2.35	21.62	289	4898	Lock	02:09	2.35	156
23/06/2016	12:30:38	SWHTF02_B1	52.86854	1.81023	1.51	19.74	289	4899	Haul			
23/06/2016	12:43:30	SWHTF02_B2	52.86889	1.81042	2.87	19.15	290	4900	Lock	02:24	2.14	159
23/06/2016	12:45:54	SWHTF02_B2	52.86756	1.80990	1.76	22.50	290	4901	Haul			

Date	Time UTC	Site Name _Rep	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro fix no.	Fix description (e.g. Lock)	Tow duration	Mean Speed Over Ground (knots)	Tow length (m)
23/06/2016	13:00:26	SWHTT06_A1	52.86361	1.80674	3.02	29.12	291	4902	Lock	02:14	2.15	148
23/06/2016	13:02:40	SWHTT06_A1	52.86242	1.80620	0.72	29.58	291	4903	Haul			
23/06/2016	13:05:00	damaged net replaced										
23/06/2016	13:30:00	survey operations restarted										
23/06/2016	13:35:15	SWHTT08_A1	52.86111	1.80763	1.84	28.59	292	4904	Lock	03:04	1.66	157
23/06/2016	13:38:19	SWHTT08_A1	52.85973	1.80734	1.26	28.54	292	4905	Haul			
23/06/2016	14:29:21	SWHTT08_A2	52.86006	1.80756	1.97	27.54	293	4880	Lock	02:48	1.88	162
23/06/2016	14:32:09	SWHTT08_A2	52.85883	1.80632	1.72	27.64	293	4881	Haul			
23/06/2016	14:43:28	SWHTT08_B1	52.85984	1.80771	1.56	25.86	294	4882	Lock	02:59	1.66	153
23/06/2016	14:46:27	SWHTT08_B1	52.85848	1.80749	1.31	28.05	294	4883	Haul			
23/06/2016	15:00:00	Trawling survey operations ceased										
23/06/2016	17:50:00	Alongside Lowestoft										
24/06/2016	06:00:00	vessel departed Hamilton Dock (Lowestoft)										
24/06/2016	08:10:00	vessel arrived SW of Haisborough Tail CSA - trawl gear prepared										
24/06/2016	08:28:59	SWHTT11_A1	52.85853	1.81235	1.87	30.42	295	4884	Lock	03:34	1.53	168
24/06/2016	08:32:33	SWHTT11_A1	52.86001	1.81242	1.48	29.03	295	4885	Haul			
24/06/2016	08:43:27	SWHTT11_A2	52.85833	1.81226	1.37	30.46	296	4886	Lock	03:34	1.43	157
24/06/2016	08:47:01	SWHTT11_A2	52.85970	1.81234	1.17	28.95	296	4887	Haul			
24/06/2016	08:57:59	SWHTT11_B1	52.85846	1.81219	2.01	30.32	297	4888	Lock	03:46	1.39	162
24/06/2016	09:01:45	SWHTT11_B1	52.85987	1.81233	1.28	29.12	297	4889	Haul			
24/06/2016	09:17:43	SWHTF21_A1	52.86326	1.83043	0.77	17.70	298	4890	Lock	03:39	1.39	157
24/06/2016	09:21:22	SWHTF21_A1	52.86453	1.82955	1.31	21.82	298	4891	Haul			
24/06/2016	09:32:29	SWHTF21_B1	52.86302	1.82994	1.66	16.64	299	4892	Lock	03:46	1.36	158
24/06/2016	09:36:15	SWHTF21_B1	52.86441	1.82978	1.09	21.79	299	4893	Haul			
24/06/2016	09:44:39	SWHTF21_B2	52.86290	1.83017	1.96	16.17	300	4894	Lock	03:22	1.67	174
24/06/2016	09:48:01	SWHTF21_B2	52.86435	1.82960	1.49	21.98	300	4895	Haul			
