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CEND0618 Survey Report: North East of Farnes Deep MCZ
and Farnes East MCZ

Wood, D., McIlwaine, P., Albrecht, J. & Downie, A.

January 2020

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For further information please contact:

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough PE1 1JY
www.jncc.gov.uk

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1 Introduction

Cefas and JNCC undertook a survey of the North East of Farnes Deep (NEFD) and Farnes East (FRNE) Marine Conservation Zones (MCZ) between 23 April and 4 May 2018. The following report details the activities undertaken on the survey. Samples were collected at both sites which will be analysed in line with the survey objectives. The results of these analyses will be presented in a separate report and published on the JNCC website.

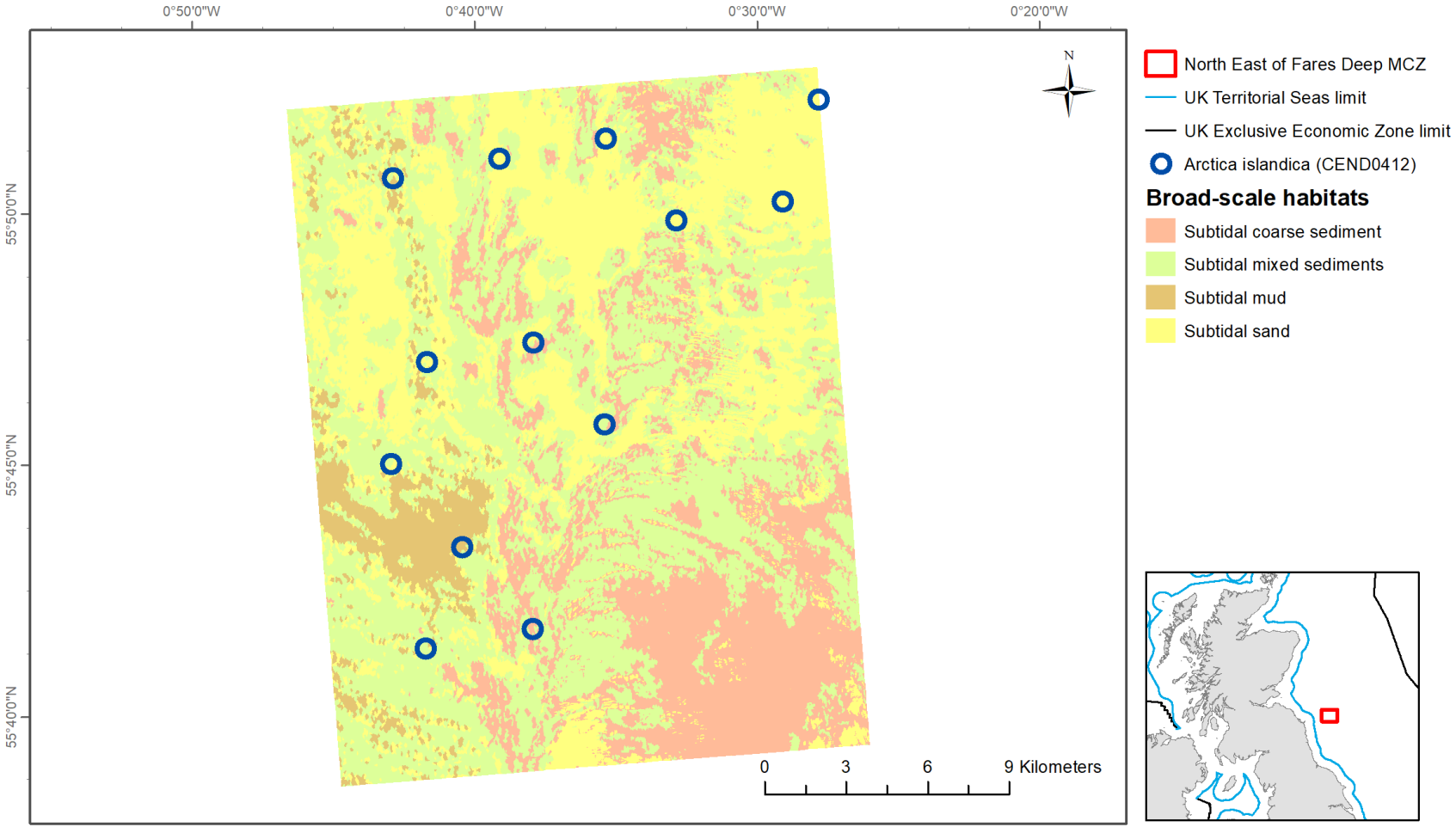
1.1 Site descriptions

1.1.1 North East of Farnes Deep MCZ

North East of Farnes Deep MCZ is located approximately 55km offshore from the north Northumberland coast, in the northern North Sea. The site has a total area of 492km² and a depth range between 50 to 100m below chart datum; the deepest section of the site runs parallel to the western boundary and the shallowest section is in the south-east quarter. Subtidal mixed sediments occupy almost half of the MCZ; subtidal sand and subtidal coarse sediment each occupy approximately a quarter of the total site area, with a small area of subtidal mud present in the west of the site. All the subtidal sediment types found within North East of Farnes Deep MCZ are designated as features of the site. The most up to date BSH map for the site at the time of survey was produced from data collected during the joint JNCC/Cefas survey in 2012 (survey code: CEND0412) (Eggleton *et al.* 2015)(Figure 1). The long-lived Ocean quahog (*Arctica islandica*) Feature of Conservation Importance (FOCI), is also recorded at the site and listed as a designated feature (Table 1, Figure 1). The Ocean quahog is an OSPAR Threatened and/or Declining species (OSPAR 2018) and a species Feature of Conservation Importance (FOCI) listed on the Ecological Network Guidance (JNCC & Natural England 2010).

Although not designated features of the site, geological/geomorphological features are also present in the form of depositional glacial features and topographic features of the North-East Bank seabed mound or pinnacle.

For more information on this site please refer to the JNCC Site Information Centre (<http://jncc.defra.gov.uk/page-6557>).



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Figure 1. Map showing location of North East of Farnes Deep MCZ and the distribution of Broad-Scale Habitats within the MCZ boundary. BSH map from Eggleton *et al.* (2015). *Arctica Islandica* data source CEND0412 survey.

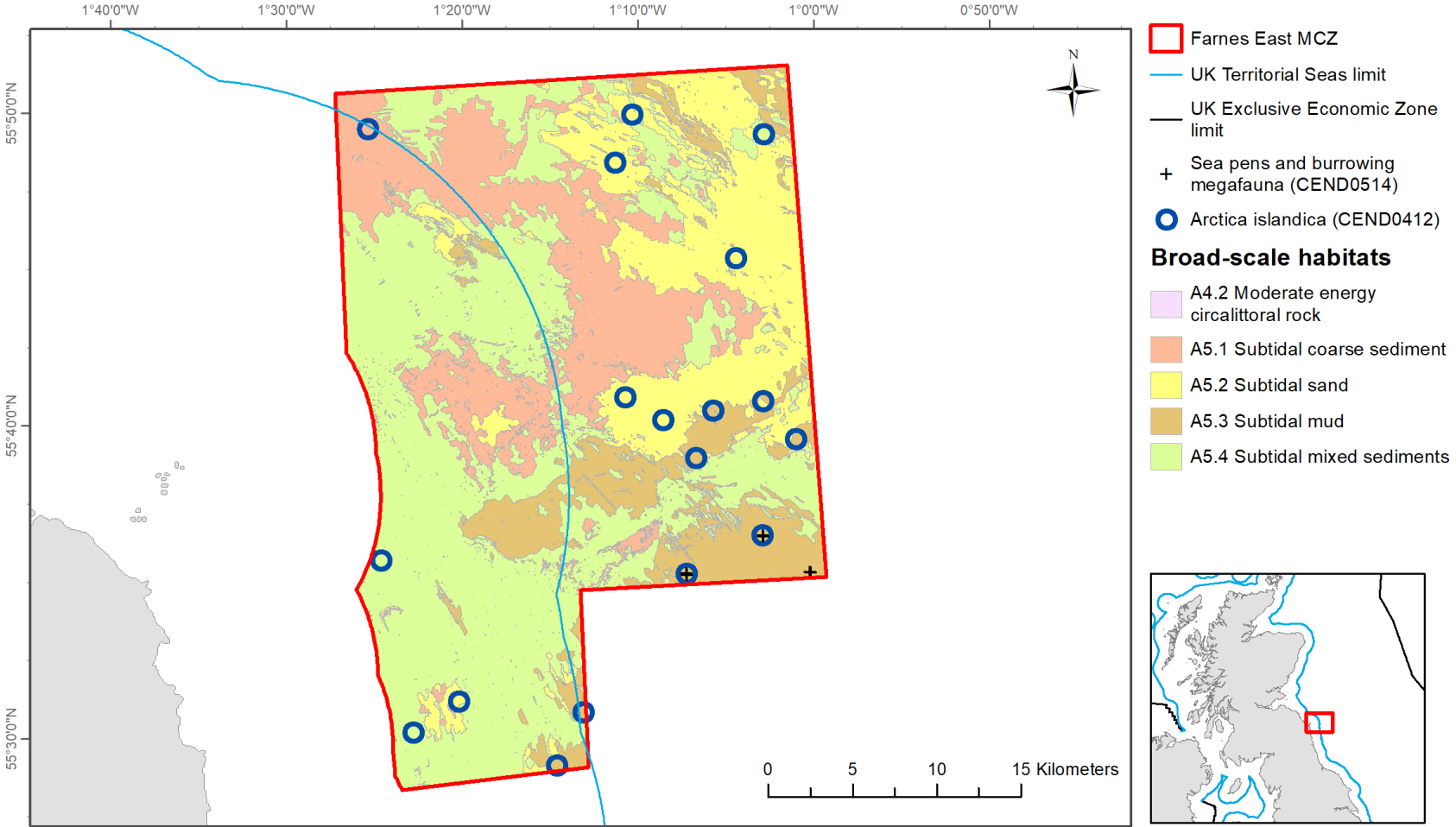
Table 1. Designated features of North East of Farnes Deep MCZ and General Management Approaches (GMA).

Designated Features	General Management Approach (GMA)
Subtidal coarse sediment (A5.1)	Maintain in favourable condition.
Subtidal sand (A5.2)	Maintain in favourable condition.
Subtidal mud (A5.3)	Maintain in favourable condition.
Subtidal mixed sediments (A5.4)	Maintain in favourable condition.
Ocean quahog	Maintain in favourable condition.

1.1.2 Farnes East MCZ

Farnes East MCZ is a joint inshore and offshore site situated off the north east of England, approximately 11km from the Northumberland coast. A section of the eastern boundary of the site follows the 6nm line. The site has a total area of 945km² and ranges in depth from 30m to 100m. The seabed is predominantly composed of subtidal sediments with a scattering of small patches of moderate energy circalittoral rock. The shallower areas of the site, in the west, are dominated by subtidal coarse sediment and subtidal mixed sediments, while the eastern side is largely subtidal sand. A section of the Farnes Deep glacial trench occurs within the site boundary. The trench, which is the deepest part of the MCZ, contains subtidal mud. The most up to date BSH map for the site at the time of survey was produced from data collected during the joint JNCC/Cefas survey in 2012 (survey code: CEND0412) (Murray *et al.* 2015), (Figure 2). All the subtidal sediment types and the circalittoral rock found within Farnes East MCZ are listed as protected features (Table 2). The sedimentary habitats in Farnes East MCZ also support Ocean quahog (*Arctica islandica*), which is a designated feature of the site (Figure 2, Table 2). Two species of sea pen; slender sea pen (*Virgularia mirabilis*) and phosphorescent sea pen (*Pennatula phosphorea*) have been observed living in the mud habitat. Norway lobster (*Nephrops norvegicus*) construct burrows within the deep mud habitat. As a result, the habitat FOCI 'Sea pen and burrowing megafauna communities' is also protected in Farnes East MCZ (Figure 2, Table 2).

For further information on this site please refer to JNCC's Site Information Centre (<http://jncc.defra.gov.uk/page-6773>).



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Figure 2. Map showing location of Farnes East MCZ and the distribution of Broad-Scale Habitats within the MCZ boundary. BSH data source Murray *et al.* (2015). *Arctica Islandica* records are from CEND0412 and Sea pen and burrowing megafauna records are from CEND0514.

Table 2. Designated features of Farnes East MCZ and General Management Approaches (GMA).

Designated Feature/s	General Management Approach (GMA)
Moderate energy circalittoral rock (A4.2)	Maintain in favourable condition.
Subtidal coarse sediment (A5.1)	Maintain in favourable condition.
Subtidal sand (A5.2)	Maintain in favourable condition.
Subtidal mud (A5.3)	Recover to favourable condition.
Subtidal mixed sediments (A5.4)	Maintain in favourable condition.
Sea pen and burrowing megafauna communities	Recover to favourable condition.
Ocean quahog	Recover to favourable condition.

2 Survey Aims and Objectives

2.1 North East of Farnes Deep MCZ

At North East of Farnes Deep (NEFD) MCZ, the aim of the survey was to investigate the potential impact of restricting bottom trawling as part of the management measures for the site, using an operational (Type 2) monitoring approach. The area of interest for the survey is in the south-eastern corner of the site, which overlaps the tail-end of a sand-eel fishery. The prioritised primary objectives of the survey are detailed in Table 3, along with an indication of whether the objective was completed or not during the survey.

Table 3. Monitoring objectives for the CEND0618 North East of Farnes Deep MCZ survey.

Objective (attributes in bold)	Sub-objectives	Priority	Rationale/Justification	Hypotheses
<p>1. Collect evidence to inform Type 2 (operational) monitoring of the;</p> <ul style="list-style-type: none"> • extent and distribution; and, • structure and functions, and • quality and composition <p>of the biological communities and typical species associated with subtidal coarse sediment, subtidal sand, features of NEFD and the surrounding area.</p>	<p>1.1 Acquire quantitative infaunal data using grab samples within areas of interest within and outside NEFD (this will fulfil criteria in sub-objectives 2.1 and 3.1).</p>	1	Acquire quantitative data to enable operational or investigative (Type 2) monitoring of the infaunal and biological communities associated with subtidal coarse sediment, subtidal sand, subtidal mixed sediments and subtidal mud features within the site.	There is no difference/change in the infaunal communities associated with subtidal sand, subtidal mixed sediments and subtidal mud features, respectively, within and outside the site at T0 and T1.
<p>2. Collect evidence to inform Type 2 (operational) monitoring of the;</p> <ul style="list-style-type: none"> • extent and distribution and, • physical structure <p>of the subtidal coarse sediment, subtidal sand, subtidal mixed sediments and subtidal mud features of the NEFD.</p>	<p>2.1 Acquire sediment particle size data using grab samples within areas of interest within and outside NEFD (see sub-objective 1.1).</p>	1	Acquire quantitative data to enable operational or investigative (Type 2) monitoring of the subtidal sand, subtidal mixed sediments and subtidal mud features within the site.	There is no difference/change in subtidal sand, subtidal mixed sediment and subtidal mud physical structure features, supporting biological communities, respectively, within and outside the site at T0 and T1.

<p>3. Collect evidence to inform Type 2 (operational) monitoring of the quality and quantity of habitat supporting the species FOCI, Ocean quahog.</p>	<p>3.1 Acquire quantitative data using grab sampling and outside NEFD (Data collected in sub-objectives 1.1, where available, will be used to meet this objective).</p>	<p>2</p>	<p>Acquire quantitative grab sample data to enable operational or investigative (Type 3) monitoring of the habitat supporting the species FOCI, Ocean quahog, within the site.</p>	<p>There is no difference in supporting habitats for ocean quahog populations within and outside the site at T0 and T1.</p>
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2.2 Farnes East MCZ

At Farnes East (FRNE) MCZ, the aim of the survey was to acquire sentinel monitoring (Type 1 monitoring) data to contribute to the development of a monitoring time-series for the Farnes East MCZ. This site was visited previously in 2012 (Cefas survey CEND0412) and 2014 (Cefas survey CEND0514) but as the aim of these surveys focussed on site verification, CEND0618 will form the first time point of a dedicated monitoring dataset. However, this will not preclude their *ad hoc* comparison with existing data from the sites.

The survey gathered evidence on the extent, distribution, structure and functions, and supporting processes relating to the designated features of the site (Table 2) against which the rate and direction of change can be inferred in the long-term. The primary objectives of the survey are presented in Table 4. Several lower priority objectives were included as contingency. They were to be completed if more time was available or if there were problems with a piece of equipment. It was not expected that all objectives would be completed during CEND0618.

It is noted that data from this survey will form part of a monitoring time series and that future repeated monitoring and evidence gathering will be required to fully investigate and understand the temporal variability in the parameters measured.

Table 4. Monitoring objectives for the CEND0618 Farnes East MCZ survey.

Objective (attributes in bold)	Sub-objectives	Priority	Rationale/Justification	Hypotheses
<p>1. Collect evidence to inform Type 1 (sentinel) monitoring of the biological and physical;</p> <ul style="list-style-type: none"> • extent and distribution; and, • structure and functions, and, • quality and composition <p>of the subtidal mud feature of FRNE and, where available, the quality and quantity of the habitat supporting the FOCI Sea pen and burrowing megafauna communities and, if available, the composition of the FOCI.</p>	<p>1.1 Acquire quantitative infaunal data using a mini-Hamon grab (integrated with sub-objective 1.3).</p>	1	Acquire quantitative data to enable sentinel (Type 1) monitoring of the infaunal communities associated with the subtidal mud feature within the site.	There is no difference/change in measured infaunal communities associated with the subtidal mud feature within the site from T0 and T1.
	<p>1.2. Acquire semi-quantitative epifaunal data using a camera sledge to collect epifaunal video transects and stills imagery.</p>	1	Acquire quantitative and semi-quantitative epifaunal community data to enable sentinel (Type 1) monitoring of the subtidal mud feature and the FOCI feature, Sea pen and burrowing megafauna communities, within the site.	There is no difference/change in measured subtidal mud epifaunal communities within the site from T0 and T1 and there is no difference/change in supporting habitats for the FOCI (Sea pen and burrowing megafauna communities) within and outside the site at T0 and T1.
	<p>1.3. Acquire sediment samples using a mini-Hamon grab (integrated into sub-objective 1.1).</p>	1	Acquire quantitative data to enable sentinel (Type 1) monitoring of the physical attributes of the sediment supporting the infaunal communities associated with the subtidal mud feature within the site.	There is no difference/change in the physical attributes of the sediment supporting the infaunal communities associated with subtidal mud feature within the site at T0 and T1.
<p>2. Collect evidence to inform Type 1 (sentinel) monitoring of the biological and physical;</p> <ul style="list-style-type: none"> • extent and distribution; and, • structure and functions, and, • quality and composition <p>associated with the subtidal coarse sediment, subtidal sand, and subtidal mixed sediments features of FRNE.</p>	<p>2.1 Acquire quantitative infaunal data using mini-Hamon grab samples (integrated with sub-objective 2.3).</p>	2	Acquire quantitative data to enable sentinel (Type 1) monitoring of the subtidal coarse sediment, Subtidal sand, and Subtidal mixed sediments features within the site.	There is no difference/change in measured infaunal communities associated with subtidal coarse sediment, subtidal sand, and subtidal mixed sediments features, respectively, within the site at sentinel stations from T0 and T1.
	<p>2.2. Acquire semi-quantitative epifaunal data using drop frame camera to capture video and stills imagery (integrated with sub-objective 2.4).</p>	3	Acquire semi-quantitative data to enable sentinel (Type 1) monitoring of the subtidal coarse sediment, and subtidal mixed sediments feature within the site.	There is no difference/change in measured subtidal coarse sediment, and subtidal mixed sediments epifaunal community features, respectively, within the site at sentinel stations from T0 and T1.

	<p>2.3. Acquire sediment samples using mini-Hamon grab (integrated into sub-objective 2.1).</p>	2	<p>Acquire quantitative data to enable sentinel (Type 1) monitoring of the physical attributes of the sediment supporting the infaunal communities associated with the subtidal coarse sediment, subtidal sand, and subtidal mixed sediments features within the site.</p>	<p>There is no difference/change in the physical attributes of the sediment supporting the infaunal communities associated with the subtidal coarse sediment, subtidal sand, and subtidal mixed sediments features, respectively, within the site at T0 and T1.</p>
	<p>2.4. Acquire semi-quantitative data using drop frame camera to capture video and stills imagery (integrated with sub-objective 2.2).</p>	3	<p>Acquire semi-quantitative data to enable sentinel (Type 1) monitoring of the extent, distribution and physical structure of subtidal coarse sediment and subtidal mixed sediments features within the site.</p>	<p>There is no difference/change in measured subtidal coarse sediment, and subtidal mixed sediments BSH features, respectively, within the site at T0 and T1.</p>
<p>3. Collect evidence to inform Type 1 (sentinel) monitoring of the biological and physical;</p> <ul style="list-style-type: none"> • extent and distribution; and, • structure and functions, and, • quality and composition associated with the moderate energy circalittoral rock features of FRNE. 	<p>3.1. Acquire semi quantitative epifaunal community data using drop frame camera to capture video and stills imagery (integrated with sub-objective 3.2).</p>	3	<p>Acquire semi-quantitative data to enable sentinel (Type 1) monitoring of the epifaunal community associated with the moderate energy circalittoral rock feature within the site.</p>	<p>There is no difference/change in measured moderate energy circalittoral rock epifaunal community features, respectively, within the site at sentinel stations from T0 and T1.</p>
	<p>3.2. Acquire semi-quantitative data using drop frame camera to capture video and stills imagery (integrated with sub-objective 3.1).</p>	3	<p>Acquire semi- quantitative data to enable sentinel (Type 1) monitoring of the extent, distribution and physical structure of the moderate energy circalittoral rock feature within the site.</p>	<p>There is no difference/change in the physical attributes of the moderate energy circalittoral rock feature, respectively, within the site at T0 and T1.</p>
<p>4. Collect evidence to inform Type 1 (sentinel) monitoring of the supporting processes relating to subtidal mud, subtidal coarse sediment, subtidal sand, subtidal mixed sediment and moderate energy circalittoral rock features of FRNE, respectively, by priority.</p>	<p>4.1. Acquire CTD and ESM Logger data transmissometer data (integrated with sub-objectives 1.2, 2.2, 2.4, 3.1 and 3.2, as applicable).</p>	4	<p>Acquire quantitative environmental data (e.g., temperature, salinity and turbidity) to improve understanding of environmental conditions and natural supporting processes at the seabed within to the site.</p>	<ul style="list-style-type: none"> • Hypothesis not required. • Supporting processes will not be compared within the site, at sentinel stations, from T0 and T1, but will provide context of environmental variability.

	4.2. Acquire Ferrybox data continuously during survey.	4		
5. Collect evidence to inform Type 1 (sentinel) monitoring of the quality and quantity of habitat supporting species FOCI , Ocean quahog , and, if available, the composition of the FOCI.	5.1 Acquire semi-quantitative epifaunal data using video and stills imagery within areas of interest within FRNE (integrated with sub-objectives 1.2, 2.2, 2.4, 3.1 and 3.2, as applicable).	3	Acquire quantitative and semi-quantitative data to enable sentinel (Type 1) monitoring of the habitat supporting the species FOCI, Ocean quahog, within the site.	There is no difference/change in supporting habitat for Ocean quahog populations within and outside the site at T0 and T1 .
	5.2 Acquire quantitative epifaunal data using grab sampling, using a mini-Hamon grab, within areas of interest in FRNE (integrated with sub-objectives 1.1, 1.3, 2.1, 2.3).	2		

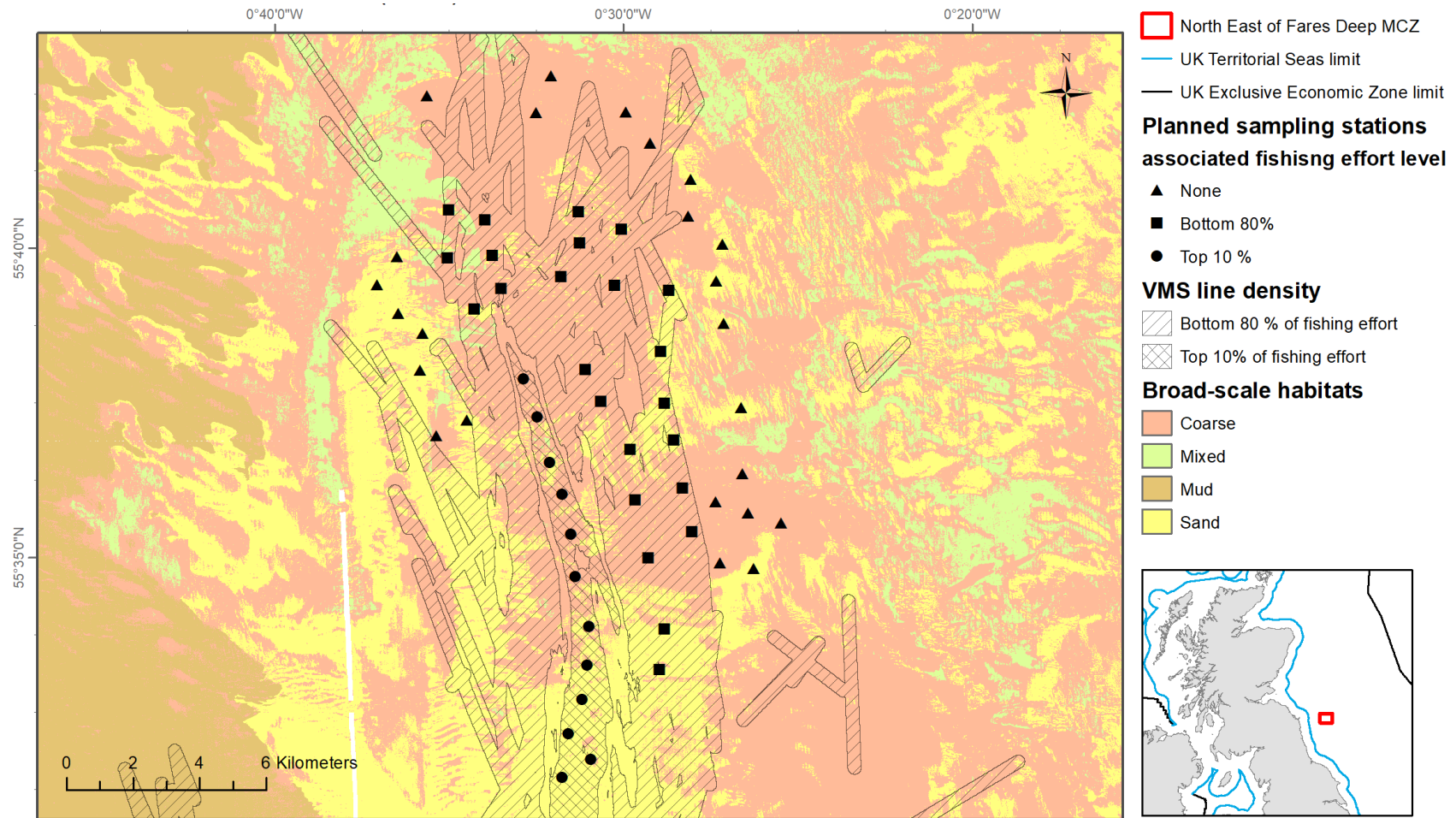
3 Survey Planning and Design

3.1 North East of Farnes Deep (NEFD)

3.1.1 Monitoring Objectives 1-3

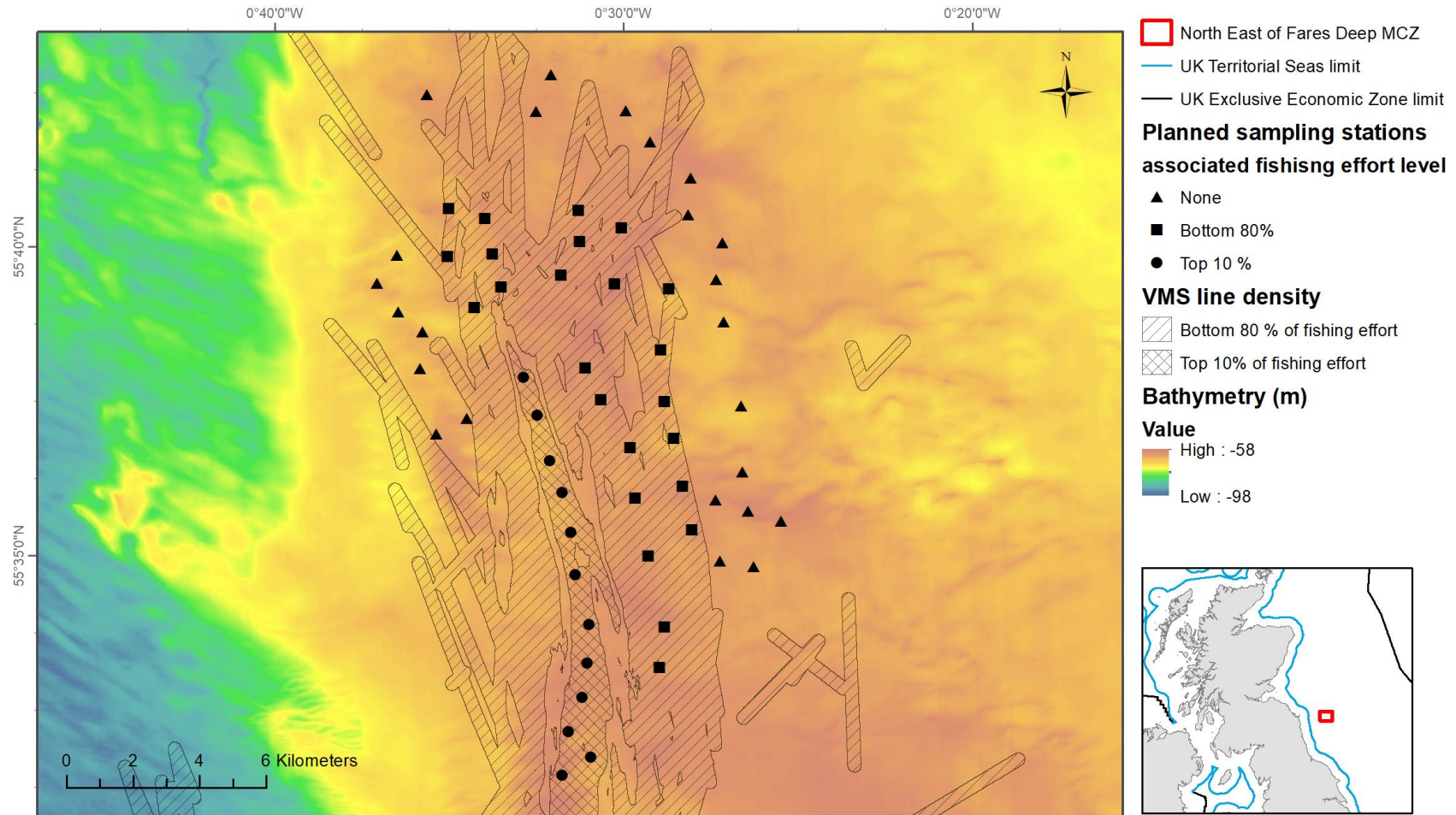
For NEFD MCZ site an area of interest containing the south-east corner of the MCZ plus the area immediately outside the MCZ was selected. This area was chosen as the south-east corner of NEFD MCZ overlaps with the area used by a sand eel fishery. An updated basic EUNIS habitat map for the larger area around the MCZ was produced using CHP bathymetry and backscatter with ground truth samples collected on previous surveys of the MCZ (CEND0412 and CEND1016). The map indicates the area of interest and the adjacent area outside the MCZ consist of a mosaic of 'A5.1 Sublittoral coarse sediment', 'A5.2 Sublittoral sand' and '5.4 Sublittoral mixed sediments' (Figure 3). As the map is based on old CHP data, it cannot be considered entirely accurate for current conditions. The delineation of 'coarse' vs. 'mixed' substrata is particularly uncertain. None of the areas identified as 'A5.4 Sublittoral mixed sediments' are subject to the higher level of fishing pressure. As a result, the study is concentrated on the areas mapped as 'A5.1 Sublittoral coarse sediment' and 'A5.2 Sublittoral sand' BSH. It is, however, likely that some of the samples will contain 'A5.4 Sublittoral mixed sediments'.

