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Volume 7B Proposed Development (Offshore) Appendices

Appendix 4-2 Environmental Baseline Report (Offshore Export Cable Corridor)

Caledonia Offshore Wind Farm Ltd

5th Floor Atria One, 144 Morrison Street, Edinburgh, EH38EX

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Volume 7B Appendix 4-2 Environmental Baseline Report (Offshore Export Cable Corridor)

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Revision	Issued
Date	18 October 2024

This document contains the following report: 'Caledonia OWF Phase 2 Export Cable Route Environmental Baseline Survey' as prepared by Gardline in November 2023. For the purpose of Consent Application, the document has been retitled to: 'Volume 7B, Appendix 4-2: Environmental Baseline Report (Offshore Export Cable Corridor)', alongside the addition of a new front cover.

Survey Report for:
Caledonia Offshore Wind Farm Limited

Project:
Caledonia OWF Phase 2
Export Cable Route

Description:
Environmental Baseline Survey

Survey Date:
March 2023 to June 2023

Project Number:
54463

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Final

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0	27-Sep-2023	Draft	pdf
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Distribution

Caledonia Offshore Wind Limited
Ocean Winds
5th Floor
Atria One
144 Morrison Street
Edinburgh
EH4 8EX

For attention of

[redacted]

EXECUTIVE SUMMARY

- Integrated survey work along the offshore and nearshore portions of export cable route (ECR) and within the array area, situated in the Moray Firth, were conducted by Gardline Limited on behalf of Caledonia Offshore Wind Farm Limited between March and June 2023 onboard the motor vessel (MV) *Ocean Endeavour*. The nearshore component of the survey was conducted onboard the MV *Titan Discovery* between April and June 2023. Offshore ECR Environmental operations onboard the MV *Ocean Endeavour* were conducted between 19-Mar-2023 and 14-Apr-2023, with the nearshore ECR environmental operations onboard the MV *Titan Discovery* conducted from 02-May-2023 to 21-May-2023.
- Upon completion of the survey, 40 environmental stations were investigated with an additional 19 camera only stations. Of these stations, all except ENV20 and ENV32 had successful sampling suites collected.
- Seabed imagery and observations from grab samples confirmed the presence of sand with varying amounts of gravel and shell fragments.
- Observed fauna was generally sparse, with 57% of stills containing no visible fauna. There was a notable difference in taxa observed in areas of mixed sediment.
- Water profiling at eight stations revealed well mixed upper layers (to *c.*10m). Thermoclines were present at the offshore stations with the nearshore Station ENV53 presenting a well-mixed profile throughout. Dissolved oxygen, pH and turbidity were consistent with published literature for the wider North Sea.
- Particle size analysis at 38 stations supported the seabed imagery with sediment along the ECR classified as sandy gravel to muddy sand under modified Folk (1954). Generally, sand was the dominant fraction accounting for between 54.8% and 98.8% of the sediment.
- Concentrations of total organic carbon at nine stations varied between 0.16% and 0.77% and were positively correlated with fines ($r=0.83$, $p<0.01$).
- Total hydrocarbon concentrations by GC-FID ranged from 2.8µg g^{-1} at the shallowest stations to 18.7µg g^{-1} at the deepest station, with a mean of 10.7µg g^{-1} (±4.6SD). Concentrations of hydrocarbons were below threshold expected to impact faunal communities.
- Gas chromatography traces and the prevalence of higher molecular weight odd-numbered n-alkanes indicated terrestrial plant sources and the residue of highly weathered and biodegraded petrogenic material.
- Total polycyclic aromatic hydrocarbons concentrations were ≤0.150µg g^{-1} and therefore below effect range low (ERL; Long *et al.*, 1995) and apparent effects threshold (AET; Buchman, 2008).
- Concentrations of polychlorinated biphenyls and organotins were below the limit of detection (LOD) at all stations.
- Concentrations of polybrominated diphenyl ethers were below the LOD, with the exception of PBDE 209 at eight of the nine analysed stations, exceeding OSPAR (2020) background assessment criteria after normalisation to 2.5% TOC. However, all concentrations were below Federal Environmental Quality Guidelines (Viñas *et al.*, 2023).
- Organochloropesticides were below LOD at most stations and where recorded did not exceed Cefas Action Level (CAL) 1 (MMO, 2022) concentrations.
- All metal concentrations were below their respective ERLs (Long *et al.*, 1995), AETs (Buchman, 2008) and CALs (MMO, 2022) indicating that toxicological impacts to biota associated with metal concentrations were unlikely to occur.
- A total of 491 operational taxonomic units (OTUs) were recorded from sediment samples along the ECR. This was broken down to 443 bacterial OTUs and 48 infaunal OTUs. Overall, there was a high proportion of widespread taxa and lone taxa suggesting that the community has been subjected to relatively little disturbance.
- A total of 72 OTUs were recorded from water samples, comprising 30 fish OTUs and 42 vertebrate OTUs.
- Macrofaunal analysis identified 1858 adult individuals representing 240 taxa. Polychaetes were the most dominant taxonomic group along the ECR.

- Biomass recorded a total adult wet weight of 270.092g along the ECR. As expected, when classified by biomass, Mollusca was the most dominant taxa, as expected due to the size difference when compared to polychaetes.
- EUNIS classification was conducted based on all data collected from the survey, resulting in six level 4 and two level 5 biotope classifications ranging from MB5233 *Nephtys cirrosa* and *Bathyporeia spp*. in Atlantic infralittoral sand at the nearshore stations to MC6216 Sea pens and burrowing megafauna in Atlantic circalittoral fine mud at the deepest stations.

Report volumes are as follows:

Report	Report No.
Caledonia OWF Array Area Field Report	54463.E0
Caledonia OWF ECR Field Report	54463.E1
Caledonia OWF ECR MMO and PAMS Report	54463.E2
Caledonia OWF Array Area MMO and PAMS Report	54463.E3
Caledonia OWF Array Area Habitat Assessment Report	54463.E4
Caledonia OWF Array Area Environmental Baseline Report	54463.E5
Caledonia OWF ECR Habitat Assessment Report	54463.E6
Caledonia OWF ECR Environmental Baseline Report	54463.E7

USE OF THIS REPORT

This report has been prepared with due care and diligence and with the skill reasonably expected of a reputable contractor experienced in the types of work carried out under the contract and as such the findings in this report are based on an interpretation of data which is a matter of opinion on which professionals may differ and unless clearly stated is not a recommendation of any course of action.

Gardline has prepared this report for the client identified on the front cover in fulfilment of its contractual obligations under the referenced contract and the only liabilities Gardline accept are those contained therein.

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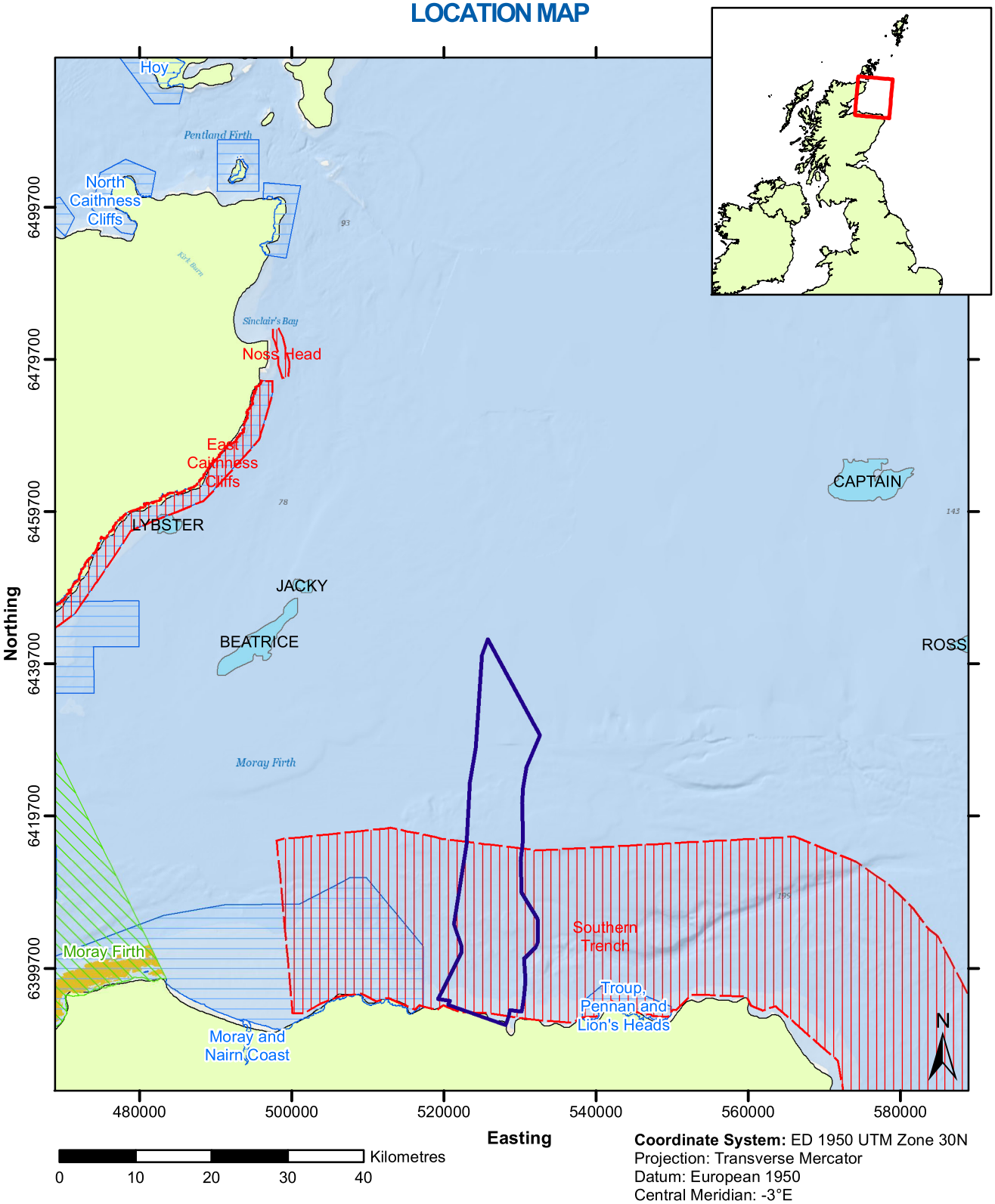
GARDLINE LIMITED
Endeavour House, Admiralty Road, Great Yarmouth, Norfolk, NR30 3NG, England
Telephone +44 (0) 1493 845600 Fax +44 (0) 1493852106
www.gardline.com

LOCATION MAP



Coordinate System: ED 1950 UTM Zone 30N
Projection: Transverse Mercator
Datum: European 1950
Central Meridian: -3°E

Key

- Caledonia Offshore Wind Farm Export Cable Route Survey Area
- Nature Conservation Marine Protected Areas (NCMPA; JNCC, 2022)
- Special Area of Conservation (JNCC, 2022)
- Special Protected Area (JNCC, 2022)
- Oil Field (NSTA, 2022)
- Sandy Sediment in less than 20m water (JNCC, 2019)

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Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

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GLOSSARY OF TERMS AND ABBREVIATIONS

AET	Apparent Effects Threshold
Aliphatic	An organic compound having open-chain structure (see Alkane)
Alkane	Any of a series of open-chain, saturated hydrocarbons C_nH_{2n+2} (*e.g.* methane, ethane)
Anthropogenic	Produced or caused by human activity
BAC	Background Assessment Criteria
BC(s)	Background Concentration(s)
Benthic	Relating to the seabed
Biogenic	Produced by living organisms
BSI	British Standards Institute
CAL	Cefas Action Level
CCC	Continuing Calibration Check
Cefas	Centre of Environment Fisheries and Aquaculture Science
CEMP	Coordinated Environmental Management Programme
CHEM	Chemistry Sample
Clay	Sediment grains <3.9µm in diameter
CM	Central Meridian
CPI	Carbon Preference Index
CTD	Conductivity, Temperature and Depth Profiler
DCM	Dichloromethane
DO	Dissolved Oxygen
EAC	Environmental Assessment Criteria
EBS	Environmental Baseline Survey
ECR	Export Cable Route
EEA	European Environment Agency
ERL	Effects Range Low
ERM	Effects Range Median
EQR	Ecological Quality Ratio
EUNIS	European Union Nature Identification System
Fines	Sediment grains <63µm in diameter (same as Mud)
FTU	Formazine Turbidity Units
GC	Gas Chromatography
GC-FID	Gas Chromatography Flame Ionisation Detection
GC-MS	Gas Chromatography Mass Spectrometry
GC-MS-MS	Triple Quadrupole Mass Spectrometer
Gravel	Sediment grains >2mm in diameter
HF	Hydrofluoric Acid
HMW	High Molecular Weight
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
LAT	Lowest Astronomical Tide
LMW	Low Molecular Weight
LOD	Limit of Detection
Macrofauna	Organisms that are normally larger than the mesh size of the sieve used. Then state the sieve size *e.g.*, "In this case 1mm".
MBES	Multi-beam Echo Sounder
MDS	Multi Dimensional Scaling
Meiofauna	Organisms that are usually smaller than the mesh size of the sieve used. Then state the sieve size *e.g.*, "In this case 1mm".
MMO	Marine Management Organisation
Mud	Sediment grains <63µm (includes Silt and Clay)
MV	Motor Vessel
NDIR	Non-dispersive infrared
NMBAQC	North East Atlantic Marine Biological Analytical Quality Control
NPD	Naphthalenes, phenanthrenes and dibenzothiophenes
NSTA	North Sea Transit Authority
OCP	Organochlorine Pesticide
OSPAR	Oslo and Paris convention
OTU	Operational Taxonomic Unit
OWF	Offshore Wind Farm
PAH(s)	Polycyclic aromatic hydrocarbon(s)
PBDE	Polybrominated Diphenyl Ether
PCB	Polychlorinated Biphenyl
PCR	Polymerase Chain Reaction
Petrogenic	Relating to unburned petroleum products
PMF	Priority Marine Feature
PRIMER	A statistical analysis program - Plymouth Routines in Multivariate Research
PSA	Particle Size Analysis
PSU	Practical Salinity Units
Pyrogenic	Produced under conditions involving intense heat
QC	Quality Control
SAC	Special Area of Conservation
Sand	Sediment grains ≥63µm and <2mm in diameter
SD	Standard deviation
Silt	Sediment grains ≥3.9µm and <63µm in diameter
Sobs	A species accumulation curve with samples added in label order
Sorting	Measure of the range of grain sizes in a sediment sample
SSS	Side Scan Sonar
THC	Total Hydrocarbon
TOC	Total Organic Carbon
UCM	Unresolved Complex Mixture
UGE	A smoothed species accumulation curve based on samples being added randomly and averaged over several runs
UKCS	United Kingdom Continental Shelf
UKOOA	United Kingdom Offshore Operators Association
USBL	Ultra-Short Baseline
US EPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
UVF	Ultra-Violet Fluorescence Spectroscopy

1 INTRODUCTION

1.1 Scope of Work

Between March and June 2023, Gardline Limited (Gardline) and Titan Environmental Surveys (Titan) conducted an integrated survey on behalf of Calendonia Offshore Wind Farm Limited across the associated export cable routes (ECR) located in the outer regions of the Moray Firth.

The offshore portion of the survey was conducted on the motor vessel (MV) *Ocean Endeavour* between 03-Mar-2023 and 12-Jun-2023, with environmental operations taking place between from 19-Mar-2023 to 14-Apr-2023. The nearshore component of the survey was conducted onboard the MV *Titan Discovery* between 16-Apr-2023 and 06-Jun-2023, with environmental operations taking place from 02-May-2023 to 21-May-2023. The current report details the full environmental baseline survey (EBS) results. Results of the habitat assessment (Gardline, 2023b) and geophysical survey (Gardline, 2023a) are reported separately, with results summarised within this report where relevant.

As detailed in the scope of work (Appendix A), the overall aim of the survey was data collection to support the design of the proposed offshore windfarm infrastructure along the ECR and to continue works undertaken during the Caledonia Reconnaissance Geophysical Survey in 2022. To support the placement and design of proposed offshore subsea facilities within the survey area a multi-discipline survey was required.

The objectives of the environmental survey were:

- characterise the benthic sub-tidal environment that is present across the footprint of the ECR.
- identify the occurrence and distribution of any habitats or species of conservation interest.
- characterise the grain type and levels of contaminants within the seabed sediments.

All positional information in this report is referenced to WGS 1984. All grid coordinates are projected using Universal Transverse Mercator (UTM) Projection Grid Zone 30N, Central Meridian (CM) 3°W.

1.2 Environmental Survey Strategy

Details of the station locations are summarised in Table 1.1. Target and actual sampling locations, the latter of which may be slightly offset from the former, are presented in Figure 1.1 to Figure 1.5 and in the Surveyors' log sheets in Appendix B. A selection of photographs from the seabed imagery and of the recovered grab samples is presented in Appendix C. Sampling and analytical methods are detailed in Appendix D.

To enable clear and concise reporting, the naming convention of the stations have been shortened by the removal of the 'ECR_' station identifier. These shortened names have been used throughout the report where possible, though the original full names have been retained in survey logs, the image file names and on the video overlays. The abbreviated station names have been presented in Table 1.1 along with details of grab samples and seabed imagery data acquired.

A total of 64 stations were pre-selected by the client across the ECR to meet the objectives of the SOW (Appendix A). This included 4 stations covering the inshore part of the survey corridor. Of the 64 stations, 24 were camera-only transects focussing on substrates consisting of potential Annex I habitats, with the remaining 40 stations co-located with sediment sampling. Stations ENV38 and ENV39 utilised the C-Technics digital camera system, with the remaining stations investigated with the Kongsberg digital camera. Of the 64 stations investigated with the camera system, imagery from 27 stations was analysed for the occurrence and distribution of any habitats or species of conservation interest and only these camera transects have been plotted in

Figure 1.1 to Figure 1.5. Across the remaining 36 stations, seabed imagery was used for grab sampling pre-clearance purposes only at 34 stations and was of insufficient quality to conduct analysis at the remaining two stations (ENV60 and ENV64).

Benthic sampling was undertaken at 40 stations and other than at Stations ENV20 and ENV32, all were successfully sampled. At Station ENV20, failed sampling attempts due to in the grab sample or pebbles becoming stuck in the grab's jaw leading to sample washout, meant that a full suite of samples was not collected from this station. Similarly, no grab samples were acquired at Station ENV32 due to either low retention in the grab sample or pebbles becoming stuck in the grab's jaw.

Using the 0.1m^2 mini-Hamon grab, two macrofaunal samples were acquired. With the exception of Station ENV08, these were sub-sampled for particle size analysis (PSA), prior to being sieved onboard through a 1mm sieve to provide benthic macrofaunal samples, which were preserved in formaldehyde solution. One of the faunal samples (MFA) was processed in the laboratory, with the second sample (MFB) retained at Gardline's premises as a spare. At Station ENV08, following several failed sampling attempts, the PSA sample was acquired through a separate deployment of the grab due to the low sample volume of the MFA and MFB samples. At nine of the stations (as detailed in Table 1.1), sub-samples for environmental DNA (eDNA) analysis were also taken from the fauna samples.

Using the 0.1m^2 Day grab for acquisition of chemistry samples at nine of the stations (as detailed in Table 1.1), one sample (designated CHEM) from each station was sub-sampled for analysis of hydrocarbons, metals, organotins, polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs) and organochlorine pesticides (OCPs).

CTD profiles and water sample were also acquired at eight stations (as detailed in Table 1.1). Two water samples, one near the seabed and one below the sea surface, were acquired at each station for eDNA analysis.

Table 1.1 Summary of Environmental Station Target Positions and Data Acquired

Target ID	Station ID for use in the Report	Start Easting[1]	Start Northing[1]	End Easting[1]	End Northing[1]	Observed Water Depth[2] (m)	Description	Camera[3]	CTD Profile	Failed Sampling Attempts	Fauna[4]	Sediment Sub-samples			Water Sub-samples
												Chemistry[5]	Particle Size[5]	eDNA[5]	eDNA[5]
Offshore Stations															
ECR_ENV_01	ENV01	527 943	6 394 888			35	High side scan sonar (SSS) reflectivity, sand and slightly gravelly sand, seabed depressions and large sand waves	Y		3	2		2		
ECR_ENV_02	ENV02	525 003	6 404 670			88	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_03	ENV03	527 815	6 422 341			74	General flat seabed, low SSS reflectivity, sandy sediment	Y		1	2		2		
ECR_ENV_04	ENV04	526 524	6 410 862			83	General flat seabed, low SSS reflectivity, sandy sediment	Y	Y		2	2	2	2	2
ECR_ENV_05	ENV05	529 726	6 431 936			75	General flat seabed, low SSS reflectivity, sandy sediment	Y		1	2		2		
ECR_ENV_06	ENV06	527 936	6 415 791			71	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_07	ENV07	523 782	6 395 200			32	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_08	ENV08	526 625	6 398 004			73	Edge of gradual slope, low SSS reflectivity, sandy sediment	Y		3	2		2[6]		
ECR_ENV_09	ENV09	524 422	6 407 875			87	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_10	ENV10	526 895	6 427 550			78	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_11	ENV11	527 403	6 419 346			68	Area of medium to high SSS reflectivity, mixed sediment, some seabed depressions	Y		4	2		2		
ECR_ENV_12	ENV12	527 238	6 406 199			90	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_13	ENV13	525 888	6 415 996			63	General flat seabed, low SSS reflectivity, sandy sediment	Y	Y		2	2	2	2	2
ECR_ENV_14	ENV14	528 139	6 404 768			69	Top of large seabed outcrop, shows medium SSS reflectivity, sandy/mixed sediment	Y		4	2		2		
ECR_ENV_15	ENV15	524 539	6 397 554			52	Top of large sand wave, indicates a transition area between low and high SSS reflectivity, mixed sediment, slight seabed elevation	Y			2		2		
ECR_ENV_16	ENV16	525 425	6 395 985			40	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_17	ENV17	525 686	6 399 992			75	General flat seabed, low SSS reflectivity, sandy sediment	Y	Y		2	2	2	2	2
ECR_ENV_18	ENV18	529 459	6 435 225			69	Transition between low and high SSS reflectivity, mixed sediment	Y			2		2		
ECR_ENV_19	ENV19	526 293	6 412 287			79	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_20	ENV20	522 015	6 396 359			32	Potential rock outcrop, High SSS reflectivity, sandy/gravel sediment, possible reef structure	Y		4	2		0		
ECR_ENV_21	ENV21	528 145	6 396 764			48	General flat seabed, medium SSS reflectivity, sandy/gravel sediment	Y		1	2		2		
ECR_ENV_22	ENV22	526 407	6 421 398			64	Medium SSS reflectivity, mixed sediment, seabed elevation, mega ripples	Y			2		2		
ECR_ENV_23	ENV23	526 710	6 414 359			74	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_24	ENV24	526 032	6 407 680			92	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_25	ENV25	528 441	6 398 316			75	General flat seabed, low SSS reflectivity, sandy sediment	Y		1	2		2		
ECR_ENV_26	ENV26	528 618	6 402 532			110	Bottom of trench, low SSS reflectivity, sandy sediment	Y	Y		2	2	2	2	2
ECR_ENV_27	ENV27	527 955	6 408 300			90	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_28	ENV28	527 328	6 425 044			78	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_29	ENV29	526 548	6 423 621			83	Bottom of shoaling seabed, low SSS reflectivity, sandy sediment	Y	Y		2	2	2	2	2
ECR_ENV_30	ENV30	527 788	6 431 898			74	General flat seabed, low SSS reflectivity, sandy sediment	Y		1	2		2		
ECR_ENV_31	ENV31	529 151	6 429 215			76	General flat seabed, low SSS reflectivity, sandy sediment	Y	Y	1	2	2	2	2	2
ECR_ENV_32	ENV32	525 129	6 418 432			62	Slope of seabed outcrop, low to high SSS reflectivity, sandy/gravel sediment	Y		6	0		0		
ECR_ENV_33	ENV33	527 780	6 399 737			92	General flat seabed, low SSS reflectivity, sandy sediment	Y		2	2		2		
ECR_ENV_34	ENV34	526 390	6 430 516			76	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		
ECR_ENV_35	ENV35	528 927	6 405 414			78	General flat seabed, low SSS reflectivity, sandy sediment	Y			2		2		

Target ID	Station ID for use in the Report	Start Easting[1]	Start Northing[1]	End Easting[1]	End Northing[1]	Observed Water Depth[2] (m)	Description	Camera[3]	CTD Profile	Failed Sampling Attempts	Fauna[4]	Sediment Sub-samples			Water Sub-samples
												Chemistry[5]	Particle Size[5]	eDNA[5]	eDNA[5]
ECR_ENV_36	ENV36	527 614	6 435 820			73	General flat seabed, low SSS reflectivity, sandy sediment	Y	Y	1	2	2	2	2	2
ECR_ENV_37	ENV37	526 607	6 399 300	526 580	6 399 341	75	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_38	ENV38	523 646	6 398 992	523 620	6 399 028	60	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_39	ENV39	523 566	6 396 273	523 550	6 396 320	40	General flat seabed, high SSS reflectivity, sandy/gravel sediment	Y							
ECR_ENV_40	ENV40	527 687	6 437 681	527 728	6 437 665	69	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_41	ENV41	529 600	6 430 646	529 638	6 430 651	74	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_42	ENV42	526 559	6 425 774	526 595	6 425 780	78	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_43	ENV43	526 959	6 417 301	527 000	6 417 289	64	General flat seabed, high SSS reflectivity, sandy/gravel sediment	Y							
ECR_ENV_44	ENV44	525 589	6 411 512	525 640	6 411 514	77	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_45	ENV45	527 524	6 410 067	527 574	6 410 062	83	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_46	ENV46	524 818	6 408 957	524 868	6 408 955	86	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_47	ENV47	525 217	6 406 950	525 218	6 406 904	86	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_48	ENV48	528 397	6 406 983	528 349	6 406 985	95	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_49	ENV49	526 330	6 405 008	526 285	6 404 996	71	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_50	ENV50	529 508	6 403 681	529 558	6 403 686	98	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_51	ENV51	527 934	6 400 689	527 932	6 400 736	98	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_52	ENV52	525 152	6 402 576	525 148	6 402 622	93	General flat seabed, low SSS reflectivity, sandy sediment	Y							
ECR_ENV_53	ENV53	525 615	6 394 765			31	Transition between low and high SSS reflectivity, mixed sediment and potential rocky outcrops	Y	Y		2	2	2	2	2
ECR_ENV_54	ENV54	528 222	6 399 816	528 225	6 399 773	97	Large seabed depression with high SSS reflectivity centre	Y							
ECR_ENV_55	ENV55	526 580	6 402 950	526 550	6 402 913	108	Large seabed depression with high SSS reflectivity centre	Y							
ECR_ENV_60	ENV60	522 606	6 397 249	522 612	6 397 102	39	Mottled SSS reflectivity with slight/ low bathymetric changes	Y							
ECR_ENV_61	ENV61	523 342	6 398 248	523 384	6 398 133	50	Mottled SSS reflectivity with slight/ low bathymetric changes.	Y							
ECR_ENV_62	ENV62	524 127	6 397 212	521 136	6 397 036	46	Higher SSS reflectivity area.	Y							
ECR_ENV_63	ENV63	525 787	6 420 121	525 918	6 420 064	60	Bathymetric feature with higher SSS reflectivity	Y							
ECR_ENV_64	ENV64	525 504	6 419 160	525 486	6 419 034	65	Bathymetric feature with mottled higher SSS reflectivity	Y							
Nearshore Stations															
ECR_ENV_56	ENV56	526 019	6 393 557	NA	NA	NA	Adjusted to target rocky area	Y							
ECR_ENV_57	ENV57	527 011	6 392 977	NA	NA	13	Client specified	Y		2	2		2		
ECR_ENV_58	ENV58	523 103	6 394 101	NA	NA	20	Client specified	Y		4	2	2	2		
ECR_ENV_59	ENV59	521 403	6 395 099	NA	NA	29	Client specified	Y		1	2		2		
							Total Stations Investigated	**64**	**8**	**17**	**40**	**9**	**40**	**8**	**8**
							Total Stations Analysed	**27**	**8**	**17**	**39**	**9**	**38**	**8**	**8**

1 Environmental target locations. Actual sampling positions for each individual grab sample are detailed in Appendix B.
2 Actual depth at time of sampling, not corrected to lowest astronomical tide (LAT)
3 Stations investigated with the camera system but not analysed only are greyed out and not plotted in Figure 1.1 to Figure 1.5.
4 PSA sub-sample removed prior to sieving through a 1mm mesh sieve. One macrofauna sample was sent to be analysed, one sample kept as a spare at room temperature. Analysis methods are as detailed in Appendix D.
5 Each sub-sample comprises one to be analysed and one to be retained as a spare. Analysis methods are as detailed in Appendix D.
6 PSA sample at Station ENV08 was taken from a separate deployment of the grab. At all other stations, PSA was taken from the fauna samples.

Figure 1.1 Target and Actual Sampling Locations; Stations ENV01 to ENV26

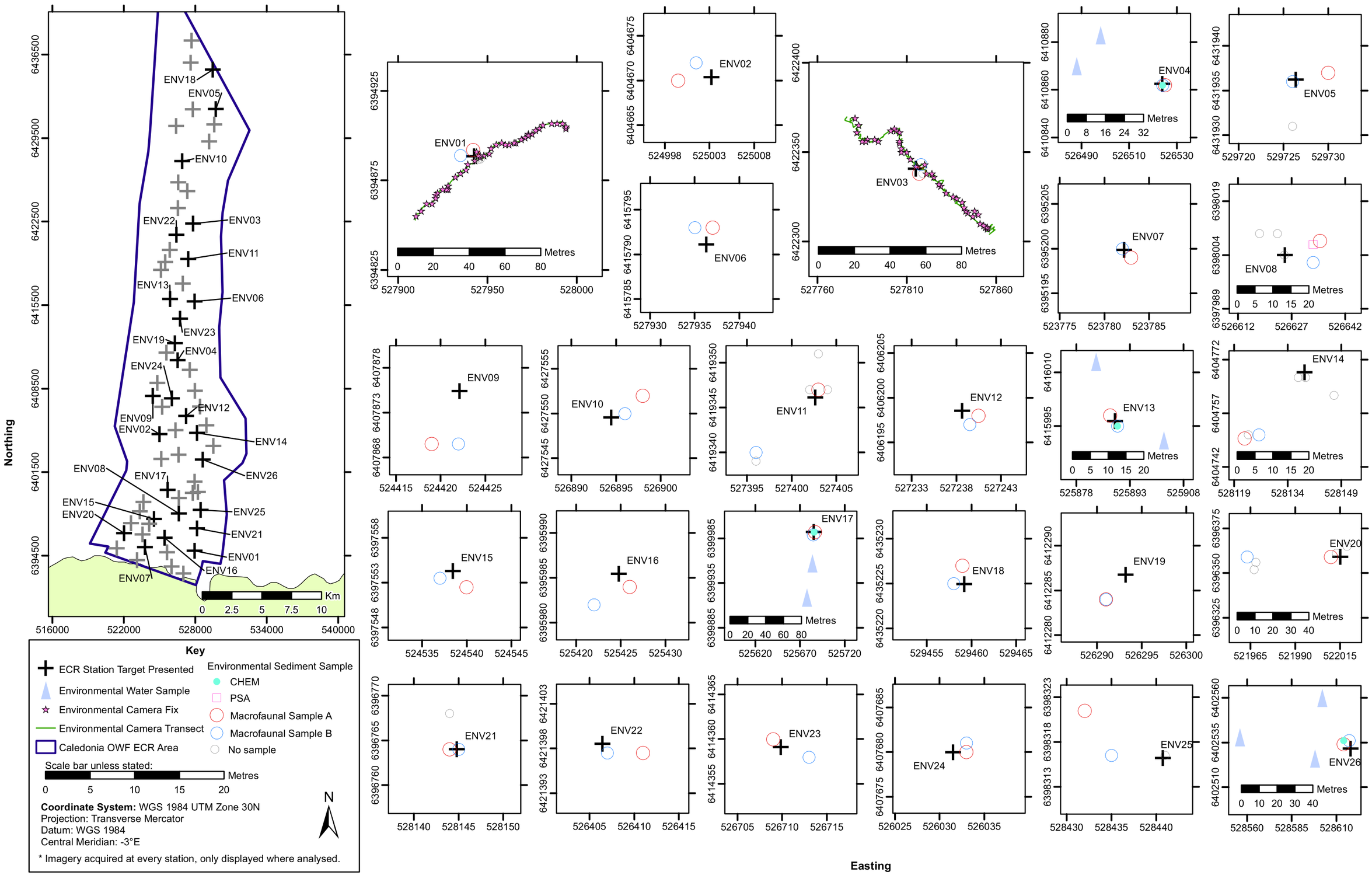


Figure 1.2 Target and Actual Sampling Locations; Stations ENV27 to ENV42

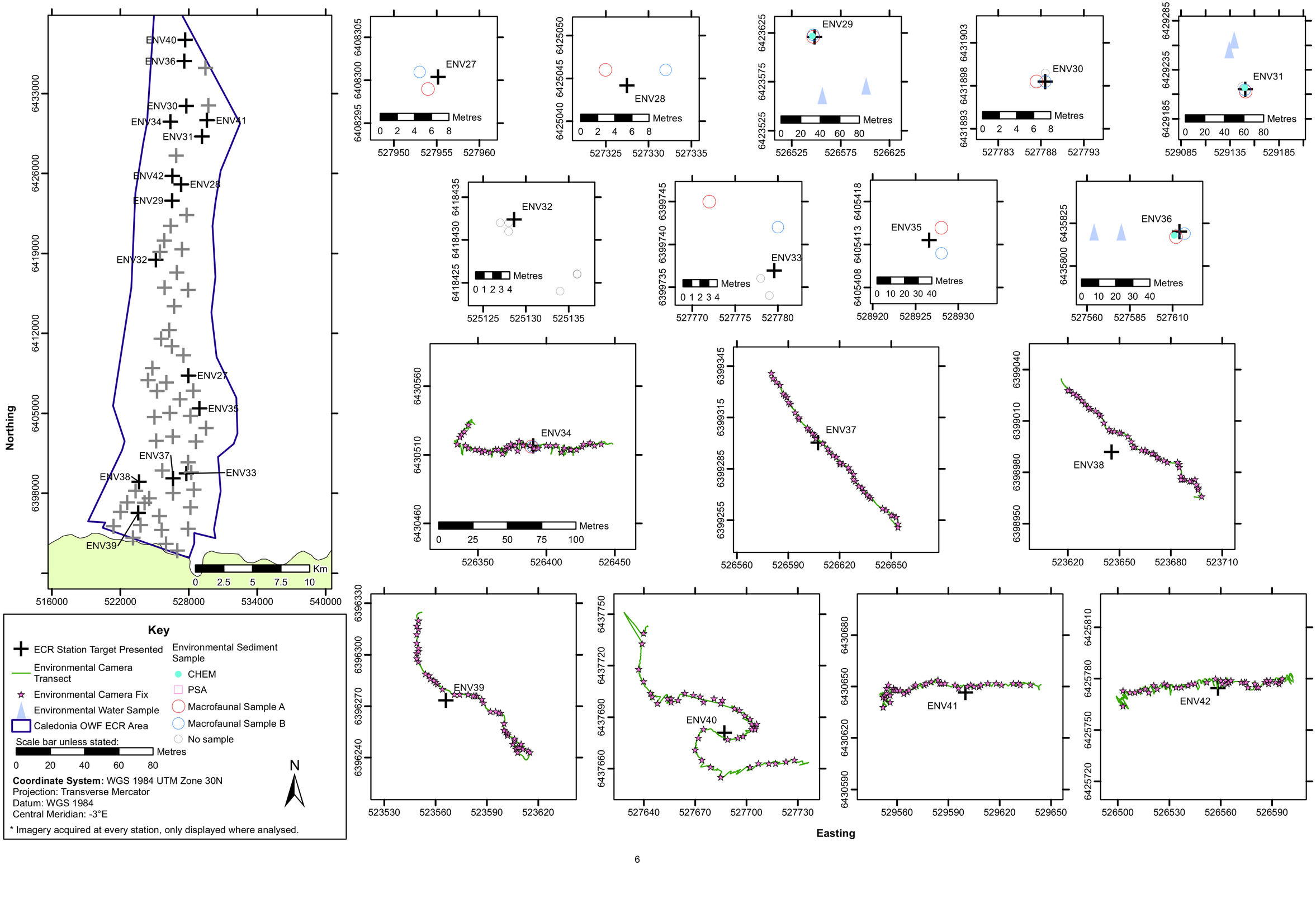


Figure 1.3 Target and Actual Sampling Locations; Stations ENV43 to ENV55

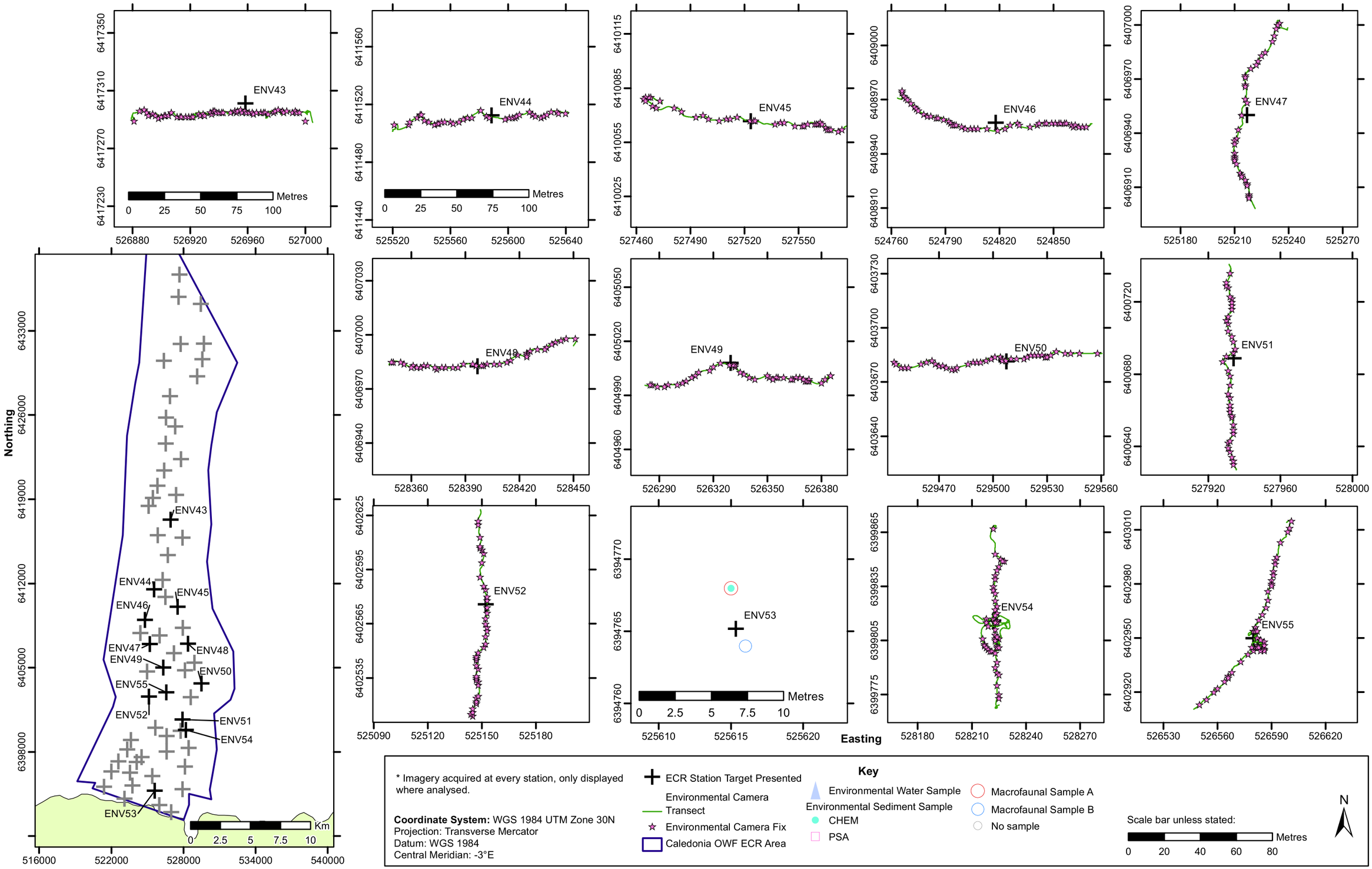


Figure 1.4 Target and Actual Sampling Locations; Stations ENV60 to ENV64

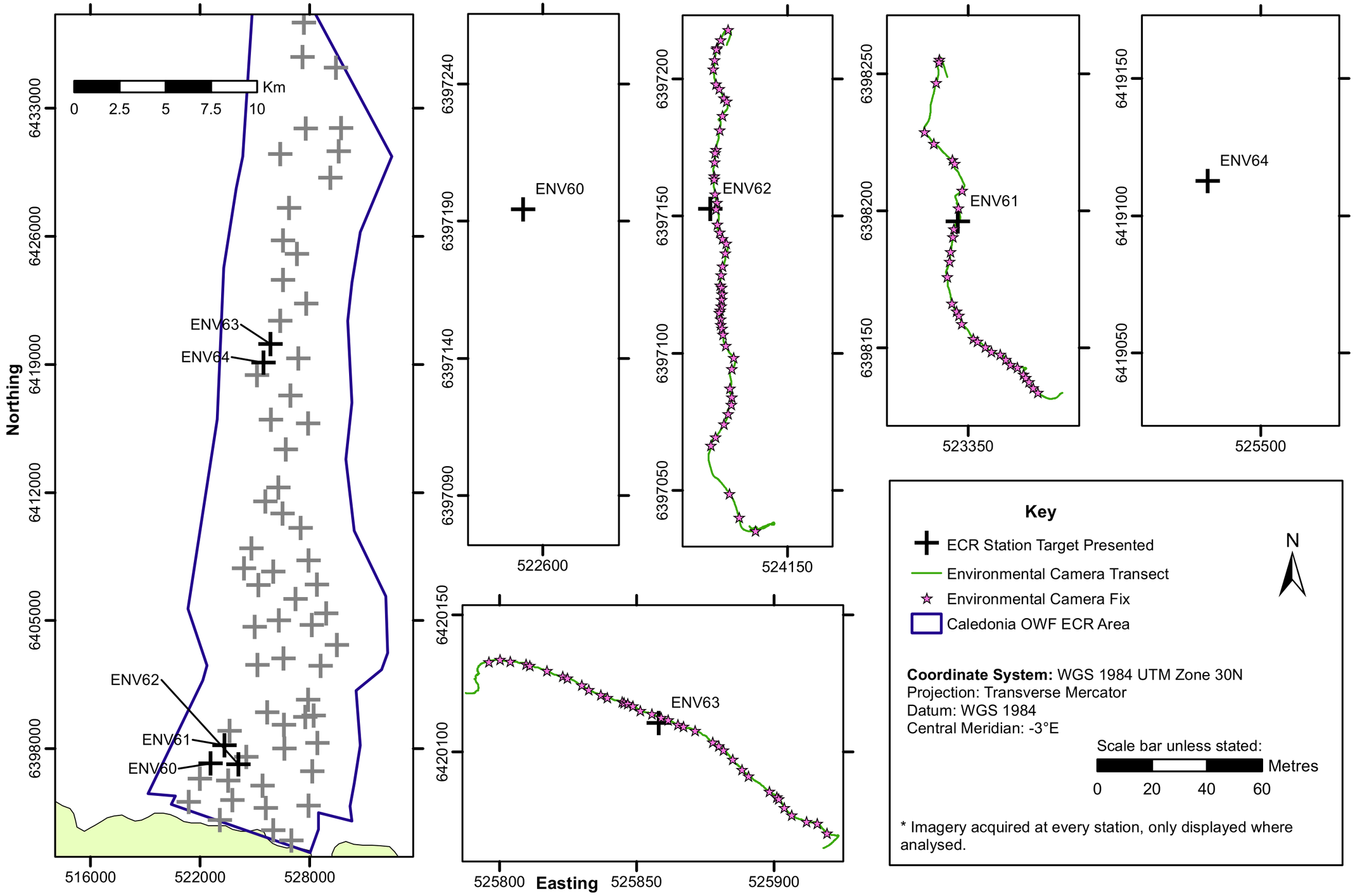
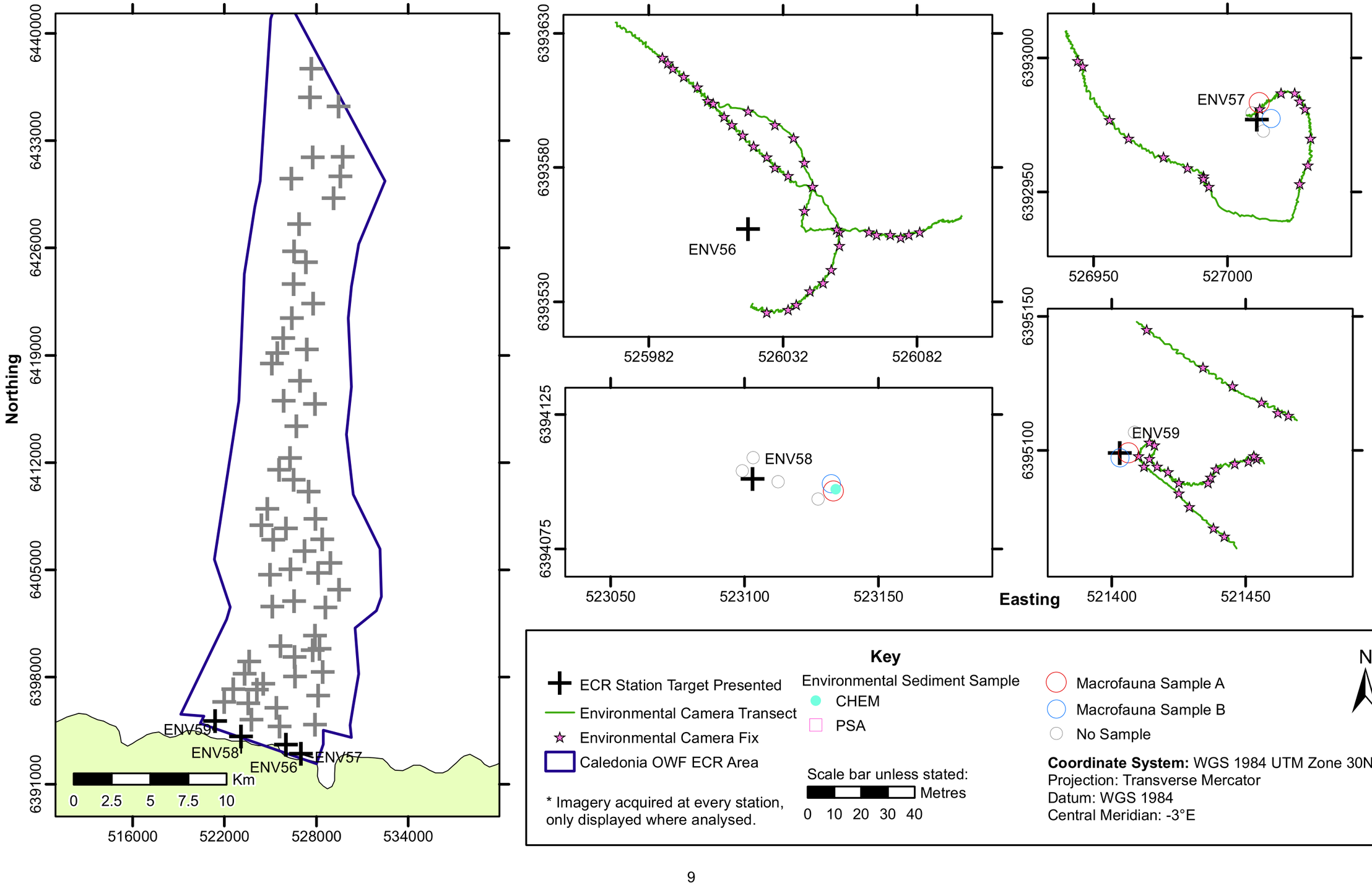


Figure 1.5 Target and Actual Sampling Locations; Stations ENV56 to ENV59 (Nearshore)



1.3 Published Background Data

Reference, where possible, has been made to suitable published background data for marine sediments from the North-East Atlantic and North Sea such as Cefas Action Levels (CALs; MMO, 2022) and OSPAR (2005), along with toxicity information including effects range low (ERL) and effects range median (ERM; Long *et al.*, 1995) and the apparent effects thresholds (AETs) as detailed by Buchman (2008). Background information is also provided in Appendix E.

The MMO (2022) CALs are used to assess dredging material and its suitability for disposal at sea. The values can be used in conjunction with other assessment methods to monitor the contaminant levels of metals, organotins, PCBs and OCPs. In general, contaminant levels in dredged material below CAL1 are of no concern and are unlikely to influence the licencing decision. Dredged material with contaminant levels between CAL1 and CAL2 would require further consideration and testing before a decision can be made. Dredged material with contaminant levels above CAL2 is generally considered unsuitable for sea disposal.

OSPAR (2005) has published a set of background concentrations (BC), which represent the concentrations of certain hazardous substances that would be expected in the North-East Atlantic if certain industrial developments had not happened. OSPAR has also described 'background assessment criteria' (BACs), a set of statistical tools that enable testing of whether mean observed concentrations (*i.e.*, collected during a seabed survey) can be considered to be near background concentrations. Where no updated BCs have been developed, the upper limit of the range of background/reference concentrations (BRC) agreed by OSPAR in 1997 have been used. Comparison to OSPAR (2005) data required normalisation of the hydrocarbon concentrations to 2.5% total organic content (TOC). However, OSPAR (2015) acknowledge that the current BC and BAC may be inappropriate for application throughout the Convention area, as they were derived from a data set that emphasises the northern part of the Convention area and within other areas there may be differences in origin and composition of the sediment. In particular, OSPAR (2015) point out that if the composition of the sampled sediments is very different to the sediment type defined for the assessment criteria, normalisation will require a large extrapolation and may cause an unacceptable uncertainty. As such, where OSPAR (2005) BC, BAC and BRC values are compared with predominantly sandy or coarse sediments, particularly in the southern part of the convention area, interpretation should be treated with some caution.

The best estimates of the potential toxicity of polyaromatic hydrocarbons (PAHs) in marine sediments are ERL and ERM concentrations for total low molecular weight (2- to 3-ring, LMW), total high molecular weight (4- to 6-ring, HMW) and total 2-6 ring PAHs (Neff, 2004) as given by Long *et al.* (1995) and OSPAR (2009c). These concentrations are not actual thresholds of toxicity but delineate concentration ranges with associated probabilities of toxicity. More information on the ERL and ERM for PAHs can be found in Appendix Section E.2. Long *et al.* (1995) also define ERL and ERM values for selected metals.

OSPAR have also defined Environmental Assessment Criteria (EAC) for PAHs, PCBs and the metals cadmium (Cd), lead (Pb) and zinc (Zn) as part of their Coordinated Environmental Management Programme (CEMP; OSPAR, 2009c). EACs represent the contaminant concentration in the environment below which no chronic effects are expected to occur in marine species, including the most sensitive species. Therefore, concentrations below the EACs are considered to present no significant risk to the environment. EACs for a range of contaminants were proposed in 2004, and updated EACs for PCBs were proposed in 2008. Further EACs continue to be developed for use in data assessments. Comparison with EACs required normalisation of PAH and PCB concentrations to 2.5% TOC and metals to 1% TOC. Where EACs are not available, OSPAR instead advise using the aforementioned ERL and ERM values.

Buchman's (2008) AETs were obtained by establishing relationships between the sediment metal concentrations and benthic community toxicological impacts and correspond to the highest concentrations at which no toxicological effects were observed.

1.4 Existing Infrastructure

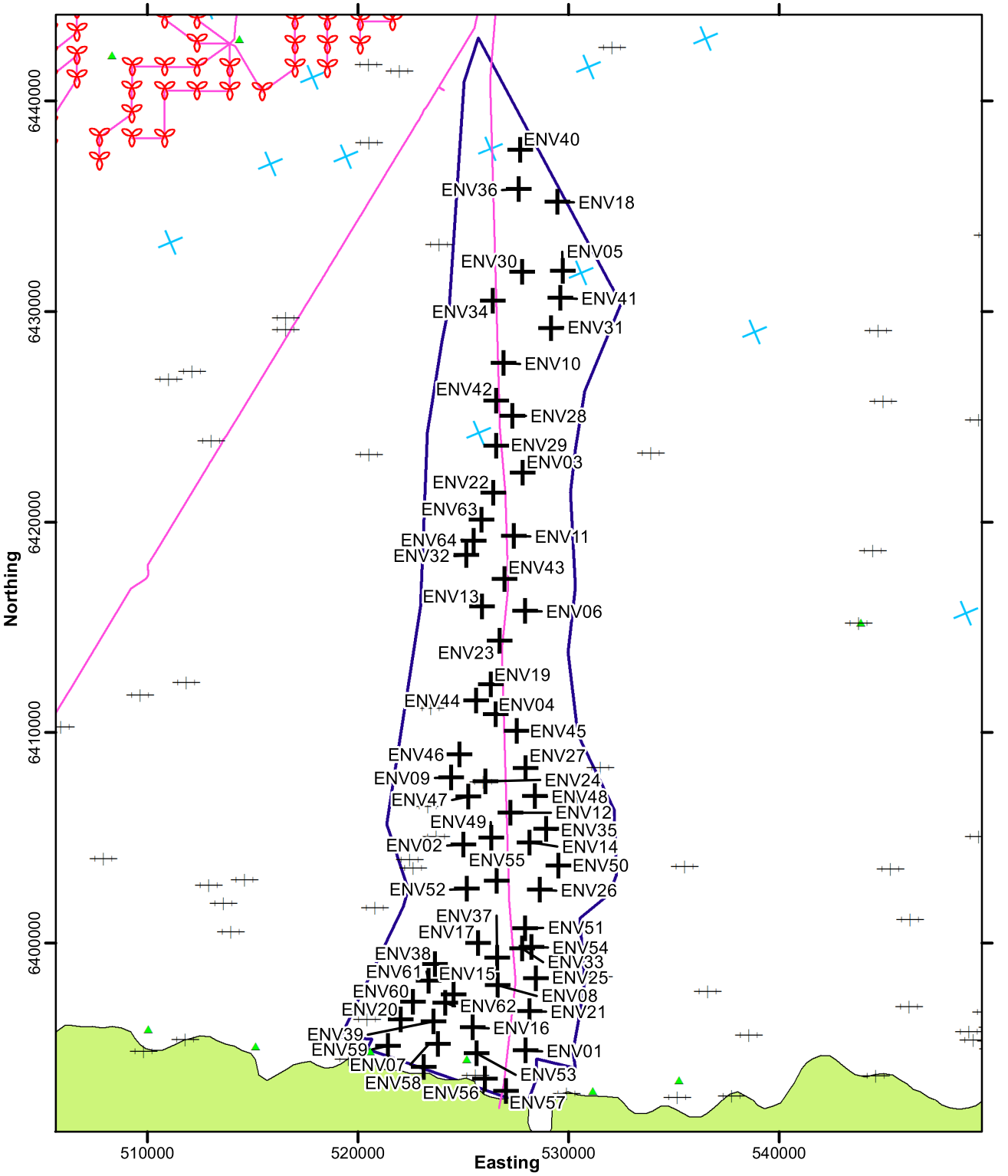
Based on data from the North Sea Transit Authority (NSTA, 2023), the position and status of the three wells within 5km of the environmental station targets are listed in Table 1.2. There were no pipelines in the vicinity of the survey area. An overview of all existing infrastructure relative to the stations is illustrated in Figure 1.6.

Table 1.2 Details of Historical Wells Within 5km of Environmental Station Targets

Well	Easting	Northing	Status	Intent	Completion Date	Distance and Direction from Nearest Station
12/28-2	530597	6431851	Abandoned Phase 3	Exploration	10-Aug-1984	875m E of ENV05
18/03-1	525745	6424235	Abandoned Phase 3	Exploration	30-Jul-1992	1011m NW of ENV29
12/28-3	526301	6437741	Abandoned Phase 3	Exploration	03-Sep-1984	1387m W of ENV40

<1km	1-2km	2-3km	3-4km	4-5km

Figure 1.6 Local Subsea Infrastructure Features



2 RESULTS AND DISCUSSION

2.1 Geophysical Survey Summary

2.1.1 Survey Overview

Geophysical survey data were successfully acquired across the export cable route. Acquisition comprised data from multi-beam echo sounder (MBES), side scan sonar (SSS), magnetometer, hull-mounted pinger, ultra-short baseline (USBL) positioning beacons and single channel high resolution seismic (S-UHRS) equipment. The data are reported separately in the geophysical interpretation report (Gardline, 2023a).

For the export cable route survey, the main line spacing was 100m and cross line spacing was 500m filling the entire corridor which ranged from 3km to 6km in width. The MV *Titan Discovery* completed all acquisition of the export cable route in water depths less than 25m.

2.1.2 Bathymetry

Bathymetry data, gridded at 2m, is illustrated as a colour shaded relief image in Figure 2.1.

Water depth across the ECR varied between 0.3m LAT in the south as the ECR approaches the shore to 109.0m LAT in the southeast, *c.*10km from shore and varying with an average gradient of less than 1°. In the south of the ECR, prominent north to south orientated ridges with localised gradients up to 70°, are interpreted as outcropping bedrock.

In the central part of the ECR, east to west orientated trenches are interpreted as furrows, with measured depths of less than 1m below the surrounding seabed and gradients up to 5° on the flanks. Ripples, with north to south orientated crests, were seen within the furrows with wavelengths of approximately 1m, and heights of less than 0.1m. Gradients associated with the ripples were negligible.

2.1.3 Seabed Features

The SSS mosaic, overlaid with interpreted seabed features, is presented in Figure 2.2. Seabed sediments were interpreted to comprise predominantly sand with areas of slightly gravelly sand and slightly gravelly clayey sand.

Areas of relatively low SSS reflectivity were interpreted as Holocene sand.

Areas of relatively high SSS reflectivity, largely associated with bathymetric lows within furrows in the central portion of the ECR, were interpreted as slightly gravelly sand, representing outcropping Unit 2 (Glaciomarine Sands and Clays).

Areas of high SSS reflectively in the central and southern portions of the ECR, largely associated with bathymetric highs, are interpreted as slightly gravelly clayey sand, representing outcropping Unit 3 (Glacial Till) These areas were also characterized by numerous large boulders as seen on the SSS and MBES data.

Well defined areas of chaotic high SSS reflectivity in the southern nearshore section of the ECR associated with bathymetric highs, locally steep gradients and north to south trending ridges are interpreted as conglomerate outcrop (Unit 5).

Numerous contacts were observed on the SSS data, the majority of which were interpreted as boulders. These were concentrated in boulder fields within bathymetry highs associated with where underlying Glacial Till (Unit 3) was at or near the seabed.

The Moray Firth Eastern Development Area 1, 2 and 3 Export Cables run through the southern ~9km of the ECR from the west to the south. The SSS and MBES data confirmed that the cables are trenched in the north with areas of partially infilled trench to the central south section. The cables are intermittently covered by areas of rock dump up to 2.5m high towards the south before the cable is buried and not seen.

The UK Oil and Gas database indicates that two wells are present within the OECR survey area, both of which are located within areas of data coverage.

An area of marginally higher SSS reflectivity was present over Well 18/03-1; where a small mound approximately 0.2m high was seen on the MBES data. Well 12/28-2 was not identified on the SSS or the MBES data; however, multiple magnetic anomalies were associated.

Figure 2.1 Colour Shaded Relief of Bathymetry

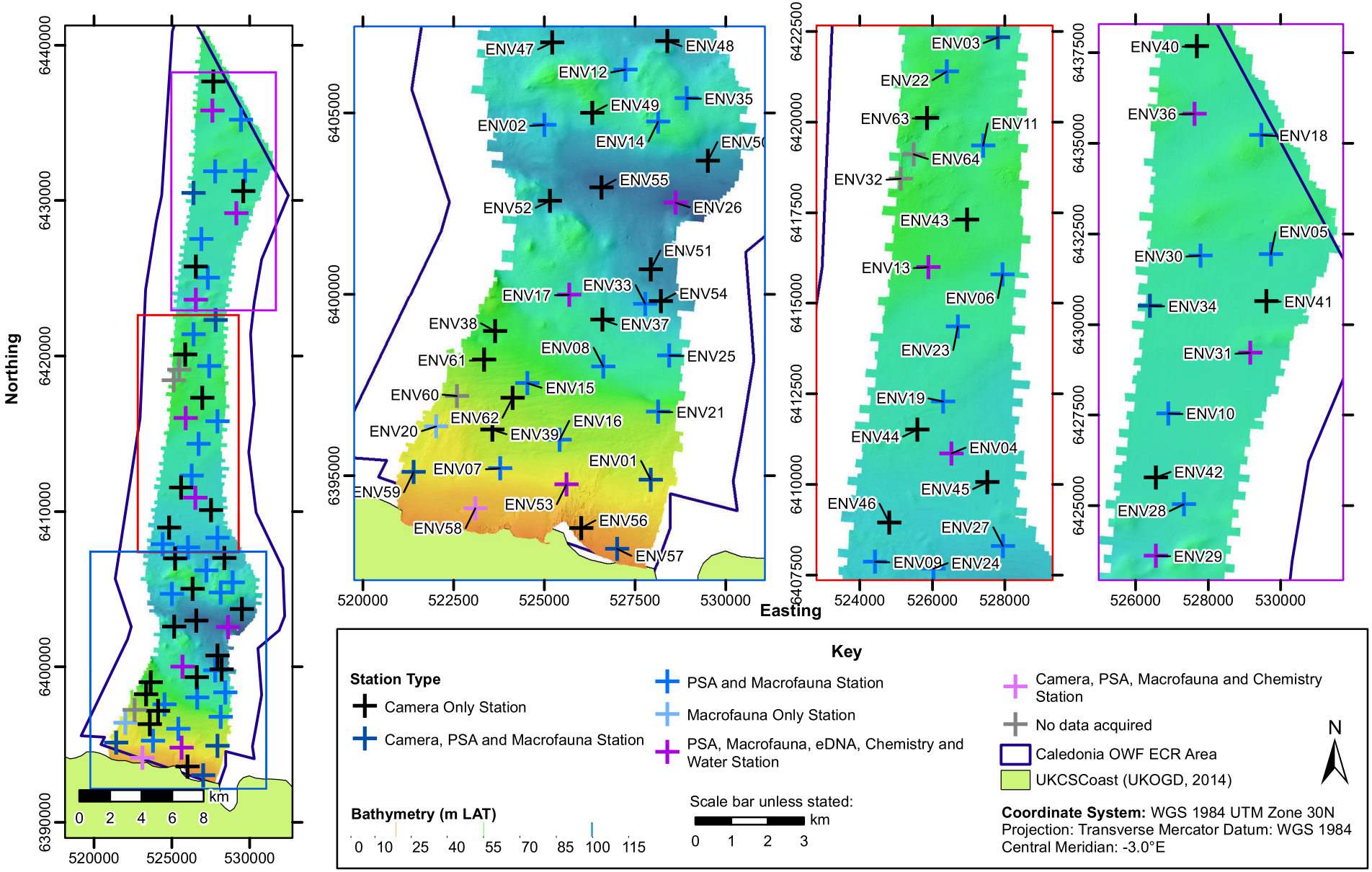
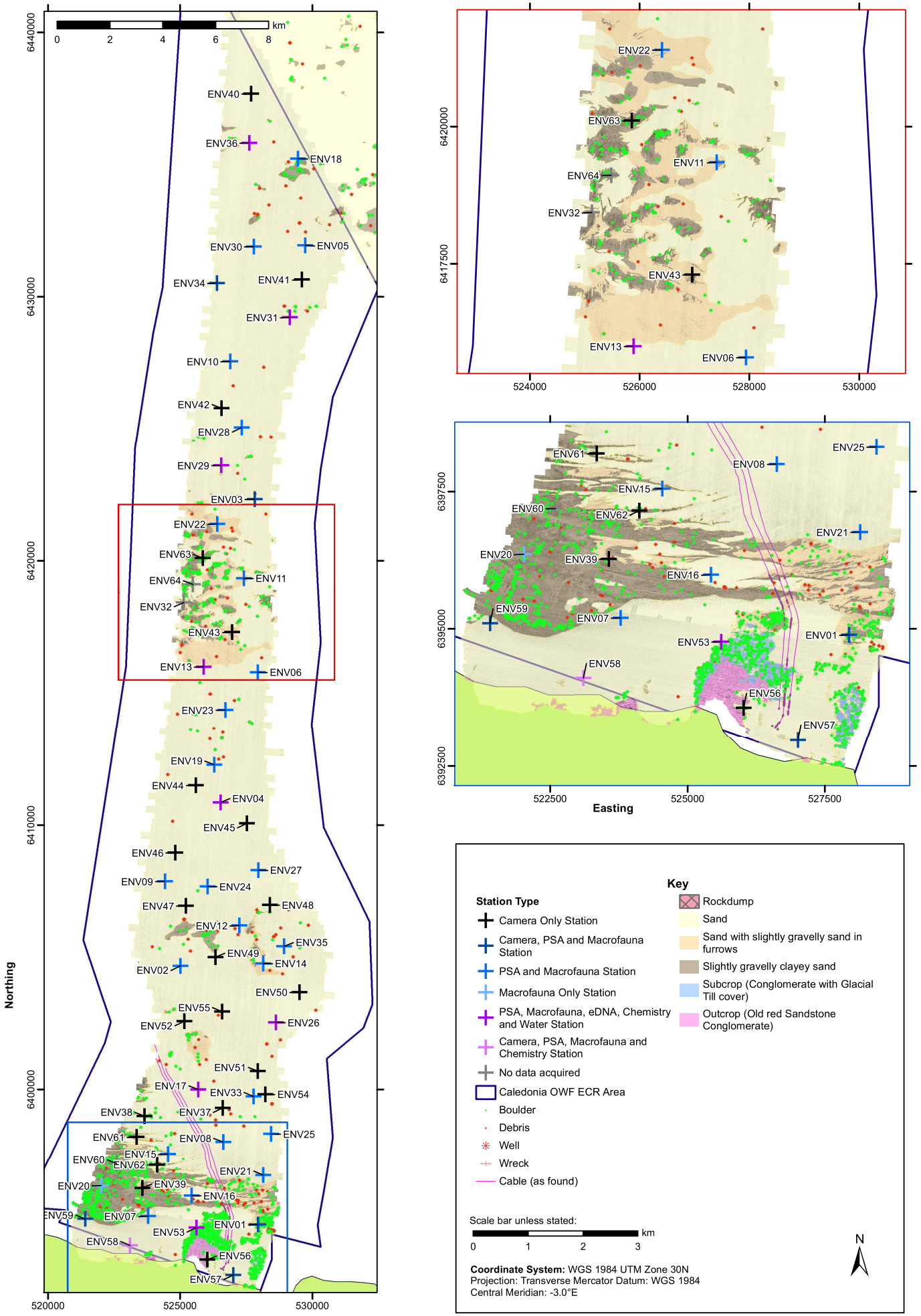


Figure 2.2 SSS Mosaic Overlaid with Seabed Features



2.2 Seabed Imagery Observations Summary

The results of the camera investigation at the 27 analysed stations (see Section 1.2) are summarised below and presented in full in the habitat assessment report (Gardline, 2023b). A selection of seabed images, together with sediment and faunal descriptions are presented in Appendix C.

Imagery confirmed the sediments ranged from muddy fine to coarse sand with varying amounts of gravel and shell fragments. Fauna was generally sparse, with 52% (n=567) of images containing no visible fauna. Of all taxa and features observed in imagery, burrows were the most common, identified in 54% (n=591) of images.

Evidence of faunal burrows and/or sea pens was observed at 20 of the 27 stations. The analysis of the SACFOR densities against JNCC (2014) criteria indicated some similarity to a 'sea pen and burrowing megafauna communities' habitat as defined by OSPAR (2010) which is classified as a threatened and/or declining habitat (OSPAR, 2008) and a PMF in Scotland's seas (NatureScot, 2020b).

Potential rocky reef was observed at seven stations along the ECR. The analysis of the resemblance to the Irving (2009) assessment criteria indicated low resemblance to stony reef at Station ENV01 and medium resemblance to stony reef at Stations ENV56 and ENV63. This habitat is listed under Annex I of the Habitats Directive (1992) for protection within Special Areas of Conservation (SAC).

There were observations of the bivalve mollusc *Arctica islandica* in the form of siphons. This species is on the OSPAR (2008) list of threatened and/or declining species and habitat and is listed as a low or limited mobility species PMF in Scottish offshore waters (NatureScot, 2020a).

Two individuals of the flatfish *Glyptocephalus cynoglossus* were observed at Station ENV43. This species is listed as vulnerable globally on the IUCN Red List (2023).

Other than those habitats and species detailed above, there was no further evidence from seabed imagery of any other habitats or species of conservation focus within the ECR survey area.

2.3 Water Physico-Chemical Profile

Water CTD profiles were acquired at eight stations. The upcast profiles used in the following analysis of the different physico-chemical variables are presented graphically in Appendix F. Depth profiles for temperature (°C), salinity (practical salinity units; PSU), turbidity (formazin turbidity units; FTU), dissolved oxygen (DO) and pH were recorded against depth on each deployment. Observed temperature has been converted to potential temperature (θ) using UNESCO algorithms (Fofonoff & Millard, 1983), while DO concentration was calculated from the percentage saturation using the formula from Weiss (1970).

2.3.1 Potential Temperature

To aid comparison between different profiled stations, a summary of potential temperature (θ, °C) measurements is tabulated in Table 2.1 for specific depth horizons. The potential temperature profiles revealed that the surface temperatures generally increased with distance from shore from 6.9°C at Stations ENV17 and ENV53 to 8.1°C at Station ENV36. Stations ENV04, ENV29, ENV31 and ENV36 showed the clearest thermoclines at depths ranging from *c.*10 to 15m, whereas nearshore Station ENV53 recorded a well-mixed profile throughout.

Beyond depths of 30m, the temperature range across all offshore stations narrowed to within 0.5°C of each other, and remained relatively stable beyond 40m depth, ranging from 7.2°C to 7.6°C at 50m depth, with temperatures generally higher further from shore.

Table 2.1 Summary of Potential Temperature (θ, °C)

Station[1]	Range (θ, °C)			θ (°C) at Specific Depth			Station Depth (m LAT)
	Min	Max	Surface	25m	50m	Max Depth	
ENV53	6.9	6.9	6.9	NA	NA	6.9	28
ENV17	6.9	7.3	6.9	7.2	7.2	7.2	73
ENV26	7.0	7.3	7.1	7.3	7.3	7.3	109
ENV04	7.3	7.5	7.5	7.3	7.3	7.3	81
ENV13	7.2	7.5	7.4	7.3	7.2	7.2	62
ENV29	7.4	8.3	8.2	7.6	7.5	7.4	81
ENV31	7.4	7.8	7.8	7.6	7.4	7.4	73
ENV36	7.5	8.1	8.0	7.6	7.6	7.5	71

1 Stations are listed in order of distance from shore, from closest to furthest.
NA indicates the CTD maximum depth at this station was shallower than the specific depth; therefore, no value was recorded for this depth.

2.3.2 Salinity

A summary of salinity values in PSU is tabulated in Table 2.2. Between stations, salinity varied from 33.7 PSU to 34.8 PSU. All stations recorded slightly decreased salinity in the surface waters except for Station ENV53 which showed a consistent salinity throughout its well mixed profile. Reduced salinity in surface waters and development of a halocline is consistent with the surface freshwater input from the river catchments of the Inner Moray and Cromarty Firths which flow into the Moray Firth.

Table 2.2 Summary of Salinity (PSU)

Station[1]	Range of Salinity (PSU)			Salinity (PSU) at Specific Depth		
	Min	Max	Surface	25m	50m	Max Depth
ENV53	34.4	34.4	34.4	NA	NA	34.4
ENV17	34.1	34.5	34.1	34.5	34.5	34.5
ENV26	34.2	34.5	34.2	34.5	34.5	34.5
ENV04	34.0	34.6	34.0	34.5	34.6	34.6
ENV13	34.3	34.5	34.3	34.4	34.5	34.5
ENV29	33.7	34.7	33.8	34.6	34.6	34.7
ENV31	34.1	34.6	34.2	34.4	34.6	34.6
ENV36	34.4	34.8	34.4	34.6	34.6	34.8

1 Stations are listed in order of distance from shore, from closest to furthest.
NA indicates the CTD maximum depth at this station was shallower than the specific depth; therefore, no value was recorded for this depth.

2.3.3 Dissolved Oxygen

A summary of DO results recorded in mg L^{-1} is tabulated in Table 2.3. Concentrations of DO ranged from 9.0mg L^{-1} at five of the eight stations to 10.7mg L^{-1} at Station ENV36. Profiles revealed that maximum DO concentrations were typically recorded within the top 5m to 10m of the water column, corresponding with the fresher inputs recorded in the salinity profiles. The decrease of DO throughout the water column may be attributed to bacterial degradation of organic matter sinking from the sea-surface, the respiration of planktonic organisms within the upper water column, nitrification, chemical oxidation and the increasing distance from the sea surface-atmosphere interface. A previous study found DO concentrations in the North Sea to vary between 6mg L^{-1} and 10mg L^{-1} (Mahaffey *et al.*, 2020), which is broadly consistent with the current survey.

DO readings in excess of 100% air saturation are possible due to the production of pure oxygen by photosynthetically-active organisms and due to the non-ideal equilibrium of DO between the water and the air above (YSI, 2019). This was the case for surface waters at all offshore stations.

Table 2.3 Summary of Dissolved Oxygen (mg L^{-1})

Station[1]	Range of Dissolved Oxygen (mg L^{-1})			Dissolved Oxygen (mg L^{-1}) at Specific Depth		
	Min	Max	Surface	25m	50m	Max Depth
ENV53	9.4	9.6	9.6	NA	NA	9.5
ENV17	9.0	10.4	10.3	9.4	9.1	9.1
ENV26	9.0	10.2	10.2	9.5	9.1	9.0
ENV04	9.1	10.6	10.6	9.6	9.2	9.1
ENV13	9.0	10.4	10.3	9.5	9.1	9.0
ENV29	9.2	10.4	10.4	9.6	9.3	9.2
ENV31	9.0	10.2	10.2	9.5	9.2	9.1
ENV36	9.0	10.7	10.7	9.5	9.3	9.0

1 Stations are listed in order of distance from shore, from closest to furthest.
NA indicates the CTD maximum depth at this station was shallower than the specific depth; therefore, no value was recorded for this depth.

2.3.4 Turbidity

A summary of turbidity values in FTU is tabulated in Table 2.4. Turbidity profiles indicated that overall, the turbidity of the water was relatively consistent throughout the water column. A slight increase in turbidity, together with data spikes, were observed in the deepest 5m to 10m at most stations. The spikes are consistent with the sensor becoming momentarily obscured by suspended particles, debris or fauna in the water column, For example, the nearshore Station ENV53 generally exhibited more turbidity than the offshore stations, which may be attributed to the spring plankton bloom observed in the seabed imagery at this station, see (Gardline, 2023b).

Table 2.4 Summary of Turbidity (FTU) from CTD Upcast Profiles

Station[1]	Range of Turbidity (FTU)			Turbidity (FTU) at Specific Depth		
	Min	Max	Surface	25m	50m	Max Depth
ENV53	1.8	6.7	2.1	NA	NA	2.7
ENV17	1.3	4.1	1.6	1.5	1.8	2.0
ENV26	1.4	2.8	1.5	1.5	1.6	2.2
ENV04	1.3	3.3	1.5	1.5	1.8	2.4
ENV13	1.4	4.3	1.5	1.6	2.2	2.2
ENV29	1.4	2.7	1.5	1.5	1.5	2.1
ENV31	1.4	3.4	1.6	1.6	1.8	2.4
ENV36	1.2	2.7	1.7	1.4	1.3	2.5

1 Stations are listed in order of distance from shore, from closest to furthest.
NA indicates the CTD maximum depth at this station was shallower than the specific depth; therefore, no value was recorded for this depth.

2.3.5 pH

A summary of pH values recorded during the water profiles is presented in Table 2.5. Values for pH remained relatively consistent throughout the water column and survey area, with slight increases in pH associated with the thermoclines where present. Air-sea interaction with carbon dioxide ensures seawater is generally within a pH range of 7.5 to 8.5.

Table 2.5 Summary of pH from CTD Upcast Profiles

Station[1]	Range of pH			pH at Specific Depth		
	Min	Max	Surface	25m	50m	Max Depth
ENV53	8.0	8.0	8.0	NA	NA	8.0
ENV17	7.9	8.0	8.0	7.9	7.9	7.9
ENV26	7.9	8.0	8.0	8.0	7.9	7.9
ENV04	7.9	8.1	8.1	8.0	7.9	7.9
ENV13	7.9	8.1	8.0	8.0	7.9	7.9
ENV29	7.9	8.1	8.1	8.0	7.9	7.9
ENV31	7.9	8.1	8.1	8.0	7.9	7.9
ENV36	7.9	8.1	8.1	8.0	7.9	7.9

1 Stations are listed in order of distance from shore, from closest to furthest.
NA indicates the CTD maximum depth at this station was shallower than the specific depth; therefore, no value was recorded for this depth.

2.4 Sediment Sampling Summary

Seabed sampling was conducted at 40 stations along the ECR, of these a full suite of samples was collected from 38 stations. All 40 stations were sampled using a 0.1m^2 mini-Hamon grab (for PSA and macrofauna samples), while a 0.1m^2 Day grab (for eDNA and chemistry samples) was used at a subset of 9 stations. Environmental deck and positioning logs are presented in Appendix B with example images presented in Appendix C.

Overall, 88 single grab samples were retained from 128 attempts. Of these retained samples 93% were taken within 20m of their target location and a further 5% were between 10m and 20m of their target location. At Station ENV20, one grab sample was retained 53m from target after several failed sampling attempts associated with coarse sediments. Additionally, this station did not recover a full suite of samples and no samples were retained at Station ENV32 due to the coarse nature of the sediments present. On average, retained samples were acquired 5.1m (±8.1SD) from their target location. The 40 unsuccessful sampling attempts occurred across 17 stations, generally due to stones in the grab jaws (52%) or low sample volume (45%) with one instance of potential contamination of a chemistry sample (3%).

Seabed sampling supported the initial interpretation of the seabed imagery findings, confirming that the seabed comprised primarily sand with varying amounts of gravel, shell fragments and fine sediment. Visible fauna observed within the retrieved grab was limited and included:

- Annelida (Polychaeta)
- Arthropoda (Crustacea, Paguroidea)
- Echinodermata (*Asterias rubens*, Echinoidea, Ophiuroidea, Spatangoidea)
- Mollusca (Bivalvia, Scaphopoda).

2.5 Sediment Characteristics

2.5.1 Particle Size Analysis

The results of the PSA for the 38 sampled stations along the ECR, determined using wet and dry sieving, are presented in Table 2.6 and Figure 2.3. Full results, including histograms illustrating the particle size distribution at each of the sampled stations, are presented in Appendix G.

Across the ECR, mean particle size varied from 41µm at Station ENV27 to 1813µm at Station ENV11. The five sampled stations closest to the shore in water depths of less than 35m (ENV07, ENV53, ENV57, ENV58 and ENV59) were dominated by sand (>95%) and were described as moderate to moderately well sorted based on Folk and Ward (1957) statistics. These stations recorded negligible (<5%) fines (<63µm; silt and clay) and gravel (>2mm) content.

By contrast, the 24 stations sampled in water depths greater than 70m (ENV02 to ENV06, ENV08 to ENV10, ENV12, ENV17, ENV19, ENV23 to ENV31, ENV33 to ENV36) recorded poorly to very poorly sorted sediment classified as muddy sand under modified Folk (1954). These stations were dominated by fine sand to very fine sand, with fines content ranging from 11% at Station ENV08 to 45% at Station ENV27 and gravel content (<1%).

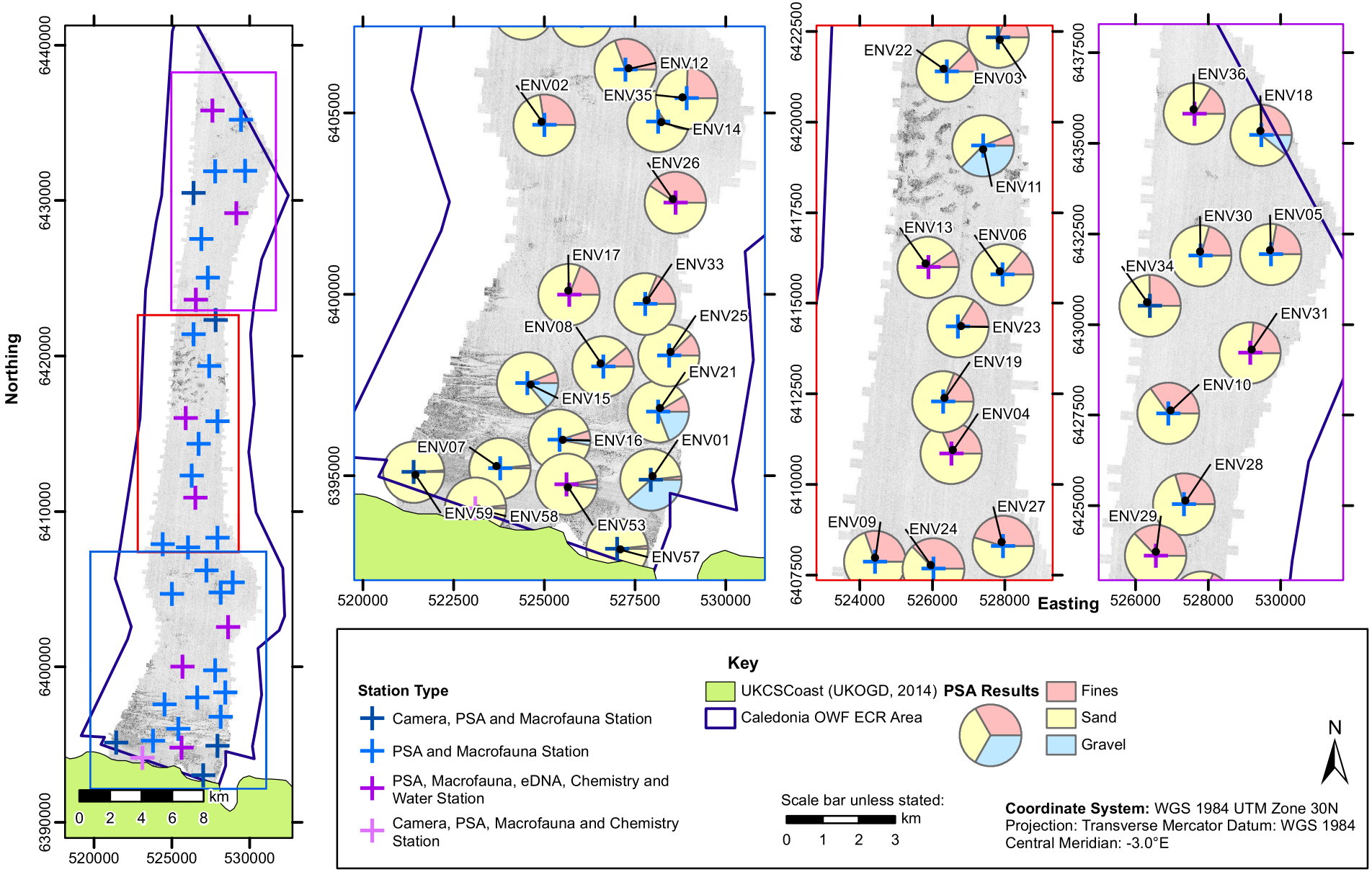
The nine remaining stations (ENV01, ENV11, ENV13 to ENV16, ENV18, ENV21 and ENV22) were located in or near areas of higher or mottled SSS reflectivity and recorded variable gravel content ranging from <1% at Station ENV13 to 39% at Station ENV01. Fines content was also variable across these stations, ranging from 1.8% at Station ENV01 to 25% at Station ENV18. Overall, there was a clear trend associated with water depth, with the strongest correlation being between fines and water depth (Spearman's r=1.00, p<0.01, Appendix H).

Table 2.6 Sediment Characteristics

Station		Mean Diameter (µm)	Mean Diameter (phi)	Fines %	Sand %	Gravel %	Wentworth Classification of Median Grain Size	Sorting[1]	Modified Folk Classification	Total Organic Carbon %
ENV01		1591	-0.7	1.8	59.6	38.6	Very coarse sand	Very poor	Sandy gravel	NA
ENV02		90	3.5	27.3	72.6	<0.1	Very fine sand	Very poor	Muddy sand	NA
ENV03		115	3.1	19.1	80.9	0.0	Very fine sand	Poor	Muddy sand	NA
ENV04		61	4.0	31.3	68.7	0.0	Coarse silt	Poor	Muddy sand	0.37
ENV05		83	3.6	22.1	77.9	<0.1	Very fine sand	Poor	Muddy sand	NA
ENV06		141	2.8	14.1	85.9	<0.1	Fine sand	Poor	Muddy sand	NA
ENV07		520	0.9	1.7	97.4	0.8	Coarse sand	Moderate	Sand	NA
ENV08		167	2.6	11.1	88.9	<0.1	Fine sand	Poor	Muddy sand	NA
ENV09		79	3.7	30.5	69.5	0.0	Very fine sand	Very poor	Muddy sand	NA
ENV10		51	4.3	34.9	65.1	0.0	Coarse silt	Poor	Muddy sand	NA
ENV11		1813	-0.9	6.2	56.2	37.5	Very coarse sand	Very poor	Sandy gravel	NA
ENV12		69	3.9	30.6	69.4	0.0	Very fine sand	Very poor	Muddy sand	NA
ENV13		220	2.2	9.5	90.3	0.2	Fine sand	Poor	Sand	0.19
ENV14		215	2.2	16.0	81.4	2.6	Fine sand	Poor	Slightly gravelly muddy sand	NA
ENV15		490	1.0	6.1	79.8	14.1	Medium sand	Poor	Gravelly sand	NA
ENV16		363	1.5	4.9	92.4	2.7	Medium sand	Poor	Slightly gravelly sand	NA
ENV17		130	2.9	18.9	80.8	0.3	Fine sand	Poor	Muddy sand	0.30
ENV18		166	2.6	24.6	64.7	10.7	Fine sand	Very poor	Gravelly muddy sand	NA
ENV19		118	3.1	19.1	80.6	0.3	Very fine sand	Poor	Muddy sand	NA
ENV21		497	1.0	8.7	72.1	19.1	Medium sand	Very poor	Gravelly muddy sand	NA
ENV22		252	2.0	12.3	87.2	0.5	Medium sand	Poor	Muddy sand	NA
ENV23		152	2.7	16.2	83.8	0.0	Fine sand	Poor	Muddy sand	NA
ENV24		53	4.2	37.1	62.9	0.0	Coarse silt	Very poor	Muddy sand	NA
ENV25		143	2.8	12.2	87.8	<0.1	Fine sand	Poor	Muddy sand	NA
ENV26		47	4.4	40.7	59.3	0.0	Coarse silt	Very poor	Muddy sand	0.77
ENV27		41	4.6	45.2	54.8	0.0	Coarse silt	Very poor	Muddy sand	NA
ENV28		66	3.9	29.7	70.3	0.0	Very fine sand	Poor	Muddy sand	NA
ENV29		48	4.4	37.2	62.8	0.0	Coarse silt	Poor	Muddy sand	0.61
ENV30		91	3.5	20.4	79.6	<0.1	Very fine sand	Poor	Muddy sand	NA
ENV31		99	3.3	23.2	76.8	0.0	Very fine sand	Poor	Muddy sand	0.35
ENV33		111	3.2	18.7	81.3	0.0	Very fine sand	Poor	Muddy sand	NA
ENV34		73	3.8	25.3	74.6	0.1	Very fine sand	Poor	Muddy sand	NA
ENV35		102	3.3	24.4	75.6	<0.1	Very fine sand	Very poor	Muddy sand	NA
ENV36		107	3.2	16.0	84.0	<0.1	Very fine sand	Poor	Muddy sand	0.62
ENV53		270	1.9	2.5	95.1	2.4	Medium sand	Moderately well	Slightly gravelly sand	0.17
ENV57		194	2.4	1.7	98.3	<0.1	Fine sand	Moderately well	Sand	NA
ENV58_A		228	2.1	1.7	98.0	0.3	Fine sand	Moderately well	Sand	0.16
ENV59		350	1.5	1.1	98.8	0.1	Medium sand	Moderately well	Sand	NA
This Study	Minimum	41	-0.9	1.1	54.8	0.0	Coarse silt to very coarse sand	Very poor to moderately well	Muddy sand to sandy gravel	0.16
	Maximum	1813	4.6	45.2	98.8	38.6				0.77
	Mean	248	2.8	18.5	78.0	3.4				0.40
	±SD	371	1.3	12.2	12.3	9.2				0.43

Sediments were not treated to remove carbonates prior to particle size analyses.
NA Not analysed
1 Sorting according to Folk and Ward (1957).

Figure 2.3 Sampled Proportion of Fines, Sand and Gravel Across the ECR



2.5.2 Organic Carbon

The results of the TOC analysis, conducted at nine of the ECR stations are presented in Table 2.6. TOC is measured as a percentage of the total weight and represents the carbon constitute of the organic matter. Organic matter in marine sediment is primarily comprised of detrital matter and naphthenic material (carboxylic acids) and humic substances with a small proportion of biological biomass. Where samples were collected, values of TOC ranged from 0.16% at Station ENV58 to 0.77% at Station ENV26. The survey mean TOC value was 0.39% (±0.22SD) and there was a positive correlation with depth (Spearman's $p<0.05$, Appendix H).

In general, for continental shelf sediments there is a close relationship between organic carbon content and the surface area of the mineral matrix (Mayer, 1994). Increased TOC is expected with fine sediment, as it adsorbs to the increased surface area provided by the fine grain particles. As such, TOC values were expected considering the general predominant sand component and percentage fines of the sediment. This was supported by Spearman's rank results, with TOC being significantly positively correlated with percentage fines ($r=0.83$, $p<0.01$) along the ECR (Spearman's Rank, Appendix H).

2.6 Hydrocarbon Concentrations

2.6.1 Total Hydrocarbons and Alkanes

Concentrations of THC were analysed by GC-FID and, to meet MMO (2022) guidelines, by ultra-violet fluorescence (UVF) spectroscopy. Detailed information on analytical methods is presented in Appendix D.6.
A summary of the results of the hydrocarbon analyses are presented in Table 2.7.

THC analysed by GC-FID (comprising n-alkanes, pristane, phytane, unresolved complex mixture (UCM) and PAHs) ranged from 2.8µg g^{-1} at the shallowest Station ENV58 to 18.7µg g^{-1} at the deepest Station ENV26 with a mean of 10.7µg g^{-1} (±4.6SD). Spearman's rank calculations (Appendix H) showed that concentrations of THC by GC-FID were positively correlated with fines ($r=0.78$, $p<0.05$) and TOC ($r=0.80$, $p<0.05$). Concentrations of THC by UVF were consistently lower than THC measured by GC-FID; with only Stations ENV17, ENV26 and ENV29 recording concentrations above the limit of detection (LOD; 4.1µg g^{-1}, 4.2µg g^{-1} and 4.7µg g^{-1}, respectively).

It has been previously shown that benthic macrofauna suffer adverse effects when THC is in excess of 50µg g^{-1} (Kjeilen-Eilertsen *et al.*, 2004; UKOOA, 2002; 2005) and as such, this value represents the threshold above which hydrocarbons are expected to have a 'significant environmental impact. Kingston (1992) also previously reported that benthic macrofauna suffer adverse effects, namely reduced diversity, when THC is more than 50µg g^{-1} to 60µg g^{-1} and that specific sensitive species may be impacted at levels greater than 10µg g^{-1}. Concentrations of THC by GC-FID at six of the nine stations (ENV04, ENV17, ENV26, ENV29 ENV36 and EnV53) were above the 10µg g^{-1} threshold and as such were expected to have a potential negative impact on specific benthic macrofauna. However, concentrations of THC by UVF were below the threshold of 10µg g^{-1}. Mair *et al*. (1987) observed a notable increase in the dominance of opportunistic species at THC levels more than 291.4µg g^{-1}, a threshold which none of the stations in the current survey exceeded.

Although THC concentrations give an indication of the total oil in the sediment at each station, it does not give an indication of the source. Analysis of GC chromatograms (Appendix I) may provide further understanding of the distribution of hydrocarbons by giving an indication of the origin of hydrocarbons in marine sediments and the extent to which they are weathered. Peaks in the gas chromatograms correspond to individual n-alkanes and other compounds, with carbon numbers increasing with eluting time. The area beneath the trace constitutes a complex mixture (see Appendix E.2 for further information) of hydrocarbons that could not be resolved by GC-FID. This UCM includes cycloalkane compounds, which remain after substantial weathering and biodegradation of petrogenic inputs to the sediment (McDougall, 2000).

The chromatograms generally presented a pattern of low level, HMW resolved alkanes and UCM ranging from approximately nC_{21} to nC_{36} with a peak between nC_{28} and nC_{36}. Such distributions are considered typical of background levels of hydrocarbon inputs in areas such as the North Sea with historical oil and gas explorations which include a relatively low level UCM distributed between nC_{20} and nC_{33}. Hydrocarbons in the molecular weight range nC_{24} to nC_{36} commonly originate from terrestrial plant sources (Harborne, 1999) or may represent the residue of highly weathered and biodegraded petrogenic material including natural seeps, shipping discharge and oil and gas exploration and extraction (Bouloubassi *et al.*, 2001; McDougall, 2000). The chromatograms generally display larger resolved peaks over the HMW n-alkanes, with a predominance of heavier weight n-alkanes and compounds with odd carbon numbers over those with an even carbon number. This profile is characteristic of background concentrations of n-alkanes in North Sea sediments and it is indicative of sedimentary biogenic hydrocarbons from a terrestrial plant source (Harborne, 1999; Tran *et al.*, 1995; Wang & Fingas, 2005). The relative size of the UCM feature on the traces largely reflected the concentrations of THC, other than at the two stations nearest the shore (ENV53 and ENV58), which presented notably lower level HMW n-alkanes and UCM compared with stations with similar THC concentrations further offshore (*e.g.* ENV13 and ENV31). The UCM accounted for 62% to 94% of THC along the ECR, indicating that generally hydrocarbons were weathered with some fresher inputs.

Further insight into the origin of hydrocarbons in marine sediments can be gained by measuring concentrations of individual alkanes (Table 2.7). Concentrations of n-alkanes from nC_{10} to nC_{37}, pristane and phytane are summarised in Table 2.7. Individual n-alkane concentrations are presented in Table 2.8, whilst their distributions at each station are summarised as bar charts in Appendix I. Total n-alkane concentrations varied between 0.018µg g^{-1} at Station ENV53 and 0.478µg g^{-1} at Station ENV26 with a mean concentration of 0.232µg g^{-1} (±0.164SD).

The ratio of odd to even numbered n-alkanes within the HMW range (nC_{26} to nC_{30}), commonly referred to as the carbon preference index (CPI), can provide further insight into the origin of alkanes in marine sediment. Marine sediments containing a high level of biogenically derived (odd carbon number) n-alkanes are known to have CPI ≥2.0, with values ≥4.0 suggesting a virtual absence of petrogenic hydrocarbons (McDougall, 2000). CPI values close to 0 indicate a predominance of petrogenic hydrocarbons. Where calculated, CPI values ranged from 3.0 at Station ENV29 to 4.9 at Station ENV13 suggesting a mixture of petrogenic and biogenic inputs; with biogenic aliphatic hydrocarbons such as higher terrestrial plant waxes being more dominant. At Stations ENV13 and ENV36 the CPI was >4.0 suggesting a virtual absence of petrogenic hydrocarbons.

The ratio of the isoprenoids pristane and phytane can be used to derive similar information to the CPI where a high Pr:Ph ratio is indicative of biogenic hydrocarbons most commonly originating from the decomposition of the phytol side-chain of chlorophyll (Muniz *et al.*, 2004). The isoprenoid pristane is primarily biogenic in origin (Muniz *et al.*, 2004; Bouloubassi *et al.*, 2001) while phytane is rarely produced biogenically but is a common component of crude oil (Steinhauer & Boehm, 1992). Concentrations of pristane ranged from 0.001µg g^{-1} at two stations nearest the shore (ENV53 and ENV58) to 0.022µg g^{-1} at the deepest station (ENV26). Phytane was only recorded above LOD at Stations ENV26, ENV29, ENV31 and ENV36 with concentrations of ranging between 0.002µg g^{-1} and 0.004µg g^{-1}, therefore the Pr:Ph ratio was only quantifiable at these stations. The predominance of biogenic pristane over phytane across all stations suggests that primarily biogenic aliphatic hydrocarbons contributed to the THC concentrations, though a degree of petrogenic input was evident by the presence of phytane at four stations.

Overall, although there was a general trend for concentrations of THC, n-alkanes and pristane to be higher in areas of deeper water and finer sediments, this correlation was not evident for UCM concentrations, indicating that other factors such as terrestrial run-off, underlying geology and proximity to existing infrastructure could also be having an influence on the hydrocarbon concentrations across this relatively complex survey area.

Table 2.7 Summary of Sediment Hydrocarbon Analyses

Station	UVF	GC-FID									GC-MS	
				n-alkanes				Isoprenoids				
	THC	THC	UCM	nC10-20	nC21-37	nC10-37	CPI[1]	Pristane (Pr)	Phytane (Ph)	Pr/Ph Ratio	NPD[2]	Total PAH
ENV04	<1	11.3	8.1	0.035	0.283	0.318	3.4	0.011	<0.001	NC	0.016	0.069
ENV13	<1	6.0	3.7	0.012	0.069	0.081	4.9	0.003	<0.001	NC	0.002	0.009
ENV17	4.1	12.9	8.2	0.033	0.331	0.364	3.7	0.010	<0.001	NC	0.014	0.061
ENV26	4.2	18.7	13.1	0.057	0.421	0.478	3.2	0.022	0.004	5.5	0.030	0.146
ENV29	4.7	14.0	9.5	0.047	0.314	0.361	3.0	0.012	0.003	4.4	0.023	0.108
ENV31	<1	9.2	6.4	0.027	0.175	0.202	3.6	0.007	0.002	4.0	0.011	0.059
ENV36	<1	11.4	7.4	0.040	0.211	0.251	4.2	0.010	0.002	5.7	0.014	0.062
ENV53	<1	10.1	9.5	0.003	0.016	0.018	NC	0.001	<0.001	NC	NC	NC
ENV58	<1	2.8	1.8	0.006	0.014	0.020	NC	0.001	<0.001	NC	NC	NC
Minimum	NQ	2.8	1.8	0.003	0.014	0.018	NQ	0.001	NQ	NQ	NC	NC
Maximum	4.7	18.7	13.1	0.057	0.421	0.478	4.9	0.022	0.004	5.7	0.030	0.146
Mean	NC	10.7	7.5	0.029	0.204	0.232	NC	0.009	NC	NC	NC	NC
±SD	NC	4.6	3.3	0.019	0.147	0.164	NC	0.006	NC	NC	NC	NC

Unless indicated, concentrations expressed as µg g^{-1} dry sediment

1 Calculated using $2(nC_{27} + nC_{29})/nC_{26} + 2(nC_{28}) + nC_{30}$ (Farrington & Tripp, 1977).

2 Naphthalenes, phenanthrenes and dibenzothiophenes (total).

NQ Not quantified due to concentrations below LOD.

NC Not calculated due to concentrations below LOD.

Table 2.8 n-Alkane Concentrations

Station	ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53	ENV58
nC_{10}	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{11}	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{12}	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{13}	4	<1	2	3	3	1	2	<1	<1
nC_{14}	2	2	2	4	4	2	3	<1	<1
nC_{15}	6	2	5	9	8	4	6	<1	<1
nC_{16}	3	2	4	8	6	4	5	<1	<1
nC_{17}	9	3	9	16	12	6	11	2	4
nC_{18}	3	1	5	4	4	3	4	<1	<1
nC_{19}	5	2	4	8	7	4	6	1	2
nC_{20}	3	<1	2	5	4	2	3	<1	<1
nC_{21}	12	4	9	9	9	4	8	<1	1
nC_{22}	4	2	4	9	7	4	4	<1	<1
nC_{23}	15	2	20	15	11	6	10	<1	<1
nC_{24}	11	5	9	8	10	5	6	<1	<1
nC_{25}	18	3	34	37	27	19	22	3	<1
nC_{26}	10	2	7	15	13	5	7	<1	<1
nC_{27}	23	6	27	44	28	13	18	2	2
nC_{28}	10	2	11	22	15	6	6	2	<1
nC_{29}	44	13	50	85	54	29	38	1	4
nC_{30}	11	2	13	22	11	7	7	2	1
nC_{31}	57	5	77	91	65	36	48	3	3
nC_{32}	4	10	4	7	4	3	3	1	4
nC_{33}	31	5	29	12	22	19	18	2	<1
nC_{34}	7	4	11	7	5	5	4	<1	<1
nC_{35}	14	3	13	17	14	7	6	<1	<1
nC_{36}	6	2	6	11	9	5	3	<1	<1
nC_{37}	6	1	9	12	8	3	4	<1	<1
Total	**318**	**81**	**364**	**478**	**361**	**202**	**251**	**18**	**20**

Concentrations expressed as ng g^{-1} dry weight sediment.

2.6.2 Polycyclic Aromatic Hydrocarbons

Total PAH concentrations for the MMO (2022) stipulated compounds ranged from 0.009 µg g^{-1} at Station ENV13 to 0.146 µg g^{-1} at Station ENV26, with the exception of the two nearshore Stations ENV53 and ENV58 where the total PAH concentrations were below the LOD.

Information on the origin of PAHs can be derived from the parent compound molecular weight indices as detailed by Yunker *et. al.* (2002) and are presented in Figure 2.4. The molecular mass indices identified pyrogenic PAHs at all stations. The 276 (indeno[123,cd]pyrene and benzo[ghi]perylene) mass indices identified that stations were from grass, wood and coal combustion.

A study of the alkyl homologue distributions can provide further indication of sources of PAHs in sediment. Pyrogenic PAHs are predominantly unalkylated HMW compounds, whereas petrogenic PAHs display a greater degree of alkylation, particularly of the LMW compounds of naphthalene and phenanthrene (Wang & Fingas,

2005). As illustrated in Figure 2.5, where present it is evident that the alkylated homologues are more abundant than their parent compounds which indicates there are petrogenic PAHs present, however in low concentrations.

The best estimates of the potential toxicity of PAHs in marine sediments are the ERL and ERM values (Long *et al.*, 1995), as described in Section 1.3 and Appendix E.2. Total PAH concentrations and those for individual compounds were well below their respective ERL values, indicating that toxic effects to fauna by PAHs are unlikely. The AET (Buchman, 2008) represents the concentration above which adverse biological impacts would be expected on the biological indicator due to the exposure to that contaminant alone. Total and individual PAH concentrations were also well below their respective AETs at all stations, further suggesting that overall adverse biological impacts would be extremely unlikely.

When comparing to OSPAR BC, BAC and EAC (OSPAR, 2005; 2009a) concentrations were first normalised to 2.5% TOC (as presented in Appendix I). After normalisation, several of the measurable concentrations for many of the PAHs were considered above BC concentrations at Stations ENV04, ENV17, ENV26, ENV29 and ENV31; however, none exceeded the EAC threshold. Furthermore, when comparing mean concentrations for the entire survey area no PAH concentrations were above the corresponding BAC threshold, meaning that overall, PAH concentrations could be considered near background.

Figure 2.4 Ratio of 276 Molecular Weight Indices

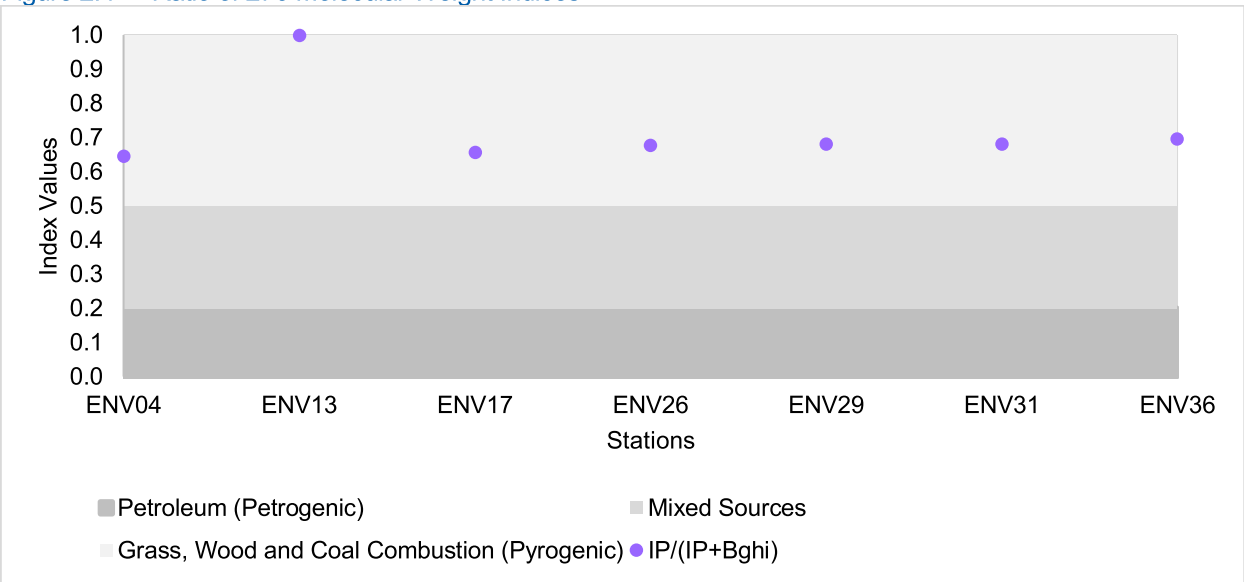


Table 2.9 PAH Concentrations

Station	ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53	ENV58	Long et al. (1995) ERL	Buchman (2008) AET[1]
Acenaphthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	16	130[E]
Acenaphthylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	44	171[E]
Anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	85.3	280[E]
Benzo[a]anthracene	2	<1	2	5	3	2	2	<1	<1	261	960[e]
Benzo[a]pyrene	3	<1	3	7	5	3	3	<1	<1	430	1100[E]
Benzo[b]fluoranthene	8	2	6	16	12	7	8	<1	<1	NA	1800 [EJ]
Benzo[e]pyrene	8	2	6	17	13	7	9	<1	<1	NA	NA
Benzo[ghi]perylene	5	<1	4	9	7	4	4	<1	<1	NA	NA
Benzo[k]fluoranthene	6	2	5	13	9	5	5	<1	<1	NA	1800[EJ]
C1-naphthalenes	3	<1	2	<1	3	2	2	<1	<1	NA	NA
C1-phenanthrene	3	<1	3	6	5	3	3	<1	<1	NA	NA
C2-naphthalenes	4	2	4	10	6	3	4	<1	<1	NA	NA
C3-naphthalenes	3	<1	2	5	4	2	2	<1	<1	NA	NA
Chrysene	3	<1	3	6	4	3	2	<1	<1	384	950[E]
Dibenzo[ah]anthracene	<1	<1	<1	3	2	<1	<1	<1	<1	63.4	230[OM]
Fluoranthene	4	<1	4	9	6	5	3	<1	<1	600	1300[E]
Fluorene	<1	<1	<1	<1	<1	<1	<1	<1	<1	19	120[E]
Indeno[1,2,3-cd]pyrene	8	2	7	20	15	8	10	<1	<1	160	600[M]
Naphthalene	<1	<1	<1	2	<1	<1	<1	<1	<1	NA	230[E]
Perylene	3	<1	4	7	2	<1	<1	<1	<1	NA	NA
Phenanthrene	2	<1	2	5	3	2	2	<1	<1	NA	660[E]
Pyrene	3	<1	3	7	5	4	3	<1	<1	665	2400[E]
Total	**69**	**9**	**61**	**146**	**108**	**59**	**62**	**0**	**0**	**4022**	NA

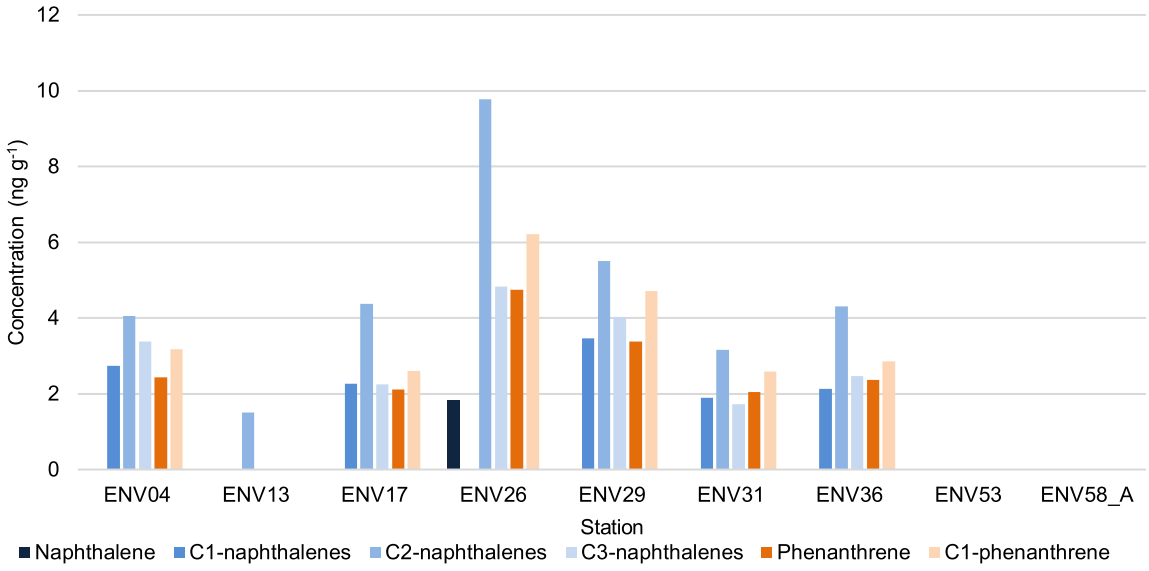
Concentrations expressed as ng g^{-1} dry weight sediment.

Grey text relate to concentrations below LOD.

1 Apparent effect threshold according to Buchman (2008) under the following assessment targets in superscript E = Echinoderm larvae, I = infaunal community impact, M = microtox assay and O = oyster larvae

Results in green are from published background data see Section 1.3.

Figure 2.5 Naphthalene and Phenanthrene Parent Versus Alkylated Homologue PAHs



2.6.3 Polychlorinated Biphenyls

Polychlorinated biphenyl concentrations were recorded below LOD at all sampled stations.

2.6.4 Polybrominated Diphenyl Ethers

Concentrations of PBDEs, presented in Table 2.8, were below LOD with the exception of PBDE 209 which ranged from below the LOD at Station ENV58 to 1.53ng g^{-1} at Station ENV26. After normalisation to 2.5% TOC (see Appendix J), PBDE 209 at all but Station ENV58 exceeded the OSPAR (2020) BAC. However, concentrations were below the Federal Environment Quality Guidelines (FEQGs; Viñas *et al.*, 2023)). PBDE 209 has a high affinity to bind to sediment, which reduces mobility in the environment.

Table 2.10 Concentrations of PBDEs

Station	ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53	ENV58	FEQG (Viñas *et al.*, 2023)
PBDE 17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA
PBDE 28	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	110
PBDE 47	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	97.5
PBDE 66	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	97.5
PBDE 85	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1
PBDE 99	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1
PBDE 100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1
PBDE 138	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA
PBDE 153	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1100
PBDE 154	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1100
PBDE 183	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	14000
PBDE 209	0.80	0.71	0.61	1.53	0.28	1.86	0.39	0.23	<0.2	47.5

Concentrations expressed as ng g^{-1} dry weight sediment.
Results in green are from published background data see Section 1.3.

2.6.5 Organochloropesticides

Generally, concentrations of OCPs were below the LOD with the exception of dieldrin at Station ENV04 (0.1ng g^{-1}). Dieldrin concentration at ENV04 did not exceeded the CAL1 (MMO, 2022) concentration of 0.5ng g^{-1}.

2.7 Organotins

The organotins dibutyltin and tributyltin were below LOD at all sampled stations.

2.8 Metal Concentrations

Following extraction by aqua regia, concentrations of As, Cd, Cr, Cu, Hg, Ni, Pb and Zn were determined by ICP-MS. The results of the metal analyses are presented in Table 2.11.

Of the metals reported, Cr, Cu, Ni, Pb and Zn were positively correlated with depth and finer sediment ($p<0.01$, Appendix H), indicating that fluctuations in metal concentrations were influenced by variations in sediment particle size and the resultant adsorption properties. These five metals also showed positive correlations with TOC and LMW n-alkanes. Concentrations of Cd were below LOD (<0.04µg g^{-1}) at Stations ENV13 and ENV53 while Hg concentrations were at or below LOD (<0.01µg g^{-1}) at all stations except Station ENV31 where a concentration of 0.01µg g^{-1} was recorded.

Metals data were directly compared to MMO (2022) CALs, Buchman (2008) AETs and Long *et al*. (1995) ERL and ERM (see Section 1.3), none of which were exceeded at any station, indicating that toxicological impacts where unlikely to occur,

Furthermore, concentrations of Cd, Pb and Zn, once normalised to 1% TOC (Appendix K), were below their respective OSPAR (2009c) EACs and can therefore be considered to present no significant risk to the environment.

Table 2.11 Sediment Metal Concentrations

Station		As	Cd	Cr	Cu	Hg	Ni	Pb	Zn
ENV04		3.3	0.08	11.6	4.3	<0.01	7.0	4.7	18.1
ENV13		2.2	<0.04	7.4	3.0	<0.01	3.3	2.5	10.6
ENV17		2.6	0.04	10.2	3.5	<0.01	5.3	3.9	16.3
ENV26		4.1	0.12	14.7	5.9	<0.01	9.8	6.2	24.8
ENV29		3.3	0.11	13.8	4.8	<0.01	9.0	5.4	19.7
ENV31		2.1	0.05	9.1	3.9	0.01	5.6	3.4	14.9
ENV36		2.1	0.08	10.6	3.9	<0.01	6.9	3.9	14.6
ENV53		5.4	<0.04	6.1	3.0	<0.01	3.7	2.6	11.9
ENV58		3.7	0.06	7.4	3.2	<0.01	4.5	2.1	11.0
This Study	Minimum	2.1	NQ	6.1	3.0	NQ	3.3	2.1	10.6
	Maximum	5.4	0.12	14.7	5.9	0.01	9.8	6.2	24.8
	Mean	3.2	NC	10.1	3.9	NC	6.1	3.9	15.8
	±SD	1.1	NC	2.9	1.0	NC	2.3	1.4	4.6
CAL 1 (MMO, 2022)		20	0.4	40	40	0.3	20	50	130
CAL 2 (MMO, 2022)		100	5.0	400	400	3.0	200	500	800
Long *et al.* (1995)	ERL	8.2	1.2	81.0	34.0	0.15	20.9	46.7	150
	ERM	70.0	9.6	370.0	270.0	0.70	51.6	218.0	410
Buchman (2008)	AET	35	3	62	390	0.41	110	400	410

Concentrations expressed as µg g^{-1} dry weight sediment.
Unless specified, concentrations determined following aqua regia sediment extraction.
NQ Not quantified due to values below LOD.
NC Not calculated due to all values below the LOD.
Results in green are from published background data see Section 1.3.

2.9 Statistical Analysis of Sediment Physico-chemical Results

2.9.1 Multivariate

Multivariate analyses were performed using PRIMER v7 (Plymouth Marine Laboratories) on the nine station physico-chemical data set to ascertain similarities and differences between stations. Prior to undertaking the analysis the following variables were excluded:

- Mean particle diameter (phi) was excluded as mean particle diameter (µm) is more intuitive.
- Sand was excluded as it is closely related with fines.
- HMW n-alkanes (nC_{21}-nC_{37}) concentration was excluded as it is closely related with total n-alkanes.
- Hg was excluded as concentrations were predominantly below the LOD.

In order for phytane, total PAH, PDBE 209 and Cd to be included, stations recording concentrations below LOD were assigned a concentration just below the LOD to allow appropriate ranking.

Based on the Dixon's test for outliers, log transformation of the sediment characteristics (PSA and TOC) variables was chosen to down-weigh the influence of the relatively high gravel content at Station ENV53. The data set was normalised to make the variables unitless and Euclidean distance resemblance matrix was produced. A CLUSTER analysis was performed to graphically represent the (dis)similarities between the stations, with a SIMPROF routine run in conjunction, to show whether the differences between stations were statistically significant. Stations joined by red lines are statistically indistinguishable from each other, while those joined by black lines are statistically distinct. Only three or more stations can be considered a true cluster due to the permutative nature of SIMPROF. A non-metric multidimensional scaling (nMDS) routine was also run, which creates a two-dimensional plot of the stations from the similarity matrix. The configuration of the stations on the

MDS plot reflects similarity with distances between stations being representative of their Euclidean distance or relative (dis)similarity.

The Euclidean similarity dendrogram for the physico-chemical data set (Figure 2.6a) illustrates variations in the physico-chemical characteristics of the stations sampled along the ECR. The SIMPROF routine identified two clusters and one closely associated pair of stations. The corresponding nMDS (Figure 2.6b) has a stress value of 0.01 indicating it is an almost perfect two-dimensional representation of rank dis(similarities) and overall pattern observed in the physico-chemical data set. The key factors responsible for the multivariate pattern in the physico-chemical data are displayed in Table 2.12, based on a review of the raw data and SIMPER analysis.

The results of a BEST BIOENV routine on the data set indicated that three analytes accounted for approximately 96% of the variation between stations, these were mean grain size and the concentrations of pristane and total PAH, indicating that natural variation is influencing the low-level concentrations of hydrocarbons along the ECR. Further, when looking at these variables in isolation, the BEST result indicated total PAH correlated with 95.5% of the overall pattern. A selection of these variables has been plotted to illustrate the trends in Figure 2.6c.

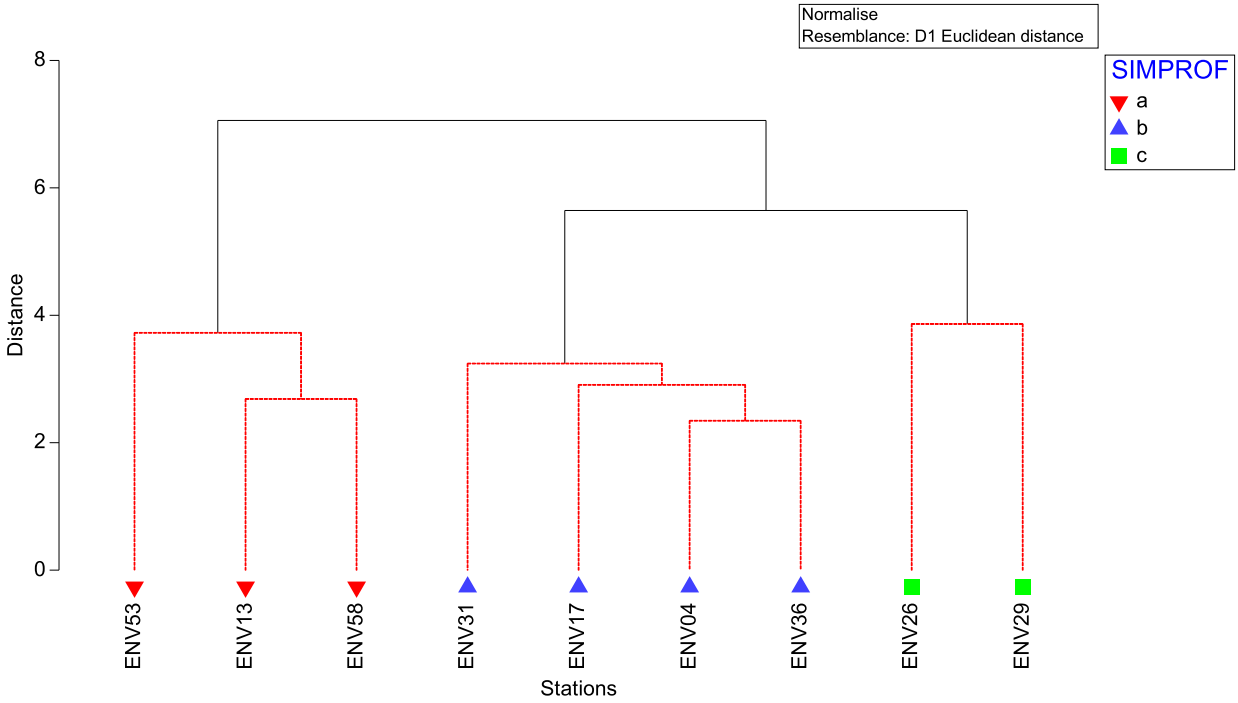
Results of an analysis of similarity (ANOSIM) indicated that the physico-chemical characteristics of stations when grouped by 25m depth zone (Figure 2.6d) were statistically different ($r=0.813$, $p<0.01$).

Table 2.12 Physico-chemical Parameters Influencing SIMPROF Separation in the 9 Station Data Set

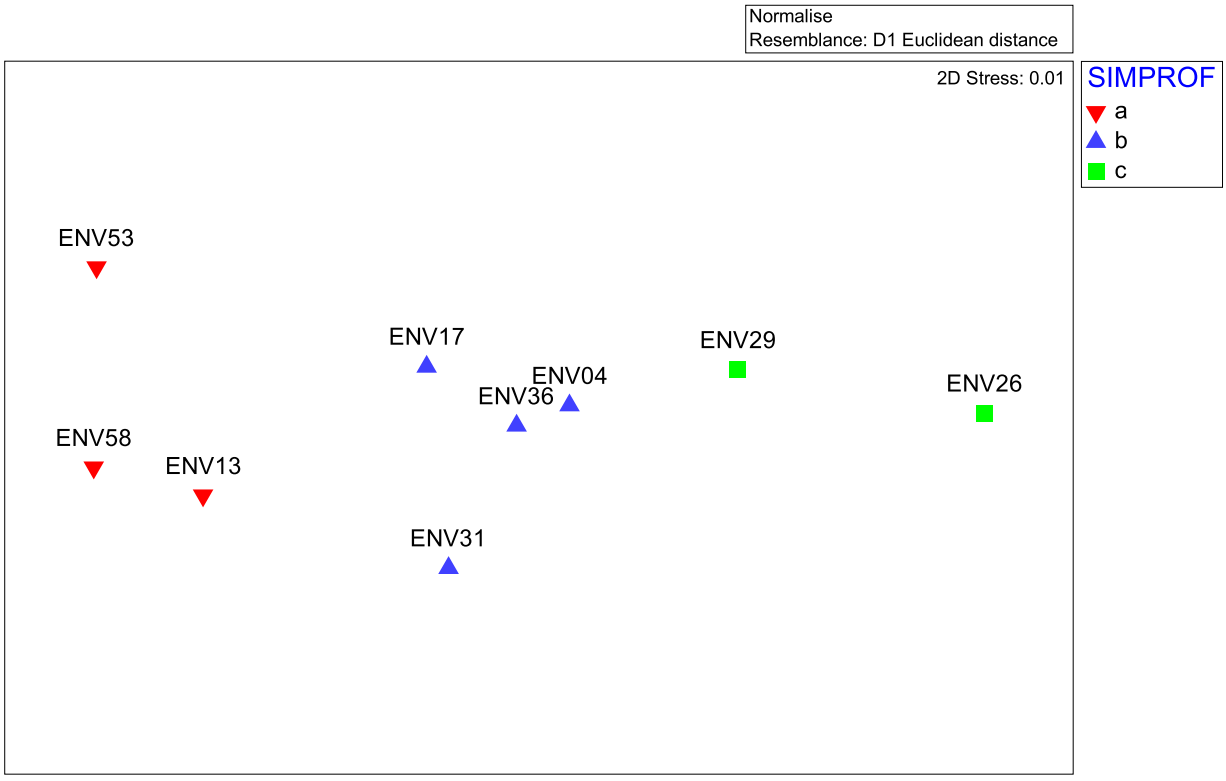
Stations	SIMPROF	Dissimilarity (Euclidean Distance)	Physico-chemical Parameters Influencing Station Separation	Other factors
ENV13, ENV53, ENV58	SIMPROF *a* vs *b, c*	7.06	Coarsest sediments, lowest concentrations of TOC, n-alkanes, pristane, PAH and most metals (Cr, Cu, Ni, Pb and Zn)	Shallowest stations
ENV04, ENV17, ENV31, ENV36	SIMPROF *b* vs c	5.64	Coarser sediment and lower concentrations of hydrocarbons and metals than the remaining stations.	
ENV26, ENV29	SIMPROF *c*	NA	NA	Deepest Stations

Figure 2.6 Multivariate Analyses of the Nine Station Physico-chemical Data Set

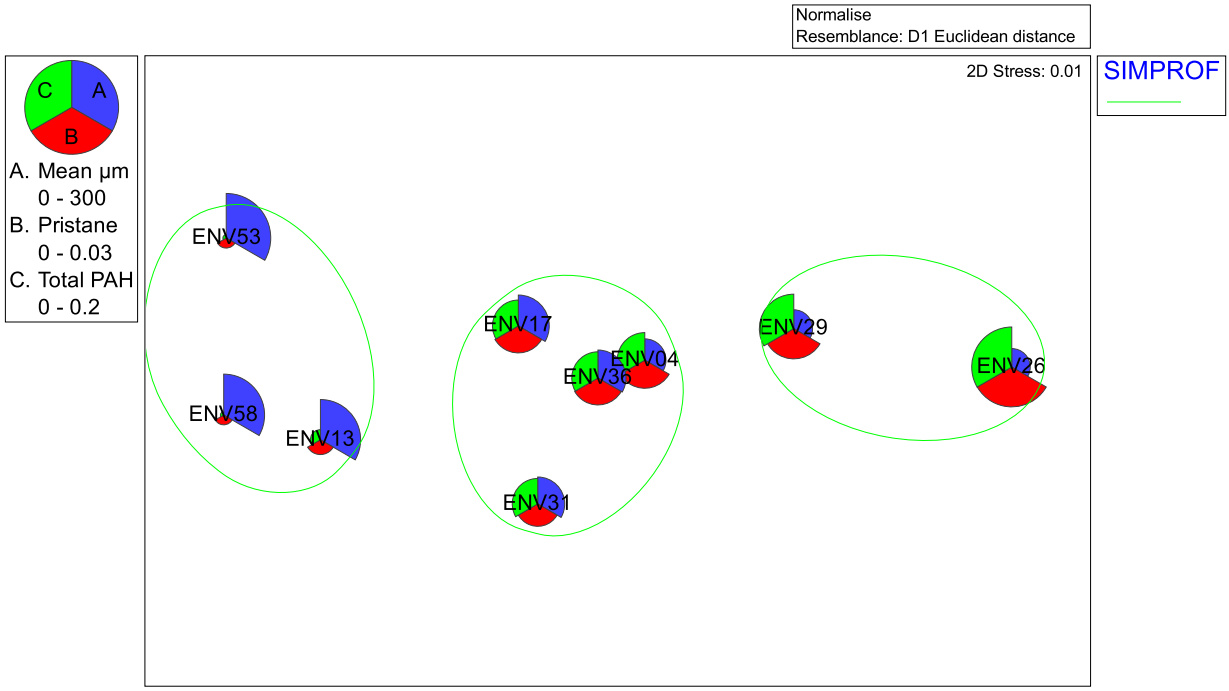
a) Euclidean Distance Dendrogram



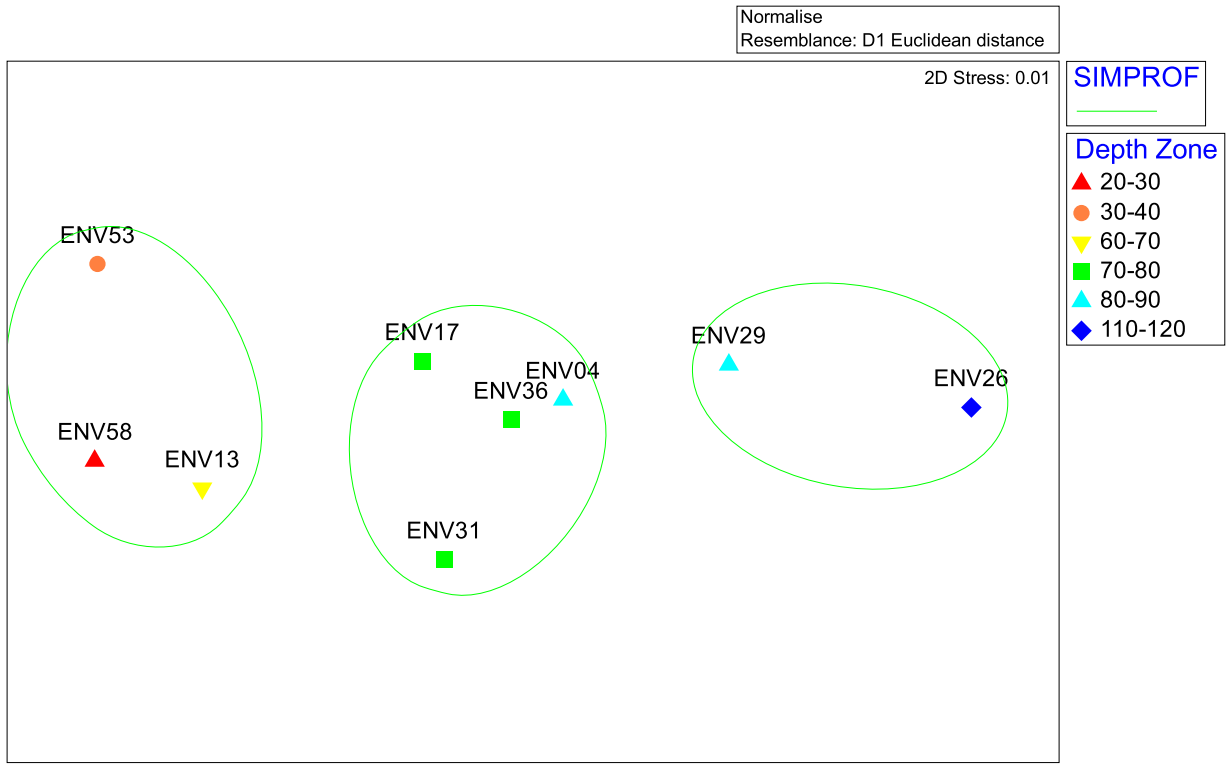
b) MDS Ordination



c) MDS Ordination with Bubbles Representing a Selection of Environmental Variables



d) MDS Ordination with Symbols Indicating 10m Depth Zone



2.10 DNA Metabarcoding Results

2.10.1 Overview

Two samples for sediment eDNA and four for water eDNA (two near surface and two near seabed) were collected at a subset of eight of the stations where physico-chemical samples were obtained (*i.e.* excluding ENV58) with primary samples sent to the laboratory. The remaining samples were retained as spares. All records are provided in Appendix L. Each row in Appendix L represents one operational taxonomic unit (OTU), shown with the lowest possible taxonomic assignment based on currently available reference data. Each column represents a sample, showing the proportion of sequence reads per detected OTU. Care should be taken interpreting the numbers of reads in terms of relative species abundance or biomass as unavoidable biases introduced during the laboratory process can have a major effect on this relationship, for example, some species amplify more readily than others during processing.

The most conservative approach is to analyse the data in terms of presence-absence. Due to the number of taxa included in the analysis, presence-absence data still has high statistical power for demonstrating change. If abundance data for particular species is important to the project, then incidence across multiple samples can be used as a proxy for abundance (*e.g.* a species detected in every sample replicate is likely to be more abundant than one found only in a small proportion of replicates). Alternatively, this may be a scenario in which conventional methods are the better suited (see Section 0).

2.10.2 Summary of Notable Species

The sediment invertebrate eDNA data set detected *A. islandica* at Station ENV29. This species is on the OSPAR (2008) list of threatened and/or declining species and habitats and is listed as a low or limited mobility species PMF in Scottish offshore waters (NatureScot, 2020a).

The water vertebrate eDNA data set detected Norway pout (*Trisopterus esmarkii*) and Atlantic mackerel (*Scomber scombrus*), which are PMFs in Scottish waters (NatureScot, 2020a), and listed on the Scottish Biodiversity List (2020b). Both species are listed as least concern when considering global and European stocks on the IUCN (2023) Red List. Three marine mammals were detected; harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*) and Risso's dolphin (*Grampus griseus*), and are listed on the Scottish Biodiversity List (2020b) and are PMFs in Scottish waters (NatureScot, 2020a).

In addition, the rainbow (steelhead) trout (*Oncorhynchus mykiss*) was detected at Station ENV53, located approximately 2.5km from the coast. This species is known to migrate to the sea during its lifecycle. They also thrive in sea lochs where they are a commercially farmed species (Kames, 2023).

The fish eDNA data set recorded Atlantic cod (*Gadus morhua*), herring (*Clupea harengus*) and whiting (*Merlangius merlangus*) which are listed as PMFs in Scottish waters (NatureScot, 2020a), and on the Scottish Biodiversity List (2020b) together with *T. esmarkii* and *S. scombrus* also detected in the vertebrate analysis. *G. morhua* is listed as vulnerable on the IUCN (2023) Red List when considering global stock assessment; however, it is listed as least concern when considering European stocks. Additionally, the brown or sea trout (*Salmo trutta*) was detected at Station ENV53. This species, which is listed on the Scottish Biodiversity List (NatureScot, 2020b), has two possible lifecycle patterns, one of which matures at sea and stays in coastal areas.

2.10.3 Summary Statistics for Sediment Metabarcoding

A total of 491 OTUs were detected from sediment samples along the ECR as detailed in Table 2.13. Full read counts of the OTUs detected per station are tabulated in Appendix L. Of the 491 detected bacterial and infaunal OTUs, a greater percentage of infaunal OTUs were identified to species level (42%) compared to the bacterial OTUs (1%) possibly related to the larger pool of reference material for infaunal OTUs, see Table 2.13.

Bacteria

The bacterial data set identified 26 taxonomic groups based on class with proportional contributions of these taxonomic groups along the ECR detailed in Table 2.14 and presented for each station in Figure 2.7. The 'Other' category comprised 170 OTUs which could not be identified to class.

The most detected taxonomic group along the ECR (n=170) was the 'Other' which accounted for 38% of OTUs. The second most detected taxonomic group was Gammaproteobacteria (n=95) accounting for 21% of the OTUs. Gammaproteobacteria dominance is likely given it is one of the richest classes within the bacteria phyla (Williams *et al.*, 2010). The relative dominance of 'Other' within the proportional contributions was partly due to the inability to determine these OTUs further than phylum (n=79) or domain (n=91).

Of the 443 bacterial OTUs, a total of 75 (17%) were present in all sediment stations, while 109 (25%) occurred at a single station. The relatively high numbers of widespread OTUs and lone OTUs along the ECR suggested that the community had been subjected to relatively little disturbance.

Infauna

A total of 12 taxonomic groups based on class were detected from the sediment infauna data set with the proportional contribution of these taxonomic groups along the ECR detailed in Table 2.15 and presented for each station in Figure 2.8. The 'Other' category comprised one OTU which was only classified to the phylum Platyhelminthes.

Polychaeta (n=20) was the most detected taxonomic group along the ECR and accounted for 42% of the OTUs. The second most detected group was the Arthropoda Copepoda (n=10, 21%). The relative abundance of 'Other' within the proportional contributions was partly due to the inability to determine these OTUs further than phylum (n=1). Five infaunal taxonomic groups (Chromadorea, Eurotatoria, Ophiuroidea, Palaeonemertea and Other) were represented by a single OTU.

Of the 48 infaunal OTUs, a total of 30 (63%) were present at a single station along the ECR. However, unlike the bacterial data set, none was detected at all stations. The absence of a consistent infaunal community as well as a relatively high proportion of lone OTUs suggest the community heterogeneity across the ECR may have been under sampled for the infaunal size class. This may be improved by analysis of the samples from the remaining 32 stations or analysis of second samples acquired at each of the stations, though it is not certain that this would fill all community gaps.

Table 2.13 OTU Sediment Detections per Target and Percentage Successfully Classified

Target	Number of Stations Analysed	Number of Stations containing OTUs	Number of OTUs	Phylum (%)	Class (%)	Order (%)	Family (%)	Genus (%)	Species (%)
Bacteria (sediment)	8	8	443	79	62	38	25	6	1
Infauna (sediment)	8	8	48	100	98	77	73	65	42

Table 2.14 Contribution of Gross Sediment Bacterial OTU Taxonomic Groups

Group by Class	Reads		OTUs	
	Number	Proportional Contribution %	Abundance	Proportional Contribution %
Acidimicrobiia	646	<1	3	<1
Acidobacteria	12847	5	20	5
Actinomycetia	6650	3	18	4
Alphaproteobacteria	6644	3	36	8
Aminicenantia	620	<1	4	<1
Anaerolineae	5888	2	16	4
Bacteroidia	3655	1	9	2
Betaproteobacteria	3183	1	2	<1
Cyanophyceae	64	<1	1	<1
Cytophagia	2276	<1	8	2
Dehalococcoidia	187	<1	1	<1
Deltaproteobacteria	123	<1	2	<1
Flavobacteria	2016	<1	8	2
Fusobacteria	129	<1	1	<1
Gammaproteobacteria	82244	33	95	21
Ignavibacteria	412	<1	1	<1
Kiritimatiellae	126	<1	3	<1
Nitrospira	1309	<1	3	<1
Phycisphaerae	59	<1	2	<1
Planctomycetacia	6376	3	30	7
Planctomycetia	62	<1	1	<1
Sphingobacteria	143	<1	2	<1
Spirochaetes(Class)	35	<1	1	<1
Thermodesulfovibrionia	84	<1	1	<1
Verrucomicrobiae	659	<1	5	1
Other Bacteria	111703	45	170	38
Total	**248140**	**100**	**443**	**100**

"Other Bacteria" includes the 79 (18%) OTUs that could not be identified beyond Phylum and the 91 (21%) OTUs that could not be identified beyond domain.

Table 2.15 Contribution of Gross Sediment Infaunal OTU Taxonomic Groups

Group by Class	Reads		OTUs	
	Number	Proportional Contribution %	Abundance	Proportional Contribution %
Bivalvia	243	<1	3	6
Chromadorea	66	<1	1	2
Copepoda	2189	1	10	21
Echinoidea	36734	21	2	4
Eurotatoria	118	<1	1	2
Gastropoda	1072	<1	3	6
Hydrozoa	4905	3	3	6
Ophiuroidea	34977	20	1	2
Palaeonemertea	43	<1	1	2
Polychaeta	91926	53	20	42
Sagittoidea	478	<1	2	4
Other	38	<1	1	2
Total	**172789**	**100**	**48**	**100**

"Other" represents OTUs that could not be identified beyond Phylum.

Figure 2.7 Contributions of Gross Sediment Bacteria OTU Taxonomic Groups by Station

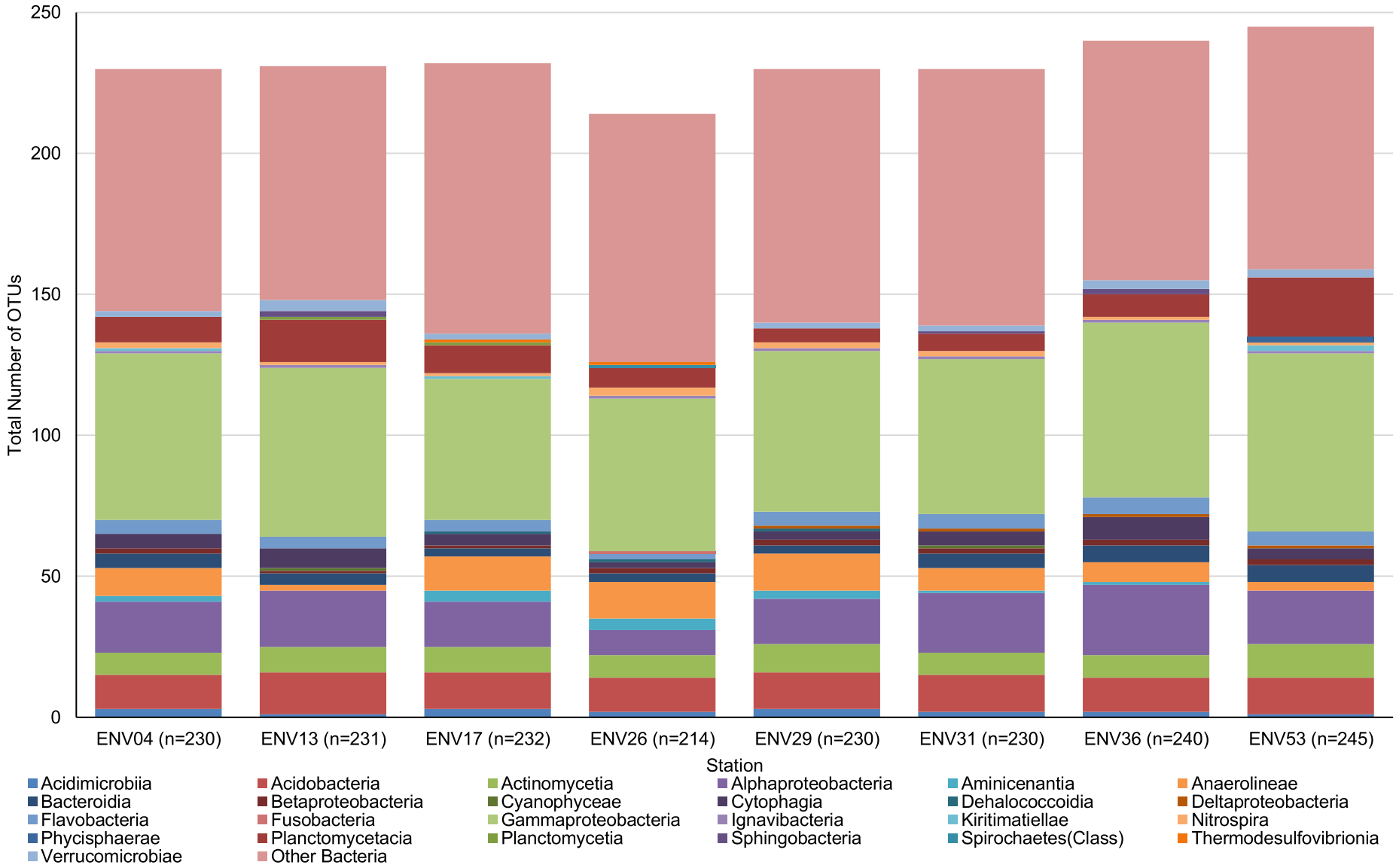
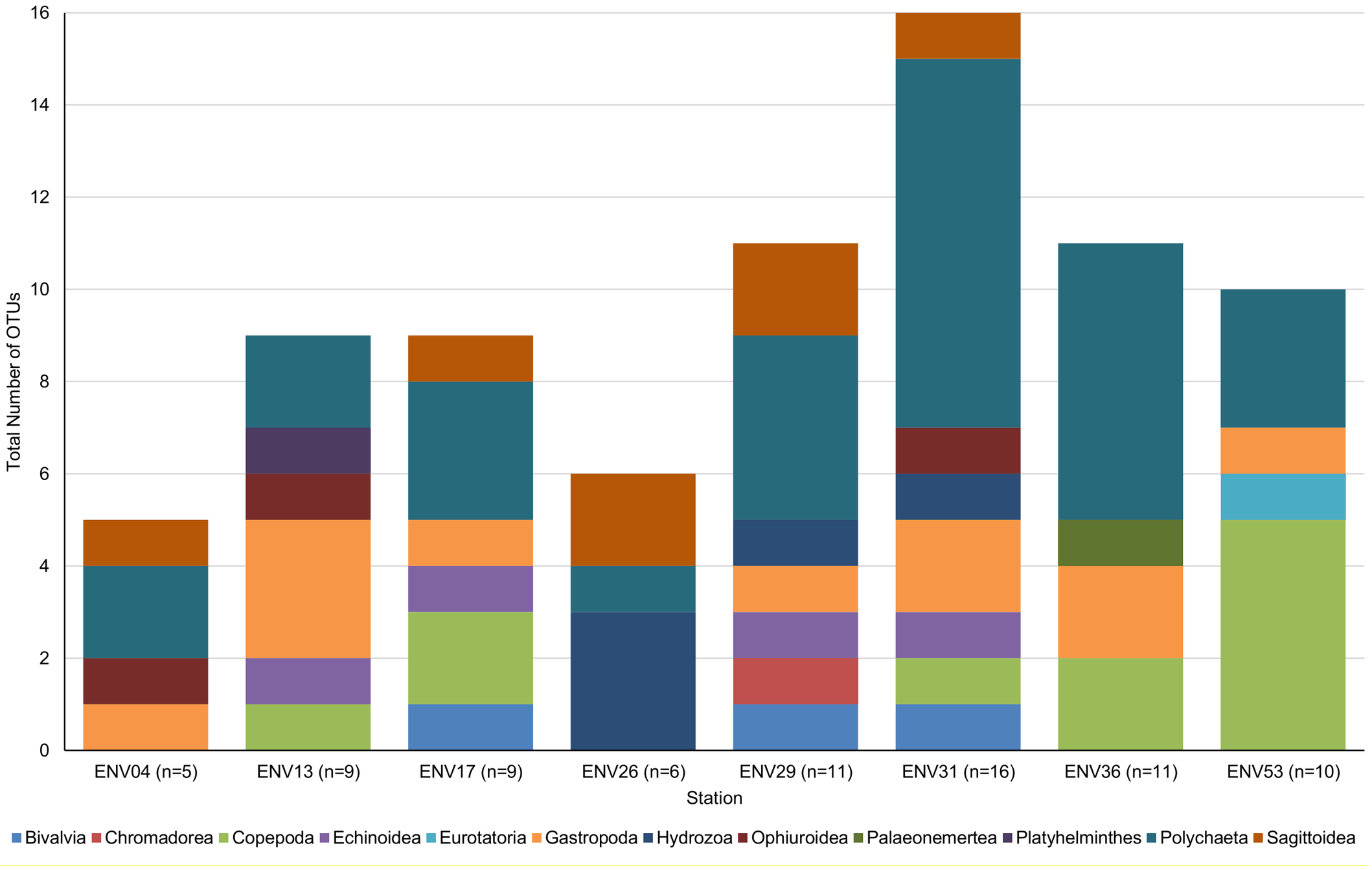


Figure 2.8 Contributions of Gross Sediment Infaunal OTU Taxonomic Groups by Station



Comparative taxonomic heat trees detailing the number of OTUs along the ECR from bacteria taxa down to the order rank is presented in Figure 2.23 while the taxonomic heat trees detailing discrete infaunal taxa OTUs down to the rank order are presented in Figure 2.24. The nodes (circles) represent taxon whilst the lines detail the hierarchical relationships between taxa. The colour scale and relative width of the nodes represent the number of OTUs for each taxon. Labels without nodes represent missing taxa. Summary statistics for the sediment bacterial and infaunal richness are detailed in Table 2.16.

Figure 2.9 Sediment Bacterial Taxonomic Heat Trees of the Number of OTUs

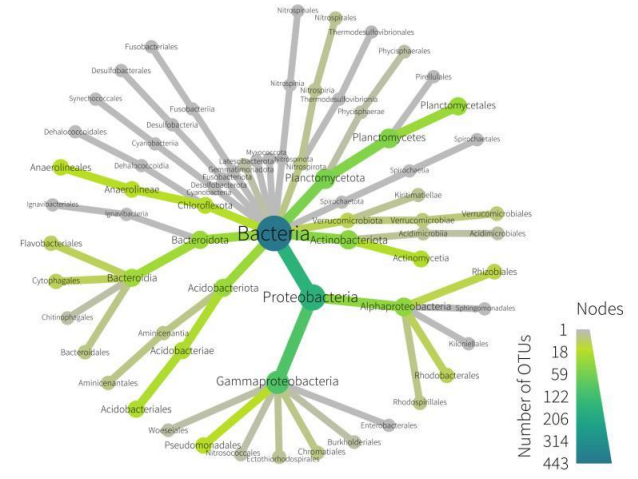


Figure 2.10 Sediment Infaunal Taxonomic Heat Trees of the Number of OTUs

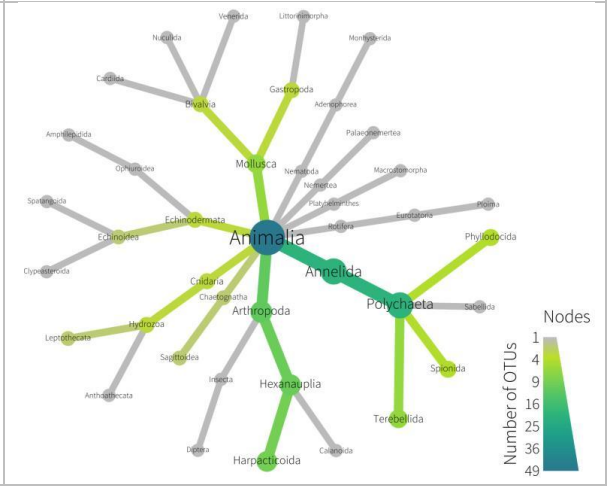


Table 2.16 Summary of Sediment (Bacterial and Infaunal) Richness

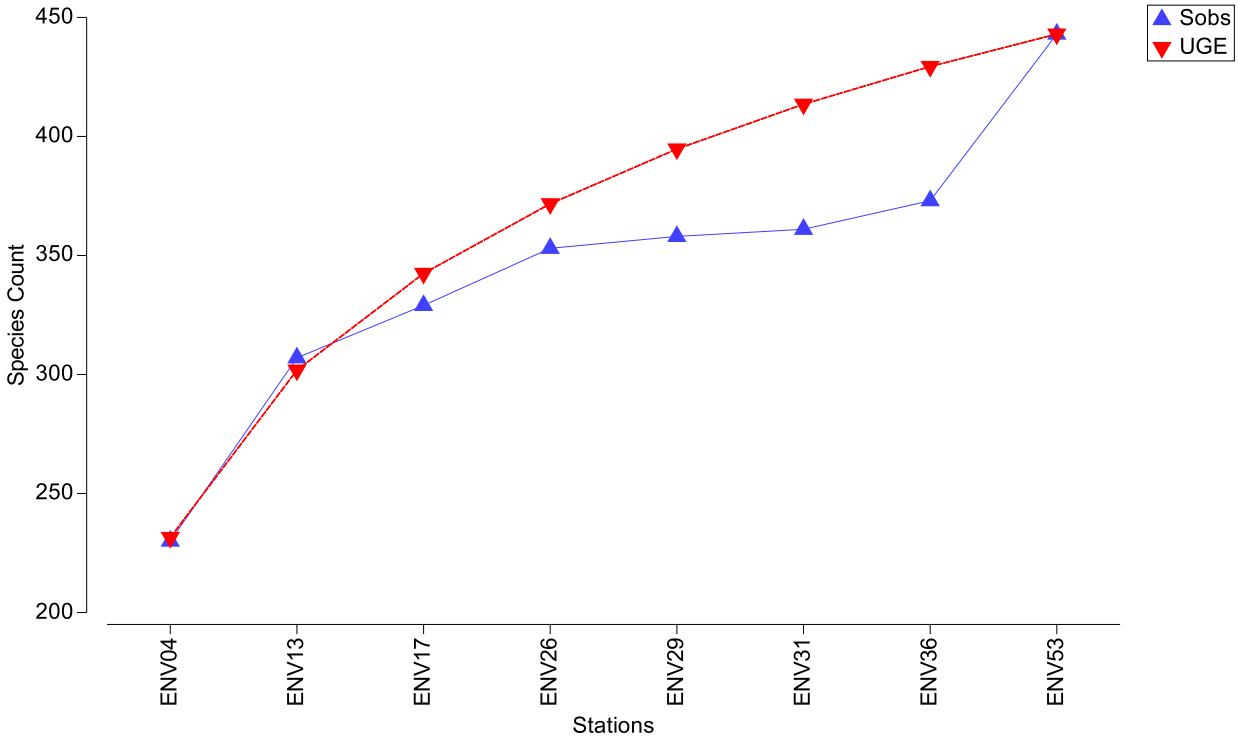
	Bacterial	Infaunal
Minimum	214	5
Maximum	245	16
Mean	232	10
±SD	9	3.4

Accumulation plots of OTUs for the bacterial and infaunal data sets, for the array area are presented in Figure 2.11 and Figure 2.12, respectively. Two lines are plotted; the first (plotted in blue and often referred to as a Sobs curve) adds the new taxa to those already recorded, in sample order. The second line (plotted in red and often referred to as the UGE curve) is smooth, as it is an average output based on the samples being added in a random order 999 times (Ugland *et al.*, 2003). Notable changes in the slope of the species in order of observation (Sobs) curve compared to the UGE curve can be an indication of differences in the community composition. Further, the relative position of the Sobs curve to that of the UGE curve can reflect the number of OTUs versus expectations had all samples been equal.

The Sobs curve for the sediment bacteria data set (Figure 2.11) began below the UGE curve with the addition of the first station (Station ENV04). The addition of 77 new OTUs at Station ENV13 raised the Sobs curve relatively steeply, placing it above the UGE curve for that station only. The remaining stations returned fewer than expected new OTUs until the addition of the final station (ENV53) with 70 new OTUs. These results indicate that the bacterial communities at the two shallowest stations (ENV13 and ENV53) were relatively distinct from the stations in deeper water.

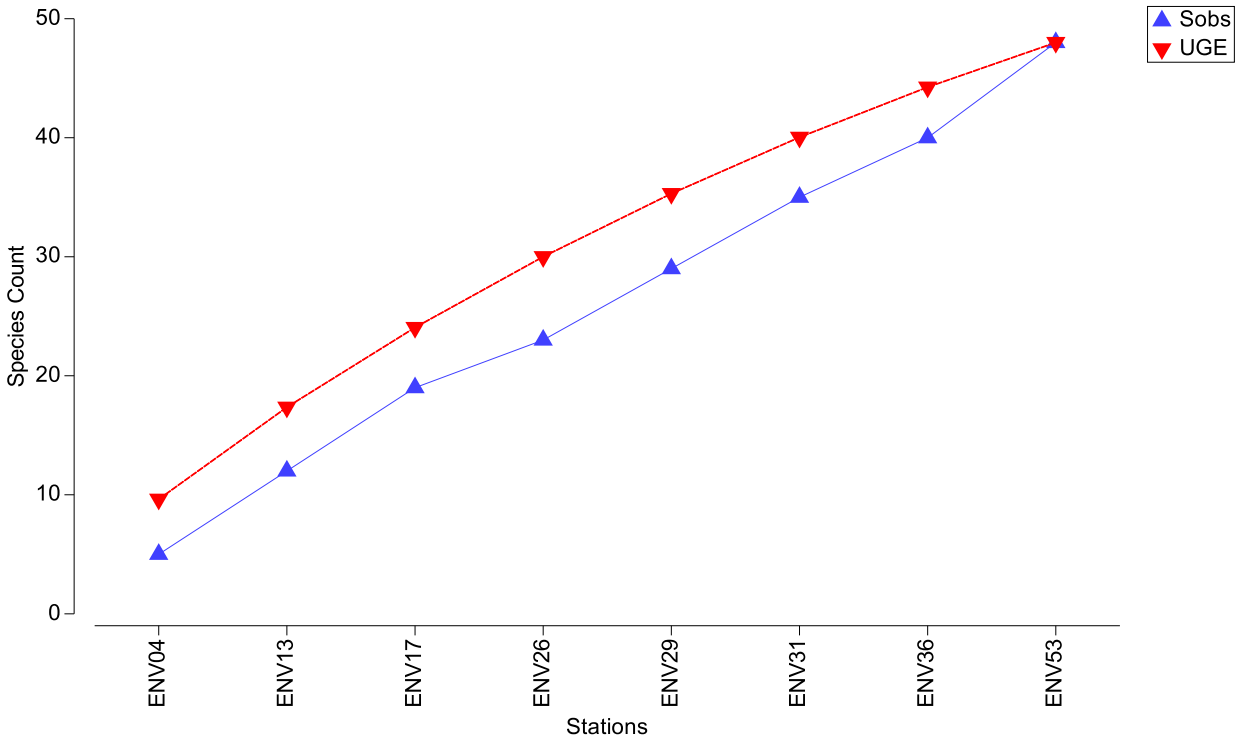
The Sobs and UGE curve of the sediment bacterial data OTU accumulation plot for the ECR continued to rise with the addition of the last samples. This reflected that further samples across the ECR may elicit additional OTUs to those reported during the current sampling campaign.

Figure 2.11 Bacterial OTU Accumulation Curve



The Sobs curve for the ECR sediment infaunal data set (Figure 2.12) began below the UGE curve, and rose parallel with it until the addition of the last sample, indicating that fewer OTUs were present at Station ENV04 than was to be expected and that the infaunal community at the shallowest station (ENV53) was relatively distinct. With the Sobs and UGE curves continuing to rise at a consistent rate (UGE; OTUs). This reflected that analysis of samples from the other 32 sampled stations along the ECR may elicit additional OTUs to those reported.

Figure 2.12 Infaunal OTU Accumulation Curve



2.10.4 Summary Statistics for Water Metabarcoding

A total of 72 operational taxonomic units (OTUs) were detected from water samples along the ECR as detailed in Table 2.17. Full read count of the OTUs detected per statins are tabulated in Appendix L.

Fish

The fish eDNA data set identified 17 taxonomic groups based on family with the proportional contribution of each of these taxonomic families to the overall structure of the ECR detailed in Table 2.18 and presented for each station and sample in Figure 2.13 and Figure 2.14, respectively.

Of the 16 samples acquired across 8 stations for the fish eDNA water analysis, 8 samples contained amplifiable DNA. Station ENV36 did not recover samples with any amplifiable DNA, whereas both samples from Station ENV53 recovered amplifiable eDNA. One sample from each of the remaining stations contained amplifiable DNA and these were typically the bottom sample, other than at Station ENV04, where only the surface sample recovered amplifiable DNA. Gadidae and Pleuronectidae (both; n=5, 17%) were the most detected taxonomic families with Cottidae (n=3, 10%), the next most detected group. In addition, eleven taxonomic families were represented by a single OTU.

Of the 30 fish OTUs obtained from the water samples, 12 (40%) were present in a single sample, with none present at every station.

Vertebrates

The vertebrate eDNA data set identified 29 taxonomic groups based on family. Contributions of the taxonomic families to the overall structure of the survey area are detailed in Table 2.19 and presented for each station and sample in Figure 2.15 and Figure 2.16, respectively.

All samples acquired along the ECR for vertebrate eDNA analysis contained amplifiable DNA. Gadidae and Pleuronectidae (both; n=4, 10%) were consistent with the fish eDNA analysis being the most detected taxonomic families with Agonidae, Ammodytidae, Callionymidae, Cottidae, Delphinidae, Lotidae and Syngnathidae each being represented by two OTUs (5%) and the second most detected groups by family. Additionally, the remaining 20 taxonomic families were represented by a single OTU.

Of the 42 vertebrate OTUs obtained from the water samples, 20 (48%) were present in a single sample, 5 (12%) were present at every station, of which 3 (7%) were present in every sample.

Table 2.17 OTU Water Detections per Target and Percentage Successfully Classified

Target	Number of Stations Analysed	Number of Stations containing OTUs	Number of OTUs	Phylum (%)	Class (%)	Order (%)	Family (%)	Genus (%)	Species (%)
Fish (water)	8	7	30	100	100	100	100	90	90
Vertebrates (water)	8	8	42	100	100	100	100	86	74

Table 2.18 Contribution of Gross Water Fish OTU Taxonomic Families

Group by Class	Reads		OTUs	
	Number	Proportional Contribution %	Abundance	Proportional Contribution %
Agonidae	30672	4	1	3
Ammodytidae	120253	14	1	3
Argentinidae	625	<1	1	3
Blenniidae	1376	<1	1	3
Callionymidae	853	<1	2	7
Clupeidae	258396	30	2	7
Cottidae	75053	9	3	10
Cyclopteridae	3224	<1	1	3
Gadidae	114341	13	5	17
Gobiidae	1213	<1	2	7
Liparidae	58	<1	1	3
Pholidae	10044	1	1	3
Pleuronectidae	223732	26	5	17
Salmonidae	1667	<1	1	3
Scombridae	827	<1	1	3
Scophthalmidae	17477	2	1	3
Triglidae	13631	2	1	3
Total	**873442**	**100**	**30**	**100**

Table 2.19 Contribution of Gross Water Vertebrate OTU Taxonomic Families

Group by Class	Reads		OTUs	
	Number	Proportional Contribution %	Abundance	Proportional Contribution %
Agonidae	387	<1	2	5
Alosidae	16	<1	1	2
Ammodytidae	76289	38	2	5
Argentinidae	447	<1	1	2
Blenniidae	177	<1	1	2
Callionymidae	389	<1	2	5
Clupeidae	9357	5	1	2
Cottidae	3672	2	2	5
Cyclopteridae	285	<1	1	2
Cyprinidae	13	<1	1	2
Delphinidae	36	<1	2	5
Gadidae	41996	21	4	10
Gasterosteidae	75	<1	1	2
Gobiidae	26	<1	1	2
Labridae	25	<1	1	2
Liparidae	75	<1	1	2
Lotidae	1920	<1	2	5
Phocidae	289	<1	1	2
Phocoenidae	2481	1	1	2
Pholidae	837	<1	1	2
Pleuronectidae	22895	11	4	10
Salmonidae	16	<1	1	2
Scombridae	39	<1	1	2
Scophthalmidae	36132	18	1	2
Soleidae	59	<1	1	2
Stichaeidae	383	<1	1	2
Syngnathidae	46	<1	2	5
Triglidae	773	<1	1	2
Zoarcidae	29	<1	1	2
Total	**199164**	**100**	**42**	**100**

Figure 2.13 Contributions of Gross Water Fish OTU Taxonomic Families by Station

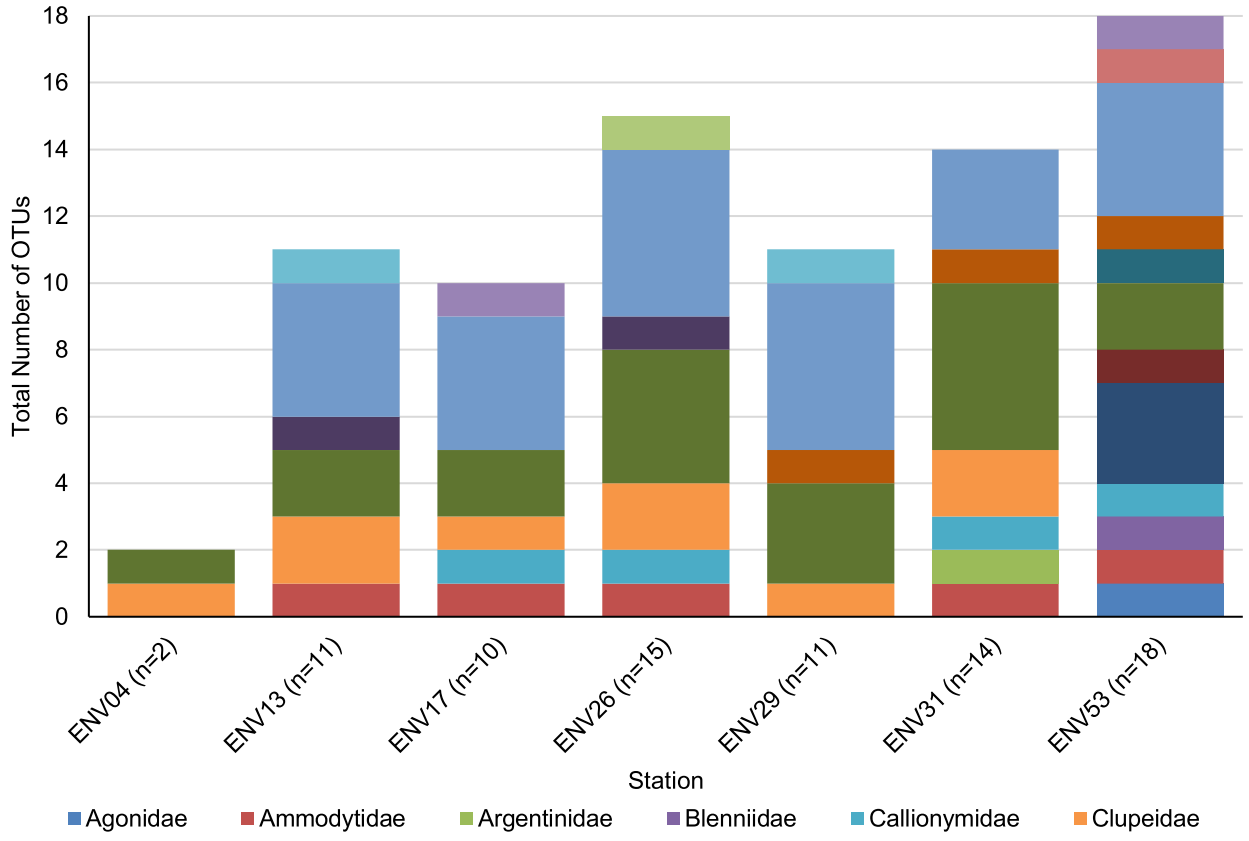


Figure 2.14 Contributions of Gross Water Fish OTU Taxonomic Families by Sample

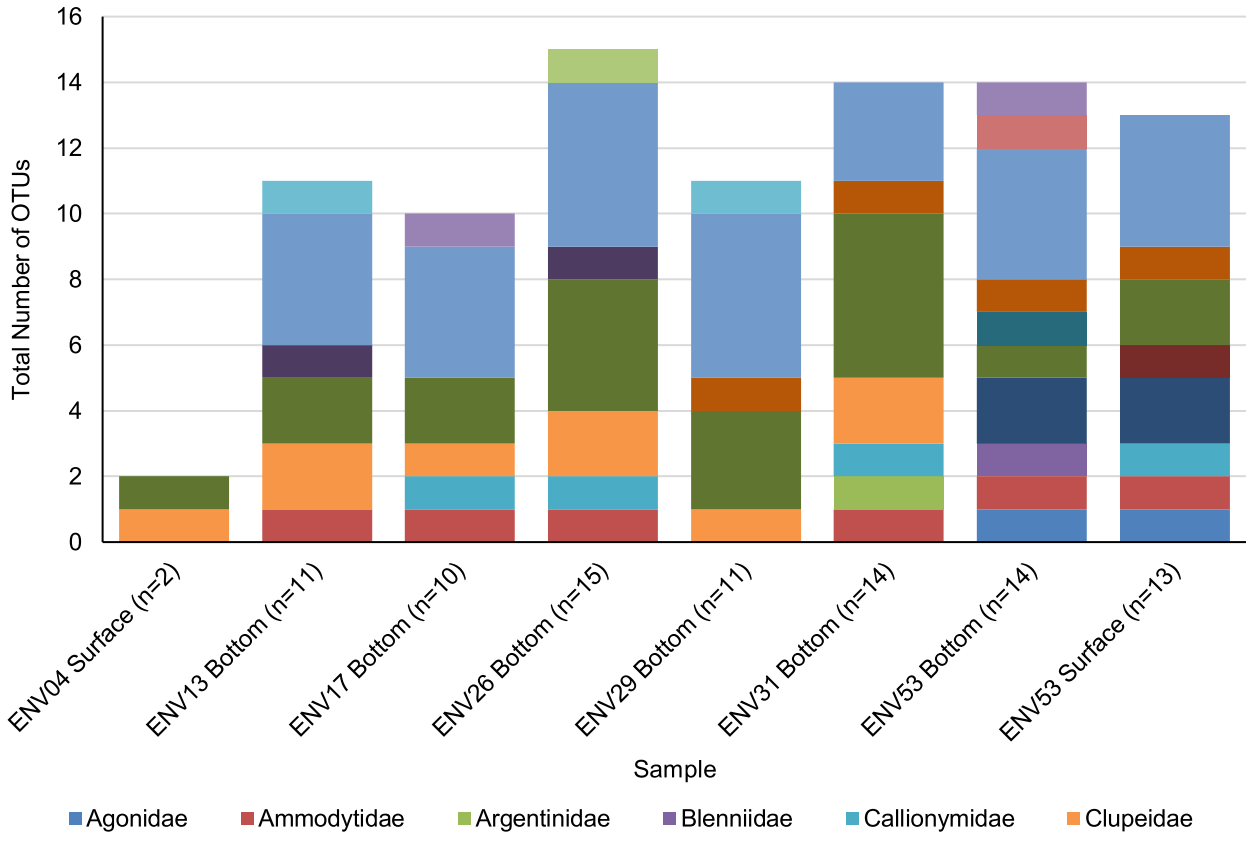


Figure 2.15 Contributions of Gross Water Vertebrate OTU Taxonomic Families by Station

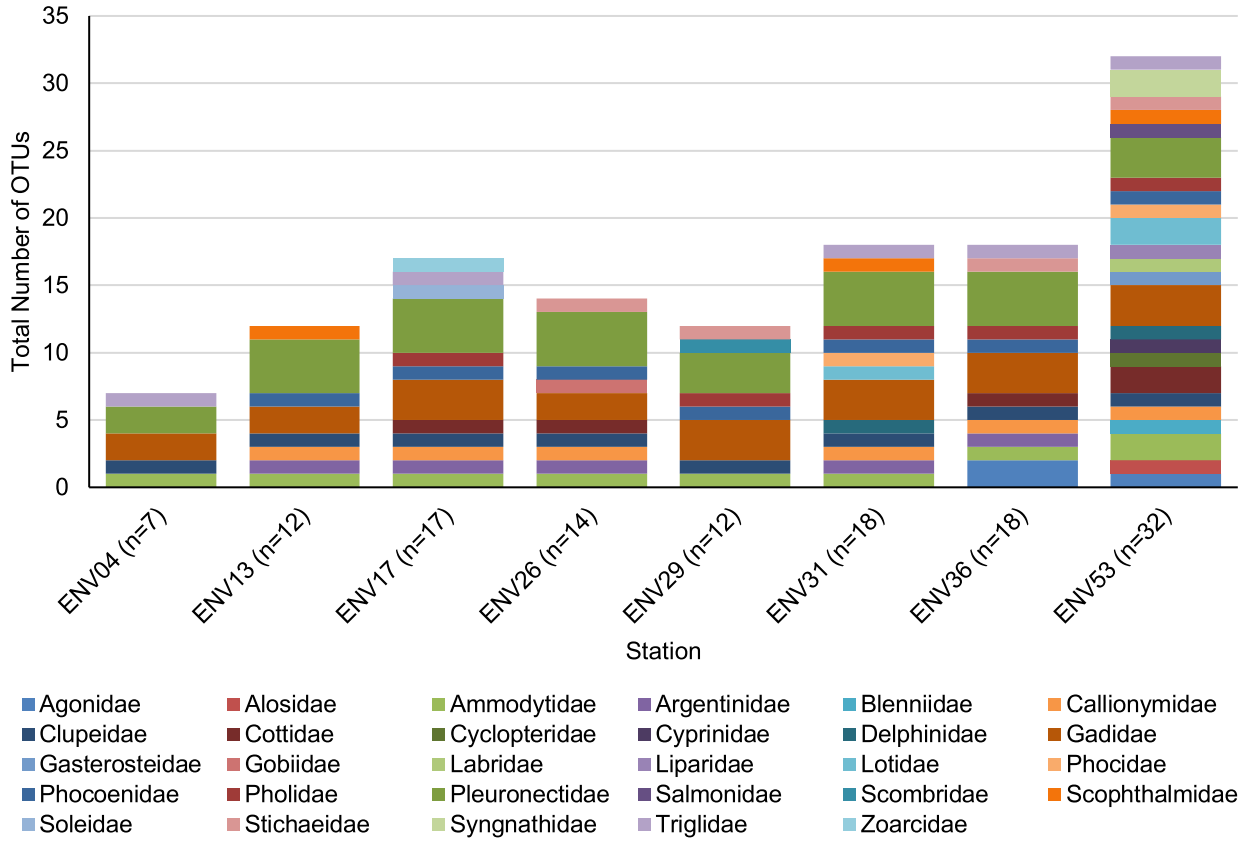
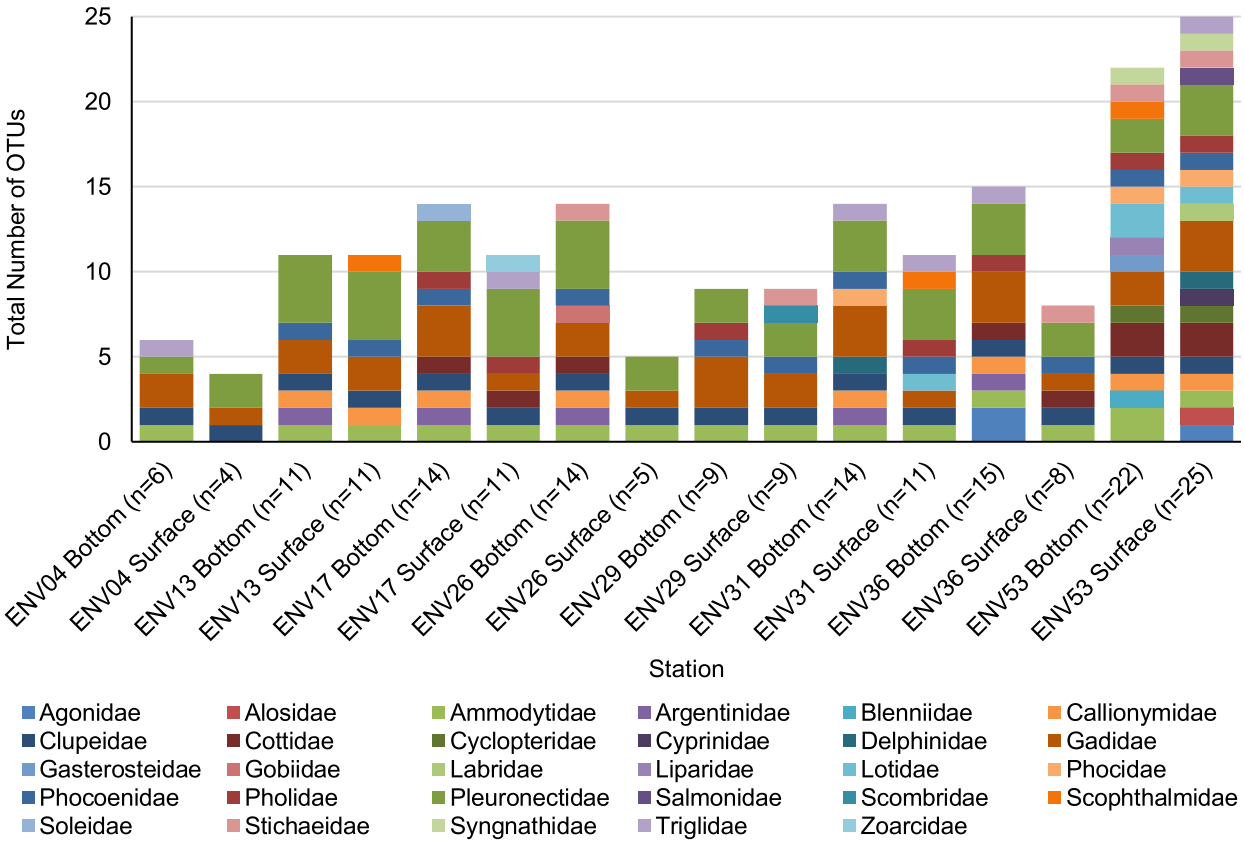


Figure 2.16 Contributions of Gross Water Vertebrate OTU Taxonomic Families by Sample



Comparative taxonomic heat trees detailing the number of OTUs across the ECR from fish taxa down to the order rank is presented in Figure 2.17 while the taxonomic heat trees detailing vertebrate taxa OTUs down to the rank order are presented in Figure 2.18. Summary statistics for the water fish and vertebrate richness are detailed in Table 2.20.

