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Kish Offshore Wind Ltd

RWE SLR GoBe APEM Group

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Fugro - WPM1, WPM2 & WPM3 - Main Array & ECR - Benthic Ecology Monitoring Report

Dublin Array Offshore Site Investigation | Ireland, Irish Sea

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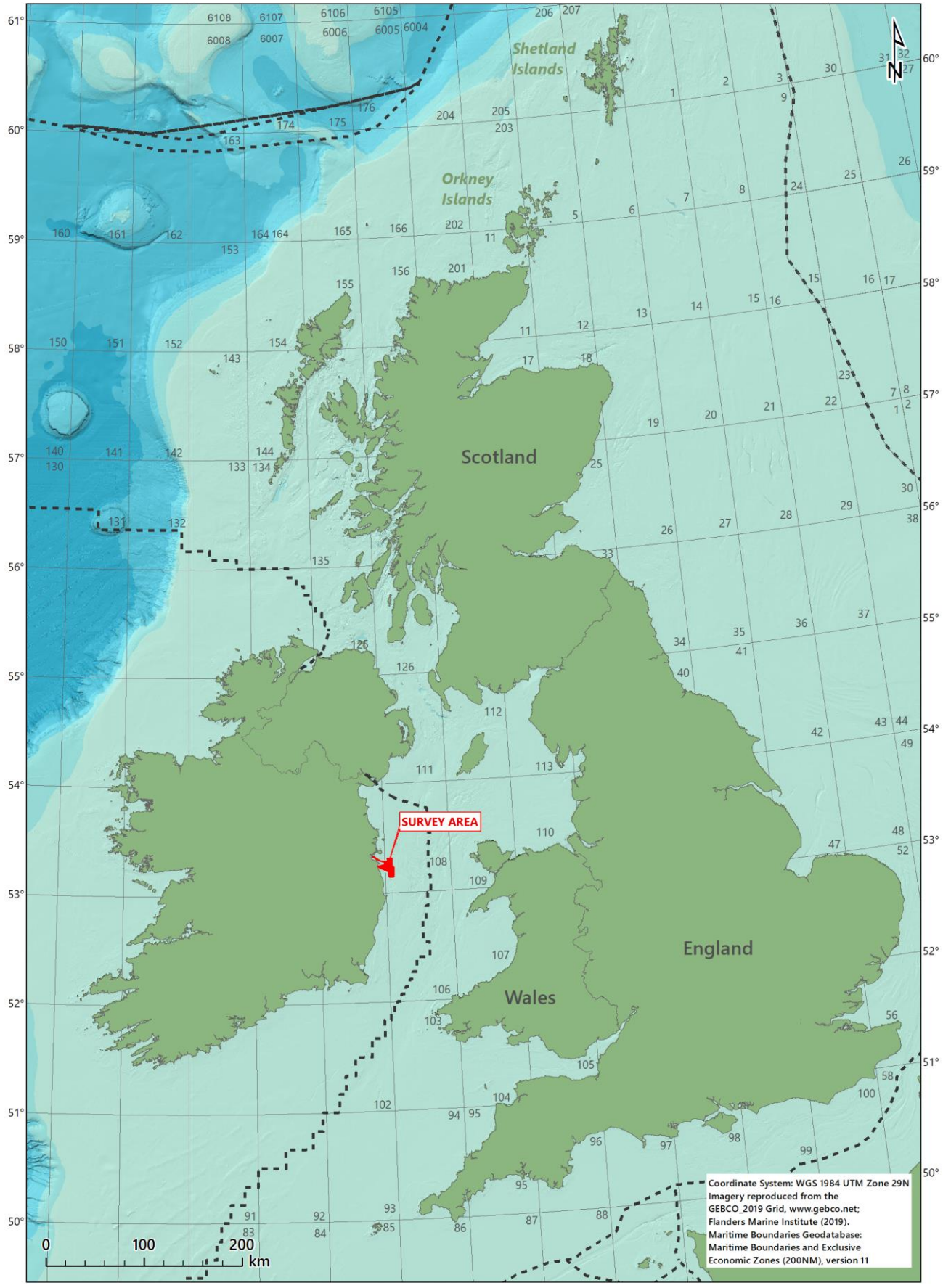
Frontispiece



Executive Summary

Introduction

Kish Offshore Wind Limited and Bray Offshore Wind Limited contracted Fugro to perform a benthic subtidal survey to provide an environmental baseline characterisation of the site selected for the Dublin Array Offshore Wind Farm development. The site is in the Irish sea, extending 10 km off the east coast of Ireland in water depths of 2 m to 30 m Lowest Astronomical Tide (LAT). The Dublin Array Wind Farm will cover an area of approximately 54 km^2. Operations were conducted onboard the MV Fastnet Pelican during the survey period 14 February to 19 March 2021.

The results of study will be used to inform the project environmental impact assessment (EIA) and final development consent approval process.

The aim of the benthic survey was fulfilled through acquisition of sediment samples and seabed video and photographic data. Sediment samples were acquired to characterise the benthic environment in terms of physico-chemical characteristics and biological communities, the results of which are the focus of this report. Seabed video and photographic data, detailed in the Environmental Features Report, provided information on habitat types, with focus on habitats of conservation importance, such as those listed under Annex I of the European Commission (EC) Habitats Directive and habitats listed on the Oslo and Paris Commission (OSPAR) list of threatened and/or declining habitats and species. The results of the seabed video and photographic data were integrated with those from the grab samples to further define the habitats and associated biological communities in terms of biotopes in line with the European Nature Information System (EUNIS) habitat classification.

Survey Strategy

Thirty drop-down camera and grab sampling stations were proposed based on revision of existing geophysical data. Emphasis was placed on locating areas of potential conservation value, on boundaries between areas of differing sonic reflectivity, bathymetric highs and lows and areas characteristic of the general background conditions of the site.

Seabed photography was acquired using a Kongsberg OE 14-208 camera system and a Bowtech SeaKnight underwater camera system mounted within purpose-built camera frames. In areas of poor visibility, seabed photography was acquired using a Subsea Technology and Rentals (STR) SeaSpyder Nano HD drop-down camera system with a freshwater lens.

Sampling for chemistry analysis was proposed at 15 locations, selected to be representative of the habitats identified with focus on muddy habitats.

Seabed samples were acquired using a 0.1 m^2 mini Hamon grab for fauna and sediment particle size distribution (PSD) single replicate samples and a 0.1 m^2 Day grab for sediment chemistry samples.

Seabed video and photographic data were successfully acquired along 29 of the 30 proposed transects. Station ST25 was not surveyed due to the presence of fishing gear. A full suite of grab

samples was successfully acquired at 28 of the 30 stations. Two stations could not be sampled, and included station ST25, due to the presence of obstructing fishing gear and station ST12 due to the presence of boulders.

Sediment Characteristics

The organic content, in the form of total organic carbon (TOC), was low across the survey area, with values of between < 0.02 % and 1.43 %, and a median of 0.09 %. The carbonate content was between 4.49 % and 25.0 % with a median of 13.3 %.

The sediment across the survey area comprised mainly sand, the coarseness of which, assessed by means of the Wentworth scale, ranged from 'very fine sand' which typified two stations to 'coarse sand' which typified four stations. 'Medium sand' typified 15 stations and 'fine sand' typified seven stations.

Percentages of gravel and fines were comparatively low, the gravel content being up to 22.04 % and the fines content being up to 18.01 %. A contribution to gravel emanated from shell fragments recorded by the seabed video and photography. Three sediment classes were identified using the Folk (British Geological Survey (BGS) modified) classification, including 'sand' which typified 12 stations, 'muddy sand' which typified four stations, and 'gravelly sand' which typified 12 stations.

The sorting coefficient reflected the heterogeneity of the sediment and ranged from well sorted to very poorly sorted, with most stations having poorly sorted sediments.

Most stations had unimodal distributions and five stations had bimodal or polymodal distribution reflecting the high energy environment of the survey area, which was further confirmed by the presence of sand ripples and sandbanks by the seabed video and photographic data.

The spatial pattern of sediment distribution was not influenced by the depth.

Sediment Chemistry

Total hydrocarbon content (THC) across the Dublin Array survey area was between < 0.5 µg/g and 10.6 µg/g with a median of 2.3 µg/g, below the lower level of the Irish sediment quality guidelines for total extractable hydrocarbons (1000 µg/g).

Analysis of the individual n-alkanes in the range nC_{12} to nC_{36} provided information on the source of hydrocarbons present, with results indicating predominantly biogenic sources of hydrocarbons.

The total United States Environmental Protection Agency (US EPA) 16 polycyclic aromatic hydrocarbons (PAH) concentrations were below the Irish sediment quality guidelines lower level at all stations and the individual US EPA 16 PAHs were below their respective 95th percentile of the Irish data from the Marine Institute.

All metals analysed had concentrations below the lower level of the Irish sediment quality guidelines at all stations, except arsenic, the concentration of which was above the lower level at six stations but below the upper level at all stations. Arsenic concentrations were contextualised with areas with

naturally high occurrence of this metal within the OSPAR maritime area, the Irish Sea being part of OSPAR region III, Celtic Sea.

The polychlorinated biphenyls (PCBs) analysed included the International Council for the Exploration of the Sea (ICES) 7 congeners 28, 52, 101, 118, 138, 153 and 180, the concentrations of which were below their respective minimum reporting values (MRVs) and below the lower level (1 µg/kg) and upper level (100 µg/kg) of the Irish sediment quality guidelines across the survey area.

The organotins analysed in this study included the dibutyl tin (DBT) and tributyl tin (TBT), the concentrations of which were below their respective MRVs and below the lower level (100 µg/kg) and upper level (500 µg/kg) of the Irish sediment quality guidelines across the survey area.

The organochlorine pesticides (OCPs) analysed included alpha-hexachlorocyclohexane (alpha-HCH), beta-hexachlorocyclohexane (beta-HCH), delta-hexachlorocyclohexane (delta-HCH) and gamma-hexachlorocyclohexane (lindane). The concentrations of these chemicals were below their respective MRVs, however the MRV for lindane is above the lower level (0.3 µg/kg) and below the upper level (1 µg/kg) of the Irish sediment quality guidelines

Macrofauna

The macrofaunal community comprised infaunal and epifaunal taxa, the latter being represented by solitary and colonial organisms. Annelida and Mollusca represented most of the community structure and composition of the enumerated fauna, which comprised infauna and solitary epifauna, whereas Arthropoda and other phyla were less represented by comparison. There was considerable variability in the number of taxa across the survey area, with stations on the Kish and Bray Banks and two nearshore stations having low faunal richness and abundance compared to the other stations. The low macrofauna richness and abundance at these stations is likely to be associated with the mobility of the sediment, which featured mostly well sorted to moderately well sorted sand, with sand ripples visible from the seabed video and photography.

Characterising taxa within the Annelida included fast growing and robust polychaetes such *Spirobranchus lamarcki*, *Lumbrineris* cf. *cingulata*, *Pholoe baltica*, *Ophelia borealis*, *Nephtys cirrosa, Spiophanes bombyx* and *Owenia borealis*. Similarly, Arthropoda were represented by fast swimming crustacean amphipods such as *Urothoe elegans*, *Harpinia antennaria* and *Othomaera othonis*.

Mollusca were represented by opportunistic species such as the bivalves *Nucula nucleus*, *Kurtiella bidentata*, *Abra alba*, *Nucula nitidosa*, *Fabulina fabula* and *Tellimya ferruginosa*, along with the gastropod *Euspira nitida*.

The Echinodermata composition was dominated by species typical of habitats exposed to strong tidal currents and/or with flexible eating behaviour, such as the brittlestars *Ophiothrix fragilis*, *Amphiura filiformis*, *Ophiura albida* and *Amphipholis squamata*.

Five macrofaunal assemblages were identified through the multivariate analysis, each assemblage having < 50 % average similarity, and associated with the sediment type.

Echinodermata and Mollusca comprised most of the infaunal biomass, owing to the numerical abundance of brittlestars as well as the size of invertebrates such as the sea urchins *Echinocardium cordatum*, *Echinocardium flavescens* and *Psammechinus miliaris*, and the holothurians *Leptosynapta bergensis* and *Thyone fusus*. The biomass of Mollusca was associated with the numerical abundance of bivalves.

Colonial epifauna from the grab samples comprised Porifera, Cnidaria, Bryozoa and ciliates of the family Folliculinidae, the latter being the most frequently occurring colonial taxon across the survey area. Colonial epifauna recorded by mean of the seabed video and photography included taxa typical of areas subject to strong water flow, sediment re-suspension and subsequent degree of scour such as *Alcyonium digitatum*, *Hydrallmania falcata*, and species of *Nemertesia* and *Sertularia*.

Overall, the results are indicative of a dynamic seabed sediment subject to physical disturbance with subsequent reworking of the sediments with faunal communities typical of high energy environment.

Seabed Habitats and Biotopes

One biotope complex and five biotopes were identified across the Dublin Array survey area, including:

1. 'Infralittoral coarse sediment' (A5.13);
2. '*Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment' (A5.261);
3. '*Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud' (A5.351);
4. '*Glycera lapidum* in impoverished infralittoral mobile gravel and sand' (A5.135);
5. '*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand' (A5.242);
6. 'Atlantic and Mediterranean high energy infralittoral rock' (A3.1).

The biotope 'Atlantic and Mediterranean high energy infralittoral rock' (A3.1) was assigned to station ST12 which was assessed only by means of seabed video and photographic data, owing to the nature of the substrate which prevented grab sampling.

Potentially Sensitive Habitats and Species

Station ST12 was assessed for the potential of stony reef, and the results indicated a 'medium' resemblance to a stony reef along two sections of the transect.

No other Annex I habitats or Annex II species, Oslo and Paris (OSPAR) threatened and/or declining species and habitats were recorded within the survey area.