60 x 0.1m² Hamon Grab stations were identified; these were stratified across two BSH (coarse and sand), as well as three levels of fishing effort (none, bottom 80% of fishing effort, top 10% of fishing effort (Figure 3). Fishing effort was calculated based on UK and non-UK vessel monitoring system (VMS) pings from 2014 – 2016 and was associated with the shallower areas of the study site (Figure 4). At each station five replicate grab samples were collected within a 50m radius bullring, with the vessel moving approximately 10m between each replicate. The 0.1m² mini Hamon Grab (section 0) was used at this site for collecting particle size analysis (PSA) and macrofauna samples. Cobbles and/or the species FOCI *Arctica islandica* were measured (length, width, and depth) and weighed, when collected in a grab sample (Figure 5). The cobbles and damaged *A. islandica* specimens were included in the macrofauna samples. Intact *A. islandica* were returned to the seabed; these data will be included in the final analysis. This sampling strategy was primarily designed to address objectives 1 and 2 however any samples containing *A. islandica* contributed to objective 3 (Table 3).



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Figure 3. Location of the planned 0.1m² Hamon grab stations (5 replicates at each station) at North East of Farnes Deep MCZ, in relation three levels of fishing effort, and predicted broad-scale habitats. BSH map created from CHP bathymetry and backscatter with ground truth samples collected on previous surveys of the MCZ (CEND0412 and CEND1016). Contains public sector information, licenced under the Open Government Licence v3.0, from UKHO.



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Figure 4. Location of the planned 0.1m² Hamon grab stations (5 replicates at each station) at North East of Farnes Deep MCZ, in relation three levels of fishing effort, and bathymetry. Note that the fishing effort is concentrated in the shallower regions of the survey area. Bathymetry from CHP. Contains public sector information, licenced under the Open Government Licence v3.0, from UKHO.



Figure 5. Example of *Arctica islandica* collected from the mini Hamon grab at North East of Farnes Deep MCZ. Intact specimens were returned to the seabed.

3.2 Farnes East

3.2.1 Type 1 Monitoring of Mud BSH and ‘Sea pens and burrowing megafauna’ (FRNE objective 1)

The existing data of FRNE MCZ do not allow for adequate characterisation of the ‘Subtidal mud’ BSH and ‘Sea pens and burrowing megafauna’ habitat FOCI features at the site, or an estimation of sufficient stations to detect recovery of the habitats. Consequently, the survey objective for the mud habitats was to characterise the ‘Subtidal mud’ BSH and the ‘Sea pens and burrowing megafauna’ habitat FOCI (Table 4 – objective 1). The sampling was designed to obtain observations on the presence and abundance of epifaunal and infaunal taxa, including sea pens, as well as burrows as indicators of burrowing megafauna. The sampling design aimed to provide the necessary data to both establish the current extent of the ‘Sea pens and burrowing megafauna’ habitat FOCI and inform future monitoring surveys.

The criteria outlined by JNCC (2014) state that the Sea pens and burrowing megafauna habitat FOCI should be defined through multiple sightings of burrows and/or mounds attributable to relevant species across either a video tow, or in a sufficient number of still images, to identify the burrows and/or burrowing species as at least “frequent” on the SACFOR scale.

Data ideally required to confirm this habitat type include:

- (1) video and stills imagery to confirm burrows and/or mounds and, where present, sea pens;
- (2) infaunal grab samples to confirm relevant fauna (although see above); and
- (3) PSA data to confirm a fine mud habitat (JNCC 2014).

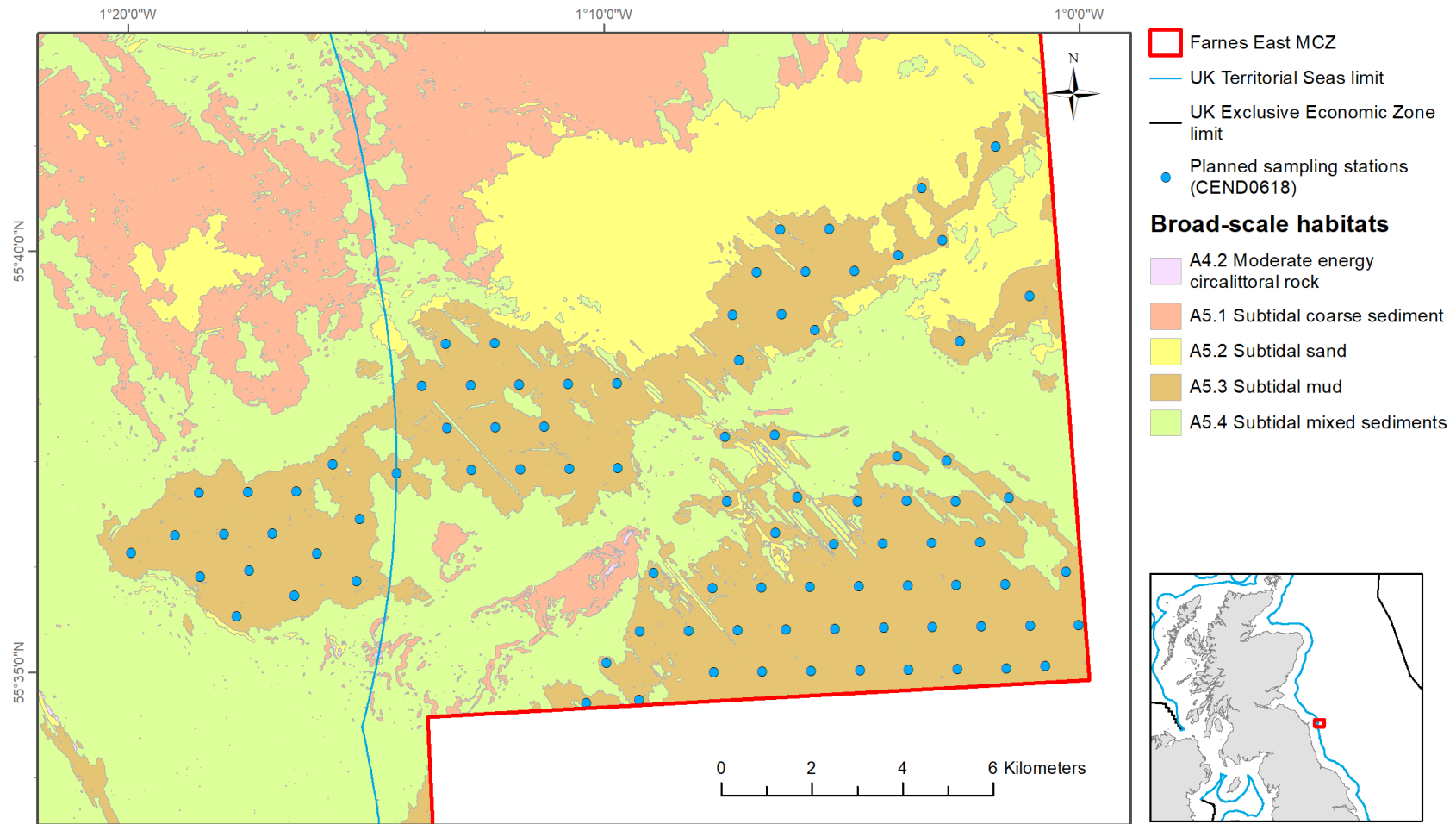
The mud feature at Farnes East consists of two large basins and additional smaller patches of mud (Figure 6). Existing data suggest the two largest basins differ in their particle size distribution; in that the southern basin has a higher mud content, whilst the northern basin is sandier. The southern basin is also currently fished.

A power analysis of grab samples collected in 2014 and assigned as mud BSH suggested 45 stations are needed to detect a 20 percent decrease in the number of individuals recorded from the mud BSH (Power = 0.8, $p = 0.05$).

90 planned survey stations were located in the two main mud basins, 45 stations each. An equidistant triangular grid was used with planned stations a minimum of 1km apart. Each station included:

- a 100m camera sledge tow (see section 4.3 for details about the camera sledge), and
- a single 0.1m² Hamon Grab (see section 4.2 for details about the Hamon grab) sample

The location of the planned stations can be seen in Figure 6. A subset of these stations ($n = 4$) also formed part of the sampling design for Objective 2.



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Figure 6. Two areas of A5.3 Subtidal mud showing the distribution of planned sampling effort in the northern and southern mud basins of Farnes East MCZ. N.B. a subset of these stations (n = 4) formed part of objective 2. BSH data source Murray *et al.* (2015).

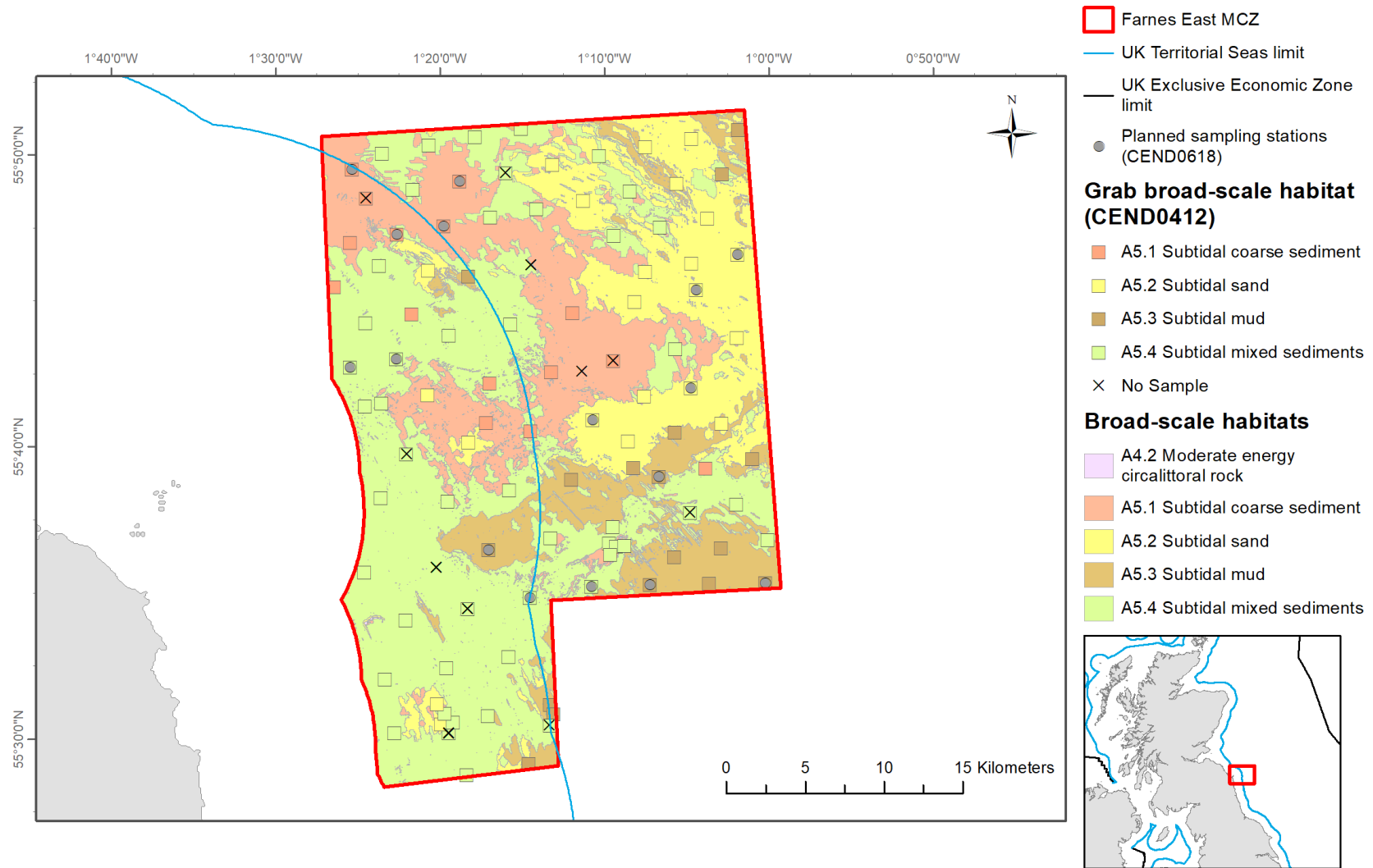
3.2.2 Type 1 Monitoring of all sedimentary BSH (FRNE Objective 2)

There are four sedimentary BSH present at FRNE – ‘A5.2 Subtidal coarse sediment’, ‘A5.3 Subtidal sand’, ‘A5.4 Subtidal mud’ and ‘A5.5 Subtidal mixed sediments’ (Figure 7). Particle size analysis (PSA) of existing grab samples, and power analysis using species richness and abundance metrics from faunal data (Appendix 1) both indicate that all the BSH have very high in-group variability. Variability within each BSH class is too great to consider them uniform units for sampling using a random sampling approach. To capture the whole gradient of particle size distributions across the site, whilst at the same time reducing variability in sampling units used for future comparison, it was decided to sample a smaller number of increased replication monitoring stations across a range of particle size distributions within each BSH. Monitoring single stations, instead of BSH classes, was chosen to reduce variability among samples and increase the power to detect temporal change within stations. Including multiple stations per BSH will give confidence over ‘representativeness’ of stations of the whole habitat type. Replication will quantify within-station variability and allow for robust time-series trend analysis for monitoring.

Increased replication monitoring stations were selected at FRNE based on the stations sampled on CEND0412 (Figure 7). Using previously sampled stations as monitoring stations provided the best chance of sampling the range of conditions at the site. Each station was expected to be more uniform between replicates than between stations. It must however be noted that, although the replication at stations will address the fine-scale spatial variability potentially present at stations, temporal variability can only be assessed and accounted for after multiple sampling events. BSH assigned to each station following sample analysis will be invaluable in terms of reporting and analyses, and for developing future monitoring survey plans.

Each of the four BSH were divided into two subtypes (See Appendix 5 for more detail) and two sampling stations were located in each subtype, giving a total of 16 stations (4 BSH x 2 subtypes x 2 stations = 16 stations) (Figure 7). 10 replicate grabs and a single drop camera transect were planned for each station (Figure 8). These samples address FRNE objective 2 (Table 4).

Infaunal community analysis of CEND0412 data was used to verify that the planned stations also captured the variation present in the infaunal macroinvertebrate community at Farnes East MCZ (See Appendix 5 for more detail).



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Figure 7. BSH observed in samples and stations at Farnes East MCZ with no sample grab attempts (from survey CEND0412) with planned sampling stations (10 replicate grabs and one camera transect planned at each station). BSH data source Murray *et al.* (2015).

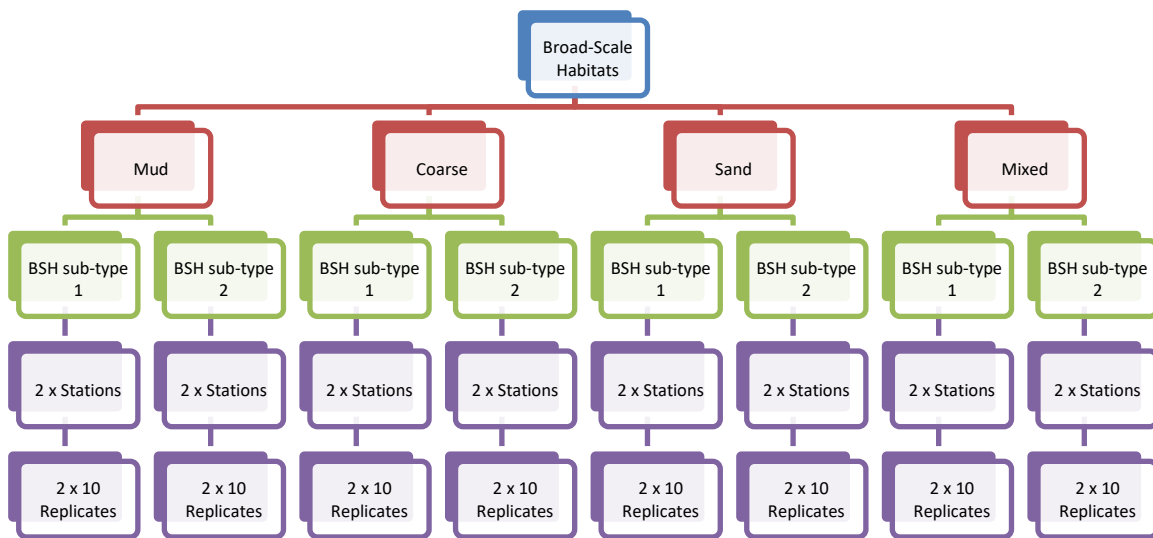
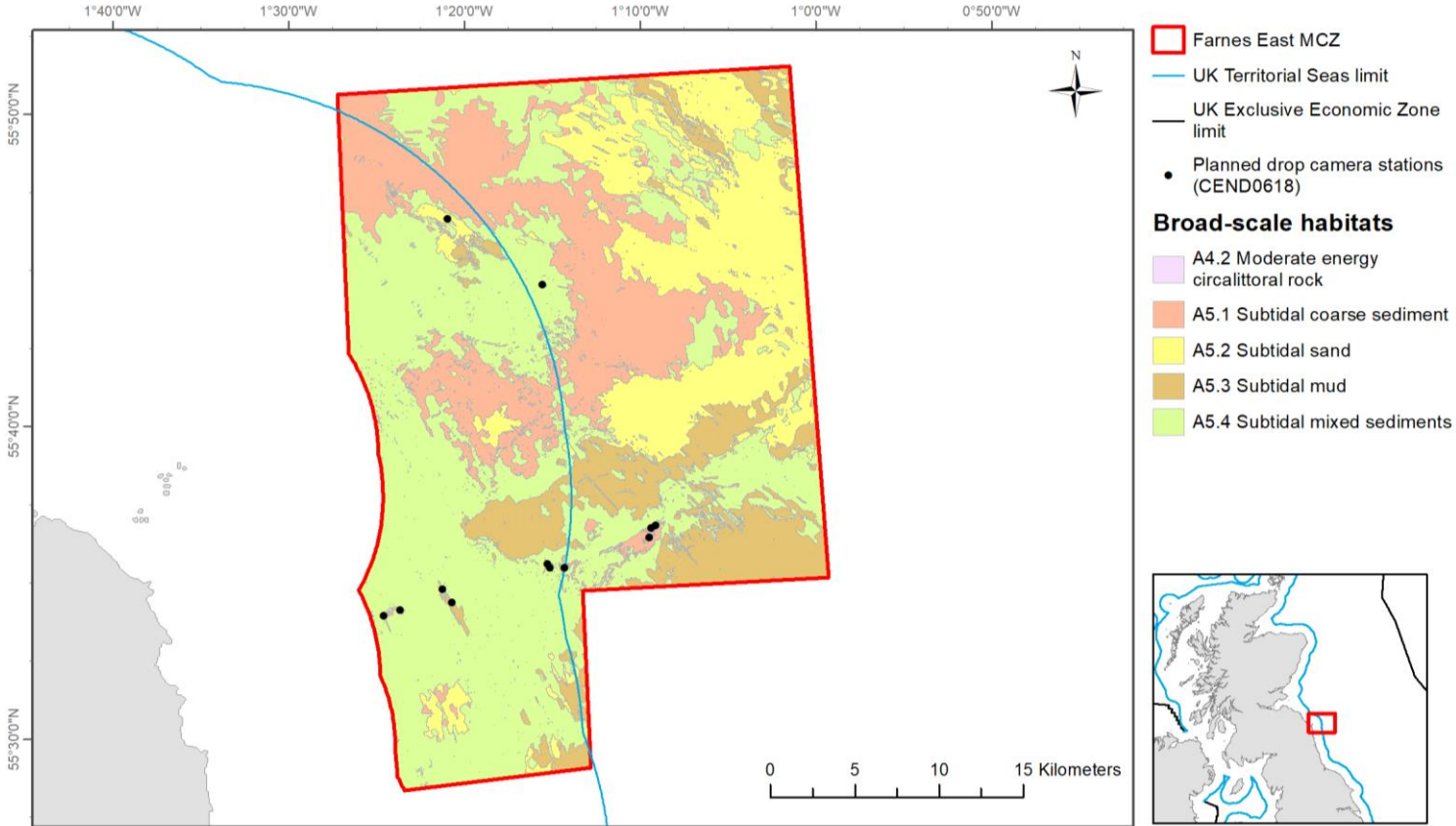


Figure 8. Survey design for BSH grab survey. Four BSH, each containing 2 BSH sub-types. Each sub-type contains 2 stations, each with 10 replicate grabs.

3.2.3 Type 1 Monitoring of Moderate energy circalittoral rock (FRNE Objective 3)

A third objective was planned to monitor small outcrops of moderate energy circalittoral rock that occur at the site (Table 4 – objective 3). The habitat map was used to identify 12 locations where the rock outcrop was large enough to conduct a 120m video transect using the drop camera (Figure 9). The objective of the drop camera survey was to establish a taxon list for future comparison.



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Figure 9. Planned locations of drop camera tows over Moderate energy circalittoral rock at FRNE MCZ. BSH data source Murray *et al.* (2015).

3.2.4 Type 1 monitoring of the supporting processes relating to designated BSH types (FRNE objective 4)

The Ecosystem Monitoring Version 2 (ESM2) logger was mounted to the camera frame (drop frame or sledge) and recorded data during each camera transect. Therefore, all camera work carried out under FRNE objectives 1-3 (Table 4) contributed to this objective. Water samples from the ships ferry box were used to calibrate the data. More information on the ESM2 logger and the ferry box can be found in sections 4.4 and 4.5 respectively.

3.2.5 Type 1 monitoring of the quality and quantity of habitat supporting species FOCI Ocean quahog (FRNE objective 5)

Ocean quahog collected using the 0.1m² Hamon grab at FRNE are recorded following the same procedure described in section 3.1.1. A subsample for PSA will also be retained from these stations.

Additionally, Ocean quahog siphons may be visible in video and still images collected from planned camera transects at FRNE. Samples planned to fulfil FRNE objective 1 and to a lesser extent FRNE objective 2 (as objective 2 is unlikely to encounter suitable habitat for Ocean quahog), will contribute to FRNE objective 5 (Table 4).

4 Sampling methods

The survey of the two sites was undertaken aboard the RV *Cefas Endeavour*. Details of the vessel and the equipment used are provided in Appendix 2. The survey operations and protocols are described below.

4.1 Survey Project Team

The survey team for the duration of the fieldwork included Cefas and Joint Nature Conservation Committee (JNCC) marine scientists. 24-hour operations were conducted throughout.

Table 5. Survey staff roles for CEND0618.

Cross-shifts 06:00 – 18:00	
Cefas Scientist in Charge	
Cefas Second in Charge	
Cefas Data Manager	
Day Shift 12:00 – 00:00	Night Shift 00:00 – 12:00
Cefas Shift Lead	Cefas Shift Lead
Cefas GIS & survey planning lead	Cefas Benthic lead
JNCC survey planning lead	Cefas Marine Instrumentation Technician
Cefas Marine Instrumentation Technician	3x Deck Scientists
Benthic ecologist	JNCC monitoring lead
Deck Scientist	

4.2 Sediment and macrofauna samples

The grab system employed for the study comprised a 0.1m² mini Hamon grab (Figure 10). Samples were collected from the planned ground-truth stations anywhere within a 50m

radius bullring centred on the station location. On recovery, the grab was emptied into a large plastic bin and a representative integrated sub-sample of sediment (approximately 0.5l) taken for Particle Size Analysis (PSA). The PSA sample was stored in a labelled plastic container and frozen ready for transfer to a laboratory for analysis. The remaining sample was photographed, and the volume of sediment measured and recorded. Benthic fauna was collected by washing the sample with sea-water over a 1mm sieve. The retained >1mm fraction was transferred to a labelled container and preserved in buffered 4 % formaldehyde for later analysis. A visual assessment was made of the sediment type sampled by the grab and noted on the field records, assigning the sample to a preliminary Folk class and its equivalent BSH.



Figure 10. 0.1m² mini Hamon grab similar to that used on CEND0618.