Figure 2.17 Water Fish Taxonomic Heat Trees of the Number of OTUs

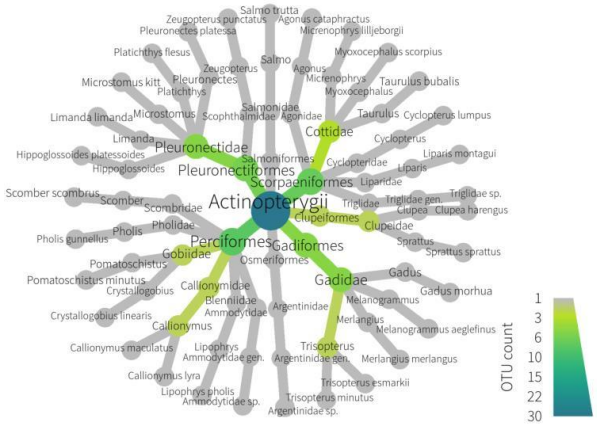


Figure 2.18 Water Vertebrate Taxonomic Heat Trees of the Number of OTUs

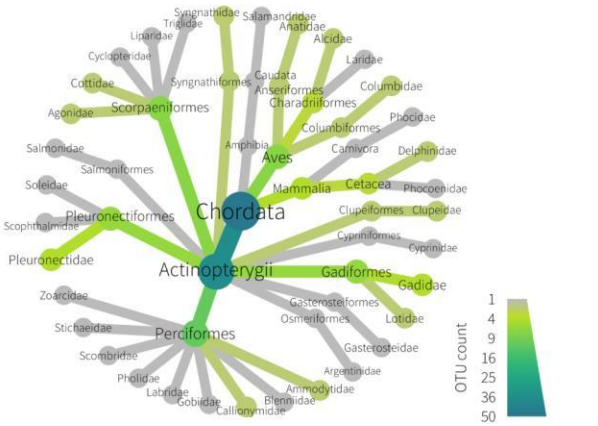


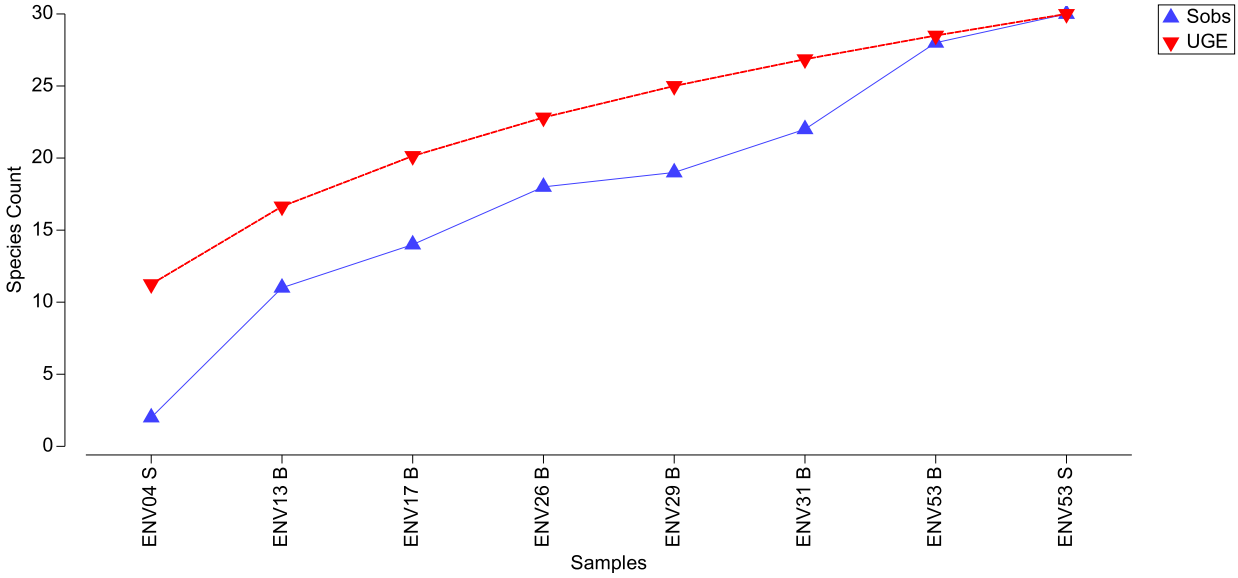
Table 2.20 Summary of Water (Fish and Vertebrate) Richness

	Fish	Vertebrate
Minimum	2	7
Maximum	30	42
Mean	14	19
±SD	8	11

Accumulation plots of OTUs for the fish and vertebrate data sets, along the ECR are presented in Table 2.19 and Table 2.20.

The Sobs curve for the water fish data set (Figure 2.19) began below the UGE, but rose relatively steeply with the addition of the shallowest stations (ENV13 and ENV53), indicating that fewer OTUs were present at Station ENV04 than was to be expected and that the fish communities at the shallowest stations (ENV13 and ENV53), particularly in the bottom samples, were distinct from those at the remaining stations. The Sobs and UGE curve of the water fish data OTU accumulation plot for the ECR continued to rise with the addition of the last sample. This reflected that further samples across the array area may elicit additional OTUs to those reported during the current sampling campaign.

Figure 2.19 Fish OTU by Sample Accumulation Curve

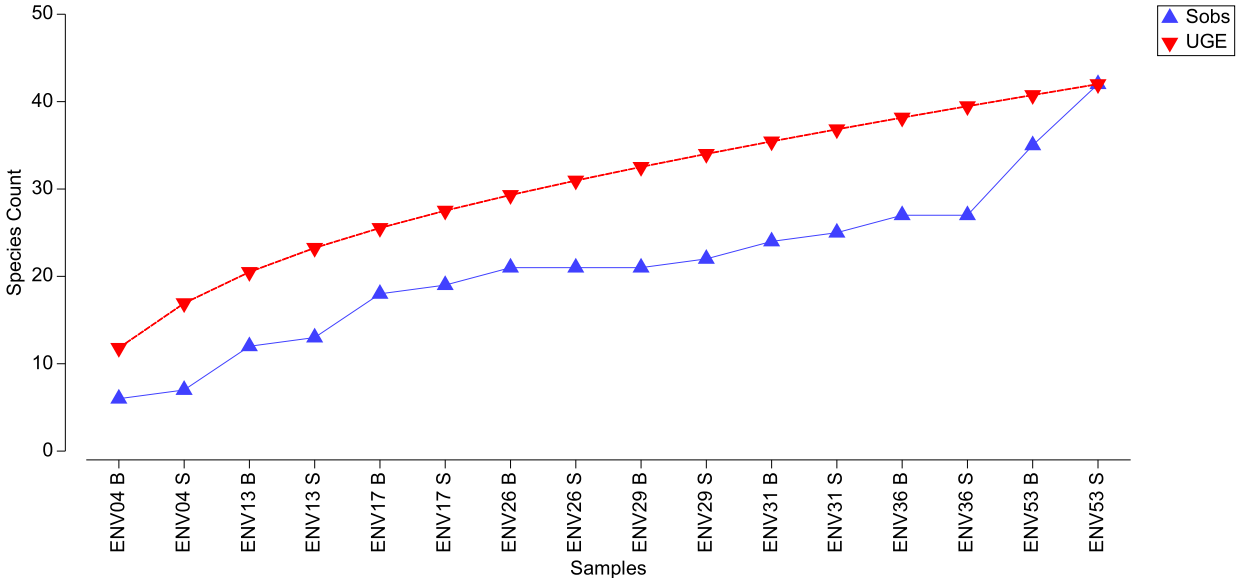


S Surface sample B Bottom sample

The Sobs curve for the ECR water vertebrate data set (Figure 2.20) reflected a similar pattern to the fish data set with the curve beginning and remaining below the UGE curve. However, it rose relatively steeply with the addition of bottom samples from Stations ENV13 and ENV17 and both samples from Station ENV53. The low start to the Sobs curve, indicates that fewer OTUs were present at Station ENV04 than was to be expected. The relative flatness of the Sobs curve with the addition of each surface sample indicates that these were less diverse and/or added relatively few new OTUs compared with the bottom samples, other than at Station ENV29. The relative steepness of the Sobs curve at the shallowest stations (ENV13 and ENV53) and the relatively nearshore Station ENV17 indicate that the vertebrate communities at these stations were distinct from those at the remaining stations.

With the Sobs and UGE curves continuing to rise with the addition of the last samples, further samples across the ECR may elicit additional OTUs to those reported during the current sampling campaign.

Figure 2.20 Vertebrate OTU by Sample Accumulation Curve



2.10.5 Sediment OTU Community Structure using Multivariate Analyses

Multivariate analyses enable subtle trends within the data sets to be identified. Bray-Curtis similarity matrices were produced from the standardised data using PRIMER v7. Rather than applying the conservative approach of presence absence, the decision was made to used standardised reads as a proxy for relative abundance to maximise use of the available data. A SIMPROF permutation test was conducted in conjunction with CLUSTER analysis and the results illustrated on a dendrogram. Red lines join samples that are statistically indistinguishable, whilst black lines join samples which are distinct from one another. A nMDS routine was also run. The results of the CLUSTER analysis including SIMPROF analysis in the form of a Bray-Curtis similarity dendrogram and nMDS plot for the sediment bacteria samples are displayed in Figure 2.21.

Bacteria

The CLUSTER analysis and resulting dendrogram for the ECR sediment bacterial OTU data set (Figure 2.21a) identified six SIMPROF groups which comprised four outliers (SIMPROF *a* ENV53, *b* ENV13, *c* ENV26, and *d* ENV17) and two closely associated pairs (SIMPROF *e* (ENV04 and ENV29) and *f* (ENV31 and ENV36). All the samples were more similar than dissimilar to one another (similarity >50%) with the exception of Station ENV53 which was <28% similarity to any other station. The key OTUs and classes responsible for the multivariate pattern in the bacterial eDNA data set are displayed in Table 2.21, based on SIMPER analysis and review of the raw data.

Numerous OTUs each made a small contribution towards the separation of the groups from the remaining stations. This may be due to the bacterial communities being far richer than equivalent metazoan communities and less discriminately bound to the sediment given their established variation with both overlying water quality along with direct sediment physico-chemistry (Allison & Martiny, 2008; Frühe *et al.*, 2021). However, they still provide a suitable sensitive receptor to environmental pressures for monitoring impacts (Horton *et al.*, 2019).

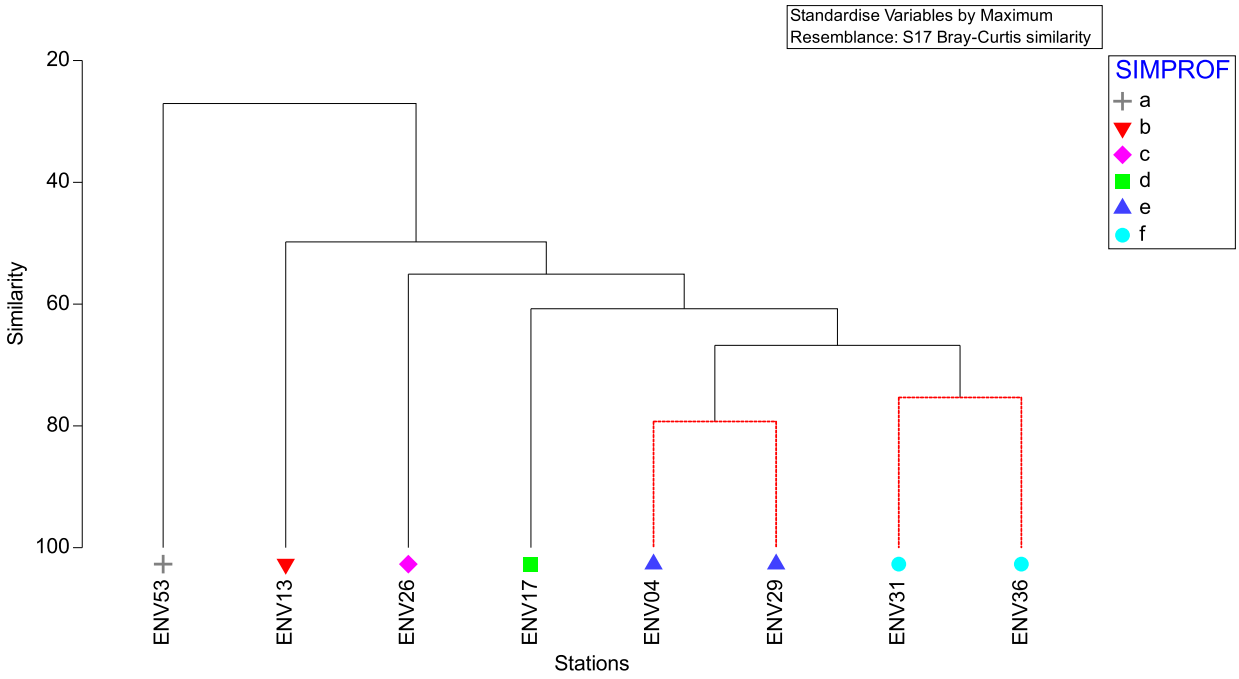
The nMDS ordination of the ECR sediment bacterial sample data (Figure 2.21b) revealed a similar pattern to the CLUSTER analysis, with a stress level of 0, this can be considered a perfect representation of the rank dis(similarities) and overall pattern observed in the data set, which broadly corresponds with changes in water depth across the ECR.

Infauna

CLUSTER analysis for the ECR sediment infaunal OTU data set found no significant differences between the stations, despite them all recording less than 22% Bray-Curtis similarity with one another. This can largely be attributed to the relatively sparse data set. As with the bacterial data set, Station ENV53 was the most dissimilar station in terms of its infaunal community, recorded a Bray-Curtis similarity of <2% with the remaining stations.

Figure 2.21 Multivariate Analysis of Sediment Bacterial OTU Data by Station

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination with Symbols Indicating 10m Depth Zone

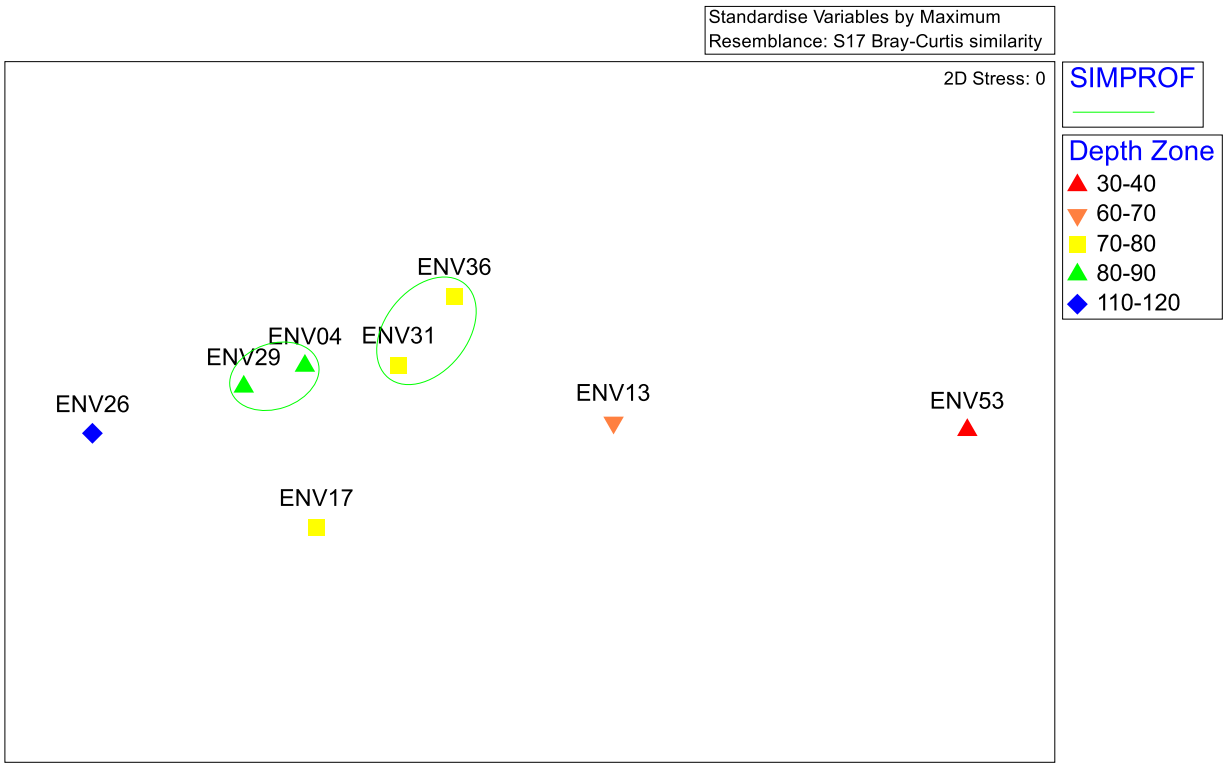


Table 2.21 Taxa Influencing Sediment Bacteria OTU SIMPROF Variation

Stations	SIMPROF	Similarity (Bray-Curtis %)	Taxa Influencing Station Separation
ENV53	SIMPROF *a* vs *b-f*	27.06	• Unique presence of 70 OTUs (including 24 Proteobacteria OTUs), accounting for 16% of the OTUs along the ECR. • 19% of OTUs recorded higher reads (84 OTUs including 27 Proteobacteria OTUs). • No reads of 49 OTUs (including 18 Proteobacteria OTUs), accounting for 11% of OTUs along the ECR. • 6 OTUs recorded lower reads accounting for 1% of the OTUs, of which 5 OTUs were Proteobacteria.
ENV13	SIMPROF *b* vs *c-f*	49.79	• Unique presence of 26 OTUs (including 9 Planctomycetes and 8 Proteobacteria), accounting for 13% of the OTUs along the ECR. • 18% of OTUs recorded higher reads (78 OTUs including 35 Proteobacteria OTUs and 10 Planctomycetes OTUs). • No reads of 62 OTUs (including 17 Proteobacteria OTUs and 8 Chloroflexi OTUs), accounting for 14% of the OTUs along the ECR. • 13 OTUs recorded lower reads accounting for 3% of the OTUs (including 6 Proteobacteria OTUs and 3 Bacteroidetes OTUs).
ENV26	SIMPROF *c* vs *d-f*	55.07	• Unique presence of 15 OTUs (including 5 Proteobacteria OTUs and 2 Planctomycetes OTUs), accounting for 3% of the OTUs along the ECR. • 16% of OTUs recorded higher reads (71 OTUs including 11 Chloroflexi OTUs and 9 Acidobacteria OTUs). • No reads of 42 OTUs (including 21 Proteobacteria OTUs) accounting for 9% of OTUs along the ECR. • 10 OTUs recorded lower reads accounting for 2% of the OTUs (including 2 Actinobacteriota OTUs and 2 Bacteroidetes OTUs).
ENV17	SMPROF *d* vs *e*, *f*	60.76	• Unique presence of 18 OTUs (including 4 Planctomycetes OTUs and 3 Acidobacteria OTUs), accounting for 4% of the OTUs along the ECR. • 15% of OTUs recorded higher reads (65 OTUs, including 13 Actinobacteriota OTUs and 13 Acidobacteria OTUs). • No reads of 41 OTUs (including 21 Proteobacteria OTUs and 6 Bacetroidetes OTUs), accounting for 9% of OTUs along the ECR. • 5 OTUs recorded lower reads accounting for 1% of the OTUs, of which 4 OTUs were Proteobacteria.
ENV04, ENV29	SIMPROF *e* vs *f*	66.77	• Unique presence of 18 OTUs (including 9 Proteobacteria OTUs and 5 Chloroflexi OTUs), accounting for 4% of the OTUs along the ECR. • 7% of OTUs recorded higher reads (32 OTUs, including 16 Proteobacteria OTUs and 6 Bacteroidetes OTUs). • No reads of 32 OTUs (including 8 Proteobacteria OTUs and 4 Bacteroidetes OTUs), accounting for 7% of the OTUs along the ECR. • 16 OTUs recorded lower reads accounting for 4% of the OTUs (including 8 Proteobacteria OTUs and 4 Bacteroidetes OTUs).
ENV31, ENV36	SIMPROF *f*	NA	NA

2.10.6 Water OTU Community Structure using Multivariate Analyses

The water multivariate analyses were produced from the standardised data in PRIMER v7. A SIMPROF permutation test was conducted in conjunction with CLUSTER analysis and the results illustrated on a dendrogram. In addition, a nMDS routine was also run.

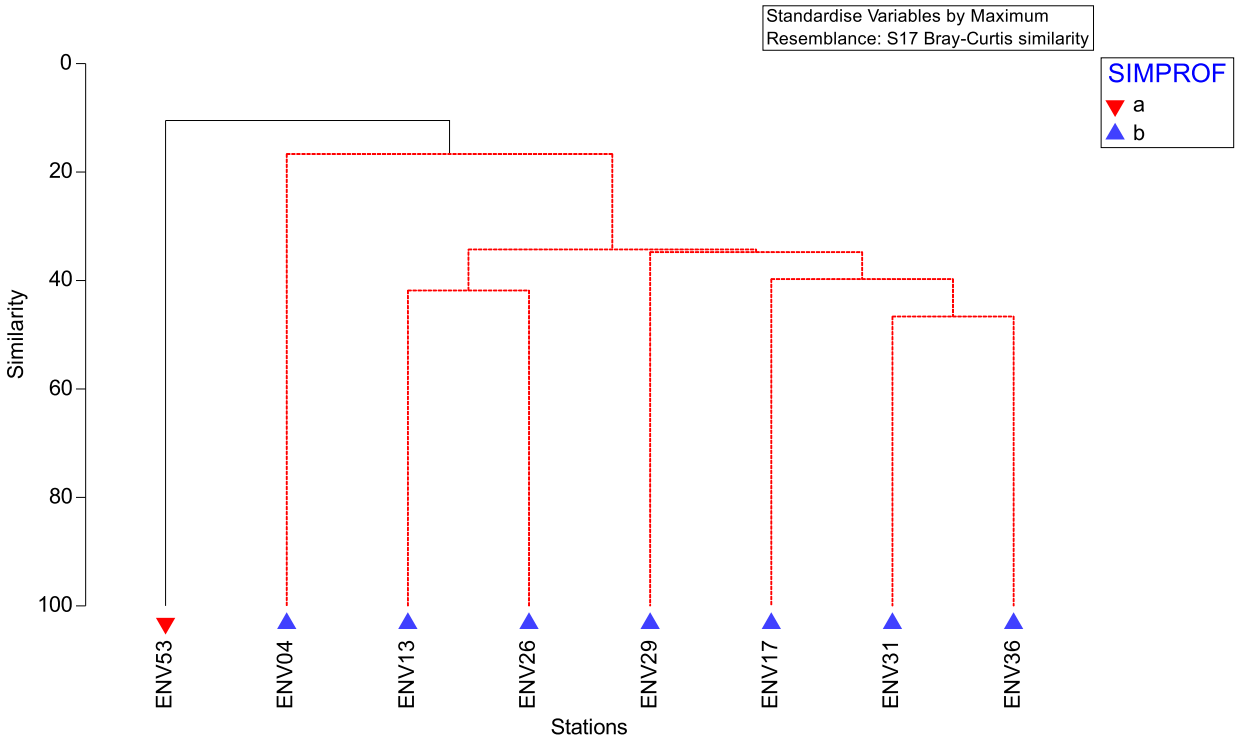
Fish

The cluster analysis of the ECR water fish OTU data set found no significant differences between the stations or samples, despite them all recording less than 38% Bray-Curtis similarity with one another. This can largely be attributed to the relatively sparse data set, with the surface sample from Station ENV04 being the most dissimilar in terms of its fish community, recording a Bray-Curtis similarity of less than 14% with the remaining stations and samples.

Vertebrates

CLUSTER analysis and the resulting dendrogram for the ECR water vertebrate OTU station data set (Figure 2.22) identified two groups, all of which were more dissimilar than similar (*i.e.* Bray-Curtis similarity of less than 50%). Station ENV53 (SIMPROF *a*) with a similarity of 11% included 15 unique OTUs accounting for 36% of the OTUs along the ECR. These consisted of two OTUs from Syngnathidae and one OTU from the remaining thirteen families.

Figure 2.22 Multivariate Analysis of Water Vertebrate OTU Data by Station



2.10.7 Multivariate Comparison of Sediment Metabarcoding Results to Physico-chemical Data

The bacterial and infaunal eDNA multivariate patterns were compared to the physico-chemical data to determine if any patterns correlated. All the eight stations analysed for sediment eDNA also had a full suite of physio-chemistry analysed.

A RELATE analysis identified a 72% correlation between the sediment bacteria eDNA multivariate pattern and that of the physico-chemical variables. BV STEP analyses further identified a sub-set of five physico-chemical variables (fines, gravel, n-alkanes, As and Zn) which showed a 92% correlation with the sediment bacteria eDNA multivariate pattern, with fines alone showing an 86% correlation with the sediment bacteria eDNA multivariate pattern.

A RELATE analysis identified a 48% correlation between the sediment infaunal eDNA multivariate pattern and that of the physico-chemical variables. BV STEP analyses further identified a sub-set of five physico-chemical variables (mean grain size, fines, n-alkanes, As and Zn) which showed a 73% correlation with the sediment infaunal eDNA multivariate pattern, with fines alone showing a 72% correlation with the sediment infaunal eDNA multivariate pattern.

An analysis of similarity (ANOSIM) was conducted on both the bacterial and infaunal eDNA data sets to investigate the association with depth (divided into 10m zones). This revealed a significant but low-level

correlation with the bacterial eDNA data set ($r=0.646$, $p<0.05$) and no such relationship was evident with the infaunal eDNA data set.

Further sampling, including additional stations and replication would allow further investigation of the relationship between bacterial and infaunal OTU data and the physico-chemical variables. As a result of the current sample size (n=39, of which 8 stations had concurrent physico-chemical, bacterial and infaunal eDNA) and use of single eDNA replicates per station the statistical robustness of the analysis patterns is limited and may be obscured.

2.11 Macrofaunal Interpretation

2.11.1 Overview

Two 0.1m^2 faunal samples (labelled MFA and MFB) were collected from each of 39 sampled stations, with MFA worked up and MFB retained and appropriately stored as a spare. All faunal samples were screened through a 1mm mesh sieve. Before analysing the data set provided by the laboratory, several taxa were removed as per our stated methods; however, all records, regardless of whether they were included in statistical analyses, are listed in Appendix M.

2.11.2 Summary of Notable Species

A single adult specimen of the bivalve *Devonia perrieri* was collected at Station ENV35 which is present on the Scottish Biodiversity List (NatureScot, 2020b). The adult recorded a biomass of 0.0028gm.

Two juveniles of the bivalve ocean quahog (*A. islandica*) were recorded (Stations ENV02 and ENV07) with an average biomass of 0.0016gm per individual. This species is on the OSPAR (2008) list of threatened and/or declining species and habitats and is listed as a low or limited mobility species PMF in Scottish offshore waters (NatureScot, 2020a). However, *A. islandica* is commonly found in this area of the North Sea, where populations of 40- to 80-year old specimens have been recorded, with a substantial proportion over 100 years old (OSPAR, 2009b).

Three individuals of the phosphorescent sea pen (*Pennatula phosphorea*) were recovered at Station ENV02 with a total biomass of 0.004gm. Sea pens are a component of the 'sea pen and burrowing megafauna communities' habitat which is classified as a threatened and/or declining habitat (OSPAR, 2008) and is a PMF in Scotland's seas (NatureScot, 2020b).

2.11.3 Abundance Summary Statistics

A total of 1896 individuals representing 247 taxa were recorded from 39 samples. Full enumeration of the taxa recorded per sample is tabulated in Appendix M. Of these, juveniles accounted for 2% of total individuals, 3% of taxa.

The presence of a large number of juveniles in the macrobenthos tends to be ephemeral due to high mortality and can temporarily disturb the normal balance of relative abundance amongst species (and consequentially measures of diversity). A RELATE analysis was conducted in PRIMER to determine whether the presence of juveniles caused significant differences between the rationalised full and adult only resemblance matrices. The tests showed the two data sets were 99.5% similar ($p<0.01$), indicating no significant differences between the multivariate pattern of the two data sets. No juvenile taxa were recorded in the top ten ranked taxa and therefore adult only data will be discussed in this report.

The data set was divided into five broad taxonomic groups: Annelida (Polychaeta), Arthropoda (Malacostraca), Mollusca, Echinodermata and 'Others'. The 'Others' category included Annelida (Sipuncula), Arthropoda (Pyconogonida), Cnidaria (Anthozoa), Foraminifera, Hemichordata, Nemertea, Phoronida and Platyhelminthes.

The absolute and proportional contributions of these five taxonomic groups to the overall community structure for the adult data set are summarised in Table 2.22. The contributions of each taxonomic group to total individuals and taxa are illustrated as stacked bar charts in Figure 2.23.

Table 2.22 Contribution of Gross Taxonomic Groups of Adults by Abundance

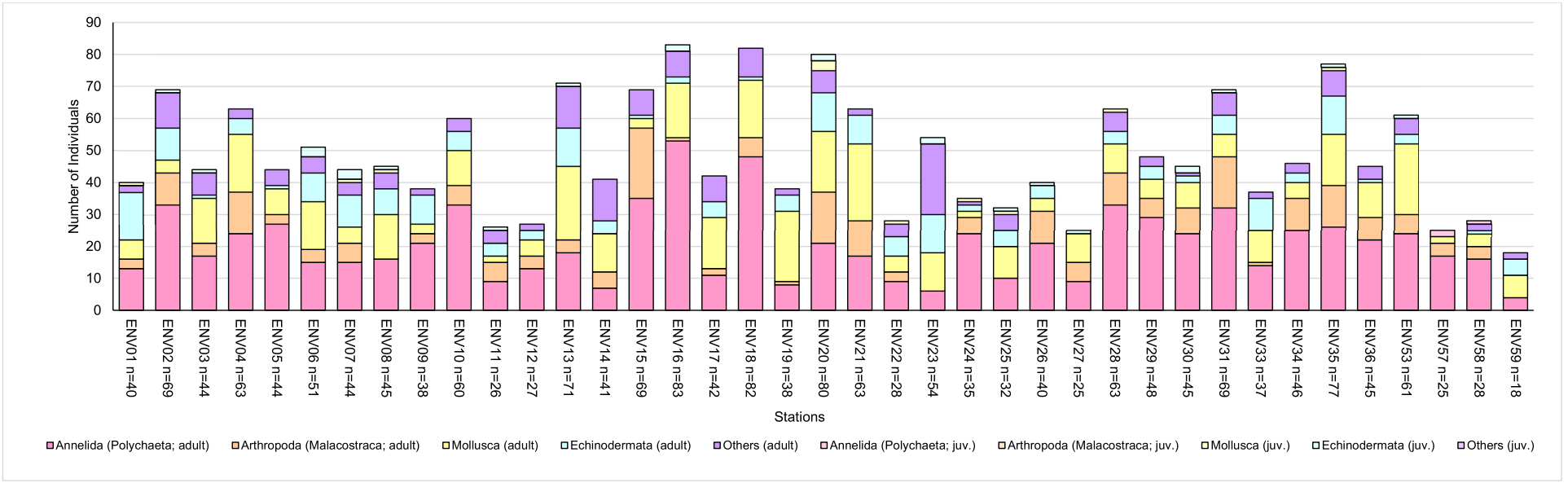
Group	Adult Individuals		Adult Taxa	
	Total	Proportional Contribution %	Total	Proportional Contribution %
Annelida (Polychaeta)	799	43	106	44
Arthropoda (Malacostraca)	239	13	50	21
Mollusca	408	22	55	23
Echinodermata	213	11	15	6
Others	199	11	14	6
Total	**1858**	**100**	**240**	**100**

Annelida (Polychaeta; n=799) was the most abundant taxonomic group accounting for 43% of individuals and 44% of the taxa. Mollusca (n=408) was the second most abundant taxonomic group accounting for 22% of individuals and 23% of the taxa. Although Arthropoda (Malacostraca) was the third most abundant group (n=239), accounting for 13% of individuals, it was relatively diverse, responsible for 21% of taxa. By contrast, Echinodermata accounted for a similar proportion of the individuals (n=213, 11%), but only 6% of the taxa, reflecting relatively high abundances of four of the fifteen taxa within this group.

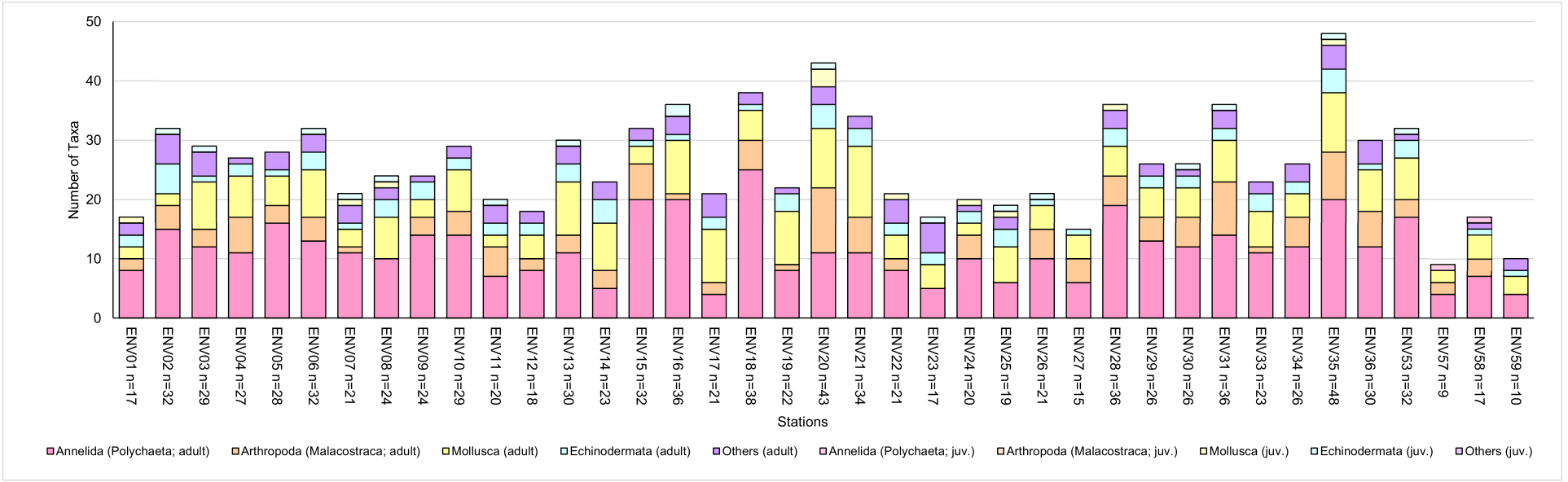
Of the 240 adult taxa recorded along the ECR, none was present at every station. The most widespread taxon was Nemertea, present at 25 of the 39 stations. A total of 98 taxa (41%) were recorded at a single station and of those 75 (31%) were represented by a single individual. It is generally accepted that ecological communities which are frequently subjected to local disturbance or contamination events will be dominated by a limited number of tolerant taxa, which will be represented in high individual abundances (Clarke & Warwick, 2006). There was no evidence of localised super-abundances of pollution tolerant taxon and the numbers of single or low abundance taxa in this survey suggest a reasonably diverse community that has been subject to relatively little disturbance or contamination.

Figure 2.23 Contributions of Gross Taxonomic Groups

a) Individuals



b) Taxa



Species ranking provides additional information on the dominance structure of the faunal community along the ECR and results are presented based on abundance in Table 2.23. Of the top ten ranked adult taxa: four were Annelida, and two each were Arthropoda, Echinodermata, Mollusca and 'Others'.

Results of the species ranking and fidelity scores can give a further indication of a taxon's distribution, with results ≥0.8 and ≤1.2 indicating a generally even distribution of a taxon, whilst values outside of this range represent a patchier distribution. Only two taxa (*Urothoe elegans* and *Echinocyamus pusillus*) within the adult only top ten fell within this range. Additionally, there was some reordering of taxa when ranked by abundance rather than score suggesting the dominant taxa exhibited a patchy distribution. This is consistent with sampling across a relatively wide area covering various sediment types and water depths.

Table 2.23 Species Ranking by Abundance

Rank		Taxon	Total Rank Score	Fidelity	Total Abundance	Present at Number of Stations
Score	Abundance					
1	7	NEMERTEA	178	0.46	47	25
2	1	*Amphiura filiformis*	174	0.50	74	21
3	10	*Euspira nitida*	153	0.49	41	22
4	6	*Peresiella clymenoides*	149	0.55	49	21
4	9	*Callianassa subterranea*	149	0.55	43	20
5	5	*Papillicardium minimum*	141	0.60	53	19
6	3	*Astrorhiza*	140	0.72	70	17
7	9	*Urothoe elegans*	132	0.85	43	18
8	2	*Echinocyamus pusillus*	130	1.11	71	17
9	11	*Galathowenia*	124	1.59	38	17
9	11	*Owenia*	124	1.59	38	19
10	12	*Scoloplos armiger*	112	2.87	34	15

Cells are coloured according to their taxonomic groups: Annelida, Arthropoda, Echinodermata, Mollusca, 'Others'.

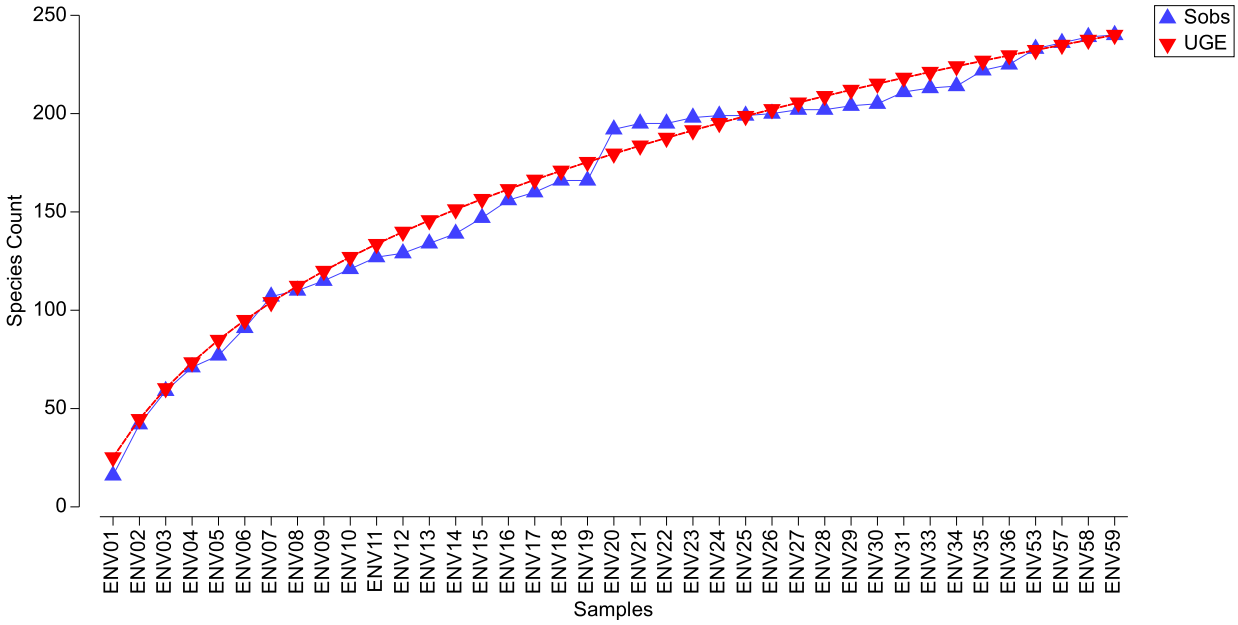
When considering all macrofaunal species observed along the ECR in terms of feeding guilds, the majority of species were identified as suspension feeders (both passive and active), deposit feeders (surface and sub-surface), with examples of predatory and scavenger species. Among the dominant taxa along the ECR there were examples of suspension and deposit feeders.

A species accumulation plot for the adult only abundance data set is presented for the ECR in Figure 2.24Figure 2.26. This plot shows the increasing total number of different taxa observed as samples are pooled. Significant changes in the slope of the Sobs curve compared to the UGE curve can be an indication of differences in the community composition. The Sobs curve began slightly below the UGE curve, but rose relatively with the addition of ENV02, consistent with a shift in faunal community as sampling took place more than 10km from ENV01 in deeper water. Overall, however, the steepest sections of the Sobs curve, bringing it above the UGE curve, occurred when sampling returned to the shallower waters, such as at Station ENV07, ENV20 and ENV53. Most notably, there were 26 taxa added from sampling at Station ENV20, of which 24 were unique to this station.

Station ENV35 was one of the few stations in deeper water where a relatively high number of new taxa were added, all eight of which were unique to this station including four arthropod taxa and the bivalve *Devonia perrieri*.

The UGE curve from the continued to rise with the addition of the last sample, indicating that further samples across the survey area may elicit additional taxa to those reported during the current sampling campaign.

Figure 2.24 Adult Data Set Species Accumulation Curve



2.11.4 Biomass Summary Statistics

A total biomass of 270.092g was recorded from the 1891 individuals from 39 samples. Of these, juveniles accounted for 0.14% of the total biomass. Full enumeration of the biomass per sample is tabulated in Appendix N. Biomass was not measured for the five individuals of Anomiidae as these were found attached to rocks and removing them can cause damage, similar to barnacles.

As to be expected, Mollusca (n=131.790g) dominated (see Table 2.24), accounting for 49% of the total biomass largely attributable to two individuals of the bivalve *Venus casina*. The second highest biomass was recorded within Echinodermata (n=116.793g) accounting for 43% of the total biomass and largely attributable to two individuals of the urchin *Brissopsis lyrifera*. Although Arthropoda was the third most abundant group by individuals, it recorded the lowest biomass contribution accounting for 1% of the total biomass.

Table 2.24 Contribution of Gross Taxonomic Groups by Biomass

Group	Adult Individuals	
	Total Biomass (g)	Proportional Contribution %
Annelida (Polychaeta)	13.861	5
Arthropoda (Malacostraca)	3.349	1
Mollusca	131.790	49
Echinodermata	116.793	43
Others	4.300	2
Total	**270.092**	**100**

Species ranking provides additional information on the dominance structure of the faunal community in the array area and results are presented based on biomass in Table 2.25. When considering species ranking based on biomass, as expected there was some movement in terms of species ranking compared to abundance. Five taxa (*A. filiformis*, *C. subterranea*, *Astrorhiza*, Nemertea and *P. minimum*) remained in the top ten when ranked by biomass with the other taxa being replaced by Mollusca, Annelida and Echinodermata taxa.

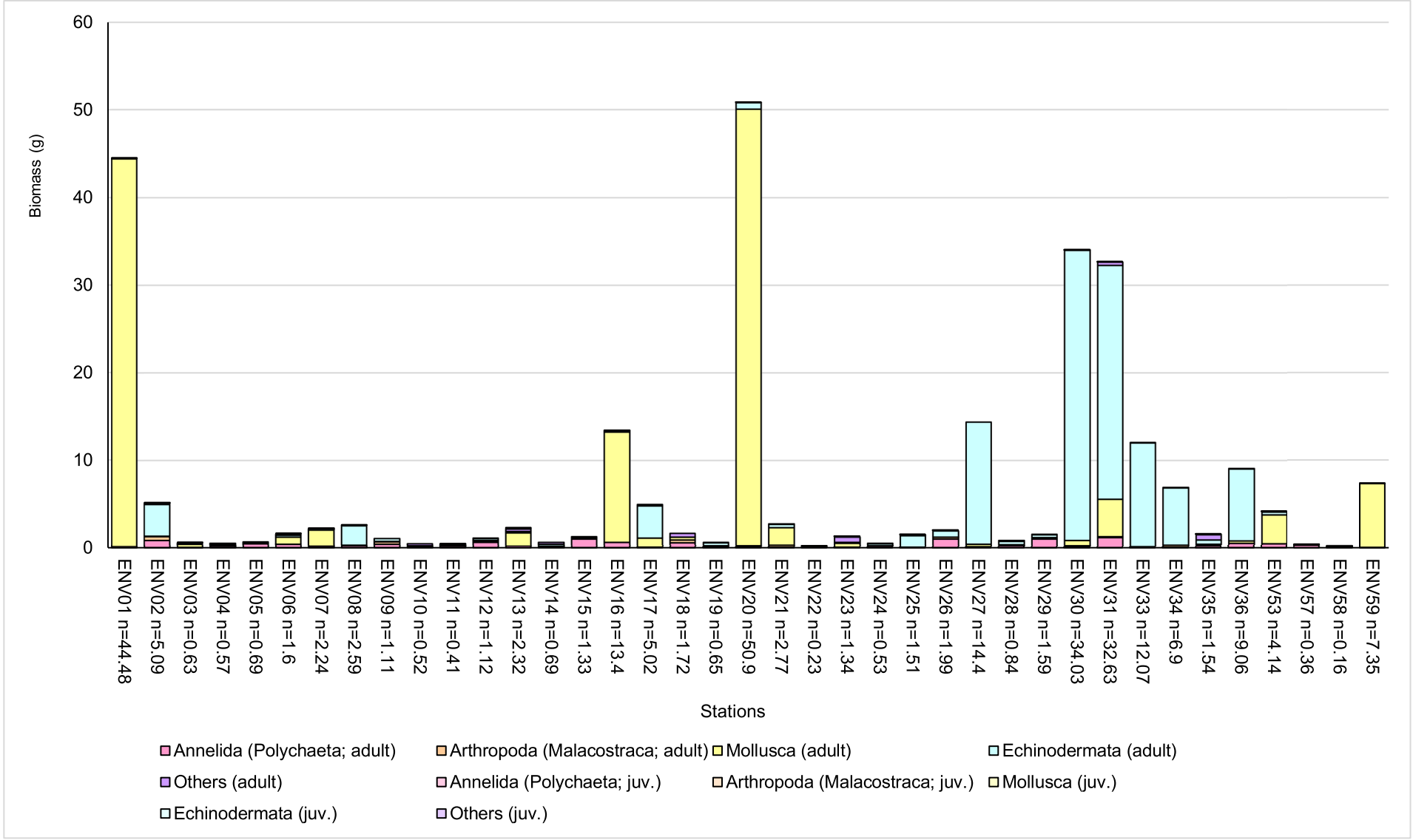
Table 2.25 Species Ranking by Biomass of Adult Only Data

Rank		Taxon	Total Rank Score	Fidelity	Total Biomass (g)	Present at Number of Stations
Score	Abundance					
1	7	*Amphiura filiformis*	150	0.4	3.9746	21
2	10	*Callianassa subterranea*	131	0.4	2.3937	20
3	12	*Astrorhiza*	103	0.4	2.1157	17
4	17	*Leptosynapta bergensis*	76	0.3	1.405	11
5	1	*Brissopsis lyrifera*	70	0.3	97.4288	7
5	23	NEMERTEA	70	0.3	0.7676	25
6	9	*Antalis entalis*	58	0.3	2.6384	14
7	15	*Glycera unicornis*	50	0.4	1.6354	7
7	18	*Nephtys hombergii*	50	0.4	1.3843	6
7	35	*Papillicardium minimum*	50	0.4	0.3776	19
8	25	*Rhodine gracilior*	48	0.5	0.723	9
9	20	*Amphiura chiajei*	43	0.6	1.2124	9
10	33	*Phoronis*	40	1.2	0.3835	15

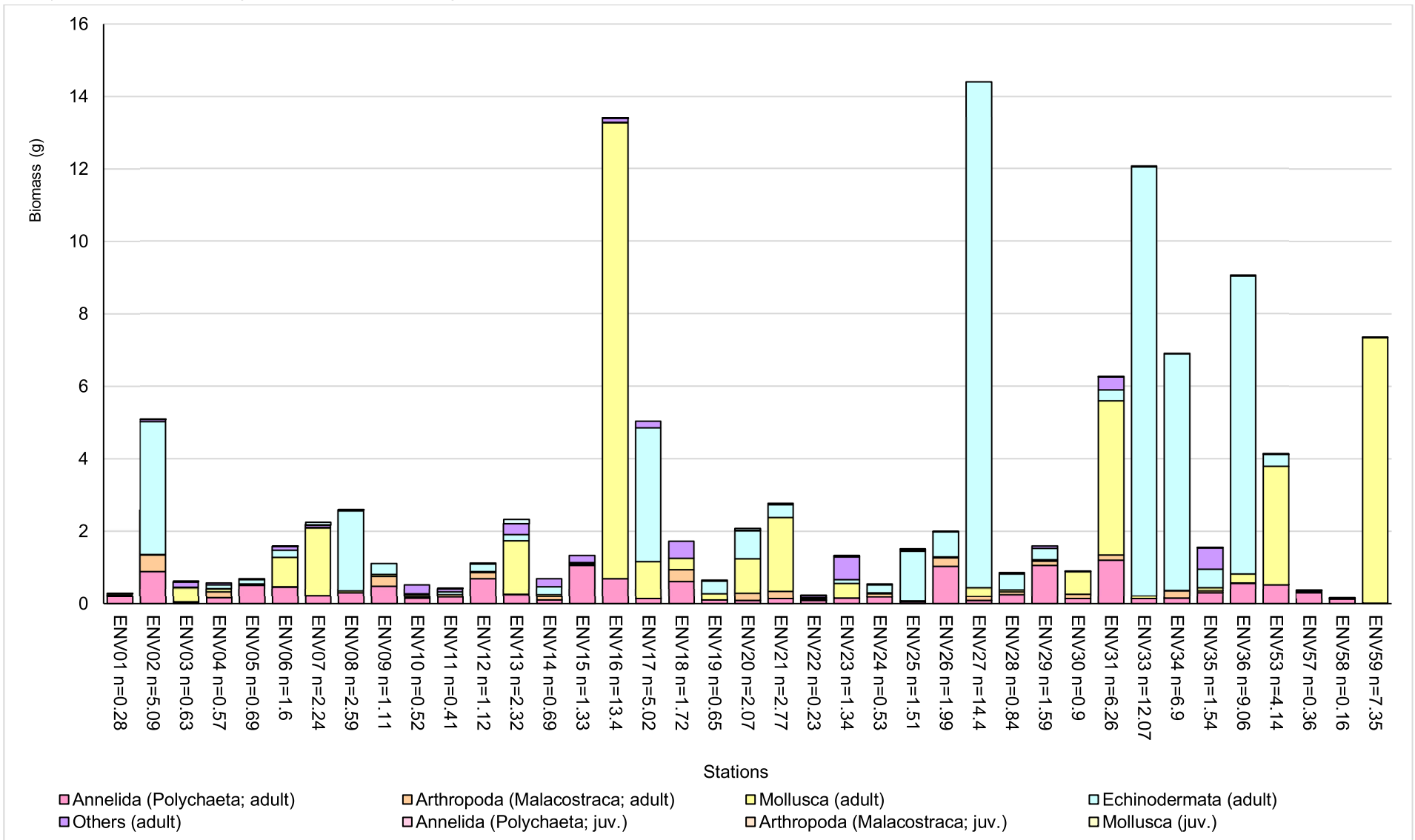
Cells are coloured to indicate taxonomic divisions: Annelida, Arthropoda, Mollusca, Echinodermata, 'Others'.

Figure 2.25 Contributions of Gross Taxonomic Groups by Biomass

a) Biomass – Large Molluscs and Echinoderms Included



b) Biomass – Two Large Molluscs and Two Large Echinoderms Excluded



2.11.5 Diversity using Univariate Statistics

The adult abundance data set for the ECR was analysed to provide the total number of individuals and taxa. Shannon-Weiner diversity index (H'), calculated using logarithm base 2 (Shannon & Weaver, 1949), Pielou's eveness (*J*), Simpson's dominance (λ) and Margalef's richness (*d*). Increasing values of the Shannon-Weiner diversity correspond to increasing diversity of the community. Values for the Simpson's dominance index and Pielou's both range from 0 to 1, with 1 indicating a dominated community for the former and an even community for the latter. Margalef's index takes account of the number of species present for a given number of individuals. Detailed information on methods for univariate statistics are presented in Appendix D.10.

The results of the univariate statistics for the adult only macrofaunal data are presented in Table 2.26. Shannon-Weiner diversity values ranged from 2.51 at the shallowest station (ENV57) to 5.29 at Station ENV35 with a mean value of 4.18 (±0.57SD). Margalef's richness followed a similar trend, ranging from 2.23 at Station ENV57 to 10.42 at Station ENV35. Pielou's eveness suggested the community was overall more even than uneven, with values ranging from 0.77 at Station ENV23 to 0.97 at Station ENV11. This was further supported by low Simpson's dominance values which ranged from 0.03 at Station ENV35 to 0.22 at Station ENV57. At the shallowest station (ENV57), the relatively low diversity, dominated community related to the polychaetes *Nepthys cirrosa,* which accounted for 35% (n=8) and *Megalona johnstoni,* which contributed 26% (n=6) of the station's otherwise relatively sparse adult population.

Table 2.26 Faunal Abundance Univariate Statistics

Sample	n Taxa	nIndividuals	Margalef's Richness (*d*)	Simpson's Dominance (*λ*)	Pielou's Evenness (*J'*)	Shannon Wiener Diversity(H'_{log2})
ENV01	16	39	4.09	0.17	0.82	3.29
ENV02	31	68	7.11	0.05	0.93	4.60
ENV03	28	43	7.18	0.04	0.97	4.65
ENV04	27	63	6.28	0.06	0.92	4.36
ENV05	28	44	7.13	0.05	0.95	4.59
ENV06	31	48	7.75	0.06	0.92	4.58
ENV07	19	40	4.88	0.11	0.88	3.73
ENV08	22	43	5.58	0.07	0.92	4.09
ENV09	24	38	6.32	0.06	0.96	4.39
ENV10	29	60	6.84	0.11	0.85	4.12
ENV11	19	25	5.59	0.06	0.97	4.13
ENV12	18	27	5.16	0.07	0.96	4.01
ENV13	29	70	6.59	0.09	0.85	4.14
ENV14	23	41	5.92	0.06	0.94	4.24
ENV15	32	69	7.32	0.07	0.88	4.39
ENV16	34	81	7.51	0.05	0.92	4.68
ENV17	21	42	5.35	0.07	0.93	4.10
ENV18	38	82	8.40	0.05	0.93	4.87
ENV19	22	38	5.77	0.11	0.88	3.91
ENV20	39	75	8.80	0.04	0.95	5.02
ENV21	34	63	7.96	0.05	0.93	4.76
ENV22	20	27	5.76	0.06	0.96	4.16
ENV23	16	52	3.80	0.18	0.77	3.09
ENV24	19	34	5.10	0.13	0.85	3.62
ENV25	17	30	4.70	0.08	0.93	3.82
ENV26	20	39	5.19	0.10	0.90	3.89
ENV27	15	25	4.35	0.09	0.95	3.70
ENV28	35	62	8.24	0.06	0.91	4.66
ENV29	26	48	6.46	0.10	0.89	4.17
ENV30	25	43	6.38	0.06	0.94	4.36
ENV31	35	68	8.06	0.04	0.94	4.81
ENV33	23	37	6.09	0.08	0.91	4.12
ENV34	26	46	6.53	0.05	0.95	4.45
ENV35	46	75	10.42	0.03	0.96	5.29
ENV36	30	45	7.62	0.05	0.95	4.65
ENV53	31	60	7.33	0.05	0.93	4.61
ENV57	8	23	2.23	0.22	0.84	2.51
ENV58	16	27	4.55	0.09	0.93	3.73
ENV59	10	18	3.11	0.18	0.87	2.88
Minimum	8	18	2.23	0.03	0.77	2.51
Maximum	46	82	10.42	0.22	0.97	5.29
Mean	25	48	6.24	0.08	0.91	4.18
±SD	8	17	1.63	0.04	0.04	0.57

2.11.6 Faunal Community Structure using Multivariate Analyses

In comparison to univariate statistics, multivariate analyses enable subtle trends within the adult data sets to be identified. Multivariate analyses were performed on the rationalised data using PRIMER v7. Bray-Curtis similarity matrices are produced based on the square root transformed abundance data set and fourth root transformed biomass data set. These transformations were chosen to down weight the influence of the numerically dominant species and to ensure that the intermediately abundant and sparse species contribute to the multivariate pattern.

A SIMPROF permutation test was conducted in conjunction with CLUSTER analysis and the results illustrated on a dendrogram (Figure 2.26a). Red lines join samples that are statistically indistinguishable, whilst black lines join samples which are distinct from one another. The Bray Curtis similarity dendrogram and nMDS plot for the adult only abundance data are presented in Figure 2.26.

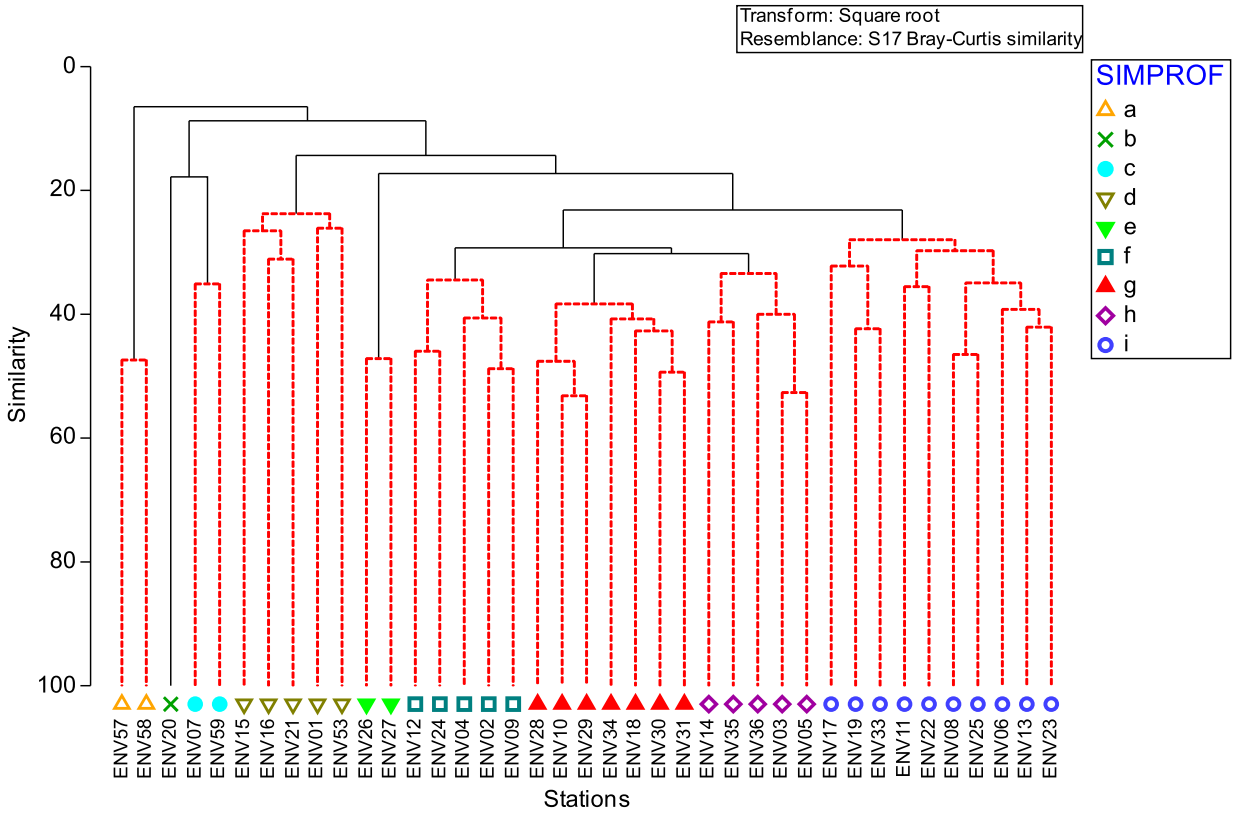
The CLUSTER analysis and dendrogram for the adult abundance station data (Figure 2.26a) identified nine SIMPROF groups which comprised one outlier (Station ENV20, SIMPROF *b*), three closely associated pairs (SIMPROF *a*, *c* and *e*) and five clusters (SIMPROF *d*, *f*, *g*, *h* and *i*). Most stations were more dissimilar than similar to one another, joining together at a Bray-Curtis similarity of 6%.

The nMDS ordination of the adult abundance station data set (Figure 2.26b) revealed a similar pattern to the CLUSTER analysis, with a stress value of 0.19 the ordination can be considered a useful two-dimensional representation of rank dis(similarities) and the overall pattern observed in the data set. With symbols presented according to each station's depth zone, the relationship between faunal community and water depth was apparent.

Examination of the ECR adult abundance data set together with the results of SIMPER analyses, presented in Figure 2.26, highlighted the principal contributors to the grouping and separation of the stations. This was restricted to explaining the separation where similarity was less than 22% for conciseness and includes the principal contributors to the grouping and separation of the stations. Variation in taxa, namely the top ten ranked taxa were responsible for the sample separation.

Figure 2.26 Multivariate Analysis of Abundance Faunal Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination

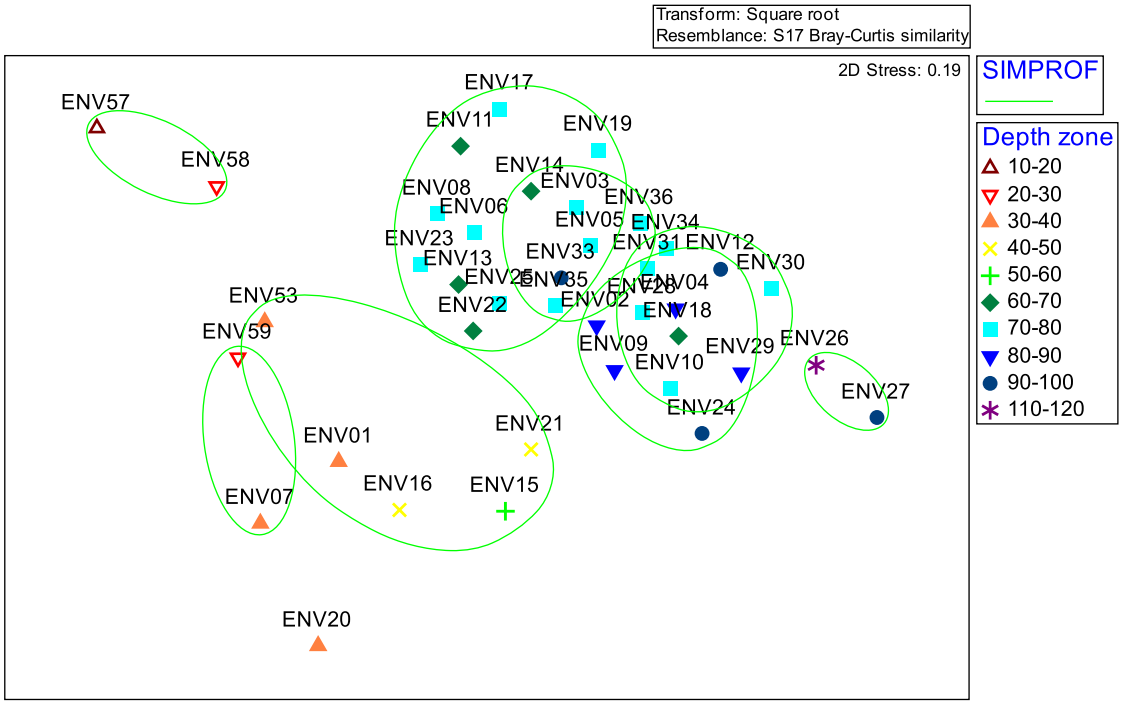


Table 2.27 Taxa influencing Adult Macrofauna Abundance SIMPROF Variation

Stations	SIMPROF	Similarity (Bray-Curtis %)	Taxa Influencing Station Separation
ENV57 and ENV58	SIMPROF *a* vs *b-i*	6.49	• Higher than remaining stations' average abundance of *N. cirrosa*, *B. guilliamsoniana* and *S. bombyx* (*c.*12% of the dissimilarity). • Presence of *M. johnstoni* and *M. filiformis,* (*c.*7% of the dissimilarity). • Absence of ***A. filiformis***, (*c.*2% of the dissimilarity)
ENV20, ENV07 and ENV59	SIMPROF *b,c* vs *d-i*	8.76	• Higher than remaining stations' average abundance of ***E. pusillus***, *Asbjornsenia pygmaea* and *S. armiger* (*c.*8% of the dissimilarity). • Presence of *Urothoe marina*, (*c.*2% of the dissimilarity). • Absence of ***A. filiformis***, ***Astrorhiza***, ***P. clymenoides***, ***P. minimum***, ***C. subterranea*** and *P. cf. dubia*, (*c.*11% of the disimilarity)
ENV01, ENV15, ENV16, ENV21 and ENV53	SIMPROF *d* vs *e-i*	14.34	• Higher than remaining stations' average abundance of Thracioidea, ***E. pusillus***, *Edwardsia claparedii*, *S. armiger*, ***U. elegans***, and *Lumbrineris aniara agg.* (*c.*14% of the dissimilarity). • Lower than remaining stations' average abundance of ***A. filiformis***, (*c.*2% of the dissimilarity) • Absence of ***Astrorhiza*** and ***P. minimum*** (*c.*3% of the dissimilarity) • Prescence of *Aponuphis bilineata* (*c.*2% of the dissimilarity)
ENV26 and ENV27	SIMPROF *e* vs *f-i*	17.27	• Absence and/or lower than remaining stations' average abundance of *Heteromastus filiformis*, *Eudorella emarginata*, *Nucula sulcata*, *G. unicornis* and *Amphiura chiajei*, (*c.*14% of the dissimilarity). • Higher than remaining stations' average abundance of *P. cf. dubia* (*c.*2% of the dissimilarity). • Presence of ***A. filiformis*** and ***Astrorhiza*** (*c.*5% of the dissimilarity).
ENV20	SIMPROF *b* vs *c*	17.83	• Presence of *Scalibregma inflatum*, *Galathea intermedia*, *Amphipholis squamata*, *Tritia* and *Hydroides norvegica*, (*c.*18% of the dissimilarity). • Absence of *A. pygmaea*, (*c.*3% of the dissimilarity).
ENV06, ENV08, ENV11, ENV13, ENV17, ENV19, ENV22, ENV23, ENV25 and ENV33	SIMPROF *i* vs *f-h*	23.17	• Lower average abundance of ***Astrorhiza***, *A. entalis*, ***A. filiformis***, ***E. pusillus*** and ***P. minimum***, (*c.*12% of the dissimilarity). • Higher abundance of ***C. subterranea***, *P. cf. dubia*, ***Galathowenia*** and ***P. clymenoides***, (*c.*10% of the dissimilarity).
ENV02, ENV04, ENV09, ENV12 and ENV24	SIMPROF *f* vs *g,h*	29.27	• Higher average abundance of *Amphictene auricoma*, ***A. filiformis, P. clymenoides and P. mimimum***, (*c.*11% of the dissimilarity). • Lower abundance of *P. cf. dubia*, ***Astrorhiza,*** *Diplocirrus glaucus and Chaetozone pseudosetosa*, (*c.*10% of the dissimilarity).
ENV03, ENV05, ENV14, ENV35 and ENV36	SIMPROF *h* vs *g*	30.22	• Higher abundance of ***Astrorhiza***, ***Euspira nitida***, ***P. minimum***, ***Galathowenia*** and *Phoronis*, (*c.*10% of the dissimilarity). • Lower abundance of *P. cf. dubia*, *Trichobranchus roseus* and *C. pseudosetosa*, (*c.*8% of the dissimilarity). • Absence of *Abra nitida* (*c.*2% of the dissimilarity).

Taxa in **bold** denotes those within the top ten ranked taxa when assessed by abundance as per Table 2.23

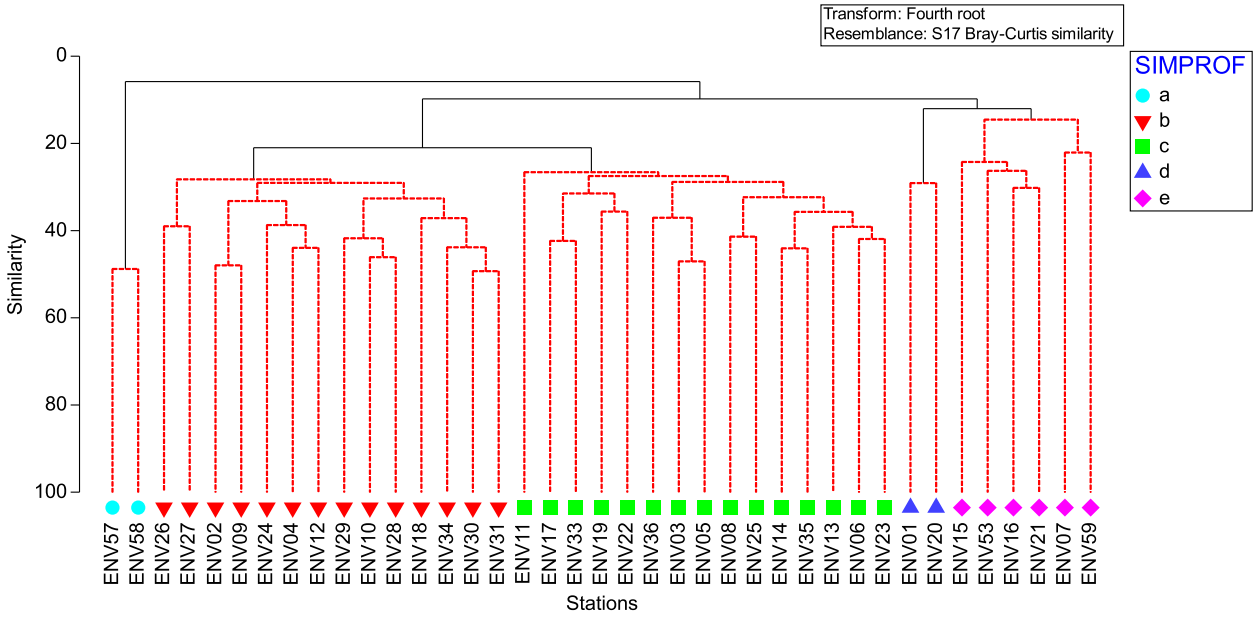
There was some rearranging of the dendrogram when biomass is considered (Figure 2.27a). The adult biomass data set was similarly analysed with CLUSTER analysis and identified five SIMPROF groups comprising two closely associated pairs (SIMPROF *a* and *d*) and three clusters (SIMPROF *b*, *c* and *e*). All stations were more dissimilar than similar to one another, grouping together at 6% Bray-Curtis similarity.

The nMDS ordinations of the ECR adult biomass station data ((Figure 2.27b) revealed a similar pattern to the CLUSTER analysis, with a stress value of 0.19 the ordination can be considered a useful two-dimensional representation of rank dis(similarities) and the overall pattern observed in the data set. With symbols presented according to each station's depth zone, the relationship between faunal community and water depth was again apparent.

Examination of the ECR adult biomass data set together with the results of SIMPER analyses presented in Table 2.28, highlighted the principal contributors to the groupings and separations of the stations.

Figure 2.27 Multivariate Analysis of Biomass Faunal Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination

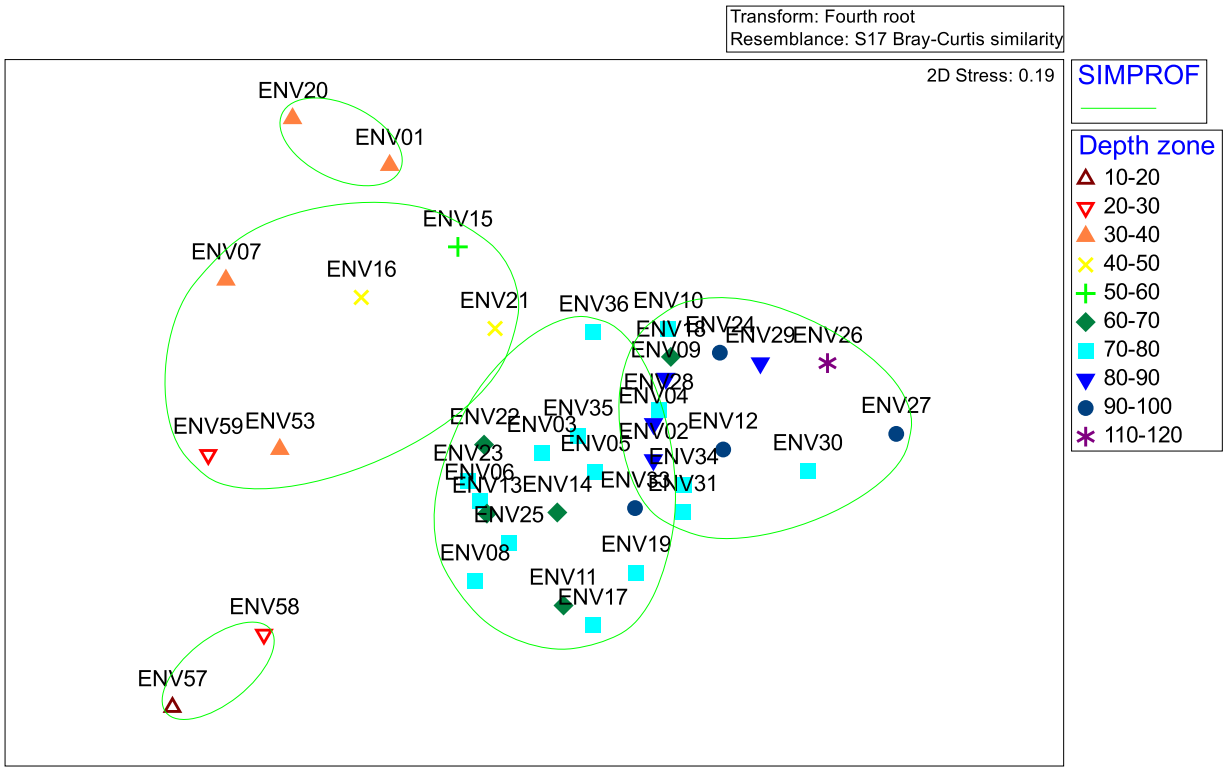


Table 2.28 Taxa Influencing Macrofauna Biomass SIMPROF Variation

Stations	SIMPROF	Similarity (Bray-Curtis %)	Taxa Influencing Station Separation
ENV57 and ENV58	SIMPROF *a* vs *b-e*	5.82	• Higher than the remaining stations biomass of *N. cirrosa*, *B. guilliamsoniana* and *S. bombyx*, (*c.*11% of the dissimilarity). • Presence of *M. johnstoni*, (*c.*3% of the dissimilarity). • Absence of ***A. filiformis***, ***B. lyrifera*** and ***C. subterranea***, (*c.*8% of the dissimilarity).
ENV02 to ENV06, ENV08 to ENV14, ENV17 to ENV19, ENV22 to ENV31 and ENV33 to ENV36	SIMPROF *b,c* vs *d,e*	9.79	• Higher biomass of ***A. filiformis*** and ***C. subterranea***, (*c.*4% of the dissimilarity) • Lower biomass of *Gari fervensis* and **Nemertea**, (*c.*3% of the dissimilarity) • Presence of ***B. lyrifera*** and ***Astrorhiza***, (*c.*4% of the dissimilarity). • Absence of ***Venus casina***, ***Dosinia lupinus***, *Dosinia* and *A. bilineata*, (*c.*9% of the dissimilarity).
ENV01 and ENV20	SIMPROF *d* vs *e*	12.03	• Presence of ***V. casina*** and *Amphiura (Ophiopeltis) securigera*, (*c.*18% of the dissimilarity). • Absence of ***G. fervensis***, (*c.*2% of the dissimilarity).
ENV02, ENV04, ENV09, ENV10, ENV12, ENV18, ENV24, ENV26 to ENV31 and ENV34	SIMPROF *b* vs *c*	20.99	• Higher biomass of ***B. lyrifera***, ***C. subterranea***, ***L. bergensis*** and ***G. unicornis***, (*c.*13% of the dissimilarity). • Lower biomass of ***A. filiformis***, ***Astrorhiza*** and ***A. entalis***, (*c.*8% of the dissimilarity).

Taxa in **bold** denotes taxa within the top ten ranked taxa when assessed on biomass.

2.11.7 Multivariate Comparison of Faunal and Physico-Chemical Data Sets

The 39 station macrofauna community data set was compared to the corresponding sediment characteristics data set in PRIMER v7 to determine if any patterns in the faunal community correlated with the environmental factors assessed. The BVSTEP analysis identified a 75% correlation between the adult abundance multivariate pattern with fines content.

Similarly, a subset of 9 stations of the macrofauna community adult station data set was compared to the corresponding 9 stations physico-chemical characteristics data set. The BVSTEP analysis identified an 85% correlation between the 9 station adult abundance multivariate pattern with five variables (mean diameter (µm), fines, gravel, TOC and As), indicating it is likely that the faunal community across the ECR varied naturally with physical sediment characteristics. There was no evidence of any anthropogenic impacts associated with chemical variables.

2.11.8 Multivariate Comparison of Macrofaunal and Metabarcoding Data Sets

The sediment bacterial and infaunal OTU data sets were compared to the adult macrofaunal abundance and biomass data to determine if there was any correlation. A RELATE analysis identified a significant correlation of 72% ($p<0.01$) for bacterial OTUs and 56% ($p<0.06$) for infaunal OTUs when compared to the adult macrofauna abundance data. Similar results for the bacterial OTUs were found for the biomass indicating a significant correlation of 69% and 55% ($p<0.01$) for infaunal OTUs when compared to the adult biomass data set.

It is important to note that despite significant correlations found, only one macrofauna sample was used for metabarcoding of bacteria and infauna. In order to better utilise this approach for monitoring and avoid missed taxa present in the environment, more replicate DNA samples are needed, in particular replicates associated with each sample (*i.e.* MFA and MFB). Additional sample replication would allow for better comparison between data sets further aiding in a more comprehensive characterisation of the macrofaunal communities across the survey area.

2.12 EUNIS Habitat Classification

The European Union Nature Identification System (EUNIS) classification hierarchy to biotope level 5 was mainly based on depth, sediment type and faunal composition. Results of the EUNIS habitat classification based on these data are summarised in Table 2.29 and Appendix O.

All habitats observed in the ECR related to EUNIS level 1 environment ‘Marine benthic habitats’ (EUNIS habitat code M). Three level 2 broad habitats were identified ‘Infralittoral’ (EUNIS habitat type code MB), ‘Circalittoral’ (EUNIS habitat type code MC) and ‘Offshore circalittoral’ (EUNIS habitat type code MD).

The following EUNIS level 3 main habitats were present across the array area:

- Areas of fine sand to muddy sand from below the extreme low water mark to the limit of the photic zone were assigned EUNIS habitat MB5 (Infralittoral sand).
- Areas of mixed sand, gravel and cobbles, generally below 20m, were assigned EUNIS habitat MC4 (circalittoral mixed sediment).
- Areas of fine sand to muddy sand below 20m water depth, were assigned EUNIS habitat MC5 (Atlantic circalittoral sand).
- Areas of mixed sand, gravel and cobbles in depths greater than 30m, were assigned EUNIS habitat MD4 (Offshore circalittoral mixed sediment).
- Areas of fine sand to muddy sand below 60m water depth, were assigned EUNIS habitat MD5 (Offshore circalittoral sand).

- Areas of mud to muddy sand below 60m water depth, were assigned EUNIS habitat MD6 (Offshore circalittoral mud).

EUNIS level 4 main habitat classification was determined considering the habitat descriptions of both the EUNIS website and associated documentation (Davies *et al.*, 2004; EEA, 2019). Along the ECR the following six EUNIS biotope complexes were identified:

- EUNIS Biotope MB523 (Faunal communities of full salinity Atlantic infralittoral sand) which are classified as sands occurring in shallow water on the open coast or in tide-swept channels.
- EUNIS Biotope MC421 (Faunal communities of Atlantic circalittoral mixed sediment) which are classified as mixed sediment habitats in the circalittoral zone (generally below 15-20 m) including well mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in or lying upon mud, sand or gravel.
- EUNIS Biotope MC521 (Faunal communities of Atlantic circalittoral sand), classified as sand communities either on the open coast or in tide-swept channels of marine inlets in depths of over 15-20m.
- EUNIS Biotope MD421 (Faunal communities in Atlantic offshore circalittoral mixed sediment) which are classified as deep circalittoral habitats with slightly muddy mixed gravelly sand and stones or shell.
- EUNIS biotope MD521 (Faunal communities in Atlantic offshore circalittoral sand) which are classified as fine sands or non-cohesive muddy sands.
- EUNIS biotope MD621 (Faunal communities on Atlantic offshore circalittoral mud) classified as Sublittoral muds, occurring below moderate depths of 15-20 m, either on the open coast or in marine inlets such as sealochs.

In addition, one level 5 EUNIS biotope complex was identified:

- EUNIS Biotope MB5233 (*N. cirrosa* and *Bathyporeia spp*. in Atlantic infralittoral sand) which is described as well-sorted medium and fine sands characterised by *N. cirrosa* and *Bathyporeia spp*. (and sometimes *Pontocrates spp*.) which occur in the shallow sublittoral to at least 30m depth.

Further, EUNIS biotope MC6216 (Sea pens and burrowing megafauna in Atlantic circalittoral fine mud) was characterised based on a review of the imagery; however, there is a mismatch of visible and infaunal taxa with the sediment type.

Further classification of the macrofaunal community to EUNIS level 5 was attempted with limited success, due to an imperfect fit against the information available on the biotope communities (EEA, 2019; JNCC, 2022b) in addition to the physical mismatch of dominant taxa with sediment type. Due to a lack of consistent structure resulting from a lack of cosmopolitan species across each station it is difficult to suggest a new biotope.

Table 2.29 EUNIS Habitat Classification

Cluster	Station	Water Depth (m)	EUNIS Folk Classification for PSA Data	EUNIS Level 2	EUNIS Habitat Classification		MNCR Habitat Classification		EUNIS/MNCR Habitat Type	Remarks
					Level	Code	Level	Code		
a	ENV57	13	Sand and muddy sand	MB5	5	MB5233	4	SS.SSa.IFiSa.NcirBat	*Nephtys cirrosa* and *Bathyporeia spp.* in Atlantic infralittoral sand	Fauna is dominated by polychaetes and arthropods in sands and muddy sands in shallow water to at least 30m depth.
	ENV58	20	Sand and muddy sand							
b	ENV20	32	NA	MC4	4	MC421	3	SS.SMx.CMx	Faunal communities of Atlantic circalittoral mixed sediment	Fauna is dominated by epifaunal molluscs in shallow mixed sediment
c	ENV07	32	Sand and muddy sand	MC5	4	MC521	3	SS.SSa.CMuSa	Faunal communities of Atlantic circalittoral sand	Fauna is dominated by polychaetes, arthropods and bivalves in shallow sand.
	ENV59	29	Sand and muddy sand							
d	ENV01	35	Coarse sediments	MD4	4	MD421	3	SS.SMx.CMx	Faunal communities of Atlantic circalittoral mixed sediment	Fauna is dominated by polychaetes in coarse and mixed sediment.
	ENV15	52	Coarse sediments							
	ENV16	40	Sand and muddy sand							
	ENV21	48	Mixed sediments							
	ENV53	31	Sand and muddy sand							
e	ENV26	110	Mud and sandy mud	MD6 MC6	4 5	MD621 MC6216	3 4	SS.SMu.Omu SS.SMu.CFiMu.SpnMeg	Faunal communities on Atlantic offshore circalittoral mud Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	Fauna is dominated by polychaetes and bivalves in sandy mud. Classification including imagery interpretation
	ENV27	90	Mud and sandy mud							
f	ENV02	88	Mud and sandy mud	MD6 MC6	4 5	MD621 MC6216	3 4	SS.SMu.Omu SS.SMu.CFiMu.SpnMeg	Faunal communities on Atlantic offshore circalittoral mud Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	Fauna is dominated by polychaetes and bivalves in sandy mud. Classification including imagery interpretation
	ENV04	83	Mud and sandy mud							
	ENV09	87	Mud and sandy mud							
	ENV12	90	Mud and sandy mud							
	ENV24	92	Mud and sandy mud							
g	ENV10	78	Mud and sandy mud	MD6 MC6	4 5	MD621 MC6216	3 4	SS.SMu.Omu SS.SMu.CFiMu.SpnMeg	Faunal communities on Atlantic offshore circalittoral mud Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	Fauna is dominated by polychaetes in sandy mud. Classification including imagery interpretation
	ENV18	69	Mixed sediments							
	ENV28	78	Mud and sandy mud							
	ENV29	83	Mud and sandy mud							
	ENV30	74	Mud and sandy mud							
	ENV31	76	Mud and sandy mud							
	ENV34	76	Mud and sandy mud							
h	ENV03	74	Sand and muddy sand	MD6 MC6	4 5	MD621 MC6216	3 4	SS.SMu.Omu SS.SMu.CFiMu.SpnMeg	Faunal communities on Atlantic offshore circalittoral mud Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	Fauna is dominated by polychaetes and arthropods in sandy mud or muddy sand. Classification including imagery interpretation
	ENV05	75	Mud and sandy mud							
	ENV14	69	Sand and muddy sand							
	ENV35	78	Mud and sandy mud							
	ENV36	73	Sand and muddy sand							
i	ENV06	71	Sand and muddy sand	MD5 MC6	4 5	MD521 MC6216	3 4	SS.SSa.CMuSa SS.SMu.CFiMu.SpnMeg	Faunal communities of Atlantic offshore circalittoral sand Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	Fauna is dominated by molluscs and echinoderms in sand and muddy sand. Classification including imagery interpretation
	ENV08	73	Sand and muddy sand							
	ENV11	68	Mud and sandy mud							
	ENV13	63	Sand and muddy sand							
	ENV17	75	Sand and muddy sand							
	ENV19	79	Sand and muddy sand							
	ENV22	64	Sand and muddy sand							
	ENV23	74	Sand and muddy sand							
	ENV25	75	Sand and muddy sand							
	ENV33	92	Sand and muddy sand							

3 CONCLUSION

Water profiles along the ECR displayed mixed surface waters overlying a more stable water column structure below 20m depth, with the nearshore profile exhibiting a well-mixed profile throughout. The salinity profiles reflected the freshwater inputs in the surface layers with the exception of the nearshore Station ENV53 which had a stable salinity throughout consistent with a well-mixed water column. The dissolved oxygen maximum within the top 10m of the water column was consistent with the air-sea interface providing a gas exchange, with a decrease in dissolved oxygen through the water column consistent with respiration by organisms and bacterial digestion of sinking organic matter. The turbidity and pH profiles were relatively consistent through the water column with the nearshore Station ENV53 showing slightly higher turbidity, potentially attributable to the spring phytoplankton bloom.

Sediment samples along the ECR were dominated by the sand fraction. Sediments were described as very poorly to moderately well sorted sand gravel to muddy sand (Folk, 1954). Concentrations of TOC were positively correlated with the percentage of fines and depth.

Hydrocarbon concentrations along the ECR were below the published thresholds indicating the faunal community was not expected to be significantly influenced by THC concentrations.

The concentrations of UCM suggested that the hydrocarbons were well weathered with some fresher inputs and typical of background levels. Further investigation of the CPI values and Pr:Ph ratio indicated a prevalence of biogenic inputs, with a degree of petrogenic input evident by the presence of Ph at some stations. In addition, total PAH concentrations were below their respective ERL.

Concentrations of PCB and organotins were below the limit of detection at all stations, while PBDE 209 concentration exceeded the OSPAR (2020) BAC after normalisation to 2.5% TOC at all but Station ENV58 where it was below the limit of detection. However, these values were below the FEQG values (Viñas *et al.*, 2023). Concentrations of OCP where either below the limit of detection, or below CAL1 concentrations.

Metal concentrations were below ERL suggesting toxic effects on the faunal community due to metal concentrations were unlikely to occur.

A total of 443 bacterial sediment OTUs were recorded along the ECR, while 48 infaunal sediment OTUs were identified. Of these, the most abundant bacterial OTUs were within the ‘Others’ category when classified by class, while the most abundant infaunal OTUs were within the Polychaeta class. The water eDNA analysis recorded 30 fish OTUs and 42 vertebrate OTUs. The most detected OTUs were within the Gadidae and Pleuronectidae taxonomic groups when classified by family, for both the fish and vertebrate water eDNA datasets.

When considering the ECR in terms of abundance, the macrofaunal community was characterised by Annelida followed by Mollusca. However, when considering the faunal community in terms of biomass, Mollusca was the most dominant group followed by Echinodermata, which is to be expected given the size difference of this group compared to polychaetes.

EUNIS classification based on the macrofaunal community was attempted with limited success due to an imperfect fit against information available on the biotope communities. Additionally, there was a physical mismatch of the dominant taxa with the sediment type identified within PSA data. Due to the lack of consistent structure resulting from a lack of cosmopolitan species across the stations a new biotope was not able to be suggested.

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APPENDICES

APPENDIX A SCOPE OF WORK

Appendix A is confidential and has been withdrawn from this report.

APPENDIX B FIELD SAMPLING LOGS

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	13:39:30	1	ECR_ENV_39			camera	40	523607	6396245	523566	6396273	41	-28	50	-55	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:39:49	2	ECR_ENV_39			camera	40	523605	6396248	523566	6396273	39	-25	46	-57	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:40:08	3	ECR_ENV_39			camera	39	523608	6396246	523566	6396273	42	-27	50	-57	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:40:27	4	ECR_ENV_39			camera	40	523611	6396245	523566	6396273	45	-28	53	-58	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:40:39	5	ECR_ENV_39			camera	40	523614	6396244	523566	6396273	48	-29	56	-58	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:40:46	6	ECR_ENV_39			camera	39	523615	6396243	523566	6396273	49	-30	58	-58	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:42:08	7	ECR_ENV_39			camera	39	523608	6396243	523566	6396273	42	-30	52	-54	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:42:26	8	ECR_ENV_39			camera	39	523609	6396246	523566	6396273	43	-27	51	-57	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:42:43	9	ECR_ENV_39			camera	39	523610	6396248	523566	6396273	44	-25	51	-60	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:43:16	10	ECR_ENV_39			camera	39	523606	6396250	523566	6396273	40	-23	46	-60	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:43:28	11	ECR_ENV_39			camera	39	523606	6396251	523566	6396273	40	-22	46	-61	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:44:06	12	ECR_ENV_39			camera	39	523602	6396253	523566	6396273	36	-20	41	-60	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:44:16	13	ECR_ENV_39			camera	39	523602	6396254	523566	6396273	36	-19	41	-62	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:44:37	14	ECR_ENV_39			camera	39	523601	6396255	523566	6396273	35	-18	39	-62	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:44:49	15	ECR_ENV_39			camera	39	523600	6396256	523566	6396273	34	-17	38	-63	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:45:19	16	ECR_ENV_39			camera	40	523600	6396260	523566	6396273	34	-13	36	-68	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:46:20	17	ECR_ENV_39			camera	40	523598	6396266	523566	6396273	32	-7	33	-77	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:46:33	18	ECR_ENV_39			camera	40	523597	6396266	523566	6396273	31	-7	32	-76	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:46:46	19	ECR_ENV_39			camera	40	523595	6396267	523566	6396273	29	-6	30	-77	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:47:19	20	ECR_ENV_39			camera	40	523592	6396267	523566	6396273	26	-6	27	-76	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:48:08	21	ECR_ENV_39			camera	40	523588	6396272	523566	6396273	22	-1	22	-86	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:48:32	22	ECR_ENV_39			camera	40	523587	6396274	523566	6396273	21	1	21	-92	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:48:54	23	ECR_ENV_39			camera	40	523584	6396276	523566	6396273	18	3	18	-98	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:49:07	24	ECR_ENV_39			camera	40	523583	6396276	523566	6396273	17	3	17	-99	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:49:17	25	ECR_ENV_39			camera	40	523582	6396276	523566	6396273	16	3	16	-99	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:49:45	26	ECR_ENV_39			camera	40	523579	6396277	523566	6396273	13	4	13	-106	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:50:33	27	ECR_ENV_39			camera	40	523574	6396277	523566	6396273	8	4	9	-114	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:50:51	28	ECR_ENV_39			camera	40	523571	6396277	523566	6396273	5	4	6	-126	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:52:19	29	ECR_ENV_39			camera	40	523564	6396280	523566	6396273	-2	7	7	162	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:52:46	30	ECR_ENV_39			camera	40	523561	6396283	523566	6396273	-5	10	11	152	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:53:03	31	ECR_ENV_39			camera	40	523560	6396284	523566	6396273	-6	11	12	150	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:53:21	32	ECR_ENV_39			camera	40	523559	6396285	523566	6396273	-7	12	14	148	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:53:43	33	ECR_ENV_39			camera	40	523557	6396286	523566	6396273	-9	13	16	144	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:54:07	34	ECR_ENV_39			camera	40	523556	6396288	523566	6396273	-10	15	18	145	DM	(Raw Nav, C-Tecnics 3022) (V)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	13:54:26	35	ECR_ENV_39			camera	40	523554	6396289	523566	6396273	-12	16	20	142	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:55:26	36	ECR_ENV_39			camera	40	523550	6396296	523566	6396273	-16	23	28	144	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:55:41	37	ECR_ENV_39			camera	40	523549	6396298	523566	6396273	-17	25	30	145	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:56:06	38	ECR_ENV_39			camera	40	523549	6396301	523566	6396273	-17	28	32	148	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:56:23	39	ECR_ENV_39			camera	40	523550	6396302	523566	6396273	-16	29	33	151	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:56:49	40	ECR_ENV_39			camera	40	523550	6396304	523566	6396273	-16	31	35	152	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:57:03	41	ECR_ENV_39			camera	40	523549	6396307	523566	6396273	-17	34	38	153	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:57:43	42	ECR_ENV_39			camera	40	523549	6396312	523566	6396273	-17	39	42	156	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:58:02	43	ECR_ENV_39			camera	40	523550	6396315	523566	6396273	-16	42	45	159	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:58:16	44	ECR_ENV_39			camera	40	523549	6396317	523566	6396273	-17	44	47	159	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:58:34	45	ECR_ENV_39			camera	40	523550	6396320	523566	6396273	-16	47	49	161	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	13:58:46	46	ECR_ENV_39			camera	40	523550	6396320	523566	6396273	-16	47	49	161	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:09:06	47	ECR_ENV_38			camera	60	523698	6398966	523646	6398992	53	-26	59	-64	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:09:36	48	ECR_ENV_38			camera	60	523696	6398970	523646	6398992	51	-22	55	-67	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:09:48	49	ECR_ENV_38			camera	60	523696	6398971	523646	6398992	51	-21	55	-68	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:10:02	50	ECR_ENV_38			camera	60	523695	6398973	523646	6398992	50	-19	53	-69	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:10:21	51	ECR_ENV_38			camera	60	523694	6398976	523646	6398992	49	-16	51	-72	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:10:42	52	ECR_ENV_38			camera	60	523692	6398975	523646	6398992	47	-17	49	-70	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:10:51	53	ECR_ENV_38			camera	60	523691	6398975	523646	6398992	46	-17	49	-70	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:11:09	54	ECR_ENV_38			camera	60	523688	6398976	523646	6398992	43	-16	45	-70	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:11:24	55	ECR_ENV_38			camera	60	523687	6398976	523646	6398992	42	-16	44	-69	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:11:35	56	ECR_ENV_38			camera	60	523686	6398976	523646	6398992	41	-16	43	-69	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:11:52	57	ECR_ENV_38			camera	60	523686	6398978	523646	6398992	41	-14	43	-71	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:12:16	58	ECR_ENV_38			camera	60	523685	6398983	523646	6398992	40	-9	40	-77	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:12:30	59	ECR_ENV_38			camera	60	523685	6398985	523646	6398992	40	-7	40	-80	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:12:48	60	ECR_ENV_38			camera	60	523684	6398986	523646	6398992	39	-6	39	-81	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:13:18	61	ECR_ENV_38			camera	60	523678	6398986	523646	6398992	33	-6	33	-80	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:13:33	62	ECR_ENV_38			camera	60	523676	6398987	523646	6398992	31	-5	31	-81	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:14:04	63	ECR_ENV_38			camera	60	523673	6398988	523646	6398992	28	-4	28	-82	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:14:18	64	ECR_ENV_38			camera	60	523672	6398989	523646	6398992	27	-3	27	-84	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:14:32	65	ECR_ENV_38			camera	60	523670	6398991	523646	6398992	25	-1	24	-88	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:14:40	66	ECR_ENV_38			camera	60	523670	6398991	523646	6398992	25	-1	24	-88	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:14:52	67	ECR_ENV_38			camera	60	523669	6398991	523646	6398992	24	-1	23	-88	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:15:09	68	ECR_ENV_38			camera	60	523666	6398992	523646	6398992	21	0	20	-90	DM	(Raw Nav, C-Tecnics 3022) (V)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	15:15:24	69	ECR_ENV_38			camera	60	523665	6398993	523646	6398992	20	1	20	-93	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:15:38	70	ECR_ENV_38			camera	60	523663	6398993	523646	6398992	18	1	18	-94	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:16:04	71	ECR_ENV_38			camera	60	523659	6398995	523646	6398992	14	3	14	-103	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:16:15	72	ECR_ENV_38			camera	60	523658	6398995	523646	6398992	13	3	13	-104	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:16:35	73	ECR_ENV_38			camera	60	523657	6398998	523646	6398992	12	6	13	-118	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:17:09	74	ECR_ENV_38			camera	60	523655	6399001	523646	6398992	9	9	13	-134	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:17:39	75	ECR_ENV_38			camera	60	523651	6399003	523646	6398992	5	11	12	-154	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:17:54	76	ECR_ENV_38			camera	60	523650	6399003	523646	6398992	4	11	12	-158	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:18:15	77	ECR_ENV_38			camera	60	523647	6399004	523646	6398992	1	12	12	-173	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:18:23	78	ECR_ENV_38			camera	60	523645	6399004	523646	6398992	-1	12	12	178	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:18:32	79	ECR_ENV_38			camera	60	523644	6399005	523646	6398992	-2	13	13	173	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:19:05	80	ECR_ENV_38			camera	60	523641	6399009	523646	6398992	-5	17	18	165	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:19:32	81	ECR_ENV_38			camera	60	523639	6399013	523646	6398992	-7	21	22	163	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:19:47	82	ECR_ENV_38			camera	60	523638	6399014	523646	6398992	-8	22	23	161	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:20:03	83	ECR_ENV_38			camera	60	523636	6399016	523646	6398992	-10	24	26	158	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:20:25	84	ECR_ENV_38			camera	60	523633	6399017	523646	6398992	-13	25	28	154	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:20:38	85	ECR_ENV_38			camera	60	523632	6399018	523646	6398992	-14	26	29	153	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:20:58	86	ECR_ENV_38			camera	60	523630	6399020	523646	6398992	-16	28	32	151	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:21:22	87	ECR_ENV_38			camera	60	523628	6399022	523646	6398992	-18	30	35	150	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:21:41	88	ECR_ENV_38			camera	60	523626	6399024	523646	6398992	-20	32	38	149	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:21:53	89	ECR_ENV_38			camera	60	523625	6399025	523646	6398992	-21	33	39	148	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:22:06	90	ECR_ENV_38			camera	60	523623	6399026	523646	6398992	-23	34	41	147	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:22:27	91	ECR_ENV_38			camera	60	523621	6399028	523646	6398992	-25	36	44	146	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	15:22:36	92	ECR_ENV_38			camera	60	523620	6399028	523646	6398992	-26	36	44	145	DM	(Raw Nav, C-Tecnics 3022) (V)
19-Mar-2023	16:22:15	93	ECR_ENV_37			camera	75	526654	6399251	526607	6399300	47	-49	68	-44	DM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
19-Mar-2023	16:22:30	94	ECR_ENV_37			camera	76	526654	6399253	526607	6399300	47	-47	67	-45	DM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
19-Mar-2023	16:22:54	95	ECR_ENV_37			camera	76	526653	6399257	526607	6399300	46	-44	63	-46		(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A) # No photo taken
19-Mar-2023	16:23:05	96	ECR_ENV_37			camera	76	526651	6399258	526607	6399300	44	-43	61	-46		(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
19-Mar-2023	16:23:16	97	ECR_ENV_37			camera	76	526650	6399258	526607	6399300	43	-42	60	-45		(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
19-Mar-2023	16:23:39	98	ECR_ENV_37			camera	75	526647	6399261	526607	6399300	40	-39	56	-46		(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
19-Mar-2023	16:24:00	99	ECR_ENV_37			camera	75	526645	6399262	526607	6399300	37	-38	53	-44		(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
19-Mar-2023	16:24:50	100	ECR_ENV_37			camera	75.5	526638	6399268	526607	6399300	31	-32	44	-44		(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A) # No photo taken
19-Mar-2023	16:24:59	101	ECR_ENV_37			camera	75.6	526637	6399269	526607	6399300	30	-31	43	-44		(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A) # No photo taken

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463					Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited					Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2					Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1					Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84			Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	16:25:09	102	ECR_ENV_37			camera	76	526636	6399270	526607	6399300	29	-30	42	-44	DM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
19-Mar-2023	16:25:29	103	ECR_ENV_37			camera	75	526634	6399272	526607	6399300	27	-28	39	-44	DM	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
19-Mar-2023	16:25:46	104	ECR_ENV_37			camera	75	526633	6399274	526607	6399300	25	-27	37	-44	DM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
19-Mar-2023	16:26:05	105	ECR_ENV_37			camera	75	526631	6399275	526607	6399300	24	-25	34	-43	DM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
19-Mar-2023	16:26:25	106	ECR_ENV_37			camera	75	526629	6399278	526607	6399300	21	-23	31	-43	DM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
19-Mar-2023	16:26:44	107	ECR_ENV_37			camera	75	526628	6399279	526607	6399300	20	-21	29	-44	DM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
19-Mar-2023	16:27:03	108	ECR_ENV_37			camera	75	526628	6399282	526607	6399300	20	-19	28	-47		(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A) # No photo taken
19-Mar-2023	16:27:26	109	ECR_ENV_37			camera	76	526626	6399284	526607	6399300	19	-16	25	-49	DM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
19-Mar-2023	16:27:39	110	ECR_ENV_37			camera	75	526625	6399286	526607	6399300	18	-15	23	-51	DM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
19-Mar-2023	16:28:03	111	ECR_ENV_37			camera	75	526622	6399288	526607	6399300	15	-13	20	-49	DM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
19-Mar-2023	16:28:18	112	ECR_ENV_37			camera	75	526620	6399288	526607	6399300	13	-12	18	-47	DM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
19-Mar-2023	16:28:27	113	ECR_ENV_37			camera	76	526620	6399289	526607	6399300	12	-11	17	-47	DM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
19-Mar-2023	16:28:49	114	ECR_ENV_37			camera	75	526618	6399292	526607	6399300	10	-8	13	-51	DM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
19-Mar-2023	16:29:03	115	ECR_ENV_37			camera	75	526616	6399293	526607	6399300	9	-7	11	-51	DM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
19-Mar-2023	16:29:18	116	ECR_ENV_37			camera	75	526614	6399295	526607	6399300	7	-5	9	-54	DM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
19-Mar-2023	16:29:41	117	ECR_ENV_37			camera	75	526613	6399297	526607	6399300	6	-3	6	-62	DM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
19-Mar-2023	16:30:05	118	ECR_ENV_37			camera	76	526610	6399300	526607	6399300	3	0	3	-80	DM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
19-Mar-2023	16:30:36	119	ECR_ENV_37			camera	75	526606	6399303	526607	6399300	-1	2	3	160	DM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
19-Mar-2023	16:30:57	120	ECR_ENV_37			camera	75	526605	6399305	526607	6399300	-3	5	6	151	DM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
19-Mar-2023	16:31:08	121	ECR_ENV_37			camera	76	526604	6399306	526607	6399300	-4	6	7	147	DM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
19-Mar-2023	16:31:24	122	ECR_ENV_37			camera	76	526602	6399308	526607	6399300	-6	8	9	144	DM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
19-Mar-2023	16:31:36	123	ECR_ENV_37			camera	75	526601	6399309	526607	6399300	-7	9	11	143	DM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
19-Mar-2023	16:32:24	124	ECR_ENV_37			camera	76	526596	6399314	526607	6399300	-11	14	17	141	DM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
19-Mar-2023	16:32:36	125	ECR_ENV_37			camera	76	526596	6399315	526607	6399300	-12	14	19	141	DM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
19-Mar-2023	16:33:03	126	ECR_ENV_37			camera	76	526594	6399318	526607	6399300	-13	18	22	144	DM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
19-Mar-2023	16:33:43	127	ECR_ENV_37			camera	76	526591	6399323	526607	6399300	-17	22	28	143	DM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
19-Mar-2023	16:34:00	128	ECR_ENV_37			camera	76	526590	6399324	526607	6399300	-17	24	29	144	DM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
19-Mar-2023	16:34:16	129	ECR_ENV_37			camera	76	526589	6399327	526607	6399300	-18	26	32	145	DM	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
19-Mar-2023	16:34:28	130	ECR_ENV_37			camera	76	526588	6399328	526607	6399300	-19	28	34	145	DM	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
19-Mar-2023	16:34:45	131	ECR_ENV_37			camera	76	526587	6399329	526607	6399300	-20	29	35	145	DM	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
19-Mar-2023	16:35:24	132	ECR_ENV_37			camera	76	526585	6399334	526607	6399300	-23	34	41	146	DM	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
19-Mar-2023	16:35:39	133	ECR_ENV_37			camera	76	526583	6399336	526607	6399300	-24	35	43	146	DM	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
19-Mar-2023	16:36:10	134	ECR_ENV_37			camera	76	526581	6399338	526607	6399300	-26	38	46	145	DM	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
19-Mar-2023	16:36:37	135	ECR_ENV_37			camera	76	526580	6399341	526607	6399300	-27	41	49	147	DM	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
19-Mar-2023	17:56:42	136	ECR_ENV_51			camera	98	527934	6400630	527934	6400689	0	-59	59	0	DM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	17:56:49	137	ECR_ENV_51			camera	98	527934	6400632	527934	6400689	0	-57	57	0	DM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
19-Mar-2023	17:56:59	138	ECR_ENV_51			camera	98	527933	6400634	527934	6400689	-1	-55	55	1	DM	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
19-Mar-2023	17:57:19	139	ECR_ENV_51			camera	98	527932	6400637	527934	6400689	-2	-52	52	2	DM	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
19-Mar-2023	17:57:36	140	ECR_ENV_51			camera	98	527931	6400639	527934	6400689	-3	-50	50	4	DM	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
19-Mar-2023	17:57:52	141	ECR_ENV_51			camera	98	527931	6400642	527934	6400689	-3	-47	47	3	DM	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
19-Mar-2023	17:58:08	142	ECR_ENV_51			camera	98	527932	6400643	527934	6400689	-2	-45	45	3	DM	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
19-Mar-2023	17:58:37	143	ECR_ENV_51			camera	98	527934	6400647	527934	6400689	0	-41	41	-1	DM	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
19-Mar-2023	17:58:49	144	ECR_ENV_51			camera	98	527934	6400649	527934	6400689	0	-40	40	0	DM	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
19-Mar-2023	17:59:06	145	ECR_ENV_51			camera	98	527934	6400652	527934	6400689	0	-37	36	1	DM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
19-Mar-2023	17:59:34	146	ECR_ENV_51			camera	98	527933	6400656	527934	6400689	-1	-33	33	2	DM	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
19-Mar-2023	17:59:45	147	ECR_ENV_51			camera	98	527933	6400657	527934	6400689	-1	-32	32	3	DM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
19-Mar-2023	17:59:54	148	ECR_ENV_51			camera	98	527932	6400659	527934	6400689	-2	-30	30	3	DM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
19-Mar-2023	18:00:08	149	ECR_ENV_51			camera	98	527932	6400661	527934	6400689	-2	-28	28	4	DM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
19-Mar-2023	18:00:21	150	ECR_ENV_51			camera	98	527932	6400663	527934	6400689	-2	-26	26	5	DM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
19-Mar-2023	18:00:49	151	ECR_ENV_51			camera	98	527932	6400667	527934	6400689	-2	-21	21	7	DM	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
19-Mar-2023	18:01:07	152	ECR_ENV_51			camera	98	527931	6400669	527934	6400689	-3	-19	20	9	DM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
19-Mar-2023	18:01:35	153	ECR_ENV_51			camera	98	527932	6400674	527934	6400689	-2	-14	14	7	DM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
19-Mar-2023	18:02:04	154	ECR_ENV_51			camera	98	527932	6400679	527934	6400689	-2	-10	10	13	DM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
19-Mar-2023	18:02:20	155	ECR_ENV_51			camera	98	527931	6400682	527934	6400689	-3	-7	8	23	DM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
19-Mar-2023	18:02:58	156	ECR_ENV_51			camera	98	527928	6400687	527934	6400689	-6	-2	6	70	DM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
19-Mar-2023	18:03:23	157	ECR_ENV_51			camera	98	527930	6400690	527934	6400689	-4	1	4	101	DM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
19-Mar-2023	18:03:44	158	ECR_ENV_51			camera	98	527934	6400692	527934	6400689	0	4	4	-175	DM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
19-Mar-2023	18:03:52	159	ECR_ENV_51			camera	98	527935	6400694	527934	6400689	1	5	5	-169	DM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
19-Mar-2023	18:04:15	160	ECR_ENV_51			camera	98	527934	6400698	527934	6400689	0	9	9	-179	DM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
19-Mar-2023	18:04:40	161	ECR_ENV_51			camera	98	527933	6400701	527934	6400689	-1	12	12	175	DM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
19-Mar-2023	18:05:01	162	ECR_ENV_51			camera	98	527931	6400704	527934	6400689	-3	15	15	169	DM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
19-Mar-2023	18:05:21	163	ECR_ENV_51			camera	98	527931	6400708	527934	6400689	-3	19	20	170	DM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
19-Mar-2023	18:05:30	164	ECR_ENV_51			camera	98	527930	6400710	527934	6400689	-4	21	21	169	DM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
19-Mar-2023	18:05:50	165	ECR_ENV_51			camera	98	527931	6400712	527934	6400689	-4	24	24	172	DM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
19-Mar-2023	18:06:20	166	ECR_ENV_51			camera	98	527933	6400716	527934	6400689	-1	27	27	179	DM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
19-Mar-2023	18:06:31	167	ECR_ENV_51			camera	98	527933	6400718	527934	6400689	-1	29	29	179	DM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
19-Mar-2023	18:06:43	168	ECR_ENV_51			camera	98	527933	6400720	527934	6400689	-1	31	31	178	DM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
19-Mar-2023	18:06:53	169	ECR_ENV_51			camera	98	527933	6400722	527934	6400689	-1	33	33	178	DM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
19-Mar-2023	18:07:13	170	ECR_ENV_51			camera	98	527932	6400723	527934	6400689	-2	35	35	177	DM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
19-Mar-2023	18:07:42	171	ECR_ENV_51			camera	98	527931	6400728	527934	6400689	-3	39	39	176	DM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
19-Mar-2023	18:07:53	172	ECR_ENV_51			camera	98	527930	6400729	527934	6400689	-4	41	41	175	DM	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
19-Mar-2023	18:08:02	173	ECR_ENV_51			camera	98	527930	6400731	527934	6400689	-4	42	42	175	DM	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
19-Mar-2023	18:08:24	174	ECR_ENV_51			camera	98	527932	6400736	527934	6400689	-2	47	47	178	DM	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	19:17:01	175	ECR_ENV_52			camera	93	525145	6402514	525152	6402576	-8	-61	62	7	DM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
19-Mar-2023	19:17:13	176	ECR_ENV_52			camera	93	525144	6402515	525152	6402576	-8	-61	61	8	DM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
19-Mar-2023	19:17:22	177	ECR_ENV_52			camera	93	525145	6402516	525152	6402576	-8	-59	60	7	DM	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
19-Mar-2023	19:17:32	178	ECR_ENV_52			camera	93	525145	6402518	525152	6402576	-7	-58	58	7	DM	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
19-Mar-2023	19:17:47	179	ECR_ENV_52			camera	93	525147	6402521	525152	6402576	-6	-55	55	6	DM	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
19-Mar-2023	19:17:59	180	ECR_ENV_52			camera	93	525147	6402522	525152	6402576	-5	-53	53	6	DM	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
19-Mar-2023	19:18:13	181	ECR_ENV_52			camera	93	525147	6402524	525152	6402576	-5	-52	52	6	DM	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
19-Mar-2023	19:18:25	182	ECR_ENV_52			camera	93	525148	6402525	525152	6402576	-4	-51	51	5	DM	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
19-Mar-2023	19:18:57	183	ECR_ENV_52			camera	93	525148	6402531	525152	6402576	-4	-44	45	5	DM	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
19-Mar-2023	19:19:06	184	ECR_ENV_52			camera	93	525148	6402533	525152	6402576	-4	-43	43	6	DM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
19-Mar-2023	19:19:17	185	ECR_ENV_52			camera	93	525147	6402534	525152	6402576	-5	-41	42	7		(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A) # No photo taken
19-Mar-2023	19:19:20	186	ECR_ENV_52			camera	93	525147	6402535	525152	6402576	-5	-41	41	7	DM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
19-Mar-2023	19:19:31	187	ECR_ENV_52			camera	93	525147	6402536	525152	6402576	-6	-40	40	8	DM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
19-Mar-2023	19:19:59	188	ECR_ENV_52			camera	93	525148	6402540	525152	6402576	-5	-35	36	7	DM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
19-Mar-2023	19:20:10	189	ECR_ENV_52			camera	93	525147	6402542	525152	6402576	-5	-34	34	8	DM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
19-Mar-2023	19:20:30	190	ECR_ENV_52			camera	93	525147	6402545	525152	6402576	-5	-31	31	9	DM	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
19-Mar-2023	19:20:39	191	ECR_ENV_52			camera	93	525147	6402546	525152	6402576	-5	-29	30	10	DM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
19-Mar-2023	19:20:48	192	ECR_ENV_52			camera	93	525147	6402547	525152	6402576	-6	-28	29	11	DM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
19-Mar-2023	19:21:04	193	ECR_ENV_52			camera	93	525148	6402549	525152	6402576	-5	-27	27	10	DM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
19-Mar-2023	19:21:23	194	ECR_ENV_52			camera	93	525151	6402552	525152	6402576	-1	-24	24	3	DM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
19-Mar-2023	19:21:44	195	ECR_ENV_52			camera	93	525152	6402554	525152	6402576	0	-22	21	0	DM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
19-Mar-2023	19:22:04	196	ECR_ENV_52			camera	93	525152	6402558	525152	6402576	0	-18	18	0	DM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
19-Mar-2023	19:22:19	197	ECR_ENV_52			camera	93	525153	6402561	525152	6402576	0	-15	15	-2	DM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
19-Mar-2023	19:22:34	198	ECR_ENV_52			camera	93	525153	6402563	525152	6402576	0	-12	12	-2	DM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
19-Mar-2023	19:22:47	199	ECR_ENV_52			camera	93	525152	6402565	525152	6402576	0	-10	10	0	DM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
19-Mar-2023	19:23:08	200	ECR_ENV_52			camera	93	525152	6402568	525152	6402576	0	-7	7	-1	DM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
19-Mar-2023	19:23:23	201	ECR_ENV_52			camera	93	525153	6402571	525152	6402576	1	-5	5	-11	DM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
19-Mar-2023	19:23:48	202	ECR_ENV_52			camera	93	525153	6402574	525152	6402576	1	-1	2	-22	DM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
19-Mar-2023	19:24:05	203	ECR_ENV_52			camera	93	525153	6402578	525152	6402576	1	2	2	-154	DM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
19-Mar-2023	19:24:22	204	ECR_ENV_52			camera	93	525153	6402580	525152	6402576	1	5	5	-174	DM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
19-Mar-2023	19:24:44	205	ECR_ENV_52			camera	93	525152	6402584	525152	6402576	-1	8	8	175	DM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
19-Mar-2023	19:24:58	206	ECR_ENV_52			camera	93	525151	6402586	525152	6402576	-1	11	11	174	DM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
19-Mar-2023	19:25:30	207	ECR_ENV_52			camera	93	525149	6402591	525152	6402576	-3	16	16	170	DM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
19-Mar-2023	19:26:28	208	ECR_ENV_52			camera	93	525150	6402599	525152	6402576	-2	23	23	175	DM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
19-Mar-2023	19:26:58	209	ECR_ENV_52			camera	93	525151	6402604	525152	6402576	-1	28	28	178	DM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
19-Mar-2023	19:27:19	210	ECR_ENV_52			camera	93	525150	6402606	525152	6402576	-2	30	30	176	DM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
19-Mar-2023	19:27:37	211	ECR_ENV_52			camera	93	525149	6402607	525152	6402576	-3	31	31	174	DM	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
19-Mar-2023	19:27:49	212	ECR_ENV_52			camera	93	525149	6402608	525152	6402576	-4	32	32	174	DM	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463					Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited					Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2					Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1					Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84		Ellipsoid	WGS 84		Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	19:28:21	213	ECR_ENV_52			camera	93	525149	6402613	525152	6402576	-3	37	37	176	DM	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
19-Mar-2023	19:29:04	214	ECR_ENV_52			camera	93	525148	6402620	525152	6402576	-4	44	44	175	DM	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
19-Mar-2023	19:29:23	215	ECR_ENV_52			camera	93	525148	6402622	525152	6402576	-5	46	46	174		(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A) # No photo taken
19-Mar-2023	20:49:35	216	ECR_ENV_50			camera	98	529445	6403681	529507	6403681	-62	-1	62	89	DM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
19-Mar-2023	20:49:47	217	ECR_ENV_50			camera	98	529446	6403680	529507	6403681	-61	-1	61	89	DM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
19-Mar-2023	20:50:07	218	ECR_ENV_50			camera	98	529449	6403678	529507	6403681	-58	-3	58	87	DM	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
19-Mar-2023	20:50:16	219	ECR_ENV_50			camera	98	529451	6403678	529507	6403681	-56	-3	56	87	DM	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
19-Mar-2023	20:50:29	220	ECR_ENV_50			camera	98	529453	6403678	529507	6403681	-54	-4	54	86	DM	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
19-Mar-2023	20:51:05	221	ECR_ENV_50			camera	98	529460	6403680	529507	6403681	-47	-1	47	89	DM	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
19-Mar-2023	20:51:18	222	ECR_ENV_50			camera	98	529463	6403681	529507	6403681	-45	0	45	90	DM	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
19-Mar-2023	20:51:35	223	ECR_ENV_50			camera	98	529466	6403682	529507	6403681	-42	1	42	91	DM	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
19-Mar-2023	20:51:53	224	ECR_ENV_50			camera	98	529468	6403680	529507	6403681	-40	-1	40	88	DM	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
19-Mar-2023	20:52:07	225	ECR_ENV_50			camera	98	529470	6403679	529507	6403681	-38	-2	38	87	DM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
19-Mar-2023	20:52:23	226	ECR_ENV_50			camera	98	529472	6403679	529507	6403681	-36	-3	36	86	DM	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
19-Mar-2023	20:52:42	227	ECR_ENV_50			camera	98	529474	6403678	529507	6403681	-33	-3	34	84	DM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
19-Mar-2023	20:53:00	228	ECR_ENV_50			camera	98	529477	6403677	529507	6403681	-31	-5	31	82	DM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
19-Mar-2023	20:53:29	229	ECR_ENV_50			camera	98	529479	6403677	529507	6403681	-28	-4	29	81	DM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
19-Mar-2023	20:53:36	230	ECR_ENV_50			camera	98	529480	6403678	529507	6403681	-27	-3	27	83	DM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
19-Mar-2023	20:54:04	231	ECR_ENV_50			camera	98	529486	6403680	529507	6403681	-21	-2	21	86	DM	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
19-Mar-2023	20:54:22	232	ECR_ENV_50			camera	98	529489	6403681	529507	6403681	-18	-1	18	88	DM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
19-Mar-2023	20:54:33	233	ECR_ENV_50			camera	98	529491	6403681	529507	6403681	-16	0	16	89	DM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
19-Mar-2023	20:54:44	234	ECR_ENV_50			camera	98	529493	6403681	529507	6403681	-14	0	14	90	DM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
19-Mar-2023	20:55:04	235	ECR_ENV_50			camera	98	529496	6403682	529507	6403681	-12	1	12	94	DM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
19-Mar-2023	20:55:25	236	ECR_ENV_50			camera	98	529499	6403683	529507	6403681	-9	2	9	102	DM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
19-Mar-2023	20:55:38	237	ECR_ENV_50			camera	98	529501	6403684	529507	6403681	-7	2	7	110	DM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
19-Mar-2023	20:56:06	238	ECR_ENV_50			camera	98	529504	6403684	529507	6403681	-4	3	5	126	DM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
19-Mar-2023	20:56:21	239	ECR_ENV_50			camera	98	529505	6403683	529507	6403681	-3	2	3	121	DM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
19-Mar-2023	20:56:33	240	ECR_ENV_50			camera	98	529505	6403682	529507	6403681	-2	0	2	102	DM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
19-Mar-2023	20:56:57	241	ECR_ENV_50			camera	98	529507	6403682	529507	6403681	0	1	1	157	DM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
19-Mar-2023	20:57:22	242	ECR_ENV_50			camera	98	529510	6403683	529507	6403681	2	2	3	-129	DM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
19-Mar-2023	20:57:37	243	ECR_ENV_50			camera	98	529513	6403683	529507	6403681	5	2	5	-107	DM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
19-Mar-2023	20:58:10	244	ECR_ENV_50			camera	98	529517	6403683	529507	6403681	9	2	10	-100	DM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
19-Mar-2023	20:58:30	245	ECR_ENV_50			camera	98	529519	6403684	529507	6403681	12	3	12	-104	DM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
19-Mar-2023	20:58:40	246	ECR_ENV_50			camera	98	529521	6403685	529507	6403681	14	4	14	-105	DM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
19-Mar-2023	20:58:58	247	ECR_ENV_50			camera	98	529523	6403685	529507	6403681	16	3	16	-102	DM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
19-Mar-2023	20:59:18	248	ECR_ENV_50			camera	98	529525	6403685	529507	6403681	18	3	18	-101	DM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
19-Mar-2023	20:59:39	249	ECR_ENV_50			camera	98	529527	6403685	529507	6403681	19	4	20	-101	DM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
19-Mar-2023	20:59:59	250	ECR_ENV_50			camera	98	529529	6403684	529507	6403681	21	3	21	-98	DM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	21:00:06	251	ECR_ENV_50			camera	98	529529	6403684	529507	6403681	22	3	22	-97	DM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
19-Mar-2023	21:00:21	252	ECR_ENV_50			camera	98	529530	6403684	529507	6403681	22	2	22	-96	DM	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
19-Mar-2023	21:00:44	253	ECR_ENV_50			camera	98	529532	6403685	529507	6403681	25	4	25	-99	DM	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
19-Mar-2023	21:01:04	254	ECR_ENV_50			camera	98	529535	6403687	529507	6403681	28	5	28	-101	DM	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
19-Mar-2023	21:01:29	255	ECR_ENV_50			camera	98	529540	6403686	529507	6403681	33	4	33	-98	DM	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
19-Mar-2023	21:01:54	256	ECR_ENV_50			camera	98	529543	6403686	529507	6403681	36	4	36	-97	DM	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
19-Mar-2023	21:02:37	257	ECR_ENV_50			camera	98	529548	6403686	529507	6403681	41	5	41	-96	DM	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
19-Mar-2023	21:03:40	258	ECR_ENV_50			camera	98	529558	6403686	529507	6403681	50	5	51	-95	DM	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
19-Mar-2023	22:11:21	259	ECR_ENV_49			camera	71	526385	6405001	526330	6405008	55	-7	56	-83	DM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
19-Mar-2023	22:11:35	260	ECR_ENV_49			camera	71	526385	6405001	526330	6405008	55	-7	55	-83	DM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
19-Mar-2023	22:11:58	261	ECR_ENV_49			camera	71	526382	6404999	526330	6405008	52	-9	53	-80	DM	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
19-Mar-2023	22:12:11	262	ECR_ENV_49			camera	71	526380	6404997	526330	6405008	50	-11	51	-77	DM	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
19-Mar-2023	22:12:43	263	ECR_ENV_49			camera	71	526373	6404998	526330	6405008	44	-10	45	-77	DM	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
19-Mar-2023	22:12:50	264	ECR_ENV_49			camera	71	526373	6404999	526330	6405008	43	-10	44	-77	DM	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
19-Mar-2023	22:13:00	265	ECR_ENV_49			camera	71	526372	6404998	526330	6405008	42	-10	43	-77	DM	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
19-Mar-2023	22:13:08	266	ECR_ENV_49			camera	71	526371	6404998	526330	6405008	42	-10	43	-77	DM	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
19-Mar-2023	22:13:21	267	ECR_ENV_49			camera	71	526370	6404999	526330	6405008	40	-9	41	-77	DM	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
19-Mar-2023	22:13:36	268	ECR_ENV_49			camera	71	526368	6405000	526330	6405008	38	-8	39	-79	DM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
19-Mar-2023	22:14:04	269	ECR_ENV_49			camera	71	526366	6405000	526330	6405008	37	-8	38	-78	DM	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
19-Mar-2023	22:14:15	270	ECR_ENV_49			camera	71	526364	6404999	526330	6405008	35	-9	36	-76	DM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
19-Mar-2023	22:14:25	271	ECR_ENV_49			camera	71	526363	6404999	526330	6405008	33	-9	34	-75	DM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
19-Mar-2023	22:14:44	272	ECR_ENV_49			camera	71	526359	6405000	526330	6405008	29	-8	30	-75	DM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
19-Mar-2023	22:15:00	273	ECR_ENV_49			camera	71	526356	6405000	526330	6405008	27	-8	28	-73	DM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
19-Mar-2023	22:15:12	274	ECR_ENV_49			camera	71	526355	6405000	526330	6405008	25	-9	27	-71	DM	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
19-Mar-2023	22:15:27	275	ECR_ENV_49			camera	71	526353	6404999	526330	6405008	24	-10	26	-68	DM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
19-Mar-2023	22:15:47	276	ECR_ENV_49			camera	71	526351	6405000	526330	6405008	21	-8	23	-70	DM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
19-Mar-2023	22:16:06	277	ECR_ENV_49			camera	71	526350	6405001	526330	6405008	20	-7	21	-70	DM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
19-Mar-2023	22:16:38	278	ECR_ENV_49			camera	72	526343	6404999	526330	6405008	14	-9	16	-57	DM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
19-Mar-2023	22:16:57	279	ECR_ENV_49			camera	72	526340	6405000	526330	6405008	11	-8	13	-54	DM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
19-Mar-2023	22:17:26	280	ECR_ENV_49			camera	72	526337	6405002	526330	6405008	8	-6	10	-53	DM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
19-Mar-2023	22:17:50	281	ECR_ENV_49			camera	72	526335	6405003	526330	6405008	5	-6	8	-45	DM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
19-Mar-2023	22:18:21	282	ECR_ENV_49			camera	72	526332	6405006	526330	6405008	3	-3	4	-48	DM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
19-Mar-2023	22:18:44	283	ECR_ENV_49			camera	72	526332	6405007	526330	6405008	2	-1	2	-65	DM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
19-Mar-2023	22:19:15	284	ECR_ENV_49			camera	72	526331	6405007	526330	6405008	1	-1	1	-55	DM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
19-Mar-2023	22:19:27	285	ECR_ENV_49			camera	72	526329	6405007	526330	6405008	-1	-1	1	33	DM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
19-Mar-2023	22:20:01	286	ECR_ENV_49			camera	72	526324	6405008	526330	6405008	-6	0	6	86	DM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
19-Mar-2023	22:20:19	287	ECR_ENV_49			camera	72	526320	6405006	526330	6405008	-10	-2	10	77	DM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
19-Mar-2023	22:20:31	288	ECR_ENV_49			camera	72	526318	6405004	526330	6405008	-11	-4	12	72	DM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	22:21:00	289	ECR_ENV_49			camera	72	526312	6405003	526330	6405008	-18	-6	19	73	DM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
19-Mar-2023	22:21:11	290	ECR_ENV_49			camera	72	526310	6405001	526330	6405008	-20	-7	21	70	DM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
19-Mar-2023	22:21:21	291	ECR_ENV_49			camera	72	526308	6405000	526330	6405008	-21	-9	23	68	DM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
19-Mar-2023	22:21:41	292	ECR_ENV_49			camera	73	526305	6404998	526330	6405008	-25	-10	27	67	DM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
19-Mar-2023	22:21:53	293	ECR_ENV_49			camera	72	526303	6404997	526330	6405008	-27	-11	29	67	DM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
19-Mar-2023	22:22:08	294	ECR_ENV_49			camera	73	526300	6404996	526330	6405008	-30	-12	32	68	DM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
19-Mar-2023	22:22:27	295	ECR_ENV_49			camera	73	526295	6404996	526330	6405008	-35	-12	37	71	DM	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
19-Mar-2023	22:22:41	296	ECR_ENV_49			camera	73	526293	6404995	526330	6405008	-36	-13	39	70	DM	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
19-Mar-2023	22:23:03	297	ECR_ENV_49			camera	73	526289	6404995	526330	6405008	-41	-13	42	73	DM	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
19-Mar-2023	22:23:19	298	ECR_ENV_49			camera	73	526286	6404996	526330	6405008	-44	-12	46	75	DM	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
19-Mar-2023	22:23:30	299	ECR_ENV_49			camera	73	526285	6404996	526330	6405008	-45	-13	47	74	DM	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
19-Mar-2023	23:31:38	300	ECR_ENV_48			camera	96	528451	6406998	528397	6406983	54	15	56	-106	DM	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
19-Mar-2023	23:32:00	301	ECR_ENV_48			camera	96	528446	6406998	528397	6406983	49	15	51	-107	DM	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
19-Mar-2023	23:32:11	302	ECR_ENV_48			camera	96	528443	6406997	528397	6406983	46	15	49	-108	DM	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)
19-Mar-2023	23:32:26	303	ECR_ENV_48			camera	96	528440	6406996	528397	6406983	43	14	45	-108	DM	(Corr'd Nav, Kongsberg 14208, img#45) (V) (T.A)
19-Mar-2023	23:32:42	304	ECR_ENV_48			camera	96	528438	6406995	528397	6406983	41	13	43	-107	DM	(Corr'd Nav, Kongsberg 14208, img#46) (V) (T.A)
19-Mar-2023	23:33:04	305	ECR_ENV_48			camera	96	528435	6406993	528397	6406983	38	10	40	-105	DM	(Corr'd Nav, Kongsberg 14208, img#47) (V) (T.A)
19-Mar-2023	23:33:17	306	ECR_ENV_48			camera	96	528434	6406992	528397	6406983	37	9	38	-104	DM	(Corr'd Nav, Kongsberg 14208, img#48) (V) (T.A)
19-Mar-2023	23:33:38	307	ECR_ENV_48			camera	96	528430	6406992	528397	6406983	33	10	34	-106	DM	(Corr'd Nav, Kongsberg 14208, img#49) (V) (T.A)
19-Mar-2023	23:33:56	308	ECR_ENV_48			camera	96	528426	6406991	528397	6406983	29	9	31	-107	DM	(Corr'd Nav, Kongsberg 14208, img#50) (V) (T.A)
19-Mar-2023	23:34:14	309	ECR_ENV_48			camera	96	528424	6406990	528397	6406983	27	7	28	-105	DM	(Corr'd Nav, Kongsberg 14208, img#51) (V) (T.A)
19-Mar-2023	23:34:26	310	ECR_ENV_48			camera	96	528424	6406989	528397	6406983	27	6	27	-103	DM	(Corr'd Nav, Kongsberg 14208, img#52) (V) (T.A)
19-Mar-2023	23:34:39	311	ECR_ENV_48			camera	96	528424	6406988	528397	6406983	27	5	27	-101	DM	(Corr'd Nav, Kongsberg 14208, img#53) (V) (T.A)
19-Mar-2023	23:35:11	312	ECR_ENV_48			camera	95	528419	6406989	528397	6406983	22	6	23	-105	DM	(Corr'd Nav, Kongsberg 14208, img#54) (V) (T.A)
19-Mar-2023	23:35:31	313	ECR_ENV_48			camera	96	528415	6406986	528397	6406983	18	3	18	-101	DM	(Corr'd Nav, Kongsberg 14208, img#55) (V) (T.A)
19-Mar-2023	23:35:46	314	ECR_ENV_48			camera	95	528413	6406985	528397	6406983	16	2	16	-97	DM	(Corr'd Nav, Kongsberg 14208, img#56) (V) (T.A)
19-Mar-2023	23:36:04	315	ECR_ENV_48			camera	95	528409	6406984	528397	6406983	13	2	13	-98	DM	(Corr'd Nav, Kongsberg 14208, img#57) (V) (T.A)
19-Mar-2023	23:36:25	316	ECR_ENV_48			camera	95	528406	6406984	528397	6406983	9	1	9	-97	DM	(Corr'd Nav, Kongsberg 14208, img#58) (V) (T.A)
19-Mar-2023	23:36:45	317	ECR_ENV_48			camera	95	528402	6406984	528397	6406983	5	1	5	-105	DM	(Corr'd Nav, Kongsberg 14208, img#59) (V) (T.A)
19-Mar-2023	23:37:01	318	ECR_ENV_48			camera	95	528400	6406983	528397	6406983	3	0	3	-96	DM	(Corr'd Nav, Kongsberg 14208, img#60) (V) (T.A)
19-Mar-2023	23:37:11	319	ECR_ENV_48			camera	95	528399	6406983	528397	6406983	2	0	2	-89	DM	(Corr'd Nav, Kongsberg 14208, img#61) (V) (T.A)
19-Mar-2023	23:37:30	320	ECR_ENV_48			camera	96	528396	6406983	528397	6406983	0	0	0	126	DM	(Corr'd Nav, Kongsberg 14208, img#62) (V) (T.A)
19-Mar-2023	23:37:43	321	ECR_ENV_48			camera	95	528394	6406984	528397	6406983	-3	1	3	110	DM	(Corr'd Nav, Kongsberg 14208, img#63) (V) (T.A)
19-Mar-2023	23:38:03	322	ECR_ENV_48			camera	95	528389	6406984	528397	6406983	-8	1	8	97	DM	(Corr'd Nav, Kongsberg 14208, img#64) (V) (T.A)
19-Mar-2023	23:38:22	323	ECR_ENV_48			camera	95	528386	6406982	528397	6406983	-11	-1	11	86	DM	(Corr'd Nav, Kongsberg 14208, img#65) (V) (T.A)
19-Mar-2023	23:38:38	324	ECR_ENV_48			camera	95	528383	6406982	528397	6406983	-14	-1	14	86	DM	(Corr'd Nav, Kongsberg 14208, img#66) (V) (T.A)
19-Mar-2023	23:38:57	325	ECR_ENV_48			camera	95	528379	6406982	528397	6406983	-18	-1	18	87	DM	(Corr'd Nav, Kongsberg 14208, img#67) (V) (T.A)
19-Mar-2023	23:39:06	326	ECR_ENV_48			camera	95	528377	6406982	528397	6406983	-20	-1	20	88	DM	(Corr'd Nav, Kongsberg 14208, img#68) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Mar-2023	23:39:24	327	ECR_ENV_48			camera	95	528374	6406981	528397	6406983	-22	-1	22	87	DM	(Corr'd Nav, Kongsberg 14208, img#69) (V) (T.A)
19-Mar-2023	23:39:35	328	ECR_ENV_48			camera	95	528373	6406982	528397	6406983	-24	-1	24	88	DM	(Corr'd Nav, Kongsberg 14208, img#70) (V) (T.A)
19-Mar-2023	23:39:55	329	ECR_ENV_48			camera	95	528369	6406983	528397	6406983	-28	1	28	91	DM	(Corr'd Nav, Kongsberg 14208, img#71) (V) (T.A)
19-Mar-2023	23:40:05	330	ECR_ENV_48			camera	95	528367	6406983	528397	6406983	-30	0	30	90	DM	(Corr'd Nav, Kongsberg 14208, img#72) (V) (T.A)
19-Mar-2023	23:40:19	331	ECR_ENV_48			camera	95	528365	6406982	528397	6406983	-31	-1	31	89	DM	(Corr'd Nav, Kongsberg 14208, img#73) (V) (T.A)
19-Mar-2023	23:40:31	332	ECR_ENV_48			camera	95	528363	6406982	528397	6406983	-34	0	34	90	DM	(Corr'd Nav, Kongsberg 14208, img#74) (V) (T.A)
19-Mar-2023	23:40:41	333	ECR_ENV_48			camera	95	528361	6406983	528397	6406983	-36	0	36	90	DM	(Corr'd Nav, Kongsberg 14208, img#75) (V) (T.A)
19-Mar-2023	23:41:07	334	ECR_ENV_48			camera	95	528360	6406982	528397	6406983	-37	-1	37	89	DM	(Corr'd Nav, Kongsberg 14208, img#76) (V) (T.A)
19-Mar-2023	23:41:28	335	ECR_ENV_48			camera	95	528356	6406984	528397	6406983	-41	1	41	92	DM	(Corr'd Nav, Kongsberg 14208, img#77) (V) (T.A)
19-Mar-2023	23:41:35	336	ECR_ENV_48			camera	95	528354	6406985	528397	6406983	-43	2	43	93	DM	(Corr'd Nav, Kongsberg 14208, img#78) (V) (T.A)
19-Mar-2023	23:42:01	337	ECR_ENV_48			camera	95	528350	6406985	528397	6406983	-47	3	47	93	DM	(Corr'd Nav, Kongsberg 14208, img#79) (V) (T.A)
19-Mar-2023	23:42:13	338	ECR_ENV_48			camera	95	528349	6406985	528397	6406983	-48	2	48	92	DM	(Corr'd Nav, Kongsberg 14208, img#80) (V) (T.A)
20-Mar-2023	01:02:50	339	ECR_ENV_47			camera	87	525234	6407000	525217	6406950	17	50	52	-161	AM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
20-Mar-2023	01:03:48	340	ECR_ENV_47			camera	88	525235	6407001	525217	6406950	18	51	54	-161	AM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
20-Mar-2023	01:03:56	341	ECR_ENV_47			camera	87	525234	6407000	525217	6406950	17	50	53	-161	AM	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
20-Mar-2023	01:04:11	342	ECR_ENV_47			camera	87	525233	6406998	525217	6406950	16	48	51	-161	AM	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
20-Mar-2023	01:04:46	343	ECR_ENV_47			camera	87	525232	6406994	525217	6406950	15	44	46	-162	AM	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
20-Mar-2023	01:05:07	344	ECR_ENV_47			camera	87	525231	6406991	525217	6406950	14	41	43	-161	AM	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
20-Mar-2023	01:05:56	345	ECR_ENV_47			camera	87	525227	6406985	525217	6406950	11	35	36	-163	AM	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
20-Mar-2023	01:06:21	346	ECR_ENV_47			camera	87	525225	6406983	525217	6406950	8	33	34	-166	AM	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
20-Mar-2023	01:06:51	347	ECR_ENV_47			camera	87	525223	6406980	525217	6406950	6	30	30	-168	AM	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
20-Mar-2023	01:07:09	348	ECR_ENV_47			camera	87	525222	6406978	525217	6406950	5	28	28	-169	AM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
20-Mar-2023	01:07:34	349	ECR_ENV_47			camera	87	525219	6406976	525217	6406950	3	26	26	-174	AM	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
20-Mar-2023	01:08:12	350	ECR_ENV_47			camera	86	525216	6406972	525217	6406950	-1	22	22	178	AM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
20-Mar-2023	01:08:23	351	ECR_ENV_47			camera	86	525216	6406971	525217	6406950	-1	21	21	177	AM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
20-Mar-2023	01:08:48	352	ECR_ENV_47			camera	86	525216	6406967	525217	6406950	-1	17	17	178	AM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
20-Mar-2023	01:08:53	353	ECR_ENV_47			camera	86	525216	6406966	525217	6406950	-1	16	16	178	AM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
20-Mar-2023	01:09:41	354	ECR_ENV_47			camera	86	525216	6406959	525217	6406950	-1	9	9	177	AM	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
20-Mar-2023	01:09:56	355	ECR_ENV_47			camera	86	525217	6406957	525217	6406950	0	7	7	178	AM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
20-Mar-2023	01:10:48	356	ECR_ENV_47			camera	86	525214	6406950	525217	6406950	-3	0	3	87	AM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
20-Mar-2023	01:11:49	357	ECR_ENV_47			camera	86	525212	6406942	525217	6406950	-5	-8	9	31	AM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
20-Mar-2023	01:12:22	358	ECR_ENV_47			camera	85	525211	6406937	525217	6406950	-6	-13	14	25	AM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
20-Mar-2023	01:12:35	359	ECR_ENV_47			camera	85	525210	6406936	525217	6406950	-7	-14	16	25	AM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
20-Mar-2023	01:12:49	360	ECR_ENV_47			camera	85	525210	6406934	525217	6406950	-7	-16	18	23	AM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
20-Mar-2023	01:13:19	361	ECR_ENV_47			camera	85	525210	6406929	525217	6406950	-7	-21	22	19	AM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
20-Mar-2023	01:13:30	362	ECR_ENV_47			camera	85	525210	6406927	525217	6406950	-7	-23	24	18	AM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
20-Mar-2023	01:13:41	363	ECR_ENV_47			camera	85	525210	6406926	525217	6406950	-7	-24	25	16	AM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
20-Mar-2023	01:13:50	364	ECR_ENV_47			camera	85	525210	6406925	525217	6406950	-7	-25	26	14	AM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	01:14:00	365	ECR_ENV_47			camera	85	525211	6406923	525217	6406950	-6	-27	28	12	AM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
20-Mar-2023	01:14:36	366	ECR_ENV_47			camera	85	525213	6406918	525217	6406950	-4	-32	32	7	AM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
20-Mar-2023	01:14:42	367	ECR_ENV_47			camera	85	525214	6406917	525217	6406950	-3	-33	33	6	AM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
20-Mar-2023	01:14:49	368	ECR_ENV_47			camera	85	525214	6406916	525217	6406950	-3	-34	34	5	AM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
20-Mar-2023	01:15:06	369	ECR_ENV_47			camera	85	525216	6406914	525217	6406950	-1	-37	37	2	AM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
20-Mar-2023	01:15:15	370	ECR_ENV_47			camera	85	525217	6406912	525217	6406950	0	-38	38	1	AM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
20-Mar-2023	01:15:24	371	ECR_ENV_47			camera	85	525217	6406911	525217	6406950	0	-39	39	0	AM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
20-Mar-2023	01:16:00	372	ECR_ENV_47			camera	85	525218	6406906	525217	6406950	2	-44	44	-2	AM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
20-Mar-2023	01:16:06	373	ECR_ENV_47			camera	85	525218	6406905	525217	6406950	2	-45	45	-2	AM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
20-Mar-2023	01:16:13	374	ECR_ENV_47			camera	85	525218	6406904	525217	6406950	1	-46	46	-2	AM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
20-Mar-2023	02:34:05	375	ECR_ENV_46			camera	86	524766	6408974	524818	6408957	-52	17	54	108	AM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
20-Mar-2023	02:34:18	376	ECR_ENV_46			camera	86	524766	6408975	524818	6408957	-51	17	54	109	AM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
20-Mar-2023	02:34:39	377	ECR_ENV_46			camera	86	524767	6408972	524818	6408957	-51	15	53	106	AM	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
20-Mar-2023	02:34:47	378	ECR_ENV_46			camera	86	524768	6408971	524818	6408957	-50	14	52	105	AM	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
20-Mar-2023	02:34:56	379	ECR_ENV_46			camera	86	524769	6408970	524818	6408957	-49	13	51	104	AM	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
20-Mar-2023	02:35:15	380	ECR_ENV_46			camera	86	524771	6408968	524818	6408957	-47	11	48	103	AM	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
20-Mar-2023	02:35:37	381	ECR_ENV_46			camera	86	524773	6408966	524818	6408957	-45	9	46	101	AM	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
20-Mar-2023	02:35:46	382	ECR_ENV_46			camera	86	524774	6408965	524818	6408957	-44	7	44	100	AM	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
20-Mar-2023	02:35:56	383	ECR_ENV_46			camera	86	524775	6408964	524818	6408957	-43	7	43	99	AM	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
20-Mar-2023	02:36:16	384	ECR_ENV_46			camera	86	524778	6408962	524818	6408957	-40	5	40	97	AM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
20-Mar-2023	02:36:29	385	ECR_ENV_46			camera	86	524780	6408961	524818	6408957	-38	4	39	96	AM	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
20-Mar-2023	02:36:44	386	ECR_ENV_46			camera	86	524782	6408961	524818	6408957	-36	4	36	96	AM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
20-Mar-2023	02:37:07	387	ECR_ENV_46			camera	86	524785	6408960	524818	6408957	-33	3	33	95	AM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
20-Mar-2023	02:37:14	388	ECR_ENV_46			camera	86	524786	6408960	524818	6408957	-32	3	32	96	AM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
20-Mar-2023	02:37:33	389	ECR_ENV_46			camera	86	524789	6408959	524818	6408957	-29	2	29	95	AM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
20-Mar-2023	02:37:54	390	ECR_ENV_46			camera	86	524792	6408958	524818	6408957	-26	1	26	91	AM	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
20-Mar-2023	02:38:06	391	ECR_ENV_46			camera	86	524793	6408957	524818	6408957	-25	0	25	89	AM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
20-Mar-2023	02:38:18	392	ECR_ENV_46			camera	86	524794	6408956	524818	6408957	-24	-1	24	88	AM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
20-Mar-2023	02:38:26	393	ECR_ENV_46			camera	86	524795	6408956	524818	6408957	-23	-1	23	87	AM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
20-Mar-2023	02:38:35	394	ECR_ENV_46			camera	86	524796	6408956	524818	6408957	-22	-2	22	86	AM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
20-Mar-2023	02:38:50	395	ECR_ENV_46			camera	86	524799	6408955	524818	6408957	-19	-2	20	83	AM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
20-Mar-2023	02:39:07	396	ECR_ENV_46			camera	86	524801	6408954	524818	6408957	-17	-3	17	80	AM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
20-Mar-2023	02:39:29	397	ECR_ENV_46			camera	86	524804	6408954	524818	6408957	-14	-4	14	75	AM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
20-Mar-2023	02:39:46	398	ECR_ENV_46			camera	86	524806	6408954	524818	6408957	-12	-4	12	73	AM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
20-Mar-2023	02:39:53	399	ECR_ENV_46			camera	86	524808	6408954	524818	6408957	-10	-3	11	72	AM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
20-Mar-2023	02:40:34	400	ECR_ENV_46			camera	86	524813	6408954	524818	6408957	-5	-4	6	52	AM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
20-Mar-2023	02:41:14	401	ECR_ENV_46			camera	86	524819	6408953	524818	6408957	1	-4	4	-14	AM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
20-Mar-2023	02:41:37	402	ECR_ENV_46			camera	86	524823	6408954	524818	6408957	5	-3	5	-59	AM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	02:42:00	403	ECR_ENV_46			camera	86	524826	6408956	524818	6408957	8	-2	9	-79	AM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
20-Mar-2023	02:42:27	404	ECR_ENV_46			camera	86	524830	6408957	524818	6408957	12	0	12	-91	AM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
20-Mar-2023	02:42:40	405	ECR_ENV_46			camera	86	524831	6408956	524818	6408957	13	-1	13	-84	AM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
20-Mar-2023	02:43:26	406	ECR_ENV_46			camera	86	524837	6408955	524818	6408957	19	-2	19	-83	AM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
20-Mar-2023	02:43:50	407	ECR_ENV_46			camera	86	524841	6408956	524818	6408957	23	-1	23	-87	AM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
20-Mar-2023	02:44:10	408	ECR_ENV_46			camera	86	524842	6408957	524818	6408957	25	0	24	-89	AM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
20-Mar-2023	02:44:29	409	ECR_ENV_46			camera	86	524845	6408957	524818	6408957	27	-1	27	-89	AM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
20-Mar-2023	02:44:38	410	ECR_ENV_46			camera	86	524846	6408957	524818	6408957	29	-1	28	-89	AM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
20-Mar-2023	02:44:59	411	ECR_ENV_46			camera	86	524849	6408957	524818	6408957	31	0	31	-90	AM	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
20-Mar-2023	02:45:09	412	ECR_ENV_46			camera	86	524851	6408957	524818	6408957	33	0	33	-89	AM	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
20-Mar-2023	02:45:25	413	ECR_ENV_46			camera	86	524853	6408957	524818	6408957	35	-1	35	-89	AM	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
20-Mar-2023	02:45:39	414	ECR_ENV_46			camera	86	524854	6408957	524818	6408957	36	0	36	-89	AM	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
20-Mar-2023	02:45:48	415	ECR_ENV_46			camera	86	524856	6408957	524818	6408957	38	0	38	-90	AM	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
20-Mar-2023	02:45:56	416	ECR_ENV_46			camera	86	524857	6408957	524818	6408957	39	0	39	-89	AM	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
20-Mar-2023	02:46:18	417	ECR_ENV_46			camera	86	524860	6408956	524818	6408957	42	-2	42	-88	AM	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
20-Mar-2023	02:46:25	418	ECR_ENV_46			camera	86	524861	6408955	524818	6408957	43	-2	43	-88	AM	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)
20-Mar-2023	02:46:42	419	ECR_ENV_46			camera	86	524862	6408956	524818	6408957	44	-2	44	-88	AM	(Corr'd Nav, Kongsberg 14208, img#45) (V) (T.A)
20-Mar-2023	02:46:54	420	ECR_ENV_46			camera	86	524864	6408955	524818	6408957	46	-2	46	-88	AM	(Corr'd Nav, Kongsberg 14208, img#46) (V) (T.A)
20-Mar-2023	02:47:10	421	ECR_ENV_46			camera	86	524866	6408955	524818	6408957	48	-2	48	-88	AM	(Corr'd Nav, Kongsberg 14208, img#47) (V) (T.A)
20-Mar-2023	02:47:29	422	ECR_ENV_46			camera	86	524868	6408955	524818	6408957	50	-2	50	-88	AM	(Corr'd Nav, Kongsberg 14208, img#48) (V) (T.A)
20-Mar-2023	04:05:56	423	ECR_ENV_45			camera	83	527473	6410078	527524	6410067	-51	11	52	103	AM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
20-Mar-2023	04:06:41	424	ECR_ENV_45			camera	83	527468	6410080	527524	6410067	-55	13	57	103	AM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
20-Mar-2023	04:06:48	425	ECR_ENV_45			camera	83	527467	6410080	527524	6410067	-56	13	58	103	AM	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
20-Mar-2023	04:07:03	426	ECR_ENV_45			camera	83	527465	6410080	527524	6410067	-59	13	60	103	AM	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
20-Mar-2023	04:07:21	427	ECR_ENV_45			camera	83	527464	6410079	527524	6410067	-60	12	61	102	AM	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
20-Mar-2023	04:07:35	428	ECR_ENV_45			camera	83	527465	6410078	527524	6410067	-58	12	60	101	AM	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
20-Mar-2023	04:08:14	429	ECR_ENV_45			camera	83	527469	6410075	527524	6410067	-54	8	55	98	AM	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
20-Mar-2023	04:08:24	430	ECR_ENV_45			camera	83	527471	6410074	527524	6410067	-53	7	53	98	AM	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
20-Mar-2023	04:09:18	431	ECR_ENV_45			camera	83	527481	6410074	527524	6410067	-42	7	43	100	AM	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
20-Mar-2023	04:09:51	432	ECR_ENV_45			camera	83	527485	6410072	527524	6410067	-39	5	39	97	AM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
20-Mar-2023	04:10:40	433	ECR_ENV_45			camera	83	527493	6410069	527524	6410067	-31	2	31	94	AM	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
20-Mar-2023	04:11:09	434	ECR_ENV_45			camera	83	527497	6410070	527524	6410067	-26	3	26	96	AM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
20-Mar-2023	04:11:26	435	ECR_ENV_45			camera	83	527500	6410068	527524	6410067	-24	1	24	93	AM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
20-Mar-2023	04:12:05	436	ECR_ENV_45			camera	83	527506	6410067	527524	6410067	-18	0	18	91	AM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
20-Mar-2023	04:12:36	437	ECR_ENV_45			camera	83	527510	6410068	527524	6410067	-13	1	13	96	AM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
20-Mar-2023	04:12:45	438	ECR_ENV_45			camera	83	527512	6410068	527524	6410067	-12	2	12	98	AM	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
20-Mar-2023	04:13:11	439	ECR_ENV_45			camera	83	527516	6410069	527524	6410067	-8	2	8	106	AM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
20-Mar-2023	04:14:03	440	ECR_ENV_45			camera	83	527523	6410067	527524	6410067	0	0	1	134	AM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	04:14:10	441	ECR_ENV_45			camera	83	527525	6410067	527524	6410067	1	0	1	-89	AM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
20-Mar-2023	04:14:26	442	ECR_ENV_45			camera	83	527526	6410067	527524	6410067	3	0	3	-90	AM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
20-Mar-2023	04:15:34	443	ECR_ENV_45			camera	83	527537	6410065	527524	6410067	13	-2	13	-81	AM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
20-Mar-2023	04:16:01	444	ECR_ENV_45			camera	83	527540	6410066	527524	6410067	16	-1	16	-87	AM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
20-Mar-2023	04:16:13	445	ECR_ENV_45			camera	83	527542	6410066	527524	6410067	18	-1	18	-87	AM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
20-Mar-2023	04:16:58	446	ECR_ENV_45			camera	83	527548	6410064	527524	6410067	24	-2	24	-84	AM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
20-Mar-2023	04:17:27	447	ECR_ENV_45			camera	83	527552	6410064	527524	6410067	29	-2	29	-85	AM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
20-Mar-2023	04:17:34	448	ECR_ENV_45			camera	83	527553	6410064	527524	6410067	30	-2	30	-85	AM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
20-Mar-2023	04:17:50	449	ECR_ENV_45			camera	83	527555	6410065	527524	6410067	32	-2	32	-87	AM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
20-Mar-2023	04:18:16	450	ECR_ENV_45			camera	83	527559	6410065	527524	6410067	35	-1	35	-88	AM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
20-Mar-2023	04:18:25	451	ECR_ENV_45			camera	83	527560	6410065	527524	6410067	37	-2	37	-88	AM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
20-Mar-2023	04:18:42	452	ECR_ENV_45			camera	83	527561	6410065	527524	6410067	38	-1	38	-88	AM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
20-Mar-2023	04:18:49	453	ECR_ENV_45			camera	83	527562	6410066	527524	6410067	38	-1	38	-88	AM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
20-Mar-2023	04:18:59	454	ECR_ENV_45			camera	83	527563	6410065	527524	6410067	39	-2	39	-88	AM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
20-Mar-2023	04:19:16	455	ECR_ENV_45			camera	83	527565	6410063	527524	6410067	42	-4	42	-84	AM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
20-Mar-2023	04:19:25	456	ECR_ENV_45			camera	83	527566	6410062	527524	6410067	43	-5	43	-84	AM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
20-Mar-2023	04:19:30	457	ECR_ENV_45			camera	83	527567	6410062	527524	6410067	43	-5	43	-84	AM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
20-Mar-2023	04:19:42	458	ECR_ENV_45			camera	83	527568	6410062	527524	6410067	45	-5	45	-84	AM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
20-Mar-2023	04:20:02	459	ECR_ENV_45			camera	83	527572	6410061	527524	6410067	49	-5	49	-84	AM	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
20-Mar-2023	04:20:14	460	ECR_ENV_45			camera	83	527574	6410062	527524	6410067	50	-5	51	-84	AM	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
20-Mar-2023	05:32:20	461	ECR_ENV_44			camera	77	525521	6411506	525589	6411512	-67	-6	67	85	AM	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
20-Mar-2023	05:33:59	462	ECR_ENV_44			camera	77	525531	6411506	525589	6411512	-57	-6	58	84	AM	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
20-Mar-2023	05:34:13	463	ECR_ENV_44			camera	77	525532	6411508	525589	6411512	-56	-4	56	86	AM	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
20-Mar-2023	05:34:36	464	ECR_ENV_44			camera	77	525537	6411511	525589	6411512	-52	-2	52	88	AM	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
20-Mar-2023	05:34:57	465	ECR_ENV_44			camera	77	525539	6411513	525589	6411512	-50	1	50	91	AM	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
20-Mar-2023	05:35:06	466	ECR_ENV_44			camera	77	525540	6411513	525589	6411512	-49	0	49	90	AM	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
20-Mar-2023	05:35:27	467	ECR_ENV_44			camera	77	525542	6411509	525589	6411512	-47	-3	47	86	AM	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
20-Mar-2023	05:36:01	468	ECR_ENV_44			camera	77	525545	6411508	525589	6411512	-43	-5	44	84	AM	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
20-Mar-2023	05:36:23	469	ECR_ENV_44			camera	77	525549	6411506	525589	6411512	-40	-6	40	81	AM	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
20-Mar-2023	05:36:54	470	ECR_ENV_44			camera	77	525551	6411507	525589	6411512	-38	-6	38	81	AM	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
20-Mar-2023	05:37:05	471	ECR_ENV_44			camera	77	525552	6411507	525589	6411512	-36	-5	37	82	AM	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
20-Mar-2023	05:37:13	472	ECR_ENV_44			camera	77	525554	6411508	525589	6411512	-35	-5	35	82	AM	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
20-Mar-2023	05:37:27	473	ECR_ENV_44			camera	77	525556	6411508	525589	6411512	-32	-4	33	82	AM	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
20-Mar-2023	05:37:57	474	ECR_ENV_44			camera	77	525560	6411508	525589	6411512	-29	-5	29	80	AM	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
20-Mar-2023	05:38:10	475	ECR_ENV_44			camera	77	525562	6411507	525589	6411512	-27	-5	27	79	AM	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
20-Mar-2023	05:38:39	476	ECR_ENV_44			camera	77	525566	6411508	525589	6411512	-22	-4	23	79	AM	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
20-Mar-2023	05:38:57	477	ECR_ENV_44			camera	77	525569	6411510	525589	6411512	-20	-3	20	82	AM	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
20-Mar-2023	05:39:26	478	ECR_ENV_44			camera	77	525572	6411511	525589	6411512	-16	-1	16	86	AM	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	05:39:50	479	ECR_ENV_44			camera	77	525575	6411511	525589	6411512	-14	-1	14	86	AM	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
20-Mar-2023	05:40:42	480	ECR_ENV_44			camera	77	525581	6411516	525589	6411512	-7	4	8	118	AM	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
20-Mar-2023	05:41:11	481	ECR_ENV_44			camera	77	525585	6411512	525589	6411512	-4	0	4	84	AM	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
20-Mar-2023	05:41:29	482	ECR_ENV_44			camera	77	525587	6411511	525589	6411512	-2	-1	2	56	AM	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
20-Mar-2023	05:42:50	483	ECR_ENV_44			camera	77	525598	6411510	525589	6411512	10	-2	10	-77	AM	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
20-Mar-2023	05:42:58	484	ECR_ENV_44			camera	77	525601	6411511	525589	6411512	12	-2	12	-81	AM	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
20-Mar-2023	05:43:07	485	ECR_ENV_44			camera	77	525603	6411511	525589	6411512	14	-2	14	-83	AM	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
20-Mar-2023	05:43:25	486	ECR_ENV_44			camera	77	525605	6411511	525589	6411512	17	-1	17	-86	AM	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
20-Mar-2023	05:43:36	487	ECR_ENV_44			camera	77	525606	6411512	525589	6411512	18	0	18	-89	AM	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
20-Mar-2023	05:43:47	488	ECR_ENV_44			camera	77	525608	6411513	525589	6411512	20	0	20	-91	AM	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
20-Mar-2023	05:44:18	489	ECR_ENV_44			camera	77	525615	6411515	525589	6411512	27	3	27	-96	AM	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
20-Mar-2023	05:44:40	490	ECR_ENV_44			camera	78	525617	6411513	525589	6411512	29	1	29	-91	AM	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
20-Mar-2023	05:44:46	491	ECR_ENV_44			camera	77	525617	6411513	525589	6411512	29	0	29	-90	AM	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
20-Mar-2023	05:45:03	492	ECR_ENV_44			camera	77	525619	6411512	525589	6411512	30	-1	30	-89	AM	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
20-Mar-2023	05:45:22	493	ECR_ENV_44			camera	78	525623	6411511	525589	6411512	34	-1	34	-88	AM	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
20-Mar-2023	05:45:42	494	ECR_ENV_44			camera	77	525625	6411512	525589	6411512	36	-1	36	-89	AM	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
20-Mar-2023	05:45:50	495	ECR_ENV_44			camera	77	525625	6411512	525589	6411512	36	0	36	-89	AM	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
20-Mar-2023	05:46:08	496	ECR_ENV_44			camera	77	525627	6411513	525589	6411512	38	0	38	-91	AM	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
20-Mar-2023	05:46:28	497	ECR_ENV_44			camera	77	525630	6411515	525589	6411512	42	2	42	-93	AM	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
20-Mar-2023	05:46:56	498	ECR_ENV_44			camera	78	525634	6411515	525589	6411512	46	2	46	-93	AM	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
20-Mar-2023	05:47:12	499	ECR_ENV_44			camera	78	525635	6411514	525589	6411512	47	2	47	-92	AM	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
20-Mar-2023	05:47:41	500	ECR_ENV_44			camera	78	525640	6411514	525589	6411512	51	2	51	-92	AM	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
20-Mar-2023	07:32:40	501	ECR_ENV_43			camera	64	526881	6417289	526959	6417301	-78	-12	78	81	AM	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
20-Mar-2023	07:33:42	502	ECR_ENV_43			camera	64	526885	6417296	526959	6417301	-74	-5	74	86	AM	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
20-Mar-2023	07:34:08	503	ECR_ENV_43			camera	64	526888	6417297	526959	6417301	-70	-5	70	86	AM	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
20-Mar-2023	07:34:26	504	ECR_ENV_43			camera	64	526890	6417295	526959	6417301	-68	-6	68	85	AM	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
20-Mar-2023	07:34:36	505	ECR_ENV_43			camera	64	526891	6417293	526959	6417301	-68	-8	68	83	AM	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
20-Mar-2023	07:34:56	506	ECR_ENV_43			camera	64	526894	6417294	526959	6417301	-64	-7	65	84	AM	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
20-Mar-2023	07:35:05	507	ECR_ENV_43			camera	64	526894	6417294	526959	6417301	-64	-8	65	83	AM	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
20-Mar-2023	07:35:12	508	ECR_ENV_43			camera	64	526896	6417293	526959	6417301	-63	-8	63	83	AM	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
20-Mar-2023	07:35:35	509	ECR_ENV_43			camera	64	526898	6417291	526959	6417301	-61	-10	62	81	AM	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
20-Mar-2023	07:36:01	510	ECR_ENV_43			camera	64	526900	6417292	526959	6417301	-59	-9	59	81	AM	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
20-Mar-2023	07:36:08	511	ECR_ENV_43			camera	64	526902	6417293	526959	6417301	-57	-8	57	82	AM	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
20-Mar-2023	07:36:16	512	ECR_ENV_43			camera	64	526903	6417293	526959	6417301	-56	-8	57	82	AM	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
20-Mar-2023	07:36:29	513	ECR_ENV_43			camera	64	526905	6417293	526959	6417301	-54	-8	54	81	AM	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
20-Mar-2023	07:36:50	514	ECR_ENV_43			camera	64	526907	6417295	526959	6417301	-51	-7	52	83	AM	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
20-Mar-2023	07:37:18	515	ECR_ENV_43			camera	64	526911	6417292	526959	6417301	-47	-9	48	80	AM	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
20-Mar-2023	07:37:29	516	ECR_ENV_43			camera	64	526913	6417292	526959	6417301	-46	-10	47	78	AM	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	07:37:42	517	ECR_ENV_43			camera	64	526914	6417292	526959	6417301	-44	-9	45	78	AM	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
20-Mar-2023	07:37:59	518	ECR_ENV_43			camera	64	526917	6417292	526959	6417301	-41	-9	42	77	AM	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
20-Mar-2023	07:38:11	519	ECR_ENV_43			camera	64	526919	6417292	526959	6417301	-39	-9	40	77	AM	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
20-Mar-2023	07:38:18	520	ECR_ENV_43			camera	64	526921	6417292	526959	6417301	-38	-9	39	77	AM	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
20-Mar-2023	07:38:30	521	ECR_ENV_43			camera	64	526922	6417292	526959	6417301	-36	-9	37	76	AM	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
20-Mar-2023	07:38:58	522	ECR_ENV_43			camera	64	526926	6417294	526959	6417301	-32	-7	33	77	AM	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
20-Mar-2023	07:39:05	523	ECR_ENV_43			camera	65	526927	6417293	526959	6417301	-32	-8	33	76	AM	(Raw Nav, Kongsberg 14208, img#23) (B)
20-Mar-2023	07:39:20	524	ECR_ENV_43			camera	65	526929	6417294	526959	6417301	-30	-7	30	76	AM	(Raw Nav, Kongsberg 14208, img#24) (B)
20-Mar-2023	07:39:25	525	ECR_ENV_43			camera	64	526930	6417293	526959	6417301	-28	-8	29	74	AM	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
20-Mar-2023	07:39:52	526	ECR_ENV_43			camera	64	526934	6417295	526959	6417301	-24	-6	25	75	AM	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
20-Mar-2023	07:39:58	527	ECR_ENV_43			camera	64	526935	6417294	526959	6417301	-24	-7	25	74	AM	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
20-Mar-2023	07:40:06	528	ECR_ENV_43			camera	64	526936	6417296	526959	6417301	-23	-6	24	76	AM	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
20-Mar-2023	07:40:20	529	ECR_ENV_43			camera	64	526937	6417296	526959	6417301	-21	-5	22	76	AM	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
20-Mar-2023	07:40:28	530	ECR_ENV_43			camera	64	526938	6417295	526959	6417301	-20	-6	21	72	AM	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
20-Mar-2023	07:40:43	531	ECR_ENV_43			camera	64	526940	6417295	526959	6417301	-18	-6	19	70	AM	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
20-Mar-2023	07:41:06	532	ECR_ENV_43			camera	63	526942	6417295	526959	6417301	-16	-6	17	69	AM	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
20-Mar-2023	07:41:14	533	ECR_ENV_43			camera	63	526943	6417295	526959	6417301	-15	-7	17	67	AM	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
20-Mar-2023	07:41:45	534	ECR_ENV_43			camera	63	526948	6417295	526959	6417301	-11	-6	12	60	AM	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
20-Mar-2023	07:42:09	535	ECR_ENV_43			camera	64	526951	6417296	526959	6417301	-8	-6	10	55	AM	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
20-Mar-2023	07:42:16	536	ECR_ENV_43			camera	64	526952	6417295	526959	6417301	-6	-6	9	43	AM	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
20-Mar-2023	07:42:27	537	ECR_ENV_43			camera	63	526953	6417296	526959	6417301	-6	-5	8	47	AM	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
20-Mar-2023	07:42:39	538	ECR_ENV_43			camera	64	526955	6417297	526959	6417301	-3	-4	5	39	AM	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
20-Mar-2023	07:42:46	539	ECR_ENV_43			camera	64	526956	6417295	526959	6417301	-2	-6	6	22	AM	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
20-Mar-2023	07:43:00	540	ECR_ENV_43			camera	64	526958	6417296	526959	6417301	-1	-5	5	9	AM	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
20-Mar-2023	07:43:07	541	ECR_ENV_43			camera	65	526959	6417295	526959	6417301	0	-6	6	-4	AM	(Raw Nav, Kongsberg 14208, img#41) (B)
20-Mar-2023	07:43:23	542	ECR_ENV_43			camera	64	526961	6417295	526959	6417301	3	-7	7	-21	AM	(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
20-Mar-2023	07:43:51	543	ECR_ENV_43			camera	64	526963	6417295	526959	6417301	5	-6	7	-38	AM	(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
20-Mar-2023	07:44:00	544	ECR_ENV_43			camera	64	526964	6417294	526959	6417301	6	-7	9	-41	AM	(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
20-Mar-2023	07:44:13	545	ECR_ENV_43			camera	64	526966	6417295	526959	6417301	8	-6	10	-52	AM	(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
20-Mar-2023	07:44:29	546	ECR_ENV_43			camera	64	526969	6417295	526959	6417301	10	-6	12	-59	AM	(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
20-Mar-2023	07:44:48	547	ECR_ENV_43			camera	64	526971	6417295	526959	6417301	12	-6	14	-63	AM	(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
20-Mar-2023	07:44:52	548	ECR_ENV_43			camera	64	526972	6417295	526959	6417301	13	-6	15	-64	AM	(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
20-Mar-2023	07:45:11	549	ECR_ENV_43			camera	64	526974	6417294	526959	6417301	16	-7	17	-65	AM	(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
20-Mar-2023	07:45:41	550	ECR_ENV_43			camera	64	526978	6417295	526959	6417301	19	-6	20	-74	AM	(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
20-Mar-2023	07:45:52	551	ECR_ENV_43			camera	64	526979	6417296	526959	6417301	21	-5	22	-75	AM	(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
20-Mar-2023	07:46:09	552	ECR_ENV_43			camera	64	526981	6417297	526959	6417301	23	-5	23	-79	AM	(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
20-Mar-2023	07:46:25	553	ECR_ENV_43			camera	64	526984	6417296	526959	6417301	26	-5	26	-79	AM	(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
20-Mar-2023	07:46:31	554	ECR_ENV_43			camera	64	526985	6417295	526959	6417301	27	-6	27	-77	AM	(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	07:46:55	555	ECR_ENV_43			camera	65	526987	6417296	526959	6417301	29	-5	29	-80	AM	(Raw Nav, Kongsberg 14208, img#55) (B)
20-Mar-2023	07:47:23	556	ECR_ENV_43			camera	65	526991	6417295	526959	6417301	33	-6	33	-79	AM	(Raw Nav, Kongsberg 14208, img#56) (B)
20-Mar-2023	07:47:44	557	ECR_ENV_43			camera	65	526993	6417296	526959	6417301	35	-5	35	-82	AM	(Raw Nav, Kongsberg 14208, img#57) (B)
20-Mar-2023	07:47:50	558	ECR_ENV_43			camera	65	526994	6417295	526959	6417301	36	-6	36	-80	AM	(Raw Nav, Kongsberg 14208, img#58) (B)
20-Mar-2023	07:48:08	559	ECR_ENV_43			camera	65	526996	6417295	526959	6417301	38	-6	38	-81	AM	(Raw Nav, Kongsberg 14208, img#59) (B)
20-Mar-2023	07:48:22	560	ECR_ENV_43			camera	65	527000	6417289	526959	6417301	42	-12	43	-74	AM	(Raw Nav, Kongsberg 14208, img#60) (B)
20-Mar-2023	09:38:03	561	ECR_ENV_42			camera	78	526503	6425764	526559	6425774	-56	-10	56	80	AM	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
20-Mar-2023	09:39:48	562	ECR_ENV_42			camera	78	526503	6425773	526559	6425774	-56	-2	56	88	AM	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
20-Mar-2023	09:40:33	563	ECR_ENV_42			camera	78	526507	6425772	526559	6425774	-52	-2	52	88	AM	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
20-Mar-2023	09:40:52	564	ECR_ENV_42			camera	78	526510	6425772	526559	6425774	-48	-2	48	87	AM	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
20-Mar-2023	09:41:05	565	ECR_ENV_42			camera	78	526513	6425773	526559	6425774	-46	-2	46	88	AM	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
20-Mar-2023	09:41:36	566	ECR_ENV_42			camera	78	526516	6425774	526559	6425774	-43	0	43	90	AM	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
20-Mar-2023	09:41:58	567	ECR_ENV_42			camera	78	526518	6425772	526559	6425774	-40	-3	40	86	AM	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
20-Mar-2023	09:42:28	568	ECR_ENV_42			camera	78	526521	6425776	526559	6425774	-38	2	38	92	AM	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
20-Mar-2023	09:42:44	569	ECR_ENV_42			camera	78	526523	6425774	526559	6425774	-35	0	35	90	AM	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
20-Mar-2023	09:43:21	570	ECR_ENV_42			camera	78	526527	6425777	526559	6425774	-32	3	32	95	AM	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
20-Mar-2023	09:43:38	571	ECR_ENV_42			camera	78	526529	6425776	526559	6425774	-29	2	29	93	AM	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
20-Mar-2023	09:44:23	572	ECR_ENV_42			camera	78	526534	6425775	526559	6425774	-24	1	24	92	AM	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
20-Mar-2023	09:44:53	573	ECR_ENV_42			camera	78	526537	6425775	526559	6425774	-22	1	22	92	AM	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
20-Mar-2023	09:45:13	574	ECR_ENV_42			camera	78	526541	6425776	526559	6425774	-18	1	18	95	AM	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
20-Mar-2023	09:45:36	575	ECR_ENV_42			camera	78	526543	6425777	526559	6425774	-15	2	16	98	AM	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
20-Mar-2023	09:45:50	576	ECR_ENV_42			camera	78	526545	6425777	526559	6425774	-14	3	14	102	AM	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
20-Mar-2023	09:46:52	577	ECR_ENV_42			camera	78	526552	6425778	526559	6425774	-6	4	7	120	AM	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
20-Mar-2023	09:47:23	578	ECR_ENV_42			camera	78	526557	6425780	526559	6425774	-2	5	6	161	AM	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
20-Mar-2023	09:47:43	579	ECR_ENV_42			camera	78	526560	6425779	526559	6425774	1	4	4	-165	AM	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
20-Mar-2023	09:47:51	580	ECR_ENV_42			camera	78	526561	6425777	526559	6425774	2	3	4	-140	AM	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
20-Mar-2023	09:48:01	581	ECR_ENV_42			camera	78	526563	6425779	526559	6425774	4	5	6	-136	AM	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
20-Mar-2023	09:48:09	582	ECR_ENV_42			camera	78	526564	6425777	526559	6425774	5	3	6	-121	AM	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
20-Mar-2023	09:48:14	583	ECR_ENV_42			camera	78	526565	6425778	526559	6425774	7	4	8	-120	AM	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
20-Mar-2023	09:48:19	584	ECR_ENV_42			camera	78	526566	6425779	526559	6425774	8	5	9	-120	AM	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
20-Mar-2023	09:48:37	585	ECR_ENV_42			camera	78	526572	6425778	526559	6425774	13	4	14	-107	AM	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
20-Mar-2023	09:48:44	586	ECR_ENV_42			camera	78	526574	6425778	526559	6425774	15	3	15	-102	AM	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
20-Mar-2023	09:48:49	587	ECR_ENV_42			camera	78	526575	6425778	526559	6425774	16	4	17	-104	AM	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
20-Mar-2023	09:48:58	588	ECR_ENV_42			camera	78	526576	6425775	526559	6425774	18	1	18	-93	AM	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
20-Mar-2023	09:49:14	589	ECR_ENV_42			camera	78	526580	6425777	526559	6425774	21	3	21	-98	AM	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
20-Mar-2023	09:49:23	590	ECR_ENV_42			camera	78	526581	6425775	526559	6425774	23	1	23	-92	AM	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
20-Mar-2023	09:49:32	591	ECR_ENV_42			camera	78	526582	6425775	526559	6425774	24	0	24	-91	AM	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
20-Mar-2023	09:49:39	592	ECR_ENV_42			camera	78	526586	6425778	526559	6425774	28	4	28	-98	AM	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	09:49:45	593	ECR_ENV_42			camera	78	526587	6425779	526559	6425774	29	5	29	-100	AM	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
20-Mar-2023	09:49:51	594	ECR_ENV_42			camera	78	526588	6425777	526559	6425774	30	3	30	-96	AM	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
20-Mar-2023	09:49:57	595	ECR_ENV_42			camera	80	526589	6425779	526559	6425774	30	5	31	-99	AM	(Raw Nav, Kongsberg 14208, img#35) (B)
20-Mar-2023	09:50:13	596	ECR_ENV_42			camera	78	526592	6425778	526559	6425774	34	4	34	-96	AM	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
20-Mar-2023	09:50:31	597	ECR_ENV_42			camera	78	526594	6425777	526559	6425774	36	2	36	-94	AM	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
20-Mar-2023	09:50:46	598	ECR_ENV_42			camera	78	526595	6425779	526559	6425774	37	5	37	-98	AM	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
20-Mar-2023	09:50:53	599	ECR_ENV_42			camera	78	526596	6425780	526559	6425774	37	6	37	-99	AM	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
20-Mar-2023	11:21:06	600	ECR_ENV_41			camera	74	529552	6430638	529600	6430646	-48	-8	49	80	AM	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
20-Mar-2023	11:21:51	601	ECR_ENV_41			camera	74	529553	6430643	529600	6430646	-48	-3	48	86	AM	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
20-Mar-2023	11:21:59	602	ECR_ENV_41			camera	74	529556	6430641	529600	6430646	-44	-6	45	83	AM	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
20-Mar-2023	11:22:08	603	ECR_ENV_41			camera	74	529552	6430644	529600	6430646	-48	-3	48	87	AM	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
20-Mar-2023	11:22:28	604	ECR_ENV_41			camera	74	529553	6430645	529600	6430646	-47	-1	47	89	AM	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
20-Mar-2023	11:22:48	605	ECR_ENV_41			camera	74	529554	6430646	529600	6430646	-46	0	46	90	AM	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
20-Mar-2023	11:22:55	606	ECR_ENV_41			camera	74	529554	6430649	529600	6430646	-46	3	46	93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A) # No photo taken
20-Mar-2023	11:23:02	607	ECR_ENV_41			camera	74	529555	6430651	529600	6430646	-45	5	45	96	AM	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
20-Mar-2023	11:23:05	608	ECR_ENV_41			camera	74	529556	6430645	529600	6430646	-44	-1	44	89	AM	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
20-Mar-2023	11:23:11	609	ECR_ENV_41			camera	74	529558	6430649	529600	6430646	-42	2	42	93	AM	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
20-Mar-2023	11:23:18	610	ECR_ENV_41			camera	74	529558	6430648	529600	6430646	-42	2	42	92	AM	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
20-Mar-2023	11:23:25	611	ECR_ENV_41			camera	74	529559	6430648	529600	6430646	-41	1	41	92	AM	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
20-Mar-2023	11:23:31	612	ECR_ENV_41			camera	74	529560	6430648	529600	6430646	-40	1	40	92	AM	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
20-Mar-2023	11:23:37	613	ECR_ENV_41			camera	74	529562	6430648	529600	6430646	-38	1	38	92	AM	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
20-Mar-2023	11:23:45	614	ECR_ENV_41			camera	74	529564	6430646	529600	6430646	-36	0	36	90	AM	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
20-Mar-2023	11:23:52	615	ECR_ENV_41			camera	74	529566	6430647	529600	6430646	-34	1	34	92	AM	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
20-Mar-2023	11:23:58	616	ECR_ENV_41			camera	74	529567	6430648	529600	6430646	-33	1	33	93	AM	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
20-Mar-2023	11:24:17	617	ECR_ENV_41			camera	74	529570	6430650	529600	6430646	-30	3	30	96	AM	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
20-Mar-2023	11:24:25	618	ECR_ENV_41			camera	74	529571	6430651	529600	6430646	-29	4	29	98	AM	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
20-Mar-2023	11:24:51	619	ECR_ENV_41			camera	74	529576	6430651	529600	6430646	-24	5	25	102	AM	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
20-Mar-2023	11:24:59	620	ECR_ENV_41			camera	74	529577	6430652	529600	6430646	-24	5	24	103	AM	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
20-Mar-2023	11:25:12	621	ECR_ENV_41			camera	74	529580	6430653	529600	6430646	-20	7	22	109	AM	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
20-Mar-2023	11:25:44	622	ECR_ENV_41			camera	74	529584	6430654	529600	6430646	-16	7	18	114	AM	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
20-Mar-2023	11:26:06	623	ECR_ENV_41			camera	74	529585	6430652	529600	6430646	-15	5	16	110	AM	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
20-Mar-2023	11:26:30	624	ECR_ENV_41			camera	74	529586	6430652	529600	6430646	-14	6	15	113	AM	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
20-Mar-2023	11:26:36	625	ECR_ENV_41			camera	74	529588	6430652	529600	6430646	-13	5	14	113	AM	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
20-Mar-2023	11:27:05	626	ECR_ENV_41			camera	74	529594	6430651	529600	6430646	-6	4	7	127	AM	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
20-Mar-2023	11:27:13	627	ECR_ENV_41			camera	74	529596	6430649	529600	6430646	-4	3	5	123	AM	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
20-Mar-2023	11:27:30	628	ECR_ENV_41			camera	74	529601	6430650	529600	6430646	1	3	3	-162	AM	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
20-Mar-2023	11:27:37	629	ECR_ENV_41			camera	74	529603	6430651	529600	6430646	3	4	5	-146	AM	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
20-Mar-2023	11:27:59	630	ECR_ENV_41			camera	74	529605	6430650	529600	6430646	5	4	6	-124	AM	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463				Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2				Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84		Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	11:28:22	631	ECR_ENV_41			camera	74	529608	6430650	529600	6430646	8	4	9	-114	AM	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
20-Mar-2023	11:28:33	632	ECR_ENV_41			camera	74	529609	6430651	529600	6430646	9	5	11	-118	AM	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
20-Mar-2023	11:29:00	633	ECR_ENV_41			camera	74	529613	6430652	529600	6430646	13	5	14	-113	AM	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
20-Mar-2023	11:29:21	634	ECR_ENV_41			camera	74	529618	6430652	529600	6430646	18	6	19	-108	AM	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
20-Mar-2023	11:29:29	635	ECR_ENV_41			camera	74	529621	6430651	529600	6430646	21	4	21	-102	AM	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
20-Mar-2023	11:29:57	636	ECR_ENV_41			camera	74	529628	6430652	529600	6430646	28	5	28	-101	AM	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
20-Mar-2023	11:30:10	637	ECR_ENV_41			camera	74	529631	6430652	529600	6430646	31	5	32	-100	AM	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
20-Mar-2023	11:30:19	638	ECR_ENV_41			camera	74	529632	6430651	529600	6430646	32	5	33	-99	AM	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
20-Mar-2023	11:30:48	639	ECR_ENV_41			camera	74	529638	6430651	529600	6430646	38	4	38	-97	AM	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
20-Mar-2023	13:15:08	640	ECR_ENV_40			camera	69	527640	6437739	527687	6437681	-47	58	75	141	DM	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
20-Mar-2023	13:15:28	641	ECR_ENV_40			camera	69	527639	6437733	527687	6437681	-48	52	71	138	DM	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
20-Mar-2023	13:16:24	642	ECR_ENV_40			camera	69	527637	6437718	527687	6437681	-50	37	62	126	DM	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
20-Mar-2023	13:16:57	643	ECR_ENV_40			camera	69	527640	6437711	527687	6437681	-48	30	56	122	DM	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
20-Mar-2023	13:17:36	644	ECR_ENV_40			camera	69	527644	6437704	527687	6437681	-43	23	49	119	DM	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
20-Mar-2023	13:17:47	645	ECR_ENV_40			camera	69	527645	6437702	527687	6437681	-42	21	47	117	DM	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
20-Mar-2023	13:18:24	646	ECR_ENV_40			camera	69	527648	6437698	527687	6437681	-39	17	43	113	DM	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
20-Mar-2023	13:18:37	647	ECR_ENV_40			camera	69	527654	6437701	527687	6437681	-33	21	39	122	DM	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
20-Mar-2023	13:18:53	648	ECR_ENV_40			camera	69	527656	6437701	527687	6437681	-32	20	37	122		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A) # No photo taken
20-Mar-2023	13:19:03	649	ECR_ENV_40			camera	69	527656	6437699	527687	6437681	-31	18	36	120	DM	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
20-Mar-2023	13:19:13	650	ECR_ENV_40			camera	69	527660	6437700	527687	6437681	-27	19	33	125	DM	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
20-Mar-2023	13:19:26	651	ECR_ENV_40			camera	69	527664	6437704	527687	6437681	-24	23	33	135	DM	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
20-Mar-2023	13:19:41	652	ECR_ENV_40			camera	70	527669	6437703	527687	6437681	-18	22	29	141	DM	(Raw Nav, Kongsberg 14208, img#13) (B)
20-Mar-2023	13:19:55	653	ECR_ENV_40			camera	70	527673	6437702	527687	6437681	-14	21	26	146	DM	(Raw Nav, Kongsberg 14208, img#14) (B)
20-Mar-2023	13:20:12	654	ECR_ENV_40			camera	70	527675	6437699	527687	6437681	-12	18	22	146	DM	(Raw Nav, Kongsberg 14208, img#15) (B)
20-Mar-2023	13:20:21	655	ECR_ENV_40			camera	70	527681	6437701	527687	6437681	-6	20	21	163	DM	(Raw Nav, Kongsberg 14208, img#16) (B)
20-Mar-2023	13:20:34	656	ECR_ENV_40			camera	70	527686	6437700	527687	6437681	-1	19	19	176	DM	(Raw Nav, Kongsberg 14208, img#17) (B)
20-Mar-2023	13:20:51	657	ECR_ENV_40			camera	70	527685	6437698	527687	6437681	-2	17	17	173	DM	(Raw Nav, Kongsberg 14208, img#18) (B)
20-Mar-2023	13:21:03	658	ECR_ENV_40			camera	70	527693	6437695	527687	6437681	6	14	15	-158	DM	(Raw Nav, Kongsberg 14208, img#19) (B)
20-Mar-2023	13:21:15	659	ECR_ENV_40			camera	70	527696	6437694	527687	6437681	9	13	16	-146	DM	(Raw Nav, Kongsberg 14208, img#20) (B)
20-Mar-2023	13:21:29	660	ECR_ENV_40			camera	70	527699	6437691	527687	6437681	12	10	16	-131	DM	(Raw Nav, Kongsberg 14208, img#21) (B)
20-Mar-2023	13:21:42	661	ECR_ENV_40			camera	70	527702	6437689	527687	6437681	15	8	17	-119	DM	(Raw Nav, Kongsberg 14208, img#22) (B)
20-Mar-2023	13:22:07	662	ECR_ENV_40			camera	70	527703	6437686	527687	6437681	16	5	17	-108	DM	(Raw Nav, Kongsberg 14208, img#23) (B)
20-Mar-2023	13:22:16	663	ECR_ENV_40			camera	70	527706	6437686	527687	6437681	19	5	20	-106	DM	(Raw Nav, Kongsberg 14208, img#24) (B)
20-Mar-2023	13:22:31	664	ECR_ENV_40			camera	70	527705	6437684	527687	6437681	18	3	18	-100	DM	(Raw Nav, Kongsberg 14208, img#25) (B)
20-Mar-2023	13:22:55	665	ECR_ENV_40			camera	71	527705	6437683	527687	6437681	18	2	18	-97	DM	(Raw Nav, Kongsberg 14208, img#26) (B)
20-Mar-2023	13:23:19	666	ECR_ENV_40			camera	70	527703	6437683	527687	6437681	16	2	16	-98	DM	(Raw Nav, Kongsberg 14208, img#27) (B)
20-Mar-2023	13:24:13	667	ECR_ENV_40			camera	71	527698	6437679	527687	6437681	11	-2	11	-81	DM	(Raw Nav, Kongsberg 14208, img#28) (B)
20-Mar-2023	13:24:31	668	ECR_ENV_40			camera	71	527695	6437678	527687	6437681	8	-3	8	-70	DM	(Raw Nav, Kongsberg 14208, img#29) (B)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Mar-2023	13:25:13	669	ECR_ENV_40			camera	70	527689	6437677	527687	6437681	2	-4	4	-26	DM	(Raw Nav, Kongsberg 14208, img#30) (B)
20-Mar-2023	13:26:29	670	ECR_ENV_40			camera	70	527675	6437683	527687	6437681	-12	2	12	100	DM	(Raw Nav, Kongsberg 14208, img#31) (B)
20-Mar-2023	13:27:07	671	ECR_ENV_40			camera	70	527672	6437678	527687	6437681	-15	-3	15	80	DM	(Raw Nav, Kongsberg 14208, img#32) (B)
20-Mar-2023	13:27:51	672	ECR_ENV_40			camera	70	527670	6437671	527687	6437681	-17	-10	20	60	DM	(Raw Nav, Kongsberg 14208, img#33) (B)
20-Mar-2023	13:28:24	673	ECR_ENV_40			camera	70	527674	6437665	527687	6437681	-13	-16	21	40	DM	(Raw Nav, Kongsberg 14208, img#34) (B)
20-Mar-2023	13:28:50	674	ECR_ENV_40			camera	71	527679	6437661	527687	6437681	-8	-20	21	23	DM	(Raw Nav, Kongsberg 14208, img#35) (B)
20-Mar-2023	13:29:26	675	ECR_ENV_40			camera	70	527685	6437655	527687	6437681	-2	-26	26	5	DM	(Raw Nav, Kongsberg 14208, img#36) (B)
20-Mar-2023	13:30:22	676	ECR_ENV_40			camera	70	527702	6437661	527687	6437681	15	-20	25	-37	DM	(Raw Nav, Kongsberg 14208, img#37) (B)
20-Mar-2023	13:30:36	677	ECR_ENV_40			camera	70	527707	6437663	527687	6437681	20	-18	27	-48	DM	(Raw Nav, Kongsberg 14208, img#38) (B)
20-Mar-2023	13:30:58	678	ECR_ENV_40			camera	70	527713	6437663	527687	6437681	26	-18	31	-55	DM	(Raw Nav, Kongsberg 14208, img#39) (B)
20-Mar-2023	13:31:14	679	ECR_ENV_40			camera	70	527717	6437663	527687	6437681	30	-18	35	-59	DM	(Raw Nav, Kongsberg 14208, img#40) (B)
20-Mar-2023	13:31:24	680	ECR_ENV_40			camera	70	527723	6437664	527687	6437681	36	-17	40	-65	DM	(Raw Nav, Kongsberg 14208, img#41) (B)
20-Mar-2023	13:31:31	681	ECR_ENV_40			camera	70	527728	6437665	527687	6437681	41	-16	44	-69	DM	(Raw Nav, Kongsberg 14208, img#42) (B)
29-Mar-2023	15:49:50	682	ECR_ENV_08			camera	72	526589	6398039	526625	6398004	-36	36	51	135	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
29-Mar-2023	15:50:02	683	ECR_ENV_08			camera	72	526591	6398039	526625	6398004	-34	35	49	135	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
29-Mar-2023	15:50:19	684	ECR_ENV_08			camera	72	526594	6398039	526625	6398004	-32	35	47	138	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
29-Mar-2023	15:50:35	685	ECR_ENV_08			camera	72	526596	6398039	526625	6398004	-29	35	45	140	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
29-Mar-2023	15:50:43	686	ECR_ENV_08			camera	72	526596	6398038	526625	6398004	-29	34	44	140	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
29-Mar-2023	15:51:04	687	ECR_ENV_08			camera	72	526596	6398035	526625	6398004	-29	32	43	138	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
29-Mar-2023	15:51:19	688	ECR_ENV_08			camera	72	526597	6398034	526625	6398004	-29	30	41	136	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
29-Mar-2023	15:51:30	689	ECR_ENV_08			camera	72	526598	6398033	526625	6398004	-27	29	40	137	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
29-Mar-2023	15:51:46	690	ECR_ENV_08			camera	72	526600	6398032	526625	6398004	-25	28	38	139	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
29-Mar-2023	15:52:02	691	ECR_ENV_08			camera	72	526603	6398032	526625	6398004	-22	28	35	142	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
29-Mar-2023	15:52:15	692	ECR_ENV_08			camera	72	526605	6398032	526625	6398004	-20	28	35	144	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
29-Mar-2023	15:52:34	693	ECR_ENV_08			camera	72	526606	6398033	526625	6398004	-19	29	34	147	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
29-Mar-2023	15:53:09	694	ECR_ENV_08			camera	72	526603	6398030	526625	6398004	-22	26	34	140	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
29-Mar-2023	15:54:12	695	ECR_ENV_08			camera	71	526606	6398026	526625	6398004	-19	22	29	139	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
29-Mar-2023	15:54:27	696	ECR_ENV_08			camera	71	526608	6398024	526625	6398004	-17	21	26	141	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
29-Mar-2023	15:54:36	697	ECR_ENV_08			camera	71	526610	6398024	526625	6398004	-15	20	25	142	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
29-Mar-2023	15:55:07	698	ECR_ENV_08			camera	71	526610	6398021	526625	6398004	-15	17	23	139	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
29-Mar-2023	15:55:31	699	ECR_ENV_08			camera	71	526612	6398018	526625	6398004	-13	14	19	136	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
29-Mar-2023	15:56:19	700	ECR_ENV_08			camera	71	526616	6398017	526625	6398004	-9	13	16	145	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
29-Mar-2023	15:56:52	701	ECR_ENV_08			camera	71	526618	6398013	526625	6398004	-7	9	12	143	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
29-Mar-2023	15:57:10	702	ECR_ENV_08			camera	71	526619	6398011	526625	6398004	-6	7	9	141	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
29-Mar-2023	15:57:44	703	ECR_ENV_08			camera	71	526620	6398011	526625	6398004	-5	7	9	142	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
29-Mar-2023	15:58:43	704	ECR_ENV_08			camera	71	526623	6398006	526625	6398004	-2	2	3	129	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
29-Mar-2023	15:58:54	705	ECR_ENV_08			camera	71	526624	6398005	526625	6398004	-1	1	1	143	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
29-Mar-2023	15:59:02	706	ECR_ENV_08			camera	71	526625	6398005	526625	6398004	0	1	1	170	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
29-Mar-2023	15:59:54	707	ECR_ENV_08			camera	71	526626	6398000	526625	6398004	1	-4	4	-9	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
29-Mar-2023	16:00:13	708	ECR_ENV_08			camera	71	526629	6397999	526625	6398004	3	-5	6	-35	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
29-Mar-2023	16:00:39	709	ECR_ENV_08			camera	71	526630	6397999	526625	6398004	5	-5	7	-41	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
29-Mar-2023	16:01:15	710	ECR_ENV_08			camera	71	526632	6397996	526625	6398004	7	-8	10	-40	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
29-Mar-2023	16:01:40	711	ECR_ENV_08			camera	71	526635	6397995	526625	6398004	9	-9	13	-46	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
29-Mar-2023	16:02:13	712	ECR_ENV_08			camera	71	526637	6397991	526625	6398004	12	-13	18	-42	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
29-Mar-2023	16:02:28	713	ECR_ENV_08			camera	71	526639	6397990	526625	6398004	14	-14	20	-44	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
29-Mar-2023	16:02:54	714	ECR_ENV_08			camera	71	526641	6397990	526625	6398004	16	-14	21	-50	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
29-Mar-2023	16:03:21	715	ECR_ENV_08			camera	71	526645	6397990	526625	6398004	20	-14	24	-56	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
29-Mar-2023	16:03:35	716	ECR_ENV_08			camera	71	526646	6397990	526625	6398004	21	-14	26	-56	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
29-Mar-2023	16:03:50	717	ECR_ENV_08			camera	71	526648	6397988	526625	6398004	22	-16	27	-55	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
29-Mar-2023	16:03:59	718	ECR_ENV_08			camera	71	526648	6397987	526625	6398004	23	-17	29	-54	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
29-Mar-2023	16:04:15	719	ECR_ENV_08			camera	71	526650	6397985	526625	6398004	25	-19	31	-53	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
29-Mar-2023	16:05:02	720	ECR_ENV_08			camera	71	526654	6397985	526625	6398004	29	-19	35	-56	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
29-Mar-2023	16:05:19	721	ECR_ENV_08			camera	71	526654	6397983	526625	6398004	29	-21	36	-54	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
29-Mar-2023	16:05:43	722	ECR_ENV_08			camera	71	526654	6397980	526625	6398004	29	-24	37	-51	SG	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
29-Mar-2023	16:06:21	723	ECR_ENV_08			camera	71	526655	6397976	526625	6398004	30	-28	41	-47	SG	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
29-Mar-2023	16:06:44	724	ECR_ENV_08			camera	71	526659	6397975	526625	6398004	34	-29	45	-49	SG	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
29-Mar-2023	16:07:09	725	ECR_ENV_08			camera	71	526661	6397975	526625	6398004	36	-29	46	-52	SG	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)
29-Mar-2023	16:07:43	726	ECR_ENV_08			camera	71	526664	6397974	526625	6398004	39	-30	49	-53	PL	(Corr'd Nav, Kongsberg 14208, img#45) (V) (T.A)
30-Mar-2023	02:56:35	727	ECR_ENV_15			camera	49	524593	6397521	524538	6397554	55	-33	64	-59	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
30-Mar-2023	02:56:42	728	ECR_ENV_15			camera	49	524592	6397522	524538	6397554	54	-32	63	-59	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
30-Mar-2023	02:56:54	729	ECR_ENV_15			camera	49	524590	6397523	524538	6397554	52	-31	60	-60	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
30-Mar-2023	02:57:53	730	ECR_ENV_15			camera	49	524584	6397528	524538	6397554	45	-26	52	-60	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
30-Mar-2023	02:58:04	731	ECR_ENV_15			camera	49	524583	6397528	524538	6397554	44	-25	51	-60	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
30-Mar-2023	02:58:11	732	ECR_ENV_15			camera	49	524582	6397529	524538	6397554	43	-25	50	-60	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
30-Mar-2023	02:58:26	733	ECR_ENV_15			camera	49	524580	6397531	524538	6397554	41	-23	47	-60	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
30-Mar-2023	02:58:33	734	ECR_ENV_15			camera	49	524579	6397531	524538	6397554	40	-23	46	-61	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
30-Mar-2023	02:58:46	735	ECR_ENV_15			camera	49	524577	6397532	524538	6397554	39	-22	45	-61	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
30-Mar-2023	02:59:11	736	ECR_ENV_15			camera	49	524575	6397535	524538	6397554	37	-19	41	-63	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
30-Mar-2023	02:59:25	737	ECR_ENV_15			camera	49	524574	6397536	524538	6397554	35	-17	39	-64	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
30-Mar-2023	02:59:41	738	ECR_ENV_15			camera	49	524572	6397538	524538	6397554	33	-16	37	-65	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
30-Mar-2023	03:00:17	739	ECR_ENV_15			camera	49	524568	6397541	524538	6397554	30	-13	32	-66	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
30-Mar-2023	03:00:24	740	ECR_ENV_15			camera	49	524567	6397542	524538	6397554	29	-12	31	-67	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
30-Mar-2023	03:01:02	741	ECR_ENV_15			camera	49	524563	6397544	524538	6397554	24	-10	26	-68	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
30-Mar-2023	03:01:15	742	ECR_ENV_15			camera	50	524561	6397545	524538	6397554	22	-9	24	-69	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
30-Mar-2023	03:01:46	743	ECR_ENV_15			camera	50	524557	6397547	524538	6397554	19	-7	20	-71	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
30-Mar-2023	03:02:01	744	ECR_ENV_15			camera	50	524555	6397549	524538	6397554	17	-5	17	-74	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
30-Mar-2023	03:02:25	745	ECR_ENV_15			camera	50	524553	6397550	524538	6397554	15	-4	15	-74	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
30-Mar-2023	03:02:46	746	ECR_ENV_15			camera	50	524551	6397550	524538	6397554	12	-4	13	-73	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
30-Mar-2023	03:02:53	747	ECR_ENV_15			camera	50	524550	6397551	524538	6397554	11	-3	12	-74	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
30-Mar-2023	03:03:11	748	ECR_ENV_15			camera	50	524547	6397552	524538	6397554	9	-2	9	-79	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
30-Mar-2023	03:03:24	749	ECR_ENV_15			camera	50	524546	6397552	524538	6397554	7	-2	7	-78	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
30-Mar-2023	03:03:46	750	ECR_ENV_15			camera	50	524542	6397553	524538	6397554	3	-1	3	-73	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
30-Mar-2023	03:04:11	751	ECR_ENV_15			camera	50	524539	6397554	524538	6397554	0	0	0	-166	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
30-Mar-2023	03:04:24	752	ECR_ENV_15			camera	50	524538	6397556	524538	6397554	-1	2	2	159	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
30-Mar-2023	03:04:54	753	ECR_ENV_15			camera	50	524536	6397559	524538	6397554	-3	5	6	150	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
30-Mar-2023	03:05:02	754	ECR_ENV_15			camera	50	524535	6397560	524538	6397554	-4	6	7	150	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
30-Mar-2023	03:05:22	755	ECR_ENV_15			camera	50	524534	6397562	524538	6397554	-5	8	9	148	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
30-Mar-2023	03:05:48	756	ECR_ENV_15			camera	49	524532	6397565	524538	6397554	-7	11	13	150	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
30-Mar-2023	03:06:07	757	ECR_ENV_15			camera	49	524531	6397567	524538	6397554	-8	13	15	150	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
30-Mar-2023	03:06:16	758	ECR_ENV_15			camera	50	524530	6397569	524538	6397554	-9	15	17	150	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
30-Mar-2023	03:06:29	759	ECR_ENV_15			camera	50	524529	6397571	524538	6397554	-10	17	19	150	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
30-Mar-2023	03:06:40	760	ECR_ENV_15			camera	50	524528	6397572	524538	6397554	-10	18	21	150	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
30-Mar-2023	03:06:47	761	ECR_ENV_15			camera	50	524528	6397572	524538	6397554	-11	19	21	150	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
30-Mar-2023	03:07:14	762	ECR_ENV_15			camera	49	524524	6397575	524538	6397554	-15	21	26	145	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
30-Mar-2023	03:07:37	763	ECR_ENV_15			camera	49	524521	6397576	524538	6397554	-17	22	28	141	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
30-Mar-2023	03:07:55	764	ECR_ENV_15			camera	49	524519	6397577	524538	6397554	-20	23	30	139	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
30-Mar-2023	03:08:17	765	ECR_ENV_15			camera	49	524516	6397579	524538	6397554	-23	25	34	138	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
30-Mar-2023	03:08:24	766	ECR_ENV_15			camera	49	524515	6397579	524538	6397554	-23	26	35	138	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
30-Mar-2023	03:08:42	767	ECR_ENV_15			camera	49	524514	6397581	524538	6397554	-25	27	37	138	PL	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
30-Mar-2023	03:09:06	768	ECR_ENV_15			camera	49	524513	6397586	524538	6397554	-26	32	41	141	PL	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
30-Mar-2023	03:09:52	769	ECR_ENV_15			camera	49	524508	6397590	524538	6397554	-30	36	47	140	PL	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
30-Mar-2023	04:50:42	770	ECR_ENV_20			camera	29	522072	6396358	522015	6396359	57	-1	57	-89	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
30-Mar-2023	04:51:00	771	ECR_ENV_20			camera	29	522072	6396359	522015	6396359	57	0	57	-90	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
30-Mar-2023	04:51:49	772	ECR_ENV_20			camera	29	522074	6396358	522015	6396359	59	-1	59	-89	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
30-Mar-2023	04:51:57	773	ECR_ENV_20			camera	29	522074	6396357	522015	6396359	59	-2	59	-88	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
30-Mar-2023	04:52:35	774	ECR_ENV_20			camera	29	522069	6396358	522015	6396359	53	-1	53	-89	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
30-Mar-2023	04:52:48	775	ECR_ENV_20			camera	29	522067	6396357	522015	6396359	51	-2	51	-88	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
30-Mar-2023	04:53:10	776	ECR_ENV_20			camera	29	522064	6396356	522015	6396359	49	-3	49	-87	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
30-Mar-2023	04:53:27	777	ECR_ENV_20			camera	29	522061	6396355	522015	6396359	45	-4	46	-85	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
30-Mar-2023	04:53:34	778	ECR_ENV_20			camera	29	522060	6396355	522015	6396359	44	-4	44	-85	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
30-Mar-2023	04:53:51	779	ECR_ENV_20			camera	29	522057	6396354	522015	6396359	42	-5	42	-83	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
30-Mar-2023	04:53:58	780	ECR_ENV_20			camera	29	522056	6396354	522015	6396359	41	-6	41	-82	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
30-Mar-2023	04:54:05	781	ECR_ENV_20			camera	29	522055	6396354	522015	6396359	39	-5	40	-82	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
30-Mar-2023	04:54:22	782	ECR_ENV_20			camera	29	522053	6396355	522015	6396359	38	-4	38	-84	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
30-Mar-2023	04:54:47	783	ECR_ENV_20			camera	29	522050	6396357	522015	6396359	35	-2	35	-87	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
30-Mar-2023	04:54:57	784	ECR_ENV_20			camera	29	522049	6396357	522015	6396359	34	-2	34	-87	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
30-Mar-2023	04:55:16	785	ECR_ENV_20			camera	29	522046	6396358	522015	6396359	30	-1	30	-87	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
30-Mar-2023	04:55:26	786	ECR_ENV_20			camera	29	522044	6396357	522015	6396359	29	-2	29	-87	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
30-Mar-2023	04:55:42	787	ECR_ENV_20			camera	29	522042	6396357	522015	6396359	27	-2	27	-85	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
30-Mar-2023	04:56:20	788	ECR_ENV_20			camera	29	522037	6396356	522015	6396359	22	-3	22	-83	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
30-Mar-2023	04:56:31	789	ECR_ENV_20			camera	29	522035	6396357	522015	6396359	20	-2	20	-83	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
30-Mar-2023	04:56:49	790	ECR_ENV_20			camera	29	522033	6396356	522015	6396359	17	-3	18	-82	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
30-Mar-2023	04:57:12	791	ECR_ENV_20			camera	29	522030	6396357	522015	6396359	14	-2	14	-83	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
30-Mar-2023	04:57:18	792	ECR_ENV_20			camera	29	522029	6396357	522015	6396359	14	-2	14	-83	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
30-Mar-2023	04:57:55	793	ECR_ENV_20			camera	29	522023	6396357	522015	6396359	7	-2	8	-75	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
30-Mar-2023	04:58:09	794	ECR_ENV_20			camera	29	522021	6396356	522015	6396359	5	-3	6	-64	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
30-Mar-2023	04:58:44	795	ECR_ENV_20			camera	29	522016	6396358	522015	6396359	1	-1	1	-21	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
30-Mar-2023	04:59:00	796	ECR_ENV_20			camera	29	522014	6396359	522015	6396359	-1	0	1	92	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
30-Mar-2023	04:59:18	797	ECR_ENV_20			camera	29	522011	6396359	522015	6396359	-4	0	4	95	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
30-Mar-2023	04:59:42	798	ECR_ENV_20			camera	28	522007	6396359	522015	6396359	-8	0	8	92	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
30-Mar-2023	05:00:14	799	ECR_ENV_20			camera	29	522004	6396360	522015	6396359	-12	1	12	94	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
30-Mar-2023	05:00:29	800	ECR_ENV_20			camera	29	522002	6396361	522015	6396359	-13	2	14	100	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
30-Mar-2023	05:00:49	801	ECR_ENV_20			camera	28	521998	6396362	522015	6396359	-17	3	17	100	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
30-Mar-2023	05:00:56	802	ECR_ENV_20			camera	29	521997	6396362	522015	6396359	-18	3	19	100	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
30-Mar-2023	05:01:03	803	ECR_ENV_20			camera	28	521996	6396362	522015	6396359	-20	3	20	98	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
30-Mar-2023	05:01:12	804	ECR_ENV_20			camera	28	521994	6396361	522015	6396359	-22	2	22	95	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
30-Mar-2023	05:01:19	805	ECR_ENV_20			camera	28	521993	6396360	522015	6396359	-23	1	23	93	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
30-Mar-2023	05:01:27	806	ECR_ENV_20			camera	28	521992	6396360	522015	6396359	-24	1	23	92	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
30-Mar-2023	05:01:43	807	ECR_ENV_20			camera	28	521991	6396360	522015	6396359	-25	1	25	92	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
30-Mar-2023	05:02:08	808	ECR_ENV_20			camera	27	521989	6396362	522015	6396359	-26	3	27	97	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
30-Mar-2023	05:02:15	809	ECR_ENV_20			camera	27	521988	6396362	522015	6396359	-28	3	28	97	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
30-Mar-2023	05:02:38	810	ECR_ENV_20			camera	27	521983	6396361	522015	6396359	-33	2	33	94	PL	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
30-Mar-2023	05:03:04	811	ECR_ENV_20			camera	27	521979	6396359	522015	6396359	-36	0	36	91	PL	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
30-Mar-2023	05:03:23	812	ECR_ENV_20			camera	28	521975	6396359	522015	6396359	-40	0	40	91	PL	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
30-Mar-2023	05:04:15	813	ECR_ENV_20			camera	29	521967	6396359	522015	6396359	-48	-1	48	89	PL	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)
30-Mar-2023	05:04:21	814	ECR_ENV_20			camera	29	521966	6396359	522015	6396359	-49	0	49	90	PL	(Corr'd Nav, Kongsberg 14208, img#45) (V) (T.A)
30-Mar-2023	05:04:34	815	ECR_ENV_20			camera	29	521965	6396359	522015	6396359	-50	0	50	90	PL	(Corr'd Nav, Kongsberg 14208, img#46) (V) (T.A)
30-Mar-2023	07:38:17	816	ECR_ENV_07			camera	33	523822	6395233	523782	6395200	40	33	52	-130	PL	(Raw Nav, Kongsberg 14208, img#1) (V)
30-Mar-2023	07:38:24	817	ECR_ENV_07			camera	33	523822	6395233	523782	6395200	40	33	52	-130	PL	(Raw Nav, Kongsberg 14208, img#2) (V)
30-Mar-2023	07:38:57	818	ECR_ENV_07			camera	33	523823	6395231	523782	6395200	41	31	51	-127	PL	(Raw Nav, Kongsberg 14208, img#3) (V)
30-Mar-2023	07:39:06	819	ECR_ENV_07			camera	33	523824	6395230	523782	6395200	42	30	52	-126	PL	(Raw Nav, Kongsberg 14208, img#4) (V)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
30-Mar-2023	07:39:13	820	ECR_ENV_07			camera	33	523824	6395230	523782	6395200	42	30	52	-126	PL	(Raw Nav, Kongsberg 14208, img#5) (V)
30-Mar-2023	07:39:21	821	ECR_ENV_07			camera	33	523824	6395230	523782	6395200	42	30	52	-126	PL	(Raw Nav, Kongsberg 14208, img#6) (V)
30-Mar-2023	07:39:35	822	ECR_ENV_07			camera	33	523824	6395232	523782	6395200	42	32	53	-128	PL	(Raw Nav, Kongsberg 14208, img#7) (V)
30-Mar-2023	07:39:48	823	ECR_ENV_07			camera	33	523823	6395232	523782	6395200	41	32	52	-128	PL	(Raw Nav, Kongsberg 14208, img#8) (V)
30-Mar-2023	07:40:41	824	ECR_ENV_07			camera	33	523820	6395223	523782	6395200	38	23	44	-121	PL	(Raw Nav, Kongsberg 14208, img#9) (V)
30-Mar-2023	07:40:48	825	ECR_ENV_07			camera	33	523820	6395225	523782	6395200	38	25	45	-124	PL	(Raw Nav, Kongsberg 14208, img#10) (V)
30-Mar-2023	07:40:55	826	ECR_ENV_07			camera	33	523821	6395226	523782	6395200	39	26	47	-124	PL	(Raw Nav, Kongsberg 14208, img#11) (V)
30-Mar-2023	07:41:03	827	ECR_ENV_07			camera	33	523822	6395228	523782	6395200	40	28	49	-125	PL	(Raw Nav, Kongsberg 14208, img#12) (V)
30-Mar-2023	07:41:11	828	ECR_ENV_07			camera	33	523823	6395229	523782	6395200	41	29	50	-126	PL	(Raw Nav, Kongsberg 14208, img#13) (V)
30-Mar-2023	07:41:53	829	ECR_ENV_07			camera	33	523823	6395228	523782	6395200	41	28	50	-125	PL	(Raw Nav, Kongsberg 14208, img#14) (V)
30-Mar-2023	07:42:02	830	ECR_ENV_07			camera	33	523822	6395228	523782	6395200	40	28	49	-125	PL	(Raw Nav, Kongsberg 14208, img#15) (V)
30-Mar-2023	07:42:08	831	ECR_ENV_07			camera	33	523821	6395228	523782	6395200	39	28	48	-126	PL	(Raw Nav, Kongsberg 14208, img#16) (V)
30-Mar-2023	07:42:35	832	ECR_ENV_07			camera	33	523817	6395226	523782	6395200	35	26	44	-127	PL	(Raw Nav, Kongsberg 14208, img#17) (V)
30-Mar-2023	07:42:46	833	ECR_ENV_07			camera	33	523816	6395224	523782	6395200	34	24	42	-126	PL	(Raw Nav, Kongsberg 14208, img#18) (V)
30-Mar-2023	07:42:56	834	ECR_ENV_07			camera	33	523815	6395222	523782	6395200	33	22	40	-124	PL	(Raw Nav, Kongsberg 14208, img#19) (V)
30-Mar-2023	07:43:05	835	ECR_ENV_07			camera	33	523815	6395221	523782	6395200	33	21	39	-123	PL	(Raw Nav, Kongsberg 14208, img#20) (V)
30-Mar-2023	07:43:17	836	ECR_ENV_07			camera	33	523813	6395222	523782	6395200	31	22	38	-126	PL	(Raw Nav, Kongsberg 14208, img#21) (V)
30-Mar-2023	07:43:39	837	ECR_ENV_07			camera	33	523810	6395221	523782	6395200	28	21	35	-127	PL	(Raw Nav, Kongsberg 14208, img#22) (V)
30-Mar-2023	07:43:54	838	ECR_ENV_07			camera	33	523807	6395218	523782	6395200	25	18	31	-126	PL	(Raw Nav, Kongsberg 14208, img#23) (V)
30-Mar-2023	07:44:06	839	ECR_ENV_07			camera	33	523804	6395217	523782	6395200	22	17	28	-128	PL	(Raw Nav, Kongsberg 14208, img#24) (V)
30-Mar-2023	07:44:23	840	ECR_ENV_07			camera	33	523800	6395215	523782	6395200	18	15	23	-130	PL	(Raw Nav, Kongsberg 14208, img#25) (V)
30-Mar-2023	07:44:27	841	ECR_ENV_07			camera	33	523800	6395214	523782	6395200	18	14	23	-129	PL	(Raw Nav, Kongsberg 14208, img#26) (V)
30-Mar-2023	07:44:36	842	ECR_ENV_07			camera	33	523798	6395212	523782	6395200	16	12	20	-128	PL	(Raw Nav, Kongsberg 14208, img#27) (V)
30-Mar-2023	07:44:57	843	ECR_ENV_07			camera	33	523794	6395209	523782	6395200	12	9	15	-128	PL	(Raw Nav, Kongsberg 14208, img#28) (V)
30-Mar-2023	07:45:08	844	ECR_ENV_07			camera	33	523793	6395208	523782	6395200	11	8	14	-127	PL	(Raw Nav, Kongsberg 14208, img#29) (V)
30-Mar-2023	07:45:19	845	ECR_ENV_07			camera	33	523790	6395206	523782	6395200	8	6	10	-128	PL	(Raw Nav, Kongsberg 14208, img#30) (V)
30-Mar-2023	07:45:38	846	ECR_ENV_07			camera	33	523786	6395203	523782	6395200	4	3	5	-130	PL	(Raw Nav, Kongsberg 14208, img#31) (V)
30-Mar-2023	07:45:46	847	ECR_ENV_07			camera	33	523785	6395201	523782	6395200	3	1	3	-112	PL	(Raw Nav, Kongsberg 14208, img#32) (V)
30-Mar-2023	07:45:52	848	ECR_ENV_07			camera	33	523784	6395199	523782	6395200	2	-1	2	-64	PL	(Raw Nav, Kongsberg 14208, img#33) (V)
30-Mar-2023	07:46:18	849	ECR_ENV_07			camera	33	523785	6395198	523782	6395200	3	-2	3	-56	PL	(Raw Nav, Kongsberg 14208, img#34) (V)
30-Mar-2023	07:46:48	850	ECR_ENV_07			camera	33	523784	6395200	523782	6395200	2	0	2	-95	PL	(Raw Nav, Kongsberg 14208, img#35) (V)
30-Mar-2023	07:47:02	851	ECR_ENV_07			camera	32	523783	6395199	523782	6395200	1	-1	1	-42	PL	(Raw Nav, Kongsberg 14208, img#36) (V)
30-Mar-2023	07:47:46	852	ECR_ENV_07			camera	32	523778	6395199	523782	6395200	-4	-1	4	79	PL	(Raw Nav, Kongsberg 14208, img#37) (V)
30-Mar-2023	07:48:17	853	ECR_ENV_07			camera	32	523779	6395195	523782	6395200	-3	-5	6	34	PL	(Raw Nav, Kongsberg 14208, img#38) (V)
30-Mar-2023	07:48:27	854	ECR_ENV_07			camera	32	523779	6395194	523782	6395200	-3	-6	7	29	PL	(Raw Nav, Kongsberg 14208, img#39) (V)
30-Mar-2023	07:48:38	855	ECR_ENV_07			camera	32	523778	6395195	523782	6395200	-4	-5	6	41	PL	(Raw Nav, Kongsberg 14208, img#40) (V)
30-Mar-2023	07:49:31	856	ECR_ENV_07			camera	32	523776	6395189	523782	6395200	-6	-11	13	30	PL	(Raw Nav, Kongsberg 14208, img#41) (V)
30-Mar-2023	07:50:04	857	ECR_ENV_07			camera	32	523776	6395189	523782	6395200	-6	-11	13	30	PL	(Raw Nav, Kongsberg 14208, img#42) (V)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
30-Mar-2023	07:50:31	858	ECR_ENV_07			camera	32	523773	6395188	523782	6395200	-9	-12	15	38	PL	(Raw Nav, Kongsberg 14208, img#43) (V)
30-Mar-2023	07:50:55	859	ECR_ENV_07			camera	32	523773	6395184	523782	6395200	-9	-16	18	30	PL	(Raw Nav, Kongsberg 14208, img#44) (V)
30-Mar-2023	07:51:17	860	ECR_ENV_07			camera	32	523772	6395183	523782	6395200	-10	-17	20	31	PL	(Raw Nav, Kongsberg 14208, img#45) (V)
30-Mar-2023	07:51:27	861	ECR_ENV_07			camera	32	523772	6395182	523782	6395200	-10	-18	21	30	PL	(Raw Nav, Kongsberg 14208, img#46) (V)
30-Mar-2023	07:51:35	862	ECR_ENV_07			camera	32	523771	6395182	523782	6395200	-11	-18	21	32	PL	(Raw Nav, Kongsberg 14208, img#47) (V)
30-Mar-2023	07:52:02	863	ECR_ENV_07			camera	32	523768	6395182	523782	6395200	-14	-18	23	39	PL	(Raw Nav, Kongsberg 14208, img#48) (V)
30-Mar-2023	07:52:56	864	ECR_ENV_07			camera	32	523765	6395181	523782	6395200	-17	-19	26	42	PL	(Raw Nav, Kongsberg 14208, img#49) (V)
30-Mar-2023		865	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		866	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		867	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		868	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		869	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		870	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		871	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		872	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		873	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		874	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023		875	ECR_ENV_07			camera											Lost connection with EELS, Photo but no Fix taken
30-Mar-2023	07:58:24	876	ECR_ENV_07			camera	32	523761	6395174	523782	6395200	-21	-26	33	39	PL	(Raw Nav, Kongsberg 14208, img#61) (V)
30-Mar-2023	07:58:36	877	ECR_ENV_07			camera	32	523760	6395173	523782	6395200	-22	-27	35	40	PL	(Raw Nav, Kongsberg 14208, img#62) (V)
30-Mar-2023	07:58:56	878	ECR_ENV_07			camera	32	523759	6395172	523782	6395200	-23	-28	36	40	PL	(Raw Nav, Kongsberg 14208, img#63) (V)
30-Mar-2023	07:59:08	879	ECR_ENV_07			camera	32	523758	6395171	523782	6395200	-24	-29	38	40	PL	(Raw Nav, Kongsberg 14208, img#64) (V)
30-Mar-2023	07:59:26	880	ECR_ENV_07			camera	32	523757	6395170	523782	6395200	-25	-30	39	40	PL	(Raw Nav, Kongsberg 14208, img#65) (V)
30-Mar-2023	07:59:45	881	ECR_ENV_07			camera	32	523756	6395170	523782	6395200	-26	-30	40	41	PL	(Raw Nav, Kongsberg 14208, img#66) (V)
30-Mar-2023	08:00:25	882	ECR_ENV_07			camera	32	523753	6395168	523782	6395200	-29	-32	43	43	PL	(Raw Nav, Kongsberg 14208, img#67) (V)
30-Mar-2023	08:00:31	883	ECR_ENV_07			camera	32	523753	6395168	523782	6395200	-29	-32	43	43	PL	(Raw Nav, Kongsberg 14208, img#68) (V)
30-Mar-2023	08:00:38	884	ECR_ENV_07			camera	32	523752	6395168	523782	6395200	-30	-32	44	43	PL	(Raw Nav, Kongsberg 14208, img#69) (V)
30-Mar-2023	08:00:54	885	ECR_ENV_07			camera	32	523751	6395166	523782	6395200	-31	-34	46	43	PL	(Raw Nav, Kongsberg 14208, img#70) (V)
02-Apr-2023	13:35:43	886	ECR_ENV_16			camera	38	525472	6395987	525425	6395985	47	1	47	-92	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
02-Apr-2023	13:35:59	887	ECR_ENV_16			camera	38	525465	6395988	525425	6395985	40	3	40	-94	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
02-Apr-2023	13:36:07	888	ECR_ENV_16			camera	38	525461	6395988	525425	6395985	37	2	37	-94	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
02-Apr-2023	13:36:15	889	ECR_ENV_16			camera	38	525457	6395987	525425	6395985	33	2	33	-93	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
02-Apr-2023	13:36:27	890	ECR_ENV_16			camera	38	525453	6395986	525425	6395985	28	1	28	-91	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
02-Apr-2023	13:36:45	891	ECR_ENV_16			camera	38	525449	6395984	525425	6395985	24	-1	24	-88	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
02-Apr-2023	13:36:48	892	ECR_ENV_16			camera	38	525448	6395984	525425	6395985	24	-1	24	-87	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A) # No photo taken
02-Apr-2023	13:37:06	893	ECR_ENV_16			camera	38	525445	6395982	525425	6395985	21	-3	21	-81	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
02-Apr-2023	13:37:20	894	ECR_ENV_16			camera	38	525443	6395981	525425	6395985	18	-5	19	-75	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
02-Apr-2023	13:37:46	895	ECR_ENV_16			camera	38	525437	6395982	525425	6395985	13	-3	13	-75	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Apr-2023	13:37:56	896	ECR_ENV_16			camera	38	525436	6395983	525425	6395985	11	-3	11	-75	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
02-Apr-2023	13:38:03	897	ECR_ENV_16			camera	38	525435	6395983	525425	6395985	10	-2	10	-77	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A) # No photo taken
02-Apr-2023	13:38:30	898	ECR_ENV_16			camera	38	525434	6395985	525425	6395985	9	0	9	-90	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
02-Apr-2023	13:38:41	899	ECR_ENV_16			camera	38	525436	6395986	525425	6395985	11	1	11	-95	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
02-Apr-2023	13:39:01	900	ECR_ENV_16			camera	38	525433	6395986	525425	6395985	9	0	9	-93	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
02-Apr-2023	13:39:30	901	ECR_ENV_16			camera	38	525433	6395985	525425	6395985	8	-1	8	-84	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
02-Apr-2023	13:40:12	902	ECR_ENV_16			camera	38	525431	6395981	525425	6395985	7	-4	8	-57	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
02-Apr-2023	13:40:35	903	ECR_ENV_16			camera	38	525428	6395982	525425	6395985	4	-4	5	-43	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
02-Apr-2023	13:40:47	904	ECR_ENV_16			camera	39	525429	6395983	525425	6395985	4	-2	5	-62	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
02-Apr-2023	13:41:01	905	ECR_ENV_16			camera	39	525431	6395985	525425	6395985	6	-1	6	-85	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
02-Apr-2023	13:41:19	906	ECR_ENV_16			camera	39	525431	6395985	525425	6395985	7	0	7	-89	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
02-Apr-2023	13:41:58	907	ECR_ENV_16			camera	39	525423	6395983	525425	6395985	-2	-2	3	46	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
02-Apr-2023	13:42:13	908	ECR_ENV_16			camera	39	525421	6395983	525425	6395985	-4	-3	5	56	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
02-Apr-2023	13:42:35	909	ECR_ENV_16			camera	39	525421	6395983	525425	6395985	-3	-3	4	49	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
02-Apr-2023	13:43:00	910	ECR_ENV_16			camera	39	525422	6395986	525425	6395985	-3	0	3	92	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
02-Apr-2023	13:43:17	911	ECR_ENV_16			camera	39	525422	6395988	525425	6395985	-3	3	4	130	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
02-Apr-2023	13:43:55	912	ECR_ENV_16			camera	39	525421	6395984	525425	6395985	-3	-1	4	67	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
02-Apr-2023	13:45:16	913	ECR_ENV_16			camera	39	525414	6395979	525425	6395985	-11	-6	13	60	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
02-Apr-2023	13:45:26	914	ECR_ENV_16			camera	39	525412	6395980	525425	6395985	-13	-5	14	68	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
02-Apr-2023	13:45:50	915	ECR_ENV_16			camera	39	525408	6395983	525425	6395985	-16	-3	17	80	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
02-Apr-2023	13:46:13	916	ECR_ENV_16			camera	39	525405	6395983	525425	6395985	-20	-3	20	83	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
02-Apr-2023	13:46:22	917	ECR_ENV_16			camera	39	525404	6395983	525425	6395985	-21	-3	21	82	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
02-Apr-2023	13:46:31	918	ECR_ENV_16			camera	39	525402	6395983	525425	6395985	-23	-3	23	83	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
02-Apr-2023	13:46:39	919	ECR_ENV_16			camera	39	525400	6395984	525425	6395985	-24	-2	24	86	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
02-Apr-2023	13:46:48	920	ECR_ENV_16			camera	39	525399	6395985	525425	6395985	-26	-1	26	88	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
02-Apr-2023	13:46:54	921	ECR_ENV_16			camera	39	525398	6395985	525425	6395985	-27	0	27	90	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
02-Apr-2023	13:47:09	922	ECR_ENV_16			camera	39	525393	6395986	525425	6395985	-31	0	31	91	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
02-Apr-2023	13:47:24	923	ECR_ENV_16			camera	39	525390	6395986	525425	6395985	-35	0	35	90	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
02-Apr-2023	13:47:44	924	ECR_ENV_16			camera	39	525386	6395985	525425	6395985	-39	0	39	90	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
02-Apr-2023	13:47:56	925	ECR_ENV_16			camera	39	525384	6395985	525425	6395985	-41	-1	41	89	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A) # No photo taken
02-Apr-2023	13:48:04	926	ECR_ENV_16			camera	39	525383	6395984	525425	6395985	-42	-1	42	89	SG	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
02-Apr-2023	13:48:17	927	ECR_ENV_16			camera	39	525381	6395985	525425	6395985	-44	0	44	89	SG	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
02-Apr-2023	13:48:52	928	ECR_ENV_16			camera	39	525378	6395984	525425	6395985	-47	-1	47	89	SG	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
02-Apr-2023	15:48:33	929	ECR_ENV_25			camera	73	528374	6398309	528441	6398316	-66	-6	67	85	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
02-Apr-2023	15:49:03	930	ECR_ENV_25			camera	73	528379	6398310	528441	6398316	-62	-6	62	84	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
02-Apr-2023	15:49:11	931	ECR_ENV_25			camera	73	528380	6398310	528441	6398316	-61	-6	61	85	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
02-Apr-2023	15:49:54	932	ECR_ENV_25			camera	73	528384	6398311	528441	6398316	-57	-4	57	86	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Apr-2023	15:50:37	933	ECR_ENV_25			camera	74	528390	6398314	528441	6398316	-51	-2	51	88	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
02-Apr-2023	15:51:07	934	ECR_ENV_25			camera	73	528394	6398316	528441	6398316	-47	0	47	90	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
02-Apr-2023	15:51:25	935	ECR_ENV_25			camera	73	528396	6398317	528441	6398316	-45	1	45	91	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
02-Apr-2023	15:51:41	936	ECR_ENV_25			camera	73	528398	6398315	528441	6398316	-43	-1	43	89	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
02-Apr-2023	15:51:49	937	ECR_ENV_25			camera	74	528398	6398314	528441	6398316	-43	-2	43	88	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
02-Apr-2023	15:52:11	938	ECR_ENV_25			camera	73	528401	6398314	528441	6398316	-39	-2	39	87	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
02-Apr-2023	15:52:38	939	ECR_ENV_25			camera	74	528405	6398314	528441	6398316	-36	-1	36	88	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
02-Apr-2023	15:52:59	940	ECR_ENV_25			camera	74	528408	6398315	528441	6398316	-32	-1	32	88	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
02-Apr-2023	15:53:37	941	ECR_ENV_25			camera	74	528412	6398315	528441	6398316	-29	-1	29	88	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
02-Apr-2023	15:53:47	942	ECR_ENV_25			camera	74	528413	6398314	528441	6398316	-28	-1	28	87	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
02-Apr-2023	15:54:20	943	ECR_ENV_25			camera	74	528417	6398313	528441	6398316	-24	-2	24	84	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
02-Apr-2023	15:54:47	944	ECR_ENV_25			camera	74	528422	6398314	528441	6398316	-19	-1	19	86	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
02-Apr-2023	15:55:17	945	ECR_ENV_25			camera	74	528425	6398316	528441	6398316	-16	0	16	90	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
02-Apr-2023	15:55:35	946	ECR_ENV_25			camera	74	528427	6398314	528441	6398316	-14	-1	14	84	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
02-Apr-2023	15:56:16	947	ECR_ENV_25			camera	74	528434	6398313	528441	6398316	-7	-3	8	67	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
02-Apr-2023	15:56:39	948	ECR_ENV_25			camera	74	528438	6398313	528441	6398316	-3	-3	4	50	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
02-Apr-2023	15:57:09	949	ECR_ENV_25			camera	74	528442	6398314	528441	6398316	1	-1	2	-33	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
02-Apr-2023	15:57:36	950	ECR_ENV_25			camera	74	528445	6398315	528441	6398316	4	-1	4	-82	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
02-Apr-2023	15:57:50	951	ECR_ENV_25			camera	74	528447	6398314	528441	6398316	6	-1	6	-76	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
02-Apr-2023	15:58:01	952	ECR_ENV_25			camera	74	528448	6398313	528441	6398316	8	-2	8	-74	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
02-Apr-2023	15:58:10	953	ECR_ENV_25			camera	74	528450	6398313	528441	6398316	9	-2	10	-77	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
02-Apr-2023	15:58:28	954	ECR_ENV_25			camera	74	528453	6398314	528441	6398316	12	-2	12	-83	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
02-Apr-2023	15:58:36	955	ECR_ENV_25			camera	74	528454	6398314	528441	6398316	13	-1	13	-84	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
02-Apr-2023	15:58:51	956	ECR_ENV_25			camera	74	528455	6398314	528441	6398316	14	-1	14	-85	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
02-Apr-2023	15:59:05	957	ECR_ENV_25			camera	74	528456	6398313	528441	6398316	15	-2	16	-81	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
02-Apr-2023	15:59:15	958	ECR_ENV_25			camera	74	528458	6398313	528441	6398316	17	-3	17	-81	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
02-Apr-2023	15:59:31	959	ECR_ENV_25			camera	74	528460	6398313	528441	6398316	20	-2	20	-83	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
02-Apr-2023	15:59:47	960	ECR_ENV_25			camera	74	528462	6398314	528441	6398316	22	-2	22	-85	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
02-Apr-2023	16:00:15	961	ECR_ENV_25			camera	74	528466	6398316	528441	6398316	26	0	26	-90	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
02-Apr-2023	16:00:43	962	ECR_ENV_25			camera	74	528469	6398316	528441	6398316	28	1	28	-91	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
02-Apr-2023	16:00:58	963	ECR_ENV_25			camera	74	528471	6398315	528441	6398316	30	-1	30	-88	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
02-Apr-2023	16:01:10	964	ECR_ENV_25			camera	74	528472	6398314	528441	6398316	32	-2	32	-87	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
02-Apr-2023	16:01:27	965	ECR_ENV_25			camera	74	528475	6398315	528441	6398316	34	-1	34	-88	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
02-Apr-2023	16:01:41	966	ECR_ENV_25			camera	74	528477	6398315	528441	6398316	36	-1	36	-89	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
02-Apr-2023	16:02:04	967	ECR_ENV_25			camera	74	528480	6398313	528441	6398316	39	-3	39	-86	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
02-Apr-2023	16:02:23	968	ECR_ENV_25			camera	74	528481	6398312	528441	6398316	40	-4	40	-85	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
02-Apr-2023	16:02:33	969	ECR_ENV_25			camera	74	528483	6398312	528441	6398316	42	-3	42	-86	SG	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
02-Apr-2023	16:02:43	970	ECR_ENV_25			camera	74	528485	6398313	528441	6398316	44	-2	44	-87	SG	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT			