24/06/2016	09:58:08	SWHTF17_A1	52.86644	1.82328	1.44	18.15	301	4896	Lock	03:38	1.42	159
24/06/2016	10:01:46	SWHTF17_A1	52.86784	1.82334	1.60	22.16	301	4897	Haul			
24/06/2016	10:11:29	SWHTF17_A2	52.86658	1.82298	1.68	17.99	302	4898	Lock	03:22	1.55	161
24/06/2016	10:14:51	SWHTF17_A2	52.86795	1.82360	1.22	23.51	302	4899	Haul			

Date	Time UTC	Site Name _Rep	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro fix no.	Fix description (e.g. Lock)	Tow duration	Mean Speed Over Ground (knots)	Tow length (m)
24/06/2016	10:24:52	SWHTF17_B1	52.86644	1.82323	1.62	18.05	303	4900	Lock	03:40	1.40	158
24/06/2016	10:28:32	SWHTF17_B1	52.86783	1.82325	1.29	21.63	303	4901	Haul			
24/06/2016	10:39:05	SWHTF13_A1	52.86995	1.81953	1.05	19.02	304	4902	Lock	03:38	1.39	156
24/06/2016	10:42:43	SWHTF13_A1	52.87133	1.81933	1.18	24.25	304	4903	Haul			
24/06/2016	10:52:45	SWHTF13_B1	52.86990	1.81975	1.81	19.50	305	4904	Lock	03:48	1.51	177
24/06/2016	10:56:33	SWHTF13_B1	52.87146	1.81941	1.79	25.03	305	4905	Haul			
24/06/2016	11:07:20	SWHTT13_A1	52.87104	1.82246	1.54	31.62	306	4906	Lock	04:01	1.30	161
24/06/2016	11:11:21	SWHTT13_A1	52.87246	1.82233	1.29	32.73	306	4907	Haul			
24/06/2016	11:25:05	SWHTT13_B1	52.87100	1.82260	1.77	30.85	307	4908	Lock	03:23	1.51	158
24/06/2016	11:28:28	SWHTT13_B1	52.87239	1.82229	1.71	32.82	307	4909	Haul			
24/06/2016	11:47:44	SWHTT19_A1	52.86966	1.83054	2.01	23.93	308	4910	Lock			
24/06/2016	12:45:20	SWHTT19_A2	52.86892	1.82899	2.27	25.53	309	4911	Lock	02:38	1.98	161
24/06/2016	12:47:58	SWHTT19_A2	52.87011	1.83025	2.09	25.89	309	4912	Haul			
24/06/2016	12:57:59	SWHTT19_A3	52.86876	1.82799	2.27	24.53	310	4913	Lock	02:55	1.74	157
24/06/2016	13:00:54	SWHTT19_A3	52.86996	1.82913	1.95	28.03	310	4914	Haul			
24/06/2016	14:15:02	SWHTT14_A1	52.87345	1.82483	2.31	29.76	311	4915	Lock	03:07	1.96	189
24/06/2016	14:18:09	SWHTT14_A1	52.87243	1.82266	1.36	30.73	311	4916	Haul			
24/06/2016	14:53:09	SWHTT14_B1	52.87382	1.82468	1.87	29.88	312	4917	Lock	03:35	1.57	174
24/06/2016	14:56:44	SWHTT14_B1	52.87274	1.82288	2.30	30.07	312	4918	Haul			
24/06/2016	15:00:00	Beam trawling operations at SW of Haisborough Tail completed										
24/06/2016	19:10:00	Alongside Wells-next-the-Sea Dock Basin fuel berth										
24/06/2016	20:00:00	Secured alongside on overnight berth - scientists disembarked										
25/06/2016	14:30:00	Beam trawl rigged										
25/06/2016	15:15:00	Beam trawling operations commenced										