4.3 Seabed imagery

Seabed imagery was acquired for later assessment of the benthic epifaunal community present using a camera sledge (Figure 11). A drop camera system was also taken for areas where the seabed surface proved too coarse to safely deploy a camera sledge. In practice the drop camera system was not required as only monitoring objectives requiring the camera sledge were addressed (Table 4). High definition video footage and digital still images were captured during 11-minute tows. Fan lasers were mounted on the camera sledge frame. These provide a fixed known distance allowing quantification of sampling (Figure 12). Sensors logging bottom temperature, altitude, bearing and depth recorded data for the duration of the tow.



Figure 11. Camera sledge system used on CEND0618.

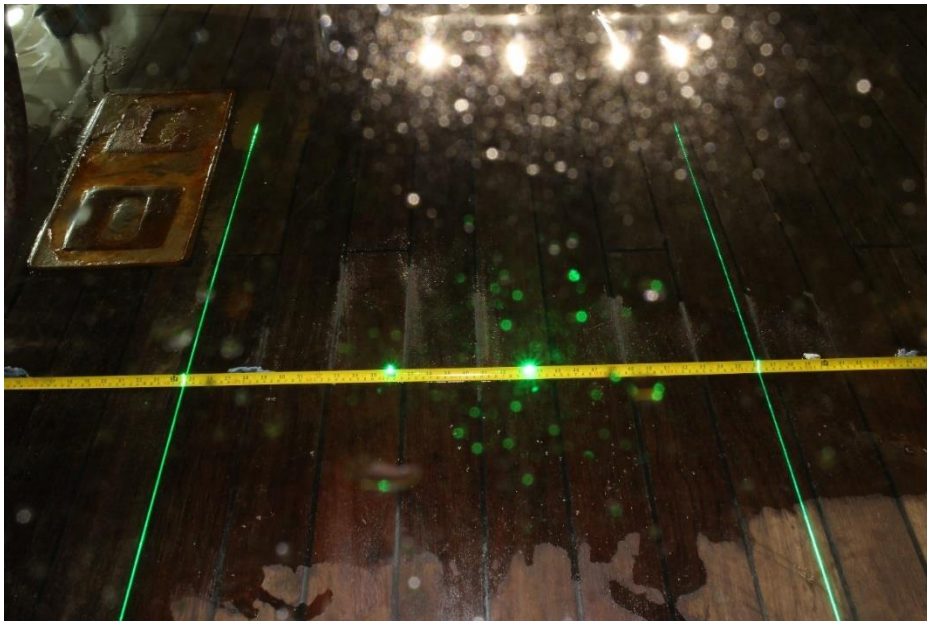


Figure 12. Fan (80cm separation) and spot lasers (19cm separation) on the camera sledge being measured prior to deployment.

4.4 Physical environmental parameters

An ESM2 logger was attached to the camera frame to record a suite of environmental variables across the horizontal profile of each video tow. The ESM2 logger was fitted with a conductivity / temperature (CT) sensor, chlorophyll fluorometer, oxygen optode and two optical backscatter sensors to gather salinity, chlorophyll, dissolved oxygen and turbidity data.

The RV *Cefas Endeavour's* 'ferrybox' is an underway continuous logging system and was operated throughout CEND0618. This instrument measures the surface values of the same parameters recorded using the ESM2 logger, with an additional sensor measuring variable

fluorescence (a measure of phytoplankton photosynthetic efficiency). These data will provide high quality physical parameters to relate to various benthic observations and contribute to achieving FRNE objective 4.1 (Table 4). These data will also be used to supplement Cefas' shelf sea modelling activities.

4.5 Water sample processing

As with most, if not all, *in-situ* instrumentation, data need to be validated and the equipment calibrated to ensure robust datasets. Discrete water samples were collected using the continuous flow 'ferrybox' system for salinity. Salinity samples were collected by syphoning off water into rinsed clean glass salinity bottles. The lip and opening of the bottle were wiped clean to prevent salt formation and potential loss of determinant. An insert is placed in the neck of the bottle to prevent evaporation and the bottle is then capped, itemised and logged. It's important that the in-situ samples are taken from the same water mass the instruments are measuring. The camera sledge frame (with the attached ESM2 logger and sensor array) was held at 4m below sea level for a few minutes while taking the water sample from the 'ferrybox'. The ship's thrusters are not in use during this process as they are known to mix and ventilate the surface waters significantly.

5 Survey Narrative

The survey equipment and consumables were mobilised in advance of sailing. All times are GMT.

23 April 2018: A vessel induction was given at 11:00 for staff who had not received one in the last six months. The vessel left Lowestoft at 15:00 on the 23 April 2018 and transited to North East of Farnes Deep MCZ.

24 April 2018: The vessel arrived at the first station of NEFD at 09:00 24 April 2018 at which point a Hamon grab toolbox were held with all staff. Grab samples were collected continuously through the day.

25 April 2018: Hamon grab sampling continued throughout the day. A successful "wet test" deployment of the camera sledge system was carried out on at 15:00 in preparation for the Farnes East site.

26 – 27 April 2018: Hamon grab sampling carried on out for a further 48 hours without incident.

28 April 2018: Sediment sampling was continued at North East of Farnes Deep MCZ until completion at 05:38. The vessel left the site at 06:00 and arrived at Farnes East at 08:00. Hamon grab sampling began at 09:02. Two camera test deployments were carried out at 09:25 to allow for adjustments. Grabbing continued while these adjustments were made before camera sledge sampling began at 11:41. Simultaneous camera and grab sampling was carried out for the rest of the day.

29 April 2018: Camera sledge operations were stopped at 23:30 after a notable kink and damage appeared in the fibre optic cable (Figure 13). At the same time, there were two occasions when the camera sledge lights and lasers unexpectedly turned on, possibly because of the damaged cable. By this point 26 video transects had been successfully collected, however, very high levels of phytodetritus in the water column meant that the visibility was often poor. It was decided to focus on taking sediment samples at the Objective

2 sites (Type 1 Monitoring of all sedimentary BSH) while the camera issues were being investigated and resolved. Grab sampling continued throughout the day without incident.



Figure 13. Damage to the camera sledge's fibre optic cable.

30 April 2018: Hamon grabbing operations continued for the next 24 hours with 68 further grab samples taken. The high intensity of operations took its toll on the Hamon grab, which had to be replaced after the welds on the grab arm pivot were ripped apart (Figure 14). This resulted in 30 minutes of downtime while the grab was swapped for a replacement.

Around this time, it was determined that the number of stations planned for the Farnes East MCZ site was overly optimistic and that despite the favourable conditions, several stations would have to be dropped due to lack of time. FRNE objective 3 (type 1 monitoring of moderate energy circalittoral rock) was dropped reducing the workload by 12 stations. FRNE objective 1 (type 1 monitoring of mud BSH and 'Sea pens and burrowing megafauna') was then revised from 90 stations to 50 stations. The revision meant 25 stations in the northern mud basin and 25 stations in the southern mud basin would be sampled. These were determined to still be enough to carry out a full assessment of the area of interest.

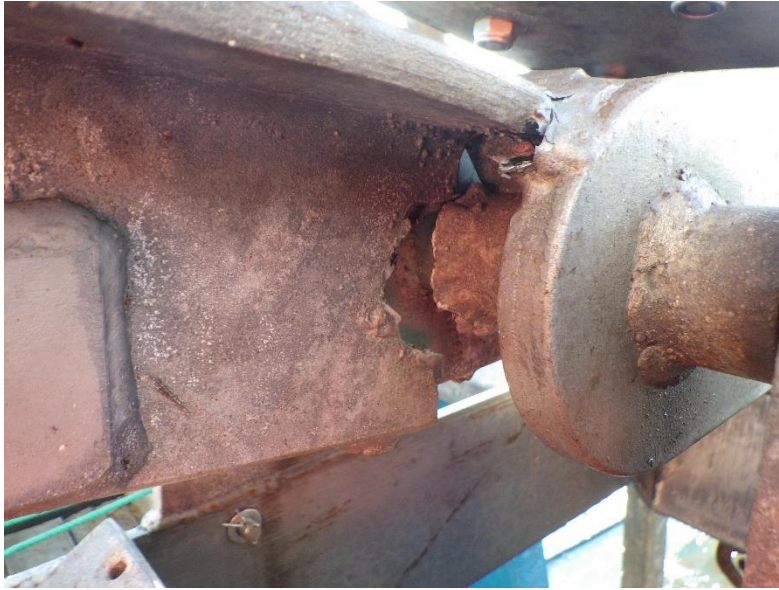


Figure 14. Damaged weld on the mini Hamon Grab.

1 May 2018: The damaged fibre optic cable was replaced with a coaxial cable. This did mean a decrease in image quality from full HD to 720P. To avoid a repeat of the lights and lasers incident, changes were made to the software settings and a revised risk assessment and standard operating procedure were developed. Camera sledge operations recommenced at 15:00 after staff carried out a toolbox talk to understand the changes and new procedures. Once again, the visibility on the video and still images poor due to high levels of phytodetritus in the water column. Hamon grab sampling continued throughout the day without incident.

2 May 2018: Simultaneous camera and grab sampling went on until 03:30. At this point the weather deteriorated and it was no longer possible to sample using the camera sledge. Grab sampling continued until 06:00 when the weather deteriorated further. All sampling was paused at 06:30 until conditions improved with camera sampling restarting at 08:00 and grab sampling at 15:35. Operations continued together until 17:30. At this point the bow thruster of the vessel developed an oil leak. Condensation also appeared on the inside of the camera housing. The camera was swapped for a replacement and the crew carried out preventative maintenance on the bow thruster. Simultaneous grab and video sampling resumed at 22:00.

3 May 2018: The grab and video operations continued until the last sample was collected at 13:52. The vessel left Farnes East MCZ at 14:00 and transited to Lowestoft Port.

4 May 2018: The *RV Cefas Endeavour* docked at 12:00. Sampling gear was demobilised, and samples transferred to storage in readiness for processing.

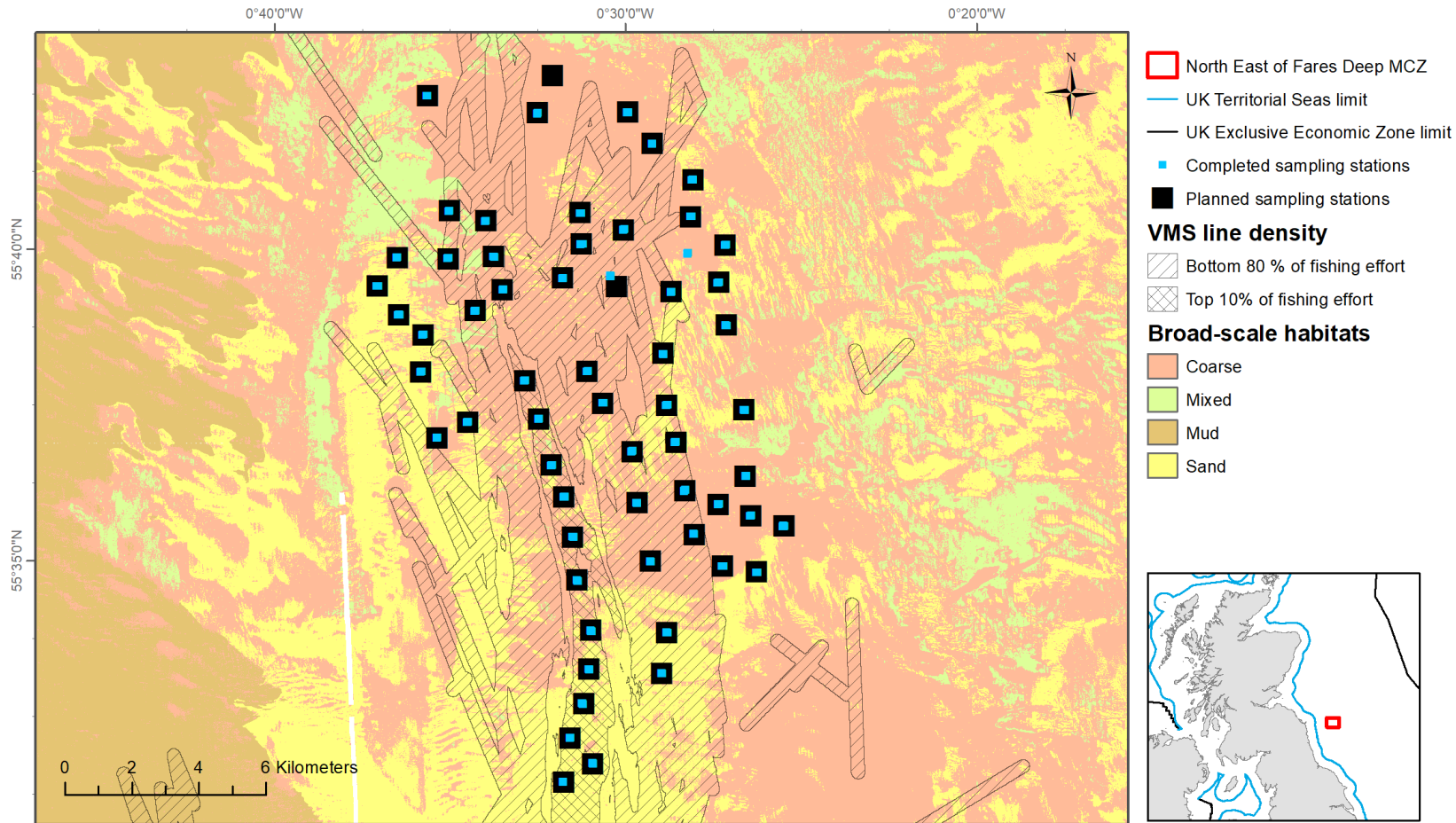
6 Environmental data acquisition

6.1 North East Farnes Deep MCZ

All sampling objectives for NEFD were completed on survey. Five replicate Hamon grab sediment samples were successfully collected from 58 of the original planned 60 stations. At station NEFDM001 samples were too small to be valid. At station NEFDM009 the sediment was too coarse and only yielded two samples. Two additional stations were added to achieve a total of 60 successfully sampled stations, each with five replicates (Table 6, Figure 15). The analysis of the samples will be completed and reported on in a later report. Metadata on the samples is given in Appendix 6.

Table 6. Summary of samples collected at North East Farnes Deep MCZ on CEND0618. *See Table 3 for full monitoring objectives.

Objective*	Sub-objectives	Sample type	Stations planned	Stations attempted	Successful stations	No. of samples	No. of replicates at each station
1. Collect evidence to inform Type 2 (operational) monitoring of the; <ul style="list-style-type: none"> • extent and distribution; and, • structure and functions, and quality and composition of the biological communities and typical species associated with subtidal coarse sediment, subtidal sand, features of NEFD and the surrounding area.	1.1 Acquire quantitative infaunal data using grab samples within areas of interest within and outside NEFD (this will fulfil criteria in sub-objectives 2.1 and 3.1)	PSA / Macrofauna	60	62	60	302	5
2. Collect evidence to inform Type 2 (operational) monitoring of the extent, distribution and physical structure of the subtidal coarse sediment, subtidal sand, subtidal mixed sediments and subtidal mud features of the NEFD.	2.1 Acquire sediment particle size data using grab samples within areas of interest within and outside NEFD (see sub-objective 1.1)	PSA / Macrofauna	60	62	60	302	5
3. Collect evidence to inform Type 2 (operational) monitoring of the quality and quantity of habitat supporting the species FOCI, Ocean quahog.	3.1 Acquire quantitative data using grab sampling and outside NEFD (Data collected in sub-objectives 1.1, where available, will be used to meet this objective).	PSA / Macrofauna	60	62	60	302	5



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Figure 15. The 60 sampling stations plus 2 additional stations at North East of Farnes Deep MCZ. BSH map created from CHP bathymetry and backscatter with ground truth samples collected on previous surveys of the MCZ (CEND0412 and CEND1016). Contains public sector information, licenced under the Open Government Licence v3.0, from UKHO.

6.2 Farnes East MCZ

During the survey it became apparent that there was insufficient time to complete all objectives for Farnes East. This was partly due to the downtime with the camera sledge and partly an underestimation of the deployment time required for camera sledges (as opposed to drop cameras). FRNE objective 1 (type 1 monitoring of mud BSH and 'Sea pens and burrowing megafauna') was revised down from 90 stations to 50 stations. FRNE objectives 3, 2.3, and 2.4 were dropped altogether due to their lower priority (Table 4). The final number of stations and samples collected are given in Table 7. The locations of the stations sampled to achieve FRNE objective 1 and 2 can be seen in Figure 16 and Figure 17 respectively. Metadata for each sample is given in Appendix 6.

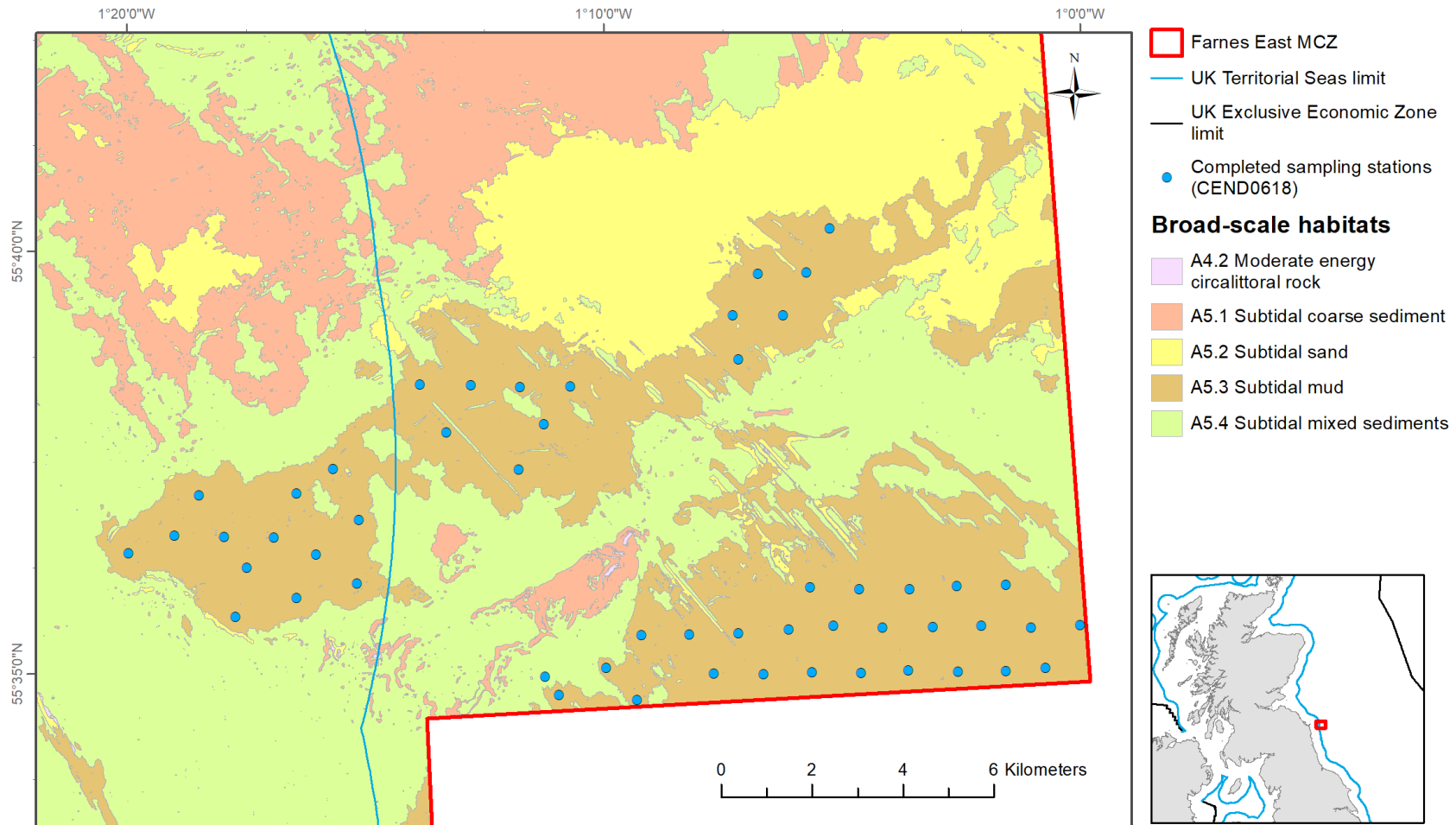
In order to calibrate data from the ESM2 logger, a total of 23 salinity samples were taken across the site and these contribute to achieving FRNE objective 4.2 (Table 4).

Table 7. Monitoring objectives for the Farnes East MCZ survey, including an indication of whether the objective was completed during CEND0618. *5 stations of objective 1 overlaps with 5 stations of objective 2. ¹27 camera samples were made at full HD. The remaining camera samples were at 720P after switching to the coaxial cable. ²ESM2 and Ferrybox data are examined separately post-survey and were not available at time of this report.

Objective	Sub-objectives	Sample type	Stations planned	Stations achieved	Replicates	Total no. of samples	Objective completed
1. Collect evidence to inform Type 1 (sentinel) monitoring of the biological and physical; <ul style="list-style-type: none"> • extent and distribution; and, • structure and functions, and quality and composition of the subtidal mud feature of FRNE and, where available, the quality and quantity of the habitat supporting the FOCI Sea pen and burrowing megafauna communities and, if available, the composition of the FOCI	1.1 Acquire quantitative infaunal data using a mini-Hamon grab (integrated with sub-objective 1.3).	Macrofauna and PSA	90	53	1	53*	Yes
	1.2. Acquire semi- quantitative epifaunal data using a camera sledge to collect epifaunal video transects and stills imagery	Seabed imagery	90	53	1	53 ¹	Yes
	1.3. Acquire sediment samples using a mini-Hamon grab (integrated into sub-objective 1.1)	Macrofauna and PSA	90	53	1	53*	Yes
2. Collect evidence to inform Type 1 (sentinel) monitoring of the biological and physical; <ul style="list-style-type: none"> • extent and distribution; and, • structure and functions, and quality and composition associated with the subtidal coarse sediment, subtidal sand, and subtidal mixed sediments features of FRNE	2.1 Acquire quantitative infaunal data using mini-Hamon grab samples (integrated with sub-objective 2.3).	Macrofauna and PSA	16	16	10	160*	Yes
	2.2. Acquire semi quantitative epifaunal data using drop frame camera to capture video and stills imagery (integrated with sub-objective 2.4).	-	-	-	-	-	No

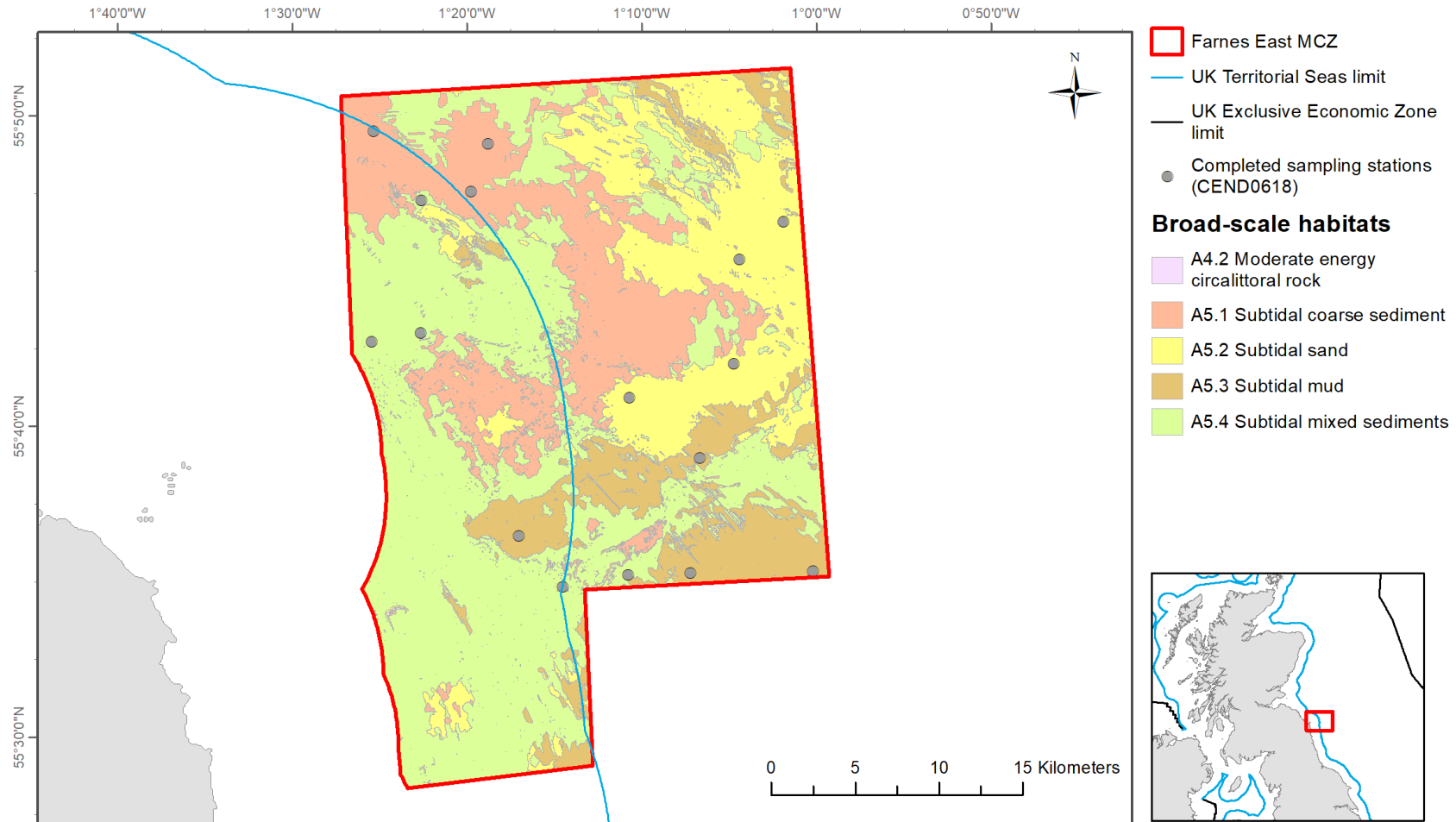
Objective	Sub-objectives	Sample type	Stations planned	Stations achieved	Replicates	Total no. of samples	Objective completed
	2.3. Acquire sediment samples using mini-Hamon grab (integrated into sub-objective 2.1)	Macrofauna and PSA	16	16	10	160*	Yes
	2.4. Acquire semi-quantitative data using drop frame camera to capture video and stills imagery (integrated with sub-objective 2.2).	-	-	-	-	-	No
3. Collect evidence to inform Type 1 (sentinel) monitoring of the biological and physical; <ul style="list-style-type: none"> • extent and distribution; and, • structure and functions, and quality and composition associated with the moderate energy circalittoral rock features of FRNE	3.1. Acquire semi quantitative epifaunal community data using drop frame camera to capture video and stills imagery (integrated with sub-objective 3.2)	-	-	-	-	-	No
	3.2. Acquire semi-quantitative data using drop frame camera to capture video and stills imagery (integrated with sub-objective 3.1).	-	-	-	-	-	No
4. Collect evidence to inform Type 1 (sentinel) monitoring of the supporting processes relating to subtidal mud, subtidal coarse sediment, subtidal sand, subtidal mixed sediment and moderate energy circalittoral rock features of FRNE, respectively, by priority.	4.1. Acquire CTD and ESM Logger data transmissometer data (integrated with sub-objectives 1.2, 2.2, 2.4, 3.1 and 3.2, as applicable).	-	-	-	-	-	Yes ²
	4.2. Acquire Ferrybox data continuously during survey	-	-	-	-	-	Yes ²

Objective	Sub-objectives	Sample type	Stations planned	Stations achieved	Replicates	Total no. of samples	Objective completed
5. Collect evidence to inform Type 1 (sentinel) monitoring of the quality and quantity of habitat supporting species FOCI, Ocean quahog, and, if available, the composition of the FOCI	5.1 Acquire semi-quantitative epifaunal data using video and stills imagery within areas of interest within FRNE (integrated with sub-objectives 1.2, 2.2, 2.4, 3.1 and 3.2, as applicable).	-	-	-	-	-	No
	5.2 Acquire quantitative epifaunal data using grab sampling, using a mini-Hamon grab, within areas of interest in FRNE (integrated with sub-objectives 1.1, 1.3, 2.1, 2.3).	-	-	-	-	-	Yes



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Figure 16. Completed sampling stations in the mud habitats at FRNE MCZ (FRNE objective 1). Each station was sampled with a 0.1m² Hamon grab and a 11 minute camera sledge transect.