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Apr-2023	16:02:59	971	ECR_ENV_25			camera	74	528488	6398316	528441	6398316	47	0	47	-90	SG	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
02-Apr-2023	17:37:27	972	ECR_ENV_33			camera	90	527725	6399744	527780	6399737	-55	7	55	97	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
02-Apr-2023	17:37:49	973	ECR_ENV_33			camera	90	527727	6399745	527780	6399737	-53	8	53	98	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
02-Apr-2023	17:38:23	974	ECR_ENV_33			camera	90	527731	6399743	527780	6399737	-48	6	48	97	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
02-Apr-2023	17:38:31	975	ECR_ENV_33			camera	90	527732	6399741	527780	6399737	-48	4	48	95	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
02-Apr-2023	17:39:09	976	ECR_ENV_33			camera	90	527737	6399739	527780	6399737	-43	2	43	93	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
02-Apr-2023	17:39:22	977	ECR_ENV_33			camera	90	527739	6399739	527780	6399737	-41	3	41	94	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
02-Apr-2023	17:39:39	978	ECR_ENV_33			camera	90	527741	6399740	527780	6399737	-39	3	39	95	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
02-Apr-2023	17:40:03	979	ECR_ENV_33			camera	90	527745	6399741	527780	6399737	-35	4	35	97	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
02-Apr-2023	17:40:13	980	ECR_ENV_33			camera	90	527746	6399741	527780	6399737	-33	5	34	98	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
02-Apr-2023	17:40:26	981	ECR_ENV_33			camera	90	527748	6399741	527780	6399737	-32	4	32	98	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
02-Apr-2023	17:40:51	982	ECR_ENV_33			camera	90	527752	6399741	527780	6399737	-28	4	28	98	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
02-Apr-2023	17:41:04	983	ECR_ENV_33			camera	90	527754	6399741	527780	6399737	-25	4	26	99	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
02-Apr-2023	17:41:19	984	ECR_ENV_33			camera	90	527756	6399740	527780	6399737	-24	3	24	97	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
02-Apr-2023	17:41:44	985	ECR_ENV_33			camera	90	527757	6399741	527780	6399737	-22	4	23	100	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
02-Apr-2023	17:42:01	986	ECR_ENV_33			camera	90	527760	6399741	527780	6399737	-20	5	21	103	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
02-Apr-2023	17:42:10	987	ECR_ENV_33			camera	90	527761	6399741	527780	6399737	-19	4	19	103	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
02-Apr-2023	17:42:21	988	ECR_ENV_33			camera	90	527762	6399741	527780	6399737	-17	4	18	102	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
02-Apr-2023	17:42:35	989	ECR_ENV_33			camera	90	527763	6399740	527780	6399737	-16	3	17	102	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
02-Apr-2023	17:43:20	990	ECR_ENV_33			camera	90	527769	6399739	527780	6399737	-11	2	11	99	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
02-Apr-2023	17:43:57	991	ECR_ENV_33			camera	90	527776	6399741	527780	6399737	-4	4	6	135	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
02-Apr-2023	17:44:19	992	ECR_ENV_33			camera	91	527780	6399742	527780	6399737	0	6	6	-178	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
02-Apr-2023	17:44:30	993	ECR_ENV_33			camera	91	527782	6399743	527780	6399737	2	6	6	-162	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
02-Apr-2023	17:44:41	994	ECR_ENV_33			camera	91	527783	6399743	527780	6399737	4	6	7	-146	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
02-Apr-2023	17:44:58	995	ECR_ENV_33			camera	90	527786	6399741	527780	6399737	6	4	8	-125	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
02-Apr-2023	17:45:19	996	ECR_ENV_33			camera	91	527788	6399741	527780	6399737	8	4	9	-114	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
02-Apr-2023	17:45:40	997	ECR_ENV_33			camera	91	527790	6399739	527780	6399737	11	2	11	-102	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
02-Apr-2023	17:45:59	998	ECR_ENV_33			camera	91	527794	6399739	527780	6399737	15	2	15	-99	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
02-Apr-2023	17:46:08	999	ECR_ENV_33			camera	91	527796	6399739	527780	6399737	16	3	16	-99	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
02-Apr-2023	17:46:27	1000	ECR_ENV_33			camera	90	527798	6399740	527780	6399737	19	3	19	-99	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
02-Apr-2023	17:46:39	1001	ECR_ENV_33			camera	91	527799	6399738	527780	6399737	19	1	19	-94	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
02-Apr-2023	17:46:54	1002	ECR_ENV_33			camera	90	527799	6399735	527780	6399737	19	-1	19	-86	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
02-Apr-2023	17:47:05	1003	ECR_ENV_33			camera	90	527800	6399735	527780	6399737	21	-2	21	-84	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
02-Apr-2023	17:47:15	1004	ECR_ENV_33			camera	91	527802	6399736	527780	6399737	23	-1	23	-87	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
02-Apr-2023	17:47:22	1005	ECR_ENV_33			camera	91	527804	6399736	527780	6399737	24	-1	24	-88	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
02-Apr-2023	17:47:39	1006	ECR_ENV_33			camera	91	527806	6399738	527780	6399737	27	1	27	-92	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
02-Apr-2023	17:48:00	1007	ECR_ENV_33			camera	91	527809	6399739	527780	6399737	30	2	30	-93	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
02-Apr-2023	17:48:14	1008	ECR_ENV_33			camera	91	527811	6399739	527780	6399737	32	2	32	-94	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Apr-2023	17:48:33	1009	ECR_ENV_33			camera	91	527815	6399740	527780	6399737	35	3	36	-94	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
02-Apr-2023	17:49:17	1010	ECR_ENV_33			camera	91	527823	6399743	527780	6399737	44	6	44	-98	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
02-Apr-2023	17:49:32	1011	ECR_ENV_33			camera	91	527826	6399744	527780	6399737	46	7	47	-99	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
03-Apr-2023	04:18:45	1012	ECR_ENV_17			camera	75	525683	6400054	525685	6399992	-2	62	62	178	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
03-Apr-2023	04:19:13	1013	ECR_ENV_17			camera	75	525686	6400050	525685	6399992	0	58	58	-180	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
03-Apr-2023	04:19:22	1014	ECR_ENV_17			camera	75	525685	6400048	525685	6399992	0	56	56	180	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A) # No photo taken
03-Apr-2023	04:19:26	1015	ECR_ENV_17			camera	75	525685	6400047	525685	6399992	-1	55	55	179	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
03-Apr-2023	04:19:34	1016	ECR_ENV_17			camera	75	525684	6400045	525685	6399992	-1	53	53	179	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
03-Apr-2023	04:19:45	1017	ECR_ENV_17			camera	75	525683	6400043	525685	6399992	-2	51	51	177	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
03-Apr-2023	04:19:59	1018	ECR_ENV_17			camera	75	525683	6400042	525685	6399992	-3	50	50	177	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
03-Apr-2023	04:20:24	1019	ECR_ENV_17			camera	75	525683	6400040	525685	6399992	-2	47	47	178	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
03-Apr-2023	04:20:39	1020	ECR_ENV_17			camera	75	525685	6400037	525685	6399992	-1	45	45	179	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
03-Apr-2023	04:20:49	1021	ECR_ENV_17			camera	75	525686	6400035	525685	6399992	0	43	43	-180	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
03-Apr-2023	04:21:00	1022	ECR_ENV_17			camera	75	525687	6400034	525685	6399992	1	42	42	-178	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
03-Apr-2023	04:21:18	1023	ECR_ENV_17			camera	75	525687	6400033	525685	6399992	2	41	41	-178	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
03-Apr-2023	04:21:27	1024	ECR_ENV_17			camera	74	525687	6400032	525685	6399992	1	39	39	-178	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
03-Apr-2023	04:21:50	1025	ECR_ENV_17			camera	74	525687	6400027	525685	6399992	1	35	35	-178	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
03-Apr-2023	04:22:00	1026	ECR_ENV_17			camera	74	525687	6400025	525685	6399992	1	33	33	-178	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
03-Apr-2023	04:22:08	1027	ECR_ENV_17			camera	74	525687	6400025	525685	6399992	1	33	32	-178	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
03-Apr-2023	04:22:40	1028	ECR_ENV_17			camera	74	525685	6400020	525685	6399992	0	28	28	180	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
03-Apr-2023	04:22:49	1029	ECR_ENV_17			camera	74	525685	6400019	525685	6399992	-1	27	26	179	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
03-Apr-2023	04:23:09	1030	ECR_ENV_17			camera	74	525684	6400018	525685	6399992	-1	26	26	177	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
03-Apr-2023	04:23:28	1031	ECR_ENV_17			camera	74	525684	6400016	525685	6399992	-1	24	24	177	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
03-Apr-2023	04:24:10	1032	ECR_ENV_17			camera	74	525684	6400010	525685	6399992	-1	18	18	177	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
03-Apr-2023	04:24:36	1033	ECR_ENV_17			camera	74	525685	6400009	525685	6399992	0	16	16	179	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
03-Apr-2023	04:24:53	1034	ECR_ENV_17			camera	74	525684	6400006	525685	6399992	-2	14	14	173	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
03-Apr-2023	04:25:41	1035	ECR_ENV_17			camera	74	525683	6399998	525685	6399992	-2	6	6	158	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
03-Apr-2023	04:25:49	1036	ECR_ENV_17			camera	74	525684	6399997	525685	6399992	-2	5	5	160	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
03-Apr-2023	04:26:07	1037	ECR_ENV_17			camera	74	525685	6399996	525685	6399992	-1	4	4	168	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
03-Apr-2023	04:26:36	1038	ECR_ENV_17			camera	74	525686	6399992	525685	6399992	1	0	1	-76	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
03-Apr-2023	04:27:55	1039	ECR_ENV_17			camera	74	525684	6399988	525685	6399992	-2	-4	4	24	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
03-Apr-2023	04:28:38	1040	ECR_ENV_17			camera	74	525685	6399983	525685	6399992	0	-10	10	0	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
03-Apr-2023	04:28:48	1041	ECR_ENV_17			camera	74	525685	6399981	525685	6399992	0	-11	11	1	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
03-Apr-2023	04:28:52	1042	ECR_ENV_17			camera	74	525685	6399981	525685	6399992	0	-12	12	1	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
03-Apr-2023	04:29:20	1043	ECR_ENV_17			camera	74	525686	6399977	525685	6399992	0	-16	16	-1	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
03-Apr-2023	04:29:31	1044	ECR_ENV_17			camera	74	525685	6399974	525685	6399992	0	-18	18	0	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
03-Apr-2023	04:30:02	1045	ECR_ENV_17			camera	74	525685	6399971	525685	6399992	0	-22	22	1	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
03-Apr-2023	04:30:23	1046	ECR_ENV_17			camera	74	525686	6399967	525685	6399992	0	-25	25	-1	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
03-Apr-2023	04:30:37	1047	ECR_ENV_17			camera	74	525686	6399965	525685	6399992	1	-28	28	-2	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
03-Apr-2023	04:30:47	1048	ECR_ENV_17			camera	74	525686	6399963	525685	6399992	1	-29	29	-2	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
03-Apr-2023	04:31:00	1049	ECR_ENV_17			camera	74	525686	6399962	525685	6399992	1	-30	30	-1	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
03-Apr-2023	04:31:07	1050	ECR_ENV_17			camera	74	525686	6399962	525685	6399992	0	-30	30	-1	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
03-Apr-2023	04:31:24	1051	ECR_ENV_17			camera	74	525686	6399960	525685	6399992	0	-33	32	0	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
03-Apr-2023	04:31:40	1052	ECR_ENV_17			camera	74	525687	6399957	525685	6399992	1	-35	35	-2	PL	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
03-Apr-2023	04:32:24	1053	ECR_ENV_17			camera	74	525688	6399952	525685	6399992	3	-41	41	-4	PL	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
03-Apr-2023	04:32:56	1054	ECR_ENV_17			camera	73	525686	6399946	525685	6399992	1	-46	46	-1	PL	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
03-Apr-2023	04:33:01	1055	ECR_ENV_17			camera	73	525686	6399946	525685	6399992	0	-46	46	0	PL	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)
03-Apr-2023	15:11:47	1056	ECR_ENV_26			camera	108	528566	6402549	528618	6402532	-52	17	54	109	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
03-Apr-2023	15:12:16	1057	ECR_ENV_26			camera	108	528570	6402548	528618	6402532	-48	17	50	109	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
03-Apr-2023	15:12:31	1058	ECR_ENV_26			camera	108	528573	6402548	528618	6402532	-45	16	48	110	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
03-Apr-2023	15:12:49	1059	ECR_ENV_26			camera	108	528576	6402548	528618	6402532	-42	16	45	111	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
03-Apr-2023	15:12:57	1060	ECR_ENV_26			camera	108	528577	6402548	528618	6402532	-41	17	44	112	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
03-Apr-2023	15:13:15	1061	ECR_ENV_26			camera	108	528580	6402548	528618	6402532	-38	17	41	114	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
03-Apr-2023	15:13:35	1062	ECR_ENV_26			camera	108	528584	6402548	528618	6402532	-34	16	37	116	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
03-Apr-2023	15:13:51	1063	ECR_ENV_26			camera	108	528587	6402549	528618	6402532	-31	17	36	119	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
03-Apr-2023	15:14:18	1064	ECR_ENV_26			camera	108	528588	6402549	528618	6402532	-30	17	35	120	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
03-Apr-2023	15:14:41	1065	ECR_ENV_26			camera	108	528591	6402548	528618	6402532	-27	17	31	122	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
03-Apr-2023	15:15:09	1066	ECR_ENV_26			camera	108	528594	6402549	528618	6402532	-24	17	30	126	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
03-Apr-2023	15:15:28	1067	ECR_ENV_26			camera	109	528596	6402547	528618	6402532	-22	16	27	125	SG	(Raw Nav, Kongsberg 14208, img#12) (V)
03-Apr-2023	15:15:48	1067a	ECR_ENV_26			camera	108	528598	6402548	528618	6402532	-20	16	26	130	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A) # Double Fix
03-Apr-2023	15:16:18	1068	ECR_ENV_26			camera	108	528601	6402545	528618	6402532	-17	13	22	127	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
03-Apr-2023	15:16:40	1069	ECR_ENV_26			camera	108	528602	6402542	528618	6402532	-16	11	19	123	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
03-Apr-2023	15:17:03	1070	ECR_ENV_26			camera	108	528602	6402541	528618	6402532	-16	9	18	121	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
03-Apr-2023	15:17:37	1071	ECR_ENV_26			camera	109	528607	6402536	528618	6402532	-11	4	12	111	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
03-Apr-2023	15:17:59	1072	ECR_ENV_26			camera	109	528611	6402534	528618	6402532	-7	2	7	108	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
03-Apr-2023	15:18:26	1073	ECR_ENV_26			camera	109	528612	6402531	528618	6402532	-6	-1	6	82	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
03-Apr-2023	15:18:34	1074	ECR_ENV_26			camera	109	528613	6402529	528618	6402532	-5	-2	6	67	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
03-Apr-2023	15:19:05	1075	ECR_ENV_26			camera	109	528617	6402526	528618	6402532	-1	-6	6	12	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
03-Apr-2023	15:19:34	1076	ECR_ENV_26			camera	109	528620	6402524	528618	6402532	2	-8	8	-17	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
03-Apr-2023	15:19:48	1077	ECR_ENV_26			camera	109	528621	6402522	528618	6402532	4	-10	10	-20	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
03-Apr-2023	15:20:17	1078	ECR_ENV_26			camera	109	528624	6402520	528618	6402532	6	-12	13	-26	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
03-Apr-2023	15:20:46	1079	ECR_ENV_26			camera	109	528628	6402517	528618	6402532	10	-15	18	-34	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
03-Apr-2023	15:21:05	1080	ECR_ENV_26			camera	109	528630	6402515	528618	6402532	12	-17	21	-35	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
03-Apr-2023	15:21:18	1081	ECR_ENV_26			camera	109	528631	6402513	528618	6402532	13	-19	23	-35	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
03-Apr-2023	15:21:30	1082	ECR_ENV_26			camera	109	528633	6402512	528618	6402532	15	-20	25	-37	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
03-Apr-2023	15:21:48	1083	ECR_ENV_26			camera	109	528635	6402510	528618	6402532	17	-21	27	-39	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463				Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2				Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84		Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
03-Apr-2023	15:21:54	1084	ECR_ENV_26			camera	109	528636	6402510	528618	6402532	18	-21	28	-40	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
03-Apr-2023	15:22:05	1085	ECR_ENV_26			camera	109	528637	6402509	528618	6402532	19	-22	29	-40	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
03-Apr-2023	15:22:16	1086	ECR_ENV_26			camera	109	528637	6402508	528618	6402532	19	-24	30	-39	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
03-Apr-2023	15:22:28	1087	ECR_ENV_26			camera	109	528637	6402507	528618	6402532	19	-24	31	-39	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
03-Apr-2023	15:22:39	1088	ECR_ENV_26			camera	109	528638	6402507	528618	6402532	20	-24	32	-40	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
03-Apr-2023	15:22:51	1089	ECR_ENV_26			camera	109	528640	6402506	528618	6402532	22	-26	33	-40	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
03-Apr-2023	15:23:13	1090	ECR_ENV_26			camera	109	528642	6402504	528618	6402532	24	-27	36	-41	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
03-Apr-2023	15:23:33	1091	ECR_ENV_26			camera	109	528644	6402503	528618	6402532	26	-29	39	-42	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
03-Apr-2023	15:23:50	1092	ECR_ENV_26			camera	109	528645	6402500	528618	6402532	27	-32	41	-40	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
03-Apr-2023	15:23:57	1093	ECR_ENV_26			camera	109	528645	6402499	528618	6402532	27	-32	42	-40	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
03-Apr-2023	15:24:28	1094	ECR_ENV_26			camera	109	528649	6402496	528618	6402532	31	-35	47	-41	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
04-Apr-2023	04:35:25	1095	ECR_ENV_21			camera	48	528147	6396819	528145	6396764	3	55	55	-177	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
04-Apr-2023	04:35:45	1096	ECR_ENV_21			camera	48	528146	6396817	528145	6396764	1	53	53	-178	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
04-Apr-2023	04:36:07	1097	ECR_ENV_21			camera	48	528144	6396815	528145	6396764	-1	51	51	179	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
04-Apr-2023	04:36:19	1098	ECR_ENV_21			camera	48	528142	6396814	528145	6396764	-3	50	50	177	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
04-Apr-2023	04:36:52	1099	ECR_ENV_21			camera	48	528142	6396811	528145	6396764	-3	47	47	176	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
04-Apr-2023	04:37:02	1100	ECR_ENV_21			camera	48	528142	6396809	528145	6396764	-3	45	45	176	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
04-Apr-2023	04:37:13	1101	ECR_ENV_21			camera	48	528141	6396807	528145	6396764	-3	43	44	175	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
04-Apr-2023	04:37:34	1102	ECR_ENV_21			camera	48	528142	6396805	528145	6396764	-3	41	42	176	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
04-Apr-2023	04:37:51	1103	ECR_ENV_21			camera	48	528143	6396803	528145	6396764	-1	39	39	178	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
04-Apr-2023	04:38:06	1104	ECR_ENV_21			camera	48	528144	6396800	528145	6396764	-1	36	36	179	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
04-Apr-2023	04:38:25	1105	ECR_ENV_21			camera	48	528145	6396799	528145	6396764	1	35	35	-179	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
04-Apr-2023	04:38:59	1106	ECR_ENV_21			camera	48	528146	6396795	528145	6396764	1	31	31	-178	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
04-Apr-2023	04:39:07	1107	ECR_ENV_21			camera	48	528146	6396793	528145	6396764	1	29	29	-178	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
04-Apr-2023	04:39:14	1108	ECR_ENV_21			camera	48	528146	6396792	528145	6396764	1	28	28	-177	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
04-Apr-2023	04:39:41	1109	ECR_ENV_21			camera	48	528147	6396788	528145	6396764	2	24	24	-175	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
04-Apr-2023	04:39:51	1110	ECR_ENV_21			camera	48	528146	6396787	528145	6396764	1	23	23	-177	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
04-Apr-2023	04:40:06	1111	ECR_ENV_21			camera	48	528145	6396785	528145	6396764	1	21	21	-179	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
04-Apr-2023	04:41:00	1112	ECR_ENV_21			camera	47	528144	6396780	528145	6396764	-1	16	16	177	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
04-Apr-2023	04:41:32	1113	ECR_ENV_21			camera	47	528143	6396775	528145	6396764	-2	11	11	169	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
04-Apr-2023	04:41:54	1114	ECR_ENV_21			camera	47	528143	6396774	528145	6396764	-2	10	10	167	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
04-Apr-2023	04:42:29	1115	ECR_ENV_21			camera	47	528145	6396768	528145	6396764	0	4	4	178	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
04-Apr-2023	04:42:51	1116	ECR_ENV_21			camera	47	528146	6396766	528145	6396764	1	2	3	-150	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
04-Apr-2023	04:43:35	1117	ECR_ENV_21			camera	47	528145	6396763	528145	6396764	0	-2	2	-14	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
04-Apr-2023	04:43:49	1118	ECR_ENV_21			camera	47	528145	6396760	528145	6396764	0	-4	4	3	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
04-Apr-2023	04:44:03	1119	ECR_ENV_21			camera	47	528144	6396758	528145	6396764	0	-6	6	3	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
04-Apr-2023	04:44:23	1120	ECR_ENV_21			camera	47	528145	6396756	528145	6396764	0	-8	8	-1	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
04-Apr-2023	04:44:51	1121	ECR_ENV_21			camera	47	528145	6396753	528145	6396764	1	-11	11	-3	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Apr-2023	04:45:07	1122	ECR_ENV_21			camera	47	528146	6396750	528145	6396764	1	-14	14	-3	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
04-Apr-2023	04:45:25	1123	ECR_ENV_21			camera	47	528146	6396747	528145	6396764	1	-17	17	-5	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
04-Apr-2023	04:45:35	1124	ECR_ENV_21			camera	47	528147	6396746	528145	6396764	2	-18	18	-6	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
04-Apr-2023	04:45:52	1125	ECR_ENV_21			camera	47	528146	6396745	528145	6396764	2	-20	20	-4	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
04-Apr-2023	04:46:22	1126	ECR_ENV_21			camera	47	528144	6396740	528145	6396764	-1	-24	24	2	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
04-Apr-2023	04:46:31	1127	ECR_ENV_21			camera	46	528144	6396739	528145	6396764	-1	-25	25	3	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
04-Apr-2023	04:46:41	1128	ECR_ENV_21			camera	46	528144	6396738	528145	6396764	-1	-26	26	2	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
04-Apr-2023	04:47:08	1129	ECR_ENV_21			camera	46	528145	6396735	528145	6396764	0	-30	30	0	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
04-Apr-2023	04:47:49	1130	ECR_ENV_21			camera	46	528145	6396730	528145	6396764	0	-34	34	0	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
04-Apr-2023	04:48:09	1131	ECR_ENV_21			camera	46	528145	6396726	528145	6396764	0	-38	38	-1	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
04-Apr-2023	04:48:26	1132	ECR_ENV_21			camera	46	528145	6396724	528145	6396764	1	-40	40	-1	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
04-Apr-2023	04:49:02	1133	ECR_ENV_21			camera	46	528145	6396720	528145	6396764	0	-44	44	0	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
04-Apr-2023	04:49:32	1134	ECR_ENV_21			camera	46	528145	6396716	528145	6396764	1	-48	48	-1	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
04-Apr-2023	08:36:08	1135	ECR_ENV_53			camera	27	525601	6394813	525615	6394765	-15	48	50	163	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
04-Apr-2023	08:36:36	1136	ECR_ENV_53			camera	27	525601	6394812	525615	6394765	-14	47	49	163	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
04-Apr-2023	08:37:00	1137	ECR_ENV_53			camera	27	525602	6394810	525615	6394765	-13	45	47	164	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
04-Apr-2023	08:37:30	1138	ECR_ENV_53			camera	27	525604	6394807	525615	6394765	-12	42	44	164	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
04-Apr-2023	08:37:42	1139	ECR_ENV_53			camera	27	525604	6394806	525615	6394765	-12	40	42	164	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
04-Apr-2023	08:37:50	1140	ECR_ENV_53			camera	27	525604	6394805	525615	6394765	-11	40	41	164	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
04-Apr-2023	08:38:04	1141	ECR_ENV_53			camera	27	525603	6394804	525615	6394765	-12	39	40	162	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
04-Apr-2023	08:38:19	1142	ECR_ENV_53			camera	27	525602	6394802	525615	6394765	-13	37	39	161	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
04-Apr-2023	08:38:40	1143	ECR_ENV_53			camera	27	525602	6394800	525615	6394765	-13	35	37	160	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
04-Apr-2023	08:39:15	1144	ECR_ENV_53			camera	27	525604	6394797	525615	6394765	-11	32	34	161	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
04-Apr-2023	08:39:39	1145	ECR_ENV_53			camera	27	525606	6394794	525615	6394765	-10	29	31	162	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
04-Apr-2023	08:39:51	1146	ECR_ENV_53			camera	27	525606	6394793	525615	6394765	-9	28	30	162	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
04-Apr-2023	08:40:09	1147	ECR_ENV_53			camera	27	525607	6394792	525615	6394765	-8	27	28	162	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
04-Apr-2023	08:40:23	1148	ECR_ENV_53			camera	27	525607	6394790	525615	6394765	-8	25	26	163	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
04-Apr-2023	08:41:35	1149	ECR_ENV_53			camera	27	525610	6394784	525615	6394765	-5	19	20	166	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
04-Apr-2023	08:42:12	1150	ECR_ENV_53			camera	27	525611	6394781	525615	6394765	-4	16	16	165	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
04-Apr-2023	08:42:42	1151	ECR_ENV_53			camera	27	525611	6394778	525615	6394765	-4	12	13	162	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
04-Apr-2023	08:44:04	1152	ECR_ENV_53			camera	27	525613	6394770	525615	6394765	-2	4	5	154	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
04-Apr-2023	08:44:26	1153	ECR_ENV_53			camera	27	525614	6394767	525615	6394765	-1	2	2	148	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
04-Apr-2023	08:45:34	1154	ECR_ENV_53			camera	28	525617	6394759	525615	6394765	2	-6	6	-17	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
04-Apr-2023	08:45:42	1155	ECR_ENV_53			camera	28	525618	6394759	525615	6394765	2	-6	7	-20	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
04-Apr-2023	08:45:57	1156	ECR_ENV_53			camera	28	525619	6394758	525615	6394765	3	-7	8	-25	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
04-Apr-2023	08:46:06	1157	ECR_ENV_53			camera	28	525619	6394756	525615	6394765	4	-9	10	-25	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
04-Apr-2023	08:46:14	1158	ECR_ENV_53			camera	28	525620	6394755	525615	6394765	4	-10	11	-24	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
04-Apr-2023	08:46:20	1159	ECR_ENV_53			camera	28	525620	6394755	525615	6394765	5	-11	11	-23	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT			

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Apr-2023	08:46:39	1160	ECR_ENV_53			camera	28	525621	6394753	525615	6394765	5	-12	13	-25	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
04-Apr-2023	08:46:59	1161	ECR_ENV_53			camera	28	525621	6394751	525615	6394765	6	-15	16	-22	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
04-Apr-2023	08:47:16	1162	ECR_ENV_53			camera	28	525620	6394749	525615	6394765	5	-16	17	-17	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
04-Apr-2023	08:47:21	1163	ECR_ENV_53			camera	28	525620	6394749	525615	6394765	5	-17	17	-16	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
04-Apr-2023	08:47:45	1164	ECR_ENV_53			camera	28	525620	6394746	525615	6394765	5	-19	20	-14	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
04-Apr-2023	08:48:02	1165	ECR_ENV_53			camera	28	525620	6394745	525615	6394765	5	-21	21	-14	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
04-Apr-2023	08:48:23	1166	ECR_ENV_53			camera	28	525621	6394742	525615	6394765	5	-23	23	-13	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
04-Apr-2023	08:48:31	1167	ECR_ENV_53			camera	28	525621	6394742	525615	6394765	6	-23	24	-14	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
04-Apr-2023	08:48:49	1168	ECR_ENV_53			camera	28	525622	6394739	525615	6394765	7	-26	27	-14	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
04-Apr-2023	08:49:24	1169	ECR_ENV_53			camera	28	525623	6394737	525615	6394765	8	-28	29	-16	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
04-Apr-2023	08:50:18	1170	ECR_ENV_53			camera	28	525626	6394734	525615	6394765	11	-32	33	-19	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
04-Apr-2023	08:50:34	1171	ECR_ENV_53			camera	28	525628	6394732	525615	6394765	12	-33	35	-21	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
04-Apr-2023	08:51:17	1172	ECR_ENV_53			camera	28	525631	6394727	525615	6394765	16	-38	42	-23	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
04-Apr-2023	08:51:22	1173	ECR_ENV_53			camera	28	525632	6394727	525615	6394765	16	-39	42	-23	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
04-Apr-2023	08:51:28	1174	ECR_ENV_53			camera	28	525632	6394726	525615	6394765	17	-39	42	-23	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
04-Apr-2023	08:51:38	1175	ECR_ENV_53			camera	28	525633	6394725	525615	6394765	18	-40	44	-24	PL	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
04-Apr-2023	08:51:50	1176	ECR_ENV_53			camera	28	525634	6394724	525615	6394765	19	-41	45	-25	PL	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
04-Apr-2023	08:52:00	1177	ECR_ENV_53			camera	27	525635	6394724	525615	6394765	20	-42	46	-25	PL	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
04-Apr-2023	08:52:05	1178	ECR_ENV_53			camera	28	525635	6394723	525615	6394765	20	-42	46	-26	PL	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)
04-Apr-2023	08:52:19	1179	ECR_ENV_53			camera	28	525637	6394722	525615	6394765	22	-43	48	-27	PL	(Corr'd Nav, Kongsberg 14208, img#45) (V) (T.A)
04-Apr-2023	11:07:10	1180	ECR_ENV_01			camera	31	527994	6394904	527943	6394889	51	15	53	-106	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
04-Apr-2023	11:07:25	1181	ECR_ENV_01			camera	31	527994	6394905	527943	6394889	51	16	53	-108	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
04-Apr-2023	11:07:38	1182	ECR_ENV_01			camera	31	527992	6394907	527943	6394889	50	19	53	-111	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
04-Apr-2023	11:08:05	1183	ECR_ENV_01			camera	31	527989	6394907	527943	6394889	47	19	50	-112	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
04-Apr-2023	11:08:17	1184	ECR_ENV_01			camera	31	527986	6394907	527943	6394889	44	19	47	-113	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
04-Apr-2023	11:08:41	1185	ECR_ENV_01			camera	31	527981	6394906	527943	6394889	38	17	42	-114	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
04-Apr-2023	11:08:52	1186	ECR_ENV_01			camera	31	527979	6394904	527943	6394889	37	16	40	-113	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
04-Apr-2023	11:09:01	1187	ECR_ENV_01			camera	31	527977	6394903	527943	6394889	34	14	37	-112	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
04-Apr-2023	11:09:14	1188	ECR_ENV_01			camera	31	527975	6394901	527943	6394889	32	13	34	-112	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
04-Apr-2023	11:09:26	1189	ECR_ENV_01			camera	31	527973	6394901	527943	6394889	31	12	33	-112	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
04-Apr-2023	11:09:37	1190	ECR_ENV_01			camera	31	527973	6394900	527943	6394889	30	12	32	-111	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
04-Apr-2023	11:09:53	1191	ECR_ENV_01			camera	31	527971	6394899	527943	6394889	28	11	30	-111	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
04-Apr-2023	11:10:07	1192	ECR_ENV_01			camera	31	527969	6394898	527943	6394889	27	10	28	-110	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
04-Apr-2023	11:10:27	1193	ECR_ENV_01			camera	31	527966	6394896	527943	6394889	24	8	25	-108	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
04-Apr-2023	11:10:39	1194	ECR_ENV_01			camera	31	527965	6394896	527943	6394889	22	7	23	-107	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
04-Apr-2023	11:10:55	1195	ECR_ENV_01			camera	31	527962	6394895	527943	6394889	20	7	21	-109	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
04-Apr-2023	11:11:11	1196	ECR_ENV_01			camera	31	527960	6394895	527943	6394889	17	7	19	-112	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
04-Apr-2023	11:11:24	1197	ECR_ENV_01			camera	31	527958	6394896	527943	6394889	15	7	17	-115	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Apr-2023	11:11:46	1198	ECR_ENV_01			camera	31	527955	6394895	527943	6394889	12	7	14	-119	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
04-Apr-2023	11:12:06	1199	ECR_ENV_01			camera	31	527952	6394893	527943	6394889	10	4	11	-115	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
04-Apr-2023	11:12:28	1200	ECR_ENV_01			camera	31	527951	6394890	527943	6394889	8	2	8	-104	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
04-Apr-2023	11:12:43	1201	ECR_ENV_01			camera	31	527948	6394889	527943	6394889	6	1	6	-99	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
04-Apr-2023	11:12:52	1202	ECR_ENV_01			camera	31	527948	6394889	527943	6394889	5	0	5	-91	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
04-Apr-2023	11:13:20	1203	ECR_ENV_01			camera	31	527946	6394888	527943	6394889	3	0	3	-89	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
04-Apr-2023	11:13:50	1204	ECR_ENV_01			camera	31	527944	6394891	527943	6394889	2	3	3	-145	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
04-Apr-2023	11:15:21	1205	ECR_ENV_01			camera	31	527946	6394889	527943	6394889	3	1	3	-100	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
04-Apr-2023	11:16:00	1206	ECR_ENV_01			camera	31	527945	6394889	527943	6394889	3	0	3	-92	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
04-Apr-2023	11:16:34	1207	ECR_ENV_01			camera	31	527943	6394886	527943	6394889	1	-3	3	-11	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
04-Apr-2023	11:17:05	1208	ECR_ENV_01			camera	31	527939	6394884	527943	6394889	-4	-5	6	38	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
04-Apr-2023	11:17:30	1209	ECR_ENV_01			camera	31	527938	6394881	527943	6394889	-5	-7	9	34	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
04-Apr-2023	11:17:51	1210	ECR_ENV_01			camera	31	527935	6394879	527943	6394889	-8	-9	12	42	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
04-Apr-2023	11:18:27	1211	ECR_ENV_01			camera	31	527932	6394877	527943	6394889	-10	-11	15	42	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
04-Apr-2023	11:18:52	1212	ECR_ENV_01			camera	31	527928	6394872	527943	6394889	-14	-16	21	42	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
04-Apr-2023	11:19:03	1213	ECR_ENV_01			camera	31	527928	6394870	527943	6394889	-15	-18	23	40	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
04-Apr-2023	11:19:14	1214	ECR_ENV_01			camera	31	527927	6394870	527943	6394889	-16	-19	24	39	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
04-Apr-2023	11:19:29	1215	ECR_ENV_01			camera	31	527925	6394870	527943	6394889	-18	-19	26	44	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
04-Apr-2023	11:19:45	1216	ECR_ENV_01			camera	31	527922	6394868	527943	6394889	-20	-20	29	45	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
04-Apr-2023	11:19:56	1217	ECR_ENV_01			camera	31	527921	6394867	527943	6394889	-21	-22	30	44	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
04-Apr-2023	11:20:09	1218	ECR_ENV_01			camera	31	527921	6394865	527943	6394889	-21	-24	32	42	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
04-Apr-2023	11:20:31	1219	ECR_ENV_01			camera	31	527919	6394862	527943	6394889	-24	-26	36	42	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
04-Apr-2023	11:20:50	1220	ECR_ENV_01			camera	31	527916	6394862	527943	6394889	-27	-27	38	45	PL	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
04-Apr-2023	11:21:13	1221	ECR_ENV_01			camera	31	527913	6394858	527943	6394889	-30	-30	42	45	PL	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
04-Apr-2023	11:21:49	1222	ECR_ENV_01			camera	31	527910	6394855	527943	6394889	-33	-33	47	45	PL	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
04-Apr-2023	13:38:10	1223	ECR_ENV_54			camera	95	528222	6399867	528222	6399816	0	51	51	-180	SG	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)
04-Apr-2023		1224	ECR_ENV_54			camera										SG	Lost connection with EELS, no Fix taken
04-Apr-2023		1225	ECR_ENV_54			camera										SG	Lost connection with EELS, no Fix taken
04-Apr-2023		1226	ECR_ENV_54			camera										SG	Lost connection with EELS, no Fix taken
04-Apr-2023		1227	ECR_ENV_54			camera										SG	Lost connection with EELS, no Fix taken
04-Apr-2023		1228	ECR_ENV_54			camera										SG	Lost connection with EELS, no Fix taken
04-Apr-2023	13:40:35	1229	ECR_ENV_54			camera	95	528223	6399853	528222	6399816	1	37	37	-178	SG	(Corr'd Nav, Kongsberg 14208, img#50) (V) (T.A)
04-Apr-2023	13:40:50	1230	ECR_ENV_54			camera	95	528226	6399850	528222	6399816	4	35	35	-173	SG	(Corr'd Nav, Kongsberg 14208, img#51) (V) (T.A)
04-Apr-2023	13:41:06	1231	ECR_ENV_54			camera	95	528228	6399849	528222	6399816	6	33	34	-169	SG	(Corr'd Nav, Kongsberg 14208, img#52) (V) (T.A)
04-Apr-2023	13:41:22	1232	ECR_ENV_54			camera	95	528227	6399849	528222	6399816	5	33	33	-172	SG	(Corr'd Nav, Kongsberg 14208, img#53) (V) (T.A)
04-Apr-2023	13:41:51	1233	ECR_ENV_54			camera	95	528225	6399846	528222	6399816	3	30	30	-174	SG	(Corr'd Nav, Kongsberg 14208, img#54) (V) (T.A)
04-Apr-2023	13:42:11	1234	ECR_ENV_54			camera	96	528224	6399844	528222	6399816	2	28	28	-176	SG	(Corr'd Nav, Kongsberg 14208, img#55) (V) (T.A)
04-Apr-2023	13:42:29	1235	ECR_ENV_54			camera	96	528223	6399841	528222	6399816	1	25	25	-177	SG	(Corr'd Nav, Kongsberg 14208, img#56) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Apr-2023	13:42:55	1236	ECR_ENV_54			camera	96	528223	6399839	528222	6399816	1	23	23	-177	SG	(Corr'd Nav, Kongsberg 14208, img#57) (V) (T.A)
04-Apr-2023	13:43:16	1237	ECR_ENV_54			camera	96	528222	6399835	528222	6399816	0	19	19	-179	SG	(Corr'd Nav, Kongsberg 14208, img#58) (V) (T.A)
04-Apr-2023	13:43:27	1238	ECR_ENV_54			camera	95	528222	6399833	528222	6399816	1	17	17	-178	SG	(Corr'd Nav, Kongsberg 14208, img#59) (V) (T.A)
04-Apr-2023	13:43:55	1239	ECR_ENV_54			camera	95	528223	6399831	528222	6399816	1	15	15	-175	SG	(Corr'd Nav, Kongsberg 14208, img#60) (V) (T.A)
04-Apr-2023	13:44:23	1240	ECR_ENV_54			camera	95	528223	6399827	528222	6399816	1	11	11	-175	SG	(Corr'd Nav, Kongsberg 14208, img#61) (V) (T.A)
04-Apr-2023	13:44:41	1241	ECR_ENV_54			camera	97	528224	6399824	528222	6399816	2	8	8	-169	SG	(Corr'd Nav, Kongsberg 14208, img#62) (V) (T.A)
04-Apr-2023	13:45:11	1242	ECR_ENV_54			camera	97	528223	6399822	528222	6399816	1	6	6	-170	SG	(Corr'd Nav, Kongsberg 14208, img#63) (V) (T.A)
04-Apr-2023	13:45:36	1243	ECR_ENV_54			camera	97	528224	6399820	528222	6399816	2	4	4	-155	SG	(Corr'd Nav, Kongsberg 14208, img#64) (V) (T.A)
04-Apr-2023	13:46:12	1244	ECR_ENV_54			camera	97	528222	6399817	528222	6399816	0	1	1	-157	SG	(Corr'd Nav, Kongsberg 14208, img#65) (V) (T.A)
04-Apr-2023	13:46:32	1245	ECR_ENV_54			camera	97	528224	6399816	528222	6399816	2	0	2	-76	SG	(Corr'd Nav, Kongsberg 14208, img#66) (V) (T.A)
04-Apr-2023	13:48:08	1246	ECR_ENV_54			camera	97	528223	6399819	528222	6399816	1	3	3	-163	SG	(Corr'd Nav, Kongsberg 14208, img#67) (V) (T.A)
04-Apr-2023	13:49:43	1247	ECR_ENV_54			camera	97	528218	6399817	528222	6399816	-4	1	4	111	SG	(Corr'd Nav, Kongsberg 14208, img#68) (V) (T.A)
04-Apr-2023	13:51:47	1248	ECR_ENV_54			camera	97	528218	6399815	528222	6399816	-4	-1	4	75	SG	(Corr'd Nav, Kongsberg 14208, img#69) (V) (T.A)
04-Apr-2023	13:53:02	1249	ECR_ENV_54			camera	97	528224	6399815	528222	6399816	2	-1	2	-77	SG	(Corr'd Nav, Kongsberg 14208, img#70) (V) (T.A)
04-Apr-2023	13:55:36	1250	ECR_ENV_54			camera	97	528223	6399815	528222	6399816	1	-1	1	-44	SG	(Corr'd Nav, Kongsberg 14208, img#71) (V) (T.A)
04-Apr-2023	13:55:58	1251	ECR_ENV_54			camera	97	528223	6399811	528222	6399816	1	-5	5	-11	SG	(Corr'd Nav, Kongsberg 14208, img#72) (V) (T.A)
04-Apr-2023	13:56:27	1252	ECR_ENV_54			camera	97	528223	6399808	528222	6399816	1	-8	9	-9	SG	(Corr'd Nav, Kongsberg 14208, img#73) (V) (T.A)
04-Apr-2023	13:56:33	1253	ECR_ENV_54			camera	97	528223	6399806	528222	6399816	1	-10	10	-7	SG	(Corr'd Nav, Kongsberg 14208, img#74) (V) (T.A)
04-Apr-2023	13:57:25	1254	ECR_ENV_54			camera	97	528225	6399806	528222	6399816	3	-10	10	-15	SG	(Corr'd Nav, Kongsberg 14208, img#75) (V) (T.A)
04-Apr-2023	13:57:39	1255	ECR_ENV_54			camera	97	528224	6399807	528222	6399816	2	-9	10	-13	SG	(Corr'd Nav, Kongsberg 14208, img#76) (V) (T.A)
04-Apr-2023	13:57:54	1256	ECR_ENV_54			camera	97	528223	6399805	528222	6399816	1	-11	11	-6	SG	(Corr'd Nav, Kongsberg 14208, img#77) (V) (T.A)
04-Apr-2023	13:58:19	1257	ECR_ENV_54			camera	97	528224	6399802	528222	6399816	3	-14	14	-10	SG	(Corr'd Nav, Kongsberg 14208, img#78) (V) (T.A)
04-Apr-2023	14:04:23	1258	ECR_ENV_54			camera	97	528219	6399813	528222	6399816	-3	-3	4	46	SG	(Corr'd Nav, Kongsberg 14208, img#79) (V) (T.A)
04-Apr-2023	14:05:40	1259	ECR_ENV_54			camera	97	528216	6399806	528222	6399816	-6	-10	12	31	SG	(Corr'd Nav, Kongsberg 14208, img#80) (V) (T.A)
04-Apr-2023	14:05:50	1260	ECR_ENV_54			camera	97	528217	6399803	528222	6399816	-5	-13	14	22	SG	(Corr'd Nav, Kongsberg 14208, img#81) (V) (T.A)
04-Apr-2023	14:05:56	1261	ECR_ENV_54			camera	97	528217	6399802	528222	6399816	-4	-14	15	17	SG	(Corr'd Nav, Kongsberg 14208, img#82) (V) (T.A)
04-Apr-2023	14:06:02	1262	ECR_ENV_54			camera	97	528218	6399801	528222	6399816	-4	-15	15	13	SG	(Corr'd Nav, Kongsberg 14208, img#83) (V) (T.A)
04-Apr-2023	14:06:09	1263	ECR_ENV_54			camera	97	528219	6399800	528222	6399816	-3	-16	16	10	SG	(Corr'd Nav, Kongsberg 14208, img#84) (V) (T.A)
04-Apr-2023	14:06:24	1264	ECR_ENV_54			camera	97	528220	6399799	528222	6399816	-1	-17	17	5	SG	(Corr'd Nav, Kongsberg 14208, img#85) (V) (T.A)
04-Apr-2023	14:06:31	1265	ECR_ENV_54			camera	97	528221	6399799	528222	6399816	-1	-17	17	4	SG	(Corr'd Nav, Kongsberg 14208, img#86) (V) (T.A)
04-Apr-2023	14:07:08	1266	ECR_ENV_54			camera	97	528224	6399801	528222	6399816	2	-15	15	-9	SG	(Corr'd Nav, Kongsberg 14208, img#87) (V) (T.A)
04-Apr-2023	14:07:19	1267	ECR_ENV_54			camera	97	528225	6399801	528222	6399816	3	-15	16	-12	SG	(Corr'd Nav, Kongsberg 14208, img#88) (V) (T.A)
04-Apr-2023	14:08:00	1268	ECR_ENV_54			camera	96	528223	6399798	528222	6399816	1	-18	18	-4	SG	(Corr'd Nav, Kongsberg 14208, img#89) (V) (T.A)
04-Apr-2023	14:08:31	1269	ECR_ENV_54			camera	97	528224	6399793	528222	6399816	2	-23	23	-4	SG	(Corr'd Nav, Kongsberg 14208, img#90) (V) (T.A)
04-Apr-2023	14:08:49	1270	ECR_ENV_54			camera	96	528223	6399790	528222	6399816	1	-26	26	-2	SG	(Corr'd Nav, Kongsberg 14208, img#91) (V) (T.A)
04-Apr-2023	14:09:11	1271	ECR_ENV_54			camera	96	528224	6399787	528222	6399816	2	-29	29	-4	SG	(Corr'd Nav, Kongsberg 14208, img#92) (V) (T.A)
04-Apr-2023	14:09:30	1272	ECR_ENV_54			camera	95	528225	6399786	528222	6399816	3	-30	30	-6	SG	(Corr'd Nav, Kongsberg 14208, img#93) (V) (T.A)
04-Apr-2023	14:10:10	1273	ECR_ENV_54			camera	95	528224	6399780	528222	6399816	2	-36	36	-3	SG	(Corr'd Nav, Kongsberg 14208, img#94) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Apr-2023	14:10:42	1274	ECR_ENV_54			camera	94	528225	6399775	528222	6399816	3	-41	41	-4	SG	(Corr'd Nav, Kongsberg 14208, img#95) (V) (T.A)
04-Apr-2023	14:11:00	1275	ECR_ENV_54			camera	94	528225	6399773	528222	6399816	3	-43	43	-5	SG	(Corr'd Nav, Kongsberg 14208, img#96) (V) (T.A)
04-Apr-2023	15:08:04	1276	ECR_ENV_55			camera	106	526601	6403015	526580	6402950	21	65	69	-163	SG	(Corr'd Nav, Kongsberg 14208, img#97) (V) (T.A)
04-Apr-2023	15:08:41	1277	ECR_ENV_55			camera	106	526600	6403011	526580	6402950	20	62	65	-162	SG	(Corr'd Nav, Kongsberg 14208, img#98) (V) (T.A)
04-Apr-2023	15:08:55	1278	ECR_ENV_55			camera	106	526599	6403009	526580	6402950	19	59	62	-163	SG	(Corr'd Nav, Kongsberg 14208, img#99) (V) (T.A)
04-Apr-2023	15:09:59	1279	ECR_ENV_55			camera	106	526595	6403003	526580	6402950	14	53	55	-165	SG	(Corr'd Nav, Kongsberg 14208, img#100) (V) (T.A)
04-Apr-2023	15:10:54	1280	ECR_ENV_55			camera	106	526593	6402995	526580	6402950	13	46	47	-164	SG	(Corr'd Nav, Kongsberg 14208, img#101) (V) (T.A)
04-Apr-2023	15:11:13	1281	ECR_ENV_55			camera	106	526592	6402993	526580	6402950	11	43	44	-165	SG	(Corr'd Nav, Kongsberg 14208, img#102) (V) (T.A)
04-Apr-2023	15:11:25	1282	ECR_ENV_55			camera	106	526592	6402991	526580	6402950	12	41	43	-164	SG	(Corr'd Nav, Kongsberg 14208, img#103) (V) (T.A)
04-Apr-2023	15:11:48	1283	ECR_ENV_55			camera	106	526591	6402987	526580	6402950	11	37	39	-164	SG	(Corr'd Nav, Kongsberg 14208, img#104) (V) (T.A)
04-Apr-2023	15:12:07	1284	ECR_ENV_55			camera	106	526591	6402985	526580	6402950	11	35	37	-163	SG	(Corr'd Nav, Kongsberg 14208, img#105) (V) (T.A)
04-Apr-2023	15:12:26	1285	ECR_ENV_55			camera	106	526590	6402982	526580	6402950	10	32	34	-163	SG	(Corr'd Nav, Kongsberg 14208, img#106) (V) (T.A)
04-Apr-2023	15:12:40	1286	ECR_ENV_55			camera	106	526590	6402980	526580	6402950	10	31	32	-162	SG	(Corr'd Nav, Kongsberg 14208, img#107) (V) (T.A)
04-Apr-2023	15:12:53	1287	ECR_ENV_55			camera	106	526590	6402979	526580	6402950	9	29	30	-162	SG	(Corr'd Nav, Kongsberg 14208, img#108) (V) (T.A)
04-Apr-2023	15:13:07	1288	ECR_ENV_55			camera	106	526588	6402976	526580	6402950	8	27	28	-163	SG	(Corr'd Nav, Kongsberg 14208, img#109) (V) (T.A)
04-Apr-2023	15:13:50	1289	ECR_ENV_55			camera	106	526588	6402971	526580	6402950	8	21	23	-159	SG	(Corr'd Nav, Kongsberg 14208, img#110) (V) (T.A)
04-Apr-2023	15:14:16	1290	ECR_ENV_55			camera	107	526587	6402967	526580	6402950	7	18	19	-160	SG	(Corr'd Nav, Kongsberg 14208, img#111) (V) (T.A)
04-Apr-2023	15:14:47	1291	ECR_ENV_55			camera	107	526585	6402963	526580	6402950	5	13	14	-161	SG	(Corr'd Nav, Kongsberg 14208, img#112) (V) (T.A)
04-Apr-2023	15:15:33	1292	ECR_ENV_55			camera	107	526583	6402960	526580	6402950	2	10	10	-166	SG	(Corr'd Nav, Kongsberg 14208, img#113) (V) (T.A)
04-Apr-2023	15:16:38	1293	ECR_ENV_55			camera	108	526581	6402956	526580	6402950	1	6	6	-172	SG	(Corr'd Nav, Kongsberg 14208, img#114) (V) (T.A)
04-Apr-2023	15:16:59	1294	ECR_ENV_55			camera	108	526580	6402954	526580	6402950	0	4	4	177	SG	(Corr'd Nav, Kongsberg 14208, img#115) (V) (T.A)
04-Apr-2023	15:17:08	1295	ECR_ENV_55			camera	108	526580	6402954	526580	6402950	0	4	4	176	SG	(Corr'd Nav, Kongsberg 14208, img#116) (V) (T.A)
04-Apr-2023	15:17:29	1296	ECR_ENV_55			camera	108	526580	6402954	526580	6402950	0	4	4	179	SG	(Corr'd Nav, Kongsberg 14208, img#117) (V) (T.A)
04-Apr-2023	15:18:54	1297	ECR_ENV_55			camera	108	526581	6402954	526580	6402950	1	5	5	-164	SG	(Corr'd Nav, Kongsberg 14208, img#118) (V) (T.A)
04-Apr-2023	15:19:56	1298	ECR_ENV_55			camera	107	526582	6402954	526580	6402950	1	5	5	-163	SG	(Corr'd Nav, Kongsberg 14208, img#119) (V) (T.A)
04-Apr-2023	15:20:46	1299	ECR_ENV_55			camera	108	526582	6402950	526580	6402950	2	0	2	-104	SG	(Corr'd Nav, Kongsberg 14208, img#120) (V) (T.A)
04-Apr-2023	15:21:51	1300	ECR_ENV_55			camera	108	526586	6402948	526580	6402950	6	-2	6	-72	SG	(Corr'd Nav, Kongsberg 14208, img#121) (V) (T.A)
04-Apr-2023	15:23:50	1301	ECR_ENV_55			camera	108	526582	6402945	526580	6402950	1	-5	5	-15	SG	(Corr'd Nav, Kongsberg 14208, img#122) (V) (T.A)
04-Apr-2023	15:25:34	1302	ECR_ENV_55			camera	108	526581	6402945	526580	6402950	1	-5	5	-9	SG	(Corr'd Nav, Kongsberg 14208, img#123) (V) (T.A)
04-Apr-2023	15:30:23	1303	ECR_ENV_55			camera	108	526584	6402949	526580	6402950	3	-1	4	-72	SG	(Corr'd Nav, Kongsberg 14208, img#124) (V) (T.A)
04-Apr-2023	15:31:14	1304	ECR_ENV_55			camera	108	526582	6402946	526580	6402950	2	-4	4	-27	SG	(Corr'd Nav, Kongsberg 14208, img#125) (V) (T.A)
04-Apr-2023	15:32:40	1305	ECR_ENV_55			camera	108	526580	6402943	526580	6402950	-1	-7	7	5	SG	(Corr'd Nav, Kongsberg 14208, img#126) (V) (T.A)
04-Apr-2023	15:33:32	1306	ECR_ENV_55			camera	108	526579	6402945	526580	6402950	-1	-4	4	10	SG	(Corr'd Nav, Kongsberg 14208, img#127) (V) (T.A)
04-Apr-2023	15:35:18	1307	ECR_ENV_55			camera	108	526582	6402945	526580	6402950	2	-5	5	-18	SG	(Corr'd Nav, Kongsberg 14208, img#128) (V) (T.A)
04-Apr-2023	15:35:47	1308	ECR_ENV_55			camera	108	526585	6402944	526580	6402950	5	-6	8	-40	SG	(Corr'd Nav, Kongsberg 14208, img#129) (V) (T.A)
04-Apr-2023	15:35:56	1309	ECR_ENV_55			camera	108	526585	6402944	526580	6402950	5	-6	8	-39	SG	(Corr'd Nav, Kongsberg 14208, img#130) (V) (T.A)
04-Apr-2023	15:36:11	1310	ECR_ENV_55			camera	108	526586	6402944	526580	6402950	6	-6	9	-46	SG	(Corr'd Nav, Kongsberg 14208, img#131) (V) (T.A)
04-Apr-2023	15:36:36	1311	ECR_ENV_55			camera	108	526586	6402943	526580	6402950	6	-7	9	-41	SG	(Corr'd Nav, Kongsberg 14208, img#132) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Apr-2023	15:36:43	1312	ECR_ENV_55			camera	108	526584	6402943	526580	6402950	4	-7	8	-32	SG	(Corr'd Nav, Kongsberg 14208, img#133) (V) (T.A)
04-Apr-2023	15:37:26	1313	ECR_ENV_55			camera	108	526586	6402946	526580	6402950	6	-4	7	-54	SG	(Corr'd Nav, Kongsberg 14208, img#134) (V) (T.A)
04-Apr-2023	15:37:55	1314	ECR_ENV_55			camera	108	526583	6402945	526580	6402950	3	-5	5	-30	SG	(Corr'd Nav, Kongsberg 14208, img#135) (V) (T.A)
04-Apr-2023	15:38:47	1315	ECR_ENV_55			camera	108	526577	6402941	526580	6402950	-3	-9	9	19	SG	(Corr'd Nav, Kongsberg 14208, img#136) (V) (T.A)
04-Apr-2023	15:39:24	1316	ECR_ENV_55			camera	108	526573	6402937	526580	6402950	-7	-13	14	30	SG	(Corr'd Nav, Kongsberg 14208, img#137) (V) (T.A)
04-Apr-2023	15:40:31	1317	ECR_ENV_55			camera	108	526568	6402931	526580	6402950	-12	-19	22	34	SG	(Corr'd Nav, Kongsberg 14208, img#138) (V) (T.A)
04-Apr-2023	15:40:48	1318	ECR_ENV_55			camera	108	526566	6402929	526580	6402950	-14	-21	25	33	SG	(Corr'd Nav, Kongsberg 14208, img#139) (V) (T.A)
04-Apr-2023	15:40:56	1319	ECR_ENV_55			camera	108	526566	6402928	526580	6402950	-15	-22	26	33	SG	(Corr'd Nav, Kongsberg 14208, img#140) (V) (T.A)
04-Apr-2023	15:41:26	1320	ECR_ENV_55			camera	108	526564	6402926	526580	6402950	-16	-24	29	33	SG	(Corr'd Nav, Kongsberg 14208, img#141) (V) (T.A)
04-Apr-2023	15:42:00	1321	ECR_ENV_55			camera	108	526560	6402922	526580	6402950	-20	-28	35	36	SG	(Corr'd Nav, Kongsberg 14208, img#142) (V) (T.A)
04-Apr-2023	15:42:32	1322	ECR_ENV_55			camera	107	526558	6402920	526580	6402950	-22	-29	37	37	SG	(Corr'd Nav, Kongsberg 14208, img#143) (V) (T.A)
04-Apr-2023	15:43:08	1323	ECR_ENV_55			camera	107	526554	6402916	526580	6402950	-27	-34	43	38	SG	(Corr'd Nav, Kongsberg 14208, img#144) (V) (T.A)
04-Apr-2023	15:43:42	1324	ECR_ENV_55			camera	106	526550	6402913	526580	6402950	-30	-37	48	39	SG	(Corr'd Nav, Kongsberg 14208, img#145) (V) (T.A)
04-Apr-2023	16:47:03	1325	ECR_ENV_02			camera	87	525001	6404726	525003	6404670	-1	56	56	179	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
04-Apr-2023	16:47:20	1326	ECR_ENV_02			camera	87	525001	6404724	525003	6404670	-2	53	53	178	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
04-Apr-2023	16:48:01	1327	ECR_ENV_02			camera	87	525002	6404719	525003	6404670	-1	49	49	179	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
04-Apr-2023	16:48:33	1328	ECR_ENV_02			camera	87	525003	6404715	525003	6404670	1	44	44	-179	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
04-Apr-2023	16:48:44	1329	ECR_ENV_02			camera	87	525003	6404713	525003	6404670	0	43	43	-179	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
04-Apr-2023	16:49:09	1330	ECR_ENV_02			camera	87	525003	6404710	525003	6404670	0	40	40	-180	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
04-Apr-2023	16:49:26	1331	ECR_ENV_02			camera	87	525002	6404708	525003	6404670	-1	38	38	178	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
04-Apr-2023	16:49:33	1332	ECR_ENV_02			camera	87	525001	6404707	525003	6404670	-1	36	36	178	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
04-Apr-2023	16:49:44	1333	ECR_ENV_02			camera	87	525001	6404705	525003	6404670	-1	35	35	178	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
04-Apr-2023	16:50:12	1334	ECR_ENV_02			camera	87	525002	6404702	525003	6404670	0	31	31	179	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
04-Apr-2023	16:50:47	1335	ECR_ENV_02			camera	87	525002	6404698	525003	6404670	-1	28	28	178	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
04-Apr-2023	16:51:16	1336	ECR_ENV_02			camera	87	525002	6404694	525003	6404670	0	23	23	179	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
04-Apr-2023	16:51:50	1337	ECR_ENV_02			camera	87	525001	6404692	525003	6404670	-2	21	21	176	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
04-Apr-2023	16:52:38	1338	ECR_ENV_02			camera	87	525002	6404689	525003	6404670	-1	19	19	178	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
04-Apr-2023	16:53:12	1339	ECR_ENV_02			camera	87	525002	6404686	525003	6404670	0	15	15	179	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
04-Apr-2023	16:53:43	1340	ECR_ENV_02			camera	87	525003	6404681	525003	6404670	1	11	11	-177	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
04-Apr-2023	16:54:43	1341	ECR_ENV_02			camera	87	525004	6404673	525003	6404670	1	3	3	-163	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
04-Apr-2023	16:54:58	1342	ECR_ENV_02			camera	87	525003	6404671	525003	6404670	0	0	1	-132	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
04-Apr-2023	16:55:29	1343	ECR_ENV_02			camera	87	525003	6404666	525003	6404670	0	-4	4	-6	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
04-Apr-2023	16:55:47	1344	ECR_ENV_02			camera	87	525002	6404663	525003	6404670	0	-7	7	2	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
04-Apr-2023	16:56:02	1345	ECR_ENV_02			camera	87	525002	6404662	525003	6404670	0	-9	9	3	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
04-Apr-2023	16:56:26	1346	ECR_ENV_02			camera	87	525004	6404660	525003	6404670	1	-10	10	-7	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
04-Apr-2023	16:56:49	1347	ECR_ENV_02			camera	87	525003	6404657	525003	6404670	0	-13	13	0	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
04-Apr-2023	16:57:17	1348	ECR_ENV_02			camera	87	525003	6404652	525003	6404670	0	-18	18	-1	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
04-Apr-2023	16:57:36	1349	ECR_ENV_02			camera	87	525003	6404651	525003	6404670	1	-19	19	-2	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Apr-2023	16:57:45	1350	ECR_ENV_02			camera	87	525004	6404650	525003	6404670	1	-20	20	-4	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
04-Apr-2023	16:58:00	1351	ECR_ENV_02			camera	87	525004	6404648	525003	6404670	1	-22	22	-2	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
04-Apr-2023	16:58:12	1352	ECR_ENV_02			camera	87	525003	6404646	525003	6404670	0	-24	24	0	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
04-Apr-2023	16:58:31	1353	ECR_ENV_02			camera	87	525004	6404643	525003	6404670	1	-28	28	-3	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
04-Apr-2023	16:58:51	1354	ECR_ENV_02			camera	87	525003	6404640	525003	6404670	0	-31	31	-1	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
04-Apr-2023	16:59:07	1355	ECR_ENV_02			camera	87	525003	6404638	525003	6404670	0	-32	32	-1	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
04-Apr-2023	16:59:16	1356	ECR_ENV_02			camera	87	525003	6404637	525003	6404670	1	-33	33	-1	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
04-Apr-2023	16:59:39	1357	ECR_ENV_02			camera	87	525004	6404634	525003	6404670	1	-36	36	-1	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
04-Apr-2023	17:00:00	1358	ECR_ENV_02			camera	87	525002	6404632	525003	6404670	-1	-38	38	1	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
04-Apr-2023	17:00:09	1359	ECR_ENV_02			camera	87	525001	6404630	525003	6404670	-1	-40	40	2	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
04-Apr-2023	17:00:16	1360	ECR_ENV_02			camera	87	525001	6404629	525003	6404670	-2	-41	41	2	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
04-Apr-2023	17:00:27	1361	ECR_ENV_02			camera	87	525002	6404627	525003	6404670	-1	-43	43	2	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
04-Apr-2023	17:00:42	1362	ECR_ENV_02			camera	87	525002	6404625	525003	6404670	0	-46	46	1	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
04-Apr-2023	17:01:00	1363	ECR_ENV_02			camera	87	525003	6404623	525003	6404670	0	-47	47	0	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
05-Apr-2023	00:07:08	1364	ECR_ENV_14			camera	69	528174	6404809	528139	6404768	36	41	54	-139	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
05-Apr-2023	00:07:18	1365	ECR_ENV_14			camera	69	528176	6404808	528139	6404768	37	39	54	-136	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
05-Apr-2023	00:07:38	1366	ECR_ENV_14			camera	69	528177	6404806	528139	6404768	38	38	54	-134	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
05-Apr-2023	00:07:43	1367	ECR_ENV_14			camera	68	528177	6404806	528139	6404768	39	37	53	-134	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
05-Apr-2023	00:08:01	1368	ECR_ENV_14			camera	69	528176	6404806	528139	6404768	38	38	53	-135	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
05-Apr-2023	00:08:36	1369	ECR_ENV_14			camera	68	528179	6404804	528139	6404768	40	36	54	-132	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
05-Apr-2023	00:08:44	1370	ECR_ENV_14			camera	68	528179	6404804	528139	6404768	40	35	53	-131	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
05-Apr-2023	00:08:51	1371	ECR_ENV_14			camera	68	528178	6404804	528139	6404768	39	36	53	-132	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
05-Apr-2023	00:09:18	1372	ECR_ENV_14			camera	68	528175	6404804	528139	6404768	37	35	51	-134	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
05-Apr-2023	00:09:53	1373	ECR_ENV_14			camera	68	528171	6404799	528139	6404768	32	31	44	-133	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
05-Apr-2023	00:09:57	1374	ECR_ENV_14			camera	68	528170	6404798	528139	6404768	32	30	44	-133	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
05-Apr-2023	00:10:06	1375	ECR_ENV_14			camera	68	528170	6404797	528139	6404768	31	28	42	-133	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
05-Apr-2023	00:10:36	1376	ECR_ENV_14			camera	68	528165	6404793	528139	6404768	26	25	36	-133	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
05-Apr-2023	00:11:08	1377	ECR_ENV_14			camera	68	528166	6404790	528139	6404768	27	22	35	-129	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
05-Apr-2023	00:11:17	1378	ECR_ENV_14			camera	68	528165	6404789	528139	6404768	26	21	34	-128	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
05-Apr-2023	00:11:31	1379	ECR_ENV_14			camera	68	528163	6404789	528139	6404768	25	21	32	-130	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
05-Apr-2023	00:12:02	1380	ECR_ENV_14			camera	67	528160	6404788	528139	6404768	21	19	29	-132	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
05-Apr-2023	00:12:13	1381	ECR_ENV_14			camera	67	528159	6404786	528139	6404768	20	18	27	-132	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
05-Apr-2023	00:13:06	1382	ECR_ENV_14			camera	67	528153	6404783	528139	6404768	15	14	20	-134	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
05-Apr-2023	00:13:13	1383	ECR_ENV_14			camera	67	528153	6404782	528139	6404768	14	13	19	-133	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
05-Apr-2023	00:13:33	1384	ECR_ENV_14			camera	67	528153	6404779	528139	6404768	14	10	18	-126	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
05-Apr-2023	00:13:44	1385	ECR_ENV_14			camera	67	528153	6404778	528139	6404768	14	9	17	-124	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
05-Apr-2023	00:13:53	1386	ECR_ENV_14			camera	67	528152	6404777	528139	6404768	13	8	15	-122	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
05-Apr-2023	00:14:05	1387	ECR_ENV_14			camera	67	528150	6404775	528139	6404768	11	6	13	-119	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	00:14:35	1388	ECR_ENV_14			camera	67	528148	6404771	528139	6404768	9	3	10	-107	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
05-Apr-2023	00:15:02	1389	ECR_ENV_14			camera	67	528146	6404772	528139	6404768	8	4	9	-116	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
05-Apr-2023	00:15:31	1390	ECR_ENV_14			camera	67	528143	6404769	528139	6404768	4	0	4	-93	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
05-Apr-2023	00:16:23	1391	ECR_ENV_14			camera	67	528139	6404766	528139	6404768	0	-3	3	-8	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
05-Apr-2023	00:16:39	1392	ECR_ENV_14			camera	67	528137	6404763	528139	6404768	-2	-5	5	20	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
05-Apr-2023	00:16:45	1393	ECR_ENV_14			camera	66	528136	6404763	528139	6404768	-3	-5	6	27	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
05-Apr-2023	00:17:08	1394	ECR_ENV_14			camera	67	528134	6404762	528139	6404768	-5	-6	8	36	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
05-Apr-2023	00:17:23	1395	ECR_ENV_14			camera	66	528132	6404759	528139	6404768	-6	-9	11	34	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
05-Apr-2023	00:18:10	1396	ECR_ENV_14			camera	67	528129	6404753	528139	6404768	-9	-15	18	32	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
05-Apr-2023	00:18:25	1397	ECR_ENV_14			camera	67	528128	6404750	528139	6404768	-11	-18	21	32	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
05-Apr-2023	00:18:41	1398	ECR_ENV_14			camera	67	528126	6404749	528139	6404768	-13	-19	23	34	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
05-Apr-2023	00:19:30	1399	ECR_ENV_14			camera	67	528123	6404746	528139	6404768	-16	-22	27	36	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
05-Apr-2023	00:19:40	1400	ECR_ENV_14			camera	67	528121	6404744	528139	6404768	-17	-24	30	36	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
05-Apr-2023	00:20:35	1401	ECR_ENV_14			camera	67	528116	6404741	528139	6404768	-23	-27	36	40	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
05-Apr-2023	00:20:57	1402	ECR_ENV_14			camera	67	528113	6404740	528139	6404768	-26	-28	38	43	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
05-Apr-2023	00:21:27	1403	ECR_ENV_14			camera	67	528108	6404737	528139	6404768	-31	-31	44	44	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
05-Apr-2023	00:21:49	1404	ECR_ENV_14			camera	67	528107	6404734	528139	6404768	-32	-34	47	43	PL	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
05-Apr-2023	00:22:01	1405	ECR_ENV_14			camera	67	528106	6404732	528139	6404768	-33	-37	49	42	PL	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
05-Apr-2023	02:49:00	1406	ECR_ENV_35			camera	77	528926	6405462	528927	6405414	-1	49	49	179	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
05-Apr-2023	02:50:04	1407	ECR_ENV_35			camera	77	528922	6405463	528927	6405414	-4	49	50	175	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
05-Apr-2023	02:50:46	1408	ECR_ENV_35			camera	77	528924	6405457	528927	6405414	-3	44	44	177	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
05-Apr-2023	02:50:56	1409	ECR_ENV_35			camera	77	528924	6405456	528927	6405414	-2	42	42	177	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
05-Apr-2023	02:51:15	1410	ECR_ENV_35			camera	77	528927	6405453	528927	6405414	1	39	39	-179	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
05-Apr-2023	02:51:22	1411	ECR_ENV_35			camera	77	528927	6405451	528927	6405414	1	38	38	-179	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
05-Apr-2023	02:51:36	1412	ECR_ENV_35			camera	77	528928	6405448	528927	6405414	1	34	34	-178	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
05-Apr-2023	02:51:45	1413	ECR_ENV_35			camera	77	528928	6405446	528927	6405414	2	32	32	-177	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
05-Apr-2023	02:51:59	1414	ECR_ENV_35			camera	77	528929	6405444	528927	6405414	3	30	30	-175	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
05-Apr-2023	02:52:14	1415	ECR_ENV_35			camera	77	528933	6405442	528927	6405414	7	28	29	-167	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
05-Apr-2023	02:53:12	1416	ECR_ENV_35			camera	77	528929	6405439	528927	6405414	2	25	25	-175	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
05-Apr-2023	02:53:20	1417	ECR_ENV_35			camera	77	528928	6405437	528927	6405414	1	23	23	-177	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
05-Apr-2023	02:54:44	1418	ECR_ENV_35			camera	77	528929	6405423	528927	6405414	3	10	10	-165	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
05-Apr-2023	02:55:27	1419	ECR_ENV_35			camera	77	528926	6405422	528927	6405414	-1	9	9	175	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
05-Apr-2023	02:55:55	1420	ECR_ENV_35			camera	76	528927	6405417	528927	6405414	1	3	3	-168	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
05-Apr-2023	02:56:15	1421	ECR_ENV_35			camera	76	528926	6405413	528927	6405414	-1	-1	1	42	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
05-Apr-2023	02:56:21	1422	ECR_ENV_35			camera	76	528926	6405411	528927	6405414	0	-2	2	5	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
05-Apr-2023	02:56:28	1423	ECR_ENV_35			camera	76	528927	6405410	528927	6405414	1	-4	4	-12	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
05-Apr-2023	02:56:34	1424	ECR_ENV_35			camera	76	528928	6405409	528927	6405414	2	-5	5	-18	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
05-Apr-2023	02:57:17	1425	ECR_ENV_35			camera	76	528924	6405404	528927	6405414	-3	-9	10	17	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	02:57:52	1426	ECR_ENV_35			camera	76	528926	6405398	528927	6405414	-1	-15	15	2	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
05-Apr-2023	02:58:13	1427	ECR_ENV_35			camera	76	528926	6405393	528927	6405414	-1	-20	20	3	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
05-Apr-2023	02:58:39	1428	ECR_ENV_35			camera	76	528926	6405390	528927	6405414	-1	-23	23	2	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
05-Apr-2023	02:59:14	1429	ECR_ENV_35			camera	76	528926	6405383	528927	6405414	-1	-31	31	2	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
05-Apr-2023	02:59:22	1430	ECR_ENV_35			camera	76	528926	6405381	528927	6405414	-1	-33	33	1	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
05-Apr-2023	02:59:45	1431	ECR_ENV_35			camera	76	528926	6405377	528927	6405414	-1	-37	37	1	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
05-Apr-2023	02:59:50	1432	ECR_ENV_35			camera	76	528926	6405376	528927	6405414	0	-38	38	1	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
05-Apr-2023	02:59:57	1433	ECR_ENV_35			camera	76	528926	6405375	528927	6405414	0	-39	39	0	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
05-Apr-2023	03:00:05	1434	ECR_ENV_35			camera	76	528927	6405373	528927	6405414	0	-41	41	0	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
05-Apr-2023	03:00:09	1435	ECR_ENV_35			camera	76	528926	6405372	528927	6405414	0	-42	42	0	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
05-Apr-2023	03:00:15	1436	ECR_ENV_35			camera	76	528926	6405371	528927	6405414	-1	-43	43	1	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
05-Apr-2023	03:00:20	1437	ECR_ENV_35			camera	76	528925	6405370	528927	6405414	-1	-44	44	2	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
05-Apr-2023	03:00:26	1438	ECR_ENV_35			camera	76	528925	6405369	528927	6405414	-2	-45	45	2	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
05-Apr-2023	03:00:32	1439	ECR_ENV_35			camera	76	528925	6405368	528927	6405414	-1	-46	46	2	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
05-Apr-2023	03:00:39	1440	ECR_ENV_35			camera	76	528926	6405367	528927	6405414	-1	-47	47	1	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
05-Apr-2023	03:00:45	1441	ECR_ENV_35			camera	76	528926	6405366	528927	6405414	-1	-48	48	1	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
05-Apr-2023	03:00:56	1442	ECR_ENV_35			camera	76	528926	6405365	528927	6405414	0	-49	49	0	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
05-Apr-2023	05:01:42	1443	ECR_ENV_12			camera	90	527239	6406254	527238	6406199	0	56	56	-180	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
05-Apr-2023	05:02:47	1444	ECR_ENV_12			camera	90	527231	6406254	527238	6406199	-7	55	56	173	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
05-Apr-2023	05:03:17	1445	ECR_ENV_12			camera	90	527233	6406254	527238	6406199	-5	55	55	175	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
05-Apr-2023	05:03:35	1446	ECR_ENV_12			camera	90	527231	6406251	527238	6406199	-8	53	53	172	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
05-Apr-2023	05:04:01	1447	ECR_ENV_12			camera	90	527230	6406247	527238	6406199	-8	49	50	170	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
05-Apr-2023	05:04:35	1448	ECR_ENV_12			camera	90	527231	6406243	527238	6406199	-7	44	45	171	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
05-Apr-2023	05:05:05	1449	ECR_ENV_12			camera	90	527232	6406239	527238	6406199	-6	40	41	171	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
05-Apr-2023	05:05:19	1450	ECR_ENV_12			camera	90	527233	6406237	527238	6406199	-5	38	39	173	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
05-Apr-2023	05:05:32	1451	ECR_ENV_12			camera	90	527234	6406236	527238	6406199	-5	37	37	173	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
05-Apr-2023	05:05:54	1452	ECR_ENV_12			camera	89	527234	6406233	527238	6406199	-5	34	35	172	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
05-Apr-2023	05:06:17	1453	ECR_ENV_12			camera	89	527234	6406230	527238	6406199	-4	31	31	172	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
05-Apr-2023	05:06:44	1454	ECR_ENV_12			camera	90	527234	6406226	527238	6406199	-4	27	28	171	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
05-Apr-2023	05:07:00	1455	ECR_ENV_12			camera	89	527233	6406224	527238	6406199	-5	25	26	169	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
05-Apr-2023	05:07:25	1456	ECR_ENV_12			camera	89	527232	6406220	527238	6406199	-6	21	22	165	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
05-Apr-2023	05:07:39	1457	ECR_ENV_12			camera	89	527231	6406219	527238	6406199	-7	20	21	161	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
05-Apr-2023	05:07:53	1458	ECR_ENV_12			camera	89	527231	6406217	527238	6406199	-8	19	20	158	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
05-Apr-2023	05:08:00	1459	ECR_ENV_12			camera	89	527231	6406216	527238	6406199	-8	18	19	157	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
05-Apr-2023	05:08:43	1460	ECR_ENV_12			camera	89	527232	6406210	527238	6406199	-6	12	13	154	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
05-Apr-2023	05:08:50	1461	ECR_ENV_12			camera	89	527232	6406210	527238	6406199	-6	11	13	151	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
05-Apr-2023	05:09:15	1462	ECR_ENV_12			camera	89	527233	6406207	527238	6406199	-5	9	10	148	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
05-Apr-2023	05:09:27	1463	ECR_ENV_12			camera	89	527234	6406205	527238	6406199	-4	7	8	148	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	05:09:46	1464	ECR_ENV_12			camera	89	527235	6406203	527238	6406199	-3	5	5	147	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
05-Apr-2023	05:10:21	1465	ECR_ENV_12			camera	89	527237	6406201	527238	6406199	-2	3	3	150	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
05-Apr-2023	05:10:42	1466	ECR_ENV_12			camera	89	527237	6406198	527238	6406199	-1	-1	1	68	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
05-Apr-2023	05:11:17	1467	ECR_ENV_12			camera	89	527238	6406193	527238	6406199	0	-5	5	3	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
05-Apr-2023	05:11:36	1468	ECR_ENV_12			camera	89	527237	6406191	527238	6406199	-2	-8	8	12	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
05-Apr-2023	05:11:58	1469	ECR_ENV_12			camera	89	527237	6406188	527238	6406199	-1	-11	11	4	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
05-Apr-2023	05:12:23	1470	ECR_ENV_12			camera	89	527237	6406186	527238	6406199	-1	-13	13	4	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
05-Apr-2023	05:12:48	1471	ECR_ENV_12			camera	89	527239	6406183	527238	6406199	1	-15	15	-4	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
05-Apr-2023	05:13:29	1472	ECR_ENV_12			camera	89	527239	6406179	527238	6406199	1	-20	20	-3	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
05-Apr-2023	05:13:43	1473	ECR_ENV_12			camera	89	527239	6406178	527238	6406199	1	-21	21	-2	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
05-Apr-2023	05:14:03	1474	ECR_ENV_12			camera	89	527238	6406174	527238	6406199	0	-24	24	0	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
05-Apr-2023	05:14:17	1475	ECR_ENV_12			camera	89	527238	6406172	527238	6406199	0	-26	26	1	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
05-Apr-2023	05:14:38	1476	ECR_ENV_12			camera	89	527237	6406171	527238	6406199	-1	-28	28	3	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
05-Apr-2023	05:14:58	1477	ECR_ENV_12			camera	89	527236	6406168	527238	6406199	-2	-31	31	4	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
05-Apr-2023	05:15:26	1478	ECR_ENV_12			camera	89	527235	6406164	527238	6406199	-3	-35	35	5	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
05-Apr-2023	05:15:49	1479	ECR_ENV_12			camera	89	527236	6406160	527238	6406199	-2	-39	39	3	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
05-Apr-2023	05:15:57	1480	ECR_ENV_12			camera	89	527236	6406159	527238	6406199	-2	-39	39	3	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
05-Apr-2023	05:16:33	1481	ECR_ENV_12			camera	89	527239	6406156	527238	6406199	0	-43	43	-1	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
05-Apr-2023	05:16:53	1482	ECR_ENV_12			camera	89	527239	6406154	527238	6406199	1	-45	45	-1	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
05-Apr-2023	13:32:43	1483	ECR_ENV_24			camera	91	526068	6407712	526032	6407680	37	32	49	-131	SG	(Raw Nav, Kongsberg 14208, img#1) (V)
05-Apr-2023	13:32:54	1484	ECR_ENV_24			camera	91	526067	6407712	526032	6407680	36	32	48	-132	SG	(Raw Nav, Kongsberg 14208, img#2) (V)
05-Apr-2023	13:36:09	1485	ECR_ENV_24			camera	91	526062	6407710	526032	6407680	31	30	43	-135	SG	(Raw Nav, Kongsberg 14208, img#3) (V)
05-Apr-2023		1486	ECR_ENV_24			camera										SG	Lost connection with EELS, Photo but no Fix taken
05-Apr-2023		1487	ECR_ENV_24			camera										SG	Lost connection with EELS, Photo but no Fix taken
05-Apr-2023		1488	ECR_ENV_24			camera										SG	Lost connection with EELS, Photo but no Fix taken
05-Apr-2023	13:37:31	1489	ECR_ENV_24			camera	93	526058	6407701	526032	6407680	27	21	34	-128	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V)
05-Apr-2023	13:37:39	1490	ECR_ENV_24			camera	93	526058	6407700	526032	6407680	27	20	33	-127	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V)
05-Apr-2023	13:37:57	1491	ECR_ENV_24			camera	93	526056	6407697	526032	6407680	25	17	30	-124	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V)
05-Apr-2023	13:38:12	1492	ECR_ENV_24			camera	93	526053	6407694	526032	6407680	22	14	26	-123	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V)
05-Apr-2023	13:38:32	1493	ECR_ENV_24			camera	93	526051	6407694	526032	6407680	20	14	24	-125	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V)
05-Apr-2023	13:38:47	1494	ECR_ENV_24			camera	93	526049	6407691	526032	6407680	17	11	20	-123	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V)
05-Apr-2023	13:39:03	1495	ECR_ENV_24			camera	93	526046	6407688	526032	6407680	14	8	17	-120	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V)
05-Apr-2023	13:39:21	1496	ECR_ENV_24			camera	92	526044	6407688	526032	6407680	12	8	15	-124	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V)
05-Apr-2023	13:39:38	1497	ECR_ENV_24			camera	93	526042	6407688	526032	6407680	10	8	13	-127	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V)
05-Apr-2023	13:40:02	1498	ECR_ENV_24			camera	93	526040	6407683	526032	6407680	9	3	9	-111	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V)
05-Apr-2023	13:40:15	1499	ECR_ENV_24			camera	93	526038	6407682	526032	6407680	7	3	7	-110	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V)
05-Apr-2023	13:40:33	1500	ECR_ENV_24			camera	93	526036	6407684	526032	6407680	4	4	6	-131	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V)
05-Apr-2023	13:40:50	1501	ECR_ENV_24			camera	93	526034	6407683	526032	6407680	3	3	4	-140	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	13:41:05	1502	ECR_ENV_24			camera	92	526033	6407681	526032	6407680	2	1	2	-124	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V)
05-Apr-2023	13:41:17	1503	ECR_ENV_24			camera	93	526032	6407680	526032	6407680	0	0	1	-128	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V)
05-Apr-2023	13:41:41	1504	ECR_ENV_24			camera	93	526031	6407677	526032	6407680	-1	-3	3	13	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V)
05-Apr-2023	13:42:03	1505	ECR_ENV_24			camera	92	526029	6407674	526032	6407680	-3	-6	6	27	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V)
05-Apr-2023	13:42:20	1506	ECR_ENV_24			camera	92	526028	6407673	526032	6407680	-4	-7	8	28	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V)
05-Apr-2023	13:42:32	1507	ECR_ENV_24			camera	93	526028	6407670	526032	6407680	-4	-10	10	22	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V)
05-Apr-2023	13:42:50	1508	ECR_ENV_24			camera	93	526025	6407666	526032	6407680	-6	-14	15	24	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V)
05-Apr-2023	13:42:59	1509	ECR_ENV_24			camera	93	526024	6407664	526032	6407680	-8	-16	17	26	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V)
05-Apr-2023	13:43:08	1510	ECR_ENV_24			camera	93	526023	6407663	526032	6407680	-9	-17	19	27	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V)
05-Apr-2023	13:43:17	1511	ECR_ENV_24			camera	93	526021	6407661	526032	6407680	-10	-19	22	28	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V)
05-Apr-2023	13:43:26	1512	ECR_ENV_24			camera	93	526020	6407660	526032	6407680	-11	-20	23	29	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V)
05-Apr-2023	13:43:37	1513	ECR_ENV_24			camera	93	526019	6407658	526032	6407680	-13	-22	25	30	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V)
05-Apr-2023	13:44:02	1514	ECR_ENV_24			camera	92	526016	6407659	526032	6407680	-15	-21	26	36	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V)
05-Apr-2023	13:44:09	1515	ECR_ENV_24			camera	93	526015	6407659	526032	6407680	-16	-21	26	37	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V)
05-Apr-2023	13:44:18	1516	ECR_ENV_24			camera	92	526014	6407659	526032	6407680	-17	-21	27	39	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V)
05-Apr-2023	13:44:32	1517	ECR_ENV_24			camera	92	526012	6407659	526032	6407680	-19	-21	28	42	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V)
05-Apr-2023	13:44:45	1518	ECR_ENV_24			camera	92	526010	6407659	526032	6407680	-21	-21	30	46	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V)
05-Apr-2023	13:45:00	1519	ECR_ENV_24			camera	92	526008	6407658	526032	6407680	-23	-22	32	47	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V)
05-Apr-2023	13:45:19	1520	ECR_ENV_24			camera	92	526009	6407655	526032	6407680	-23	-26	34	42	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V)
05-Apr-2023	13:45:29	1521	ECR_ENV_24			camera	92	526008	6407652	526032	6407680	-23	-28	36	40	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V)
05-Apr-2023	13:45:37	1522	ECR_ENV_24			camera	93	526008	6407651	526032	6407680	-24	-29	38	39	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V)
05-Apr-2023	13:45:55	1523	ECR_ENV_24			camera	91	526007	6407648	526032	6407680	-25	-32	41	37	SG	(Corr'd Nav, Kongsberg 14208, img#41) (V)
05-Apr-2023	13:46:11	1524	ECR_ENV_24			camera	91	526005	6407645	526032	6407680	-26	-35	44	37	SG	(Corr'd Nav, Kongsberg 14208, img#42) (V)
05-Apr-2023	13:46:28	1525	ECR_ENV_24			camera	93	526003	6407643	526032	6407680	-29	-37	47	38	SG	(Corr'd Nav, Kongsberg 14208, img#43) (V)
05-Apr-2023	16:06:44	1526	ECR_ENV_09			camera	87	524421	6407923	524422	6407875	-1	48	48	178	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
05-Apr-2023	16:06:58	1527	ECR_ENV_09			camera	87	524422	6407926	524422	6407875	0	52	52	180	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
05-Apr-2023	16:07:18	1528	ECR_ENV_09			camera	87	524424	6407926	524422	6407875	2	51	51	-178	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
05-Apr-2023	16:07:48	1529	ECR_ENV_09			camera	87	524425	6407922	524422	6407875	3	47	47	-176	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
05-Apr-2023	16:08:06	1530	ECR_ENV_09			camera	87	524424	6407919	524422	6407875	2	44	44	-178	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
05-Apr-2023	16:08:28	1531	ECR_ENV_09			camera	87	524423	6407915	524422	6407875	1	41	41	-179	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
05-Apr-2023	16:08:48	1532	ECR_ENV_09			camera	87	524424	6407912	524422	6407875	2	38	37	-177	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
05-Apr-2023	16:09:08	1533	ECR_ENV_09			camera	87	524423	6407911	524422	6407875	1	36	36	-179	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
05-Apr-2023	16:09:30	1534	ECR_ENV_09			camera	87	524420	6407906	524422	6407875	-2	31	31	176	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
05-Apr-2023	16:09:46	1535	ECR_ENV_09			camera	87	524419	6407903	524422	6407875	-3	28	28	174	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
05-Apr-2023	16:09:53	1536	ECR_ENV_09			camera	87	524419	6407902	524422	6407875	-3	27	27	174	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
05-Apr-2023	16:10:02	1537	ECR_ENV_09			camera	87	524420	6407901	524422	6407875	-3	26	26	174	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
05-Apr-2023	16:10:12	1538	ECR_ENV_09			camera	87	524420	6407898	524422	6407875	-2	23	23	176	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
05-Apr-2023	16:10:27	1539	ECR_ENV_09			camera	87	524421	6407893	524422	6407875	-1	18	18	178	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	16:10:37	1540	ECR_ENV_09			camera	87	524422	6407891	524422	6407875	0	16	16	-179	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
05-Apr-2023	16:11:01	1541	ECR_ENV_09			camera	87	524423	6407888	524422	6407875	0	13	13	-178	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
05-Apr-2023	16:11:12	1542	ECR_ENV_09			camera	87	524422	6407884	524422	6407875	0	10	10	-179	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
05-Apr-2023	16:11:23	1543	ECR_ENV_09			camera	86	524422	6407881	524422	6407875	0	6	6	179	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
05-Apr-2023	16:11:38	1544	ECR_ENV_09			camera	86	524422	6407875	524422	6407875	0	1	1	180	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
05-Apr-2023	16:11:46	1545	ECR_ENV_09			camera	86	524422	6407874	524422	6407875	0	-1	1	-3	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
05-Apr-2023	16:11:56	1546	ECR_ENV_09			camera	86	524422	6407873	524422	6407875	0	-2	2	8	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
05-Apr-2023	16:12:06	1547	ECR_ENV_09			camera	87	524422	6407872	524422	6407875	0	-3	3	9	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
05-Apr-2023	16:12:18	1548	ECR_ENV_09			camera	87	524423	6407870	524422	6407875	1	-4	5	-8	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
05-Apr-2023	16:12:27	1549	ECR_ENV_09			camera	86	524423	6407869	524422	6407875	1	-6	6	-12	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
05-Apr-2023	16:12:41	1550	ECR_ENV_09			camera	86	524423	6407866	524422	6407875	1	-9	9	-5	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
05-Apr-2023	16:12:47	1551	ECR_ENV_09			camera	86	524422	6407865	524422	6407875	0	-10	10	-2	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
05-Apr-2023	16:12:56	1552	ECR_ENV_09			camera	86	524423	6407863	524422	6407875	1	-12	12	-4	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
05-Apr-2023	16:13:06	1553	ECR_ENV_09			camera	86	524424	6407861	524422	6407875	2	-14	14	-10	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
05-Apr-2023	16:13:16	1554	ECR_ENV_09			camera	86	524425	6407860	524422	6407875	3	-15	15	-12	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
05-Apr-2023	16:13:43	1555	ECR_ENV_09			camera	86	524422	6407857	524422	6407875	0	-18	18	1	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
05-Apr-2023	16:13:54	1556	ECR_ENV_09			camera	86	524422	6407854	524422	6407875	0	-21	21	1	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
05-Apr-2023	16:14:09	1557	ECR_ENV_09			camera	86	524421	6407851	524422	6407875	-1	-24	24	3	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
05-Apr-2023	16:14:15	1558	ECR_ENV_09			camera	86	524421	6407851	524422	6407875	-1	-24	24	3	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
05-Apr-2023	16:14:33	1559	ECR_ENV_09			camera	86	524421	6407848	524422	6407875	-1	-27	27	3	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
05-Apr-2023	16:14:49	1560	ECR_ENV_09			camera	86	524422	6407844	524422	6407875	0	-31	31	0	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
05-Apr-2023	16:14:57	1561	ECR_ENV_09			camera	86	524423	6407843	524422	6407875	1	-32	32	-1	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
05-Apr-2023	16:15:06	1562	ECR_ENV_09			camera	86	524423	6407841	524422	6407875	1	-34	34	-1	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
05-Apr-2023	16:15:25	1563	ECR_ENV_09			camera	86	524422	6407839	524422	6407875	0	-36	36	0	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
05-Apr-2023	16:15:54	1564	ECR_ENV_09			camera	86	524421	6407834	524422	6407875	-1	-41	41	2	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
05-Apr-2023	16:16:22	1565	ECR_ENV_09			camera	86	524420	6407828	524422	6407875	-2	-47	47	2	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
05-Apr-2023	17:49:29	1566	ECR_ENV_27			camera	89	527894	6408311	527955	6408300	-61	11	62	100	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
05-Apr-2023	17:49:58	1567	ECR_ENV_27			camera	89	527896	6408311	527955	6408300	-59	11	60	100	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
05-Apr-2023	17:50:10	1568	ECR_ENV_27			camera	89	527898	6408311	527955	6408300	-57	10	58	100	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
05-Apr-2023	17:50:19	1569	ECR_ENV_27			camera	89	527900	6408310	527955	6408300	-56	10	57	100	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
05-Apr-2023	17:51:09	1570	ECR_ENV_27			camera	89	527905	6408308	527955	6408300	-51	8	51	99	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
05-Apr-2023	17:51:31	1571	ECR_ENV_27			camera	89	527908	6408307	527955	6408300	-47	7	48	98	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
05-Apr-2023	17:51:50	1572	ECR_ENV_27			camera	89	527910	6408308	527955	6408300	-45	7	46	99	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
05-Apr-2023	17:52:15	1573	ECR_ENV_27			camera	89	527915	6408309	527955	6408300	-41	8	41	102	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
05-Apr-2023	17:52:27	1574	ECR_ENV_27			camera	89	527916	6408309	527955	6408300	-39	9	40	103	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
05-Apr-2023	17:52:46	1575	ECR_ENV_27			camera	89	527919	6408309	527955	6408300	-37	9	37	103	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
05-Apr-2023	17:53:08	1576	ECR_ENV_27			camera	89	527922	6408309	527955	6408300	-33	8	34	104	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
05-Apr-2023	17:53:20	1577	ECR_ENV_27			camera	89	527925	6408308	527955	6408300	-30	8	31	105	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463				Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2				Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84		Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	17:53:44	1578	ECR_ENV_27			camera	89	527928	6408309	527955	6408300	-28	9	29	108	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
05-Apr-2023	17:53:50	1579	ECR_ENV_27			camera	89	527928	6408309	527955	6408300	-27	9	28	108	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
05-Apr-2023	17:54:14	1580	ECR_ENV_27			camera	89	527931	6408307	527955	6408300	-24	7	25	106	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
05-Apr-2023	17:54:32	1581	ECR_ENV_27			camera	89	527934	6408307	527955	6408300	-22	6	23	106	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
05-Apr-2023	17:54:55	1582	ECR_ENV_27			camera	89	527937	6408306	527955	6408300	-18	6	19	108	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
05-Apr-2023	17:55:14	1583	ECR_ENV_27			camera	89	527939	6408306	527955	6408300	-16	6	17	111	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A) # No photo taken
05-Apr-2023	17:55:26	1584	ECR_ENV_27			camera	89	527941	6408306	527955	6408300	-14	6	15	112	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A) # No photo taken
05-Apr-2023	17:55:48	1585	ECR_ENV_27			camera	89	527944	6408306	527955	6408300	-11	5	12	116	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
05-Apr-2023	17:56:16	1586	ECR_ENV_27			camera	89	527948	6408303	527955	6408300	-7	3	8	112	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
05-Apr-2023	17:56:29	1587	ECR_ENV_27			camera	89	527949	6408303	527955	6408300	-6	3	7	115	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
05-Apr-2023	17:56:46	1588	ECR_ENV_27			camera	89	527952	6408303	527955	6408300	-3	2	4	126	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
05-Apr-2023	17:57:01	1589	ECR_ENV_27			camera	89	527954	6408303	527955	6408300	-1	3	3	157	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
05-Apr-2023	17:57:19	1590	ECR_ENV_27			camera	89	527956	6408305	527955	6408300	1	4	4	-169	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
05-Apr-2023	17:57:52	1591	ECR_ENV_27			camera	89	527960	6408302	527955	6408300	5	2	5	-115	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
05-Apr-2023	17:58:16	1592	ECR_ENV_27			camera	89	527964	6408302	527955	6408300	9	2	9	-103	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
05-Apr-2023	17:58:44	1593	ECR_ENV_27			camera	89	527967	6408301	527955	6408300	12	1	12	-95	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
05-Apr-2023	17:59:04	1594	ECR_ENV_27			camera	89	527971	6408299	527955	6408300	16	-1	16	-86	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
05-Apr-2023	17:59:23	1595	ECR_ENV_27			camera	89	527977	6408298	527955	6408300	22	-2	22	-84	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
05-Apr-2023	17:59:38	1596	ECR_ENV_27			camera	89	527980	6408298	527955	6408300	25	-3	25	-84	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
05-Apr-2023	17:59:51	1597	ECR_ENV_27			camera	89	527981	6408298	527955	6408300	26	-2	26	-85	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
05-Apr-2023	18:00:07	1598	ECR_ENV_27			camera	89	527982	6408299	527955	6408300	27	-2	27	-87	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
05-Apr-2023	18:00:26	1599	ECR_ENV_27			camera	89	527986	6408299	527955	6408300	31	-1	31	-88	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
05-Apr-2023	18:00:37	1600	ECR_ENV_27			camera	89	527988	6408299	527955	6408300	32	-1	32	-88	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
05-Apr-2023	18:00:52	1601	ECR_ENV_27			camera	89	527989	6408300	527955	6408300	34	0	34	-89	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
05-Apr-2023	18:01:07	1602	ECR_ENV_27			camera	89	527991	6408301	527955	6408300	36	0	36	-91	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
05-Apr-2023	18:01:28	1603	ECR_ENV_27			camera	89	527994	6408301	527955	6408300	39	1	39	-91	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
05-Apr-2023	18:01:50	1604	ECR_ENV_27			camera	89	527997	6408302	527955	6408300	41	2	42	-93	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
05-Apr-2023	18:02:02	1605	ECR_ENV_27			camera	89	527998	6408302	527955	6408300	43	2	43	-92	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
05-Apr-2023	18:02:11	1606	ECR_ENV_27			camera	89	528000	6408302	527955	6408300	45	1	45	-91	SG	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
05-Apr-2023	18:02:25	1607	ECR_ENV_27			camera	89	528002	6408300	527955	6408300	47	0	47	-90	SG	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
05-Apr-2023	18:02:33	1608	ECR_ENV_27			camera	89	528003	6408300	527955	6408300	48	0	48	-90	SG	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
05-Apr-2023	21:01:55	1609	ECR_ENV_04			camera	81	526471	6410874	526524	6410862	-53	11	54	102	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
05-Apr-2023	21:02:22	1610	ECR_ENV_04			camera	81	526470	6410871	526524	6410862	-54	8	54	99	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
05-Apr-2023	21:03:08	1611	ECR_ENV_04			camera	81	526474	6410864	526524	6410862	-50	1	50	91	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
05-Apr-2023	21:03:25	1612	ECR_ENV_04			camera	81	526477	6410862	526524	6410862	-47	-1	47	89	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
05-Apr-2023	21:03:50	1613	ECR_ENV_04			camera	81	526480	6410861	526524	6410862	-44	-2	44	88	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
05-Apr-2023	21:04:08	1614	ECR_ENV_04			camera	81	526482	6410861	526524	6410862	-42	-1	42	88	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463				Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2				Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84		Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	21:04:29	1615	ECR_ENV_04			camera	81	526485	6410862	526524	6410862	-39	-1	39	89	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
05-Apr-2023	21:04:58	1616	ECR_ENV_04			camera	81	526488	6410862	526524	6410862	-36	0	35	90	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
05-Apr-2023	21:05:22	1617	ECR_ENV_04			camera	81	526491	6410863	526524	6410862	-33	0	33	91	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
05-Apr-2023	21:05:33	1618	ECR_ENV_04			camera	81	526492	6410863	526524	6410862	-32	0	31	91	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
05-Apr-2023	21:06:01	1619	ECR_ENV_04			camera	81	526496	6410862	526524	6410862	-28	0	28	89	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
05-Apr-2023	21:06:57	1620	ECR_ENV_04			camera	81	526501	6410860	526524	6410862	-23	-2	23	85	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
05-Apr-2023	21:07:24	1621	ECR_ENV_04			camera	81	526504	6410862	526524	6410862	-20	0	20	89	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
05-Apr-2023	21:07:43	1622	ECR_ENV_04			camera	81	526506	6410863	526524	6410862	-18	1	18	92	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
05-Apr-2023	21:08:29	1623	ECR_ENV_04			camera	81	526510	6410860	526524	6410862	-14	-3	14	79	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
05-Apr-2023	21:09:04	1624	ECR_ENV_04			camera	81	526513	6410860	526524	6410862	-11	-3	11	76	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
05-Apr-2023	21:09:34	1625	ECR_ENV_04			camera	81	526516	6410861	526524	6410862	-7	-1	7	82	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
05-Apr-2023	21:09:48	1626	ECR_ENV_04			camera	81	526518	6410862	526524	6410862	-6	0	6	87	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
05-Apr-2023	21:10:03	1627	ECR_ENV_04			camera	81	526520	6410862	526524	6410862	-4	0	4	88	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
05-Apr-2023	21:10:20	1628	ECR_ENV_04			camera	81	526522	6410863	526524	6410862	-2	0	2	95	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
05-Apr-2023	21:10:28	1629	ECR_ENV_04			camera	81	526523	6410863	526524	6410862	-1	0	1	113	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
05-Apr-2023	21:10:39	1630	ECR_ENV_04			camera	81	526524	6410863	526524	6410862	0	1	1	-161	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
05-Apr-2023	21:11:13	1631	ECR_ENV_04			camera	81	526528	6410863	526524	6410862	4	1	4	-98	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
05-Apr-2023	21:11:25	1632	ECR_ENV_04			camera	81	526529	6410863	526524	6410862	5	1	5	-96	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
05-Apr-2023	21:11:44	1633	ECR_ENV_04			camera	81	526531	6410863	526524	6410862	7	1	7	-94	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
05-Apr-2023	21:12:06	1634	ECR_ENV_04			camera	81	526534	6410862	526524	6410862	10	-1	10	-85	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
05-Apr-2023	21:12:29	1635	ECR_ENV_04			camera	81	526537	6410861	526524	6410862	13	-2	13	-83	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
05-Apr-2023	21:12:50	1636	ECR_ENV_04			camera	81	526540	6410860	526524	6410862	16	-2	16	-82	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
05-Apr-2023	21:13:10	1637	ECR_ENV_04			camera	81	526543	6410861	526524	6410862	19	-2	19	-85	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
05-Apr-2023	21:13:18	1638	ECR_ENV_04			camera	81	526544	6410861	526524	6410862	20	-2	20	-86	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
05-Apr-2023	21:13:32	1639	ECR_ENV_04			camera	81	526546	6410862	526524	6410862	23	-1	23	-88	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
05-Apr-2023	21:13:42	1640	ECR_ENV_04			camera	81	526548	6410862	526524	6410862	24	0	24	-90	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
05-Apr-2023	21:14:04	1641	ECR_ENV_04			camera	81	526550	6410864	526524	6410862	27	2	27	-94	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
05-Apr-2023	21:14:12	1642	ECR_ENV_04			camera	81	526551	6410864	526524	6410862	28	2	28	-94	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
05-Apr-2023	21:14:24	1643	ECR_ENV_04			camera	81	526553	6410864	526524	6410862	29	2	29	-94	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
05-Apr-2023	21:14:42	1644	ECR_ENV_04			camera	81	526555	6410863	526524	6410862	31	1	31	-91	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
05-Apr-2023	21:14:53	1645	ECR_ENV_04			camera	81	526556	6410863	526524	6410862	32	0	32	-90	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
05-Apr-2023	21:15:05	1646	ECR_ENV_04			camera	81	526558	6410862	526524	6410862	34	0	34	-90	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
05-Apr-2023	21:15:17	1647	ECR_ENV_04			camera	81	526560	6410862	526524	6410862	36	0	36	-89	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
05-Apr-2023	21:15:28	1648	ECR_ENV_04			camera	81	526561	6410862	526524	6410862	37	-1	37	-89	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
05-Apr-2023	21:15:36	1649	ECR_ENV_04			camera	81	526562	6410861	526524	6410862	39	-1	38	-88	SG	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
05-Apr-2023	21:15:52	1650	ECR_ENV_04			camera	81	526565	6410861	526524	6410862	41	-2	41	-88	SG	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
05-Apr-2023	21:16:08	1651	ECR_ENV_04			camera	81	526567	6410860	526524	6410862	43	-2	43	-87	SG	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
05-Apr-2023	21:16:22	1652	ECR_ENV_04			camera	81	526569	6410860	526524	6410862	45	-2	45	-87	SG	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	21:16:36	1653	ECR_ENV_04			camera	81	526571	6410860	526524	6410862	47	-3	47	-87	SG	(Corr'd Nav, Kongsberg 14208, img#45) (V) (T.A)
05-Apr-2023	22:49:44	1654	ECR_ENV_19			camera	76	526319	6412242	526293	6412287	26	-45	52	-30	SG	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
05-Apr-2023	22:50:18	1655	ECR_ENV_19			camera	76	526317	6412246	526293	6412287	24	-41	47	-31	SG	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
05-Apr-2023	22:50:40	1656	ECR_ENV_19			camera	76	526316	6412248	526293	6412287	22	-39	45	-30	SG	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
05-Apr-2023	22:50:54	1657	ECR_ENV_19			camera	76	526314	6412249	526293	6412287	21	-38	43	-29	SG	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
05-Apr-2023	22:51:14	1658	ECR_ENV_19			camera	76	526314	6412252	526293	6412287	20	-35	41	-30	SG	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
05-Apr-2023	22:51:30	1659	ECR_ENV_19			camera	76	526313	6412254	526293	6412287	20	-33	38	-31	SG	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
05-Apr-2023	22:51:41	1660	ECR_ENV_19			camera	76	526313	6412256	526293	6412287	20	-31	37	-32	SG	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
05-Apr-2023	22:52:10	1661	ECR_ENV_19			camera	76	526312	6412259	526293	6412287	19	-28	33	-34	SG	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
05-Apr-2023	22:52:19	1662	ECR_ENV_19			camera	76	526311	6412260	526293	6412287	18	-27	32	-33	SG	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
05-Apr-2023	22:52:39	1663	ECR_ENV_19			camera	76	526309	6412261	526293	6412287	16	-25	30	-33	SG	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
05-Apr-2023	22:52:54	1664	ECR_ENV_19			camera	76	526309	6412262	526293	6412287	15	-25	29	-32	SG	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
05-Apr-2023	22:53:11	1665	ECR_ENV_19			camera	76	526307	6412263	526293	6412287	14	-23	27	-31	SG	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
05-Apr-2023	22:53:32	1666	ECR_ENV_19			camera	76	526307	6412266	526293	6412287	14	-21	25	-33	SG	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
05-Apr-2023	22:53:46	1667	ECR_ENV_19			camera	76	526306	6412267	526293	6412287	13	-20	24	-33	SG	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
05-Apr-2023	22:54:04	1668	ECR_ENV_19			camera	76	526305	6412268	526293	6412287	11	-19	22	-31	SG	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
05-Apr-2023	22:54:21	1669	ECR_ENV_19			camera	76	526303	6412269	526293	6412287	10	-18	21	-29	SG	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
05-Apr-2023	22:54:43	1670	ECR_ENV_19			camera	76	526302	6412270	526293	6412287	9	-17	19	-27	SG	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
05-Apr-2023	22:55:06	1671	ECR_ENV_19			camera	76	526301	6412272	526293	6412287	8	-15	16	-28	SG	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
05-Apr-2023	22:55:49	1672	ECR_ENV_19			camera	76	526300	6412276	526293	6412287	7	-11	12	-32	SG	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
05-Apr-2023	22:56:12	1673	ECR_ENV_19			camera	76	526298	6412279	526293	6412287	5	-8	9	-34	SG	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
05-Apr-2023	22:56:26	1674	ECR_ENV_19			camera	76	526298	6412281	526293	6412287	5	-6	7	-38	SG	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
05-Apr-2023	22:56:40	1675	ECR_ENV_19			camera	76	526297	6412283	526293	6412287	3	-4	5	-39	SG	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
05-Apr-2023	22:57:09	1676	ECR_ENV_19			camera	76	526294	6412284	526293	6412287	1	-2	3	-17	SG	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
05-Apr-2023	22:57:22	1677	ECR_ENV_19			camera	76	526293	6412285	526293	6412287	0	-2	2	10	SG	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
05-Apr-2023	22:57:37	1678	ECR_ENV_19			camera	76	526293	6412286	526293	6412287	0	-1	1	20	SG	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
05-Apr-2023	22:58:10	1679	ECR_ENV_19			camera	76	526294	6412290	526293	6412287	1	4	4	-170	SG	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
05-Apr-2023	22:58:33	1680	ECR_ENV_19			camera	76	526292	6412293	526293	6412287	-2	6	6	165	SG	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
05-Apr-2023	22:58:58	1681	ECR_ENV_19			camera	76	526291	6412297	526293	6412287	-2	10	10	166	SG	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
05-Apr-2023	22:59:15	1682	ECR_ENV_19			camera	76	526289	6412299	526293	6412287	-4	12	13	160	SG	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
05-Apr-2023	22:59:24	1683	ECR_ENV_19			camera	76	526288	6412300	526293	6412287	-5	13	14	160	SG	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
05-Apr-2023	22:59:42	1684	ECR_ENV_19			camera	76	526288	6412301	526293	6412287	-5	15	15	161	SG	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
05-Apr-2023	23:00:06	1685	ECR_ENV_19			camera	76	526286	6412303	526293	6412287	-7	17	18	158	SG	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
05-Apr-2023	23:00:18	1686	ECR_ENV_19			camera	76	526286	6412304	526293	6412287	-7	17	18	157	SG	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
05-Apr-2023	23:00:39	1687	ECR_ENV_19			camera	76	526285	6412304	526293	6412287	-8	17	19	153	SG	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
05-Apr-2023	23:00:57	1688	ECR_ENV_19			camera	76	526284	6412305	526293	6412287	-9	18	21	154	SG	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
05-Apr-2023	23:01:32	1689	ECR_ENV_19			camera	76	526283	6412308	526293	6412287	-10	21	23	154	SG	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
05-Apr-2023	23:01:51	1690	ECR_ENV_19			camera	76	526282	6412309	526293	6412287	-11	22	25	153	SG	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Apr-2023	23:02:06	1691	ECR_ENV_19			camera	76	526282	6412311	526293	6412287	-11	24	26	155	SG	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
05-Apr-2023	23:02:20	1692	ECR_ENV_19			camera	76	526282	6412312	526293	6412287	-12	25	27	155	SG	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
05-Apr-2023	23:02:42	1693	ECR_ENV_19			camera	76	526282	6412313	526293	6412287	-11	26	28	157	SG	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
05-Apr-2023	23:03:10	1694	ECR_ENV_19			camera	76	526281	6412315	526293	6412287	-12	28	31	157	SG	(Corr'd Nav, Kongsberg 14208, img#41) (V) (T.A)
05-Apr-2023	23:03:45	1695	ECR_ENV_19			camera	76	526279	6412318	526293	6412287	-14	31	34	156	SG	(Corr'd Nav, Kongsberg 14208, img#42) (V) (T.A)
05-Apr-2023	23:03:59	1696	ECR_ENV_19			camera	76	526279	6412320	526293	6412287	-14	33	36	157	SG	(Corr'd Nav, Kongsberg 14208, img#43) (V) (T.A)
05-Apr-2023	23:04:22	1697	ECR_ENV_19			camera	76	526280	6412324	526293	6412287	-13	37	39	161	SG	(Corr'd Nav, Kongsberg 14208, img#44) (V) (T.A)
05-Apr-2023	23:04:50	1698	ECR_ENV_19			camera	76	526280	6412328	526293	6412287	-14	41	43	161	SG	(Corr'd Nav, Kongsberg 14208, img#45) (V) (T.A)
05-Apr-2023	23:05:02	1699	ECR_ENV_19			camera	76	526279	6412329	526293	6412287	-15	42	44	161	SG	(Corr'd Nav, Kongsberg 14208, img#46) (V) (T.A)
06-Apr-2023	00:47:30	1700	ECR_ENV_23			camera	71	526760	6414366	526710	6414359	50	7	51	-98	PL	(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
06-Apr-2023	00:48:46	1701	ECR_ENV_23			camera	71	526750	6414362	526710	6414359	40	3	40	-95	PL	(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
06-Apr-2023	00:48:55	1702	ECR_ENV_23			camera	71	526748	6414361	526710	6414359	38	2	38	-93	PL	(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
06-Apr-2023	00:49:22	1703	ECR_ENV_23			camera	71	526742	6414355	526710	6414359	32	-4	33	-82	PL	(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
06-Apr-2023	00:49:37	1704	ECR_ENV_23			camera	71	526739	6414354	526710	6414359	29	-5	29	-81	PL	(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
06-Apr-2023	00:49:48	1705	ECR_ENV_23			camera	71	526738	6414355	526710	6414359	28	-4	28	-82	PL	(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
06-Apr-2023	00:50:04	1706	ECR_ENV_23			camera	71	526736	6414356	526710	6414359	26	-3	26	-83	PL	(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
06-Apr-2023	00:50:14	1707	ECR_ENV_23			camera	71	526733	6414355	526710	6414359	23	-4	24	-81	PL	(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
06-Apr-2023	00:50:38	1708	ECR_ENV_23			camera	71	526729	6414358	526710	6414359	19	-1	19	-86	PL	(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
06-Apr-2023	00:50:44	1709	ECR_ENV_23			camera	71	526728	6414359	526710	6414359	19	0	18	-89	PL	(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
06-Apr-2023	00:50:54	1710	ECR_ENV_23			camera	71	526726	6414360	526710	6414359	16	1	16	-92	PL	(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
06-Apr-2023	00:51:08	1711	ECR_ENV_23			camera	71	526723	6414359	526710	6414359	13	0	13	-89	PL	(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
06-Apr-2023	00:51:16	1712	ECR_ENV_23			camera	71	526721	6414358	526710	6414359	11	-1	11	-83	PL	(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
06-Apr-2023	00:51:23	1713	ECR_ENV_23			camera	71	526720	6414358	526710	6414359	10	-2	10	-81	PL	(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
06-Apr-2023	00:51:31	1714	ECR_ENV_23			camera	71	526719	6414358	526710	6414359	9	-1	9	-85	PL	(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
06-Apr-2023	00:51:40	1715	ECR_ENV_23			camera	71	526717	6414360	526710	6414359	8	0	8	-94	PL	(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
06-Apr-2023	00:51:55	1716	ECR_ENV_23			camera	71	526716	6414360	526710	6414359	6	0	6	-94	PL	(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
06-Apr-2023	00:52:07	1717	ECR_ENV_23			camera	71	526714	6414357	526710	6414359	4	-2	4	-69	PL	(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
06-Apr-2023	00:52:27	1718	ECR_ENV_23			camera	71	526711	6414358	526710	6414359	1	-1	1	-49	PL	(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
06-Apr-2023	00:53:00	1719	ECR_ENV_23			camera	71	526705	6414359	526710	6414359	-5	0	5	89	PL	(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
06-Apr-2023	00:53:06	1720	ECR_ENV_23			camera	71	526704	6414357	526710	6414359	-5	-2	6	73	PL	(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
06-Apr-2023	00:53:14	1721	ECR_ENV_23			camera	71	526703	6414356	526710	6414359	-6	-3	7	65	PL	(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
06-Apr-2023	00:53:20	1722	ECR_ENV_23			camera	71	526702	6414356	526710	6414359	-7	-3	8	66	PL	(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
06-Apr-2023	00:53:37	1723	ECR_ENV_23			camera	71	526701	6414359	526710	6414359	-9	0	9	87	PL	(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
06-Apr-2023	00:53:46	1724	ECR_ENV_23			camera	71	526700	6414360	526710	6414359	-10	1	10	97	PL	(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
06-Apr-2023	00:53:56	1725	ECR_ENV_23			camera	71	526698	6414361	526710	6414359	-12	2	12	99	PL	(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
06-Apr-2023	00:54:12	1726	ECR_ENV_23			camera	71	526695	6414361	526710	6414359	-15	2	15	97	PL	(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
06-Apr-2023	00:54:35	1727	ECR_ENV_23			camera	71	526689	6414359	526710	6414359	-21	0	21	90	PL	(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
06-Apr-2023	00:54:48	1728	ECR_ENV_23			camera	71	526687	6414357	526710	6414359	-23	-2	23	84	PL	(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT			