25/06/2016	15:17:06	NRRDT02_A1	53.28497	0.97784	1.43	18.58	325	5055	Lock	04:19	1.33	177
25/06/2016	15:21:25	NRRDT02_A1	53.28378	0.97952	1.62	18.37	325	5056	Haul			
25/06/2016	15:55:07	NRRDT02_B2	53.28440	0.97635	1.95	19.61	327	5057	Lock	03:10	1.78	174
25/06/2016	15:58:17	NRRDT02_B2	53.28315	0.97789	1.79	18.84	327	5058	Haul			
25/06/2016	16:14:00	NRRDT10_A1	53.28555	0.98248	2.28	18.95	328	5059	Lock	02:42	1.89	158
25/06/2016	16:16:42	NRRDT10_A1	53.28433	0.98357	1.14	18.24	328	5060	Haul			

Date	Time UTC	Site Name _Rep	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro fix no.	Fix description (e.g. Lock)	Tow duration	Mean Speed Over Ground (knots)	Tow length (m)
25/06/2016	16:32:15	NRRDT10_B1	53.28453	0.98128	2.06	19.01	329	5061	Lock	02:37	1.96	158
25/06/2016	16:34:52	NRRDT10_B1	53.28334	0.98254	1.94	18.10	329	5062	Haul			
25/06/2016	16:50:03	NRRDT08_A1	53.28197	0.98447	1.12	18.33	330	5063	Lock	02:49	1.79	156
25/06/2016	16:52:52	NRRDT08_A1	53.28119	0.98641	1.56	15.44	330	5064	Haul			
25/06/2016	17:40:02	NRRDT08_A2	53.28137	0.98288	2.35	18.95	331	5065	Lock	02:30	2.22	171
25/06/2016	17:42:32	NRRDT08_A2	53.28040	0.98485	2.08	16.79	331	5066	Haul			
25/06/2016	17:45:00	trawling operations at NRRD ceased										
25/06/2016	20:00:00	alongside Wells-next-the-Sea Dock Basin										
26/06/2016	09:50:00	vessel departed Wells-next-the-Sea Dock Basin										
26/06/2016	11:45:00	arrived on station at North Ridge CSA										
26/06/2016	11:48:29	NRRDT07_A1	53.25209	0.95555	1.43	23.14	332	5067	Lock	03:17	1.53	155
26/06/2016	11:51:46	NRRDT07_A1	53.25311	0.95400	1.13	22.51	332	5068	Haul			
26/06/2016	12:08:38	NRRDT07_B1	53.25151	0.95478	1.97	22.83	333	5069	Lock	03:10	1.65	161
26/06/2016	12:11:48	NRRDT07_B1	53.25241	0.95296	1.91	22.74	333	5070	Haul			
26/06/2016	12:33:37	NRRDT04_A1	53.25317	0.95045	1.66	22.01	334	5071	Lock	02:38	2.02	164
26/06/2016	12:36:15	NRRDT04_A1	53.25431	0.94889	2.38	22.58	334	5072	Haul			
26/06/2016	12:55:15	NRRDT04_B1	53.25255	0.94959	2.02	21.66	335	5073	Lock	02:50	1.90	166
26/06/2016	12:58:05	NRRDT04_B1	53.25354	0.94774	2.47	21.79	335	5074	Haul			
26/06/2016	13:19:07	NRRDF09_A1	53.25388	0.95965	2.74	15.49	336	5075	Lock	02:31	2.81	218
26/06/2016	13:21:38	NRRDF09_A1	53.25539	0.95755	2.81	14.64	336	5076	Haul			
26/06/2016	13:38:52	NRRDF09_A2	53.25354	0.95992	2.64	15.11	337	5077	Lock	02:09	2.43	161
26/06/2016	13:41:01	NRRDF09_A2	53.25492	0.95924	2.44	12.59	337	5078	Haul			
26/06/2016	13:54:19	NRRDF09_B1	53.25448	0.95780	2.60	15.51	338	5079	Lock	02:55	1.75	158