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Figure 17. Completed sampling stations for FRNE objective 2. Each station was sampled with 10 replicates of a 0.1m² Hamon grab. Note that stations in the mud BSH were used to fulfil both FRNE objectives 1 and 2. BSH data source Murray *et al.* (2015).

7 References

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8 List of Abbreviations

Acronym	Definition
BSH	Broad-Scale Habitat
CRP	Central Reference Point
CTD	Conductivity, Temperature, and Depth
EOL	End of line
ESM2	Mini CTD Logger
EUNIS	European Nature Information System
FOCI	Features of Conservation Interest
FRNE	Farnes East MCZ
GIS	Geographic Information System
GMA	General Management Approach
GMT	Greenwich Mean Time
GPS	Global Positioning System
JNCC	Joint Nature Conservation Committee
MCZ	Marine Conservation Zone
NEFD	North East of Farnes Deep MCZ
OSPAR	Oslo/Paris Convention
PSA	Particle Size Analysis
SACFOR	S = Superabundant, A = Abundant, C = Common, F = Frequent, O = Occasional, R = Rare
SIC	Scientist in Charge
SOL	Start of Line
VMS	Vessel Monitoring System

9 Appendices

Appendix 1. Comprehensive power analysis results - Site: Farnes East MCZ

Stratum	Metric	Distribution	Power	Significance	No. of samples required
A5.1 Subtidal coarse sediment	Abundance	Gaussian/Normal	>0.8	0.05	28
A5.2 Subtidal sand		Gaussian/Normal	>0.8	0.05	79
A5.3 Subtidal mud		Lognormal	>0.8	0.05	90
A5.4 Subtidal mixed sediments		Lognormal	>0.8	0.05	171
All Stratum (un-stratified)		Lognormal	>0.8	0.05	175
Comprehensive power analysis results	Richness	Gaussian/Normal	>0.8	0.05	20
A5.2 Subtidal sand		Lognormal	>0.8	0.05	42
A5.3 Subtidal mud		Lognormal	>0.8	0.05	22
A5.4 Subtidal mixed sediments		Negative Binomial	>0.8	0.05	54
All Stratum (un-stratified)		Lognormal	>0.8	0.05	70

Appendix 2. Vessel and equipment used

RV Cefas Endeavour



Port of registry	Lowestoft
Length OA	73.00m (excluding stern roller)
Length extreme	73.91 m
Breadth (MLD)	15.80m
Depth (MLD)	8.20m
Design draft	5.00m
Deep draught	5.50m
LBP	66.50m
Gross tonnage	2983 tonnes
Net register tonnage	894 tonnes
Net lightship	2436 tonnes
Deadweight @ 5.00 m	784 tonnes
Deadweight @ 5.50 m	1244 tonnes
Displacement @ 5.00 m	3210 tonnes
Displacement @ 5.50 m	3680 tonnes
Builder	Ferguson Shipbuilders Limited, Port Glasgow
Commissioned	2003
Communications	In port BT Tel. Cellphone Voice/Fax/Data Radio TELEX Inmarsat C Fleet 77 (Inmarsat F) and VSAT (eutelsat) internet access
Endurance	42 days
Complement	En suite accommodation for 16 crew and 19 scientists with dedicated hospital facility
Propulsion System	AC/DC Diesel Electric 3 x diesel electric AC generators, individually raft mounted 2 x tandem electric DC motors Single screw
Power generation	3240Kw
Power propulsion	2230Kw
Thrusters	Bow thruster (flush mounted azimuthing) Stern thruster (tunnel)
Trial speed	14.4 knots
Bollard pull	29 tonnes
Call sign	VQHF3
Official number	906938
MMSI	235005270
Lloyds/IMO number	9251107
Side Gantry	7.5 tonne articulated side A-frame

Stern Gantry	25 tonne stern A-frame
Winches	3 x cranes 35tM, heave compensated 2 x trawl winches 2 x drum winches, (1 double) Double barrel survey winch with motion compensation and slip rings Double barrel survey winch with slip rings Double barrel towing winch with slip rings Side-scan sonar winch with slip rings 3 x Gilson winches (one fitted to stern A-frame)
Transducers/Sea tube	Drop keel to deploy transducers outside the hull boundary layer in addition to hull mounted transducers 1.2m diameter sea tube/moon-pool
Acoustic equipment	Kongsberg Simrad: HiPAP 500 positioning sonar EK60, 38/120kHz scientific sounder EA 600, 50/200kHz scientific sounder Scanmar net mensuration system SH80 high frequency omni-directional sonar EM3002 swathe bathymetry sounder Hull mounted Scanmar fishing computer transducers
Boats	2 x 8m rigid work and rescue boats with suite of navigational equipment deployed on heave-compensated davits
Laboratories	8 networked laboratories designed for optimum flexibility of purpose 4 serviced deck locations for containerised laboratories
Special features	Dynamic positioning system Intering anti-roll system Local Area Network with scientific data management system Ship-wide general information system CCTV
Class	LRS 100A1+LMC UMS SCM CCS ICC IP ES(2) DP(CM) ICE class 2

Camera sledge

The camera sledge was equipped with the following camera and specifications:

- Telemetry Operation over fibre optic cable
- 1080p high definition video camera
- 720p forward facing video camera
- 18 mega pixels underwater digital stills camera
- High power camera flash
- 20W high intensity led lights x 6 (2 forward facing)
- Dual scaling subsea lasers x 2 (spaced at 250mm)
- 250khz precision altimeter
- Combined compass & depth
- Temperature sensor
- Ultra-short base length positioning beacon

Positioning Software and Offsets

Vessel offsets are defined from the pitch roll centre of the vessel i.e. the Central Reference Point (CRP) is used by the Tower CEMAP software to calculate offsets to deployment gantry.

GPS fixes were recorded using the Tower Navigation system on RV *Cefas Endeavour*. This records the positional coordinates of the gantry from which the sampling equipment is being deployed, automatically compensating for the offset between these gantries and the GPS antenna, as well as the corrected position provided by the Ultra-Short Base Length HiPAP beacon, when in use.

The vessel offsets used to calculate a more accurate position for equipment deployed from the RV *Cefas Endeavour* are shown for the stern gantry, side gantry, and HiPAP (Figures 5 - 7).

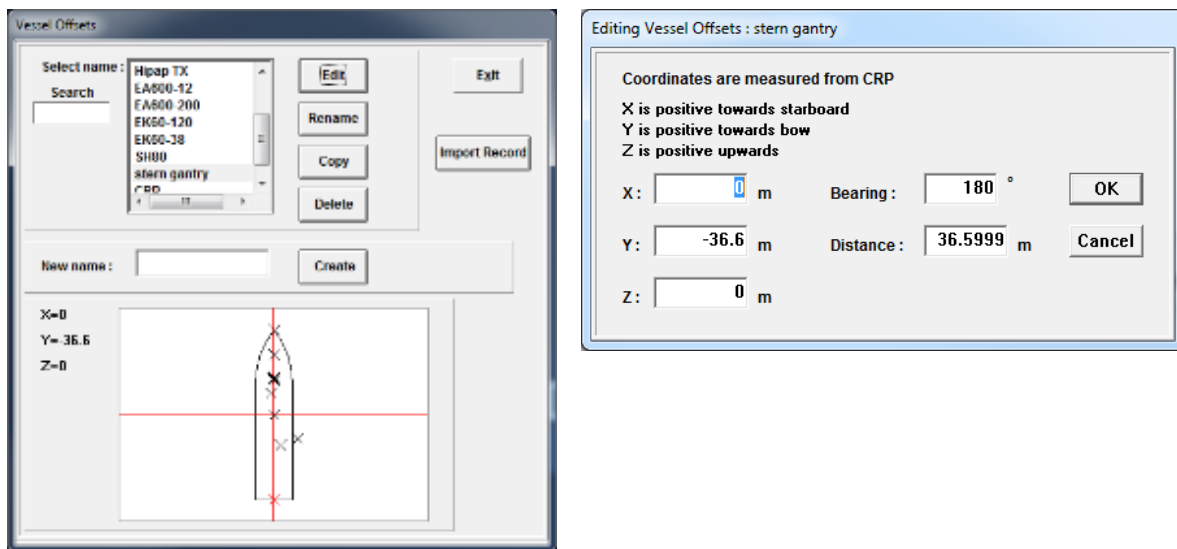


Figure 18. Stern Gantry vessel offsets in the Tower Navigation system.

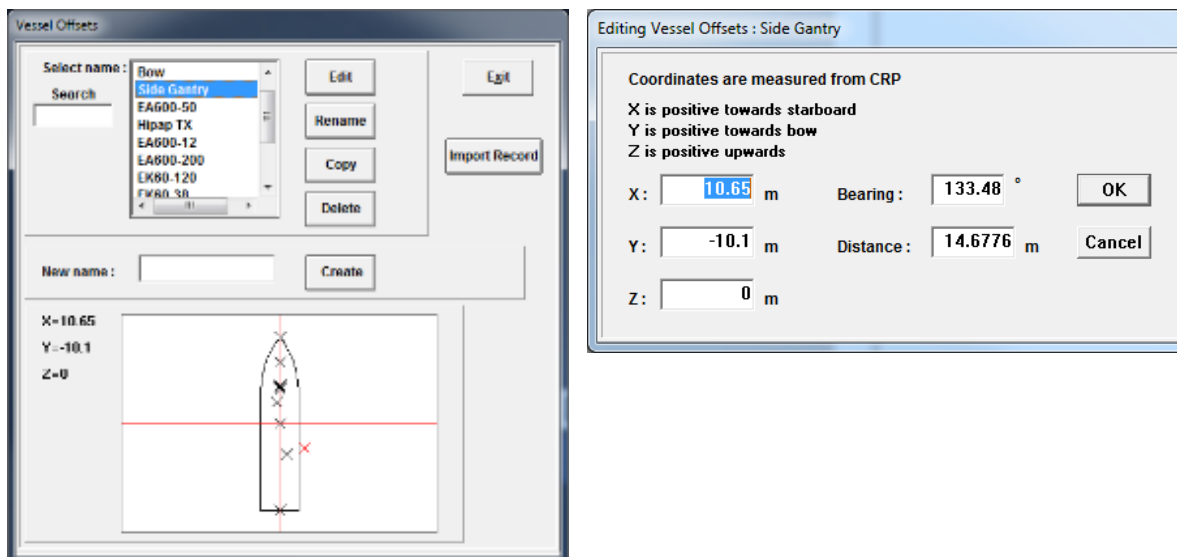


Figure 19. Side Gantry vessel offsets in the Tower Navigation system.

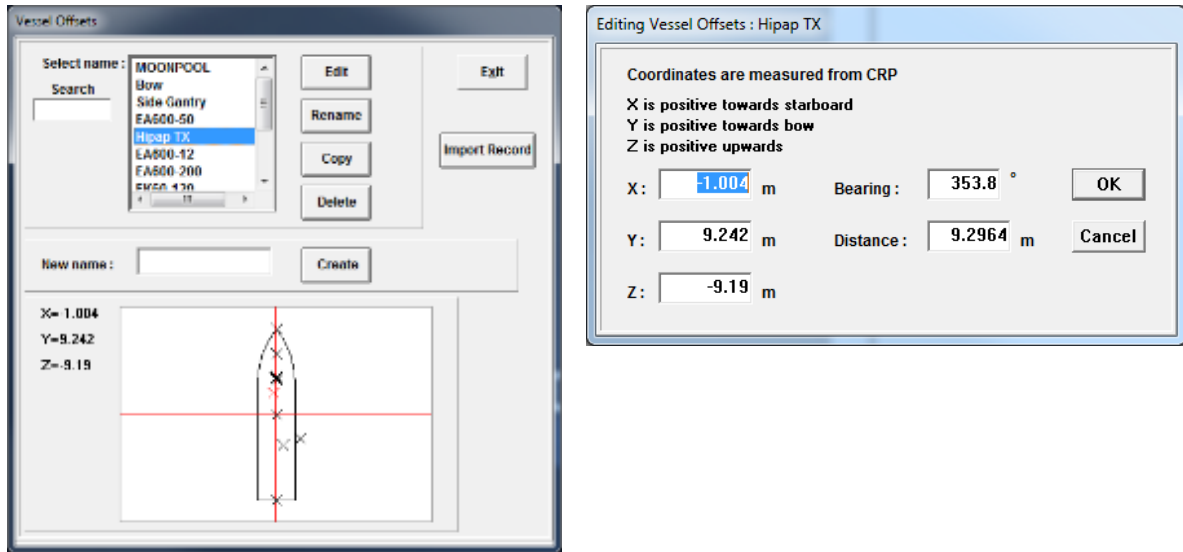


Figure 20. Hipap vessel offsets in the Tower Navigation system.

Appendix 3. Health and Safety and Ships Drills

Table 8. Drills and toolbox talks held during CEND0618.

Drill/Toolbox	Time	Date	Staff
Vessel Induction	11:00	23/04/2018	All staff every 6 months
Masters & SIC Toolbox	16:00	23/04/2018	All staff
Hamon Grab toolbox	09:30	24/04/2018	Night Shift staff
Muster stations and abandon ship	11:30	24/04/2018	All Staff
Hamon Grab toolbox	12:00	24/04/2018	Day Shift staff
Camera Sledge Toolbox	13:30	25/04/2018	Day Shift staff
Camera Sledge Toolbox	08:30	28/04/2018	Night Shift staff
Man overboard	11:30	28/04/2018	All Staff
Fire suppressant systems	11:30	29/04/2018	All staff
Revised Camera Sledge Toolbox*	15:00	01/05/2018	Day Shift staff
Revised Camera Sledge Toolbox	12:00	02/05/2018	Night Shift staff

*The camera sledge risk assessment and toolbox were revised to cover the risk of the lights and lasers unexpectedly turning on and dazzling staff.

Appendix 4. Summary of survey operation time

Table 9. Breakdown of survey operations.

Type	Time (hh:mm)
Mob/Demob	02:00
Offshore Calibrations	N/A
Total Operation Acoustic Survey (TOSu)	N/A
Total Operation Sampling (TOSa)	225:00
Equipment/Downtime	02:45
Ship/Plant Downtime	02:45
Waiting on Weather	01:30
Transit	43:00
Standby Port	35:00
Others	N/A
Total:	288:00

Appendix 5. Farnes East MCZ, BSH subtypes and infaunal community representation

Broad-Scale Habitat (BSH) subtypes

BSH subtypes were identified using summary statistics of the gravel, sand and mud fractions (Figure 21). The 25th, 50th and 85th percentiles of percentages of gravel, sand and mud were calculated for each BSH.

For coarse and mixed sediments, two subtypes (coarser and finer) were identified using the 25th and 85th percentiles of gravel and sand, whilst keeping mud at the median value.

For sand and mud, subtypes (muddier and sandier) were identified using the 25th and 85th percentiles of mud and sand, whilst keeping gravel at the median value (Figure 21).

This results in each BSH having two subtypes based on particle size distribution.

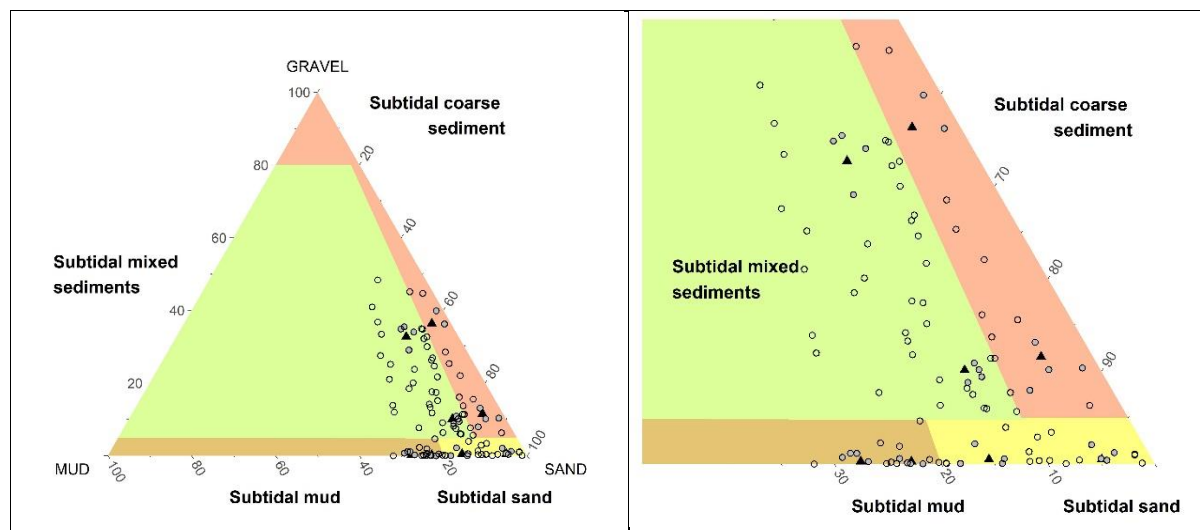


Figure 21. Folk triangle (left) and detailed view (right) showing the particle size distribution in grab samples collected at Farnes East MCZ from survey CEND0412 with centroids for two sub-regions (black triangles) in each BSH and the four stations nearest to each centroid (solid circles).

Representation of infaunal communities at FRNE

Infaunal community analysis was used to determine if the increased replication monitoring stations selected at FRNE also captured the variation present in the infaunal macroinvertebrate communities. CEND0412 Infauna data were checked for taxon revisions, truncated (colonials set to an abundance = one, vertebrate and pelagic taxa removed, etc.) and square root transformed. Cluster analysis was performed in Primer V7 using the kRCluster routine, setting the maximum number of groups to five. This faunal group allocation is presented in Table 10 and Figure 22 to show the variation in faunal assemblages within the mixed BSH, within the context of PSA distribution and geographically in Figure 23.

Table 10. Number of grab samples from CEND0412 allocated to each k-means cluster.

kCLUSTER5 group	Total number of sediment samples allocated to this group
A	13
B	28
C	5
D	6
E	48

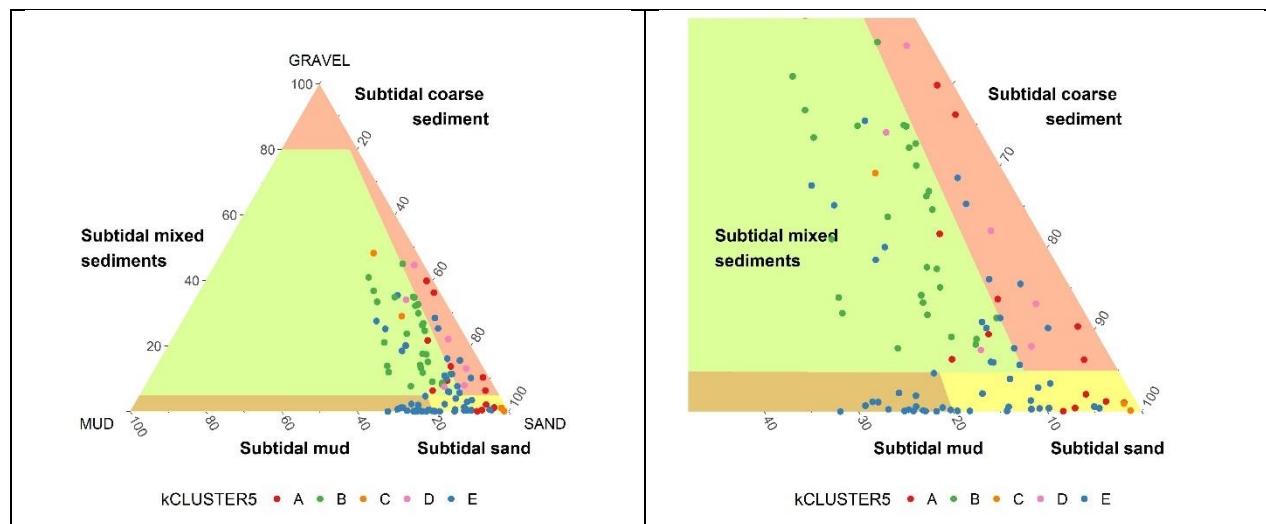
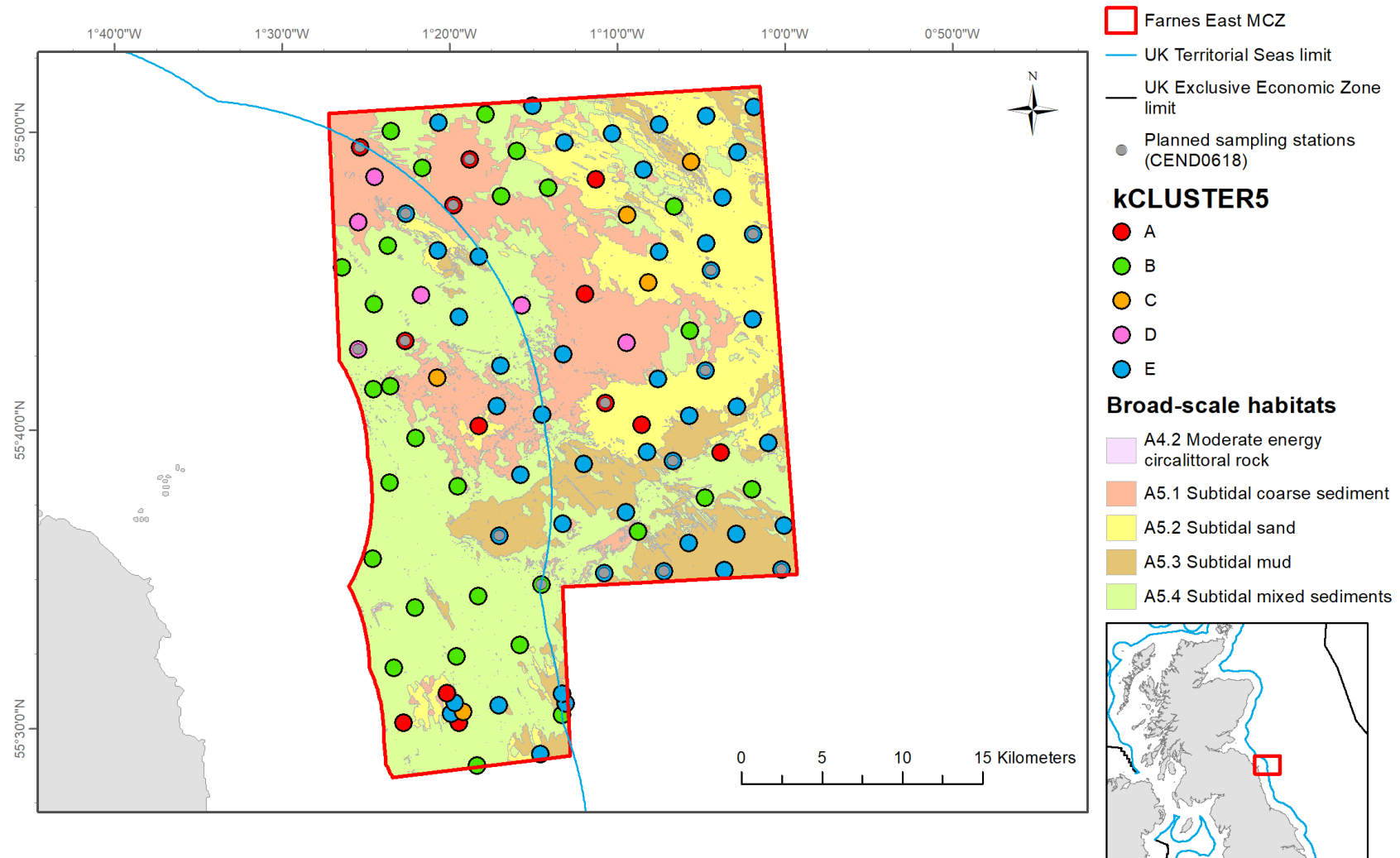


Figure 22. Folk triangle (left) and detailed view (right) showing the particle size distribution in grab samples collected at Farnes East MCZ on CEND0412 with their associated infaunal group (kRCluster).

The four closest stations to the subgroup centroids were selected as potential sentinel stations and plotted in GIS (Figure 23).



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Figure 23. The distribution of infaunal groups across the Farnes East survey site. BSH data source Murray *et al.* (2015).

Appendix 6. Survey metadata

Table 11. Hamon grab station metadata for North East of Farnes Deep (NEFD) and Farnes East (FRNE). Station Number is a sequential event number for the survey and thus changes each time a new gear is used, or a new location is sampled. Station Code is used to identify the location of the sampling station. Replicate = number of replicates in form A, B, C *etc.* the number indicates the number of attempts e.g. A2 = first replicate, second attempt. All positions are provided in decimal degrees, Latitude / Longitude WGS84.