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	00:55:05	1729	ECR_ENV_23			camera	71	526684	6414356	526710	6414359	-25	-3	26	82	PL	(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
06-Apr-2023	00:55:14	1730	ECR_ENV_23			camera	71	526682	6414356	526710	6414359	-28	-3	28	84	PL	(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
06-Apr-2023	00:55:21	1731	ECR_ENV_23			camera	71	526681	6414357	526710	6414359	-29	-2	29	85	PL	(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
06-Apr-2023	00:55:46	1732	ECR_ENV_23			camera	71	526678	6414360	526710	6414359	-32	1	32	91	PL	(Corr'd Nav, Kongsberg 14208, img#33) (V) (T.A)
06-Apr-2023	00:55:58	1733	ECR_ENV_23			camera	71	526675	6414360	526710	6414359	-35	1	35	91	PL	(Corr'd Nav, Kongsberg 14208, img#34) (V) (T.A)
06-Apr-2023	00:56:08	1734	ECR_ENV_23			camera	71	526673	6414358	526710	6414359	-37	-1	37	89	PL	(Corr'd Nav, Kongsberg 14208, img#35) (V) (T.A)
06-Apr-2023	00:56:16	1735	ECR_ENV_23			camera	71	526671	6414357	526710	6414359	-39	-2	39	87	PL	(Corr'd Nav, Kongsberg 14208, img#36) (V) (T.A)
06-Apr-2023	00:56:41	1736	ECR_ENV_23			camera	71	526666	6414360	526710	6414359	-43	1	43	91	PL	(Corr'd Nav, Kongsberg 14208, img#37) (V) (T.A)
06-Apr-2023	00:56:50	1737	ECR_ENV_23			camera	71	526665	6414361	526710	6414359	-45	2	45	93	PL	(Corr'd Nav, Kongsberg 14208, img#38) (V) (T.A)
06-Apr-2023	00:57:29	1738	ECR_ENV_23			camera	71	526664	6414358	526710	6414359	-46	-1	46	88	PL	(Corr'd Nav, Kongsberg 14208, img#39) (V) (T.A)
06-Apr-2023	00:58:07	1739	ECR_ENV_23			camera	71	526663	6414360	526710	6414359	-47	1	47	91	PL	(Corr'd Nav, Kongsberg 14208, img#40) (V) (T.A)
06-Apr-2023	02:40:47	1740	ECR_ENV_06			camera	69	527976	6415833	527936	6415791	39	42	57	-136	PL	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Apr-2023	02:41:32	1741	ECR_ENV_06			camera	69	527976	6415834	527936	6415791	40	42	58	-137	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Apr-2023	02:41:57	1742	ECR_ENV_06			camera	69	527973	6415831	527936	6415791	37	39	54	-137	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Apr-2023	02:42:11	1743	ECR_ENV_06			camera	69	527970	6415829	527936	6415791	34	38	51	-139	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Apr-2023	02:42:30	1744	ECR_ENV_06			camera	69	527969	6415826	527936	6415791	33	35	48	-137	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Apr-2023	02:43:14	1745	ECR_ENV_06			camera	69	527965	6415823	527936	6415791	29	32	43	-138	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Apr-2023	02:43:40	1746	ECR_ENV_06			camera	69	527960	6415821	527936	6415791	24	30	38	-141	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Apr-2023	02:44:21	1747	ECR_ENV_06			camera	69	527954	6415814	527936	6415791	18	23	29	-142	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Apr-2023	02:44:28	1748	ECR_ENV_06			camera	69	527954	6415812	527936	6415791	18	21	27	-140	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Apr-2023	02:44:53	1749	ECR_ENV_06			camera	69	527950	6415811	527936	6415791	14	20	24	-145	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Apr-2023	02:45:12	1750	ECR_ENV_06			camera	69	527949	6415808	527936	6415791	12	17	21	-143	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Apr-2023	02:45:49	1751	ECR_ENV_06			camera	69	527944	6415801	527936	6415791	7	10	12	-144	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Apr-2023	02:48:48	1752	ECR_ENV_06			camera	69	527933	6415797	527936	6415791	-3	6	7	151	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Apr-2023	02:49:16	1753	ECR_ENV_06			camera	69	527933	6415796	527936	6415791	-4	5	6	145	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Apr-2023	02:49:26	1754	ECR_ENV_06			camera	70	527932	6415796	527936	6415791	-4	5	6	136	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Apr-2023	02:49:32	1755	ECR_ENV_06			camera	69	527931	6415795	527936	6415791	-6	4	7	127	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Apr-2023	02:49:38	1756	ECR_ENV_06			camera	69	527931	6415795	527936	6415791	-6	4	7	123	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Apr-2023	02:49:43	1757	ECR_ENV_06			camera	69	527931	6415794	527936	6415791	-5	3	6	119	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Apr-2023	02:49:48	1758	ECR_ENV_06			camera	69	527931	6415793	527936	6415791	-5	2	6	113	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Apr-2023	02:50:23	1759	ECR_ENV_06			camera	69	527927	6415790	527936	6415791	-10	-1	10	86	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Apr-2023	02:50:31	1760	ECR_ENV_06			camera	69	527924	6415791	527936	6415791	-12	0	12	88	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Apr-2023	02:50:59	1761	ECR_ENV_06			camera	69	527920	6415787	527936	6415791	-17	-5	17	75	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Apr-2023	02:51:06	1762	ECR_ENV_06			camera	69	527922	6415783	527936	6415791	-14	-8	17	60	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Apr-2023	02:51:21	1763	ECR_ENV_06			camera	69	527920	6415782	527936	6415791	-16	-9	18	62	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Apr-2023	02:51:35	1764	ECR_ENV_06			camera	69	527918	6415782	527936	6415791	-18	-9	20	64	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Apr-2023	02:51:46	1765	ECR_ENV_06			camera	69	527918	6415783	527936	6415791	-18	-8	20	65	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Apr-2023	02:51:56	1766	ECR_ENV_06			camera	69	527917	6415781	527936	6415791	-19	-10	21	62	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	02:52:13	1767	ECR_ENV_06			camera	69	527912	6415779	527936	6415791	-24	-12	27	63	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Apr-2023	02:52:20	1768	ECR_ENV_06			camera	69	527912	6415777	527936	6415791	-24	-14	28	60	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Apr-2023	02:52:38	1769	ECR_ENV_06			camera	69	527911	6415775	527936	6415791	-26	-16	31	57	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Apr-2023	02:52:46	1770	ECR_ENV_06			camera	69	527910	6415773	527936	6415791	-27	-18	32	56	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Apr-2023	02:52:55	1771	ECR_ENV_06			camera	69	527910	6415772	527936	6415791	-26	-19	32	54	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Apr-2023	02:53:02	1772	ECR_ENV_06			camera	69	527910	6415772	527936	6415791	-26	-19	33	54	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Apr-2023	02:53:11	1773	ECR_ENV_06			camera	69	527908	6415772	527936	6415791	-28	-19	34	56	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Apr-2023	02:53:17	1774	ECR_ENV_06			camera	69	527906	6415770	527936	6415791	-30	-21	37	55	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Apr-2023	02:53:41	1775	ECR_ENV_06			camera	69	527899	6415765	527936	6415791	-37	-26	45	55	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Apr-2023	02:53:45	1776	ECR_ENV_06			camera	69	527900	6415766	527936	6415791	-36	-25	44	55	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Apr-2023	02:53:52	1777	ECR_ENV_06			camera	69	527900	6415766	527936	6415791	-36	-25	44	55	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Apr-2023	02:54:14	1778	ECR_ENV_06			camera	69	527900	6415766	527936	6415791	-37	-26	45	55	PL	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Apr-2023	02:54:58	1779	ECR_ENV_06			camera	69	527899	6415765	527936	6415791	-37	-26	45	55	PL	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Apr-2023	02:55:11	1780	ECR_ENV_06			camera	69	527899	6415765	527936	6415791	-37	-26	46	55	PL	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Apr-2023	02:56:26	1781	ECR_ENV_06			camera	69	527898	6415764	527936	6415791	-39	-27	47	55	PL	(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Apr-2023	06:31:28	1782	ECR_ENV_13			camera	62	525841	6415939	525888	6415996	-47	-58	75	39	PL	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Apr-2023	06:32:22	1783	ECR_ENV_13			camera	62	525846	6415938	525888	6415996	-43	-58	72	36	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Apr-2023	06:32:47	1784	ECR_ENV_13			camera	62	525847	6415947	525888	6415996	-42	-49	64	40	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Apr-2023	06:32:53	1785	ECR_ENV_13			camera	62	525849	6415946	525888	6415996	-40	-50	64	38	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Apr-2023	06:32:59	1786	ECR_ENV_13			camera	62	525849	6415947	525888	6415996	-40	-49	63	39	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Apr-2023	06:33:36	1787	ECR_ENV_13			camera	62	525853	6415954	525888	6415996	-36	-43	55	40	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Apr-2023	06:34:00	1788	ECR_ENV_13			camera	62	525859	6415955	525888	6415996	-29	-42	51	35	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Apr-2023	06:34:13	1789	ECR_ENV_13			camera	62	525857	6415960	525888	6415996	-32	-36	48	42	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Apr-2023	06:34:31	1790	ECR_ENV_13			camera	62	525858	6415962	525888	6415996	-30	-34	46	41	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Apr-2023	06:34:50	1791	ECR_ENV_13			camera	62	525858	6415966	525888	6415996	-31	-30	43	45	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Apr-2023	06:35:00	1792	ECR_ENV_13			camera	62	525858	6415969	525888	6415996	-30	-28	41	47	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Apr-2023	06:35:13	1793	ECR_ENV_13			camera	62	525860	6415969	525888	6415996	-28	-28	40	46	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Apr-2023	06:35:26	1794	ECR_ENV_13			camera	62	525860	6415970	525888	6415996	-29	-26	39	47	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Apr-2023	06:36:11	1795	ECR_ENV_13			camera	62	525864	6415978	525888	6415996	-25	-18	31	53	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Apr-2023	06:36:17	1796	ECR_ENV_13			camera	62	525866	6415980	525888	6415996	-23	-16	28	54	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Apr-2023	06:36:24	1797	ECR_ENV_13			camera	62	525864	6415982	525888	6415996	-24	-15	28	59	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Apr-2023	06:36:51	1798	ECR_ENV_13			camera	62	525869	6415985	525888	6415996	-20	-12	23	60	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Apr-2023	06:37:02	1799	ECR_ENV_13			camera	62	525870	6415985	525888	6415996	-18	-11	21	59	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Apr-2023	06:37:08	1800	ECR_ENV_13			camera	62	525870	6415987	525888	6415996	-18	-9	20	63	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Apr-2023	06:37:15	1801	ECR_ENV_13			camera	62	525872	6415987	525888	6415996	-16	-9	18	61	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Apr-2023	06:37:23	1802	ECR_ENV_13			camera	62	525872	6415988	525888	6415996	-16	-9	18	62	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Apr-2023	06:37:31	1803	ECR_ENV_13			camera	62	525874	6415989	525888	6415996	-14	-8	16	61	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Apr-2023	06:38:10	1804	ECR_ENV_13			camera	62	525879	6415992	525888	6415996	-10	-5	11	64	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	06:38:31	1805	ECR_ENV_13			camera	62	525878	6415994	525888	6415996	-10	-3	10	75	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Apr-2023	06:38:40	1806	ECR_ENV_13			camera	62	525881	6415993	525888	6415996	-7	-4	8	62	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Apr-2023	06:38:54	1807	ECR_ENV_13			camera	62	525882	6415997	525888	6415996	-6	1	6	97	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Apr-2023	06:39:02	1808	ECR_ENV_13			camera	62	525883	6415997	525888	6415996	-5	1	5	100	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Apr-2023	06:39:18	1809	ECR_ENV_13			camera	62	525886	6415999	525888	6415996	-2	3	4	142	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Apr-2023	06:39:27	1810	ECR_ENV_13			camera	62	525887	6415999	525888	6415996	-1	3	3	156	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Apr-2023	06:40:09	1811	ECR_ENV_13			camera	62	525891	6416006	525888	6415996	3	9	10	-163	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Apr-2023	06:40:26	1812	ECR_ENV_13			camera	62	525892	6416009	525888	6415996	4	13	14	-163	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Apr-2023	06:40:47	1813	ECR_ENV_13			camera	62	525896	6416011	525888	6415996	8	15	17	-151	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Apr-2023	06:41:00	1814	ECR_ENV_13			camera	62	525899	6416011	525888	6415996	10	15	18	-145	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Apr-2023	06:41:46	1815	ECR_ENV_13			camera	62	525906	6416013	525888	6415996	17	17	24	-134	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Apr-2023	06:42:02	1816	ECR_ENV_13			camera	62	525908	6416014	525888	6415996	20	18	27	-133	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Apr-2023	06:42:25	1817	ECR_ENV_13			camera	61	525912	6416017	525888	6415996	24	21	32	-131	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Apr-2023	06:42:33	1818	ECR_ENV_13			camera	61	525913	6416018	525888	6415996	25	21	33	-131	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Apr-2023	06:42:40	1819	ECR_ENV_13			camera	62	525914	6416019	525888	6415996	26	22	34	-131	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Apr-2023	06:43:09	1820	ECR_ENV_13			camera	61	525920	6416027	525888	6415996	32	31	44	-134	PL	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Apr-2023	06:43:25	1821	ECR_ENV_13			camera	61	525922	6416029	525888	6415996	34	33	47	-134	PL	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Apr-2023	09:04:49	1822	ECR_ENV_32			camera	58	525170	6418383	525129	6418432	41	-49	64	-40	PL	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Apr-2023	09:05:25	1823	ECR_ENV_32			camera	58	525176	6418386	525129	6418432	48	-46	66	-46	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Apr-2023	09:05:33	1824	ECR_ENV_32			camera	58	525188	6418390	525129	6418432	59	-42	73	-55	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Apr-2023	09:05:57	1825	ECR_ENV_32			camera	58	525170	6418386	525129	6418432	42	-46	62	-42	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Apr-2023	09:06:11	1826	ECR_ENV_32			camera	58	525170	6418387	525129	6418432	41	-45	61	-42	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Apr-2023	09:06:25	1827	ECR_ENV_32			camera	58	525168	6418390	525129	6418432	40	-43	58	-43	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Apr-2023	09:06:37	1828	ECR_ENV_32			camera	58	525168	6418390	525129	6418432	39	-42	58	-43	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Apr-2023	09:06:54	1829	ECR_ENV_32			camera	58	525169	6418391	525129	6418432	40	-41	57	-44	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Apr-2023	09:07:04	1830	ECR_ENV_32			camera	58	525167	6418393	525129	6418432	38	-39	55	-44	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Apr-2023	09:07:34	1831	ECR_ENV_32			camera	58	525163	6418396	525129	6418432	35	-36	50	-44	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Apr-2023	09:08:24	1832	ECR_ENV_32			camera	58	525156	6418401	525129	6418432	27	-31	41	-41	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Apr-2023	09:08:33	1833	ECR_ENV_32			camera	58	525155	6418403	525129	6418432	26	-29	39	-42	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Apr-2023	09:08:45	1834	ECR_ENV_32			camera	58	525153	6418403	525129	6418432	24	-29	38	-40	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Apr-2023	09:09:04	1835	ECR_ENV_32			camera	58	525151	6418405	525129	6418432	22	-28	35	-39	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Apr-2023	09:09:13	1836	ECR_ENV_32			camera	58	525150	6418406	525129	6418432	21	-27	34	-38	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Apr-2023	09:09:28	1837	ECR_ENV_32			camera	58	525149	6418406	525129	6418432	21	-27	34	-38	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Apr-2023	09:09:54	1838	ECR_ENV_32			camera	58	525148	6418409	525129	6418432	19	-24	30	-39	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Apr-2023	09:10:26	1839	ECR_ENV_32			camera	58	525147	6418410	525129	6418432	19	-23	29	-40	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Apr-2023	09:10:37	1840	ECR_ENV_32			camera	58	525147	6418412	525129	6418432	19	-21	28	-42	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Apr-2023	09:10:46	1841	ECR_ENV_32			camera	59	525147	6418413	525129	6418432	18	-20	27	-43	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Apr-2023	09:10:55	1842	ECR_ENV_32			camera	59	525148	6418413	525129	6418432	19	-19	27	-45	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	09:11:07	1843	ECR_ENV_32			camera	59	525146	6418414	525129	6418432	17	-19	26	-43	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Apr-2023	09:11:39	1844	ECR_ENV_32			camera	59	525146	6418417	525129	6418432	18	-16	24	-48	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Apr-2023	09:11:46	1845	ECR_ENV_32			camera	59	525147	6418418	525129	6418432	19	-15	24	-51	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Apr-2023	09:11:52	1846	ECR_ENV_32			camera	59	525146	6418417	525129	6418432	17	-15	23	-48	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Apr-2023	09:12:07	1847	ECR_ENV_32			camera	59	525144	6418419	525129	6418432	15	-13	20	-49	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Apr-2023	09:12:38	1848	ECR_ENV_32			camera	59	525140	6418422	525129	6418432	12	-10	15	-49	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Apr-2023	09:13:12	1849	ECR_ENV_32			camera	59	525137	6418423	525129	6418432	8	-9	12	-41	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Apr-2023	09:13:30	1850	ECR_ENV_32			camera	59	525136	6418425	525129	6418432	7	-8	11	-45	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Apr-2023	09:14:22	1851	ECR_ENV_32			camera	59	525135	6418427	525129	6418432	6	-5	8	-50	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Apr-2023	09:14:31	1852	ECR_ENV_32			camera	59	525135	6418428	525129	6418432	6	-4	8	-54	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Apr-2023	09:14:53	1853	ECR_ENV_32			camera	59	525134	6418430	525129	6418432	5	-2	6	-66	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Apr-2023	09:15:55	1854	ECR_ENV_32			camera	59	525129	6418434	525129	6418432	0	2	2	-176	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Apr-2023	09:16:11	1855	ECR_ENV_32			camera	59	525127	6418434	525129	6418432	-1	2	2	148	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Apr-2023	09:16:45	1856	ECR_ENV_32			camera	59	525124	6418437	525129	6418432	-4	4	6	134	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Apr-2023	09:16:58	1857	ECR_ENV_32			camera	59	525123	6418438	525129	6418432	-6	5	8	132	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Apr-2023	09:17:22	1858	ECR_ENV_32			camera	59	525120	6418438	525129	6418432	-9	5	11	121	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Apr-2023	09:17:53	1859	ECR_ENV_32			camera	59	525119	6418439	525129	6418432	-9	6	11	124	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Apr-2023	09:18:23	1860	ECR_ENV_32			camera	59	525118	6418442	525129	6418432	-11	10	14	132	PL	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Apr-2023	09:18:54	1861	ECR_ENV_32			camera	59	525116	6418443	525129	6418432	-13	11	17	130	PL	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Apr-2023	09:19:01	1862	ECR_ENV_32			camera	59	525116	6418443	525129	6418432	-13	11	17	131	PL	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Apr-2023	09:19:08	1863	ECR_ENV_32			camera	59	525117	6418443	525129	6418432	-12	11	16	132	PL	(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Apr-2023	09:19:54	1864	ECR_ENV_32			camera	59	525113	6418448	525129	6418432	-16	15	22	134	PL	(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Apr-2023	09:20:02	1865	ECR_ENV_32			camera	59	525113	6418448	525129	6418432	-16	16	23	134	PL	(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Apr-2023	09:20:38	1866	ECR_ENV_32			camera	59	525108	6418451	525129	6418432	-21	18	28	132	PL	(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Apr-2023	09:21:15	1867	ECR_ENV_32			camera	59	525107	6418454	525129	6418432	-22	22	31	135	PL	(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Apr-2023	09:21:22	1868	ECR_ENV_32			camera	59	525106	6418456	525129	6418432	-23	24	33	136	PL	(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Apr-2023	09:21:50	1869	ECR_ENV_32			camera	60	525105	6418459	525129	6418432	-24	26	35	137	PL	(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Apr-2023	09:22:35	1870	ECR_ENV_32			camera	60	525099	6418461	525129	6418432	-29	28	41	134	PL	(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Apr-2023	09:23:03	1871	ECR_ENV_32			camera	60	525098	6418461	525129	6418432	-31	29	42	134	PL	(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Apr-2023	09:24:15	1872	ECR_ENV_32			camera	60	525094	6418464	525129	6418432	-35	32	47	132	PL	(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Apr-2023	09:24:54	1873	ECR_ENV_32			camera	60	525091	6418464	525129	6418432	-37	31	49	130	PL	(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Apr-2023	11:38:08	1874	ECR_ENV_11			camera	65	527443	6419304	527403	6419346	40	-42	58	-44	PL	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Apr-2023	11:38:23	1875	ECR_ENV_11			camera	65	527443	6419304	527403	6419346	40	-43	58	-43	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Apr-2023	11:38:33	1876	ECR_ENV_11			camera	65	527441	6419304	527403	6419346	38	-43	57	-42	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Apr-2023	11:38:44	1877	ECR_ENV_11			camera	65	527441	6419303	527403	6419346	38	-43	57	-42	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Apr-2023	11:38:53	1878	ECR_ENV_11			camera	65	527439	6419304	527403	6419346	37	-42	56	-41	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Apr-2023	11:39:29	1879	ECR_ENV_11			camera	65	527444	6419307	527403	6419346	41	-39	57	-46	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Apr-2023	11:39:51	1880	ECR_ENV_11			camera	65	527440	6419309	527403	6419346	37	-37	52	-46	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	11:40:01	1881	ECR_ENV_11			camera	65	527438	6419311	527403	6419346	35	-35	50	-45	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Apr-2023	11:40:30	1882	ECR_ENV_11			camera	65	527436	6419315	527403	6419346	33	-31	45	-47	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Apr-2023	11:40:46	1883	ECR_ENV_11			camera	65	527434	6419318	527403	6419346	31	-28	42	-48	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Apr-2023	11:41:08	1884	ECR_ENV_11			camera	65	527431	6419319	527403	6419346	28	-27	39	-46	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Apr-2023	11:41:29	1885	ECR_ENV_11			camera	65	527429	6419323	527403	6419346	27	-24	36	-49	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Apr-2023	11:41:37	1886	ECR_ENV_11			camera	65	527428	6419326	527403	6419346	26	-20	33	-52	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Apr-2023	11:41:56	1887	ECR_ENV_11			camera	65	527425	6419328	527403	6419346	22	-18	29	-51	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Apr-2023	11:42:10	1888	ECR_ENV_11			camera	65	527423	6419330	527403	6419346	20	-16	26	-52	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Apr-2023	11:42:37	1889	ECR_ENV_11			camera	65	527419	6419332	527403	6419346	16	-14	21	-49	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Apr-2023	11:43:03	1890	ECR_ENV_11			camera	65	527416	6419336	527403	6419346	13	-11	17	-52	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Apr-2023	11:43:10	1891	ECR_ENV_11			camera	65	527415	6419337	527403	6419346	12	-9	16	-53	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Apr-2023	11:43:41	1892	ECR_ENV_11			camera	65	527412	6419340	527403	6419346	10	-6	11	-57	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Apr-2023	11:44:00	1893	ECR_ENV_11			camera	65	527411	6419342	527403	6419346	8	-4	9	-61	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Apr-2023	11:44:24	1894	ECR_ENV_11			camera	65	527409	6419344	527403	6419346	6	-2	7	-70	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Apr-2023	11:44:40	1895	ECR_ENV_11			camera	65	527408	6419345	527403	6419346	6	-1	6	-76	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Apr-2023	11:44:53	1896	ECR_ENV_11			camera	65	527403	6419347	527403	6419346	1	1	1	-139	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Apr-2023	11:45:06	1897	ECR_ENV_11			camera	65	527402	6419349	527403	6419346	-1	3	3	162	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Apr-2023	11:45:20	1898	ECR_ENV_11			camera	65	527401	6419350	527403	6419346	-2	4	4	158	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Apr-2023	11:45:32	1899	ECR_ENV_11			camera	65	527399	6419353	527403	6419346	-4	7	8	151	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Apr-2023	11:45:48	1900	ECR_ENV_11			camera	65	527397	6419357	527403	6419346	-6	11	12	151	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Apr-2023	11:46:03	1901	ECR_ENV_11			camera	65	527398	6419358	527403	6419346	-5	12	13	157	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Apr-2023	11:46:21	1902	ECR_ENV_11			camera	65	527393	6419359	527403	6419346	-10	13	16	143	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Apr-2023	11:46:33	1903	ECR_ENV_11			camera	65	527393	6419360	527403	6419346	-10	14	17	144	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Apr-2023	11:46:45	1904	ECR_ENV_11			camera	65	527388	6419362	527403	6419346	-14	16	21	138	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Apr-2023	11:46:55	1905	ECR_ENV_11			camera	65	527391	6419363	527403	6419346	-12	17	21	144	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Apr-2023	11:47:13	1906	ECR_ENV_11			camera	65	527385	6419367	527403	6419346	-18	21	27	139	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Apr-2023	11:47:28	1907	ECR_ENV_11			camera	65	527384	6419368	527403	6419346	-19	22	29	140	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Apr-2023	11:47:41	1908	ECR_ENV_11			camera	65	527384	6419370	527403	6419346	-19	24	31	142	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Apr-2023	11:47:51	1909	ECR_ENV_11			camera	65	527380	6419372	527403	6419346	-22	26	34	139	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Apr-2023	11:48:07	1910	ECR_ENV_11			camera	65	527379	6419373	527403	6419346	-24	27	36	138	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Apr-2023	11:48:20	1911	ECR_ENV_11			camera	65	527377	6419374	527403	6419346	-26	28	38	138	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Apr-2023	11:49:07	1912	ECR_ENV_11			camera	65	527373	6419377	527403	6419346	-30	31	43	136	PL	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Apr-2023	11:49:46	1913	ECR_ENV_11			camera	65	527375	6419377	527403	6419346	-28	31	42	138	PL	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Apr-2023	11:50:22	1914	ECR_ENV_11			camera	65	527375	6419377	527403	6419346	-28	31	42	138	PL	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Apr-2023	13:23:52	1915	ECR_ENV_22			camera	61	526455	6421359	526406	6421398	48	-40	62	-51	SG	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Apr-2023	13:24:05	1916	ECR_ENV_22			camera	61	526454	6421358	526406	6421398	47	-40	62	-50	SG	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Apr-2023	13:24:20	1917	ECR_ENV_22			camera	61	526454	6421359	526406	6421398	47	-40	62	-50	SG	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Apr-2023	13:24:55	1918	ECR_ENV_22			camera	61	526451	6421362	526406	6421398	44	-36	57	-51	SG	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	13:25:08	1919	ECR_ENV_22			camera	61	526448	6421364	526406	6421398	41	-34	53	-50	SG	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Apr-2023	13:25:35	1920	ECR_ENV_22			camera	61	526445	6421367	526406	6421398	38	-31	49	-51	SG	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Apr-2023	13:26:27	1921	ECR_ENV_22			camera	62	526440	6421374	526406	6421398	34	-24	41	-54	SG	(Raw Nav, Kongsberg 14208, img#7) (B)
06-Apr-2023	13:26:37	1922	ECR_ENV_22			camera	61	526438	6421376	526406	6421398	31	-22	38	-55	SG	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Apr-2023	13:27:00	1923	ECR_ENV_22			camera	61	526435	6421380	526406	6421398	29	-18	34	-58	SG	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Apr-2023	13:27:16	1924	ECR_ENV_22			camera	61	526433	6421383	526406	6421398	27	-15	31	-60	SG	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Apr-2023	13:28:05	1925	ECR_ENV_22			camera	61	526426	6421390	526406	6421398	19	-8	21	-68	SG	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Apr-2023	13:28:19	1926	ECR_ENV_22			camera	61	526423	6421392	526406	6421398	16	-6	17	-70	SG	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Apr-2023	13:28:28	1927	ECR_ENV_22			camera	61	526421	6421392	526406	6421398	15	-6	16	-67	SG	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Apr-2023	13:28:45	1928	ECR_ENV_22			camera	61	526420	6421393	526406	6421398	14	-5	15	-72	SG	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Apr-2023	13:29:02	1929	ECR_ENV_22			camera	61	526417	6421392	526406	6421398	11	-6	12	-62	SG	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Apr-2023	13:29:23	1930	ECR_ENV_22			camera	61	526416	6421393	526406	6421398	9	-5	10	-61	SG	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Apr-2023	13:29:40	1931	ECR_ENV_22			camera	61	526415	6421394	526406	6421398	8	-4	9	-61	SG	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Apr-2023	13:30:11	1932	ECR_ENV_22			camera	61	526409	6421395	526406	6421398	3	-3	4	-42	SG	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Apr-2023	13:30:40	1933	ECR_ENV_22			camera	61	526408	6421397	526406	6421398	1	-1	1	-61	SG	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Apr-2023	13:30:47	1934	ECR_ENV_22			camera	61	526405	6421399	526406	6421398	-1	1	2	115	SG	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Apr-2023	13:31:02	1935	ECR_ENV_22			camera	61	526402	6421401	526406	6421398	-4	3	5	127	SG	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Apr-2023	13:31:15	1936	ECR_ENV_22			camera	61	526402	6421403	526406	6421398	-5	5	7	136	SG	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Apr-2023	13:31:30	1937	ECR_ENV_22			camera	61	526400	6421406	526406	6421398	-7	8	10	140	SG	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Apr-2023	13:31:46	1938	ECR_ENV_22			camera	61	526400	6421409	526406	6421398	-7	11	13	147	SG	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Apr-2023	13:31:59	1939	ECR_ENV_22			camera	61	526398	6421410	526406	6421398	-9	12	15	144	SG	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Apr-2023	13:32:22	1940	ECR_ENV_22			camera	61	526392	6421412	526406	6421398	-14	14	20	134	SG	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Apr-2023	13:32:34	1941	ECR_ENV_22			camera	61	526391	6421413	526406	6421398	-15	15	21	134	SG	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Apr-2023	13:32:50	1942	ECR_ENV_22			camera	61	526387	6421414	526406	6421398	-20	16	25	129	SG	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Apr-2023	13:33:00	1943	ECR_ENV_22			camera	61	526388	6421413	526406	6421398	-19	15	24	130	SG	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Apr-2023	13:33:09	1944	ECR_ENV_22			camera	61	526385	6421416	526406	6421398	-22	18	28	129	SG	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Apr-2023	13:33:17	1945	ECR_ENV_22			camera	61	526384	6421417	526406	6421398	-23	19	30	130	SG	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Apr-2023	13:33:30	1946	ECR_ENV_22			camera	61	526383	6421420	526406	6421398	-24	22	32	132	SG	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Apr-2023	13:33:37	1947	ECR_ENV_22			camera	62	526381	6421420	526406	6421398	-25	22	34	131	SG	(Raw Nav, Kongsberg 14208, img#33) (B)
06-Apr-2023	13:33:46	1947a	ECR_ENV_22			camera	61	526381	6421423	526406	6421398	-25	25	35	135	SG	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A) # Double Fix
06-Apr-2023	13:33:58	1948	ECR_ENV_22			camera	61	526380	6421426	526406	6421398	-26	28	38	137	SG	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Apr-2023	13:34:07	1949	ECR_ENV_22			camera	61	526381	6421427	526406	6421398	-26	29	39	138	SG	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Apr-2023	13:34:14	1950	ECR_ENV_22			camera	61	526381	6421428	526406	6421398	-26	30	40	140	SG	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Apr-2023	13:34:28	1951	ECR_ENV_22			camera	61	526380	6421431	526406	6421398	-26	33	42	142	SG	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Apr-2023	13:34:35	1952	ECR_ENV_22			camera	61	526380	6421432	526406	6421398	-27	34	43	142	SG	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Apr-2023	13:34:44	1953	ECR_ENV_22			camera	61	526380	6421434	526406	6421398	-26	36	44	144	SG	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Apr-2023	14:37:27	1955	ECR_ENV_03			camera	72	527855	6422307	527815	6422341	40	-34	52	-50	SG	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Apr-2023	14:37:34	1956	ECR_ENV_03			camera	72	527855	6422308	527815	6422341	40	-33	52	-51	SG	(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	14:37:58	1957	ECR_ENV_03			camera	72	527854	6422308	527815	6422341	39	-32	51	-51	SG	(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Apr-2023	14:38:21	1958	ECR_ENV_03			camera	72	527853	6422309	527815	6422341	38	-32	49	-50	SG	(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Apr-2023	14:38:34	1959	ECR_ENV_03			camera	72	527851	6422310	527815	6422341	36	-30	47	-50	SG	(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Apr-2023	14:39:06	1960	ECR_ENV_03			camera	72	527850	6422315	527815	6422341	35	-26	43	-54	SG	(Raw Nav, Kongsberg 14208, img#46) (B)
06-Apr-2023	14:39:13	1961	ECR_ENV_03			camera	73	527847	6422314	527815	6422341	32	-27	42	-50	SG	(Raw Nav, Kongsberg 14208, img#47) (B)
06-Apr-2023	14:39:26	1962	ECR_ENV_03			camera	72	527848	6422317	527815	6422341	33	-24	41	-54	SG	(Raw Nav, Kongsberg 14208, img#48) (B)
06-Apr-2023	14:39:41	1963	ECR_ENV_03			camera	73	527844	6422316	527815	6422341	29	-25	38	-50	SG	(Raw Nav, Kongsberg 14208, img#49) (B)
06-Apr-2023	14:39:53	1964	ECR_ENV_03			camera	73	527843	6422317	527815	6422341	28	-24	37	-50	SG	(Raw Nav, Kongsberg 14208, img#50) (B)
06-Apr-2023	14:40:07	1965	ECR_ENV_03			camera	73	527842	6422319	527815	6422341	27	-22	35	-51	SG	(Raw Nav, Kongsberg 14208, img#51) (B)
06-Apr-2023	14:40:29	1966	ECR_ENV_03			camera	72	527841	6422322	527815	6422341	26	-19	32	-54	SG	(Raw Nav, Kongsberg 14208, img#52) (B)
06-Apr-2023	14:40:53	1967	ECR_ENV_03			camera	72	527838	6422324	527815	6422341	23	-17	28	-54	SG	(Raw Nav, Kongsberg 14208, img#53) (B)
06-Apr-2023	14:41:03	1968	ECR_ENV_03			camera	73	527836	6422325	527815	6422341	21	-16	26	-53	SG	(Raw Nav, Kongsberg 14208, img#54) (B)
06-Apr-2023	14:41:20	1969	ECR_ENV_03			camera	73	527832	6422327	527815	6422341	17	-14	22	-51	SG	(Raw Nav, Kongsberg 14208, img#55) (B)
06-Apr-2023	14:41:42	1970	ECR_ENV_03			camera	72	527829	6422331	527815	6422341	14	-10	17	-55	SG	(Raw Nav, Kongsberg 14208, img#56) (B)
06-Apr-2023	14:41:59	1971	ECR_ENV_03			camera	73	527828	6422332	527815	6422341	13	-9	16	-56	SG	(Raw Nav, Kongsberg 14208, img#57) (B)
06-Apr-2023	14:42:15	1972	ECR_ENV_03			camera	72	527825	6422336	527815	6422341	10	-5	11	-65	SG	(Raw Nav, Kongsberg 14208, img#58) (B)
06-Apr-2023	14:42:30	1973	ECR_ENV_03			camera	72	527824	6422338	527815	6422341	9	-3	9	-74	SG	(Raw Nav, Kongsberg 14208, img#59) (B)
06-Apr-2023	14:42:38	1974	ECR_ENV_03			camera	72	527821	6422338	527815	6422341	6	-3	6	-66	SG	(Raw Nav, Kongsberg 14208, img#60) (B)
06-Apr-2023	14:43:01	1975	ECR_ENV_03			camera	72	527820	6422343	527815	6422341	5	2	5	-116	SG	(Raw Nav, Kongsberg 14208, img#61) (B)
06-Apr-2023	14:43:14	1976	ECR_ENV_03			camera	72	527816	6422342	527815	6422341	1	1	2	-146	SG	(Raw Nav, Kongsberg 14208, img#62) (B)
06-Apr-2023	14:43:24	1977	ECR_ENV_03			camera	72	527815	6422342	527815	6422341	0	1	1	178	SG	(Raw Nav, Kongsberg 14208, img#63) (B)
06-Apr-2023	14:43:40	1978	ECR_ENV_03			camera	72	527812	6422346	527815	6422341	-3	5	6	150	SG	(Raw Nav, Kongsberg 14208, img#64) (B)
06-Apr-2023	14:43:55	1979	ECR_ENV_03			camera	72	527810	6422350	527815	6422341	-5	9	11	152	SG	(Raw Nav, Kongsberg 14208, img#65) (B)
06-Apr-2023	14:44:02	1980	ECR_ENV_03			camera	73	527807	6422350	527815	6422341	-8	9	12	139	SG	(Raw Nav, Kongsberg 14208, img#66) (B)
06-Apr-2023	14:44:11	1981	ECR_ENV_03			camera	73	527807	6422352	527815	6422341	-8	11	14	145	SG	(Raw Nav, Kongsberg 14208, img#67) (B)
06-Apr-2023	14:44:30	1982	ECR_ENV_03			camera	72	527806	6422355	527815	6422341	-9	14	17	148	SG	(Raw Nav, Kongsberg 14208, img#68) (B) # No photo taken
06-Apr-2023	14:44:43	1983	ECR_ENV_03			camera	73	527806	6422356	527815	6422341	-9	15	18	150	SG	(Raw Nav, Kongsberg 14208, img#69) (B)
06-Apr-2023	14:44:54	1984	ECR_ENV_03			camera	73	527806	6422361	527815	6422341	-9	20	22	156	SG	(Raw Nav, Kongsberg 14208, img#70) (B)
06-Apr-2023	14:45:10	1985	ECR_ENV_03			camera	72	527804	6422362	527815	6422341	-11	21	24	153	SG	(Raw Nav, Kongsberg 14208, img#71) (B)
06-Apr-2023	14:45:30	1986	ECR_ENV_03			camera	72	527803	6422363	527815	6422341	-12	22	25	152	SG	(Raw Nav, Kongsberg 14208, img#72) (B)
06-Apr-2023	14:45:37	1987	ECR_ENV_03			camera	72	527801	6422362	527815	6422341	-14	21	26	147	SG	(Raw Nav, Kongsberg 14208, img#73) (B)
06-Apr-2023	14:46:14	1988	ECR_ENV_03			camera	72	527794	6422356	527815	6422341	-21	15	26	126	SG	(Raw Nav, Kongsberg 14208, img#74) (B)
06-Apr-2023	14:46:32	1989	ECR_ENV_03			camera	72	527792	6422357	527815	6422341	-23	16	28	125	SG	(Raw Nav, Kongsberg 14208, img#75) (B)
06-Apr-2023	14:46:45	1990	ECR_ENV_03			camera	72	527788	6422357	527815	6422341	-27	16	32	121	SG	(Raw Nav, Kongsberg 14208, img#76) (B)
06-Apr-2023	14:46:53	1991	ECR_ENV_03			camera	72	527787	6422356	527815	6422341	-28	15	32	119	SG	(Raw Nav, Kongsberg 14208, img#77) (B)
06-Apr-2023	14:47:05	1992	ECR_ENV_03			camera	72	527785	6422356	527815	6422341	-30	15	34	117	SG	(Raw Nav, Kongsberg 14208, img#78) (B)
06-Apr-2023	14:47:37	1993	ECR_ENV_03			camera	72	527782	6422361	527815	6422341	-33	20	39	122	SG	(Raw Nav, Kongsberg 14208, img#79) (B)
06-Apr-2023	14:47:50	1994	ECR_ENV_03			camera	72	527783	6422365	527815	6422341	-32	24	40	127	SG	(Raw Nav, Kongsberg 14208, img#80) (B)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	14:48:05	1995	ECR_ENV_03			camera	72	527781	6422369	527815	6422341	-34	28	44	130	SG	(Raw Nav, Kongsberg 14208, img#81) (B)
13-Apr-2023	18:59:24	1996	ECR_ENV_29			camera	81	526514	6423579	526548	6423621	-34	-42	54	39	SG	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Apr-2023	18:59:38	1997	ECR_ENV_29			camera	81	526515	6423581	526548	6423621	-33	-40	52	40	SG	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Apr-2023	19:00:19	1998	ECR_ENV_29			camera	81	526523	6423582	526548	6423621	-25	-39	47	33	SG	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Apr-2023	19:00:35	1999	ECR_ENV_29			camera	81	526522	6423588	526548	6423621	-26	-33	42	38	SG	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Apr-2023	19:01:06	2000	ECR_ENV_29			camera	81	526524	6423592	526548	6423621	-25	-29	38	40	SG	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Apr-2023	19:01:13	2001	ECR_ENV_29			camera	81	526525	6423593	526548	6423621	-23	-28	36	40	SG	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Apr-2023	19:01:32	2002	ECR_ENV_29			camera	81	526527	6423595	526548	6423621	-21	-26	33	39	SG	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Apr-2023	19:02:32	2003	ECR_ENV_29			camera	81	526536	6423595	526548	6423621	-12	-26	29	25	SG	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Apr-2023	19:03:03	2004	ECR_ENV_29			camera	81	526534	6423601	526548	6423621	-15	-20	24	37	SG	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Apr-2023	19:03:11	2005	ECR_ENV_29			camera	81	526537	6423604	526548	6423621	-12	-17	20	35	SG	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Apr-2023	19:03:18	2006	ECR_ENV_29			camera	81	526537	6423606	526548	6423621	-11	-15	19	36	SG	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Apr-2023	19:03:27	2007	ECR_ENV_29			camera	81	526543	6423605	526548	6423621	-5	-16	17	19	SG	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Apr-2023	19:03:34	2008	ECR_ENV_29			camera	81	526539	6423608	526548	6423621	-9	-13	16	37	SG	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Apr-2023	19:04:12	2009	ECR_ENV_29			camera	81	526544	6423610	526548	6423621	-4	-11	12	21	SG	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Apr-2023	19:04:21	2010	ECR_ENV_29			camera	81	526544	6423610	526548	6423621	-4	-11	11	20	SG	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A) # No photo taken
13-Apr-2023	19:04:57	2011	ECR_ENV_29			camera	82	526548	6423614	526548	6423621	0	-7	7	0	SG	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Apr-2023	19:05:13	2012	ECR_ENV_29			camera	81	526548	6423617	526548	6423621	0	-4	4	1	SG	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Apr-2023	19:05:22	2013	ECR_ENV_29			camera	81	526550	6423619	526548	6423621	1	-2	3	-30	SG	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Apr-2023	19:05:48	2014	ECR_ENV_29			camera	81	526552	6423625	526548	6423621	4	4	6	-134	SG	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A) # No photo taken
13-Apr-2023	19:05:55	2015	ECR_ENV_29			camera	82	526550	6423624	526548	6423621	2	3	4	-148	SG	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Apr-2023	19:06:43	2016	ECR_ENV_29			camera	81	526556	6423627	526548	6423621	8	7	10	-130	SG	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Apr-2023	19:07:00	2017	ECR_ENV_29			camera	82	526556	6423627	526548	6423621	8	6	10	-128	SG	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Apr-2023	19:07:14	2018	ECR_ENV_29			camera	82	526559	6423630	526548	6423621	11	9	14	-130	SG	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Apr-2023	19:07:21	2019	ECR_ENV_29			camera	81	526561	6423630	526548	6423621	13	9	16	-126	SG	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Apr-2023	19:07:43	2020	ECR_ENV_29			camera	82	526560	6423634	526548	6423621	11	13	17	-139	SG	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Apr-2023	19:08:15	2021	ECR_ENV_29			camera	82	526566	6423635	526548	6423621	18	14	23	-129	SG	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Apr-2023	19:08:22	2022	ECR_ENV_29			camera	82	526569	6423635	526548	6423621	20	15	25	-125	SG	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Apr-2023	19:08:29	2023	ECR_ENV_29			camera	82	526565	6423639	526548	6423621	17	18	25	-138	SG	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Apr-2023	19:08:52	2024	ECR_ENV_29			camera	82	526568	6423637	526548	6423621	20	16	26	-129	SG	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Apr-2023	19:09:01	2025	ECR_ENV_29			camera	82	526566	6423640	526548	6423621	18	19	26	-137	SG	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Apr-2023	19:09:11	2026	ECR_ENV_29			camera	82	526568	6423640	526548	6423621	20	19	27	-135	SG	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Apr-2023	19:09:25	2027	ECR_ENV_29			camera	82	526570	6423643	526548	6423621	22	22	31	-136	SG	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Apr-2023	19:09:36	2028	ECR_ENV_29			camera	82	526572	6423643	526548	6423621	23	22	32	-134	SG	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Apr-2023	19:09:55	2029	ECR_ENV_29			camera	82	526577	6423642	526548	6423621	29	22	36	-127	SG	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Apr-2023	19:10:26	2030	ECR_ENV_29			camera	82	526578	6423648	526548	6423621	30	27	40	-133	SG	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Apr-2023	19:10:33	2031	ECR_ENV_29			camera	82	526577	6423650	526548	6423621	29	29	41	-135	SG	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Apr-2023	19:10:41	2032	ECR_ENV_29			camera	82	526575	6423651	526548	6423621	27	31	41	-138	SG	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Apr-2023	19:11:00	2033	ECR_ENV_29			camera	82	526579	6423651	526548	6423621	31	31	43	-135	SG	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Apr-2023	19:11:48	2034	ECR_ENV_29			camera	82	526580	6423651	526548	6423621	32	30	43	-133	SG	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Apr-2023	19:11:54	2035	ECR_ENV_29			camera	82	526582	6423649	526548	6423621	34	28	44	-130	SG	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Apr-2023	19:12:01	2036	ECR_ENV_29			camera	82	526582	6423651	526548	6423621	34	30	45	-132	SG	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Apr-2023	22:38:35	2037	ECR_ENV_28			camera	76	527278	6425071	527328	6425044	-49	27	56	118	SG	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Apr-2023	22:38:55	2038	ECR_ENV_28			camera	76	527274	6425071	527328	6425044	-53	27	60	117	SG	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Apr-2023	22:39:10	2039	ECR_ENV_28			camera	76	527279	6425077	527328	6425044	-48	33	58	124	SG	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Apr-2023	22:39:28	2040	ECR_ENV_28			camera	76	527280	6425076	527328	6425044	-48	31	57	123	SG	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Apr-2023	22:39:43	2041	ECR_ENV_28			camera	76	527281	6425075	527328	6425044	-47	31	56	124	SG	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Apr-2023	22:40:12	2042	ECR_ENV_28			camera	76	527283	6425074	527328	6425044	-44	30	54	124	SG	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Apr-2023	22:40:26	2043	ECR_ENV_28			camera	76	527285	6425074	527328	6425044	-43	30	52	125	SG	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Apr-2023	22:40:51	2044	ECR_ENV_28			camera	76	527290	6425071	527328	6425044	-37	27	46	126	SG	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Apr-2023	22:40:57	2045	ECR_ENV_28			camera	76	527289	6425069	527328	6425044	-38	25	46	123	SG	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Apr-2023	22:41:18	2046	ECR_ENV_28			camera	76	527291	6425067	527328	6425044	-36	23	43	122	SG	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Apr-2023	22:41:31	2047	ECR_ENV_28			camera	76	527292	6425066	527328	6425044	-35	22	42	122	SG	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Apr-2023	22:41:49	2048	ECR_ENV_28			camera	76	527294	6425064	527328	6425044	-33	20	39	121	SG	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Apr-2023	22:42:21	2049	ECR_ENV_28			camera	76	527300	6425060	527328	6425044	-28	16	32	120	SG	(Raw Nav, Kongsberg 14208, img#13) (B)
13-Apr-2023	22:42:30	2050	ECR_ENV_28			camera	77	527301	6425059	527328	6425044	-26	15	30	119	SG	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Apr-2023	22:43:14	2051	ECR_ENV_28			camera	76	527308	6425057	527328	6425044	-20	13	24	124	SG	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Apr-2023	22:43:27	2052	ECR_ENV_28			camera	76	527311	6425058	527328	6425044	-16	14	21	130	SG	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Apr-2023	22:43:47	2053	ECR_ENV_28			camera	76	527315	6425056	527328	6425044	-13	12	17	132	SG	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Apr-2023	22:44:00	2054	ECR_ENV_28			camera	76	527317	6425055	527328	6425044	-10	11	15	138	SG	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Apr-2023	22:44:12	2055	ECR_ENV_28			camera	76	527319	6425055	527328	6425044	-8	10	13	142	SG	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Apr-2023	22:44:26	2056	ECR_ENV_28			camera	76	527321	6425053	527328	6425044	-6	9	11	143	SG	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Apr-2023	22:45:20	2057	ECR_ENV_28			camera	77	527320	6425051	527328	6425044	-7	7	10	136	SG	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Apr-2023	22:45:34	2058	ECR_ENV_28			camera	76	527321	6425049	527328	6425044	-6	5	8	130	SG	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Apr-2023	22:45:46	2059	ECR_ENV_28			camera	76	527322	6425048	527328	6425044	-6	4	7	125	SG	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Apr-2023	22:46:03	2060	ECR_ENV_28			camera	76	527323	6425046	527328	6425044	-4	2	5	120	SG	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Apr-2023	22:46:32	2061	ECR_ENV_28			camera	76	527327	6425044	527328	6425044	0	0	0	73	SG	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Apr-2023	22:46:51	2062	ECR_ENV_28			camera	77	527328	6425041	527328	6425044	0	-3	3	-6	SG	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Apr-2023	22:47:00	2063	ECR_ENV_28			camera	76	527330	6425040	527328	6425044	3	-4	5	-31	SG	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Apr-2023	22:47:44	2064	ECR_ENV_28			camera	76	527334	6425034	527328	6425044	7	-10	12	-33	SG	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Apr-2023	22:48:00	2065	ECR_ENV_28			camera	76	527338	6425029	527328	6425044	10	-15	18	-35	SG	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Apr-2023	22:48:14	2066	ECR_ENV_28			camera	76	527338	6425028	527328	6425044	11	-16	19	-35	SG	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Apr-2023	22:48:42	2067	ECR_ENV_28			camera	76	527337	6425026	527328	6425044	10	-18	20	-28	SG	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Apr-2023	22:48:49	2068	ECR_ENV_28			camera	76	527338	6425025	527328	6425044	10	-19	21	-28	SG	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Apr-2023	22:49:02	2069	ECR_ENV_28			camera	76	527344	6425021	527328	6425044	16	-23	28	-35	SG	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Apr-2023	22:49:12	2070	ECR_ENV_28			camera	76	527344	6425020	527328	6425044	17	-24	29	-35	SG	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Apr-2023	22:49:25	2071	ECR_ENV_28			camera	76	527347	6425018	527328	6425044	20	-27	33	-36	SG	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Apr-2023	22:49:33	2072	ECR_ENV_28			camera	76	527349	6425017	527328	6425044	22	-28	35	-38	SG	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A) # No photo taken
13-Apr-2023	22:49:40	2073	ECR_ENV_28			camera	76	527350	6425015	527328	6425044	23	-29	36	-38	SG	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Apr-2023	22:49:49	2074	ECR_ENV_28			camera	77	527351	6425015	527328	6425044	24	-29	38	-39	SG	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Apr-2023	22:50:13	2075	ECR_ENV_28			camera	76	527356	6425013	527328	6425044	29	-31	42	-42	SG	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Apr-2023	22:50:23	2076	ECR_ENV_28			camera	77	527355	6425011	527328	6425044	27	-33	43	-40	SG	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Apr-2023	22:50:38	2077	ECR_ENV_28			camera	77	527361	6425012	527328	6425044	34	-32	47	-46	SG	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Apr-2023		2078	ECR_ENV_10													PL	Lost connection with EELS, no Fix taken
08-Apr-2023		2079	ECR_ENV_10													PL	Lost connection with EELS, no Fix taken
09-Apr-2023		2080	ECR_ENV_10													PL	Lost connection with EELS, no Fix taken
10-Apr-2023		2081	ECR_ENV_10													PL	Lost connection with EELS, no Fix taken
11-Apr-2023		2082	ECR_ENV_10													PL	Lost connection with EELS, no Fix taken
12-Apr-2023		2083	ECR_ENV_10													PL	Lost connection with EELS, no Fix taken
13-Apr-2023		2084	ECR_ENV_10													PL	Lost connection with EELS, no Fix taken
14-Apr-2023	00:33:54	2085	ECR_ENV_10			camera	77	526857	6427550	526894	6427550	-38	0	37	91	PL	(Raw Nav, Kongsberg 14208, img#1) (B)
14-Apr-2023	00:35:10	2086	ECR_ENV_10			camera	77	526857	6427548	526894	6427550	-38	-2	37	88	PL	(Raw Nav, Kongsberg 14208, img#2) (B)
14-Apr-2023	00:35:15	2087	ECR_ENV_10			camera	76	526859	6427550	526894	6427550	-36	0	35	91	PL	(Raw Nav, Kongsberg 14208, img#3) (B)
14-Apr-2023	00:35:23	2088	ECR_ENV_10			camera	77	526857	6427549	526894	6427550	-38	-1	37	89	PL	(Raw Nav, Kongsberg 14208, img#4) (B)
14-Apr-2023	00:35:32	2089	ECR_ENV_10			camera	77	526859	6427550	526894	6427550	-36	0	35	91	PL	(Raw Nav, Kongsberg 14208, img#5) (B)
14-Apr-2023	00:35:46	2090	ECR_ENV_10			camera	76	526860	6427550	526894	6427550	-35	0	34	91	PL	(Raw Nav, Kongsberg 14208, img#6) (B)
14-Apr-2023	00:35:52	2091	ECR_ENV_10			camera	76	526862	6427550	526894	6427550	-33	0	32	91	PL	(Raw Nav, Kongsberg 14208, img#7) (B)
14-Apr-2023	00:36:07	2092	ECR_ENV_10			camera	77	526859	6427548	526894	6427550	-36	-2	35	88	PL	(Raw Nav, Kongsberg 14208, img#8) (B)
14-Apr-2023	00:36:14	2093	ECR_ENV_10			camera	76	526862	6427551	526894	6427550	-33	1	32	93	PL	(Raw Nav, Kongsberg 14208, img#9) (B)
14-Apr-2023	00:36:46	2094	ECR_ENV_10			camera	77	526867	6427549	526894	6427550	-28	-1	27	89	PL	(Raw Nav, Kongsberg 14208, img#10) (B)
14-Apr-2023	00:36:54	2095	ECR_ENV_10			camera	77	526867	6427549	526894	6427550	-28	-1	27	89	PL	(Raw Nav, Kongsberg 14208, img#11) (B)
14-Apr-2023	00:37:06	2096	ECR_ENV_10			camera	76	526867	6427546	526894	6427550	-28	-4	28	83	PL	(Raw Nav, Kongsberg 14208, img#12) (B)
14-Apr-2023	00:37:16	2097	ECR_ENV_10			camera	77	526872	6427548	526894	6427550	-23	-2	23	86	PL	(Raw Nav, Kongsberg 14208, img#13) (B)
14-Apr-2023	00:37:22	2098	ECR_ENV_10			camera	77	526873	6427548	526894	6427550	-22	-2	22	86	PL	(Raw Nav, Kongsberg 14208, img#14) (B)
14-Apr-2023	00:37:29	2099	ECR_ENV_10			camera	76	526875	6427549	526894	6427550	-20	-1	19	88	PL	(Raw Nav, Kongsberg 14208, img#15) (B)
14-Apr-2023	00:37:45	2100	ECR_ENV_10			camera	77	526876	6427548	526894	6427550	-19	-2	19	85	PL	(Raw Nav, Kongsberg 14208, img#16) (B)
14-Apr-2023	00:37:52	2101	ECR_ENV_10			camera	76	526873	6427545	526894	6427550	-22	-5	22	78	PL	(Raw Nav, Kongsberg 14208, img#17) (B)
14-Apr-2023	00:37:58	2102	ECR_ENV_10			camera	76	526875	6427545	526894	6427550	-20	-5	20	77	PL	(Raw Nav, Kongsberg 14208, img#18) (B)
14-Apr-2023	00:38:06	2103	ECR_ENV_10			camera	76	526879	6427550	526894	6427550	-16	0	15	92	PL	(Raw Nav, Kongsberg 14208, img#19) (B)
14-Apr-2023	00:38:25	2104	ECR_ENV_10			camera	76	526883	6427548	526894	6427550	-12	-2	12	82	PL	(Raw Nav, Kongsberg 14208, img#20) (B)
14-Apr-2023	00:38:31	2105	ECR_ENV_10			camera	76	526884	6427551	526894	6427550	-11	1	11	98	PL	(Raw Nav, Kongsberg 14208, img#21) (B)
14-Apr-2023	00:38:46	2106	ECR_ENV_10			camera	76	526887	6427549	526894	6427550	-7	-1	7	86	PL	(Raw Nav, Kongsberg 14208, img#22) (B)
14-Apr-2023	00:38:53	2107	ECR_ENV_10			camera	76	526890	6427549	526894	6427550	-4	-1	4	83	PL	(Raw Nav, Kongsberg 14208, img#23) (B)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	00:39:26	2108	ECR_ENV_10			camera	77	526896	6427549	526894	6427550	2	-1	2	-71	PL	(Raw Nav, Kongsberg 14208, img#24) (B)
14-Apr-2023	00:39:40	2109	ECR_ENV_10			camera	76	526899	6427549	526894	6427550	5	-1	5	-83	PL	(Raw Nav, Kongsberg 14208, img#25) (B)
14-Apr-2023	00:39:48	2110	ECR_ENV_10			camera	77	526899	6427547	526894	6427550	5	-3	5	-61	PL	(Raw Nav, Kongsberg 14208, img#26) (B)
14-Apr-2023	00:40:20	2111	ECR_ENV_10			camera	77	526909	6427547	526894	6427550	15	-3	15	-80	PL	(Raw Nav, Kongsberg 14208, img#27) (B)
14-Apr-2023	00:40:39	2112	ECR_ENV_10			camera	76	526911	6427545	526894	6427550	17	-5	17	-75	PL	(Raw Nav, Kongsberg 14208, img#28) (B)
14-Apr-2023	00:40:53	2113	ECR_ENV_10			camera	77	526917	6427549	526894	6427550	23	-1	23	-89	PL	(Raw Nav, Kongsberg 14208, img#29) (B)
14-Apr-2023	00:41:07	2114	ECR_ENV_10			camera	76	526919	6427550	526894	6427550	25	0	25	-91	PL	(Raw Nav, Kongsberg 14208, img#30) (B)
14-Apr-2023	00:41:27	2115	ECR_ENV_10			camera	77	526922	6427550	526894	6427550	28	0	28	-91	PL	(Raw Nav, Kongsberg 14208, img#31) (B)
14-Apr-2023	00:41:41	2116	ECR_ENV_10			camera	76	526923	6427549	526894	6427550	29	-1	29	-89	PL	(Raw Nav, Kongsberg 14208, img#32) (B)
14-Apr-2023	00:41:54	2117	ECR_ENV_10			camera	76	526926	6427550	526894	6427550	32	0	32	-91	PL	(Raw Nav, Kongsberg 14208, img#33) (B)
14-Apr-2023	00:42:01	2118	ECR_ENV_10			camera	76	526928	6427549	526894	6427550	34	-1	34	-89	PL	(Raw Nav, Kongsberg 14208, img#34) (B)
14-Apr-2023	00:42:10	2119	ECR_ENV_10			camera	76	526928	6427548	526894	6427550	34	-2	34	-87	PL	(Raw Nav, Kongsberg 14208, img#35) (B)
14-Apr-2023	00:42:24	2120	ECR_ENV_10			camera	77	526929	6427545	526894	6427550	35	-5	35	-83	PL	(Raw Nav, Kongsberg 14208, img#36) (B)
14-Apr-2023	00:42:31	2121	ECR_ENV_10			camera	76	526935	6427549	526894	6427550	41	-1	41	-89	PL	(Raw Nav, Kongsberg 14208, img#37) (B)
14-Apr-2023	00:43:04	2122	ECR_ENV_10			camera	77	526940	6427546	526894	6427550	46	-4	46	-86	PL	(Raw Nav, Kongsberg 14208, img#38) (B)
14-Apr-2023	00:43:16	2123	ECR_ENV_10			camera	77	526946	6427551	526894	6427550	52	1	52	-92	PL	(Raw Nav, Kongsberg 14208, img#39) (B)
14-Apr-2023	01:20:21	2124	ECR_ENV_10A			camera	76	526843	6427539	526894	6427550	-52	-10	53	79	PL	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Apr-2023	01:21:03	2125	ECR_ENV_10A			camera	76	526845	6427546	526894	6427550	-49	-3	50	86	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Apr-2023	01:21:17	2126	ECR_ENV_10A			camera	76	526845	6427548	526894	6427550	-49	-2	49	88	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Apr-2023	01:22:00	2127	ECR_ENV_10A			camera	76	526847	6427550	526894	6427550	-47	0	47	90	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Apr-2023	01:22:15	2128	ECR_ENV_10A			camera	76	526851	6427549	526894	6427550	-43	0	43	90	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Apr-2023	01:22:27	2129	ECR_ENV_10A			camera	76	526851	6427547	526894	6427550	-44	-3	44	86	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Apr-2023	01:23:03	2130	ECR_ENV_10A			camera	76	526857	6427553	526894	6427550	-37	3	37	95	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Apr-2023	01:23:11	2131	ECR_ENV_10A			camera	76	526858	6427552	526894	6427550	-36	2	36	93	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Apr-2023	01:23:18	2132	ECR_ENV_10A			camera	76	526859	6427553	526894	6427550	-35	4	35	96	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Apr-2023	01:23:58	2133	ECR_ENV_10A			camera	76	526867	6427554	526894	6427550	-27	4	28	99	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Apr-2023	01:24:30	2134	ECR_ENV_10A			camera	76	526875	6427554	526894	6427550	-20	4	20	102	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Apr-2023	01:24:37	2135	ECR_ENV_10A			camera	76	526875	6427554	526894	6427550	-20	5	20	103	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Apr-2023	01:25:03	2136	ECR_ENV_10A			camera	76	526877	6427552	526894	6427550	-17	2	17	98	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Apr-2023	01:25:20	2137	ECR_ENV_10A			camera	76	526881	6427554	526894	6427550	-14	5	15	110	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Apr-2023	01:25:28	2138	ECR_ENV_10A			camera	76	526882	6427551	526894	6427550	-13	1	13	96	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Apr-2023	01:25:45	2139	ECR_ENV_10A			camera	76	526885	6427550	526894	6427550	-9	0	9	90	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A) # No photo taken
14-Apr-2023	01:26:05	2140	ECR_ENV_10A			camera	76	526890	6427550	526894	6427550	-5	0	5	93	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Apr-2023	01:26:19	2141	ECR_ENV_10A			camera	76	526893	6427550	526894	6427550	-1	1	1	134	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Apr-2023	01:26:25	2142	ECR_ENV_10A			camera	76	526895	6427550	526894	6427550	1	1	1	-147	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Apr-2023	01:26:37	2143	ECR_ENV_10A			camera	76	526898	6427550	526894	6427550	4	1	4	-102	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Apr-2023	01:26:46	2144	ECR_ENV_10A			camera	76	526900	6427550	526894	6427550	5	0	5	-93	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Apr-2023	01:26:50	2145	ECR_ENV_10A			camera	76	526901	6427550	526894	6427550	7	1	7	-97	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	01:27:00	2146	ECR_ENV_10A			camera	76	526903	6427552	526894	6427550	9	2	9	-105	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Apr-2023	01:27:09	2147	ECR_ENV_10A			camera	76	526906	6427552	526894	6427550	11	2	12	-100	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Apr-2023	01:27:17	2148	ECR_ENV_10A			camera	76	526905	6427550	526894	6427550	11	0	11	-91	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Apr-2023	01:27:24	2149	ECR_ENV_10A			camera	76	526908	6427551	526894	6427550	14	2	14	-97	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Apr-2023	01:27:38	2150	ECR_ENV_10A			camera	76	526912	6427553	526894	6427550	18	4	18	-102	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Apr-2023	01:27:46	2151	ECR_ENV_10A			camera	76	526912	6427551	526894	6427550	18	2	18	-96	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Apr-2023	01:28:00	2152	ECR_ENV_10A			camera	76	526917	6427554	526894	6427550	23	4	23	-100	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Apr-2023	01:28:05	2153	ECR_ENV_10A			camera	76	526918	6427553	526894	6427550	23	3	23	-98	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Apr-2023	01:28:18	2154	ECR_ENV_10A			camera	76	526921	6427553	526894	6427550	27	4	27	-98	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Apr-2023	01:28:33	2155	ECR_ENV_10A			camera	76	526926	6427553	526894	6427550	32	4	32	-97	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Apr-2023	01:28:41	2156	ECR_ENV_10A			camera	76	526925	6427554	526894	6427550	31	4	31	-98	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Apr-2023	01:28:49	2157	ECR_ENV_10A			camera	76	526926	6427553	526894	6427550	31	3	31	-96	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Apr-2023	01:29:09	2158	ECR_ENV_10A			camera	76	526930	6427554	526894	6427550	36	5	36	-98	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Apr-2023	01:29:26	2159	ECR_ENV_10A			camera	76	526931	6427551	526894	6427550	37	2	37	-93	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Apr-2023	01:29:48	2160	ECR_ENV_10A			camera	76	526932	6427545	526894	6427550	37	-4	37	-83	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Apr-2023	01:30:07	2161	ECR_ENV_10A			camera	76	526938	6427547	526894	6427550	44	-2	44	-87	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Apr-2023	01:30:40	2162	ECR_ENV_10A			camera	76	526944	6427549	526894	6427550	50	0	50	-90	PL	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Apr-2023	01:30:46	2163	ECR_ENV_10A			camera	76	526946	6427549	526894	6427550	52	0	52	-89	PL	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Apr-2023	05:07:38	2164	ECR_ENV_31			camera	72	529092	6429261	529151	6429215	-58	46	74	128	PL	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Apr-2023	05:08:01	2165	ECR_ENV_31			camera	73	529093	6429258	529151	6429215	-58	42	72	126	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Apr-2023	05:09:15	2166	ECR_ENV_31			camera	73	529100	6429245	529151	6429215	-51	30	59	120	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Apr-2023	05:09:42	2167	ECR_ENV_31			camera	73	529106	6429247	529151	6429215	-45	31	55	125	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Apr-2023	05:10:03	2168	ECR_ENV_31			camera	73	529109	6429244	529151	6429215	-42	28	50	124	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Apr-2023	05:10:14	2169	ECR_ENV_31			camera	73	529108	6429239	529151	6429215	-42	24	49	120	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Apr-2023	05:10:28	2170	ECR_ENV_31			camera	73	529114	6429241	529151	6429215	-36	25	44	125	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Apr-2023	05:10:56	2171	ECR_ENV_31			camera	73	529118	6429236	529151	6429215	-33	20	39	122	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Apr-2023	05:11:22	2172	ECR_ENV_31			camera	73	529121	6429235	529151	6429215	-30	20	35	124	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Apr-2023	05:11:31	2173	ECR_ENV_31			camera	73	529123	6429234	529151	6429215	-27	19	33	125	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Apr-2023	05:11:39	2174	ECR_ENV_31			camera	73	529124	6429233	529151	6429215	-26	17	32	123	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Apr-2023	05:11:46	2175	ECR_ENV_31			camera	73	529125	6429232	529151	6429215	-26	17	31	124	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Apr-2023	05:11:57	2176	ECR_ENV_31			camera	73	529125	6429229	529151	6429215	-26	14	29	118	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Apr-2023	05:12:13	2177	ECR_ENV_31			camera	73	529132	6429231	529151	6429215	-19	15	24	129	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Apr-2023	05:12:19	2178	ECR_ENV_31			camera	73	529131	6429230	529151	6429215	-20	15	24	127	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Apr-2023	05:12:26	2179	ECR_ENV_31			camera	73	529133	6429229	529151	6429215	-18	14	22	128	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Apr-2023	05:12:40	2180	ECR_ENV_31			camera	73	529133	6429229	529151	6429215	-18	14	23	127	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Apr-2023	05:12:56	2181	ECR_ENV_31			camera	73	529134	6429227	529151	6429215	-17	11	20	125	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Apr-2023	05:13:05	2182	ECR_ENV_31			camera	73	529136	6429226	529151	6429215	-15	10	18	124	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Apr-2023	05:13:30	2183	ECR_ENV_31			camera	73	529138	6429223	529151	6429215	-13	8	15	120	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	05:13:44	2184	ECR_ENV_31			camera	73	529136	6429217	529151	6429215	-15	1	15	96	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Apr-2023	05:14:19	2185	ECR_ENV_31			camera	73	529143	6429215	529151	6429215	-7	0	7	90	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Apr-2023	05:14:26	2186	ECR_ENV_31			camera	73	529142	6429216	529151	6429215	-9	1	9	96	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Apr-2023	05:15:07	2187	ECR_ENV_31			camera	73	529145	6429210	529151	6429215	-6	-5	7	49	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Apr-2023	05:15:17	2188	ECR_ENV_31			camera	73	529147	6429209	529151	6429215	-4	-6	7	33	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Apr-2023	05:15:35	2189	ECR_ENV_31			camera	73	529150	6429208	529151	6429215	-1	-8	8	6	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Apr-2023	05:15:54	2190	ECR_ENV_31			camera	73	529151	6429203	529151	6429215	0	-13	12	1	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Apr-2023	05:16:09	2191	ECR_ENV_31			camera	73	529154	6429203	529151	6429215	3	-12	13	-14	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Apr-2023	05:16:28	2192	ECR_ENV_31			camera	73	529156	6429203	529151	6429215	5	-13	14	-23	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Apr-2023	05:16:52	2193	ECR_ENV_31			camera	74	529160	6429199	529151	6429215	9	-17	19	-29	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Apr-2023	05:17:05	2194	ECR_ENV_31			camera	73	529162	6429199	529151	6429215	11	-17	20	-34	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Apr-2023	05:17:44	2195	ECR_ENV_31			camera	73	529168	6429194	529151	6429215	17	-22	28	-39	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Apr-2023	05:17:50	2196	ECR_ENV_31			camera	73	529166	6429188	529151	6429215	16	-28	32	-30	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Apr-2023	05:18:14	2197	ECR_ENV_31			camera	74	529170	6429187	529151	6429215	19	-28	34	-34	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Apr-2023	05:18:29	2198	ECR_ENV_31			camera	74	529171	6429188	529151	6429215	20	-28	34	-36	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Apr-2023	05:18:42	2199	ECR_ENV_31			camera	74	529172	6429187	529151	6429215	21	-28	35	-36	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Apr-2023	05:18:50	2200	ECR_ENV_31			camera	74	529172	6429184	529151	6429215	21	-31	38	-34	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Apr-2023	05:19:04	2201	ECR_ENV_31			camera	74	529173	6429183	529151	6429215	23	-33	40	-35	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Apr-2023	05:19:16	2202	ECR_ENV_31			camera	74	529175	6429181	529151	6429215	25	-35	42	-36	PL	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Apr-2023	05:19:30	2203	ECR_ENV_31			camera	74	529174	6429175	529151	6429215	23	-41	47	-30	PL	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Apr-2023	07:44:07	2204	ECR_ENV_34			camera	73	526343	6430532	526390	6430516	-47	16	50	108	PL	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Apr-2023	07:44:51	2205	ECR_ENV_34			camera	73	526340	6430527	526390	6430516	-50	10	51	101	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Apr-2023	07:45:08	2206	ECR_ENV_34			camera	73	526338	6430525	526390	6430516	-53	8	53	99	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Apr-2023	07:45:16	2207	ECR_ENV_34			camera	73	526337	6430523	526390	6430516	-54	7	54	97	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Apr-2023	07:45:45	2208	ECR_ENV_34			camera	73	526335	6430518	526390	6430516	-56	2	56	92	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Apr-2023	07:45:52	2209	ECR_ENV_34			camera	73	526335	6430518	526390	6430516	-55	2	55	92	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Apr-2023	07:46:33	2210	ECR_ENV_34			camera	73	526341	6430517	526390	6430516	-49	0	49	90	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Apr-2023	07:46:48	2211	ECR_ENV_34			camera	73	526343	6430515	526390	6430516	-47	-2	47	88	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Apr-2023	07:47:26	2212	ECR_ENV_34			camera	73	526348	6430514	526390	6430516	-43	-2	43	87	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Apr-2023	07:47:41	2213	ECR_ENV_34			camera	73	526351	6430514	526390	6430516	-40	-3	40	86	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Apr-2023	07:47:58	2214	ECR_ENV_34			camera	73	526353	6430512	526390	6430516	-37	-4	37	84	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Apr-2023	07:48:12	2215	ECR_ENV_34			camera	73	526355	6430513	526390	6430516	-35	-4	35	84	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Apr-2023	07:48:35	2216	ECR_ENV_34			camera	74	526359	6430512	526390	6430516	-31	-4	31	82	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Apr-2023	07:48:54	2217	ECR_ENV_34			camera	73	526363	6430514	526390	6430516	-27	-2	27	85	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Apr-2023	07:49:08	2218	ECR_ENV_34			camera	73	526365	6430514	526390	6430516	-26	-3	26	84	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Apr-2023	07:49:23	2219	ECR_ENV_34			camera	73	526368	6430511	526390	6430516	-23	-5	23	77	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Apr-2023	07:49:37	2220	ECR_ENV_34			camera	73	526370	6430514	526390	6430516	-21	-3	21	82	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Apr-2023	07:49:49	2221	ECR_ENV_34			camera	73	526371	6430516	526390	6430516	-20	0	20	89	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	07:49:56	2222	ECR_ENV_34			camera	73	526373	6430515	526390	6430516	-18	-1	18	87	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Apr-2023	07:50:10	2223	ECR_ENV_34			camera	73	526375	6430517	526390	6430516	-15	0	15	90	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Apr-2023	07:50:15	2224	ECR_ENV_34			camera	73	526374	6430518	526390	6430516	-16	1	16	95	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Apr-2023	07:50:23	2225	ECR_ENV_34			camera	73	526377	6430517	526390	6430516	-14	1	14	94	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Apr-2023	07:50:45	2226	ECR_ENV_34			camera	73	526379	6430513	526390	6430516	-11	-3	12	74	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Apr-2023	07:50:55	2227	ECR_ENV_34			camera	73	526380	6430520	526390	6430516	-10	4	11	110	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Apr-2023	07:51:09	2228	ECR_ENV_34			camera	73	526383	6430518	526390	6430516	-8	2	8	102	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Apr-2023	07:51:21	2229	ECR_ENV_34			camera	73	526383	6430517	526390	6430516	-7	1	7	95	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Apr-2023	07:52:04	2230	ECR_ENV_34			camera	74	526388	6430517	526390	6430516	-3	0	3	100	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Apr-2023	07:52:11	2231	ECR_ENV_34			camera	73	526388	6430517	526390	6430516	-2	1	2	103	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Apr-2023	07:52:27	2232	ECR_ENV_34			camera	73	526390	6430515	526390	6430516	-1	-1	2	31	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Apr-2023	07:52:39	2233	ECR_ENV_34			camera	73	526391	6430515	526390	6430516	0	-1	1	-23	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Apr-2023	07:53:03	2234	ECR_ENV_34			camera	73	526394	6430515	526390	6430516	4	-2	4	-67	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Apr-2023	07:53:34	2235	ECR_ENV_34			camera	73	526400	6430517	526390	6430516	10	1	10	-95	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Apr-2023	07:53:50	2236	ECR_ENV_34			camera	73	526403	6430517	526390	6430516	13	1	13	-93	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Apr-2023	07:54:14	2237	ECR_ENV_34			camera	73	526407	6430517	526390	6430516	17	0	17	-91	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Apr-2023	07:54:45	2238	ECR_ENV_34			camera	73	526411	6430512	526390	6430516	21	-5	22	-77	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Apr-2023	07:54:52	2239	ECR_ENV_34			camera	73	526413	6430515	526390	6430516	23	-2	23	-86	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Apr-2023	07:55:14	2240	ECR_ENV_34			camera	73	526417	6430514	526390	6430516	27	-2	27	-85	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Apr-2023	07:55:31	2241	ECR_ENV_34			camera	73	526418	6430514	526390	6430516	28	-3	28	-84	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Apr-2023	07:56:02	2242	ECR_ENV_34			camera	73	526422	6430514	526390	6430516	32	-2	32	-86	PL	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Apr-2023	07:56:29	2243	ECR_ENV_34			camera	73	526426	6430516	526390	6430516	36	0	36	-90	PL	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Apr-2023	07:56:40	2244	ECR_ENV_34			camera	73	526427	6430518	526390	6430516	37	1	37	-92	PL	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Apr-2023	07:57:05	2245	ECR_ENV_34			camera	73	526431	6430518	526390	6430516	41	1	41	-92	PL	(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Apr-2023	07:57:11	2246	ECR_ENV_34			camera	73	526432	6430519	526390	6430516	41	2	41	-93	PL	(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Apr-2023	07:57:31	2247	ECR_ENV_34			camera	73	526435	6430517	526390	6430516	45	0	45	-90	PL	(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Apr-2023	07:58:07	2248	ECR_ENV_34			camera	73	526440	6430518	526390	6430516	50	2	50	-92	PL	(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Apr-2023	09:22:11	2249	ECR_ENV_30			camera	72	527741	6431924	527788	6431898	-47	26	54	119	PL	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Apr-2023	09:22:47	2250	ECR_ENV_30			camera	72	527742	6431923	527788	6431898	-46	25	52	119	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Apr-2023	09:23:01	2251	ECR_ENV_30			camera	71	527741	6431921	527788	6431898	-47	24	52	117	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Apr-2023	09:23:15	2252	ECR_ENV_30			camera	72	527742	6431920	527788	6431898	-47	22	51	115	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Apr-2023	09:23:30	2253	ECR_ENV_30			camera	72	527744	6431924	527788	6431898	-44	26	51	120	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Apr-2023	09:23:44	2254	ECR_ENV_30			camera	72	527746	6431923	527788	6431898	-42	25	49	120	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Apr-2023	09:24:18	2255	ECR_ENV_30			camera	72	527751	6431921	527788	6431898	-37	23	43	123	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Apr-2023	09:24:34	2256	ECR_ENV_30			camera	72	527752	6431918	527788	6431898	-37	20	42	119	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Apr-2023	09:24:40	2257	ECR_ENV_30			camera	72	527755	6431921	527788	6431898	-33	23	40	125	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Apr-2023	09:24:57	2258	ECR_ENV_30			camera	72	527755	6431918	527788	6431898	-33	20	38	121	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	09:25:03	2259	ECR_ENV_30			camera	72	527759	6431920	527788	6431898	-29	22	36	127	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Apr-2023	09:25:23	2260	ECR_ENV_30			camera	72	527759	6431918	527788	6431898	-29	21	35	126	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Apr-2023	09:25:37	2261	ECR_ENV_30			camera	72	527764	6431919	527788	6431898	-24	21	32	131	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Apr-2023	09:25:43	2262	ECR_ENV_30			camera	72	527765	6431919	527788	6431898	-23	21	31	132	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Apr-2023	09:26:21	2263	ECR_ENV_30			camera	72	527769	6431916	527788	6431898	-19	18	26	134	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Apr-2023	09:26:47	2264	ECR_ENV_30			camera	72	527770	6431916	527788	6431898	-18	18	26	135	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Apr-2023	09:27:27	2265	ECR_ENV_30			camera	72	527772	6431913	527788	6431898	-16	15	21	133	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Apr-2023	09:27:33	2266	ECR_ENV_30			camera	72	527772	6431912	527788	6431898	-16	14	21	131	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Apr-2023	09:28:32	2267	ECR_ENV_30			camera	72	527775	6431910	527788	6431898	-13	12	18	131	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Apr-2023	09:29:02	2268	ECR_ENV_30			camera	72	527774	6431906	527788	6431898	-14	8	16	119	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Apr-2023	09:29:28	2269	ECR_ENV_30			camera	72	527778	6431905	527788	6431898	-10	7	12	124	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Apr-2023	09:29:53	2270	ECR_ENV_30			camera	72	527780	6431904	527788	6431898	-8	6	10	125	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Apr-2023	09:30:44	2271	ECR_ENV_30			camera	72	527785	6431900	527788	6431898	-3	2	4	124	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Apr-2023	09:31:27	2272	ECR_ENV_30			camera	72	527789	6431897	527788	6431898	1	-1	1	-58	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Apr-2023	09:31:40	2273	ECR_ENV_30			camera	72	527790	6431897	527788	6431898	2	-1	2	-74	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Apr-2023	09:31:47	2274	ECR_ENV_30			camera	72	527792	6431896	527788	6431898	4	-2	5	-60	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Apr-2023	09:32:17	2275	ECR_ENV_30			camera	72	527795	6431894	527788	6431898	7	-4	9	-60	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Apr-2023	09:32:24	2276	ECR_ENV_30			camera	72	527796	6431893	527788	6431898	8	-5	9	-59	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Apr-2023	09:32:53	2277	ECR_ENV_30			camera	72	527799	6431891	527788	6431898	11	-7	13	-58	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Apr-2023	09:33:10	2278	ECR_ENV_30			camera	72	527801	6431889	527788	6431898	13	-9	16	-53	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Apr-2023	09:33:17	2279	ECR_ENV_30			camera	72	527801	6431888	527788	6431898	13	-10	16	-53	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Apr-2023	09:33:25	2280	ECR_ENV_30			camera	72	527802	6431888	527788	6431898	14	-10	17	-54	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Apr-2023	09:33:49	2281	ECR_ENV_30			camera	72	527803	6431886	527788	6431898	15	-12	19	-52	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Apr-2023	09:34:04	2282	ECR_ENV_30			camera	72	527804	6431884	527788	6431898	16	-14	21	-50	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Apr-2023	09:34:11	2283	ECR_ENV_30			camera	72	527804	6431882	527788	6431898	16	-16	22	-45	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Apr-2023	09:34:27	2284	ECR_ENV_30			camera	72	527805	6431883	527788	6431898	17	-15	22	-48	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Apr-2023	09:34:40	2285	ECR_ENV_30			camera	72	527807	6431882	527788	6431898	19	-16	25	-50	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Apr-2023	09:34:52	2286	ECR_ENV_30			camera	72	527809	6431881	527788	6431898	21	-17	27	-51	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Apr-2023	09:35:45	2287	ECR_ENV_30			camera	72	527813	6431878	527788	6431898	26	-20	33	-51	PL	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Apr-2023	09:35:52	2288	ECR_ENV_30			camera	72	527813	6431876	527788	6431898	25	-22	33	-49	PL	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Apr-2023	09:36:14	2289	ECR_ENV_30			camera	72	527813	6431873	527788	6431898	25	-25	35	-45	PL	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Apr-2023	09:36:22	2290	ECR_ENV_30			camera	72	527817	6431874	527788	6431898	29	-24	38	-51	PL	(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Apr-2023	09:37:00	2291	ECR_ENV_30			camera	72	527817	6431873	527788	6431898	29	-25	38	-50	PL	(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Apr-2023	09:37:28	2292	ECR_ENV_30			camera	72	527821	6431869	527788	6431898	34	-29	44	-49	PL	(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Apr-2023	09:37:35	2293	ECR_ENV_30			camera	72	527821	6431868	527788	6431898	33	-30	45	-47	PL	(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Apr-2023	09:38:24	2294	ECR_ENV_30			camera	72	527826	6431864	527788	6431898	39	-34	51	-49	PL	(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Apr-2023	11:12:36	2295	ECR_ENV_05			camera	73	529689	6431972	529726	6431936	-38	35	52	133	PL	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Apr-2023	11:12:50	2296	ECR_ENV_05			camera	73	529690	6431972	529726	6431936	-36	36	51	135	PL	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N					Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	11:13:04	2297	ECR_ENV_05			camera	73	529691	6431973	529726	6431936	-35	37	51	136	PL	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Apr-2023	11:13:20	2298	ECR_ENV_05			camera	73	529693	6431971	529726	6431936	-33	35	48	137	PL	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Apr-2023	11:13:40	2299	ECR_ENV_05			camera	73	529697	6431971	529726	6431936	-30	35	46	139	PL	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Apr-2023	11:13:58	2300	ECR_ENV_05			camera	73	529701	6431971	529726	6431936	-25	34	43	144	PL	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Apr-2023	11:14:15	2301	ECR_ENV_05			camera	73	529706	6431970	529726	6431936	-21	34	40	149	PL	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Apr-2023	11:14:46	2302	ECR_ENV_05			camera	73	529709	6431968	529726	6431936	-18	32	36	151	PL	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Apr-2023	11:15:03	2303	ECR_ENV_05			camera	73	529709	6431965	529726	6431936	-17	29	34	149	PL	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Apr-2023	11:15:21	2304	ECR_ENV_05			camera	73	529711	6431964	529726	6431936	-16	28	32	151	PL	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Apr-2023	11:15:40	2305	ECR_ENV_05			camera	73	529710	6431962	529726	6431936	-16	26	30	148	PL	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Apr-2023	11:16:00	2306	ECR_ENV_05			camera	73	529710	6431959	529726	6431936	-16	23	28	145	PL	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Apr-2023	11:16:44	2307	ECR_ENV_05			camera	73	529707	6431952	529726	6431936	-19	15	25	129	PL	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Apr-2023	11:16:55	2308	ECR_ENV_05			camera	73	529712	6431951	529726	6431936	-15	15	21	135	PL	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Apr-2023	11:17:13	2309	ECR_ENV_05			camera	73	529712	6431947	529726	6431936	-14	10	17	126	PL	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Apr-2023	11:17:52	2310	ECR_ENV_05			camera	73	529719	6431941	529726	6431936	-7	5	9	125	PL	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Apr-2023	11:18:02	2311	ECR_ENV_05			camera	73	529720	6431939	529726	6431936	-7	3	7	115	PL	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Apr-2023	11:18:15	2312	ECR_ENV_05			camera	73	529724	6431938	529726	6431936	-3	2	3	122	PL	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A) # No photo taken
14-Apr-2023	11:18:29	2313	ECR_ENV_05			camera	73	529725	6431937	529726	6431936	-1	1	2	142	PL	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Apr-2023	11:18:38	2314	ECR_ENV_05			camera	74	529727	6431935	529726	6431936	1	-1	1	-21	PL	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Apr-2023	11:18:51	2315	ECR_ENV_05			camera	73	529730	6431933	529726	6431936	4	-3	5	-54	PL	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Apr-2023	11:19:02	2316	ECR_ENV_05			camera	73	529732	6431931	529726	6431936	6	-5	7	-49	PL	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Apr-2023	11:19:16	2317	ECR_ENV_05			camera	73	529735	6431929	529726	6431936	9	-7	11	-52	PL	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Apr-2023	11:19:46	2318	ECR_ENV_05			camera	73	529740	6431925	529726	6431936	13	-11	17	-51	PL	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Apr-2023	11:20:01	2319	ECR_ENV_05			camera	73	529743	6431923	529726	6431936	17	-14	21	-50	PL	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A) # No photo taken
14-Apr-2023	11:20:07	2320	ECR_ENV_05			camera	73	529744	6431921	529726	6431936	17	-15	23	-50	PL	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Apr-2023	11:20:14	2321	ECR_ENV_05			camera	73	529744	6431921	529726	6431936	18	-15	23	-50	PL	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Apr-2023	11:20:22	2322	ECR_ENV_05			camera	73	529745	6431918	529726	6431936	19	-18	26	-46	PL	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Apr-2023	11:20:35	2323	ECR_ENV_05			camera	73	529748	6431917	529726	6431936	22	-19	29	-49	PL	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Apr-2023	11:20:49	2324	ECR_ENV_05			camera	73	529750	6431915	529726	6431936	24	-21	32	-49	PL	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Apr-2023	11:21:04	2325	ECR_ENV_05			camera	73	529752	6431913	529726	6431936	25	-23	34	-48	PL	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Apr-2023	11:21:11	2326	ECR_ENV_05			camera	73	529753	6431912	529726	6431936	27	-24	36	-48	PL	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Apr-2023	11:21:25	2327	ECR_ENV_05			camera	73	529756	6431911	529726	6431936	29	-26	39	-49	PL	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Apr-2023	11:21:39	2328	ECR_ENV_05			camera	73	529756	6431909	529726	6431936	30	-27	41	-48	PL	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Apr-2023	11:21:51	2329	ECR_ENV_05			camera	73	529758	6431907	529726	6431936	32	-29	43	-48	PL	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Apr-2023	11:21:58	2330	ECR_ENV_05			camera	73	529760	6431906	529726	6431936	33	-30	45	-48	PL	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Apr-2023	11:22:12	2331	ECR_ENV_05			camera	73	529761	6431903	529726	6431936	35	-33	48	-47	PL	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Apr-2023	11:22:19	2332	ECR_ENV_05			camera	73	529763	6431903	529726	6431936	36	-34	50	-47	PL	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Apr-2023	14:15:07	2333	ECR_ENV_36			camera	71	527555	6435817	527614	6435820	-59	-3	59	87	SG	(Raw Nav, Kongsberg 14208, img#1) (B)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463				Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2				Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84		Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	14:15:43	2334	ECR_ENV_36			camera	71	527559	6435814	527614	6435820	-55	-6	55	84	SG	(Raw Nav, Kongsberg 14208, img#2) (B)
14-Apr-2023	14:15:50	2335	ECR_ENV_36			camera	71	527560	6435812	527614	6435820	-54	-8	55	82	SG	(Raw Nav, Kongsberg 14208, img#3) (B)
14-Apr-2023	14:16:09	2336	ECR_ENV_36			camera	71	527565	6435813	527614	6435820	-49	-7	50	82	SG	(Raw Nav, Kongsberg 14208, img#4) (B)
14-Apr-2023	14:16:26	2337	ECR_ENV_36			camera	71	527569	6435816	527614	6435820	-45	-4	45	85	SG	(Raw Nav, Kongsberg 14208, img#5) (B)
14-Apr-2023	14:16:38	2338	ECR_ENV_36			camera	71	527572	6435816	527614	6435820	-42	-4	42	85	SG	(Raw Nav, Kongsberg 14208, img#6) (B)
14-Apr-2023	14:16:55	2339	ECR_ENV_36			camera	72	527574	6435817	527614	6435820	-40	-3	40	86	SG	(Raw Nav, Kongsberg 14208, img#7) (B)
14-Apr-2023	14:17:05	2340	ECR_ENV_36			camera	72	527576	6435817	527614	6435820	-38	-3	38	85	SG	(Raw Nav, Kongsberg 14208, img#8) (B)
14-Apr-2023	14:17:13	2341	ECR_ENV_36			camera	71	527578	6435815	527614	6435820	-36	-5	36	82	SG	(Raw Nav, Kongsberg 14208, img#9) (B)
14-Apr-2023	14:17:43	2342	ECR_ENV_36			camera	72	527580	6435819	527614	6435820	-34	-1	34	88	SG	(Raw Nav, Kongsberg 14208, img#10) (B)
14-Apr-2023	14:17:50	2343	ECR_ENV_36			camera	71	527581	6435815	527614	6435820	-33	-5	33	81	SG	(Raw Nav, Kongsberg 14208, img#11) (B)
14-Apr-2023	14:18:08	2344	ECR_ENV_36			camera	71	527583	6435819	527614	6435820	-31	-1	31	88	SG	(Raw Nav, Kongsberg 14208, img#12) (B)
14-Apr-2023	14:18:24	2345	ECR_ENV_36			camera	71	527587	6435818	527614	6435820	-27	-2	27	86	SG	(Raw Nav, Kongsberg 14208, img#13) (B)
14-Apr-2023	14:18:39	2346	ECR_ENV_36			camera	71	527589	6435818	527614	6435820	-25	-2	25	85	SG	(Raw Nav, Kongsberg 14208, img#14) (B)
14-Apr-2023	14:19:01	2347	ECR_ENV_36			camera	71	527594	6435821	527614	6435820	-20	1	20	93	SG	(Raw Nav, Kongsberg 14208, img#15) (B)
14-Apr-2023	14:19:09	2348	ECR_ENV_36			camera	71	527595	6435821	527614	6435820	-19	1	19	93	SG	(Raw Nav, Kongsberg 14208, img#16) (B)
14-Apr-2023	14:19:26	2349	ECR_ENV_36			camera	72	527600	6435822	527614	6435820	-14	2	14	98	SG	(Raw Nav, Kongsberg 14208, img#17) (B)
14-Apr-2023	14:19:43	2350	ECR_ENV_36			camera	71	527603	6435823	527614	6435820	-11	3	11	105	SG	(Raw Nav, Kongsberg 14208, img#18) (B)
14-Apr-2023	14:19:54	2351	ECR_ENV_36			camera	71	527605	6435823	527614	6435820	-9	3	10	108	SG	(Raw Nav, Kongsberg 14208, img#19) (B)
14-Apr-2023	14:20:24	2352	ECR_ENV_36			camera	72	527613	6435823	527614	6435820	-1	3	3	160	SG	(Raw Nav, Kongsberg 14208, img#20) (B)
14-Apr-2023	14:20:35	2353	ECR_ENV_36			camera	72	527614	6435823	527614	6435820	0	3	3	178	SG	(Raw Nav, Kongsberg 14208, img#21) (B)
14-Apr-2023	14:20:59	2354	ECR_ENV_36			camera	72	527618	6435823	527614	6435820	4	3	5	-127	SG	(Raw Nav, Kongsberg 14208, img#22) (B)
14-Apr-2023	14:21:12	2355	ECR_ENV_36			camera	71	527620	6435823	527614	6435820	6	3	7	-117	SG	(Raw Nav, Kongsberg 14208, img#23) (B)
14-Apr-2023	14:21:19	2356	ECR_ENV_36			camera	72	527622	6435823	527614	6435820	8	3	8	-111	SG	(Raw Nav, Kongsberg 14208, img#24) (B)
14-Apr-2023	14:21:48	2357	ECR_ENV_36			camera	71	527628	6435819	527614	6435820	14	-1	14	-86	SG	(Raw Nav, Kongsberg 14208, img#25) (B)
14-Apr-2023	14:22:08	2358	ECR_ENV_36			camera	72	527635	6435822	527614	6435820	21	2	21	-95	SG	(Raw Nav, Kongsberg 14208, img#26) (B)
14-Apr-2023	14:22:23	2359	ECR_ENV_36			camera	72	527639	6435823	527614	6435820	25	3	25	-97	SG	(Raw Nav, Kongsberg 14208, img#27) (B)
14-Apr-2023	14:22:38	2360	ECR_ENV_36			camera	72	527642	6435824	527614	6435820	28	4	28	-98	SG	(Raw Nav, Kongsberg 14208, img#28) (B)
14-Apr-2023	14:22:54	2361	ECR_ENV_36			camera	72	527645	6435825	527614	6435820	31	5	31	-99	SG	(Raw Nav, Kongsberg 14208, img#29) (B)
14-Apr-2023	14:23:00	2362	ECR_ENV_36			camera	72	527647	6435826	527614	6435820	33	6	33	-100	SG	(Raw Nav, Kongsberg 14208, img#30) (B)
14-Apr-2023	14:23:17	2363	ECR_ENV_36			camera	72	527649	6435826	527614	6435820	35	6	35	-100	SG	(Raw Nav, Kongsberg 14208, img#31) (B)
14-Apr-2023	14:23:26	2364	ECR_ENV_36			camera	72	527651	6435825	527614	6435820	37	5	37	-98	SG	(Raw Nav, Kongsberg 14208, img#32) (B)
14-Apr-2023	14:23:53	2365	ECR_ENV_36			camera	72	527654	6435824	527614	6435820	40	4	40	-96	SG	(Raw Nav, Kongsberg 14208, img#33) (B)
14-Apr-2023	14:24:12	2366	ECR_ENV_36			camera	72	527657	6435824	527614	6435820	43	4	43	-95	SG	(Raw Nav, Kongsberg 14208, img#34) (B)
14-Apr-2023	14:24:35	2367	ECR_ENV_36			camera	72	527658	6435821	527614	6435820	44	1	44	-91	SG	(Raw Nav, Kongsberg 14208, img#35) (B)
14-Apr-2023	14:24:57	2368	ECR_ENV_36			camera	72	527664	6435822	527614	6435820	50	2	50	-92	SG	(Raw Nav, Kongsberg 14208, img#36) (B)
14-Apr-2023	16:04:25	2369	ECR_ENV_18			camera	66	529402	6435230	529459	6435225	-57	5	58	95	SG	(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Apr-2023	16:04:42	2370	ECR_ENV_18			camera	67	529403	6435229	529459	6435225	-56	4	56	94	SG	(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Apr-2023	16:05:40	2371	ECR_ENV_18			camera	66	529409	6435226	529459	6435225	-50	1	50	91	SG	(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	16:06:10	2372	ECR_ENV_18			camera	66	529415	6435226	529459	6435225	-45	1	45	91	SG	(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Apr-2023	16:06:29	2373	ECR_ENV_18			camera	66	529417	6435226	529459	6435225	-42	1	42	91	SG	(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Apr-2023	16:06:42	2374	ECR_ENV_18			camera	66	529419	6435226	529459	6435225	-40	1	40	91	SG	(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A) # No photo taken
14-Apr-2023	16:07:02	2375	ECR_ENV_18			camera	66	529422	6435224	529459	6435225	-38	-1	38	89	SG	(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Apr-2023	16:07:22	2376	ECR_ENV_18			camera	66	529424	6435224	529459	6435225	-35	-1	35	89	SG	(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Apr-2023	16:07:41	2377	ECR_ENV_18			camera	66	529427	6435224	529459	6435225	-32	-1	32	88	SG	(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Apr-2023	16:07:47	2378	ECR_ENV_18			camera	66	529428	6435221	529459	6435225	-32	-4	32	83	SG	(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Apr-2023	16:08:00	2379	ECR_ENV_18			camera	66	529430	6435225	529459	6435225	-29	0	29	89	SG	(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Apr-2023	16:08:13	2380	ECR_ENV_18			camera	66	529432	6435225	529459	6435225	-28	0	28	91	SG	(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Apr-2023	16:08:32	2381	ECR_ENV_18			camera	66	529434	6435225	529459	6435225	-25	1	25	91	SG	(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Apr-2023	16:08:44	2382	ECR_ENV_18			camera	66	529436	6435227	529459	6435225	-24	2	24	94	SG	(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Apr-2023	16:09:01	2383	ECR_ENV_18			camera	66	529437	6435224	529459	6435225	-23	-1	23	86	SG	(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Apr-2023	16:09:23	2384	ECR_ENV_18			camera	66	529439	6435224	529459	6435225	-20	-1	20	87	SG	(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Apr-2023	16:09:33	2385	ECR_ENV_18			camera	66	529441	6435227	529459	6435225	-18	2	18	98	SG	(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Apr-2023	16:09:57	2386	ECR_ENV_18			camera	66	529445	6435228	529459	6435225	-15	3	15	102	SG	(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Apr-2023	16:10:20	2387	ECR_ENV_18			camera	66	529448	6435229	529459	6435225	-11	4	12	111	SG	(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Apr-2023	16:10:38	2388	ECR_ENV_18			camera	66	529449	6435230	529459	6435225	-10	5	12	117	SG	(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Apr-2023	16:11:01	2389	ECR_ENV_18			camera	66	529451	6435231	529459	6435225	-8	6	10	128	SG	(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Apr-2023	16:11:30	2390	ECR_ENV_18			camera	66	529455	6435233	529459	6435225	-4	8	9	153	SG	(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Apr-2023	16:12:36	2391	ECR_ENV_18			camera	67	529461	6435238	529459	6435225	2	14	14	-173	SG	(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Apr-2023	16:12:50	2392	ECR_ENV_18			camera	67	529463	6435239	529459	6435225	4	14	15	-165	SG	(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Apr-2023	16:13:19	2393	ECR_ENV_18			camera	67	529465	6435244	529459	6435225	6	19	20	-162	SG	(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Apr-2023	16:13:36	2394	ECR_ENV_18			camera	67	529465	6435246	529459	6435225	5	21	22	-166	SG	(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Apr-2023	16:13:50	2395	ECR_ENV_18			camera	67	529464	6435246	529459	6435225	5	21	22	-167	SG	(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Apr-2023	16:14:10	2396	ECR_ENV_18			camera	67	529465	6435245	529459	6435225	6	20	21	-164	SG	(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Apr-2023	16:15:04	2397	ECR_ENV_18			camera	67	529466	6435249	529459	6435225	6	24	25	-165	SG	(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Apr-2023	16:15:25	2398	ECR_ENV_18			camera	67	529466	6435247	529459	6435225	6	22	23	-164	SG	(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Apr-2023	16:16:07	2399	ECR_ENV_18			camera	67	529471	6435246	529459	6435225	12	21	24	-151	SG	(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Apr-2023	16:16:34	2400	ECR_ENV_18			camera	67	529476	6435245	529459	6435225	16	20	25	-140	SG	(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Apr-2023	16:17:11	2401	ECR_ENV_18			camera	67	529477	6435242	529459	6435225	18	17	25	-133	SG	(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Apr-2023	16:17:32	2402	ECR_ENV_18			camera	67	529479	6435241	529459	6435225	20	16	25	-128	SG	(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Apr-2023	16:18:10	2403	ECR_ENV_18			camera	67	529485	6435236	529459	6435225	26	11	28	-113	SG	(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Apr-2023	16:18:34	2404	ECR_ENV_18			camera	67	529482	6435235	529459	6435225	22	10	25	-114	SG	(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Apr-2023	16:18:50	2405	ECR_ENV_18			camera	67	529489	6435233	529459	6435225	30	8	31	-106	SG	(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Apr-2023	16:19:03	2406	ECR_ENV_18			camera	67	529489	6435231	529459	6435225	30	6	31	-102	SG	(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Apr-2023	16:19:34	2407	ECR_ENV_18			camera	66	529488	6435229	529459	6435225	29	4	29	-98	SG	(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Apr-2023	16:19:51	2408	ECR_ENV_18			camera	66	529490	6435230	529459	6435225	31	5	31	-99	SG	(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Apr-2023	16:20:13	2409	ECR_ENV_18			camera	66	529492	6435228	529459	6435225	33	3	33	-96	SG	(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	16:20	2410	ECR_ENV_18			camera	66	529496	6435225	529459	6435225	37	1	37	-91	SG	(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Apr-2023	16:21	2411	ECR_ENV_18			camera	66	529501	6435223	529459	6435225	42	-2	42	-87	SG	(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Apr-2023	16:21	2412	ECR_ENV_18			camera	66	529505	6435221	529459	6435225	46	-4	46	-85	SG	(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
19-May-2023	19:41	4195	ECR_ENV_61			camera	50	523340	6398255	523346	6398196	-7	59	60	174		(Corr'd Nav, Kongsberg 14208, img#1) (V) (T.A)
19-May-2023	19:41	4196	ECR_ENV_61			camera	50	523339	6398254	523346	6398196	-7	58	59	173		(Corr'd Nav, Kongsberg 14208, img#2) (V) (T.A)
19-May-2023	19:42	4197	ECR_ENV_61			camera	50	523338	6398247	523346	6398196	-8	51	51	171		(Corr'd Nav, Kongsberg 14208, img#3) (V) (T.A)
19-May-2023	19:44	4198	ECR_ENV_61			camera	50	523334	6398229	523346	6398196	-12	33	35	160		(Corr'd Nav, Kongsberg 14208, img#4) (V) (T.A)
19-May-2023	19:45	4199	ECR_ENV_61			camera	50	523338	6398225	523346	6398196	-9	29	30	163		(Corr'd Nav, Kongsberg 14208, img#5) (V) (T.A)
19-May-2023	19:46	4200	ECR_ENV_61			camera	49	523344	6398219	523346	6398196	-2	23	23	175		(Corr'd Nav, Kongsberg 14208, img#6) (V) (T.A)
19-May-2023	19:46	4201	ECR_ENV_61			camera	49	523345	6398217	523346	6398196	-1	21	21	177		(Corr'd Nav, Kongsberg 14208, img#7) (V) (T.A)
19-May-2023	19:47	4202	ECR_ENV_61			camera	49	523348	6398207	523346	6398196	1	12	12	-173		(Corr'd Nav, Kongsberg 14208, img#8) (V) (T.A)
19-May-2023	19:49	4203	ECR_ENV_61			camera	50	523347	6398201	523346	6398196	0	5	5	-179		(Corr'd Nav, Kongsberg 14208, img#9) (V) (T.A)
19-May-2023	19:50	4204	ECR_ENV_61			camera	49	523345	6398193	523346	6398196	-2	-3	3	31		(Corr'd Nav, Kongsberg 14208, img#10) (V) (T.A)
19-May-2023	19:50	4205	ECR_ENV_61			camera	49	523345	6398190	523346	6398196	-2	-6	6	19		(Corr'd Nav, Kongsberg 14208, img#11) (V) (T.A)
19-May-2023	19:51	4206	ECR_ENV_61			camera	49	523344	6398185	523346	6398196	-3	-11	11	14		(Corr'd Nav, Kongsberg 14208, img#12) (V) (T.A)
19-May-2023	19:51	4207	ECR_ENV_61			camera	50	523343	6398181	523346	6398196	-3	-15	15	12		(Corr'd Nav, Kongsberg 14208, img#13) (V) (T.A)
19-May-2023	19:52	4208	ECR_ENV_61			camera	49	523342	6398176	523346	6398196	-4	-20	20	11		(Corr'd Nav, Kongsberg 14208, img#14) (V) (T.A)
19-May-2023	19:53	4209	ECR_ENV_61			camera	49	523344	6398166	523346	6398196	-2	-30	30	4		(Corr'd Nav, Kongsberg 14208, img#15) (V) (T.A)
19-May-2023	19:53	4210	ECR_ENV_61			camera	49	523346	6398163	523346	6398196	-1	-33	33	1		(Corr'd Nav, Kongsberg 14208, img#16) (V) (T.A)
19-May-2023	19:54	4211	ECR_ENV_61			camera	49	523347	6398162	523346	6398196	0	-34	34	0		(Corr'd Nav, Kongsberg 14208, img#17) (V) (T.A)
19-May-2023	19:54	4212	ECR_ENV_61			camera	49	523348	6398159	523346	6398196	1	-37	37	-2		(Corr'd Nav, Kongsberg 14208, img#18) (V) (T.A)
19-May-2023	19:55	4213	ECR_ENV_61			camera	49	523352	6398153	523346	6398196	6	-43	43	-7		(Corr'd Nav, Kongsberg 14208, img#19) (V) (T.A)
19-May-2023	19:55	4214	ECR_ENV_61			camera	49	523354	6398152	523346	6398196	7	-44	44	-9		(Corr'd Nav, Kongsberg 14208, img#20) (V) (T.A)
19-May-2023	19:55	4215	ECR_ENV_61			camera	49	523356	6398150	523346	6398196	10	-46	47	-12		(Corr'd Nav, Kongsberg 14208, img#21) (V) (T.A)
19-May-2023	19:55	4216	ECR_ENV_61			camera	49	523359	6398149	523346	6398196	12	-47	49	-14		(Corr'd Nav, Kongsberg 14208, img#22) (V) (T.A)
19-May-2023	19:55	4217	ECR_ENV_61			camera	49	523362	6398148	523346	6398196	15	-48	51	-18		(Corr'd Nav, Kongsberg 14208, img#23) (V) (T.A)
19-May-2023	19:56	4218	ECR_ENV_61			camera	49	523364	6398146	523346	6398196	17	-50	53	-19		(Corr'd Nav, Kongsberg 14208, img#24) (V) (T.A)
19-May-2023	19:56	4219	ECR_ENV_61			camera	49	523366	6398144	523346	6398196	19	-52	55	-20		(Corr'd Nav, Kongsberg 14208, img#25) (V) (T.A)
19-May-2023	19:56	4220	ECR_ENV_61			camera	49	523368	6398143	523346	6398196	22	-53	57	-22		(Corr'd Nav, Kongsberg 14208, img#26) (V) (T.A)
19-May-2023	19:57	4221	ECR_ENV_61			camera	50	523370	6398140	523346	6398196	24	-56	60	-23		(Corr'd Nav, Kongsberg 14208, img#27) (V) (T.A)
19-May-2023	19:57	4222	ECR_ENV_61			camera	50	523371	6398139	523346	6398196	25	-57	62	-23		(Corr'd Nav, Kongsberg 14208, img#28) (V) (T.A)
19-May-2023	19:57	4223	ECR_ENV_61			camera	50	523372	6398138	523346	6398196	26	-58	64	-24		(Corr'd Nav, Kongsberg 14208, img#29) (V) (T.A)
19-May-2023	19:58	4224	ECR_ENV_61			camera	50	523374	6398135	523346	6398196	27	-61	66	-24		(Corr'd Nav, Kongsberg 14208, img#30) (V) (T.A)
19-May-2023	19:58	4225	ECR_ENV_61			camera	50	523375	6398134	523346	6398196	29	-62	69	-25		(Corr'd Nav, Kongsberg 14208, img#31) (V) (T.A)
19-May-2023	21:16	4226	ECR_ENV_62			camera	44	524128	6397218	524122	6397153	6	65	66	-174		(Corr'd Nav, Kongsberg 14208, img#32) (V) (T.A)
19-May-2023	21:16:55	4227	ECR_ENV_62			camera	46	524126	6397214	524122	6397153	4	62	62	4		(Raw Nav, Kongsberg 14208, img#33) (V)
19-May-2023	21:17:27	4228	ECR_ENV_62			camera	46	524124	6397211	524122	6397153	2	59	59	2		(Raw Nav, Kongsberg 14208, img#34) (V)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463					Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited					Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2					Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1					Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84		Ellipsoid	WGS 84		Projection	UTM zone 30N				Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-May-2023	21:17:37	4229	ECR_ENV_62			camera	46	524124	6397211	524122	6397153	2	58	58	2		(Raw Nav, Kongsberg 14208, img#35) (V)
19-May-2023	21:18:11	4230	ECR_ENV_62			camera	46	524124	6397207	524122	6397153	2	54	54	2		(Raw Nav, Kongsberg 14208, img#36) (V)
19-May-2023	21:18:42	4231	ECR_ENV_62			camera	46	524123	6397204	524122	6397153	1	51	51	1		(Raw Nav, Kongsberg 14208, img#37) (V)
19-May-2023	21:19:21	4232	ECR_ENV_62			camera	46	524124	6397198	524122	6397153	2	46	46	3		(Raw Nav, Kongsberg 14208, img#38) (V)
19-May-2023	21:19:37	4233	ECR_ENV_62			camera	46	524125	6397196	524122	6397153	3	44	44	4		(Raw Nav, Kongsberg 14208, img#39) (V)
19-May-2023	21:20:00	4234	ECR_ENV_62			camera	46	524127	6397193	524122	6397153	5	41	41	7		(Raw Nav, Kongsberg 14208, img#40) (V)
19-May-2023	21:20:13	4235	ECR_ENV_62			camera	46	524128	6397192	524122	6397153	6	39	40	9		(Raw Nav, Kongsberg 14208, img#41) (V)
19-May-2023	21:21:03	4236	ECR_ENV_62			camera	46	524126	6397187	524122	6397153	4	34	34	7		(Raw Nav, Kongsberg 14208, img#42) (V)
19-May-2023	21:22:21	4237	ECR_ENV_62			camera	46	524125	6397181	524122	6397153	3	29	29	7		(Raw Nav, Kongsberg 14208, img#43) (V)
19-May-2023	21:23:22	4238	ECR_ENV_62			camera	46	524124	6397174	524122	6397153	2	22	22	5		(Raw Nav, Kongsberg 14208, img#44) (V)
19-May-2023	21:23:30	4239	ECR_ENV_62			camera	46	524124	6397173	524122	6397153	2	20	20	5		(Raw Nav, Kongsberg 14208, img#45) (V)
19-May-2023	21:23:57	4240	ECR_ENV_62			camera	46	524124	6397170	524122	6397153	2	17	17	5		(Raw Nav, Kongsberg 14208, img#46) (V)
19-May-2023	21:24:32	4241	ECR_ENV_62			camera	46	524123	6397165	524122	6397153	1	12	12	6		(Raw Nav, Kongsberg 14208, img#47) (V)
19-May-2023	21:24:38	4242	ECR_ENV_62			camera	46	524123	6397164	524122	6397153	1	11	11	7		(Raw Nav, Kongsberg 14208, img#48) (V)
19-May-2023	21:25:12	4243	ECR_ENV_62			camera	46	524124	6397158	524122	6397153	2	5	6	17		(Raw Nav, Kongsberg 14208, img#49) (V)
19-May-2023	21:25:33	4244	ECR_ENV_62			camera	46	524124	6397155	524122	6397153	2	2	3	46		(Raw Nav, Kongsberg 14208, img#50) (V)
19-May-2023	21:25:51	4245	ECR_ENV_62			camera	46	524124	6397153	524122	6397153	2	0	2	92		(Raw Nav, Kongsberg 14208, img#51) (V)
19-May-2023	21:27:02	4246	ECR_ENV_62			camera	46	524125	6397147	524122	6397153	3	-6	6	155		(Raw Nav, Kongsberg 14208, img#52) (V)
19-May-2023	21:27:26	4247	ECR_ENV_62			camera	46	524125	6397144	524122	6397153	3	-9	9	158		(Raw Nav, Kongsberg 14208, img#53) (V)
19-May-2023	21:27:39	4248	ECR_ENV_62			camera	46	524126	6397142	524122	6397153	4	-11	12	158		(Raw Nav, Kongsberg 14208, img#54) (V)
19-May-2023	21:27:54	4249	ECR_ENV_62			camera	46	524128	6397140	524122	6397153	6	-13	14	156		(Raw Nav, Kongsberg 14208, img#55) (V)
19-May-2023	21:28:21	4250	ECR_ENV_62			camera	46	524127	6397137	524122	6397153	5	-16	17	161		(Raw Nav, Kongsberg 14208, img#56) (V)
19-May-2023	21:29:09	4251	ECR_ENV_62			camera	46	524126	6397132	524122	6397153	4	-21	21	168		(Raw Nav, Kongsberg 14208, img#57) (V)
19-May-2023	21:29:36	4252	ECR_ENV_62			camera	46	524126	6397129	524122	6397153	4	-24	24	171		(Raw Nav, Kongsberg 14208, img#58) (V)
19-May-2023	21:30:10	4253	ECR_ENV_62			camera	46	524126	6397125	524122	6397153	4	-28	28	173		(Raw Nav, Kongsberg 14208, img#59) (V)
19-May-2023	21:30:22	4254	ECR_ENV_62			camera	46	524126	6397124	524122	6397153	4	-29	29	172		(Raw Nav, Kongsberg 14208, img#60) (V)
19-May-2023	21:30:42	4255	ECR_ENV_62			camera	46	524126	6397122	524122	6397153	4	-31	31	172		(Raw Nav, Kongsberg 14208, img#61) (V)
19-May-2023	21:31:01	4256	ECR_ENV_62			camera	46	524126	6397120	524122	6397153	4	-33	33	173		(Raw Nav, Kongsberg 14208, img#62) (V)
19-May-2023	21:31:23	4257	ECR_ENV_62			camera	46	524126	6397117	524122	6397153	4	-35	36	174		(Raw Nav, Kongsberg 14208, img#63) (V)
19-May-2023	21:31:34	4258	ECR_ENV_62			camera	46	524126	6397116	524122	6397153	3	-37	37	175		(Raw Nav, Kongsberg 14208, img#64) (V)
19-May-2023	21:31:40	4259	ECR_ENV_62			camera	46	524125	6397115	524122	6397153	3	-38	38	175		(Raw Nav, Kongsberg 14208, img#65) (V)
19-May-2023	21:32:01	4260	ECR_ENV_62			camera	46	524126	6397112	524122	6397153	4	-40	40	175		(Raw Nav, Kongsberg 14208, img#66) (V)
19-May-2023	21:32:14	4261	ECR_ENV_62			camera	46	524126	6397110	524122	6397153	4	-42	42	175		(Raw Nav, Kongsberg 14208, img#67) (V)
19-May-2023	21:32:26	4262	ECR_ENV_62			camera	46	524126	6397109	524122	6397153	4	-44	44	175		(Raw Nav, Kongsberg 14208, img#68) (V)
19-May-2023	21:32:40	4263	ECR_ENV_62			camera	46	524127	6397107	524122	6397153	5	-46	46	174		(Raw Nav, Kongsberg 14208, img#69) (V)
19-May-2023	21:33:03	4264	ECR_ENV_62			camera	46	524128	6397103	524122	6397153	6	-50	50	174		(Raw Nav, Kongsberg 14208, img#70) (V)
19-May-2023	21:33:34	4265	ECR_ENV_62			camera	46	524130	6397098	524122	6397153	8	-54	55	171		(Raw Nav, Kongsberg 14208, img#71) (V)
19-May-2023	21:34:02	4266	ECR_ENV_62			camera	46	524130	6397094	524122	6397153	8	-58	59	172		(Raw Nav, Kongsberg 14208, img#72) (V)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93		
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT			

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-May-2023	21:34:43	4267	ECR_ENV_62			camera	46	524129	6397087	524122	6397153	7	-65	66	174		(Raw Nav, Kongsberg 14208, img#73) (V)
19-May-2023	21:35:05	4268	ECR_ENV_62			camera	46	524130	6397084	524122	6397153	8	-69	69	174		(Raw Nav, Kongsberg 14208, img#74) (V)
19-May-2023	21:35:23	4269	ECR_ENV_62			camera	46	524130	6397081	524122	6397153	8	-71	72	174		(Raw Nav, Kongsberg 14208, img#75) (V)
19-May-2023	21:35:52	4270	ECR_ENV_62			camera	45	524128	6397078	524122	6397153	6	-75	75	175		(Raw Nav, Kongsberg 14208, img#76) (V)
19-May-2023	21:36:19	4271	ECR_ENV_62			camera	45	524127	6397074	524122	6397153	5	-79	79	176		(Raw Nav, Kongsberg 14208, img#77) (V)
19-May-2023	21:36:46	4272	ECR_ENV_62			camera	45	524124	6397069	524122	6397153	2	-83	83	179		(Raw Nav, Kongsberg 14208, img#78) (V)
19-May-2023	21:37:06	4273	ECR_ENV_62			camera	45	524122	6397066	524122	6397153	0	-86	86	180		(Raw Nav, Kongsberg 14208, img#79) (V)
19-May-2023	21:39:05	4274	ECR_ENV_62			camera	45	524129	6397049	524122	6397153	7	-104	104	176		(Raw Nav, Kongsberg 14208, img#80) (V)
19-May-2023	21:39:46	4275	ECR_ENV_62			camera	45	524132	6397040	524122	6397153	10	-112	113	175		(Raw Nav, Kongsberg 14208, img#81) (V)
19-May-2023	21:40	4276	ECR_ENV_62			camera	42	524139	6397035	524122	6397153	17	-117	119	-8		(Corr'd Nav, Kongsberg 14208, img#82) (V) (T.A)
19-May-2023	22:26	4277	ECR_ENV_60			camera	38	522606	6397251	522593	6397194	13	57	58	-167		(Corr'd Nav, Kongsberg 14208, img#83) (V) (T.A)
19-May-2023	22:29	4289	ECR_ENV_60			camera	38	522609	6397242	522593	6397194	16	48	51	-161		(Corr'd Nav, Kongsberg 14208, img#95) (V) (T.A)
19-May-2023	22:29	4290	ECR_ENV_60			camera	38	522610	6397239	522593	6397194	17	45	48	-160		(Corr'd Nav, Kongsberg 14208, img#96) (V) (T.A)
19-May-2023	22:29	4291	ECR_ENV_60			camera	38	522608	6397238	522593	6397194	15	44	46	-161		(Corr'd Nav, Kongsberg 14208, img#97) (V) (T.A)
19-May-2023	22:30	4292	ECR_ENV_60			camera	38	522608	6397236	522593	6397194	15	41	44	-161		(Corr'd Nav, Kongsberg 14208, img#98) (V) (T.A)
19-May-2023	22:30	4293	ECR_ENV_60			camera	39	522606	6397232	522593	6397194	13	38	40	-161		(Corr'd Nav, Kongsberg 14208, img#99) (V) (T.A)
19-May-2023	22:30	4294	ECR_ENV_60			camera	39	522605	6397231	522593	6397194	12	37	39	-162		(Corr'd Nav, Kongsberg 14208, img#100) (V) (T.A)
19-May-2023	22:30	4295	ECR_ENV_60			camera	38	522605	6397230	522593	6397194	12	36	38	-162		(Corr'd Nav, Kongsberg 14208, img#101) (V) (T.A)
19-May-2023	22:30	4296	ECR_ENV_60			camera	38	522605	6397228	522593	6397194	12	34	36	-161		(Corr'd Nav, Kongsberg 14208, img#102) (V) (T.A)
19-May-2023	22:31	4297	ECR_ENV_60			camera	39	522604	6397227	522593	6397194	11	33	34	-161		(Corr'd Nav, Kongsberg 14208, img#103) (V) (T.A)
19-May-2023	22:31	4298	ECR_ENV_60			camera	39	522603	6397225	522593	6397194	10	31	33	-162		(Corr'd Nav, Kongsberg 14208, img#104) (V) (T.A)
19-May-2023	22:31	4299	ECR_ENV_60			camera	39	522603	6397224	522593	6397194	10	30	32	-162		(Corr'd Nav, Kongsberg 14208, img#105) (V) (T.A)
19-May-2023	22:32	4300	ECR_ENV_60			camera	39	522600	6397219	522593	6397194	7	25	26	-164		(Corr'd Nav, Kongsberg 14208, img#106) (V) (T.A)
19-May-2023	22:32	4301	ECR_ENV_60			camera	39	522600	6397218	522593	6397194	7	23	24	-164		(Corr'd Nav, Kongsberg 14208, img#107) (V) (T.A)
19-May-2023	22:32	4302	ECR_ENV_60			camera	39	522599	6397216	522593	6397194	6	22	23	-165		(Corr'd Nav, Kongsberg 14208, img#108) (V) (T.A)
19-May-2023	22:32	4303	ECR_ENV_60			camera	39	522599	6397214	522593	6397194	6	20	21	-162		(Corr'd Nav, Kongsberg 14208, img#109) (V) (T.A)
19-May-2023	22:32	4304	ECR_ENV_60			camera	39	522600	6397213	522593	6397194	7	19	20	-160		(Corr'd Nav, Kongsberg 14208, img#110) (V) (T.A)
19-May-2023	22:33	4305	ECR_ENV_60			camera	39	522598	6397209	522593	6397194	5	15	15	-163		(Corr'd Nav, Kongsberg 14208, img#111) (V) (T.A)
19-May-2023	22:33	4306	ECR_ENV_60			camera	39	522598	6397206	522593	6397194	5	12	13	-159		(Corr'd Nav, Kongsberg 14208, img#112) (V) (T.A)
19-May-2023	22:33	4307	ECR_ENV_60			camera	39	522597	6397203	522593	6397194	4	9	10	-158		(Corr'd Nav, Kongsberg 14208, img#113) (V) (T.A)
19-May-2023	22:34	4308	ECR_ENV_60			camera	39	522597	6397198	522593	6397194	4	3	5	-131		(Corr'd Nav, Kongsberg 14208, img#114) (V) (T.A)
19-May-2023	22:35	4309	ECR_ENV_60			camera	39	522594	6397194	522593	6397194	1	0	1	-89		(Corr'd Nav, Kongsberg 14208, img#115) (V) (T.A)
19-May-2023	22:35	4310	ECR_ENV_60			camera	39	522593	6397193	522593	6397194	0	-1	1	-3		(Corr'd Nav, Kongsberg 14208, img#116) (V) (T.A)
19-May-2023	22:35	4311	ECR_ENV_60			camera	39	522593	6397193	522593	6397194	0	-2	2	14		(Corr'd Nav, Kongsberg 14208, img#117) (V) (T.A)
19-May-2023	22:35	4312	ECR_ENV_60			camera	39	522591	6397190	522593	6397194	-2	-4	5	24		(Corr'd Nav, Kongsberg 14208, img#118) (V) (T.A)
19-May-2023	22:36	4313	ECR_ENV_60			camera	39	522589	6397188	522593	6397194	-4	-7	8	28		(Corr'd Nav, Kongsberg 14208, img#119) (V) (T.A)
19-May-2023	22:36	4314	ECR_ENV_60			camera	39	522589	6397186	522593	6397194	-4	-9	9	23		(Corr'd Nav, Kongsberg 14208, img#120) (V) (T.A)
19-May-2023	22:36	4315	ECR_ENV_60			camera	39	522589	6397182	522593	6397194	-4	-13	13	19		(Corr'd Nav, Kongsberg 14208, img#121) (V) (T.A)

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-May-2023	22:36	4316	ECR_ENV_60			camera	39	522589	6397180	522593	6397194	-4	-15	15	16		(Corr'd Nav, Kongsberg 14208, img#122) (V) (T.A)
19-May-2023	22:37	4317	ECR_ENV_60			camera	39	522591	6397176	522593	6397194	-2	-19	19	7		(Corr'd Nav, Kongsberg 14208, img#123) (V) (T.A)
19-May-2023	22:37	4318	ECR_ENV_60			camera	39	522592	6397173	522593	6397194	-1	-22	22	2		(Corr'd Nav, Kongsberg 14208, img#124) (V) (T.A)
19-May-2023	22:37	4319	ECR_ENV_60			camera	39	522592	6397171	522593	6397194	-1	-23	23	2		(Corr'd Nav, Kongsberg 14208, img#125) (V) (T.A)
19-May-2023	22:38	4320	ECR_ENV_60			camera	38	522591	6397165	522593	6397194	-2	-29	29	4		(Corr'd Nav, Kongsberg 14208, img#126) (V) (T.A)
19-May-2023	22:38	4321	ECR_ENV_60			camera	38	522590	6397163	522593	6397194	-3	-32	32	5		(Corr'd Nav, Kongsberg 14208, img#127) (V) (T.A)
19-May-2023	22:39	4322	ECR_ENV_60			camera	38	522592	6397159	522593	6397194	-1	-35	35	1		(Corr'd Nav, Kongsberg 14208, img#128) (V) (T.A)
19-May-2023	22:39	4323	ECR_ENV_60			camera	38	522591	6397158	522593	6397194	-2	-36	36	3		(Corr'd Nav, Kongsberg 14208, img#129) (V) (T.A)
19-May-2023	22:40	4324	ECR_ENV_60			camera	38	522588	6397152	522593	6397194	-5	-43	43	7		(Corr'd Nav, Kongsberg 14208, img#130) (V) (T.A)
19-May-2023	22:40	4325	ECR_ENV_60			camera	38	522587	6397148	522593	6397194	-6	-47	47	8		(Corr'd Nav, Kongsberg 14208, img#131) (V) (T.A)
19-May-2023	22:41	4326	ECR_ENV_60			camera	38	522588	6397142	522593	6397194	-5	-52	53	6		(Corr'd Nav, Kongsberg 14208, img#132) (V) (T.A)
19-May-2023	22:41	4327	ECR_ENV_60			camera	38	522587	6397139	522593	6397194	-6	-56	56	6		(Corr'd Nav, Kongsberg 14208, img#133) (V) (T.A)
19-May-2023	22:41	4328	ECR_ENV_60			camera	38	522590	6397134	522593	6397194	-3	-60	60	3		(Corr'd Nav, Kongsberg 14208, img#134) (V) (T.A)
19-May-2023	22:42	4329	ECR_ENV_60			camera	38	522589	6397127	522593	6397194	-4	-68	68	3		(Corr'd Nav, Kongsberg 14208, img#135) (V) (T.A)
19-May-2023	22:43	4330	ECR_ENV_60			camera	38	522588	6397123	522593	6397194	-5	-71	71	4		(Corr'd Nav, Kongsberg 14208, img#136) (V) (T.A)
19-May-2023	22:43	4331	ECR_ENV_60			camera	38	522590	6397122	522593	6397194	-3	-72	72	3		(Corr'd Nav, Kongsberg 14208, img#137) (V) (T.A)
19-May-2023	22:43	4332	ECR_ENV_60			camera	38	522591	6397118	522593	6397194	-2	-76	76	2		(Corr'd Nav, Kongsberg 14208, img#138) (V) (T.A)
19-May-2023	22:43	4333	ECR_ENV_60			camera	38	522591	6397116	522593	6397194	-2	-79	79	1		(Corr'd Nav, Kongsberg 14208, img#139) (V) (T.A)
19-May-2023	22:44	4334	ECR_ENV_60			camera	38	522592	6397114	522593	6397194	-1	-80	80	1		(Corr'd Nav, Kongsberg 14208, img#140) (V) (T.A)
19-May-2023	22:44	4335	ECR_ENV_60			camera	38	522593	6397113	522593	6397194	0	-82	82	0		(Corr'd Nav, Kongsberg 14208, img#141) (V) (T.A)
19-May-2023	22:44	4336	ECR_ENV_60			camera	38	522594	6397112	522593	6397194	1	-82	82	-1		(Corr'd Nav, Kongsberg 14208, img#142) (V) (T.A)
19-May-2023	22:45	4337	ECR_ENV_60			camera	38	522599	6397106	522593	6397194	6	-89	89	-4		(Corr'd Nav, Kongsberg 14208, img#143) (V) (T.A)
19-May-2023	22:45	4338	ECR_ENV_60			camera	38	522600	6397105	522593	6397194	7	-89	90	-5		(Corr'd Nav, Kongsberg 14208, img#144) (V) (T.A)
20-May-2023	02:42:49	4339	ECR_ENV_64			camera	66	525502	6419161	525481	6419113	22	49	53	24		(Raw Nav, Kongsberg 14208, img#1) (B)
20-May-2023	02:43:09	4340	ECR_ENV_64			camera	66	525502	6419161	525481	6419113	21	49	53	24		(Raw Nav, Kongsberg 14208, img#2) (B)
20-May-2023	03:03:42	4341	ECR_ENV_64			camera	65	525489	6419167	525481	6419113	8	54	55	9		(Raw Nav, Kongsberg 14208, no img) (B) no image
20-May-2023	03:03:51	4342	ECR_ENV_64			camera	65	525489	6419167	525481	6419113	8	54	55	9		(Raw Nav, Kongsberg 14208, no img) (B) no image
20-May-2023	03:04	4343	ECR_ENV_64			camera	64	525488	6419166	525481	6419113	8	53	54	-172		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
20-May-2023	03:08:01	4344	ECR_ENV_64			camera	65	525488	6419167	525481	6419113	7	54	54	8		(Raw Nav, Kongsberg 14208, img#4) (B)
20-May-2023	03:08:14	4345	ECR_ENV_64			camera	65	525487	6419166	525481	6419113	6	53	54	7		(Raw Nav, Kongsberg 14208, img#5) (B)
20-May-2023	03:08:59	4346	ECR_ENV_64			camera	65	525486	6419161	525481	6419113	6	48	49	7		(Raw Nav, Kongsberg 14208, img#6) (B)
20-May-2023	03:12:21	4347	ECR_ENV_64			camera	66	525481	6419166	525481	6419113	1	53	53	1		(Raw Nav, Kongsberg 14208, img#7) (B)
20-May-2023	03:13:34	4348	ECR_ENV_64			camera	65	525480	6419156	525481	6419113	0	43	43	360		(Raw Nav, Kongsberg 14208, img#8) (B)
20-May-2023	03:14:21	4349	ECR_ENV_64			camera	65	525481	6419148	525481	6419113	1	36	36	1		(Raw Nav, Kongsberg 14208, img#9) (B)
20-May-2023	03:14:40	4350	ECR_ENV_64			camera	65	525481	6419146	525481	6419113	1	33	33	1		(Raw Nav, Kongsberg 14208, img#10) (B)
20-May-2023	03:15:25	4351	ECR_ENV_64			camera	64	525481	6419139	525481	6419113	1	26	26	2		(Raw Nav, Kongsberg 14208, img#11) (B)
20-May-2023	03:16:13	4352	ECR_ENV_64			camera	64	525481	6419131	525481	6419113	1	19	19	2		(Raw Nav, Kongsberg 14208, img#12) (B)
20-May-2023	03:17:09	4353	ECR_ENV_64			camera	63	525482	6419123	525481	6419113	1	10	10	5		(Raw Nav, Kongsberg 14208, img#13) (B)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463				Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	COG							
Project Name	Caledonia OWF Phase 2				Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Vessel							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84		Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-May-2023	03:17:18	4354	ECR_ENV_64			camera	63	525482	6419121	525481	6419113	1	9	9	6		(Raw Nav, Kongsberg 14208, img#14) (B)
20-May-2023	03:17:34	4355	ECR_ENV_64			camera	63	525482	6419119	525481	6419113	1	7	7	9		(Raw Nav, Kongsberg 14208, img#15) (B)
20-May-2023	03:17:40	4356	ECR_ENV_64			camera	63	525482	6419118	525481	6419113	1	6	6	11		(Raw Nav, Kongsberg 14208, img#16) (B)
20-May-2023	03:18:05	4357	ECR_ENV_64			camera	63	525482	6419115	525481	6419113	2	3	3	34		(Raw Nav, Kongsberg 14208, img#17) (B)
20-May-2023	03:18:26	4358	ECR_ENV_64			camera	63	525483	6419112	525481	6419113	3	-1	3	102		(Raw Nav, Kongsberg 14208, img#18) (B)
20-May-2023	03:18:33	4359	ECR_ENV_64			camera	63	525484	6419111	525481	6419113	3	-1	3	114		(Raw Nav, Kongsberg 14208, img#19) (B)
20-May-2023	03:18:47	4360	ECR_ENV_64			camera	63	525484	6419109	525481	6419113	4	-4	5	136		(Raw Nav, Kongsberg 14208, img#20) (B)
20-May-2023	03:18:54	4361	ECR_ENV_64			camera	63	525484	6419108	525481	6419113	4	-5	6	141		(Raw Nav, Kongsberg 14208, img#21) (B)
20-May-2023	03:19:03	4362	ECR_ENV_64			camera	63	525485	6419107	525481	6419113	4	-6	7	145		(Raw Nav, Kongsberg 14208, img#22) (B)
20-May-2023	03:19:58	4363	ECR_ENV_64			camera	63	525485	6419099	525481	6419113	4	-14	14	164		(Raw Nav, Kongsberg 14208, img#23) (B)
20-May-2023	03:20:43	4364	ECR_ENV_64			camera	64	525484	6419093	525481	6419113	3	-20	20	171		(Raw Nav, Kongsberg 14208, img#24) (B)
20-May-2023	03:22:01	4365	ECR_ENV_64			camera	65	525481	6419083	525481	6419113	0	-30	30	179		(Raw Nav, Kongsberg 14208, img#25) (B)
20-May-2023	03:22:52	4366	ECR_ENV_64			camera	66	525480	6419075	525481	6419113	-1	-37	37	182		(Raw Nav, Kongsberg 14208, img#26) (B)
20-May-2023	03:23:36	4367	ECR_ENV_64			camera	67	525479	6419069	525481	6419113	-1	-44	44	182		(Raw Nav, Kongsberg 14208, img#27) (B)
20-May-2023	03:23:56	4368	ECR_ENV_64			camera	67	525479	6419066	525481	6419113	-1	-47	47	182		(Raw Nav, Kongsberg 14208, img#28) (B)
20-May-2023	03:24:44	4369	ECR_ENV_64			camera	67	525479	6419062	525481	6419113	-2	-51	51	182		(Raw Nav, Kongsberg 14208, img#29) (B)
20-May-2023	03:24:55	4370	ECR_ENV_64			camera	67	525479	6419061	525481	6419113	-2	-52	52	182		(Raw Nav, Kongsberg 14208, img#30) (B)
20-May-2023	03:25:33	4371	ECR_ENV_64			camera	67	525480	6419055	525481	6419113	-1	-58	58	181		(Raw Nav, Kongsberg 14208, img#31) (B)
20-May-2023	03:26:42	4372	ECR_ENV_64			camera	67	525481	6419049	525481	6419113	1	-64	64	179		(Raw Nav, Kongsberg 14208, img#32) (B)
20-May-2023	03:26:52	4373	ECR_ENV_64			camera	67	525482	6419048	525481	6419113	1	-65	65	179		(Raw Nav, Kongsberg 14208, img#33) (B)
20-May-2023	03:27:29	4374	ECR_ENV_64			camera	67	525483	6419044	525481	6419113	2	-69	69	178		(Raw Nav, Kongsberg 14208, img#34) (B)
20-May-2023	03:27:54	4375	ECR_ENV_64			camera	67	525483	6419041	525481	6419113	3	-72	72	178		(Raw Nav, Kongsberg 14208, img#35) (B)
20-May-2023	04:19:39	4376	ECR_ENV_63			camera	60	525796	6420133	525481	6419113	315	1020	66	290		(Raw Nav, Kongsberg 14208, img#36) (B)
20-May-2023	04:20:05	4377	ECR_ENV_63			camera	61	525800	6420134	525858	6420111	-58	23	62	292		(Raw Nav, Kongsberg 14208, img#37) (B)
20-May-2023	04:20:35	4378	ECR_ENV_63			camera	60	525804	6420133	525858	6420111	-54	22	59	293		(Raw Nav, Kongsberg 14208, img#38) (B)
20-May-2023	04:21:16	4379	ECR_ENV_63			camera	61	525810	6420132	525858	6420111	-49	21	53	294		(Raw Nav, Kongsberg 14208, img#39) (B)
20-May-2023	04:21:29	4380	ECR_ENV_63			camera	61	525811	6420132	525858	6420111	-47	21	52	294		(Raw Nav, Kongsberg 14208, img#40) (B)
20-May-2023	04:22:16	4381	ECR_ENV_63			camera	61	525817	6420130	525858	6420111	-41	19	45	295		(Raw Nav, Kongsberg 14208, img#41) (B)
20-May-2023	04:22:58	4382	ECR_ENV_63			camera	61	525823	6420128	525858	6420111	-35	17	39	296		(Raw Nav, Kongsberg 14208, img#42) (B)
20-May-2023	04:23:09	4383	ECR_ENV_63			camera	61	525825	6420127	525858	6420111	-33	16	37	296		(Raw Nav, Kongsberg 14208, img#43) (B)
20-May-2023	04:23:52	4384	ECR_ENV_63			camera	61	525830	6420124	525858	6420111	-28	14	31	296		(Raw Nav, Kongsberg 14208, img#44) (B)
20-May-2023	04:24:10	4385	ECR_ENV_63			camera	60	525833	6420123	525858	6420111	-26	12	28	295		(Raw Nav, Kongsberg 14208, img#45) (B)
20-May-2023	04:24:45	4386	ECR_ENV_63			camera	60	525837	6420121	525858	6420111	-21	10	24	296		(Raw Nav, Kongsberg 14208, img#46) (B)
20-May-2023	04:25:06	4387	ECR_ENV_63			camera	60	525839	6420120	525858	6420111	-19	9	21	296		(Raw Nav, Kongsberg 14208, img#47) (B)
20-May-2023	04:25:46	4388	ECR_ENV_63			camera	60	525845	6420118	525858	6420111	-13	8	16	300		(Raw Nav, Kongsberg 14208, img#48) (B)
20-May-2023	04:25:53	4389	ECR_ENV_63			camera	60	525845	6420118	525858	6420111	-13	7	15	300		(Raw Nav, Kongsberg 14208, img#49) (B)
20-May-2023	04:26:01	4390	ECR_ENV_63			camera	60	525847	6420118	525858	6420111	-11	7	13	302		(Raw Nav, Kongsberg 14208, img#50) (B)
20-May-2023	04:26:15	4391	ECR_ENV_63			camera	60	525849	6420117	525858	6420111	-9	6	11	303		(Raw Nav, Kongsberg 14208, img#51) (B)

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*								
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG								
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node		x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Vessel								
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT			

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-May-2023	04:26:40	4392	ECR_ENV_63			camera	60	525851	6420115	525858	6420111	-7	5	8	304		(Raw Nav, Kongsberg 14208, img#52) (B)
20-May-2023	04:27:12	4393	ECR_ENV_63			camera	60	525856	6420114	525858	6420111	-3	3	4	322		(Raw Nav, Kongsberg 14208, img#53) (B)
20-May-2023	04:27:37	4394	ECR_ENV_63			camera	60	525859	6420113	525858	6420111	1	2	2	23		(Raw Nav, Kongsberg 14208, img#54) (B)
20-May-2023	04:27:56	4395	ECR_ENV_63			camera	60	525861	6420112	525858	6420111	3	1	4	71		(Raw Nav, Kongsberg 14208, img#55) (B)
20-May-2023	04:28:28	4396	ECR_ENV_63			camera	61	525865	6420110	525858	6420111	7	-1	7	95		(Raw Nav, Kongsberg 14208, img#56) (B)
20-May-2023	04:28:46	4397	ECR_ENV_63			camera	61	525867	6420109	525858	6420111	9	-1	9	98		(Raw Nav, Kongsberg 14208, img#57) (B)
20-May-2023	04:29:18	4398	ECR_ENV_63			camera	61	525871	6420108	525858	6420111	13	-3	14	102		(Raw Nav, Kongsberg 14208, img#58) (B)
20-May-2023	04:30:18	4399	ECR_ENV_63			camera	62	525878	6420104	525858	6420111	20	-7	21	110		(Raw Nav, Kongsberg 14208, img#59) (B)
20-May-2023	04:30:42	4400	ECR_ENV_63			camera	62	525880	6420102	525858	6420111	22	-8	23	111		(Raw Nav, Kongsberg 14208, img#60) (B)
20-May-2023	04:31:01	4401	ECR_ENV_63			camera	62	525882	6420101	525858	6420111	24	-10	26	113		(Raw Nav, Kongsberg 14208, img#61) (B)
20-May-2023	04:31:40	4402	ECR_ENV_63			camera	63	525885	6420097	525858	6420111	27	-13	30	116		(Raw Nav, Kongsberg 14208, img#62) (B)
20-May-2023	04:32:22	4403	ECR_ENV_63			camera	63	525888	6420094	525858	6420111	30	-17	35	119		(Raw Nav, Kongsberg 14208, img#63) (B)
20-May-2023	04:32:46	4404	ECR_ENV_63			camera	63	525891	6420091	525858	6420111	33	-19	38	121		(Raw Nav, Kongsberg 14208, img#64) (B)
20-May-2023	04:33:47	4405	ECR_ENV_63			camera	63	525898	6420086	525858	6420111	40	-25	47	122		(Raw Nav, Kongsberg 14208, img#65) (B)
20-May-2023	04:34:10	4406	ECR_ENV_63			camera	63	525901	6420084	525858	6420111	43	-27	51	122		(Raw Nav, Kongsberg 14208, img#66) (B)
20-May-2023	04:34:16	4407	ECR_ENV_63			camera	63	525902	6420083	525858	6420111	44	-28	52	122		(Raw Nav, Kongsberg 14208, img#67) (B)
20-May-2023	04:34:40	4408	ECR_ENV_63			camera	64	525904	6420080	525858	6420111	46	-31	55	124		(Raw Nav, Kongsberg 14208, img#68) (B)
20-May-2023	04:35:06	4409	ECR_ENV_63			camera	64	525907	6420077	525858	6420111	48	-34	59	125		(Raw Nav, Kongsberg 14208, img#69) (B)
20-May-2023	04:35:45	4410	ECR_ENV_63			camera	64	525912	6420075	525858	6420111	54	-36	65	124		(Raw Nav, Kongsberg 14208, img#70) (B)
20-May-2023	04:36:09	4411	ECR_ENV_63			camera	64	525916	6420074	525858	6420111	58	-37	68	122		(Raw Nav, Kongsberg 14208, img#71) (B)
20-May-2023	04:36:56	4412	ECR_ENV_63			camera	64	525919	6420071	525858	6420111	61	-40	73	123		(Raw Nav, Kongsberg 14208, img#72) (B)

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)													FOR-ENV-0538
Job No:	54463		Area:	North Sea				Scale: Green Lasers Lines (99mm)					
Project:	Caledonia OWF Phase 2							Equipment: 1Cam / OE14-208 / CT3022					
Client:	Caledonia Offshore Windfarm Limited							Vessel: MV *Ocean Endeavour*					
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HD Video HDD File Name(s)	Topside SD Video File Name (s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_39	19-Mar-2023	13:39:13	13:59:01	0:19:48	54463_ECR_ENV_39 00002.MTS	54463_ECR_ENV_39_2023-03-19_133913_Ch1/2_00	Fine sand with occasional shell fragments, cobbles and boulders	Annelida (Polychaeta), Arthropoda (Galatheoidea, Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Echinoidea), Mollusca (Bivalvia)	RH, MC	46	1	46	
ECR_ENV_38	19-Mar-2023	15:08:57	15:23:28	0:14:31	54463_ECR_ENV_38 00003.MTS	54463_ECR_ENV_38_2023-03-19_150857_Ch1/2_00	Fine sand with occasional shell fragments	Annelida (Polychaeta), Arthropoda (Brachyura, Galatheoidea, Paguroidea), Chordata (Ascidiacea, Triglidae), Cnidaria (Anthozoa, Hydrozoa, *P. phosphorea*), Mollusca (Bivalvia, Gastropoda)	RH, MC	46	47	92	Issue with C-Tecnics camera, some images out of focus
ECR_ENV_37	19-Mar-2023	16:21:42	16:37:08	0:15:26	54463_ECR_ENV_37 - 01/02 00004.MTS 00005.MTS	54463_ECR_ENV_37_2023-03-19_162142_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Actinopterygii), Cnidaria *(P. phosphorea*)	RH, MC	39	93	135	Issue with camera flash for first six images
ECR_ENV_51	19-Mar-2023	17:56:24	18:08:48	0:12:24	54463_ECR_ENV_51 00006.MTS	54463_ECR_ENV_51_2023-03-19_175624_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Arthropoda (*N. norvegicus*), Chordata (Actinopterygii), Cnidaria (*P. phosphorea* , *Tubularia),* Mollusca	RH, MC	39	136	174	
ECR_ENV_52	19-Mar-2023	19:16:49	19:29:36	00:12:47	54463_ECR_ENV_52 00007.MTS	54463_ECR_ENV_52_2023-03-19_191649_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Chordata (Actinopterygii, Gadidae), Cnidaria (*P. phosphorea* , *Tubularia*), Echinodermata (*Ophiura*)	RH, MC	38	175	215	Issue with topside SD Ch2 video
ECR_ENV_50	19-Mar-2023	20:49:18	21:04:56	00:15:38	54463_ECR_ENV_50 00008.MTS	54463_ECR_ENV_50_2023-03-19_204918_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Arthropoda, Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Tubularia*), Echinodermata (*Henricia*)	RH, MC	43	216	258	
ECR_ENV_49	19-Mar-2023	22:11:05	22:29:00	00:17:55	54463_ECR_ENV_49 00009.MTS	54463_ECR_ENV_49_2023-03-19_221105_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, *P. phosphorea*)	RH, MC	41	259	299	

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)													FOR-ENV-0538
Job No:	54463		Area:	North Sea				Scale: Green Lasers Lines (99mm)					
Project:	Caledonia OWF Phase 2							Equipment: 1Cam / OE14-208 / CT3022					
Client:	Caledonia Offshore Windfarm Limited							Vessel: MV *Ocean Endeavour*					
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HD Video HDD File Name(s)	Topside SD Video File Name (s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_48	19-Mar-2023	23:31:27	23:42:40	00:11:13	54463_ECR_ENV_48 00010.MTS	54463_ECR_ENV_48_2023-03-19_233127_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Annelida (Sabellidae), Arthropoda (*G. rhomboides* , Nephropidae), Chordata (Actinopterygii), Cnidaria (Hydrozoa, *P. phosphorea* , *Tubularia)*	RH, MC	39	300	338	
ECR_ENV_47	20-Mar-2023	01:02:15	01:17:16	00:15:01	54463_ECR_ENV_47 00011.MTS	54463_ECR_ENV_47_2023-03-20_010215_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii), Cnidaria (*P. phosphorea*)	MJ, JH	36	339	374	
ECR_ENV_46	20-Mar-2023	02:33:19	02:47:36	00:14:17	54463_ECR_ENV_46 00012.MTS	54463_ECR_ENV_46_2023-03-20_023319_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Arthropoda (*C. pagurus,* Nephropidae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea* , *Virgularia*)	MJ, JH	48	375	422	
ECR_ENV_45	20-Mar-2023	04:05:40	04:20:33	00:14:53	54463_ECR_ENV_45 00013.MTS	54463_ECR_ENV_45_2023-03-20_040540_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Arthropoda (*N. norvegicus*), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea* , *Tubularia, Virgularia*)	MJ, JH	38	423	460	
ECR_ENV_44	20-Mar-2023	05:32:03	05:47:54	00:15:51	54463_ECR_ENV_44 00014.MTS	54463_ECR_ENV_44_2023-03-20_053202_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Chordata (Actinopterygii), Cnidaria (Hydrozoa, *P. phosphorea* , *Tubularia)*	MJ, JH	40	460	500	
ECR_ENV_43	20-Mar-2023	07:31:35	07:48:43	00:17:08	54463_ECR_ENV_43 00015.MTS	54463_ECR_ENV_43_2023-03-20_073135_Ch1/2_00	Fine sand with occasional shell fragments, cobbles, boulders and faunal burrows	Annelida (Sabellidae), Arthropoda (Decapoda, Galatheoidea, *N. norvegicus* , Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actinaria, Hydrozoa, *P. phosphorea* , *Tubularia*), Echinodermata (Asteroidea, Echinoidea, Henricia), Mollusca (Gastropoda, Scaphopoda)	MJ, JH	60	501	560	
ECR_ENV_42	20-Mar-2023	09:37:49	09:51:26	00:13:37	54463_ECR_ENV_42 00016.MTS	54463_ECR_ENV_42_2023-03-20_093749_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Arthropoda (*N. norvegicus*), Chordata (Pleuronectiformes), Cnidaria (*P. phosphorea*)	MJ, JH	39	561	599	

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)													FOR-ENV-0538
Job No:	54463		Area:	North Sea			Scale: Green Lasers Lines (99mm)						
Project:	Caledonia OWF Phase 2						Equipment: 1Cam / OE14-208 / CT3022						
Client:	Caledonia Offshore Windfarm Limited						Vessel: MV *Ocean Endeavour*						
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HD Video HDD File Name(s)	Topside SD Video File Name (s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_41	20-Mar-2023	11:20:51	11:31:32	00:10:41	54463_ECR_ENV_41 00017.MTS	54463_ECR_ENV_41_2023-03-20_112051_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Chordata (Actinopterygii), Cnidaria (*P. phosphorea, Virgularia*)	MJ, JH	39	600	639	
ECR_ENV_40	20-Mar-2023	13:14:56	13:31:56	00:17:00	54463_ECR_ENV_40 00018.MTS	54463_ECR_ENV_40_2023-03-20_131456_Ch1/2_00	Fine sand with occasional shell fragments and faunal burrows	Chordata (Actinopterygii), Cnidaria (*P. phosphorea*), Echinodermata, (*Henricia*)	RH, MC	41	640	681	Bow thruster failure
ECR_ENV_08	29-Mar-2023	14:49:18	15:08:10	00:18:52	54463_ECR_ENV_08 00000.MTS	54463_ECR_ENV_08_2023-03-29_144918_Ch1/2_00	Fine sand with ripples and occasional shell fragments	Arthropoda (Paguroidea), Chordata (Actinopterygii, *Callionymus* , Pleuronectiformes), Cnidaria (*P. phosphorea*), Mollusca (*A. islandica* , Bivalvia, Gastropoda)	MJ, JH	45	682	726	Presence of *Arctica islandica*
ECR_ENV_15	30-Mar-2023	01:56:02	02:10:18	00:14:16	54463_ECR_ENV_15 00001.MTS	54463_ECR_ENV_15_2023-03-30_015602_Ch1/2_00	Fine sand with occasional shell fragments	Chordata (Actinopterygii, Pleuronectiformes, Triglidae), Cnidaria (Anthozoa), Mollusca (*A. islandica* , Bivalvia, Pectinidae)	MJ, JH	43	727	769	Presence of *Arctica islandica*
ECR_ENV_20	30-Mar-2023	03:50:13	04:04:49	00:14:36	54463_ECR_ENV_20 00002.MTS	54463_ECR_ENV_20_2023-03-30_035013_Ch1/2_00	Fine sand with occasional shell fragments, cobbles and boulders	Arthropoda (Caridea, Brachyura, Galatheoidea), Chordata (Actinopterygii), Cnidaria (*A. digitatum* , Metridium), Echinodermata (Asteroidea, Echinoidea, *Henricia*)	MJ, JH	46	770	815	
ECR_ENV_07	30-Mar-2023	06:37:34	07:01:56	00:24:22	54463_ECR_ENV_07 00003.MTS	54463_ECR_ENV_07_2023-03-30_063734_Ch1/2_00	Fine sand with occasional shell fragments	Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Asteroidea, *Henricia*)	MJ, JH	70	816	885	Issue with EELS, photo taken but no fix 865 to 875
ECR_ENV_16	02-Apr-2023	12:35:23	12:49:14	00:13:51	54463_ECR_ENV_16 00000.MTS	54463_ECR_ENV_16_2023-04-02_123523_Ch1/2_00	Fine sand with occasional shell fragments	Chordata (Actinopterygii), Echinodermata (Asteroidea)	RH, MC	43	886	928	Large swell
ECR_ENV_25	02-Apr-2023	14:48:21	15:03:14	00:14:53	54463_ECR_ENV_25 00001.MTS	55463_ECR_ENV_25_2023-04-02_144821_Ch1/2_00	Fine sand with occasional shell fragments	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*), Mollusca (*A. islandica*)	RH, MC	43	929	971	Presence of *Arctica islandica* Large swell
ECR_ENV_33	02-Apr-2023	16:37:15	16:49:53	00:12:38	54463_ECR_ENV_33 00002.MTS	55463_ECR_ENV_33_2023-04-02_163715_Ch1/2_00	Fine sand with occasional shell fragments	Arthropoda (*N. norvegicus*), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*), Echinodermata (Ophiuroidea)	RH, MC	40	972	1011	

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)													FOR-ENV-0538
Job No:	54463		Area:	North Sea				Scale: Green Lasers Lines (99mm)					
Project:	Caledonia OWF Phase 2							Equipment: 1Cam / OE14-208 / CT3022					
Client:	Caledonia Offshore Windfarm Limited							Vessel: MV *Ocean Endeavour*					
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HD Video HDD File Name(s)	Topside SD Video File Name (s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_17	03-Apr-2023	03:17:41	03:34:06	00:16:25	54463_ECR_ENV_17 00003.MTS	55463_ECR_ENV_17_2023-04-03_031741_Ch1/2_00	Fine sand with occasional shell fragments	Annelida (Polychaeta), Chordata (Actinopterygii, Plueronectiformes), Cnidaria (*P. phosphorea*), Echinodermata (Asteroidea), Mollusca (*A. islandica* , Pectinidae)	MJ, JH	43	1012	1055	Presence of *Arctica islandica* Issue with camera focus
ECR_ENV_26	03-Apr-2023	14:11:13	14:24:47	00:13:34	54463_ECR_ENV_26 00004.MTS	55463_ECR_ENV_26_2023-04-03_141113_Ch1/2_00	Fine sand	Arthropoda (Caridea, *N. norvegicus*), Cnidaria (*P. phosphorea* , *Tubularia*)	RH, MC	40	1056	1094	
ECR_ENV_21	04-Apr-2023	03:34:58	03:50:23	00:15:25	54463_ECR_ENV_21 00005.MTS	55463_ECR_ENV_21_2023-04-04_033458_Ch1/2_00	Fine sand with ripples and occasional shell fragments	Arthropoda (Brachyura, Caridea, Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*), Mollusca (*A. islandica* , Bivalvia)	MJ, JH	40	1095	1134	Presence of *Arctica islandica*
ECR_ENV_53	04-Apr-2023	07:35:41	07:52:57	00:17:16	54463_ECR_ENV_53 00006.MTS	55463_ECR_ENV_53_2023-04-04_073541_Ch1/2_00	Coarse sand with occasional shell fragments, cobbles and boulders	Annelida (Polychaeta), Arthropoda (*C. pagurus* , Galatheoidea), Bryozoa, Chordata (Pleuronectiformes), Cnidaria (*A. digitatum*), Echinodermata (*A. rubens, C. papposus* , Echinoidea, *Luidia*)	MJ, JH	45	1135	1179	
ECR_ENV_01	04-Apr-2023	10:06:57	10:22:15	00:15:18	54463_ECR_ENV_01 00007.MTS	55463_ECR_ENV_01_2023-04-04_100657_Ch1/2_00	Coarse sand with occasional shell fragments, cobbles and boulders	Arthropoda, Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Anthozoa), Echinodermata (Echinoidea, Asteroidea), Mollusca (Bivalvia)	RH, MC	43	1180	1222	
ECR_ENV_54	04-Apr-2023	12:38:02	13:11:20	00:33:18	54463_ECR_ENV_54 00008/9.MTS	55463_ECR_ENV_54_2023-04-04_123802_Ch1/2_00 55463_ECR_ENV_54_2023-04-04_130802_Ch1/2_01	Fine sand and very large boulder in centre of target	Arthropoda (Paguroidea, Galatheoidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Anthozoa), Echinodermata (Echinoidea)	RH, MC	48	1223	1275	Issue with EELs, no fix (1224-1228)
ECR_ENV_55	04-Apr-2023	14:07:54	14:44:00	00:36:06	54463_ECR_ENV_55 00010/11.MTS	55463_ECR_ENV_55_2023-04-04_140754_Ch1/2_00 55463_ECR_ENV_55_2023-04-04_143754_Ch1/2_01	Fine sand and very large boulder in centre of target	Arthropoda (Galatheoidea, *N. norvegicus*), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Anthozoa)	RH, MC	49	1276	1324	

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)													FOR-ENV-0538
Job No:	54463		Area:	North Sea			Scale: Green Lasers Lines (99mm)						
Project:	Caledonia OWF Phase 2						Equipment: 1Cam / OE14-208 / CT3022						
Client:	Caledonia Offshore Windfarm Limited						Vessel: MV *Ocean Endeavour*						
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HD Video HDD File Name(s)	Topside SD Video File Name (s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_02	04-Apr-2023	15:45:59	16:01:16	00:15:17	54463_ECR_ENV_02 00012.MTS	55463_ECR_ENV_02_2023-04-04_154559_Ch1/2_00	Fine sand	Arthropoda (*N. norvegicus*), Chordata (Actinopterygii), Cnidaria (*P. phosphorea*, *Tubularia*)	RH, MC	39	1325	1363	
ECR_ENV_14	04-Apr-2023	23:06:09	23:22:16	00:16:07	54463_ECR_ENV_14 00000.MTS	55463_ECR_ENV_14_2023-04-04_230609_Ch1/2_00	Fine sand with occasional shell fragments, cobbles and boulders	Arthropoda (Brachyura, Galatheoidea, *N. norvegicus*), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*)	MJ, JH	42	1364	1405	
ECR_ENV_35	05-Apr-2023	01:48:42	02:01:14	00:12:32	54463_ECR_ENV_35 00001.MTS	55463_ECR_ENV_35_2023-04-05_014842_Ch1/2_00	Fine sand	Arthropoda (Brachyura), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, *P. phosphorea*)	MJ, JH	37	1406	1442	
ECR_ENV_12	05-Apr-2023	04:01:17	04:17:41	00:16:24	54463_ECR_ENV_12 00002.MTS	55463_ECR_ENV_12_2023-04-05_040117_Ch1/2_00	Fine sand	Arthropoda (Galatheoidea), Chordata (Actinopterygii), Cnidaria (Hydrozoa, *P. phosphorea*)	MJ, JH	40	1443	1482	
ECR_ENV_24	05-Apr-2023	12:35:56	12:46:36	00:10:40	54463_ECR_ENV_24 (1/2) 00003.MTS 00004.MTS	55463_ECR_ENV_24_2023-04-05_123556_Ch1/2_00	Fine sand	Chordata (Pleuronectiformes), Cnidaria (*P. phosphorea*)	RH, MC	43	1489	1525	Break in 1Cam recording
ECR_ENV_09	05-Apr-2023	15:08:26	15:16:41	00:08:15	54463_ECR_ENV_09 00005.MTS	54463_ECR-ENV_09_2023-04-05_150626_Ch1/2_00	Fine sand with shell fragments	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*)	RH, MC	40	1526	1565	
ECR_ENV_27	05-Apr-2023	16:49:10	17:02:40	00:13:30	54463_ECR_ENV_27 00006.MTS	54463_ECR_ENV_27_2023-04-05_164910_Ch1/2_00	Fine sand with shell fragments	Chordata (Actinopterygii), Cnidaria (*P. phosphorea*, *Tubularia*)	RH, MC	41	1566	1608	
ECR_ENV_04	05-Apr-2023	20:01:44	20:16:59	00:15:15	54463_ECR_ENV_04 00007.MTS	54463_ECR_ENV_04_2023-04-05_200144_Ch1/2_00	Fine sand with occasional shell fragments	Arthropoda (Galatheoidea), Chordata (Actinopterygii, Pleuroneciformes), Cnidaria (*P. phosphorea*), Mollusca (*A. islandica*, Bivalvia)	RH, MC	45	1609	1653	Presence of *Arctica islandica*
ECR_ENV_19	05-Apr-2023	21:49:58	22:05:25	00:15:27	54463_ECR_ENV_19 00008.MTS	54463_ECR_ENV_19_2023-04-05_214958_Ch1/2_00	Fine sand with occasional shell fragments	Arthropoda (Brachyura), Chordata (Actinopterygii), Cnidaria (Actiniaria, *P. phosphorea*)	RH, MC	46	1654	1699	
ECR_ENV_23	05-Apr-2023	23:47:14	23:58:45	00:11:31	54463_ECR_ENV_23 00009.MTS	54463_ECR_ENV_23_2023-04-05_234714_Ch1/2_00	Fine sand with occasional shell fragments	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*), Echinodermata (Asteroidea)	MJ, JH	40	1700	1739	
ECR_ENV_06	06-Apr-2023	01:40:33	01:57:13	00:16:40	54463_ECR_ENV_06 00010.MTS	54463_ECR_ENV_06_2023-04-06_014033_Ch1/2_00	Fine sand with occasional shell fragments	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa), Mollusca (*A. islandica*, Bivalvia)	MJ, JH	42	1740	1781	Presence of *Arctica islandica*
ECR_ENV_13	06-Apr-2023	05:30:59	05:43:46	00:12:47	54463_ECR_ENV_13 00011.MTS	54463_ECR_ENV_13_2023-04-06_053059_Ch1/2_00	Fine sand with occasional shell fragments	Annelida (Polychaeta), Arthropoda (Caridea), Chordata (Actinopterygii, Pleuronectiformes)	MJ, JH	40	1782	1821	

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)													FOR-ENV-0538
Job No:	54463		Area:	North Sea				Scale: Green Lasers Lines (99mm)					
Project:	Caledonia OWF Phase 2							Equipment: 1Cam / OE14-208 / CT3022					
Client:	Caledonia Offshore Windfarm Limited							Vessel: MV *Ocean Endeavour*					
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HD Video HDD File Name(s)	Topside SD Video File Name (s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_32	06-Apr-2023	08:04:28	08:25:34	00:21:06	54463_ECR_ENV_32 00012.MTS	54463_ECR_ENV_32_2023-04-06_080428_Ch1/2_00	Fine sand with occasional shell fragments, cobbles and boulders	Arthropoda (Galatheoidea, Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Asteroidea, Echinoidea, *Luidia*)	MJ, JH	52	1822	1873	
ECR_ENV_11	06-Apr-2023	10:38:17	10:50:31	00:12:14	54463_ECR_ENV_11 00013.MTS	54463_ECR_ENV_11_2023-04-06_103817_Ch1/2_00	Fine sand with occasional shell fragments	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*), Echinodermata (Asteroidea, Echinoidea), Mollusca (Bivalvia)	RH, MC	41	1874	1914	
ECR_ENV_22	06-Apr-2023	12:23:27	12:34:48	00:11:21	54463_ECR_ENV_22 00014.MTS	54463_ECR_ENV_22_2023-04-06_122327_Ch1/2_00	Fine sand with occasional shell fragments	Chordata (Actinopterygii), Cnidaria (*P. phosphorea*), Echinodermata (Asteroidea), Mollusca (Gastropoda)	RH, MC	40	1915	1953	
ECR_ENV_03	06-Apr-2023	14:37:19	14:48:20	00:11:01	54463_ECR_ENV_03 00015.MTS	54463_ECR_ENV_03_2023-04-06_133719_Ch1/2_00	Fine sand	Chordata (Actinopterygii), Cnidaria (*P. phosphorea*)	RH, MC	40	1955	1995	
ECR_ENV_29	13-Apr-2023	17:58:44	18:12:24	00:13:40	54463_ECR_ENV_29 00000.MTS	54463_ECR_ENV_29_2023-04-13_175844_Ch1/2_00	Fine sand with faunal burrows	Arthropoda (Galatheoidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*)	RH, MC	39	1996	2036	Large swell
ECR_ENV_28	13-Apr-2023	21:38:19	21:51:03	00:12:44	54463_ECR_ENV_28 00001.MTS	54463_ECR_ENV_28_2023-04-13_213819_Ch1/2_00	Fine sand with faunal burrows	Arthropoda (Galatheoidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Anthozoa, *P. phosphorea* , *Virgularia*), Echinodermata (Asteroidea)	RH, MC	40	2037	2077	Large swell
ECR_ENV_10	13-Apr-2023	23:22:40	23:43:33	00:20:53	54463_ECR_ENV_10 00002.MTS	54463_ECR_ENV_10_2023-04-13_232240_Ch1/2_00	Fine sand with faunal burrows	Arthropoda (Galatheoidea), Chordata (Actinopterygii), Cnidaria (*P. phosphorea*)	MJ, JH	39	2085	2123	Issue with EELs, no fix (2078-2084) Repeated station due to issue with EELs and Voyager
ECR_ENV_10A	14-Apr-2023	00:19:53	00:30:56	00:11:03	54463_ECR_ENV_10A 00003.MTS	54463_ECR_ENV_10A_2023-04-14_001953_Ch1/2_00	Fine sand with faunal burrows	Arthropoda (Galatheoidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*), Echinodermata (Asteroidea)	MJ, JH	39	2124	2163	Repeat of ECR_ENV_10
ECR_ENV_31	14-Apr-2023	04:07:11	04:20:19	00:13:08	54463_ECR_ENV_31 00004.MTS	54463_ECR_ENV_31_2023-04-14_040711_Ch1/2_00	Fine sand with faunal burrows	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*), Echinodermata (Asteroidea)	MJ, JH	40	2164	2203	

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)													FOR-ENV-0538
Job No:	54463		Area:	North Sea			Scale: Green Lasers Lines (99mm)						
Project:	Caledonia OWF Phase 2						Equipment: 1Cam / OE14-208 / CT3022						
Client:	Caledonia Offshore Windfarm Limited						Vessel: MV *Ocean Endeavour*						
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HD Video HDD File Name(s)	Topside SD Video File Name (s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_34	14-Apr-2023	06:43:37	06:58:33	00:14:56	54463_ECR_ENV_35 00005.MTS	54463_ECR_ENV_34_2023-04-14_064337_Ch1/2_00	Fine sand with faunal burrows	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*)	MJ, JH	45	2204	2248	
ECR_ENV_30	14-Apr-2023	08:21:35	08:38:52	00:17:17	54463_ECR_ENV_30 00006.MTS	54463_ECR_ENV_30_2023-04-14_082135_Ch1/2_00	Fine sand with faunal burrows	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, *P. phosphorea*)	MJ, JH	46	2249	2294	
ECR_ENV_05	14-Apr-2023	10:12:09	10:22:23	00:10:14	54463_ECR_ENV_05 00007.MTS	54463_ECR_ENV_05_2023-04-14_101209_Ch1/2_00	Fine sand with faunal burrows	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*)	MJ, JH	36	2295	2332	
ECR_ENV_36	14-Apr-2023	13:14:55	13:25:13	00:10:18	54463_ECR_ENV_36 00008.MTS	54463_ECR_ENV_36_2023-04-14_131455_Ch1/2_00	Fine sand with faunal burrows	Cnidaria (*P. phosphorea*)	RH, MC	36	2333	2368	
ECR_ENV_18	14-Apr-2023	15:03:59	15:21:53	00:17:54	54463_ECR_ENV_18 00009.MTS	54463_ECR_ENV_18_2023-04-14_150359_Ch1/2_00	Fine sand with faunal burrows	Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*P. phosphorea*), Mollusca (Gastropoda)	RH, MC	43	2369	2412	
ECR_ENV_61	19-May-2023	19:39:18	19:58:34	00:19:16	54463_ECR_ENV_61.MTS	54463_ECR_ENV_61_2023-05-19_183919_Ch1/2_00	Coarse sand with shells fragments, gravel.	Arthropoda (Galatheoidea, Paguroidae) Chordata (*Callionymus Lyra*, Pleuronectidae), Cnidaria (Plumulariidae), Mollusca (Buccinidae, Pectinidae)	JE	30	4195	4225	
ECR_ENV_62	19-May-2023	21:14:56	21:40:18	00:25:21	54463_ECR_ENV_62.MTS	54463_ECR_ENV_62_2023-05-19_201457_Ch1/2_00	Coarse sand with gravel pebbles and occasionally boulders.	Arthropoda (*Cancer pagurus*, Galatheoidea, Paguroidea), Bryozoa (Flustridae) Chordata (Actinopterygii, Gadidae, Pleuronectidae, Triglidae), Echinodermata (Asteroidea, *Astropecten irregularis*, *Asterias rubens*, *Porania pulvillus*), Mollusca (Buccinidae, Pectinidae, Solenidae)	JE	50	4226	4276	EELS log not populating all positional information.
ECR_ENV_60	19-May-2023	22:25:17	22:45:51	00:20:33	54463_ECR_ENV_60.MTS	54463_ECR_ENV_60_2023-05-19_212518_Ch1/2_00	Coarse sand with gravel pebbles and boulders.	Arthropoda (*Cancer pagurus*, Galatheoidea, Paguroidea), Chordata (Actinopterygii, Pleuronectidae,Triglidae), Cnidaria (*Alcyionium digitatum*, Plumulariidae, Sertulariidae), Echinodermata (*Asteria rubens*,*Crossaster pappo sus*, *Echinidae*)	JE	61	4277	4338	Issues with HD video recording. EELS log not populating all positional information. Debris: thick rope / wire debris in images 9699 and 9670.