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Abbreviations

2DHR	Two-dimensional high resolution
AFDW	Ash free dry weight
AQC	Analytical quality control
BAC	Background Assessment Concentration
BC	Background Concentration
BGS	British Geological Survey

BIOENV	Biological and Environmental
BS	British Standards
BSL	Below sea level
CBD	Convention on Biological Diversity
CEMP	Coordinated Environmental Monitoring Programme
CM	Central meridian
CPI	Carbon preference index
CRM	Certified reference material
DBT	Dibutyl tin
DCM	Dichloromethane
DDT	Dichlorodiphenyltrichloroethane
EC	European Commission
EcoQOs	Ecological Quality Objectives
EEA	European Environment Agency
EI	Electron ionisation
EIA	Environmental Impact Assessment
EMODnet	European Marine Observation Data Network
EOL	End of line
EPSG	European Petroleum Survey Group
ERL	Effects range low
ERM	Effects range medium
EUNIS	European Nature Information System
FA	Faunal sample A
FID	Flame ionisation detection
GC	Gas chromatography
GC-FID	Gas chromatography–flame ionisation detection
GC-MS	Gas chromatography–mass spectrometry
GC-µECD	Gas chromatography with micro-electron capture detection
HCH	Hexachlorocyclohexane
HC	Hydrocarbon sample
HD	Hard drive
HM	Heavy metal sample
ICES	International Council for the Exploration of the Sea
ICP-MS	Inductively coupled plasma-mass spectrometry
ISO	International Organization for Standardization
LAT	Lowest Astronomical Tide
LED	Light-emitting diode
MMO	Marine Management Organisation
MPA	Marine Protected Area
MRV	Minimum reporting value
MSFD	Marine Strategy Framework Directive
MV	Motor vessel
nC_{12-36}	n-Alkane range
NF	No fix
NMBAQC	North East National Marine Biological Association Quality Control
nMDS	Non-metric multidimensional scaling
NS	No sample
OCP	Organochlorine pesticide
OSPAR	Oslo and Paris Commission

PAH	Polycyclic aromatic hydrocarbon
PC	Physico-chemical sample
PCA	Principal component analysis
PCBs	Polychlorinated biphenyls
PEL	Probable effects level
Ph	Phytane
Pr	Pristane
Pr/Ph	Ratio of pristane to phytane
PRIMER	Plymouth Routines in Multivariate Ecological Research
PSA	Particle size analysis
PSD	Particle size distribution
RSD	Relative standard deviation
SAC	Special Area of Conservation
SD	Standard deviation
SIM	Selected ion monitoring
SIMPER	Similarity percentage (analysis)
SIMPROF	Similarity Profile
SOL	Start of line
SPA	Special Protection Area
SSS	Side scan sonar
STEB	Sodium tetraethyl borate
STR	Subsea Technology and Rentals
TBT	Tributyl tin
THC	Total hydrocarbon content
TOC	Total organic carbon
UKAS	United Kingdom Accreditation Service
US EPA	United States Environmental Protection Agency
US EPA 16	United States Environmental Protection Agency's 16 priority PAH pollutants
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
WGS 84	World Geodetic System 1984
WoRMS	World Register of Marine Species

1. Introduction

1.1 General Project Description

Kish Offshore Wind Limited and Bray Offshore Wind Limited, hereafter referred to as the Client, contracted Fugro to undertake a benthic subtidal survey to provide an environmental baseline characterisation of the site selected for the Dublin Array Offshore Wind Farm development. The site is in the Irish sea, extending 10 km off the east coast of Ireland in water depths of 2 m to 30 m Lowest Astronomical Tide (LAT). The Dublin Array Wind Farm will cover an area of approximately 54 km^2. Operations were conducted onboard the MV Fastnet Pelican during the survey period 14 February to 19 March 2021.

The benthic subtidal study included geophysical and geotechnical surveys and an environmental survey, the latter comprising a habitat assessment and a benthic characterisation survey. The Environmental Features Report (Fugro 2021a) details the results of the habitat assessment, whereas this report details the results of the baseline benthic characterisation survey.

Appendix A outlines the guidelines for use of this report.

1.2 Scope of Work

The aim of the benthic subtidal survey was to investigate the physico-chemical and biological properties of the sediment to provide a robust baseline characterisation of the site and to supplement the existing benthic ecology data across the area of interest. The aim of the study was fulfilled through acquisition of sediment samples and seabed video and photographic data. The seabed video and photography allowed evaluation of the habitat types across the Dublin Array survey area, with particular focus on habitats of conservation importance, such as those listed under Annex I of the European Commission (EC) Habitats Directive and habitats listed on the Oslo and Paris Commission (OSPAR) list of threatened and/or declining habitats and species (OSPAR, 2021).

The detailed interpretation of the baseline data collected to characterise the relevant seabed areas will be used to inform the project environmental impact assessment (EIA) and final development consent approval process.

1.3 Environmental Legislation

The relevant environmental legislation applying to the Dublin Array offshore site investigation has been detailed in the Environmental Features Report (Fugro, 2021a) and summarised in Table 1.1

Table 1.1: Summary of marine environmental legislation

Legislation	Key aims
Oslo and Paris (OSPAR) Convention	Establish an area of Marine Protected Areas (MPAs)
Convention on Biological Diversity (CBD)	Conservation of biological diversity and sustainable use of its components
Habitats Directive (92/43/EEC)	Conservation of natural habitats and of wild fauna and flora and protection of biodiversity through measures for protection for habitats listed in Annex I and species listed in Annex II of the Directive. Establishment of a European wide network of protected sites, known as Special Areas of Conservation (SACs)
Birds Directive (2009/147/EC)	Establishment of a network of Special Protection Areas (SPAs) for rare or vulnerable birds listed in Annex I of the Directive.
Marine Strategy Framework Directive (MSFD)(2008/56/EC)	Establish a framework for community action in the field of marine environmental policy
The Wildlife Acts 1976 to 2018	Provide a wide-ranging basis for the protection of habitats and species throughout Ireland

1.4 Regional Habitats, Species and Protected Areas

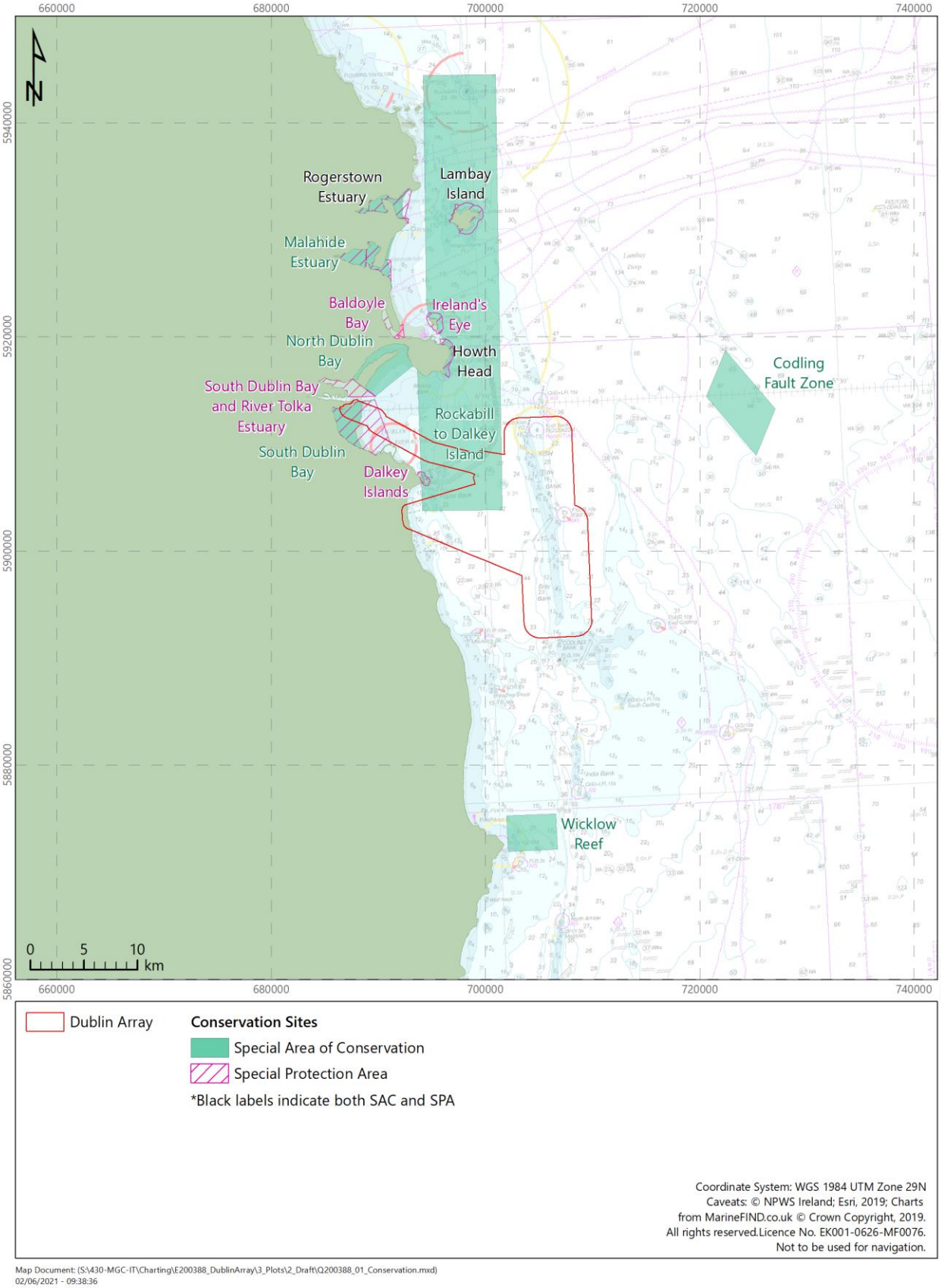
Based on the European Marine Observation and Data Network (EMODnet) seabed habitats map, the Dublin Array survey area comprises the European Nature Information System (EUNIS) habitats 'Circalittoral muddy sand' (A5.26) and 'Deep circalittoral sand' (A5.27), with areas of 'Infralittoral sandy mud' (A5.33), 'Circalittoral sandy mud' (A5.35), 'Circalittoral mixed sediment' (A5.44) and 'Atlantic and Mediterranean high energy Circalittoral rock' (A3.1) (EMODnet, 2019).

Table 1.2 lists the relevant nearby marine protected areas within 25 km of the survey area, summarising the sensitive habitats and species for which they are designated. Figure 1.1 presents the protected areas in relation to the Dublin Array survey area.

Table 1.2: Summary of nearby protected areas, Dublin Array

Protected Area	Distance* [km]	Direction*	Protected Habitats/Species
Special Areas of Conservation			
Rockabill to Dalkey Island	Within survey area		Reefs [1170]
South Dublin Bay	0.6	W	Mudflats and sandflats not covered by seawater at low tide [1140]
North Dublin Bay	1.3	NW	Mudflats and sandflats not covered by seawater at low tide [1140]
Baldoyle Bay	5.9	N	Mudflats and sandflats not covered by seawater at low tide [1140]
Malahide Estuary	10.6	NW	Mudflats and sandflats not covered by seawater at low tide [1140]
Codling Fault Zone	14.5	NE	Submarine structures made by leaking gases
Rogerstown Estuary	17.3	NW	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140]
Lambay Island	17.4	N	Reefs [1170] *Halichoerus grypus* (Grey Seal) [1364] *Phoca vitulina* (Harbour Seal) [1365]
Wicklow Reef	21.1	S	Reefs [1170]
Special Protection Areas			
Dalkey Island	Within survey area		*Sterna dougallii* (Roseate tern), *Sterna hirundo* (Common tern), *Sterna paradisaea* (Arctic tern)
South Dublin Bay and River Tolka Estuary	0.25	W	Numerous species of wetland and marine birds
North Bull Island	1.2	N	Numerous species of wetland and marine birds
Howth Head Coast	4.4	N	*Rissa tridactyla* (Kittiwake)
Baldoyle Bay	5.7	N	Numerous species of wetland and marine birds
Ireland's Eye	7.8	N	Cormorant (*Phalacrocorax carbo*), Herring Gull (*Larus argentatus*), Kittiwake (*Rissa tridactyla*), Guillemot (*Uria aalge*), Razorbill (*Alca torda*)
Malahide Estuary	11.4	NW	Numerous species of wetland and marine birds
Rogerstown Estuary	17	N	Numerous species of wetland and marine birds
Lambay Island	17.5	N	Numerous species of wetland and marine birds

Notes
Source: National Parks and Wildlife Service Protected Sites Map Viewer
* = Distance and direction from the nearest station in the Dublin Array survey area



Notes
SAC = Special Area of Conservation
SPA = Special Protection Area

Figure 1.1: Protected areas relevant to the Dublin Array survey area

1.5 Environmental Quality Standards for Sediment Chemical Concentrations

Sediment quality standards followed the guidelines for the assessment of dredged material for disposal in Irish waters (Cronin et al., 2006). The purpose of these guidelines is to establish a comprehensive national framework for assessing the quality of dredged material and, in particular, for assessing likely impacts arising from the dumping at the sea of contaminated sediments.

For metals, upper level guidance values were derived from samples collected from reference sites around the Irish coast whereas lower values were derived using the 95th percentile of remaining background data (Cronin et al., 2006).

For polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs), 95th percentiles of background data were used to derive the lower guidance values. In the absence of matching chemical and ecotoxicological data derived on Irish sediment samples, upper guidance values are based on available ecotoxicological datasets, such as effects range median/probable effect level (ERM/PEL). Data for organics in the < 2 mm sediment was not normalised for total organic carbon (TOC).

For dredged material assessment, sediment can be classified into three categories:

- 'Class one', where contaminant concentrations are below the lower level; sediments are considered uncontaminated and no biological effects are likely;
- 'Class two', where concentrations fall between the upper and lower levels; sediments are considered marginally contaminated, therefore further sampling and analysis may be necessary to delineate problem areas;
- 'Class three', where concentrations are above the upper level; sediments are considered heavily contaminated and very likely to induce toxicity in marine organisms, requiring consideration of alternative management options.