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
1	NEFDM002	Macrofauna	A2	67	24/04/2018	08:57	55.7042773	-0.5950677
1	NEFDM002	PSA	A2	67	24/04/2018	08:57	55.7042773	-0.5950677
1	NEFDM002	Macrofauna	B3	67	24/04/2018	10:18	55.7043135	-0.5952734
1	NEFDM002	PSA	B3	67	24/04/2018	10:18	55.7043135	-0.5952734
1	NEFDM002	Macrofauna	C1	67	24/04/2018	11:23	55.7043154	-0.5953558
1	NEFDM002	PSA	C1	67	24/04/2018	11:23	55.7043154	-0.5953558
1	NEFDM002	Macrofauna	D2	67	24/04/2018	11:56	55.7043175	-0.595451
1	NEFDM002	PSA	D2	67	24/04/2018	11:56	55.7043175	-0.595451
1	NEFDM002	Macrofauna	E1	67	24/04/2018	12:03	55.7042991	-0.5955447
1	NEFDM002	PSA	E1	67	24/04/2018	12:03	55.7042991	-0.5955447
3	NEFDM049	Macrofauna	A1	64	24/04/2018	15:11	55.6987828	-0.5430831
3	NEFDM049	PSA	A1	64	24/04/2018	15:11	55.6987828	-0.5430831
3	NEFDM049	Macrofauna	B2	64	24/04/2018	15:25	55.6986245	-0.5431368
3	NEFDM049	PSA	B2	64	24/04/2018	15:25	55.6986245	-0.5431368
3	NEFDM049	Macrofauna	C1	64	24/04/2018	15:32	55.6985576	-0.5432568
3	NEFDM049	PSA	C1	64	24/04/2018	15:32	55.6985576	-0.5432568
3	NEFDM049	Macrofauna	D1	64	24/04/2018	15:39	55.698492	-0.5431441
3	NEFDM049	PSA	D1	64	24/04/2018	15:39	55.698492	-0.5431441
3	NEFDM049	Macrofauna	E1	64	24/04/2018	15:46	55.6984221	-0.5432455
3	NEFDM049	PSA	E1	64	24/04/2018	15:46	55.6984221	-0.5432455
4	NEFDM003	Macrofauna	A3	64	24/04/2018	16:50	55.698097	-0.500586

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
4	NEFDM003	PSA	A3	64	24/04/2018	16:50	55.698097	-0.500586
4	NEFDM003	Macrofauna	C1	64	24/04/2018	17:19	55.6979004	-0.5001759
4	NEFDM003	PSA	C1	64	24/04/2018	17:19	55.6979004	-0.5001759
4	NEFDM003	Macrofauna	D1	64	24/04/2018	17:26	55.6979662	-0.5000952
4	NEFDM003	PSA	D1	64	24/04/2018	17:26	55.6979662	-0.5000952
4	NEFDM003	Macrofauna	E1	64	24/04/2018	17:33	55.6980559	-0.5000175
4	NEFDM003	PSA	E1	64	24/04/2018	17:33	55.6980559	-0.5000175
4	NEFDM003	Macrofauna	B8	64	24/04/2018	18:10	55.6978275	-0.5007094
4	NEFDM003	PSA	B8	64	24/04/2018	18:10	55.6978275	-0.5007094
5	NEFDM050	Macrofauna	A1	65	24/04/2018	18:40	55.6894706	-0.4892989
5	NEFDM050	PSA	A1	65	24/04/2018	18:40	55.6894706	-0.4892989
5	NEFDM050	Macrofauna	B1	65	24/04/2018	18:46	55.6893898	-0.4893756
5	NEFDM050	PSA	B1	65	24/04/2018	18:46	55.6893898	-0.4893756
5	NEFDM050	Macrofauna	C1	65	24/04/2018	18:52	55.6893479	-0.4892493
5	NEFDM050	PSA	C1	65	24/04/2018	18:52	55.6893479	-0.4892493
5	NEFDM050	Macrofauna	D1	65	24/04/2018	18:57	55.68926	-0.4893512
5	NEFDM050	PSA	D1	65	24/04/2018	18:57	55.68926	-0.4893512
5	NEFDM050	Macrofauna	E1	65	24/04/2018	19:05	55.6892895	-0.4894093
5	NEFDM050	PSA	E1	65	24/04/2018	19:05	55.6892895	-0.4894093
6	NEFDM004	Macrofauna	A1	65	24/04/2018	20:11	55.6792737	-0.4711071
6	NEFDM004	PSA	A1	65	24/04/2018	20:11	55.6792737	-0.4711071
6	NEFDM004	Macrofauna	B1	65	24/04/2018	20:18	55.6792384	-0.4709636
6	NEFDM004	PSA	B1	65	24/04/2018	20:18	55.6792384	-0.4709636
6	NEFDM004	Macrofauna	C2	65	24/04/2018	20:32	55.6792436	-0.4706962
6	NEFDM004	PSA	C2	65	24/04/2018	20:32	55.6792436	-0.4706962

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
6	NEFDM004	Macrofauna	D1	65	24/04/2018	20:38	55.6793389	-0.4706472
6	NEFDM004	PSA	D1	65	24/04/2018	20:38	55.6793389	-0.4706472
6	NEFDM004	Macrofauna	E1	65	24/04/2018	20:45	55.6793001	-0.470493
6	NEFDM004	PSA	E1	65	24/04/2018	20:45	55.6793001	-0.470493
7	NEFDM051	Macrofauna	A1	67	24/04/2018	22:28	55.6695852	-0.471745
7	NEFDM051	PSA	A1	67	24/04/2018	22:28	55.6695852	-0.471745
7	NEFDM051	Macrofauna	B1	67	24/04/2018	23:12	55.6694964	-0.4718005
7	NEFDM051	PSA	B1	67	24/04/2018	23:12	55.6694964	-0.4718005
7	NEFDM051	Macrofauna	C1	67	24/04/2018	23:19	55.669463	-0.4720307
7	NEFDM051	PSA	C1	67	24/04/2018	23:19	55.669463	-0.4720307
7	NEFDM051	Macrofauna	D1	67	24/04/2018	23:26	55.6695326	-0.4722501
7	NEFDM051	PSA	D1	67	24/04/2018	23:26	55.6695326	-0.4722501
7	NEFDM051	Macrofauna	E1	67	24/04/2018	23:33	55.669498	-0.472414
7	NEFDM051	PSA	E1	67	24/04/2018	23:33	55.669498	-0.472414
8	NEFDM008	Macrofauna	A1	64	25/04/2018	01:13	55.6667155	-0.503845
8	NEFDM008	PSA	A1	64	25/04/2018	01:13	55.6667155	-0.503845
8	NEFDM008	Macrofauna	B1	64	25/04/2018	01:18	55.6666572	-0.5040131
8	NEFDM008	PSA	B1	64	25/04/2018	01:18	55.6666572	-0.5040131
8	NEFDM008	Macrofauna	C1	64	25/04/2018	01:24	55.6666618	-0.5042364
8	NEFDM008	PSA	C1	64	25/04/2018	01:24	55.6666618	-0.5042364
8	NEFDM008	Macrofauna	D1	64	25/04/2018	01:29	55.666591	-0.5044037
8	NEFDM008	PSA	D1	64	25/04/2018	01:29	55.666591	-0.5044037
8	NEFDM008	Macrofauna	E1	64	25/04/2018	01:35	55.6665448	-0.5046115
8	NEFDM008	PSA	E1	64	25/04/2018	01:35	55.6665448	-0.5046115
9	NEFDM007	Macrofauna	A1	65	25/04/2018	03:05	55.6714847	-0.5239842

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
9	NEFDM007	PSA	A1	65	25/04/2018	03:05	55.6714847	-0.5239842
9	NEFDM007	Macrofauna	B1	65	25/04/2018	03:10	55.6714504	-0.5241324
9	NEFDM007	PSA	B1	65	25/04/2018	03:10	55.6714504	-0.5241324
9	NEFDM007	Macrofauna	C1	65	25/04/2018	03:15	55.6714185	-0.5242716
9	NEFDM007	PSA	C1	65	25/04/2018	03:15	55.6714185	-0.5242716
9	NEFDM007	Macrofauna	D1	65	25/04/2018	03:21	55.6713822	-0.524416
9	NEFDM007	PSA	D1	65	25/04/2018	03:21	55.6713822	-0.524416
9	NEFDM007	Macrofauna	E1	65	25/04/2018	03:26	55.6713571	-0.5245712
9	NEFDM007	PSA	E1	65	25/04/2018	03:26	55.6713571	-0.5245712
10	NEFDM006	Macrofauna	A3	67	25/04/2018	04:45	55.6703448	-0.5695041
10	NEFDM006	PSA	A3	67	25/04/2018	04:45	55.6703448	-0.5695041
10	NEFDM006	Macrofauna	B1	67	25/04/2018	04:52	55.6703037	-0.5696223
10	NEFDM006	PSA	B1	67	25/04/2018	04:52	55.6703037	-0.5696223
10	NEFDM006	Macrofauna	C2	67	25/04/2018	05:03	55.6702053	-0.5698979
10	NEFDM006	PSA	C2	67	25/04/2018	05:03	55.6702053	-0.5698979
10	NEFDM006	Macrofauna	D1	67	25/04/2018	05:09	55.6701152	-0.5698211
10	NEFDM006	PSA	D1	67	25/04/2018	05:09	55.6701152	-0.5698211
10	NEFDM006	Macrofauna	E1	67	25/04/2018	05:25	55.6701693	-0.5696903
10	NEFDM006	PSA	E1	67	25/04/2018	05:25	55.6701693	-0.5696903
11	NEFDM005	Macrofauna	A1	66	25/04/2018	05:55	55.6733148	-0.5864997
11	NEFDM005	PSA	A1	66	25/04/2018	05:55	55.6733148	-0.5864997
11	NEFDM005	Macrofauna	B1	66	25/04/2018	06:01	55.6732592	-0.5866154
11	NEFDM005	PSA	B1	66	25/04/2018	06:01	55.6732592	-0.5866154
11	NEFDM005	Macrofauna	C1	66	25/04/2018	06:06	55.6732091	-0.5867692
11	NEFDM005	PSA	C1	66	25/04/2018	06:06	55.6732091	-0.5867692

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
11	NEFDM005	Macrofauna	D1	66	25/04/2018	06:11	55.6731554	-0.5868904
11	NEFDM005	PSA	D1	66	25/04/2018	06:11	55.6731554	-0.5868904
11	NEFDM005	Macrofauna	E1	66	25/04/2018	06:16	55.6730959	-0.5870216
11	NEFDM005	PSA	E1	66	25/04/2018	06:16	55.6730959	-0.5870216
12	NEFDM056	Macrofauna	A1	70	25/04/2018	07:33	55.6611924	-0.6122681
12	NEFDM056	PSA	A1	70	25/04/2018	07:33	55.6611924	-0.6122681
12	NEFDM056	Macrofauna	B1	70	25/04/2018	07:39	55.6612822	-0.6123559
12	NEFDM056	PSA	B1	70	25/04/2018	07:39	55.6612822	-0.6123559
12	NEFDM056	Macrofauna	C1	70	25/04/2018	07:45	55.6613455	-0.6122584
12	NEFDM056	PSA	C1	70	25/04/2018	07:45	55.6613455	-0.6122584
12	NEFDM056	Macrofauna	D1	70	25/04/2018	07:52	55.6614136	-0.6121142
12	NEFDM056	PSA	D1	70	25/04/2018	07:52	55.6614136	-0.6121142
12	NEFDM056	Macrofauna	E1	70	25/04/2018	07:59	55.6613372	-0.6120217
12	NEFDM056	PSA	E1	70	25/04/2018	07:59	55.6613372	-0.6120217
13	NEFDM015	Macrofauna	A1	67	25/04/2018	08:52	55.6607808	-0.5876956
13	NEFDM015	PSA	A1	67	25/04/2018	08:52	55.6607808	-0.5876956
13	NEFDM015	Macrofauna	B1	67	25/04/2018	08:59	55.6607319	-0.5878377
13	NEFDM015	PSA	B1	67	25/04/2018	08:59	55.6607319	-0.5878377
13	NEFDM015	Macrofauna	C1	67	25/04/2018	09:06	55.6606837	-0.5879652
13	NEFDM015	PSA	C1	67	25/04/2018	09:06	55.6606837	-0.5879652
13	NEFDM015	Macrofauna	D1	67	25/04/2018	09:12	55.6606404	-0.5881095
13	NEFDM015	PSA	D1	67	25/04/2018	09:12	55.6606404	-0.5881095
13	NEFDM015	Macrofauna	E1	67	25/04/2018	09:19	55.6606007	-0.5882445
13	NEFDM015	PSA	E1	67	25/04/2018	09:19	55.6606007	-0.5882445
14	NEFDM012	Macrofauna	A1	67	25/04/2018	10:25	55.6605449	-0.5659339

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
14	NEFDM012	PSA	A1	67	25/04/2018	10:25	55.6605449	-0.5659339
14	NEFDM012	Macrofauna	B1	67	25/04/2018	10:31	55.6605847	-0.5660869
14	NEFDM012	PSA	B1	67	25/04/2018	10:31	55.6605847	-0.5660869
14	NEFDM012	Macrofauna	C1	67	25/04/2018	10:42	55.6606704	-0.5662959
14	NEFDM012	PSA	C1	67	25/04/2018	10:42	55.6606704	-0.5662959
14	NEFDM012	Macrofauna	D1	67	25/04/2018	10:50	55.6606544	-0.5664574
14	NEFDM012	PSA	D1	67	25/04/2018	10:50	55.6606544	-0.5664574
14	NEFDM012	Macrofauna	E1	67	25/04/2018	10:56	55.6606215	-0.5666123
14	NEFDM012	PSA	E1	67	25/04/2018	10:56	55.6606215	-0.5666123
15	NEFDM010	Macrofauna	A1	65	25/04/2018	11:30	55.6630952	-0.5238408
15	NEFDM010	PSA	A1	65	25/04/2018	11:30	55.6630952	-0.5238408
15	NEFDM010	Macrofauna	B1	65	25/04/2018	11:36	55.6630837	-0.5240345
15	NEFDM010	PSA	B1	65	25/04/2018	11:36	55.6630837	-0.5240345
15	NEFDM010	Macrofauna	C3	65	25/04/2018	11:55	55.6631617	-0.5246915
15	NEFDM010	PSA	C3	65	25/04/2018	11:55	55.6631617	-0.5246915
15	NEFDM010	Macrofauna	D1	65	25/04/2018	12:03	55.6631042	-0.5248293
15	NEFDM010	PSA	D1	65	25/04/2018	12:03	55.6631042	-0.5248293
15	NEFDM010	Macrofauna	E1	65	25/04/2018	12:10	55.6630233	-0.5250053
15	NEFDM010	PSA	E1	65	25/04/2018	12:10	55.6630233	-0.5250053
16	NEFDM052	Macrofauna	A1	67	25/04/2018	13:05	55.6616583	-0.4558424
16	NEFDM052	PSA	A1	67	25/04/2018	13:05	55.6616583	-0.4558424
16	NEFDM052	Macrofauna	B1	67	25/04/2018	13:11	55.6616443	-0.4560657
16	NEFDM052	PSA	B1	67	25/04/2018	13:11	55.6616443	-0.4560657
16	NEFDM052	Macrofauna	C1	67	25/04/2018	13:26	55.6615413	-0.4561557
16	NEFDM052	PSA	C1	67	25/04/2018	13:26	55.6615413	-0.4561557

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
16	NEFDM052	Macrofauna	D1	67	25/04/2018	13:32	55.6614623	-0.4563052
16	NEFDM052	PSA	D1	67	25/04/2018	13:32	55.6614623	-0.4563052
16	NEFDM052	Macrofauna	E1	67	25/04/2018	13:40	55.66144	-0.4565238
16	NEFDM052	PSA	E1	67	25/04/2018	13:40	55.66144	-0.4565238
18	NEFDM018	Macrofauna	A1	67	25/04/2018	14:45	55.6514478	-0.4606316
18	NEFDM018	PSA	A1	67	25/04/2018	14:45	55.6514478	-0.4606316
18	NEFDM018	Macrofauna	B1	67	25/04/2018	14:51	55.651462	-0.4604221
18	NEFDM018	PSA	B1	67	25/04/2018	14:51	55.651462	-0.4604221
18	NEFDM018	Macrofauna	C1	67	25/04/2018	14:58	55.6515568	-0.460254
18	NEFDM018	PSA	C1	67	25/04/2018	14:58	55.6515568	-0.460254
18	NEFDM018	Macrofauna	D1	67	25/04/2018	15:04	55.6515384	-0.4600676
18	NEFDM018	PSA	D1	67	25/04/2018	15:04	55.6515384	-0.4600676
18	NEFDM018	Macrofauna	E1	67	25/04/2018	15:10	55.6515476	-0.4598373
18	NEFDM018	PSA	E1	67	25/04/2018	15:10	55.6515476	-0.4598373
19	NEFDM011	Macrofauna	A1	67	25/04/2018	15:31	55.6494982	-0.4826852
19	NEFDM011	PSA	A1	67	25/04/2018	15:31	55.6494982	-0.4826852
19	NEFDM011	Macrofauna	B1	67	25/04/2018	15:36	55.6494249	-0.482775
19	NEFDM011	PSA	B1	67	25/04/2018	15:36	55.6494249	-0.482775
19	NEFDM011	Macrofauna	C1	67	25/04/2018	15:42	55.6494761	-0.4829072
19	NEFDM011	PSA	C1	67	25/04/2018	15:42	55.6494761	-0.4829072
19	NEFDM011	Macrofauna	D1	67	25/04/2018	15:47	55.6494027	-0.4829951
19	NEFDM011	PSA	D1	67	25/04/2018	15:47	55.6494027	-0.4829951
19	NEFDM011	Macrofauna	E1	67	25/04/2018	15:52	55.6493473	-0.4828763
19	NEFDM011	PSA	E1	67	25/04/2018	15:52	55.6493473	-0.4828763
20	NEFDM009	Macrofauna	B4	60	25/04/2018	16:46	55.6515621	-0.5087315

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
20	NEFDM009	PSA	B4	60	25/04/2018	16:46	55.6515621	-0.5087315
20	NEFDM009	Macrofauna	C1	60	25/04/2018	17:10	55.6513598	-0.5088056
20	NEFDM009	PSA	C1	60	25/04/2018	17:10	55.6513598	-0.5088056
20	NEFDM009	Macrofauna	D1	60	25/04/2018	17:31	55.6511263	-0.5089519
20	NEFDM009	PSA	D1	60	25/04/2018	17:31	55.6511263	-0.5089519
20	NEFDM009	Macrofauna	E2	60	25/04/2018	17:57	55.6517997	-0.5087122
20	NEFDM009	PSA	E2	60	25/04/2018	17:57	55.6517997	-0.5087122
20	NEFDM009	Macrofauna	A4	60	25/04/2018	18:02	55.6517625	-0.5088118
20	NEFDM009	PSA	A4	60	25/04/2018	18:02	55.6517625	-0.5088118
21	NEFDM016	Macrofauna	A1	63	25/04/2018	18:32	55.6542539	-0.5337332
21	NEFDM016	PSA	A1	63	25/04/2018	18:32	55.6542539	-0.5337332
21	NEFDM016	Macrofauna	B1	63	25/04/2018	18:38	55.654215	-0.533855
21	NEFDM016	PSA	B1	63	25/04/2018	18:38	55.654215	-0.533855
21	NEFDM016	Macrofauna	C1	63	25/04/2018	18:44	55.6541752	-0.5339938
21	NEFDM016	PSA	C1	63	25/04/2018	18:44	55.6541752	-0.5339938
21	NEFDM016	Macrofauna	D1	63	25/04/2018	18:49	55.6541325	-0.5341436
21	NEFDM016	PSA	D1	63	25/04/2018	18:49	55.6541325	-0.5341436
21	NEFDM016	Macrofauna	E1	63	25/04/2018	18:54	55.65409	-0.5342867
21	NEFDM016	PSA	E1	63	25/04/2018	18:54	55.65409	-0.5342867
22	NEFDM014	Macrofauna	A1	64	25/04/2018	19:39	55.6517744	-0.56215
22	NEFDM014	PSA	A1	64	25/04/2018	19:39	55.6517744	-0.56215
22	NEFDM014	Macrofauna	B1	64	25/04/2018	19:44	55.6517304	-0.5622662
22	NEFDM014	PSA	B1	64	25/04/2018	19:44	55.6517304	-0.5622662
22	NEFDM014	Macrofauna	C1	64	25/04/2018	19:50	55.6516752	-0.5624183
22	NEFDM014	PSA	C1	64	25/04/2018	19:50	55.6516752	-0.5624183

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
22	NEFDM014	Macrofauna	D1	64	25/04/2018	19:55	55.6516229	-0.5625481
22	NEFDM014	PSA	D1	64	25/04/2018	19:55	55.6516229	-0.5625481
22	NEFDM014	Macrofauna	E1	64	25/04/2018	20:01	55.6515891	-0.5626583
22	NEFDM014	PSA	E1	64	25/04/2018	20:01	55.6515891	-0.5626583
23	NEFDM013	Macrofauna	A1	67	25/04/2018	20:29	55.6463137	-0.5757981
23	NEFDM013	PSA	A1	67	25/04/2018	20:29	55.6463137	-0.5757981
23	NEFDM013	Macrofauna	B1	67	25/04/2018	20:34	55.6462765	-0.5759148
23	NEFDM013	PSA	B1	67	25/04/2018	20:34	55.6462765	-0.5759148
23	NEFDM013	Macrofauna	C1	67	25/04/2018	20:40	55.646215	-0.5760602
23	NEFDM013	PSA	C1	67	25/04/2018	20:40	55.646215	-0.5760602
23	NEFDM013	Macrofauna	D1	67	25/04/2018	21:08	55.6461463	-0.5761398
23	NEFDM013	PSA	D1	67	25/04/2018	21:08	55.6461463	-0.5761398
23	NEFDM013	Macrofauna	E1	67	25/04/2018	21:13	55.6461087	-0.5763076
23	NEFDM013	PSA	E1	67	25/04/2018	21:13	55.6461087	-0.5763076
24	NEFDM017	Macrofauna	A1	70	25/04/2018	23:45	55.6537647	-0.6214889
24	NEFDM017	PSA	A1	70	25/04/2018	23:45	55.6537647	-0.6214889
24	NEFDM017	Macrofauna	B1	70	25/04/2018	23:51	55.6538143	-0.6216922
24	NEFDM017	PSA	B1	70	25/04/2018	23:51	55.6538143	-0.6216922
24	NEFDM017	Macrofauna	C1	70	25/04/2018	23:56	55.6538025	-0.621887
24	NEFDM017	PSA	C1	70	25/04/2018	23:56	55.6538025	-0.621887
24	NEFDM017	Macrofauna	D1	70	26/04/2018	00:23	55.6537792	-0.6220621
24	NEFDM017	PSA	D1	70	26/04/2018	00:23	55.6537792	-0.6220621
24	NEFDM017	Macrofauna	E1	70	26/04/2018	00:29	55.6537794	-0.6222514
24	NEFDM017	PSA	E1	70	26/04/2018	00:29	55.6537794	-0.6222514
25	NEFDM053	Macrofauna	A1	73	26/04/2018	00:56	55.6459529	-0.6118364

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
25	NEFDM053	PSA	A1	73	26/04/2018	00:56	55.6459529	-0.6118364
25	NEFDM053	Macrofauna	B1	73	26/04/2018	01:02	55.6459884	-0.6120416
25	NEFDM053	PSA	B1	73	26/04/2018	01:02	55.6459884	-0.6120416
25	NEFDM053	Macrofauna	C1	73	26/04/2018	01:08	55.6459378	-0.6122429
25	NEFDM053	PSA	C1	73	26/04/2018	01:08	55.6459378	-0.6122429
25	NEFDM053	Macrofauna	D1	73	26/04/2018	01:14	55.6458935	-0.6123956
25	NEFDM053	PSA	D1	73	26/04/2018	01:14	55.6458935	-0.6123956
25	NEFDM053	Macrofauna	E1	73	26/04/2018	01:20	55.6459115	-0.6125931
25	NEFDM053	PSA	E1	73	26/04/2018	01:20	55.6459115	-0.6125931
26	NEFDM055	Macrofauna	A1	69	26/04/2018	01:58	55.6404517	-0.6007391
26	NEFDM055	PSA	A1	69	26/04/2018	01:58	55.6404517	-0.6007391
26	NEFDM055	Macrofauna	B1	69	26/04/2018	02:04	55.6404603	-0.6009525
26	NEFDM055	PSA	B1	69	26/04/2018	02:04	55.6404603	-0.6009525
26	NEFDM055	Macrofauna	C1	69	26/04/2018	02:11	55.6403731	-0.6011311
26	NEFDM055	PSA	C1	69	26/04/2018	02:11	55.6403731	-0.6011311
26	NEFDM055	Macrofauna	D1	69	26/04/2018	02:16	55.6403179	-0.6012923
26	NEFDM055	PSA	D1	69	26/04/2018	02:16	55.6403179	-0.6012923
26	NEFDM055	Macrofauna	E1	69	26/04/2018	02:22	55.6403112	-0.6014952
26	NEFDM055	PSA	E1	69	26/04/2018	02:22	55.6403112	-0.6014952
27	NEFDM054	Macrofauna	A1	68	26/04/2018	04:04	55.6305992	-0.6024299
27	NEFDM054	PSA	A1	68	26/04/2018	04:04	55.6305992	-0.6024299
27	NEFDM054	Macrofauna	B1	68	26/04/2018	04:10	55.630541	-0.6025622
27	NEFDM054	PSA	B1	68	26/04/2018	04:10	55.630541	-0.6025622
27	NEFDM054	Macrofauna	C1	68	26/04/2018	04:15	55.6304929	-0.6026842
27	NEFDM054	PSA	C1	68	26/04/2018	04:15	55.6304929	-0.6026842

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
27	NEFDM054	Macrofauna	D1	68	26/04/2018	04:20	55.630444	-0.6028117
27	NEFDM054	PSA	D1	68	26/04/2018	04:20	55.630444	-0.6028117
27	NEFDM054	Macrofauna	E1	68	26/04/2018	04:26	55.6304051	-0.6029551
27	NEFDM054	PSA	E1	68	26/04/2018	04:26	55.6304051	-0.6029551
28	NEFDM060	Macrofauna	A1	66	26/04/2018	04:55	55.6127474	-0.5960188
28	NEFDM060	PSA	A1	66	26/04/2018	04:55	55.6127474	-0.5960188
28	NEFDM060	Macrofauna	B1	66	26/04/2018	05:00	55.6127003	-0.5961482
28	NEFDM060	PSA	B1	66	26/04/2018	05:00	55.6127003	-0.5961482
28	NEFDM060	Macrofauna	C1	66	26/04/2018	05:06	55.6126378	-0.5962885
28	NEFDM060	PSA	C1	66	26/04/2018	05:06	55.6126378	-0.5962885
28	NEFDM060	Macrofauna	D1	66	26/04/2018	05:11	55.6125659	-0.5961886
28	NEFDM060	PSA	D1	66	26/04/2018	05:11	55.6125659	-0.5961886
28	NEFDM060	Macrofauna	E1	66	26/04/2018	05:16	55.6125093	-0.5963173
28	NEFDM060	PSA	E1	66	26/04/2018	05:16	55.6125093	-0.5963173
29	NEFDM059	Macrofauna	A1	65	26/04/2018	05:41	55.6166303	-0.5812548
29	NEFDM059	PSA	A1	65	26/04/2018	05:41	55.6166303	-0.5812548
29	NEFDM059	Macrofauna	B1	65	26/04/2018	05:46	55.616586	-0.5813644
29	NEFDM059	PSA	B1	65	26/04/2018	05:46	55.616586	-0.5813644
29	NEFDM059	Macrofauna	C1	65	26/04/2018	05:51	55.616534	-0.5815154
29	NEFDM059	PSA	C1	65	26/04/2018	05:51	55.616534	-0.5815154
29	NEFDM059	Macrofauna	D1	65	26/04/2018	05:56	55.6164703	-0.5816192
29	NEFDM059	PSA	D1	65	26/04/2018	05:56	55.6164703	-0.5816192
29	NEFDM059	Macrofauna	E1	65	26/04/2018	06:02	55.6164293	-0.5817467
29	NEFDM059	PSA	E1	65	26/04/2018	06:02	55.6164293	-0.5817467
30	NEFDM021	Macrofauna	A1	64	26/04/2018	07:12	55.6272313	-0.5535436

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
30	NEFDM021	PSA	A1	64	26/04/2018	07:12	55.6272313	-0.5535436
30	NEFDM021	Macrofauna	B1	64	26/04/2018	07:17	55.6271866	-0.5536503
30	NEFDM021	PSA	B1	64	26/04/2018	07:17	55.6271866	-0.5536503
30	NEFDM021	Macrofauna	C1	64	26/04/2018	07:23	55.627131	-0.5538218
30	NEFDM021	PSA	C1	64	26/04/2018	07:23	55.627131	-0.5538218
30	NEFDM021	Macrofauna	D1	64	26/04/2018	07:28	55.6270747	-0.5539403
30	NEFDM021	PSA	D1	64	26/04/2018	07:28	55.6270747	-0.5539403
30	NEFDM021	Macrofauna	E1	64	26/04/2018	07:33	55.6270254	-0.5540637
30	NEFDM021	PSA	E1	64	26/04/2018	07:33	55.6270254	-0.5540637
31	NEFDM022	Macrofauna	A1	64	26/04/2018	08:26	55.6290995	-0.5236408
31	NEFDM022	PSA	A1	64	26/04/2018	08:26	55.6290995	-0.5236408
31	NEFDM022	Macrofauna	B1	64	26/04/2018	08:32	55.6290519	-0.5237821
31	NEFDM022	PSA	B1	64	26/04/2018	08:32	55.6290519	-0.5237821
31	NEFDM022	Macrofauna	C1	64	26/04/2018	08:38	55.6290289	-0.5239291
31	NEFDM022	PSA	C1	64	26/04/2018	08:38	55.6290289	-0.5239291
31	NEFDM022	Macrofauna	D1	64	26/04/2018	08:43	55.628986	-0.5240825
31	NEFDM022	PSA	D1	64	26/04/2018	08:43	55.628986	-0.5240825
31	NEFDM022	Macrofauna	E1	64	26/04/2018	08:49	55.6289357	-0.524214
31	NEFDM022	PSA	E1	64	26/04/2018	08:49	55.6289357	-0.524214
32	NEFDM019	Macrofauna	A1	69	26/04/2018	10:03	55.6327906	-0.4875149
32	NEFDM019	PSA	A1	69	26/04/2018	10:03	55.6327906	-0.4875149
32	NEFDM019	Macrofauna	B1	69	26/04/2018	10:09	55.6328314	-0.4875609
32	NEFDM019	PSA	B1	69	26/04/2018	10:09	55.6328314	-0.4875609
32	NEFDM019	Macrofauna	C1	69	26/04/2018	10:15	55.6329352	-0.4875478
32	NEFDM019	PSA	C1	69	26/04/2018	10:15	55.6329352	-0.4875478