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)													FOR-ENV-0538
Job No:	54463		Area:	North Sea				Scale: Green Lasers Lines (99mm)					
Project:	Caledonia OWF Phase 2							Equipment: 1Cam / OE14-208 / CT3022					
Client:	Caledonia Offshore Windfarm Limited							Vessel: MV *Ocean Endeavour*					
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HD Video HDD File Name(s)	Topside SD Video File Name (s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_64	20-May-2023	02:42:23	03:28:33	00:22:11	54463_ECR_ENV_64-01/2/3/4.MTS	54463_ECR_ENV_64_2023-05-20_014223_Ch1/2_00 54463_ECR_ENV_64_2023-05-20_014536_Ch1/2_00 54463_ECR_ENV_64_2023-05-20_020728_Ch1/2_00	Coarse sand with gravel pebbles and boulders. Occasionally fine sand with sea pens and burrowing megafauna community	Arthropoda (*Cancer pagurus* , Galatheoidea, Paguroidae), Chordata (*Callionymus Lyra* , Gadidae, Pleuronectidae), Cnidaria (Actiniidae, Plumulariidae, *P. phosphorea,* Sertulariidae), Echinodermata (*Asterias rubens* , Luidia, Echinoidea, Ophiuroidea, *Porania pulvillus*)	GB	36	4339	4375	Issues with EELS. Transect extended due to potential sea pen and burrowing megafauna habitat.
ECR_ENV_63	20-May-2023	04:19:01	04:37:07	00:18:09	54463_ECR_ENV_63-01/2.MTS	54463_ECR_ENV_63_2023-05-20_031902_Ch1/2_00	Coarse sand with gravel pebbles and boulders	Arthropoda (Galatheidae), Chordata (Gadidae), Cnidaria (Actiniidae, Plumulariidae, Sertulariidae), Echinodermata (*Asterias rubens* , Luidia, Echinoidea, *Porania pulvillus*)	GB	36	4376	4412	EELS log not populating all positional information.

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463				Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	CoG						
Project Name	Caledonia OWF Phase 2				Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Grab Deployment Node						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84		Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
29-Mar-2023	16:36	1	ECR_ENV_08	20%	No Sample	HG	74	526625	6398004	526624	6398007	1	-3	3	165	SG	Low retention
29-Mar-2023	16:57	2	ECR_ENV_08	30%	No Sample	HG	74	526618	6398010	526624	6398007	-6	3	7	295	SG	Low retention
29-Mar-2023	17:06	3	ECR_ENV_08	30%	No Sample	HG	74	526623	6398010	526624	6398007	-2	3	3	330	SG	Low retention
29-Mar-2023	00:28	4	ECR_ENV_08	20%	MFA	HG	73	526635	6398008	526624	6398007	11	0	11	88	PL	Moved 10m E, Low retention sample accepted
29-Mar-2023	00:40	5	ECR_ENV_08	20%	MFB	HG	73	526633	6398002	526624	6398007	9	-5	10	121	PL	Low retention sample accepted
29-Mar-2023	00:52	6	ECR_ENV_08	20%	PSA	HG	73	526633	6398007	526624	6398007	9	0	9	89	PL	Low retention sample accepted
30-Mar-2023	03:24	7	ECR_ENV_15	70%	MFA	HG	52	524540	6397552	524538	6397554	2	-2	3	135	PL	
30-Mar-2023	03:42	8	ECR_ENV_15	60%	MFB	HG	52	524537	6397553	524538	6397554	-1	-1	1	242	PL	
30-Mar-2023	05:18	9	ECR_ENV_20	20%	MFA	HG	32	522010	6396359	522015	6396359	-5	0	5	270	PL	Low retention sample accepted
30-Mar-2023	05:38	10	ECR_ENV_20	20%	No Sample	HG	32	522013	6396361	522015	6396359	-2	2	3	304	PL	Rock in jaws, wash out.
30-Mar-2023	05:48	11	ECR_ENV_20	20%	No Sample	HG	32	522019	6396365	522015	6396359	3	6	7	31	PL	Low retention
30-Mar-2023	06:33	12	ECR_ENV_20	20%	No Sample	HG	32	521967	6396352	522015	6396359	-48	-7	49	262	PL	Rock in jaws, wash out.
30-Mar-2023	06:40	13	ECR_ENV_20	20%	No Sample	HG	32	521968	6396356	522015	6396359	-47	-3	48	266	PL	Rock in jaws, wash out.
30-Mar-2023	06:48	14	ECR_ENV_20	10%	MFB	HG	33	521963	6396359	522015	6396359	-53	0	53	270	PL	Moved 50m SW, Low retention sample accepted
30-Mar-2023	08:24	15	ECR_ENV_07	90%	MFA	HG	32	523783	6395199	523782	6395200	1	-1	1	124	PL	
30-Mar-2023	08:33	16	ECR_ENV_07	80%	MFB	HG	32	523782	6395200	523782	6395200	0	0	0	246	PL	
02-Apr-2023	14:10	17	ECR_ENV_16	80%	MFA	HG	40	525426	6395984	525425	6395985	2	-2	2	136	SG	
02-Apr-2023	14:24	18	ECR_ENV_16	70%	MFB	HG	40	525422	6395982	525425	6395985	-3	-3	4	222	SG	
02-Apr-2023	16:17	19	ECR_ENV_25	40%	MFA	HG	75	528432	6398321	528441	6398316	-9	6	10	303	SG	
02-Apr-2023	16:25	20	ECR_ENV_25	30%	No Sample	HG	75	528441	6398316	528441	6398316	0	0	0	38	SG	Low retention
02-Apr-2023	16:33	21	ECR_ENV_25	40%	MFB	HG	75	528435	6398316	528442	6398317	-7	-1	7	262	SG	
02-Apr-2023	18:07	22	ECR_ENV_33	30%	No Sample	HG	92	527778	6399736	527780	6399737	-1	-1	2	221	SG	Low retention
02-Apr-2023	18:40	23	ECR_ENV_33	20%	No Sample	HG	92	527779	6399734	527780	6399737	-1	-3	3	193	SG	Low retention
02-Apr-2023	18:58	24	ECR_ENV_33	40%	MFA	HG	92	527772	6399745	527780	6399737	-8	8	11	318	SG	
02-Apr-2023	19:28	25	ECR_ENV_33	40%	MFB	HG	93	527780	6399742	527780	6399737	0	5	5	360	SG	
03-Apr-2023	05:12	26	ECR_ENV_17	60%	MFA	HG	75	525687	6399992	525686	6399992	2	0	2	84	PL	
03-Apr-2023	05:31	27	ECR_ENV_17	50%	MFB	HG	75	525685	6399989	525686	6399992	0	-3	3	189	PL	
03-Apr-2023	06:08	28	ECR_ENV_17	40%	CHEM	DG	76	525686	6399992	525686	6399992	1	0	1	85	PL	
03-Apr-2023	15:48	29	ECR_ENV_26	90%	MFA	HG	110	528614	6402534	528618	6402532	-4	3	5	307	SG	
03-Apr-2023	15:59	30	ECR_ENV_26	90%	MFB	HG	109	528617	6402536	528618	6402532	-1	4	4	352	SG	
03-Apr-2023	16:25	31	ECR_ENV_26	90%	CHEM	DG	109	528614	6402536	528618	6402532	-4	5	6	319	SG	
04-Apr-2023	05:15	32	ECR_ENV_21	60%	MFA	HG	48	528144	6396764	528145	6396764	-1	0	1	288	PL	
04-Apr-2023	05:28	33	ECR_ENV_21	30%	No Sample	HG	48	528144	6396768	528145	6396764	-1	4	4	351	PL	Rock in jaws, wash out
04-Apr-2023	05:37	34	ECR_ENV_21	50%	MFB	HG	48	528145	6396764	528145	6396764	1	0	1	76	PL	

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	CoG							
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Grab Deployment Node							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Apr-2023	09:11	35	ECR_ENV_53	70%	MFA	HG	31	525615	6394768	525615	6394765	0	3	3	358	PL	
04-Apr-2023	09:24	36	ECR_ENV_53	70%	MFB	HG	31	525616	6394764	525615	6394765	0	-1	1	148	PL	
04-Apr-2023	09:48	37	ECR_ENV_53	60%	CHEM	DG	31	525615	6394768	525615	6394765	0	3	3	0	PL	
04-Apr-2023	11:32	38	ECR_ENV_01	50%	MFA	HG	35	527942	6394892	527943	6394888	-1	3	3	349	SG	
04-Apr-2023	11:37	39	ECR_ENV_01	0%	No Sample	HG	35	527945	6394887	527943	6394888	2	-1	2	121	SG	Rock in jaws, wash out
04-Apr-2023	11:41	40	ECR_ENV_01	0%	No Sample	HG	35	527946	6394887	527943	6394888	4	-1	4	112	SG	Rock in jaws, wash out
04-Apr-2023	11:46	41	ECR_ENV_01	0%	No Sample	HG	35	527945	6394888	527943	6394888	2	0	2	102	SG	Rock in jaws, wash out
04-Apr-2023	11:52	42	ECR_ENV_01	50%	MFB	HG	35	527935	6394889	527943	6394888	-7	0	7	272	SG	Moved 10m W
04-Apr-2023	17:22	43	ECR_ENV_02	90%	MFA	HG	88	524999	6404670	525003	6404670	-3	-1	3	258	SG	
04-Apr-2023	17:33	44	ECR_ENV_02	90%	MFB	HG	88	525001	6404672	525003	6404670	-2	1	2	312	SG	
05-Apr-2023	00:58	45	ECR_ENV_14	0%	No Sample	HG	70	528137	6404767	528139	6404768	-2	-2	3	229	PL	Rock in jaws, wash out
05-Apr-2023	01:03	46	ECR_ENV_14	0%	No Sample	HG	70	528139	6404767	528139	6404768	1	-1	1	151	PL	Rock in jaws, wash out
05-Apr-2023	01:13	47	ECR_ENV_14	0%	No Sample	HG	70	528147	6404762	528139	6404768	8	-7	10	131	PL	Rock in jaws, wash out
05-Apr-2023	01:25	48	ECR_ENV_14	40%	MFA	HG	69	528122	6404750	528139	6404768	-16	-18	25	221	PL	
05-Apr-2023	01:35	49	ECR_ENV_14	0%	No Sample	HG	70	528123	6404751	528139	6404768	-16	-18	24	221	PL	Rock in jaws, wash out
05-Apr-2023	01:45	50	ECR_ENV_14	50%	MFB	HG	69	528126	6404751	528139	6404768	-12	-18	22	215	PL	
05-Apr-2023	03:28	51	ECR_ENV_35	70%	MFA	HG	78	528928	6405415	528927	6405414	1	2	2	34	PL	
05-Apr-2023	03:39	52	ECR_ENV_35	70%	MFB	HG	78	528928	6405412	528927	6405414	1	-2	2	147	PL	
05-Apr-2023	05:43	53	ECR_ENV_12	90%	MFA	HG	90	527240	6406198	527238	6406199	2	0	2	92	PL	
05-Apr-2023	06:00	54	ECR_ENV_12	90%	MFB	HG	90	527239	6406197	527238	6406199	1	-1	2	137	PL	
05-Apr-2023	14:04	55	ECR_ENV_24	90%	MFA	HG	92	526033	6407680	526032	6407680	2	0	2	76	SG	
05-Apr-2023	14:12	56	ECR_ENV_24	90%	MFB	HG	92	526033	6407681	526032	6407680	2	1	2	69	SG	
05-Apr-2023	16:29	57	ECR_ENV_09	90%	MFA	HG	87	524419	6407869	524422	6407875	-3	-6	7	206	SG	
05-Apr-2023	16:37	58	ECR_ENV_09	90%	MFB	HG	87	524422	6407869	524422	6407875	0	-6	6	182	SG	
05-Apr-2023	18:17	59	ECR_ENV_27	90%	MFA	HG	90	527954	6408299	527955	6408300	-1	-1	2	230	SG	
05-Apr-2023	18:28	60	ECR_ENV_27	90%	MFB	HG	89	527953	6408301	527955	6408300	-2	1	3	291	SG	
05-Apr-2023	21:30	61	ECR_ENV_04	90%	MFA	HG	83	526525	6410862	526524	6410862	1	-1	1	124	SG	
05-Apr-2023	21:41	62	ECR_ENV_04	90%	MFB	HG	84	526524	6410862	526524	6410862	0	-1	1	155	SG	
05-Apr-2023	21;58	63	ECR_ENV_04	80%	CHEM	DG	84	526524	6410862	526524	6410862	0	-1	1	173	SG	
06-Apr-2023	23:33	64	ECR_ENV_19	60%	MFA	HG	79	526291	6412284	526293	6412287	-3	-3	4	223	PL	
06-Apr-2023	23:44	65	ECR_ENV_19	70%	MFB	HG	79	526291	6412284	526293	6412287	-2	-3	3	214	PL	
06-Apr-2023	01:21	66	ECR_ENV_23	60%	MFA	HG	74	526709	6414360	526710	6414359	-1	1	2	303	PL	
06-Apr-2023	01:32	67	ECR_ENV_23	50%	MFB	HG	74	526713	6414358	526710	6414359	3	-1	3	107	PL	
06-Apr-2023	03:22	68	ECR_ENV_06	50%	MFA	HG	71	527937	6415793	527936	6415791	1	2	2	25	PL	
06-Apr-2023	03:33	69	ECR_ENV_06	40%	MFB	HG	71	527935	6415793	527936	6415791	-2	1	2	312	PL	
06-Apr-2023	07:05	70	ECR_ENV_13	50%	MFA	HG	63	525887	6415998	525888	6415996	-1	1	2	324	PL	
06-Apr-2023	07:19	71	ECR_ENV_13	50%	MFB	HG	63	525889	6415995	525888	6415996	0	-1	1	166	PL	
06-Apr-2023	07:45	72	ECR_ENV_13	60%	CHEM	DG	63	525889	6415995	525888	6415996	1	-1	2	140	PL	

APPENDIX B FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*							
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	CoG							
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93	
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Grab Deployment Node							
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N			Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Apr-2023	09:44	73	ECR_ENV_32	1%	No Sample	HG	62	525128	6418432	525129	6418432	-1	-1	1	223	PL	Rock in jaws, wash out
06-Apr-2023	09:53	74	ECR_ENV_32	5%	No Sample	HG	62	525128	6418431	525129	6418432	-1	-2	2	211	PL	Rock in jaws, wash out
06-Apr-2023	10:02	75	ECR_ENV_32	2%	No Sample	HG	62	525127	6418432	525129	6418432	-1	-1	2	251	PL	Rock in jaws, wash out
06-Apr-2023	10:17	76	ECR_ENV_32	0%	No Sample	HG	62	525136	6418426	525129	6418432	7	-6	10	132	PL	Rock in jaws, wash out
06-Apr-2023	10:27	77	ECR_ENV_32	0%	No Sample	HG	62	525134	6418424	525129	6418432	6	-8	10	145	PL	Rock in jaws, wash out
06-Apr-2023	10:39	78	ECR_ENV_32	2%	No Sample	HG	62	525136	6418426	525129	6418432	7	-7	10	132	PL	Rock in jaws, wash out, Station abandoned
06-Apr-2023	12:03	79	ECR_ENV_11	0%	No Sample	HG	68	527404	6419347	527403	6419346	1	1	1	56	SG	Rock in jaws, wash out
06-Apr-2023	12:09	80	ECR_ENV_11	40%	MFA	HG	68	527403	6419347	527403	6419346	0	1	1	358	SG	
06-Apr-2023	12:15	81	ECR_ENV_11	0%	No Sample	HG	68	527402	6419347	527403	6419346	-1	1	1	319	SG	Rock in jaws, wash out
06-Apr-2023	12:22	82	ECR_ENV_11	0%	No Sample	HG	68	527403	6419351	527403	6419346	1	5	5	6	SG	Rock in jaws, wash out
06-Apr-2023	12:31	83	ECR_ENV_11	0%	No Sample	HG	68	527396	6419339	527403	6419346	-7	-7	10	225	SG	Moved 10m SW, Rock in jaws, wash out
06-Apr-2023	12:37	84	ECR_ENV_11	40%	MFB	HG	68	527396	6419340	527403	6419346	-6	-6	9	225	SG	
06-Apr-2023	13:47	85	ECR_ENV_22	40%	MFA	HG	64	526411	6421397	526407	6421398	4	-1	4	101	SG	
06-Apr-2023	13:54	86	ECR_ENV_22	40%	MFB	HG	64	526407	6421397	526407	6421398	0	-1	1	169	SG	
06-Apr-2023	15:00	87	ECR_ENV_03	40%	MFA	HG	74	527817	6422338	527815	6422341	1	-3	3	152	SG	
06-Apr-2023	15:06	88	ECR_ENV_03	30%	No sample	HG	74	527819	6422338	527815	6422341	4	-3	5	122	SG	Low retention
06-Apr-2023	15:13	89	ECR_ENV_03	50%	MFB	HG	74	527818	6422343	527815	6422341	3	2	4	51	SG	
13-Apr-2023	21:29	90	ECR_ENV_29	90%	MFA	HG	83	526547	6423621	526548	6423621	-1	0	1	257	SG	
13-Apr-2023	21:38	91	ECR_ENV_29	90%	MFB	HG	83	526547	6423623	526548	6423621	-1	2	2	332	SG	
13-Apr-2023	21:53	92	ECR_ENV_29	90%	CHEM	DG	83	526546	6423622	526548	6423621	-2	1	2	301	SG	
14-Apr-2023	23:08	93	ECR_ENV_28	80%	MFA	HG	78	527325	6425046	527328	6425044	-3	2	3	307	PL	
14-Apr-2023	23:20	94	ECR_ENV_28	90%	MFB	HG	78	527332	6425046	527328	6425044	5	2	5	67	PL	
14-Apr-2023	01:53	95	ECR_ENV_10	80%	MFA	HG	78	526898	6427552	526894	6427550	3	2	4	54	PL	
14-Apr-2023	02:06	96	ECR_ENV_10	80%	MFB	HG	78	526896	6427550	526894	6427550	2	0	2	87	PL	
14-Apr-2023	05:44	97	ECR_ENV_31		No sample	HG	76	529147	6429218	529151	6429215	-4	2	4	303	PL	Contaminated, did not clean with bleach
14-Apr-2023	05:52	98	ECR_ENV_31	80%	MFA	HG	76	529151	6429213	529151	6429215	0	-2	2	174	PL	
14-Apr-2023	06:06	99	ECR_ENV_31	80%	MFB	HG	76	529150	6429215	529151	6429215	0	-1	1	206	PL	
14-Apr-2023	06:32	100	ECR_ENV_31	70%	CHEM	DG	76	529150	6429217	529151	6429215	-1	2	2	325	PL	
14-Apr-2023	08:16	101	ECR_ENV_34	60%	MFA	HG	76	526389	6430516	526390	6430516	-1	0	1	247	PL	
14-Apr-2023	08:24	102	ECR_ENV_34	70%	MFB	HG	76	526390	6430516	526390	6430516	0	0	0	244	PL	
14-Apr-2023	09:58	103	ECR_ENV_30	20%	No sample	HG	74	527788	6431899	527788	6431898	0	1	1	344	PL	Low retention
14-Apr-2023	10:10	104	ECR_ENV_30	50%	MFA	HG	74	527787	6431898	527788	6431898	-1	0	1	284	PL	
14-Apr-2023	10:21	105	ECR_ENV_30	70%	MFB	HG	73	527788	6431898	527788	6431898	0	0	0	109	PL	
14-Apr-2023	11:33	106	ECR_ENV_05	40%	MFA	HG	75	529730	6431937	529726	6431936	3	1	4	72	SG	
14-Apr-2023	11:41	107	ECR_ENV_05	30%	No sample	HG	75	529726	6431931	529726	6431936	-1	-5	5	189	SG	Low retention
14-Apr-2023	11:48	108	ECR_ENV_05	40%	MFB	HG	75	529726	6431936	529726	6431936	-1	-1	1	220	SG	
14-Apr-2023	14:37	109	ECR_ENV_36	40%	MFA	HG	73	527612	6435817	527614	6435820	-2	-3	4	211	SG	
14-Apr-2023	14:47	110	ECR_ENV_36	40%	MFB	HG	73	527617	6435819	527614	6435820	3	-1	3	110	SG	
14-Apr-2023	15:02	111	ECR_ENV_36	10%	No sample	HG	73	527612	6435819	527614	6435820	-2	-1	2	244	SG	Low retention

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	CoG						
Project Name	Caledonia OWF Phase 2			Deployment Location	Camera Deployment Node	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Grab Deployment Node						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Apr-2023	15:10	112	ECR_ENV_36	60%	CHEM	DG	73	527611	6435818	527614	6435820	-3	-2	3	237	SG	
14-Apr-2023	16:58	113	ECR_ENV_18	60%	MFA	HG	69	529459	6435227	529459	6435225	0	2	2	360	SG	
14-Apr-2023	17:06	114	ECR_ENV_18	90%	MFB	HG	69	529458	6435225	529459	6435225	-2	0	2	262	SG	

APPENDIX B FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	54463		Area:	North Sea			Sieve Size: 1mm			
Project:	Caledonia OWF Phase 2						Equipment: Mini-Hamon Grab, Day Grab			
Client:	Caledonia Offshore Windfarm Limited						Vessel: MV *Ocean Endeavour*			
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
1	ECR_ENV_08	29-Mar-2023	16:36	20%	No sample				RH, MC	Low retention
2	ECR_ENV_08	29-Mar-2023	16:57	30%	No sample				RH, MC	Low retention
3	ECR_ENV_08	29-Mar-2023	17:06	30%	No sample				RH, MC	Low retention
4	ECR_ENV_08	30-Mar-2023	00:28	20%	MFA	1 x 1L	Fine sand with shell fragments Munsell: 5Y 4/2	Annelida (Polychaeta)	MJ, JAH	Moved 10m E, Low retention sample accepted
5	ECR_ENV_08	30-Mar-2023	00:40	20%	MFB	1 x 1L	Fine sand with shell fragments Munsell: 5Y 4/2	Annelida (Polychaeta)	MJ, JAH	Low retention sample accepted
6	ECR_ENV_08	30-Mar-2023	00:52	20%	PSA	2 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/2	No visible fauna	MJ, JAH	PSA and PSA Spare
7	ECR_ENV_15	30-Mar-2023	03:24	70%	MFA	1 x 5L 1 x ziplock bag	Coarse sand and shell fragments Munsell: 5Y 5/3	No visible fauna	MJ, JAH	PSA
8	ECR_ENV_15	30-Mar-2023	03:42	60%	MFB	1 x 5L 1 x ziplock bag	Coarse sand and shell fragments Munsell: 5Y 5/3	No visible fauna	MJ, JAH	PSA Spare
9	ECR_ENV_20	30-Mar-2023	05:18	20%	MFA	1 x 1L	Coarse sand with gravel, cobbles and shell fragments Munsell: 5Y 5/3 Cobbles: 80%	Echinodermata (*Asterias rubens*), Mollusca (Bivalvia)	MJ, JAH	Low retention sample accepted, no PSA
10	ECR_ENV_20	30-Mar-2023	05:38	20%	No sample				MJ, JAH	Rock in grab jaws
11	ECR_ENV_20	30-Mar-2023	05:48	20%	No sample				MJ, JAH	Low retention
12	ECR_ENV_20	30-Mar-2023	06:33	20%	No sample				MJ, JAH	Rock in grab jaws
13	ECR_ENV_20	30-Mar-2023	06:40	20%	No sample				MJ, JAH	Rock in grab jaws
14	ECR_ENV_20	30-Mar-2023	06:48	10%	MFB	1 x 1L	Coarse sand with gravel, cobbles and shell fragments Munsell: 5Y 5/3 Cobbles: 30%	Annelida (Polychaeta), Arthropoda (Paguroidea)	MJ, JAH	Moved 50m SW, Low retention sample accepted, no PSA Spare
15	ECR_ENV_07	30-Mar-2023	08:24	90%	MFA	1 x 5L 1 x ziplock bag	Coarse sand with shell fragments Munsell: 10YR 6/6	No visible fauna	MJ, JAH	PSA
16	ECR_ENV_07	30-Mar-2023	08:33	80%	MFB	1 x 5L 1 x ziplock bag	Coarse sand with shell fragments Munsell: 10YR 6/6	Annelida (Polychaeta), Echinodermata (Echinoidea)	MJ, JAH	PSA Spare
17	ECR_ENV_16	02-Apr-2023	14:10	80%	MFA	1 x 5L 1 x ziplock bag	Coarse sand with shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, MC	PSA
18	ECR_ENV_16	02-Apr-2023	14:24	70%	MFB	1 x 5L 1 x ziplock bag	Coarse sand with shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, MC	PSA Spare
19	ECR_ENV_25	02-Apr-2023	16:17	40%	MFA	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 10Y 4/2	Annelida (Polychaeta), Echinodermata (Echinoidea)	RH, MC	PSA
20	ECR_ENV_25	02-Apr-2023	16:25	20%	No sample				RH, MC	Low retention

APPENDIX B FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No: 54463			Area: North Sea					Sieve Size: 1mm		
Project: Caledonia OWF Phase 2								Equipment: Mini-Hamon Grab, Day Grab		
Client: Caledonia Offshore Windfarm Limited								Vessel: MV *Ocean Endeavour*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
21	ECR_ENV_25	02-Apr-2023	16:33	40%	MFB	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 10YR 4/2	Annelida (Polychaeta), Echinodermata (Echinoidea)	RH, MC	PSA Spare
22	ECR_ENV_33	02-Apr-2023	18:07	30%	No sample				RH, MC	Low retention
23	ECR_ENV_33	02-Apr-2023	18:40	20%	No sample				RH, MC	Low retention
24	ECR_ENV_33	02-Apr-2023	18:58	40%	MFA	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 10YR 4/2	Annelida (Polychaeta), Echinodermata (Echinoidea)	RH, MC	PSA
25	ECR_ENV_33	02-Apr-2023	19:28	40%	MFB	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 10YR 4/2	Annelida (Polychaeta)	RH, MC	PSA Spare
26	ECR_ENV_17	03-Apr-2023	05:12	60%	MFA	1 x 1L 2 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Echinodermata (Echinoidea), Mollusca (Bivalvia, Scaphopoda)	MJ, JAH	PSA eDNA
27	ECR_ENV_17	03-Apr-2023	05:31	50%	MFB	1 x 1L 2 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta)	MJ, JAH	PSA Spare eDNA Spare
28	ECR_ENV_17	03-Apr-2023	06:08	40%	CHEM	2 x 1L Jar	Fine sand with shell fragments Munsell: 5Y 4/3	No visible fauna	MJ, JAH	CHEM and CHEM Spare
29	ECR_ENV_26	03-Apr-2023	15:48	90%	MFA	1 x 1L 2 x ziplock bag	Fine sand Munsell: 10YR 2/3	Annelida (Polychaeta), Echinodermata (Echinoidea)	RH, MC	PSA eDNA
30	ECR_ENV_26	03-Apr-2023	15:59	90%	MFB	1 x 1L 2 x ziplock bag	Fine sand Munsell: 10YR 2/3	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	RH, MC	PSA Spare eDNA Spare
31	ECR_ENV_26	03-Apr-2023	16:25	90%	CHEM	2 x 1L Jar	Fine sand Munsell: 10YR 2/3	No visible fauna	RH, MC	CHEM and CHEM Spare
32	ECR_ENV_21	04-Apr-2023	05:15	60%	MFA	1 x 5L 1 x ziplock bag	Fine sand with gravel, cobbles and shell fragments Munsell: 5Y 4/4 Cobbles: 5%	Annelida (Polychaeta)	MJ, JAH	PSA
33	ECR_ENV_21	04-Apr-2023	05:28	30%	No sample				MJ, JAH	Rock in grab jaws
34	ECR_ENV_21	04-Apr-2023	05:37	50%	MFB	1 x 5L 1 x ziplock bag	Fine sand with cobbles and shell fragments Munsell: 5Y 4/4	No visible fauna	MJ, JAH	PSA Spare
35	ECR_ENV_53	04-Apr-2023	09:11	70%	MFA	1 x 1L 2 x ziplock bag	Medium sand with shell fragments Munsell: 10YR 4/6	Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, MC	PSA eDNA
36	ECR_ENV_53	04-Apr-2023	09:24	70%	MFB	1 x 1L 2 x ziplock bag	Medium sand with shell fragments Munsell: 10YR 4/6	Annelida (Polychaeta)	RH, MC	PSA Spare eDNA Spare
37	ECR_ENV_53	04-Apr-2023	09:48	60%	CHEM	2 x 1L Jar	Medium sand with shell fragments Munsell: 10YR 4/6	No visible fauna	RH, MC	CHEM and CHEM Spare

APPENDIX B FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	54463		Area:	North Sea			Sieve Size: 1mm			
Project:	Caledonia OWF Phase 2						Equipment: Mini-Hamon Grab, Day Grab			
Client:	Caledonia Offshore Windfarm Limited						Vessel: MV *Ocean Endeavour*			
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
38	ECR_ENV_01	04-Apr-2023	11:32	50%	MFA	1 x 5L 1 x ziplock bag	Coarse sand with gravel, cobble and shell fragments Munsell: 10YR 3/3 Cobble: 5%	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, MC	PSA
39	ECR_ENV_01	04-Apr-2023	11:37	0%	No sample				RH, MC	Rock in grab jaws
40	ECR_ENV_01	04-Apr-2023	11:41	0%	No sample				RH, MC	Grab empty, Misfire
41	ECR_ENV_01	04-Apr-2023	11:46	0%	No sample				RH, MC	Rock in grab jaws
42	ECR_ENV_01	04-Apr-2023	11:52	50%	MFB	1 x 5L 1 x ziplock bag	Coarse sand with gravel, cobble and shell fragments Munsell: 10YR 3/3 Cobble: 20%	Annelida (Polychaeta)	RH, MC	PSA Spare
43	ECR_ENV_02	04-Apr-2023	17:22	90%	MFA	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 10YR 2/4	Annelida (Polychaeta)	RH, MC	PSA
44	ECR_ENV_02	04-Apr-2023	17:33	90%	MFB	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 10YR 2/4	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	RH, MC	PSA Spare
45	ECR_ENV_14	05-Apr-2023	00:58	0%	No sample				MJ, JAH	Rock in grab jaws
46	ECR_ENV_14	05-Apr-2023	01:03	0%	No sample				MJ, JAH	Rock in grab jaws
47	ECR_ENV_14	05-Apr-2023	01:13	0%	No sample				MJ, JAH	Rock in grab jaws
48	ECR_ENV_14	05-Apr-2023	01:25	40%	MFA	1 x 5L 1 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta)	MJ, JAH	Moved 25m SW, PSA
49	ECR_ENV_14	05-Apr-2023	01:35	0%	No sample				MJ, JAH	Rock in grab jaws
50	ECR_ENV_14	05-Apr-2023	01:45	50%	MFB	1 x 5L 1 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta)	MJ, JAH	Moved 25m SW, PSA Spare
51	ECR_ENV_35	05-Apr-2023	03:28	70%	MFA	1 x 1L 1 x ziplock bag	Fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	MJ, JAH	PSA
52	ECR_ENV_35	05-Apr-2023	03:39	70%	MFB	1 x 1L 1 x ziplock bag	Fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Arthropoda (Crustacea)	MJ, JAH	PSA Spare
53	ECR_ENV_12	05-Apr-2023	05:43	90%	MFA	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Arthropoda	MJ, JAH	PSA
54	ECR_ENV_12	05-Apr-2023	06:00	90%	MFB	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Arthropoda, Echinodermata (Ophiuroidea)	MJ, JAH	PSA Spare
55	ECR_ENV_24	05-Apr-2023	14:04	90%	MFA	1 x 1L 1 x ziplock bag	Fine sand Munsell: 10YR 2/4	Annelida (Polychaeta)	RH, MC	PSA

APPENDIX B FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	54463			Area:	North Sea			Sieve Size: 1mm		
Project:	Caledonia OWF Phase 2							Equipment: Mini-Hamon Grab, Day Grab		
Client:	Caledonia Offshore Windfarm Limited							Vessel: MV *Ocean Endeavour*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
56	ECR_ENV_24	05-Apr-2023	14:12	90%	MFB	1 x 1L 1 x ziplock bag	Fine sand Munsell: 10YR 2/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, MC	PSA Spare
57	ECR_ENV_09	05-Apr-2023	16:29	90%	MFA	1 x 1L 1 x ziplock bag	Fine sand Munsell: 10YR 2/1	Annelida (Polychaeta)	RH, MC	PSA
58	ECR_ENV_09	05-Apr-2023	16:37	90%	MFB	1 x 1L 1 x ziplock bag	Fine sand Munsell: 10YR 2/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, MC	PSA Spare
59	ECR_ENV_27	05-Apr-2023	18:17	90%	MFA	1 x 1L 1 x ziplock bag	Fine sand Munsell: 10YR 2/2	Annelida (Polychaeta), Echinodermata (Spatangoidea)	RH, MC	PSA
60	ECR_ENV_27	05-Apr-2023	18:28	90%	MFB	1 x 1L 1 x ziplock bag	Fine sand Munsell: 10YR 2/2	Annelida (Polychaeta)	RH, MC	PSA Spare
61	ECR_ENV_04	05-Apr-2023	21:30	90%	MFA	1 x 1L 2 x ziplock bag	Fine sand Munsell: 10YR 3/2	Annelida (Polychaeta)	RH, MC	PSA eDNA
62	ECR_ENV_04	05-Apr-2023	21:41	90%	MFB	1 x 1L 2 x ziplock bag	Fine sand Munsell: 10YR 3/2	Annelida (Polychaeta)	RH, MC	PSA Spare eDNA Spare
63	ECR_ENV_04	05-Apr-2023	21:58	80%	CHEM	2 x 1L Jar	Fine sand Munsell: 10YR 3/2	No visible fauna	RH, MC	CHEM and CHEM Spare
64	ECR_ENV_19	06-Apr-2023	23:33	60%	MFA	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta)	MJ, JAH	PSA
65	ECR_ENV_19	06-Apr-2023	23:44	70%	MFB	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	MJ, JAH	PSA Spare
66	ECR_ENV_23	06-Apr-2023	01:21	60%	MFA	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	MJ, JAH	PSA
67	ECR_ENV_23	06-Apr-2023	01:32	50%	MFB	1 x 1L 1 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia)	MJ, JAH	PSA Spare
68	ECR_ENV_06	06-Apr-2023	03:22	50%	MFA	1 x 1L 1 x ziplock bag	Find sand Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	MJ, JAH	PSA
69	ECR_ENV_06	06-Apr-2023	03:33	40%	MFB	1 x 1L 1 x ziplock bag	Find sand Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Spatangoidea)	MJ, JAH	PSA Spare
70	ECR_ENV_13	06-Apr-2023	07:05	50%	MFA	1 x 1L 2 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Echinodermata (Spatangoidea)	MJ, JAH	PSA eDNA

APPENDIX B FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	54463		Area:	North Sea			Sieve Size: 1mm			
Project:	Caledonia OWF Phase 2						Equipment: Mini-Hamon Grab, Day Grab			
Client:	Caledonia Offshore Windfarm Limited						Vessel: MV *Ocean Endeavour*			
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
71	ECR_ENV_13	06-Apr-2023	07:19	50%	MFB	1 x 1L 2 x ziplock bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Echinodermata (Spatangoidea)	MJ, JAH	PSA Spare eDNA Spare
72	ECR_ENV_13	06-Apr-2023	07:45	60%	CHEM	2 x 1L Jar	Fine sand with shell fragments Munsell: 5Y 4/3	No visible fauna	MJ, JAH	CHEM and CHEM Spare
73	ECR_ENV_32	06-Apr-2023	09:44	1%	No sample				MJ, JAH	Low retention
74	ECR_ENV_32	06-Apr-2023	09:53	5%	No sample				MJ, JAH	Low retention
75	ECR_ENV_32	06-Apr-2023	10:02	2%	No sample				MJ, JAH	Low retention
76	ECR_ENV_32	06-Apr-2023	10:17	0%	No sample				MJ, JAH	Moved 10m SE Rock in grab jaws
77	ECR_ENV_32	06-Apr-2023	10:27	0%	No sample				MJ, JAH	Rock in grab jaws
78	ECR_ENV_32	06-Apr-2023	10:39	2%	No sample				MJ, JAH	Low retention, Station abandoned
79	ECR_ENV_11	06-Apr-2023	12:03	0%	No sample				RH, MC	Rock in grab jaws
80	ECR_ENV_11	06-Apr-2023	12:09	40%	MFA	1 x 5L 1 x ziplock bag	Coarse sand with gravel, cobbles and shell fragments. Munsell: 10YR 4/3 Cobble: 5%	Annelida (Polychaeta)	RH, MC	PSA
81	ECR_ENV_11	06-Apr-2023	12:15	0%	No sample				RH, MC	Rock in grab jaws
82	ECR_ENV_11	06-Apr-2023	12:22	0%	No sample				RH, MC	Rock in grab jaws
83	ECR_ENV_11	06-Apr-2023	12:31	0%	No sample				RH, MC	Rock in grab jaws
84	ECR_ENV_11	06-Apr-2023	12:37	40%	MFB	1 x 5L 1 x ziplock bag	Coarse sand with gravel, cobbles and shell fragments. Munsell: 10YR 4/3 Cobble: 1%	Annelida (Polychaeta), Arthropoda	RH, MC	PSA Spare
85	ECR_ENV_22	06-Apr-2023	13:47	40%	MFA	1 x 1L 1 x ziplock bag	Coarse sand with gravel, cobbles and shell fragments. Munsell: 10YR 4/3 Cobble: 1%	Echinodermata (Ophiuroidea)	RH, MC	PSA
86	ECR_ENV_22	06-Apr-2023	13:54	40%	MFB	1 x 1L 1 x ziplock bag	Coarse sand with gravel, cobbles and shell fragments. Munsell: 10YR 4/3 Cobble: 1%	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, MC	PSA Spare
87	ECR_ENV_03	06-Apr-2023	15:00	40%	MFA	1 x 1L 1 x ziplock bag	Fine to medium sand with occasional shell fragments Munsell: 10YR 4/1	Annelida (Polychaeta)	RH, MC	PSA
88	ECR_ENV_03	06-Apr-2023	15:06	30%	No sample				RH, MC	
89	ECR_ENV_03	06-Apr-2023	15:13	50%	MFB	1 x 1L 1 x ziplock bag	Fine to medium sand with occasional shell fragments Munsell: 10YR 4/1	Annelida (Polychaeta)	RH, MC	PSA Spare
90	ECR_ENV_29	13-Apr-2023	21:29	90%	MFA	1 x 1L 2 x ziplock bag	Fine sand Munsell: 10YR 2/1	Annelida (Polychaeta)	RH, MC	PSA eDNA

APPENDIX B FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No: 54463			Area: North Sea					Sieve Size: 1mm		
Project: Caledonia OWF Phase 2								Equipment: Mini-Hamon Grab, Day Grab		
Client: Caledonia Offshore Windfarm Limited								Vessel: MV *Ocean Endeavour*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
91	ECR_ENV_29	13-Apr-2023	21:38	90%	MFB	1 x 1L 2 x ziplock bag	Fine sand Munsell: 10YR 2/1	Annelida (Polychaeta)	RH, MC	PSA Spare eDNA Spare
92	ECR_ENV_29	13-Apr-2023	21:53	90%	CHEM	2 x 1L Jar	Fine sand Munsell: 10YR 2/1	No visible fauna	RH, MC	CHEM and CHEM Spare
93	ECR_ENV_28	14-Apr-2023	23:08	80%	MFA	1 x 1L 1 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 4/2	Annelida (Polychaeta)	MJ, JAH	PSA
94	ECR_ENV_28	14-Apr-2023	23:20	90%	MFB	1 x 1L 1 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	MJ, JAH	PSA Spare
95	ECR_ENV_10	14-Apr-2023	01:53	80%	MFA	1 x 1L 1 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta)	MJ, JAH	PSA
96	ECR_ENV_10	14-Apr-2023	02:06	80%	MFB	1 x 1L 1 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 4/3	No visible fauna	MJ, JAH	PSA Spare
97	ECR_ENV_31	14-Apr-2023	05:44		No sample				MJ, JAH	Contaminated, did not clean with bleach
98	ECR_ENV_31	14-Apr-2023	05:52	80%	MFA	1 x 1L 2 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Echinodermata, Mollusca (Gastropoda)	MJ, JAH	PSA eDNA
99	ECR_ENV_31	14-Apr-2023	06:06	80%	MFB	1 x 1L 2 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta)	MJ, JAH	PSA Spare eDNA Spare
100	ECR_ENV_31	14-Apr-2023	06:32	70%	CHEM	2 x 1L Jar	Fine sand with occasional shell fragments Munsell: 5Y 4/3	No visible fauna	MJ, JAH	CHEM and CHEM Spare
101	ECR_ENV_34	14-Apr-2023	08:16	60%	MFA	1 x 1L 1 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 5/4	Annelida (Polychaeta), Echinodermata	MJ, JAH	PSA
102	ECR_ENV_34	14-Apr-2023	08:24	70%	MFB	1 x 1L 1 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 5/4	Annelida (Polychaeta)	MJ, JAH	PSA Spare
103	ECR_ENV_30	14-Apr-2023	09:58	20%	No sample				MJ, JAH	Low retention
104	ECR_ENV_30	14-Apr-2023	10:10	50%	MFA	1 x 1L 1 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 5/3	Arthropoda	MJ, JAH	PSA
105	ECR_ENV_30	14-Apr-2023	10:21	70%	MFB	1 x 1L 1 x ziplock bag	Fine sand with occasional shell fragments Munsell: 5Y 5/3	No visible fauna	MJ, JAH	PSA Spare
106	ECR_ENV_05	14-Apr-2023	11:33	40%	MFA	1 x 1L 1 x ziplock bag	Fine to medium sand with occasional shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, MC	PSA

APPENDIX B FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No: 54463			Area: North Sea					Sieve Size: 1mm		
Project: Caledonia OWF Phase 2								Equipment: Mini-Hamon Grab, Day Grab		
Client: Caledonia Offshore Windfarm Limited								Vessel: MV *Ocean Endeavour*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
107	ECR_ENV_05	14-Apr-2023	11:41	30%	No sample				RH, MC	Low retention
108	ECR_ENV_05	14-Apr-2023	11:48	40%	MFB	1 x 1L 1 x ziplock bag	Fine to medium sand with occasional shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, MC	PSA Spare
109	ECR_ENV_36	14-Apr-2023	14:37	40%	MFA	1 x 1L 2 x ziplock bag	Fine sand with shell fragments Munsell: 10Y 3/1	Annelida (Polychaeta), Echinodermata	RH, MC	PSA eDNA
110	ECR_ENV_36	14-Apr-2023	14:47	40%	MFB	1 x 1L 2 x ziplock bag	Fine sand with shell fragments Munsell: 10Y 3/1	Annelida (Polychaeta), Echinodermata, Mollusca (Scaphopoda)	RH, MC	PSA Spare eDNA Spare
111	ECR_ENV_36	14-Apr-2023	15:02	10%	No sample				RH, MC	Low retention
112	ECR_ENV_36	14-Apr-2023	15:10	60%	CHEM	2 x 1L Jar	Fine sand with shell fragments Munsell: 10Y 3/1	No visible fauna	RH, MC	CHEM and CHEM Spare
113	ECR_ENV_18	14-Apr-2023	16:58	60%	MFA	1 x 5L 1 x ziplock bag	Coarse sand with shells Munsell: 10YR 4/6	Annelida (Polychaeta)	RH, MC	PSA
114	ECR_ENV_18	14-Apr-2023	17:06	90%	MFB	2 x 5L 1 x ziplock bag	Coarse sand with shells Munsell: 10YR 4/6	No visible fauna	RH, MC	PSA Spare

APPENDIX B FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54463			Vessel	MV *Ocean Endeavour*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	COG						
Project Name	Caledonia OWF Phase 2			Deployment Location	STBD Water Sampling Deployment	x	6.7	y	21.94	z	2.93
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Water Sampling Deployment NODE						
Geodetic Reference System	Datum	WGS 84 - WGS 84	Ellipsoid	WGS 84	Projection	UTM zone 30N		Vertical / Tidal Datum	VORF, LAT		

Date	Fix Time (UTC)	Fix number	Line No/Stn No	Penetration	Sample Retention	Beacon Depth (m)	Observed Depth (m)	Reduced Depth LAT (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
									Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Apr-2023	21:22	1	ECR_ENV_17		5 Litres	NA	76	73	525678	6399919	525686	6399992	-8	-73	73	186	SG	
02-Apr-2023	21:45	2	ECR_ENV_17		5 Litres	NA	77	74	525684	6399957	525686	6399992	-1	-36	36	182	SG	
03-Apr-2023	08:05	3	ECR_ENV_26		5 Litres	NA	111	108	528556	6402538	528618	6402532	-62	7	62	276	PL	No sample. Misfire
03-Apr-2023	08:27	4	ECR_ENV_26		5 Litres	NA	111	109	528602	6402560	528618	6402532	-16	29	33	331	PL	
03-Apr-2023	08:51	5	ECR_ENV_26		5 Litres	NA	111	108	528598	6402526	528618	6402532	-20	-5	21	256	PL	
04-Apr-2023	07:14	6	ECR_ENV_53		5 Litres	NA	30	28	525632	6394801	525615	6394765	16	36	40	24	PL	
04-Apr-2023	07:29	7	ECR_ENV_53		5 Litres	NA	30	28	525630	6394791	525615	6394765	15	26	30	30	PL	
05-Apr-2023	19:36	8	ECR_ENV_04		5 Litres	NA	82	81	526488	6410870	526524	6410862	-36	7	37	282	SG	
05-Apr-2023	19:52	9	ECR_ENV_04		5 Litres	NA	82	81	526498	6410883	526524	6410862	-25	20	33	309	SG	
06-Apr-2023	04:53	10	ECR_ENV_13		5 Litres	58	63	62	525883	6416013	525888	6415996	-6	17	18	341	PL	
06-Apr-2023	05:13	11	ECR_ENV_13		5 Litres	58	63	62	525902	6415991	525888	6415996	13	-5	14	112	PL	
10-Apr-2023	12:40	12	ECR_ENV_29		5 Litres	79	84	81	526601	6423571	526548	6423621	53	-50	73	133	SG	
10-Apr-2023	12:59	13	ECR_ENV_29		5 Litres	79	84	81	526556	6423561	526548	6423621	8	-60	61	172	SG	
14-Apr-2023	03:30	14	ECR_ENV_31		5 Litres	71	76	73	529139	6429266	529151	6429215	-12	51	52	347	PL	
14-Apr-2023	03:52	15	ECR_ENV_31		5 Litres	71	76	73	529134	6429256	529151	6429215	-17	41	44	338	PL	
14-Apr-2023	13:01	16	ECR_ENV_36		5 Litres	68	73	71	527580	6435820	527614	6435820	-34	0	34	269	SG	
14-Apr-2023	13:19	17	ECR_ENV_36		5 Litres	68	73	71	527564	6435820	527614	6435820	-50	0	50	270	SG	

APPENDIX B FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)									FOR-ENV-0540
Job No: 54463			Area: North Sea				Volume: 5L		
Project: Caledonia OWF Phase 2							Equipment: Niskin Bottles		
Client: Caledonia Offshore Windfarm Limited							Vessel: MV *Ocean Endeavour*		
Sample Number	Station Number	Date	Time (UTC)	Load	Overall Station Depth (m)	Sample Depth (m)	Sample Analysis	Operator(s)	Comments
1	ECR_ENV_17	02-Apr-2023	21:22	5 Litres	76	5	CTD Profile, Water eDNA	MG, RH	Aborted. Tape inhibiting messenger
2	ECR_ENV_17	02-Apr-2023	21:22	5 Litres	76	71	CTD Profile, Water eDNA	MG, RH	Aborted. Tape inhibiting messenger
3	ECR_ENV_17	02-Apr-2023	21:22	5 Litres	76	5	CTD Profile, Water eDNA	RH, MC	Surface Primary
4	ECR_ENV_17	02-Apr-2023	21:22	5 Litres	76	71	CTD Profile, Water eDNA	RH, MC	Bottom Primary
5	ECR_ENV_17	02-Apr-2023	21:45	5 Litres	77	5	CTD Profile, Water eDNA	RH, MC	Surface Spare
6	ECR_ENV_17	02-Apr-2023	21:45	5 Litres	77	71	CTD Profile, Water eDNA	RH, MC	Bottom Spare
7	ECR_ENV_26	03-Apr-2023	08:05	5 Litres	111	5	CTD Profile, Water eDNA	HJ, MJ	No sample. Misfire
8	ECR_ENV_26	03-Apr-2023	08:05	5 Litres	111	106	CTD Profile, Water eDNA	HJ, MJ	No sample. Misfire
9	ECR_ENV_26	03-Apr-2023	08:27	5 Litres	111	5	CTD Profile, Water eDNA	JH, MJ	Surface Primary
10	ECR_ENV_26	03-Apr-2023	08:27	5 Litres	111	106	CTD Profile, Water eDNA	JH, MJ	Bottom Primary
11	ECR_ENV_26	03-Apr-2023	08:51	5 Litres	111	5	CTD Profile, Water eDNA	JH, MJ	Surface Spare
12	ECR_ENV_26	03-Apr-2023	08:51	5 Litres	111	106	CTD Profile, Water eDNA	JH, MJ	Bottom Spare
13	ECR_ENV_53	04-Apr-2023	07:14	5 Litres	30	5	CTD Profile, Water eDNA	JH, MJ	Surface Primary
14	ECR_ENV_53	04-Apr-2023	07:14	5 Litres	30	25	CTD Profile, Water eDNA	JH, MJ	Bottom Primary
15	ECR_ENV_53	04-Apr-2023	07:29	5 Litres	30	5	CTD Profile, Water eDNA	JH, MJ	Surface Spare
16	ECR_ENV_53	04-Apr-2023	07:29	5 Litres	30	25	CTD Profile, Water eDNA	JH, MJ	Bottom Spare
17	ECR_ENV_04	05-Apr-2023	19:36	5 Litres	82	5	CTD Profile, Water eDNA	RH, MC	Surface Primary
18	ECR_ENV_04	05-Apr-2023	19:36	5 Litres	82	77	CTD Profile, Water eDNA	RH, MC	Bottom Primary

APPENDIX B FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)									FOR-ENV-0540
Job No: 54463			Area: North Sea				Volume: 5L		
Project: Caledonia OWF Phase 2							Equipment: Niskin Bottles		
Client: Caledonia Offshore Windfarm Limited							Vessel: MV *Ocean Endeavour*		
Sample Number	Station Number	Date	Time (UTC)	Load	Overall Station Depth (m)	Sample Depth (m)	Sample Analysis	Operator(s)	Comments
19	ECR_ENV_04	05-Apr-2023	19:52	5 Litres	82	5	CTD Profile, Water eDNA	RH, MC	Surface Spare
20	ECR_ENV_04	05-Apr-2023	19:52	5 Litres	82	77	CTD Profile, Water eDNA	RH, MC	Bottom Spare
21	ECR_ENV_13	05-Apr-2023	04:53	5 Litres	63	5	CTD Profile, Water eDNA	JH, MJ	Surface Primary
22	ECR_ENV_13	05-Apr-2023	04:53	5 Litres	63	58	CTD Profile, Water eDNA	JH, MJ	Bottom Primary
23	ECR_ENV_13	05-Apr-2023	05:13	5 Litres	63	5	CTD Profile, Water eDNA	JH, MJ	Surface Spare
24	ECR_ENV_13	05-Apr-2023	05:13	5 Litres	63	58	CTD Profile, Water eDNA	JH, MJ	Bottom Spare
25	ECR_ENV_29	10-Apr-2023	12:40	5 Litres	84	5	CTD Profile, Water eDNA	RH, MC	Surface Primary
26	ECR_ENV_29	10-Apr-2023	12:40	5 Litres	84	79	CTD Profile, Water eDNA	RH, MC	Bottom Primary
27	ECR_ENV_29	10-Apr-2023	12:59	5 Litres	84	5	CTD Profile, Water eDNA	RH, MC	Surface Spare
28	ECR_ENV_29	10-Apr-2023	12:59	5 Litres	84	79	CTD Profile, Water eDNA	RH, MC	Bottom Spare
29	ECR_ENV_31	14-Apr-2023	03:30	5 Litres	76	5	CTD Profile, Water eDNA	JH, MJ	Surface Primary
30	ECR_ENV_31	14-Apr-2023	03:30	5 Litres	76	71	CTD Profile, Water eDNA	JH, MJ	Bottom Primary
31	ECR_ENV_31	14-Apr-2023	03:52	5 Litres	76	5	CTD Profile, Water eDNA	JH, MJ	Surface Spare
32	ECR_ENV_31	14-Apr-2023	03:52	5 Litres	76	71	CTD Profile, Water eDNA	JH, MJ	Bottom Spare
33	ECR_ENV_36	14-Apr-2023	13:01	5 Litres	73	5	CTD Profile, Water eDNA	RH, MC	Surface Primary
34	ECR_ENV_36	14-Apr-2023	13:01	5 Litres	73	68	CTD Profile, Water eDNA	RH, MC	Bottom Primary
35	ECR_ENV_36	14-Apr-2023	13:19	5 Litres	73	5	CTD Profile, Water eDNA	RH, MC	Surface Spare
36	ECR_ENV_36	14-Apr-2023	13:19	5 Litres	73	68	CTD Profile, Water eDNA	RH, MC	Bottom Spare

APPENDIX B FIELD SAMPLING LOGS

Titan Environmental Surveys Limited

Seabed Imagery Positioning Summary

Job No	54463			Vessel	MV *Titan Discovery*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	CoG						
Project Name	Caledonia OWF Phase 2			Deployment Location	A-frame midpoint	x	-0.022	y	-6.618	z	2.157
Primary Positioning System	Applanix POS MV GNSS (c/w Atlas H10 PPP Corrections)			Actual Coordinates derived from	A-frame midpoint node vessel reference frame						
Geodetic Reference System	Datum	WGS84	Ellipsoid	GRS80	Projection	UTM 30N			Vertical / Tidal Datum	LAT VORF	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-May-2023	08:43:54	1	ECR_ENV_59			camera		521413	6395145	521403	6395099	10	46	47	12	FB BL BH AM	
02-May-2023	08:44:47	2	ECR_ENV_59			camera		521434	6395131	521403	6395099	31	31	44	45	FB BL BH AM	
02-May-2023	08:45:17	3	ECR_ENV_59			camera		521445	6395124	521403	6395099	42	25	48	59	FB BL BH AM	
02-May-2023	08:45:46	4	ECR_ENV_59			camera		521456	6395118	521403	6395099	53	19	56	71	FB BL BH AM	
02-May-2023	08:46:02	5	ECR_ENV_59			camera		521462	6395114	521403	6395099	59	15	61	76	FB BL BH AM	
02-May-2023	08:46:12	6	ECR_ENV_59			camera		521466	6395113	521403	6395099	63	14	65	78	FB BL BH AM	
02-May-2023	08:51:20	7	ECR_ENV_59			camera		521454	6395097	521403	6395099	51	-2	51	92	FB BL BH AM	
02-May-2023	08:51:41	8	ECR_ENV_59			camera		521453	6395098	521403	6395099	50	-1	50	91	FB BL BH AM	
02-May-2023	08:52:04	9	ECR_ENV_59			camera		521451	6395096	521403	6395099	48	-3	48	93	FB BL BH AM	Fix but no photo
02-May-2023	08:52:24	10	ECR_ENV_59			camera		521446	6395095	521403	6395099	43	-4	43	96	FB BL BH AM	
02-May-2023	08:52:52	11	ECR_ENV_59			camera		521439	6395093	521403	6395099	36	-6	36	99	FB BL BH AM	
02-May-2023	08:53:09	12	ECR_ENV_59			camera		521437	6395090	521403	6395099	34	-9	36	104	FB BL BH AM	
02-May-2023	08:53:21	13	ECR_ENV_59			camera		521436	6395088	521403	6395099	33	-11	34	109	FB BL BH AM	
02-May-2023	08:54:10	14	ECR_ENV_59			camera		521425	6395088	521403	6395099	22	-11	25	117	FB BL BH AM	
02-May-2023	08:54:44	15	ECR_ENV_59			camera		521421	6395092	521403	6395099	18	-8	19	113	FB BL BH AM	
02-May-2023	08:55:00	16	ECR_ENV_59			camera		521417	6395094	521403	6395099	14	-5	15	112	FB BL BH AM	
02-May-2023	08:55:24	17	ECR_ENV_59			camera		521414	6395097	521403	6395099	11	-2	11	100	FB BL BH AM	
02-May-2023	08:55:54	18	ECR_ENV_59			camera		521416	6395102	521403	6395099	13	2	14	80	FB BL BH AM	
02-May-2023	08:56:10	19	ECR_ENV_59			camera		521414	6395103	521403	6395099	11	4	11	70	FB BL BH AM	
02-May-2023	08:56:31	20	ECR_ENV_59			camera		521410	6395098	521403	6395099	7	-1	7	98	FB BL BH AM	
02-May-2023	08:56:51	21	ECR_ENV_59			camera		521412	6395094	521403	6395099	9	-5	10	118	FB BL BH AM	
02-May-2023	08:57:51	22	ECR_ENV_59			camera		521425	6395084	521403	6395099	22	-15	27	125	FB BL BH AM	
02-May-2023	08:58:11	23	ECR_ENV_59			camera		521429	6395079	521403	6395099	26	-20	33	128	FB BL BH AM	
02-May-2023	08:58:42	24	ECR_ENV_59			camera		521438	6395071	521403	6395099	35	-28	45	129	FB BL BH AM	
02-May-2023	08:58:57	25	ECR_ENV_59			camera		521442	6395068	521403	6395099	39	-31	50	129	FB BL BH AM	
02-May-2023	09:29:42	26	ECR_ENV_58			camera		523031	6394103	523103	6394101	-73	2	73	272	FB BL BH AM	
02-May-2023	09:30:04	27	ECR_ENV_58			camera		523038	6394100	523103	6394101	-65	-1	65	269	FB BL BH AM	
02-May-2023	09:30:43	28	ECR_ENV_58			camera		523050	6394095	523103	6394101	-54	-6	54	263	FB BL BH AM	
02-May-2023	09:31:42	29	ECR_ENV_58			camera		523073	6394086	523103	6394101	-30	-15	33	243	FB BL BH AM	
02-May-2023	09:32:03	30	ECR_ENV_58			camera		523078	6394087	523103	6394101	-25	-15	29	239	FB BL BH AM	
02-May-2023	09:32:24	31	ECR_ENV_58			camera		523085	6394087	523103	6394101	-19	-14	23	232	FB BL BH AM	
02-May-2023	09:32:50	32	ECR_ENV_58			camera		523094	6394088	523103	6394101	-10	-14	17	215	FB BL BH AM	
02-May-2023	09:34:25	33	ECR_ENV_58			camera		523143	6394090	523103	6394101	39	-11	41	106	FB BL BH AM	
02-May-2023	09:34:51	34	ECR_ENV_58			camera		523139	6394095	523103	6394101	35	-7	36	100	FB BL BH AM	
02-May-2023	09:35:19	35	ECR_ENV_58			camera		523131	6394099	523103	6394101	28	-2	28	94	FB BL BH AM	
02-May-2023	09:35:48	36	ECR_ENV_58			camera		523125	6394104	523103	6394101	22	2	22	84	FB BL BH AM	
02-May-2023	09:36:20	37	ECR_ENV_58			camera		523121	6394107	523103	6394101	18	5	19	74	FB BL BH AM	

APPENDIX B FIELD SAMPLING LOGS

Titan Environmental Surveys Limited

Seabed Imagery Positioning Summary

Job No	54463				Vessel	MV *Titan Discovery*						
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	CoG						
Project Name	Caledonia OWF Phase 2				Deployment Location	A-frame midpoint	x	-0.022	y	-6.618	z	2.157
Primary Positioning System	Applanix POS MV GNSS (c/w Atlas H10 PPP Corrections)				Actual Coordinates derived from	A-frame midpoint node vessel reference frame						
Geodetic Reference System	Datum	WGS84	Ellipsoid	GRS80		Projection	UTM 30N			Vertical / Tidal Datum	LAT VORF	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-May-2023	09:36:52	38	ECR_ENV_58			camera		523115	6394107	523103	6394101	12	6	13	65	FB BL BH AM	
02-May-2023	09:37:00	39	ECR_ENV_58			camera		523112	6394107	523103	6394101	9	5	10	59	FB BL BH AM	Fix but no photo
02-May-2023	09:37:42	40	ECR_ENV_58			camera		523104	6394108	523103	6394101	1	6	6	10	FB BL BH AM	
02-May-2023	09:38:10	41	ECR_ENV_58			camera		523100	6394111	523103	6394101	-3	9	10	344	FB BL BH AM	
02-May-2023	09:38:24	42	ECR_ENV_58			camera		523098	6394112	523103	6394101	-5	10	12	333	FB BL BH AM	
02-May-2023	09:38:38	43	ECR_ENV_58			camera		523095	6394111	523103	6394101	-8	9	12	320	FB BL BH AM	
02-May-2023	09:38:41	44	ECR_ENV_58			camera		523095	6394112	523103	6394101	-8	10	13	322	FB BL BH AM	Fix but no photo
02-May-2023	09:39:35	45	ECR_ENV_58			camera		523088	6394118	523103	6394101	-16	17	23	317	FB BL BH AM	
02-May-2023	10:11:39	46	ECR_ENV_57			camera		526944	6392999	527011	6392977	-68	22	71	288	FB BL BH AM	
02-May-2023	10:11:52	47	ECR_ENV_57			camera		526946	6392997	527011	6392977	-66	21	69	287	FB BL BH AM	
02-May-2023	10:12:56	48	ECR_ENV_57			camera		526956	6392977	527011	6392977	-56	0	56	270	FB BL BH AM	
02-May-2023	10:13:24	49	ECR_ENV_57			camera		526963	6392970	527011	6392977	-48	-7	49	262	FB BL BH AM	
02-May-2023	10:13:59	50	ECR_ENV_57			camera		526976	6392963	527011	6392977	-35	-14	38	248	FB BL BH AM	
02-May-2023	10:14:19	51	ECR_ENV_57			camera		526985	6392959	527011	6392977	-27	-18	32	236	FB BL BH AM	
02-May-2023	10:14:39	52	ECR_ENV_57			camera		526991	6392956	527011	6392977	-20	-21	29	225	FB BL BH AM	
02-May-2023	10:15:05	53	ECR_ENV_57			camera		526991	6392955	527011	6392977	-21	-22	30	223	FB BL BH AM	
02-May-2023	10:15:29	54	ECR_ENV_57			camera		526993	6392952	527011	6392977	-19	-25	31	217	FB BL BH AM	
02-May-2023	10:17:00	55	ECR_ENV_57			camera		527027	6392953	527011	6392977	16	-24	28	147	FB BL BH AM	
02-May-2023	10:17:25	56	ECR_ENV_57			camera		527030	6392960	527011	6392977	18	-17	25	133	FB BL BH AM	
02-May-2023	10:17:53	57	ECR_ENV_57			camera		527031	6392970	527011	6392977	20	-7	21	110	FB BL BH AM	
02-May-2023	10:18:45	58	ECR_ENV_57			camera		527029	6392981	527011	6392977	18	4	18	77	FB BL BH AM	
02-May-2023	10:19:12	59	ECR_ENV_57			camera		527027	6392984	527011	6392977	16	8	18	64	FB BL BH AM	
02-May-2023	10:19:33	60	ECR_ENV_57			camera		527025	6392987	527011	6392977	14	10	17	53	FB BL BH AM	
02-May-2023	10:19:51	61	ECR_ENV_57			camera		527020	6392987	527011	6392977	9	10	13	41	FB BL BH AM	
02-May-2023	10:20:40	62	ECR_ENV_57			camera		527012	6392981	527011	6392977	0	4	4	6	FB BL BH AM	
02-May-2023	10:53:26	63	ECR_ENV_56			camera		525987	6393621	526019	6393557	-32	64	72	333	FB BL BH AM	
02-May-2023	10:53:36	64	ECR_ENV_56			camera		525989	6393619	526019	6393557	-30	63	69	334	FB BL BH AM	
02-May-2023	10:53:47	65	ECR_ENV_56			camera		525991	6393617	526019	6393557	-28	61	67	335	FB BL BH AM	
02-May-2023	10:54:08	66	ECR_ENV_56			camera		525995	6393614	526019	6393557	-24	57	62	337	FB BL BH AM	
02-May-2023	10:54:32	67	ECR_ENV_56			camera		526000	6393610	526019	6393557	-19	53	57	340	FB BL BH AM	
02-May-2023	10:54:53	68	ECR_ENV_56			camera		526004	6393605	526019	6393557	-16	49	51	342	FB BL BH AM	
02-May-2023	10:55:05	69	ECR_ENV_56			camera		526006	6393604	526019	6393557	-13	48	49	345	FB BL BH AM	
02-May-2023	10:55:28	70	ECR_ENV_56			camera		526010	6393599	526019	6393557	-9	42	43	347	FB BL BH AM	
02-May-2023	10:55:46	71	ECR_ENV_56			camera		526013	6393596	526019	6393557	-6	39	40	351	FB BL BH AM	
02-May-2023	10:56:11	72	ECR_ENV_56			camera		526017	6393592	526019	6393557	-2	35	35	357	FB BL BH AM	
02-May-2023	10:56:31	73	ECR_ENV_56			camera		526021	6393588	526019	6393557	1	31	31	2	FB BL BH AM	
02-May-2023	10:57:01	74	ECR_ENV_56			camera		526026	6393584	526019	6393557	7	27	28	14	FB BL BH AM	

APPENDIX B FIELD SAMPLING LOGS

Titan Environmental Surveys Limited

Seabed Imagery Positioning Summary

Job No	54463			Vessel	MV *Titan Discovery*						
Client	Caledonia Offshore Windfarm Limited			Vessel Reference Point (VRP)	CoG						
Project Name	Caledonia OWF Phase 2			Deployment Location	A-frame midpoint	x	-0.022	y	-6.618	z	2.157
Primary Positioning System	Applanix POS MV GNSS (c/w Atlas H10 PPP Corrections)			Actual Coordinates derived from	A-frame midpoint node vessel reference frame						
Geodetic Reference System	Datum	WGS84	Ellipsoid	GRS80	Projection	UTM 30N			Vertical / Tidal Datum	LAT VORF	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-May-2023	10:57:21	75	ECR_ENV_56			camera		526029	6393580	526019	6393557	10	24	26	23	FB BL BH AM	
02-May-2023	10:57:48	76	ECR_ENV_56			camera		526034	6393577	526019	6393557	15	20	25	36	FB BL BH AM	
02-May-2023	10:58:45	77	ECR_ENV_56			camera		526053	6393556	526019	6393557	34	0	34	90	FB BL BH AM	
02-May-2023	10:58:59	78	ECR_ENV_56			camera		526053	6393551	526019	6393557	33	-6	34	99	FB BL BH AM	
02-May-2023	10:59:25	79	ECR_ENV_56			camera		526050	6393542	526019	6393557	30	-15	34	116	FB BL BH AM	
02-May-2023	10:59:41	80	ECR_ENV_56			camera		526047	6393537	526019	6393557	27	-19	34	125	FB BL BH AM	
02-May-2023	11:00:03	81	ECR_ENV_56			camera		526042	6393534	526019	6393557	23	-23	32	135	FB BL BH AM	
02-May-2023	11:00:26	82	ECR_ENV_56			camera		526037	6393529	526019	6393557	18	-27	33	147	FB BL BH AM	
02-May-2023	11:00:39	83	ECR_ENV_56			camera		526034	6393527	526019	6393557	15	-29	33	153	FB BL BH AM	
02-May-2023	11:01:07	84	ECR_ENV_56			camera		526026	6393526	526019	6393557	6	-30	31	168	FB BL BH AM	
02-May-2023	18:04:36	85	ECR_ENV_56_A			camera		526083	6393556	526019	6393557	64	-1	64	91	FB BL BH AM	
02-May-2023	18:04:55	86	ECR_ENV_56_A			camera		526079	6393555	526019	6393557	59	-2	59	92	FB BL BH AM	
02-May-2023	18:05:07	87	ECR_ENV_56_A			camera		526076	6393554	526019	6393557	57	-2	57	92	FB BL BH AM	
02-May-2023	18:05:19	88	ECR_ENV_56_A			camera		526072	6393555	526019	6393557	53	-2	53	92	FB BL BH AM	
02-May-2023	18:05:37	89	ECR_ENV_56_A			camera		526067	6393555	526019	6393557	47	-1	47	92	FB BL BH AM	
02-May-2023	18:05:47	90	ECR_ENV_56_A			camera		526064	6393556	526019	6393557	44	0	44	90	FB BL BH AM	
02-May-2023	18:06:13	91	ECR_ENV_56_A			camera		526052	6393557	526019	6393557	33	0	33	90	FB BL BH AM	
02-May-2023	18:07:00	92	ECR_ENV_56_A			camera		526040	6393564	526019	6393557	21	7	22	71	FB BL BH AM	
02-May-2023	18:07:23	93	ECR_ENV_56_A			camera		526043	6393573	526019	6393557	24	17	29	55	FB BL BH AM	
02-May-2023	18:07:46	94	ECR_ENV_56_A			camera		526040	6393582	526019	6393557	20	26	33	38	FB BL BH AM	
02-May-2023	18:08:06	95	ECR_ENV_56_A			camera		526036	6393591	526019	6393557	17	34	38	27	FB BL BH AM	
02-May-2023	18:08:20	96	ECR_ENV_56_A			camera		526029	6393596	526019	6393557	10	40	41	14	FB BL BH AM	
02-May-2023	18:08:40	97	ECR_ENV_56_A			camera		526019	6393601	526019	6393557	-1	44	44	359	FB BL BH AM	Fix but no photo

APPENDIX B FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No: 54463 | Area: North Sea | Scale: Green Laser Lines (105mm)

Project: Caledonia OWF Phase 2 - Nearshore | Equipment: Shallow Water Camera

Client: Caledonia Offshore Windfarm Limited | Vessel: MV *Titan Discovery*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	Duration	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No. of Photos	First Fix No.	Last Fix No.	Comments
ECR_ENV_59	02-May-2023	08:44:17	08:59:35	00:15:18	SD: 2023-05-02_08-44-17_ECR_ENV_59_KBERG, 2023-05-02_08-44-31_ECR_ENV_59_1CAM; HD: 00016.MTS, 00017.MTS	Rippled sand with shell fragments	No visible fauna	WA	24	1	25	High Swell. No fix 9 due to QINSY error
ECR_ENV_58	02-May-2023	09:29:18	09:39:47	00:10:29	SD: 2023-05-02_09-29-17_ECR_ENV_58_KBERG, 2023-05-02_09-29-24_ECR_ENV_58_1CAM; HD: 00018.MTS	Rippled sand with shell fragments	Chordata (Actinopterygii), Echinodermata (Asteroidea)	WA	18	26	45	High Swell. No fix 39 and 44 due to QINSY error
ECR_ENV_57	02-May-2023	10:11:08	10:21:01	00:09:53	SD: 2023-05-02_10-11-08_ECR_ENV_57_KBERG, 2023-05-02_10-11-15_ECR_ENV_57_1CAM; HD: 00019.MTS	Rippled Sand	Annelida	WA	17	46	62	Bright ambient light, moderate swell
ECR_ENV_56	02-May-2023	10:52:24	11:01:32	00:09:08	SD: 2023-05-02_10-52-23_ECR_ENV_56_KBERG, 2023-05-02_10-52-33_ECR_ENV_56_1CAM; HD: 00020.MTS	Boulders and cobbles, areas of rippled sand	Cnidaria (Actiniaria), Echinoderma (Echinoidea)	WA	22	63	84	Moderate swell, ambient light affecting HD footage, images poor quality due to swell and suspended solids
ECR_ENV_56_A	02-May-2023	18:03:37	18:09:43	00:06:06	SD: 2023-05-02_18-03-36_ECR_ENV_56_A_KBERG, 2023-05-02_18-03-58_ECR_ENV_56_A_1CAM; HD: 00021.MTS	Boulders and cobbles, areas of rippled sand	Cnidaria (Actiniaria), Echinoderma (Echinoidea)	WA	12	85	96	High swell, ambient light affecting HD footage, images poor quality due to swell and suspended solids. Transect aborted due to conditions.

APPENDIX B FIELD SAMPLING LOGS

Titan Environmental Surveys Limited

Seafloor Sampling Positioning Summary

Job No	54463				Vessel	MV *Titan Discovery*						
Client	Caledonia Offshore Windfarm Limited				Vessel Reference Point (VRP)	CoG						
Project Name	Caledonia OWF Phase 2				Deployment Location	A-frame midpoint	x	-0.022	y	-6.618	z	2.157
Primary Positioning System	Applanix POS MV GNSS (c/w Atlas H10 PPP Corrections)				Actual Coordinates derived from	A-frame midpoint node vessel reference frame						
Geodetic Reference System	Datum	WGS84	Ellipsoid	GRS80		Projection	UTM 30N			Vertical / Tidal Datum	LAT VORF	

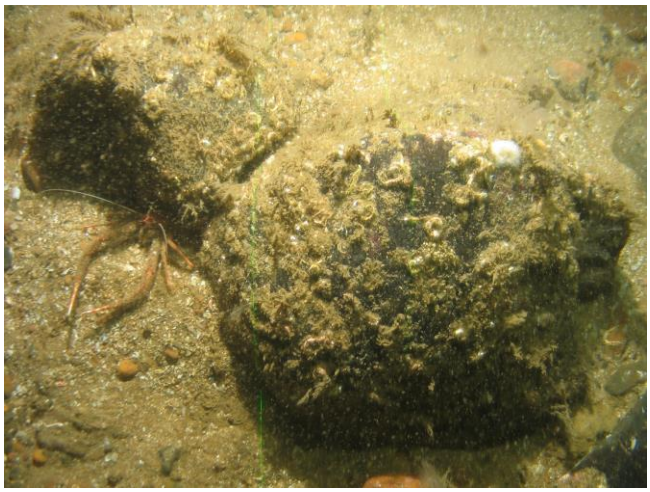
Date	Time (UTC)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-May-2023	11:45	1	ECR_ENV_59	30%	NS	-	29	521408	6395107	521403	6395099	5	8	9	35	FB BL BH AM	30%
08-May-2023	11:56	2	ECR_ENV_59	40%	MFA	1 x 1L, 1 x Ziplock	29	521406	6395099	521403	6395099	3	0	3	87	FB BL BH AM	MFA & PSA 40%
08-May-2023	12:13	3	ECR_ENV_59	40%	MFB	1 x 1L, 1 x Ziplock	29	521403	6395097	521403	6395099	0	-2	2	178	FB BL BH AM	MFB & Spare 40%
08-May-2023	12:40	4	ECR_ENV_58	20%	NS	-	19	523099	6394104	523103	6394101	-4	3	5	303	FB BL BH AM	30%
08-May-2023	12:48	5	ECR_ENV_58	30%	NS	-	19	523113	6394100	523103	6394101	9	-1	9	99	FB BL BH AM	20%
08-May-2023	12:55	6	ECR_ENV_58	20%	NS	-	20	523103	6394109	523103	6394101	0	8	8	359	FB BL BH AM	20%
08-May-2023	13:20	7	ECR_ENV_58_A	40%	MFA	1 x 1L, 1 x Ziplock	20	523133	6394097	523103	6394101	30	-5	30	99	FB BL BH AM	Moved 25m to East. MFA & PSA 40%
08-May-2023	13:29	8	ECR_ENV_58_A	40%	MFB	1 x 1L, 1 x Ziplock	20	523132	6394099	523103	6394101	29	-2	29	94	FB BL BH AM	MFB & Spare 40%
08-May-2023	14:10	9	ECR_ENV_57	30%	NS	-	13	527009	6392980	527011	6392977	-2	3	3	323	FB BL BH AM	30%
08-May-2023	14:15	10	ECR_ENV_57	20%	NS	-	13	527013	6392973	527011	6392977	2	-4	5	151	FB BL BH AM	30%
08-May-2023	14:21	11	ECR_ENV_57	40%	MFA	1 x 1L, 1 x Ziplock	13	527012	6392983	527011	6392977	1	6	6	8	FB BL BH AM	MFA & PSA 40%
08-May-2023	14:28	12	ECR_ENV_57	40%	MFB	1 x 1L, 1 x Ziplock	13	527016	6392977	527011	6392977	5	0	5	85	FB BL BH AM	MFB & Spare 40%
08-May-2023	15:43	13	ECR_ENV_58_A	40%	NS	-	19	523128	6394094	523103	6394101	24	-8	25	108	FB BL BH AM	
08-May-2023	15:50	14	ECR_ENV_58_A	60%	CHEM	2 x 1L Amber Glass Jar	19	523134	6394097	523103	6394101	31	-4	31	98	FB BL BH AM	

APPENDIX B FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	54463			Area:	North Sea			Sieve Size: 1mm		
Project:	Caledonia OWF Nearshore							Equipment: Mini-Hamon Grab, Day Grab		
Client:	Caledonia Offshore Windfarm Limited							Vessel: MV *Titan Discovery*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
1	ECR_ENV_59	08-May-23	11:45:25	30%	No Sample	-	Medium sand with shell fragments Munsell: 10YR 5/4		WA	Low retention
2	ECR_ENV_59	08-May-23	11:56:00	40%	MFA	1 x 1L 1 x Ziplock	Medium sand with shell fragments Munsell: 10YR 5/4	Annelida	WA	PSA
3	ECR_ENV_59	08-May-23	12:13:36	40%	MFB	1 x 1L 1 x Ziplock	Medium sand with shell fragments Munsell: 10YR 5/4	Annelida	WA	Spare
4	ECR_ENV_58	08-May-23	12:40:50	20%	No Sample	-	Sand with shell fragments Munsell: 2.5Y 5/3		WA	Low retention
5	ECR_ENV_58	08-May-23	12:48:46	30%	No Sample	-	Sand with shell fragments Munsell: 2.5Y 5/3		WA	Low retention
6	ECR_ENV_58	08-May-23	12:55:28	20%	No Sample	-	Sand with shell fragments Munsell: 2.5Y 5/3		WA	Low retention
7	ECR_ENV_58_A	08-May-23	13:20:47	40%	MFA	1 x 1L 1 x Ziplock	Fine sand with shell fragments Munsell: 2.5Y 5/3	Annelida	WA	Station relocated 25m E, 10kg weights added
8	ECR_ENV_58_A	08-May-23	13:29:22	40%	MFB	1 x 1L 1 x Ziplock	Fine sand with shell fragments Munsell: 2.5Y 5/3	Annelida	WA	No grab/dump tray photo
9	ECR_ENV_57	08-May-23	14:10:14	30%	No Sample	-	Fine sand with shell fragments Munsell: 2.5Y 5/4		WA	10kg weights added
10	ECR_ENV_57	08-May-23	14:15:41	20%	No Sample	-	Fine sand with shell fragments Munsell: 2.5Y 5/4		WA	
11	ECR_ENV_57	08-May-23	14:21:35	40%	MFA	1 x 1L 1 x Ziplock	Fine sand with shell fragments Munsell: 2.5Y 5/4	Annelida	WA	
12	ECR_ENV_57	08-May-23	14:28:40	40%	MFB	1 x 1L 1 x Ziplock	Fine sand with shell fragments Munsell: 2.5Y 5/4	Annelida	WA	
13	ECR_ENV_58_A	08-May-23	15:43:40	40%	No Sample	-	Fine sand with shell fragments Munsell: 2.5Y 5/3		WA	Day Grab, Low retention, grab photo says "CHEM"
14	ECR_ENV_58_A	08-May-23	15:50:40	60%	CHEM	2 x 1L Amber Glass Jar	Fine sand with shell fragments Munsell: 2.5Y 5/3	Annelida	WA	Day Grab, CHEM & CHEM Spare

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_01
Fix: 1188 **E:** 527975 **N:** 6394901 **Depth (m):** 31

Sediment Description:
Scattered cobbles with soft sediment and shell fragments

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Galatheoidea *stet.*), Bryozoa (*Alcyonidium diaphanum*), Epifauna, Faunal turf

Station: ECR_ENV_01
Fix: 1189 **E:** 527973 **N:** 6394901 **Depth (m):** 31

Sediment Description:
Scattered cobbles with soft sediment and shell fragments

Faunal Description:
Annelida (Serpulidae *stet.*), Bryozoa (Flustridae *indet.*), Cnidaria (Actiniaria *indet.* 002), Echinodermata (*Crossaster papposus*), Mollusca (*Calliostoma stet*), Epifauna, Faunal turf, Porifera indet. GL0003

Station: ECR_ENV_01
Fix: 38 **E:** 527942 **N:** 6394892 **Depth (m):** 35
Retention: MFA

Sediment Description:
Coarse sand with gravel, cobble and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

Station: ECR_ENV_01
Fix: 38 **E:** 527942 **N:** 6394892 **Depth (m):** 35
Retention: MFA

Sediment Description:
Coarse sand with gravel, cobble and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_02
Fix: 44 **E:** 525001 **N:** 6404672 **Depth (m):** 88
Retention: MFB

Sediment Description:
Fine sand with shell fragments

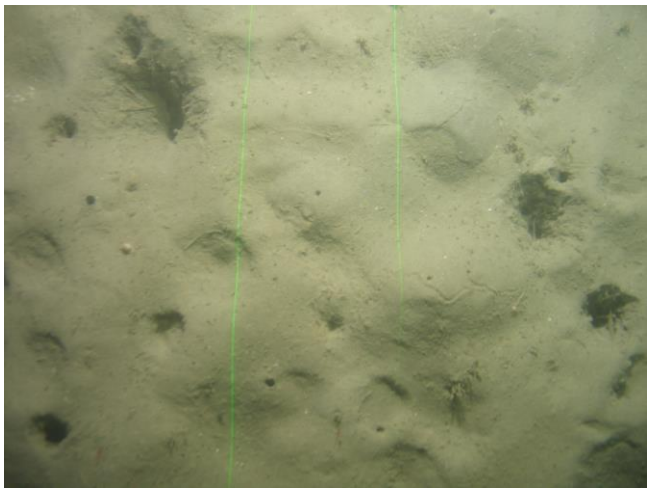
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

Station: ECR_ENV_02
Fix: 44 **E:** 525001 **N:** 6404672 **Depth (m):** 88
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_03
Fix: 1958 **E:** 527853 **N:** 6422309 **Depth (m):** 72

Sediment Description:
Soft sediment with faunal tracks and burrows

Faunal Description:
Animalia tube, Mollusca (*Euspira indet* 001)

Station: ECR_ENV_03
Fix: 1992 **E:** 527785 **N:** 6422356 **Depth (m):** 72

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (Pennatuloidea *stet.*)

Station: ECR_ENV_03
Fix: 89 **E:** 527818 **N:** 6422343 **Depth (m):** 74
Retention: MFB

Sediment Description:
Fine to medium sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_03
Fix: 89 **E:** 527818 **N:** 6422343 **Depth (m):** 74
Retention: MFB

Sediment Description:
Fine to medium sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_04
Fix: 61 **E:** 526525 **N:** 6410862 **Depth (m):** 83
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_04
Fix: 61 **E:** 526525 **N:** 6410862 **Depth (m):** 83
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_05
Fix: 108 **E:** 529726 **N:** 6431936 **Depth (m):** 75
Retention: MFB

Sediment Description:
Fine to medium sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

Station: ECR_ENV_05
Fix: 108 **E:** 529726 **N:** 6431936 **Depth (m):** 75
Retention: MFB

Sediment Description:
Fine to medium sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_06
Fix: 69 **E:** 527935 **N:** 6415793 **Depth (m):** 71
Retention: MFB

Sediment Description:
Find sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Spatangoidea)

Station: ECR_ENV_06
Fix: 69 **E:** 527935 **N:** 6415793 **Depth (m):** 71
Retention: MFB

Sediment Description:
Find sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Spatangoidea)

Station: ECR_ENV_07
Fix: 16 **E:** 523782 **N:** 6395200 **Depth (m):** 32
Retention: MFB

Sediment Description:
Coarse sand with shell fragments

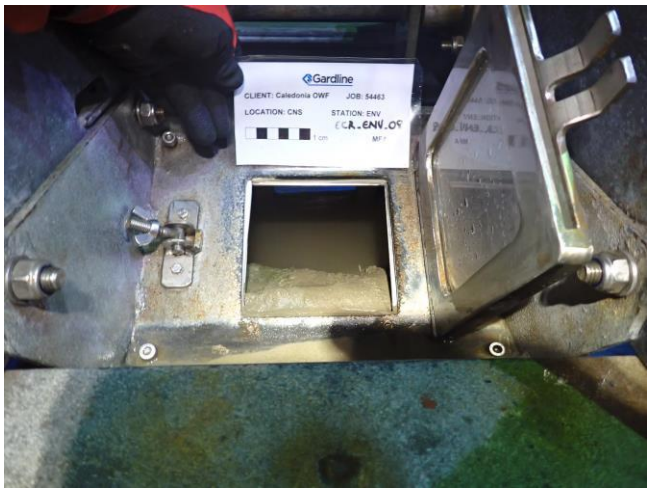
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

Station: ECR_ENV_07
Fix: 16 **E:** 523782 **N:** 6395200 **Depth (m):** 32
Retention: MFB

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_08
Fix: 4 **E:** 526635 **N:** 6398008 **Depth (m):** 73
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_08
Fix: 4 **E:** 526635 **N:** 6398008 **Depth (m):** 73
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_09
Fix: 58 **E:** 524422 **N:** 6407869 **Depth (m):** 87
Retention: MFB

Sediment Description:
Fine sand

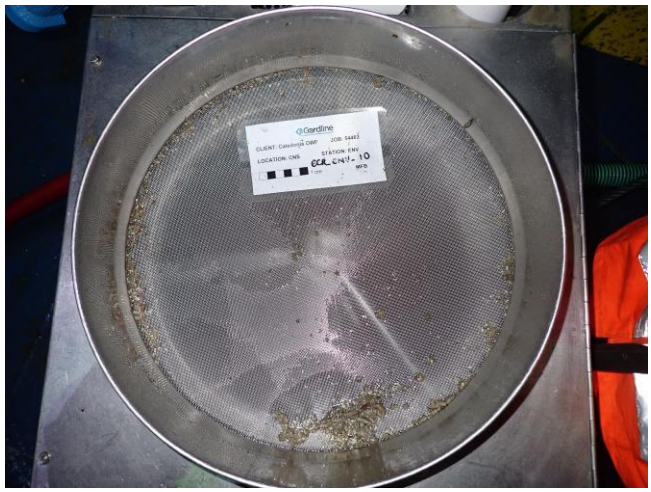
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

Station: ECR_ENV_09
Fix: 58 **E:** 524422 **N:** 6407869 **Depth (m):** 87
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_10
Fix: 96 **E:** 526896 **N:** 6427550 **Depth (m):** 78
Retention: MFB

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
No visible fauna

Station: ECR_ENV_10
Fix: 96 **E:** 526896 **N:** 6427550 **Depth (m):** 78
Retention: MFB

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
No visible fauna

Station: ECR_ENV_11
Fix: 84 **E:** 527396 **N:** 6419340 **Depth (m):** 68
Retention: MFB

Sediment Description:
Coarse sand with gravel, cobbles and shell fragments.

Faunal Description:
Annelida (Polychaeta), Arthropoda (Arthropoda)

Station: ECR_ENV_11
Fix: 84 **E:** 527396 **N:** 6419340 **Depth (m):** 68
Retention: MFB

Sediment Description:
Coarse sand with gravel, cobbles and shell fragments.

Faunal Description:
Annelida (Polychaeta), Arthropoda (Arthropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_12
Fix: 54 **E:** 527239 **N:** 6406197 **Depth (m):** 90
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Arthropoda), Echinodermata (Ophiuroidea)

Station: ECR_ENV_12
Fix: 54 **E:** 527239 **N:** 6406197 **Depth (m):** 90
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Arthropoda), Echinodermata (Ophiuroidea)

Station: ECR_ENV_13
Fix: 70 **E:** 525887 **N:** 6415998 **Depth (m):** 63
Retention: MFA

Sediment Description:
Fine sand with shell fragments

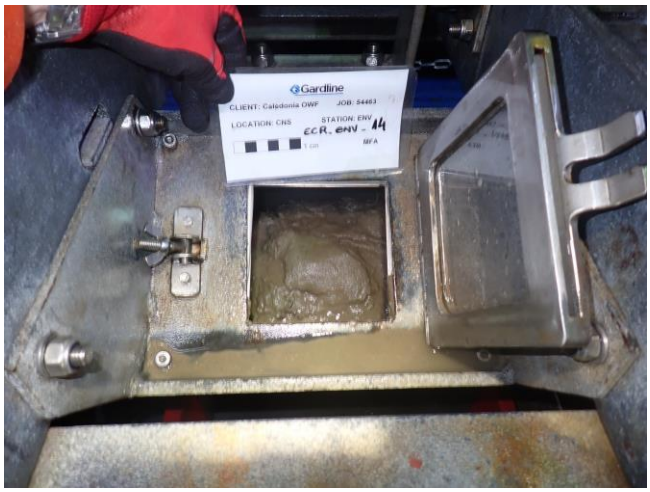
Faunal Description:
Annelida (Polychaeta), Echinodermata (Spatangoidea)

Station: ECR_ENV_13
Fix: 70 **E:** 525887 **N:** 6415998 **Depth (m):** 63
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Spatangoidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_14
Fix: 48 **E:** 528122 **N:** 6404750 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_14
Fix: 48 **E:** 528122 **N:** 6404750 **Depth (m):** 69
Retention: MFA

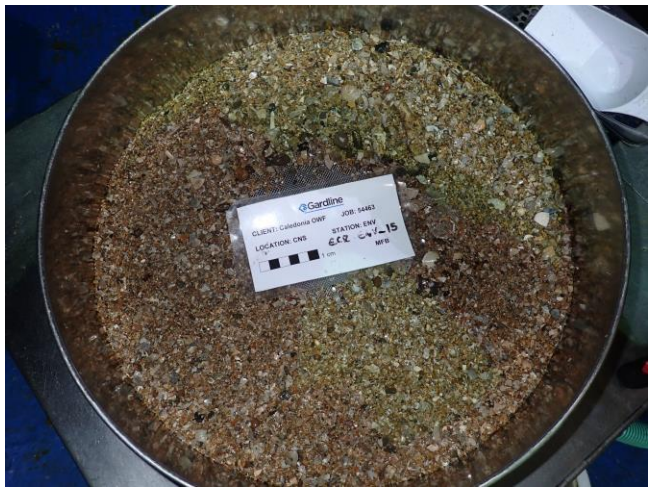
Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_15
Fix: 8 **E:** 524537 **N:** 6397553 **Depth (m):** 52
Retention: MFB

Sediment Description:
Coarse sand and shell fragments

Faunal Description:
No visible fauna



Station: ECR_ENV_15
Fix: 8 **E:** 524537 **N:** 6397553 **Depth (m):** 52
Retention: MFB

Sediment Description:
Coarse sand and shell fragments

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_16
Fix: 18 **E:** 525422 **N:** 6395982 **Depth (m):** 40
Retention: MFB

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

Station: ECR_ENV_16
Fix: 18 **E:** 525422 **N:** 6395982 **Depth (m):** 40
Retention: MFB

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

Station: ECR_ENV_17
Fix: 26 **E:** 525687 **N:** 6399992 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Echinodermata (Echinoidea), Mollusca (Bivalvia, Scaphopoda)

Station: ECR_ENV_17
Fix: 26 **E:** 525687 **N:** 6399992 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Echinodermata (Echinoidea), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_18
Fix: 113 **E:** 529459 **N:** 6435227 **Depth (m):** 69
Retention: MFA

Sediment Description:
Coarse sand with shells

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_18
Fix: 113 **E:** 529459 **N:** 6435227 **Depth (m):** 69
Retention: MFA

Sediment Description:
Coarse sand with shells

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_19
Fix: 64 **E:** 526291 **N:** 6412284 **Depth (m):** 79
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_19
Fix: 64 **E:** 526291 **N:** 6412284 **Depth (m):** 79
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_20
Fix: 9 **E:** 522010 **N:** 6396359 **Depth (m):** 32
Retention: MFA

Sediment Description:
Coarse sand with gravel, cobbles and shell fragments

Faunal Description:
Mollusca (Bivalvia)

Station: ECR_ENV_20
Fix: 9 **E:** 522010 **N:** 6396359 **Depth (m):** 32
Retention: MFA

Sediment Description:
Coarse sand with gravel, cobbles and shell fragments

Faunal Description:
Mollusca (Bivalvia)

Station: ECR_ENV_21
Fix: 34 **E:** 528145 **N:** 6396764 **Depth (m):** 48
Retention: MFB

Sediment Description:
Fine sand with cobbles and shell fragments

Faunal Description:
No visible fauna

Station: ECR_ENV_21
Fix: 34 **E:** 528145 **N:** 6396764 **Depth (m):** 48
Retention: MFB

Sediment Description:
Fine sand with cobbles and shell fragments

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_22
Fix: 85 **E:** 526411 **N:** 6421397 **Depth (m):** 64
Retention: MFA

Sediment Description:
Coarse sand with gravel, cobbles and shell fragments.

Faunal Description:
Echinodermata (Ophiuroidea)

Station: ECR_ENV_22
Fix: 85 **E:** 526411 **N:** 6421397 **Depth (m):** 64
Retention: MFA

Sediment Description:
Coarse sand with gravel, cobbles and shell fragments.

Faunal Description:
Echinodermata (Ophiuroidea)

Station: ECR_ENV_23
Fix: 67 **E:** 526713 **N:** 6414358 **Depth (m):** 74
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

Station: ECR_ENV_23
Fix: 67 **E:** 526713 **N:** 6414358 **Depth (m):** 74
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_24
Fix: 56 **E:** 526033 **N:** 6407681 **Depth (m):** 92
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

Station: ECR_ENV_24
Fix: 56 **E:** 526033 **N:** 6407681 **Depth (m):** 92
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

Station: ECR_ENV_25
Fix: 19 **E:** 528432 **N:** 6398321 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

Station: ECR_ENV_25
Fix: 19 **E:** 528432 **N:** 6398321 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_26
Fix: 30 **E:** 528617 **N:** 6402536 **Depth (m):** 109
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

Station: ECR_ENV_26
Fix: 30 **E:** 528617 **N:** 6402536 **Depth (m):** 109
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

Station: ECR_ENV_27
Fix: 59 **E:** 527954 **N:** 6408299 **Depth (m):** 90
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Spatangoidea)

Station: ECR_ENV_27
Fix: 59 **E:** 527954 **N:** 6408299 **Depth (m):** 90
Retention: MFA

Sediment Description:
Fine sand

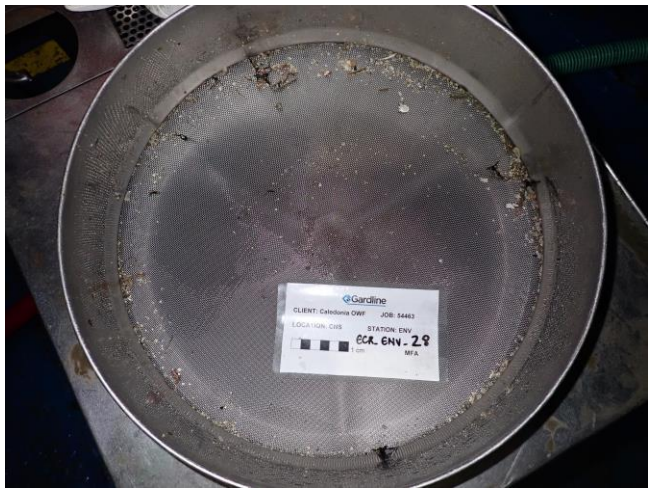
Faunal Description:
Annelida (Polychaeta), Echinodermata (Spatangoidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_28
Fix: 93 **E:** 527325 **N:** 6425046 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta)



Station: ECR_ENV_28
Fix: 93 **E:** 527325 **N:** 6425046 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_29
Fix: 90 **E:** 526547 **N:** 6423620 **Depth (m):** 83
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_29
Fix: 90 **E:** 526547 **N:** 6423620 **Depth (m):** 83
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_30
Fix: 104 **E:** 527787 **N:** 6431898 **Depth (m):** 74
Retention: MFA

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
Arthropoda (Arthropoda)

Station: ECR_ENV_30
Fix: 104 **E:** 527787 **N:** 6431898 **Depth (m):** 74
Retention: MFA

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
Arthropoda (Arthropoda)

Station: ECR_ENV_31
Fix: 98 **E:** 529151 **N:** 6429213 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinodermata), Mollusca (Gastropoda)

Station: ECR_ENV_31
Fix: 98 **E:** 529151 **N:** 6429213 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinodermata), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_32
Fix: 73 **E:** 525128 **N:** 6418432 **Depth (m):** 62
Retention: No Sample

Sediment Description:

Faunal Description:
No visible fauna

Station: ECR_ENV_32
Fix: 74 **E:** 525128 **N:** 6418432 **Depth (m):** 62
Retention: No Sample

Sediment Description:

Faunal Description:
No visible fauna

Station: ECR_ENV_33
Fix: 24 **E:** 527772 **N:** 6399745 **Depth (m):** 92
Retention: MFA

Sediment Description:
Fine sand with shell fragments

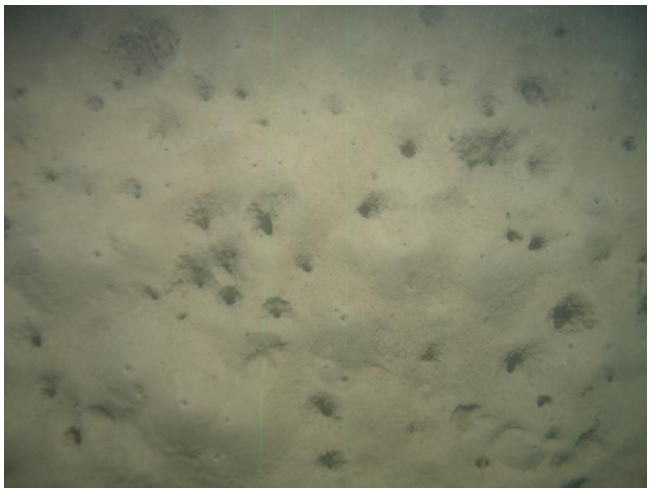
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

Station: ECR_ENV_33
Fix: 24 **E:** 527772 **N:** 6399745 **Depth (m):** 92
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

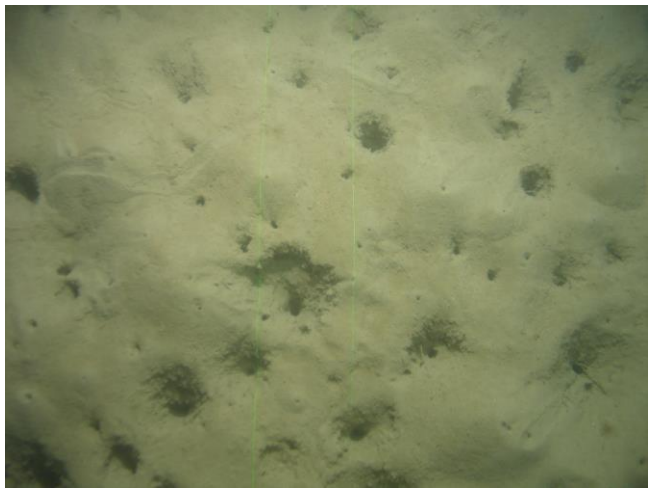
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_34
Fix: 2209 **E:** 526335 **N:** 6430518 **Depth (m):** 73

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube



Station: ECR_ENV_34
Fix: 2244 **E:** 526427 **N:** 6430518 **Depth (m):** 73

Sediment Description:
Soft sedimnet with faunal tracks and burrows

Faunal Description:
Animalia tube

Station: ECR_ENV_34
Fix: 102 **E:** 526390 **N:** 6430516 **Depth (m):** 76
Retention: MFB

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta)

Station: ECR_ENV_34
Fix: 102 **E:** 526390 **N:** 6430516 **Depth (m):** 76
Retention: MFB

Sediment Description:
Fine sand with occasional shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_35
Fix: 51 **E:** 528928 **N:** 6405415 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

Station: ECR_ENV_35
Fix: 51 **E:** 528928 **N:** 6405415 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

Station: ECR_ENV_36
Fix: 110 **E:** 527617 **N:** 6435819 **Depth (m):** 73
Retention: MFB

Sediment Description:
Fine sand with shell fragments

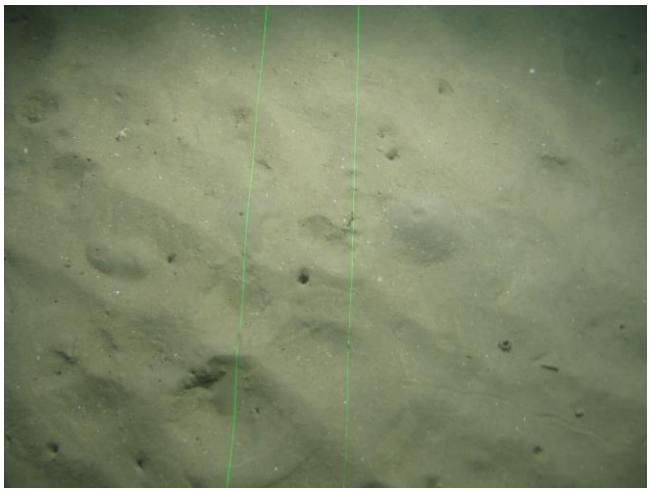
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinodermata), Mollusca (Scaphopoda)

Station: ECR_ENV_36
Fix: 110 **E:** 527617 **N:** 6435819 **Depth (m):** 73
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinodermata), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_37
Fix: 103 **E:** 526634 **N:** 6399272 **Depth (m):** 75

Sediment Description:
Soft sediment with burrows

Faunal Description:
Animalia tube

Station: ECR_ENV_37
Fix: 112 **E:** 526620 **N:** 6399288 **Depth (m):** 75

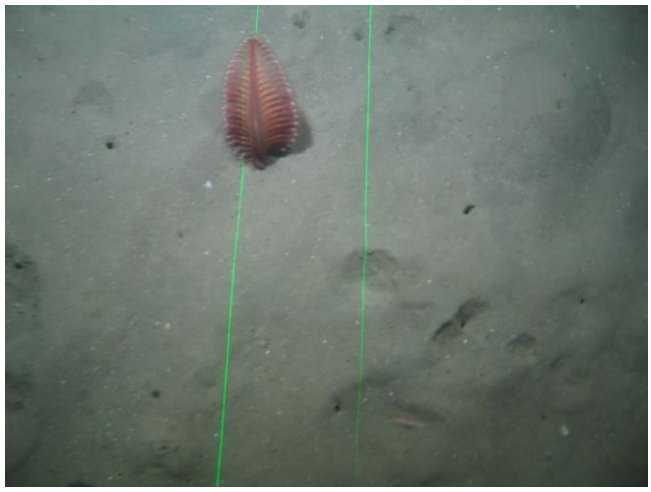
Sediment Description:
Soft sediment

Faunal Description:
Animalia tube, Foraminifera

Station: ECR_ENV_37
Fix: 114 **E:** 526618 **N:** 6399292 **Depth (m):** 75

Sediment Description:
Soft sediment with burrow

Faunal Description:
Animalia tube, Cnidaria (Pennatuloidea *stet.*)

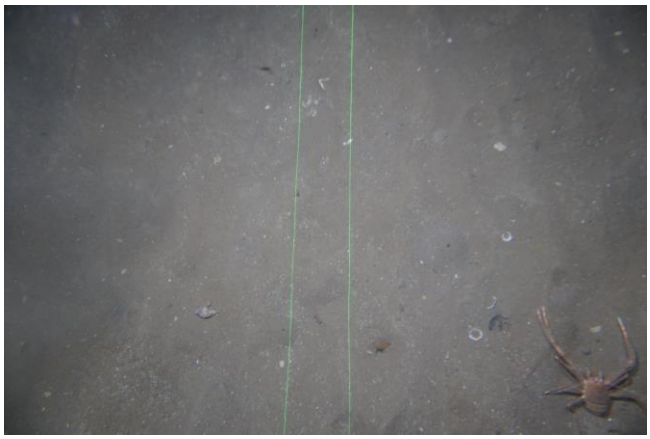


Station: ECR_ENV_37
Fix: 123 **E:** 526601 **N:** 6399309 **Depth (m):** 75

Sediment Description:
Soft sediment with burrows

Faunal Description:
Cnidaria (Pennatuloidea *stet.*)

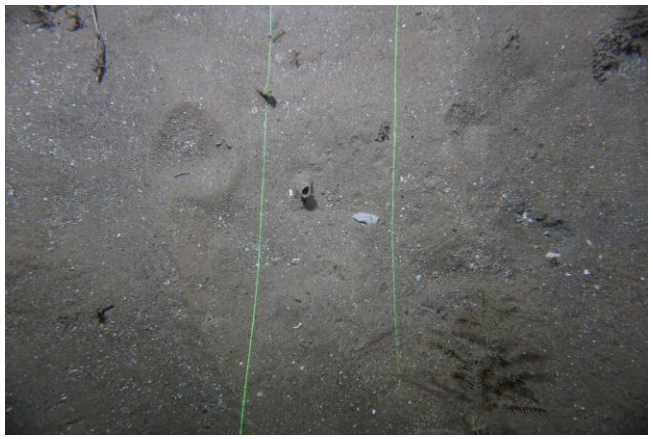
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_38
Fix: 51 **E:** 523694 **N:** 6398976 **Depth (m):** 60

Sediment Description:
Sand with some shell fragments

Faunal Description:
Arthropoda (Galatheoidea *stet.*)



Station: ECR_ENV_38
Fix: 60 **E:** 523684 **N:** 6398986 **Depth (m):** 60

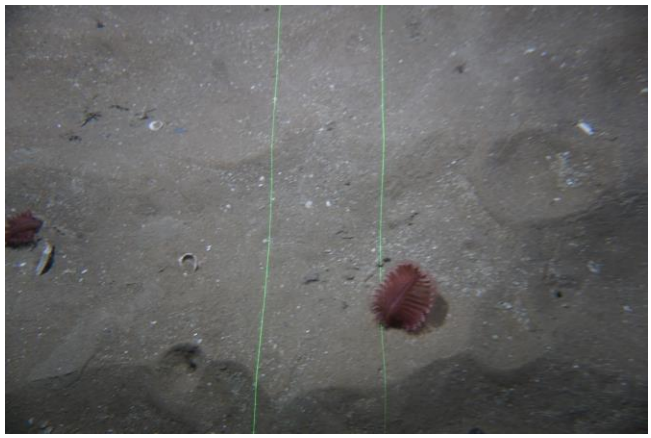
Sediment Description:
Soft sediment

Faunal Description:
Animalia tube, Cnidaria (Sertulariidae *indet.* 001), Faunal turf

Station: ECR_ENV_38
Fix: 71 **E:** 523659 **N:** 6398995 **Depth (m):** 60

Sediment Description:
Soft sediment

Faunal Description:
Cnidaria (Pennatuloidea *stet.*)

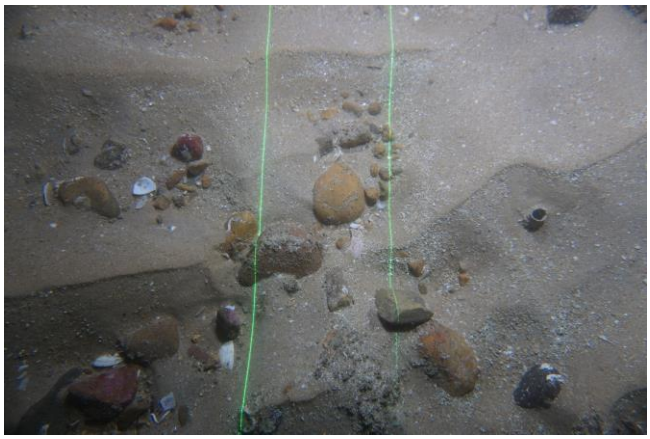


Station: ECR_ENV_38
Fix: 79 **E:** 523644 **N:** 6399005 **Depth (m):** 60

Sediment Description:
Soft sediment

Faunal Description:
Animalia tube, Cnidaria (Pennatuloidea *stet.*)

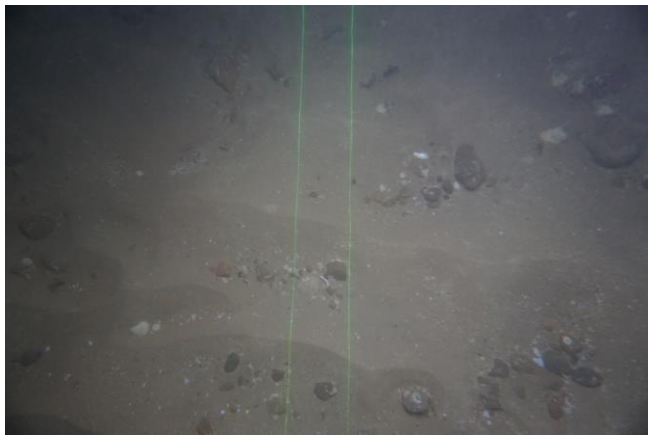
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_39
Fix: 12 **E:** 523602 **N:** 6396253 **Depth (m):** 39

Sediment Description:
Soft sediment with cobbles.

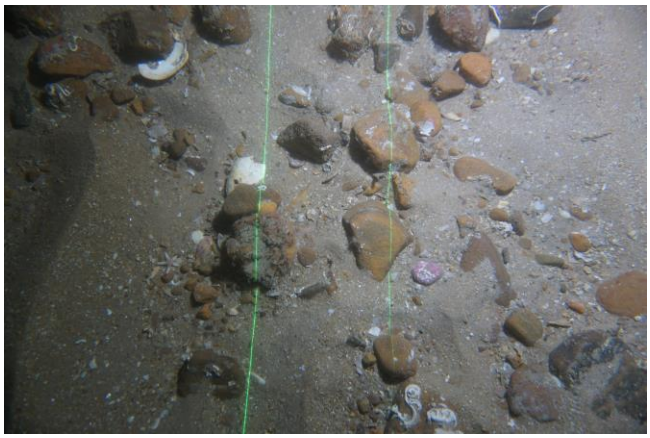
Faunal Description:
Animalia tube, Annelida (Serpulidae *stet.*), Epifauna, Porifera *indet.* 001



Station: ECR_ENV_39
Fix: 19 **E:** 523595 **N:** 6396267 **Depth (m):** 40

Sediment Description:
Soft sediment with some gravel

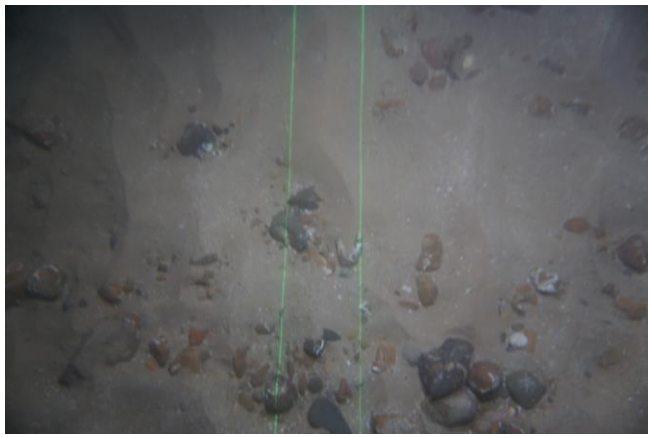
Faunal Description:
Annelida (Serpulidae *stet.*), Echinodermata (Asteroidea *indet.* 001), Epifauna



Station: ECR_ENV_39
Fix: 45 **E:** 523550 **N:** 6396320 **Depth (m):** 40

Sediment Description:
Scattered cobbles on soft sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Echinodermata (*Asterias rubens*), Epifauna, Faunal turf, Porifera *indet.* 001

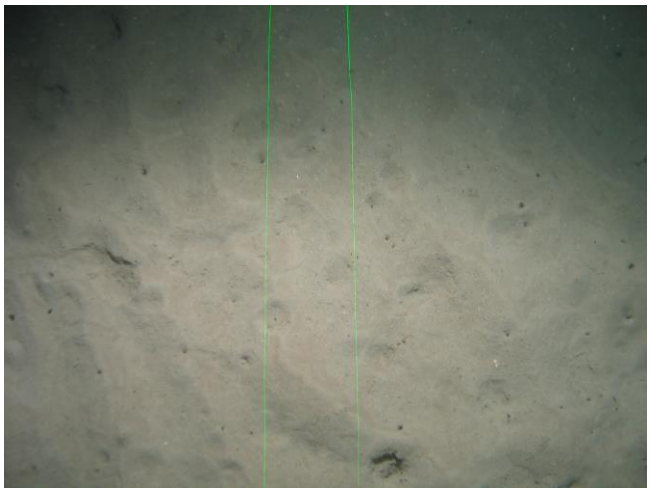


Station: ECR_ENV_39
Fix: 6 **E:** 523615 **N:** 6396243 **Depth (m):** 39

Sediment Description:
Soft sediment with a few cobbles

Faunal Description:
Annelida (Serpulidae *stet.*), Epifauna

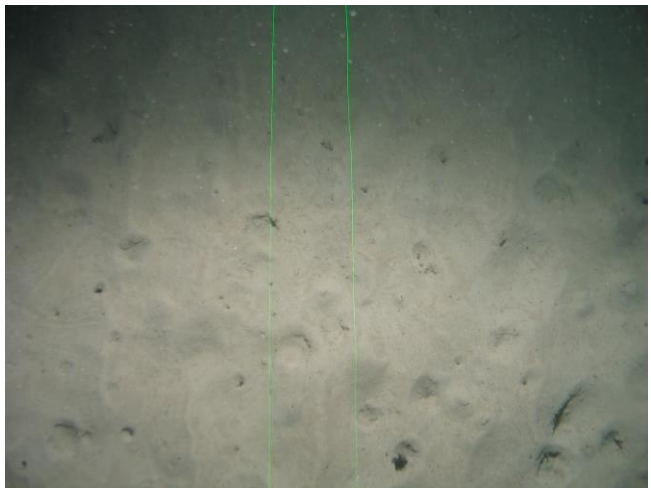
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_40
Fix: 644 **E:** 527644 **N:** 6437704 **Depth (m):** 69

Sediment Description:
Soft sediment

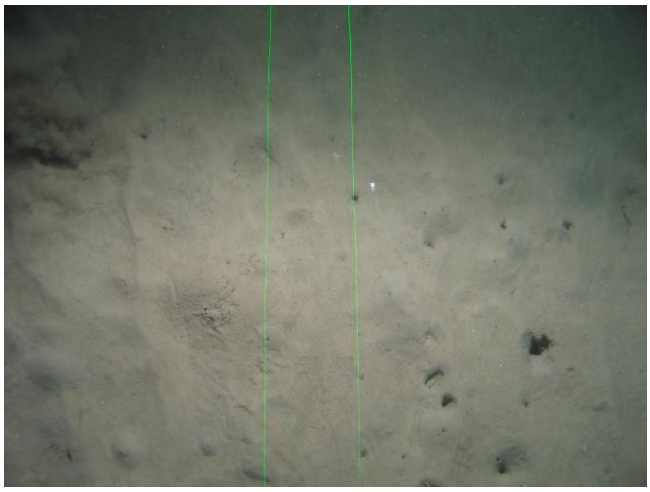
Faunal Description:
Animalia tube



Station: ECR_ENV_40
Fix: 651 **E:** 527664 **N:** 6437704 **Depth (m):** 69

Sediment Description:
Soft sediment

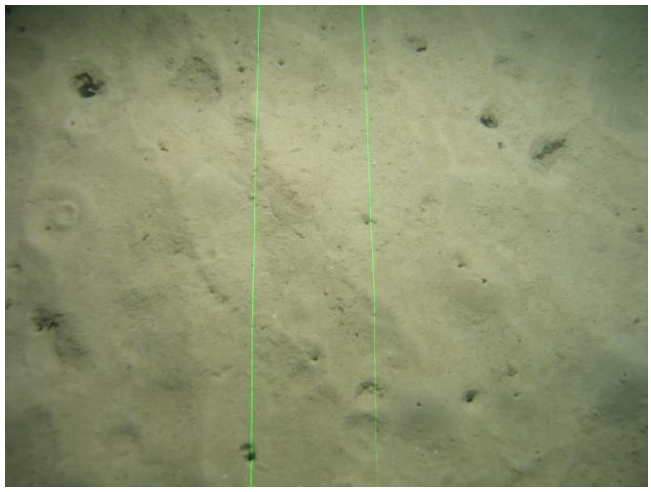
Faunal Description:
Animalia tube



Station: ECR_ENV_40
Fix: 657 **E:** 527685 **N:** 6437698 **Depth (m):** 70

Sediment Description:
Soft sediment

Faunal Description:
No visible fauna

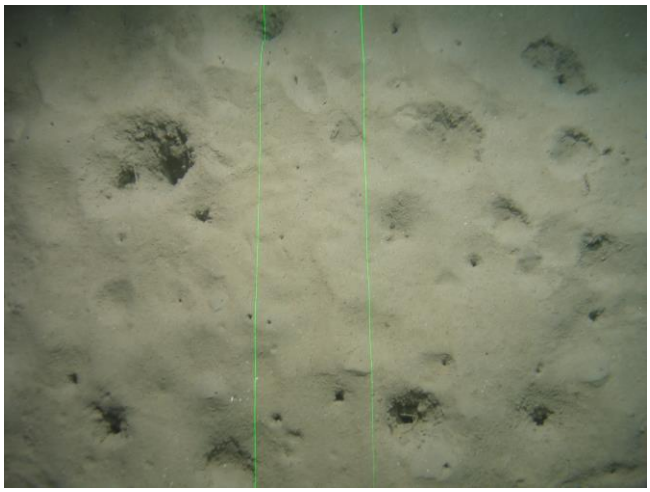


Station: ECR_ENV_40
Fix: 666 **E:** 527703 **N:** 6437683 **Depth (m):** 70

Sediment Description:
Soft sediment

Faunal Description:
No visible fauna

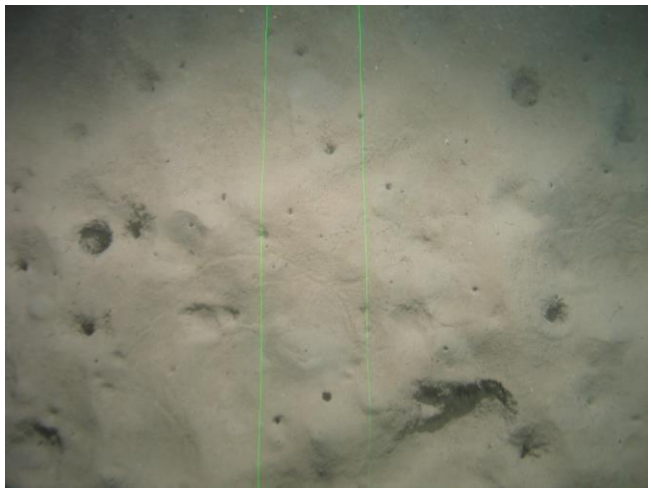
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_41
Fix: 603 **E:** 529552 **N:** 6430644 **Depth (m):** 74

Sediment Description:
Soft sediment with burrows

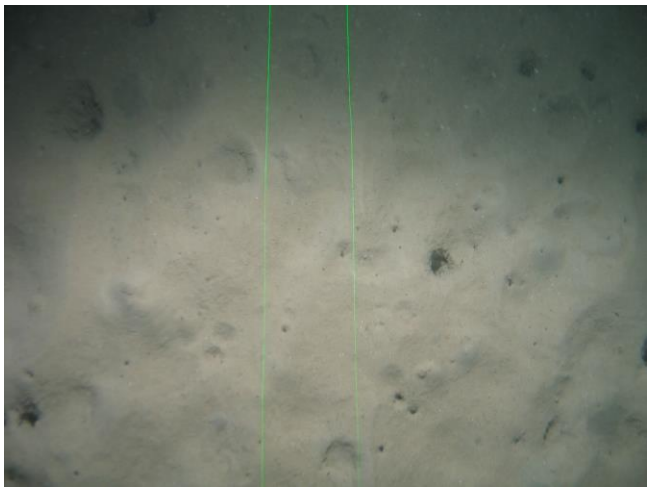
Faunal Description:
No visible fauna



Station: ECR_ENV_41
Fix: 609 **E:** 529558 **N:** 6430649 **Depth (m):** 74

Sediment Description:
Soft sediment with bioturbation and faunal tracks

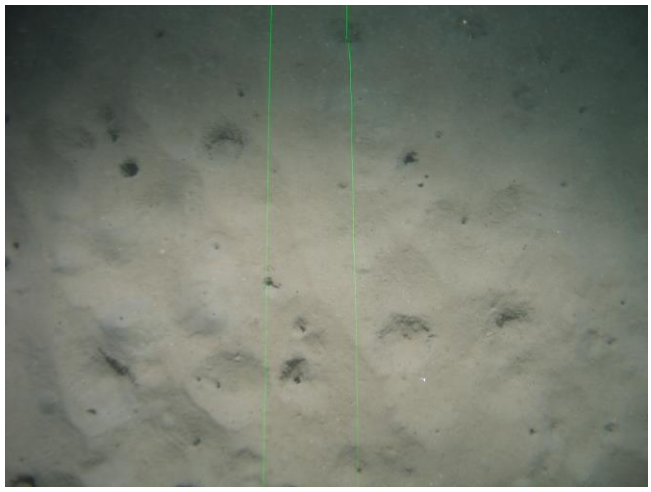
Faunal Description:
No visible fauna



Station: ECR_ENV_41
Fix: 626 **E:** 529594 **N:** 6430651 **Depth (m):** 74

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna

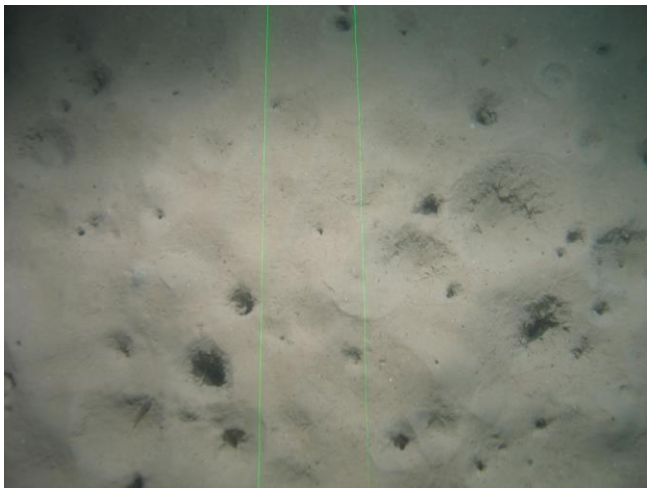


Station: ECR_ENV_41
Fix: 634 **E:** 529618 **N:** 6430652 **Depth (m):** 74

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna

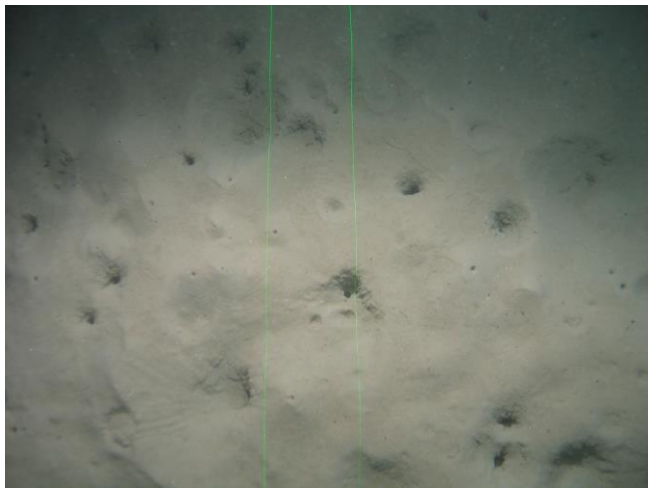
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_42
Fix: 568 **E:** 526521 **N:** 6425776 **Depth (m):** 78

Sediment Description:
Soft sediment with bioturbation

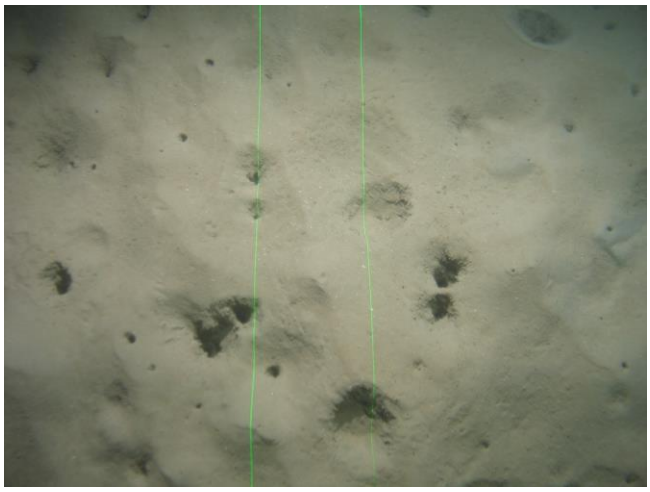
Faunal Description:
Animalia tube, Chordata (Actinopterygii *indet.* GL0001)



Station: ECR_ENV_42
Fix: 573 **E:** 526537 **N:** 6425775 **Depth (m):** 78

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ECR_ENV_42
Fix: 587 **E:** 526575 **N:** 6425778 **Depth (m):** 78

Sediment Description:
Soft sediment with bioturbation

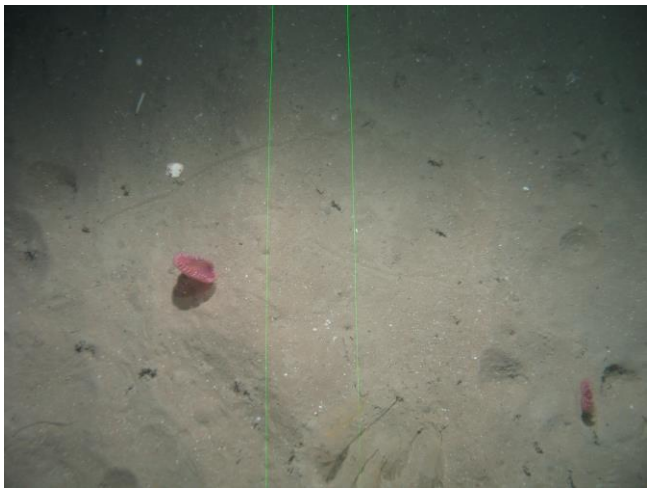
Faunal Description:
No visible fauna

Station: ECR_ENV_42
Fix: 594 **E:** 526588 **N:** 6425777 **Depth (m):** 78

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (Pennatuloidea *stet.*)

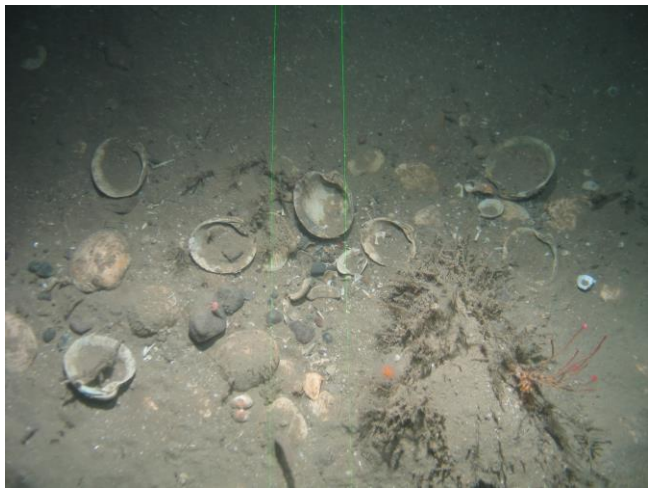
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_43
Fix: 502 **E:** 526885 **N:** 6417296 **Depth (m):** 64

Sediment Description:
Soft sediment with shell fragments and faunal tracks

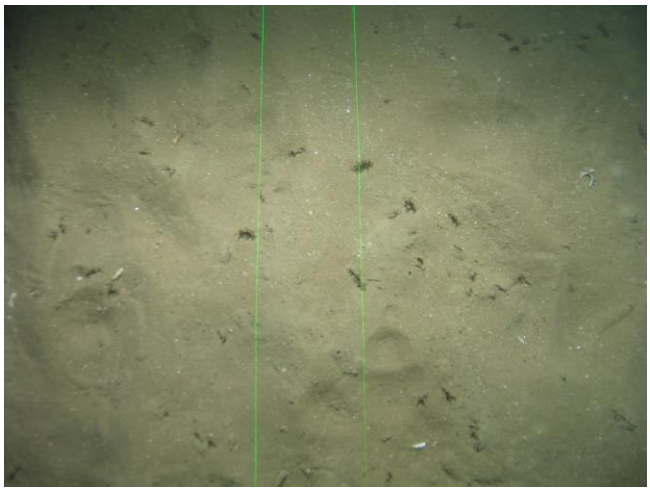
Faunal Description:
Cnidaria (*Lytocarpia myriophyllum*, Pennatuloidea *stet.*)



Station: ECR_ENV_43
Fix: 516 **E:** 526913 **N:** 6417292 **Depth (m):** 64

Sediment Description:
Soft sediment with cobbles and shell fragments

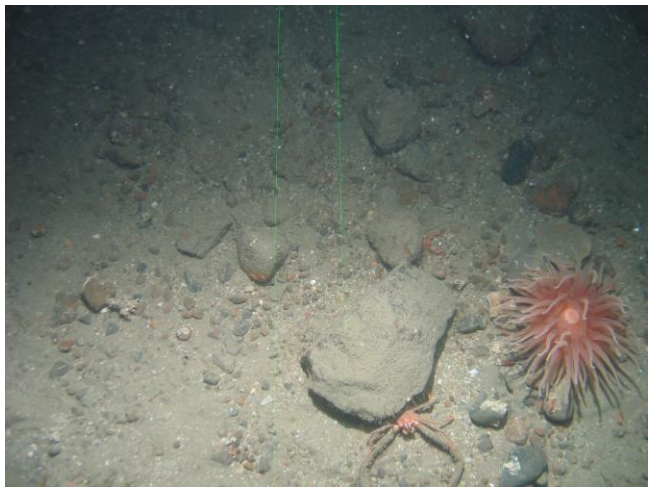
Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Alcyonium digitatum*, *Tubularia indivisa*), Epifauna, Faunal turf



Station: ECR_ENV_43
Fix: 522 **E:** 526926 **N:** 6417294 **Depth (m):** 64

Sediment Description:
Soft rippled sediment

Faunal Description:
No visible fauna

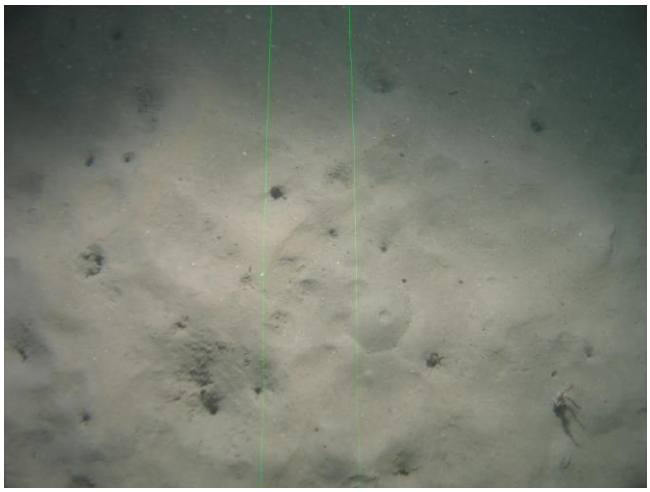


Station: ECR_ENV_43
Fix: 548 **E:** 526972 **N:** 6417295 **Depth (m):** 64

Sediment Description:
Scattered cobbles on top of soft sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Galatheoidea *stet.*), Cnidaria (*Bolocera tuediae*), Epifauna

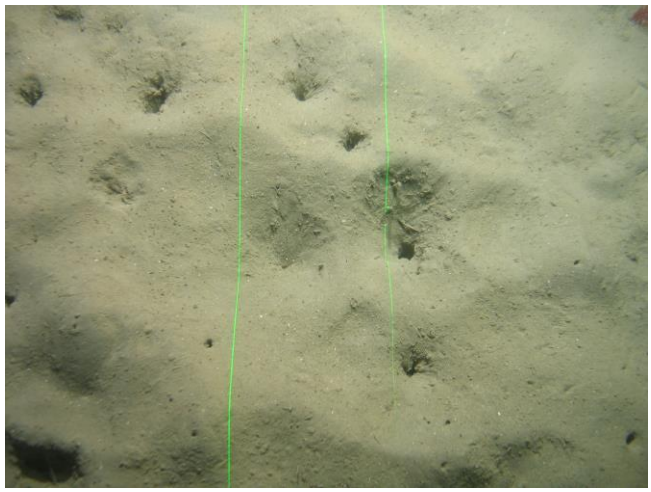
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_44
Fix: 464 **E:** 525537 **N:** 6411511 **Depth (m):** 77

Sediment Description:
Soft sediment with bioturbation

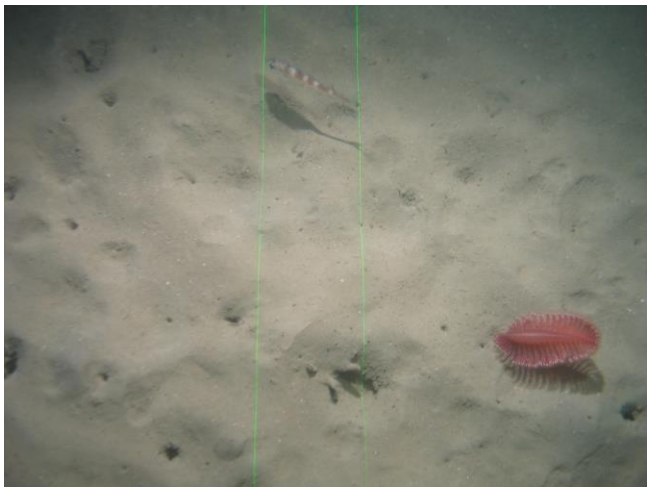
Faunal Description:
Cnidaria (*Tubularia indivisa*)



Station: ECR_ENV_44
Fix: 471 **E:** 525552 **N:** 6411507 **Depth (m):** 77

Sediment Description:
Soft sediment with bioturbation and faunal tracks

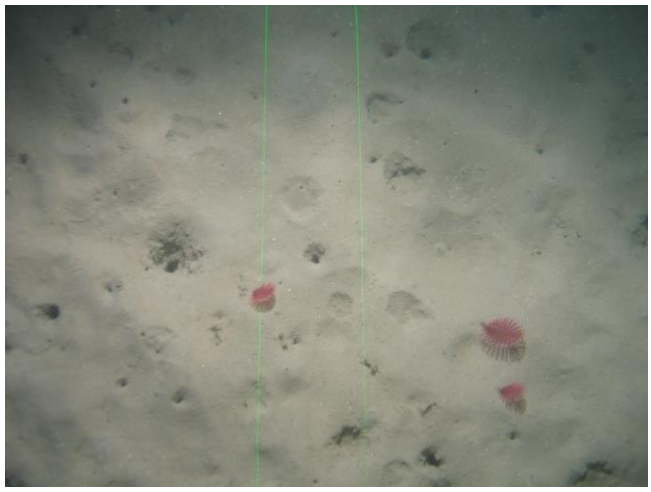
Faunal Description:
Cnidaria (Pennatuloidea *stet.*)



Station: ECR_ENV_44
Fix: 478 **E:** 525572 **N:** 6411511 **Depth (m):** 77

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Chordata (Actinopterygii *indet.* 001), Cnidaria (Pennatuloidea *stet.*)

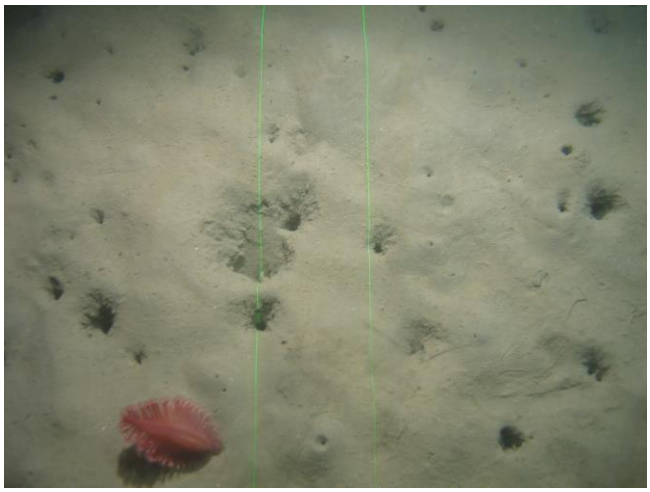


Station: ECR_ENV_44
Fix: 488 **E:** 525608 **N:** 6411513 **Depth (m):** 77

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (Pennatuloidea *stet.*)

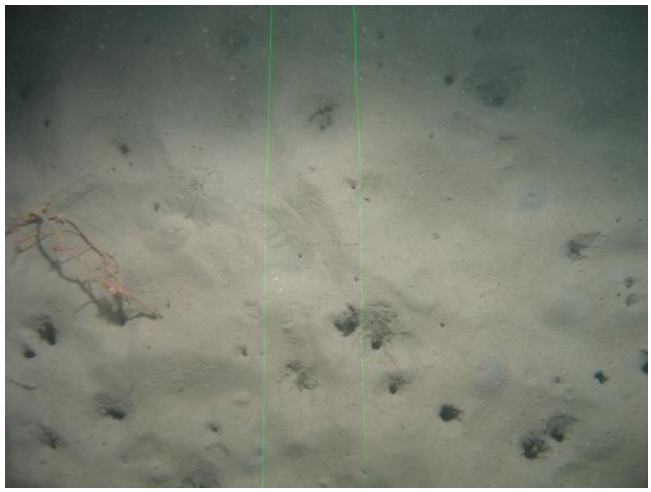
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_45
Fix: 437 **E:** 527510 **N:** 6410068 **Depth (m):** 83

Sediment Description:
Soft sediment with bioturbation

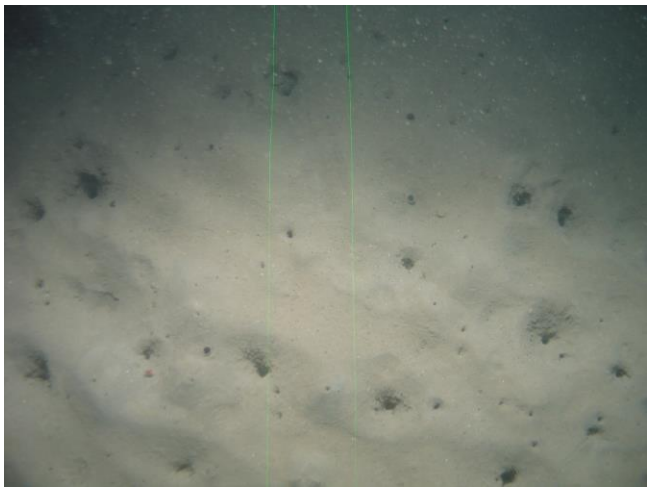
Faunal Description:
Cnidaria (Pennatuloidea *stet.*)



Station: ECR_ENV_45
Fix: 445 **E:** 527542 **N:** 6410066 **Depth (m):** 83

Sediment Description:
Soft sediment with bioturbation and faunal tracks

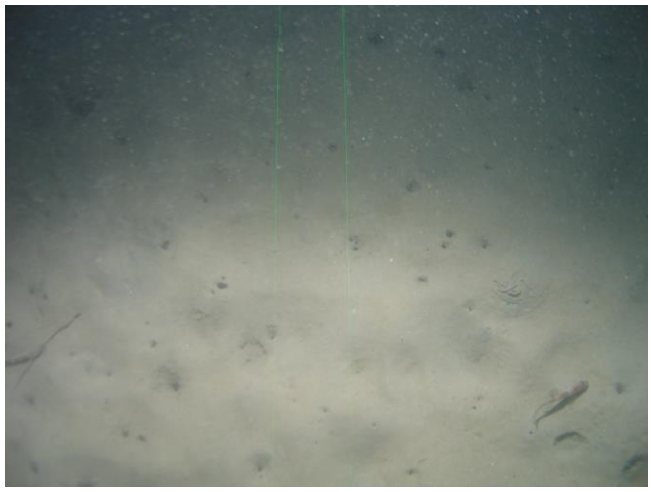
Faunal Description:
Cnidaria (*Tubularia indivisa*)



Station: ECR_ENV_45
Fix: 451 **E:** 527560 **N:** 6410065 **Depth (m):** 83

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube, Cnidaria (Pennatuloidea *stet.*)

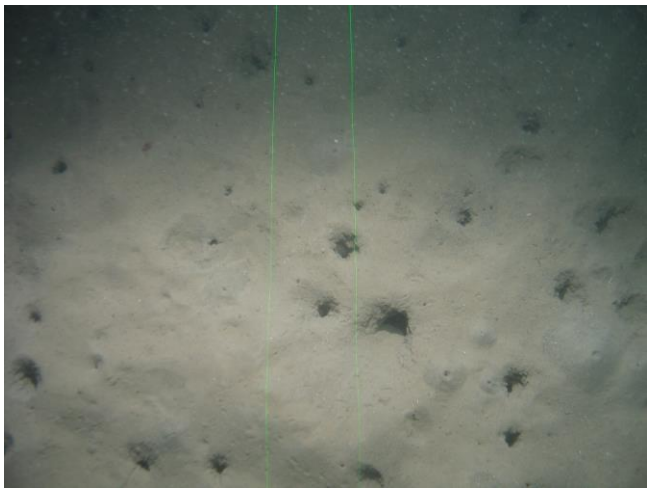


Station: ECR_ENV_45
Fix: 456 **E:** 527566 **N:** 6410062 **Depth (m):** 83

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Chordata (Actinopterygii *indet.* 001)

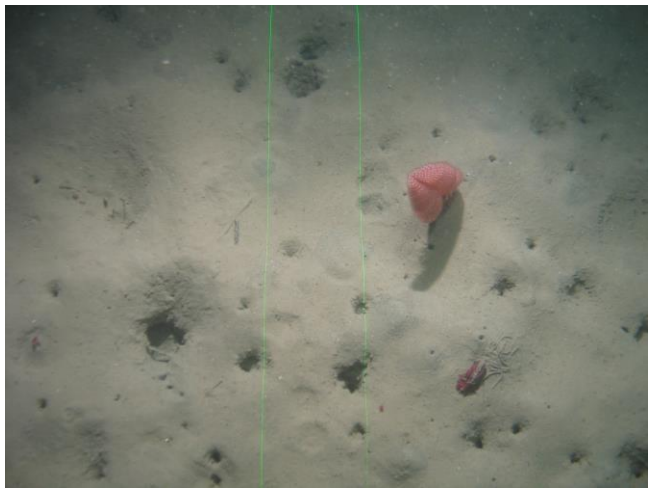
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_46
Fix: 377 **E:** 524767 **N:** 6408972 **Depth (m):** 86

Sediment Description:
Soft sediment with bioturbation

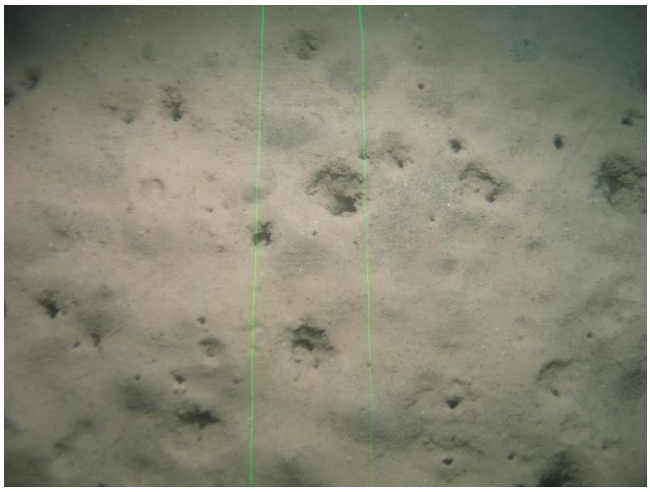
Faunal Description:
No visible fauna



Station: ECR_ENV_46
Fix: 384 **E:** 524778 **N:** 6408962 **Depth (m):** 86

Sediment Description:
Soft sediment with bioturbation

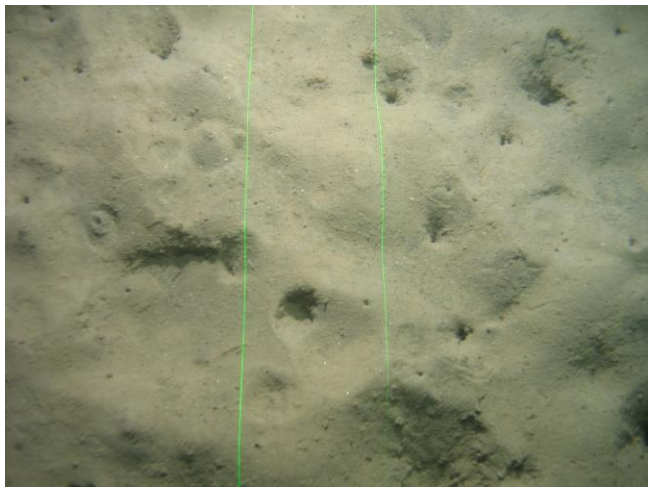
Faunal Description:
Cnidaria (Pennatuloidea *stet.*)



Station: ECR_ENV_46
Fix: 402 **E:** 524823 **N:** 6408954 **Depth (m):** 86

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna

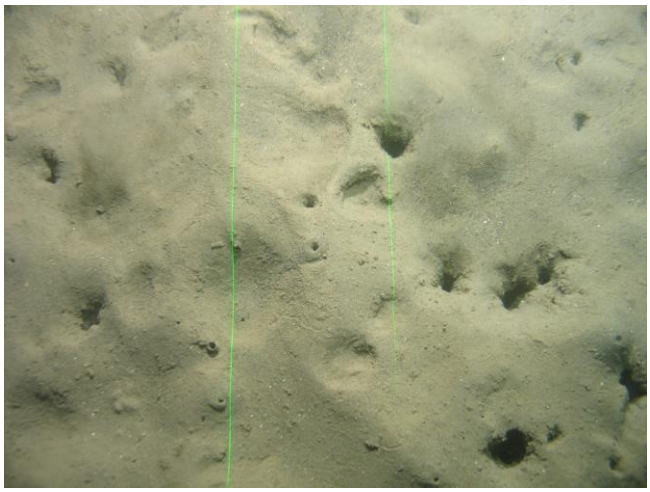


Station: ECR_ENV_46
Fix: 409 **E:** 524845 **N:** 6408957 **Depth (m):** 86

Sediment Description:
Soft sediment

Faunal Description:
No visible fauna

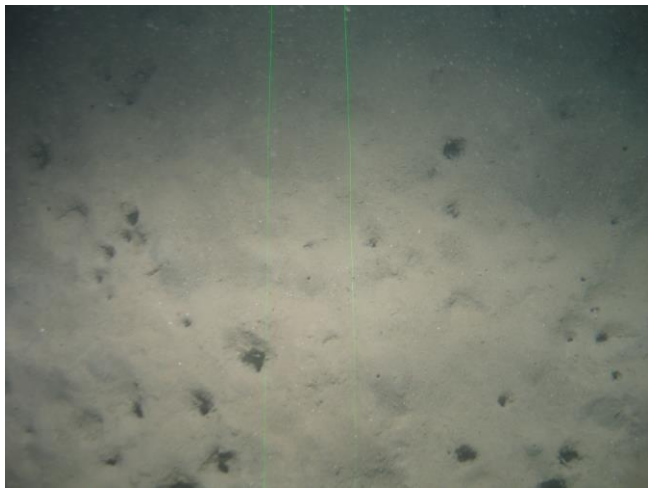
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_47
Fix: 349 **E:** 525219 **N:** 6406976 **Depth (m):** 87

Sediment Description:
Soft sediment with bioturbation

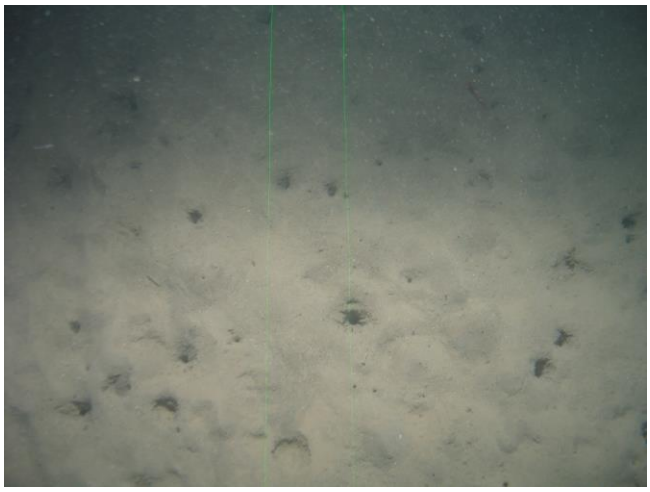
Faunal Description:
Animalia tube



Station: ECR_ENV_47
Fix: 361 **E:** 525210 **N:** 6406929 **Depth (m):** 85

Sediment Description:
Soft sediment with bioturbation

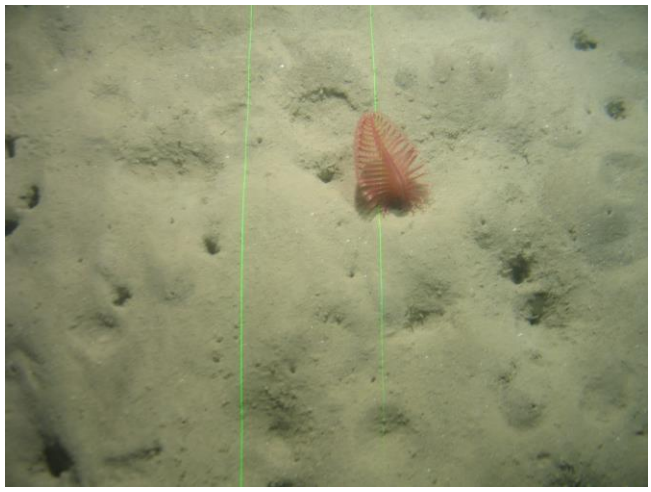
Faunal Description:
Cnidaria (Pennatuloidea *stet.*)



Station: ECR_ENV_47
Fix: 372 **E:** 525218 **N:** 6406906 **Depth (m):** 85

Sediment Description:
Soft sediment with some bioturbation

Faunal Description:
Animalia tube, Arthropoda (Caridea *stet.*)

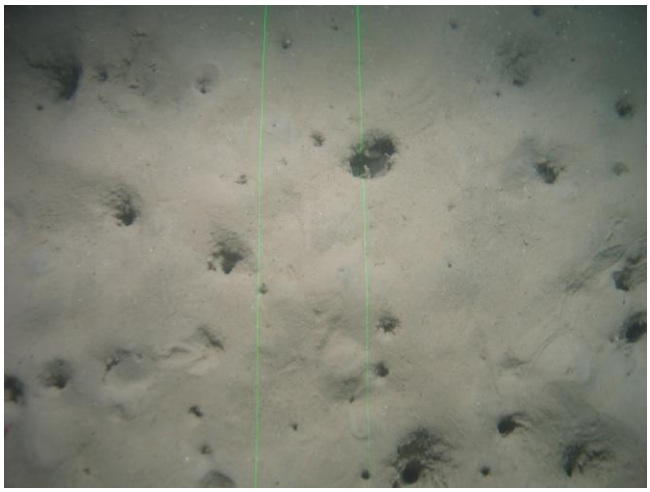


Station: ECR_ENV_47
Fix: 374 **E:** 525218 **N:** 6406904 **Depth (m):** 85

Sediment Description:
Soft sediment with some bioturbation

Faunal Description:
Cnidaria (Pennatuloidea *stet.*)

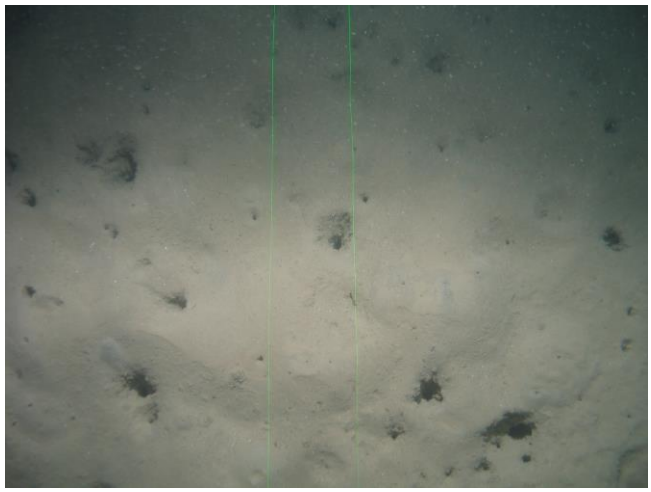
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_48
Fix: 306 **E:** 528434 **N:** 6406992 **Depth (m):** 96

Sediment Description:
Soft sediment with bioturbation and faunal tracks

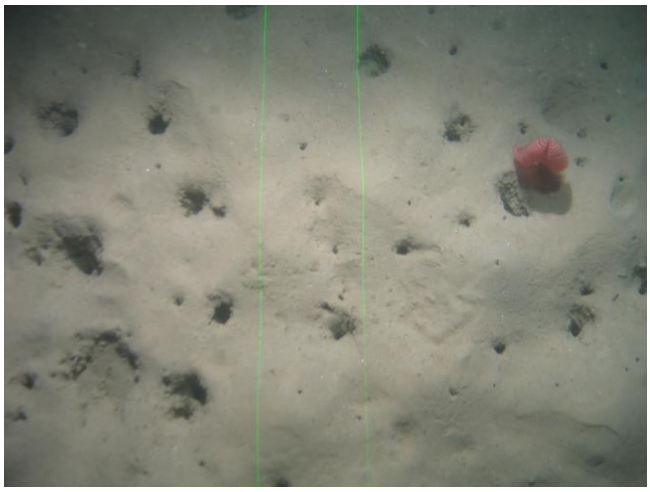
Faunal Description:
Animalia tube



Station: ECR_ENV_48
Fix: 317 **E:** 528402 **N:** 6406984 **Depth (m):** 95

Sediment Description:
Soft sediment with bioturbation

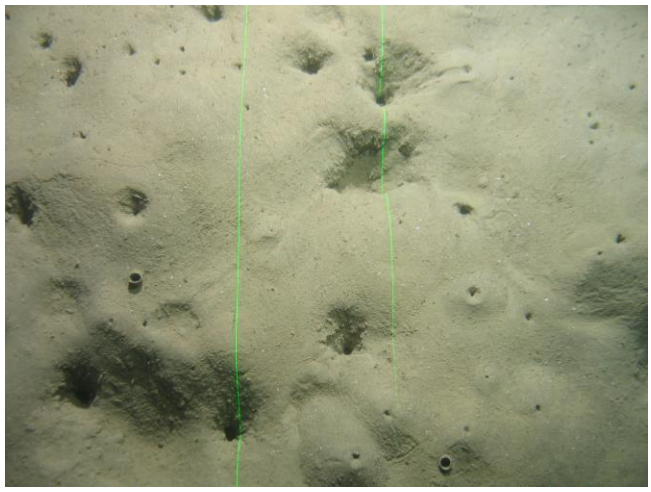
Faunal Description:
Animalia tube



Station: ECR_ENV_48
Fix: 320 **E:** 528396 **N:** 6406983 **Depth (m):** 96

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (Pennatuloidea *stet.*)

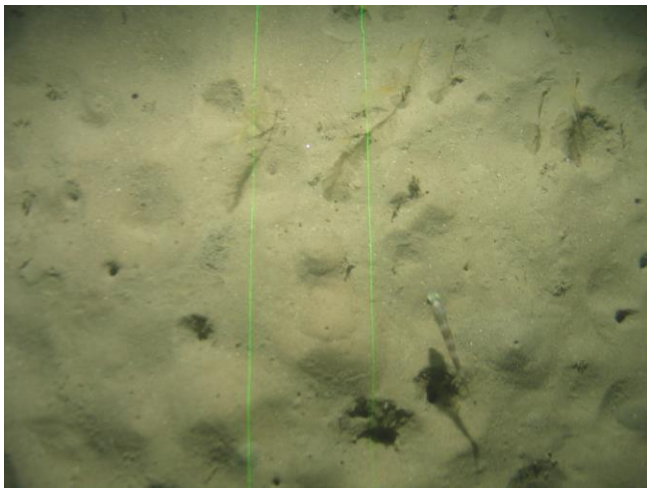


Station: ECR_ENV_48
Fix: 331 **E:** 528365 **N:** 6406982 **Depth (m):** 95

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube, Echinodermata (Ophiuridae *stet.*)

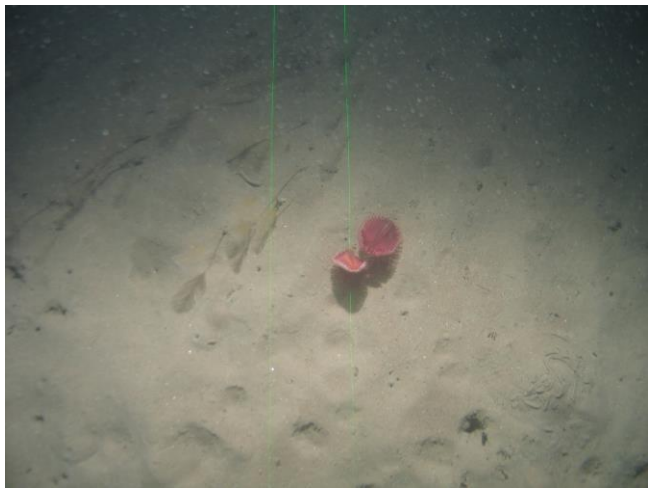
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_49
Fix: 287 **E:** 526320 **N:** 6405006 **Depth (m):** 72

Sediment Description:
Soft sediment with some bioturbation

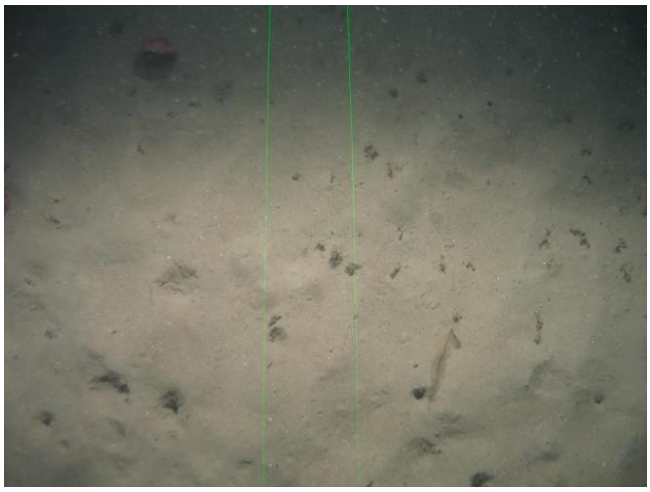
Faunal Description:
Chordata (Actinopterygii *indet.* 001), Cnidaria (*Lytocarpia myriophyllum*), Faunal turf



Station: ECR_ENV_49
Fix: 290 **E:** 526310 **N:** 6405001 **Depth (m):** 72

Sediment Description:
Soft sediment

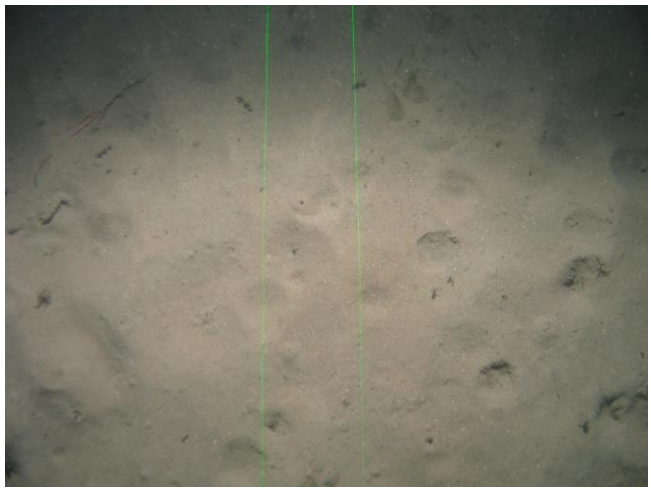
Faunal Description:
Animalia tube, Cnidaria (*Lytocarpia myriophyllum*, Pennatuloidea *stet.*)



Station: ECR_ENV_49
Fix: 291 **E:** 526308 **N:** 6405000 **Depth (m):** 72

Sediment Description:
Soft sediment

Faunal Description:
Animalia tube, Cnidaria (*Nemertesia antennina*, Pennatuloidea *stet.*), Faunal turf

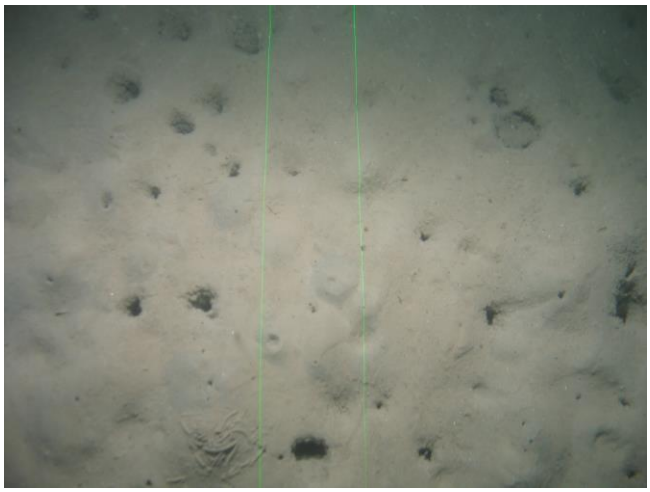


Station: ECR_ENV_49
Fix: 298 **E:** 526286 **N:** 6404996 **Depth (m):** 73

Sediment Description:
Soft sediment

Faunal Description:
Animalia tube, Cnidaria (*Tubularia indivisa*), Faunal turf

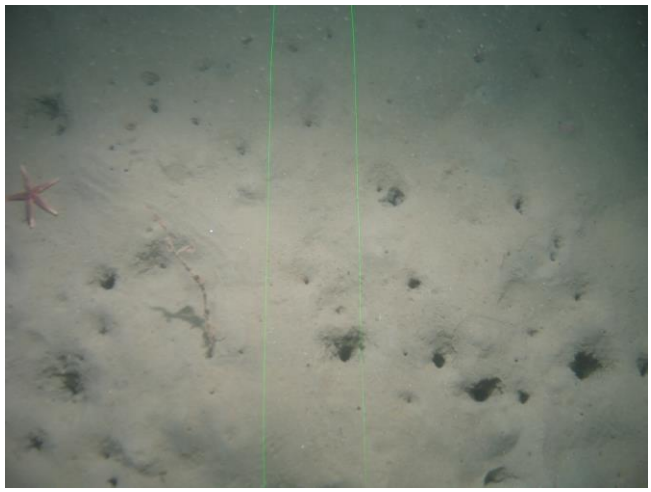
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_50
Fix: 219 **E:** 529451 **N:** 6403678 **Depth (m):** 98

Sediment Description:
Soft sediment with bioturbation

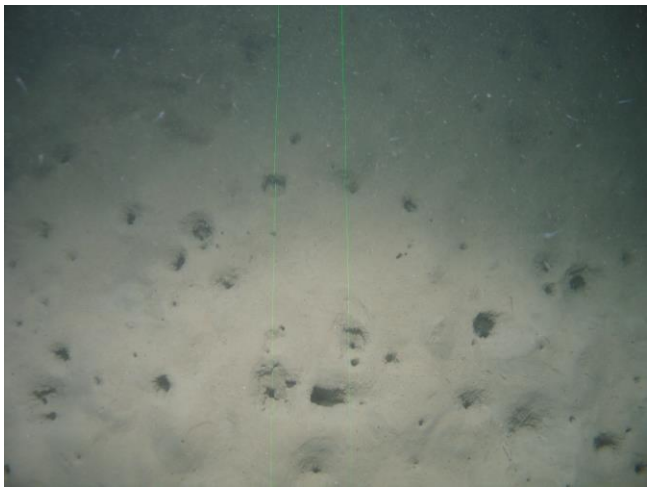
Faunal Description:
No visible fauna



Station: ECR_ENV_50
Fix: 235 **E:** 529496 **N:** 6403682 **Depth (m):** 98

Sediment Description:
Soft sediment with bioturbation and faunal tracks

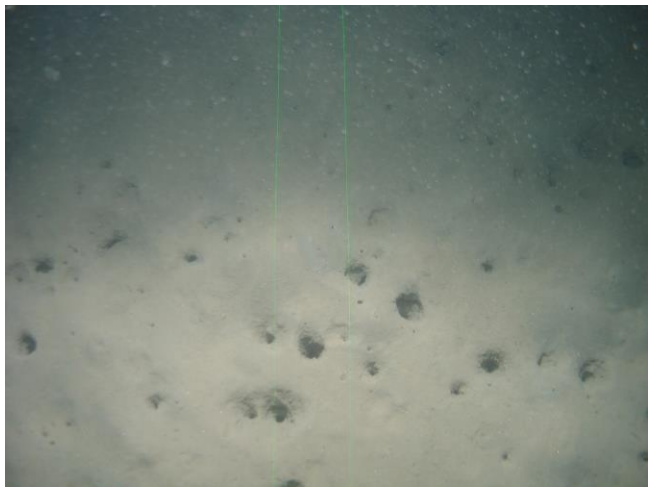
Faunal Description:
Animalia tube, Annelida (*Myxicola stet*), Cnidaria (*Tubularia indivisa*), Echinodermata (*Henricia stet*)



Station: ECR_ENV_50
Fix: 249 **E:** 529527 **N:** 6403685 **Depth (m):** 98

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna

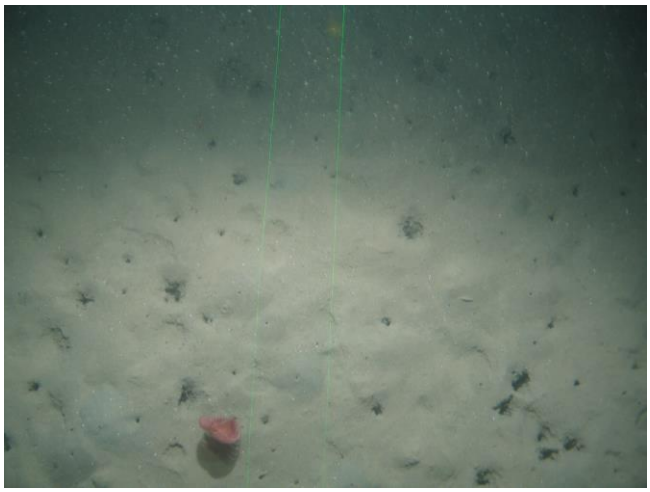


Station: ECR_ENV_50
Fix: 255 **E:** 529540 **N:** 6403686 **Depth (m):** 98

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna

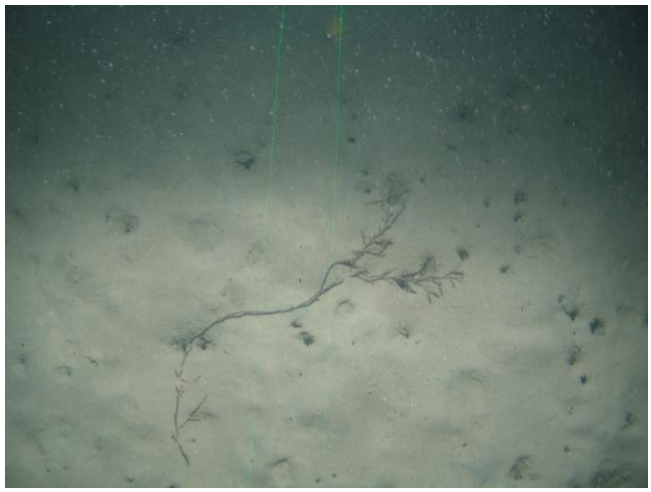
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_51
Fix: 144 **E:** 527934 **N:** 6400649 **Depth (m):** 98

Sediment Description:
Soft sediment with bioturbation

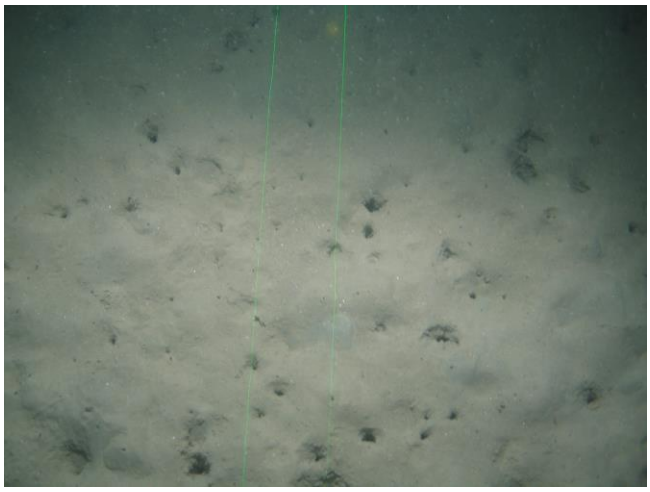
Faunal Description:
Animalia tube, Cnidaria (Pennatuloidea *stet.*)



Station: ECR_ENV_51
Fix: 148 **E:** 527932 **N:** 6400659 **Depth (m):** 98

Sediment Description:
Soft sediment with some bioturbation

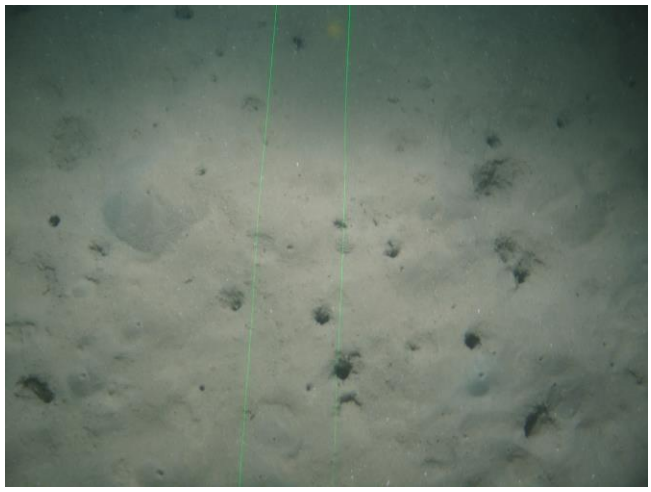
Faunal Description:
Animalia eggs, Animalia tube



Station: ECR_ENV_51
Fix: 156 **E:** 527928 **N:** 6400687 **Depth (m):** 98

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna

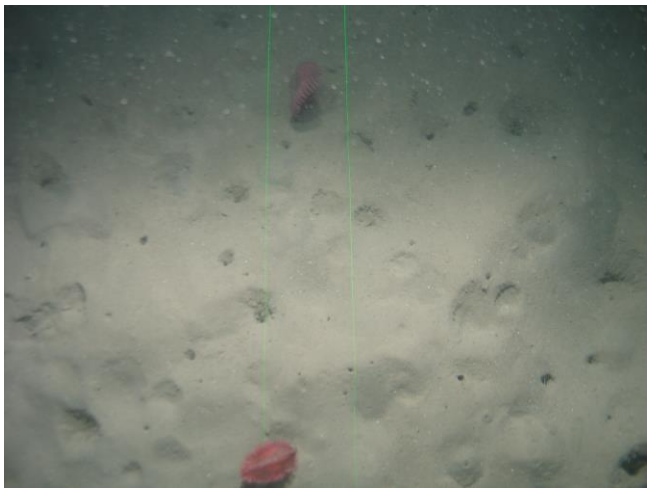


Station: ECR_ENV_51
Fix: 167 **E:** 527933 **N:** 6400718 **Depth (m):** 98

Sediment Description:
Soft sediment with some bioturbation

Faunal Description:
No visible fauna

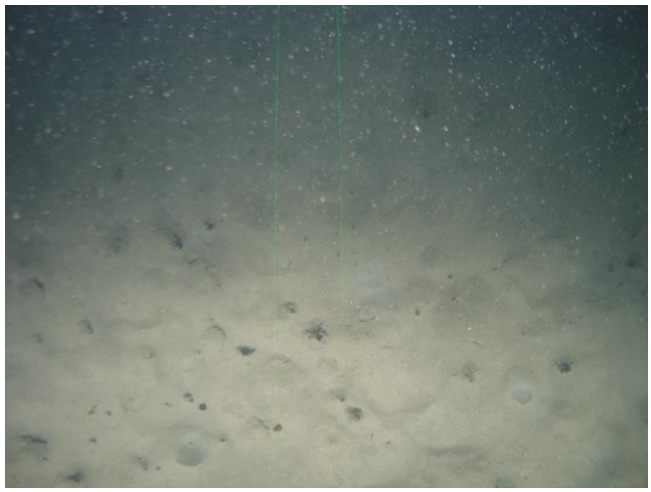
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_52
Fix: 199 **E:** 525152 **N:** 6402565 **Depth (m):** 93

Sediment Description:
Soft sediment with bioturbation

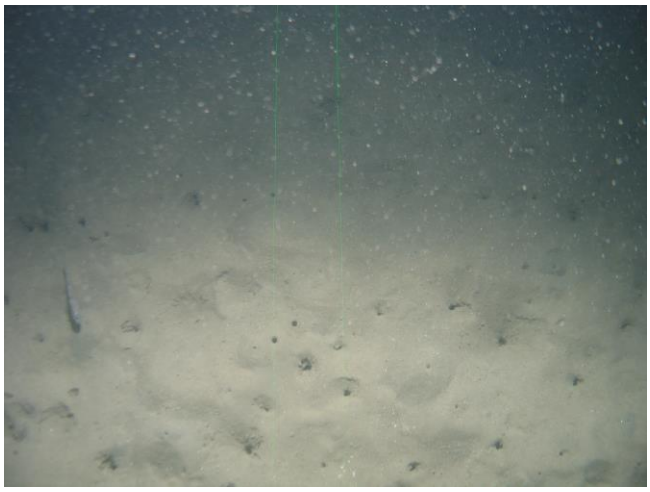
Faunal Description:
Animalia tube, Cnidaria (Pennatuloidea *stet.*)



Station: ECR_ENV_52
Fix: 204 **E:** 525153 **N:** 6402580 **Depth (m):** 93

Sediment Description:
Soft sediment with bioturbation

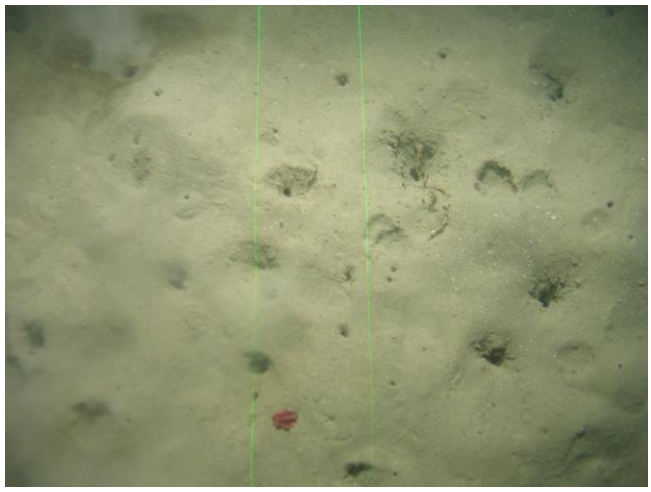
Faunal Description:
No visible fauna



Station: ECR_ENV_52
Fix: 205 **E:** 525152 **N:** 6402584 **Depth (m):** 93

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube, Chordata (Actinopterygii *indet.* GL0001)



Station: ECR_ENV_52
Fix: 209 **E:** 525151 **N:** 6402604 **Depth (m):** 93

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (Pennatuloidea *stet.*, *Tubularia indivisa*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_53
Fix: 35 **E:** 525615 **N:** 6394768 **Depth (m):** 31
Retention: MFA

Sediment Description:
Medium sand with shell fragments

Faunal Description:
Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

Station: ECR_ENV_53
Fix: 35 **E:** 525615 **N:** 6394768 **Depth (m):** 31
Retention: MFA

Sediment Description:
Medium sand with shell fragments

Faunal Description:
Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_54
Fix: 1244 **E:** 528222 **N:** 6399817 **Depth (m):** 97

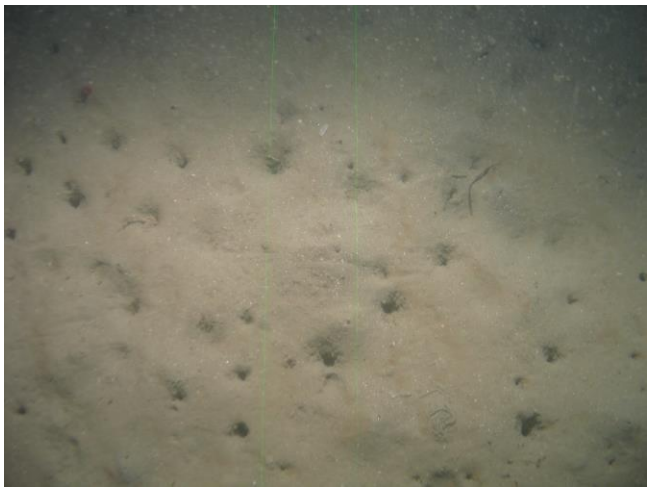
Sediment Description:
Soft sediment with bioturbation and faunal tracks

Faunal Description:
Arthropoda (Galatheoidea *stet.*)

Station: ECR_ENV_54
Fix: 1250 **E:** 528223 **N:** 6399815 **Depth (m):** 97

Sediment Description:
Soft sediment with bioturbation and faunal tracks

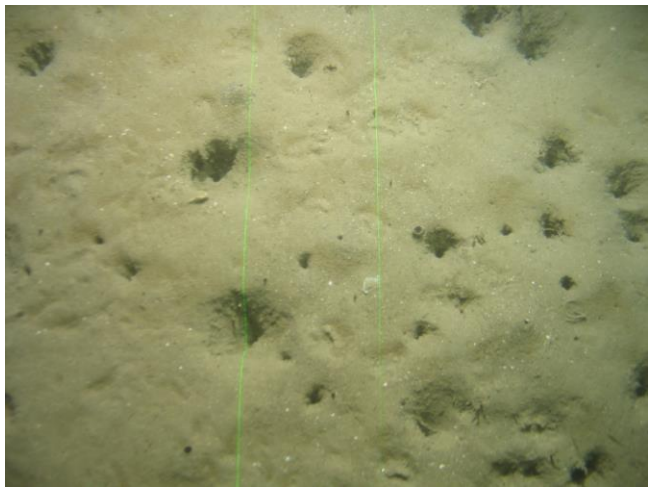
Faunal Description:
Animalia tube



Station: ECR_ENV_54
Fix: 1252 **E:** 528223 **N:** 6399808 **Depth (m):** 97

Sediment Description:
Soft sediment with bioturbation and faunal tracks

Faunal Description:
Cnidaria (Pennatuloidea *stet.*)



Station: ECR_ENV_54
Fix: 1268 **E:** 528223 **N:** 6399798 **Depth (m):** 96

Sediment Description:
Soft rippled sediment with faunal tracks

Faunal Description:
Animalia tube

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_55
Fix: 1303 **E:** 526584 **N:** 6402949 **Depth (m):** 108

Sediment Description:
Soft sediment with bioturbation and faunal tracks

Faunal Description:
Arthropoda (Galatheoidea *stet.*)

Station: ECR_ENV_55
Fix: 1308 **E:** 526585 **N:** 6402944 **Depth (m):** 108

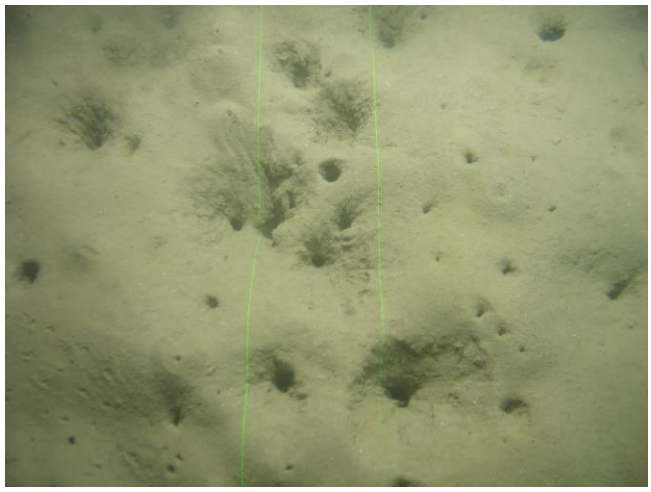
Sediment Description:
Soft sediment with scattered cobbles

Faunal Description:
Arthropoda (Galatheoidea *stet.*), Chordata (Actinopterygii *indet.* GL0001), Cnidaria (Actiniaria *stet.*, *Tubularia indivisa*), Epifauna, Faunal turf

Station: ECR_ENV_55
Fix: 1314 **E:** 526583 **N:** 6402945 **Depth (m):** 108

Sediment Description:
Soft sediment with faunal tracks and bioturbation

Faunal Description:
Arthropoda (Galatheoidea *stet.*), Cnidaria (Pennatuloidea *stet.*), Epifauna, Faunal turf



Station: ECR_ENV_55
Fix: 1324 **E:** 526550 **N:** 6402913 **Depth (m):** 106

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_56
Fix: 64 **E:** 525989 **N:** 6393619 **Depth (m):**

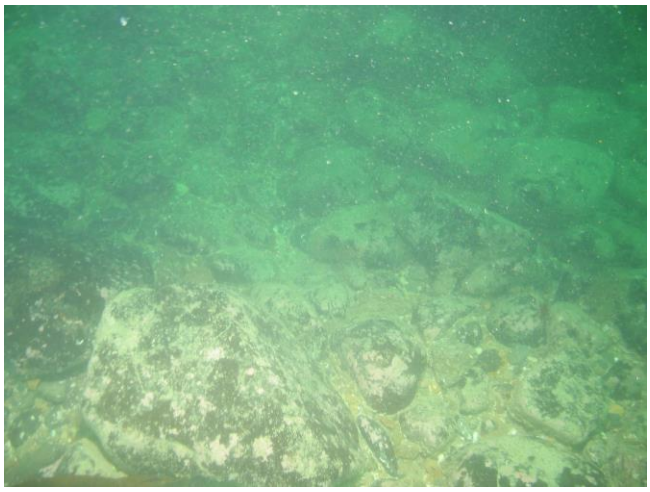
Sediment Description:
Scattered boulders

Faunal Description:
Echinodermata (Asteroidea ,*indet.* 001, Echinoidea *indet.* 001)

Station: ECR_ENV_56
Fix: 67 **E:** 526000 **N:** 6393610 **Depth (m):**

Sediment Description:
Soft rippled sediment

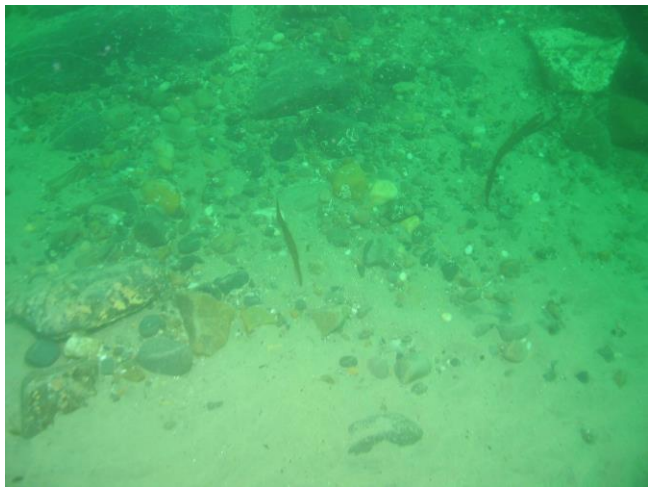
Faunal Description:
Echinodermata (Asteroidea ,*indet.* 001, Echinoidea *indet.* 001)



Station: ECR_ENV_56
Fix: 78 **E:** 526053 **N:** 6393551 **Depth (m):**

Sediment Description:
Scattered boulders

Faunal Description:
No visible fauna



Station: ECR_ENV_56
Fix: 82 **E:** 526037 **N:** 6393529 **Depth (m):**

Sediment Description:
Scattered cobles

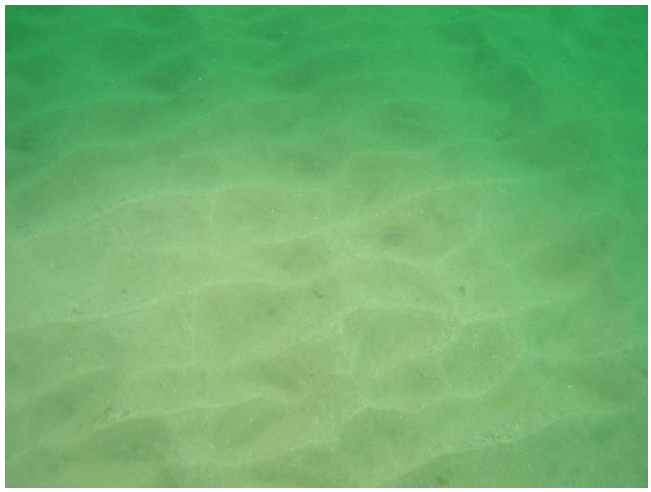
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_57
Fix: 61 **E:** 527020 **N:** 6392987 **Depth (m):**

Sediment Description:
Soft rippled sediment

Faunal Description:
No visible fauna



Station: ECR_ENV_57
Fix: 62 **E:** 527012 **N:** 6392981 **Depth (m):**

Sediment Description:
Soft rippled sediment

Faunal Description:
No visible fauna

Station: ECR_ENV_57
Fix: 11 **E:** 527012 **N:** 6392983 **Depth (m):** 13
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida

Station: ECR_ENV_57
Fix: 11 **E:** 527012 **N:** 6392983 **Depth (m):** 13
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_58_A
Fix: 7 **E:** 523133 **N:** 6394097 **Depth (m):** **Retention:** MFA

Sediment Description:
Fine sand with shell fragments

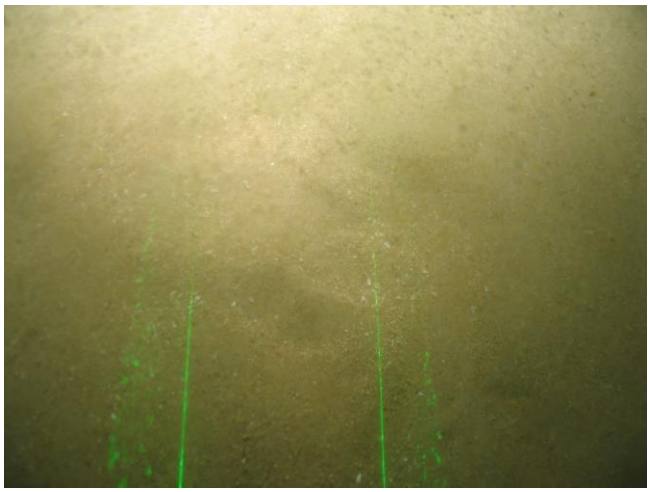
Faunal Description:
Annelida

Station: ECR_ENV_58_A
Fix: 7 **E:** 523133 **N:** 6394097 **Depth (m):** **Retention:** MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_59
Fix: 7 **E:** 521454 **N:** 6395097 **Depth (m):**

Sediment Description:
Soft rippled sediment

Faunal Description:
No visible fauna

Station: ECR_ENV_59
Fix: 10 **E:** 521446 **N:** 6395095 **Depth (m):**

Sediment Description:
Soft rippled sediment

Faunal Description:
No visible fauna

Station: ECR_ENV_59
Fix: 2 **E:** 521406 **N:** 6395099 **Depth (m):** 29
Retention: MFA

Sediment Description:
Medium sand with shell fragments

Faunal Description:
Annelida

Station: ECR_ENV_59
Fix: 2 **E:** 521406 **N:** 6395099 **Depth (m):** 29
Retention: MFA

Sediment Description:
Medium sand with shell fragments

Faunal Description:
Annelida

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_61
Fix: 4197 **E:** 523338 **N:** 6398247 **Depth (m):** 51

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
Animalia tube, Cnidaria (Sertulariidae *indet.* 001), Mollusca (*Aequipecten opercularis*)

Station: ECR_ENV_61
Fix: 4202 **E:** 523348 **N:** 6398208 **Depth (m):** 51

Sediment Description:
Soft sediment with shell fragments and gravel

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Galatheoidea *stet.*), Chordata (Actinopterygii *indet.* 02, *Callionymus lyra*)

Station: ECR_ENV_61
Fix: 4209 **E:** 523344 **N:** 6398166 **Depth (m):** 51

Sediment Description:
Soft sediment

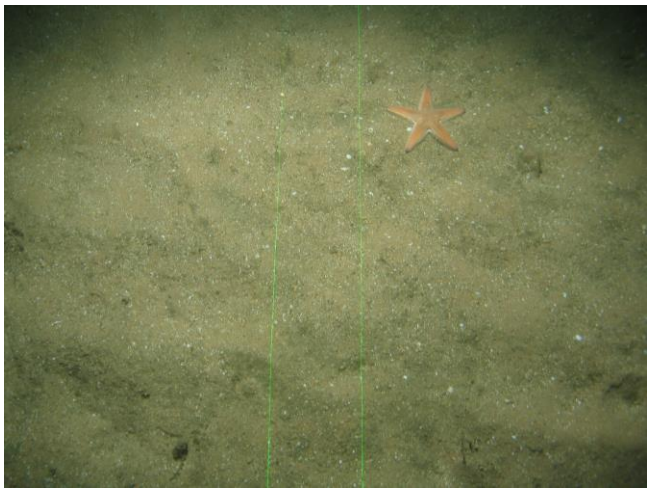
Faunal Description:
Annelida (Serpulidae *stet.*)

Station: ECR_ENV_61
Fix: 4221 **E:** 523370 **N:** 6398141 **Depth (m):** 51

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
Animalia tube, Echinodermata (Holothuroidea *indet.* 001)

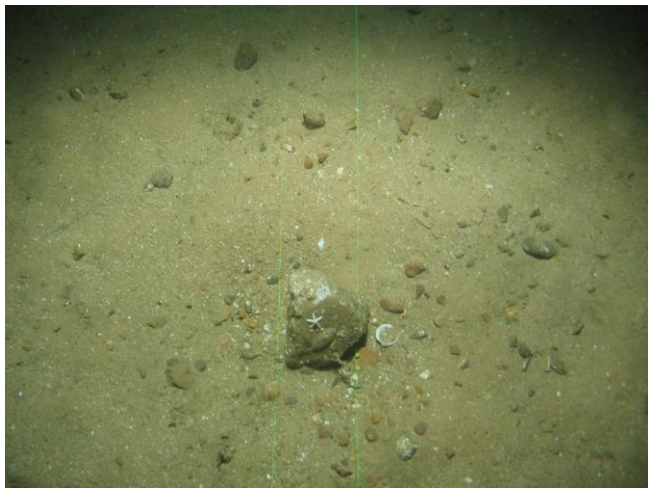
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS



Station: ECR_ENV_62
Fix: 4229 **E:** 524124 **N:** 6397211 **Depth (m):** 46

Sediment Description:
Soft rippled sediment with shell fragments

Faunal Description:
Echinodermata (*Astropecten irregularis*)



Station: ECR_ENV_62
Fix: 4239 **E:** 524124 **N:** 6397173 **Depth (m):** 46

Sediment Description:
Soft sediment with scattered cobbles

Faunal Description:
Animalia tube, Annelida (Serpulidae *stet.*), Echinodermata (Asteroidea *indet.* 001), Porifera *indet.* GL0002

Station: ECR_ENV_62
Fix: 4246 **E:** 524125 **N:** 6397147 **Depth (m):** 46

Sediment Description:
Soft rippled sediment with gravel and shell fragments.