In the case of 'class three' sediments, it is unlikely that dumping at sea will be permitted and alternative management and disposal of material would take place (Cronin et al., 2006).

1.6 Coordinate Reference System

All coordinates in this report are referenced on World Geodetic System 1984 (WGS 84) Universal Transverse Mercator (UTM) 29N (European Petroleum Survey Group [EPSG] code 32629). Table 1.3 provides the detailed geodetic and projection parameters.

Table 1.3: Project geodetic and projection parameters

Global Positioning System Geodetic Parameters	
Datum:	World Geodetic System 1984 (WGS 84)
Spheroid:	World Geodetic System 1984
Semi major axis:	a = 6 378 137.000 m
Reciprocal flattening:	1/f = 298.257 223 563
Project Projection Parameters	
Grid Projection:	Universal Transverse Mercator (UTM)
UTM Zone:	29N
Central Meridian:	9° 00′ 00″ West
Latitude of Origin:	00° 00′ 00″ North
False Easting:	500 000 m
False Northing:	0 m
Scale factor on Central Meridian:	0.9996
Units:	Metre

2. Survey Strategy

Thirty environmental sampling stations were predetermined by the client. Stations were proposed after reviewing existing geophysical data. Emphasis was placed on locating areas of potential conservation value (e.g. Annex I listed habitats), on boundaries between areas of differing sonic reflectivity, bathymetric highs and lows and areas characteristic of the general background conditions of the site.

At each environmental sampling station, video and stills photography were proposed along transects (a minimum of 50 m in length) prior to the collection of one macrofaunal and one particle size distribution (PSD) sample. Acquisition of an additional physico-chemical (PC) sample for sediment chemistry analysis was proposed at representative locations within each identified habitat type using a Day grab. Focus was placed on muddy habitats where there is a greater rate of accumulation of contaminants.

On request of the client, station ST28 was relocated during the survey to ground-truth a geophysical anomaly observed on the side scan sonar (SSS) and bathymetric data, and station ST30 was relocated north to avoid the fishing gear present.

Tables 2.1 and 2.2 provide the coordinates, proposed data acquisition and rationale. Acceptable sampling accuracy was agreed with the client representative as within 25 m of the target location. Figure 2.1 presents the proposed locations overlain on bathymetry data.

Table 2.1: Proposed sampling stations, Dublin Array

Geodetic Parameters: WGS 84 Zone 29N [m]; EPSG 32629]				
Station	Easting	Northing	Rationale	Data and Sample Acquisition*
ST01	689 094.1	5 912 677.4	Predetermined by the client. Moved 500 m north by to avoid cable	Video and stills, PSD, FA
ST02	691 702.2	5 911 261.4	Predetermined by the client	Video and stills, PSD, FA
ST03	694 338.4	5 909 729.5	Predetermined by the client	Video and stills, PSD, FA
ST04	697 993.5	5 907 917.5	Predetermined by the client	Video and stills, PSD, FA
ST05	700 944.1	5 907 928.9	Predetermined by the client	Video and stills, PSD, FA
ST06	701 280.3	5 906 492.8	Predetermined by the client	Video and stills, PSD, FA
ST07	702 258.2	5 904 349.2	Predetermined by the client	Video and stills, PSD, FA
ST08	699 774.6	5 904 314.5	Predetermined by the client	Video and stills, PSD, FA
ST09	701 764.6	5 902 250.5	Predetermined by the client	Video and stills, PSD, FA
ST10	698 883.4	5 902 602.4	Predetermined by the client	Video and stills, PSD, FA
ST11	695 241.9	5 903 564.7	Predetermined by the client	Video and stills, PSD, FA
ST12	693 990.7	5 901 880.2	Predetermined by the client	Video and stills, PSD, FA
ST13	696 409.4	5 901 881.4	Predetermined by the client	Video and stills, PSD, FA

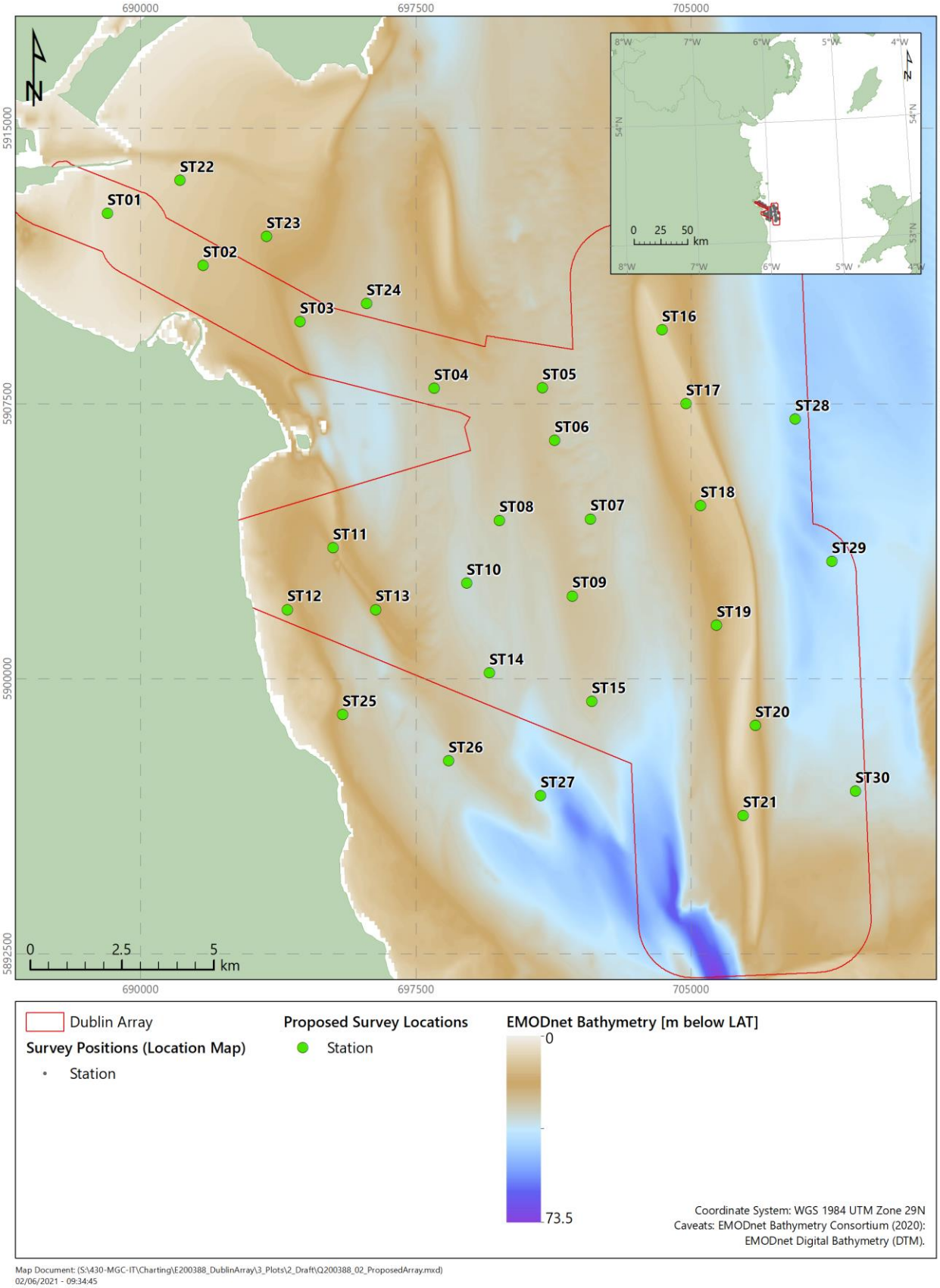
Geodetic Parameters: WGS 84 Zone 29N [m]; EPSG 32629]				
Station	Easting	Northing	Rationale	Data and Sample Acquisition*
ST14	699 505.9	5 900 159.7	Predetermined by the client	Video and stills, PSD, FA
ST15	702 295.0	5 899 381.6	Predetermined by the client	Video and stills, PSD, FA
ST16	704 212.5	5 909 508.2	Predetermined by the client	Video and stills, PSD, FA
ST17	704 861.7	5 907 490.8	Predetermined by the client	Video and stills, PSD, FA
ST18	705 260.1	5 904 718.1	Predetermined by the client	Video and stills, PSD, FA
ST19	705 698.0	5 901 455.7	Predetermined by the client	Video and stills, PSD, FA
ST20	706 749.4	5 898 724.8	Predetermined by the client	Video and stills, PSD, FA
ST21	706 424.2	5 896 268.8	Predetermined by the client	Video and stills, PSD, FA
ST22	691 067.8	5 913 578.9	Predetermined by the client. Moved 500 m south-east to avoid pipeline	Video and stills, PSD, FA
ST23	693 421.5	5 912 050.3	Predetermined by the client. Moved 500 m north to avoid cable	Video and stills, PSD, FA
ST24	696 153.0	5 910 223.0	Relocated away from spoil ground with approval of the client	Video and stills, PSD, FA
ST25	695 501.5	5 899 025.1	Predetermined by the client	Video and stills, PSD, FA
ST26	698 395.5	5 897 758.2	Predetermined by the client	Video and stills, PSD, FA
ST27	700 902.4	5 896 813.4	Predetermined by the client. Moved 500 m east to avoid wreck	Video and stills, PSD, FA
ST28†	707 841.9	5 907 074.9	Predetermined by the client	Video and stills, PSD, FA
ST29	708 844.1	5 903 199.4	Predetermined by the client	Video and stills, PSD, FA
ST30†	709 487.4	5 896 932.7	Predetermined by the client	Video and stills, PSD, FA

Notes
PSD = Particle size distribution sample
FA = Faunal sample A
* = Representative sediment chemistry sampling (hydrocarbons and heavy metals) were selected on survey, where possible for each identified habitat type, concentrating particularly on muddy habitats (if any)
† = Original proposed sample location defined in Scope of Work

Table 2.2: Proposed new ST28 and ST30 transects, Dublin Array

Geodetic Parameters: WGS 84 Zone 29N [m]; [EPSG 32629]					
Station		Easting	Northing	Rationale	Data and Sample Acquisition
ST28	SOL	706 925.6	5 907 690.6	Updated station location to ground-truth potential depressions	Video, stills PSD, FA
	EOL	706 918.6	5 907 770.3		
ST30		709 166.3	5 897 688.7	Moved to avoid fishing gear	Video, stills PSD, FA

Notes
SOL = Start of line
EOL = End of line
PSD = Particle size distribution sample
FA = Faunal sample A



Notes
LAT = Lowest Astronomical Tide

Figure 2.1: Proposed survey locations overlaid on bathymetry data, Dublin Array

3. Methods

3.1 Survey Methods

Survey methods have been presented in the Acquisition/Operations Report (Fugro, 2021b) and are summarised below.

3.1.1 Seabed Photography

Seabed photography was acquired using a Kongsberg OE 14-208 camera system mounted within a purpose-built camera frame complete with a separate strobe and two halogen lamps. Two lasers were set up 23 cm apart to provide a scale. Seabed photography was also acquired using a Bowtech SeaKnight underwater camera system mounted within a purpose-built camera frame, complete with a HD video camera and high-resolution stills camera (14.7 mega pixel), two light-emitting diode (LED) lamps and two lasers set up 18.5 cm apart.

In areas of poor visibility, seabed photography was acquired using a Subsea Technology and Rentals (STR) SeaSpyder Nano HD drop-down camera system. This system comprised an STR SeaCam Mini IP camera and two ultra-efficient STR SeaLight LED lights installed in a freshwater frame.

3.1.2 Sediment Sampling

Seabed samples were acquired using a 0.1 m^2 mini Hamon grab for fauna and sediment PSD samples and a 0.1 m^2 Day grab for sediment chemistry samples.

Further details on survey methodology are in Appendix B.1.

3.2 Laboratory Methods

Analytical methodologies are described in the following subsections, with further details in Appendix B.2.

3.2.1 Sediment Characteristics

3.2.1.1 Particle Size Distribution (PSD)

Sediment samples were analysed by Fugro using dry sieve analysis and laser diffraction.

Dry sieve PSD analysis was undertaken in accordance with FGBML in-house methods based on the North East Atlantic Marine Biological Association Quality Control scheme's (NMBAQC) best practice guidance document – Particle Size Analysis (PSA) for Supporting Biological Analysis: 2016 (Mason, 2016), and British Standards (BS)1377: Parts 1: 2016 and 2: 1990). Representative material > 1 mm was split from the bulk subsample and oven dried before being sieved through a series of sieves with apertures corresponding to 0.5 phi intervals between 63 mm and 1 mm as described by the Wentworth scale (Wentworth, 1922). The

weight of the sediment fraction retained on each mesh was subsequently measured and recorded.

Laser diffraction PSD analysis was undertaken in accordance with FGBML in-house methods based on Mason (2016), and BS International Organization for Standardization (ISO) 13320: 2020. Representative material < 1 mm was removed from the bulk subsample for laser analysis, with a minimum of three triplicate analyses performed using the laser sizer at 0.5 phi intervals between < 1 mm to < 0.98 µm. Laser diffraction was carried out using a Malvern Mastersizer 2000 with a Hydro 2000G dispersion unit.

3.2.1.2 Total Organic Carbon (TOC)

Sediment samples were analysed for TOC by Element Materials Technology. The dry, homogenised sample was treated with hydrochloric acid, then rinsed with deionised water to remove mineral carbon. The sample was then combusted at 900 °C in an Eltra TOC furnace/analyser in the presence of oxygen. Organic carbon was oxidised to CO_2 and measured by non-dispersive infrared analysis. This method does not quantify volatile organic carbon, which should be determined by another technique. The limit of detection for this method was < 0.02 % w/w.

3.2.2 Sediment Hydrocarbons

Sediment samples were analysed by Fugro. The sediment samples were analysed for hydrocarbon content including total hydrocarbon content (THC), total n-alkanes (nC_{12} to nC_{36}) and polycyclic aromatic hydrocarbons (PAHs), specifically the United States Environmental Protection Agency's 16 priority PAH pollutants (US EPA 16 PAHs).