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
32	NEFDM019	Macrofauna	D1	69	26/04/2018	10:21	55.6330197	-0.4876356
32	NEFDM019	PSA	D1	69	26/04/2018	10:21	55.6330197	-0.4876356
32	NEFDM019	Macrofauna	E1	69	26/04/2018	10:27	55.6329899	-0.4877981
32	NEFDM019	PSA	E1	69	26/04/2018	10:27	55.6329899	-0.4877981
33	NEFDM020	Macrofauna	A1	70	26/04/2018	11:13	55.6398557	-0.4569487
33	NEFDM020	PSA	A1	70	26/04/2018	11:13	55.6398557	-0.4569487
33	NEFDM020	Macrofauna	B1	70	26/04/2018	11:19	55.6399119	-0.4571262
33	NEFDM020	PSA	B1	70	26/04/2018	11:19	55.6399119	-0.4571262
33	NEFDM020	Macrofauna	C1	70	26/04/2018	11:24	55.639938	-0.4573307
33	NEFDM020	PSA	C1	70	26/04/2018	11:24	55.639938	-0.4573307
33	NEFDM020	Macrofauna	D1	70	26/04/2018	11:31	55.6399466	-0.4575522
33	NEFDM020	PSA	D1	70	26/04/2018	11:31	55.6399466	-0.4575522
33	NEFDM020	Macrofauna	E1	70	26/04/2018	11:37	55.639999	-0.4576622
33	NEFDM020	PSA	E1	70	26/04/2018	11:37	55.639999	-0.4576622
34	NEFDM026	Macrofauna	A1	73	26/04/2018	12:32	55.6170387	-0.4498013
34	NEFDM026	PSA	A1	73	26/04/2018	12:32	55.6170387	-0.4498013
34	NEFDM026	Macrofauna	B1	73	26/04/2018	12:37	55.6171167	-0.4499759
34	NEFDM026	PSA	B1	73	26/04/2018	12:37	55.6171167	-0.4499759
34	NEFDM026	Macrofauna	C1	73	26/04/2018	12:43	55.617081	-0.4501547
34	NEFDM026	PSA	C1	73	26/04/2018	12:43	55.617081	-0.4501547
34	NEFDM026	Macrofauna	D1	73	26/04/2018	12:49	55.6171224	-0.4503296
34	NEFDM026	PSA	D1	73	26/04/2018	12:49	55.6171224	-0.4503296
34	NEFDM026	Macrofauna	E1	73	26/04/2018	12:55	55.617118	-0.4505199
34	NEFDM026	PSA	E1	73	26/04/2018	12:55	55.617118	-0.4505199
35	NEFDM025	Macrofauna	A1	69	26/04/2018	13:46	55.6192036	-0.4863877

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
35	NEFDM025	PSA	A1	69	26/04/2018	13:46	55.6192036	-0.4863877
35	NEFDM025	Macrofauna	B1	69	26/04/2018	13:52	55.619248	-0.4865261
35	NEFDM025	PSA	B1	69	26/04/2018	13:52	55.619248	-0.4865261
35	NEFDM025	Macrofauna	C1	69	26/04/2018	13:58	55.6192253	-0.486747
35	NEFDM025	PSA	C1	69	26/04/2018	13:58	55.6192253	-0.486747
35	NEFDM025	Macrofauna	D1	69	26/04/2018	14:04	55.6191729	-0.4868957
35	NEFDM025	PSA	D1	69	26/04/2018	14:04	55.6191729	-0.4868957
35	NEFDM025	Macrofauna	E1	69	26/04/2018	14:09	55.6191999	-0.4871125
35	NEFDM025	PSA	E1	69	26/04/2018	14:09	55.6191999	-0.4871125
36	NEFDM024	Macrofauna	A1	65	26/04/2018	14:42	55.6203716	-0.5166458
36	NEFDM024	PSA	A1	65	26/04/2018	14:42	55.6203716	-0.5166458
36	NEFDM024	Macrofauna	B1	65	26/04/2018	14:47	55.6204162	-0.5168358
36	NEFDM024	PSA	B1	65	26/04/2018	14:47	55.6204162	-0.5168358
36	NEFDM024	Macrofauna	C1	65	26/04/2018	14:53	55.6203987	-0.5170039
36	NEFDM024	PSA	C1	65	26/04/2018	14:53	55.6203987	-0.5170039
36	NEFDM024	Macrofauna	D1	65	26/04/2018	15:00	55.6203382	-0.5171748
36	NEFDM024	PSA	D1	65	26/04/2018	15:00	55.6203382	-0.5171748
36	NEFDM024	Macrofauna	E1	65	26/04/2018	15:05	55.6203487	-0.517362
36	NEFDM024	PSA	E1	65	26/04/2018	15:05	55.6203487	-0.517362
37	NEFDM023	Macrofauna	A1	67	26/04/2018	15:34	55.6168311	-0.5475478
37	NEFDM023	PSA	A1	67	26/04/2018	15:34	55.6168311	-0.5475478
37	NEFDM023	Macrofauna	B1	67	26/04/2018	15:39	55.616783	-0.5476771
37	NEFDM023	PSA	B1	67	26/04/2018	15:39	55.616783	-0.5476771
37	NEFDM023	Macrofauna	C1	67	26/04/2018	15:45	55.6167355	-0.5477939
37	NEFDM023	PSA	C1	67	26/04/2018	15:45	55.6167355	-0.5477939

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
37	NEFDM023	Macrofauna	D1	67	26/04/2018	15:50	55.6167298	-0.5477996
37	NEFDM023	PSA	D1	67	26/04/2018	15:50	55.6167298	-0.5477996
37	NEFDM023	Macrofauna	E1	67	26/04/2018	15:55	55.6166934	-0.5479464
37	NEFDM023	PSA	E1	67	26/04/2018	15:55	55.6166934	-0.5479464
38	NEFDM027	Macrofauna	A1	68	26/04/2018	17:07	55.6042071	-0.5421826
38	NEFDM027	PSA	A1	68	26/04/2018	17:07	55.6042071	-0.5421826
38	NEFDM027	Macrofauna	B1	68	26/04/2018	17:13	55.6041936	-0.5423159
38	NEFDM027	PSA	B1	68	26/04/2018	17:13	55.6041936	-0.5423159
38	NEFDM027	Macrofauna	C1	68	26/04/2018	17:18	55.6041263	-0.5424674
38	NEFDM027	PSA	C1	68	26/04/2018	17:18	55.6041263	-0.5424674
38	NEFDM027	Macrofauna	D1	68	26/04/2018	17:24	55.6040889	-0.5425971
38	NEFDM027	PSA	D1	68	26/04/2018	17:24	55.6040889	-0.5425971
38	NEFDM027	Macrofauna	E1	68	26/04/2018	17:29	55.6040468	-0.5427204
38	NEFDM027	PSA	E1	68	26/04/2018	17:29	55.6040468	-0.5427204
39	NEFDM029	Macrofauna	A1	65	26/04/2018	18:58	55.6073012	-0.5038524
39	NEFDM029	PSA	A1	65	26/04/2018	18:58	55.6073012	-0.5038524
39	NEFDM029	Macrofauna	B1	65	26/04/2018	19:03	55.6072512	-0.503991
39	NEFDM029	PSA	B1	65	26/04/2018	19:03	55.6072512	-0.503991
39	NEFDM029	Macrofauna	C1	65	26/04/2018	19:08	55.6072061	-0.5041176
39	NEFDM029	PSA	C1	65	26/04/2018	19:08	55.6072061	-0.5041176
39	NEFDM029	Macrofauna	D1	65	26/04/2018	19:13	55.6071551	-0.5042556
39	NEFDM029	PSA	D1	65	26/04/2018	19:13	55.6071551	-0.5042556
39	NEFDM029	Macrofauna	E1	65	26/04/2018	19:18	55.6071047	-0.5043873
39	NEFDM029	PSA	E1	65	26/04/2018	19:18	55.6071047	-0.5043873
40	NEFDM028	Macrofauna	A1	68	26/04/2018	19:42	55.6093194	-0.4831828

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
40	NEFDM028	PSA	A1	68	26/04/2018	19:42	55.6093194	-0.4831828
40	NEFDM028	Macrofauna	B1	68	26/04/2018	19:47	55.6092812	-0.4833361
40	NEFDM028	PSA	B1	68	26/04/2018	19:47	55.6092812	-0.4833361
40	NEFDM028	Macrofauna	C1	68	26/04/2018	19:52	55.609231	-0.4834324
40	NEFDM028	PSA	C1	68	26/04/2018	19:52	55.609231	-0.4834324
40	NEFDM028	Macrofauna	D1	68	26/04/2018	19:57	55.6091936	-0.4835812
40	NEFDM028	PSA	D1	68	26/04/2018	19:57	55.6091936	-0.4835812
40	NEFDM028	Macrofauna	E1	68	26/04/2018	20:03	55.6091256	-0.483513
40	NEFDM028	PSA	E1	68	26/04/2018	20:03	55.6091256	-0.483513
41	NEFDM033	Macrofauna	A1	64	26/04/2018	20:36	55.5963624	-0.479468
41	NEFDM033	PSA	A1	64	26/04/2018	20:36	55.5963624	-0.479468
41	NEFDM033	Macrofauna	B1	64	26/04/2018	20:42	55.5962688	-0.4794288
41	NEFDM033	PSA	B1	64	26/04/2018	20:42	55.5962688	-0.4794288
41	NEFDM033	Macrofauna	C2	64	26/04/2018	20:52	55.5962303	-0.4797362
41	NEFDM033	PSA	C2	64	26/04/2018	20:52	55.5962303	-0.4797362
41	NEFDM033	Macrofauna	D3	64	26/04/2018	21:11	55.5960102	-0.4799751
41	NEFDM033	PSA	D3	64	26/04/2018	21:11	55.5960102	-0.4799751
41	NEFDM033	Macrofauna	E1	64	26/04/2018	21:17	55.59599	-0.4801182
41	NEFDM033	PSA	E1	64	26/04/2018	21:17	55.59599	-0.4801182
42	NEFDM030	Macrofauna	A1	61	26/04/2018	22:29	55.5993504	-0.4505145
42	NEFDM030	PSA	A1	61	26/04/2018	22:29	55.5993504	-0.4505145
42	NEFDM030	Macrofauna	D1	61	26/04/2018	23:35	55.5994385	-0.4508563
42	NEFDM030	PSA	D1	61	26/04/2018	23:35	55.5994385	-0.4508563
42	NEFDM030	Macrofauna	E2	61	26/04/2018	23:50	55.5994374	-0.4504565
42	NEFDM030	PSA	E2	61	26/04/2018	23:50	55.5994374	-0.4504565

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
42	NEFDM030	Macrofauna	B7	61	27/04/2018	00:09	55.5995613	-0.4505395
42	NEFDM030	PSA	B7	61	27/04/2018	00:09	55.5995613	-0.4505395
42	NEFDM030	Macrofauna	C4	61	27/04/2018	00:15	55.5995935	-0.4507135
42	NEFDM030	PSA	C4	61	27/04/2018	00:15	55.5995935	-0.4507135
43	NEFDM038	Macrofauna	A2	65	27/04/2018	01:01	55.5855979	-0.4339477
43	NEFDM038	PSA	A2	65	27/04/2018	01:01	55.5855979	-0.4339477
43	NEFDM038	Macrofauna	B1	65	27/04/2018	01:15	55.5855465	-0.4335835
43	NEFDM038	PSA	B1	65	27/04/2018	01:15	55.5855465	-0.4335835
43	NEFDM038	Macrofauna	C6	65	27/04/2018	01:21	55.5855581	-0.4334466
43	NEFDM038	PSA	C6	65	27/04/2018	01:21	55.5855581	-0.4334466
43	NEFDM038	Macrofauna	D1	65	27/04/2018	01:54	55.5857225	-0.4332416
43	NEFDM038	PSA	D1	65	27/04/2018	01:54	55.5857225	-0.4332416
43	NEFDM038	Macrofauna	E1	65	27/04/2018	02:11	55.5858114	-0.4338155
43	NEFDM038	PSA	E1	65	27/04/2018	02:11	55.5858114	-0.4338155
44	NEFDM040	Macrofauna	A1	67	27/04/2018	03:22	55.5734604	-0.446862
44	NEFDM040	PSA	A1	67	27/04/2018	03:22	55.5734604	-0.446862
44	NEFDM040	Macrofauna	B1	67	27/04/2018	03:25	55.5734903	-0.4470179
44	NEFDM040	PSA	B1	67	27/04/2018	03:25	55.5734903	-0.4470179
44	NEFDM040	Macrofauna	C1	67	27/04/2018	03:32	55.5735108	-0.4471724
44	NEFDM040	PSA	C1	67	27/04/2018	03:32	55.5735108	-0.4471724
44	NEFDM040	Macrofauna	D1	67	27/04/2018	03:37	55.5735384	-0.4473091
44	NEFDM040	PSA	D1	67	27/04/2018	03:37	55.5735384	-0.4473091
44	NEFDM040	Macrofauna	E1	67	27/04/2018	03:42	55.5735527	-0.4474778
44	NEFDM040	PSA	E1	67	27/04/2018	03:42	55.5735527	-0.4474778
45	NEFDM058	Macrofauna	A1	66	27/04/2018	04:04	55.5755494	-0.4628034

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
45	NEFDM058	PSA	A1	66	27/04/2018	04:04	55.5755494	-0.4628034
45	NEFDM058	Macrofauna	B1	66	27/04/2018	04:10	55.5755675	-0.4629615
45	NEFDM058	PSA	B1	66	27/04/2018	04:10	55.5755675	-0.4629615
45	NEFDM058	Macrofauna	C1	66	27/04/2018	04:15	55.5755789	-0.4631405
45	NEFDM058	PSA	C1	66	27/04/2018	04:15	55.5755789	-0.4631405
45	NEFDM058	Macrofauna	D1	66	27/04/2018	04:20	55.5755825	-0.4632999
45	NEFDM058	PSA	D1	66	27/04/2018	04:20	55.5755825	-0.4632999
45	NEFDM058	Macrofauna	E1	66	27/04/2018	04:27	55.5755923	-0.4634546
45	NEFDM058	PSA	E1	66	27/04/2018	04:27	55.5755923	-0.4634546
46	NEFDM034	Macrofauna	A1	64	27/04/2018	04:50	55.5888473	-0.4487755
46	NEFDM034	PSA	A1	64	27/04/2018	04:50	55.5888473	-0.4487755
46	NEFDM034	Macrofauna	C5	64	27/04/2018	05:07	55.5887289	-0.449071
46	NEFDM034	PSA	C5	64	27/04/2018	05:07	55.5887289	-0.449071
46	NEFDM034	Macrofauna	B2	64	27/04/2018	05:12	55.5887252	-0.4492348
46	NEFDM034	PSA	B2	64	27/04/2018	05:12	55.5887252	-0.4492348
46	NEFDM034	Macrofauna	E4	64	27/04/2018	05:36	55.5886389	-0.4493731
46	NEFDM034	PSA	E4	64	27/04/2018	05:36	55.5886389	-0.4493731
46	NEFDM034	Macrofauna	D3	64	27/04/2018	05:47	55.5886576	-0.4490638
46	NEFDM034	PSA	D3	64	27/04/2018	05:47	55.5886576	-0.4490638
47	NEFDM057	Macrofauna	A2	63	27/04/2018	07:22	55.5921864	-0.4641074
47	NEFDM057	PSA	A2	63	27/04/2018	07:22	55.5921864	-0.4641074
47	NEFDM057	Macrofauna	B1	63	27/04/2018	07:28	55.5921092	-0.4641537
47	NEFDM057	PSA	B1	63	27/04/2018	07:28	55.5921092	-0.4641537
47	NEFDM057	Macrofauna	D2	63	27/04/2018	08:07	55.5922565	-0.464219
47	NEFDM057	PSA	D2	63	27/04/2018	08:07	55.5922565	-0.464219

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
47	NEFDM057	Macrofauna	E2	63	27/04/2018	08:24	55.5922886	-0.4640504
47	NEFDM057	PSA	E2	63	27/04/2018	08:24	55.5922886	-0.4640504
47	NEFDM057	Macrofauna	C5	63	27/04/2018	08:38	55.5922692	-0.46375
47	NEFDM057	PSA	C5	63	27/04/2018	08:38	55.5922692	-0.46375
48	NEFDM036	Macrofauna	A1	64	27/04/2018	09:04	55.5845429	-0.4762277
48	NEFDM036	PSA	A1	64	27/04/2018	09:04	55.5845429	-0.4762277
48	NEFDM036	Macrofauna	B1	64	27/04/2018	09:11	55.5844464	-0.476077
48	NEFDM036	PSA	B1	64	27/04/2018	09:11	55.5844464	-0.476077
48	NEFDM036	Macrofauna	C1	64	27/04/2018	09:17	55.5844503	-0.4762346
48	NEFDM036	PSA	C1	64	27/04/2018	09:17	55.5844503	-0.4762346
48	NEFDM036	Macrofauna	D1	64	27/04/2018	09:23	55.5843564	-0.4762569
48	NEFDM036	PSA	D1	64	27/04/2018	09:23	55.5843564	-0.4762569
48	NEFDM036	Macrofauna	E1	64	27/04/2018	09:29	55.5843391	-0.4764321
48	NEFDM036	PSA	E1	64	27/04/2018	09:29	55.5843391	-0.4764321
49	NEFDM032	Macrofauna	A1	65	27/04/2018	09:53	55.5931659	-0.5025059
49	NEFDM032	PSA	A1	65	27/04/2018	09:53	55.5931659	-0.5025059
49	NEFDM032	Macrofauna	B1	65	27/04/2018	09:59	55.5932134	-0.5026391
49	NEFDM032	PSA	B1	65	27/04/2018	09:59	55.5932134	-0.5026391
49	NEFDM032	Macrofauna	C1	65	27/04/2018	10:06	55.5932709	-0.50276
49	NEFDM032	PSA	C1	65	27/04/2018	10:06	55.5932709	-0.50276
49	NEFDM032	Macrofauna	D2	65	27/04/2018	10:23	55.5933334	-0.502722
49	NEFDM032	PSA	D2	65	27/04/2018	10:23	55.5933334	-0.502722
49	NEFDM032	Macrofauna	E1	65	27/04/2018	10:30	55.5933292	-0.5025648
49	NEFDM032	PSA	E1	65	27/04/2018	10:30	55.5933292	-0.5025648
50	NEFDM031	Macrofauna	A1	68	27/04/2018	11:13	55.595585	-0.5365348

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
50	NEFDM031	PSA	A1	68	27/04/2018	11:13	55.595585	-0.5365348
50	NEFDM031	Macrofauna	B1	68	27/04/2018	11:18	55.5956466	-0.5366949
50	NEFDM031	PSA	B1	68	27/04/2018	11:18	55.5956466	-0.5366949
50	NEFDM031	Macrofauna	C1	68	27/04/2018	11:24	55.595677	-0.5368581
50	NEFDM031	PSA	C1	68	27/04/2018	11:24	55.595677	-0.5368581
50	NEFDM031	Macrofauna	D1	68	27/04/2018	11:30	55.5956671	-0.5370542
50	NEFDM031	PSA	D1	68	27/04/2018	11:30	55.5956671	-0.5370542
50	NEFDM031	Macrofauna	E1	68	27/04/2018	11:37	55.5956236	-0.5372421
50	NEFDM031	PSA	E1	68	27/04/2018	11:37	55.5956236	-0.5372421
51	NEFDM035	Macrofauna	A1	69	27/04/2018	12:01	55.5847581	-0.5330935
51	NEFDM035	PSA	A1	69	27/04/2018	12:01	55.5847581	-0.5330935
51	NEFDM035	Macrofauna	B1	69	27/04/2018	12:06	55.5848419	-0.5332077
51	NEFDM035	PSA	B1	69	27/04/2018	12:06	55.5848419	-0.5332077
51	NEFDM035	Macrofauna	C1	69	27/04/2018	12:12	55.5849032	-0.5333721
51	NEFDM035	PSA	C1	69	27/04/2018	12:12	55.5849032	-0.5333721
51	NEFDM035	Macrofauna	D1	69	27/04/2018	12:18	55.5849119	-0.5335848
51	NEFDM035	PSA	D1	69	27/04/2018	12:18	55.5849119	-0.5335848
51	NEFDM035	Macrofauna	E1	69	27/04/2018	12:26	55.5848899	-0.5337762
51	NEFDM035	PSA	E1	69	27/04/2018	12:26	55.5848899	-0.5337762
52	NEFDM037	Macrofauna	A1	67	27/04/2018	12:57	55.5773326	-0.4969558
52	NEFDM037	PSA	A1	67	27/04/2018	12:57	55.5773326	-0.4969558
52	NEFDM037	Macrofauna	B1	67	27/04/2018	13:02	55.5774118	-0.4970518
52	NEFDM037	PSA	B1	67	27/04/2018	13:02	55.5774118	-0.4970518
52	NEFDM037	Macrofauna	C1	67	27/04/2018	13:08	55.5774507	-0.4971969
52	NEFDM037	PSA	C1	67	27/04/2018	13:08	55.5774507	-0.4971969

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
52	NEFDM037	Macrofauna	D1	67	27/04/2018	13:14	55.5775427	-0.4972561
52	NEFDM037	PSA	D1	67	27/04/2018	13:14	55.5775427	-0.4972561
52	NEFDM037	Macrofauna	E1	67	27/04/2018	13:20	55.5775971	-0.4973899
52	NEFDM037	PSA	E1	67	27/04/2018	13:20	55.5775971	-0.4973899
53	NEFDM042	Macrofauna	A1	65	27/04/2018	14:55	55.5581566	-0.4902834
53	NEFDM042	PSA	A1	65	27/04/2018	14:55	55.5581566	-0.4902834
53	NEFDM042	Macrofauna	B1	65	27/04/2018	14:59	55.5581843	-0.4904523
53	NEFDM042	PSA	B1	65	27/04/2018	14:59	55.5581843	-0.4904523
53	NEFDM042	Macrofauna	C1	65	27/04/2018	15:05	55.5582564	-0.4905723
53	NEFDM042	PSA	C1	65	27/04/2018	15:05	55.5582564	-0.4905723
53	NEFDM042	Macrofauna	D1	65	27/04/2018	15:09	55.5583049	-0.4907031
53	NEFDM042	PSA	D1	65	27/04/2018	15:09	55.5583049	-0.4907031
53	NEFDM042	Macrofauna	E2	65	27/04/2018	15:20	55.5583709	-0.4908195
53	NEFDM042	PSA	E2	65	27/04/2018	15:20	55.5583709	-0.4908195
54	NEFDM044	Macrofauna	A1	66	27/04/2018	15:41	55.5472797	-0.493543
54	NEFDM044	PSA	A1	66	27/04/2018	15:41	55.5472797	-0.493543
54	NEFDM044	Macrofauna	B1	66	27/04/2018	15:46	55.5473397	-0.4936625
54	NEFDM044	PSA	B1	66	27/04/2018	15:46	55.5473397	-0.4936625
54	NEFDM044	Macrofauna	C1	66	27/04/2018	15:51	55.5473953	-0.4937755
54	NEFDM044	PSA	C1	66	27/04/2018	15:51	55.5473953	-0.4937755
54	NEFDM044	Macrofauna	D1	66	27/04/2018	15:55	55.54745	-0.4939046
54	NEFDM044	PSA	D1	66	27/04/2018	15:55	55.54745	-0.4939046
54	NEFDM044	Macrofauna	E1	66	27/04/2018	16:00	55.5475044	-0.4940288
54	NEFDM044	PSA	E1	66	27/04/2018	16:00	55.5475044	-0.4940288
55	NEFDM048	Macrofauna	A1	66	27/04/2018	17:55	55.5238203	-0.5277692

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
55	NEFDM048	PSA	A1	66	27/04/2018	17:55	55.5238203	-0.5277692
55	NEFDM048	Macrofauna	B1	66	27/04/2018	18:00	55.5239073	-0.5277889
55	NEFDM048	PSA	B1	66	27/04/2018	18:00	55.5239073	-0.5277889
55	NEFDM048	Macrofauna	C1	66	27/04/2018	18:05	55.5239001	-0.5279474
55	NEFDM048	PSA	C1	66	27/04/2018	18:05	55.5239001	-0.5279474
55	NEFDM048	Macrofauna	D1	66	27/04/2018	18:09	55.5239963	-0.5279469
55	NEFDM048	PSA	D1	66	27/04/2018	18:09	55.5239963	-0.5279469
55	NEFDM048	Macrofauna	E1	66	27/04/2018	18:14	55.5240908	-0.5279655
55	NEFDM048	PSA	E1	66	27/04/2018	18:14	55.5240908	-0.5279655
56	NEFDM047	Macrofauna	A1	62	27/04/2018	19:31	55.5194295	-0.5421868
56	NEFDM047	PSA	A1	62	27/04/2018	19:31	55.5194295	-0.5421868
56	NEFDM047	Macrofauna	B1	62	27/04/2018	19:37	55.5193935	-0.5423253
56	NEFDM047	PSA	B1	62	27/04/2018	19:37	55.5193935	-0.5423253
56	NEFDM047	Macrofauna	C1	62	27/04/2018	19:43	55.5193125	-0.5422716
56	NEFDM047	PSA	C1	62	27/04/2018	19:43	55.5193125	-0.5422716
56	NEFDM047	Macrofauna	D1	62	27/04/2018	19:48	55.519233	-0.5422295
56	NEFDM047	PSA	D1	62	27/04/2018	19:48	55.519233	-0.5422295
56	NEFDM047	Macrofauna	E1	62	27/04/2018	19:54	55.5191523	-0.5421708
56	NEFDM047	PSA	E1	62	27/04/2018	19:54	55.5191523	-0.5421708
57	NEFDM045	Macrofauna	A1	63	27/04/2018	21:48	55.5311315	-0.538132
57	NEFDM045	PSA	A1	63	27/04/2018	21:48	55.5311315	-0.538132
57	NEFDM045	Macrofauna	B1	63	27/04/2018	21:53	55.5310885	-0.5382732
57	NEFDM045	PSA	B1	63	27/04/2018	21:53	55.5310885	-0.5382732
57	NEFDM045	Macrofauna	C1	63	27/04/2018	21:59	55.5310473	-0.5384168
57	NEFDM045	PSA	C1	63	27/04/2018	21:59	55.5310473	-0.5384168

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
57	NEFDM045	Macrofauna	D1	63	27/04/2018	22:04	55.5309654	-0.5383382
57	NEFDM045	PSA	D1	63	27/04/2018	22:04	55.5309654	-0.5383382
57	NEFDM045	Macrofauna	E1	63	27/04/2018	22:09	55.5308956	-0.5382592
57	NEFDM045	PSA	E1	63	27/04/2018	22:09	55.5308956	-0.5382592
58	NEFDM046	Macrofauna	A1	64	27/04/2018	22:42	55.5399085	-0.5314288
58	NEFDM046	PSA	A1	64	27/04/2018	22:42	55.5399085	-0.5314288
58	NEFDM046	Macrofauna	B2	64	27/04/2018	23:11	55.5400127	-0.5316838
58	NEFDM046	PSA	B2	64	27/04/2018	23:11	55.5400127	-0.5316838
58	NEFDM046	Macrofauna	C1	64	27/04/2018	23:17	55.5401055	-0.5318259
58	NEFDM046	PSA	C1	64	27/04/2018	23:17	55.5401055	-0.5318259
58	NEFDM046	Macrofauna	D1	64	27/04/2018	23:24	55.5401501	-0.5319695
58	NEFDM046	PSA	D1	64	27/04/2018	23:24	55.5401501	-0.5319695
58	NEFDM046	Macrofauna	E1	64	27/04/2018	23:33	55.5401694	-0.531774
58	NEFDM046	PSA	E1	64	27/04/2018	23:33	55.5401694	-0.531774
59	NEFDM043	Macrofauna	A1	65	27/04/2018	23:58	55.5490384	-0.5278144
59	NEFDM043	PSA	A1	65	27/04/2018	23:58	55.5490384	-0.5278144
59	NEFDM043	Macrofauna	B1	65	28/04/2018	00:04	55.5491404	-0.5278701
59	NEFDM043	PSA	B1	65	28/04/2018	00:04	55.5491404	-0.5278701
59	NEFDM043	Macrofauna	C1	65	28/04/2018	00:09	55.549191	-0.5280214
59	NEFDM043	PSA	C1	65	28/04/2018	00:09	55.549191	-0.5280214
59	NEFDM043	Macrofauna	D1	65	28/04/2018	00:15	55.5492746	-0.5281353
59	NEFDM043	PSA	D1	65	28/04/2018	00:15	55.5492746	-0.5281353
59	NEFDM043	Macrofauna	E1	65	28/04/2018	00:22	55.5493132	-0.5283014
59	NEFDM043	PSA	E1	65	28/04/2018	00:22	55.5493132	-0.5283014
60	NEFDM041	Macrofauna	A1	67	28/04/2018	01:07	55.5593363	-0.526173