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (*Cancer pagurus*), Faunal turf

Station: ECR_ENV_62
Fix: 4262 **E:** 524126 **N:** 6397109 **Depth (m):** 46

Sediment Description:
Soft sediment with cobbles and boulders

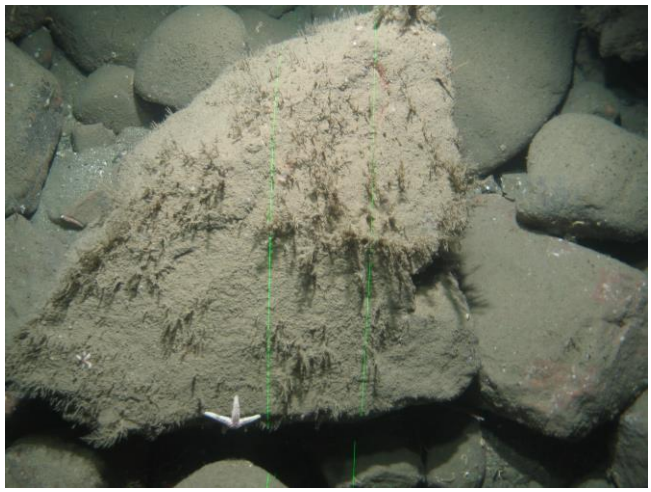
Faunal Description:
Arthropoda (Galatheoidea *stet.*), Echinodermata (Asteroidea *indet.* 001), Mollusca (*Calliostoma stet*), Epifauna, Faunal turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

Station: ECR_ENV_63
Fix: 4381 **E:** 525817 **N:** 6420130 **Depth (m):** 61

Sediment Description:
Cobbles and boulders with gravel and shell fragments

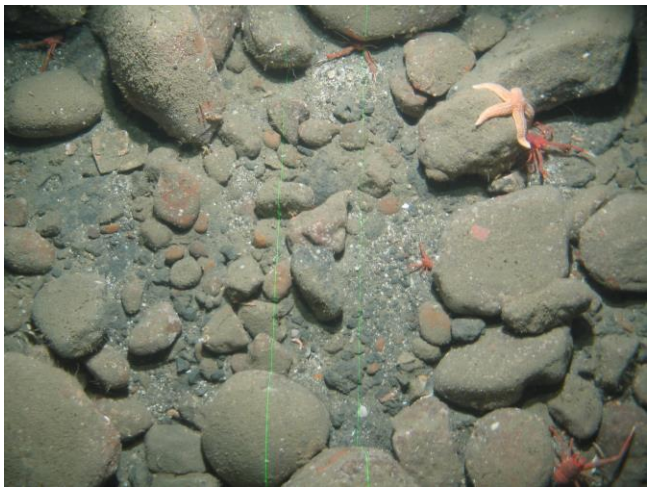
Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Galatheoidea *stet.*), Cnidaria (*Tubularia indivisa*), Epifauna, Faunal turf



Station: ECR_ENV_63
Fix: 4389 **E:** 525845 **N:** 6420118 **Depth (m):** 60

Sediment Description:
Scattered cobbles and boulders with soft sediment and shell fragments

Faunal Description:
Cnidaria (*Tubularia indivisa*), Echinodermata (*Asterias rubens*), Epifauna, Faunal turf



Station: ECR_ENV_63
Fix: 4393 **E:** 525856 **N:** 6420114 **Depth (m):** 60

Sediment Description:
Scattered cobbles and boulders with soft sediment and shell fragments

Faunal Description:
Animalia tube, Arthropoda (Galatheoidea *stet.*), Echinodermata (*Asterias rubens*), Epifauna, Faunal turf

Station: ECR_ENV_63
Fix: 4400 **E:** 525880 **N:** 6420102 **Depth (m):** 62

Sediment Description:
Scattered cobbles and boulders with soft sediment and shell fragments

Faunal Description:
Arthropoda (Galatheoidea *stet.*), Cnidaria (*Bolocera tuediae*), Echinodermata (*Asterias rubens*, Echinoidea *indet.* 001), Epifauna, Faunal turf

APPENDIX D METHODS

APPENDIX D METHODS

D.1 Seabed Sampling

Benthic physico-chemical samples were recovered using a stainless-steel, 0.1m^2 Day grab which had been modified in-house. The modification, shown in Figure D.1 incorporated guides for the cables to prevent them becoming trapped during triggering. Low-slung pad feet when in contact with the seabed trigger the instrument. On recovery (once triggered) the weight of the instrument is transferred along the warp wires, closing the jaws of the grab. The grab carried extra weights to aid penetration on recovery and an extended bucket lip to reduce sediment washout. Storm feet and elastic straps were used to reduce the likelihood of the instrument pre-triggering in the water column during deployment.

Figure D.1 Modified Day Grab

Left: The modified 0.1m^2 Day grab.

Above (inset): The modification to the grab incorporated guides for the cables to prevent them from becoming trapped as the grab triggers.

Faunal and particle size samples were recovered using an in-house constructed, modified, stainless-steel 0.1m^2 mini-Hamon grab. The mini-Hamon grab comprises a box shaped scoop which is mechanically driven in a 90° arc through the surface sediments to close against a stainless-steel closure plate. The closure plate is lined by a rubberised gasket to retain the mixed sediment sample and also has a viewing window allowing the operator to determine the recovered volume of the sample. Tension on a trigger hook is released upon impact of the grab with the seafloor thereby allowing, on inhaul, the pivot arm to drive the scoop through the sediment. The vessel offset of grab deployment was used to represent the position of the sampler.

Grab sampling operational procedures were as follows:

The vessel's sampling area was pre-cleaned using a powerful deck fire-hose and seawater. The Day grab/mini-Hamon grab was washed thoroughly using pentane prior to deployment at every station to prevent hydrocarbon cross contamination. A 500m-length of 10mm, dry-core, galvanised-steel cable/100m-length of 8mm, steel cable was used to lower the Day grab/mini-Hamon grab to the seabed.

APPENDIX D METHODS

All containers were thoroughly washed with appropriate solvents and labelled externally prior to use. Biology samples were placed in 1-litre polypropylene, screw-top, squat jars and/or 5 litre buckets and provided with an additional internal waterproof label. Hydrocarbon and metals samples were placed in 1L amber glass jars, whilst the remaining samples (eDNA and particle size) were placed in double-lined zip-lock bags.

Communication between the deck, bridge crew and the surveyors was conducted by means of VHF radio. When directly over the sampling station the grab was winched to the seabed and recovered so that the sample could be obtained and the apparatus prepared for the next deployment.

Positional fixes were taken for each grab sample immediately following the grab reaching the sea floor. The precise time that the grab reached the seabed was determined by observations of the tension on the winch cable.

On recovery of a sample, the grab would first be examined for acceptability following strict quality assurance criteria. In the following cases, a grab sample would be rejected and the instrument returned to the pre-deployment position:

1. Jammed sample closure due to entrapment of a large stone, shell or other objects allowing surface sediment washout.
2. Accidental premature opening of sampler on recovery, causing possible surface washout.
3. Half sample obtained where the grab had not struck a flat area of bottom, or not hit true, causing a side or half bite of sediment;
4. Disruption of the sample by obvious shaking or contamination (these can occur when a sample is badly handled or if the grab strikes the side of the vessel during operations);
5. The sample represents less than 40% of the grab's total capacity (*i.e.* less than 6 litres) or totally fills the grab. The latter potentially allowing the sample to overflow the grab or for the surface sediments to come into contact with the lids.
6. Sample was acquired more than 50m from the target (as determined by the onboard surveyors, environmentalist and client representative, with consideration of survey objectives).
7. The presence of exopolymeric substances, mucus coagulants and/or fauna that generate them *i.e.,* Myxinidae.

Brief descriptions of the collected sediments were made at the time of sampling. These were recorded in the environmentalist's log sheets and are presented in Appendix B. A selection of photographs, taken of the sediment samples whilst still in the Day grab, is presented in Appendix C.

Sediment samples were taken directly from the Day grab for physico-chemical analysis (CHEM) and sub-sampled into the relevant containers. All containers were thoroughly washed with the appropriate solvents and labelled externally prior to use. Two surficial sediment (<2cm) sub-samples were scooped directly into 1l amber glass using a stainless steel spoon; one of these was intended for hydrocarbon and metal determinations, the other was retained as a spare. Using the mini-Hamon grab, sediment samples were decanted into a suitable receptacle and homogenised. Two samples of approximately 500g comprising one each for particle size analysis (PSA) and a spare were collected using a plastic scoop, with a third sample of approximately 40g retained for eDNA analysis. All three samples were placed in double-lined zip-lock bags.

All physico-chemical and eDNA sediment samples were transferred to an onboard freezer for storage at less than -18ºC.

Sediment samples collected for faunal analyses (MFA and MFB) were thoroughly washed from the grab into a plastic tray. Once all of the equipment was washed free of sediment, the sediment sample was transferred to a

sieving machine where it was broken down using a low powered seawater spray. All materials retained by the 1mm mesh sieve were transferred to a squat jar or bucket by means of a scoop and funnel, making sure that none of the sample was lost or trapped in the mesh. The sample was fixed with a pre-buffered <20% formalin solution of known concentration, then subsequently diluted to a final concentration of approximately 4% formalin. Biological samples were placed in 1 litre polypropylene screw-top squat jars or 5 litre buckets, depending on sample size, and provided with an additional internal waterproof label.

D.2 Water Sampling

Niskin bottles were mounted directly to the 11mm coaxial deployment cable along with a purse weight to maintain vertical transit and a messenger weight affixed to allow acquisition of sample. A fix was taken immediately after release of the messenger and prior to recovery.

Water samples were taken 5m from the seabed and 5m from the surface. On recovery of the water sample, the Niskin bottles would first be examined for acceptability following strict quality assurance (QA) criteria. In the following cases, a water sample would be rejected, and the instrument prepared for the next deployment:

1. One or both ends have not released, and the sampler has failed to trigger.
2. One or both ends have failed to seal the sample and water has leaked out.
3. Disruption of the sample by obvious shaking or contamination.
4. Sample was taken an unacceptable distance or depth from the target.

Details of collected samples were made at the time of sampling. These were recorded in the environmentalist's log sheets and presented in Appendix B. Each 5-litre water sample was decanted from the Niskin bottle into a sterilised bag and filtered through a specialised filter kit. Two samples were retained for each depth, one intended for analysis and one retained as a spare. The primary filter - used for the analysis of fish eDNA and vertebrate eDNA - and the spare filter were both placed into labelled zip-lock bags and transferred to an onboard freezer for storage at less than -18ºC.

D.3 Sample Analysis

At the end of the survey, all of the retained samples for analysis were delivered directly to their respective laboratories for analysis. The remaining samples were delivered to Gardline's Great Yarmouth office. All physico-chemical sub-samples were kept frozen, and biological and water eDNA samples stored at room temperature. Spares of one physico-chemical and one hydrocarbon sub-sample from each station were stored frozen, and one biological sample from each station stored at room temperature. Spare samples are retained at Gardline's Great Yarmouth office for at least six months after which time the client is contacted to advise on appropriate disposal, continued storage or dispatch to a destination of the client's choice.

Sediment and faunal samples were analysed by the following laboratories / persons:

- Sediment hydrocarbon, metals, total organic carbon (TOC), polyaromatic hydrocarbons (PAHs), polychlorinated biphenols (PCBs), organotins, organochlorine pesticides (OCPs) and polybrominated diphenyl esters (PBDEs) analyses were carried out by SOCOTEC, Burton-on Trent, Staffordshire, UK.
- Benthic macrofaunal identification and PSA was undertaken by Thomson Environmental Consultants Limited, Guildford, UK;
- eDNA metabarcoding was carried out by Nature Metrics Ltd, Egham, UK.

The laboratories detailed above meet quality control requirements exacted by Gardline's internal procedures (BS/EN/ISO 9001:2015; BSI, 2015).

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D.4 Particle Size Analysis

Particle size analysis was carried out by Thomson Environmental Consultants Limited in accordance with NMBAQC methods for diamictons (Mason, 2016).

No dispersants were used and the sediment was not treated to remove carbonates or organic matter prior to analysis. The range of sieve sizes, together with their Wentworth classifications (Wentworth, 1922), is given in Table D.1.

The results, given in Appendix G and summarised in Section 2.5.1, present particle size distributions in terms of mean phi, fraction percentages (*i.e.*, gravel, sand and fines), sorting (mixture of sediment sizes) and skewness (weighting of sediment fractions above and below the mean sediment size) and kurtosis (degree of peakedness) (Folk & Ward, 1957). These indices are described below:

1. Graphic Mean - a measure of average particle size in phi units (-log2(diamm), Folk & Ward, 1957).

$$M_z = \frac{\emptyset 16 + \emptyset 84 + \emptyset 50}{3}$$

where M_z= The graphic mean particle size in phi
ø = the phi size of the nth percentile of the sample

2. Sorting – the inclusive graphic standard deviation of the sample is a measure of the degree of sorting. Sorting classifications are presented in Table D.2.

$$\sigma_1 = \frac{\emptyset 84 - \emptyset 16}{4} + \frac{\emptyset 95 - \emptyset 5}{6.6}$$

where σ_1 = the inclusive graphic standard deviation

3. Inclusive Graphic Skewness – the degree of asymmetry of a frequency or cumulative curve, Skewness classification are presented in Table D.3.

$$S = \frac{\emptyset 16 + \emptyset 84 - 2(\emptyset 50)}{2(\emptyset 84 - \emptyset 16)} + \frac{\emptyset 5 + \emptyset 95 - 2(\emptyset 50)}{2(\emptyset 95 - \emptyset 5)}$$

where S = the skewness of the sample

4 Graphic Kurtosis – The degree of peakdness or departure from a 'normal' frequency or cumulative curve. Kurtosis classifications are presented in Table D.4.

$$K = \frac{\emptyset 95 - \emptyset 5}{2.44(\emptyset 75 - \emptyset 25)}$$

where K= Kurtosis

The sediment samples were additionally classified using the modified Folk triangle classification and the EUNIS classification (Figure D.2), with results presented in 1Appendix G. These classifications use the sand:mud ratio and the percentage of gravel (Folk, 1954; Parry, 2019).

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Table D.1 Phi and Sieve Aperture with Wentworth Classifications

Aperture in microns	Aperture in Phi Unit	Sediment Description	
<63000 to 45000	>-6 to -5.5	Pebble	GRAVEL
<45000 to 32000	>-5.5 to -5		
<32000 to 22600	>-5 to -4.5		
<22600 to 16000	>-4.5 to -4		
<16000 to 11200	>-4 to -3.5		
<11200 to 8000	>-3.5 to -3		
<8000 to 5600	>-3 to -2.5		
<5600 to 4000	>-2.5 to -2		
<4000 to 2800	>-2 to -1.5	Granule	
<2800 to 2000	>-1.5 to -1		
<2000 to 1400	>-1 to -0.5	Very Coarse Sand	SAND
<1400 to 1000	>-0.5 to 0		
<1000 to 710	>0 to 0.5	Coarse Sand	
<710 to 500	>0.5 to 1		
<500 to 355	>1 to 1.5	Medium Sand	
<355 to 250	>1.5 to 2		
<250 to 180	>2 to 2.5	Fine Sand	
<180 to 125	>2.5 to 3		
<125 to 90	>3 to 3.5	Very Fine Sand	
<90 to 63	>3.5 to 4		
<63 to 44	>4 to 4.5	Coarse Silt	FINES
<44 to 31.5	>4.5 to 5		
<31.5 to 22	>5 to 5.5	Medium Silt	
<22 to 15.6	>5.5 to 6		
<15.6 to 11	>6 to 6.5	Fine Silt	
<11 to 7.8	>6.5 to 7		
<7.8 to 5.5	>7 to 7.5	Very Fine Silt	
<5.5 to 3.9	>7.5 to 8		
<3.9 to 2.8	>8 to 8.5	Clay	
<2.8 to 2	>8.5 to 9		
<2 to 1.4	>9 to 9.5		
<1.4 to 1	>9.5 to 10		
<1	>10		

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Table D.2 Sorting Classifications

Sorting Coefficient (Graphical Standard Deviation)	Sorting Classifications
0 < 0.35	Very well sorted
0.35 < 0.50	Well sorted
0.50 < 0.71	Moderately well sorted
0.71 < 1.00	Moderately sorted
1.00 < 2.00	Poorly sorted
2.00 < 4.00	Very poorly sorted
4.00	Extremely poorly sorted

Table D.3 Skewness Classification

Skewness Coefficient	Mathematical Skewness	Graphical Skewness
1.00 > 0.30	Strongly Positive	Strongly fine skewed
0.30 > 0.10	Positive	Fine skewed
0.10 > -0.10	Near Symmetrical	Symmetrical
-0.10 > -0.30	Negative	Coarse skewed
-0.30 > -1.00	Strongly Negative	Strongly coarse skewed

Table D.4 Kurtosis Classification

Kurtosis Coefficient	Kurtosis Classification	Graphical meaning
≤ 0.67	Very Platykurtic	Flat-peaked; the ends are better sorted than the centre
0.67 < 0.90	Platykurtic	
0.90 < 1.11	Mesokurtic	Normal; bell shaped curve
1.11 < 1.50	Leptokurtic	Curves are excessively peaked; the centre is better sorted than the ends
1.50 < 3.00	Very Leptokurtic	
≥ 3.00	Extremely Leptokurtic	

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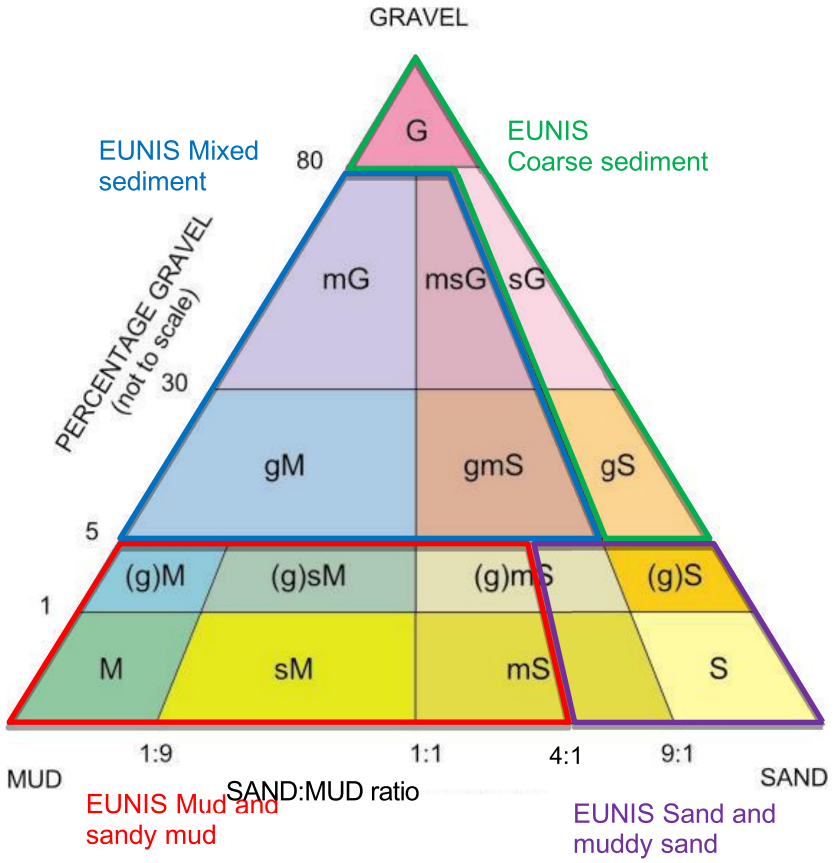
Figure D.2 Modified Folk Classification and EUNIS Sediment Classes



Code	Modified Folk Classification
G	Gravel
mG	Muddy gravel
msG	Muddy sandy gravel
sG	Sandy gravel
gM	Gravelly mud
gmS	Gravelly muddy sand
gS	Gravelly sand
(g)M	Slightly gravelly mud
(g)sM	Slightly gravelly sandy mud
(g)mS	Slightly gravelly muddy sand
(g)S	Slightly gravelly sand
M	Mud
sM	Sandy mud
mS	Muddy sand
S	Sand

Source: Folk (1954) and Parry (2019)

D.5 Total Organic Carbon

A 0.25g aliquot of air dried and ground (particle size <118µm) sample was mixed with 10ml of analytical grade sulphurous acid and allowed to effervesce at 40°C for fourteen hours in order to remove any inorganic carbon. The digested sample was then heated to 105°C until any remaining acid had evaporated and the sample had dried. The dried residue was then analysed for carbon content using an Eltra induction furnace, fitted with a non-dispersive infrared (NDIR) cell. In this instrument the sample was combusted at 1600°C in an oxygen atmosphere, the combustion gases pass through the NDIR cell which measures the carbon dioxide (CO_2) concentration. The total quantity of carbon liberated is calculated and reported as a percentage of the original mass of sample.

The method is calibrated every day and incorporates a three point calibration (including blank) using matrix matched standards sourced from traceable material. The calibration range extends to 4.0%. Any samples that are over-range are re-extracted with reduced sample weight and re-analysed. The method is statistically controlled using both process and instrument quality control samples. Both are sourced independently from the solutions used to calibrate the method. Instrument and process blank solutions are also run at regular intervals (with each batch) to monitor potential sources of contamination.

The results are expressed as % w/w of a dry sample and will not include volatile organic carbons, the majority of which are lost during digestion and drying. The upper range limit of this technique has not been investigated, whilst the lower limit is dependent on the sensitivity of the furnace and the sample weight taken. In practice, the limit of detection (LOD) is 0.02% of sample weight. The standard used was OAS Acetanilide.

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D.6 Hydrocarbons

D.6.1 Extraction Procedures

A 15g sub-sample of the sample was treated with 15ml of methanol and 60ml of dichloromethane (DCM) and mixed on a magnetic stirring plate for one hour (wet vortex extraction). The solvent extract was then chemically dried, water partitioned and then reduced to approximately 1ml using a Kuderna Danish evaporator with micro Snyder. The clean -up stage utilised 1g of activated silica gel along with DCM and pentane, which removes polar organics. One third of the column was made up with the DCM/Silica slurry and then the column was eluted with 9ml of DCM and 3ml of pentane. The 1ml of DCM extract was then eluted through the column with a further 1ml of DCM and 2ml of Pentane giving a final extract of 4ml (DCM:pentane). The samples were then subjected to a further copper clean up stage to remove any sulphur.

A separate sub-sample was taken for analysis of moisture content by drying at 120ºC for 8 hours. The moisture content was later used to convert the hydrocarbon concentrations from wet weight to dry weight.

D.6.2 Analysis by Gas Chromatography

An aliquot of the extract was then taken and analysed for total hydrocarbons and individual n-alkanes by large volume injection GC-FID and one taken to be analysed for PAH and alkylated isomer concentrations by GC-MS selected ion monitoring as specified in DTI (1992).

Appropriate column and GC conditions were used to provide sufficient chromatographic separation of all analytes and required sensitivity. GC chromatograms are presented in Appendix I.

D.6.3 Quality Control Samples

All samples have surrogates and internal standards (heptamethylnonane (A), 1-chlorooctadecane (B) and squalane (C)) added prior to commencement of extraction. Decanoic acid and eicosanoic Acid were added to the sample post extraction but prior to the clean up stage. These are reverse surrogates to measure the clean up. The method was statistically controlled using both process and instrument quality control samples. Both were sourced independently from the solutions used to calibrate the method. Three instrument blanks of 50:50 pentane:DCM were run initially and one after the continuing calibration check (CCC) before any samples. Two method blanks and an in-house prepared reference material were analysed with each batch and process blank solutions were also run at regular intervals (with each batch) to monitor potential sources of contamination.

D.6.4 Calibration and Calculation

Two calibration check standards are measured by GC-FID before and after each batch. The first CCC is a florida mix used to calibrate the individual alkane method and determine retention times and areas for the nC_{10} – nC_{40} alkane groups. The second CCC is a diesel/mineral oil mix which provides the odd alkane group retention times from nC_{11} – nC_{27}, pristane and phytane. The second CCC is used to calibrate the total petroleum hydrocarbons area.

Concentrations of total hydrocarbons from the extract analysed by GC-FID were quantified by comparison with the chromatographic envelopes from the mixed diesel/mineral oil calibration standards. The concentration in the sample was then calculated against the squalene surrogate. The chromatographically resolved individual n-alkane peaks nC_{10}-nC_{37} were quantified using the florida mix standard.

The GC/MS is calibrated initially at four concentrations to confirm linearity of each target compound across the working range. With each batch a calibration check standard is measured before and after each batch and the

concentration calculated from the slope of the four point initial calibration. The CCC is used to calibrate the method and samples are quantified using the CCC response factors.

Concentrations of PAH from the extract analysed by GC-MS were determined by referencing individual quantified mass peak areas for each target compound to the appropriate internal standard quantified mass peak area and the relative response factor calculated from the applicable CCC standard.

The analysis detection limits were 1ng g^{-1} for PAHs and 100ng g^{-1} for THC.

D.6.5 Polychlorinated Biphenyl and Organochlorine Pesticides

A portion of air-dried and sieved sample was spiked with 13C labelled internal standards, ultrasonically solvent extracted and concentrated under nitrogen. A clean-up stage was employed to remove contaminants that may have interfered with the analysis. The sample extract was analysed by gas chromatography coupled to a triple quadrupole mass spectrometer (GC-MS-MS). Quantification was performed by comparison with a solution containing each of the targeted compounds, normalised to the 13C labelled internal standards.

D.6.6 Polybrominated Diphenyl Ethers

A portion of air-dried and sieved sample was treated with 13C labelled internal standards before being extracted using an automated extraction system and concentrated under nitrogen. A clean-up stage was employed to remove contaminants that may have interfered with the analysis. The sample extract was analysed by gas chromatography coupled to a triple quadrupole mass spectrometer (GC-MS-MS) with a cooling injection system. Quantification was performed by comparison with a solution containing each of the targeted compounds, normalised to the 13C labelled internal standards.

D.6.7 Organotins

A portion of the received sample was digested with hydrochloric acid and methanol before being extracted into toluene. The extract was then derivatized using sodium tetraethylborate (STEB) before concentration and a copper/silica clean-up was performed. The extract was analysed by GC-MS and quantified by comparing the results against a calibration curve for each of the target analytes.

D.7 Metals

D.7.1 Aqua Regia Extractions for ICP-MS Determination

Approximately 1g of air-dried and ground (particle size <118µm) sediment was accurately weighed and placed in a Teflon digestion vessel. The microwave digestion process involved a two stage extraction process. The digest is made up to 100ml in a Gradplex flask. The sample was then analysed by inductively coupled plasma-mass spectrometry (ICP-MS).

D.7.2 Inductively Coupled Plasma – Mass Spectrometry (ICP-MS)

All metals were determined by ICP-MS. The spectrometer was calibrated using seven different concentrations of matrix-matched standards made from dilutions of 10g l^{-1} spectroscopic standard solutions. Target analyte concentrations were measured by direct comparison to the internal standard with the nearest mass ionisation properties, to take into account changes in plasma conditions as a result of matrix differences between standards and samples. Detection limits and the atomic mass units of the various elements analysed are presented in Table C.5.

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Table C.5 ICP Detection Limits, Elemental Emission Wavelengths and Atomic Masses

Analysis	ICP-MS	Aqua Regia Extraction
Element	Atomic Mass Units	LOD (µg g^{-1})
As	75	0.5
Cd	111	0.04
Cr	52	0.5
Cu	65	0.5
Ni	60	0.5
Pb	208	0.5
Zn	66	2
Hg	202	0.01

D.7.3 Quality Control

Quality control consists of running full method blanks together with one in-house reference material or certified reference material where required, and one duplicate sample per batch of twenty samples. Instrument performance is monitored by the use of instrument blanks, continuing calibration checks and independent calibration checks.

Instrument and process blank solutions are also run at regular intervals (with each batch) to monitor potential sources of contamination.

D.8 Sediment Metabarcoding

D.8.1 DNA Extraction and Sequencing

Water samples were collected offshore using a single filter for both the fish and vertebrate samples. In the laboratory, DNA was extracted using a commercial DNA extraction kit. An extraction blank was also processed for each extraction batch. Purified DNA extracts were amplified with PCR utilising primers that target a specific region of a barcode gene. The PCR is repeated multiple times per sample to maximise the detection of target species. Amplification success was determined by gel electrophoresis. All purified index PCRS were pooled into final libraries with each sample added in equal quantities. Illumina MiSeq was used to sequence the final library.

D.8.2 Bioinformatics

Sequence data were processed for quality filtering, OTU clustering and taxonomic assignment. Taxonomic assignments were made for each OTU using sequence similarity searched against four reference databases appropriate for the dataset. Taxonomic consistency between databases was determined with Global Biodiversity Information Facility (GBIF). Results for all searches were combined and assignments made to the lowest possible taxonomic level where there was consistency.

D.9 Macrofaunal Analysis

D.9.1 Sorting and Identification

In the laboratory, samples were gently washed across a 1mm mesh sieve to remove any sediment fines and preservative. The retained material was sorted by hand to extract all macrofauna. The organisms were identified and counted to produce a species list for each grab sample. Sample residues were checked by a second individual to provide a degree of quality control.

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D.9.2 Data Set Rationalisation

The faunal data set was rationalised according to the standard Gardline (2022) procedure, which is largely based on British Standard ISO16665:2005 (BSI, 2005) and OSPAR (2017) guidelines. A summary of these methods follows.

Juveniles

The inclusion of juvenile organisms in data sets is a contentious issue, as is the definition of a juvenile. Only when the following conditions were satisfied was an organism recorded as a juvenile:

- Organisms that were too small or immature to be identified to species were identified to the lowest possible taxonomic level and recorded as juveniles.
- The organism was in a pre-adult life stage *e.g.* megalopa, praniza, *etc.*
- For large-bodied (>4cm) species of echinoderm and bivalve, the organism was less than 10% of the maximum body size reported in the literature.

In accordance with ISO16665:2005 guidelines, juveniles are recorded separately in the faunal list in Appendix M. Juveniles were included in the analysed data set at the lowest achievable taxonomic level. In the first instance, statistical analyses were performed after counts of juveniles of known species had been combined with adult records of that same species. In accordance with OSPAR (2017), if one or more of the juvenile taxa, or species that included juvenile records, were among the ten most dominant, then a RELATE analysis was carried out to compare the data sets with and without juveniles to determine if discussion of both sets separately is required. If the two data sets are found to be at least 95% similar, then the juveniles are included in the data set for all further multivariate analyses and discussion. Alternatively, the multivariate analyses are additionally performed following exclusion of all juvenile records to illustrate their influence.

Damaged Specimens

Destructive sampling techniques and sieving may damage delicate benthic organisms. It is, therefore, commonplace for fragmented organisms to be found in faunal samples. The following conditions were applied to the recording of damaged specimens and fragments:

- Fragments that constituted a major component of an individual, that unequivocally represented the presence of an entire organism, and that could be identified to species level, were recorded and included with other counts of that species. Examples include: the heads of polychaetes and crustaceans; the complete mouth structure or central disk of brittle stars; the oral area/feeding tentacles of holothurians.
- Fragments that constituted a significant component of an individual, that unequivocally represented the presence of an entire organism, but that could not be identified to species by virtue of their incompleteness, were recorded to the lowest possible taxonomic level.
- Fragments that did not unequivocally represent the presence of an entire organism were ignored, *e.g. Ophiura* arms, *Echinocardium* shell fragments, *etc*.

Recorded fragments, therefore, represent discrete observations of individuals that were present at the time of sampling and were included in the analysed data set.

Treatment of Specific Groups of Organisms

Gardline defines macrofauna as organisms that are normally larger that the mesh size of the sieve used to separate them from the sediment (Gardline, 2022). Meiofaunal organisms, such as Ostracoda and Copepoda, which would not be consistently sampled, were not recorded. Due to their generally small size (in fully marine environments), species from the Oligochaeta, Tardigrada and Gnathostomulida were only enumerated when a

sieve with a mesh size of 0.5mm or less was used to separate organisms from sediments; otherwise, these organisms were noted to be present, but not enumerated.

Planktonic organisms, such as Chaetognatha were not recorded. The presence of nektonic species, such as fish and Cephalopoda, was recorded, but they were not enumerated.

Colonial, stoloniferous and encrusting epibenthic species were identified but not enumerated.

With the exception of discrete sea pen (Pennatuloidea) colonies, only solitary tunicates and cnidarians were enumerated and included in statistical analyses. Colonial tunicates and cnidarians were identified but not enumerated.

The testate amoeba *Astrorhiza* sp. was the only foram routinely enumerated.

In accordance with our in-house guidelines the following organisms were not identified to species, but were enumerated and included in the data set for analyses at a higher taxonomic level:

- Nemertea – identified to phylum
- Platyhelminthes – identified to phylum
- Phoronida – identified to genus
- Hemichordata – identified to phylum.

D.9.3 Biomass

Following identification of the sample, each individual taxon (where required) were biomasses by wet weight. Biomass were weighed in grams recorded to 4d.p.

D.10 Statistical Analyses

D.10.1 Hydrocarbon Indices

In order to aid the determination of hydrocarbon sources and levels of weathering of recorded hydrocarbons, a number of indices (largely based on n-alkanes) have been developed (Tran *et al.*, 1995). The following indices were calculated from raw data using Microsoft Excel:

Carbon Preference Index (CPI)
The ratio of odd to even numbered alkanes, commonly referred to as the CPI, may provide further insight into the origin of alkanes in marine sediments. Opinions differ as to which is the most informative chain length over which to calculate CPI. Douglas and Eglinton (1966) suggest that the nC_{20} to nC_{36} range is most informative, whilst Farrington and Tripp (1977) suggest CPI calculated using nC_{27} to nC_{33} alkanes is most informative. The basic premise of most CPI calculations is that land-based vegetation predominantly produces alkanes with odd carbon numbers (*i.e.*, nC_{29}), whereas there is no such tendency in alkanes of anthropogenic or marine origin. Therefore, the sum of odd numbered alkanes divided by the sum of even numbered alkanes decreases with increasing petrogenic contamination. Jeng (2006) indicates that the tendency for land-based vegetation to predominantly produce alkanes with odd carbon numbers is most prevalent in the nC_{27} to nC_{33} range.

The carbon preference index of Farrington and Tripp (1977), which is used more often than any other in the literature, is calculated as follows:

$$CPI = \frac{2(nC_{27} + nC_{29})}{nC_{26} + 2(nC_{28}) + nC_{30}}$$

CPI values close to unity suggest that sediments are contaminated with petrogenic material; whereas values of 4 and above suggest a dominance of biogenic material and a virtual absence of petrogenics.

Pristane/Phytane Ratio

Pristane and phytane are both biogenic and petrogenic but their relative abundance may vary greatly. Pristane is primarily biogenic and most commonly originates from the decomposition of a phytol side-chain of chlorophyll (Muniz *et al.*, 2004). Elevated concentrations of pristane in sediments can be indicative of high levels of microbial degradation. Phytane is rarely produced biogenically but is a common component of crude oil (Steinhauer & Boehm, 1992); it is generally absent or found in only small quantities in marine sediments. Concentrations of pristane and phytane, and their ratio to each other have, therefore, been used as an indicator of petrogenic contamination (Berthou & Friocourt, 1981). In samples that are contaminated by petroleum products the concentrations of pristane and phytane are usually nearly equal (pristane/phytane ratio close to unity) (McDougall, 2000).

Molecular weight PAH Indices

Information regarding the possible petrogenic or pyrogenic sources of PAHs in the environment can be derived from the ratio of PAH compounds of the same molecular weight as detailed by Yunker *et al*., (2002) and adopted by Fisner *et al.,* (2013). Fisner *et al.,* (2013) states that the identification of possible sources can be made according to the ratios that are commonly used in studies related to sediment analysis, such as:

- Ratio of 178 Molecular Weight PAHs (Ant/(Ant+Phe)), where Ant=anthracene, Phe=phenanthrene and values ≤0.10 indicate the dominance of petrogenic sources and >0.10 indicate the dominance of pyrogenic sources;
- Ratio of 202 Molecular Weight PAHs (Fluo/(Fluo+Py)), where Fluo=fluoranthene, Py=pyrene and values ≤0.40 indicate the dominance of petrogenic inputs and >0.40 indicated the dominance of pyrogenic sources;
- Ratio of 228 Molecular Weight PAHs (BaA/(BaA+Ch)) where BaA=benz[a]anthracene, Ch=chrysene and values ≤0.20 indicate the dominance of petrogenic PAHs, >0.20 to ≤0.35 a mixture of inputs and >0.35 the dominance of pyrogenic inputs;
- Ratio of 276 Molecular Weight PAHs (IP/(IP+Bghi)) where IP=indeno[1,2,3-cd]pyrene, Bghi=benzo[g,h,i]perylene and values ≤0.2 indicate the dominance of petrogenic sources and >0.50 indicate the dominance of pyrogenic sources.

D.10.2 Univariate Macrofauna Indices

Univariate community analyses were undertaken using the PRIMER (version 7) software package. Univariate indices seek, by means of a single number, to summarise information about some aspect of community structure. The two aspects of community structure contributing to the concept of diversity are species richness (a measure related to the total number of species present) and evenness (a measure relating to the pattern of distribution of individuals among the species present).

Diversity indices, as typified by the Shannon-Wiener index, are considered to be a relatively insensitive measure of anthropogenic disturbance. However, benthic ecologists have been able to demonstrate a clear inverse relationship between diversity and total oil concentrations in sediments (Davies *et al.*, 1984). They are therefore of some practical use for making comparisons between stations and sites.

The following indices were calculated and are presented in the report:

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Margalef's Richness Index

Species richness is sometimes given simply as the number of species in a sample but this is of course very dependent upon sample size. Alternatively, Margalef's index (*d*) may be used as this takes account of the number of species present for a given number of individuals. Margalef's richness index is calculated as follows:

$$d = \frac{(S-1)}{\ln N}$$

where d = Margalef's richness
S = total number of species
N = total number of individuals

Shannon-Wiener Diversity Index

This is a widely used measure of diversity providing an integrated index of species richness and relative abundance (Clarke & Warwick, 2006). It is basically a measure of the difficulty of predicting the identity of an individual based on overall community composition. The Shannon-Wiener diversity index is expressed as:

$$H' = -\sum_{i=1}^{s} p_i \log_n p_i$$

where H'= Shannon-Wiener diversity index
p_i = proportion of the total number of individuals from the i^{th} species.
n = log base value (log base 2 is used during this report; Shannon & Weaver, 1949)

H' integrates the number of species and individual abundance to provide a summary value reflecting the diversity of fauna at a station. This index of diversity is influenced by both species richness (*i.e.* the number of species) and evenness (or equitability) of distribution of individuals between species.

Simpson's Dominance Index

Simpson's is a dominance index derived from the probability of picking two individuals from a community at random that are from the same species. Therefore Simpson's dominance index values with be large when a community is dominated by one or a few species but lower when the community is diverse. Simpson's dominance index was calculated as follows:

$$\lambda = \sum {p_i}^2$$

where λ = Simpson's dominance index
p_i = proportion of the total number of individuals from the i^{th} species

Simpson's dominance index ranges from 0 to 1 with values typically reflecting the abundances of the most common species in the samples.

Pielou's Evenness

Evenness (or equitability) is a representation of how uniformly individuals are spread between species in a sample. It is a component of, and calculated using, a theoretical diversity measure (in this instance Shannon-Wiener). Values range from 0 to 1 with high values indicating low dominance and high evenness (*N.B.* the log base that was used to calculate H' must also be used to calculate evenness).

$$J = \frac{H'}{\log_n S}$$

where J = Pielou's evenness
H' = Shannon-Wiener diversity index
S = total number of species in a sample

Species Accumulation Curves

Species accumulation curves show the increasing total number of different taxa observed as samples are successively pooled. Two versions are plotted in this report; the first (plotted in blue) simply takes the samples in their label order, this is often referred to as the "species observed" (Sobs) curve. The second curve (plotted in red) is smooth as it is an averaged output based on the samples being added in random order 999 times. This is referred to as the UGE (Ugland, Gray, Ellingsen) curve after Ugland *et al.*, (2003).

Species Ranking

A measure of the overall dominance pattern in the sampling area may be achieved by ranking the top species per station according to abundance, giving a rank score of ten to the most abundant species, decreasing to one for the tenth most abundant species, and summing these scores for all stations to provide an overall dominance score for each species (Eleftheriou & Basford, 1989). For those species ranked in the top ten, the fidelity of the species ranking can be assessed by comparing the actual rank score with the maximum possible score (thus ten multiplied by number of stations for the top rank, etc.) for that rank as a proportion; perfect fidelity is equal to one; values lower than 0.8 or higher than 1.2 represent erratic ranking, as in a species with a patchy distribution.

D.10.3 Multivariate Analyses

In addition to univariate analyses, the data were subjected to multivariate analysis using a number of different methods available within the PRIMER package (Clarke & Warwick, 2006). By considering the full data matrix as a whole and comparing each station with every other, multivariate analyses are able to highlight subtle trends in data sets that are commonly not identified when using univariate techniques. Multivariate techniques are not restricted to use with faunal data sets and if treated appropriately may also be used to compare complex physico-chemical data sets. Multivariate analyses were computed from resemblance or similarity matrices. In the case of faunal abundance data these were constructed using the Bray-Curtis measure of similarity following transformation of the data to down-weight the influence of highly abundant or dominant species. For the purposes of this survey, a square root transformation was utilised. According to Clarke and Warwick (2006), square root transformation allows the intermediately abundant species to contribute to the similarity, while a fourth root takes account of the rarer species. Chemical data resemblance matrices are computed using Euclidean Distance following transformation (where necessary) and normalisation to standardise measurement scales.

Cluster Analysis and SIMPROF

Cluster analysis groups samples according to their similarity *i.e.*, samples within a group are more similar to each other than they are to samples in other groups. Clustering was by a hierarchical agglomerative method using group average sorting, and the results are presented as a dendrogram. Using PRIMER v7 it is possible to perform a SIMPROF (similarity profile) test at the same time as the cluster analysis to determine whether groups of samples are statistically indistinguishable or whether they contain identifiable structure. SIMPROF is an *a priori* test designed to identify groups of samples from unstructured data sets. The test employs a permutation-based analysis to determine whether groups of samples below each successive node of a dendrogram possess identifiable internal structure. If the result of a test at a particular node is not significant there is no identifiable structure within the samples below the node and they might therefore be considered to be a uniform group. A significant result indicates that samples within a group (below a particular node in the

dendrogram) contain some structure and therefore may not be considered uniform. The analysis therefore identifies groups of samples that are each highly self-similar and also that are distinguishable from each other.

Ordination Analyses using non-Metric Multidimensional Scaling

Non-metric multidimensional scaling (nMDS or MDS) is a type of ordination method which creates a 2- or 3-dimensional 'map' of the samples (or stations) from the similarity matrix. The configuration of the samples on the 'map' is a reflection of their similarity, with distances between samples being representative of their dissimilarity.

It is normal for there to be some distortion (stress) between actual similarity values (in the resemblance matrix) and distance between samples on the ordination plot; perfect solutions are very rarely achieved when dealing with complex data sets. In order to achieve the lowest possible stress PRIMER adopts an iterative approach to ordination, constructing the plot by successively refining the positions of samples until the lowest stress is achieved. In reality the lowest possible stress is not always achieved since data points may become trapped in local minima. It is therefore necessary to re-run the analyses multiple times to ensure that the lowest achievable stress is found. The ordination analysis results reported were the product of a minimum of 25 restarts. In instances where the lowest achieved stress was found for <5 (20%) of the restarts the ordination was repeated with 999 restarts to ensure that a lower stress result could not be found.

The scale and orientation of MDS ordinations are arbitrary so no axes are drawn on the plots. Stress values increase with sample size, and usually also with increasingly severe transformation of the initial data set (due to the increasing influence of rarer species on the outcome of analyses). The stress value may be used as an indication of the usefulness of plots, with a general guide being as follows (Clarke & Warwick, 2006):

<0.05	Almost perfect representation of rank similarities
0.05 to <0.1	Good representation
0.1 to <0.2	Still useful
0.2 to <0.3	Should be treated with caution
>0.3	Little better than random points

BEST (BIOENV and BVSTEP)

Where differences in macrofaunal community structure are found it is acceptable to attempt to link these to abiotic variations in the environment. This may be achieved using multivariate routines in the PRIMER called BVSTEP and BIOENV. In this instance BVSTEP analysis has been used due to the large size of the data sets.

BIOENV searches amongst a specified data matrix (normally transformed and/or untransformed data matrix) to find subsets of variables (or species) that best 'fit' the multivariate pattern of a separately specified resemblance matrix. In other words, it identified a subset (or subsets) of variables within one data set that produces the most similar (highest correlation) pattern to the overall multivariate pattern of another data set. From a random starting point the analysis adds and removes variables from the initial data sets and assesses whether these improve or worsen the match to the second data set overall. Once the best match is achieved analysis is terminated. The results depend somewhat upon the starting point of the analysis and the test is therefore always run with multiple restarts in order to ensure that the best fit is found.

Since BVSTEP may be used to compare any two similarly structured data sets it has a variety of applications. These include Bio-Env tests (where the subset of environmental variables that best fit or 'explain' the biotic data are determined), Env-Bio tests (where the subset of species that best fit the environmental data are determined) and Bio-Bio tests (where a subset or subsets of species that most resemble the overall multivariate biotic pattern are determined). The results of these analyses may provide valuable insight into the processes affecting species distributions in survey areas.

APPENDIX D METHODS

ANOSIM

ANOSIM is a multivariate equivalent of an ANOVA test. It is applied to a priori structured data sets to test for differences between pre-selected groups of samples or stations. For instance, ANOSIM may be used to test whether the fauna found <1km of an offshore installation differs from that found at >1km. The result of such an analysis might provide an indication of whether the installation and operation of offshore facilities has affected the benthic community. Results of ANOSIM tests are given as r values that range from 0 (no difference) to 1 (highly different), and the significance is determined by comparison to the randomly permuted distribution of the samples included in the analysis.

SIMPER

Where differences between groups of samples are found, SIMPER may be used to interpret which species, or environmental variables, are principally responsible for the differences between the groups and which are most responsible for the similarities within groups. The SIMPER analysis decomposes differences between all pairs of sample, one from each identified group, into their contributions from each species or variable, and ranks them in decreasing order of their contribution to overall dissimilarity.

RELATE

The RELATE test of PRIMER calculates the rank similarity of two specified data matrices, so, for instance, may be used to provide an indication of the effect of the removal of a subset of taxa (*e.g.*, juveniles) on the structure of the data set overall.

D.10.4 Spearman's Rank Correlation

Spearman's Rank Correlation Co-efficient is a non-parametric correlation analysis that may be used to test for relationships between environmental variables. Significant relationships indicate that environmental variables vary similarly. Large numbers of significant correlations might suggest the presence of an environmental gradient, that in the absence of obvious natural changes in the environment (such a depth gradient), may be attributable to point source pollution or some other form of anthropogenic interference. A matrix of Spearman's rank correlation coefficients, comparing many of the environmental variables, was calculated using Microsoft Excel and is presented in Appendix H.

D.10.5 Dixon's test for Outliers

Within the data set of environmental variables, one or more values may differ considerably from the majority of the rest. In order to identify such values for investigation as to whether they are deviant results or indicative of a notable trend at seabed, Dixon's Q-test for outliers may be used for data sets of five to 25 samples. The test assumes a normal distribution.

The Dixon's Q-test is performed by taking the difference of the highest (or lowest) value and the value nearest to it and dividing this by the range of the data for that variable. The results of the Dixon's test for both high and low outliers was calculated using Microsoft Excel and is presented in Appendix H.

D.11 EUNIS Habitat Classification

Habitat classification is used to identify different habitats and biotopes based on the biotic and abiotic features of the seabed. Habitat and biotope classifications were conducted on the available survey data, adhering to protocols within the European Union Nature Identification System (EUNIS). The system was developed between 1996 and 2001 by the European Environment Agency (EEA) in collaboration with European experts. The table below gives examples of the five EUNIS levels used to describe the marine environments.

APPENDIX D METHODS

Table D.6 Example EUNIS Habitat Classification Levels

	Detail Covered (EUNIS code)
1. Environment	Marine benthic habitats (M)
2. Broad habitats	Circalittoral biogenic habitat (MC2)
3. Main habitats	Atlantic circalittoral biogenic habitat (MC22)
4. Biotope complexes	Worm reefs in the Atlantic circalittoral zone (MC221)
5. Biotopes	*Sabellaria spinulosa* on stable Atlantic circalittoral mixed sediment (MC2211)

Development of the EUNIS classification comes from both a top-down and a bottom-up approach. The first division is based on differentiating between major biological zones related to depth (littoral down to abyssal) and differentiation of substrate type *(e.g.* rock, sand, gravel). These high-level divisions can be further subdivided based on the main biogeographical regions of Europe's seas (*e.g.* Arctic, Baltic, Atlantic) with these regional splits being based on a combination of salinity and temperature. Such broad-scale differences in habitat character are readily understood by non-specialists and provide classification types that are easily mapped. However, they also have ecological relevance as they reflect major changes in habitat character upon which species distribution depends (Connor *et al.*, 2004).

Bottom-up classification differentiates between places with different species communities. Relative species composition, diversity and abundance vary from place to place and are dependent both on environmental characteristics and upon interactions between species. Surveyed sites with similar environmental characteristics, such as sediment type and depth, show certain levels of similarity in their species communities.

APPENDIX E BACKGROUND INFORMATION

E.1 Sediment Characteristics

Particle size distributions of sediments in the marine environment are to a large extent determined by hydrodynamic energy at the sediment water interface. Strong currents tend to scour the seabed thereby resuspending fine particles and any material associated with them, whilst the finest sediments predominate in areas with the least hydrodynamic energy.

The role of sediment in the transport and retention of chemical pollutants is tied to both particle size and to the amount of particulate organic carbon associated with the sediment. The chemically active fraction of sediment is usually cited as the organic component and the finest size fractions (smaller than 63µm, silt, clay). The sediment, in particular the organic carbon and finer fractions, acts as a sink for many of the persistent compounds, including metals, hydrocarbons and chlorinated compounds. Many of these persistent substances are also inherently bioaccumulative and toxic. The concentrations of many parameters are typically positively correlated with the proportion of fines found in the sediment as a result of fine particles possessing a relatively large surface area. Fine sediment particles are relatively easily resuspended by waves and currents, and may be transported, along with the materials sorbed to them, over large distances, finally being deposited in areas of lower hydrodynamic energy.

Generally speaking, sands and coarser grained materials are often organically deficient. Strong currents have a tendency to resuspend fine materials and their associated organic matter. Therefore, in an environment that is not nutrient enriched due to anthropogenic discharges, both total organic matter and total organic carbon will normally be lowest at sites with coarse-grained sediment, where currents are often strongest.

Sediment particle size and organic content are also critical measurements for the categorisation of habitat type since to a large extent they control which organisms are capable of living within sediments. Most benthic infaunal organisms exhibit preferences for sediment with particular grain size characteristics. Many organisms live in tubes or burrows constructed from sediment particles; each organism's ability to do this may be limited by the range of different sized particles available. The distribution and abundance of free-living mobile organisms, *i.e.*, those that do not construct tubes or burrows, are also affected by particle sizes, which influence their ability to move within the sediment. Sand grains of inappropriate sizes may be too big to move or, conversely, too small to be stable.

Feeding guilds are groupings of organisms based upon the feeding strategies they employ (United States Environmental Protection Agency or US EPA, 2008) and, as such, sediment particle size and organic content can greatly affect which species guilds may dominate in any given area. Many deposit feeding organisms, which process sediment through the alimentary tract to obtain nutrition (Gage & Tyler, 1992), are highly selective of the grain sizes that they will ingest, often preferring finer sediments that possess relatively high organic content. Conversely, resuspension of fine particulate matter may clog delicate filtering apparatus used by suspension feeders to obtain their suspended food particles from seawater (Gibson *et al.*, 2005), resulting in their exclusion from muddy sediments. Additionally, the mixtures of particle sizes determine the ease with which water and oxygen move through the sediment. An abundance of fine particles in a stable environment may lead to the formation of substrata with small interstitial spaces through which oxygen diffusion can be restricted. This may lead to anoxic conditions within the sediment, which further affects the range of species that may be present. Determination of sediment particle sizes and organic content is therefore of critical importance to the interpretation of benthic environmental survey data.

E.2 Sediment Hydrocarbons

The principal sources of hydrocarbons in the marine environment are anthropogenic (McDougall, 2000). However, contamination of the marine environment with crude oils is not a recent phenomenon, nor solely attributable to anthropogenic activities (Douglas *et al.*, 1981). Three general processes can add hydrocarbons to marine environments: biosynthetic, geochemical and anthropogenic (McDougall, 2000).

Oil is a complex mixture of hydrocarbons and other organic compounds. Hydrocarbons are the principal component of oil, usually contributing >75% of the constituents (Laflamme & Hites, 1978). Petroleum hydrocarbons can be divided into the following broad classes according to their structure: saturates (alkanes, isoalkanes and cycloalkanes), olefins (alkenes), aromatics (benzene, toluene, ethylbenzene and xylenes, or BTEX, and polycyclic aromatic hydrocarbons), asphaltenes, polar compounds and resins (Leahy & Colwell, 1990; Wang & Fingas, 2005).

Due to the complex and variable composition of oil in marine sediments, quantification of total hydrocarbons, groups of hydrocarbons and individual hydrocarbons is required to allow identification of the source of oil within the sediments, be it anthropogenic, biogenic or geochemical. The OSPAR (2017) guidelines for monitoring the environmental impact of offshore oil and gas activities recommend the following analyses to be conducted for environmental surveys (including baseline surveys): total hydrocarbon (THC) concentration, unresolved complex mixture (UCM) concentration, individual and total n-alkane concentrations, pristane and phytane concentrations; individual and total 2-6 ring polycyclic aromatic hydrocarbon (PAH) concentrations, and those of their respective alkyl derivatives.

Total Hydrocarbon Concentration
THC concentration gives an indication of the total hydrocarbon present within a sediment sample; it does not give an indication of the source of contamination. The definition of THC is wholly dependent on the analytical process utilised to quantify it. In this case, THC is equivalent to total n-alkane (nC_{10} to nC_{37}), pristane, phytane, UCM and total PAH (all PAHs including alkylated derivatives) concentrations.

Unresolved Complex Mixture
The UCM consists of a large variety of branched alicyclic hydrocarbons, which are not resolved by conventional capillary gas chromatography (GC) columns and appear as a 'hump' in GC chromatograms (Bouloubassi *et al.*, 2001). These compounds remain after substantial weathering and biodegradation of petrogenic inputs has taken place, with the 'hump' becoming a more predominant feature as resolvable n-alkanes are selectively transformed by weathering. Abundant UCM is ascribed to either degraded or weathered oil residues, and therefore its occurrence in environmental samples is an indicator of oil pollution (Bouloubassi *et al.*, 2001). Notably, a UCM between nC_{20} and nC_{34}, centred on nC_{29} is typical of North Sea sediments, and is generally considered as 'North Sea Background'.

N-alkanes
Alkanes are the simplest aliphatic compounds, containing only carbon and hydrogen held together by single bonds and not containing a ring; they have the general formula C_nH_{2n+2} (Lyons & Plisga, 2005). The n-alkanes are continuous, straight chain alkanes, while branched-chain alkanes are known as isoalkanes or isoprenoids (Lyons & Plisga, 2005). The only isoprenoids quantified in this survey are pristane and phytane, which are isomers of nC_{18} and nC_{19}. These compounds are substantially less susceptible to weathering than their straight chain equivalents and are therefore of use when investigating the degree of weathering of a sample (Tran *et al.*, 1995).

Although generally less harmful to many living organisms than aromatic hydrocarbons, analysis of the aliphatic component (n-alkanes, pristane and phytane) can still provide valuable information to aid in the determination

of hydrocarbon sources (Tran *et al.*, 1995). N-alkanes can be derived from a variety of origins, both anthropogenic and natural; it is therefore necessary to distinguish which of these are present, or indeed predominate, in a given environment (Tran *et al.*, 1995). There is a wide range of methods available for this purpose, but those undertaken in this report include: quantification of individual n-alkane concentrations, interpretation of GC chromatograms, the carbon preference index (CPI; Farrington & Tripp, 1977) and the pristane:phytane ratio (Berthou & Friocourt, 1981).

Polycyclic Aromatic Hydrocarbons

PAHs and their alkyl derivatives are almost ubiquitous in marine environments (Laflamme & Hites, 1978). Natural sources of PAHs include forest fires (Youngblood & Blumer, 1975), synthesis by plants (Neff, 1979) and oil seeps (Page *et al.*, 1998). However, the largest sources of PAHs are associated with anthropogenic activities, particularly fossil fuel combustion (Neff, 2004; Laflamme & Hites, 1978). Pyrogenic PAHs may be transported long distances through the atmosphere before finally being deposited. Even after deposition, PAHs may undergo further transport, *e.g.* in urban runoff and rivers, before ultimately being deposited in marine sediments, where they sorb to organic matter and sediment particles.

Concentrations of PAHs in marine sediments vary by many orders of magnitude, ranging from less than 1ng g^{-1} in deep-water oceanic sediments up to a few mg g^{-1} in highly contaminated harbours and coastal sediments (Neff, 2004). In enclosed waters subjected to oil exploration and production activity, PAH concentrations tend to be somewhat higher than in the open ocean. Generally speaking, the greatest PAH concentrations are found in coastal sediments. Barring the presence of point sources of hydrocarbon contamination, total PAH concentrations in marine sediments normally decrease with distance from major human population centres (Larsen *et al.*, 1986).

The occurrence and concentration of PAHs in the environment is of concern since many possess mutagenic, carcinogenic and toxic properties (McDougall, 2000; Neff, 2004). Many PAHs are readily bioaccumulated through the food web and higher weight aromatics in particular are persistent. The rate at which PAHs degrade is affected by many factors; in the marine environment photooxidation and biodegradation are considered to be the two most important processes of degradation (Neff, 2004). Therefore, PAHs are likely to be most persistent in cold, high latitude deep-waters where sediments receive little or no light. ESGOSS (1994) estimate the half-lives of 2-ring aromatics to be generally less than 100 days whilst heavier weight 5- and 6-ring aromatics may possess half lives in excess of 10,000 days.

Although found in most marine sediments, petrogenic aromatics are normally less abundant than the pyrogenic, HMW aromatics (Bence *et al.*, 1996). Elevated concentrations of LMW, more volatile, 2 and 3 ring PAHs (naphthalenes, phenanthrenes and dibenzothiophenes; NPD) may often be related to the presence of point sources of hydrocarbon input, including oil spills, natural seeps, drilling activity and produced water outfalls (Neff, 2004). A major source of NPD PAHs is the use of oil-based muds during drilling operations and the subsequent discharge of these cuttings on the seabed (Breuer *et al.*, 2004). Pyrogenic PAHs tend to be more widespread, but generally in relatively low concentrations.

The concentrations at which individual PAHs produce toxic effects vary widely (Long *et al.*, 1995) and are dependent on their type and bioavailability. Values for the toxicity of individual aromatics may be misleading since individual PAHs are rarely found in isolation. The best estimates of the potential toxicity of PAHs in marine sediments are ERL and ERM concentrations for total LMW, total HMW and total PAHs (Neff, 2004). Long *et al.* (1995) gives ERL concentrations for LMW and HMW PAHs of 0.55 and 1.70µg g^{-1}, respectively. ERM concentrations are 3.16 and 9.60µg g^{-1} for LMW and HMW PAHs, respectively. The ERL and ERM concentrations for total PAH concentration in sediments are 4.022 and 44.792µg g^{-1}, respectively. These concentrations are not actual thresholds of toxicity, but delineate concentration ranges with associated probabilities of toxicity. The ERL is the tenth percentile in the PAH effects data provided by Long *et al.* (1995),

while the ERM is the median, or 50th percentile. Concentrations below the ERL concentration therefore represent a range in which effects would rarely be observed; concentrations equal to or above the ERL concentration, but below the ERM concentration, represent a range in which effects would occasionally occur and concentrations equalling or exceeding the ERM concentration represent a range within which effects could frequently be expected.

The US EPA identified 16 priority low and higher molecular weight PAHs. Nine of these were selected by OSPAR as the focus for their studies and are the 4 to 6 ring compounds of particular importance due to their toxic nature even at very low concentrations. OSPAR CEMP EAC benchmark concentrations (OSPAR, 2009c) have been developed for the nine OSPAR priority PAHs plus naphthalene and dibenzothiophenes (DBT).

Information on the source of PAHs in sediments may be obtained from a study of the alkyl homologues (*e.g.* methyl, ethyl etc. substitution) and parent compound distributions and concentrations. Sediments contaminated with petrogenic material normally contain a predominance of alkylated PAHs, particularly within the LMW range, whereas pyrogenic PAHs comprise mostly HMW unalkylated parent compounds.

E.3 Sediment Metal Concentrations

Metals are generally persistent and at elevated concentrations most are toxic to varying degrees. Many metals such as copper, zinc and chromium are readily bioaccumulated meaning that they are absorbed and stored in organisms over time leading to potential high concentrations capable of causing lethal and sub-lethal toxic effects in benthic organisms even when found in apparently low concentrations in sediment. Metal concentrations in uncontaminated marine sediments generally exceed those found in overlying seawater by three to five orders of magnitude (Bryan & Langston, 1992), since the buffering effects of saline water cause many metals to be rapidly precipitated. Furthermore, dissolved metals are readily scavenged from the water column by organic coatings and iron and manganese coatings found on the surface of fine sediment particles. Consequently, fresh waters that are metal enriched by terrestrial runoff tend to deposit much of their metal load in estuarine or near coastal sediments. Ecological impacts attributable to anthropogenic metal contamination in non-coastal marine environments are often somewhat limited in geographical range close to the point of their origin (Rygg, 1985).

Several metals are found in high concentrations in drilling muds and produced water. Some of these metals are added intentionally to drilling muds as metal salts or organo-metallic compounds whilst others are present as trace impurities in major mud ingredients, particularly barite and clay. Those metals most characteristic of contamination of the sediment with drilling muds or cuttings are barium, chromium, lead and zinc (Neff, 2005), but this may vary depending upon the specific constituents of the muds. By far the most abundant metal in most drilling muds is barium, found in the form of barite ($BaSO_4$). In exceptional cases, fine-grained marine sediments may naturally contain in excess of 1000µg g^{-1} barium, but this figure may be greatly enhanced by contamination of sediments with drilling muds containing up to 450mg g^{-1} barium (Neff, 2005). Due to its low solubility and the fact that it is not toxic in its sulphate form (Gerrard *et al.*, 1999), elevated barium concentrations are rarely of toxicological concern. However, monitoring sediment barium concentrations can provide information regarding the extent to which drill cuttings have been transported from their point of origin.

When considering the results of the sediment metal determinations it should be borne in mind that speciation (the particular forms, or species, of any given metal that exist in a sample), sediment granulometry and partitioning of metals between water and sediment phases all affect bioavailability and therefore toxicity. Even if a metal is present at above normal concentrations, it does not necessarily follow that the metal will produce ecologically deleterious effects, particularly if it is present in an insoluble or relatively low toxicity form. Historically, a wide range of different extraction techniques have been employed that were intended to provide an estimate of the concentrations of metals in marine sediments that may be available to the biota. One of the

most commonly used methods of modelling metal bioavailability is extraction of oxic (surficial) sediments with weak acids (*e.g.* 1M nitric acid) since most anthropogenic metal contaminants show a much higher affinity to fine particulate matter than the coarse fraction by the presence of organic matter and clay minerals. These techniques have been shown to produce results that correlate closely with metal burdens in the tissues of benthic organisms (Luoma & Davis, 1983; Bryan & Langston, 1992). However, the extent to which a particular method of extracting metals from sediments reflects their bioavailability is still not well understood, and the debate regarding which methods may be most appropriate is ongoing.

Total sediment metal concentrations have historically been the preferred measurement for offshore surveys. Whilst these provide little information regarding concentrations of metals that may be bioavailable, since they involve total dissolution of the sediment, they are; however, useful for comparisons between surveys and will give an indication of whether or not sediments are contaminated. There is a growing body of data that provides broad figures for the total concentrations of many metals likely to be found in uncontaminated marine sediments (see OSPAR, 2005). Baseline figures may therefore be compared to these data in order to assess whether sediments in an area may have been anthropogenically contaminated prior to any works being carried out. Where elevated concentrations of metals are found, results may be compared to existing sediment metal toxicity data in order to assess whether particular metals may be exerting a toxicological effect on benthic communities (see Buchman, 2008).

E.4 Metabarcoding

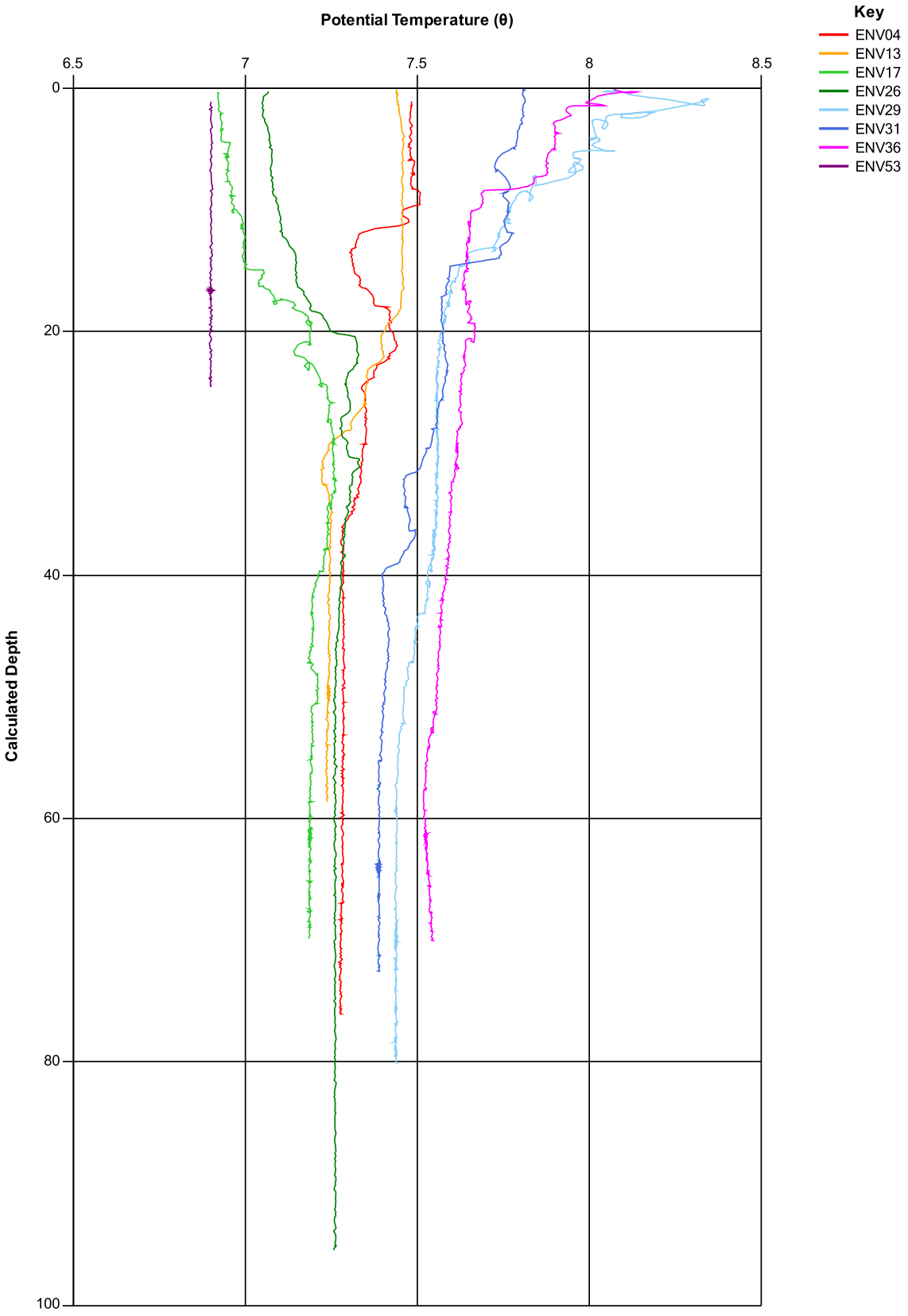
In addition to traditional methods used in this survey, sediment and water metabarcoding acts to increase assessments of important components of biodiversity that may be neglected due to the difficulty of taxonomic identification using conventional morphological approaches. DNA biodiversity monitoring provides additional information about the sediment biodiversity of the bacteria and fauna within the survey area. Bacteria are a useful indicator of water quality due to species diversity and ability to respond to changing environmental conditions (Lemke *et al.*, 1997).

E.5 Macrofaunal Analyses

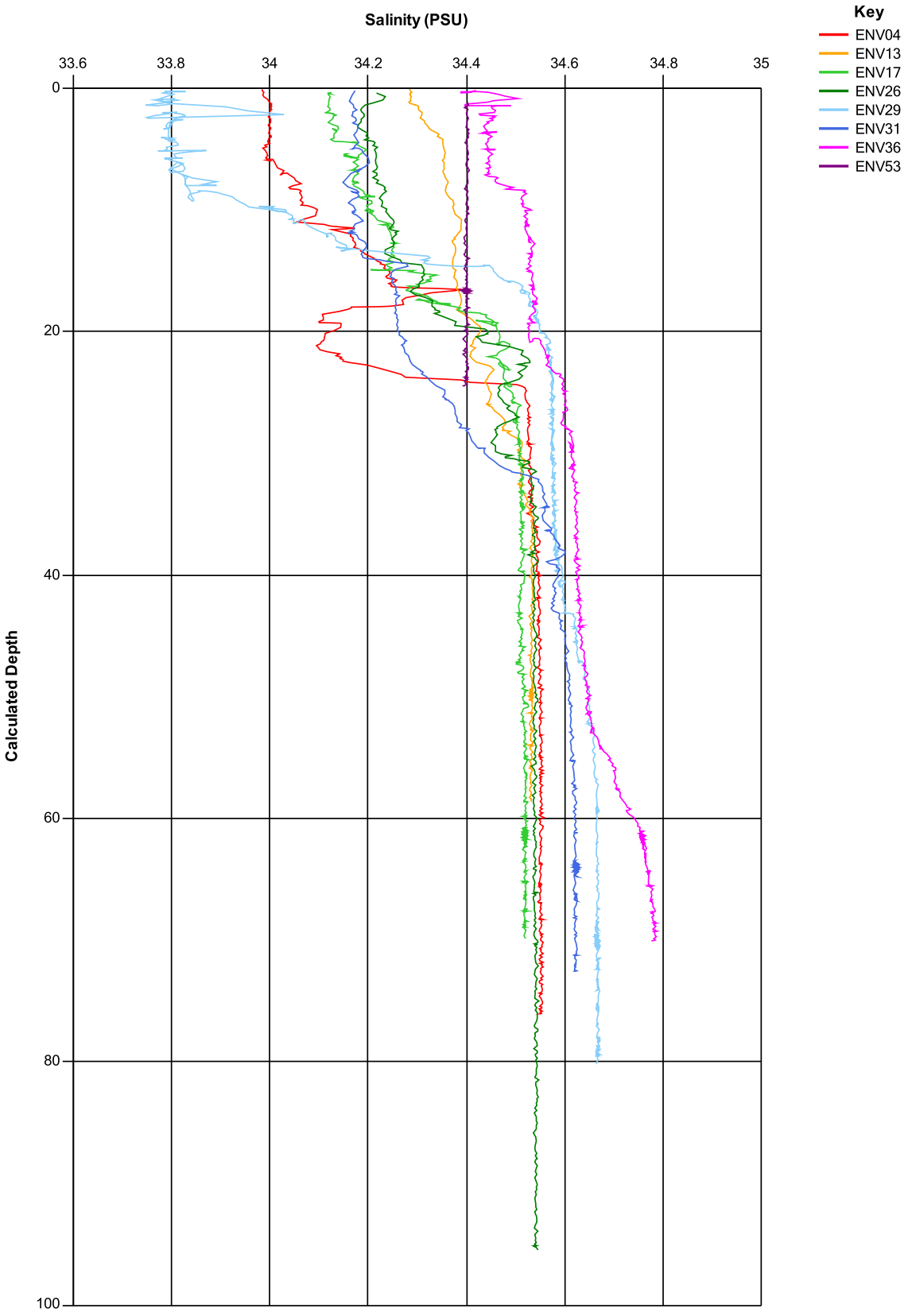
The macrofaunal investigation in this survey is designed to provide a description of the benthic infauna and how it varies across the survey area. Marine benthic invertebrate communities have been shown to be sensitive to environmental change, particularly environmental degradation as a result of anthropogenic contamination (Davies *et al.*, 1984; Warwick & Clarke, 1991). Analysis of faunal data sets may therefore provide insight into any changes resulting from point source pollutants and disturbance.

APPENDIX F CTD PROFILES

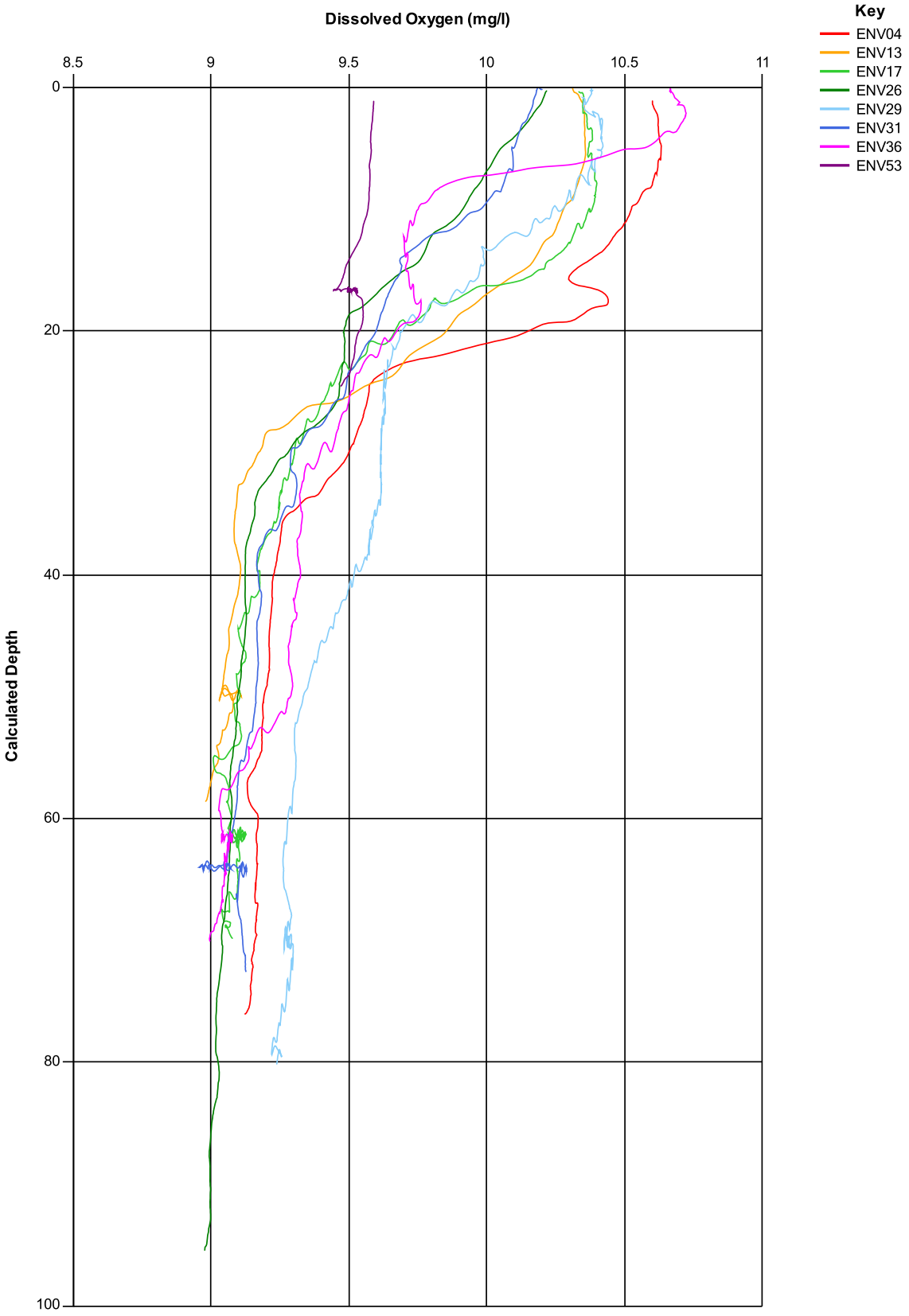
APPENDIX F CTD PROFILES



APPENDIX F CTD PROFILES



APPENDIX F CTD PROFILES



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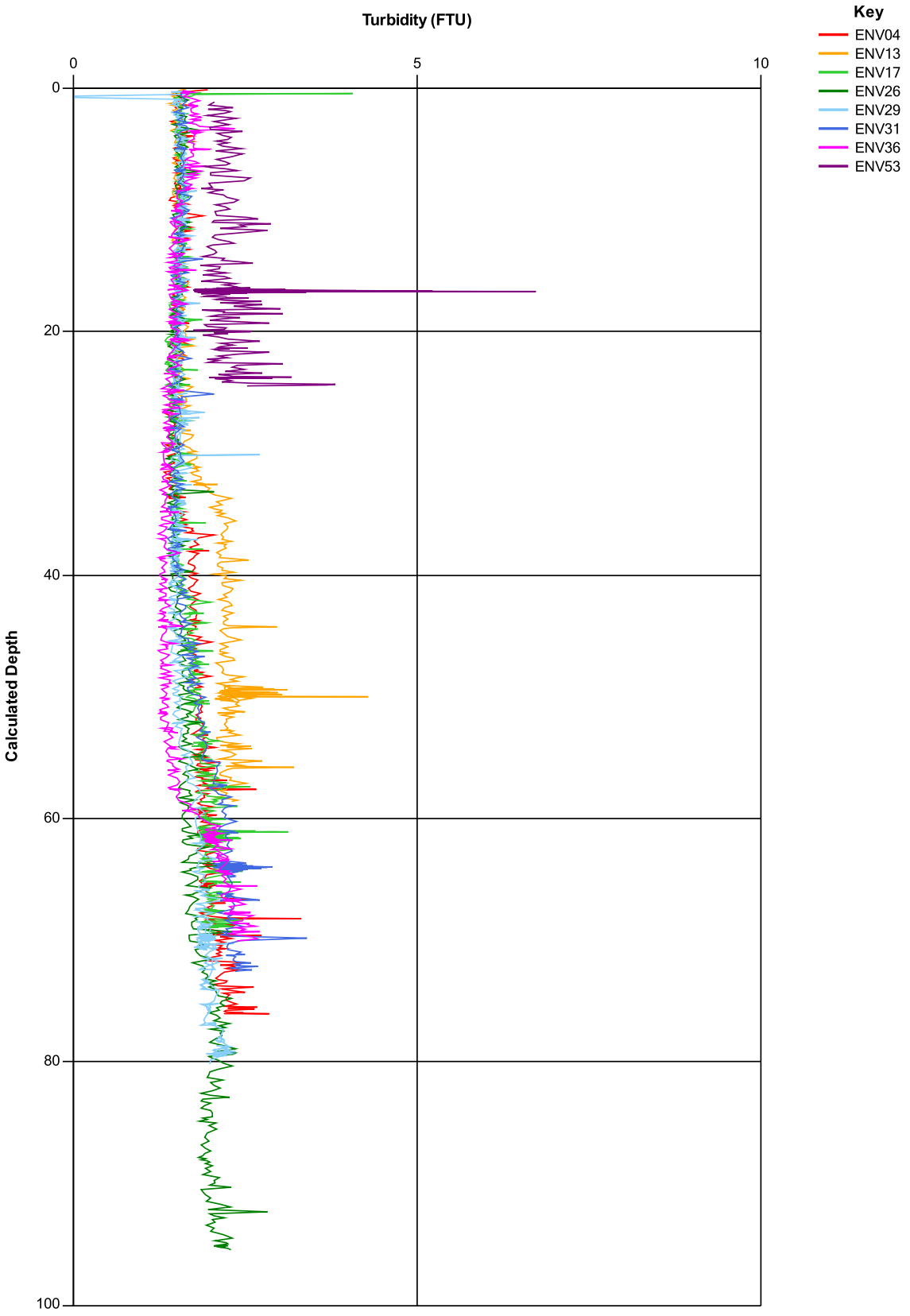

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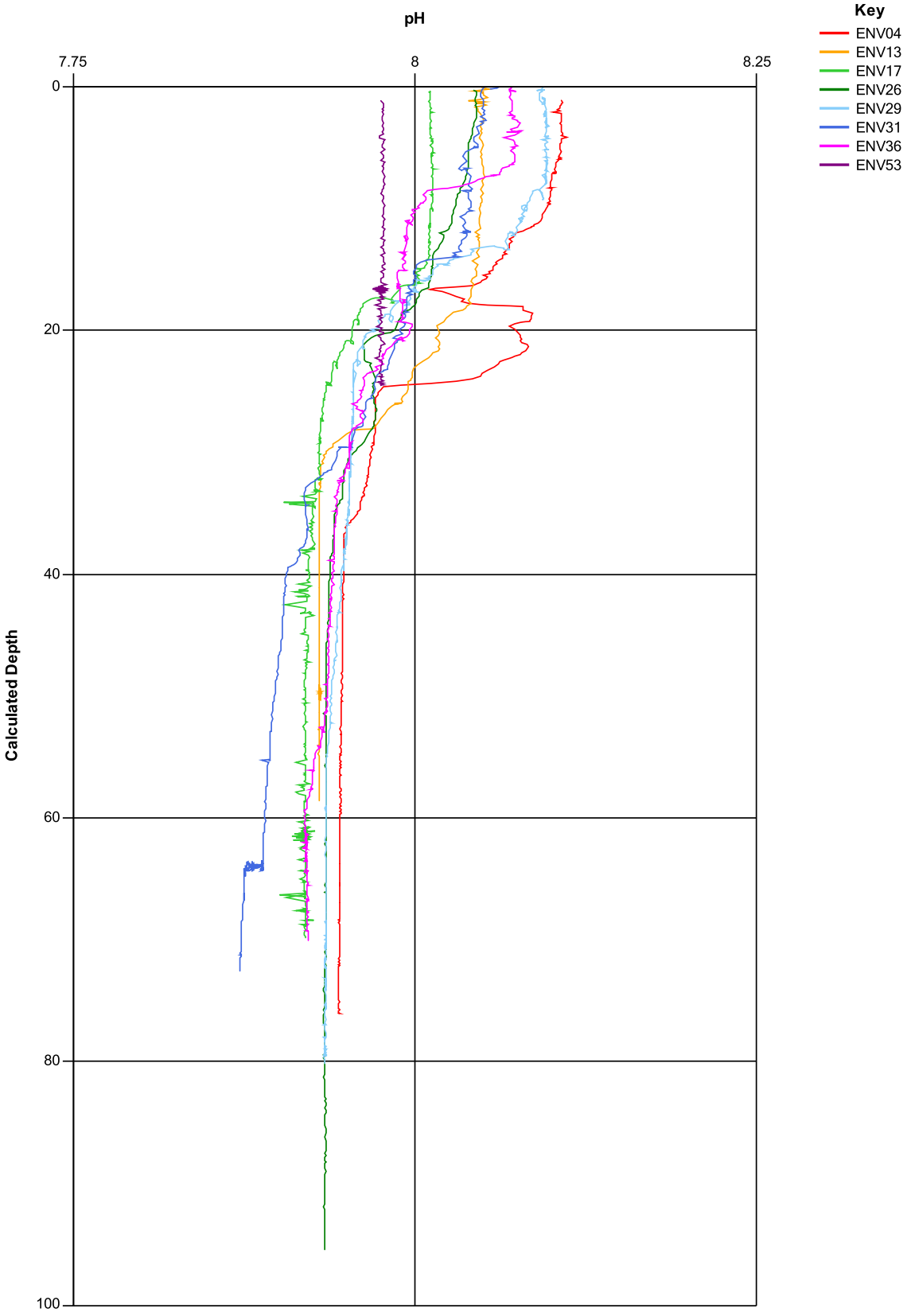
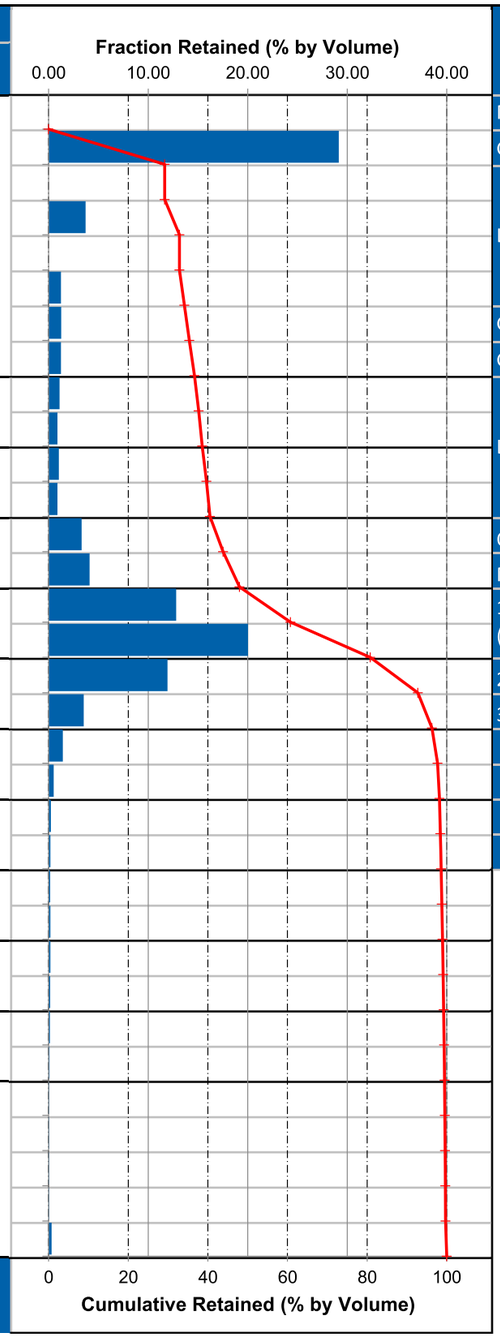


APPENDIX G PARTICLE SIZE ANALYSIS

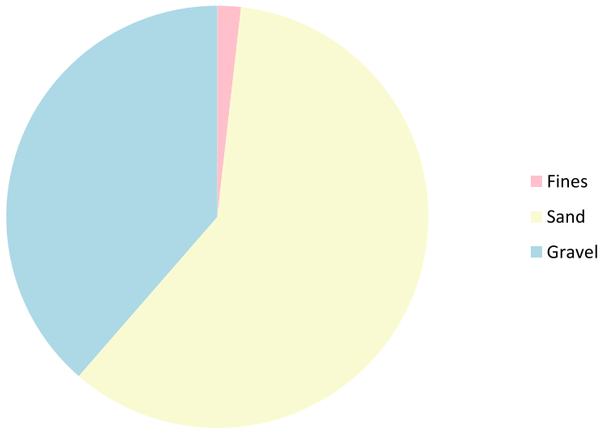
APPENDIX G PARTICLE SIZE ANALYSIS

ENV01				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
45254.83	-5.50	0.00	0.00	
32000.00	-5.00	29.16	29.16	
22627.42	-4.50	0.00	29.16	
16000.00	-4.00	3.72	32.88	Pebble
11313.71	-3.50	0.00	32.88	
8000.00	-3.00	1.23	34.11	
5656.85	-2.50	1.26	35.37	
4000.00	-2.00	1.24	36.61	
2828.43	-1.50	1.09	37.71	Granule
2000.00	-1.00	0.89	38.59	
1414.21	-0.50	1.03	39.63	Very coarse sand
1000.00	0.00	0.90	40.52	
707.11	0.50	3.31	43.83	Coarse sand
500.00	1.00	4.11	47.94	
353.55	1.50	12.81	60.75	Medium sand
250.00	2.00	20.03	80.78	
176.78	2.50	11.95	92.73	Fine sand
125.00	3.00	3.53	96.26	
88.39	3.50	1.44	97.70	Very fine sand
62.50	4.00	0.50	98.20	
44.19	4.50	0.22	98.41	Coarse silt
31.25	5.00	0.18	98.59	
22.10	5.50	0.16	98.75	Medium silt
15.63	6.00	0.17	98.92	
11.05	6.50	0.17	99.09	Fine silt
7.81	7.00	0.15	99.24	
5.52	7.50	0.13	99.37	Very fine silt
3.91	8.00	0.09	99.46	
2.76	8.50	0.07	99.53	Clay
1.95	9.00	0.05	99.58	
1.38	9.50	0.06	99.64	
0.98	10.00	0.06	99.70	
<1.0	>10	0.30	100.00	



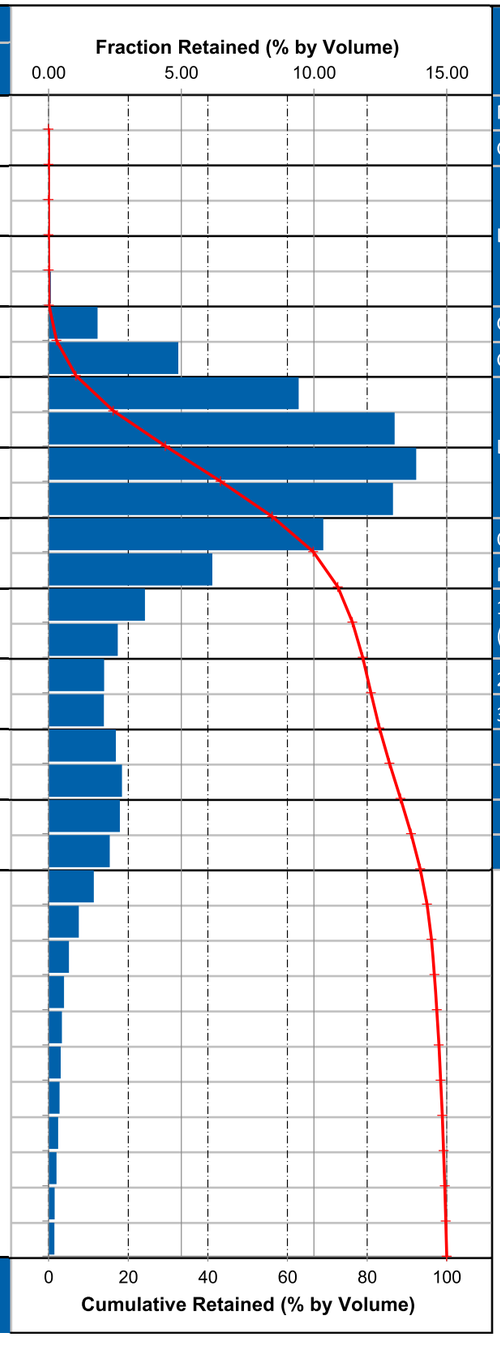
Method of Moments			
Geometric	Mean (µm)	1649.30	Wentworth:
Logarithmic	Mean (Phi)	-0.72	Very coarse sand
	Sorting	3.39	Very poor
	Skewness	-0.19	Symmetrical
	Kurtosis	2.09	Platykurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	1591.29	Wentworth:
Logarithmic	Mean (Phi)	-0.67	Very coarse sand
	Sorting	3.09	Very poor
	Skewness	-0.65	Very coarse
	Kurtosis	0.49	Very platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.08	472.88	Medium sand
1st Local Maxima (Mode)	-5.00	32000.00	Pebble
2nd Local Maxima	2.00	250.00	Medium sand
3rd Local Maxima	-2.50	5656.85	Pebble

Classification		Composition	
Modified Folk	Sandy gravel	Fines	1.80%
EUNIS Folk	Coarse sediments	Sand	59.60%
Distribution	Multimodal	Gravel	38.60%



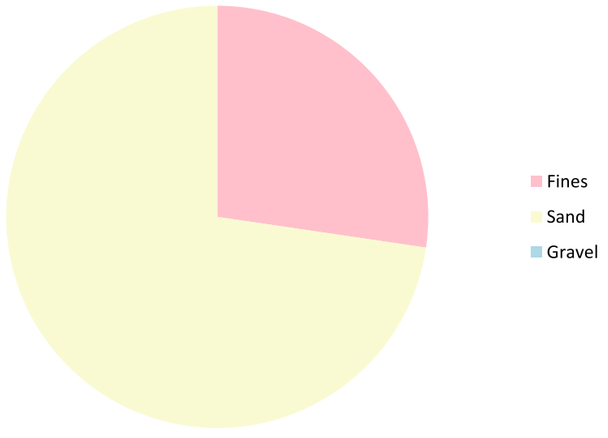
APPENDIX G PARTICLE SIZE ANALYSIS

ENV02				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.01	
1414.21	-0.50	0.03	0.04	Very coarse sand
1000.00	0.00	0.08	0.12	
707.11	0.50	1.84	1.96	Coarse sand
500.00	1.00	4.89	6.85	
353.55	1.50	9.42	16.27	Medium sand
250.00	2.00	13.04	29.31	
176.78	2.50	13.85	43.16	Fine sand
125.00	3.00	12.98	56.14	
88.39	3.50	10.35	66.48	Very fine sand
62.50	4.00	6.17	72.65	
44.19	4.50	3.63	76.29	Coarse silt
31.25	5.00	2.60	78.89	
22.10	5.50	2.09	80.98	Medium silt
15.63	6.00	2.08	83.06	
11.05	6.50	2.53	85.60	Fine silt
7.81	7.00	2.76	88.36	
5.52	7.50	2.68	91.04	Very fine silt
3.91	8.00	2.30	93.34	
2.76	8.50	1.70	95.05	Clay
1.95	9.00	1.13	96.18	
1.38	9.50	0.76	96.94	
0.98	10.00	0.58	97.52	
0.69	10.50	0.50	98.02	
0.49	11.00	0.45	98.47	
0.35	11.50	0.41	98.89	
0.24	12.00	0.36	99.25	
0.17	12.50	0.30	99.55	
0.12	13.00	0.23	99.78	
<0.12	>13	0.22	100.00	



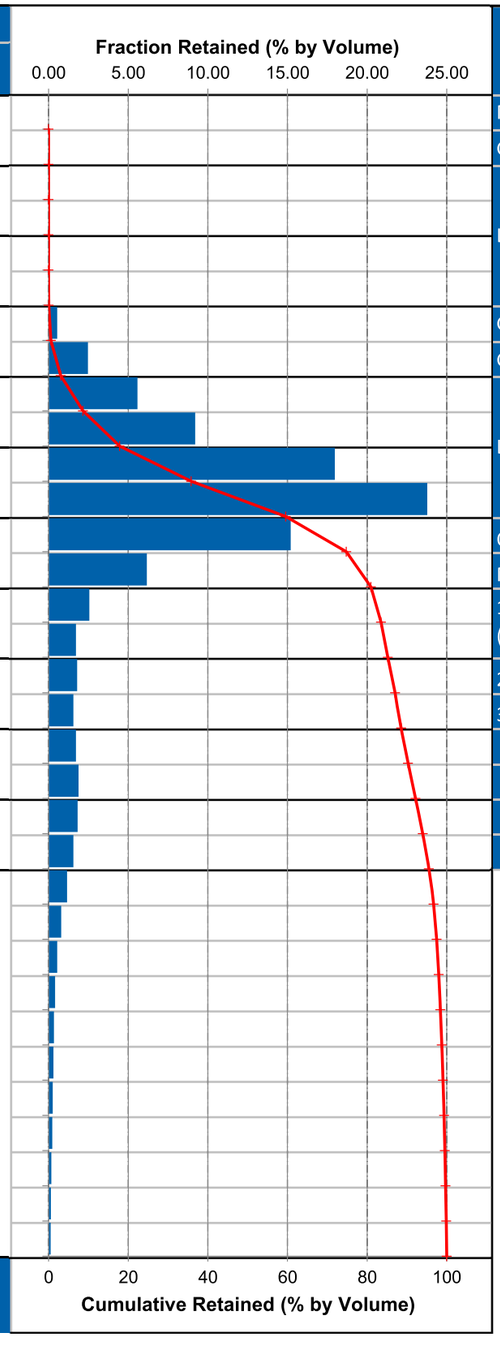
Method of Moments			
Geometric	Mean (µm)	88.44	Wentworth:
Logarithmic	Mean (Phi)	3.50	Very fine sand
	Sorting	2.46	Very poor
	Skewness	1.39	Very fine
	Kurtosis	4.69	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	89.73	Wentworth:
Logarithmic	Mean (Phi)	3.48	Very fine sand
	Sorting	2.34	Very poor
	Skewness	0.47	Very fine
	Kurtosis	1.26	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.76	147.25	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	27.30%
EUNIS Folk	Mud and sandy mud	Sand	72.60%
Distribution	Bimodal	Gravel	0.00%



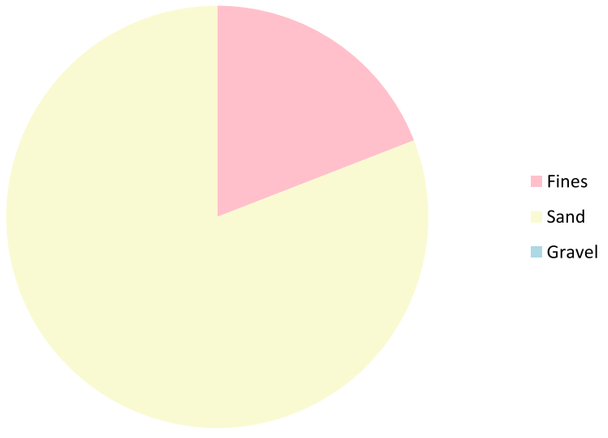
APPENDIX G PARTICLE SIZE ANALYSIS

ENV03				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.02	0.03	
707.11	0.50	0.54	0.57	Coarse sand
500.00	1.00	2.47	3.04	
353.55	1.50	5.57	8.62	Medium sand
250.00	2.00	9.21	17.83	
176.78	2.50	17.98	35.80	Fine sand
125.00	3.00	23.78	59.58	
88.39	3.50	15.20	74.78	Very fine sand
62.50	4.00	6.16	80.94	
44.19	4.50	2.56	83.50	Coarse silt
31.25	5.00	1.71	85.21	
22.10	5.50	1.80	87.01	Medium silt
15.63	6.00	1.56	88.56	
11.05	6.50	1.72	90.28	Fine silt
7.81	7.00	1.88	92.16	
5.52	7.50	1.81	93.98	Very fine silt
3.91	8.00	1.55	95.53	
2.76	8.50	1.16	96.69	Clay
1.95	9.00	0.79	97.48	
1.38	9.50	0.54	98.02	
0.98	10.00	0.40	98.42	
0.69	10.50	0.34	98.76	
0.49	11.00	0.30	99.06	
0.35	11.50	0.26	99.33	
0.24	12.00	0.23	99.55	
0.17	12.50	0.18	99.73	
0.12	13.00	0.14	99.87	
<0.12	>13	0.13	100.00	



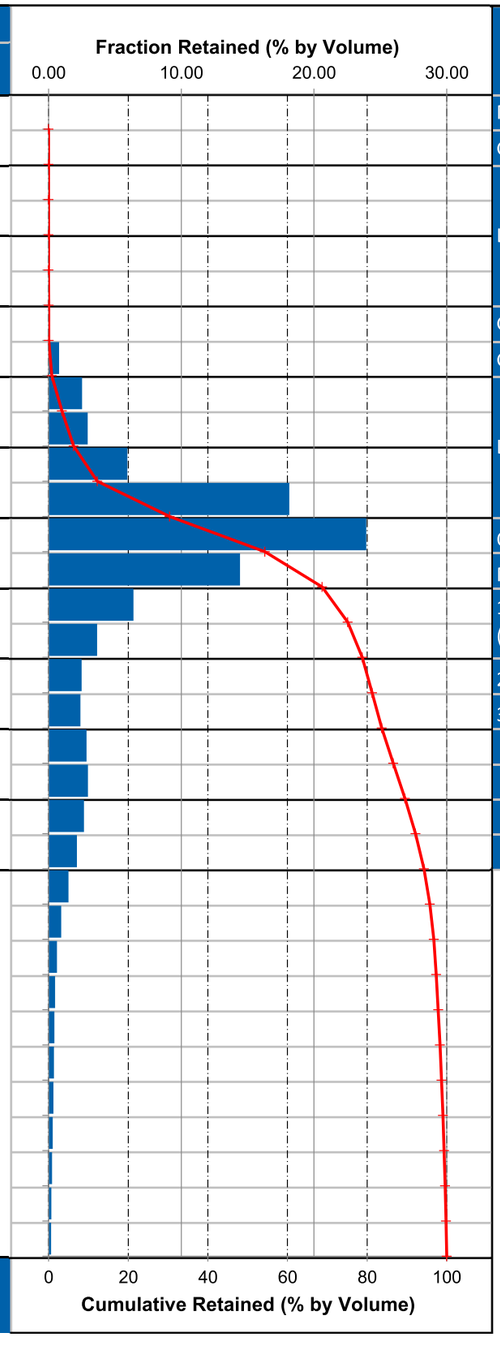
Method of Moments			
Geometric	Mean (µm)	99.56	Wentworth:
Logarithmic	Mean (Phi)	3.33	Very fine sand
	Sorting	2.02	Very poor
	Skewness	1.93	Very fine
	Kurtosis	7.19	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	115.40	Wentworth:
Logarithmic	Mean (Phi)	3.12	Very fine sand
	Sorting	1.69	Poor
	Skewness	0.43	Very fine
	Kurtosis	2.07	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.80	143.73	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	19.10%
EUNIS Folk	Sand and muddy sand	Sand	80.90%
Distribution	Bimodal	Gravel	0.00%



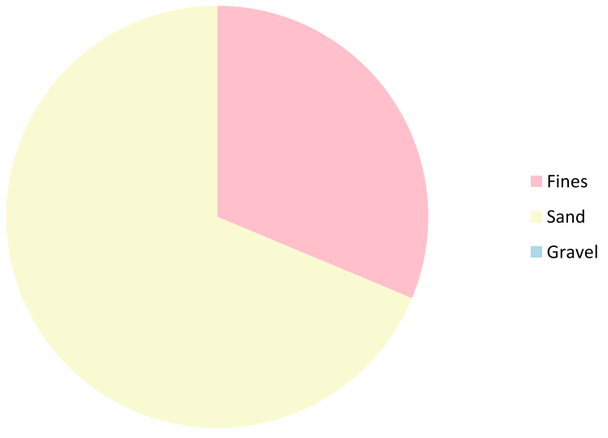
APPENDIX G PARTICLE SIZE ANALYSIS

ENV04				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.02	0.03	Coarse sand
500.00	1.00	0.80	0.83	
353.55	1.50	2.52	3.35	Medium sand
250.00	2.00	2.95	6.30	
176.78	2.50	5.94	12.24	Fine sand
125.00	3.00	18.13	30.37	
88.39	3.50	23.93	54.30	Very fine sand
62.50	4.00	14.43	68.73	
44.19	4.50	6.39	75.12	Coarse silt
31.25	5.00	3.66	78.77	
22.10	5.50	2.49	81.27	Medium silt
15.63	6.00	2.40	83.67	
11.05	6.50	2.86	86.54	Fine silt
7.81	7.00	2.96	89.50	
5.52	7.50	2.67	92.16	Very fine silt
3.91	8.00	2.13	94.29	
2.76	8.50	1.49	95.78	Clay
1.95	9.00	0.96	96.73	
1.38	9.50	0.63	97.37	
0.98	10.00	0.49	97.85	
0.69	10.50	0.43	98.28	
0.49	11.00	0.40	98.68	
0.35	11.50	0.36	99.04	
0.24	12.00	0.32	99.36	
0.17	12.50	0.25	99.61	
0.12	13.00	0.20	99.81	
<0.12	>13	0.19	100.00	



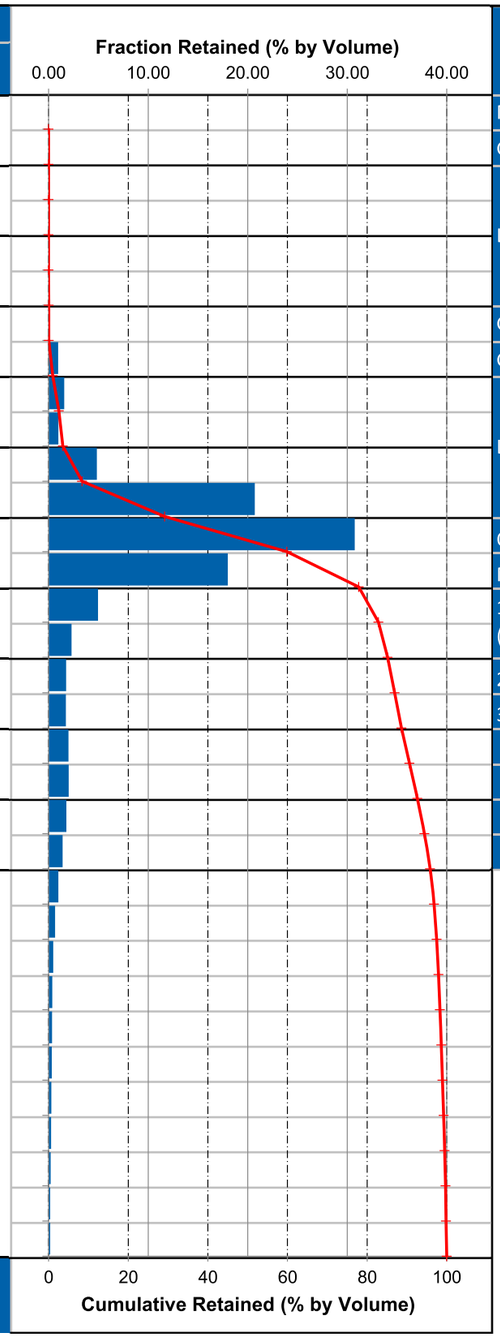
Method of Moments			
Geometric	Mean (µm)	60.36	Wentworth:
Logarithmic	Mean (Phi)	4.05	Coarse silt
	Sorting	2.04	Very poor
	Skewness	1.65	Very fine
	Kurtosis	6.05	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	61.48	Wentworth:
Logarithmic	Mean (Phi)	4.02	Coarse silt
	Sorting	1.84	Poor
	Skewness	0.51	Very fine
	Kurtosis	1.62	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.41	94.07	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	31.30%
EUNIS Folk	Mud and sandy mud	Sand	68.70%
Distribution	Bimodal	Gravel	0.00%



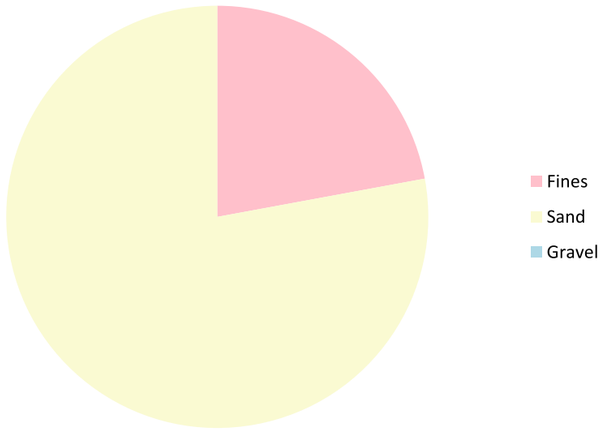
APPENDIX G PARTICLE SIZE ANALYSIS

ENV05				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.05	0.06	Coarse sand
500.00	1.00	0.95	1.01	
353.55	1.50	1.58	2.59	Medium sand
250.00	2.00	0.97	3.56	
176.78	2.50	4.86	8.42	Fine sand
125.00	3.00	20.71	29.13	
88.39	3.50	30.75	59.89	Very fine sand
62.50	4.00	18.00	77.89	
44.19	4.50	4.96	82.85	Coarse silt
31.25	5.00	2.29	85.14	
22.10	5.50	1.77	86.91	Medium silt
15.63	6.00	1.73	88.64	
11.05	6.50	2.00	90.64	Fine silt
7.81	7.00	2.01	92.65	
5.52	7.50	1.77	94.43	Very fine silt
3.91	8.00	1.40	95.83	
2.76	8.50	0.99	96.82	Clay
1.95	9.00	0.66	97.48	
1.38	9.50	0.46	97.94	
0.98	10.00	0.37	98.31	
0.69	10.50	0.34	98.65	
0.49	11.00	0.31	98.96	
0.35	11.50	0.28	99.24	
0.24	12.00	0.25	99.49	
0.17	12.50	0.20	99.69	
0.12	13.00	0.16	99.85	
<0.12	>13	0.15	100.00	



Method of Moments			
Geometric	Mean (µm)	70.83	Wentworth:
Logarithmic	Mean (Phi)	3.82	Very fine sand
	Sorting	1.78	Poor
	Skewness	2.21	Very fine
	Kurtosis	9.00	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	82.98	Wentworth:
Logarithmic	Mean (Phi)	3.59	Very fine sand
	Sorting	1.36	Poor
	Skewness	0.47	Very fine
	Kurtosis	2.23	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.34	98.81	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

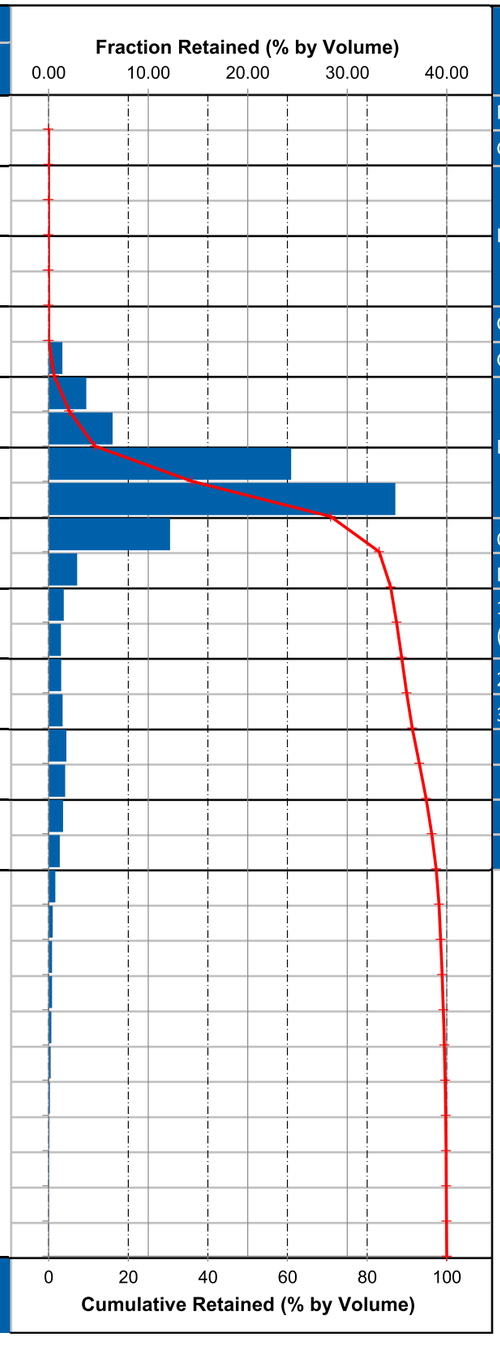
Classification		Composition	
Modified Folk	Muddy sand	Fines	22.10%
EUNIS Folk	Mud and sandy mud	Sand	77.90%
Distribution	Multimodal	Gravel	0.00%



APPENDIX G PARTICLE SIZE ANALYSIS

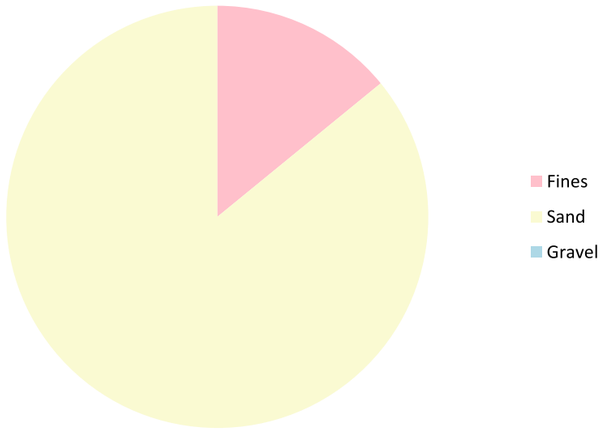
ENV06

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.00	0.01	
1414.21	-0.50	0.00	0.01	Very coarse sand
1000.00	0.00	0.00	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	1.39	1.40	
353.55	1.50	3.78	5.18	Medium sand
250.00	2.00	6.42	11.60	
176.78	2.50	24.37	35.96	Fine sand
125.00	3.00	34.84	70.80	
88.39	3.50	12.21	83.01	Very fine sand
62.50	4.00	2.88	85.88	
44.19	4.50	1.53	87.41	Coarse silt
31.25	5.00	1.25	88.66	
22.10	5.50	1.26	89.93	Medium silt
15.63	6.00	1.42	91.34	
11.05	6.50	1.77	93.12	Fine silt
7.81	7.00	1.68	94.79	
5.52	7.50	1.45	96.25	Very fine silt
3.91	8.00	1.12	97.37	
2.76	8.50	0.68	98.05	Clay
1.95	9.00	0.41	98.46	
1.38	9.50	0.36	98.81	
0.98	10.00	0.34	99.15	
0.69	10.50	0.27	99.42	
0.49	11.00	0.19	99.61	
0.35	11.50	0.13	99.75	
0.24	12.00	0.09	99.84	
0.17	12.50	0.07	99.90	
0.12	13.00	0.05	99.95	
<0.12	>13	0.05	100.00	



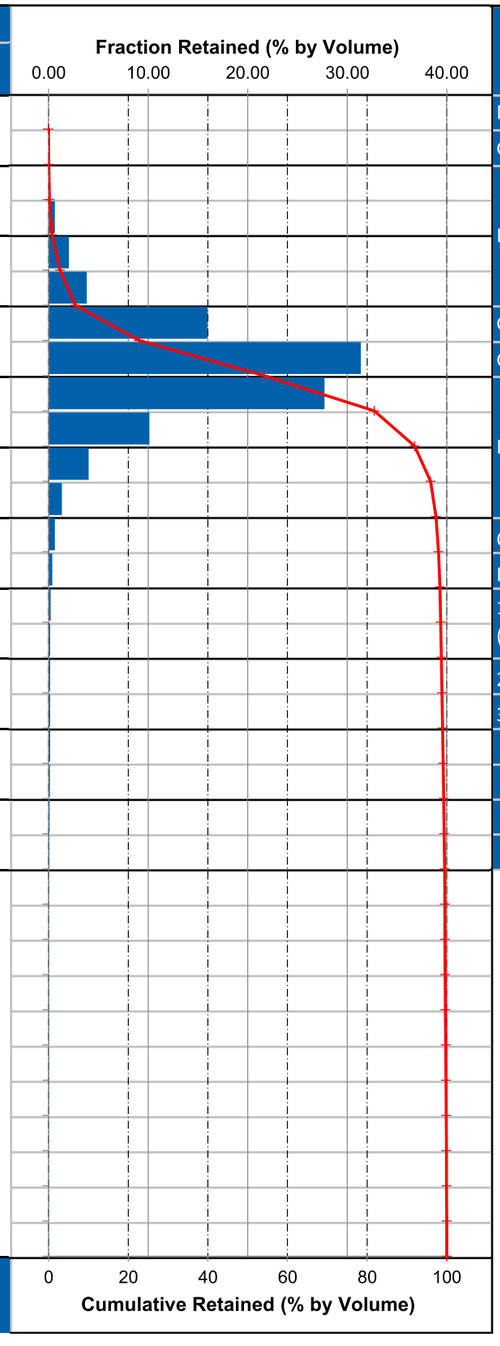
Method of Moments			
Geometric	Mean (µm)	114.89	Wentworth:
Logarithmic	Mean (Phi)	3.12	Very fine sand
	Sorting	1.68	Poor
	Skewness	2.37	Very fine
	Kurtosis	9.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	141.45	Wentworth:
Logarithmic	Mean (Phi)	2.82	Fine sand
	Sorting	1.24	Poor
	Skewness	0.39	Very fine
	Kurtosis	2.56	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.70	153.74	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	14.10%
EUNIS Folk	Sand and muddy sand	Sand	85.90%
Distribution	Bimodal	Gravel	0.00%



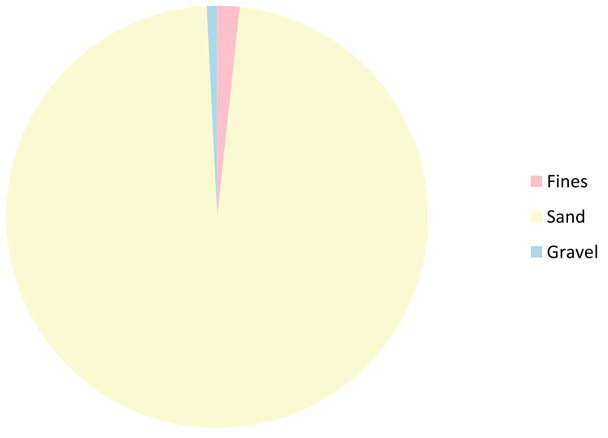
APPENDIX G PARTICLE SIZE ANALYSIS

ENV07				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.05	0.05	
2828.43	-1.50	0.16	0.21	Granule
2000.00	-1.00	0.63	0.84	
1414.21	-0.50	2.04	2.88	Very coarse sand
1000.00	0.00	3.84	6.72	
707.11	0.50	15.99	22.71	Coarse sand
500.00	1.00	31.37	54.08	
353.55	1.50	27.71	81.79	Medium sand
250.00	2.00	10.12	91.91	
176.78	2.50	4.03	95.94	Fine sand
125.00	3.00	1.34	97.28	
88.39	3.50	0.64	97.92	Very fine sand
62.50	4.00	0.36	98.28	
44.19	4.50	0.21	98.49	Coarse silt
31.25	5.00	0.16	98.65	
22.10	5.50	0.15	98.80	Medium silt
15.63	6.00	0.15	98.95	
11.05	6.50	0.15	99.10	Fine silt
7.81	7.00	0.14	99.24	
5.52	7.50	0.12	99.35	Very fine silt
3.91	8.00	0.09	99.44	
2.76	8.50	0.06	99.50	Clay
1.95	9.00	0.05	99.55	
1.38	9.50	0.05	99.61	
0.98	10.00	0.06	99.67	
0.69	10.50	0.07	99.74	
0.49	11.00	0.06	99.80	
0.35	11.50	0.05	99.85	
0.24	12.00	0.05	99.90	
0.17	12.50	0.04	99.94	
0.12	13.00	0.03	99.97	
<0.12	>13	0.03	100.00	



Method of Moments			
Geometric	Mean (µm)	483.26	Wentworth:
Logarithmic	Mean (Phi)	1.05	Medium sand
	Sorting	1.14	Poor
	Skewness	4.22	Very fine
	Kurtosis	34.80	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	519.52	Wentworth:
Logarithmic	Mean (Phi)	0.94	Coarse sand
	Sorting	0.72	Moderate
	Skewness	0.07	Symmetrical
	Kurtosis	1.27	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.93	523.06	Coarse sand
1st Local Maxima (Mode)	1.00	500.00	Coarse sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

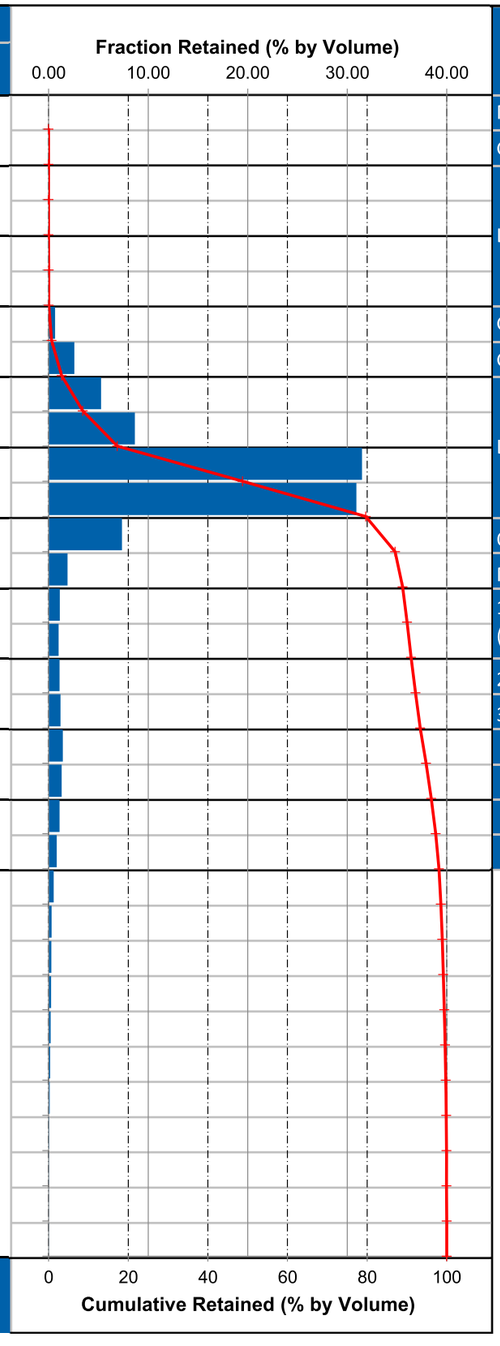
Classification		Composition	
Modified Folk	Sand	Fines	1.70%
EUNIS Folk	Sand and muddy sand	Sand	97.40%
Distribution	Unimodal	Gravel	0.80%



APPENDIX G PARTICLE SIZE ANALYSIS

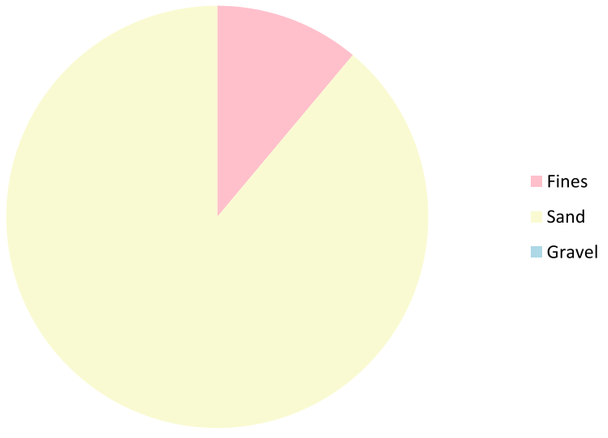
ENV08

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.02	0.03	Very coarse sand
1000.00	0.00	0.03	0.06	
707.11	0.50	0.66	0.72	Coarse sand
500.00	1.00	2.59	3.31	
353.55	1.50	5.27	8.58	Medium sand
250.00	2.00	8.67	17.25	
176.78	2.50	31.48	48.74	Fine sand
125.00	3.00	30.92	79.66	
88.39	3.50	7.38	87.04	Very fine sand
62.50	4.00	1.89	88.93	
44.19	4.50	1.12	90.05	Coarse silt
31.25	5.00	1.01	91.05	
22.10	5.50	1.10	92.16	Medium silt
15.63	6.00	1.19	93.35	
11.05	6.50	1.44	94.79	Fine silt
7.81	7.00	1.32	96.11	
5.52	7.50	1.10	97.22	Very fine silt
3.91	8.00	0.83	98.04	
2.76	8.50	0.50	98.55	Clay
1.95	9.00	0.31	98.86	
1.38	9.50	0.27	99.13	
0.98	10.00	0.26	99.39	
0.69	10.50	0.21	99.60	
0.49	11.00	0.15	99.76	
0.35	11.50	0.10	99.86	
0.24	12.00	0.06	99.92	
0.17	12.50	0.04	99.96	
0.12	13.00	0.02	99.98	
<0.12	>13	0.02	100.00	



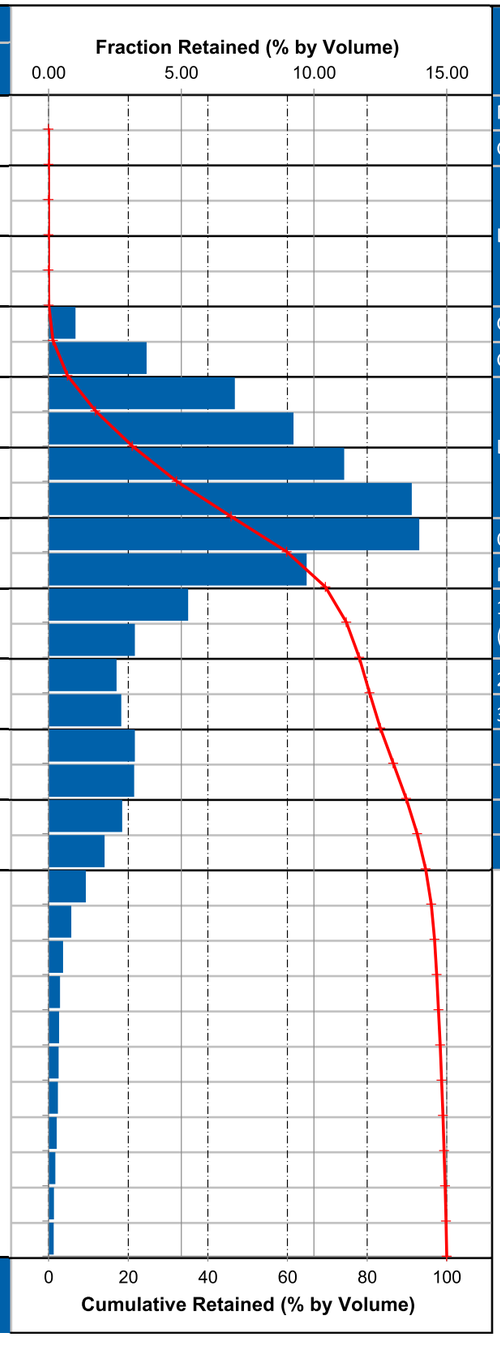
Method of Moments			
Geometric	Mean (µm)	139.71	Wentworth:
Logarithmic	Mean (Phi)	2.84	Fine sand
	Sorting	1.57	Poor
	Skewness	2.48	Very fine
	Kurtosis	10.71	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	167.15	Wentworth:
Logarithmic	Mean (Phi)	2.58	Fine sand
	Sorting	1.16	Poor
	Skewness	0.32	Very fine
	Kurtosis	2.77	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.52	174.29	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.10%
EUNIS Folk	Sand and muddy sand	Sand	88.90%
Distribution	Bimodal	Gravel	0.00%



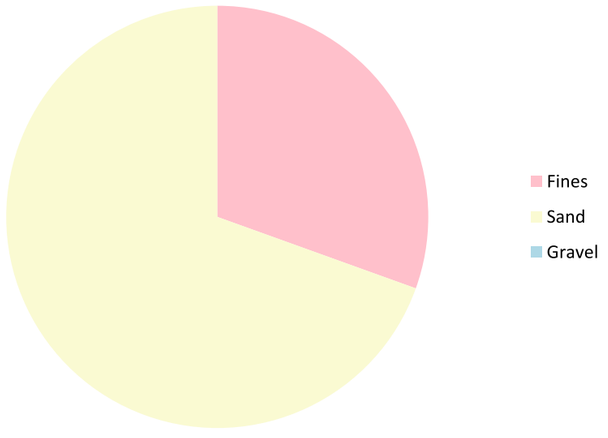
APPENDIX G PARTICLE SIZE ANALYSIS

ENV09				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.05	0.05	
707.11	0.50	1.02	1.07	Coarse sand
500.00	1.00	3.70	4.77	
353.55	1.50	7.02	11.79	Medium sand
250.00	2.00	9.23	21.02	
176.78	2.50	11.13	32.15	Fine sand
125.00	3.00	13.68	45.83	
88.39	3.50	13.96	59.79	Very fine sand
62.50	4.00	9.72	69.52	
44.19	4.50	5.25	74.77	Coarse silt
31.25	5.00	3.25	78.02	
22.10	5.50	2.57	80.59	Medium silt
15.63	6.00	2.74	83.33	
11.05	6.50	3.25	86.58	Fine silt
7.81	7.00	3.22	89.81	
5.52	7.50	2.77	92.58	Very fine silt
3.91	8.00	2.11	94.69	
2.76	8.50	1.40	96.09	Clay
1.95	9.00	0.85	96.94	
1.38	9.50	0.55	97.49	
0.98	10.00	0.43	97.92	
0.69	10.50	0.40	98.32	
0.49	11.00	0.38	98.70	
0.35	11.50	0.35	99.05	
0.24	12.00	0.31	99.36	
0.17	12.50	0.25	99.61	
0.12	13.00	0.20	99.81	
<0.12	>13	0.19	100.00	



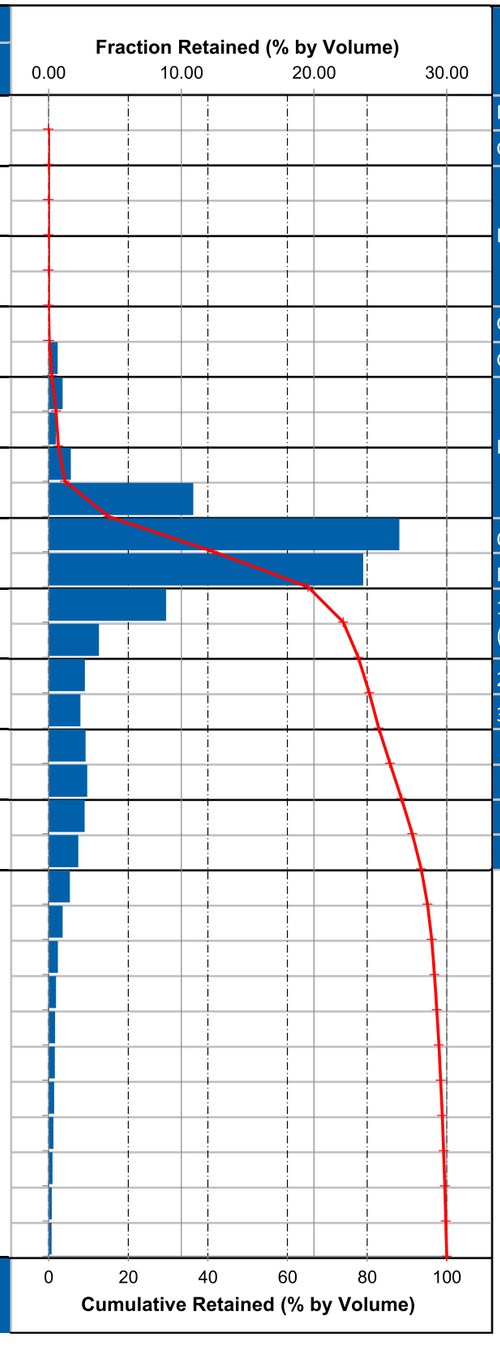
Method of Moments			
Geometric	Mean (µm)	76.85	Wentworth:
Logarithmic	Mean (Phi)	3.70	Very fine sand
	Sorting	2.27	Very poor
	Skewness	1.32	Very fine
	Kurtosis	4.88	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	79.10	Wentworth:
Logarithmic	Mean (Phi)	3.66	Very fine sand
	Sorting	2.17	Very poor
	Skewness	0.37	Very fine
	Kurtosis	1.23	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.15	112.71	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	30.50%
EUNIS Folk	Mud and sandy mud	Sand	69.50%
Distribution	Bimodal	Gravel	0.00%



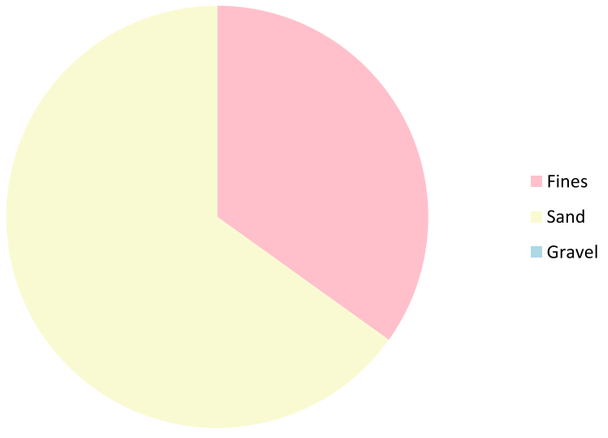
APPENDIX G PARTICLE SIZE ANALYSIS

ENV10				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.12	0.13	Coarse sand
500.00	1.00	0.68	0.81	
353.55	1.50	1.06	1.87	Medium sand
250.00	2.00	0.57	2.43	
176.78	2.50	1.68	4.12	Fine sand
125.00	3.00	10.90	15.02	
88.39	3.50	26.42	41.44	Very fine sand
62.50	4.00	23.71	65.15	
44.19	4.50	8.84	73.99	Coarse silt
31.25	5.00	3.80	77.80	
22.10	5.50	2.73	80.53	Medium silt
15.63	6.00	2.40	82.93	
11.05	6.50	2.79	85.71	Fine silt
7.81	7.00	2.92	88.63	
5.52	7.50	2.71	91.34	Very fine silt
3.91	8.00	2.24	93.58	
2.76	8.50	1.60	95.18	Clay
1.95	9.00	1.05	96.23	
1.38	9.50	0.71	96.94	
0.98	10.00	0.56	97.49	
0.69	10.50	0.50	97.99	
0.49	11.00	0.46	98.45	
0.35	11.50	0.42	98.87	
0.24	12.00	0.37	99.24	
0.17	12.50	0.30	99.54	
0.12	13.00	0.23	99.77	
<0.12	>13	0.23	100.00	



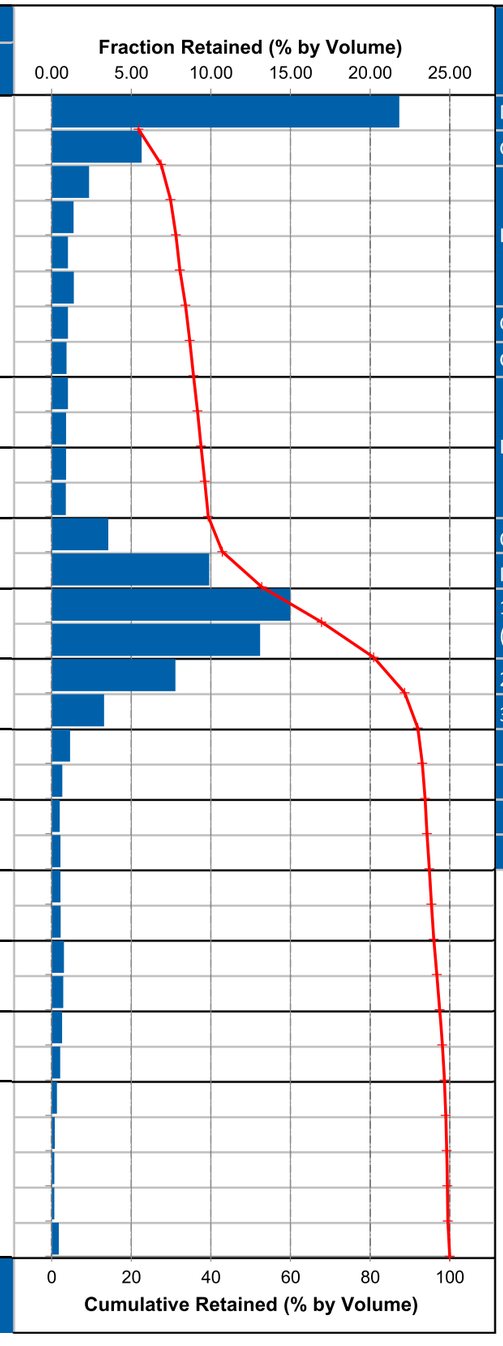
Method of Moments			
Geometric	Mean (µm)	49.92	Wentworth:
Logarithmic	Mean (Phi)	4.32	Coarse silt
	Sorting	1.98	Poor
	Skewness	1.78	Very fine
	Kurtosis	6.55	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	50.86	Wentworth:
Logarithmic	Mean (Phi)	4.30	Coarse silt
	Sorting	1.69	Poor
	Skewness	0.60	Very fine
	Kurtosis	1.68	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.68	77.99	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Muddy sand	Fines	34.90%
EUNIS Folk	Mud and sandy mud	Sand	65.10%
Distribution	Multimodal	Gravel	0.00%



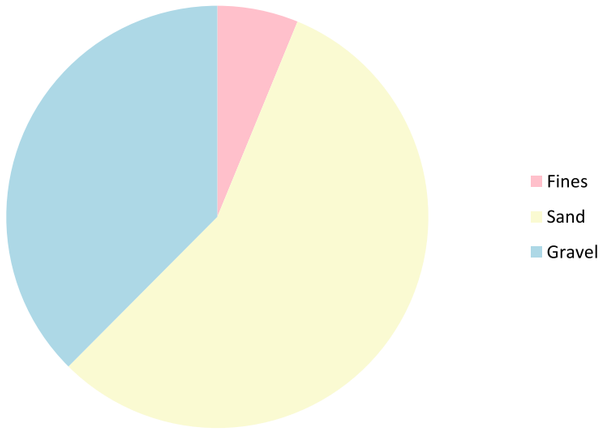
APPENDIX G PARTICLE SIZE ANALYSIS

ENV11				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
45254.83	-5.50	21.83	21.83	Pebble
32000.00	-5.00	5.65	27.48	
22627.42	-4.50	2.36	29.84	
16000.00	-4.00	1.38	31.22	
11313.71	-3.50	1.02	32.24	
8000.00	-3.00	1.40	33.64	
5656.85	-2.50	1.03	34.67	
4000.00	-2.00	0.94	35.61	
2828.43	-1.50	1.03	36.63	Granule
2000.00	-1.00	0.91	37.55	
1414.21	-0.50	0.91	38.45	Very coarse sand
1000.00	0.00	0.89	39.35	
707.11	0.50	3.56	42.91	Coarse sand
500.00	1.00	9.89	52.80	
353.55	1.50	14.98	67.79	Medium sand
250.00	2.00	13.10	80.89	
176.78	2.50	7.78	88.67	Fine sand
125.00	3.00	3.29	91.96	
88.39	3.50	1.15	93.12	Very fine sand
62.50	4.00	0.67	93.79	
44.19	4.50	0.51	94.30	Coarse silt
31.25	5.00	0.55	94.85	
22.10	5.50	0.56	95.41	Medium silt
15.63	6.00	0.57	95.98	
11.05	6.50	0.77	96.75	Fine silt
7.81	7.00	0.73	97.48	
5.52	7.50	0.66	98.14	Very fine silt
3.91	8.00	0.54	98.68	
2.76	8.50	0.33	99.01	Clay
1.95	9.00	0.20	99.21	
1.38	9.50	0.18	99.39	
0.98	10.00	0.16	99.55	
<1.0	>10	0.45	100.00	



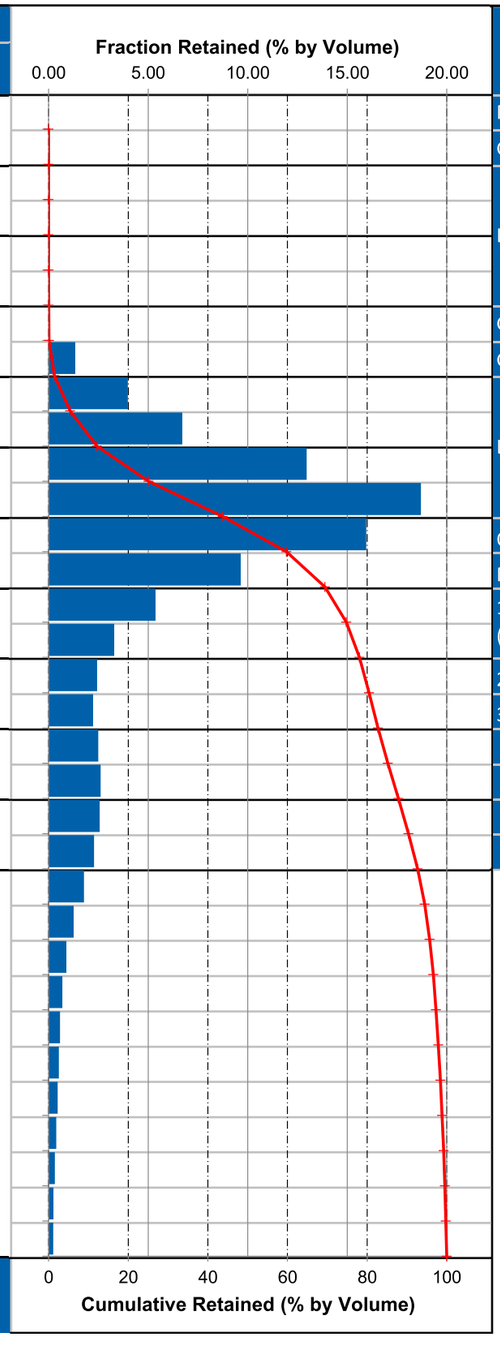
Method of Moments			
Geometric	Mean (µm)	1559.66	Wentworth:
Logarithmic	Mean (Phi)	-0.64	Very coarse sand
	Sorting	3.78	Very poor
	Skewness	0.02	Symmetrical
	Kurtosis	2.40	Platykurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	1813.06	Wentworth:
Logarithmic	Mean (Phi)	-0.86	Very coarse sand
	Sorting	3.63	Very poor
	Skewness	-0.44	Very coarse
	Kurtosis	0.65	Very platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.86	551.62	Coarse sand
1st Local Maxima (Mode)	-5.50	45254.83	Pebble
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-3.00	8000.00	Pebble

Classification		Composition	
Modified Folk	Sandy gravel	Fines	6.20%
EUNIS Folk	Coarse sediments	Sand	56.20%
Distribution	Multimodal	Gravel	37.50%



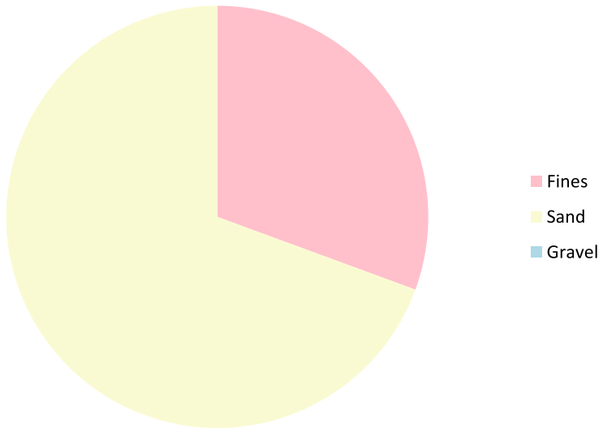
APPENDIX G PARTICLE SIZE ANALYSIS

ENV12				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.03	0.04	
707.11	0.50	0.04	0.08	Coarse sand
500.00	1.00	1.34	1.42	
353.55	1.50	3.98	5.40	Medium sand
250.00	2.00	6.72	12.12	
176.78	2.50	12.96	25.08	Fine sand
125.00	3.00	18.70	43.78	
88.39	3.50	15.96	59.74	Very fine sand
62.50	4.00	9.65	69.39	
44.19	4.50	5.38	74.77	Coarse silt
31.25	5.00	3.29	78.06	
22.10	5.50	2.43	80.49	Medium silt
15.63	6.00	2.24	82.73	
11.05	6.50	2.49	85.23	Fine silt
7.81	7.00	2.61	87.83	
5.52	7.50	2.56	90.40	Very fine silt
3.91	8.00	2.29	92.69	
2.76	8.50	1.78	94.46	Clay
1.95	9.00	1.25	95.72	
1.38	9.50	0.89	96.61	
0.98	10.00	0.69	97.29	
0.69	10.50	0.58	97.87	
0.49	11.00	0.51	98.38	
0.35	11.50	0.45	98.83	
0.24	12.00	0.39	99.22	
0.17	12.50	0.31	99.53	
0.12	13.00	0.24	99.77	
<0.12	>13	0.23	100.00	



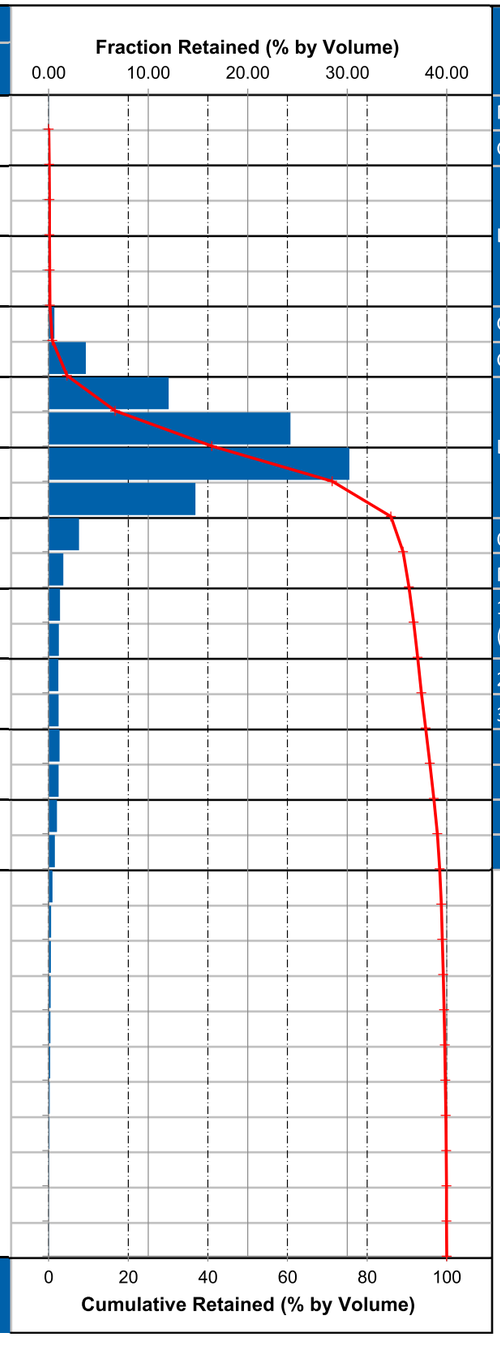
Method of Moments			
Geometric	Mean (µm)	66.28	Wentworth:
Logarithmic	Mean (Phi)	3.92	Very fine sand
	Sorting	2.28	Very poor
	Skewness	1.53	Very fine
	Kurtosis	5.18	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	68.58	Wentworth:
Logarithmic	Mean (Phi)	3.87	Very fine sand
	Sorting	2.13	Very poor
	Skewness	0.51	Very fine
	Kurtosis	1.46	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.19	109.21	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	30.60%
EUNIS Folk	Mud and sandy mud	Sand	69.40%
Distribution	Bimodal	Gravel	0.00%



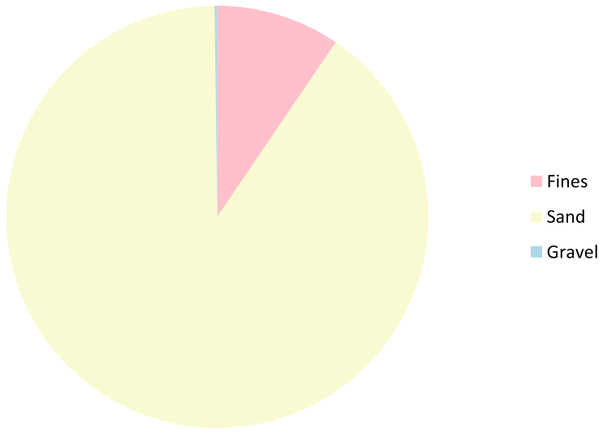
APPENDIX G PARTICLE SIZE ANALYSIS

ENV13				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.05	0.05	Pebble
4000.00	-2.00	0.08	0.13	
2828.43	-1.50	0.06	0.19	Granule
2000.00	-1.00	0.03	0.22	
1414.21	-0.50	0.05	0.27	Very coarse sand
1000.00	0.00	0.06	0.34	
707.11	0.50	0.58	0.92	Coarse sand
500.00	1.00	3.73	4.65	
353.55	1.50	12.07	16.72	Medium sand
250.00	2.00	24.30	41.02	
176.78	2.50	30.21	71.23	Fine sand
125.00	3.00	14.75	85.98	
88.39	3.50	3.05	89.03	Very fine sand
62.50	4.00	1.48	90.52	
44.19	4.50	1.14	91.66	Coarse silt
31.25	5.00	1.02	92.68	
22.10	5.50	0.97	93.66	Medium silt
15.63	6.00	1.01	94.67	
11.05	6.50	1.11	95.78	Fine silt
7.81	7.00	1.00	96.78	
5.52	7.50	0.84	97.62	Very fine silt
3.91	8.00	0.64	98.25	
2.76	8.50	0.40	98.65	Clay
1.95	9.00	0.25	98.91	
1.38	9.50	0.22	99.12	
0.98	10.00	0.21	99.34	
0.69	10.50	0.18	99.52	
0.49	11.00	0.15	99.67	
0.35	11.50	0.11	99.78	
0.24	12.00	0.08	99.86	
0.17	12.50	0.06	99.92	
0.12	13.00	0.04	99.96	
<0.12	>13	0.04	100.00	



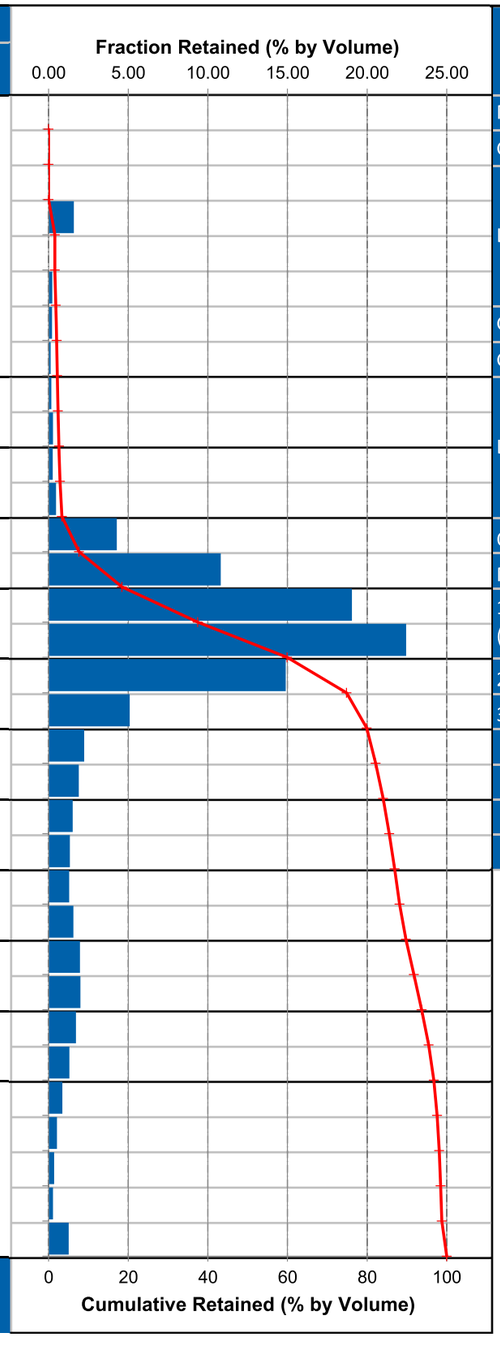
Method of Moments			
Geometric	Mean (µm)	181.18	Wentworth:
Logarithmic	Mean (Phi)	2.46	Fine sand
	Sorting	1.59	Poor
	Skewness	2.70	Very fine
	Kurtosis	12.64	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	220.09	Wentworth:
Logarithmic	Mean (Phi)	2.18	Fine sand
	Sorting	1.14	Poor
	Skewness	0.32	Very fine
	Kurtosis	2.20	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.15	225.53	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.50%
EUNIS Folk	Sand and muddy sand	Sand	90.30%
Distribution	Bimodal	Gravel	0.20%



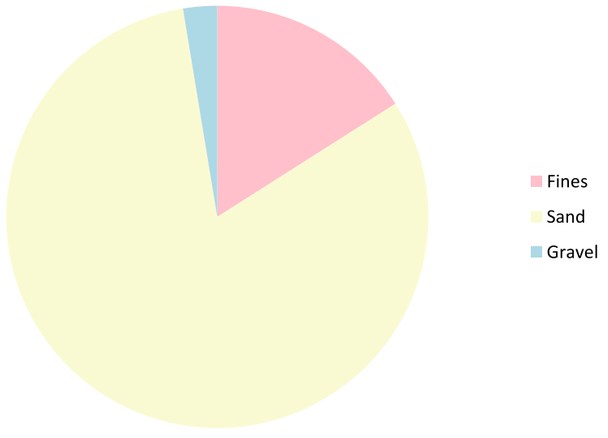
APPENDIX G PARTICLE SIZE ANALYSIS

ENV14				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
45254.83	-5.50	0.00	0.00	
32000.00	-5.00	0.00	0.00	
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	1.59	1.59	Pebble
11313.71	-3.50	0.00	1.59	
8000.00	-3.00	0.23	1.82	
5656.85	-2.50	0.22	2.03	
4000.00	-2.00	0.12	2.16	
2828.43	-1.50	0.18	2.34	Granule
2000.00	-1.00	0.27	2.61	
1414.21	-0.50	0.26	2.86	Very coarse sand
1000.00	0.00	0.47	3.34	
707.11	0.50	4.28	7.62	Coarse sand
500.00	1.00	10.81	18.43	
353.55	1.50	19.05	37.48	Medium sand
250.00	2.00	22.46	59.94	
176.78	2.50	14.88	74.82	Fine sand
125.00	3.00	5.09	79.91	
88.39	3.50	2.24	82.15	Very fine sand
62.50	4.00	1.90	84.05	
44.19	4.50	1.51	85.55	Coarse silt
31.25	5.00	1.34	86.89	
22.10	5.50	1.29	88.18	Medium silt
15.63	6.00	1.56	89.74	
11.05	6.50	1.98	91.72	Fine silt
7.81	7.00	2.00	93.71	
5.52	7.50	1.72	95.43	Very fine silt
3.91	8.00	1.30	96.73	
2.76	8.50	0.86	97.59	Clay
1.95	9.00	0.53	98.12	
1.38	9.50	0.35	98.47	
0.98	10.00	0.27	98.74	
<1.0	>10	1.26	100.00	