26/06/2016	13:57:14	NRRDF09_B1	53.25309	0.95775	1.37	19.18	338	5080	Haul			
26/06/2016	14:15:36	NRRDF05_A1	53.25689	0.95534	2.09	13.00	339	5081	Lock	02:58	1.72	158
26/06/2016	14:18:34	NRRDF05_A1	53.25555	0.95480	1.44	17.23	339	5082	Haul			
26/06/2016	14:37:27	NRRDF05_B1	53.25724	0.95400	2.21	14.73	340	5083	Lock	02:36	1.97	158
26/06/2016	14:40:03	NRRDF05_B1	53.25588	0.95348	1.55	17.51	340	5084	Haul			
26/06/2016	14:58:17	NRRDF01_A1	53.25937	0.95260	2.06	11.00	341	5085	Lock	03:34	1.46	161
26/06/2016	15:01:51	NRRDF01_A1	53.25796	0.95259	1.49	14.00	341	5086	Haul			

Date	Time UTC	Site Name _Rep	WGS84 Latitude DD.DDDDD	WGS84 Longitude DD.DDDDD	SOG (knots)	Water depth (m)	STN number	Hpro fix no.	Fix description (e.g. Lock)	Tow duration	Mean Speed Over Ground (knots)	Tow length (m)
26/06/2016	15:19:02	NRRDF01_B1	53.25920	0.95095	1.85	14.11	342	5087	Lock	02:44	1.91	161
26/06/2016	15:21:46	NRRDF01_B1	53.25789	0.95014	1.99	18.81	342	5088	Haul			
26/06/2016	15:50:22	NRRDC05_A1	53.25728	0.96050	2.00	9.40	343	5089	Lock	02:55	1.78	160
26/06/2016	15:53:17	NRRDC05_A1	53.25586	0.96022	1.69	9.35	343	5090	Haul			
26/06/2016	16:34:36	NRRDC05_B1	53.25712	0.96159	2.18	9.32	344	5091	Lock	02:51	1.79	157
26/06/2016	16:37:27	NRRDC05_B1	53.25572	0.96166	1.71	8.78	344	5092	Haul			
26/06/2016	16:51:43	NRRDC10_A1	53.26251	0.96764	2.16	8.99	345	5093	Lock	03:09	1.74	169
26/06/2016	16:54:52	NRRDC10_A1	53.26103	0.96795	1.70	9.06	345	5094	Haul			
26/06/2016	17:08:02	NRRDC10_B1	53.26259	0.96612	2.05	8.64	346	5095	Lock	02:38	1.95	159
26/06/2016	17:10:40	NRRDC10_B1	53.26118	0.96601	1.94	8.64	346	5096	Haul			
26/06/2016	17:24:49	NRRDC02_A1	53.26409	0.96018	2.24	8.06	347	5097	Lock	03:04	1.70	161
26/06/2016	17:27:53	NRRDC02_A1	53.26270	0.96024	1.80	8.40	347	5098	Haul			
26/06/2016	17:41:26	NRRDC02_B1	53.26405	0.95869	2.64	7.96	348	5099	Lock	02:48	1.88	162
26/06/2016	17:44:14	NRRDC02_B1	53.26262	0.95879	2.24	8.34	348	5100	Haul			
26/06/2016	17:59:04	NRRDT18_A1	53.25589	0.94616	2.09	20.12	349	5101	Lock	03:18	1.56	159
26/06/2016	18:02:22	NRRDT18_A1	53.25495	0.94791	1.71	20.19	349	5102	Haul			
26/06/2016	18:17:44	NRRDT18_B1	53.25543	0.94505	2.28	20.26	350	5103	Lock	03:17	1.57	159
26/06/2016	18:21:01	NRRDT18_B1	53.25449	0.94675	1.15	20.45	350	5104	Haul			
26/06/2016	18:30:00	Beam trawling operations ceased										
26/06/2016	20:30:00	Arrive Wells-next-the-Sea Dock Basin										
26/06/2016	22:15:00	Completed sample processing										

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