Samples were extracted by ultrasonication of wet sediment with mixed solvents. The sample extracts were then cleaned up using absorption column chromatography. The extracts were analysed for THC, individual and total n-alkanes (nC_{12} to nC_{36}) and the subsequent carbon preference index (CPI) using gas chromatography-flame ionisation detection (GC-FID). Aromatic hydrocarbons were analysed by gas chromatography-mass spectrometry (GC-MS).

The distributions and concentrations of 2 to 6 ring PAHs within the samples were determined by GC-MS. Standard solutions containing an appropriate range and concentration of aromatic hydrocarbons were run to calibrate the instrument and acquire response factors for quantification purposes. Individual aromatic compounds were quantified using a series of deuterated internal standards. The total 2 to 6 ring PAH values for each sediment sample was calculated by summing the concentrations of individual aromatic compounds.

3.2.3 Sediment Metals

Sediment samples were analysed by RPS. The sediment samples were analysed using an aqua regia digest technique. This provides a strong partial digest, releasing into solution metals associated with the fines fraction within the sediments (but does not extract all trace elements associated with the coarse fraction). The concentrations of metals released by an

aqua regia digest are typically considered indicative of those influencing biological interactions, as the released metals are not incorporated into the mineral matrix and are therefore potentially available for biological uptake.

Sediment samples were dried at 40 °C and then sieved to the required size fraction (2000 µm). Samples were subjected to an aqua regia microwave digestion. The resulting digests were then analysed by inductively coupled plasma–mass spectrometry (ICP-MS) for aluminium, arsenic, cadmium, chromium, copper, lead, mercury, nickel, lithium and zinc. This method is accredited by the United Kingdom Accreditation Service (UKAS) and validated by the Marine Management Organisation (MMO).

3.2.4 Sediment Polychlorinated Biphenyls

Sediment samples were analysed by RPS. Ten grams of sample was spiked with internal standard and extracted by Accelerated Solvent Extraction with hexane:acetone, followed by copper and silica clean-up. Final extracts of 2 ml were analysed on GC-MS with EI source on a SIM/Scan method. The responses are quantified against a range of calibration standards. A method blank, and analytical quality control (AQC)/certified reference material (CRM) was extracted with the batch, results for all of which are within the acceptable quality criteria. This method is UKAS accredited and MMO validated.

3.2.5 Sediment Organotins

Sediment samples were analysed by RPS laboratory. Five grams of sample was spiked with Internal standard, and extracted with methanol:acetic acid, followed by Hexane and Acetone. The extract was derivatized with 2 % sodium tetraethyl borate (STEB) with a final clean-up on an alumina solid phase extraction cartridge and analysis by GC-MS/MS and reported as cations. Reponses were quantified against a range of derivatised calibration standards. One method blank, AQC and CRM was extracted with the batch along with derivatized calibration standards.

3.2.6 Sediment Organochlorine Pesticides

Sediment samples were analysed by RPS. Ten grams of sample was spiked with internal standard and extracted by ultrasonic method with dichloromethane (DCM):methanol, followed by copper and silica clean-up. Final extracts of 2 ml were run on single quad GC-MS with EI source on a SIM/Scan method. Responses are quantified against a range of calibration standards. A method blank and AQC/CRM was extracted with the batch, results for all of which are within the acceptable quality criteria. This method is not currently UKAS accredited.

3.2.7 Sediment Macrofauna

Samples were analysed at FGBML's benthic laboratory in accordance with Fugro in-house quality assured procedures, which are consistent with the requirements of the NMBAQC scheme (Worsfold et al., 2010) and the relevant ISO standards (details in Appendix B.2). Samples were sieved over a 1.0 mm mesh sieve and taxa were identified to the lowest

taxonomic level and enumerated. Sessile colonial epifauna was recorded as present (P). Taxa of doubtful identification due to damage of specimen or unresolved taxonomic status are indicated by a question mark preceding the genus (e.g. ?*Capitella*) or species (e.g. *Capitella* ?*capitata*) name.

Biomass was undertaken at phylum level for infaunal invertebrates from grab samples using the blotted wet weigh method; biomass was not undertaken on epifauna.

3.3 Data Analysis

Summary statistics (minimum, maximum, mean, standard deviation) for all reported datasets were derived in Excel. Statistics are based on the Folk and Ward (1957) method.

3.3.1 Sediment Particle Size Distribution Statistics

Data from the sieve and laser analysis were merged and entered in Gradistat version 8 (v8) (Blott, 2010) to derive statistics including cumulative percentage of each particle size passing through each sieve, percentage retained on each sieve stack, mean and median grain size, bulk sediment classes (percentage fines, sand and gravel), skewness and sorting coefficients, and Folk (1954) classification. Table 3.1 summarises the sediment PSD statistics that were calculated using Gradistat v8.

The Wentworth (1922) sediment classification is based on mean sediment particle size. The Folk (British Geological Survey (BGS) modified) classification (Long, 2006) is based on percentages of main sediment fractions (fines, sand and gravel). Results are reported in micron (µm) and phi (ϕ) measurement units. Phi is a logarithmic scale which allows particle size data to be expressed in unit of equal value for graphical plotting and statistical calculations; the scale is based on the relationship:

$Phi\ (\phi) = -log2d$, where d is the particle size diameter in mm.

Table 3.1: Sediment particle size distribution statistics

Statistic	Definition and Descriptive Terminology
Mean	The arithmetic mean of all the sediment particles in a sample; expressed in metric and phi units
Median	A measure of central tendency, that is the midpoint of the grain size distribution where half of the sediment grains resides above this point and half below
Mode	The peak of the frequency distribution, that is the particle size (or size range) most commonly found in the distribution
Modality	A measure of the number of peaks in the frequency distribution
Sorting	A measure of the grain size range and magnitude of their spread around the mean, presented as a coefficient and descriptor (as a range of values)
Skewness	A measure of the degree of symmetry, presented as a coefficient and descriptor (as a range of values)

3.3.2 Chemistry Normalisation of Sediment Data

Where appropriate and feasible, factors such as normalisation need to be considered in the assessments of contaminants (Cronin et al., 2006).

The transport and subsequent accumulation of contaminants in marine sediments is primarily driven by the hydrodynamics of the area of interest. High energy environments are characterised by relatively coarse-grained sediments with low cohesion, low contaminant binding capacity, and low depositional rates, whereas low energy environments have greater deposition of fine-grained sediments resulting in higher adherence capacity for contaminants. Hence, contaminant concentrations in muddy sediments tend to be more elevated than those in sandy sediments; consequently, spatial variance in pollutant levels may be related to variance in sediment composition (Birch et al., 2001; Loring, 1991; Loring & Rantala, 1992).

Assessments for contamination status are usually undertaken through comparison to data sets from site-specific contaminant background levels from sediments of different origins, including textural, physico-chemical, and compositional characteristics. Without correction for variable contaminant background levels and uptake capacity, such comparisons can be biased because anthropogenic inputs and natural sedimentary load can vary by several orders of magnitude (Loring & Rantala, 1992) even where only fine-grained sediments are analysed (Chapman et al., 1999).

Normalisation attempts to compensate for the natural variability of trace metals in sediments so that any anthropogenic metal contribution may be detected and quantified (Loring, 1991). Aluminium is the element most used for metal normalisation in marine sediment since it represents aluminosilicates, the main group of minerals generally found in the fine sediment fractions (Herut & Sandler, 2006).

Owing to their lipophilic nature, PAHs bind strongly to organic matter in sediments, consequently PAH data may be normalised to organic content to reduce the influence of differences in particle size distribution (and organic content) between samples (Davies, 2004).

In the OSPAR maritime area the marine sediment quality guidelines include Background Concentrations (BC) and Background Assessment Concentrations (BAC) (OSPAR, 2014). The BCs are defined as the concentration of a contaminant at a pristine or remote site based on contemporary or historical data. For naturally occurring substances, BCs are the concentrations found in uncontaminated locations in the OSPAR maritime area (North-East Atlantic) (OSPAR, 2009). The BACs have been statistically derived and are defined as values for testing whether the concentrations at a location are at, or close to, background (OSPAR, 2009). Both BCs and BACs are normalised to 2.5 % total organic carbon (TOC) for organic contaminants, such as PAHs, and 5 % aluminium for metals. The OSPAR BAC and BC guidelines were not referred to in this study as normalised concentrations would result in biased high values, owing to the low concentration of TOC and aluminium across the Dublin Array survey area (details in Sections 4.2.1 and 4.3.2).

3.3.3 Sediment Macrofauna Data Rationalisation

Prior to analysis, the macrofaunal dataset was rationalised. To avoid spurious enhancement of the species list, damaged taxa were removed whereas some taxa were merged with a higher corresponding taxon identified. Juveniles were also removed as they represent an ephemeral stage of the macrofaunal community and are, therefore, not representative of prevailing benthic conditions. Sessile colonial epifauna recorded as P was also removed prior to analysis and assessed separately from the enumerated data set.

3.3.4 Sediment Macrofaunal Univariate Analysis

Table 3.2 summarises the univariate statistics derived from Plymouth Routines in Multivariate Ecological Research (PRIMER) version 7 (v7).

Table 3.2: Macrofaunal univariate statistics

Statistic	Definition
Number of taxa (S)	Count of taxa
Abundance (N)	Count of individuals
Margalef's index of richness (d)	A measure of the number of species present for a given number of individuals (less dependent on sampling size than S and N)
Shannon-Wiener index of diversity ($H'log_2$)	A measure of the number of taxa in a sample and the distribution of abundance across these taxa; results were assessed in line with the threshold values in Dauvin et al. (2012): High diversity ($H'log_2 > 4.00$); Good diversity ($3.00 < H'log_2 < 4.00$); Moderate diversity ($2.00 < H'log_2 < 3.00$); Poor diversity ($1.00 < H'log_2 < 2.00$); Bad diversity ($H'log_2 < 1.00$).
Pielou's index of evenness (J)	A measure of how evenly distributed the individuals are among the different species
Simpsons index of dominance (λ)	A measure of dominance whereby its largest value corresponds to assemblages the total abundance of which is dominated by one or very few of the taxa present

3.3.5 Macrofaunal Biomass Analysis

The macrofaunal blotted wet weight biomass dataset was converted to ash free dry weight (AFDW) by applying the appropriate standard corrections, as outlined in Eleftheriou and Basford (1989). Table 3.3 summarises the corrections applied.

Table 3.3: Macrofaunal standard biomass corrections by phyla

Phyla	Standard Biomass Correction [%]
Annelida	15.5
Arthropoda	22.5
Mollusca	8.5
Echinodermata	8.0
Other Taxa	15.5
Notes Standard biomass corrections to convert blotted wet weight to ash free dry weight, from Eleftheriou & Basford (1989)	

3.3.6 Multivariate Analysis

Table 3.4 summarises the multivariate analysis undertaken for macrofaunal and sediment datasets in PRIMER v7 (Clarke & Gorley, 2015). Data transformation was undertaken prior to multivariate analysis, where deemed necessary, to reduce skewness of data and allow optimal performance of multivariate analysis.

Table 3.4: Multivariate statistics

Statistic	Definition
Cluster	Hierarchical clustering 'Cluster' analysis groups samples based on the nearest neighbour sorting of a matrix of sample similarities using Bray Curtis similarity (for biological datasets) or Euclidean distance measure (for environmental datasets)
Dendrogram and non-metric multidimensional scaling (nMDS)	Dendrogram and non-metric multidimensional scaling (nMDS) ordination are outputs of Bray Curtis and Euclidean Distance similarity/distance matrices. The dendrogram is a tree-like diagram illustrating the relationships between samples based on their level of similarity. The nMDS ordinates the samples in a two-dimensional plane where the more similar samples are, the nearer they are. The extent to which these relations can be adequately represented in a two-dimensional map is expressed as the stress coefficient statistic, low values (< 0.1) indicating a good ordination with no real prospect of misleading interpretation (Clarke et al., 2014). Used together, dendrogram and nMDS allow checking adequacy and mutual consistency of both representations to ensure correct interpretation
SIMPER	Similarity Percentage analysis gauges the distinctiveness of each of the multivariate groups of samples, by listing the species that most contribute to the multivariate group in terms of abundance and frequency of occurrence
SIMPROF	Similarity profiling (SIMPROF test), to identify statistically significant sample groupings from the cluster analysis, depicted as red lines; the PRIMER default significance level of 5 % was adopted; in ecological terms the statistical relevance of SIMPROF was assessed in line with the recommendation of Clarke et al. (2008), thus '*defining coarser grouping can be appropriate if the resulting groups are always supersets of the similarity profile groups*'
PCA	Principal component analysis (PCA), to identify multidimensional patterns and relationships between variables, subsequently compressed by reducing the number of dimensions without loss of information. The degree to which a 2D PCA succeeds in representing the full multidimensional information is in the percentage of the total variance expressed by the first two principal component axes. A picture which accounts for as much as 70 % to 75 % of the original variation describes the overall structure well (Clarke et al., 2014)
BIOENV	Identifies relationships between biological and environmental variables; available in PRIMER v7 as BEST, which amalgamates the Bio-Env and Stepwise procedures, and allows to evaluate the strength of association between the variables tested and the significance level

3.3.7 Seabed Habitats and Biotopes

Habitats and biotopes within the survey area were classified in line with the hierarchical European Nature Information System (EUNIS) habitat classification (EEA, 2019), which has compiled criteria for habitat identification across Europe into a single database. Table 3.5 summarises the EUNIS hierarchy, with an example of the coding system. Habitats and biotopes were classified by integrating the results of the grab sampling, detailed in this report, with the results of the video and still image analysis, detailed in the Environmental Features Report (Fugro, 2021a). Habitats and biotopes were subsequently assessed for their ecological and conservation importance drawing upon the current marine nature conservation legislation.