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
60	NEFDM041	PSA	A1	67	28/04/2018	01:07	55.5593363	-0.526173
60	NEFDM041	Macrofauna	B1	67	28/04/2018	01:13	55.5593845	-0.5263448
60	NEFDM041	PSA	B1	67	28/04/2018	01:13	55.5593845	-0.5263448
60	NEFDM041	Macrofauna	C1	67	28/04/2018	01:19	55.5594795	-0.5264166
60	NEFDM041	PSA	C1	67	28/04/2018	01:19	55.5594795	-0.5264166
60	NEFDM041	Macrofauna	D1	67	28/04/2018	01:24	55.5595301	-0.5265601
60	NEFDM041	PSA	D1	67	28/04/2018	01:24	55.5595301	-0.5265601
60	NEFDM041	Macrofauna	E1	67	28/04/2018	01:31	55.5595996	-0.52666
60	NEFDM041	PSA	E1	67	28/04/2018	01:31	55.5595996	-0.52666
61	NEFDM039	Macrofauna	A1	70	28/04/2018	02:23	55.5729022	-0.5318407
61	NEFDM039	PSA	A1	70	28/04/2018	02:23	55.5729022	-0.5318407
61	NEFDM039	Macrofauna	B1	70	28/04/2018	02:28	55.57295	-0.5319921
61	NEFDM039	PSA	B1	70	28/04/2018	02:28	55.57295	-0.5319921
61	NEFDM039	Macrofauna	C1	70	28/04/2018	02:34	55.5730481	-0.5320281
61	NEFDM039	PSA	C1	70	28/04/2018	02:34	55.5730481	-0.5320281
61	NEFDM039	Macrofauna	D1	70	28/04/2018	02:40	55.5730977	-0.5321834
61	NEFDM039	PSA	D1	70	28/04/2018	02:40	55.5730977	-0.5321834
61	NEFDM039	Macrofauna	E1	70	28/04/2018	02:46	55.5732027	-0.5322492
61	NEFDM039	PSA	E1	70	28/04/2018	02:46	55.5732027	-0.5322492
62	NEFDM062	Macrofauna	A3	64	28/04/2018	03:48	55.6543654	-0.5111854
62	NEFDM062	PSA	A3	64	28/04/2018	03:48	55.6543654	-0.5111854
62	NEFDM062	Macrofauna	C2	64	28/04/2018	04:15	55.6544774	-0.5114633
62	NEFDM062	PSA	C2	64	28/04/2018	04:15	55.6544774	-0.5114633
62	NEFDM062	Macrofauna	D2	64	28/04/2018	04:32	55.6543103	-0.5113013
62	NEFDM062	PSA	D2	64	28/04/2018	04:32	55.6543103	-0.5113013

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
62	NEFDM062	Macrofauna	E2	64	28/04/2018	04:43	55.654162	-0.5111437
62	NEFDM062	PSA	E2	64	28/04/2018	04:43	55.654162	-0.5111437
62	NEFDM062	Macrofauna	B5	64	28/04/2018	04:54	55.654197	-0.5113749
62	NEFDM062	PSA	B5	64	28/04/2018	04:54	55.654197	-0.5113749
63	NEFDM061	Macrofauna	A1	66	28/04/2018	05:19	55.6598046	-0.4743162
63	NEFDM061	PSA	A1	66	28/04/2018	05:19	55.6598046	-0.4743162
63	NEFDM061	Macrofauna	B1	66	28/04/2018	05:23	55.6597305	-0.4743403
63	NEFDM061	PSA	B1	66	28/04/2018	05:23	55.6597305	-0.4743403
63	NEFDM061	Macrofauna	C1	66	28/04/2018	05:28	55.6596438	-0.4743716
63	NEFDM061	PSA	C1	66	28/04/2018	05:28	55.6596438	-0.4743716
63	NEFDM061	Macrofauna	D1	66	28/04/2018	05:33	55.6595494	-0.4743867
63	NEFDM061	PSA	D1	66	28/04/2018	05:33	55.6595494	-0.4743867
63	NEFDM061	Macrofauna	E1	66	28/04/2018	05:38	55.6594606	-0.4744054
63	NEFDM061	PSA	E1	66	28/04/2018	05:38	55.6594606	-0.4744054
64	FRNEM018	Macrofauna	A1	95	28/04/2018	09:02	55.5873925	-1.0066263
64	FRNEM018	PSA	A1	95	28/04/2018	09:02	55.5873925	-1.0066263
67	FRNEM045	Macrofauna	A1	98	28/04/2018	13:02	55.5790518	-1.0186787
67	FRNEM045	PSA	A1	98	28/04/2018	13:02	55.5790518	-1.0186787
67	FRNEM045	Macrofauna	B1	98	28/04/2018	13:09	55.5791528	-1.0186446
67	FRNEM045	PSA	B1	98	28/04/2018	13:09	55.5791528	-1.0186446
67	FRNEM045	Macrofauna	C1	98	28/04/2018	13:16	55.5791967	-1.0185125
67	FRNEM045	PSA	C1	98	28/04/2018	13:16	55.5791967	-1.0185125
67	FRNEM045	Macrofauna	D1	98	28/04/2018	13:23	55.579308	-1.0184278
67	FRNEM045	PSA	D1	98	28/04/2018	13:23	55.579308	-1.0184278
67	FRNEM045	Macrofauna	E1	98	28/04/2018	13:30	55.5793981	-1.0183023

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
67	FRNEM045	PSA	E1	98	28/04/2018	13:30	55.5793981	-1.0183023
67	FRNEM045	Macrofauna	F1	98	28/04/2018	13:37	55.5794507	-1.0181565
67	FRNEM045	PSA	F1	98	28/04/2018	13:37	55.5794507	-1.0181565
67	FRNEM045	Macrofauna	G1	98	28/04/2018	13:44	55.5795279	-1.0180372
67	FRNEM045	PSA	G1	98	28/04/2018	13:44	55.5795279	-1.0180372
67	FRNEM045	Macrofauna	H1	98	28/04/2018	13:51	55.5796028	-1.0180541
67	FRNEM045	PSA	H1	98	28/04/2018	13:51	55.5796028	-1.0180541
67	FRNEM045	Macrofauna	I1	98	28/04/2018	13:57	55.5795715	-1.0182156
67	FRNEM045	PSA	I1	98	28/04/2018	13:57	55.5795715	-1.0182156
67	FRNEM045	Macrofauna	J1	98	28/04/2018	14:05	55.5796718	-1.0181869
67	FRNEM045	PSA	J1	98	28/04/2018	14:05	55.5796718	-1.0181869
68	FRNEM007	Macrofauna	A1	98	28/04/2018	14:27	55.5791198	-1.0319672
68	FRNEM007	PSA	A1	98	28/04/2018	14:27	55.5791198	-1.0319672
70	FRNEM006	Macrofauna	A1	100	28/04/2018	15:22	55.5789749	-1.0488314
70	FRNEM006	PSA	A1	100	28/04/2018	15:22	55.5789749	-1.0488314
72	FRNEM005	Macrofauna	A1	106	28/04/2018	16:41	55.5792266	-1.0659638
72	FRNEM005	PSA	A1	106	28/04/2018	16:41	55.5792266	-1.0659638
74	FRNEM004	Macrofauna	A1	110	28/04/2018	18:07	55.5796906	-1.083298
74	FRNEM004	PSA	A1	110	28/04/2018	18:07	55.5796906	-1.083298
76	FRNEM003	Macrofauna	A1	110	28/04/2018	19:04	55.5797696	-1.100372
76	FRNEM003	PSA	A1	110	28/04/2018	19:04	55.5797696	-1.100372
78	FRNEM002	Macrofauna	A1	106	28/04/2018	20:06	55.5800265	-1.1176291
78	FRNEM002	PSA	A1	106	28/04/2018	20:06	55.5800265	-1.1176291
81	FRNEM044	Macrofauna	A1	104	28/04/2018	22:03	55.580271	-1.1350136
81	FRNEM044	PSA	A1	104	28/04/2018	22:03	55.580271	-1.1350136

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
81	FRNEM044	Macrofauna	B1	104	28/04/2018	22:11	55.5802426	-1.1348749
81	FRNEM044	PSA	B1	104	28/04/2018	22:11	55.5802426	-1.1348749
81	FRNEM044	Macrofauna	C1	104	28/04/2018	22:19	55.5800904	-1.1346644
81	FRNEM044	PSA	C1	104	28/04/2018	22:19	55.5800904	-1.1346644
81	FRNEM044	Macrofauna	D1	104	28/04/2018	22:27	55.5799725	-1.1344129
81	FRNEM044	PSA	D1	104	28/04/2018	22:27	55.5799725	-1.1344129
81	FRNEM044	Macrofauna	E1	104	28/04/2018	22:35	55.5798684	-1.1341659
81	FRNEM044	PSA	E1	104	28/04/2018	22:35	55.5798684	-1.1341659
81	FRNEM044	Macrofauna	F1	104	28/04/2018	22:43	55.5800285	-1.1340012
81	FRNEM044	PSA	F1	104	28/04/2018	22:43	55.5800285	-1.1340012
81	FRNEM044	Macrofauna	G1	104	28/04/2018	22:51	55.5802303	-1.134008
81	FRNEM044	PSA	G1	104	28/04/2018	22:51	55.5802303	-1.134008
81	FRNEM044	Macrofauna	H1	104	28/04/2018	23:07	55.5802282	-1.1342869
81	FRNEM044	PSA	H1	104	28/04/2018	23:07	55.5802282	-1.1342869
81	FRNEM044	Macrofauna	I1	104	28/04/2018	23:16	55.580243	-1.1344536
81	FRNEM044	PSA	I1	104	28/04/2018	23:16	55.580243	-1.1344536
81	FRNEM044	Macrofauna	J1	104	28/04/2018	23:24	55.5802525	-1.1343042
81	FRNEM044	PSA	J1	104	28/04/2018	23:24	55.5802525	-1.1343042
82	FRNEM011	Macrofauna	A1	94	28/04/2018	23:53	55.5748131	-1.1611994
82	FRNEM011	PSA	A1	94	28/04/2018	23:53	55.5748131	-1.1611994
84	FRNEM001	Macrofauna	A1	98	29/04/2018	01:24	55.5762141	-1.1879134
84	FRNEM001	PSA	A1	98	29/04/2018	01:24	55.5762141	-1.1879134
87	FRNEM097	Macrofauna	A2	88	29/04/2018	03:34	55.580062	-1.192747
87	FRNEM097	PSA	A2	88	29/04/2018	03:34	55.580062	-1.192747
87	FRNEM097	Macrofauna	B2	88	29/04/2018	03:47	55.5799088	-1.1931914

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
87	FRNEM097	PSA	B2	88	29/04/2018	03:47	55.5799088	-1.1931914
87	FRNEM097	Macrofauna	C1	88	29/04/2018	03:54	55.5798782	-1.1933495
87	FRNEM097	PSA	C1	88	29/04/2018	03:54	55.5798782	-1.1933495
87	FRNEM097	Macrofauna	D1	88	29/04/2018	03:59	55.5801069	-1.1934102
87	FRNEM097	PSA	D1	88	29/04/2018	03:59	55.5801069	-1.1934102
87	FRNEM097	Macrofauna	E2	88	29/04/2018	04:13	55.5803843	-1.1930302
87	FRNEM097	PSA	E2	88	29/04/2018	04:13	55.5803843	-1.1930302
87	FRNEM097	Macrofauna	F2	88	29/04/2018	04:28	55.5803273	-1.1926443
87	FRNEM097	PSA	F2	88	29/04/2018	04:28	55.5803273	-1.1926443
87	FRNEM097	Macrofauna	G1	88	29/04/2018	04:34	55.5802382	-1.1926073
87	FRNEM097	PSA	G1	88	29/04/2018	04:34	55.5802382	-1.1926073
87	FRNEM097	Macrofauna	H2	88	29/04/2018	04:49	55.5797733	-1.1927611
87	FRNEM097	PSA	H2	88	29/04/2018	04:49	55.5797733	-1.1927611
87	FRNEM097	Macrofauna	I2	88	29/04/2018	05:05	55.5800739	-1.1929553
87	FRNEM097	PSA	I2	88	29/04/2018	05:05	55.5800739	-1.1929553
87	FRNEM097	Macrofauna	J1	88	29/04/2018	05:12	55.5801625	-1.1929763
87	FRNEM097	PSA	J1	88	29/04/2018	05:12	55.5801625	-1.1929763
88	FRNEM021	Macrofauna	A1	92	29/04/2018	05:39	55.5819466	-1.1721909
88	FRNEM021	PSA	A1	92	29/04/2018	05:39	55.5819466	-1.1721909
90	FRNEM008	Macrofauna	A1	102	29/04/2018	07:09	55.5885224	-1.159884
90	FRNEM008	PSA	A1	102	29/04/2018	07:09	55.5885224	-1.159884
92	FRNEM009	Macrofauna	A1	101	29/04/2018	08:13	55.5884412	-1.1432781
92	FRNEM009	PSA	A1	101	29/04/2018	08:13	55.5884412	-1.1432781
94	FRNEM010	Macrofauna	A1	105	29/04/2018	09:21	55.5880041	-1.1255537
94	FRNEM010	PSA	A1	105	29/04/2018	09:21	55.5880041	-1.1255537

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
96	FRNEM012	Macrofauna	A1	108	29/04/2018	11:00	55.5879996	-1.1084126
96	FRNEM012	PSA	A1	108	29/04/2018	11:00	55.5879996	-1.1084126
99	FRNEM013	Macrofauna	A1	112	29/04/2018	13:29	55.5878813	-1.0914172
99	FRNEM013	PSA	A1	112	29/04/2018	13:29	55.5878813	-1.0914172
100	FRNEM014	Macrofauna	A1	107	29/04/2018	13:50	55.5878053	-1.0744953
100	FRNEM014	PSA	A1	107	29/04/2018	13:50	55.5878053	-1.0744953
102	FRNEM015	Macrofauna	A1	106	29/04/2018	14:53	55.5877546	-1.0573411
102	FRNEM015	PSA	A1	106	29/04/2018	14:53	55.5877546	-1.0573411
104	FRNEM016	Macrofauna	A1	97	29/04/2018	16:35	55.5873083	-1.0397034
104	FRNEM016	PSA	A1	97	29/04/2018	16:35	55.5873083	-1.0397034
106	FRNEM017	Macrofauna	A1	98	29/04/2018	17:34	55.5875632	-1.0234211
106	FRNEM017	PSA	A1	98	29/04/2018	17:34	55.5875632	-1.0234211
108	FRNEM026	Macrofauna	A1	96	29/04/2018	18:31	55.5958727	-1.031656
108	FRNEM026	PSA	A1	96	29/04/2018	18:31	55.5958727	-1.031656
110	FRNEM025	Macrofauna	A1	100	29/04/2018	19:34	55.5960406	-1.0489797
110	FRNEM025	PSA	A1	100	29/04/2018	19:34	55.5960406	-1.0489797
112	FRNEM024	Macrofauna	A1	102	29/04/2018	20:33	55.5964935	-1.0658066
112	FRNEM024	PSA	A1	102	29/04/2018	20:33	55.5964935	-1.0658066
114	FRNEM023	Macrofauna	A1	104	29/04/2018	21:42	55.5964464	-1.0833099
114	FRNEM023	PSA	A1	104	29/04/2018	21:42	55.5964464	-1.0833099
116	FRNEM022	Macrofauna	A1	101	29/04/2018	22:48	55.5965682	-1.0999729
116	FRNEM022	PSA	A1	101	29/04/2018	22:48	55.5965682	-1.0999729
117	FRNEM096	Macrofauna	A1	67	30/04/2018	00:18	55.5740781	-1.2561523
117	FRNEM096	PSA	A1	67	30/04/2018	00:18	55.5740781	-1.2561523
117	FRNEM096	Macrofauna	D3	67	30/04/2018	01:24	55.5744671	-1.2560329

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
117	FRNEM096	PSA	D3	67	30/04/2018	01:24	55.5744671	-1.2560329
117	FRNEM096	Macrofauna	G4	67	30/04/2018	03:23	55.5740542	-1.2555059
117	FRNEM096	PSA	G4	67	30/04/2018	03:23	55.5740542	-1.2555059
117	FRNEM096	Macrofauna	H2	67	30/04/2018	03:37	55.5741503	-1.2561761
117	FRNEM096	PSA	H2	67	30/04/2018	03:37	55.5741503	-1.2561761
117	FRNEM096	Macrofauna	I1	67	30/04/2018	03:43	55.5742151	-1.2563268
117	FRNEM096	PSA	I1	67	30/04/2018	03:43	55.5742151	-1.2563268
117	FRNEM096	Macrofauna	J1	67	30/04/2018	03:48	55.574327	-1.256407
117	FRNEM096	PSA	J1	67	30/04/2018	03:48	55.574327	-1.256407
117	FRNEM096	Macrofauna	B4	67	30/04/2018	03:54	55.5743961	-1.256397
117	FRNEM096	PSA	B4	67	30/04/2018	03:54	55.5743961	-1.256397
117	FRNEM096	Macrofauna	C4	67	30/04/2018	04:00	55.5745013	-1.2564314
117	FRNEM096	PSA	C4	67	30/04/2018	04:00	55.5745013	-1.2564314
117	FRNEM096	Macrofauna	E7	67	30/04/2018	04:28	55.5746443	-1.2560563
117	FRNEM096	PSA	E7	67	30/04/2018	04:28	55.5746443	-1.2560563
117	FRNEM096	Macrofauna	F9	67	30/04/2018	04:47	55.5745043	-1.2562934
117	FRNEM096	PSA	F9	67	30/04/2018	04:47	55.5745043	-1.2562934
118	FRNEM098	Macrofauna	A4	75	30/04/2018	06:28	55.6749313	-1.1871893
118	FRNEM098	PSA	A4	75	30/04/2018	06:28	55.6749313	-1.1871893
118	FRNEM098	Macrofauna	B1	75	30/04/2018	07:10	55.675	-1.187069
118	FRNEM098	PSA	B1	75	30/04/2018	07:10	55.675	-1.187069
118	FRNEM098	Macrofauna	C1	75	30/04/2018	07:16	55.6751021	-1.1870982
118	FRNEM098	PSA	C1	75	30/04/2018	07:16	55.6751021	-1.1870982
118	FRNEM098	Macrofauna	D1	75	30/04/2018	07:24	55.6751152	-1.1872516
118	FRNEM098	PSA	D1	75	30/04/2018	07:24	55.6751152	-1.1872516

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
118	FRNEM098	Macrofauna	E2	75	30/04/2018	07:41	55.6753865	-1.1875642
118	FRNEM098	PSA	E2	75	30/04/2018	07:41	55.6753865	-1.1875642
118	FRNEM098	Macrofauna	F2	75	30/04/2018	07:55	55.6752791	-1.1880309
118	FRNEM098	PSA	F2	75	30/04/2018	07:55	55.6752791	-1.1880309
118	FRNEM098	Macrofauna	G1	75	30/04/2018	08:03	55.6751613	-1.1880699
118	FRNEM098	PSA	G1	75	30/04/2018	08:03	55.6751613	-1.1880699
118	FRNEM098	Macrofauna	H2	75	30/04/2018	08:23	55.6750443	-1.1882559
118	FRNEM098	PSA	H2	75	30/04/2018	08:23	55.6750443	-1.1882559
118	FRNEM098	Macrofauna	I1	75	30/04/2018	08:32	55.6751775	-1.188324
118	FRNEM098	PSA	I1	75	30/04/2018	08:32	55.6751775	-1.188324
118	FRNEM098	Macrofauna	J1	75	30/04/2018	08:46	55.6755472	-1.1878401
118	FRNEM098	PSA	J1	75	30/04/2018	08:46	55.6755472	-1.1878401
119	FRNEM101	Macrofauna	A1	71	30/04/2018	09:46	55.6918392	-1.0884438
119	FRNEM101	PSA	A1	71	30/04/2018	09:46	55.6918392	-1.0884438
119	FRNEM101	Macrofauna	B1	71	30/04/2018	09:54	55.6916959	-1.0885403
119	FRNEM101	PSA	B1	71	30/04/2018	09:54	55.6916959	-1.0885403
119	FRNEM101	Macrofauna	C1	71	30/04/2018	10:03	55.6915918	-1.0883823
119	FRNEM101	PSA	C1	71	30/04/2018	10:03	55.6915918	-1.0883823
119	FRNEM101	Macrofauna	D1	71	30/04/2018	10:16	55.6914695	-1.0881148
119	FRNEM101	PSA	D1	71	30/04/2018	10:16	55.6914695	-1.0881148
119	FRNEM101	Macrofauna	E1	71	30/04/2018	10:32	55.6920512	-1.0874445
119	FRNEM101	PSA	E1	71	30/04/2018	10:32	55.6920512	-1.0874445
119	FRNEM101	Macrofauna	F1	71	30/04/2018	10:41	55.6921604	-1.0877036
119	FRNEM101	PSA	F1	71	30/04/2018	10:41	55.6921604	-1.0877036
119	FRNEM101	Macrofauna	G1	71	30/04/2018	10:51	55.6917629	-1.0878565

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
119	FRNEM101	PSA	G1	71	30/04/2018	10:51	55.6917629	-1.0878565
119	FRNEM101	Macrofauna	H1	71	30/04/2018	11:04	55.6916141	-1.0876375
119	FRNEM101	PSA	H1	71	30/04/2018	11:04	55.6916141	-1.0876375
119	FRNEM101	Macrofauna	I1	71	30/04/2018	11:11	55.6917608	-1.087407
119	FRNEM101	PSA	I1	71	30/04/2018	11:11	55.6917608	-1.087407
119	FRNEM101	Macrofauna	J1	71	30/04/2018	11:21	55.6919179	-1.0876842
119	FRNEM101	PSA	J1	71	30/04/2018	11:21	55.6919179	-1.0876842
120	FRNEM099	Macrofauna	A1	94	30/04/2018	12:25	55.7475124	-1.0794471
120	FRNEM099	PSA	A1	94	30/04/2018	12:25	55.7475124	-1.0794471
120	FRNEM099	Macrofauna	B1	94	30/04/2018	12:34	55.7475606	-1.0794175
120	FRNEM099	PSA	B1	94	30/04/2018	12:34	55.7475606	-1.0794175
120	FRNEM099	Macrofauna	C1	94	30/04/2018	12:43	55.7476758	-1.0793429
120	FRNEM099	PSA	C1	94	30/04/2018	12:43	55.7476758	-1.0793429
120	FRNEM099	Macrofauna	D1	94	30/04/2018	12:51	55.747743	-1.0793378
120	FRNEM099	PSA	D1	94	30/04/2018	12:51	55.747743	-1.0793378
120	FRNEM099	Macrofauna	E1	94	30/04/2018	13:01	55.7478605	-1.0792773
120	FRNEM099	PSA	E1	94	30/04/2018	13:01	55.7478605	-1.0792773
120	FRNEM099	Macrofauna	F1	94	30/04/2018	13:09	55.7479234	-1.0792423
120	FRNEM099	PSA	F1	94	30/04/2018	13:09	55.7479234	-1.0792423
120	FRNEM099	Macrofauna	G1	94	30/04/2018	13:19	55.74799	-1.0791984
120	FRNEM099	PSA	G1	94	30/04/2018	13:19	55.74799	-1.0791984
120	FRNEM099	Macrofauna	H1	94	30/04/2018	13:28	55.7479819	-1.0793938
120	FRNEM099	PSA	H1	94	30/04/2018	13:28	55.7479819	-1.0793938
120	FRNEM099	Macrofauna	I1	94	30/04/2018	13:36	55.7479184	-1.0794018
120	FRNEM099	PSA	I1	94	30/04/2018	13:36	55.7479184	-1.0794018

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
120	FRNEM099	Macrofauna	J1	94	30/04/2018	13:46	55.7478075	-1.0793969
120	FRNEM099	PSA	J1	94	30/04/2018	13:46	55.7478075	-1.0793969
121	FRNEM102	Macrofauna	A1	79	30/04/2018	14:30	55.766902	-1.0360433
121	FRNEM102	PSA	A1	79	30/04/2018	14:30	55.766902	-1.0360433
121	FRNEM102	Macrofauna	B1	79	30/04/2018	14:39	55.7669466	-1.0361561
121	FRNEM102	PSA	B1	79	30/04/2018	14:39	55.7669466	-1.0361561
121	FRNEM102	Macrofauna	C1	79	30/04/2018	14:46	55.7670292	-1.0361269
121	FRNEM102	PSA	C1	79	30/04/2018	14:46	55.7670292	-1.0361269
121	FRNEM102	Macrofauna	D1	79	30/04/2018	14:54	55.767006	-1.0363084
121	FRNEM102	PSA	D1	79	30/04/2018	14:54	55.767006	-1.0363084
121	FRNEM102	Macrofauna	E1	79	30/04/2018	15:01	55.767097	-1.0361892
121	FRNEM102	PSA	E1	79	30/04/2018	15:01	55.767097	-1.0361892
121	FRNEM102	Macrofauna	F1	81	30/04/2018	15:08	55.767168	-1.0361093
121	FRNEM102	PSA	F1	81	30/04/2018	15:08	55.767168	-1.0361093
121	FRNEM102	Macrofauna	G1	81	30/04/2018	15:14	55.7672265	-1.036198
121	FRNEM102	PSA	G1	81	30/04/2018	15:14	55.7672265	-1.036198
121	FRNEM102	Macrofauna	H1	81	30/04/2018	15:21	55.7673032	-1.0361309
121	FRNEM102	PSA	H1	81	30/04/2018	15:21	55.7673032	-1.0361309
121	FRNEM102	Macrofauna	I1	81	30/04/2018	15:27	55.7673753	-1.0362335
121	FRNEM102	PSA	I1	81	30/04/2018	15:27	55.7673753	-1.0362335
121	FRNEM102	Macrofauna	J1	81	30/04/2018	15:32	55.7673997	-1.0363692
121	FRNEM102	PSA	J1	81	30/04/2018	15:32	55.7673997	-1.0363692
122	FRNEM094	Macrofauna	A1	69	30/04/2018	18:02	55.7875455	-1.3334398
122	FRNEM094	PSA	A1	69	30/04/2018	18:02	55.7875455	-1.3334398
122	FRNEM094	Macrofauna	B1	69	30/04/2018	18:08	55.787593	-1.3332821