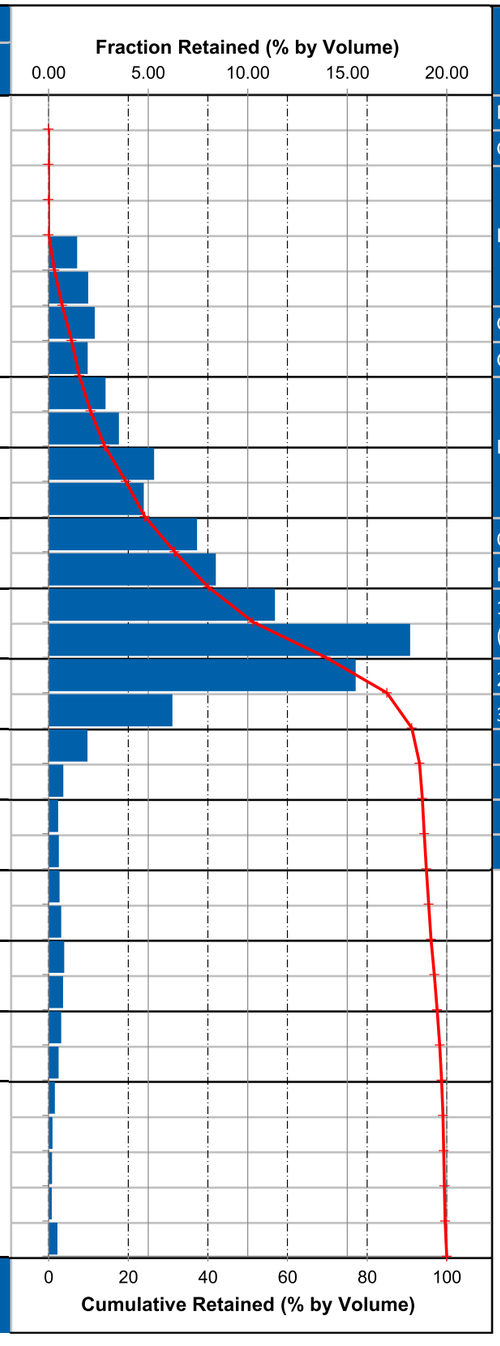
Method of Moments			
Geometric	Mean (µm)	197.86	Wentworth:
Logarithmic	Mean (Phi)	2.34	Fine sand
	Sorting	2.37	Very poor
	Skewness	1.27	Fine
	Kurtosis	6.51	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	214.94	Wentworth:
Logarithmic	Mean (Phi)	2.22	Fine sand
	Sorting	1.86	Poor
	Skewness	0.49	Very fine
	Kurtosis	2.19	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.78	291.44	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-4.00	16000.00	Pebble

Classification		Composition	
Modified Folk	Slightly gravelly muddy sand	Fines	16.00%
EUNIS Folk	Sand and muddy sand	Sand	81.40%
Distribution	Multimodal	Gravel	2.60%



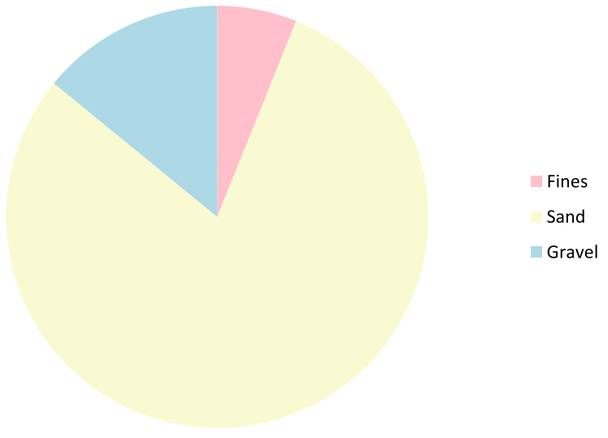
APPENDIX G PARTICLE SIZE ANALYSIS

ENV15				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
45254.83	-5.50	0.00	0.00	
32000.00	-5.00	0.00	0.00	
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	1.43	1.43	
8000.00	-3.00	1.99	3.42	
5656.85	-2.50	2.32	5.74	
4000.00	-2.00	1.96	7.70	
2828.43	-1.50	2.86	10.56	Granule
2000.00	-1.00	3.53	14.09	
1414.21	-0.50	5.31	19.39	Very coarse sand
1000.00	0.00	4.78	24.17	
707.11	0.50	7.45	31.63	Coarse sand
500.00	1.00	8.40	40.03	
353.55	1.50	11.37	51.40	Medium sand
250.00	2.00	18.16	69.56	
176.78	2.50	15.43	84.99	Fine sand
125.00	3.00	6.22	91.21	
88.39	3.50	1.95	93.16	Very fine sand
62.50	4.00	0.73	93.89	
44.19	4.50	0.48	94.36	Coarse silt
31.25	5.00	0.52	94.88	
22.10	5.50	0.55	95.43	Medium silt
15.63	6.00	0.64	96.07	
11.05	6.50	0.78	96.85	Fine silt
7.81	7.00	0.73	97.58	
5.52	7.50	0.63	98.22	Very fine silt
3.91	8.00	0.50	98.71	
2.76	8.50	0.31	99.02	
1.95	9.00	0.19	99.22	
1.38	9.50	0.17	99.39	Clay
0.98	10.00	0.17	99.56	
<1.0	>10	0.44	100.00	



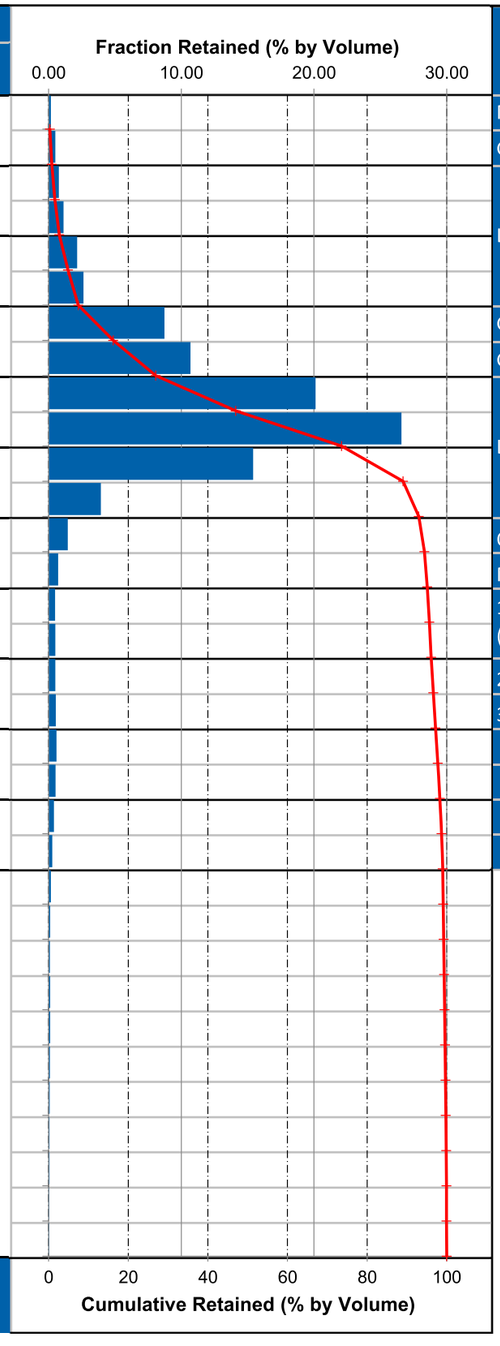
Method of Moments			
Geometric	Mean (µm)	436.64	Wentworth:
Logarithmic	Mean (Phi)	1.20	Medium sand
	Sorting	2.20	Very poor
	Skewness	0.74	Fine
	Kurtosis	6.02	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	490.07	Wentworth:
Logarithmic	Mean (Phi)	1.03	Medium sand
	Sorting	2.00	Poor
	Skewness	-0.21	Coarse
	Kurtosis	1.50	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.44	368.94	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-0.50	1414.21	Very coarse sand
3rd Local Maxima	-2.50	5656.85	Pebble

Classification		Composition	
Modified Folk	Gravelly sand	Fines	6.10%
EUNIS Folk	Coarse sediments	Sand	79.80%
Distribution	Multimodal	Gravel	14.10%



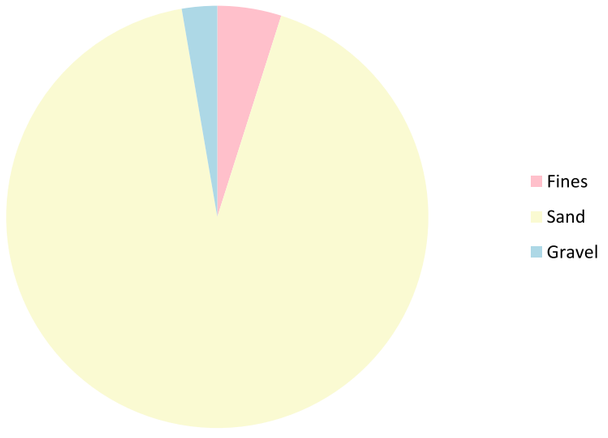
APPENDIX G PARTICLE SIZE ANALYSIS

ENV16				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.17	0.31	Pebble
4000.00	-2.00	0.50	0.82	
2828.43	-1.50	0.77	1.59	Granule
2000.00	-1.00	1.13	2.72	
1414.21	-0.50	2.15	4.86	Very coarse sand
1000.00	0.00	2.62	7.48	
707.11	0.50	8.74	16.22	Coarse sand
500.00	1.00	10.69	26.91	
353.55	1.50	20.12	47.02	Medium sand
250.00	2.00	26.59	73.61	
176.78	2.50	15.41	89.02	Fine sand
125.00	3.00	3.94	92.96	
88.39	3.50	1.44	94.40	Very fine sand
62.50	4.00	0.71	95.12	
44.19	4.50	0.49	95.61	Coarse silt
31.25	5.00	0.50	96.11	
22.10	5.50	0.50	96.61	Medium silt
15.63	6.00	0.55	97.16	
11.05	6.50	0.60	97.76	Fine silt
7.81	7.00	0.52	98.28	
5.52	7.50	0.40	98.68	Very fine silt
3.91	8.00	0.28	98.97	
2.76	8.50	0.17	99.14	Clay
1.95	9.00	0.11	99.25	
1.38	9.50	0.11	99.36	
0.98	10.00	0.12	99.48	
0.69	10.50	0.11	99.59	
0.49	11.00	0.10	99.69	
0.35	11.50	0.09	99.78	
0.24	12.00	0.07	99.85	
0.17	12.50	0.06	99.91	
0.12	13.00	0.04	99.95	
<0.12	>13	0.05	100.00	



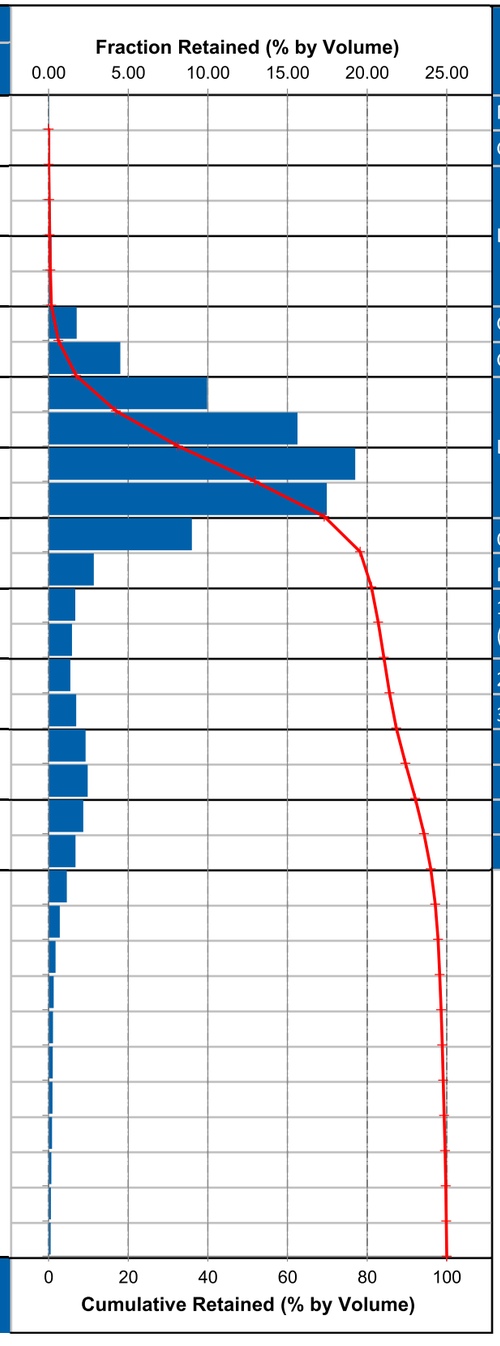
Method of Moments			
Geometric	Mean (µm)	328.03	Wentworth:
Logarithmic	Mean (Phi)	1.61	Medium sand
	Sorting	1.59	Poor
	Skewness	2.26	Very fine
	Kurtosis	14.21	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	363.45	Wentworth:
Logarithmic	Mean (Phi)	1.46	Medium sand
	Sorting	1.13	Poor
	Skewness	-0.04	Symmetrical
	Kurtosis	1.59	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.56	340.10	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	4.90%
EUNIS Folk	Sand and muddy sand	Sand	92.40%
Distribution	Unimodal	Gravel	2.70%



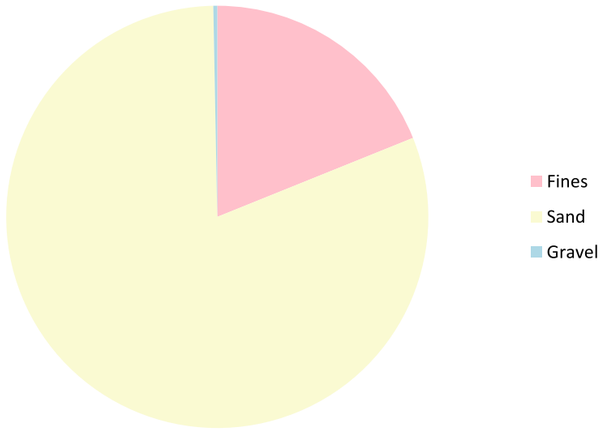
APPENDIX G PARTICLE SIZE ANALYSIS

ENV17				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.04	0.04	Pebble
4000.00	-2.00	0.02	0.07	
2828.43	-1.50	0.09	0.15	Granule
2000.00	-1.00	0.13	0.28	
1414.21	-0.50	0.19	0.47	Very coarse sand
1000.00	0.00	0.21	0.67	
707.11	0.50	1.76	2.44	Coarse sand
500.00	1.00	4.51	6.94	
353.55	1.50	9.96	16.91	Medium sand
250.00	2.00	15.62	32.53	
176.78	2.50	19.26	51.79	Fine sand
125.00	3.00	17.47	69.26	
88.39	3.50	9.00	78.26	Very fine sand
62.50	4.00	2.83	81.10	
44.19	4.50	1.67	82.76	Coarse silt
31.25	5.00	1.46	84.23	
22.10	5.50	1.36	85.59	Medium silt
15.63	6.00	1.73	87.32	
11.05	6.50	2.32	89.64	Fine silt
7.81	7.00	2.45	92.10	
5.52	7.50	2.18	94.27	Very fine silt
3.91	8.00	1.69	95.97	
2.76	8.50	1.15	97.11	Clay
1.95	9.00	0.70	97.81	
1.38	9.50	0.44	98.25	
0.98	10.00	0.32	98.57	
0.69	10.50	0.28	98.85	
0.49	11.00	0.26	99.11	
0.35	11.50	0.24	99.35	
0.24	12.00	0.21	99.56	
0.17	12.50	0.17	99.73	
0.12	13.00	0.14	99.87	
<0.12	>13	0.13	100.00	



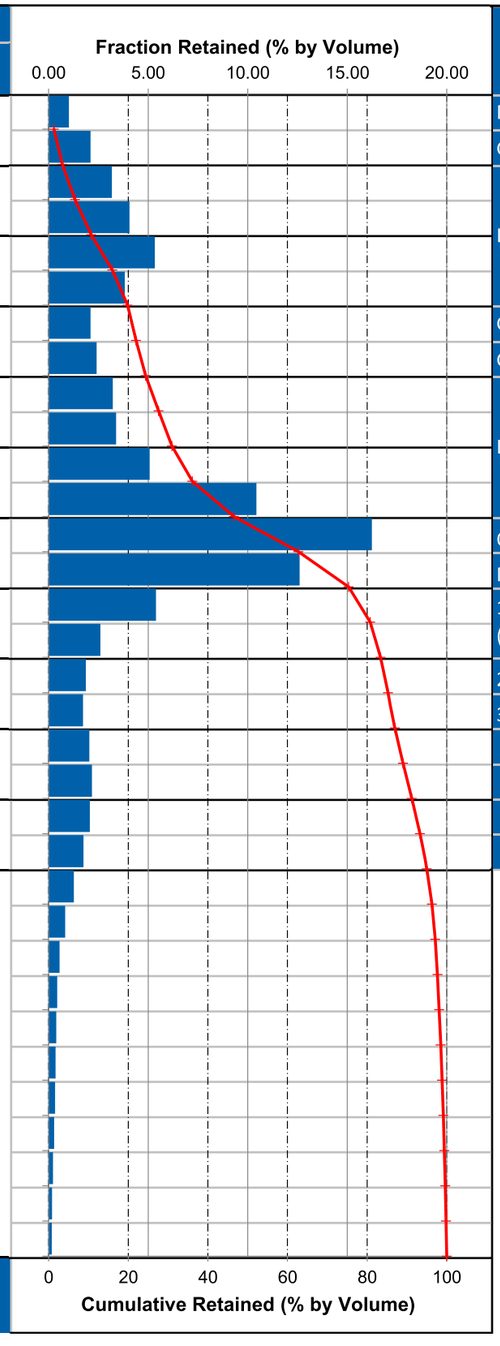
Method of Moments			
Geometric	Mean (µm)	121.16	Wentworth:
Logarithmic	Mean (Phi)	3.04	Very fine sand
	Sorting	2.17	Very poor
	Skewness	1.71	Very fine
	Kurtosis	6.18	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	129.99	Wentworth:
Logarithmic	Mean (Phi)	2.94	Fine sand
	Sorting	1.92	Poor
	Skewness	0.47	Very fine
	Kurtosis	1.82	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.45	182.56	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	18.90%
EUNIS Folk	Sand and muddy sand	Sand	80.80%
Distribution	Bimodal	Gravel	0.30%



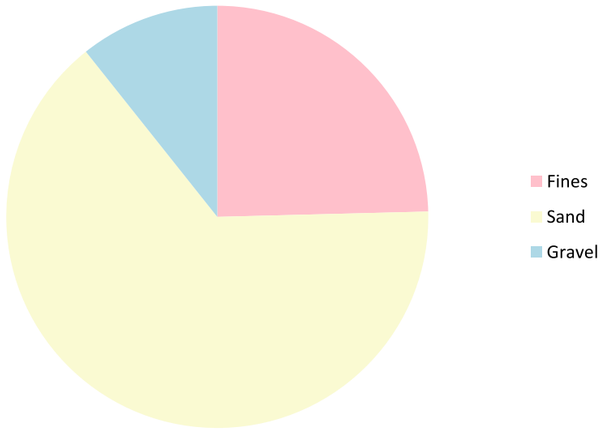
APPENDIX G PARTICLE SIZE ANALYSIS

ENV18				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	1.03	1.35	Pebble
4000.00	-2.00	2.11	3.46	
2828.43	-1.50	3.18	6.63	Granule
2000.00	-1.00	4.06	10.70	
1414.21	-0.50	5.34	16.04	Very coarse sand
1000.00	0.00	3.82	19.86	
707.11	0.50	2.11	21.97	Coarse sand
500.00	1.00	2.41	24.38	
353.55	1.50	3.23	27.61	Medium sand
250.00	2.00	3.39	31.01	
176.78	2.50	5.08	36.09	Fine sand
125.00	3.00	10.44	46.53	
88.39	3.50	16.24	62.77	Very fine sand
62.50	4.00	12.61	75.37	
44.19	4.50	5.40	80.77	Coarse silt
31.25	5.00	2.60	83.37	
22.10	5.50	1.87	85.24	Medium silt
15.63	6.00	1.73	86.97	
11.05	6.50	2.04	89.01	Fine silt
7.81	7.00	2.18	91.19	
5.52	7.50	2.07	93.26	Very fine silt
3.91	8.00	1.75	95.01	
2.76	8.50	1.27	96.29	Clay
1.95	9.00	0.83	97.12	
1.38	9.50	0.56	97.67	
0.98	10.00	0.43	98.10	
0.69	10.50	0.38	98.48	
0.49	11.00	0.35	98.83	
0.35	11.50	0.32	99.16	
0.24	12.00	0.28	99.43	
0.17	12.50	0.23	99.66	
0.12	13.00	0.17	99.83	
<0.12	>13	0.17	100.00	



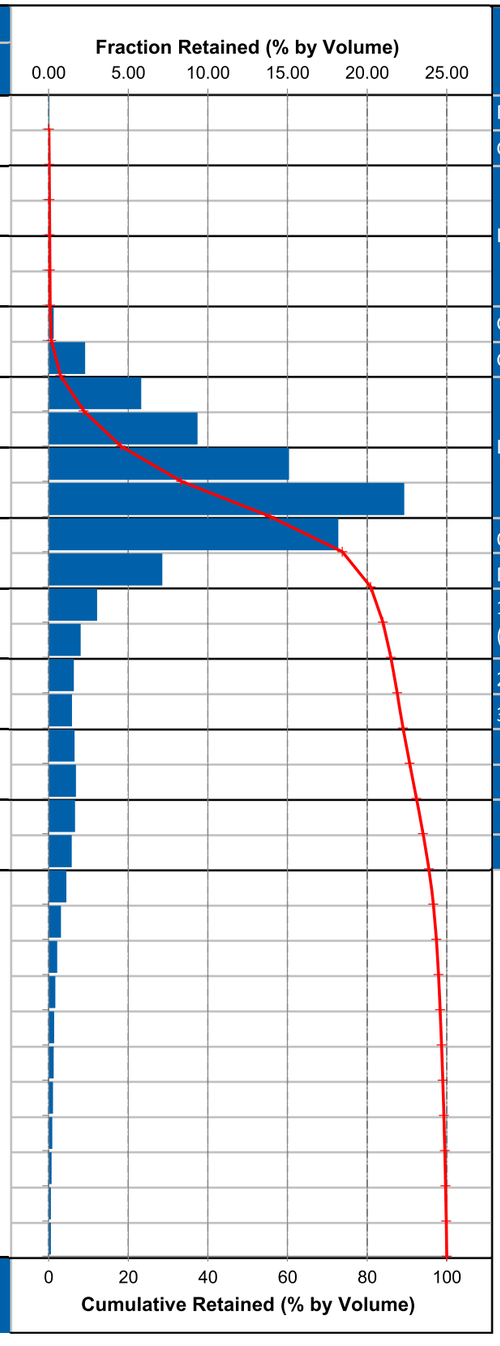
Method of Moments			
Geometric	Mean (µm)	135.60	Wentworth:
Logarithmic	Mean (Phi)	2.88	Fine sand
	Sorting	2.88	Very poor
	Skewness	0.41	Symmetrical
	Kurtosis	3.61	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	166.01	Wentworth:
Logarithmic	Mean (Phi)	2.59	Fine sand
	Sorting	2.90	Very poor
	Skewness	-0.14	Coarse
	Kurtosis	1.38	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.11	116.07	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	-0.50	1414.21	Very coarse sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Gravelly muddy sand	Fines	24.60%
EUNIS Folk	Mixed sediments	Sand	64.70%
Distribution	Multimodal	Gravel	10.70%



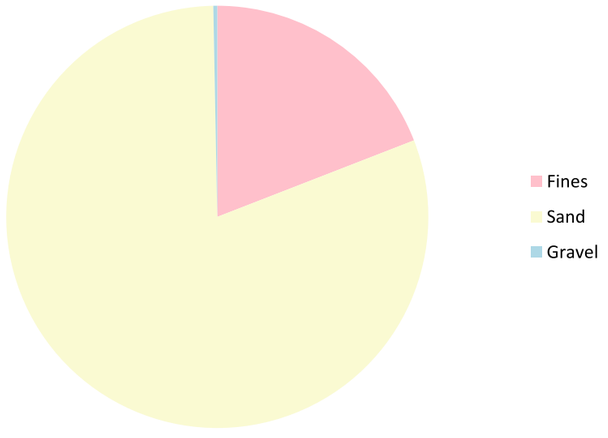
APPENDIX G PARTICLE SIZE ANALYSIS

ENV19				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.05	0.08	Pebble
4000.00	-2.00	0.09	0.17	
2828.43	-1.50	0.06	0.23	Granule
2000.00	-1.00	0.05	0.28	
1414.21	-0.50	0.05	0.32	Very coarse sand
1000.00	0.00	0.05	0.37	
707.11	0.50	0.32	0.70	Coarse sand
500.00	1.00	2.30	3.00	
353.55	1.50	5.81	8.81	Medium sand
250.00	2.00	9.35	18.16	
176.78	2.50	15.09	33.25	Fine sand
125.00	3.00	22.34	55.59	
88.39	3.50	18.19	73.78	Very fine sand
62.50	4.00	7.15	80.92	
44.19	4.50	3.05	83.97	Coarse silt
31.25	5.00	2.02	85.99	
22.10	5.50	1.58	87.57	Medium silt
15.63	6.00	1.47	89.04	
11.05	6.50	1.63	90.67	Fine silt
7.81	7.00	1.72	92.39	
5.52	7.50	1.66	94.06	Very fine silt
3.91	8.00	1.45	95.50	
2.76	8.50	1.11	96.61	Clay
1.95	9.00	0.78	97.39	
1.38	9.50	0.55	97.93	
0.98	10.00	0.42	98.35	
0.69	10.50	0.35	98.70	
0.49	11.00	0.31	99.02	
0.35	11.50	0.27	99.29	
0.24	12.00	0.23	99.52	
0.17	12.50	0.19	99.71	
0.12	13.00	0.15	99.86	
<0.12	>13	0.14	100.00	



Method of Moments			
Geometric	Mean (µm)	98.51	Wentworth:
Logarithmic	Mean (Phi)	3.34	Very fine sand
	Sorting	2.02	Very poor
	Skewness	1.87	Very fine
	Kurtosis	7.41	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	117.55	Wentworth:
Logarithmic	Mean (Phi)	3.09	Very fine sand
	Sorting	1.66	Poor
	Skewness	0.37	Very fine
	Kurtosis	2.01	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.87	136.33	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

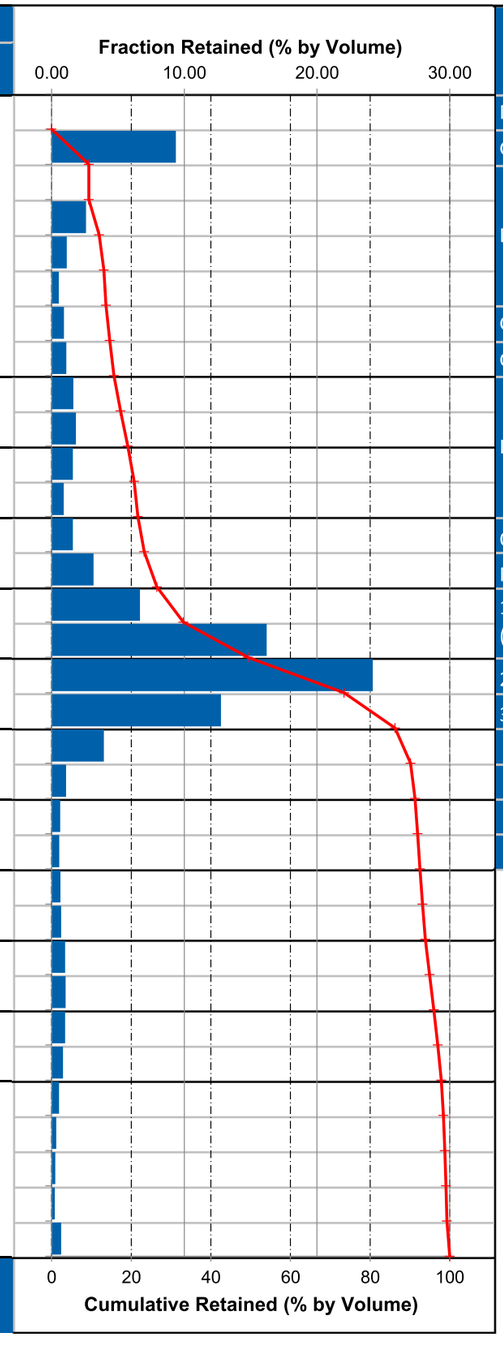
Classification		Composition	
Modified Folk	Muddy sand	Fines	19.10%
EUNIS Folk	Sand and muddy sand	Sand	80.60%
Distribution	Bimodal	Gravel	0.30%



APPENDIX G PARTICLE SIZE ANALYSIS

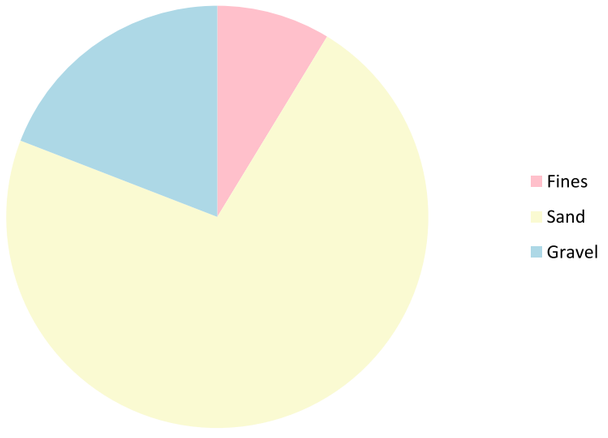
ENV21

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
45254.83	-5.50	0.00	0.00	
32000.00	-5.00	9.37	9.37	
22627.42	-4.50	0.00	9.37	
16000.00	-4.00	2.60	11.97	Pebble
11313.71	-3.50	1.14	13.11	
8000.00	-3.00	0.54	13.64	
5656.85	-2.50	0.93	14.57	
4000.00	-2.00	1.10	15.67	
2828.43	-1.50	1.64	17.31	Granule
2000.00	-1.00	1.84	19.15	
1414.21	-0.50	1.60	20.74	Very coarse sand
1000.00	0.00	0.92	21.66	
707.11	0.50	1.59	23.26	Coarse sand
500.00	1.00	3.16	26.42	
353.55	1.50	6.66	33.08	Medium sand
250.00	2.00	16.22	49.30	
176.78	2.50	24.20	73.49	Fine sand
125.00	3.00	12.76	86.25	
88.39	3.50	3.93	90.18	Very fine sand
62.50	4.00	1.10	91.28	
44.19	4.50	0.66	91.93	Coarse silt
31.25	5.00	0.58	92.52	
22.10	5.50	0.67	93.18	Medium silt
15.63	6.00	0.71	93.89	
11.05	6.50	1.03	94.92	Fine silt
7.81	7.00	1.06	95.98	
5.52	7.50	1.02	97.00	Very fine silt
3.91	8.00	0.85	97.85	
2.76	8.50	0.56	98.41	Clay
1.95	9.00	0.35	98.76	
1.38	9.50	0.28	99.04	
0.98	10.00	0.25	99.29	
<1.0	>10	0.71	100.00	



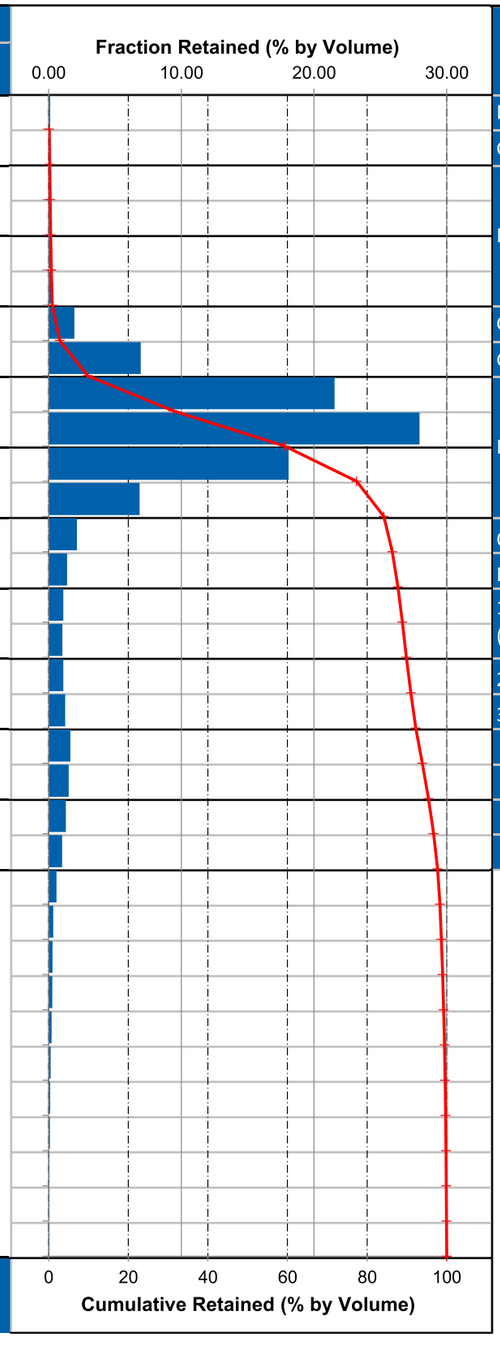
Method of Moments			
Geometric	Mean (µm)	407.65	Wentworth:
Logarithmic	Mean (Phi)	1.29	Medium sand
	Sorting	3.13	Very poor
	Skewness	-0.36	Symmetrical
	Kurtosis	4.01	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	496.90	Wentworth:
Logarithmic	Mean (Phi)	1.01	Medium sand
	Sorting	2.99	Very poor
	Skewness	-0.43	Very coarse
	Kurtosis	2.71	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.01	247.49	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-5.00	32000.00	Pebble
3rd Local Maxima	-1.00	2000.00	Granule

Classification		Composition	
Modified Folk	Gravelly muddy sand	Fines	8.70%
EUNIS Folk	Mixed sediments	Sand	72.10%
Distribution	Multimodal	Gravel	19.10%



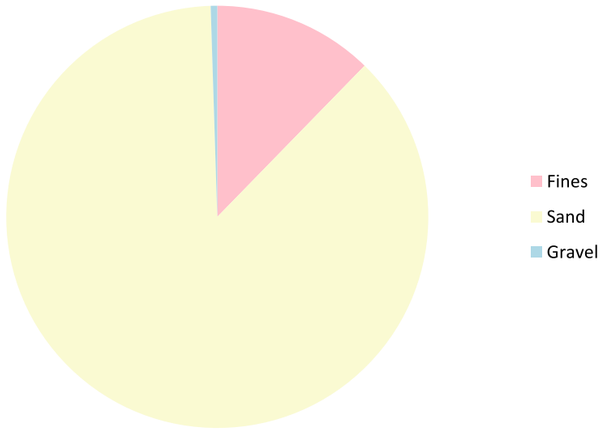
APPENDIX G PARTICLE SIZE ANALYSIS

ENV22				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.11	0.17	Pebble
4000.00	-2.00	0.13	0.30	
2828.43	-1.50	0.10	0.40	Granule
2000.00	-1.00	0.10	0.50	
1414.21	-0.50	0.17	0.67	Very coarse sand
1000.00	0.00	0.23	0.90	
707.11	0.50	1.94	2.84	Coarse sand
500.00	1.00	6.94	9.78	
353.55	1.50	21.54	31.32	Medium sand
250.00	2.00	27.95	59.27	
176.78	2.50	18.09	77.36	Fine sand
125.00	3.00	6.85	84.21	
88.39	3.50	2.13	86.34	Very fine sand
62.50	4.00	1.39	87.73	
44.19	4.50	1.11	88.83	Coarse silt
31.25	5.00	1.04	89.87	
22.10	5.50	1.11	90.98	Medium silt
15.63	6.00	1.25	92.23	
11.05	6.50	1.63	93.86	Fine silt
7.81	7.00	1.52	95.37	
5.52	7.50	1.31	96.68	Very fine silt
3.91	8.00	1.01	97.70	
2.76	8.50	0.60	98.30	Clay
1.95	9.00	0.35	98.65	
1.38	9.50	0.30	98.94	
0.98	10.00	0.28	99.22	
0.69	10.50	0.22	99.44	
0.49	11.00	0.16	99.60	
0.35	11.50	0.12	99.72	
0.24	12.00	0.09	99.81	
0.17	12.50	0.07	99.88	
0.12	13.00	0.06	99.94	
<0.12	>13	0.06	100.00	



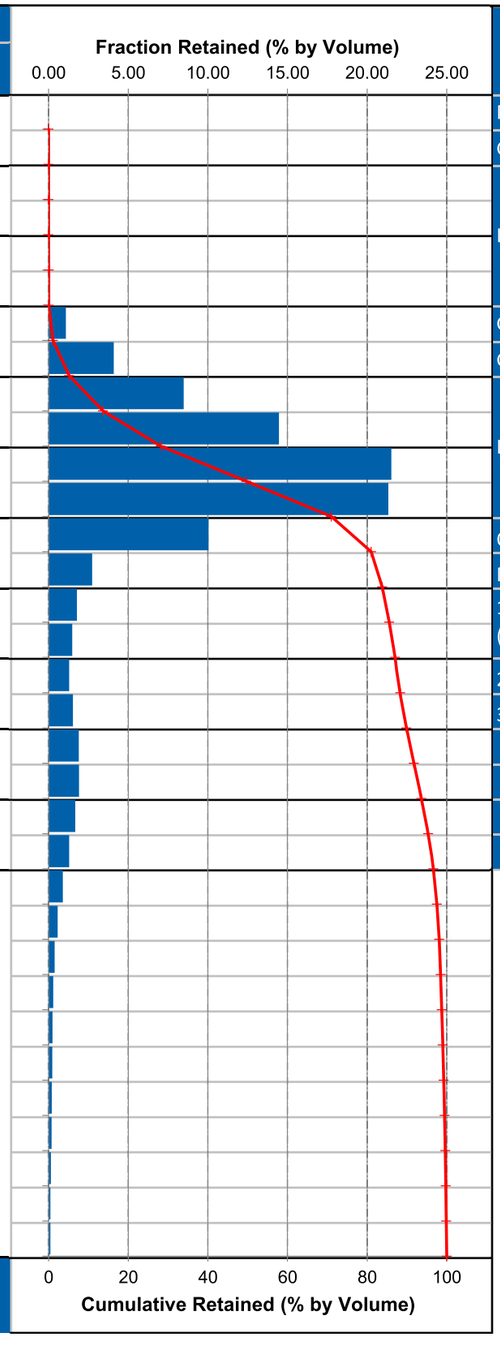
Method of Moments			
Geometric	Mean (µm)	196.73	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	1.89	Poor
	Skewness	2.23	Very fine
	Kurtosis	8.90	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	252.13	Wentworth:
Logarithmic	Mean (Phi)	1.99	Medium sand
	Sorting	1.40	Poor
	Skewness	0.44	Very fine
	Kurtosis	2.36	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.83	280.45	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	12.30%
EUNIS Folk	Sand and muddy sand	Sand	87.20%
Distribution	Bimodal	Gravel	0.50%



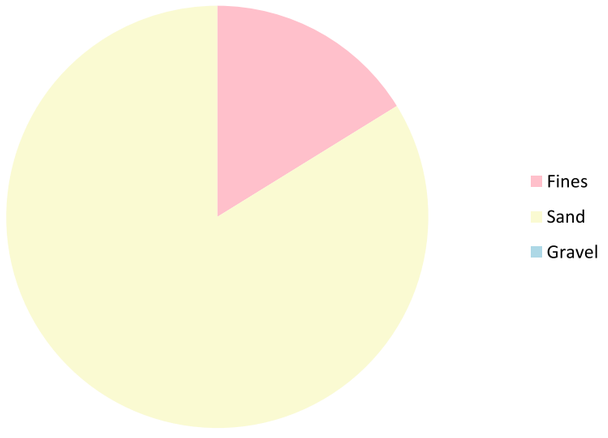
APPENDIX G PARTICLE SIZE ANALYSIS

ENV23				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.02	0.03	
707.11	0.50	1.08	1.11	Coarse sand
500.00	1.00	4.09	5.20	
353.55	1.50	8.48	13.67	Medium sand
250.00	2.00	14.46	28.13	
176.78	2.50	21.53	49.66	Fine sand
125.00	3.00	21.33	70.99	
88.39	3.50	10.04	81.03	Very fine sand
62.50	4.00	2.73	83.76	
44.19	4.50	1.78	85.55	Coarse silt
31.25	5.00	1.48	87.02	
22.10	5.50	1.29	88.31	Medium silt
15.63	6.00	1.53	89.84	
11.05	6.50	1.89	91.74	Fine silt
7.81	7.00	1.91	93.65	
5.52	7.50	1.67	95.32	Very fine silt
3.91	8.00	1.30	96.62	
2.76	8.50	0.90	97.51	Clay
1.95	9.00	0.58	98.09	
1.38	9.50	0.38	98.47	
0.98	10.00	0.29	98.76	
0.69	10.50	0.25	99.01	
0.49	11.00	0.23	99.24	
0.35	11.50	0.21	99.45	
0.24	12.00	0.18	99.63	
0.17	12.50	0.15	99.78	
0.12	13.00	0.11	99.89	
<0.12	>13	0.11	100.00	



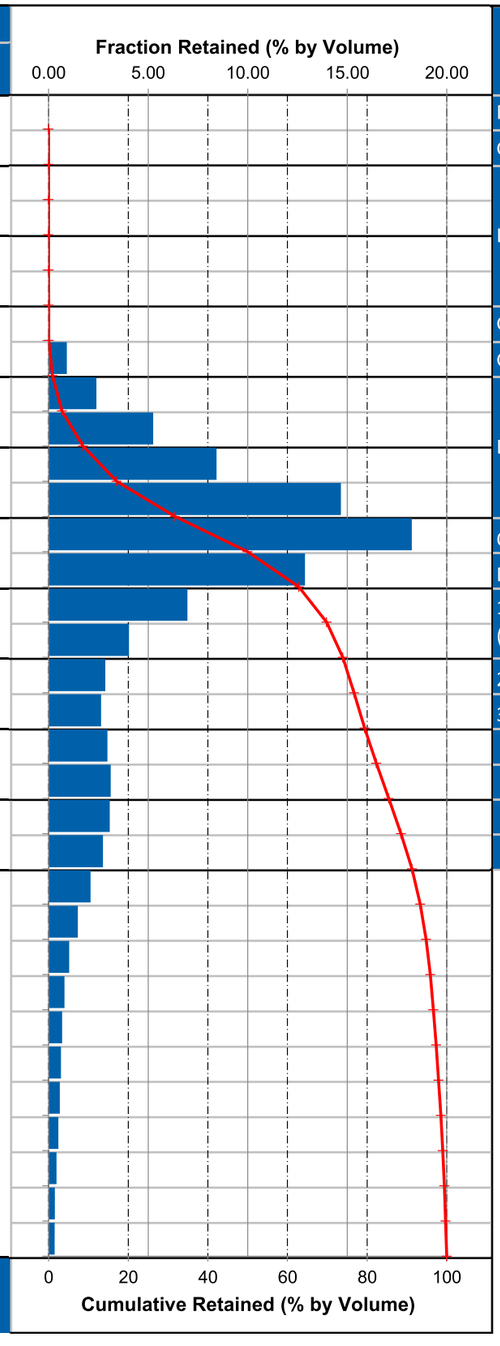
Method of Moments			
Geometric	Mean (µm)	125.64	Wentworth:
Logarithmic	Mean (Phi)	2.99	Fine sand
	Sorting	1.97	Poor
	Skewness	2.04	Very fine
	Kurtosis	7.77	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	151.96	Wentworth:
Logarithmic	Mean (Phi)	2.72	Fine sand
	Sorting	1.60	Poor
	Skewness	0.39	Very fine
	Kurtosis	2.01	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.51	175.81	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	16.20%
EUNIS Folk	Sand and muddy sand	Sand	83.80%
Distribution	Bimodal	Gravel	0.00%



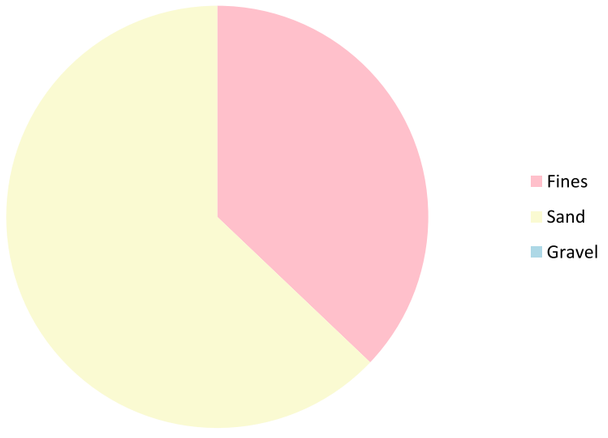
APPENDIX G PARTICLE SIZE ANALYSIS

ENV24				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.02	0.02	
707.11	0.50	0.02	0.05	Coarse sand
500.00	1.00	0.91	0.96	
353.55	1.50	2.40	3.37	Medium sand
250.00	2.00	5.25	8.62	
176.78	2.50	8.44	17.06	Fine sand
125.00	3.00	14.68	31.74	
88.39	3.50	18.24	49.98	Very fine sand
62.50	4.00	12.89	62.86	
44.19	4.50	6.98	69.84	Coarse silt
31.25	5.00	4.04	73.88	
22.10	5.50	2.85	76.73	Medium silt
15.63	6.00	2.63	79.36	
11.05	6.50	2.96	82.32	Fine silt
7.81	7.00	3.12	85.44	
5.52	7.50	3.07	88.52	Very fine silt
3.91	8.00	2.73	91.25	
2.76	8.50	2.10	93.36	Clay
1.95	9.00	1.47	94.82	
1.38	9.50	1.03	95.85	
0.98	10.00	0.80	96.65	
0.69	10.50	0.68	97.33	
0.49	11.00	0.62	97.95	
0.35	11.50	0.56	98.51	
0.24	12.00	0.49	98.99	
0.17	12.50	0.40	99.39	
0.12	13.00	0.31	99.70	
<0.12	>13	0.30	100.00	



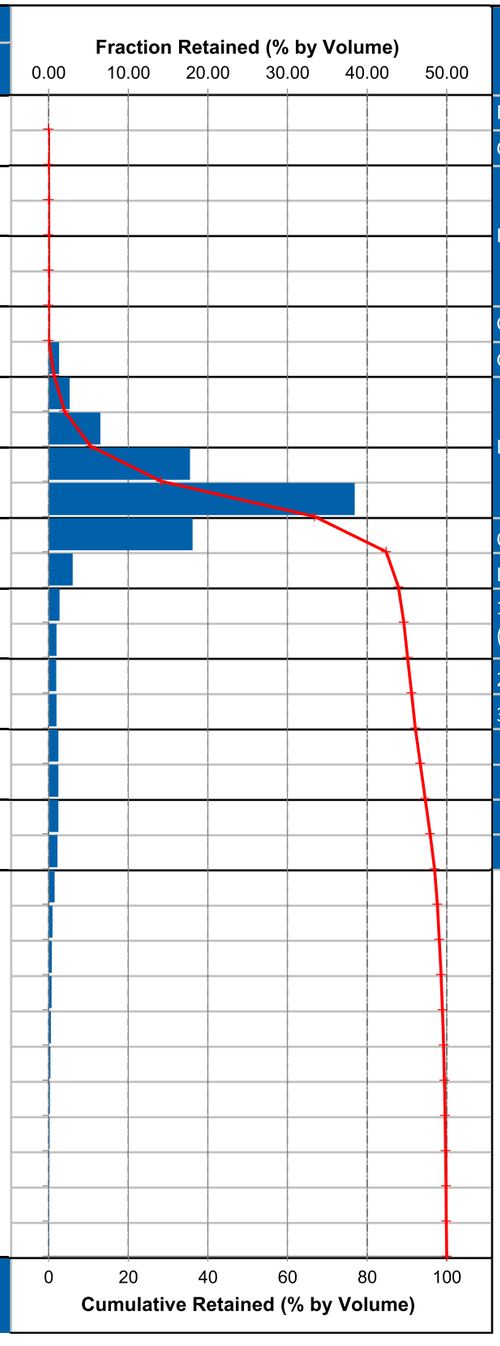
Method of Moments			
Geometric	Mean (µm)	51.58	Wentworth:
Logarithmic	Mean (Phi)	4.28	Coarse silt
	Sorting	2.34	Very poor
	Skewness	1.38	Very fine
	Kurtosis	4.67	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	53.08	Wentworth:
Logarithmic	Mean (Phi)	4.24	Coarse silt
	Sorting	2.21	Very poor
	Skewness	0.51	Very fine
	Kurtosis	1.26	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.50	88.33	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	37.10%
EUNIS Folk	Mud and sandy mud	Sand	62.90%
Distribution	Bimodal	Gravel	0.00%



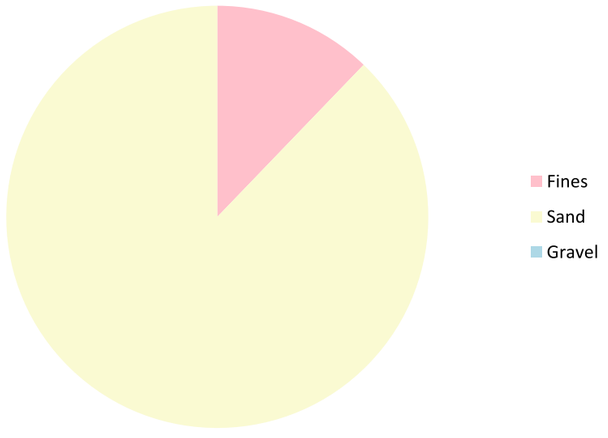
APPENDIX G PARTICLE SIZE ANALYSIS

ENV25				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.01	0.03	Very coarse sand
1000.00	0.00	0.02	0.05	
707.11	0.50	0.00	0.05	Coarse sand
500.00	1.00	1.32	1.37	
353.55	1.50	2.64	4.01	Medium sand
250.00	2.00	6.51	10.52	
176.78	2.50	17.77	28.29	Fine sand
125.00	3.00	38.44	66.73	
88.39	3.50	18.09	84.82	Very fine sand
62.50	4.00	3.01	87.83	
44.19	4.50	1.37	89.20	Coarse silt
31.25	5.00	0.98	90.18	
22.10	5.50	0.95	91.14	Medium silt
15.63	6.00	0.98	92.12	
11.05	6.50	1.22	93.33	Fine silt
7.81	7.00	1.23	94.57	
5.52	7.50	1.24	95.81	Very fine silt
3.91	8.00	1.10	96.91	
2.76	8.50	0.74	97.65	Clay
1.95	9.00	0.48	98.13	
1.38	9.50	0.41	98.55	
0.98	10.00	0.38	98.92	
0.69	10.50	0.30	99.22	
0.49	11.00	0.22	99.44	
0.35	11.50	0.16	99.60	
0.24	12.00	0.13	99.72	
0.17	12.50	0.10	99.83	
0.12	13.00	0.08	99.91	
<0.12	>13	0.09	100.00	



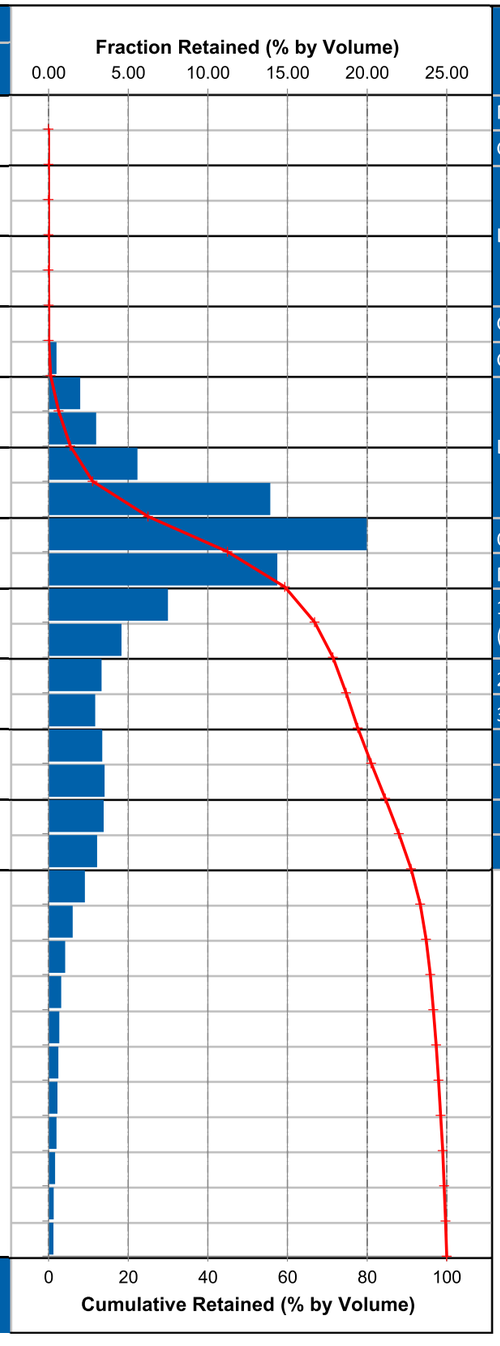
Method of Moments			
Geometric	Mean (µm)	111.85	Wentworth:
Logarithmic	Mean (Phi)	3.16	Very fine sand
	Sorting	1.67	Poor
	Skewness	2.66	Very fine
	Kurtosis	11.36	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	143.12	Wentworth:
Logarithmic	Mean (Phi)	2.80	Fine sand
	Sorting	1.18	Poor
	Skewness	0.31	Very fine
	Kurtosis	2.79	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.78	145.35	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.50	5.52	Very fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	12.20%
EUNIS Folk	Sand and muddy sand	Sand	87.80%
Distribution	Bimodal	Gravel	0.00%



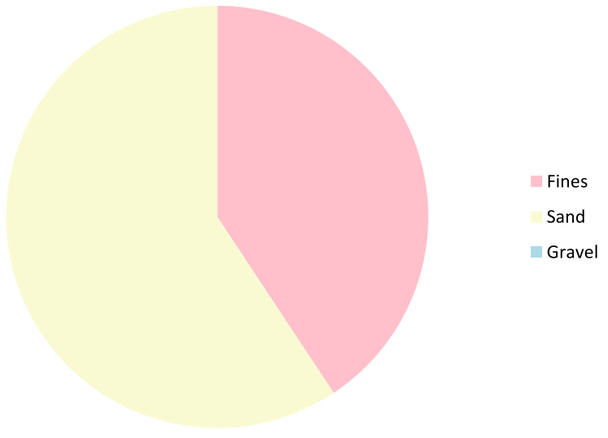
APPENDIX G PARTICLE SIZE ANALYSIS

ENV26				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.50	0.51	
353.55	1.50	1.99	2.50	Medium sand
250.00	2.00	2.99	5.49	
176.78	2.50	5.58	11.07	Fine sand
125.00	3.00	13.92	24.99	
88.39	3.50	19.97	44.96	Very fine sand
62.50	4.00	14.37	59.33	
44.19	4.50	7.49	66.81	Coarse silt
31.25	5.00	4.58	71.39	
22.10	5.50	3.33	74.72	Medium silt
15.63	6.00	2.93	77.65	
11.05	6.50	3.36	81.02	Fine silt
7.81	7.00	3.52	84.54	
5.52	7.50	3.46	87.99	Very fine silt
3.91	8.00	3.04	91.04	
2.76	8.50	2.27	93.31	Clay
1.95	9.00	1.52	94.83	
1.38	9.50	1.03	95.86	
0.98	10.00	0.79	96.65	
0.69	10.50	0.67	97.32	
0.49	11.00	0.61	97.92	
0.35	11.50	0.55	98.48	
0.24	12.00	0.49	98.97	
0.17	12.50	0.40	99.38	
0.12	13.00	0.32	99.69	
<0.12	>13	0.31	100.00	



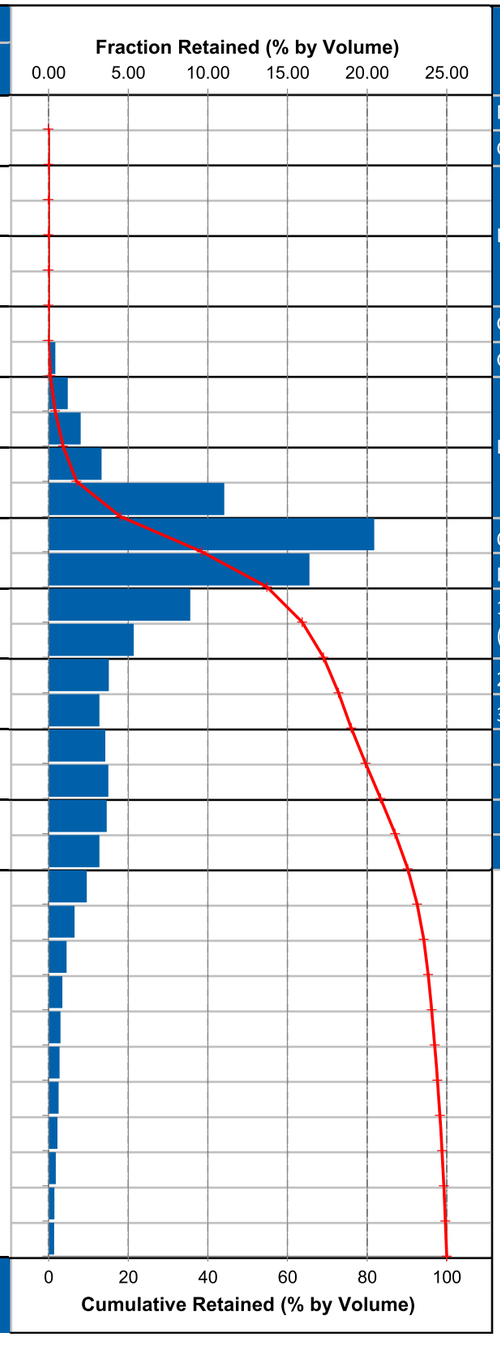
Method of Moments			
Geometric	Mean (µm)	45.19	Wentworth:
Logarithmic	Mean (Phi)	4.47	Coarse silt
	Sorting	2.29	Very poor
	Skewness	1.34	Very fine
	Kurtosis	4.59	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	46.54	Wentworth:
Logarithmic	Mean (Phi)	4.43	Coarse silt
	Sorting	2.15	Very poor
	Skewness	0.52	Very fine
	Kurtosis	1.15	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.68	78.27	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	40.70%
EUNIS Folk	Mud and sandy mud	Sand	59.30%
Distribution	Bimodal	Gravel	0.00%



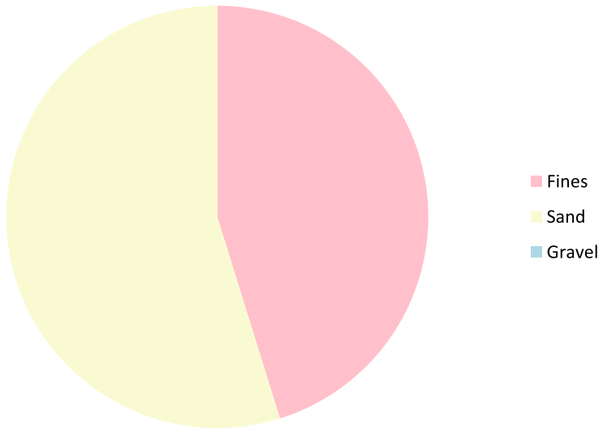
APPENDIX G PARTICLE SIZE ANALYSIS

ENV27				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.00	0.00	
707.11	0.50	0.01	0.01	Coarse sand
500.00	1.00	0.42	0.43	
353.55	1.50	1.20	1.63	Medium sand
250.00	2.00	2.02	3.65	
176.78	2.50	3.32	6.97	Fine sand
125.00	3.00	11.04	18.00	
88.39	3.50	20.44	38.44	Very fine sand
62.50	4.00	16.38	54.82	
44.19	4.50	8.90	63.72	Coarse silt
31.25	5.00	5.34	69.06	
22.10	5.50	3.78	72.84	Medium silt
15.63	6.00	3.20	76.04	
11.05	6.50	3.56	79.60	Fine silt
7.81	7.00	3.76	83.35	
5.52	7.50	3.66	87.01	Very fine silt
3.91	8.00	3.19	90.20	
2.76	8.50	2.40	92.60	Clay
1.95	9.00	1.62	94.22	
1.38	9.50	1.12	95.34	
0.98	10.00	0.87	96.21	
0.69	10.50	0.75	96.96	
0.49	11.00	0.69	97.65	
0.35	11.50	0.63	98.28	
0.24	12.00	0.56	98.84	
0.17	12.50	0.46	99.29	
0.12	13.00	0.36	99.65	
<0.12	>13	0.35	100.00	



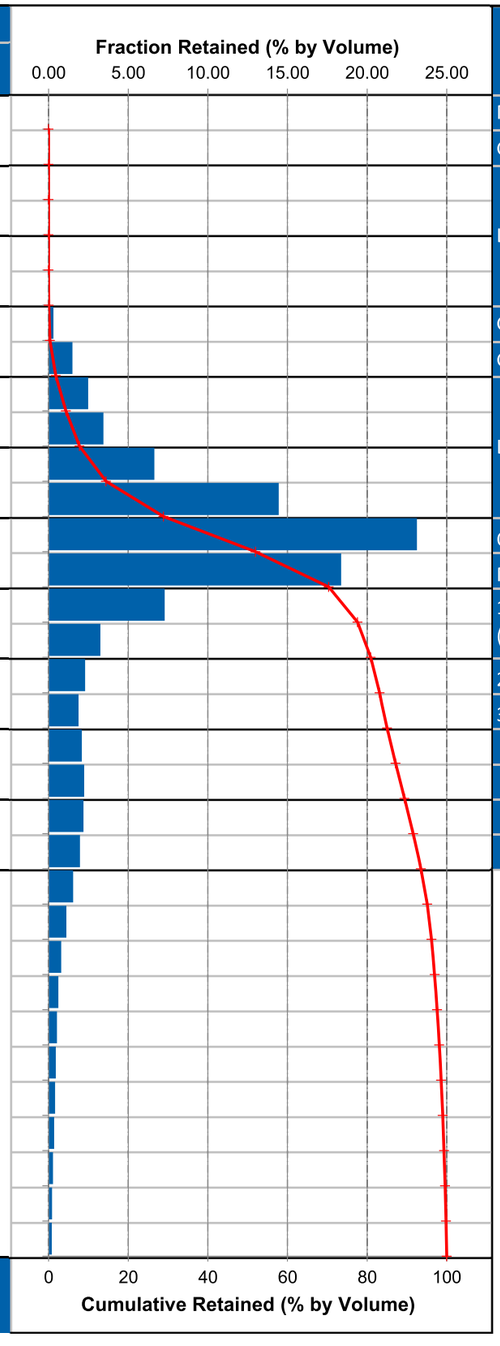
Method of Moments			
Geometric	Mean (µm)	39.12	Wentworth:
Logarithmic	Mean (Phi)	4.68	Coarse silt
	Sorting	2.29	Very poor
	Skewness	1.33	Very fine
	Kurtosis	4.53	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	40.76	Wentworth:
Logarithmic	Mean (Phi)	4.62	Coarse silt
	Sorting	2.13	Very poor
	Skewness	0.54	Very fine
	Kurtosis	1.10	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.85	69.21	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	45.20%
EUNIS Folk	Mud and sandy mud	Sand	54.80%
Distribution	Bimodal	Gravel	0.00%



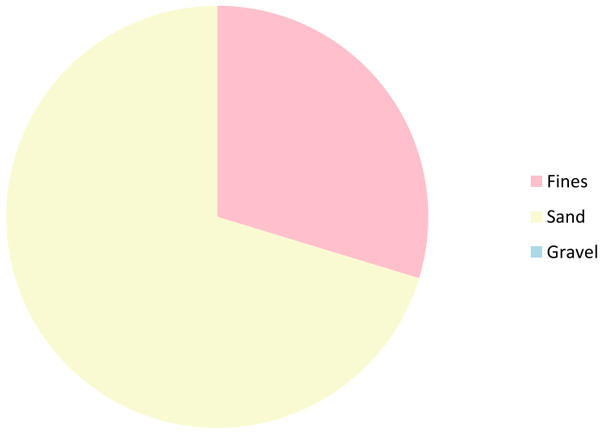
APPENDIX G PARTICLE SIZE ANALYSIS

ENV28				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.31	0.32	Coarse sand
500.00	1.00	1.50	1.83	
353.55	1.50	2.49	4.32	Medium sand
250.00	2.00	3.44	7.75	
176.78	2.50	6.64	14.40	Fine sand
125.00	3.00	14.45	28.85	
88.39	3.50	23.12	51.97	Very fine sand
62.50	4.00	18.36	70.34	
44.19	4.50	7.29	77.62	Coarse silt
31.25	5.00	3.25	80.87	
22.10	5.50	2.29	83.17	Medium silt
15.63	6.00	1.88	85.05	
11.05	6.50	2.09	87.14	Fine silt
7.81	7.00	2.23	89.37	
5.52	7.50	2.20	91.56	Very fine silt
3.91	8.00	1.97	93.53	
2.76	8.50	1.55	95.08	Clay
1.95	9.00	1.11	96.19	
1.38	9.50	0.79	96.98	
0.98	10.00	0.62	97.60	
0.69	10.50	0.52	98.12	
0.49	11.00	0.46	98.58	
0.35	11.50	0.40	98.98	
0.24	12.00	0.34	99.32	
0.17	12.50	0.27	99.59	
0.12	13.00	0.21	99.80	
<0.12	>13	0.20	100.00	



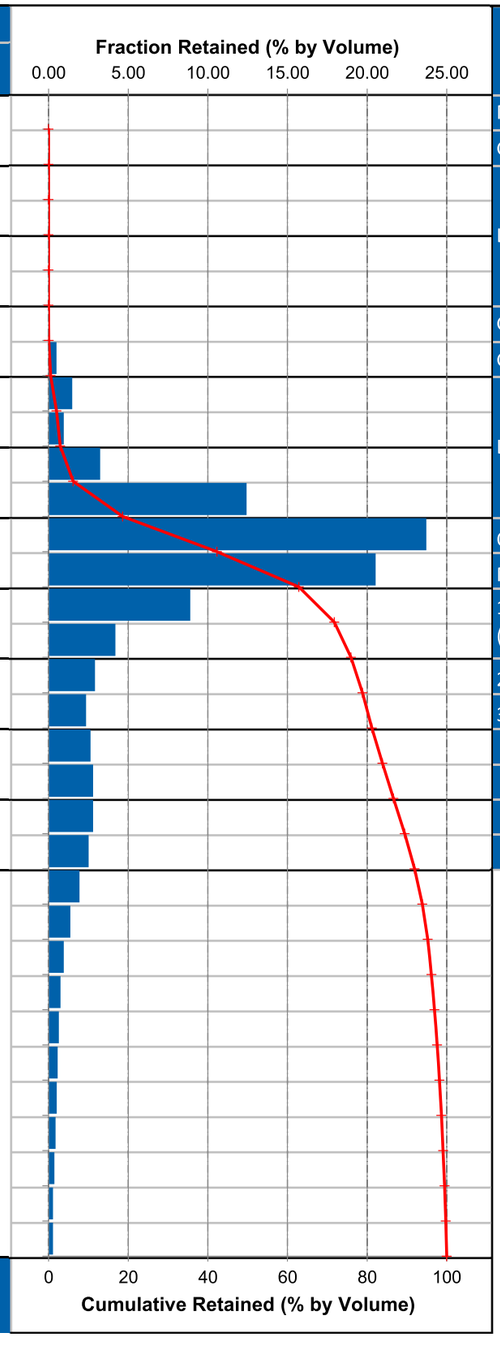
Method of Moments			
Geometric	Mean (µm)	62.14	Wentworth:
Logarithmic	Mean (Phi)	4.01	Coarse silt
	Sorting	2.08	Very poor
	Skewness	1.69	Very fine
	Kurtosis	6.25	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	66.47	Wentworth:
Logarithmic	Mean (Phi)	3.91	Very fine sand
	Sorting	1.83	Poor
	Skewness	0.44	Very fine
	Kurtosis	1.94	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.46	91.04	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	29.70%
EUNIS Folk	Mud and sandy mud	Sand	70.30%
Distribution	Bimodal	Gravel	0.00%



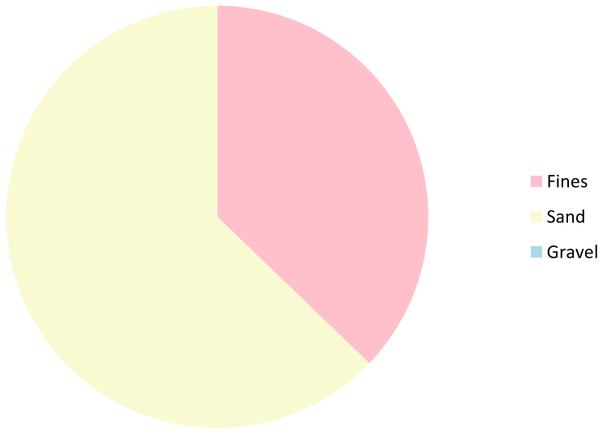
APPENDIX G PARTICLE SIZE ANALYSIS

ENV29				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.50	0.51	
353.55	1.50	1.48	1.99	Medium sand
250.00	2.00	0.95	2.94	
176.78	2.50	3.24	6.17	Fine sand
125.00	3.00	12.42	18.60	
88.39	3.50	23.71	42.31	Very fine sand
62.50	4.00	20.53	62.84	
44.19	4.50	8.90	71.74	Coarse silt
31.25	5.00	4.19	75.93	
22.10	5.50	2.91	78.84	Medium silt
15.63	6.00	2.36	81.20	
11.05	6.50	2.63	83.83	Fine silt
7.81	7.00	2.80	86.63	
5.52	7.50	2.79	89.42	Very fine silt
3.91	8.00	2.51	91.93	
2.76	8.50	1.95	93.87	Clay
1.95	9.00	1.36	95.23	
1.38	9.50	0.96	96.19	
0.98	10.00	0.74	96.93	
0.69	10.50	0.64	97.57	
0.49	11.00	0.57	98.14	
0.35	11.50	0.51	98.65	
0.24	12.00	0.44	99.10	
0.17	12.50	0.36	99.45	
0.12	13.00	0.28	99.73	
<0.12	>13	0.27	100.00	



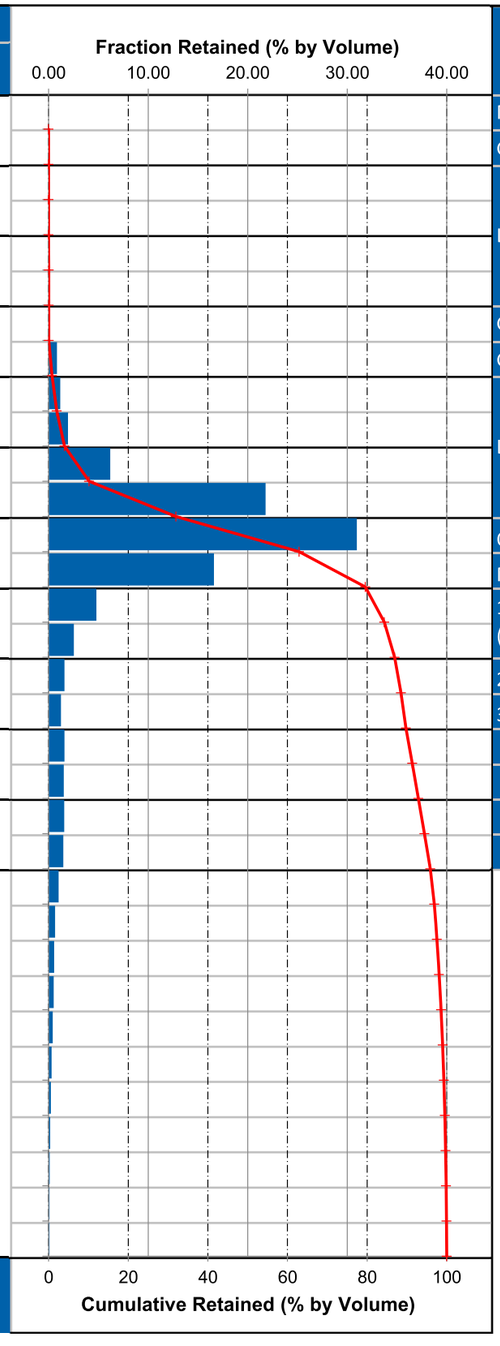
Method of Moments			
Geometric	Mean (µm)	47.33	Wentworth:
Logarithmic	Mean (Phi)	4.40	Coarse silt
	Sorting	2.13	Very poor
	Skewness	1.64	Very fine
	Kurtosis	5.66	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	48.33	Wentworth:
Logarithmic	Mean (Phi)	4.37	Coarse silt
	Sorting	1.91	Poor
	Skewness	0.57	Very fine
	Kurtosis	1.54	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.69	77.63	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Muddy sand	Fines	37.20%
EUNIS Folk	Mud and sandy mud	Sand	62.80%
Distribution	Multimodal	Gravel	0.00%



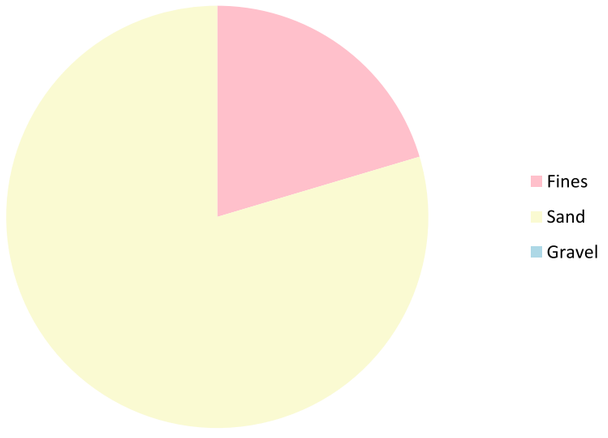
APPENDIX G PARTICLE SIZE ANALYSIS

ENV30				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.84	0.86	
353.55	1.50	1.17	2.03	Medium sand
250.00	2.00	1.94	3.97	
176.78	2.50	6.18	10.16	Fine sand
125.00	3.00	21.81	31.96	
88.39	3.50	30.97	62.93	Very fine sand
62.50	4.00	16.62	79.56	
44.19	4.50	4.79	84.35	Coarse silt
31.25	5.00	2.54	86.89	
22.10	5.50	1.59	88.48	Medium silt
15.63	6.00	1.24	89.73	
11.05	6.50	1.60	91.33	Fine silt
7.81	7.00	1.51	92.84	
5.52	7.50	1.57	94.41	Very fine silt
3.91	8.00	1.47	95.88	
2.76	8.50	1.00	96.87	Clay
1.95	9.00	0.64	97.51	
1.38	9.50	0.56	98.08	
0.98	10.00	0.52	98.60	
0.69	10.50	0.41	99.01	
0.49	11.00	0.30	99.32	
0.35	11.50	0.22	99.54	
0.24	12.00	0.16	99.70	
0.17	12.50	0.12	99.82	
0.12	13.00	0.09	99.91	
<0.12	>13	0.09	100.00	



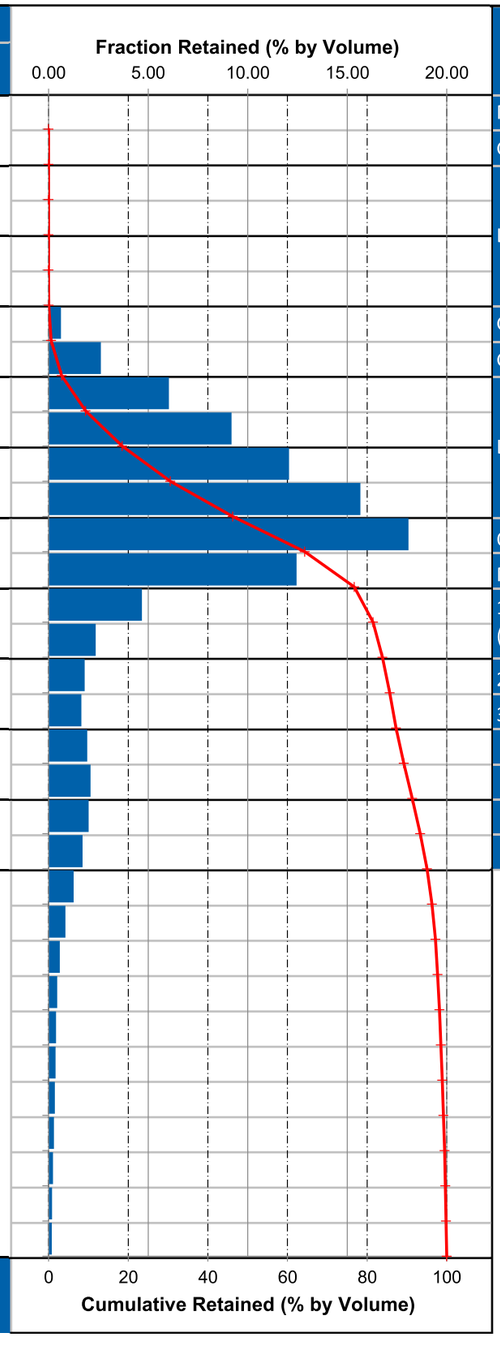
Method of Moments			
Geometric	Mean (µm)	75.31	Wentworth:
Logarithmic	Mean (Phi)	3.73	Very fine sand
	Sorting	1.72	Poor
	Skewness	2.25	Very fine
	Kurtosis	9.00	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	90.69	Wentworth:
Logarithmic	Mean (Phi)	3.46	Very fine sand
	Sorting	1.31	Poor
	Skewness	0.43	Very fine
	Kurtosis	2.25	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.29	102.15	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	20.40%
EUNIS Folk	Mud and sandy mud	Sand	79.60%
Distribution	Bimodal	Gravel	0.00%



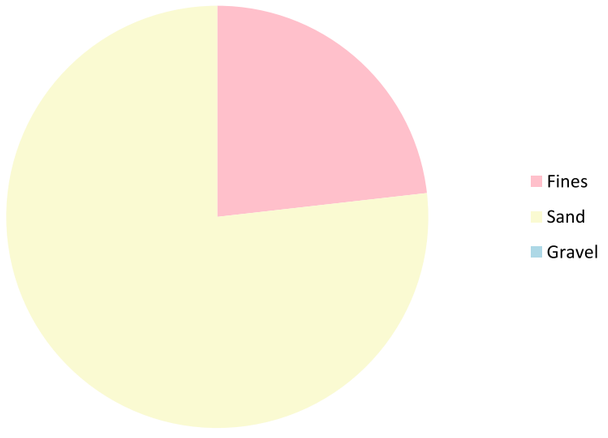
APPENDIX G PARTICLE SIZE ANALYSIS

ENV31				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.03	0.03	
707.11	0.50	0.62	0.65	Coarse sand
500.00	1.00	2.62	3.27	
353.55	1.50	6.04	9.31	Medium sand
250.00	2.00	9.19	18.50	
176.78	2.50	12.08	30.59	Fine sand
125.00	3.00	15.66	46.25	
88.39	3.50	18.08	64.33	Very fine sand
62.50	4.00	12.45	76.78	
44.19	4.50	4.69	81.47	Coarse silt
31.25	5.00	2.37	83.84	
22.10	5.50	1.81	85.65	Medium silt
15.63	6.00	1.64	87.29	
11.05	6.50	1.94	89.24	Fine silt
7.81	7.00	2.10	91.34	
5.52	7.50	2.01	93.35	Very fine silt
3.91	8.00	1.70	95.05	
2.76	8.50	1.26	96.31	Clay
1.95	9.00	0.84	97.15	
1.38	9.50	0.57	97.72	
0.98	10.00	0.43	98.15	
0.69	10.50	0.38	98.53	
0.49	11.00	0.34	98.87	
0.35	11.50	0.31	99.18	
0.24	12.00	0.27	99.45	
0.17	12.50	0.22	99.67	
0.12	13.00	0.17	99.84	
<0.12	>13	0.16	100.00	



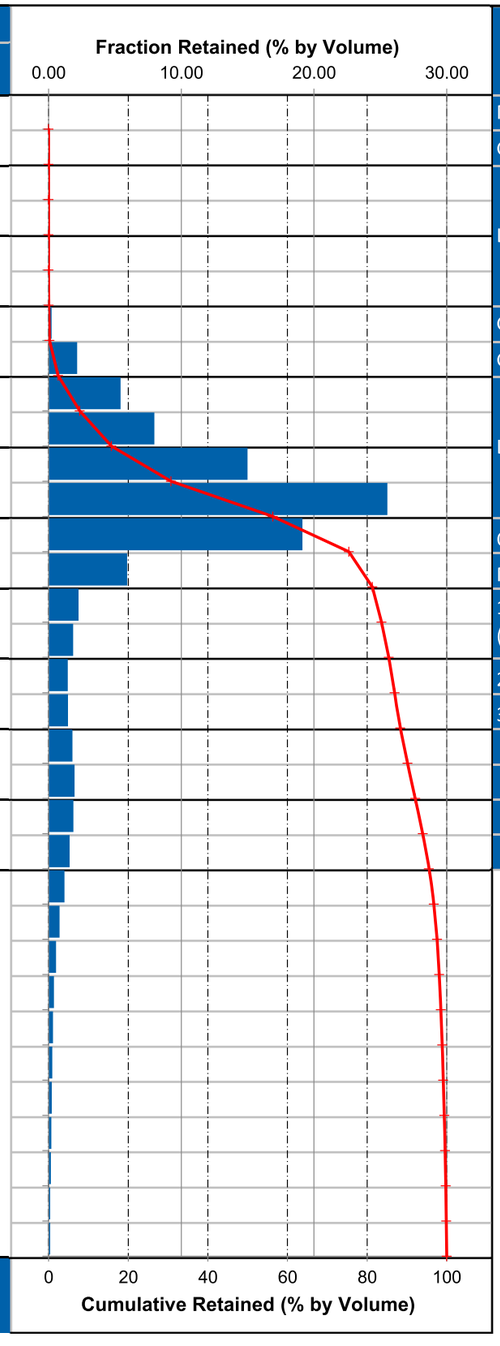
Method of Moments			
Geometric	Mean (µm)	85.92	Wentworth:
Logarithmic	Mean (Phi)	3.54	Very fine sand
	Sorting	2.09	Very poor
	Skewness	1.69	Very fine
	Kurtosis	6.41	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	98.95	Wentworth:
Logarithmic	Mean (Phi)	3.34	Very fine sand
	Sorting	1.83	Poor
	Skewness	0.32	Very fine
	Kurtosis	1.69	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.10	116.33	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	23.20%
EUNIS Folk	Mud and sandy mud	Sand	76.80%
Distribution	Bimodal	Gravel	0.00%



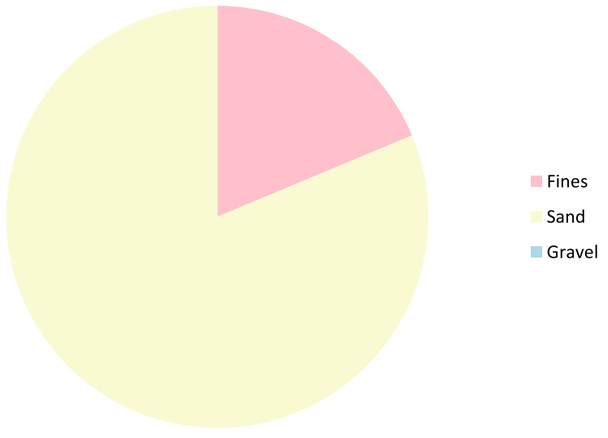
APPENDIX G PARTICLE SIZE ANALYSIS

ENV33				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.22	0.24	Coarse sand
500.00	1.00	2.15	2.38	
353.55	1.50	5.42	7.80	Medium sand
250.00	2.00	7.97	15.77	
176.78	2.50	14.99	30.77	Fine sand
125.00	3.00	25.53	56.30	
88.39	3.50	19.12	75.42	Very fine sand
62.50	4.00	5.91	81.33	
44.19	4.50	2.26	83.59	Coarse silt
31.25	5.00	1.86	85.45	
22.10	5.50	1.44	86.88	Medium silt
15.63	6.00	1.46	88.34	
11.05	6.50	1.80	90.14	Fine silt
7.81	7.00	1.96	92.10	
5.52	7.50	1.86	93.96	Very fine silt
3.91	8.00	1.58	95.55	
2.76	8.50	1.19	96.74	Clay
1.95	9.00	0.82	97.56	
1.38	9.50	0.56	98.12	
0.98	10.00	0.41	98.52	
0.69	10.50	0.33	98.85	
0.49	11.00	0.28	99.14	
0.35	11.50	0.25	99.38	
0.24	12.00	0.21	99.59	
0.17	12.50	0.16	99.76	
0.12	13.00	0.13	99.88	
<0.12	>13	0.12	100.00	



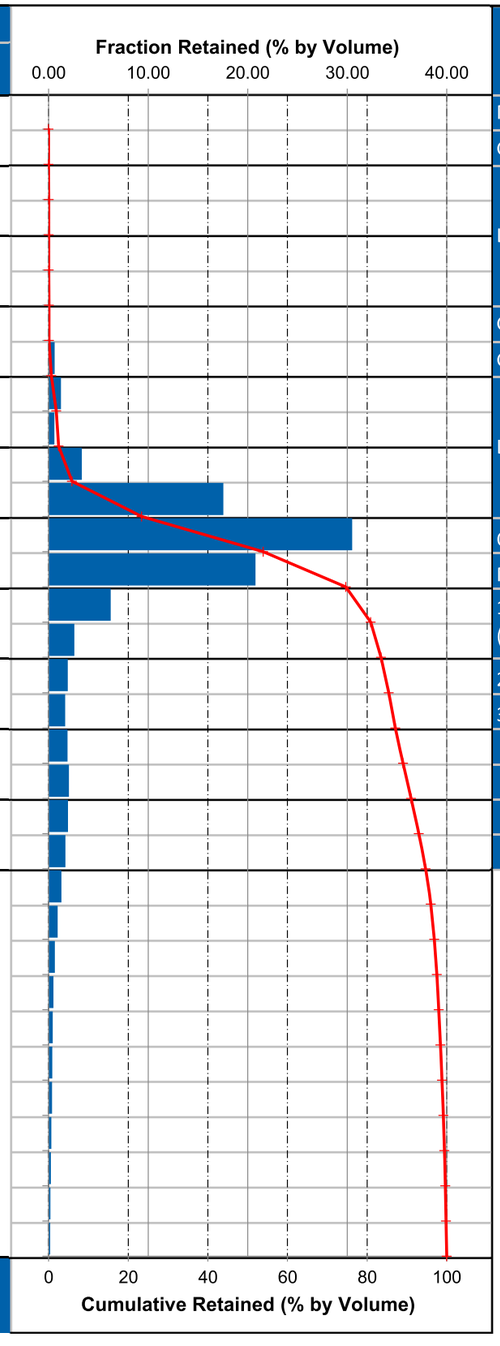
Method of Moments			
Geometric	Mean (µm)	95.91	Wentworth:
Logarithmic	Mean (Phi)	3.38	Very fine sand
	Sorting	1.98	Poor
	Skewness	1.95	Very fine
	Kurtosis	7.25	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	111.48	Wentworth:
Logarithmic	Mean (Phi)	3.17	Very fine sand
	Sorting	1.65	Poor
	Skewness	0.42	Very fine
	Kurtosis	2.28	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.88	136.15	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	18.70%
EUNIS Folk	Sand and muddy sand	Sand	81.30%
Distribution	Bimodal	Gravel	0.00%



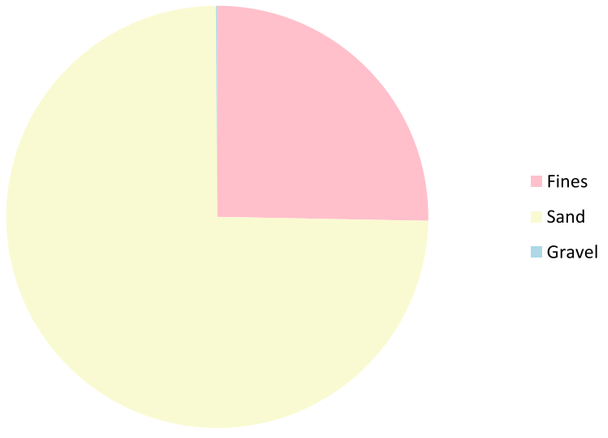
APPENDIX G PARTICLE SIZE ANALYSIS

ENV34				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.03	0.04	Granule
2000.00	-1.00	0.02	0.06	
1414.21	-0.50	0.00	0.06	Very coarse sand
1000.00	0.00	0.02	0.08	
707.11	0.50	0.01	0.10	Coarse sand
500.00	1.00	0.61	0.71	
353.55	1.50	1.23	1.94	Medium sand
250.00	2.00	0.57	2.51	
176.78	2.50	3.33	5.85	Fine sand
125.00	3.00	17.54	23.39	
88.39	3.50	30.50	53.89	Very fine sand
62.50	4.00	20.79	74.68	
44.19	4.50	6.25	80.93	Coarse silt
31.25	5.00	2.59	83.51	
22.10	5.50	1.93	85.44	Medium silt
15.63	6.00	1.66	87.11	
11.05	6.50	1.90	89.01	Fine silt
7.81	7.00	2.05	91.05	
5.52	7.50	1.96	93.01	Very fine silt
3.91	8.00	1.68	94.69	
2.76	8.50	1.28	95.97	Clay
1.95	9.00	0.90	96.87	
1.38	9.50	0.64	97.51	
0.98	10.00	0.49	98.00	
0.69	10.50	0.42	98.43	
0.49	11.00	0.38	98.81	
0.35	11.50	0.33	99.14	
0.24	12.00	0.29	99.43	
0.17	12.50	0.23	99.66	
0.12	13.00	0.18	99.83	
<0.12	>13	0.17	100.00	



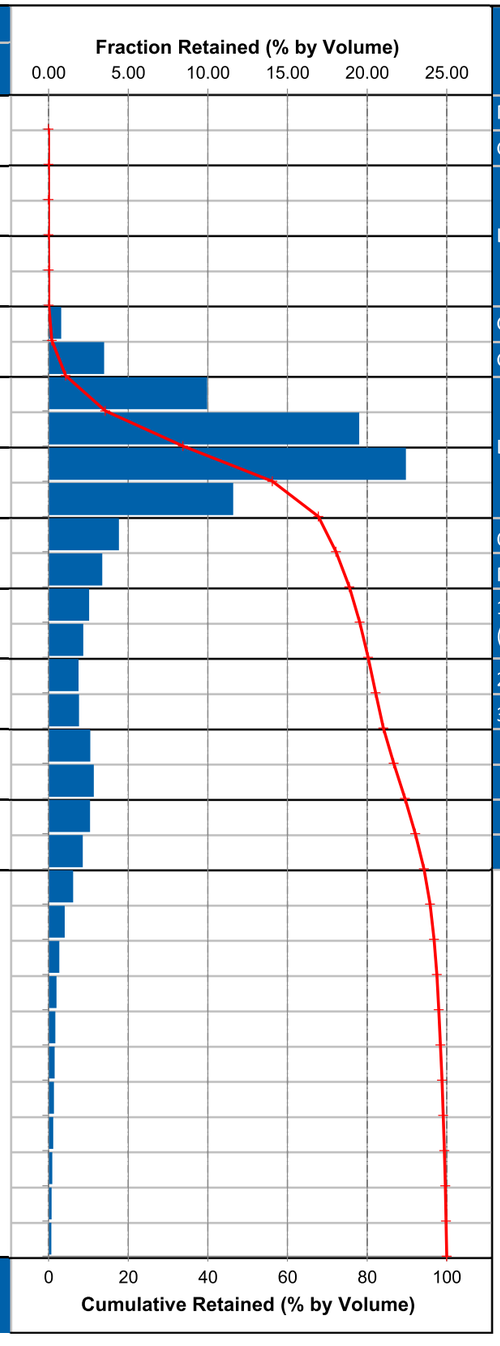
Method of Moments			
Geometric	Mean (µm)	62.88	Wentworth:
Logarithmic	Mean (Phi)	3.99	Very fine sand
	Sorting	1.86	Poor
	Skewness	2.10	Very fine
	Kurtosis	8.11	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	72.60	Wentworth:
Logarithmic	Mean (Phi)	3.78	Very fine sand
	Sorting	1.46	Poor
	Skewness	0.54	Very fine
	Kurtosis	2.36	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.44	92.39	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Muddy sand	Fines	25.30%
EUNIS Folk	Mud and sandy mud	Sand	74.60%
Distribution	Multimodal	Gravel	0.10%



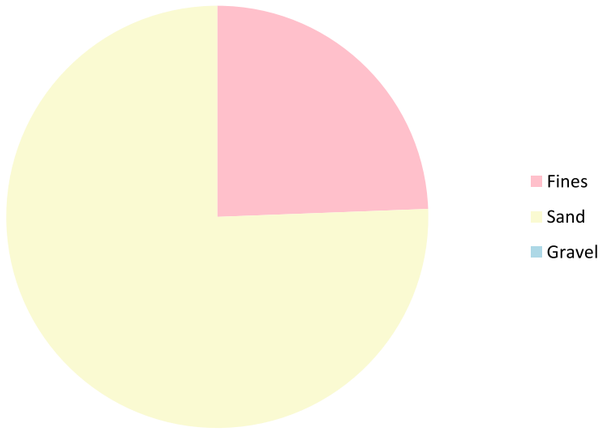
APPENDIX G PARTICLE SIZE ANALYSIS

ENV35				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.79	0.81	Coarse sand
500.00	1.00	3.48	4.29	
353.55	1.50	9.96	14.25	Medium sand
250.00	2.00	19.50	33.75	
176.78	2.50	22.43	56.18	Fine sand
125.00	3.00	11.60	67.78	
88.39	3.50	4.41	72.19	Very fine sand
62.50	4.00	3.37	75.56	
44.19	4.50	2.55	78.10	Coarse silt
31.25	5.00	2.17	80.28	
22.10	5.50	1.88	82.15	Medium silt
15.63	6.00	1.91	84.07	
11.05	6.50	2.62	86.68	Fine silt
7.81	7.00	2.83	89.52	
5.52	7.50	2.61	92.13	Very fine silt
3.91	8.00	2.14	94.27	
2.76	8.50	1.54	95.81	Clay
1.95	9.00	1.02	96.82	
1.38	9.50	0.67	97.50	
0.98	10.00	0.50	98.00	
0.69	10.50	0.42	98.42	
0.49	11.00	0.37	98.79	
0.35	11.50	0.33	99.12	
0.24	12.00	0.29	99.41	
0.17	12.50	0.23	99.65	
0.12	13.00	0.18	99.83	
<0.12	>13	0.17	100.00	



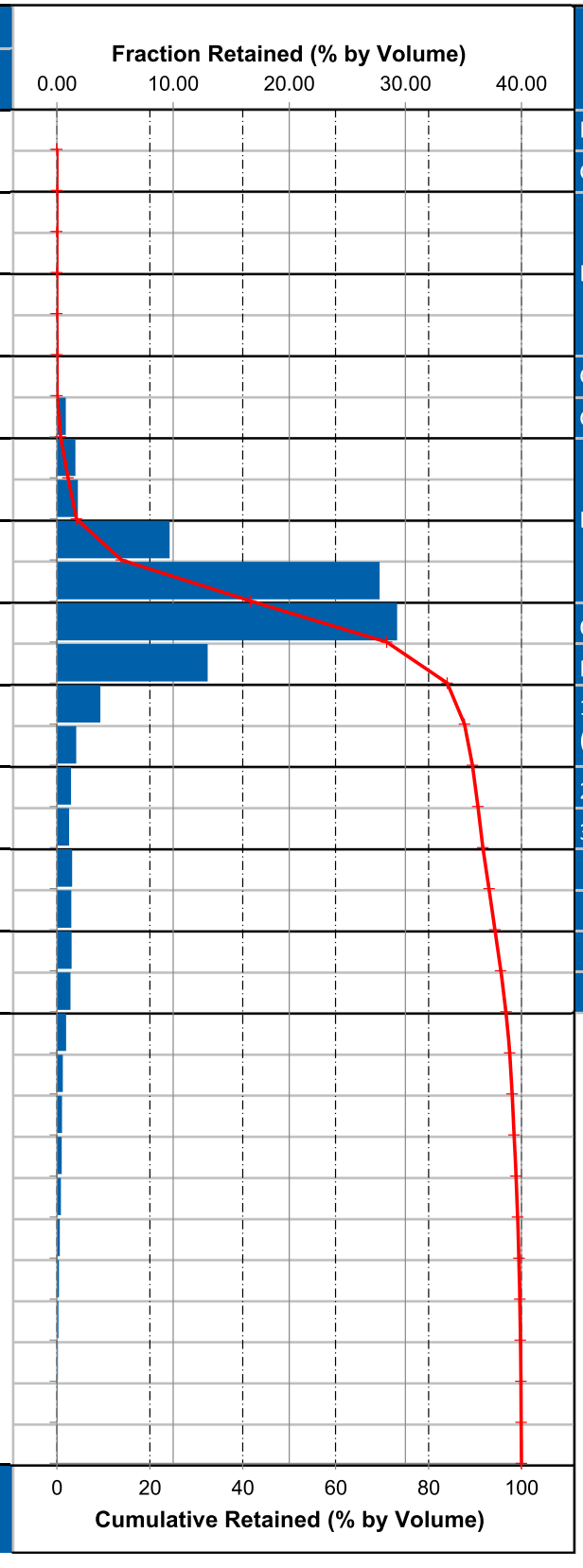
Method of Moments			
Geometric	Mean (µm)	103.44	Wentworth:
Logarithmic	Mean (Phi)	3.27	Very fine sand
	Sorting	2.37	Very poor
	Skewness	1.60	Very fine
	Kurtosis	5.11	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	101.77	Wentworth:
Logarithmic	Mean (Phi)	3.30	Very fine sand
	Sorting	2.20	Very poor
	Skewness	0.63	Very fine
	Kurtosis	1.38	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.36	194.49	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	24.40%
EUNIS Folk	Mud and sandy mud	Sand	75.60%
Distribution	Bimodal	Gravel	0.00%



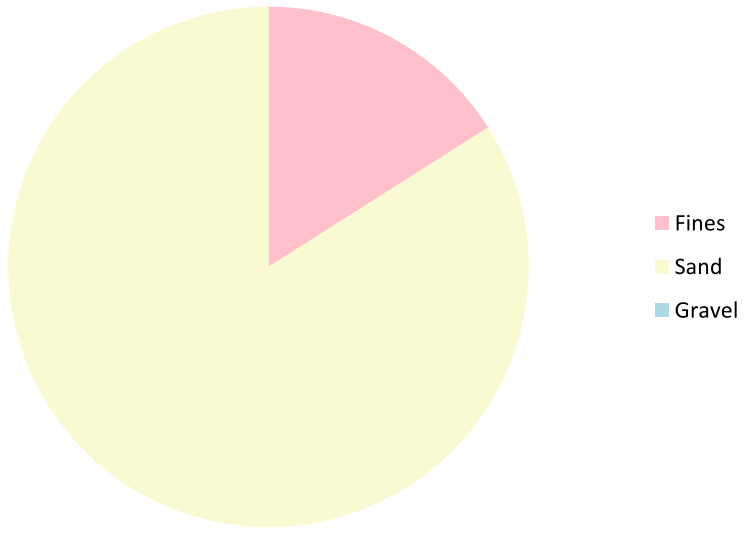
APPENDIX G PARTICLE SIZE ANALYSIS

ENV36				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.78	0.79	
353.55	1.50	1.60	2.39	Medium sand
250.00	2.00	1.81	4.20	
176.78	2.50	9.70	13.91	Fine sand
125.00	3.00	27.80	41.70	
88.39	3.50	29.30	71.00	Very fine sand
62.50	4.00	12.99	84.00	
44.19	4.50	3.75	87.75	Coarse silt
31.25	5.00	1.68	89.43	
22.10	5.50	1.22	90.65	Medium silt
15.63	6.00	1.06	91.71	
11.05	6.50	1.31	93.02	Fine silt
7.81	7.00	1.25	94.27	
5.52	7.50	1.27	95.54	Very fine silt
3.91	8.00	1.17	96.70	
2.76	8.50	0.79	97.49	Clay
1.95	9.00	0.50	97.99	
1.38	9.50	0.44	98.42	
0.98	10.00	0.41	98.84	
0.69	10.50	0.34	99.18	
0.49	11.00	0.26	99.44	
0.35	11.50	0.19	99.63	
0.24	12.00	0.14	99.76	
0.17	12.50	0.10	99.86	
0.12	13.00	0.07	99.93	
<0.12	>13	0.07	100.00	



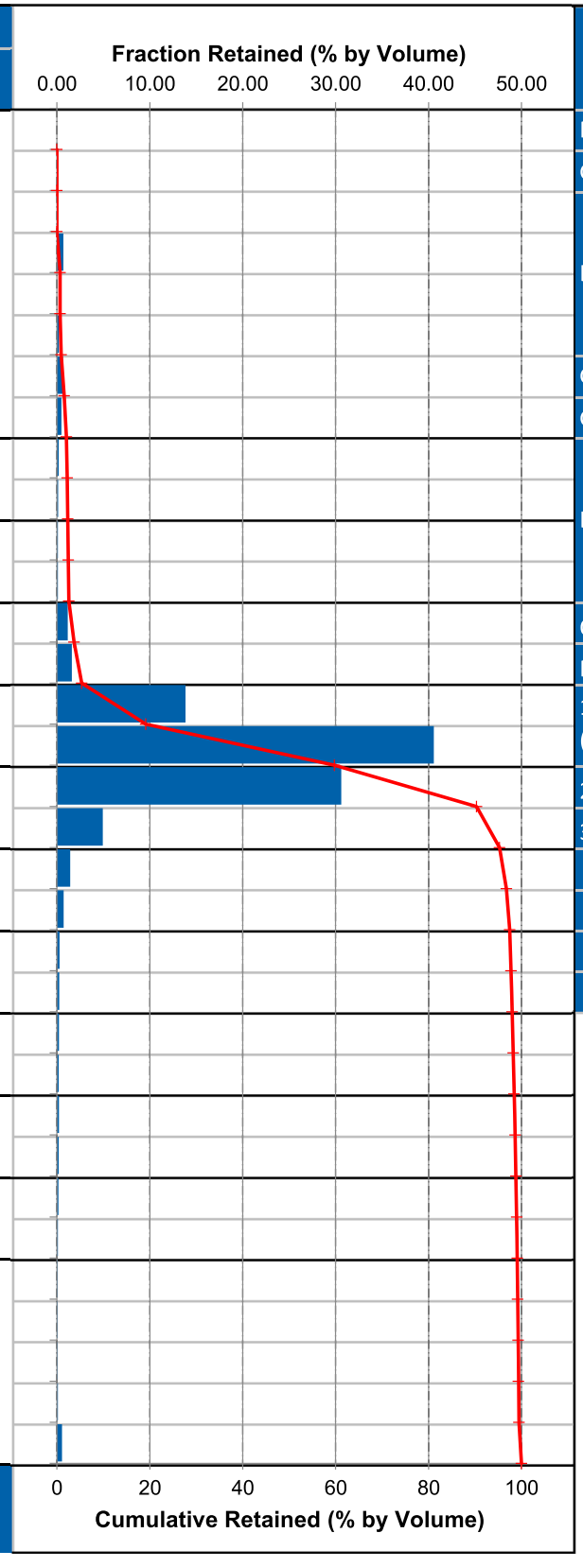
Method of Moments			
Geometric	Mean (µm)	87.66	Wentworth:
Logarithmic	Mean (Phi)	3.51	Very fine sand
	Sorting	1.62	Poor
	Skewness	2.51	Very fine
	Kurtosis	10.74	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	106.84	Wentworth:
Logarithmic	Mean (Phi)	3.23	Very fine sand
	Sorting	1.16	Poor
	Skewness	0.38	Very fine
	Kurtosis	2.25	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.14	113.31	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	16.00%
EUNIS Folk	Sand and muddy sand	Sand	84.00%
Distribution	Bimodal	Gravel	0.00%



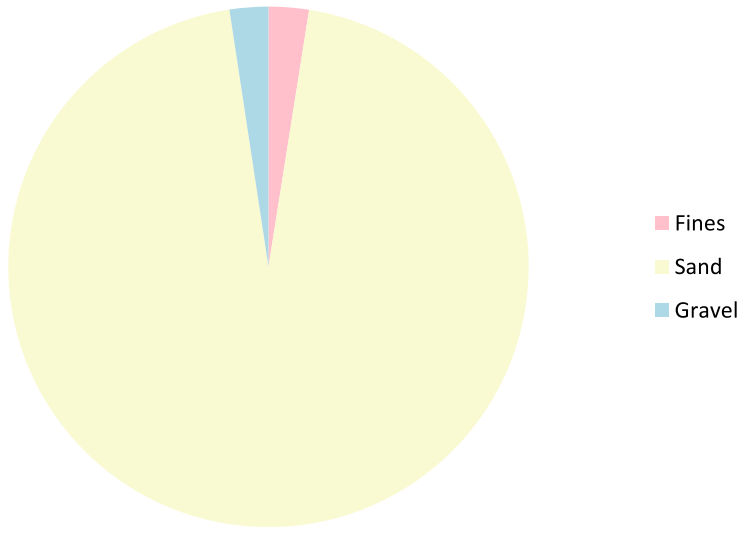
APPENDIX G PARTICLE SIZE ANALYSIS

ENV53				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
45254.83	-5.50	0.00	0.00	
32000.00	-5.00	0.00	0.00	
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.69	0.69	Pebble
11313.71	-3.50	0.00	0.69	
8000.00	-3.00	0.22	0.92	
5656.85	-2.50	0.65	1.56	
4000.00	-2.00	0.49	2.05	
2828.43	-1.50	0.19	2.24	Granule
2000.00	-1.00	0.13	2.36	
1414.21	-0.50	0.10	2.47	Very coarse sand
1000.00	0.00	0.09	2.56	
707.11	0.50	1.16	3.72	Coarse sand
500.00	1.00	1.60	5.32	
353.55	1.50	13.83	19.15	Medium sand
250.00	2.00	40.58	59.73	
176.78	2.50	30.62	90.35	Fine sand
125.00	3.00	4.95	95.29	
88.39	3.50	1.44	96.74	Very fine sand
62.50	4.00	0.73	97.47	
44.19	4.50	0.28	97.75	Coarse silt
31.25	5.00	0.25	98.00	
22.10	5.50	0.21	98.21	Medium silt
15.63	6.00	0.20	98.41	
11.05	6.50	0.22	98.63	Fine silt
7.81	7.00	0.20	98.82	
5.52	7.50	0.16	98.99	Very fine silt
3.91	8.00	0.12	99.10	
2.76	8.50	0.08	99.19	Clay
1.95	9.00	0.08	99.26	
1.38	9.50	0.09	99.35	
0.98	10.00	0.11	99.46	
<1.0	>10	0.54	100.00	



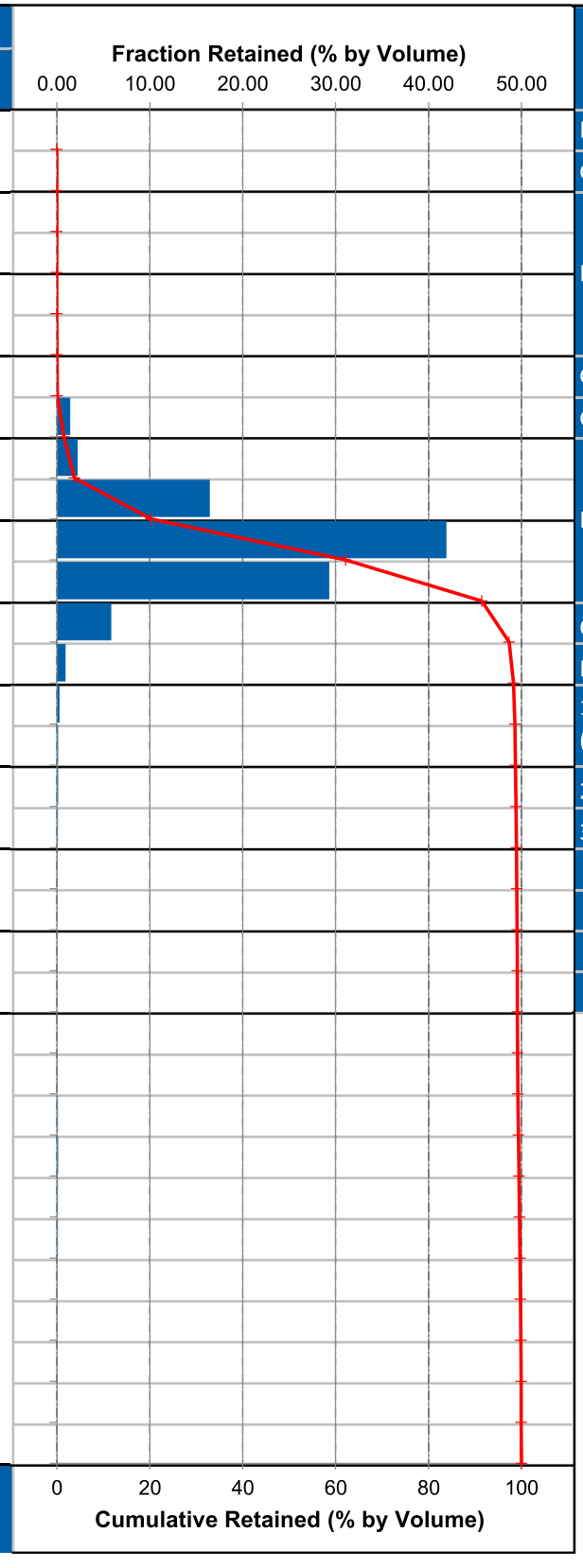
Method of Moments			
Geometric	Mean (µm)	265.33	Wentworth:
Logarithmic	Mean (Phi)	1.91	Medium sand
	Sorting	1.34	Poor
	Skewness	1.77	Very fine
	Kurtosis	25.04	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	270.26	Wentworth:
Logarithmic	Mean (Phi)	1.89	Medium sand
	Sorting	0.57	Moderately well
	Skewness	0.04	Symmetrical
	Kurtosis	1.25	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.88	271.66	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	2.50%
EUNIS Folk	Sand and muddy sand	Sand	95.10%
Distribution	Unimodal	Gravel	2.40%



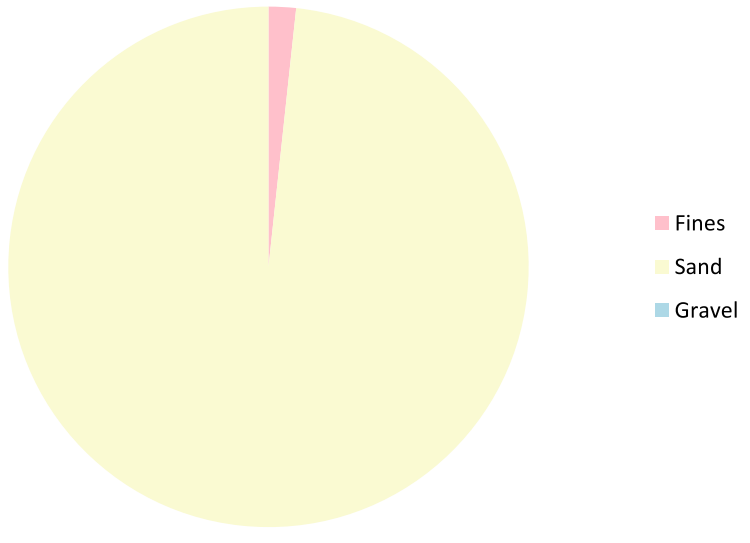
APPENDIX G PARTICLE SIZE ANALYSIS

ENV57				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.01	Very coarse sand
1000.00	0.00	0.02	0.02	
707.11	0.50	0.07	0.09	Coarse sand
500.00	1.00	1.45	1.53	
353.55	1.50	2.23	3.76	Medium sand
250.00	2.00	16.47	20.23	
176.78	2.50	41.92	62.16	Fine sand
125.00	3.00	29.32	91.48	
88.39	3.50	5.85	97.33	Very fine sand
62.50	4.00	0.95	98.27	
44.19	4.50	0.29	98.57	Coarse silt
31.25	5.00	0.15	98.72	
22.10	5.50	0.13	98.84	Medium silt
15.63	6.00	0.10	98.95	
11.05	6.50	0.07	99.02	Fine silt
7.81	7.00	0.05	99.07	
5.52	7.50	0.04	99.11	Very fine silt
3.91	8.00	0.03	99.14	
2.76	8.50	0.04	99.18	Clay
1.95	9.00	0.07	99.24	
1.38	9.50	0.10	99.35	
0.98	10.00	0.12	99.47	
0.69	10.50	0.12	99.59	
0.49	11.00	0.11	99.70	
0.35	11.50	0.09	99.79	
0.24	12.00	0.07	99.86	
0.17	12.50	0.05	99.91	
0.12	13.00	0.04	99.96	
<0.12	>13	0.04	100.00	



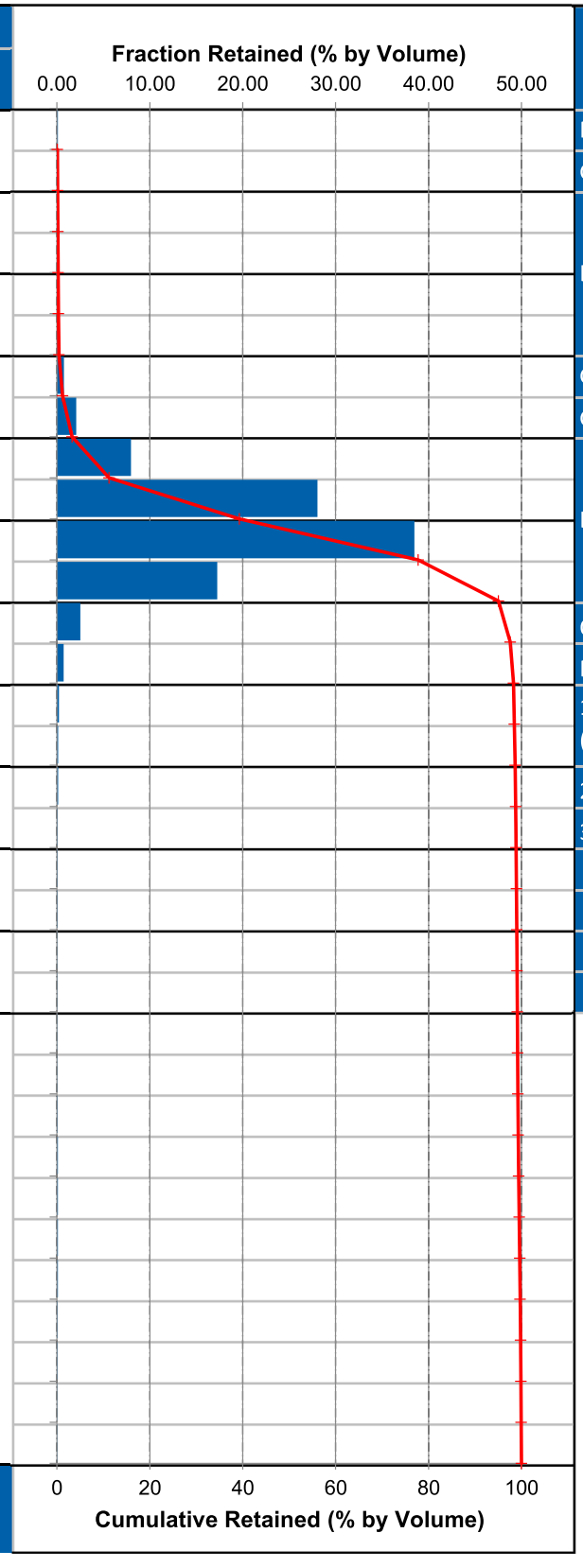
Method of Moments			
Geometric	Mean (µm)	184.51	Wentworth:
Logarithmic	Mean (Phi)	2.44	Fine sand
	Sorting	0.95	Moderately
	Skewness	5.89	Very fine
	Kurtosis	53.95	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	193.94	Wentworth:
Logarithmic	Mean (Phi)	2.37	Fine sand
	Sorting	0.52	Moderately well
	Skewness	0.05	Symmetrical
	Kurtosis	1.09	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.36	195.47	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	1.70%
EUNIS Folk	Sand and muddy sand	Sand	98.30%
Distribution	Unimodal	Gravel	0.00%



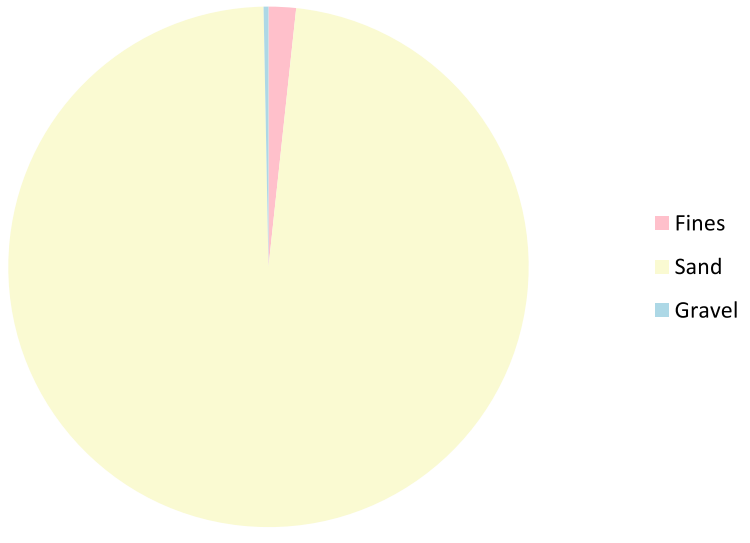
APPENDIX G PARTICLE SIZE ANALYSIS

ENV58				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.11	0.11	Pebble
4000.00	-2.00	0.04	0.15	
2828.43	-1.50	0.04	0.19	Granule
2000.00	-1.00	0.08	0.26	
1414.21	-0.50	0.06	0.33	Very coarse sand
1000.00	0.00	0.12	0.44	
707.11	0.50	0.76	1.20	Coarse sand
500.00	1.00	2.08	3.28	
353.55	1.50	7.96	11.25	Medium sand
250.00	2.00	28.05	39.30	
176.78	2.50	38.48	77.77	Fine sand
125.00	3.00	17.25	95.02	
88.39	3.50	2.53	97.55	Very fine sand
62.50	4.00	0.72	98.27	
44.19	4.50	0.21	98.48	Coarse silt
31.25	5.00	0.13	98.61	
22.10	5.50	0.13	98.74	Medium silt
15.63	6.00	0.09	98.84	
11.05	6.50	0.09	98.93	Fine silt
7.81	7.00	0.08	99.01	
5.52	7.50	0.06	99.07	Very fine silt
3.91	8.00	0.05	99.12	
2.76	8.50	0.04	99.16	Clay
1.95	9.00	0.06	99.21	
1.38	9.50	0.09	99.30	
0.98	10.00	0.11	99.40	
0.69	10.50	0.11	99.52	
0.49	11.00	0.11	99.63	
0.35	11.50	0.10	99.73	
0.24	12.00	0.09	99.82	
0.17	12.50	0.07	99.88	
0.12	13.00	0.06	99.94	
<0.12	>13	0.06	100.00	



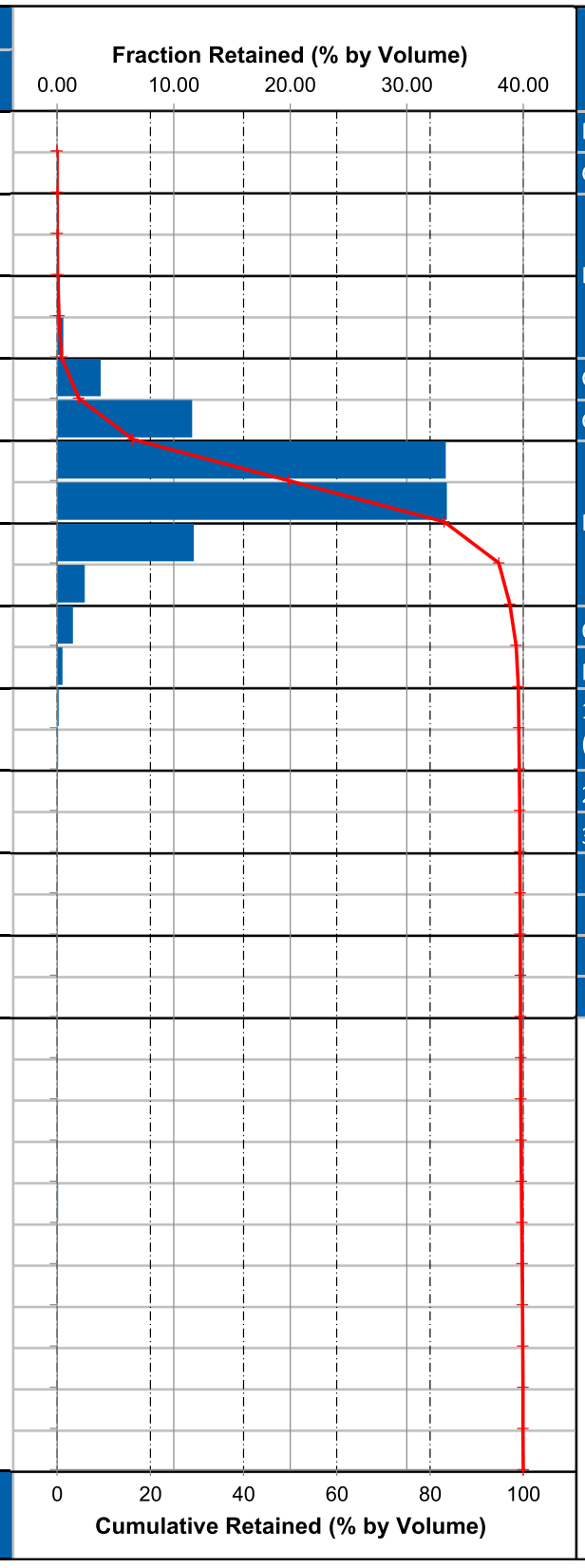
Method of Moments			
Geometric	Mean (µm)	218.79	Wentworth:
Logarithmic	Mean (Phi)	2.19	Fine sand
	Sorting	1.06	Poor
	Skewness	5.02	Very fine
	Kurtosis	45.70	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	227.71	Wentworth:
Logarithmic	Mean (Phi)	2.13	Fine sand
	Sorting	0.56	Moderately well
	Skewness	-0.05	Symmetrical
	Kurtosis	1.08	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.14	227.03	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	1.70%
EUNIS Folk	Sand and muddy sand	Sand	98.00%
Distribution	Unimodal	Gravel	0.30%



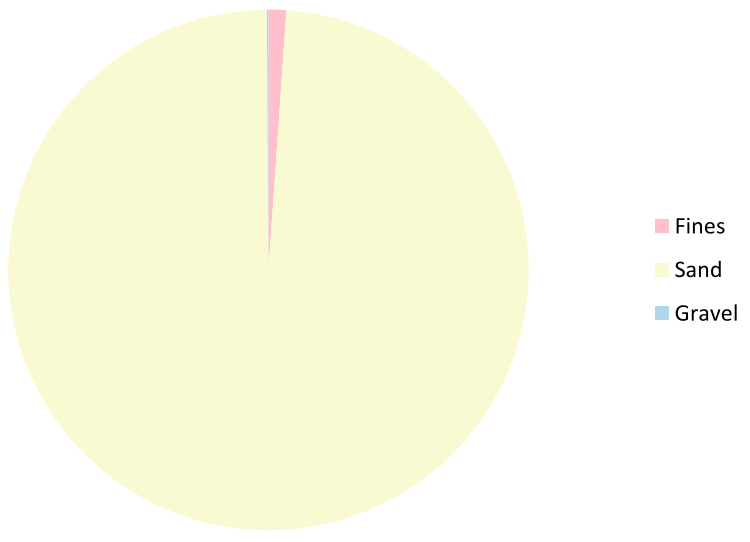
APPENDIX G PARTICLE SIZE ANALYSIS

ENV59				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
5656.85	-2.50	0.00	0.00	Pebble
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.09	0.11	
1414.21	-0.50	0.26	0.37	Very coarse sand
1000.00	0.00	0.54	0.90	
707.11	0.50	3.73	4.64	Coarse sand
500.00	1.00	11.59	16.23	
353.55	1.50	33.35	49.58	Medium sand
250.00	2.00	33.45	83.02	
176.78	2.50	11.73	94.75	Fine sand
125.00	3.00	2.37	97.12	
88.39	3.50	1.36	98.48	Very fine sand
62.50	4.00	0.46	98.94	
44.19	4.50	0.14	99.08	Coarse silt
31.25	5.00	0.09	99.17	
22.10	5.50	0.06	99.23	Medium silt
15.63	6.00	0.05	99.28	
11.05	6.50	0.05	99.33	Fine silt
7.81	7.00	0.04	99.37	
5.52	7.50	0.03	99.40	Very fine silt
3.91	8.00	0.02	99.42	
2.76	8.50	0.02	99.44	Clay
1.95	9.00	0.03	99.48	
1.38	9.50	0.05	99.53	
0.98	10.00	0.07	99.60	
0.69	10.50	0.08	99.68	
0.49	11.00	0.07	99.75	
0.35	11.50	0.07	99.82	
0.24	12.00	0.06	99.88	
0.17	12.50	0.05	99.92	
0.12	13.00	0.04	99.96	
<0.12	>13	0.04	100.00	



Method of Moments			
Geometric	Mean (µm)	336.23	Wentworth:
Logarithmic	Mean (Phi)	1.57	Medium sand
	Sorting	0.98	Moderately
	Skewness	5.46	Very fine
	Kurtosis	54.32	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	350.45	Wentworth:
Logarithmic	Mean (Phi)	1.51	Medium sand
	Sorting	0.57	Moderately well
	Skewness	0.02	Symmetrical
	Kurtosis	1.11	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.51	352.01	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	1.10%
EUNIS Folk	Sand and muddy sand	Sand	98.80%
Distribution	Unimodal	Gravel	0.10%



APPENDIX H SPEARMAN'S RANK CORRELATION

APPENDIX H SPEARMAN'S RANK CORRELATION

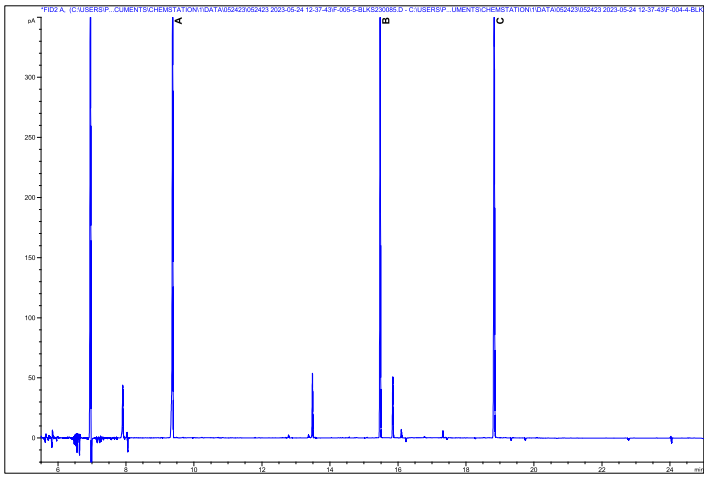
Dixon's test for high outliers (n=8 to 10)	0.34	0.19	0.09	0.08	0.25	0.38	0.38	0.19	0.22	0.25	0.45	0.39	0.12	0.38	0.13	0.22	0.37
Dixon's test for low outliers (n=8 to 10)	0.17	0.01	0.02	0.10	0.02	0.29	0.25	0.07	0.01	0.00	0.01	0.00	0.17	0.00	0.07	0.12	0.04
Station	Depth at CHEM (m Obs)	Mean µm	Fines	Sand	TOC	THC	UCM	nC10-20	nC21-37	Total n-alkanes	Pristane	Arsenic (As)	Chromium (Cr)	Copper (Cu)	Nickel (Ni)	Lead (Pb)	Zinc (Zn)
ENV04	83	61	31.3	68.7	0.37	11.3	8.1	0.035	0.283	0.318	0.011	3.3	11.6	4.3	7.0	4.7	18.1
ENV13	63	220	9.5	90.3	0.19	6.0	3.7	0.012	0.069	0.081	0.003	2.2	7.4	3.0	3.3	2.5	10.6
ENV17	75	130	18.9	80.8	0.3	12.9	8.2	0.033	0.331	0.364	0.010	2.6	10.2	3.5	5.3	3.9	16.3
ENV26	110	47	40.7	59.3	0.77	18.7	13.1	0.057	0.421	0.478	0.022	4.1	14.7	5.9	9.8	6.2	24.8
ENV29	83	48	37.2	62.8	0.61	14.0	9.5	0.047	0.314	0.361	0.012	3.3	13.8	4.8	9.0	5.4	19.7
ENV31	76	99	23.2	76.8	0.35	9.2	6.4	0.027	0.175	0.202	0.007	2.1	9.1	3.9	5.6	3.4	14.9
ENV36	73	107	16.0	84.0	0.62	11.4	7.4	0.040	0.211	0.251	0.010	2.1	10.6	3.9	6.9	3.9	14.6
ENV53	31	270	2.5	95.1	0.17	10.1	9.5	0.003	0.016	0.018	0.001	5.4	6.1	3.0	3.7	2.6	11.9
ENV58_A	20	228	1.7	98.0	0.16	2.8	1.8	0.006	0.014	0.020	0.001	3.7	7.4	3.2	4.5	2.1	11.00
Depth at CHEM (m Obs)		-0.96	1.00	-1.00	0.83	0.76	0.64	0.85	0.86	0.85	0.95	-0.03	0.90	0.91	0.88	0.92	0.93
Mean µm			-0.97	0.97	-0.88	-0.72	-0.53	-0.92	-0.80	-0.82	-0.92	0.10	-0.95	-0.97	-0.93	-0.90	-0.88
Fines				-1.00	0.83	0.78	0.67	0.87	0.87	0.85	0.95	-0.03	0.90	0.92	0.88	0.93	0.93
Sand					-0.83	-0.78	-0.67	-0.87	-0.87	-0.85	-0.95	0.03	-0.90	-0.92	-0.88	-0.93	-0.93
TOC						0.80	0.57	0.95	0.78	0.77	0.87	-0.20	0.90	0.87	0.88	0.89	0.77
THC							0.88	0.85	0.92	0.87	0.90	0.15	0.83	0.75	0.78	0.93	0.87
UCM								0.58	0.72	0.62	0.73	0.49	0.59	0.57	0.62	0.80	0.78
nC10-20									0.87	0.88	0.93	-0.13	0.98	0.92	0.92	0.92	0.83
nC21-37										0.98	0.95	-0.03	0.87	0.77	0.77	0.91	0.88
Total n-alkanes											0.93	-0.07	0.90	0.80	0.78	0.88	0.87
Pristane												0.02	0.95	0.89	0.88	0.98	0.93
Arsenic (As)													-0.03	0.02	0.07	0.10	0.18
Chromium (Cr)														0.96	0.95	0.94	0.90
Copper (Cu)															0.99	0.91	0.92
Nickel (Ni)																0.92	0.92
Lead (Pb)																	0.95
Zinc (Zn)																	

Critical Values Outliers Test
p < 0.01 if value >= 0.635
p < 0.05 if value >= 0.512

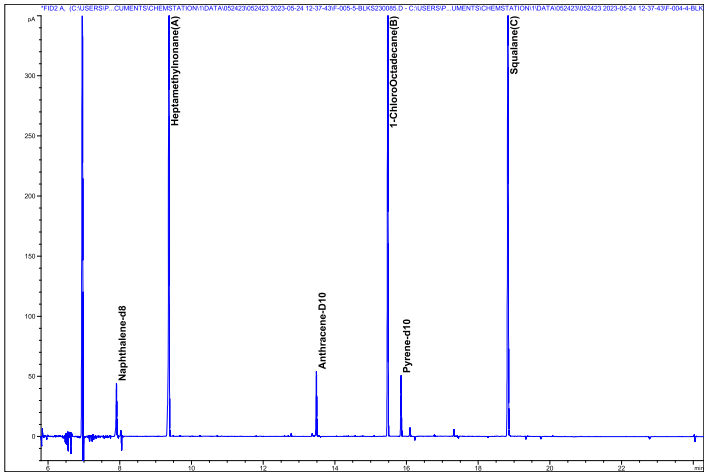
Critical Values Spearmans Test
p < 0.01 if value >= 0.833
p < 0.05 if value >= 0.683

APPENDIX I HYDROCARBON ANALYSIS

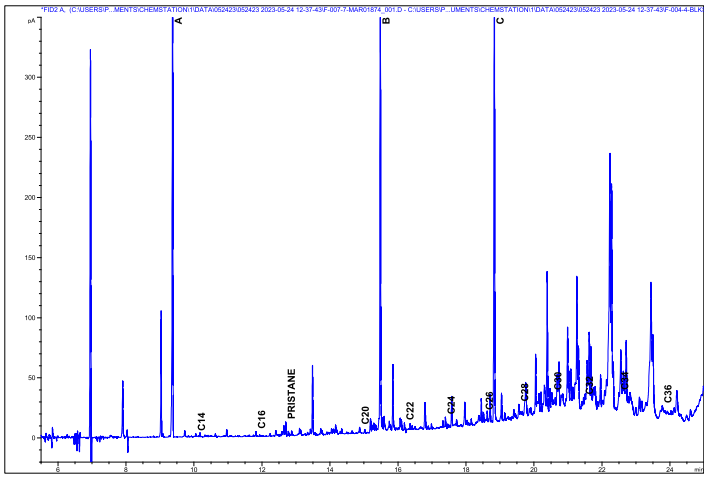
APPENDIX I HYDROCARBON ANALYSIS



BLKS230085



BLKS230085Labelled



ENV04

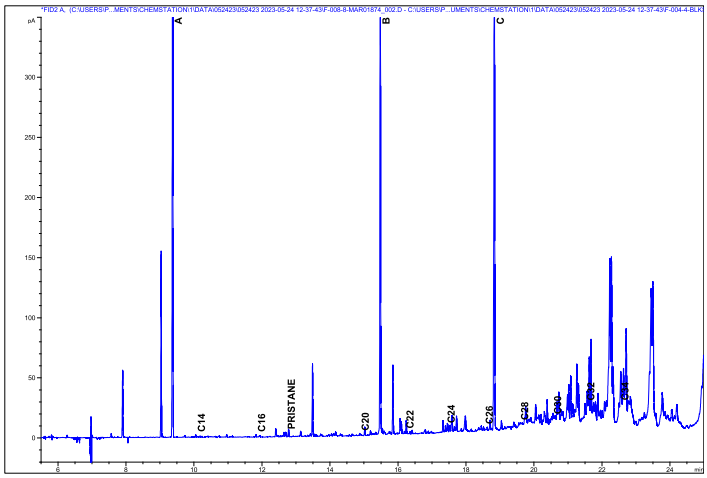
THC: 11.326µg g^{-1}

UCM: 8.076µg g^{-1}

n-Alkanes: 0.318µg g^{-1}

Note:
Peaks at ~7.01, ~16.09 and ~17.32 minutes are believed to be lab introduced and therefore excluded from the reported concentrations.
Negative peaks may appear where blank subtraction has been used.

APPENDIX I HYDROCARBON ANALYSIS

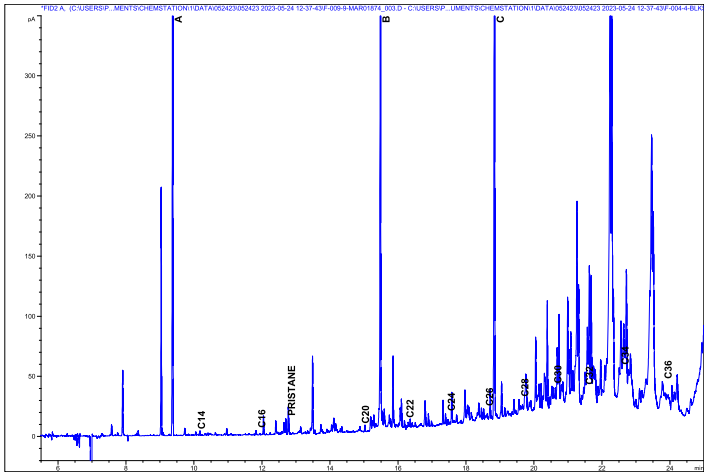


ENV13

THC: 6.023µg g^{-1}

UCM: 3.724µg g^{-1}

n-Alkanes: 0.081µg g^{-1}

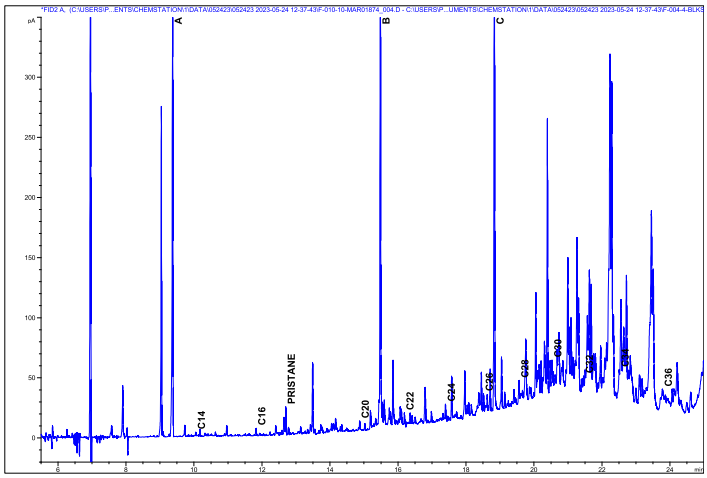


ENV17

THC: 12.862µg g^{-1}

UCM: 8.203µg g^{-1}

n-Alkanes: 0.364µg g^{-1}



ENV26

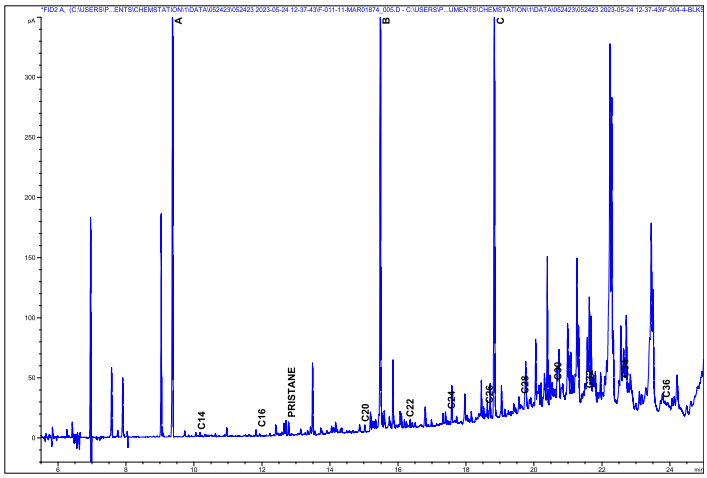
THC: 18.739µg g^{-1}

UCM: 13.082µg g^{-1}

n-Alkanes: 0.478µg g^{-1}

Note:
Peaks at ~7.01, ~16.09 and ~17.32 minutes are believed to be lab introduced and therefore excluded from the reported concentrations.
Negative peaks may appear where blank subtraction has been used.

APPENDIX I HYDROCARBON ANALYSIS

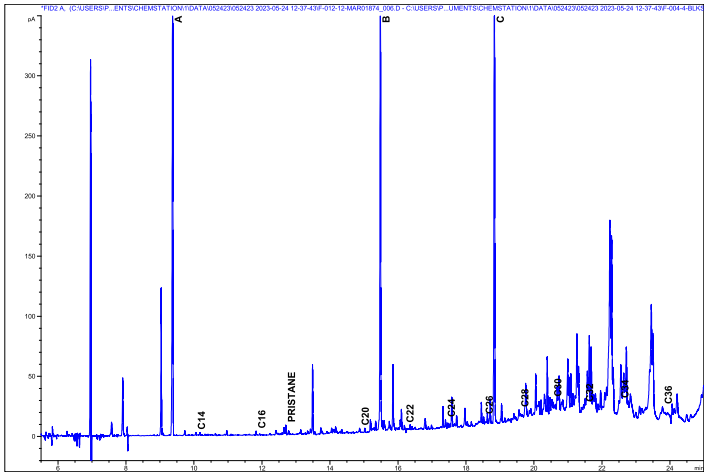


ENV29

THC: 13.956µg g^{-1}

UCM: 9.542µg g^{-1}

n-Alkanes: 0.361µg g^{-1}

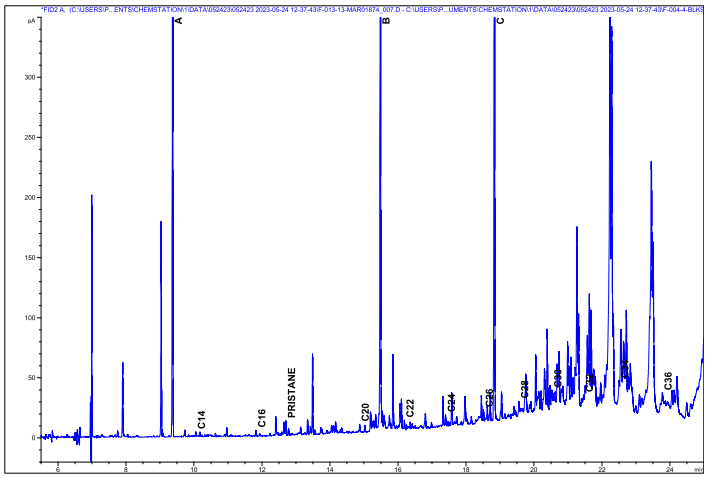


ENV31

THC: 9.216µg g^{-1}

UCM: 6.438µg g^{-1}

n-Alkanes: 0.202µg g^{-1}



ENV36

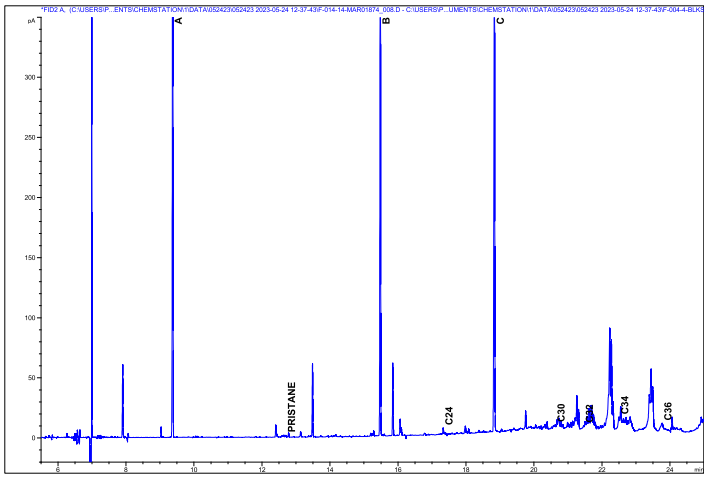
THC: 11.444µg g^{-1}

UCM: 7.439µg g^{-1}

n-Alkanes: 0.251µg g^{-1}

Note:
Peaks at ~7.01, ~16.09 and ~17.32 minutes are believed to be lab introduced and therefore excluded from the reported concentrations.
Negative peaks may appear where blank subtraction has been used.

APPENDIX I HYDROCARBON ANALYSIS

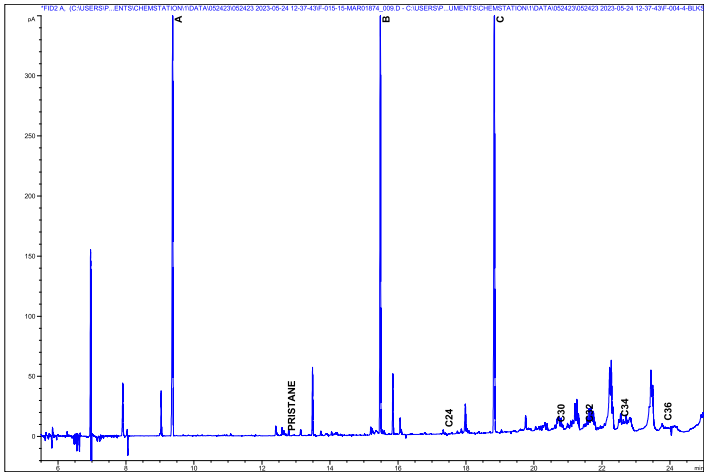


ENV53

THC: 10.145µg g^{-1}

UCM: 9.536µg g^{-1}

n-Alkanes: 0.018µg g^{-1}

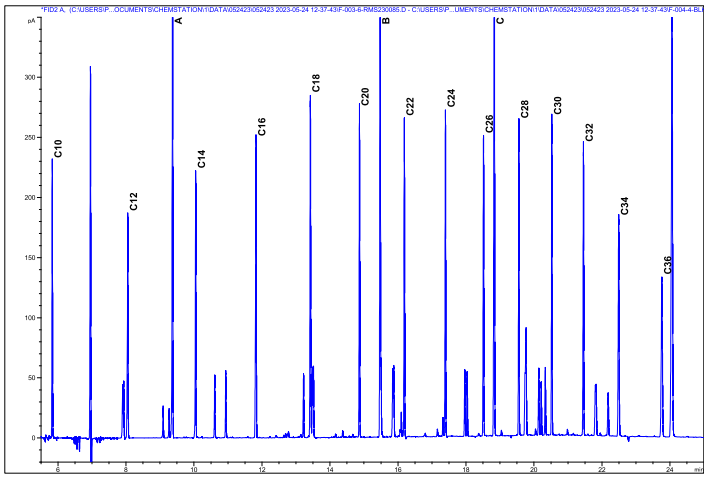


ENV58_A

THC: 2.770µg g^{-1}

UCM: 1.783µg g^{-1}

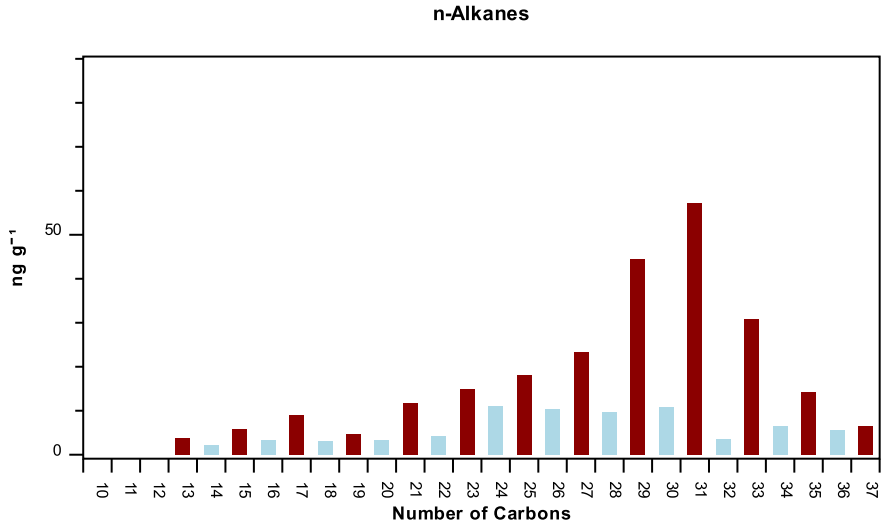
n-Alkanes: 0.020µg g^{-1}



RMS230085

Note:
Peaks at ~7.01, ~16.09 and ~17.32 minutes are believed to be lab introduced and therefore excluded from the reported concentrations.
Negative peaks may appear where blank subtraction has been used.

APPENDIX I HYDROCARBON ANALYSIS



ENV04

nC_{10}-nC_{20}: 35ng g^{-1}

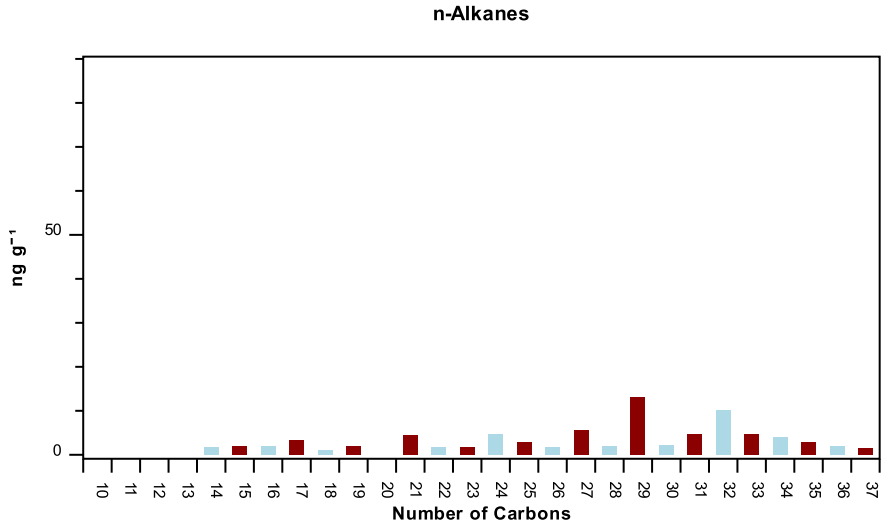
nC_{21}-nC_{37}: 283ng g^{-1}

nC_{10}-nC_{37}: 318ng g^{-1}

Odd Length n-Alkanes: 245ng g^{-1}

Even Length n-Alkanes: 73ng g^{-1}

CPI: 3.4



ENV13

nC_{10}-nC_{20}: 12ng g^{-1}

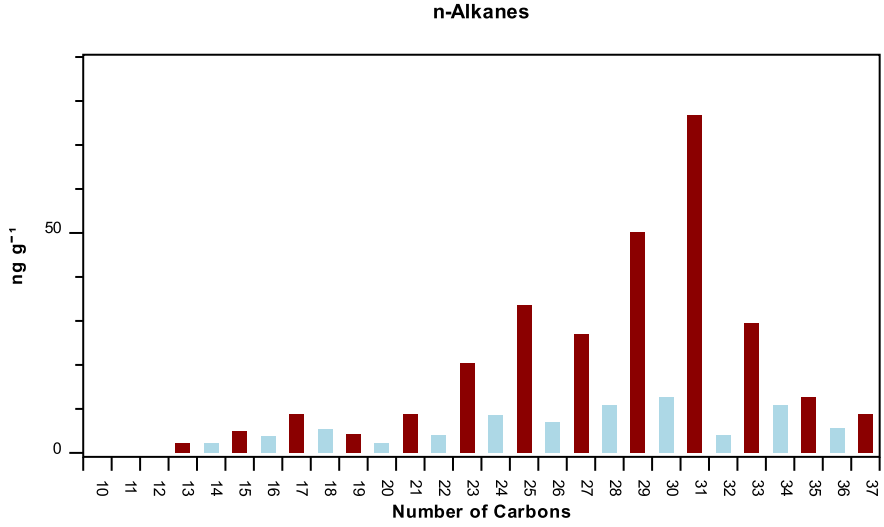
nC_{21}-nC_{37}: 69ng g^{-1}

nC_{10}-nC_{37}: 81ng g^{-1}

Odd Length n-Alkanes: 48ng g^{-1}

Even Length n-Alkanes: 33ng g^{-1}

CPI: 4.9



ENV17

nC_{10}-nC_{20}: 33ng g^{-1}

nC_{21}-nC_{37}: 331ng g^{-1}

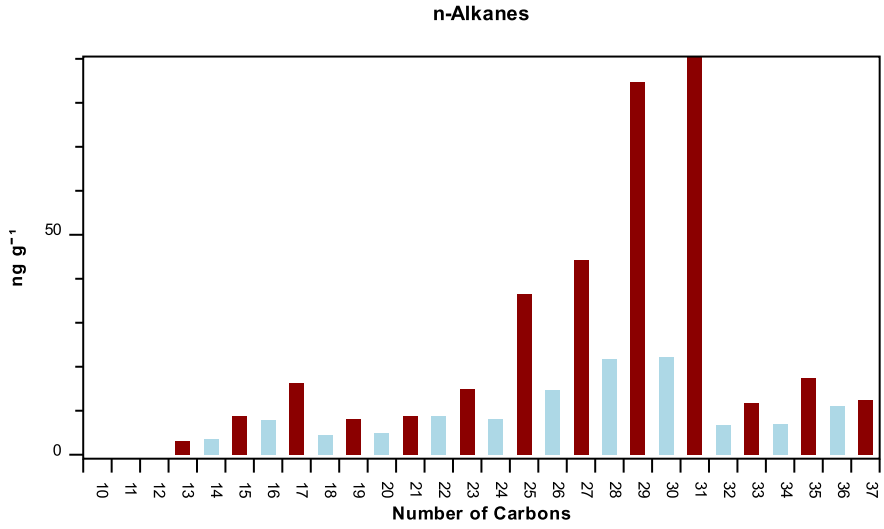
nC_{10}-nC_{37}: 364ng g^{-1}

Odd Length n-Alkanes: 287ng g^{-1}

Even Length n-Alkanes: 77ng g^{-1}

CPI: 3.7

APPENDIX I HYDROCARBON ANALYSIS



ENV26

nC_{10}-nC_{20}: 57ng g^{-1}

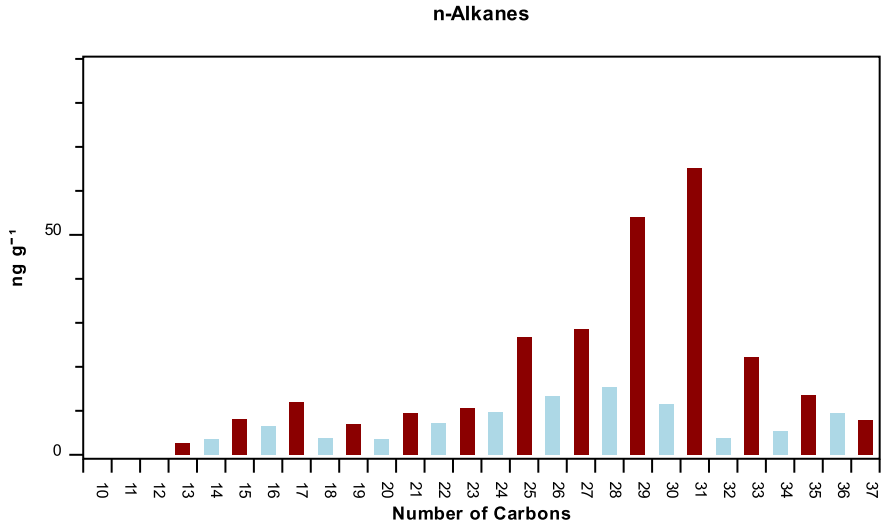
nC_{21}-nC_{37}: 421ng g^{-1}

nC_{10}-nC_{37}: 478ng g^{-1}

Odd Length n-Alkanes: 357ng g^{-1}

Even Length n-Alkanes: 121ng g^{-1}

CPI: 3.2



ENV29

nC_{10}-nC_{20}: 47ng g^{-1}

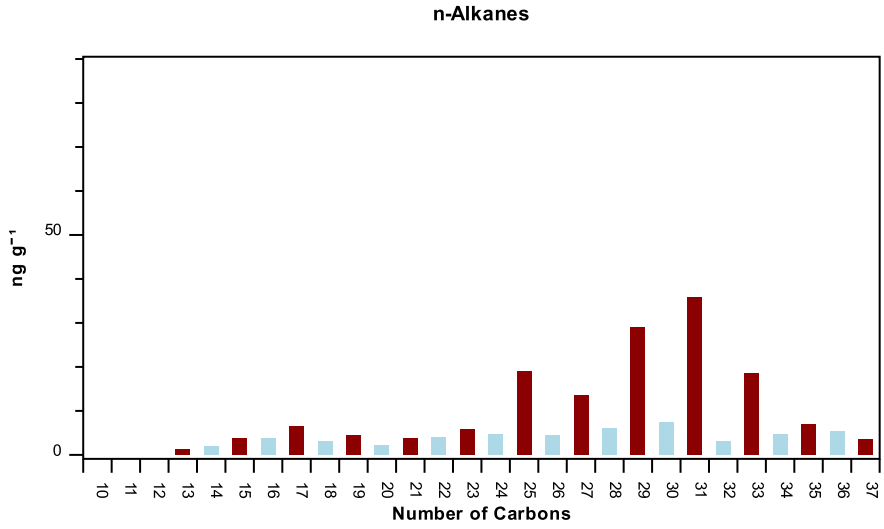
nC_{21}-nC_{37}: 314ng g^{-1}

nC_{10}-nC_{37}: 361ng g^{-1}

Odd Length n-Alkanes: 267ng g^{-1}

Even Length n-Alkanes: 93ng g^{-1}

CPI: 3.0



ENV31

nC_{10}-nC_{20}: 27ng g^{-1}

nC_{21}-nC_{37}: 175ng g^{-1}

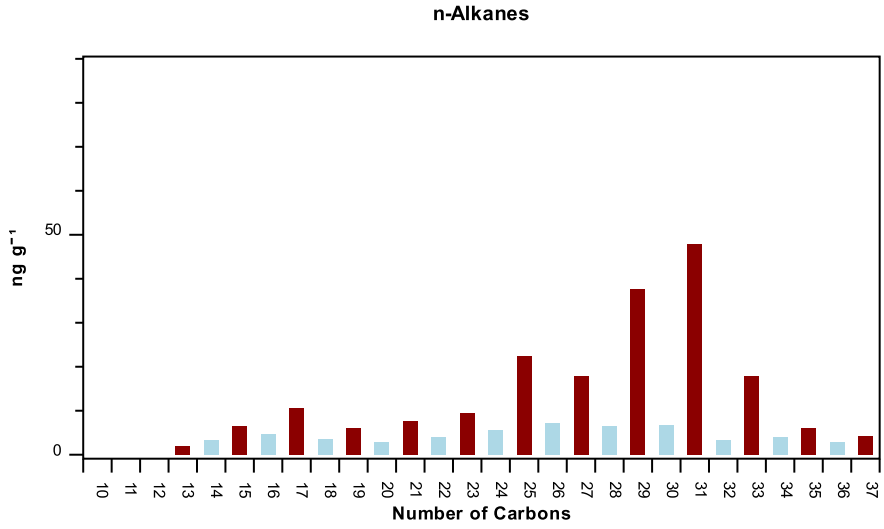
nC_{10}-nC_{37}: 202ng g^{-1}

Odd Length n-Alkanes: 151ng g^{-1}

Even Length n-Alkanes: 50ng g^{-1}

CPI: 3.6

APPENDIX I HYDROCARBON ANALYSIS



ENV36

nC_{10}-nC_{20}: 40ng g^{-1}

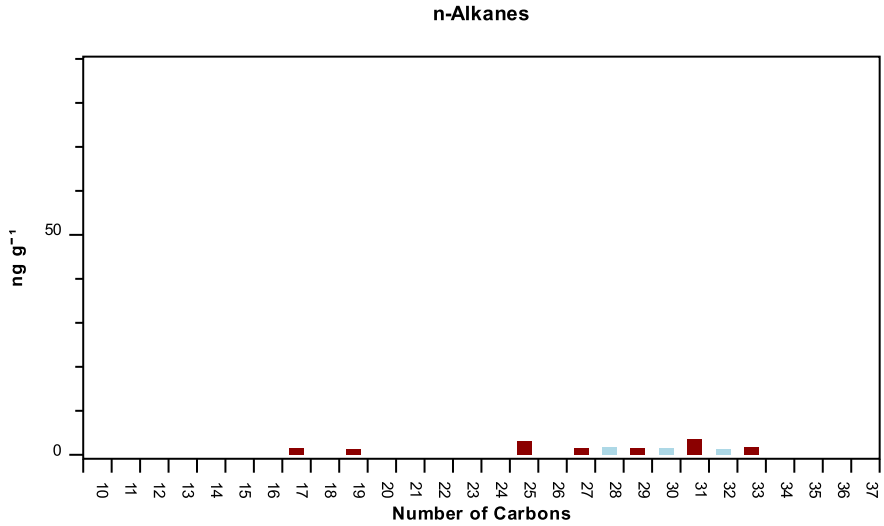
nC_{21}-nC_{37}: 211ng g^{-1}

nC_{10}-nC_{37}: 251ng g^{-1}

Odd Length n-Alkanes: 196ng g^{-1}

Even Length n-Alkanes: 54ng g^{-1}

CPI: 4.2



ENV53

nC_{10}-nC_{20}: 3ng g^{-1}

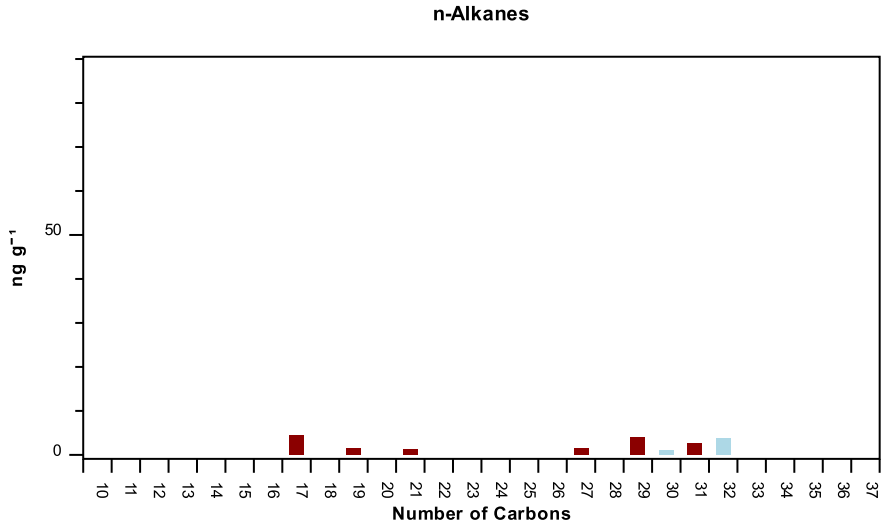
nC_{21}-nC_{37}: 16ng g^{-1}

nC_{10}-nC_{37}: 18ng g^{-1}

Odd Length n-Alkanes: 14ng g^{-1}

Even Length n-Alkanes: 4ng g^{-1}

CPI: 1.2



ENV58_A

nC_{10}-nC_{20}: 6ng g^{-1}

nC_{21}-nC_{37}: 14ng g^{-1}

nC_{10}-nC_{37}: 20ng g^{-1}

Odd Length n-Alkanes: 15ng g^{-1}

Even Length n-Alkanes: 5ng g^{-1}

CPI: 10.8

APPENDIX I HYDROCARBON ANALYSIS

Table I.1 Normalised PAH Concentrations to 2.5% TOC

Station	ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53	ENV58	Survey Mean[1]	OSPAR (2009a)		
											BC	BAC	EAC
Naphthalene	<LOD	<LOD	<LOD	6	<LOD	<LOD	<LOD	<LOD	<LOD	6	5	8	43
Acenaphthylene	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	NC	NA	NA	NA
Acenaphthene	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	NC	NA	NA	NA
Fluorene	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	NC	NA	NA	NA
Phenanthrene	16	<LOD	18	15	14	15	10	<LOD	<LOD	15	17	32	1250
Anthracene	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	NC	3	5	78
Fluoranthene	26	<LOD	36	29	26	36	14	<LOD	<LOD	28	20	39	250
Pyrene	21	<LOD	28	23	20	28	10	<LOD	<LOD	22	13	24	350
Benzo[a]anthracene	12	<LOD	18	15	14	17	6	<LOD	<LOD	14	9	16	NA
Chrysene	19	<LOD	23	19	18	20	9	<LOD	<LOD	18	11	20	NA
Benzo[b]fluoranthene	53	20	52	53	51	47	31	<LOD	<LOD	44	NA	NA	NA
Benzo[k]fluoranthene	43	23	39	41	39	36	21	<LOD	<LOD	35	NA	NA	NA
Benzo[e]pyrene	55	27	51	54	54	50	35	<LOD	<LOD	47	NA	NA	NA
Benzo[a]pyrene	21	<LOD	25	23	22	23	11	<LOD	<LOD	21	15	30	625
Perylene	19	<LOD	31	23	9	<LOD	<LOD	<LOD	<LOD	21	NA	NA	NA
Indeno[123,cd]pyrene	57	30.0	59	64	63	57	40	<LOD	<LOD	53	50	103	NA
Dibenzo[a,h]anthracene	<LOD	<LOD	<LOD	8	9	<LOD	<LOD	<LOD	<LOD	8	NA	NA	NA
Benzo[ghi]perylene	31	<LOD	31	31	29	27	18	<LOD	<LOD	28	45	80	NA

Concentrations expressed as ng g^{-1} dry weight sediment normalised to 2.5% TOC.

Blue cells are where concentrations exceed the OSPAR (2009a) BC with values below indicating pristine or remote environments.

NC Not calculated due to all concentrations being below LOD.

NA Not available

1 Survey mean relates to concentrations above LOD only.

APPENDIX J POLYBROMINATED DIPHENYL ETHERS ANALYSIS

APPENDIX J POLYBROMINATED DIPHENYL ETHERS ANALYSIS

Table K.1 Concentrations of PBDEs when Normalised to 2.5% TOC

Station	ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53	ENV58	OSPAR (2020) BAC	FEQG (Viñas et al., 2023)
PBDE 17	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	NA
PBDE 28	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	110
PBDE 47	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	97.5
PBDE 66	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	97.5
PBDE 85	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	1
PBDE 99	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	1
PBDE 100	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	1
PBDE 138	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	NA
PBDE 153	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	1100
PBDE 154	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	1100
PBDE 183	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.5	14000
PBDE 209	5.4	9.3	5.1	5.0	1.2	13.3	1.6	3.3	<LOD	0.5	47.5

Concentrations expressed as ng g^{-1} dry weight sediment.
Grey text relate to concentrations below LOD.
Blue cells are where concentrations exceed the OSPAR (2020) BAC after normalisation to 2.5% TOC.