Table 3.5: EUNIS (2019) biotope classification hierarchy example

Level	Example Classification Name	Example Classification Code
1. Environment	Marine habitats	A
2. Broad habitat types	Sublittoral sediments	A5
3. Main habitats	Sublittoral sand	A5.2
4. Biotope complexes	Infralittoral fine sand	A5.23
5. Biotopes	*Nephtys cirrosa* and *Bathyporeia* spp. in infralittoral sand	A5.233

3.3.8 Sensitive Habitats and Species

Habitats were assessed for their conservation status using the Annex I habitat list (Joint Nature Conservation Committee [JNCC], n.d.). Sensitive habitats such as stony reefs were assessed in line with the criteria outlined in Irving (2009) and Golding et al. (2020) as detailed in the Environmental Features Report (Fugro 2021a).

Species were assessed for their conservation status using the Annex II species list (JNCC, n.d) and the OSPAR list of threatened and/or declining species and habitats (OSPAR, 2021). The International Union for Conservation of Nature [IUCN] red list of threatened species (IUCN, 2021) was also consulted, although the latter is not a list of conservation priorities, rather a comprehensive inventory of the global conservation status of species and is used to assist with decision making about conserving biodiversity at local and global levels.

4. Results

4.1 Field Operations

4.1.1 Bathymetry

Depths along the export cable routes ranged from 0 m LAT to 31.9 m LAT, to the north of the survey area, and from −1.7 m LAT to 31.8 m LAT to the south of the survey area.

Depths across the array ranged from 3.4 m LAT to 64.3 m LAT.

4.1.2 Seabed Photography

Photographic stills and video were successfully acquired at 29 of the 30 proposed stations. Thirteen stations were re-run due to technical issues or poor visibility and were renamed with the suffix A (or B if an additional attempt was made). Station ST25 was not attempted due to the presence of fishing gear. The video quality at station ST10 was reduced due to poor visibility but the data was deemed acceptable and a re-run was not required. An additional camera transect at station ST12, to investigate the extent and distribution of features, could not be undertaken due to poor visibility and presence of boulders. Table 4.1 presents a summary of the photographic data acquired.

Results of the seabed photography are detailed in the Environmental Features Report (Fugro, 2021a).

Table 4.1: Completed camera transects, Dublin Array

Geodetic Parameters: WGS 84 Zone 29N [m]; [EPSG 32629]						
Station		Easting	Northing	Depth [m BSL]	Length [m]	Data Acquisition
ST01A	SOL	689 109.9	5 912 643.4	6.0	65.9	4 mins 10 secs 20 stills
	EOL	689 086.1	5 912 704.8			
ST02B	SOL	691 742.8	5 911 194.8	12.0	90.3	10 mins 19 secs 25 stills
	EOL	691 714.2	5 911 280.5			
ST03	SOL	694 387.2	5 909 673.4	26.0	93.2	6 mins 24 secs 22 stills
	EOL	694 354.7	5 909 760.8			
ST04	SOL	698 053.0	5 907 931.3	26.5	83.1	5 mins 25 secs 26 stills
	EOL	697 970.1	5 907 937.5			
ST05	SOL	700 945.7	5 907 996.7	26.0	92.3	11 mins 44 secs 31 stills
	EOL	700 923.0	5 907 907.2			
ST06	SOL	701 256.2	5 906 553.3	27.0	90.3	8 mins 17 secs 24 stills
	EOL	701 287.9	5 906 468.7			

Geodetic Parameters: WGS 84 Zone 29N [m]; [EPSG 32629]						
Station		Easting	Northing	Depth [m BSL]	Length [m]	Data Acquisition
ST07	SOL	702 236.6	5 904 403.8	27.5	86.0	8 mins 39 secs 51 stills
	EOL	702 272.1	5 904 325.5			
ST08A	SOL	699 814.1	5 904 368.7	29.0	95.9	5 mins 50 secs 20 stills
	EOL	699 766.9	5 904 285.2			
ST09	SOL	701 839.3	5 902 247.1	26.3	83.6	9 mins 42 secs 27 stills
	EOL	701 762.2	5 902 279.3			
ST10A	SOL	698 895.4	5 902 557.5	33.0	71.9	6 mins 58 secs 12 stills
	EOL	698 882.6	5 902 628.3			
ST11	SOL	695 242.8	5 903 509.4	15.0	81.6	7 mins 40 secs 17 stills
	EOL	695 225.6	5 903 589.2			
ST12A	SOL	694 010.8	5 901 825.6	13.5	84.1	10 mins 8 secs 38 stills
	EOL	693 987.5	5 901 906.4			
ST13	SOL	696 407.2	5 901 789.5	20.0	115.5	8 mins 36 secs 26 stills
	EOL	696 410.8	5 901 904.9			
ST14	SOL	699 469.3	5 900 121.0	32.0	94.5	5 mins 49 secs 10 stills
	EOL	699 519.1	5 900 136.2			
ST15	SOL	702 235.5	5 899 396.3	27.0	81.8	7 mins 15 secs 24 stills
	EOL	702 305.2	5 899 353.5			
ST16A	SOL	704 280.6	5 909 452.0	5.2	112.6	7 mins 49 secs 38 stills
	EOL	704 203.5	5 909 534.1			
ST17A	SOL	704 901.3	5 907 442.1	6.5	69.3	4 mins 59 secs 23 stills
	EOL	704 891.1	5 907 510.6			
ST18A	SOL	705 305.6	5 904 673.2	10.7	83.3	7 mins 47 secs 37 stills
	EOL	705 259.8	5 904 742.8			
ST19A	SOL	705 686.4	5 901 356.6	16.5	133.4	10 mins 8 secs 8 stills
	EOL	705 698.1	5 901 489.5			
ST20A	SOL	706 755.0	5 898 672.7	16.0	87.8	8 mins 32 secs 28 stills
	EOL	706 751.2	5 898 760.4			
ST21A	SOL	706 431.1	5 896 308.0	7.0	14.9	8 mins 38 secs 14 stills
	EOL	706 434.9	5 896 293.6			
ST22A	SOL	691 086.1	5 913 547.0	9.0	62.8	5 mins 25 secs 19 stills
	EOL	691 071.6	5 913 608.1			

Geodetic Parameters: WGS 84 Zone 29N [m]; [EPSG 32629]						
Station		Easting	Northing	Depth [m BSL]	Length [m]	Data Acquisition
ST23B	SOL	693 424.7	5 911 991.8	15.0	85.8	6 mins 44 secs 26 stills
	EOL	693 427.6	5 912 077.6			
ST24	SOL	696 154.9	5 910 158.8	28.1	95.6	5 mins 11 secs 15 stills
	EOL	696 155.5	5 910 254.4			
ST26	SOL	698 369.2	5 897 713.9	30.0	66.8	4 mins 5 secs 20 stills
	EOL	698 377.0	5 897 780.2			
ST27	SOL	700 923.6	5 896 794.1	39.0	74.7	4 mins 44 secs 9 stills
	EOL	700 863.8	5 896 838.8			
ST28	SOL	706 922.0	5 907 831.3	34.0	138.4	12 mins 44 secs 41 stills
	EOL	706 927.9	5 907 693.0			
ST29	SOL	708 853.7	5 903 144.0	40.0	88.8	6 mins 35 secs 21 stills
	EOL	708 850.6	5 903 232.7			
ST30	SOL	709 174.3	5 897 637.5	34.5	76.3	7 mins 3 secs 22 stills
	EOL	709 182.8	5 897 713.3			
Notes BSL = Below sea level SOL = Start of line EOL = End of line						

4.1.3 Seabed Sampling

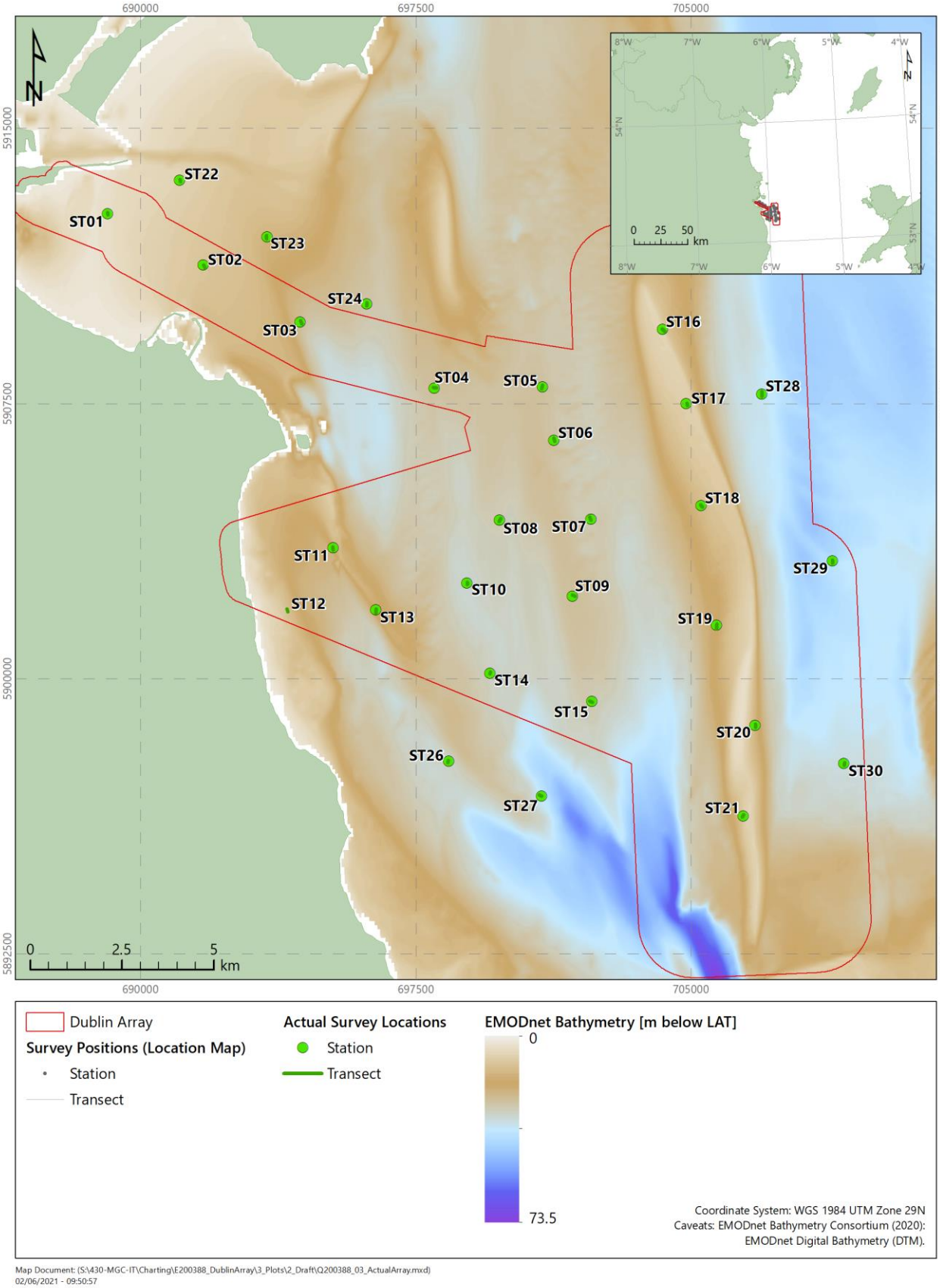
Grab samples were successfully acquired at 28 of the 30 proposed stations. Sampling at station ST25 was not attempted due to the presence of fishing gear and station ST12 was not attempted due to the presence of boulders. A complete suite of samples (one macrofauna and one PSD sample) was retained at all 28 stations. Samples for contaminant analysis, such as heavy metal (HM) and hydrocarbon (HC) were acquired at 15 stations. Table 4.2 details the samples acquired.

Table 4.2: Completed sediment sampling stations, Dublin Array

Geodetic Parameters: WGS 84 Zone 29N [m]; [EPSG 32629]				
Station	Easting	Northing	Depth [m] BSL	Sample Acquisition
ST01	689 097.3	5 912 673.9	6.0	FA, PSD, HC, HM
ST02	691 697.7	5 911 273.8	12.0	FA, PSD
ST03	694 343.3	5 909 723.1	26.0	FA, PSD, HC, HM
ST04	697 996.9	5 907 909.1	26.5	FA, PSD
ST05	700 945.6	5 907 946.9	26.0	FA, PSD, HC, HM
ST06	701 262.2	5 906 490.8	27.0	FA, PSD

Geodetic Parameters: WGS 84 Zone 29N [m]; [EPSG 32629]				
Station	Easting	Northing	Depth [m] BSL	Sample Acquisition
ST07	702 268.0	5 904 344.6	27.5	FA, PSD, HC, HM
ST08	699 780.8	5 904 322.1	29.0	FA, PSD, HC, HM
ST09	701 759.6	5 902 242.6	26.3	FA, PSD
ST10	698 890.0	5 902 608.7	33.0	FA, PSD
ST11	695 240.7	5 903 562.4	15.0	FA, PSD, HC, HM
ST13	696 407.5	5 901 879.5	13.5	FA, PSD, HC, HM
ST14	699 514.1	5 900 150.9	20.0	FA, PSD, HC, HM
ST15	702 295.0	5 899 386.1	32.0	FA, PSD, HC, HM
ST16	704 217.4	5 909 515.0	27.0	FA, PSD, HC, HM
ST17	704 864.0	5 907 496.9	5.2	FA, PSD
ST18	705 266.0	5 904 716.3	6.5	FA, PSD
ST19	705 692.5	5 901 456.9	10.7	FA, PSD, HC, HM
ST20	706 745.3	5 898 724.0	16.5	FA, PSD
ST21	706 418.1	5 896 261.4	16.0	FA, PSD, HC, HM
ST22	691 052.7	5 913 586.6	7.0	FA, PSD
ST23	693 434.2	5 912 045.8	9.0	FA, PSD, HC, HM
ST24	696 159.4	5 910 212.4	15.0	FA, PSD, HC, HM
ST26	698 390.0	5 897 752.0	28.1	FA, PSD, HC, HM
ST27	700 923.2	5 896 803.1	30.0	FA, PSD
ST28	706 925.8	5 907 756.2	39.0	FA, PSD
ST29	708 849.7	5 903 204.3	34.0	FA, PSD
ST30	709 165.4	5 897 684.7	40.0	FA, PSD

Notes:
BSL = Below sea level
FA = Faunal sample A
PSD = Particle size distribution sample
HC = Hydrocarbon sample
HM = Heavy metal sample



Notes
LAT = Lowest Astronomical Tide

Figure 4.1: Completed survey locations overlaid on bathymetry, Dublin Array

4.2 Sediment Characterisation

4.2.1 Univariate Analysis

Tables 4.3 and 4.4 present the particle size characteristics and sediment particle distribution, respectively, across the Dublin Array survey area. Figure 4.2 present the spatial distribution of gravel, sand and fines. Figure 4.3 presents an overview of the variations of the fractional composition of the sediments. Figure 4.4 presents the spatial variation of the median sediment particle size. Figure 4.5 present the Folk (BGS modified) sediment classes. Figure 4.6 presents the Wentworth description of sediments across the survey area. Appendix D presents the histograms of particle size class summary for each station.