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
122	FRNEM094	PSA	B1	69	30/04/2018	18:08	55.787593	-1.3332821
122	FRNEM094	Macrofauna	C1	69	30/04/2018	18:13	55.7876326	-1.3331483
122	FRNEM094	PSA	C1	69	30/04/2018	18:13	55.7876326	-1.3331483
122	FRNEM094	Macrofauna	D1	69	30/04/2018	18:18	55.7877051	-1.3330199
122	FRNEM094	PSA	D1	69	30/04/2018	18:18	55.7877051	-1.3330199
122	FRNEM094	Macrofauna	E1	69	30/04/2018	18:23	55.7877957	-1.3330617
122	FRNEM094	PSA	E1	69	30/04/2018	18:23	55.7877957	-1.3330617
122	FRNEM094	Macrofauna	F1	69	30/04/2018	18:28	55.7878668	-1.3330567
122	FRNEM094	PSA	F1	69	30/04/2018	18:28	55.7878668	-1.3330567
122	FRNEM094	Macrofauna	G1	69	30/04/2018	18:32	55.7879443	-1.333125
122	FRNEM094	PSA	G1	69	30/04/2018	18:32	55.7879443	-1.333125
122	FRNEM094	Macrofauna	H1	69	30/04/2018	18:38	55.7880265	-1.3331655
122	FRNEM094	PSA	H1	69	30/04/2018	18:38	55.7880265	-1.3331655
122	FRNEM094	Macrofauna	I1	69	30/04/2018	18:42	55.7881184	-1.333286
122	FRNEM094	PSA	I1	69	30/04/2018	18:42	55.7881184	-1.333286
122	FRNEM094	Macrofauna	J1	69	30/04/2018	18:47	55.7881612	-1.3333222
122	FRNEM094	PSA	J1	69	30/04/2018	18:47	55.7881612	-1.3333222
123	FRNEM095	Macrofauna	A1	64	30/04/2018	19:48	55.8129128	-1.3165643
123	FRNEM095	PSA	A1	64	30/04/2018	19:48	55.8129128	-1.3165643
123	FRNEM095	Macrofauna	B1	64	30/04/2018	19:55	55.8130348	-1.3166235
123	FRNEM095	PSA	B1	64	30/04/2018	19:55	55.8130348	-1.3166235
123	FRNEM095	Macrofauna	C1	64	30/04/2018	20:02	55.8131731	-1.316647
123	FRNEM095	PSA	C1	64	30/04/2018	20:02	55.8131731	-1.316647
123	FRNEM095	Macrofauna	D1	64	30/04/2018	20:09	55.8132499	-1.3166249
123	FRNEM095	PSA	D1	64	30/04/2018	20:09	55.8132499	-1.3166249

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
123	FRNEM095	Macrofauna	E4	64	30/04/2018	21:14	55.8132105	-1.3164819
123	FRNEM095	PSA	E4	64	30/04/2018	21:14	55.8132105	-1.3164819
123	FRNEM095	Macrofauna	F2	62	30/04/2018	21:36	55.8131756	-1.3165604
123	FRNEM095	PSA	F2	62	30/04/2018	21:36	55.8131756	-1.3165604
123	FRNEM095	Macrofauna	G1	62	30/04/2018	21:46	55.813102	-1.3164479
123	FRNEM095	PSA	G1	62	30/04/2018	21:46	55.813102	-1.3164479
123	FRNEM095	Macrofauna	H3	62	30/04/2018	22:25	55.8129859	-1.3165158
123	FRNEM095	PSA	H3	62	30/04/2018	22:25	55.8129859	-1.3165158
123	FRNEM095	Macrofauna	J2	62	01/05/2018	23:27	55.8133017	-1.3154371
123	FRNEM095	PSA	J2	62	01/05/2018	23:27	55.8133017	-1.3154371
123	FRNEM095	Macrofauna	I8	62	01/05/2018	00:07	55.813547	-1.3159515
123	FRNEM095	PSA	I8	62	01/05/2018	00:07	55.813547	-1.3159515
124	FRNEM100	Macrofauna	B1	63	01/05/2018	01:31	55.8214247	-1.4245646
124	FRNEM100	PSA	B1	63	01/05/2018	01:31	55.8214247	-1.4245646
124	FRNEM100	Macrofauna	C2	63	01/05/2018	01:44	55.8213839	-1.4242159
124	FRNEM100	PSA	C2	63	01/05/2018	01:44	55.8213839	-1.4242159
124	FRNEM100	Macrofauna	D1	63	01/05/2018	01:50	55.8215324	-1.424179
124	FRNEM100	PSA	D1	63	01/05/2018	01:50	55.8215324	-1.424179
124	FRNEM100	Macrofauna	E1	63	01/05/2018	01:56	55.8217105	-1.4242268
124	FRNEM100	PSA	E1	63	01/05/2018	01:56	55.8217105	-1.4242268
124	FRNEM100	Macrofauna	F1	63	01/05/2018	02:10	55.821344	-1.4255197
124	FRNEM100	PSA	F1	63	01/05/2018	02:10	55.821344	-1.4255197
124	FRNEM100	Macrofauna	G1	63	01/05/2018	02:17	55.8215031	-1.4254086
124	FRNEM100	PSA	G1	63	01/05/2018	02:17	55.8215031	-1.4254086
124	FRNEM100	Macrofauna	H1	63	01/05/2018	02:24	55.8216275	-1.4252978

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
124	FRNEM100	PSA	H1	63	01/05/2018	02:24	55.8216275	-1.4252978
124	FRNEM100	Macrofauna	I1	63	01/05/2018	02:30	55.8214312	-1.4252567
124	FRNEM100	PSA	I1	63	01/05/2018	02:30	55.8214312	-1.4252567
124	FRNEM100	Macrofauna	A4	63	01/05/2018	02:55	55.8213222	-1.4251602
124	FRNEM100	PSA	A4	63	01/05/2018	02:55	55.8213222	-1.4251602
124	FRNEM100	Macrofauna	J4	63	01/05/2018	03:01	55.8213927	-1.4249875
124	FRNEM100	PSA	J4	63	01/05/2018	03:01	55.8213927	-1.4249875
125	FRNEM093	Macrofauna	A1	79	01/05/2018	03:59	55.7838274	-1.3801968
125	FRNEM093	PSA	A1	79	01/05/2018	03:59	55.7838274	-1.3801968
125	FRNEM093	Macrofauna	B3	79	01/05/2018	04:19	55.7840563	-1.380349
125	FRNEM093	PSA	B3	79	01/05/2018	04:19	55.7840563	-1.380349
125	FRNEM093	Macrofauna	C1	79	01/05/2018	04:25	55.7841464	-1.3804519
125	FRNEM093	PSA	C1	79	01/05/2018	04:25	55.7841464	-1.3804519
125	FRNEM093	Macrofauna	D2	79	01/05/2018	04:40	55.7839168	-1.3805636
125	FRNEM093	PSA	D2	79	01/05/2018	04:40	55.7839168	-1.3805636
125	FRNEM093	Macrofauna	E2	79	01/05/2018	04:57	55.7837891	-1.3809903
125	FRNEM093	PSA	E2	79	01/05/2018	04:57	55.7837891	-1.3809903
125	FRNEM093	Macrofauna	F1	79	01/05/2018	05:04	55.7837262	-1.3808838
125	FRNEM093	PSA	F1	79	01/05/2018	05:04	55.7837262	-1.3808838
125	FRNEM093	Macrofauna	G1	79	01/05/2018	05:11	55.7836545	-1.3807658
125	FRNEM093	PSA	G1	79	01/05/2018	05:11	55.7836545	-1.3807658
125	FRNEM093	Macrofauna	H1	79	01/05/2018	05:18	55.7836	-1.3806587
125	FRNEM093	PSA	H1	79	01/05/2018	05:18	55.7836	-1.3806587
125	FRNEM093	Macrofauna	I3	79	01/05/2018	05:47	55.7840664	-1.380793
125	FRNEM093	PSA	I3	79	01/05/2018	05:47	55.7840664	-1.380793

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
125	FRNEM093	Macrofauna	J5	79	01/05/2018	06:23	55.7838016	-1.3812328
125	FRNEM093	PSA	J5	79	01/05/2018	06:23	55.7838016	-1.3812328
126	FRNEM091	Macrofauna	A2	69	01/05/2018	07:35	55.7085614	-1.4313992
126	FRNEM091	PSA	A2	69	01/05/2018	07:35	55.7085614	-1.4313992
126	FRNEM091	Macrofauna	B3	69	01/05/2018	08:00	55.7085131	-1.4315788
126	FRNEM091	PSA	B3	69	01/05/2018	08:00	55.7085131	-1.4315788
126	FRNEM091	Macrofauna	C2	69	01/05/2018	08:20	55.7084075	-1.4319414
126	FRNEM091	PSA	C2	69	01/05/2018	08:20	55.7084075	-1.4319414
126	FRNEM091	Macrofauna	D1	69	01/05/2018	08:30	55.7083279	-1.4312464
126	FRNEM091	PSA	D1	69	01/05/2018	08:30	55.7083279	-1.4312464
126	FRNEM091	Macrofauna	F2	69	01/05/2018	09:11	55.7082624	-1.4317892
126	FRNEM091	PSA	F2	69	01/05/2018	09:11	55.7082624	-1.4317892
126	FRNEM091	Macrofauna	G2	69	01/05/2018	09:38	55.7086016	-1.4310302
126	FRNEM091	PSA	G2	69	01/05/2018	09:38	55.7086016	-1.4310302
126	FRNEM091	Macrofauna	H1	69	01/05/2018	09:45	55.7085549	-1.4308697
126	FRNEM091	PSA	H1	69	01/05/2018	09:45	55.7085549	-1.4308697
126	FRNEM091	Macrofauna	I1	69	01/05/2018	09:54	55.7086776	-1.4307867
126	FRNEM091	PSA	I1	69	01/05/2018	09:54	55.7086776	-1.4307867
126	FRNEM091	Macrofauna	E6	69	01/05/2018	10:38	55.7084462	-1.4311081
126	FRNEM091	PSA	E6	69	01/05/2018	10:38	55.7084462	-1.4311081
126	FRNEM091	Macrofauna	J4	69	01/05/2018	10:44	55.7084347	-1.4310857
126	FRNEM091	PSA	J4	69	01/05/2018	10:44	55.7084347	-1.4310857
127	FRNEM092	Macrofauna	A1	79	01/05/2018	11:18	55.7121472	-1.3841682
127	FRNEM092	PSA	A1	79	01/05/2018	11:18	55.7121472	-1.3841682
127	FRNEM092	Macrofauna	B1	79	01/05/2018	11:25	55.7121936	-1.383848

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
127	FRNEM092	PSA	B1	79	01/05/2018	11:25	55.7121936	-1.383848
127	FRNEM092	Macrofauna	C1	79	01/05/2018	11:32	55.7123195	-1.3836549
127	FRNEM092	PSA	C1	79	01/05/2018	11:32	55.7123195	-1.3836549
127	FRNEM092	Macrofauna	D1	79	01/05/2018	11:40	55.7123938	-1.384141
127	FRNEM092	PSA	D1	79	01/05/2018	11:40	55.7123938	-1.384141
127	FRNEM092	Macrofauna	E1	79	01/05/2018	11:47	55.7123311	-1.384492
127	FRNEM092	PSA	E1	79	01/05/2018	11:47	55.7123311	-1.384492
127	FRNEM092	Macrofauna	F1	79	01/05/2018	11:55	55.7123904	-1.3849214
127	FRNEM092	PSA	F1	79	01/05/2018	11:55	55.7123904	-1.3849214
127	FRNEM092	Macrofauna	G1	79	01/05/2018	12:01	55.7124647	-1.384711
127	FRNEM092	PSA	G1	79	01/05/2018	12:01	55.7124647	-1.384711
127	FRNEM092	Macrofauna	H1	79	01/05/2018	12:08	55.7125995	-1.3849544
127	FRNEM092	PSA	H1	79	01/05/2018	12:08	55.7125995	-1.3849544
127	FRNEM092	Macrofauna	I1	79	01/05/2018	12:16	55.7126295	-1.3845891
127	FRNEM092	PSA	I1	79	01/05/2018	12:16	55.7126295	-1.3845891
127	FRNEM092	Macrofauna	J1	79	01/05/2018	12:33	55.7126172	-1.38425
127	FRNEM092	PSA	J1	79	01/05/2018	12:33	55.7126172	-1.38425
129	FRNEM089	Macrofauna	A1	100	01/05/2018	15:41	55.6026831	-1.2958844
129	FRNEM089	PSA	A1	100	01/05/2018	15:41	55.6026831	-1.2958844
129	FRNEM089	Macrofauna	B1	100	01/05/2018	15:49	55.6025898	-1.2958428
129	FRNEM089	PSA	B1	100	01/05/2018	15:49	55.6025898	-1.2958428
129	FRNEM089	Macrofauna	C1	100	01/05/2018	16:35	55.6025563	-1.2957399
129	FRNEM089	PSA	C1	100	01/05/2018	16:35	55.6025563	-1.2957399
129	FRNEM089	Macrofauna	D1	100	01/05/2018	16:43	55.6024573	-1.2957404
129	FRNEM089	PSA	D1	100	01/05/2018	16:43	55.6024573	-1.2957404

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
129	FRNEM089	Macrofauna	E1	100	01/05/2018	16:49	55.6023403	-1.2956778
129	FRNEM089	PSA	E1	100	01/05/2018	16:49	55.6023403	-1.2956778
129	FRNEM089	Macrofauna	F1	100	01/05/2018	16:58	55.6022838	-1.2956218
129	FRNEM089	PSA	F1	100	01/05/2018	16:58	55.6022838	-1.2956218
129	FRNEM089	Macrofauna	G1	100	01/05/2018	17:05	55.6021537	-1.2956238
129	FRNEM089	PSA	G1	100	01/05/2018	17:05	55.6021537	-1.2956238
129	FRNEM089	Macrofauna	H1	100	01/05/2018	17:12	55.6021837	-1.2957403
129	FRNEM089	PSA	H1	100	01/05/2018	17:12	55.6021837	-1.2957403
129	FRNEM089	Macrofauna	I1	100	01/05/2018	17:24	55.6022695	-1.2958161
129	FRNEM089	PSA	I1	100	01/05/2018	17:24	55.6022695	-1.2958161
129	FRNEM089	Macrofauna	J1	100	01/05/2018	17:31	55.6023894	-1.2958653
129	FRNEM089	PSA	J1	100	01/05/2018	17:31	55.6023894	-1.2958653
130	FRNEM046	Macrofauna	A1	97	01/05/2018	18:01	55.6064881	-1.3362868
130	FRNEM046	PSA	A1	97	01/05/2018	18:01	55.6064881	-1.3362868
132	FRNEM051	Macrofauna	A2	96	01/05/2018	19:55	55.6100724	-1.3215619
132	FRNEM051	PSA	A2	96	01/05/2018	19:55	55.6100724	-1.3215619
134	FRNEM056	Macrofauna	A1	91	01/05/2018	22:02	55.6182376	-1.3131912
134	FRNEM056	PSA	A1	91	01/05/2018	22:02	55.6182376	-1.3131912
136	FRNEM052	Macrofauna	A1	93	01/05/2018	23:34	55.6099692	-1.3047249
136	FRNEM052	PSA	A1	93	01/05/2018	23:34	55.6099692	-1.3047249
138	FRNEM053	Macrofauna	A1	98	02/05/2008	00:39	55.6098496	-1.2876069
138	FRNEM053	PSA	A1	98	02/05/2008	00:39	55.6098496	-1.2876069
140	FRNEM047	Macrofauna	A1	96	02/05/2008	01:53	55.5937087	-1.3004372
140	FRNEM047	PSA	A1	96	02/05/2008	01:53	55.5937087	-1.3004372
141	FRNEM049	Macrofauna	A1	100	02/05/2008	03:05	55.5973324	-1.280225

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
141	FRNEM049	PSA	A1	100	02/05/2008	03:05	55.5973324	-1.280225
142	FRNEM050	Macrofauna	A1	98	02/05/2008	03:33	55.6000577	-1.2583638
142	FRNEM050	PSA	A1	98	02/05/2008	03:33	55.6000577	-1.2583638
143	FRNEM054	Macrofauna	A1	99	02/05/2008	04:00	55.6057483	-1.2717859
143	FRNEM054	PSA	A1	99	02/05/2008	04:00	55.6057483	-1.2717859
144	FRNEM055	Macrofauna	A1	98	02/05/2008	04:26	55.6122059	-1.2563443
144	FRNEM055	PSA	A1	98	02/05/2008	04:26	55.6122059	-1.2563443
145	FRNEM059	Macrofauna	A1	94	02/05/2008	04:52	55.6232963	-1.2653672
145	FRNEM059	PSA	A1	94	02/05/2008	04:52	55.6232963	-1.2653672
146	FRNEM058	Macrofauna	A1	95	02/05/2008	05:16	55.61801	-1.2783055
146	FRNEM058	PSA	A1	95	02/05/2008	05:16	55.61801	-1.2783055
154	FRNEM073	Macrofauna	A1	96	02/05/2008	14:35	55.638051	-1.2333578
154	FRNEM073	PSA	A1	96	02/05/2008	14:35	55.638051	-1.2333578
156	FRNEM074	Macrofauna	A1	97	02/05/2008	15:36	55.6377458	-1.21633
156	FRNEM074	PSA	A1	97	02/05/2008	15:36	55.6377458	-1.21633
158	FRNEM065	Macrofauna	A1	95	02/05/2008	22:38	55.6299581	-1.2252344
158	FRNEM065	PSA	A1	95	02/05/2008	22:38	55.6299581	-1.2252344
160	FRNEM075	Macrofauna	A1	91	02/05/2008	23:51	55.638215	-1.1998295
160	FRNEM075	PSA	A1	91	02/05/2008	23:51	55.638215	-1.1998295
162	FRNEM076	Macrofauna	A1	97	03/05/2018	00:47	55.6379725	-1.1826607
162	FRNEM076	PSA	A1	97	03/05/2018	00:47	55.6379725	-1.1826607
164	FRNEM067	Macrofauna	A1	99	03/05/2018	01:52	55.6293087	-1.1906854
164	FRNEM067	PSA	A1	99	03/05/2018	01:52	55.6293087	-1.1906854
166	FRNEM062	Macrofauna	A1	102	03/05/2018	02:55	55.6209468	-1.1995388
166	FRNEM062	PSA	A1	102	03/05/2018	02:55	55.6209468	-1.1995388

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
169	FRNEM090	Macrofauna	A1	99	03/05/2018	05:00	55.6418117	-1.122635
169	FRNEM090	PSA	A1	99	03/05/2018	05:00	55.6418117	-1.122635
169	FRNEM090	Macrofauna	B1	99	03/05/2018	05:07	55.6417584	-1.1225194
169	FRNEM090	PSA	B1	99	03/05/2018	05:07	55.6417584	-1.1225194
169	FRNEM090	Macrofauna	C1	99	03/05/2018	05:14	55.6416922	-1.1224338
169	FRNEM090	PSA	C1	99	03/05/2018	05:14	55.6416922	-1.1224338
169	FRNEM090	Macrofauna	D1	99	03/05/2018	05:23	55.6414603	-1.1220672
169	FRNEM090	PSA	D1	99	03/05/2018	05:23	55.6414603	-1.1220672
169	FRNEM090	Macrofauna	E1	99	03/05/2018	05:30	55.6413822	-1.12215
169	FRNEM090	PSA	E1	99	03/05/2018	05:30	55.6413822	-1.12215
169	FRNEM090	Macrofauna	F1	99	03/05/2018	05:38	55.6413577	-1.1226163
169	FRNEM090	PSA	F1	99	03/05/2018	05:38	55.6413577	-1.1226163
169	FRNEM090	Macrofauna	G1	99	03/05/2018	05:45	55.6414133	-1.1226961
169	FRNEM090	PSA	G1	99	03/05/2018	05:45	55.6414133	-1.1226961
169	FRNEM090	Macrofauna	H1	99	03/05/2018	05:54	55.6416215	-1.1228027
169	FRNEM090	PSA	H1	99	03/05/2018	05:54	55.6416215	-1.1228027
169	FRNEM090	Macrofauna	I1	99	03/05/2018	06:01	55.6417395	-1.1227972
169	FRNEM090	PSA	I1	99	03/05/2018	06:01	55.6417395	-1.1227972
169	FRNEM090	Macrofauna	J1	99	03/05/2018	06:11	55.641865	-1.1222254
169	FRNEM090	PSA	J1	99	03/05/2018	06:11	55.641865	-1.1222254
170	FRNEM068	Macrofauna	A1	97	03/05/2018	07:07	55.6505234	-1.1240448
170	FRNEM068	PSA	A1	97	03/05/2018	07:07	55.6505234	-1.1240448
172	FRNEM069	Macrofauna	A1	93	03/05/2018	08:08	55.6504099	-1.1076657
172	FRNEM069	PSA	A1	93	03/05/2018	08:08	55.6504099	-1.1076657
174	FRNEM078	Macrofauna	A1	89	03/05/2018	09:10	55.6588696	-1.1156586

Station No.	Station Code	Analysis	Replicate	Depth (m)	Date	Time	Latitude	Longitude
174	FRNEM078	PSA	A1	89	03/05/2018	09:10	55.6588696	-1.1156586
176	FRNEM079	Macrofauna	A1	83	03/05/2018	10:10	55.659026	-1.0988727
176	FRNEM079	PSA	A1	83	03/05/2018	10:10	55.659026	-1.0988727
178	FRNEM085	Macrofauna	A1	85	03/05/2018	11:11	55.6673638	-1.0901368
178	FRNEM085	PSA	A1	85	03/05/2018	11:11	55.6673638	-1.0901368

Table 12. Camera sledge station metadata for North East of Farnes Deep (NEFD) and Farnes East (FRNE). Station Number is a sequential event number for the survey and thus changes each time a new gear is used, or a new location is sampled. Station Code is used to identify the location of the sampling station. Replicate = number of replicates in form A, B, C *etc.* the number indicates the number of attempts e.g. A2 = first replicate, second attempt. All positions are provided in decimal degrees, Latitude / Longitude WGS84.

Station No.	Station Code	Replicate	Depth (m)	Date	SOL Time	Latitude SOL	Longitude SOL	EOL Time	Latitude EOL	Longitude EOL
65	FRNEM018	A1	96	28/04/2018	11:41	55.58746	-1.00611	11:52	55.58831	-1.00527
66	FRNEM045	A1	96	28/04/2018	12:30	55.5793	-1.01855	12:41	55.58007	-1.01759
69	FRNEM007	A1	99	28/04/2018	14:47	55.57884	-1.03243	14:58	55.57975	-1.03214
71	FRNEM006	A1	101	28/04/2018	15:39	55.57903	-1.04914	15:50	55.57986	-1.04959
73	FRNEM005	A2	107	28/04/2018	17:31	55.57927	-1.06621	17:42	55.57836	-1.06634
75	FRNEM004	A1	110	28/04/2018	18:27	55.57933	-1.0829	18:38	55.5785	-1.08256
77	FRNEM003	A1	111	28/04/2018	19:27	55.57971	-1.10007	19:38	55.57904	-1.0991
79	FRNEM002	A1	107	28/04/2018	20:27	55.57956	-1.11696	20:38	55.5788	-1.11611
80	FRNEM044	A1	104	28/04/2018	21:27	55.57996	-1.13435	21:38	55.57929	-1.13333
83	FRNEM011	A1	95	29/04/2018	00:43	55.57516	-1.16116	00:54	55.57595	-1.16021
85	FRNEM001	A1	98	29/04/2018	01:47	55.57649	-1.18838	01:58	55.57735	-1.1888
86	FRNEM097	A1	87	29/04/2018	02:57	55.5802	-1.19304	03:08	55.58113	-1.19364
89	FRNEM021	A1	92	29/04/2018	06:01	55.58159	-1.17166	06:12	55.58072	-1.17111
91	FRNEM008	A1	91	29/04/2018	07:35	55.58793	-1.15914	07:46	55.58705	-1.15846
93	FRNEM009	A1	93	29/04/2018	08:39	55.58783	-1.14234	08:50	55.58695	-1.14167

Station No.	Station Code	Replicate	Depth (m)	Date	SOL Time	Latitude SOL	Longitude SOL	EOL Time	Latitude EOL	Longitude EOL
95	FRNEM010	A1	106	29/04/2018	09:48	55.58778	-1.12528	10:00	55.58674	-1.1248
97	FRNEM012	A1	110	29/04/2018	12:01	55.58827	-1.10773	12:12	55.58907	-1.10714
98	FRNEM013	A1	112	29/04/2018	13:00	55.58878	-1.09201	13:11	55.58962	-1.09249
101	FRNEM014	A1	109	29/04/2018	14:16	55.58813	-1.07495	14:27	55.58889	-1.0757
103	FRNEM015	A1	106	29/04/2018	15:29	55.58794	-1.05745	15:40	55.58873	-1.05827
105	FRNEM016	A1	95	29/04/2018	16:59	55.58797	-1.04051	17:10	55.58876	-1.04139
107	FRNEM017	A1	97	29/04/2018	17:55	55.58726	-1.02317	18:06	55.5864	-1.0229
109	FRNEM026	A1	95	29/04/2018	18:49	55.59585	-1.03151	19:00	55.59497	-1.03136
111	FRNEM025	A1	101	29/04/2018	19:52	55.59596	-1.04868	20:03	55.59508	-1.04872
113	FRNEM024	A1	101	29/04/2018	20:58	55.59552	-1.06529	21:09	55.59463	-1.06479
115	FRNEM023	A1	105	29/04/2018	22:05	55.59582	-1.08268	22:16	55.59496	-1.08217
128	FRNEM089	A1	101	01/05/2018	15:07	55.60315	-1.29607	15:18	55.604	-1.2968
131	FRNEM046	A2	97	01/05/2018	18:59	55.60629	-1.33696	19:10	55.60545	-1.33753
133	FRNEM051	A2	96	01/05/2018	21:12	55.60988	-1.32114	21:23	55.60913	-1.3201
135	FRNEM056	A1	92	01/05/2018	22:25	55.61774	-1.31216	23:36	55.61695	-1.31128
137	FRNEM052	A1	93	02/05/2018	00:02	55.60943	-1.30379	00:13	55.60862	-1.30301
139	FRNEM053	A1	99	02/05/2018	01:08	55.60904	-1.28642	01:19	55.60857	-1.2851
147	FRNEM058	A1	93	02/05/2018	07:57	55.61759	-1.2782	08:08	55.6167	-1.27757
148	FRNEM059	A1	91	02/05/2018	09:07	55.62226	-1.26507	09:19	55.6213	-1.26447
149	FRNEM055	A1	94	02/05/2018	09:49	55.61207	-1.25656	10:01	55.61111	-1.2557
150	FRNEM054	A1	95	02/05/2018	10:38	55.60547	-1.27174	10:49	55.60468	-1.27089
151	FRNEM050	A1	95	02/05/2018	11:25	55.59952	-1.2578	11:36	55.59879	-1.25681
152	FRNEM049	A1	98	02/05/2018	12:37	55.59693	-1.279	12:48	55.59641	-1.27775
153	FRNEM047	A1	98	02/05/2018	13:32	55.59361	-1.30044	13:43	55.59448	-1.30085
155	FRNEM073	A1	94	02/05/2018	14:58	55.63852	-1.23418	15:09	55.63919	-1.23511
157	FRNEM074	A1	94	02/05/2018	21:14	55.63809	-1.21637	21:25	55.6372	-1.21598

Station No.	Station Code	Replicate	Depth (m)	Date	SOL Time	Latitude SOL	Longitude SOL	EOL Time	Latitude EOL	Longitude EOL
159	FRNEM065	A1	95	02/05/2018	23:04	55.62892	-1.22532	23:16	55.62796	-1.22573
161	FRNEM075	A1	92	03/05/2018	00:10	55.63747	-1.19917	00:22	55.63663	-1.19837
163	FRNEM076	A1	97	03/05/2018	01:10	55.63741	-1.1817	01:22	55.63734	-1.17985
165	FRNEM067	A1	100	03/05/2018	02:20	55.63002	-1.19125	02:32	55.63099	-1.19156
167	FRNEM062	A1	103	03/05/2018	03:16	55.62125	-1.20033	03:28	55.62195	-1.20161
168	FRNEM090	A1	101	03/05/2018	04:27	55.64179	-1.12282	04:40	55.6426	-1.12401
171	FRNEM068	A1	97	03/05/2018	07:27	55.6506	-1.1244	07:38	55.65125	-1.12547
173	FRNEM069	A1	92	03/05/2018	08:30	55.65022	-1.10673	08:41	55.64945	-1.10594
175	FRNEM078	A1	89	03/05/2018	09:28	55.65865	-1.11509	09:40	55.65789	-1.11407
177	FRNEM079	A1	83	03/05/2018	10:28	55.65857	-1.09822	10:39	55.65774	-1.09742
179	FRNEM085	A1	86	03/05/2018	11:26	55.6672	-1.08965	11:39	55.66646	-1.0883
180	FRNEM022	A1	100	03/05/2018	12:41	55.59645	-1.09987	12:52	55.59608	-1.09843