APPENDIX K METALS ANALYSIS

APPENDIX K METALS ANALYSIS

Table J.1 Normalised Metals to 1% TOC

Station	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn
ENV04	8.9	0.2	31.4	11.6	<LOD	18.9	12.7	48.9
ENV13	11.6	<LOD	38.9	15.8	<LOD	17.4	13.2	55.8
ENV17	8.7	0.1	34.0	11.7	<LOD	17.7	13.0	54.3
ENV26	5.3	0.2	19.1	7.7	<LOD	12.7	8.1	32.2
ENV29	5.4	0.2	22.6	7.9	<LOD	14.8	8.9	32.3
ENV31	6.0	0.1	26.0	11.1	0.03	16.0	9.7	42.6
ENV36	3.4	0.1	17.1	6.3	<LOD	11.1	6.3	23.5
ENV53	31.8	<LOD	35.9	17.6	<LOD	21.8	15.3	70.0
ENV58	23.1	0.4	46.3	20.0	<LOD	28.1	13.1	68.8
OSPAR EAC	NA	60	NA	NA	220	NA	2200	NA

NA Not Available

APPENDIX L DNA ANALYSIS

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-36XP3I	Acidobacteria						0	44	0	0	0	0	0	26	**70**	**2**
IM-244DSC	Acidobacteria						37	33	78	48	36	52	31	0	**315**	**7**
IM-E832RH	Acidobacteria						77	121	32	22	53	60	72	143	**580**	**8**
IM-NN501I	Acidobacteria						0	0	31	0	0	0	0	0	**31**	**1**
IM-RHE679	Acidobacteria						0	0	33	35	30	0	0	0	**98**	**3**
IM-6FB0H7	Acidobacteria						24	0	31	42	20	0	0	0	**117**	**4**
IM-M9JS13	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae	*Acidobacterium*		489	226	847	660	657	363	276	54	**3572**	**8**
IM-3SC9Y7	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae	*Acidobacterium*		51	44	103	42	64	67	40	0	**411**	**7**
IM-X970CA	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae	*Acidobacterium*		0	0	0	0	0	0	0	27	**27**	**1**
IM-QQ3C81	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae	*Acidobacterium*		0	0	63	30	35	0	0	0	**128**	**3**
IM-YT35W6	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			0	34	0	0	0	0	0	250	**284**	**2**
IM-Z661FF	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			210	245	475	179	170	252	237	48	**1816**	**8**
IM-CD13T2	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			283	460	577	217	206	239	216	507	**2705**	**8**
IM-ZMK271	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			39	117	111	34	47	71	85	104	**608**	**8**
IM-A38G3N	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			0	58	0	0	0	30	30	178	**296**	**4**
IM-4M7XA3	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			38	75	100	55	46	49	36	35	**434**	**8**
IM-45H6SB	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			27	103	35	0	28	37	50	157	**437**	**7**
IM-3R2Z0T	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			80	108	117	47	64	84	61	0	**561**	**7**
IM-TI00S7	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			0	25	0	0	0	0	0	85	**110**	**2**
IM-9UQYQ7	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			29	0	0	38	27	22	0	0	**116**	**4**
IM-2KIU16	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			0	0	0	0	0	0	0	30	**30**	**1**
IM-81S58Y	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			37	33	73	55	47	41	31	0	**317**	**7**
IM-97IYP9	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			0	0	32	0	0	0	0	0	**32**	**1**
IM-NZ95U2	Acidobacteria	Acidobacteria	Acidobacteriales	Acidobacteriaceae			0	31	0	0	0	0	0	45	**76**	**2**
IM-39V8CG	Acidobacteria	Acidobacteria	Acidobacteriales				57	66	111	54	97	86	78	34	**583**	**8**
IM-486AXC	Acidobacteria	Acidobacteria	Acidobacteriales				34	59	39	68	41	30	33	0	**304**	**7**
IM-Z8Z2Y9	Acidobacteria	Aminicenantia	Aminicenantales				29	0	42	92	35	0	0	0	**198**	**4**
IM-5E8B5U	Acidobacteria	Aminicenantia	Aminicenantales				42	0	55	88	38	22	21	0	**266**	**6**
IM-SRU839	Acidobacteria	Aminicenantia	Aminicenantales				0	0	38	24	0	0	0	0	**62**	**2**
IM-9ND27G	Acidobacteria	Aminicenantia	Aminicenantales				0	0	36	37	21	0	0	0	**94**	**3**
IM-9D0S5X	Actinobacteriota						419	230	1041	597	507	486	377	159	**3816**	**8**
IM-OI63K0	Actinobacteriota						78	72	233	66	71	99	60	0	**679**	**7**
IM-550TYU	Actinobacteriota						47	73	0	35	40	47	72	210	**524**	**7**
IM-ID4M60	Actinobacteriota						110	205	310	137	149	159	124	57	**1251**	**8**
IM-L59JP0	Actinobacteriota						58	99	136	84	41	58	47	146	**669**	**8**
IM-3G5M1C	Actinobacteriota						29	0	68	0	29	29	0	0	**155**	**4**
IM-3G5E6I	Actinobacteriota						0	52	0	0	0	0	0	89	**141**	**2**
IM-K376MQ	Actinobacteriota						0	35	31	0	0	36	44	69	**215**	**5**
IM-P2X8L9	Actinobacteriota						0	54	0	0	0	34	32	55	**175**	**4**
IM-1K4O8I	Actinobacteriota						0	0	0	0	0	0	0	76	**76**	**1**
IM-S295WC	Actinobacteriota						25	33	0	0	32	31	32	46	**199**	**6**
IM-02HE4R	Actinobacteriota						0	0	30	0	0	0	0	23	**53**	**2**
IM-EV142C	Actinobacteriota						27	0	59	58	47	0	24	0	**215**	**5**
IM-2V92AL	Actinobacteriota						0	26	0	0	0	0	0	33	**59**	**2**
IM-SV88J1	Actinobacteriota						22	0	40	0	0	22	0	0	**84**	**3**
IM-1R9D6E	Actinobacteriota						0	53	0	0	0	0	33	109	**195**	**3**
IM-2DO94H	Actinobacteriota						0	0	0	0	0	0	22	0	**22**	**1**
IM-YK953O	Actinobacteriota						0	0	38	0	0	0	0	0	**38**	**1**
IM-87K5VE	Actinobacteriota						0	0	0	0	0	0	0	26	**26**	**1**
IM-21ESN3	Actinobacteriota						0	0	0	0	0	0	0	24	**24**	**1**
IM-O56WL8	Actinobacteriota	Acidimicrobiia	Acidimicrobiales	Ilumatobacteraceae	*Ilumatobacter*	*nonamiensis*	35	0	45	0	31	55	40	47	**253**	**6**
IM-H116QP	Actinobacteriota	Acidimicrobiia	Acidimicrobiales	Microtrichaceae			24	0	35	32	28	0	0	0	**119**	**4**
IM-VV19U2	Actinobacteriota	Acidimicrobiia					51	40	38	34	36	38	37	0	**274**	**7**
IM-18GW2R	Actinobacteriota	Actinomycetia					0	96	0	0	0	0	0	711	**807**	**2**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-HG948U	Actinobacteriota	Actinomycetia					100	129	188	75	116	81	85	85	**859**	**8**
IM-RB438F	Actinobacteriota	Actinomycetia					223	200	165	76	215	234	215	96	**1424**	**8**
IM-9O40TY	Actinobacteriota	Actinomycetia					26	80	74	0	30	38	69	106	**423**	**7**
IM-57JG4R	Actinobacteriota	Actinomycetia					70	114	132	52	63	109	82	33	**655**	**8**
IM-0T28WW	Actinobacteriota	Actinomycetia					160	166	254	120	137	164	165	59	**1225**	**8**
IM-7PJ17B	Actinobacteriota	Actinomycetia					0	0	0	0	0	0	0	39	**39**	**1**
IM-S1A1P0	Actinobacteriota	Actinomycetia					0	0	0	0	0	0	0	55	**55**	**1**
IM-ES432S	Actinobacteriota	Actinomycetia					0	34	0	0	0	0	0	37	**71**	**2**
IM-5EZ4U0	Actinobacteriota	Actinomycetia					45	48	59	22	50	51	40	0	**315**	**7**
IM-91BON0	Actinobacteriota	Actinomycetia					0	0	0	0	35	0	0	0	**35**	**1**
IM-848INU	Actinobacteriota	Actinomycetia					0	45	0	0	0	0	35	66	**146**	**3**
IM-Z8V8I8	Actinobacteriota	Actinomycetia					52	0	55	76	37	29	0	0	**249**	**5**
IM-U49YP7	Actinobacteriota	Actinomycetia					0	0	0	0	0	0	0	28	**28**	**1**
IM-Z575CV	Actinobacteriota	Actinomycetia					31	0	55	23	28	23	30	0	**190**	**6**
IM-IL55S0	Actinobacteriota	Actinomycetia					0	0	0	26	0	0	0	0	**26**	**1**
IM-6V28QF	Actinobacteriota	Actinomycetia					0	0	0	0	0	0	0	35	**35**	**1**
IM-E8D6F2	Actinobacteriota	Actinomycetia					0	0	47	0	21	0	0	0	**68**	**2**
IM-K4B9M8	Bacteria (Domain)						42	103	66	0	37	47	60	56	**411**	**7**
IM-3ND16P	Bacteria (Domain)						3318	6222	7303	2830	2562	3588	3226	3253	**32302**	**8**
IM-33X7BG	Bacteria (Domain)						1156	935	1886	2017	1273	1140	943	142	**9492**	**8**
IM-47M9AL	Bacteria (Domain)						159	576	266	149	94	166	113	701	**2224**	**8**
IM-54Y4FX	Bacteria (Domain)						413	50	281	332	355	116	75	0	**1622**	**7**
IM-O11Y9J	Bacteria (Domain)						300	168	503	366	243	317	249	0	**2146**	**7**
IM-2XW61K	Bacteria (Domain)						358	134	538	144	364	281	199	57	**2075**	**8**
IM-C2C2G6	Bacteria (Domain)						67	0	255	27	40	57	43	31	**520**	**7**
IM-HZF365	Bacteria (Domain)						183	37	220	71	162	100	96	0	**869**	**7**
IM-8O68JU	Bacteria (Domain)						0	25	0	0	0	0	0	169	**194**	**2**
IM-X660EN	Bacteria (Domain)						86	36	137	41	103	98	86	23	**610**	**8**
IM-I82US4	Bacteria (Domain)						105	110	144	159	112	68	45	0	**743**	**7**
IM-LHE675	Bacteria (Domain)						117	80	140	235	151	145	105	27	**1000**	**8**
IM-B1X4N5	Bacteria (Domain)						41	159	176	53	45	96	82	43	**695**	**8**
IM-5O96IV	Bacteria (Domain)						37	127	137	0	58	82	77	51	**569**	**7**
IM-M867ZA	Bacteria (Domain)						232	0	113	326	194	78	27	0	**970**	**6**
IM-M73QUG	Bacteria (Domain)						94	0	44	69	81	42	19	0	**349**	**6**
IM-Q27Y6O	Bacteria (Domain)						56	126	92	60	30	48	61	85	**558**	**8**
IM-F8J2B2	Bacteria (Domain)						146	0	103	126	158	82	68	0	**683**	**6**
IM-86W6ML	Bacteria (Domain)						78	101	129	134	142	126	98	80	**888**	**8**
IM-A0H1R3	Bacteria (Domain)						67	0	63	80	82	76	54	0	**422**	**6**
IM-4W3ZQ3	Bacteria (Domain)						84	37	96	65	65	45	37	0	**429**	**7**
IM-K5J16P	Bacteria (Domain)						23	119	64	39	30	30	32	353	**690**	**8**
IM-8CB07I	Bacteria (Domain)						0	0	0	0	0	0	0	81	**81**	**1**
IM-8LAT59	Bacteria (Domain)						0	0	0	79	37	22	0	0	**138**	**3**
IM-C8EI80	Bacteria (Domain)						35	76	28	84	23	28	29	119	**422**	**8**
IM-M14D5G	Bacteria (Domain)						47	82	0	0	22	58	60	96	**365**	**6**
IM-UV51Y8	Bacteria (Domain)						46	105	68	0	29	39	33	85	**405**	**7**
IM-2D1F4U	Bacteria (Domain)						27	34	0	74	47	52	39	0	**273**	**6**
IM-P47W8W	Bacteria (Domain)						88	51	116	255	174	116	81	0	**881**	**7**
IM-2A20BT	Bacteria (Domain)						88	57	92	105	107	74	36	0	**559**	**7**
IM-82LK0X	Bacteria (Domain)						24	36	0	0	20	0	26	91	**197**	**5**
IM-71S6YP	Bacteria (Domain)						60	43	76	99	62	64	44	31	**479**	**8**
IM-Y24B6Q	Bacteria (Domain)						60	0	146	92	67	59	45	0	**469**	**6**
IM-80BK3N	Bacteria (Domain)						0	0	0	0	0	0	0	34	**34**	**1**
IM-KC58B8	Bacteria (Domain)						0	0	0	0	0	26	36	0	**62**	**2**
IM-BMJ818	Bacteria (Domain)						50	0	52	23	34	33	31	0	**223**	**6**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-381MRM	Bacteria (Domain)						0	44	0	0	0	0	0	65	**109**	**2**
IM-Y179AK	Bacteria (Domain)						33	141	30	22	0	25	28	231	**510**	**7**
IM-7TI5X6	Bacteria (Domain)						31	0	46	37	25	0	0	0	**139**	**4**
IM-Q5O3I1	Bacteria (Domain)						0	0	0	0	0	0	0	89	**89**	**1**
IM-6C6EV0	Bacteria (Domain)						0	0	0	0	0	0	0	64	**64**	**1**
IM-I89WI1	Bacteria (Domain)						25	0	29	52	39	33	0	0	**178**	**5**
IM-WA667O	Bacteria (Domain)						0	46	30	0	0	0	0	68	**144**	**3**
IM-8NVV75	Bacteria (Domain)						39	60	81	89	38	59	41	0	**407**	**7**
IM-45GVO7	Bacteria (Domain)						0	32	35	35	0	27	32	0	**161**	**5**
IM-8RKY42	Bacteria (Domain)						45	0	78	97	28	23	0	0	**271**	**5**
IM-B1NG88	Bacteria (Domain)						0	0	0	0	0	0	0	31	**31**	**1**
IM-4V8DQ9	Bacteria (Domain)						60	27	61	61	67	36	0	0	**312**	**6**
IM-3Y54SF	Bacteria (Domain)						0	41	0	0	0	0	30	0	**71**	**2**
IM-416CCB	Bacteria (Domain)						0	0	28	0	0	0	0	0	**28**	**1**
IM-1D85JA	Bacteria (Domain)						0	26	43	0	0	0	0	0	**69**	**2**
IM-2PR70D	Bacteria (Domain)						31	29	0	23	26	28	20	0	**157**	**6**
IM-8W872K	Bacteria (Domain)						43	0	0	23	0	23	0	0	**89**	**3**
IM-AF1NK9	Bacteria (Domain)						0	0	0	32	0	0	0	0	**32**	**1**
IM-73SI2C	Bacteria (Domain)						0	0	34	34	24	0	0	0	**92**	**3**
IM-9P10KY	Bacteria (Domain)						0	29	45	0	0	22	0	0	**96**	**3**
IM-23FB7H	Bacteria (Domain)						33	0	38	38	26	0	0	0	**135**	**4**
IM-X056RN	Bacteria (Domain)						0	0	0	0	0	0	0	28	**28**	**1**
IM-7FN5R9	Bacteria (Domain)						0	0	36	42	0	0	0	0	**78**	**2**
IM-DK491D	Bacteria (Domain)						89	80	127	72	87	89	71	25	**640**	**8**
IM-B9L97U	Bacteria (Domain)						0	34	34	0	0	23	0	78	**169**	**4**
IM-9S3JL7	Bacteria (Domain)						75	47	103	149	85	75	59	0	**593**	**7**
IM-9CVH35	Bacteria (Domain)						0	42	0	0	0	0	0	0	**42**	**1**
IM-B709VL	Bacteria (Domain)						0	0	0	30	0	0	0	0	**30**	**1**
IM-8EE2P9	Bacteria (Domain)						0	0	0	41	30	0	20	0	**91**	**3**
IM-3KOW92	Bacteria (Domain)						0	47	0	0	0	0	0	50	**97**	**2**
IM-G1U75E	Bacteria (Domain)						30	0	0	0	23	0	0	0	**53**	**2**
IM-5D6YR3	Bacteria (Domain)						0	0	29	0	0	0	0	0	**29**	**1**
IM-LH01L4	Bacteria (Domain)						33	0	0	0	20	0	0	0	**53**	**2**
IM-U9D1NN	Bacteria (Domain)						24	0	0	0	0	26	24	0	**74**	**3**
IM-07B5TA	Bacteria (Domain)						0	0	0	0	0	0	0	40	**40**	**1**
IM-L40FZ3	Bacteria (Domain)						0	0	37	91	36	27	28	0	**219**	**5**
IM-Z1N2M0	Bacteria (Domain)						0	0	0	0	0	0	0	26	**26**	**1**
IM-02LH2V	Bacteria (Domain)						0	82	0	0	0	0	0	76	**158**	**2**
IM-I33N2O	Bacteria (Domain)						0	0	0	0	23	0	0	0	**23**	**1**
IM-66KAOB	Bacteria (Domain)						0	0	0	0	0	0	0	28	**28**	**1**
IM-9B9S1P	Bacteria (Domain)						0	0	0	25	0	0	0	0	**25**	**1**
IM-LC25K5	Bacteria (Domain)						0	0	0	0	0	0	0	38	**38**	**1**
IM-Z26IH6	Bacteria (Domain)						24	0	47	61	36	23	20	0	**211**	**6**
IM-U371MR	Bacteria (Domain)						60	0	50	55	79	22	22	0	**288**	**6**
IM-R6NR41	Bacteria (Domain)						0	0	0	0	24	0	0	0	**24**	**1**
IM-GZ88W2	Bacteria (Domain)						0	0	0	28	0	0	0	0	**28**	**1**
IM-K68NC4	Bacteria (Domain)						49	53	60	24	53	55	43	0	**337**	**7**
IM-I2443B	Bacteria (Domain)						0	0	28	52	27	0	0	0	**107**	**3**
IM-L0OA07	Bacteria (Domain)						0	46	43	31	0	22	26	0	**168**	**5**
IM-J586ZT	Bacteria (Domain)						0	0	0	0	0	0	19	0	**19**	**1**
IM-6M3C4F	Bacteria (Domain)						29	0	0	0	0	22	0	0	**51**	**2**
IM-C2PH21	Bacteria (Domain)						0	33	0	0	0	30	33	0	**96**	**3**
IM-X06GK2	Bacteria (Domain)						0	0	33	31	0	0	0	0	**64**	**2**
IM-9GBN48	Bacteria (Domain)						0	0	0	0	0	0	23	36	**59**	**2**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-OGR558	Bacteroidetes						30	0	34	63	38	24	23	0	**212**	**6**
IM-ZC570M	Bacteroidetes						0	0	0	0	0	0	0	25	**25**	**1**
IM-2Y6F4P	Bacteroidetes	Bacteroidia	Bacteroidales	Marinilabiliaceae			36	0	36	46	34	26	0	0	**178**	**5**
IM-JY8Z25	Bacteroidetes	Bacteroidia	Bacteroidales				339	57	443	399	356	210	126	31	**1961**	**8**
IM-UIU138	Bacteroidetes	Bacteroidia	Bacteroidales				167	41	175	266	180	121	70	0	**1020**	**7**
IM-R1Y0X2	Bacteroidetes	Bacteroidia	Bacteroidales				40	0	0	0	0	31	35	0	**106**	**3**
IM-2G41TZ	Bacteroidetes	Bacteroidia					23	38	0	0	0	0	41	52	**154**	**4**
IM-059UGY	Bacteroidetes	Bacteroidia					0	0	0	0	0	0	0	28	**28**	**1**
IM-NK91T0	Bacteroidetes	Bacteroidia					0	0	0	0	0	0	29	27	**56**	**2**
IM-778OKJ	Bacteroidetes	Bacteroidia					0	0	0	0	0	0	0	36	**36**	**1**
IM-0IZU92	Bacteroidetes	Bacteroidia					0	25	0	0	0	36	20	35	**116**	**4**
IM-18V7KT	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae	*Cytophaga*		0	27	0	0	0	0	28	48	**103**	**3**
IM-7J9TV5	Bacteroidetes	Cytophagia	Cytophagales	Flammeovirgaceae			27	31	30	0	0	0	21	0	**109**	**4**
IM-0CY31C	Bacteroidetes	Cytophagia	Cytophagales				155	193	207	135	122	152	116	0	**1080**	**7**
IM-8KRI74	Bacteroidetes	Cytophagia	Cytophagales				28	40	0	0	0	33	35	86	**222**	**5**
IM-ZT39H7	Bacteroidetes	Cytophagia	Cytophagales				0	38	0	0	0	36	49	51	**174**	**4**
IM-8S5D1Q	Bacteroidetes	Cytophagia	Cytophagales				53	35	46	23	36	41	39	0	**273**	**7**
IM-JJI383	Bacteroidetes	Cytophagia	Cytophagales				0	0	0	0	0	0	24	52	**76**	**2**
IM-0U84NM	Bacteroidetes	Cytophagia	Cytophagales				40	42	39	0	42	52	24	0	**239**	**6**
IM-L4878E	Bacteroidetes	Flavobacteria	Flavobacteriales	Flavobacteriaceae	*Lutibacter*		51	0	51	23	43	24	35	0	**227**	**6**
IM-Z9H3N2	Bacteroidetes	Flavobacteria	Flavobacteriales	Flavobacteriaceae	*Maribacter*		0	0	0	0	33	28	44	32	**137**	**4**
IM-X9VD85	Bacteroidetes	Flavobacteria	Flavobacteriales	Flavobacteriaceae			148	107	152	31	111	173	144	32	**898**	**8**
IM-72SEM7	Bacteroidetes	Flavobacteria	Flavobacteriales	Flavobacteriaceae			32	0	0	0	0	0	0	78	**110**	**2**
IM-8G8T9O	Bacteroidetes	Flavobacteria	Flavobacteriales	Flavobacteriaceae			53	28	30	0	56	43	54	0	**264**	**6**
IM-9J8C20	Bacteroidetes	Flavobacteria	Flavobacteriales	Flavobacteriaceae			0	25	0	0	27	0	21	0	**73**	**3**
IM-OS03R5	Bacteroidetes	Flavobacteria	Flavobacteriales	Flavobacteriaceae			36	43	28	0	0	52	74	38	**271**	**6**
IM-Q7L6J6	Bacteroidetes	Flavobacteria	Flavobacteriales	Schleiferiaceae			0	0	0	0	0	0	0	36	**36**	**1**
IM-6X38KG	Bacteroidetes	Ignavibacteria	Ignavibacteriales				36	54	0	71	39	34	36	142	**412**	**7**
IM-U7JA08	Bacteroidetes	Sphingobacteria	Sphingobacteriales	Saprospiraceae			0	32	0	0	0	26	32	0	**90**	**3**
IM-CJ476W	Bacteroidetes	Sphingobacteria	Sphingobacteriales	Saprospiraceae			0	26	0	0	0	0	27	0	**53**	**2**
IM-IW2J78	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			381	156	359	653	381	289	156	0	**2375**	**7**
IM-LB11W2	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			93	0	211	190	104	64	35	0	**697**	**6**
IM-EWD208	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			24	0	60	59	28	0	0	0	**171**	**4**
IM-90A6EZ	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			53	86	166	112	133	82	118	51	**801**	**8**
IM-34P1FX	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			27	0	66	49	38	0	0	0	**180**	**4**
IM-Q35Q9L	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			0	0	38	0	53	31	28	23	**173**	**5**
IM-4B00FE	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			30	0	43	61	39	24	0	0	**197**	**5**
IM-L81TT9	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			0	0	0	0	0	0	0	34	**34**	**1**
IM-48N8AX	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			0	0	0	31	22	0	0	0	**53**	**2**
IM-X4Q6G8	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			28	0	28	68	30	0	0	0	**154**	**4**
IM-YH5Y54	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			37	0	38	37	40	27	23	0	**202**	**6**
IM-42UA4S	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			0	0	35	31	0	0	0	0	**66**	**2**
IM-WG47Y2	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			0	0	0	28	0	0	0	0	**28**	**1**
IM-0NR66I	Chloroflexi	Anaerolineae	Anaerolineales	Anaerolineaceae			0	0	0	35	31	0	0	0	**66**	**2**
IM-4HUR17	Chloroflexi	Anaerolineae	Anaerolineales				83	0	99	0	117	93	59	0	**451**	**5**
IM-8WGT08	Chloroflexi	Anaerolineae					51	0	39	61	41	28	20	0	**240**	**6**
IM-Y84O8O	Chloroflexi	Dehalococcoidia	Dehalococcoidales	Dehalococcoidaceae			0	0	55	110	22	0	0	0	**187**	**3**
IM-J4J1P7	Cyanobacteria	Cyanophyceae	Synechococcales	Synechococcaceae	*Synechococcus*		0	37	0	0	0	27	0	0	**64**	**2**
IM-2QW05X	Fusobacteria	Fusobacteria	Fusobacteriales	Fusobacteriaceae			0	0	0	129	0	0	0	0	**129**	**1**
IM-X651GG	Gemmatimonadetes						40	0	87	71	52	33	28	0	**311**	**6**
IM-2S0UH4	Gemmatimonadetes						50	0	90	73	74	29	25	0	**341**	**6**
IM-09X4UP	Latescibacterota						31	0	40	0	35	22	0	0	**128**	**4**
IM-2C0F4I	Myxococcota						41	0	54	53	49	30	23	0	**250**	**6**
IM-M40BD6	Nitrospirae	Nitrospira	Nitrospirales	Nitrospiraceae			139	111	91	399	154	106	35	31	**1066**	**8**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-7JD04A	Nitrospirae	Nitrospira	Nitrospirales	Nitrospiraceae			45	0	0	99	39	30	0	0	**213**	**4**
IM-N5YW8V	Nitrospirae	Nitrospira	Nitrospirales	Nitrospiraceae			0	0	0	30	0	0	0	0	**30**	**1**
IM-6JV55Y	Nitrospirae	Thermodesulfovibrionia	Thermodesulfovibrionale	Thermodesulfovibrionacea			0	0	31	53	0	0	0	0	**84**	**2**
IM-E90UX8	Planctomycetes						0	0	0	0	0	0	0	75	**75**	**1**
IM-190FLF	Planctomycetes						26	0	47	0	0	24	27	0	**124**	**4**
IM-9K1KA3	Planctomycetes						0	38	0	0	0	0	0	89	**127**	**2**
IM-5GP54X	Planctomycetes						0	44	53	0	0	38	22	107	**264**	**5**
IM-2E99SQ	Planctomycetes						0	105	71	0	0	22	24	238	**460**	**5**
IM-6T62EX	Planctomycetes						0	0	0	0	0	0	0	60	**60**	**1**
IM-BWT979	Planctomycetes						0	34	0	0	0	0	0	34	**68**	**2**
IM-6CLH52	Planctomycetes						0	0	0	0	0	0	0	28	**28**	**1**
IM-4CO9U5	Planctomycetes						0	54	48	0	0	0	0	62	**164**	**3**
IM-17N6FL	Planctomycetes						0	0	0	0	0	0	0	41	**41**	**1**
IM-P1ZD99	Planctomycetes						0	0	0	0	0	0	0	45	**45**	**1**
IM-8V3LI9	Planctomycetes						0	0	0	0	0	0	20	0	**20**	**1**
IM-4Z74D0	Planctomycetes						0	0	0	0	0	0	0	56	**56**	**1**
IM-DX311R	Planctomycetes						0	0	0	0	0	0	0	80	**80**	**1**
IM-H13B2G	Planctomycetes						0	28	0	0	0	0	0	28	**56**	**2**
IM-6MU8W6	Planctomycetes						0	44	31	0	0	0	0	87	**162**	**3**
IM-6J6W7I	Planctomycetes						29	81	37	0	22	29	0	132	**330**	**6**
IM-D3B8S2	Planctomycetes						0	0	0	0	0	0	0	44	**44**	**1**
IM-6P77W8	Planctomycetes						0	0	0	43	0	0	0	0	**43**	**1**
IM-E769DC	Planctomycetes	Phycisphaerae	Phycisphaerales	Phycisphaeraceae			0	0	0	0	0	0	0	26	**26**	**1**
IM-VRZ854	Planctomycetes	Phycisphaerae	Phycisphaerales	Phycisphaeraceae			0	0	0	0	0	0	0	33	**33**	**1**
IM-W9M68X	Planctomycetes	Planctomycetacia	Planctomycetales	Planctomycetaceae			0	0	0	0	0	0	0	35	**35**	**1**
IM-484ZNH	Planctomycetes	Planctomycetacia	Planctomycetales	Planctomycetaceae			0	0	0	0	0	0	0	49	**49**	**1**
IM-S056NK	Planctomycetes	Planctomycetacia	Planctomycetales				0	196	82	0	0	0	22	897	**1197**	**4**
IM-L21X2F	Planctomycetes	Planctomycetacia	Planctomycetales				97	428	306	40	61	225	163	423	**1743**	**8**
IM-UU016L	Planctomycetes	Planctomycetacia	Planctomycetales				0	62	0	0	0	0	0	153	**215**	**2**
IM-B4VH11	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	0	0	0	0	91	**91**	**1**
IM-SH56Z4	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	0	0	0	0	109	**109**	**1**
IM-69U3ZY	Planctomycetes	Planctomycetacia	Planctomycetales				35	109	61	0	0	39	40	286	**570**	**6**
IM-359YYJ	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	0	0	0	0	82	**82**	**1**
IM-1ZFY17	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	0	0	0	0	57	**57**	**1**
IM-10CF8K	Planctomycetes	Planctomycetacia	Planctomycetales				76	0	70	49	58	27	31	0	**311**	**6**
IM-9J8OCT	Planctomycetes	Planctomycetacia	Planctomycetales				26	0	58	0	0	0	0	0	**84**	**2**
IM-2EQ6A0	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	0	0	0	0	45	**45**	**1**
IM-RS526Y	Planctomycetes	Planctomycetacia	Planctomycetales				27	46	0	29	0	0	0	53	**155**	**4**
IM-YMS387	Planctomycetes	Planctomycetacia	Planctomycetales				0	35	46	0	0	0	0	24	**105**	**3**
IM-Q8GF82	Planctomycetes	Planctomycetacia	Planctomycetales				0	59	0	0	0	0	0	83	**142**	**2**
IM-X777KR	Planctomycetes	Planctomycetacia	Planctomycetales				0	30	0	0	0	0	0	76	**106**	**2**
IM-U9JT87	Planctomycetes	Planctomycetacia	Planctomycetales				22	60	62	23	0	34	0	0	**201**	**5**
IM-D91GB4	Planctomycetes	Planctomycetacia	Planctomycetales				22	0	0	0	25	0	20	0	**67**	**3**
IM-08CY5D	Planctomycetes	Planctomycetacia	Planctomycetales				0	36	0	0	0	0	0	84	**120**	**2**
IM-JUG499	Planctomycetes	Planctomycetacia	Planctomycetales				0	26	59	0	0	0	0	33	**118**	**3**
IM-40C2UP	Planctomycetes	Planctomycetacia	Planctomycetales				40	38	59	63	42	38	24	38	**342**	**8**
IM-641UNU	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	0	0	0	0	27	**27**	**1**
IM-MO08V9	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	0	0	0	0	29	**29**	**1**
IM-T5OL75	Planctomycetes	Planctomycetacia	Planctomycetales				24	37	46	0	25	28	0	0	**160**	**5**
IM-IO6R26	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	34	0	0	21	0	**55**	**2**
IM-I35N9E	Planctomycetes	Planctomycetacia	Planctomycetales				0	32	0	0	0	0	0	0	**32**	**1**
IM-X2G27W	Planctomycetes	Planctomycetacia	Planctomycetales				0	26	0	0	0	0	0	46	**72**	**2**
IM-GT200W	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	38	0	0	0	0	**38**	**1**
IM-1S2JVG	Planctomycetes	Planctomycetacia	Planctomycetales				0	0	0	0	0	0	19	0	**19**	**1**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-GJE372	Planctomycetes	Planctomycetia	Pirellulales	Pirellulaceae			0	31	31	0	0	0	0	0	**62**	**2**
IM-WH08L3	Proteobacteria						1053	177	682	1307	1019	589	252	38	**5117**	**8**
IM-GA2A78	Proteobacteria						294	446	567	455	346	262	212	202	**2784**	**8**
IM-X6NV02	Proteobacteria						409	598	808	728	453	494	355	208	**4053**	**8**
IM-IDF373	Proteobacteria						0	84	69	0	0	35	28	223	**439**	**5**
IM-H32G6T	Proteobacteria						382	63	342	280	335	177	146	0	**1725**	**7**
IM-1I8M7S	Proteobacteria						276	67	358	907	405	219	151	25	**2408**	**8**
IM-3NJ5H9	Proteobacteria						406	449	317	145	272	431	473	172	**2665**	**8**
IM-60LPF9	Proteobacteria						111	279	249	135	194	146	123	187	**1424**	**8**
IM-X735NF	Proteobacteria						82	43	98	110	48	40	23	40	**484**	**8**
IM-8P70MK	Proteobacteria						0	28	0	0	0	0	0	75	**103**	**2**
IM-GO31Q4	Proteobacteria						300	113	479	366	344	254	181	0	**2037**	**7**
IM-6WJ7A7	Proteobacteria						0	30	29	0	0	0	0	55	**114**	**3**
IM-EPO161	Proteobacteria						110	66	117	145	143	116	47	0	**744**	**7**
IM-06LYO4	Proteobacteria						50	0	91	86	67	52	50	32	**428**	**7**
IM-1KZ30G	Proteobacteria						0	0	38	0	0	22	0	0	**60**	**2**
IM-K963VZ	Proteobacteria						25	0	0	63	28	0	0	0	**116**	**3**
IM-ZN81YI	Proteobacteria						0	0	0	44	24	0	0	0	**68**	**2**
IM-L85KJ4	Proteobacteria						47	48	61	54	43	59	61	0	**373**	**7**
IM-2V64N0	Proteobacteria						0	0	0	0	0	0	0	42	**42**	**1**
IM-6LUDT8	Proteobacteria						0	0	0	0	0	0	0	38	**38**	**1**
IM-Q2P1T9	Proteobacteria						0	0	0	24	25	0	0	0	**49**	**2**
IM-6DP21E	Proteobacteria						0	30	0	0	0	0	0	62	**92**	**2**
IM-66TIF6	Proteobacteria						25	0	0	58	34	35	0	0	**152**	**4**
IM-RO8Q85	Proteobacteria						29	0	0	37	34	0	0	0	**100**	**3**
IM-7GB55W	Proteobacteria						0	0	0	0	0	0	0	23	**23**	**1**
IM-CFV734	Proteobacteria						36	81	51	0	25	35	53	59	**340**	**7**
IM-6R2O6M	Proteobacteria						0	0	0	35	0	0	0	0	**35**	**1**
IM-8BT8Q3	Proteobacteria	Alphaproteobacteria	Alphaproteobacteria inc		*Methyloceanibacter*	*stevinii*	35	39	78	0	37	46	40	0	**275**	**6**
IM-6EO52Z	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae	*Filomicrobium*		64	33	153	59	46	64	22	0	**441**	**7**
IM-GX82X8	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae	*Hyphomicrobium*		87	214	237	75	64	98	69	128	**972**	**8**
IM-1U3IK8	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae			27	54	79	27	35	52	36	42	**352**	**8**
IM-6QS4U3	Proteobacteria	Alphaproteobacteria	Rhizobiales	Rhizobiaceae			43	0	0	0	57	0	0	0	**100**	**2**
IM-13WA2S	Proteobacteria	Alphaproteobacteria	Rhizobiales	Rhizobiaceae			0	0	0	0	0	42	36	0	**78**	**2**
IM-4UW8C7	Proteobacteria	Alphaproteobacteria	Rhizobiales				22	66	59	0	34	36	35	37	**289**	**7**
IM-FZ68F9	Proteobacteria	Alphaproteobacteria	Rhizobiales				0	0	0	0	0	0	0	69	**69**	**1**
IM-TF0Z30	Proteobacteria	Alphaproteobacteria	Rhizobiales				28	25	0	0	0	0	20	32	**105**	**4**
IM-A30P8F	Proteobacteria	Alphaproteobacteria	Sphingomonadales	Sphingomondaceae	*Parasphingopyxis*	*algicola*	0	0	0	0	0	0	28	0	**28**	**1**
IM-D5CZ54	Proteobacteria	Alphaproteobacteria	Kiloniellales	Kiloniellaceae			0	28	0	0	0	26	0	0	**54**	**2**
IM-9N88RA	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae			0	0	0	0	0	0	0	46	**46**	**1**
IM-KFC916	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae			44	49	38	0	55	68	73	31	**358**	**7**
IM-YB95D4	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae			67	31	48	0	59	69	71	47	**392**	**7**
IM-ZB735J	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae			0	0	0	0	0	27	20	0	**47**	**2**
IM-L8D9J3	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae			24	26	0	0	0	31	28	24	**133**	**5**
IM-3MR6N2	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae			0	0	0	0	0	0	0	27	**27**	**1**
IM-Y33E4M	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae			41	38	38	0	25	46	42	0	**230**	**6**
IM-N787IX	Proteobacteria	Alphaproteobacteria	Rhodobacterales				0	27	32	0	0	44	35	0	**138**	**4**
IM-Z3S14K	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Rhodospirillaceae			30	33	41	33	31	39	45	60	**312**	**8**
IM-N55L5V	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Rhodospirillaceae			0	0	0	31	0	0	0	0	**31**	**1**
IM-G3Q2W0	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Rhodospirillaceae			0	0	29	0	0	0	26	24	**79**	**3**
IM-Z606CA	Proteobacteria	Alphaproteobacteria	Rhodospirillales				0	0	0	0	0	0	0	38	**38**	**1**
IM-72K6VM	Proteobacteria	Alphaproteobacteria					0	220	98	0	0	0	0	31	**349**	**3**
IM-9W3W5X	Proteobacteria	Alphaproteobacteria					52	44	80	0	50	55	34	33	**348**	**7**
IM-2X06KZ	Proteobacteria	Alphaproteobacteria					0	0	0	23	0	0	22	39	**84**	**3**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-7HTT05	Proteobacteria	Alphaproteobacteria					31	0	0	0	0	0	0	0	**31**	**1**
IM-ED529U	Proteobacteria	Alphaproteobacteria					0	27	31	22	28	24	0	55	**187**	**6**
IM-Y63LT9	Proteobacteria	Alphaproteobacteria					0	35	0	0	0	22	19	0	**76**	**3**
IM-AN28E2	Proteobacteria	Alphaproteobacteria					50	56	33	25	56	55	69	0	**344**	**7**
IM-18CI5Y	Proteobacteria	Alphaproteobacteria					40	32	38	0	29	37	42	0	**218**	**6**
IM-A1NL69	Proteobacteria	Alphaproteobacteria					0	0	0	0	0	0	25	0	**25**	**1**
IM-V2OPE3	Proteobacteria	Alphaproteobacteria					30	0	0	49	45	25	19	0	**168**	**5**
IM-NS47W1	Proteobacteria	Alphaproteobacteria					23	37	0	0	25	26	23	44	**178**	**6**
IM-2X3B5B	Proteobacteria	Alphaproteobacteria					0	0	0	0	0	0	0	23	**23**	**1**
IM-O136TP	Proteobacteria	Alphaproteobacteria					0	0	0	0	0	0	19	0	**19**	**1**
IM-WD296N	Proteobacteria	Betaproteobacteria	Nitrosomonadales	Nitrosomonadaceae			286	637	258	193	227	283	338	472	**2694**	**8**
IM-8GO84O	Proteobacteria	Betaproteobacteria	Rhodocyclales	Rhodocyclaceae	*Denitratisoma*		93	0	0	93	53	100	71	79	**489**	**6**
IM-J765LB	Proteobacteria	Deltaproteobacteria	Desulfobacterales				0	0	0	0	26	40	30	0	**96**	**3**
IM-V783VO	Proteobacteria	Deltaproteobacteria	Desulfobacterales	Nitrospinaceae			0	0	0	0	0	0	0	27	**27**	**1**
IM-29ITFV	Proteobacteria	Gammaproteobacteria	Vibrionales	Vibrionaceae	*Photobacterium*	*lipolyticum*	0	0	0	27	0	0	0	0	**27**	**1**
IM-5NU01J	Proteobacteria	Gammaproteobacteria	Chromatiales	Chromatiaceae	*Thioflavicoccus*		43	0	74	84	52	25	0	0	**278**	**5**
IM-23BG6M	Proteobacteria	Gammaproteobacteria	Chromatiales	Chromatiaceae			0	33	0	25	0	0	27	0	**85**	**3**
IM-45Y2H1	Proteobacteria	Gammaproteobacteria	Chromatiales	Thioalkalispiraceae	*Thioprofundum*		0	0	0	0	0	0	0	45	**45**	**1**
IM-F77Y1N	Proteobacteria	Gammaproteobacteria	Chromatiales				31	0	0	0	27	30	21	55	**164**	**5**
IM-IX67K6	Proteobacteria	Gammaproteobacteria	Chromatiales	Ectothiorhodospiraceae			25	0	0	0	0	0	35	156	**216**	**3**
IM-L0K7E9	Proteobacteria	Gammaproteobacteria	Chromatiales	Ectothiorhodospiraceae			0	0	0	0	0	0	0	33	**33**	**1**
IM-19YI7A	Proteobacteria	Gammaproteobacteria	Chromatiales	Ectothiorhodospiraceae	*Thioalkalivibrio*		77	0	89	77	66	55	35	0	**399**	**6**
IM-4K11FQ	Proteobacteria	Gammaproteobacteria	Nitrsococcales	Nitrosococcaceae			52	25	31	69	45	0	23	756	**1001**	**7**
IM-7HDRW8	Proteobacteria	Gammaproteobacteria	Nitrsococcales	Nitrosococcaceae			52	35	55	73	51	72	89	0	**427**	**7**
IM-H5B15U	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Halieaceae			743	362	669	537	598	665	454	141	**4169**	**8**
IM-NE200R	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Halieaceae			245	236	257	94	190	242	196	388	**1848**	**8**
IM-R1DJ21	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Halieaceae			182	73	170	55	160	151	132	53	**976**	**8**
IM-93O0YK	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Halieaceae			69	75	58	22	58	75	49	58	**464**	**8**
IM-7I42ZL	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Halieaceae			32	0	0	31	28	0	0	0	**91**	**3**
IM-I5G8A4	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Halieaceae			50	50	44	0	31	40	51	0	**266**	**6**
IM-7QOK42	Proteobacteria	Gammaproteobacteria	Alteromonadales	Alteromonadaceae	*Marinobacter*		0	28	0	25	23	0	21	0	**97**	**4**
IM-8Q92XS	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Pseudomonadaceae			24	47	30	27	23	25	20	0	**196**	**7**
IM-00HDK6	Proteobacteria	Gammaproteobacteria	Oceanospirillales	Saccharospirillaceae			0	0	0	0	0	0	22	0	**22**	**1**
IM-76YQG0	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Spongiibacteraceae			62	50	60	0	54	55	66	0	**347**	**6**
IM-4T6QNH	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Spongiibacteraceae			0	32	0	0	0	0	0	0	**32**	**1**
IM-V63Z5R	Proteobacteria	Gammaproteobacteria	Pseudomonadales				48	45	34	38	46	97	92	37	**437**	**8**
IM-258AAC	Proteobacteria	Gammaproteobacteria	Pseudomonadales				56	118	48	72	59	62	71	76	**562**	**8**
IM-D29KZ1	Proteobacteria	Gammaproteobacteria	Pseudomonadales				48	82	0	44	47	48	37	43	**349**	**7**
IM-0S48T2	Proteobacteria	Gammaproteobacteria	Pseudomonadales				25	58	34	41	32	42	0	31	**263**	**7**
IM-NT5Y11	Proteobacteria	Gammaproteobacteria	Woeseiales	Woeseiaceae	*Woeseia*		96	333	169	105	85	145	92	161	**1186**	**8**
IM-81V2ZK	Proteobacteria	Gammaproteobacteria	Woeseiales	Woeseiaceae	*Woeseia*		0	0	0	0	0	0	0	25	**25**	**1**
IM-ND2N43	Proteobacteria	Gammaproteobacteria	Arenicellales	Arenicellaceae	*Arenicella*		0	0	0	0	0	0	0	87	**87**	**1**
IM-NS876X	Proteobacteria	Gammaproteobacteria	Arenicellales	Arenicellaceae	*Arenicella*		0	0	0	0	0	0	0	46	**46**	**1**
IM-01YY9S	Proteobacteria	Gammaproteobacteria	Arenicellales	Arenicellaceae	*Arenicella*		0	0	0	0	0	0	0	25	**25**	**1**
IM-W706UB	Proteobacteria	Gammaproteobacteria	AKS1		*Sulfuriflexus*		27	0	68	24	22	29	22	0	**192**	**6**
IM-49D8MH	Proteobacteria	Gammaproteobacteria					1401	1824	850	872	1348	1478	1444	2020	**11237**	**8**
IM-9QCQ08	Proteobacteria	Gammaproteobacteria					931	1742	644	834	831	1082	981	1313	**8358**	**8**
IM-U2CB84	Proteobacteria	Gammaproteobacteria					1163	610	1553	1811	1319	1411	1187	168	**9222**	**8**
IM-I953ZY	Proteobacteria	Gammaproteobacteria					0	111	67	0	0	31	21	866	**1096**	**5**
IM-B13E5X	Proteobacteria	Gammaproteobacteria					558	780	1109	618	459	1034	645	99	**5302**	**8**
IM-5E5B5X	Proteobacteria	Gammaproteobacteria					407	854	264	410	417	415	424	905	**4096**	**8**
IM-IX0B54	Proteobacteria	Gammaproteobacteria					690	587	562	616	650	728	551	110	**4494**	**8**
IM-T3W3O7	Proteobacteria	Gammaproteobacteria					346	213	421	196	201	281	227	79	**1964**	**8**
IM-T0UX87	Proteobacteria	Gammaproteobacteria					60	142	32	34	50	81	97	166	**662**	**8**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-RUF397	Proteobacteria	Gammaproteobacteria					87	169	81	62	54	91	84	218	**846**	**8**
IM-4D4HUE	Proteobacteria	Gammaproteobacteria					65	0	28	242	123	157	141	0	**756**	**6**
IM-DR413B	Proteobacteria	Gammaproteobacteria					255	125	168	120	136	170	142	117	**1233**	**8**
IM-77D6UW	Proteobacteria	Gammaproteobacteria					0	33	0	0	0	0	0	132	**165**	**2**
IM-99MKM8	Proteobacteria	Gammaproteobacteria					0	234	0	0	0	0	25	158	**417**	**3**
IM-QB00E0	Proteobacteria	Gammaproteobacteria					86	69	42	61	99	92	74	67	**590**	**8**
IM-96M8UE	Proteobacteria	Gammaproteobacteria					497	210	334	313	393	372	242	121	**2482**	**8**
IM-V7WB13	Proteobacteria	Gammaproteobacteria					174	58	145	75	156	108	76	25	**817**	**8**
IM-3AQ5M3	Proteobacteria	Gammaproteobacteria					100	165	63	72	72	69	97	133	**771**	**8**
IM-0R7L4V	Proteobacteria	Gammaproteobacteria					360	177	367	198	298	237	160	106	**1903**	**8**
IM-974OMY	Proteobacteria	Gammaproteobacteria					114	183	54	91	96	101	124	129	**892**	**8**
IM-TPX572	Proteobacteria	Gammaproteobacteria					151	142	225	208	176	177	125	42	**1246**	**8**
IM-1EDT50	Proteobacteria	Gammaproteobacteria					0	55	0	0	0	0	0	183	**238**	**2**
IM-R8Y41G	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	88	**88**	**1**
IM-U06KH7	Proteobacteria	Gammaproteobacteria					128	200	145	80	116	106	98	45	**918**	**8**
IM-C0X5T6	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	108	**108**	**1**
IM-23AKR5	Proteobacteria	Gammaproteobacteria					111	252	96	53	74	148	194	294	**1222**	**8**
IM-KJ34P0	Proteobacteria	Gammaproteobacteria					97	61	138	56	98	122	49	0	**621**	**7**
IM-80MH5A	Proteobacteria	Gammaproteobacteria					118	0	106	75	145	69	109	0	**622**	**6**
IM-P3O7K8	Proteobacteria	Gammaproteobacteria					65	55	31	23	39	58	45	0	**316**	**7**
IM-394PXE	Proteobacteria	Gammaproteobacteria					34	48	29	0	0	44	46	68	**269**	**6**
IM-A8L0X2	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	50	**50**	**1**
IM-5OZ24P	Proteobacteria	Gammaproteobacteria					47	57	38	33	33	26	45	128	**407**	**8**
IM-59MWC2	Proteobacteria	Gammaproteobacteria					78	128	37	38	76	113	89	64	**623**	**8**
IM-I0CO15	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	61	**61**	**1**
IM-78KK9U	Proteobacteria	Gammaproteobacteria					49	47	45	0	54	65	76	0	**336**	**6**
IM-53LV9H	Proteobacteria	Gammaproteobacteria					41	47	33	22	30	41	50	30	**294**	**8**
IM-37PXV9	Proteobacteria	Gammaproteobacteria					64	0	35	31	55	41	26	0	**252**	**6**
IM-2N2D1O	Proteobacteria	Gammaproteobacteria					25	42	42	56	38	56	66	31	**356**	**8**
IM-64M6WE	Proteobacteria	Gammaproteobacteria					33	49	0	0	21	51	58	0	**212**	**5**
IM-03ZO7V	Proteobacteria	Gammaproteobacteria					0	53	0	0	0	0	27	77	**157**	**3**
IM-S67DWK	Proteobacteria	Gammaproteobacteria					27	26	36	24	43	47	45	43	**291**	**8**
IM-S268EN	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	20	32	**52**	**2**
IM-QS76Q8	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	39	**39**	**1**
IM-QB546V	Proteobacteria	Gammaproteobacteria					54	0	0	47	27	24	0	0	**152**	**4**
IM-19UH8S	Proteobacteria	Gammaproteobacteria					0	32	0	0	0	0	0	56	**88**	**2**
IM-54KW0L	Proteobacteria	Gammaproteobacteria					0	68	0	0	0	0	27	53	**148**	**3**
IM-N3F2P9	Proteobacteria	Gammaproteobacteria					35	0	0	41	40	0	0	0	**116**	**3**
IM-4EJ60E	Proteobacteria	Gammaproteobacteria					24	0	0	46	40	0	19	0	**129**	**4**
IM-E1O62E	Proteobacteria	Gammaproteobacteria					26	0	28	0	29	23	38	60	**204**	**6**
IM-OT10A5	Proteobacteria	Gammaproteobacteria					0	32	0	0	0	27	26	0	**85**	**3**
IM-7C7FR3	Proteobacteria	Gammaproteobacteria					0	32	0	0	0	0	0	0	**32**	**1**
IM-737EU1	Proteobacteria	Gammaproteobacteria					0	0	0	34	0	0	0	0	**34**	**1**
IM-JV047W	Proteobacteria	Gammaproteobacteria					0	47	0	0	0	38	45	0	**130**	**3**
IM-3U99PX	Proteobacteria	Gammaproteobacteria					0	25	0	0	0	0	0	0	**25**	**1**
IM-0O3I5U	Proteobacteria	Gammaproteobacteria					0	27	0	0	0	0	0	33	**60**	**2**
IM-4U8BT6	Proteobacteria	Gammaproteobacteria					50	37	38	22	39	44	42	0	**272**	**7**
IM-O2F7D3	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	76	**76**	**1**
IM-GS923C	Proteobacteria	Gammaproteobacteria					22	0	0	0	0	0	0	0	**22**	**1**
IM-8FIZ22	Proteobacteria	Gammaproteobacteria					24	0	0	0	23	0	0	0	**47**	**2**
IM-2MSW8S	Proteobacteria	Gammaproteobacteria					0	0	0	22	0	0	0	0	**22**	**1**
IM-77L33B	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	49	**49**	**1**
IM-36OSH0	Proteobacteria	Gammaproteobacteria					0	29	0	0	0	0	0	26	**55**	**2**
IM-R27MG4	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	25	**25**	**1**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Stations								Total number of reads	Present at number of samples
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-55DIB3	Proteobacteria	Gammaproteobacteria					0	0	0	0	0	0	0	37	**37**	**1**
IM-A9H5D8	Spirochaetes	Spirochaetes(Class)	Spirochaetales	Spirochaetaceae			0	0	0	35	0	0	0	0	**35**	**1**
IM-4Q79JO	Verrucomicrobia						44	0	0	29	27	30	0	0	**130**	**4**
IM-S3E2K5	Verrucomicrobia	Kiritimatiellae					25	0	31	0	0	0	0	0	**56**	**2**
IM-20B1SS	Verrucomicrobia	Kiritimatiellae					0	0	0	0	0	0	0	31	**31**	**1**
IM-37W3GI	Verrucomicrobia	Kiritimatiellae					0	0	0	0	0	0	0	39	**39**	**1**
IM-0B5W0P	Verrucomicrobia	Verrucomicrobiae	Verrucomicrobiales	Akkermansiaceae			0	0	0	0	0	0	0	23	**23**	**1**
IM-1MM9Y3	Verrucomicrobia	Verrucomicrobiae	Verrucomicrobiales	Verrucomicrobiaceae			36	50	0	0	21	52	44	0	**203**	**5**
IM-P4DD88	Verrucomicrobia	Verrucomicrobiae	Verrucomicrobiales	Verrucomicrobiaceae			34	27	41	0	40	41	19	36	**238**	**7**
IM-Y5F3D4	Verrucomicrobia	Verrucomicrobiae	Verrucomicrobiales	Verrucomicrobiaceae			0	35	46	0	0	0	0	0	**81**	**2**
IM-8AFC89	Verrucomicrobia	Verrucomicrobiae	Verrucomicrobiales				0	26	0	0	0	0	25	63	**114**	**3**
						Number of Reads	**30001**	**33335**	**40419**	**31276**	**28640**	**29538**	**25128**	**29803**	**248140**	
						Number of OTUs	**230**	**231**	**232**	**214**	**230**	**230**	**240**	**245**	**443**	

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Samples								Total number of reads	Present at number of samples (out of 8)
							ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-2AP2NM	Annelida	Polychaeta	Phyllodocida	Hesionidae	*Podarkeopsis*	*helgolandicus*	0	0	0	0	66	0	0	0	**66**	**1**
IM-4KHT5C	Annelida	Polychaeta	Phyllodocida	Nephtyidae	*Nephtys*	*kersivalensis*	0	29	0	0	0	0	0	0	**29**	**1**
IM-81ZZ24	Annelida	Polychaeta	Phyllodocida	Syllidae	*Streptosyllis*		0	0	0	0	0	0	0	149	**149**	**1**
IM-1J519V	Annelida	Polychaeta	Phyllodocida				0	1784	0	0	0	0	0	0	**1784**	**1**
IM-8T2M61	Annelida	Polychaeta		Oweniidae	*Galathowenia*	*oculata*	809	0	0	0	0	572	0	0	**1381**	**2**
IM-21TY42	Annelida	Polychaeta	Spionida	Spionidae	*Prionospio*	*dubia*	0	0	0	0	1672	16	0	0	**1688**	**2**
IM-OO85FM	Annelida	Polychaeta	Spionida				0	0	0	0	0	5101	50	0	**5151**	**2**
IM-W05Q4S	Annelida	Polychaeta	Spionida				0	0	385	0	0	0	1388	0	**1773**	**2**
IM-N9709Q	Annelida	Polychaeta	Spionida				0	0	0	0	0	0	0	91	**91**	**1**
IM-1GUTR7	Annelida	Polychaeta	Terebellida	Cirratulidae	*Chaetozone*		0	0	280	0	0	1413	243	0	**1936**	**3**
IM-S76I52	Annelida	Polychaeta	Terebellida	Cirratulidae	*Chaetozone*		0	0	0	0	0	0	116	0	**116**	**1**
IM-7HJ284	Annelida	Polychaeta	Terebellida	Cirratulidae	*Tharyx*		0	0	0	0	0	1693	0	0	**1693**	**1**
IM-1E26WF	Annelida	Polychaeta	Terebellida				0	0	0	0	0	0	86	0	**86**	**1**
IM-9MUQ9R	Annelida	Polychaeta	Terebellida				0	0	0	0	0	66	0	0	**66**	**1**
IM-J7BG3Q	Annelida	Polychaeta	Terebellida				0	0	0	0	19	0	0	0	**19**	**1**
IM-O28VKC	Annelida	Polychaeta		Paraonidae	*Aricidea*	*laubieri*	0	0	0	0	31	0	0	0	**31**	**1**
IM-NXV1H3	Annelida	Polychaeta					3393	0	0	18661	0	0	0	0	**22054**	**2**
IM-I2Y4K4	Annelida	Polychaeta					0	0	53602	0	0	41	0	0	**53643**	**2**
IM-22Z3V2	Annelida	Polychaeta					0	0	0	0	0	47	79	0	**126**	**2**
IM-789Y2X	Annelida	Polychaeta					0	0	0	0	0	0	0	44	**44**	**1**
IM-G7KP25	Arthropoda	Copepoda	Calanoida	Temoridae	*Temora*	*longicornis*	0	0	0	0	0	129	0	0	**129**	**1**
IM-905K0O	Arthropoda	Copepoda	Harpacticoida	Ameiridae	*Proameira*		0	0	30	0	0	0	0	0	**30**	**1**
IM-1EXII3	Arthropoda	Copepoda	Harpacticoida	Ameiridae			0	0	0	0	0	0	0	1091	**1091**	**1**
IM-VX6OM8	Arthropoda	Copepoda	Harpacticoida	Ectinosomatidae			0	0	0	0	0	0	85	0	**85**	**1**
IM-0O7JP0	Arthropoda	Copepoda	Harpacticoida	Laophontidae	Laophonte	longicaudata	0	0	43	0	0	0	0	0	**43**	**1**
IM-HUGN94	Arthropoda	Copepoda	Harpacticoida	Leptastacidae	Leptastacus		0	0	0	0	0	0	0	190	**190**	**1**
IM-XF2R1Z	Arthropoda	Copepoda	Harpacticoida	Leptopontiidae	Leptopontia	flandrica	0	0	0	0	0	0	0	24	**24**	**1**
IM-F29G97	Arthropoda	Copepoda	Harpacticoida	Miraciidae	Haloschizopera	pygmaea	0	0	0	0	0	0	100	0	**100**	**1**
IM-8J5ZK0	Arthropoda	Copepoda	Harpacticoida	Miraciidae	Haloschizopera		0	117	0	0	0	0	0	356	**473**	**2**
IM-0OQ1J8	Arthropoda	Copepoda	Harpacticoida	Rhizotrichidae	Rhizothrix	minuta	0	0	0	0	0	0	0	24	**24**	**1**
IM-D06QML	Chaetognatha	Sagittoidea					44	0	67	97	207	17	0	0	**432**	**5**
IM-D06QML	Chaetognatha	Sagittoidea					44	0	67	97	207	17	0	0	**432**	**5**
IM-7WH2GP	Chaetognatha	Sagittoidea					0	0	0	29	17	0	0	0	**46**	**2**
IM-0W9L8F	Cnidaria	Hydrozoa	Anthoathecata	Bougainvilliidae	Bougainvillia		0	0	0	19	0	48	0	0	**67**	**2**
IM-193TYA	Cnidaria	Hydrozoa	Leptothecata	Eirenidae	Helgicirrha	cari	0	0	0	4746	0	0	0	0	**4746**	**1**
IM-0J53KS	Cnidaria	Hydrozoa	Leptothecata	Melicertidae	Melicertum	octocostatum	0	0	0	24	68	0	0	0	**92**	**2**
IM-0UE8FO	Echinodermata	Echinoidea	Echinolampadacea	Fibulariidae	Echinocyamus	pusillus	0	35920	0	0	0	20	0	0	**35940**	**2**
IM-5T8N02	Echinodermata	Echinoidea	Spatangoida	Brissidae	Brissopsis	lyrifera	0	0	756	0	38	0	0	0	**794**	**2**
IM-WT088E	Echinodermata	Ophiuroidea	Amphilepidida	Amphiuridae	Amphiura	filiformis	30845	3449	0	0	0	683	0	0	**34977**	**3**
IM-V5KXR1	Mollusca	Bivalvia	Cardiida	Semelidae	Abra	prismatica	0	0	33	0	0	0	0	0	**33**	**1**
IM-Q15Q30	Mollusca	Bivalvia	Nuculida	Nuculidae	Nucula	nucleus	0	0	0	0	0	127	0	0	**127**	**1**
IM-XKS4Z5	Mollusca	Bivalvia	Venerida	Arcticidae	*Arctica*	*islandica*	0	0	0	0	83	0	0	0	**83**	**1**
IM-7D4LWM	Mollusca	Gastropoda	Littorinimorpha	Naticidae	*Euspira*	*nitida*	0	104	0	0	0	0	0	0	**104**	**1**
IM-I55NUH	Mollusca	Gastropoda		Pyramidellidae	*Turbonilla*		23	67	28	0	35	82	42	558	**835**	**7**
IM-34LI74	Mollusca	Gastropoda		Pyramidellidae	*Turbonilla*		0	45	0	0	0	45	43	0	**133**	**3**
IM-7R6Y2F	Nematoda	Chromadorea	Monhysterida	Linhomoeidae	*Terschellingia*	*longicaudata*	0	0	0	0	66	0	0	0	**66**	**1**
IM-1YVZ1Z	Nemertea	Palaeonemertea	Archinemertea	Cephalothricidae			0	0	0	0	0	0	43	0	**43**	**1**
IM-J55QJV	Platyhelminthes	Platyhelminthes		Haplopharyngidae			0	38	0	0	0	0	0	0	**38**	**1**
IM-M4R8W4	Rotifera	Eurotatoria	Ploima	Synchaetidae	*Synchaeta*		0	0	0	0	0	0	0	118	**118**	**1**
						Number of Reads	**35158**	**41553**	**55291**	**23673**	**2509**	**10117**	**2275**	**2645**	**173221**	**82**
						Number of OTUs	**6**	**9**	**10**	**7**	**12**	**17**	**11**	**10**	**49**	**49**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Samples								Stations							Total number of reads	Present at number of samples (out of 14)
							ENV04 Surface	ENV13 Bottom	ENV17 Bottom	ENV26 Bottom	ENV29 Bottom	ENV31 Bottom	ENV53 Bottom	ENV53 Surface	ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV53		
IM-H6683F	Chordata	Teleostei	Clupeiformes	Clupeidae	*Clupea*	*harengus*	0	5322	0	57548	0	4563	0	0	0	5322	0	57548	0	4563	0	**67433**	**3**
IM-25HY87	Chordata	Teleostei	Clupeiformes	Clupeidae	*Sprattus*	*sprattus*	54284	19709	30814	17729	42848	25579	0	0	54284	19709	30814	17729	42848	25579	0	**190963**	**6**
IM-566W4J	Chordata	Teleostei	Gadiformes	Gadidae	*Gadus*	*morhua*	0	0	0	28	20	2065	0	37	0	0	0	28	20	2065	37	**2150**	**4**
IM-75I6XD	Chordata	Teleostei	Gadiformes	Gadidae	*Melanogrammus*	*aeglefinus*	68644	8005	1992	726	2665	12857	208	3894	68644	8005	1992	726	2665	12857	4102	**98991**	**8**
IM-Y439L8	Chordata	Teleostei	Gadiformes	Gadidae	*Merlangius*	*merlangus*	0	0	120	41	163	4733	0	0	0	0	120	41	163	4733	0	**5057**	**4**
IM-A3326P	Chordata	Teleostei	Gadiformes	Gadidae	*Trisopterus*	*esmarkii*	0	43	0	321	0	3620	0	0	0	43	0	321	0	3620	0	**3984**	**3**
IM-N0ZB2N	Chordata	Teleostei	Gadiformes	Gadidae	*Trisopterus*	*minutus*	0	0	0	0	0	4159	0	0	0	0	0	0	0	4159	0	**4159**	**1**
IM-3N1A04	Chordata	Teleostei	Argentiniformes	Argentinidae			0	0	0	0	0	625	0	0	0	0	0	0	0	625	0	**625**	**1**
IM-2Y9H72	Chordata	Teleostei	Perciformes	Ammodytidae			0	15250	38316	17225	0	18135	27592	3735	0	15250	38316	17225	0	18135	31327	**120253**	**6**
IM-6FSK1Z	Chordata	Teleostei	Blenniiformes	Blenniidae	*Lipophrys*	*pholis*	0	0	0	0	0	0	1376	0	0	0	0	0	0	0	1376	**1376**	**1**
IM-5W871B	Chordata	Teleostei	Callionymiformes	Callionymidae	*Callionymus*	*lyra*	0	0	126	89	0	0	0	22	0	0	126	89	0	0	22	**237**	**3**
IM-AP0738	Chordata	Teleostei	Callionymiformes	Callionymidae	*Callionymus*	*maculatus*	0	0	0	0	0	616	0	0	0	0	0	0	0	616	0	**616**	**1**
IM-99O9E1	Chordata	Teleostei	Gobiiformes	Gobiidae	*Crystallogobius*	*linearis*	0	22	0	0	0	0	0	0	0	22	0	0	0	0	0	**22**	**1**
IM-PX5MQ9	Chordata	Teleostei	Gobiiformes	Gobiidae	*Pomatoschistus*	*minutus*	0	0	0	1191	0	0	0	0	0	0	0	1191	0	0	0	**1191**	**1**
IM-X8JMR5	Chordata	Teleostei	Perciformes	Pholidae	*Pholis*	*gunnellus*	0	0	0	0	3160	4677	1105	1102	0	0	0	0	3160	4677	2207	**10044**	**4**
IM-LR6159	Chordata	Teleostei	Scombriformes	Scombridae	*Scomber*	*scombrus*	0	0	0	827	0	0	0	0	0	0	0	827	0	0	0	**827**	**1**
IM-GN7780	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae	*Hippoglossoides*	*platessoides*	0	37067	6825	1534	8791	7490	224	347	0	37067	6825	1534	8791	7490	571	**62278**	**7**
IM-671BU9	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae	*Limanda*	*limanda*	0	10141	16775	3810	2795	21382	3501	18909	0	10141	16775	3810	2795	21382	22410	**77313**	**7**
IM-9Z4J32	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae	*Microstomus*	*kitt*	0	0	0	169	6344	6904	0	0	0	0	0	169	6344	6904	0	**13417**	**3**
IM-9V81P6	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae	*Platichthys*	*flesus*	0	1105	3092	117	637	0	620	1150	0	1105	3092	117	637	0	1770	**6721**	**6**
IM-3F88Y4	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae	*Pleuronectes*	*platessa*	0	3325	16916	1284	6372	0	16212	19894	0	3325	16916	1284	6372	0	36106	**64003**	**6**
IM-1Y06L1	Chordata	Teleostei	Pleuronectiformes	Scophthalmidae	*Zeugopterus*	*punctatus*	0	0	10075	0	0	0	7402	0	0	0	10075	0	0	0	7402	**17477**	**2**
IM-00RM06	Chordata	Teleostei	Salmoniformes	Salmonidae	*Salmo*	*trutta*	0	0	0	0	0	0	1667	0	0	0	0	0	0	0	1667	**1667**	**1**
IM-9KCBK3	Chordata	Teleostei	Perciformes	Agonidae	*Agonus*	*cataphractus*	0	0	0	0	0	0	5358	25314	0	0	0	0	0	0	30672	**30672**	**2**
IM-BJK85A	Chordata	Teleostei	Perciformes	Cottidae	Micrenophrys	lilljeborgii	0	0	0	0	0	0	15537	0	0	0	0	0	0	0	15537	**15537**	**1**
IM-684P2D	Chordata	Teleostei	Perciformes	Cottidae	Myoxocephalus	scorpius	0	0	0	0	0	0	0	7944	0	0	0	0	0	0	7944	**7944**	**1**
IM-6FHX32	Chordata	Teleostei	Perciformes	Cottidae	Taurulus	bubalis	0	0	0	0	0	0	30889	20683	0	0	0	0	0	0	51572	**51572**	**2**
IM-T2L528	Chordata	Teleostei	Perciformes	Cyclopteridae	Cyclopterus	lumpus	0	0	0	0	0	0	0	3224	0	0	0	0	0	0	3224	**3224**	**1**
IM-SQ5312	Chordata	Teleostei	Perciformes	Liparidae	Liparis	montagui	0	0	0	0	0	0	58	0	0	0	0	0	0	0	58	**58**	**1**
IM-7OH057	Chordata	Teleostei	Perciformes	Triglidae			0	2277	0	0	11354	0	0	0	0	2277	0	0	11354	0	0	**13631**	**2**
						Number of Reads	**122928**	**102266**	**125051**	**102639**	**85149**	**117405**	**111749**	**106255**	**122928**	**102266**	**125051**	**102639**	**85149**	**117405**	**218004**	**873442**	**90**
						Number of OTUs	**2**	**11**	**10**	**15**	**11**	**14**	**14**	**13**	**2**	**11**	**10**	**15**	**11**	**14**	**18**	**30**	**30**

APPENDIX L DNA ANALYSIS

NMSeqID	Phylum	Class	Order	Family	Genus	Species	Samples																Stations								Total number of reads	Present at number of samples (out of 52)
							ECR_ENV_04 Bottom	ECR_ENV_04 Surface	ECR_ENV_13 Bottom	ECR_ENV_13 Surface	ECR_ENV_17 Bottom	ECR_ENV_17 Surface	ECR_ENV_26 Bottom	ECR_ENV_26 Surface	ECR_ENV_29 Bottom	ECR_ENV_29 Surface	ECR_ENV_31 Bottom	ECR_ENV_31 Surface	ECR_ENV_36 Bottom	ECR_ENV_36 Surface	ECR_ENV_53 Bottom	ECR_ENV_53 Surface	ENV04	ENV13	ENV17	ENV26	ENV29	ENV31	ENV36	ENV53		
IM-6M6ZY5	Chordata	Teleostei	Clupeiformes	Alosidae	*Sardina*	*pilchardus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	16	**16**	**1**
IM-86PMO8	Chordata	Teleostei	Clupeiformes	Clupeidae			375	118	1013	271	495	227	2168	81	75	1062	169	285	2443	461	76	38	493	1284	722	2249	1137	454	2904	114	**9357**	**16**
IM-861BTZ	Chordata	Teleostei	Cypriniformes	Cyprinidae	*Phoxinus*	*phoxinus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	13	**13**	**1**
IM-141L6C	Chordata	Teleostei	Gadiformes	Gadidae	*Raniceps*	*raninus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	24	**24**	**1**
IM-W8EF51	Chordata	Teleostei	Gadiformes	Gadidae	*Trisopterus*	*esmarkii*	47	0	487	128	363	0	350	0	109	95	504	0	1308	0	0	0	47	615	363	350	204	504	1308	0	**3391**	**9**
IM-KVD304	Chordata	Teleostei	Gadiformes	Gadidae	*Trisopterus*	*minutus*	0	0	0	0	294	0	0	0	98	0	519	0	102	0	86	39	0	0	294	0	98	519	102	125	**1138**	**6**
IM-35MW28	Chordata	Teleostei	Gadiformes	Gadidae			1015	15879	1278	441	2139	1090	564	117	958	478	2068	1300	4244	888	3739	1245	16894	1719	3229	681	1436	3368	5132	4984	**37443**	**16**
IM-OP488T	Chordata	Teleostei	Gadiformes	Lotidae	*Ciliata*	*mustela*	0	0	0	0	0	0	0	0	0	0	0	44	0	0	1221	590	0	0	0	0	0	44	0	1811	**1855**	**3**
IM-9Y9I7L	Chordata	Teleostei	Gadiformes	Lotidae	*Enchelyopus*	*cimbrius*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	0	0	0	0	0	0	0	0	65	**65**	**1**
IM-X0134T	Chordata	Teleostei	Perciformes	Gasterosteidae	*Gasterosteus*	*aculeatus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	0	0	0	0	0	0	0	0	75	**75**	**1**
IM-KC7E6H	Chordata	Teleostei	Argentiniformes	Argentinidae	*Argentina*	*sphyraena*	0	0	47	0	59	0	24	0	0	0	181	0	136	0	0	0	0	47	59	24	0	181	136	0	**447**	**5**
IM-SOU344	Chordata	Teleostei	Perciformes	Ammodytidae	*Ammodytes*		50616	0	467	625	5036	1045	1237	286	1641	2271	203	1811	100	3410	5928	1504	50616	1092	6081	1523	3912	2014	3510	7432	**76180**	**15**
IM-6A4A64	Chordata	Teleostei	Perciformes	Ammodytidae	*Gymnammodytes*	*semisquamatus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	109	0	0	0	0	0	0	0	0	109	**109**	**1**
IM-3L8DJ1	Chordata	Teleostei	Blenniiformes	Blenniidae	*Lipophrys*	*pholis*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177	0	0	0	0	0	0	0	0	177	**177**	**1**
IM-CJC655	Chordata	Teleostei	Callionymiformes	Callionymidae	*Callionymus*	*lyra*	0	0	68	69	0	0	51	0	0	0	32	0	49	0	27	18	0	137	0	51	0	32	49	45	**314**	**7**
IM-DT827L	Chordata	Teleostei	Callionymiformes	Callionymidae	*Callionymus*		0	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	75	0	0	0	0	0	**75**	**1**
IM-7CW88I	Chordata	Teleostei	Gobiiformes	Gobiidae	*Pomatoschistus*		0	0	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	26	0	0	0	0	**26**	**1**
IM-7967GF	Chordata	Teleostei	Eupercaria incertae sed	Labridae	*Labrus*	*mixtus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	25	**25**	**1**
IM-5W0Q6F	Chordata	Teleostei	Perciformes	Pholidae	*Pholis*	*gunnellus*	0	0	0	0	49	68	0	0	87	0	0	85	29	0	375	144	0	0	117	0	87	85	29	519	**837**	**7**
IM-4ES1Y0	Chordata	Teleostei	Scombriformes	Scombridae	*Scomber*	*scombrus*	0	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	39	0	0	0	**39**	**1**
IM-1A652Z	Chordata	Teleostei	Perciformes	Stichaeidae	*Chirolophis*	*ascanii*	0	0	0	0	0	0	27	0	0	294	0	0	0	13	29	20	0	0	0	27	294	0	13	49	**383**	**5**
IM-B9CA30	Chordata	Teleostei	Perciformes	Zoarcidae	*Zoarces*	*viviparus*	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	29	0	0	0	0	0	**29**	**1**
IM-33YQ7B	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae	*Hippoglossoides*	*platessoides*	0	0	158	37	330	70	69	0	308	0	85	134	0	292	0	0	0	195	400	69	308	219	292	0	**1483**	**9**
IM-9X37KI	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae	*Limanda*	*limanda*	0	1679	103	29	65	226	46	24	0	95	0	55	115	0	98	93	1679	132	291	70	95	55	115	191	**2628**	**12**
IM-43C8IX	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae	*Microstomus*	*kitt*	0	0	92	68	0	95	51	0	0	0	171	0	626	0	0	43	0	160	95	51	0	171	626	43	**1146**	**7**
IM-8PW24U	Chordata	Teleostei	Pleuronectiformes	Pleuronectidae			162	1180	416	104	3232	1027	512	1965	922	1077	480	525	801	378	3121	1736	1342	520	4259	2477	1999	1005	1179	4857	**17638**	**16**
IM-BRP44X	Chordata	Teleostei	Pleuronectiformes	Scophthalmidae	*Phrynorhombus*	*norvegicus*	0	0	0	36045	0	0	0	0	0	0	0	21	0	0	66	0	0	36045	0	0	0	21	0	66	**36132**	**3**
IM-WV7K83	Chordata	Teleostei	Pleuronectiformes	Soleidae	*Solea*	*solea*	0	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	59	0	0	0	0	0	**59**	**1**
IM-M196Y0	Chordata	Teleostei	Salmoniformes	Salmonidae	*Oncorhynchus*	*mykiss*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	16	**16**	**1**
IM-W753ST	Chordata	Teleostei	Perciformes	Agonidae	*Agonus*	*cataphractus*	0	0	0	0	0	0	0	0	0	0	0	0	131	0	0	234	0	0	0	0	0	0	131	234	**365**	**2**
IM-UT1761	Chordata	Teleostei	Perciformes	Agonidae	*Agonus*		0	0	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0	22	0	**22**	**1**
IM-X61K69	Chordata	Teleostei	Perciformes	Cottidae	*Micrenophrys*	*lilljeborgii*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2276	49	0	0	0	0	0	0	0	2325	**2325**	**2**
IM-2Q9OD0	Chordata	Teleostei	Perciformes	Cottidae			0	0	0	0	80	76	27	0	0	0	0	0	64	98	678	324	0	0	156	27	0	0	162	1002	**1347**	**7**
IM-56XF9X	Chordata	Teleostei	Perciformes	Cyclopteridae	*Cyclopterus*	*lumpus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	203	82	0	0	0	0	0	0	0	285	**285**	**2**
IM-0ESVO0	Chordata	Teleostei	Perciformes	Liparidae	*Liparis*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	0	0	0	0	0	0	0	0	75	**75**	**1**
IM-2Y1M3B	Chordata	Teleostei	Perciformes	Triglidae			81	0	0	0	0	46	0	0	0	0	46	36	518	0	0	46	81	0	46	0	0	82	518	46	**773**	**6**
IM-M5596K	Chordata	Teleostei	Syngnathiformes	Syngnathidae	*Entelurus*	*aequoreus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	16	**16**	**1**
IM-43PD9V	Chordata	Teleostei	Syngnathiformes	Syngnathidae	*Syngnathus*	*rostellatus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	30	**30**	**1**
IM-877UM2	Chordata	Amphibia	Caudata	Phocidae			0	0	0	0	0	0	0	0	0	0	37	0	0	0	217	35	0	0	0	0	0	37	0	252	**289**	**3**
IM-I50B1N	Chordata	Aves	Anseriformes	Delphinidae	*Grampus*	*griseus*	0	0	0	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	23	0	0	**23**	**1**
IM-P2068J	Chordata	Aves	Anseriformes	Delphinidae	*Tursiops*	*truncatus*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	13	**13**	**1**
IM-7XW7B5	Chordata	Aves	Charadriiformes	Phocoenidae	*Phocoena*	*phocoena*	0	0	207	264	170	0	34	0	64	96	117	32	0	188	673	636	0	471	170	34	160	149	188	1309	**2481**	**11**
IM-7N0TE4	Chordata	Aves	Charadriiformes	Alcidae	Alca	torda	0	0	0	0	0	31	0	0	0	0	0	0	0	0	27	27	0	0	0	0	0	0	0	0	0	**3**
IM-J518Y3	Chordata	Aves	Charadriiformes	Laridae			0	0	0	953	0	0	0	0	0	0	0	0	0	0	6804	162	0	0	0	0	0	0	0	0	0	**3**
IM-K76VZ2	Chordata	Aves	Columbiformes	Columbidae	Columba		0	0	0	0	0	0	0	0	0	0	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	**1**
IM-352H4W	Chordata	Aves	Columbiformes	Columbidae			0	0	0	0	0	49	87	0	0	0	0	0	0	210	0	0	0	0	0	0	0	0	0	0	0	**3**
IM-72PW6S	Chordata	Mammalia	Carnivora	Phocidae			0	0	0	0	0	0	0	0	0	0	37	0	0	0	217	35	0	0	0	0	0	37	0	252	**289**	**3**
IM-IH9XC4	Chordata	Mammalia	Cetartiodactyla	Delphinidae	Grampus	griseus	0	0	0	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	23	0	0	**23**	**0**
IM-4F36YH	Chordata	Mammalia	Cetartiodactyla	Delphinidae	Tursiops	truncatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	13	**13**	**1**
IM-IJ2L15	Chordata	Mammalia	Cetartiodactyla	Phocoenidae	Phocoena	phocoena	0	0	207	264	170	0	34	0	64	96	117	32	0	188	673	636	0	471	170	34	160	149	188	1309	**2481**	**11**
						Number of Reads	**52296**	**18856**	**4543**	**39298**	**12616**	**4079**	**5307**	**2473**	**4326**	**5603**	**4812**	**4360**	**10688**	**6185**	**27065**	**7872**	**71152**	**42888**	**16615**	**7693**	**9929**	**9172**	**16604**	**27917**	**201970**	**214**
						Number of OTUs	**6**	**4**	**12**	**13**	**15**	**13**	**16**	**5**	**10**	**10**	**17**	**12**	**15**	**11**	**26**	**30**	**7**	**13**	**18**	**15**	**13**	**21**	**19**	**35**	**46**	**49**

APPENDIX M MACROFAUNA ANALYSIS

APPENDIX M MACROFAUNA ANALYSIS

Aphia ID	Phylum Class/Order	Taxon Name	Qualifiers	Authority	Stations																																						Total
					ENV01	ENV02	ENV03	ENV04	ENV05	ENV06	ENV07	ENV08	ENV09	ENV10	ENV11	ENV12	ENV13	ENV14	ENV15	ENV16	ENV17	ENV18	ENV19	ENV20	ENV21	ENV22	ENV23	ENV24	ENV25	ENV26	ENV27	ENV28	ENV29	ENV30	ENV31	ENV33	ENV34	ENV35	ENV36	ENV53	ENV57	ENV58	ENV59	
Taxa included in statistical analysis																																												
	ANNELIDA																																											
130599	**Polychaeta**	*Pholoe baltica*		Örsted, 1843	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
130604		*Pholoe pallida*		Chambers, 1985	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	1	0	0	0	0	0	0	0	0	8
939		Polynoidae		Kinberg, 1856	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
129491		*Harmothoe*		Kinberg, 1856	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	7
571832		*Harmothoe glabra*		(Malmgren, 1865)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
147008		*Malmgrenia andreapolis*		McIntosh, 1874	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	6
131072		*Sigalion mathildae*	Juvenile	Audouin & Milne Edwards, 1832	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
131077		*Sthenelais limicola*		(Ehlers, 1864)	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5
129296		*Glycera*		Lamarck, 1818	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
130116		*Glycera alba*		(O.F. Müller, 1776)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
130119		*Glycera celtica*		O'Connor, 1987	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
130123		*Glycera lapidum*		Quatrefages, 1866	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
130131		*Glycera unicornis*		Lamarck, 1818	0	1	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	9
130136		*Glycinde nordmanni*		(Malmgren, 1866)	1	1	0	0	3	0	1	1	0	1	0	0	1	0	0	2	0	2	0	0	0	2	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	1	0	20
130140		*Goniada maculata*		Örsted, 1843	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2	0	2	1	0	0	0	0	0	1	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	11
710680		*Oxydromus flexuosus*		(Delle Chiaje, 1827)	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	7
129319		*Podarkeopsis*		Laubier, 1961	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
130417		*Platynereis dumerilii*		(Audouin & Milne Edwards, 1833)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
130696		*Glyphohesione klatti*		Friedrich, 1950	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
131328		*Odontosyllis gibba*		Claparède, 1863	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
196002		*Syllis parapari*		San Martín & López, 2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
129443		*Eteone*		Savigny, 1822	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
		Eteone cf. longa		(Fabricius, 1780)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
129446		*Eumida*		Malmgren, 1865	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
334506		*Phyllodoce groenlandica*		Örsted, 1842	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
334514		*Phyllodoce rosea*		(McIntosh, 1877)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
130683		*Pseudomystides limbata*		(Saint-Joseph, 1888)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
129370		*Nephtys*		Cuvier, 1817	0	3	2	0	1	0	0	1	0	1	1	0	2	0	0	0	2	1	0	0	1	0	1	1	0	0	0	1	0	0	2	0	2	2	0	0	0	0	0	24
130357		*Nephtys cirrosa*		Ehlers, 1868	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	8	2	0	14
130359		*Nephtys hombergii*		Savigny in Lamarck, 1818	0	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	6
130363		*Nephtys kersivalensis*		McIntosh, 1908	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	6
130364		*Nephtys longosetosa*		Örsted, 1842	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
146469		*Abyssoninoe hibernica*		(McIntosh, 1903)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
		Lumbrineris aniara agg.			1	0	0	0	0	0	0	5	0	1	0	0	7	0	1	1	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	1	0	1	0	2	0	0	0	24
129861		*Notocirrus scoticus*		McIntosh, 1869	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
130452		*Aponuphis bilineata*		(Baird, 1870)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	12
129884		*Heteromastus filiformis*		(Claparède, 1864)	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3	0	1	0	0	0	0	0	0	0	0	0	0	15
129892		*Mediomastus fragilis*		Rasmussen, 1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
129220		*Notomastus*		M. Sars, 1851	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	8	0	2	0	0	0	0	0	0	0	1	1	1	2	0	0	0	1	0	0	0	0	0	0	19
129906		*Peresiella clymenoides*		Harmelin, 1968	0	4	0	4	0	0	0	0	4	1	0	2	1	0	1	1	0	3	0	0	2	1	0	8	1	2	2	5	0	1	2	1	0	2	1	0	0	0	0	49
129911		*Pseudonotomastus southerni*		Warren & Parker, 1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	5
130278		*Clymenella cincta*		(Saint-Joseph, 1894)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
209899		*Euclymene lombricoides*		(Quatrefages, 1866)	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		Euclymene oerstedii agg.			0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	5
146991		*Leiochone*		Grube, 1868	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
130322		*Praxillella affinis*		(M. Sars in G.O. Sars, 1872)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5
130327		*Praxillura longissima*		Arwidsson, 1906	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	3
130330		*Rhodine gracilior*		Tauber, 1879	0	4	0	0	0	0	0	0	1	0	3	0	0	0	0	1	6	2	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	22
130491		*Ophelia borealis*		Quatrefages, 1866	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	9
130500		*Ophelina acuminata*		Örsted, 1843	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
902		Orbiniidae		Hartman, 1942	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
129420		*Orbinia*		Quatrefages, 1866	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	5
130537		*Scoloplos armiger*		(Müller, 1776)	2	0	1	0	1	2	0	0	2	2	0	0	0	0	11	0	0	0	0	0	0	1	1	0	4	0	0	0	0	0	0	0	1	1	3	1	0	0	1	34
333034		*Aricidea (Acmira) catherinae*		Laubier, 1967	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
525497		*Aricidea (Acmira) cerrutii*		Laubier, 1966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
130578		*Levinsenia gracilis*		(Tauber, 1879)	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	8
130585		*Paradoneis lyra*		(Southern, 1914)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
130980		*Scalibregma inflatum*		Rathke, 1843	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	7
130512		*Travisia forbesii*		Johnston, 1840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
129198		*Apistobranchus*		Levinsen, 1883	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
130711		*Poecilochaetus serpens*		Allen, 1904	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
131107		*Aonides paucibranchiata*		Southern, 1914	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
129611		*Dipolydora*		Verrill, 1881	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
		Dipolydora caulleryi agg.			0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
		Dipolydora coeca agg.			0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
129613		*Laonice*		Malmgren, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
131127		*Laonice bahusiensis agg.*		Söderström, 1920	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4
		Prionospio cf. dubia		Day, 1961	0	1	0	1	3	0	0	0	0	18	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	10	13	4	5	2	5	1	0	0	0	0	0	67
131157		*Prionospio fallax*		Söderström, 1920	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
131168		*Pseudopolydora paucibranchiata*		(Okuda, 1937)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
129623		*Scolelepis*		Blainville, 1828	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4
131171		*Scolelepis bonnieri*		(Mesnil, 1896)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
129625		*Spio*		Fabricius, 1785	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
131180		*Spio armata*		(Thulin, 1957)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
129626		*Spiophanes*		Grube, 1860	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
131187		*Spiophanes bombyx*		(Claparède, 1870)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4	1	10
131188		*Spiophanes kroyeri*		Grube, 1860	0	0	1	0	1	0	0	3	0	0	0	1	1	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	13

APPENDIX M MACROFAUNA ANALYSIS

Aphia ID	Phylum Class/Order	Taxon Name	Qualifiers	Authority	ENV01	ENV02	ENV03	ENV04	ENV05	ENV06	ENV07	ENV08	ENV09	ENV10	ENV11	ENV12	ENV13	ENV14	ENV15	ENV16	ENV17	ENV18	ENV19	ENV20	ENV21	ENV22	ENV23	ENV24	ENV25	ENV26	ENV27	ENV28	ENV29	ENV30	ENV31	ENV33	ENV34	ENV35	ENV36	ENV53	ENV57	ENV58	ENV59	Total
129240		*Aphelochaeta*		Blake, 1991	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	8
129242		*Chaetozone*		Malmgren, 1867	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5
1512071		*Chaetozone pseudosetosa*		Grosse, Capa & Bakken, 2021	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1	5	6	0	2	0	1	0	0	0	0	22
129243		*Cirratulus*		Lamarck, 1818	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
152269		*Tharyx killariensis*		(Southern, 1914)	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4
130100		*Diplocirrus glaucus*		(Malmgren, 1867)	0	1	2	0	2	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0	1	0	0	0	0	1	0	1	0	3	4	0	4	0	3	0	0	0	0	27
981		Ampharetidae		Malmgren, 1866	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	4
		Ampharete lindstroemi agg.			0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3
129789		*Anobothrus gracilis*		(Malmgren, 1866)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	6
129821		*Sosane sulcata*		Malmgren, 1866	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
152448		*Amphictene auricoma*		(O.F. Müller, 1776)	0	6	1	6	1	0	0	0	1	0	0	2	0	0	0	0	0	3	1	0	0	0	0	8	0	0	0	0	0	0	3	0	0	2	0	0	0	0	0	34
152367		*Lagis koreni*		Malmgren, 1866	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
131471		*Amaeana trilobata*		(Sars, 1863)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
129710		*Polycirrus*		Grube, 1850	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	5
131495		*Lanice conchilega*		(Pallas, 1766)	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	6
131519		*Pista mediterranea*		Gaillande, 1970	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
154972		*Pistella lornesis*		(Pearson, 1969)	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
874599		*Terebellides shetlandica*		Parapar, Moreira & O'Reilly, 2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
131575		*Trichobranchus roseus*		(Malm, 1874)	0	1	0	0	0	0	0	1	1	1	0	1	1	0	0	0	0	4	1	0	0	0	0	0	1	0	0	1	2	1	2	1	1	1	0	0	0	0	0	21
130967		*Sabella pavonina*		Savigny, 1822	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
988		Serpulidae		Rafinesque, 1815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
131009		*Hydroides norvegica*		Gunnerus, 1768	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
555935		*Spirobranchus triqueter*		(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
146949		*Galathowenia*		Kirkegaard, 1959	0	5	1	3	4	1	0	0	2	1	0	4	0	0	0	0	0	2	0	0	0	1	0	0	0	1	1	1	0	1	1	0	0	3	6	0	0	0	0	38
130540		*Myriochele danielsseni*		Hansen, 1878	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
129427		*Owenia*		Delle Chiaje, 1844	2	2	2	1	4	0	0	0	2	0	0	0	1	0	3	1	0	3	0	0	1	0	2	0	0	0	0	2	0	0	2	1	4	2	2	1	0	0	0	38
130266		*Magelona alleni*		Wilson, 1958	3	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	12
130268		*Magelona filiformis*		Wilson, 1959	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
130269		*Magelona johnstoni*		Fiege, Licher & Mackie, 2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	8
129341		*Magelona*		F. Müller, 1858.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
1268	**Sipuncula**	SIPUNCULA			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
410724		*Golfingia (Golfingia) vulgaris vulgaris*		(de Blainville, 1827)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
136063		*Thysanocardia procera*		(Möbius, 1875)	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	8
410749		*Phascolion (Phascolion) strombus strombus*		(Montagu, 1804)	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	7
	ARTHROPODA																																							
110460	**Malacostraca**	*Iphinoe serrata*		Norman, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
110380		Diastylidae		Bate, 1856	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
110481		*Diastylis laevis*		Norman, 1869	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
110494		*Diastyloides biplicatus*		(Sars G.O., 1865)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
110514		*Hemilamprops roseus*		(Norman, 1863)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
110524		*Eudorella emarginata*		(Krøyer, 1846)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	0	1	0	0	0	0	0	0	8
110535		*Eudorella truncatula*		(Bate, 1856)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
110415		*Campylaspis*		G.O. Sars, 1865	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
103166		*Stenothoe marina*		(Spence Bate, 1857)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
102351		*Iphimedia spatula*		Myers & McGrath, 1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
102462		*Leucothoe lilljeborgi*		Boeck, 1861	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4
102915		*Perioculodes longimanus*		(Spence Bate & Westwood, 1868)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
102932		*Westwoodilla caecula*		(Spence Bate, 1857)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
179538		*Nototropis vedlomensis*		(Spence Bate & Westwood, 1862)	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
102944		*Nicippe tumida*		Bruzelius, 1859	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
179882		*Ampelisca pectenata*		Reid, 1951	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
101928		*Ampelisca spinipes*		Boeck, 1861	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
101930		*Ampelisca tenuicornis*		Lilljeborg, 1855	0	1	2	0	1	1	0	0	0	0	1	0	1	0	5	0	0	0	1	0	1	0	0	0	0	0	2	1	0	1	2	0	0	0	0	0	0	0	0	20
101933		*Ampelisca typica*		(Spence Bate, 1856)	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
101716		*Harpinia*		Boeck, 1876	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
102960		*Harpinia antennaria*		Meinert, 1890	0	0	0	4	1	1	0	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	2	0	2	0	0	3	1	0	0	0	0	25
102972		*Harpinia pectinata*		Sars, 1891	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5
101789		*Urothoe*		Dana, 1852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
103228		*Urothoe elegans*		Spence Bate, 1857	2	0	1	2	0	0	0	0	0	2	0	0	0	2	11	0	0	1	0	0	4	2	0	1	0	2	0	3	1	2	2	1	0	3	1	0	0	0	0	43
103233		*Urothoe marina*		(Spence Bate, 1857)	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
102598		*Lepidepecreum longicorne*		(Spence Bate & Westwood, 1861)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
102779		*Tryphosites longipes*		(Spence Bate & Westwood, 1861)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	4
101742		*Bathyporeia*		Lindström, 1855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
103058		*Bathyporeia elegans*		Watkin, 1938	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	5
103060		*Bathyporeia guilliamsoniana*		(Spence Bate, 1857)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	2	0	6
103076		*Bathyporeia tenuipes*		Meinert, 1877	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
1468705		*Cheirocratus pseudosundevallii*		Gouillieux, 2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
102783		*Megaluropus agilis*		Hoek, 1889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
102807		*Eriopisa elongata*		(Bruzelius, 1859)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
423507		*Medicorophium affine*		(Bruzelius, 1859)	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
102364		*Gammaropsis maculata*		(Johnston, 1828)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
101857		*Pariambus typicus*		(Krøyer, 1844)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
101864		*Phtisica marina*		Slabber, 1769	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
101871		*Pseudoprotella phasma*		(Montagu, 1804)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
118467		*Anthura gracilis*		(Montagu, 1808)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
295579		*Astacilla dilatata*		(G. O. Sars, 1883)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	4
118859		*Natatolana borealis*		(Lilljeborg, 1851)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
107054		*Processa*		Leach, 1815 [in Leach, 1815-1875]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
107729		*Callianassa subterranea*		(Montagu, 1808)	0	7	0	4	1	0	0	0	1	2	1	2	0	2	0	0	0	2	0	0	1	0	0	2	0	1	1	1	2	3	4	0	4	1	1	0	0	0	0	43

APPENDIX M MACROFAUNA ANALYSIS

Aphia ID	Phylum Class/Order	Taxon Name	Qualifiers	Authority	Stations																																							Total
					ENV01	ENV02	ENV03	ENV04	ENV05	ENV06	ENV07	ENV08	ENV09	ENV10	ENV11	ENV12	ENV13	ENV14	ENV15	ENV16	ENV17	ENV18	ENV19	ENV20	ENV21	ENV22	ENV23	ENV24	ENV25	ENV26	ENV27	ENV28	ENV29	ENV30	ENV31	ENV33	ENV34	ENV35	ENV36	ENV53	ENV57	ENV58	ENV59	
107150		*Galathea intermedia*		Lilljeborg, 1851	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
107152		*Galathea nexa*		Embleton, 1834	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
107188		*Pisidia longicornis*		(Linnaeus, 1767)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
106738		Paguridae		Latreille, 1802	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
107217		*Anapagurus hyndmanni*		(Bell, 1845)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
107273		*Atelecyclus rotundatus*		(Olivi, 1792)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
134581	**Pyncogonida**	*Callipallene*		Flynn, 1929	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
134723		*Anoplodactylus petiolatus*		(Krøyer, 1844)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	MOLLUSCA																																											
140199	**Polyplacophora**	*Leptochiton asellus*		(Gmelin, 1791)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
2094	**Solenogastres**	SOLENOGASTRES		Gegenbaur, 1878	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
151365	**Caudofoveata**	CAUDOFOVEATA		C. R. Boettger, 1956	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
139106		*Chaetoderma nitidulum*		Lovén, 1844	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	2	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	10
140250		*Scutopus ventrolineatus*		Salvini-Plawen, 1968	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	6
150534	**Scaphopoda**	*Antalis entalis*		(Linnaeus, 1758)	0	0	0	0	0	8	0	1	0	1	1	0	13	2	0	1	4	0	0	0	1	0	6	0	0	0	0	0	1	0	0	3	0	1	3	0	0	0	0	46
101	**Gastropoda**	GASTROPODA		Cuvier, 1795	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
139476		*Cylichna cylindracea*		(Pennant, 1777)	0	0	0	2	1	1	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0	2	0	0	0	0	13
161		Philinidae		Gray, 1850 (1815)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
175		Onchidorididae		Gray, 1827	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
139736		*Epitonium trevelyanum*		(G. Johnston, 1841)	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1381415		*Turritellinella tricarinata*		(Brocchi, 1814)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
140129		*Hyala vitrea*		(Montagu, 1803)	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
145		Naticidae		Guilding, 1834	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	6
140529		*Euspira fusca*		(Blainville, 1825)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
151894		*Euspira nitida*		(Donovan, 1804)	0	3	4	1	3	1	0	2	0	0	0	0	0	2	0	0	3	0	2	1	0	1	4	0	1	0	0	1	0	0	1	1	1	3	0	3	1	1	1	41
153853		Mangeliidae		P. Fischer, 1883	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
246140		*Tritia*		Risso, 1826	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
876825		*Tritia incrassata*		(Strøm, 1768)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
836211		*Pyrgiscus crenatus*		(Brown, 1827)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
105	**Bivalvia**	BIVALVIA		Linnaeus, 1758	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
140737		*Phaxas pellucidus*		(Pennant, 1777)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1417307		*Papillicardium minimum*		(Philippi, 1836)	0	1	3	10	1	0	0	1	1	0	1	0	0	3	0	0	2	0	11	0	0	2	1	0	1	1	0	5	0	1	1	3	0	4	0	0	0	0	0	53
181343		*Parvicardium pinnulatum*		(Conrad, 1831)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
139604		*Donax vittatus*		(da Costa, 1778)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
140870		*Gari fervensis*		(Gmelin, 1791)	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	6
138474		*Abra*		Lamarck, 1818	0	0	2	1	2	0	0	0	0	0	0	0	0	1	1	0	0	3	2	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	17
141435		*Abra nitida*		(O. F. Müller, 1776)	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	4	1	0	2	0	0	0	0	0	0	15
141436		*Abra prismatica*		(Montagu, 1808)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
235		Tellinidae		Blainville, 1814	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
879714		*Asbjornsenia pygmaea*		(Lovén, 1846)	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	5	8
140108		*Saxicavella jeffreysi*		Winckworth, 1930	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
140365		*Devonia perrieri*		(Malard, 1904)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
345281		*Kurtiella bidentata*		(Montagu, 1803)	0	0	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	15
146952		*Tellimya ferruginosa*		(Montagu, 1808)	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	8
152397		*Tellimya tenella*		(Lovén, 1846)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
140283		*Lucinoma borealis*		(Linnaeus, 1767)	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
140283		*Lucinoma borealis*	Juvenile	(Linnaeus, 1767)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	6
140283		*Lucinoma borealis*	Combined	(Linnaeus, 1767)	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	2	0	0	0	3	1	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	13
140287		*Myrtea spinifera*		(Montagu, 1803)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	10	1	0	0	0	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	16
141662		*Thyasira flexuosa*		(Montagu, 1803)	0	0	0	0	1	0	0	6	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	4	0	0	0	0	0	0	1	1	0	1	0	0	0	0	18
378492		*Varicorbula gibba*		(Olivi, 1792)	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4
138211		*Mya*	Juvenile	Linnaeus, 1758	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
211		Mytilidae	Juvenile	Rafinesque, 1815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
138262		*Nucula*		Lamarck, 1799	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
140589		*Nucula nitidosa*		Winckworth, 1930	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
140592		*Nucula sulcata*		Bronn, 1831	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
214		Anomiidae		Rafinesque, 1815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
236719		*Mimachlamys varia*	Juvenile	(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
138802		*Arctica islandica*	Juvenile	(Linnaeus, 1767)	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
230		Mactridae		Lamarck, 1809	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
243		Veneridae		Rafinesque, 1815	0	0	0	0	0	1	0	1	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0	10
141909		*Clausinella fasciata*		(da Costa, 1778)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
138636		*Dosinia*		Scopoli, 1777	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
141911		*Dosinia exoleta*		(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
141912		*Dosinia lupinus*		(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
140728		*Mysia undata*		(Pennant, 1777)	0	0	0	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5
141929		*Timoclea ovata*		(Pennant, 1777)	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
141934		*Venus casina*		Linnaeus, 1758	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
382318		THRACIOIDEA		Stoliczka, 1870 (1839)	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	5	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	7	0	0	0	21
181373		*Cochlodesma praetenue*		(Pulteney, 1799)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	6
	ECHINODERMATA																																											
123080	**Asteroidea**	ASTEROIDEA	Juvenile	de Blainville, 1830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
123776		*Asterias rubens*		Linnaeus, 1758	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
124273	**Echinoidea**	*Echinocyamus pusillus*		(O.F. Müller, 1776)	14	1	0	0	0	3	10	2	2	0	2	0	6	1	0	2	0	0	0	5	0	4	10	0	0	0	0	0	0	0	0	0	0	2	0	1	0	1	5	71
123106		SPATANGOIDA	Juvenile	L. Agassiz, 1840	0	1	1	0	0	3	3	1	0	0	1	0	1	0	0	1	0	0	0	2	0	0	2	0	1	1	0	0	0	2	1	0	0	1	0	1	0	0	0	23
124373		*Brissopsis lyrifera*		(Forbes, 1841)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	0	0	0	0	0	0	7
123426		*Echinocardium*		Gray, 1825	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
124394		*Echinocardium flavescens*		(O.F. Müller, 1776)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
123449	**Holothuroidea**	*Leptosynapta*		Verrill, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

APPENDIX M MACROFAUNA ANALYSIS

Aphia ID	Phylum Class/Order	Taxon Name	Qualifiers	Authority	Stations																																							Total
					ENV01	ENV02	ENV03	ENV04	ENV05	ENV06	ENV07	ENV08	ENV09	ENV10	ENV11	ENV12	ENV13	ENV14	ENV15	ENV16	ENV17	ENV18	ENV19	ENV20	ENV21	ENV22	ENV23	ENV24	ENV25	ENV26	ENV27	ENV28	ENV29	ENV30	ENV31	ENV33	ENV34	ENV35	ENV36	ENV53	ENV57	ENV58	ENV59	
124462		*Leptosynapta bergensis*		(Östergren, 1905)	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	2	2	0	0	1	2	1	0	0	0	0	0	14
1474372		*Paraleptopentacta elongata*		(Dueben & Koren, 1846)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
123206	**Ophiuroidea**	Amphiuridae		Ljungman, 1867	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5
236130		*Acrocnida brachiata*		(Montagu, 1804)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
125064		*Amphipholis squamata*		(Delle Chiaje, 1828)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
125195		*Amphiura (Ophiopeltis) securigera*		(Düben & Koren, 1846)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
125073		*Amphiura chiajei*		Forbes, 1843	0	2	0	2	0	0	0	0	3	3	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	4	0	1	2	0	0	0	0	0	0	0	0	0	0	19
125080		*Amphiura filiformis*		(O.F. Müller, 1776)	0	5	0	3	1	5	0	5	4	0	2	2	4	1	0	0	4	0	3	0	7	2	2	1	3	0	0	0	0	0	5	8	0	6	0	1	0	0	0	74
123200		Ophiuridae		Müller & Troschel, 1840	0	0	0	0	0	1	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	9
	CNIDARIA																																											
100880	**Anthozoa**	*Edwardsia claparedii*		(Panceri, 1869)	0	0	0	0	0	0	1	1	0	0	2	0	1	0	4	3	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	20
128517		*Pennatula phosphorea*		Linnaeus, 1758	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
283798		*Cerianthus lloydii*		Gosse, 1859	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	FORAMINIFERA																																											
112299	**Monothalamea**	*Astrorhiza*		Sandahl, 1858	0	0	3	0	2	2	0	0	0	0	1	1	11	6	0	0	4	8	2	0	0	1	18	0	0	0	0	0	0	1	5	0	1	3	1	0	0	0	0	70
	HEMICHORDATA																																											
1820	**Enteropneusta**	ENTEROPNEUSTA		Gegenbaur, 1870	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	6
	NEMERTEA																																											
152391		NEMERTEA			0	3	1	3	1	1	2	0	0	3	0	1	0	3	4	4	0	1	0	2	1	1	1	1	4	0	0	2	2	0	0	1	1	2	1	0	0	0	1	47
	PLATYHELMINTHES																																											
793		PLATYHELMINTHES		Minot, 1876	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
	PHORONIDA																																											
128545		*Phoronis*		Wright, 1856	0	0	2	0	2	2	0	4	0	0	0	0	1	4	0	0	2	0	0	0	0	0	1	0	1	0	0	3	0	0	1	0	1	1	1	0	0	2	0	28
				Total Individuals	**40**	**69**	**44**	**63**	**44**	**51**	**44**	**45**	**38**	**60**	**26**	**27**	**71**	**41**	**69**	**83**	**42**	**82**	**38**	**80**	**63**	**28**	**54**	**35**	**32**	**40**	**25**	**63**	**48**	**45**	**69**	**37**	**46**	**77**	**45**	**61**	**25**	**28**	**18**	1896
				Total Taxa	**17**	**32**	**29**	**27**	**28**	**32**	**21**	**24**	**24**	**29**	**20**	**18**	**30**	**23**	**32**	**36**	**21**	**38**	**22**	**43**	**34**	**21**	**17**	**20**	**19**	**21**	**15**	**36**	**26**	**26**	**36**	**23**	**26**	**48**	**30**	**32**	**9**	**17**	**10**	247
Taxa excluded from statistical analysis																																												
	ANNELIDA																																											
130266	**Polychaeta**	*Magelona alleni*		Wilson, 1958	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	P
146949		*Galathowenia*		Kirkegaard, 1959	0	0	0	0	0	0	0	0	0	0	0	0	P	P	0	P	P	0	P	0	0	0	P	P	P	0	0	0	P	0	0	0	P	0	0	0	0	0	0	P
989		Spirorbinae		Chamberlin, 1919	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
982		Terebellidae		Johnston, 1846	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	P
152269		*Tharyx killariensis*		(Southern, 1914)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	P
129242		*Chaetozone*		Malmgren, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	P
131188		*Spiophanes kroyeri*		Grube, 1860	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
		Prionospio cf. dubia		Day, 1961	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
129613		*Laonice*		Malmgren, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	P
130711		*Poecilochaetus serpens*		Allen, 1904	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
130980		*Scalibregma inflatum*		Rathke, 1843	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
902		Orbiniidae		Hartman, 1942	0	0	0	0	P	0	0	0	0	0	0	P	0	0	0	0	P	P	P	0	0	0	0	0	0	0	P	P	0	0	0	0	0	0	0	0	P	0	0	P
130330		*Rhodine gracilior*		Tauber, 1879	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	P
923		Maldanidae		Malmgren, 1867	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	P	0	0	P	0	0	0	0	0	0	P
921		Capitellidae		Grube, 1862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
967		Lumbrineridae		Schmarda, 1861	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
129370		*Nephtys*		Cuvier, 1817	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	P
129446		*Eumida*		Malmgren, 1865	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	P
130140		*Goniada maculata*		Örsted, 1843	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	P
130136		*Glycinde nordmanni*		(Malmgren, 1866)	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
129296		*Glycera*		Lamarck, 1818	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
939		Polynoidae		Kinberg, 1856	0	0	P	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
129439		*Pholoe*		Johnston, 1839	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	P
	ARTHROPODA																																											
110380	**Malacostraca**	Diastylidae		Bate, 1856	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
1135		AMPHIPODA		Latreille, 1816	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	P
179538		*Nototropis vedlomensis*		(Spence Bate & Westwood, 1862)	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
101933		*Ampelisca typica*		(Spence Bate, 1856)	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
101716		*Harpinia*		Boeck, 1876	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
103228		*Urothoe elegans*		Spence Bate, 1857	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	P
120020		*Gastrosaccus spinifer*		(Goës, 1864)	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
107729		*Callianassa subterranea*		(Montagu, 1808)	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
13795		EPICARIDEA	parasitic	Latreille, 1825	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	4
1128		EUPHAUSIACEA		Dana, 1852	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1080	**Copepoda**	COPEPODA		Milne Edwards, 1840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
106115	**Thecostraca**	*Scalpellum*		Leach, 1818	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	P
	MOLLUSCA																																											
151365	**Caudofoveata**	CAUDOFOVEATA		C. R. Boettger, 1956	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	P	P	0	0	0	0	0	0	0	P
105	**Bivalvia**	BIVALVIA		Linnaeus, 1758	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
	ECHINODERMATA																																											
123106	**Echinoidea**	SPATANGOIDA		L. Agassiz, 1840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	P	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	P
123426		*Echinocardium*		Gray, 1825	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
123449	**Holothuroidea**	*Leptosynapta*		Verrill, 1867	0	0	0	0	P	0	0	P	0	0	0	0	0	0	0	P	0	0	0	0	0	0	P	0	0	0	0	0	0	P	0	0	0	0	P	0	0	0	0	P
123206	**Ophiuroidea**	Amphiuridae		Ljungman, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
125080		*Amphiura filiformis*		(O.F. Müller, 1776)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	P	0	0	0	0	0	0	0	0	P	P	0	0	0	0	P	0	0	0	0	0	0	P
	CHORDATA																																											
10194	**Actinoptrygii**	ACTINOPTERYGII	Eggs		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1839	**Ascidiacea**	ASCIDIACEA	type 1	Blainville, 1824	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	5
104906	**Cephalochordata**	Cephalochordata		(Pallas, 1774)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
10331	**Teleostei**	PLEURONECTIFORMES			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
	ANIMALIA																																											
2		ANIMALIA			0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P

APPENDIX M MACROFAUNA ANALYSIS

Aphia ID	Phylum Class/Order	Taxon Name	Qualifiers	Authority	Stations																																					Total
					ENV01	ENV02	ENV03	ENV04	ENV05	ENV06	ENV07	ENV08	ENV09	ENV10	ENV11	ENV12	ENV13	ENV14	ENV15	ENV16	ENV17	ENV18	ENV19	ENV20	ENV21	ENV22	ENV23	ENV24	ENV25	ENV26	ENV27	ENV28	ENV29	ENV30	ENV31	ENV33	ENV34	ENV35	ENV36	ENV53	ENV57	ENV58	ENV59	
2		ANIMALIA	Eggs		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
	BRYOZOA																																										
110829	**Gymnolaemata**	*Schizomavella*		Canu & Bassler, 1917	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
111367		*Flustra foliacea*		(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
110965		*Escharella*		Gray, 1848	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
110724	**Stenolaemata**	CYCLOSTOMATIDA		Busk, 1852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
	CNIDARIA																																										
13551	**Hydrozoa**	ANTHOATHECATA		Cornelius, 1992	0	0	P	0	0	P	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	P	0	0	P	P	0	0	P	0	0	0	0	0	0	0	0	0	P
13552		LEPTOTHECATA		Cornelius, 1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	P
1605		Aglaopheniidae		Marktanner-Turneretscher, 1890	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	P
117103		*Halecium*		Oken, 1815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
	CILIOPHORA																																										
1692	**Heterotrichea**	Folliculinidae		Dons, 1914	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	P
	HEMICHORDATA																																										
1820	**Enteropneusta**	ENTEROPNEUSTA		Gegenbaur, 1870	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
	NEMERTEA																																										
152391		NEMERTEA			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	P	0	0	0	P	0	0	0	0	0	0	0	0	0	P
	NEMATODA																																										
799		NEMATODA			0	P	P	0	0	0	0	0	P	P	0	0	0	0	0	P	0	P	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P
	PHORONIDA																																										
128545		*Phoronis*		Wright, 1856	P	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	P	P	0	P	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	P
	ALGAE																																										
		ENCRUSTING ALGAE			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P

Juvenile Record
Combined Adult and Juvenile Record
Taxa in blue are the top ten most dominant in the adult data set
Taxa in red are species of interest

APPENDIX N BIOMASS ANALYSIS

APPENDIX N BIOMASS ANALYSIS

Aphia ID	Phylum Class/Order	Taxon Name	Qualifiers	Authority	Stations																																							Total
					ENV01	ENV02	ENV03	ENV04	ENV05	ENV06	ENV07	ENV08	ENV09	ENV10	ENV11	ENV12	ENV13	ENV14	ENV15	ENV16	ENV17	ENV18	ENV19	ENV20	ENV21	ENV22	ENV23	ENV24	ENV25	ENV26	ENV27	ENV28	ENV29	ENV30	ENV31	ENV33	ENV34	ENV35	ENV36	ENV53	ENV57	ENV58	ENV59	
Taxa included in statistical analysis																																												
	ANNELIDA																																											
130599	**Polychaeta**	*Pholoe baltica*		Örsted, 1843	0	0	0	0	0	0	0	0	0	0	0.0006	0	0	0	0	0.001	0	0.0002	0	0	0.0024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0042
130604		*Pholoe pallida*		Chambers, 1985	0	0	0	0	0.0026	0.0016	0	0.0036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0033	0.004	0	0.0099	0	0	0.004	0	0	0	0	0	0	0	0	0.029
939		Polynoidae		Kinberg, 1856	0	0	0	0	0	0	0.0012	0	0	0	0	0	0	0	0.0026	0	0	0	0	0.0014	0	0	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0062
129491		*Harmothoe*		Kinberg, 1856	0	0	0	0.0021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0044	0.0049	0	0	0	0.0032	0	0	0	0.0367	0	0	0	0	0	0.0092	0	0	0	0	0	0.0605
571832		*Harmothoe glabra*		(Malmgren, 1865)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2746	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2746
147008		*Malmgrenia andreapolis*		McIntosh, 1874	0	0.0291	0	0	0	0	0	0	0.0296	0	0	0	0	0	0	0	0	0	0.0015	0	0	0	0	0	0	0	0	0.0028	0.0346	0	0	0.0134	0	0	0	0	0	0	0	0.111
131072		*Sigalion mathildae*	Juvenile	Audouin & Milne Edwards, 1832	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0026	0.0006	0	0.0032
131077		*Sthenelais limicola*		(Ehlers, 1864)	0	0	0	0	0	0.0814	0	0	0	0	0	0	0	0	0.0185	0	0	0	0	0	0	0.0073	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1347	0	0	0	0.2419
129296		*Glycera*		Lamarck, 1818	0	0	0	0	0	0	0	0	0	0.0062	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0062
130116		*Glycera alba*		(O.F. Müller, 1776)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0075	0	0	0	0.0075
130119		*Glycera celtica*		O'Connor, 1987	0	0	0	0	0	0	0	0	0	0	0	0	0.0821	0	0.3866	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4687
130123		*Glycera lapidum*		Quatrefages, 1866	0	0	0	0	0	0	0.0033	0	0	0	0	0	0	0	0	0.0105	0	0	0	0.0412	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.055
130131		*Glycera unicornis*		Lamarck, 1818	0	0.3717	0	0.1134	0.0242	0	0	0	0	0	0	0.3482	0	0	0	0	0	0	0	0	0	0	0	0	0	0.727	0.0263	0	0.0246	0	0	0	0	0	0	0	0	0	0	1.6354
130136		*Glycinde nordmanni*		(Malmgren, 1866)	0.0002	0.0005	0	0	0.0055	0	0.0009	0.0022	0	0.0007	0	0	0.0008	0	0	0.0017	0	0.0007	0	0	0	0.0028	0	0	0	0	0	0	0.0076	0	0.0015	0	0.0018	0	0	0	0	0.0151	0	0.042
130140		*Goniada maculata*		Örsted, 1843	0	0	0.0018	0	0	0	0	0	0.0582	0	0	0	0	0	0.0072	0	0.0621	0.0227	0	0	0	0	0	0.0977	0	0	0	0	0.0276	0.0002	0	0	0	0	0	0	0	0	0	0.2775
710680		*Oxydromus flexuosus*		(Delle Chiaje, 1827)	0	0	0	0	0	0.0079	0	0.0161	0	0.0115	0	0	0	0	0	0	0	0	0	0	0	0	0.0094	0.0167	0	0.0283	0	0	0.0178	0	0	0	0	0	0	0	0	0	0	0.1077
129319		*Podarkeopsis*		Laubier, 1961	0	0	0	0	0.0025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0031	0	0	0	0.0056
130417		*Platynereis dumerilii*		(Audouin & Milne Edwards, 1833)	0.013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013
130696		*Glyphohesione klatti*		Friedrich, 1950	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0	0	0	0	0.0011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0021
131328		*Odontosyllis gibba*		Claparède, 1863	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003
196002		*Syllis parapari*		San Martín & López, 2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0009	0.0047	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0056
129443		*Eteone*		Savigny, 1822	0	0	0	0	0	0	0.0124	0	0	0	0	0	0	0	0	0	0	0.0016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.014
		Eteone cf. longa		(Fabricius, 1780)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0003
129446		*Eumida*		Malmgren, 1865	0	0.0225	0	0	0	0.008	0	0	0	0	0	0	0	0	0	0.0078	0	0	0	0	0.0085	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0468
334506		*Phyllodoce groenlandica*		Örsted, 1842	0	0	0	0	0	0	0	0	0	0	0	0	0.0085	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0085
334514		*Phyllodoce rosea*		(McIntosh, 1877)	0	0	0	0	0	0.0087	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0085	0	0	0	0	0	0	0.0172
130683		*Pseudomystides limbata*		(Saint-Joseph, 1888)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0002
129370		*Nephtys*		Cuvier, 1817	0	0.0302	0.0069	0	0.0201	0	0	0.002	0	0.0037	0.0209	0	0.0414	0	0	0	0.0064	0.003	0	0	0.0111	0	0.0136	0.0114	0	0	0	0.0045	0	0	0.0174	0	0.0095	0.0195	0	0	0	0	0	0.2216
130357		*Nephtys cirrosa*		Ehlers, 1868	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0336	0.2814	0.0646	0	0.3796
130359		*Nephtys hombergii*		Savigny in Lamarck, 1818	0	0	0	0	0.346	0.3114	0	0.0939	0	0	0.1351	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0307	0.4672	0	0	0	0	1.3843
130363		*Nephtys kersivalensis*		McIntosh, 1908	0	0	0	0	0	0	0	0	0	0	0	0.3017	0	0.0845	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1318	0	0	0	0	0	0.1351	0	0	0	0	0	0.6531
130364		*Nephtys longosetosa*		Örsted, 1842	0	0	0	0	0	0	0.0069	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0069
146469		*Abyssoninoe hibernica*		(McIntosh, 1903)	0	0	0	0	0	0	0	0	0	0	0	0.0057	0	0	0	0	0	0	0	0	0	0	0	0.031	0	0	0.0167	0	0	0	0	0	0	0	0	0	0	0	0	0.0534
		Lumbrineris aniara agg.			0.0233	0	0	0	0	0	0	0.0855	0	0.0028	0	0	0.066	0	0.0084	0.0003	0	0	0	0	0.0429	0	0	0	0.0216	0	0	0	0	0	0	0.0016	0	0.0066	0	0.0849	0	0	0	0.3439
129861		*Notocirrus scoticus*		McIntosh, 1869	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0299	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0244	0	0	0	0	0.0543
130452		*Aponuphis bilineata*		(Baird, 1870)	0	0	0	0	0	0	0.0164	0	0	0	0	0	0	0	0.2196	0.3177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0251	0	0	0	0.5788
129884		*Heteromastus filiformis*		(Claparède, 1864)	0	0	0	0.0009	0	0	0	0	0.0063	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.056	0.0137	0	0.015	0	0	0	0	0	0	0	0	0	0	0.0919
129892		*Mediomastus fragilis*		Rasmussen, 1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0014
129220		*Notomastus*		M. Sars, 1851	0	0	0	0	0	0	0	0	0.008	0.0111	0	0	0	0	0	0.1914	0	0.0115	0	0	0	0	0	0	0	0.012	0.0212	0.0014	0.5748	0	0	0	0.0278	0	0	0	0	0	0	0.8592
129906		*Peresiella clymenoides*		Harmelin, 1968	0	0.002	0	0.0026	0	0	0	0	0.003	0.0009	0	0.0013	0.0008	0	0.0008	0.0003	0	0.002	0	0	0.0013	0.0031	0	0.0079	0.0001	0.0031	0.0015	0.0027	0	0.0017	0.0029	0.0013	0	0.0024	0.0034	0	0	0	0	0.0451
129911		*Pseudonotomastus southerni*		Warren & Parker, 1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0362	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0166	0.0032	0	0	0	0	0	0.056
130278		*Clymenella cincta*		(Saint-Joseph, 1894)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0321	0	0	0	0	0	0	0	0	1.0321
209899		*Euclymene lombricoides*		(Quatrefages, 1866)	0	0	0	0	0	0	0	0	0	0	0	0	0.0135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0135
		Euclymene oerstedii agg.			0	0	0	0	0	0	0	0	0	0.0085	0	0	0	0	0	0	0	0.0015	0	0	0	0	0	0	0	0	0	0.0058	0	0.0159	0	0	0	0	0.0029	0	0	0	0	0.0346
146991		*Leiochone*		Grube, 1868	0	0	0	0	0	0.0042	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0042
130322		*Praxillella affinis*		(M. Sars in G.O. Sars, 1872)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0189	0	0	0	0	0	0	0	0	0	0	0	0.0013	0	0	0	0	0	0	0	0	0	0.0202
130327		*Praxillura longissima*		Arwidsson, 1906	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1883	0	0	0	0	0	0	0.0131	0	0	0	0	0	0	0.2014
130330		*Rhodine gracilior*		Tauber, 1879	0	0.2739	0	0	0	0	0	0	0.15	0	0.0074	0	0	0	0	0.0753	0.0581	0.029	0.018	0	0	0.0599	0	0	0	0	0	0	0	0	0	0.0514	0	0	0	0	0	0	0	0.723
130491		*Ophelia borealis*		Quatrefages, 1866	0	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0.0295	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0143	0	0	0.0012	0.195
130500		*Ophelina acuminata*		Örsted, 1843	0	0.0147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0311	0	0	0	0	0	0	0	0	0	0	0.0458
902		Orbiniidae		Hartman, 1942	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0058	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0058
129420		*Orbinia*		Quatrefages, 1866	0	0	0	0	0	0	0.006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0366	0	0	0	0	0	0	0	0	0	0.0426
130537		*Scoloplos armiger*		(Müller, 1776)	0.0058	0	0.004	0	0.0043	0.0114	0	0	0.0128	0.0246	0	0	0	0	0.0585	0	0	0	0	0	0	0.002	0.0212	0	0.0143	0	0	0	0	0	0	0	0.008	0.0072	0.0052	0.0042	0	0	0.0031	0.1866
333034		*Aricidea (Acmira) catherinae*		Laubier, 1967	0	0	0	0.0007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007
525497		*Aricidea (Acmira) cerrutii*		Laubier, 1966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0028
130578		*Levinsenia gracilis*		(Tauber, 1879)	0	0	0	0	0	0.0002	0	0	0	0	0	0	0.0003	0	0	0	0	0.0003	0	0	0	0	0	0	0	0	0	0.0005	0.0009	0.0018	0	0	0	0	0	0	0	0	0	0.004
130585		*Paradoneis lyra*		(Southern, 1914)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001	0	0.0001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0011
130980		*Scalibregma inflatum*		Rathke, 1843	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0061	0	0	0	0.0263
130512		*Travisia forbesii*		Johnston, 1840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1059	0	0	0	0.1059
129198		*Apistobranchus*		Levinsen, 1883	0	0	0	0	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.002
130711		*Poecilochaetus serpens*		Allen, 1904	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007
131107		*Aonides paucibranchiata*		Southern, 1914	0	0	0	0	0	0	0.0006	0	0	0	0	0	0	0	0	0	0	0	0	0.0054	0	0.0026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0086
129611		*Dipolydora*		Verrill, 1881	0	0	0	0	0	0.0013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0008	0	0	0	0	0	0.0021
		Dipolydora caulleryi agg.			0	0	0	0	0	0.005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0032	0	0	0	0.0082
		Dipolydora coeca agg.			0	0	0	0	0	0	0	0	0.0132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0132
129613		*Laonice*		Malmgren, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0055	0	0	0	0	0	0	0	0	0.0055
131127		*Laonice bahusiensis agg.*		Söderström, 1920	0	0	0	0	0	0	0	0	0.005	0	0	0	0	0.0106	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.025	0	0	0	0	0	0.0424
		Prionospio cf. dubia		Day, 1961	0	0.0015	0	0.0068	0.0081	0	0	0	0	0.0402	0	0	0	0	0	0	0	0.0032	0.0048	0	0	0	0	0	0	0.0066	0	0.0403	0.1095	0.0196	0.023	0.0154	0.0163	0.0057	0	0	0	0	0	0.301
131157		*Prionospio fallax*		Söderström, 1920	0	0	0	0.0015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0037	0	0	0	0	0	0	0	0.0052
131168		*Pseudopolydora paucibranchiata*		(Okuda, 1937)	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0015	0	0	0	0	0	0.0036
129623		*Scolelepis*		Blainville, 1828	0	0	0	0	0	0	0.0037	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0299	0	0	0	0.0336
131171		*Scolelepis bonnieri*		(Mesnil, 1896)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0084	0	0	0	0.0084
129625		*Spio*		Fabricius, 1785	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0	0	0.003
131180		*Spio armata*		(Thulin, 1957)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007
129626		*Spiophanes*		Grube, 1860	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0062	0	0.0062
131187		*Spiophanes bombyx*		(Claparède, 1870)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0958	0	0	0	0	0	0	0	0	0	0	0	0.0012	0.0053	0.0018	0.0288	0.0022	0.1351
131188		*Spiophanes kroyeri*		Grube, 1860	0	0	0.0015	0	0.0041	0	0	0.019	0	0	0	0.0017	0.0009	0	0.0018	0	0	0.0007	0.0571	0	0	0	0	0	0	0	0	0	0	0	0	0.0032	0	0	0.0079	0	0	0	0	0.0979
129240		*Aphelochaeta*		Blake, 1991	0.0459	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0512	0.0066	0.0023	0	0	0	0.0187	0	0	0	0	0	0	0	0	0	0	0.0111	0	0	0	0	0	0	0	0.1358
129242		*Chaetozone*		Malmgren, 1867	0	0	0	0	0.0035	0	0	0	0	0.0044	0	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0.0022	0	0	0.0012	0	0	0	0	0	0	0	0	0	0	0	0.0118
1512071		*Chaetozone pseudosetosa*		Grosse, Capa & Bakken, 2021	0	0	0.0015	0.0106	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0044	0	0	0	0	0	0	0	0	0	0.0018	0.006	0.0099	0.0404	0	0.0113	0	0.0044	0	0	0	0	0.0903
129243		*Cirratulus*		Lamarck, 1818	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005
152269		*Tharyx killariensis*		(Southern, 1914)	0	0	0.0009	0	0.0007	0	0	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0001	0	0	0	0	0	0	0	0	0	0	0	0.0022
130100		*Diplocirrus glaucus*		(Malmgren, 1867)	0	0.0011	0.0128	0	0.0351	0	0	0	0	0.023	0	0	0	0	0	0	0	0.0397	0	0	0.0015	0	0	0	0	0.0068	0	0.0012	0	0.0319	0.0265	0	0.0209	0	0.0188	0	0	0	0	0.2193
981		Ampharetidae		Malmgren, 1866	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0004	0	0	0	0	0	0	0	0	0	0.0186	0	0	0	0	0	0.0003	0	0	0	0	0.0016	0	0	0	0	0.0209
		Ampharete lindstroemi agg.			0	0	0.0009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0037	0	0	0	0	0	0	0	0	0	0	0	0.0046
129789		*Anobothrus gracilis*		(Malmgren, 1866)	0	0	0	0	0	0	0	0.076	0	0	0	0	0	0	0.0033	0	0	0.0081	0	0	0	0.0068	0	0.0019	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0.0971
129821		*Sosane sulcata*		Malmgren, 1866	0	0	0	0	0	0	0	0.0055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0055
152448		*Amphictene auricoma*		(O.F. Müller, 1776)	0	0.0216	0.0008	0.0183	0.0021	0	0	0	0.0024	0	0	0.0191	0	0	0	0	0	0.0724	0.0015	0	0	0	0	0.0093	0	0	0	0	0	0	0.0183	0	0	0.0082	0	0	0	0	0	0.174
152367		*Lagis koreni*		Malmgren, 1866	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0.0056	0	0	0	0	0	0	0	0	0	0	0	0.0074
131471		*Amaeana trilobata*		(Sars, 1863)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0488	0	0	0	0	0	0	0	0	0	0	0.0488
129710		*Polycirrus*		Grube, 1850	0.0324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0128	0	0	0.0014	0.0477
131495		*Lanice conchilega*		(Pallas, 1766)	0	0	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2803	0.0003	0	0	0	0	0	0	0	0	0	0	0	0	0.0088	0	0.0008	0	0	0	0	0	0.292
131519		*Pista mediterranea*		Gaillande, 1970	0	0	0	0	0	0	0	0	0	0	0.0311	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0311
154972		*Pista lornesis*		(Pearson, 1969)	0	0	0	0	0	0	0.014	0	0	0	0	0	0	0	0	0.0166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0306
874599		*Terebellides shetlandica*		Parapar, Moreira & O'Reilly, 2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0163	0	0	0	0	0	0.0163
131575		*Trichobranchus roseus*		(Malm, 1874)	0	0.0022	0	0	0	0	0	0.002	0.0215	0.0076	0	0.0028	0.0268	0	0	0	0	0.0295	0.0078	0	0	0	0	0	0.0023	0	0	0.0035	0.0383	0.0243	0.0133	0.0221	0.0066	0.0129	0	0	0	0	0	0.2235
130967		*Sabella pavonina*		Savigny, 1822	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.009
988		Serpulidae		Rafinesque, 1815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0031	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0031
131009		*Hydroides norvegica*		Gunnerus, 1768	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0063	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0063
555935		*Spirobranchus triqueter*		(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0068	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0068
146949		*Galathowenia*		Kirkegaard, 1959	0	0.0034	0.0025	0.0025	0.0061	0.0003	0	0	0.0046	0.0042	0	0.0102	0	0	0	0	0	0.002	0	0	0	0.002	0	0	0	0.0031	0.0027	0.0015	0	0.0001	0.0014	0	0	0.0027	0.0129	0	0	0	0	0.0622
130540		*Myriochele danielsseni*		Hansen, 1878	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0001	0	0	0	0	0	0.0013
129427		*Owenia*		Delle Chiaje, 1844	0.0587	0.0246	0.0052	0.0076	0.0351	0	0	0	0.0321	0	0	0	0.0144	0	0.0029	0.0087	0	0.0135	0	0	0.0307	0	0.0167	0	0	0	0	0.0044	0	0	0.0098	0.0012	0.0159	0.0232	0.0123	0.0034	0	0	0	0.3204
129341		*Magelona alleni*		Wilson, 1958	0.0201	0.022	0	0	0	0.0083	0	0	0.0243	0	0	0	0	0	0.0073	0	0	0	0	0	0.0233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0343	0	0.0008	0	0.1404
130268		*Magelona filiformis*		Wilson, 1959	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.006	0	0.006
130269		*Magelona johnstoni*		Fiege, Licher & Mackie, 2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0173	0.0041	0	0.0214
130270		*Magelona*		F. Müller, 1858.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007	0	0	0	0	0	0	0	0	0.0007
1268	**Sipuncula**	SIPUNCULA			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0003
410724		*Golfingia (Golfingia) vulgaris vulgaris*		(de Blainville, 1827)	0	0.059	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.059
136063		*Thysanocardia procera*		(Möbius, 1875)	0	0.0089	0	0	0	0	0	0	0.1058	0	0	0	0	0	0	0	0.0138	0	0	0	0	0	0	0	0	0	0	0.0034	0.1164	0	0.0045	0	0	0	0	0	0	0	0	0.2528
410749		*Phascolion (Phascolion) strombus strombus*		(Montagu, 1804)	0	0	0.0003	0	0	0	0	0	0	0	0.0006	0	0	0	0	0.0013	0.002	0	0	0	0.0003	0.0081	0	0	0	0	0	0	0	0	0	0.0026	0	0	0	0	0	0	0	0.0152

APPENDIX N BIOMASS ANALYSIS

					Stations																																							
Aphia ID	Phylum Class/Order	Taxon Name	Qualifiers	Authority	ENV01	ENV02	ENV03	ENV04	ENV05	ENV06	ENV07	ENV08	ENV09	ENV10	ENV11	ENV12	ENV13	ENV14	ENV15	ENV16	ENV17	ENV18	ENV19	ENV20	ENV21	ENV22	ENV23	ENV24	ENV25	ENV26	ENV27	ENV28	ENV29	ENV30	ENV31	ENV33	ENV34	ENV35	ENV36	ENV53	ENV57	ENV58	ENV59	Total
	ARTHROPODA																																											
110460	**Malacostraca**	*Iphinoe serrata*		Norman, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0017	0	0	0	0	0	0	0	0	0	0	0	0	0.0017
110380		Diastylidae		Bate, 1856	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0013	0	0	0	0	0	0	0	0	0.0013
110481		*Diastylis laevis*		Norman, 1869	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0056	0	0	0	0	0	0.0056
110494		*Diastyloides biplicatus*		(Sars G.O., 1865)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005
110514		*Hemilamprops roseus*		(Norman, 1863)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0015	0	0	0	0	0	0	0	0	0.0015
110524		*Eudorella emarginata*		(Krøyer, 1846)	0	0	0	0	0	0	0	0	0	0.0022	0	0	0	0	0	0.0015	0	0	0	0	0	0	0	0	0	0.005	0.0029	0.005	0	0	0	0	0.0001	0	0	0	0	0	0	0.0167
110535		*Eudorella truncatula*		(Bate, 1856)	0	0	0	0	0	0	0	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005
110415		*Campylaspis*		G.O. Sars, 1865	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1137	0	0	0	0	0	0	0.1137
103166		*Stenothoe marina*		(Spence Bate, 1857)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0013	0	0	0	0	0	0.0013
102351		*Iphimedia spatula*		Myers & McGrath, 1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0049	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0049
102462		*Leucothoe lilljeborgi*		Boeck, 1861	0	0	0	0.0005	0	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0019	0	0	0	0	0	0	0.0042
102915		*Perioculodes longimanus*		(Spence Bate & Westwood, 1868)	0	0	0	0.0004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0004
102932		*Westwoodilla caecula*		(Spence Bate, 1857)	0	0.0002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018	0	0	0	0	0.002
179538		*Nototropis vedlomensis*		(Spence Bate & Westwood, 1862)	0	0	0	0	0	0	0	0	0	0	0.0011	0	0	0	0.0024	0	0	0	0	0.003	0.0035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01
102944		*Nicippe tumida*		Bruzelius, 1859	0	0.0054	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0054
179882		*Ampelisca pectenata*		Reid, 1951	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0029
101928		*Ampelisca spinipes*		Boeck, 1861	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0384	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0384
101930		*Ampelisca tenuicornis*		Lilljeborg, 1855	0	0.0008	0.0065	0	0.0041	0.006	0	0	0	0	0.0026	0	0.0015	0	0.0227	0	0	0	0.0001	0	0.0013	0	0	0	0	0	0.0016	0.0029	0	0.0031	0.0027	0	0	0	0	0	0	0	0	0.0559
101933		*Ampelisca typica*		(Spence Bate, 1856)	0.0032	0	0	0	0	0	0	0	0	0	0	0	0.0058	0	0.0008	0	0	0	0	0	0	0.0031	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0129
101716		*Harpinia*		Boeck, 1876	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0	0	0	0.0015
102960		*Harpinia antennaria*		Meinert, 1890	0	0	0	0.0046	0.003	0.0025	0	0	0.0011	0.0019	0	0.0016	0.0022	0	0	0	0	0	0	0	0	0	0	0.0032	0	0	0	0.0049	0.0041	0	0.0026	0	0	0.0035	0.002	0	0	0	0	0.0372
102972		*Harpinia pectinata*		Sars, 1891	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0006	0	0	0	0	0	0	0	0.0045	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0051
101789		*Urothoe*		Dana, 1852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001
103228		*Urothoe elegans*		Spence Bate, 1857	0.002	0	0.0023	0.0018	0	0	0	0	0	0.0017	0	0	0	0.0033	0.0127	0	0	0.0021	0	0	0.0054	0.0028	0	0.0033	0	0.0029	0	0.0034	0.0016	0.0028	0.0041	0.0048	0	0.0048	0.0007	0	0	0	0	0.0625
103233		*Urothoe marina*		(Spence Bate, 1857)	0	0	0	0	0	0	0.0158	0	0	0	0	0	0	0	0	0	0	0	0	0.0054	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0212
102598		*Lepidepecreum longicorne*		(Spence Bate & Westwood, 1861)	0	0	0	0	0	0.004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004
102779		*Tryphosites longipes*		(Spence Bate & Westwood, 1861)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0017	0	0	0	0	0	0	0	0	0	0	0.0044	0	0	0	0	0	0	0.0004	0	0	0	0	0	0	0.0065
101742		*Bathyporeia*		Lindström, 1855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.002	0	0	0	0.002
103058		*Bathyporeia elegans*		Watkin, 1938	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0026	0.0039	0.0012	0	0.0077
103060		*Bathyporeia guilliamsoniana*		(Spence Bate, 1857)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0034	0.0136	0.0078	0	0.0248
103076		*Bathyporeia tenuipes*		Meinert, 1877	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0027	0	0	0	0	0.0027
1468705		*Cheirocratus pseudosundevallii*		Gouillieux, 2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0026	0	0	0	0	0	0.0026
102783		*Megaluropus agilis*		Hoek, 1889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0004	0	0.0004
102807		*Eriopisa elongata*		(Bruzelius, 1859)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0003	0	0	0	0	0	0	0	0	0	0.0003
423507		*Medicorophium affine*		(Bruzelius, 1859)	0	0	0.0002	0	0	0	0	0	0.0021	0	0	0	0	0.0004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0027
102364		*Gammaropsis maculata*		(Johnston, 1828)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0023
101857		*Pariambus typicus*		(Krøyer, 1844)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0026	0	0	0	0	0.0026
101864		*Phtisica marina*		Slabber, 1769	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0019	0	0	0	0	0	0.0019
101871		*Pseudoprotella phasma*		(Montagu, 1804)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0014
118467		*Anthura gracilis*		(Montagu, 1808)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018
295579		*Astacilla dilatata*		(G. O. Sars, 1883)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0.0004	0.0012	0	0	0	0	0	0	0	0	0.0021
118859		*Natatolana borealis*		(Lilljeborg, 1851)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0095	0	0	0	0	0	0	0	0	0	0.0106	0	0	0	0	0	0.0201
107054		*Processa*		Leach, 1815 [in Leach, 1815-1875]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0413	0	0.0499	0	0	0	0	0	0	0	0	0.0912
107729		*Callianassa subterranea*		(Montagu, 1808)	0	0.4517	0	0.1603	0.013	0	0	0	0.27	0.0336	0.0465	0.1733	0	0.1	0	0	0	0.2905	0	0	0.0029	0	0	0.0685	0	0.2102	0.1169	0.0608	0.0743	0.1256	0.0766	0	0.0873	0.0258	0.0059	0	0	0	0	2.3937
107150		*Galathea intermedia*		Lilljeborg, 1851	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0249
107152		*Galathea nexa*		Embleton, 1834	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0792	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0792
107188		*Pisidia longicornis*		(Linnaeus, 1767)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0016
106738		Paguridae		Latreille, 1802	0	0	0	0	0	0	0	0	0	0	0.0101	0	0	0	0	0	0	0	0	0	0.0071	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0172
107217		*Anapagurus hyndmanni*		(Bell, 1845)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0358	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0358
107273		*Atelecyclus rotundatus*		(Olivi, 1792)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0279	0	0	0.1828	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2107
134581	**Pyncogonida**	*Callipallene*		Flynn, 1929	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0008
134723		*Anoplodactylus petiolatus*		(Krøyer, 1844)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0015
	MOLLUSCA																																											
	Polyplacophora	*Leptochiton asellus*			0	0	0	0	0	0	0.0311	0	0	0	0	0	0	0	0	0	0	0	0	0.0389	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.07
2094	**Solenogastres**	SOLENOGASTRES		Gegenbaur, 1878	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0012	0	0	0	0	0	0.0012
151365	**Caudofoveata**	CAUDOFOVEATA		C. R. Boettger, 1956	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0033	0	0	0	0	0	0.0033
139106		*Chaetoderma nitidulum*		Lovén, 1844	0	0	0	0	0	0.009	0	0	0	0.0131	0	0	0.0074	0	0	0	0	0.0049	0	0	0	0	0	0	0.0093	0	0	0.0096	0.0066	0.0118	0	0	0	0.0086	0	0	0	0	0	0.0803
140250		*Scutopus ventrolineatus*		Salvini-Plawen, 1968	0	0	0	0	0	0	0	0	0.0127	0	0	0.013	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0037	0.0046	0	0.0085	0	0	0	0	0	0	0	0	0	0	0.0425
150534	**Scaphopoda**	*Antalis entalis*		(Linnaeus, 1758)	0	0	0	0	0	0.7447	0	0.0012	0	0.0024	0.0017	0	0.979	0.0185	0	0.0487	0.2305	0	0	0	0.0019	0	0.3718	0	0	0	0	0	0.0048	0	0	0.0433	0	0.0102	0.1797	0	0	0	0	2.6384
101	**Gastropoda**	GASTROPODA		Cuvier, 1795	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0.001	0.0001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0021
139476		*Cylichna cylindracea*		(Pennant, 1777)	0	0	0	0.0107	0.0047	0.002	0	0	0	0.0111	0	0	0	0.0017	0	0	0	0	0.008	0	0	0	0	0	0	0.0015	0	0	0.0082	0	0.0043	0	0.001	0	0.0447	0	0	0	0	0.0979
161		Philinidae		Gray, 1850 (1815)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.002
175		Onchidorididae		Gray, 1827	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0017
139736		*Epitonium trevelyanum*		(G. Johnston, 1841)	0	0	0	0	0	0	0	0	0	0	0	0	0.0276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0276
1381415		*Turritellinella tricarinata*		(Brocchi, 1814)	0	0	0.3353	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3353
140129		*Hyala vitrea*		(Montagu, 1803)	0	0	0	0.0064	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0064
145		Naticidae		Guilding, 1834	0	0	0	0	0	0	0	0	0.0452	0	0	0	0	0	0	0	0	0	0.011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0072	0.0043	0	0	0	0	0.0677
140529		*Euspira fusca*		(Blainville, 1825)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.2171	0	0	0	0	0	0	0	0	4.2171
151894		*Euspira nitida*		(Donovan, 1804)	0	0.0068	0.0098	0.0042	0.006	0.0033	0	0.0047	0	0	0	0	0	0.0046	0	0	0.0107	0	0.0111	0.0053	0	0.0054	0.0183	0	0.0016	0	0	0.0004	0	0	0.0031	0.0082	0.0054	0.006	0	0.0145	0.039	0.0045	0.0024	0.1753
153853		Mangeliidae		P. Fischer, 1883	0	0	0.0007	0	0	0	0	0.0022	0	0	0	0	0	0	0	0	0	0	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0049
246140		*Tritia*		Risso, 1826	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0599	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0599
876825		*Tritia incrassata*		(Strøm, 1768)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.179
836211		*Pyrgiscus crenatus*		(Brown, 1827)	0	0	0	0	0	0.018	0	0	0	0	0	0	0	0	0	0	0.0015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0195
105	**Bivalvia**	BIVALVIA		Linnaeus, 1758	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0015	0	0	0	0	0	0	0	0.0015
140737		*Phaxas pellucidus*		(Pennant, 1777)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0055	0.0017	0.0321	0.0023	0	0	0.0089	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0505
1417307		*Papillicardium minimum*		(Philippi, 1836)	0	0.004	0.0239	0.0567	0.0088	0	0	0.0125	0.0041	0	0.001	0	0	0.0104	0	0	0.0097	0	0.1218	0	0	0.0114	0.0135	0	0.0035	0.0101	0	0.0283	0	0.0013	0.0081	0.0164	0	0.0321	0	0	0	0	0	0.3776
181343		*Parvicardium pinnulatum*		(Conrad, 1831)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0015
139604		*Donax vittatus*		(da Costa, 1778)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.002	0	0	0.002
140870		*Gari fervensis*		(Gmelin, 1791)	0	0	0.0017	0	0	0	0	0	0	0	0	0	0.0006	0	0	0.1388	0	0	0	0	0.6731	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6508	0	0.0014	0	3.4664
138474		*Abra*		Lamarck, 1818	0	0	0.0031	0.0005	0.0021	0	0	0	0	0	0	0	0	0.0015	0.0018	0	0	0.0047	0.0037	0	0	0.0047	0	0	0	0	0	0.0015	0	0	0	0	0	0	0.0048	0.0014	0	0	0	0.0298
141435		*Abra nitida*		(O. F. Müller, 1776)	0	0	0	0	0	0	0	0	0	0.0066	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0155	0.0063	0	0.0124	0.0192	0.01	0	0.0054	0	0	0	0	0	0	0.0754
141436		*Abra prismatica*		(Montagu, 1808)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0	0	0	0	0.177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.182
235		Tellinidae		Blainville, 1814	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0008	0	0.0026
879714		*Asbjornsenia pygmaea*		(Lovén, 1846)	0	0	0	0	0	0	0.0183	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0045	0	0	0.04	0.0628
140108		*Saxicavella jeffreysi*		Winckworth, 1930	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0105
140365		*Devonia perrieri*		(Malard, 1904)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0028	0	0	0	0	0	0.0028
345281		*Kurtiella bidentata*		(Montagu, 1803)	0	0	0	0.0008	0	0	0	0.003	0	0	0	0	0.0014	0	0	0	0	0	0	0	0.0083	0	0	0	0.0016	0	0	0	0	0	0	0	0	0	0	0.0106	0	0	0	0.0257
146952		*Tellimya ferruginosa*		(Montagu, 1808)	0	0	0.0121	0	0	0.0028	0	0	0	0	0	0	0	0	0	0.0051	0	0	0	0	0.0022	0	0	0	0	0	0.0903	0	0	0	0.0055	0	0	0	0	0	0	0	0	0.118
152397		*Tellimya tenella*		(Lovén, 1846)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0029	0	0	0	0	0	0	0	0.0029
140283		*Lucinoma borealis*		(Linnaeus, 1767)	0	0	0	0	0	0	0	0	0	0	0	0	0.4264	0	0	0	0.7086	0	0	0	1.0405	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.1755
140283		*Lucinoma borealis*	Juvenile	(Linnaeus, 1767)	0	0	0	0	0	0	0	0.0032	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0045	0	0.0019	0.0074	0	0	0.0002	0	0	0	0	0	0.0008	0	0	0	0	0	0.018
140283		*Lucinoma borealis*	Combined	(Linnaeus, 1767)	0	0	0	0	0	0	0	0.0032	0	0	0	0	0.4264	0	0	0	0.7086	0	0	0	1.0405	0.0045	0	0.0019	0.0074	0	0	0.0002	0	0	0	0	0	0.0008	0	0	0	0	0	2.1935
140287		*Myrtea spinifera*		(Montagu, 1803)	0	0	0	0	0	0	0	0	0	0.0005	0	0	0	0	0	0	0	0.3	0.004	0	0	0	0	0.0095	0	0	0	0.0067	0	0.1825	0.0014	0	0	0	0	0	0	0	0	0.5046
141662		*Thyasira flexuosa*		(Montagu, 1803)	0	0	0	0	0.0012	0	0	0.0243	0	0	0	0.0028	0.0229	0	0	0	0	0.0014	0	0	0	0	0	0	0.0042	0	0	0	0	0	0	0.0015	0.0013	0	0.0032	0	0	0	0	0.0628
378492		*Varicorbula gibba*		(Olivi, 1792)	0	0	0	0.0004	0	0	0	0	0	0	0	0.0014	0	0	0	0	0	0	0	0	0	0	0	0.0124	0	0	0	0	0	0.3907	0	0	0	0	0	0	0	0	0	0.4049
138211		*Mya*	Juvenile	Linnaeus, 1758	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0012
211		Mytilidae	Juvenile	Rafinesque, 1815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0017
138262		*Nucula*		Lamarck, 1799	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0047	0	0	0	0	0	0	0	0	0	0	0	0.0041	0	0	0	0	0.0088
140589		*Nucula nitidosa*		Winckworth, 1930	0	0	0.0035	0	0	0	0	0	0	0.0043	0	0	0	0	0	0	0	0	0.0163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0241
140592		*Nucula sulcata*		Bronn, 1831	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.137	0	0	0	0	0	0	0	0	0	0	0	0	0.137
236719		*Mimachlamys varia*	Juvenile	(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003
138802		*Arctica islandica*	Juvenile	(Linnaeus, 1767)	0.0024	0	0	0	0	0	0.0009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0033
230		Mactridae		Lamarck, 1809	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005
243		Veneridae		Rafinesque, 1815	0	0	0	0	0	0.0024	0	0.0087	0	0	0	0	0.0054	0	0	0	0	0	0.0063	0	0	0.0025	0	0	0.0059	0	0	0	0	0	0	0	0	0.0018	0	0	0	0.0013	0	0.0343
141909		*Clausinella fasciata*		(da Costa, 1778)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.66
138636		*Dosinia*		Scopoli, 1777	0	0	0	0	0	0	1.8057	0	0	0	0	0	0	0	0.0229	0	0	0	0	0	0.1115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9401
141911		*Dosinia exoleta*		(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.4599	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.4599
141912		*Dosinia lupinus*		(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.2922	7.2922
140728		*Mysia undata*		(Pennant, 1777)	0	0	0	0	0	0	0	0	0	0.0239	0	0.009	0	0.0093	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0025	0	0	0	0	0.0447
141929		*Timoclea ovata*		(Pennant, 1777)	0	0	0	0	0	0.0307	0	0	0	0	0	0	0	0.0111	0	0	0.007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0488
141934		*Venus casina*		Linnaeus, 1758	44.2034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48.83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93.0334
382318		THRACIOIDEA		Stoliczka, 1870 (1839)	0.0192	0	0	0	0	0	0	0	0	0	0	0	0.0007	0	0	0.0072	0	0	0	0	0.0025	0	0	0	0	0	0	0	0	0	0	0	0	0.0015	0	0.0204	0	0	0	0.0515
		Cochlodesma praetenue			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.904	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5588	0	0	0	1.4628

APPENDIX N BIOMASS ANALYSIS

Aphia ID	Phylum Class/Order	Taxon Name	Qualifiers	Authority	Stations																																							Total
					ENV01	ENV02	ENV03	ENV04	ENV05	ENV06	ENV07	ENV08	ENV09	ENV10	ENV11	ENV12	ENV13	ENV14	ENV15	ENV16	ENV17	ENV18	ENV19	ENV20	ENV21	ENV22	ENV23	ENV24	ENV25	ENV26	ENV27	ENV28	ENV29	ENV30	ENV31	ENV33	ENV34	ENV35	ENV36	ENV53	ENV57	ENV58	ENV59	
	ECHINODERMATA																																											
123080	**Asteroidea**	ASTEROIDEA	Juvenile	de Blainville, 1830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0033
123776		*Asterias rubens*		Linnaeus, 1758	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7208
124273	**Echinoidea**	*Echinocyamus pusillus*	Juvenile	(O.F. Müller, 1776)	0.0131	0.0064	0	0	0	0.0023	0.0155	0.0014	0.0004	0	0.0011	0	0.0023	0.0053	0	0.001	0	0	0	0.0035	0	0.0039	0.0081	0	0	0	0	0	0	0	0	0	0	0.0012	0	0.008	0	0.0011	0.0022	0.0768
140283		SPATANGOIDA		(Linnaeus, 1767)	0	0.0021	0.032	0	0	0.0256	0.0798	0.0077	0	0	0.0049	0	0.11	0	0	0.0085	0	0	0	0.0533	0	0	0.043	0	0.0102	0.0122	0	0	0	0.0142	0.0012	0	0	0.0051	0	0.0046	0	0	0	0.4144
124373		*Brissopsis lyrifera*		(Forbes, 1841)	0	3.3911	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6183	0	0	0	0	0	0	0	0	0	13.9577	0	0	33.1267	26.3703	10.4891	6.4756	0	0	0	0	0	0	97.4288
123426		*Echinocardium*		Gray, 1825	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0916	0	0	0	0	0	0	0	0	0	0	1.221	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3126
124394		*Echinocardium flavescens*		(O.F. Müller, 1776)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.2112	0	0	0	0	8.2112
123449	**Holothuroidea**	*Leptosynapta*		Verrill, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0049	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0049
124462		*Leptosynapta bergensis*		(Östergren, 1905)	0	0.0522	0	0	0	0	0	0	0	0	0	0.074	0	0	0	0	0	0.0011	0.2192	0	0	0	0	0.2032	0.0482	0	0	0.3095	0.3067	0	0	0.1006	0.0343	0.056	0	0	0	0	0	1.405
1474372		*Paraleptopentacta elongata*		(Dueben & Koren, 1846)	0	0	0	0	0	0	0	2.0331	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0331
123206	**Ophiuroidea**	Amphiuridae		Ljungman, 1867	0	0	0.0131	0	0	0	0	0	0	0.0043	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0	0	0	0	0	0	0	0	0	0.0196
236130		*Acrocnida brachiata*		(Montagu, 1804)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3001	0	0	0	0.3001
125064		*Amphipholis squamata*		(Delle Chiaje, 1828)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0012
125195		*Amphiura (Ophiopeltis) securigera*		(Düben & Koren, 1846)	0.0269	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0401	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.067
125073		*Amphiura chiajei*		Forbes, 1843	0	0.0964	0	0.011	0	0	0	0	0.254	0.0337	0	0	0	0	0	0	0	0	0.0054	0	0.0018	0	0	0	0	0.6891	0	0.1172	0.0038	0	0	0	0	0	0	0	0	0	0	1.2124
125080		*Amphiura filiformis*		(O.F. Müller, 1776)	0	0.1139	0	0.0978	0.1177	0.1917	0	0.1673	0.0451	0	0.0765	0.1227	0.1611	0.1052	0	0	0.0666	0	0.1191	0	0.3417	0.0429	0.0918	0.0119	0.1135	0	0	0	0	0	0.3003	1.2357	0	0.4343	0	0.0178	0	0	0	3.9746
123200		Ophiuridae		Müller & Troschel, 1840	0	0	0	0	0	0.0021	0	0	0	0	0	0	0.0008	0.0013	0.0075	0	0	0	0	0	0	0	0	0	0	0	0	0.0013	0	0	0	0	0	0.0121	0	0	0	0	0	0.0251
	CNIDARIA																																											
100880		*Edwardsia claparedii*		(Panceri, 1869)	0	0	0	0	0	0	0.0016	0.0063	0	0	0.0399	0	0.005	0	0.1283	0.0081	0	0	0	0	0	0.0107	0.0274	0	0	0	0	0	0	0	0	0	0	0	0	0.0208	0	0	0.0011	0.2492
128517		*Pennatula phosphorea*		Linnaeus, 1758	0	0.0042	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0042
283798		*Cerianthus lloydii*		Gosse, 1859	0.0114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0114
	FORAMINIFERA																																											
112299	**Monothalamea**	*Astrorhiza*		Sandahl, 1858	0	0	0.1259	0	0.0107	0.0802	0	0	0	0	0.0318	0.0233	0.2776	0.1446	0	0	0.1437	0.467	0.0274	0	0	0.0386	0.3952	0	0	0	0	0	0	0.0066	0.2394	0	0.0077	0.0877	0.0083	0	0	0	0	2.1157
	HEMICHORDATA																																											
1820	**Enteropneusta**	ENTEROPNEUSTA		Gegenbaur, 1870	0.001	0.0602	0	0	0	0	0	0	0	0.2125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4661	0	0	0	0	0	0.7398
	NEMERTEA																																											
152391		NEMERTEA			0	0.006	0.0055	0.048	0.002	0.0121	0.0416	0	0	0.0197	0	0.0088	0	0.01	0.0597	0.1221	0	0.0025	0	0.0086	0.0495	0.0036	0.197	0.0104	0.0266	0	0	0.0108	0.065	0	0	0.0265	0.0065	0.0173	0.0052	0	0	0	0.0026	0.7676
	PLATYHELMINTHES																																											
793		PLATYHELMINTHES		Minot, 1876	0	0	0	0	0	0	0.0177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0083	0	0	0	0	0.026
	PHORONIDA																																											
128545		*Phoronis*		Wright, 1856	0	0	0.0139	0	0.0193	0.0068	0	0.006	0	0	0	0	0.026	0.0756	0	0	0.0381	0	0	0	0	0	0.0067	0	0.0136	0	0	0.0148	0	0	0.1235	0	0.0018	0.0173	0.0056	0	0	0.0145	0	0.3835
				Total Biomass	**44.482**	**5.090**	**0.630**	**0.572**	**0.695**	**1.598**	**2.243**	**2.591**	**1.112**	**0.521**	**0.415**	**1.121**	**2.746**	**0.694**	**1.327**	**13.402**	**5.733**	**1.717**	**0.651**	**50.902**	**3.814**	**0.233**	**1.336**	**0.534**	**1.518**	**1.994**	**14.401**	**0.840**	**1.590**	**34.031**	**32.626**	**12.066**	**6.899**	**1.542**	**9.060**	**4.137**	**0.365**	**0.159**	**7.348**	272.7335
				Total Taxa	**17**	**32**	**29**	**27**	**28**	**32**	**21**	**24**	**24**	**29**	**20**	**18**	**30**	**23**	**32**	**36**	**21**	**38**	**22**	**42**	**33**	**21**	**17**	**20**	**19**	**21**	**15**	**36**	**26**	**26**	**36**	**23**	**26**	**48**	**30**	**32**	**9**	**17**	**10**	1010.0000
Taxa excluded from statistical analysis																																												
	ANNELIDA																																											
129341	**Polychaeta**	*Magelona alleni*		Wilson, 1958	0	0	0	0	0	0	0	0	0	0	0.0044	0	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0	0	0	0	0	0.0135	0	0	0	0	0	0.0189
146949		*Galathowenia*		Kirkegaard, 1959	0	0	0	0	0	0	0	0	0	0	0	0	0.0012	0.0084	0	0.0009	0.0007	0	0.0023	0	0	0	0.0044	0.0022	0.0026	0	0	0	0.0055	0	0	0	0.0025	0	0	0	0	0	0	0.0307
989		Spirorbinae		Chamberlin, 1919	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
982		Terebellidae		Johnston, 1846	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0793	0	0	0	0	0	0	0	0	0.0243	0	0	0	0	0	0	0	0	0	0.1036
152269		*Tharyx killariensis*		(Southern, 1914)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007	0	0	0	0.0007
129242		*Chaetozone*		Malmgren, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0013	0.0013
131188		*Spiophanes kroyeri*		Grube, 1860	0	0	0	0	0	0	0	0	0	0.0034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0034
		Prionospio cf. dubia		Day, 1961	0	0	0	0	0	0	0	0	0	0	0	0.0042	0	0	0	0	0	0	0	0	0	0	0	0.0019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0061
129613		*Laonice*		Malmgren, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0086	0	0	0	0	0	0	0	0	0	0	0	0.0086
130711		*Poecilochaetus serpens*		Allen, 1904	0	0	0	0	0	0.0033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0033
130980		*Scalibregma inflatum*		Rathke, 1843	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018
902		Orbiniidae		Hartman, 1942	0	0	0	0	0.3032	0	0	0	0	0	0	0.9353	0	0	0	0	0.0487	0.7692	0.7285	0	0	0	0	0	0	0	1.0622	0.0528	0	0	0	0	0	0	0	0	0.032	0	0	3.9319
130330		*Rhodine gracilior*		Tauber, 1879	0	0	0.0266	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0656	0	0	0	0	0	0.0922
923		Maldanidae		Malmgren, 1867	0	0	0	0.131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0038	0	0	0.0149	0	0	0.3032	0	0	0	0	0	0	0.4529
921		Capitellidae		Grube, 1862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0024
967		Lumbrineridae		Schmarda, 1861	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0803	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0803
129370		*Nephtys*		Cuvier, 1817	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0106	0	0	0	0	0.0106
129446		*Eumida*		Malmgren, 1865	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0	0	0	0	0	0	0.0120
130140		*Goniada maculata*		Örsted, 1843	0	0	0	0.0125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0027	0	0	0	0	0	0	0	0	0	0	0	0.0023	0	0	0	0	0	0	0	0	0.0175
130136		*Glycinde nordmanni*		(Malmgren, 1866)	0	0	0	0.0009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0009
129296		*Glycera*		Lamarck, 1818	0	0	0	0	0.0015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0066
939		Polynoidae		Kinberg, 1856	0	0	0.0014	0	0	0	0	0	0	0	0	0.0019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0033
129439		*Pholoe*		Johnston, 1839	0	0	0	0	0	0	0	0	0.0012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0019	0	0	0	0	0	0	0	0.0031
	ARTHROPODA																																											
13795	**Malacostraca**	EPICARIDEA	parasitic	Latreille, 1825	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
120020		*Gastrosaccus spinifer*		(Goës, 1864)	0	0	0	0	0	0	0.0007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0007
1128		EUPHAUSIACEA		Dana, 1852	0	0	0.0077	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0077
110380		Diastylidae		Bate, 1856	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018
1135		AMPHIPODA		Latreille, 1816	0	0	0	0	0	0	0	0.0009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0002	0	0	0	0.0011
179538		*Nototropis vedlomensis*		(Spence Bate & Westwood, 1862)	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0005
101933		*Ampelisca typica*		(Spence Bate, 1856)	0	0	0	0	0	0	0.0006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0006
101716		*Harpinia*		Boeck, 1876	0	0	0.0006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0006
103228		*Urothoe elegans*		Spence Bate, 1857	0	0	0	0	0	0	0	0	0.0014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0045	0	0	0	0	0	0	0.0059
107729		*Callianassa subterranea*		(Montagu, 1808)	0	0	0	0	0	0	0	0	0	0	0	0	0.0018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0018
1080	**Copepoda**	COPEPODA		Milne Edwards, 1840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
106115	**Thecostraca**	*Scalpellum*		Leach, 1818	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
	MOLLUSCA																																											
151365		CAUDOFOVEATA		C. R. Boettger, 1956	0	0	0	0	0.0163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0	0	0	0	0	0	0	0	0	0.0032	0.005	0	0	0	0	0	0	0	0.0267
105	**Bivalvia**	BIVALVIA		Linnaeus, 1758	0	0	0	0	0	0.0036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0036
214		Anomiidae		Rafinesque, 1815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
	ECHINODERMATA																																											0.0000
123106	**Echinoidea**	SPATANGOIDA	Juvenile	L. Agassiz, 1840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4666	0	0	0	0	0	0.6255	0	0	0	0	0	0	0.0292	0	0	0	0	0	0	0	0	0	0	0	1.1213
123426		*Echinocardium*		Gray, 1825	0	0	0	0	0	0.0487	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0487
123449	**Holothuroidea**	*Leptosynapta*		Verrill, 1867	0	0	0	0	0.0313	0	0	0.0161	0	0	0	0	0	0	0	0.003	0	0	0	0	0	0	0.0093	0	0	0	0	0	0	0.0036	0	0	0	0	0.02	0	0	0	0	0.0833
123206		Amphiuridae		Ljungman, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0001
125080	Ophiuroidea	*Amphiura filiformis*		(O.F. Müller, 1776)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0	0.0376	0	0	0	0	0	0	0	0	0.0046	0.0305	0	0	0	0	0.0028	0	0	0	0	0	0	0.0777
	CHORDATA																																											
10194	**Actinoptrygii**	ACTINOPTERYGII	Eggs		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
1839	**Ascidiacea**	ASCIDIACEA	type 1	Blainville, 1824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
104906	**Cephalochordata**	Cephalochordata		(Pallas, 1774)	0	0	0	0	0	0	0.0028	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0039
10331	**Teleostei**	PLEURONECTIFORMES			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0114	0	0	0.0213	0.0327
	ANIMALIA																																											
2		ANIMALIA	Eggs		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
2		ANIMALIA	Eggs		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0766	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0766
	BRYOZOA																																											
110829	**Gymnolaemata**	*Schizomavella*		Canu & Bassler, 1917	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
111367		*Flustra foliacea*		(Linnaeus, 1758)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
110965		*Escharella*		Gray, 1848	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
110724	**Stenolaemata**	CYCLOSTOMATIDA		Busk, 1852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
	CNIDARIA																																											
13551	**Hydrozoa**	ANTHOATHECATA		Cornelius, 1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
13552		LEPTOTHECATA		Cornelius, 1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
1605		Aglaopheniidae		Marktanner-Turneretscher, 1890	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
117103		*Halecium*		Oken, 1815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
	CILIOPHORA																																											
1692	**Heterotrichea**	Folliculinidae		Dons, 1914	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
	HEMICHORDATA																																											
1820	**Enteropneusta**	ENTEROPNEUSTA		Gegenbaur, 1870	0	0	0	0.1625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1625
	NEMERTEA																																											
152391		NEMERTEA			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0023	0	0	0	0	0	0	0.0033	0	0	0	0.0323	0	0	0	0	0	0	0	0	0	0.0379
	NEMATODA																																											
799		NEMATODA			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000
	PHORONIDA																																											
128545		*Phoronis*		Wright, 1856	0.0019	0	0	0	0	0	0	0	0	0	0	0.0065	0	0	0	0	0	0	0	0	0.0447	0.0064	0	0.0035	0	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0635
	ALGAE																																											
		ENCRUSTING ALGAE			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0000

Juvenile Record
Combined Adult and Juvenile Record
Taxa in blue are the top ten most dominant in the adult data set
Taxa in red are species of interest

APPENDIX O EUNIS CLASSIFICATION

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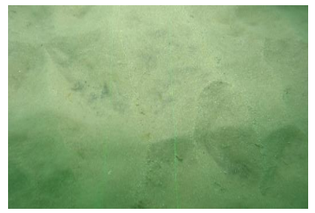
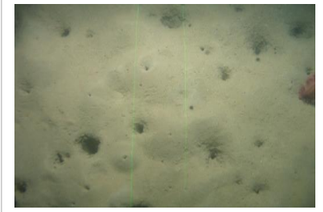
Adult Station Multivariate Cluster	Station	Water Depth (m)	Zone	Broad Substrate	Detailed Substrate Description	Salinity	EUNIS Level 2	EUNIS Habitat Classification		MNCR Habitat Classification		EUNIS/MNCR Habitat Type	Top Ten Fauna Abundance			Remarks	Representative Image
								Level	Code	Level	Code		Rank	Taxa	Abundance		
a	ENV57 ENV58	13 20	Infralittoral	Sand	Sand and muddy sand	Full	MB5	5	MB5233	4	SS.SSa.IFiSa.NcirBat	Nephtys cirrosa and Bathyporeia spp. in Atlantic infralittoral sand	1	*Nephtys cirrosa*	10	Fauna is dominated by polychaetes and arthropods in sands and muddy sands in shallow water to at least 30m depth.	
													2	*Magelona johnstoni*	8		
													3	*Bathyporeia guilliamsoniana*	5		
													3	*Spiophanes bombyx*	6		
													4	*Bathyporeia elegans*	2		
													4	***Euspira nitida***	2		
													5	*Magelona filiformis*	5		
													6	Phoronis	2		
													7	*Glycinde nordmanni*	1		
													7	*Spiophanes*	1		
													7	*Magelona alleni*	1		
													7	*Megaluropus agilis*	1		
													7	***Echinocyamus pusillus***	1		
													7	*Gari fervensis*	1		
													7	Tellinidae	1		
													7	Veneridae	1		
													8	*Spio*	1		
													8	*Donax vittatus*	1		
b	ENV20	32	Infralittoral	NA	NA	Full	MC4	4	MC421	3	SS.SMx.CMx	Faunal communities of Atlantic circalittoral mixed sediment	1	*Scalibregma inflatum*	6	Fauna is dominated by epifaunal molluscs in shallow mixed sediment	
													2	***Echinocyamus pusillus***	5		
													3	*Galathea intermedia*	4		
													3	*Amphipholis squamata*	4		
													3	*Tritia*	4		
													4	*Hydroides norvegica*	3		
													4	*Leptochiton asellus*	3		
													4	Onchidorididae	3		
													4	Anomiidae	3		
													4	*Callipallene*	3		
													5	*Harmothoe*	2		
													5	*Aonides paucibranchiata*	2		
													5	Serpulidae	2		
													5	*Gammaropsis maculata*	2		
													5	*Anapagurus hyndmanni*	2		
													5	*Asterias rubens*	2		
													5	SIPUNCULA	2		
													5	**NEMERTEA**	2		
													6	Polynoidae	1		
													6	*Glycera lapidum*	1		
													6	*Mediomastus fragilis*	1		
													6	*Spio armata*	1		
													6	*Cirratulus*	1		
													6	*Spirobranchus triqueter*	1		
													6	*Iphimedia spatula*	1		
													6	*Nototropis vedlomensis*	1		
													6	*Ampelisca spinipes*	1		
													6	*Urothoe marina*	1		
													6	*Pseudoprotella phasma*	1		
													6	*Anthura gracilis*	1		
													6	*Galathea nexa*	1		
													6	*Pisidia longicornis*	1		
													6	*Amphiura (Ophiopeltis) securigera*	1		
													6	GASTROPODA	1		
													6	***Euspira nitida***	1		
													6	*Tritia incrassata*	1		
													6	*Parvicardium pinnulatum*	1		
													6	*Clausinella fasciata*	1		
													6	*Venus casina*	1		

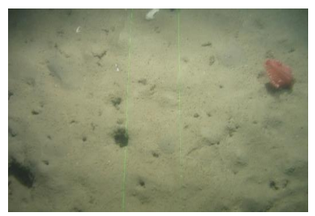
APPENDIX O EUNIS CLASSIFICATION

Adult Station Multivariate Cluster	Station	Water Depth (m)	Zone	Broad Substrate	Detailed Substrate Description	Salinity	EUNIS Level 2	EUNIS Habitat Classification		MNCR Habitat Classification		EUNIS/MNCR Habitat Type	Top Ten Fauna Abundance			Remarks	Representative Image
								Level	Code	Level	Code		Rank	Taxa	Abundance		
c	ENV07 ENV59	32 29	Circalittoral	Sand	Sand and muddy sand	Full	MC5	4	MC521	3	SS.SSa.CMuSa	Faunal communities of Atlantic circalittoral sand	1	***Echinocyamus pusillus***	15	Fauna is dominated by polychaetes, athropods and bivalves in shallow sand.	
													2	*Asbjornsenia pygmaea*	7		
													3	*Ophelia borealis*	3		
													3	**NEMERTEA**	3		
													4	*Edwardsia claparedii*	2		
													5	*Urothoe marina*	6		
													5	***Scoloplos armiger***	1		
													5	*Spiophanes bombyx*	1		
													5	*Polycirrus*	1		
													5	***Euspira nitida***	1		
													5	*Dosinia lupinus*	1		
													6	*Pista lornesis*	3		
													7	*Orbinia*	2		
													7	*Dosinia*	2		
													8	Polynoidae	1		
													8	*Glycera lapidum*	1		
													8	*Glycinde nordmanni*	1		
													8	*Eteone*	1		
													8	*Nephtys longosetosa*	1		
													8	*Aponuphis bilineata*	1		
													8	*Aonides paucibranchiata*	1		
													8	*Scolelepis*	1		
													8	*Leptochiton asellus*	1		
													8	PLATYHELMINTHES	1		
d	ENV01 ENV15 ENV16 ENV21 ENV53	35 52 40 48 31	Offshore circalittoral	Gravelly sand	Muddy sand to coarse and mixed sediment	Full	MD4	4	MD421	3	SS.SMx.CMx	Faunal communities of Atlantic circalittoral mixed sediment	1	THRACIOIDEA	19	Fauna is dominated by polychaetes in coarse and mixed sediment.	
													2	***Owenia***	8		
													2	*Lumbrineris aniara agg.*	8		
													3	*Magelona alleni*	8		
													3	***Urothoe elegans***	17		
													4	*Edwardsia claparedii*	12		
													5	***Scoloplos armiger***	14		
													5	*Aphelochaeta*	6		
													6	*Aponuphis bilineata*	11		
													7	***Echinocyamus pusillus***	17		
													7	**NEMERTEA**	9		
													8	*Kurtiella bidentata*	10		
													9	*Polycirrus*	4		
													9	*Phaxas pellucidus*	5		
													10	***Peresiella clymenoides***	4		
													10	***Amphiura filiformis***	8		

APPENDIX O EUNIS CLASSIFICATION

Adult Station Multivariate Cluster	Station	Water Depth (m)	Zone	Broad Substrate	Detailed Substrate Description	Salinity	EUNIS Level 2	EUNIS Habitat Classification		MNCR Habitat Classification		EUNIS/MNCR Habitat Type	Top Ten Fauna Abundance			Remarks	Representative Image
								Level	Code	Level	Code		Rank	Taxa	Abundance		
e	ENV26 ENV27	110 90	Offshore circalittoral	Sand	Mud and sandy mud	Full	MD6	4	MD621	3	SS.SMu.Omu	Faunal communities on Atlantic offshore circalittoral mud	1	*Heteromastus filiformis*	12	Fauna is dominated by polychaetes and bivalves in sandy mud.	
													2	***Peresiella clymenoides***	4		
													2	*Eudorella emarginata*	4		
													3	*Glycera unicornis*	3		
													4	*Notomastus*	2		
													4	***Galathowenia***	2		
													4	***Callianassa subterranea***	2		
													4	*Scutopus ventrolineatus*	2		
													4	*Abra nitida*	2		
													5	*Nucula sulcata*	4		
													6	*Harpinia pectinata*	4		
													6	*Amphiura chiajei*	4		
													6	*Tellimya ferruginosa*	3		
													7	*Praxillura longissima*	2		
													7	***Urothoe elegans***	2		
													7	*Ampelisca tenuicornis*	2		
													8	*Pholoe pallida*	1		
													8	*Oxydromus flexuosus*	1		
													8	*Prionospio cf. dubia*	1		
													8	*Diplocirrus glaucus*	1		
													8	*Tryphosites longipes*	1		
													8	*Cylichna cylindracea*	1		
													8	***Papillicardium minimum***	1		
													8	*Abyssoninoe hibernica*	1		
													8	*Iphinoe serrata*	1		
													8	*Brissopsis lyrifera*	1		
							MC6	5	MC6216	4	SS.SMu.CFiMu.SpnMeg	Seapens and burrowing megafauna in Atlantic circalittoral fine mud				Classification including imagery interpretation	
f	ENV02 ENV04 ENV09 ENV12 ENV24	88 83 87 90 92	Offshore circalittoral	Sand	Mud and sandy mud	Full	MD6	4	MD621	3	SS.SMu.Omu	Faunal communities on Atlantic offshore circalittoral mud	1	*Amphictene auricoma*	23	Fauna is dominated by polychaetes and bivalves in sandy mud.	
													1	***Peresiella clymenoides***	22		
													2	***Callianassa subterranea***	16		
													3	***Amphiura filiformis***	15		
													4	***Galathowenia***	14		
													5	*Harpinia antennaria*	8		
													6	**NEMERTEA**	8		
													7	***Papillicardium minimum***	12		
													7	*Varicorbula gibba*	3		
													8	*Amphiura chiajei*	7		
													8	*Leptosynapta bergensis*	3		
													9	*Trichobranchus roseus*	3		
													10	***Owenia***	5		
													10	*Glycera unicornis*	4		
							MC6	5	MC6216	4	SS.SMu.CFiMu.SpnMeg	Seapens and burrowing megafauna in Atlantic circalittoral fine mud				Classification including imagery interpretation	

APPENDIX O EUNIS CLASSIFICATION

Adult Station Multivariate Cluster	Station	Water Depth (m)	Zone	Broad Substrate	Detailed Substrate Description	Salinity	EUNIS Level 2	EUNIS Habitat Classification		MNCR Habitat Classification		EUNIS/MNCR Habitat Type	Top Ten Fauna Abundance			Remarks	Representative Image
								Level	Code	Level	Code		Rank	Taxa	Abundance		
g	ENV10 ENV18 ENV28 ENV29 ENV30 ENV31 ENV34	78 69 78 83 74 76 76	Offshore circalittoral	Sand	Mud and sandy mud to mixed sediment	Full	MD6	4	MD621	3	SS.SMu.Omu	Faunal communities on Atlantic offshore circalittoral mud	1	*Prionospio cf. dubia*	57	Fauna is dominated by polychaetes in sandy mud.	
													2	***Callianassa subterranea***	18		
													3	*Trichobranchus roseus*	12		
													3	*Chaetozone pseudosetosa*	17		
													4	*Diplocirrus glaucus*	17		
													5	*Abra nitida*	13		
													5	***Urothoe elegans***	11		
													6	**NEMERTEA**	9		
													7	*Notomastus*	8		
													7	***Peresiella clymenoides***	12		
													8	*Glycinde nordmanni*	7		
													9	*Myrtea spinifera*	14		
													10	*Chaetoderma nitidulum*	6		
													10	***Astrorhiza***	15		
							MC6	5	MC6216	4	SS.SMu.CFiMu.SpnMeg	Seapens and burrowing megafauna in Atlantic circalittoral fine mud				Classification including imagery interpretation	
h	ENV03 ENV05 ENV14 ENV35 ENV36	74 75 69 78 73	Offshore circalittoral	Sand	Muddy sand to sandy mud	Full	MD6	4	MD621	3	SS.SMu.Omu	Faunal communities on Atlantic offshore circalittoral mud	1	***Astrorhiza***	15	Fauna is dominated by polychaetes and arthropods in sandy mud or muddy sand.	
													2	*Phoronis*	10		
													3	**NEMERTEA**	8		
													4	***Galathowenia***	14		
													5	***Euspira nitida***	12		
													6	***Papillicardium minimum***	11		
													6	***Owenia***	10		
													7	*Abra*	6		
													7	*Scoloplos armiger*	6		
													7	***Urothoe elegans***	7		
													8	***Callianassa subterranea***	5		
													9	*Diplocirrus glaucus*	7		
													10	***Amphiura filiformis***	8		
							MC6	5	MC6216	4	SS.SMu.CFiMu.SpnMeg	Seapens and burrowing megafauna in Atlantic circalittoral fine mud				Classification including imagery interpretation	
i	ENV06 ENV08 ENV11 ENV13 ENV17 ENV19 ENV22 ENV23 ENV25 ENV33	71 73 68 63 75 79 64 74 75 92	Offshore circalittoral	Sand	Sand and muddy sand to coarse sediment	Full	MD5	4	MD521	3	SS.SSa.CMuSa	Faunal communities of Atlantic offshore circalittoral sand	1	***Amphiura filiformis***	38	Fauna is dominated by molluscs and echinoderms in sand and muddy sand.	
													2	***Papillicardium minimum***	22		
													3	*Antalis entalis*	36		
													3	***Astrorhiza***	39		
													4	***Euspira nitida***	15		
													5	***Echinocyamus pusillus***	27		
													6	*Rhodine gracilior*	14		
													7	Veneridae	8		
													8	*Phoronis*	11		
													9	**NEMERTEA**	8		
													10	*Thyasira flexuosa*	12		
													10	*Lumbrineris aniara agg.*	14		
													10	*Edwardsia claparedii*	6		
							MC6	5	MC6216	4	SS.SMu.CFiMu.SpnMeg	Seapens and burrowing megafauna in Atlantic circalittoral fine mud				Classification including imagery interpretation	

Taxa in **bold** denotes presence in the top ten when ranked by abundance

Caledonia Offshore Wind Farm
5th Floor, Atria One
144 Morrison Street
Edinburgh
EH3 8EX

www.caledoniaoffshorewind.com

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