The TOC content was below the minimum reporting value (MRV; 0.02 %) at stations ST13, ST16 and ST21. At the remaining stations the TOC content was between 0.05 % (station ST19) and 1.43 % (station ST03), with a mean of 0.23 % across the survey area (Table 4.3).

The carbonate content ranged from 4.49 % (station ST16) to 25.0 % (station ST14), with a mean of 13.0 % across the survey area.

Sediment across the survey area was predominantly sandy, the sand content ranging from 72.96 % (station ST15) to 100.00 % (station ST16), with a mean of 90.55 %. Gravel was absent from station ST16 and at the remaining stations, the gravel content ranged from 0.03 % (station ST11) to 22.04 % (station ST15), with a mean of 5.24 %. Stations ST14, ST27, ST29 and ST30 had relatively high proportions of gravel, with a content of between 12.12 % and 18.66 %. Nine stations were devoid of fines, and at the remaining stations, the fines content ranged from 0.10 % (station ST22) to 18.01 % (station ST03), with a mean of 4.21 %. Stations ST04, ST23 and ST24 had relatively high proportions of fines, with a content of between 10.32 % and 17.93 % (Table 4.3 and Figure 4.2). Of the fines, the silt content was higher than the clay content (Table 4.3 and Figure 4.3).

Three sediment classes were identified using the Folk (BGS modified) classification, including 'sand' which typified 12 stations, 'muddy sand' which typified four stations, and 'gravelly sand' which typified 12 stations (Table 4.3 and Figure 4.5).

Of the 28 stations investigated, 23 had unimodal distributions, two had bimodal distributions and three had polymodal distributions (Table 4.4). The most frequently occurring peak in the first mode was the 301.8 µm sediment particle size (medium sand), followed by the 213.4 µm and the 150.9 µm particle sizes (fine sand). The 426.8 µm (medium sand) and the 603.6 µm (coarse sand) sediment particle sizes were also recorded in the first mode albeit with lower frequency of occurrence, by comparison. The second mode comprised the 13 600.0 µm sediment particle size (medium pebbles), which typified two stations, the 2400.0 µm and 3400.0 µm (granule) and the 4800.0 µm (fine pebble) sediment particle sizes, each typifying one station. The 2400.0 µm sediment particle size also featured in the third mode along with the 6800.0 µm (fine pebble) and the 853.6 µm (coarse sand) (Appendix D).

The median sediment particle size was between 125 µm (fine sand) (station ST24) and 593 µm (medium sand) (station ST21) (Table 4.4 and Figure 4.4).

The mean sediment particle size underpinned the Wentworth description, through which four sediment classes were identified including 'medium sand', which typified 15 stations, 'fine sand', which typified seven stations, 'coarse sand', which typified four stations, and 'very fine sand' which typified two stations (Table 4.4 and Figure 4.6).

Of the 28 stations investigated, 12 had poorly sorted sediments, eight had moderately well sorted sediments, four had very poorly sorted sediments, three had well sorted sediments and one had a moderately sorted sediment. Sediment distribution was symmetrical at 13 stations, very coarse skewed at six stations, coarse skewed at five stations, very fine skewed at three stations and fine skewed at one station (Table 4.4).

Table 4.3: Summary of sediment characteristics, Dublin Array

Station	TOC [%]	Carbonate [%]	Fractional Composition			Fines		Folk Description (BGS modified)
			Gravel [%]	Sand [%]	Fines [%]	Silt [%]	Clay [%]	
ST01	0.09	13.3	2.31	97.39	0.30	0.30	0.00	Sand
ST02	-	-	0.12	95.69	4.19	3.06	1.14	Sand
ST03	1.43	17.6	4.02	77.97	18.01	12.65	5.36	Muddy sand
ST04	-	-	0.69	88.99	10.32	7.23	3.09	Muddy sand
ST05	0.06	13.5	8.41	90.23	1.36	1.16	0.21	Gravelly sand
ST06	-	-	2.71	95.29	1.99	1.60	0.40	Sand
ST07	0.06	10.6	0.89	99.11	0.00	0.00	0.00	Sand
ST08	0.14	15.8	6.47	89.63	3.90	3.00	0.90	Gravelly sand
ST09	-	-	6.74	90.38	2.88	2.32	0.57	Gravelly sand
ST10	-	-	9.60	84.94	5.46	3.83	1.64	Gravelly sand
ST11	0.06	7.31	0.03	99.97	0.00	0.00	0.00	Sand
ST13	< 0.02	7.37	0.20	99.80	0.00	0.00	0.00	Sand
ST14	0.19	25.0	18.66	77.04	4.30	3.17	1.13	Gravelly sand
ST15	0.19	12.9	22.04	72.96	5.00	3.51	1.49	Gravelly sand
ST16	< 0.02	4.49	0.00	100.00	0.00	0.00	0.00	Sand
ST17	-	-	0.10	99.90	0.00	0.00	0.00	Sand
ST18	-	-	0.83	99.17	0.00	0.00	0.00	Sand
ST19	0.05	14.1	7.73	92.27	0.00	0.00	0.00	Gravelly sand
ST20	-	-	0.09	99.91	0.00	0.00	0.00	Sand
ST21	< 0.02	11.0	1.35	98.65	0.00	0.00	0.00	Sand
ST22	-	-	0.50	99.41	0.10	0.10	0.00	Sand

Station	TOC [%]	Carbonate [%]	Fractional Composition			Fines		Folk Description (BGS modified)
			Gravel [%]	Sand [%]	Fines [%]	Silt [%]	Clay [%]	
ST23	0.24	11.1	0.07	84.63	15.30	10.59	4.71	Muddy sand
ST24	0.51	14.2	0.07	82.00	17.93	12.75	5.18	Muddy sand
ST26	0.34	16.4	5.12	88.18	6.69	4.40	2.30	Gravelly sand
ST27	-	-	13.79	81.19	5.01	3.51	1.51	Gravelly sand
ST28	-	-	7.06	90.12	2.82	2.36	0.46	Gravelly sand
ST29	-	-	12.12	80.14	7.74	5.30	2.44	Gravelly sand
ST30	-	-	14.97	80.45	4.58	3.32	1.26	Gravelly sand
Minimum	**< 0.02**	**4.49**	**0.00**	**72.96**	**0.00**	**0.00**	**0.00**	
Maximum	**1.43**	**25.0**	**22.04**	**100.00**	**18.01**	**12.75**	**5.36**	
Median	**0.09**	**13.3**	**2.51**	**90.31**	**2.85**	**2.34**	**0.51**	-
Mean	**0.23**	**13.0**	**5.24**	**90.55**	**4.21**	**3.01**	**1.21**	
Standard Deviation	**0.361**	**4.91**	**6.22**	**8.45**	**5.34**	**3.73**	**1.62**	

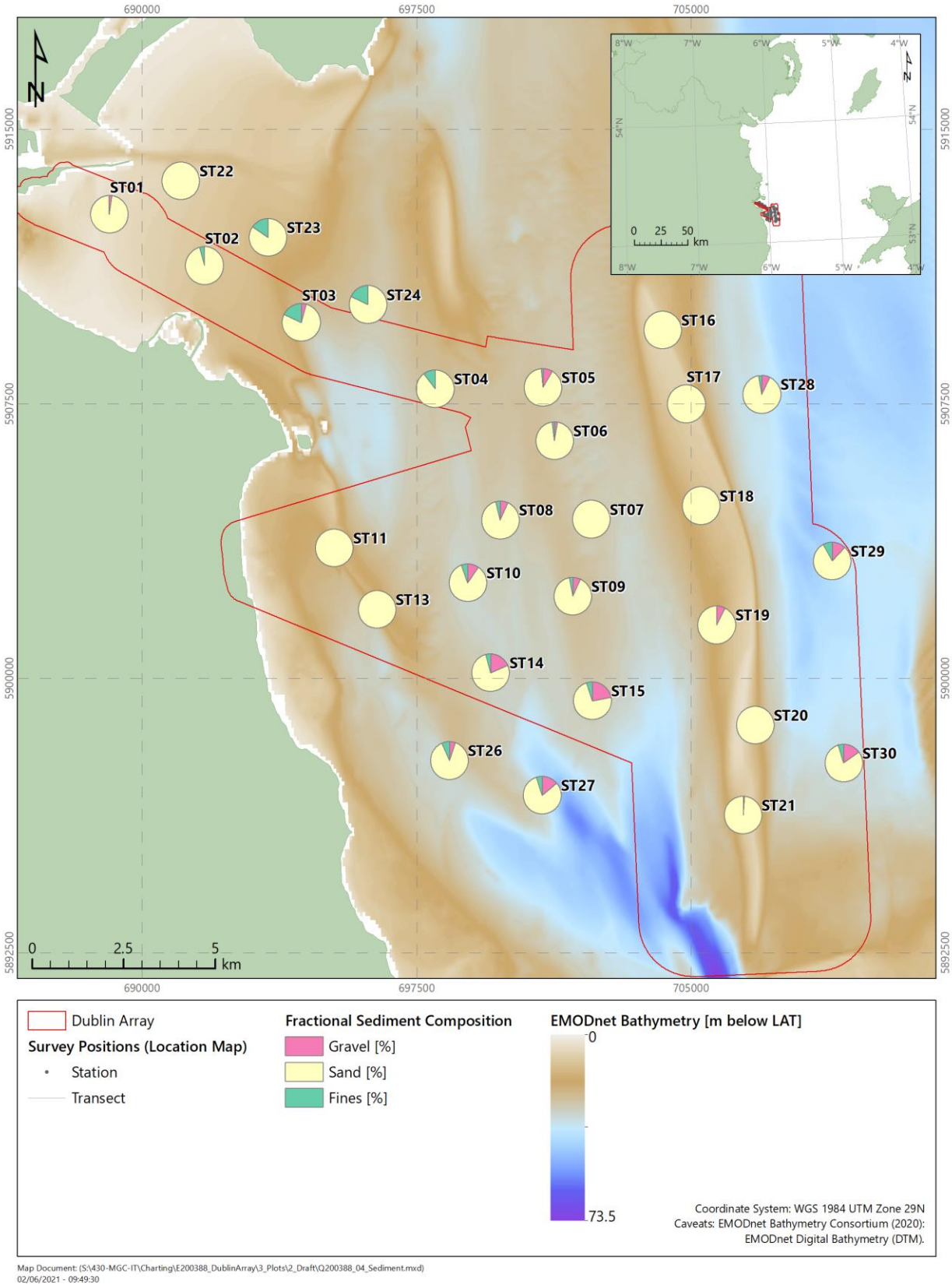
Notes
TOC = Total organic carbon
BGS = British Geological Survey
Fines = Silt and clay content
Silt = < 4.0 phi to +8.0 phi (<62.5 µm to 3.9 µm)
Clay = < 8.0 phi to +10.0 phi (<3.9 µm to 0.98 µm)
Values below the minimum reporting value (MRV) have been treated as equal to ½ the value of MRV to derive the summary statistics

Table 4.4: Summary of particle size distribution, Dublin Array

Station	Modality	Median [µm]	Mean Particle Size			Sorting Coefficient		Skewness	
			[µm]	[phi]	Wentworth (1922) Description	[µm]	Description	[µm]	Description
ST01	Unimodal	137	138	2.86	Fine sand	1.45	Moderately well sorted	0.02	Symmetrical
ST02	Unimodal	148	147	2.77	Fine sand	1.51	Moderately well sorted	−0.08	Symmetrical
ST03	Unimodal	172	134	2.90	Fine sand	4.36	Very poorly sorted	−0.30	Very fine skewed
ST04	Unimodal	211	208	2.27	Fine sand	2.68	Poorly sorted	−0.29	Fine skewed
ST05	Unimodal	414	437	1.19	Medium sand	2.40	Poorly sorted	0.26	Coarse skewed
ST06	Unimodal	325	335	1.58	Medium sand	1.88	Moderately sorted	0.12	Coarse skewed
ST07	Unimodal	247	249	2.01	Fine sand	1.44	Moderately well sorted	0.05	Symmetrical
ST08	Unimodal	253	265	1.92	Medium sand	2.18	Poorly sorted	0.28	Coarse skewed
ST09	Unimodal	503	514	0.96	Coarse sand	2.32	Poorly sorted	0.09	Symmetrical
ST10	Unimodal	309	345	1.54	Medium sand	3.53	Poorly sorted	0.15	Coarse skewed
ST11	Unimodal	321	324	1.62	Medium sand	1.37	Well sorted	0.02	Symmetrical
ST13	Unimodal	325	333	1.59	Medium sand	1.33	Well sorted	0.03	Symmetrical
ST14	Polymodal	383	551	0.86	Coarse sand	3.82	Poorly sorted	0.38	Very coarse skewed
ST15	Polymodal	322	540	0.89	Coarse sand	4.19	Very poorly sorted	0.43	Very coarse skewed
ST16	Unimodal	309	310	1.69	Medium sand	1.37	Well sorted	−0.01	Symmetrical
ST17	Unimodal	370	373	1.42	Medium sand	1.46	Moderately well sorted	0.00	Symmetrical
ST18	Unimodal	393	395	1.34	Medium sand	1.45	Moderately well sorted	0.00	Symmetrical
ST19	Unimodal	302	319	1.65	Medium sand	2.21	Poorly sorted	0.36	Very coarse skewed
ST20	Unimodal	256	259	1.95	Medium sand	1.47	Moderately well sorted	0.03	Symmetrical
ST21	Unimodal	593	589	0.76	Coarse sand	1.54	Moderately well sorted	0.00	Symmetrical
ST22	Unimodal	144	144	2.79	Fine sand	1.43	Moderately well sorted	−0.01	Symmetrical

Station	Modality	Median [µm]	Mean Particle Size			Sorting Coefficient		Skewness	
			[µm]	[phi]	Wentworth (1922) Description	[µm]	Description	[µm]	Description
ST23	Unimodal	132	122	3.04	Very fine sand	2.56	Poorly sorted	−0.42	Very fine skewed
ST24	Unimodal	125	108	3.21	Very fine sand	2.78	Poorly sorted	−0.45	Very fine skewed
ST26	Unimodal	229	235	2.09	Fine sand	2.86	Poorly sorted	−0.02	Symmetrical
ST27	Bimodal	255	365	1.45	Medium sand	4.08	Very poorly sorted	0.42	Very coarse skewed
ST28	Unimodal	293	309	1.69	Medium sand	2.21	Poorly sorted	0.32	Very coarse skewed
ST29	Polymodal	200	277	1.85	Medium sand	4.93	Very poorly sorted	0.27	Coarse skewed
ST30	Bimodal	263	409	1.29	Medium sand	3.59	Poorly sorted	0.52	Very coarse skewed
Minimum	-	**125**	**108**	**0.76**	-	**1.33**	-	**−0.45**	-
Maximum		**593**	**589**	**3.21**	-	**4.93**	-	**0.52**	-
Median		**278**	**315**	**1.67**		**2.21**		**0.03**	
Mean		**283**	**312**	**1.83**		**2.44**		**0.08**	
Standard Deviation		**112**	**135**	**0.69**		**1.09**		**0.25**	

Notes
Statistics based on Folk and Ward (1957) method derived in Gradistat (Blott, 2010)



Notes
LAT = Lowest Astronomical Tide

Figure 4.2: Spatial variations of percentage of sand gravel and fines, Dublin Array

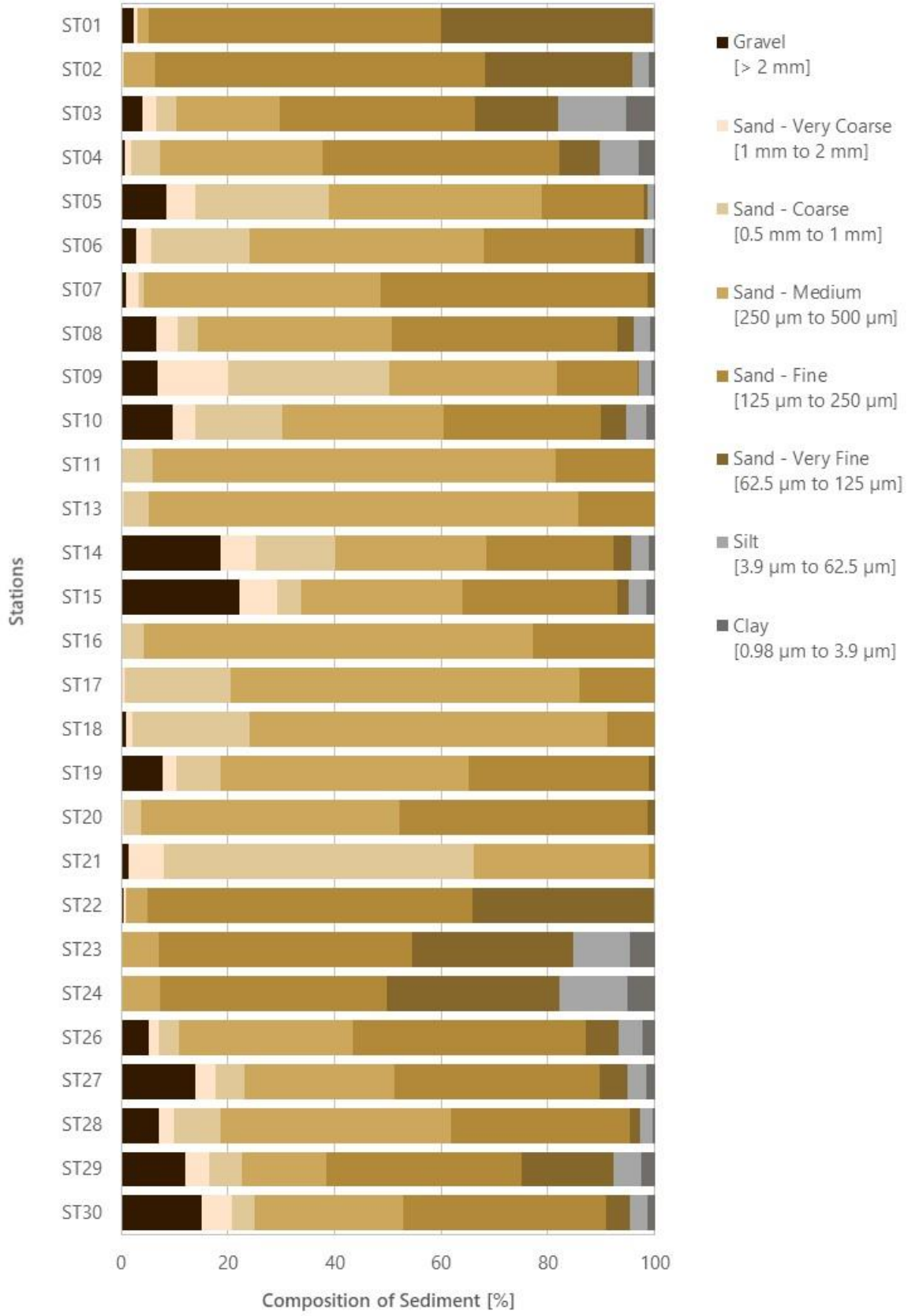
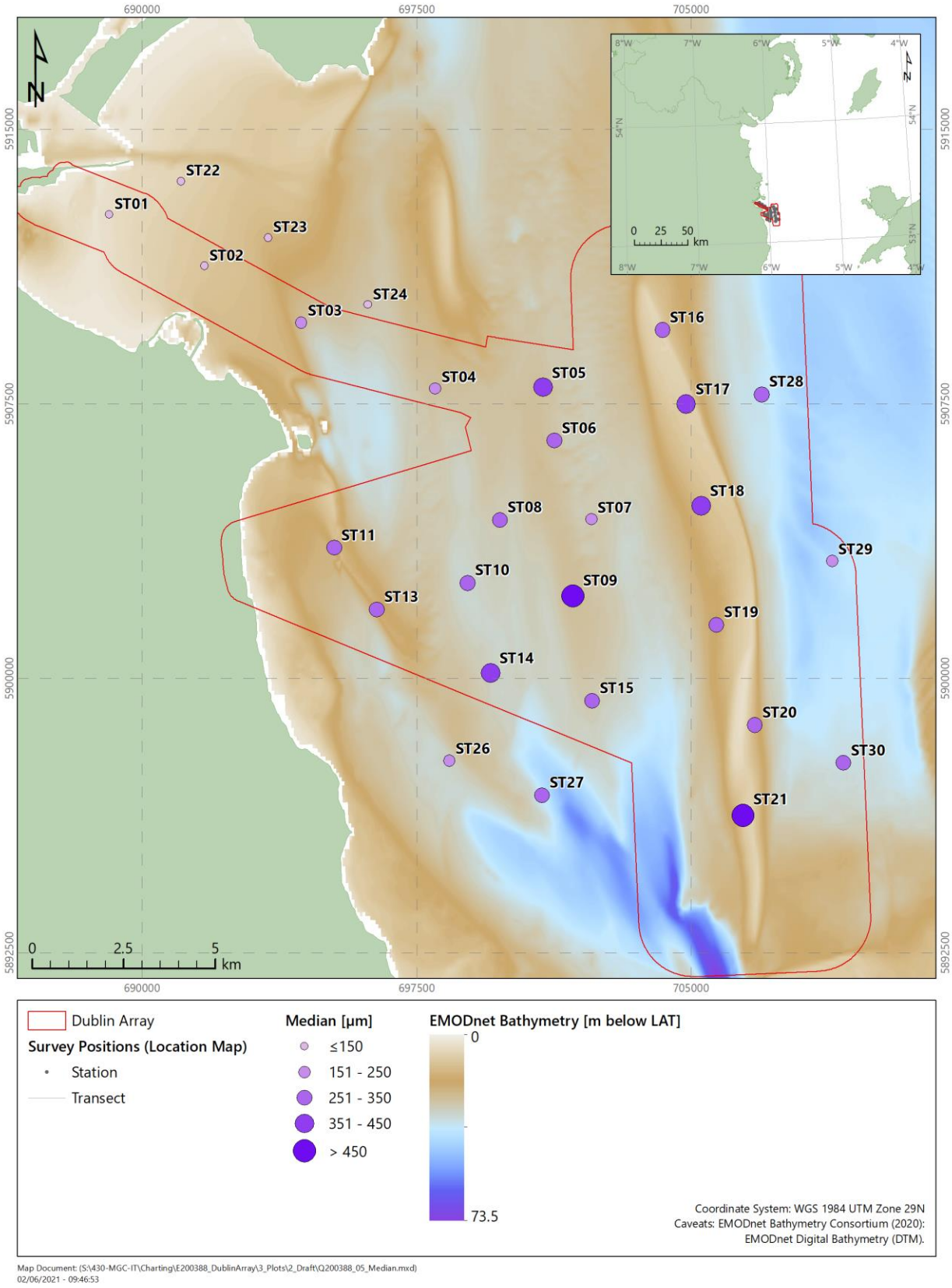
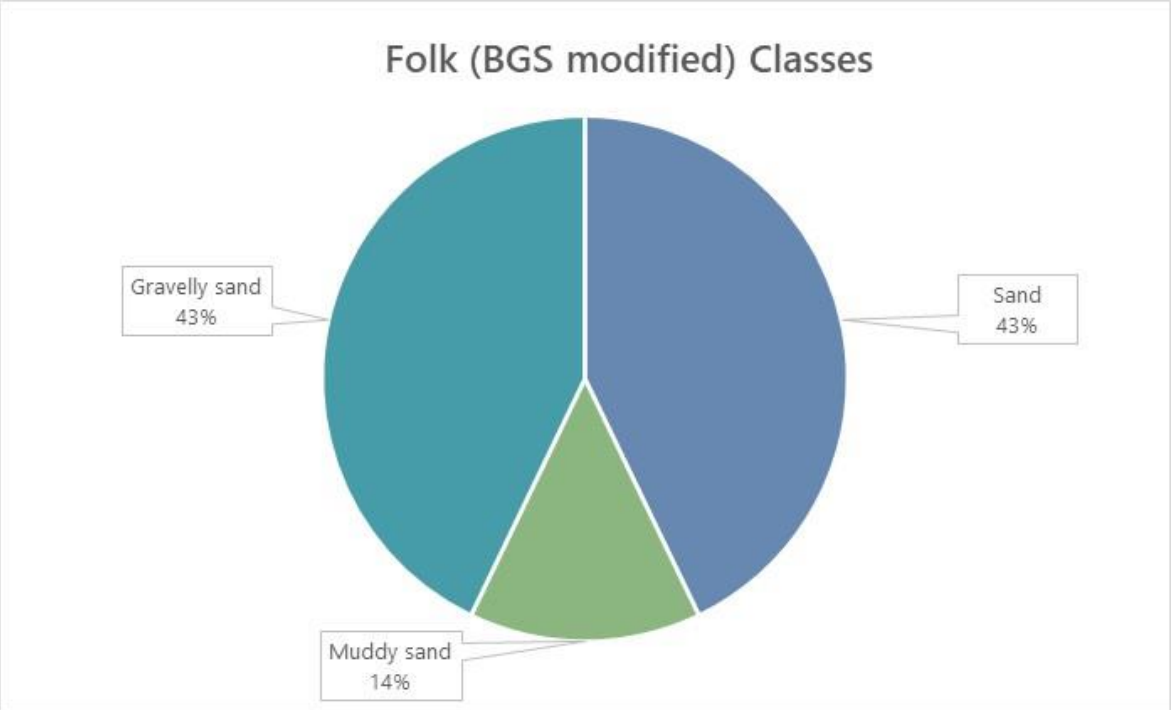


Figure 4.3: Sediment fractional composition, Dublin Array



Notes
LAT = Lowest Astronomical Tide

Figure 4.4: Spatial variations of the median [µm], Dublin Array



Notes
BGS = British Geological Survey

Figure 4.5: Folk (BGS modified) sediment classes, Dublin Array

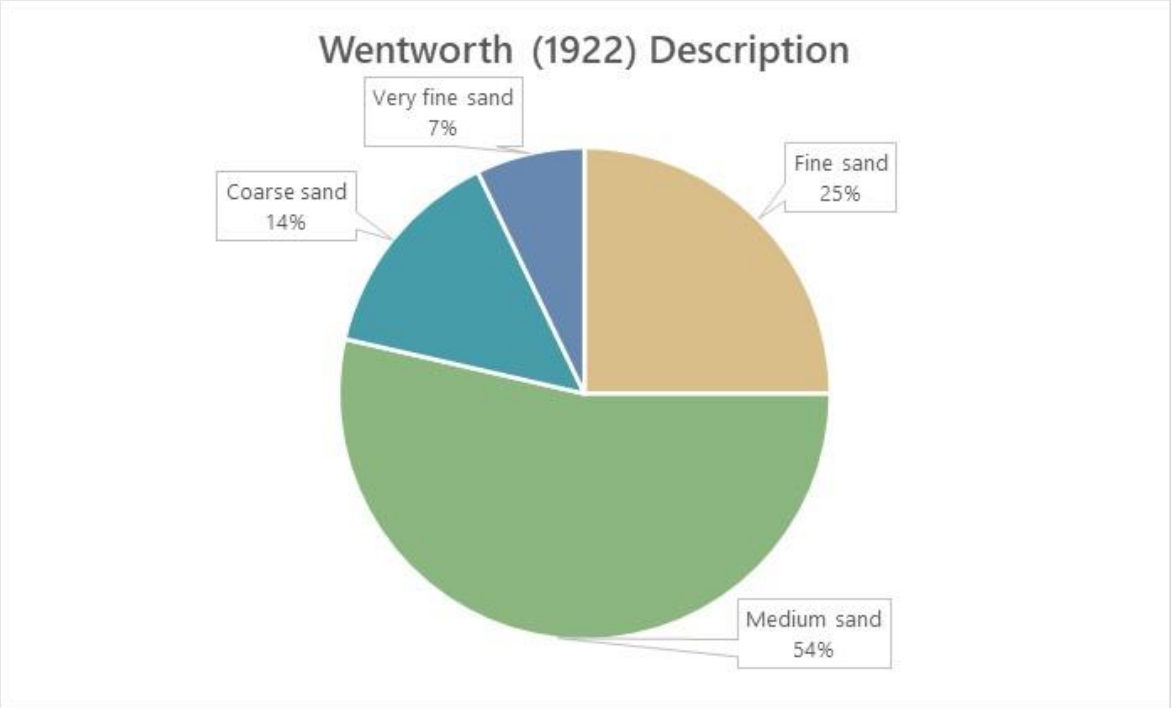


Figure 4.6: Wentworth (1922) sediment description, Dublin Array

4.2.2 Investigation of Granulometric Similarities

The cluster analysis, using Euclidean distance, was applied to the sediment PSD to investigate sedimentological characteristics. Data were fourth root transformed. The SIMPROF test, undertaken in conjunction with the cluster analysis, was interpreted in ecological terms and,

where appropriate, coarser groups were created (Section 3.3.6). Figure 4.7 presents the dendrogram and the nMDS of the Euclidean distance matrix of sediment particle size.

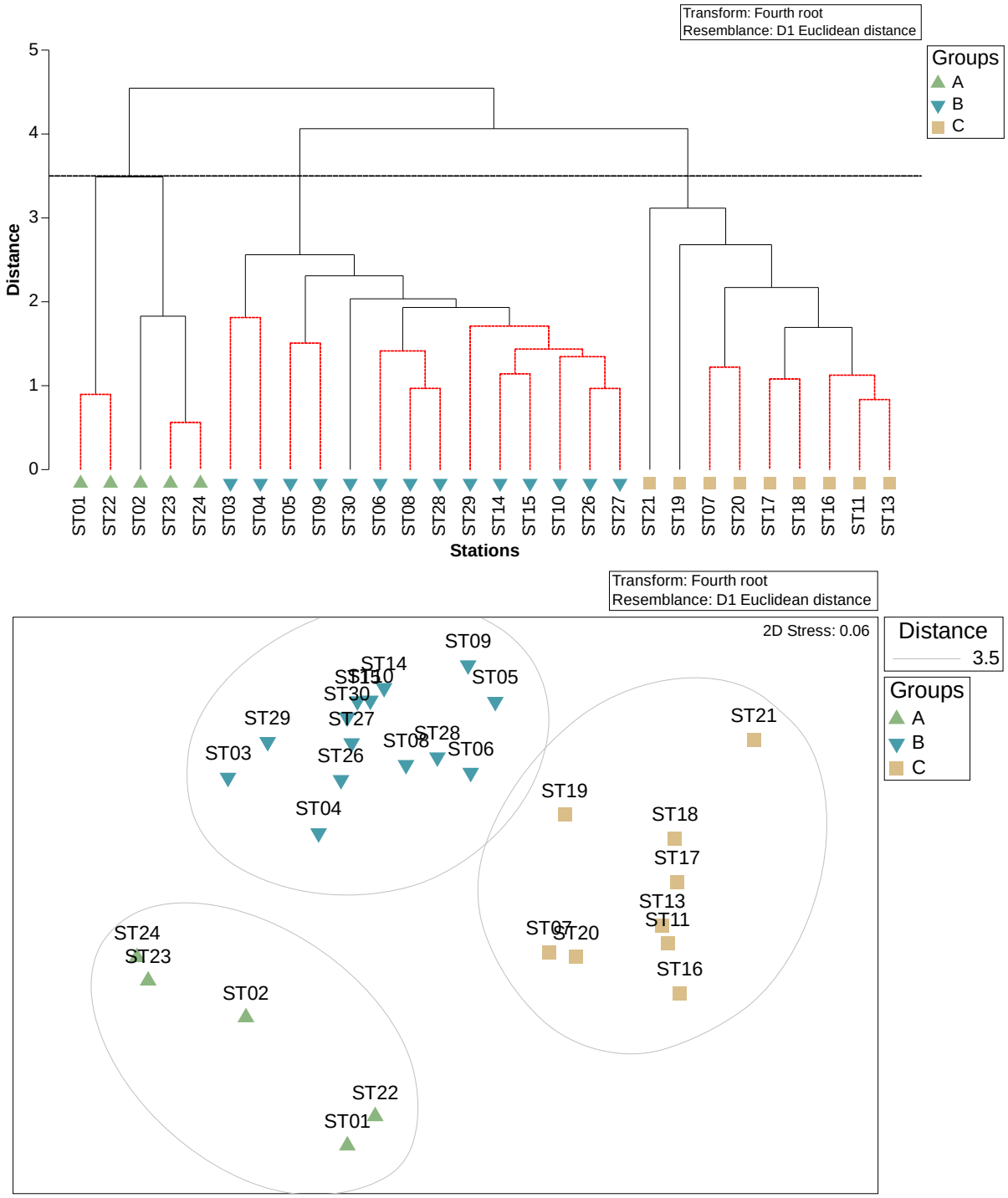


Figure 4.7: (A) dendrogram and (B) nMDS of hierarchical clustering analysis of sediment particle size, Dublin Array

Three multivariate groups (A, B and C), were identified at the Euclidean distance of 3.5. Each group was split into further groups and single stations through the SIMPROF test, at Euclidean distances of 1.8 or less. These groups were not deemed of ecological significance. Table 4.5 summarises the characteristics of the multivariate groups which included:

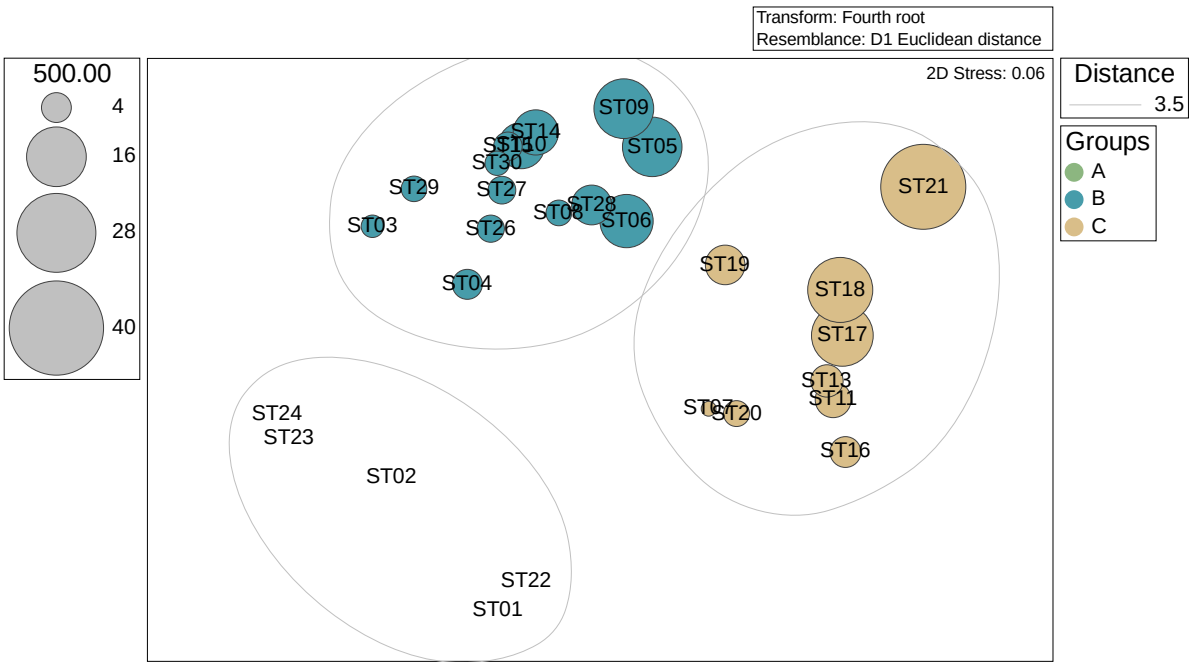
- Group A comprised five stations and had the highest average squared Euclidean distance (4.13); it was characterised by moderately sorted sand (Folk BGS modified) with a median sediment particle size ranging from 125 µm to 148 µm, mean of 137 µm (fine sand), in water depth of 6 m to 15 m, mean of 9.8 m;
- Group B comprised 14 stations and had the lowest average squared Euclidean distance (2.34); it was characterised by poorly sorted gravelly sand (Folk BGS modified) with a median sediment particle size ranging from 172 µm to 503 µm, mean of 295 µm (medium sand), in water depth of 20 m to 40 m, mean of 29.8 m;
- Group C comprised nine stations and had an average squared Euclidean distance of 2.85; it was characterised by moderately well sorted sand (Folk BGS modified) with a median sediment particle size ranging from 247 µm to 593 µm, mean 346 µm (medium sand), in water depth of 5.2 m to 27.5 m, mean of 15.3 m.

The sediment particle sizes mainly responsible for the separation of the multivariate groups included the 500 µm (coarse sand) and the 88.39 µm (very fine sand) sediment particle sizes (Figure 4.8).

Table 4.5: Summary of physical characteristics of sediment groups identified through the cluster analysis, Dublin Array

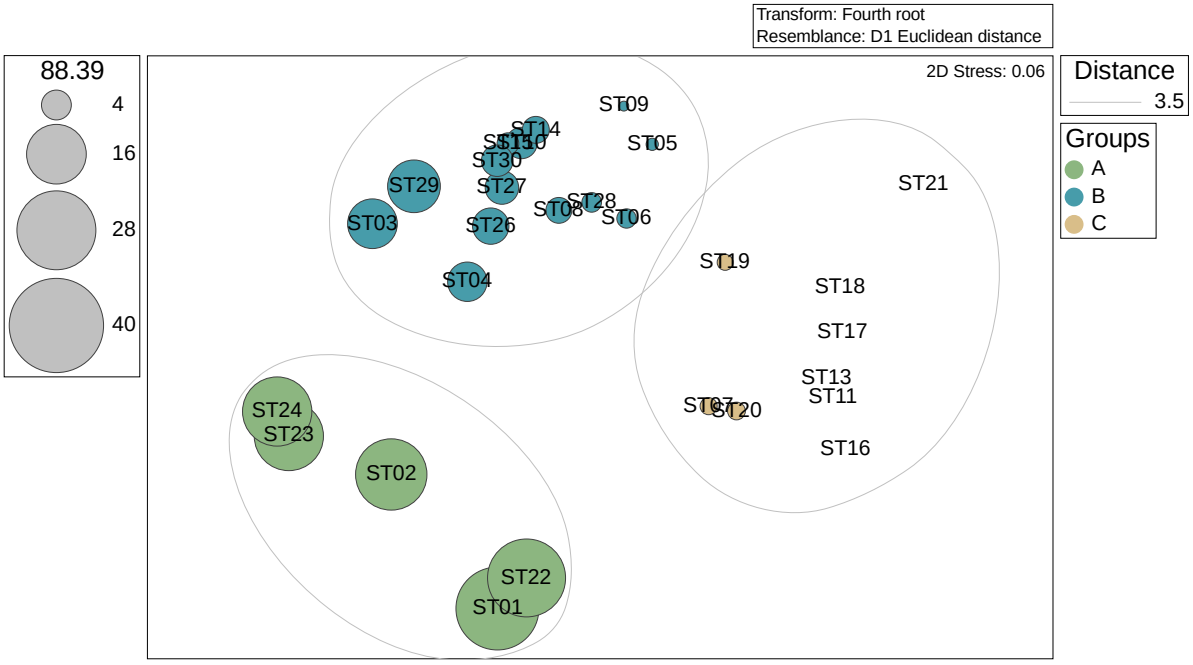
Multivariate Group	Stations	Depth [m BSL]	Median Particle Size [µm]	Fractional Composition [%]			Sorting	
				Gravel	Sand	Fines	[µm]	Description
A ▲ Average distance²: 4.13	ST01, ST02. ST22, ST23, ST24	9.8	137	0.61	91.82	7.56	1.94	Moderately sorted
B ▼ Average distance²: 2.34	ST03, ST04, ST05, ST06, ST08, ST09, ST10, ST14, ST15, ST26, ST27, ST28, ST29, ST30	29.8	295	9.46	84.82	5.72	3.22	Poorly sorted
C ■ Average distance²: 2.85	ST07, ST11, ST13, ST16, ST17, ST18, ST19, ST20, ST21	15.3	346	1.25	98.75	0.00	1.52	Moderately well sorted

Notes
Data refer to mean values in each multivariate group
BSL = Below sea level



Notes

Circles proportional in diameter to the 500 µm sediment particle size (coarse sand)



Notes

Circles proportional in diameter to the 88.39 µm sediment particle size (very fine sand)

Figure 4.8: nMDS ordination of hierarchical clustering analysis of PSD with superimposed circles proportional in diameter to percentage of particles driving the separation of groups, Dublin Array

4.2.2.1 Principal Component Analysis (PCA)

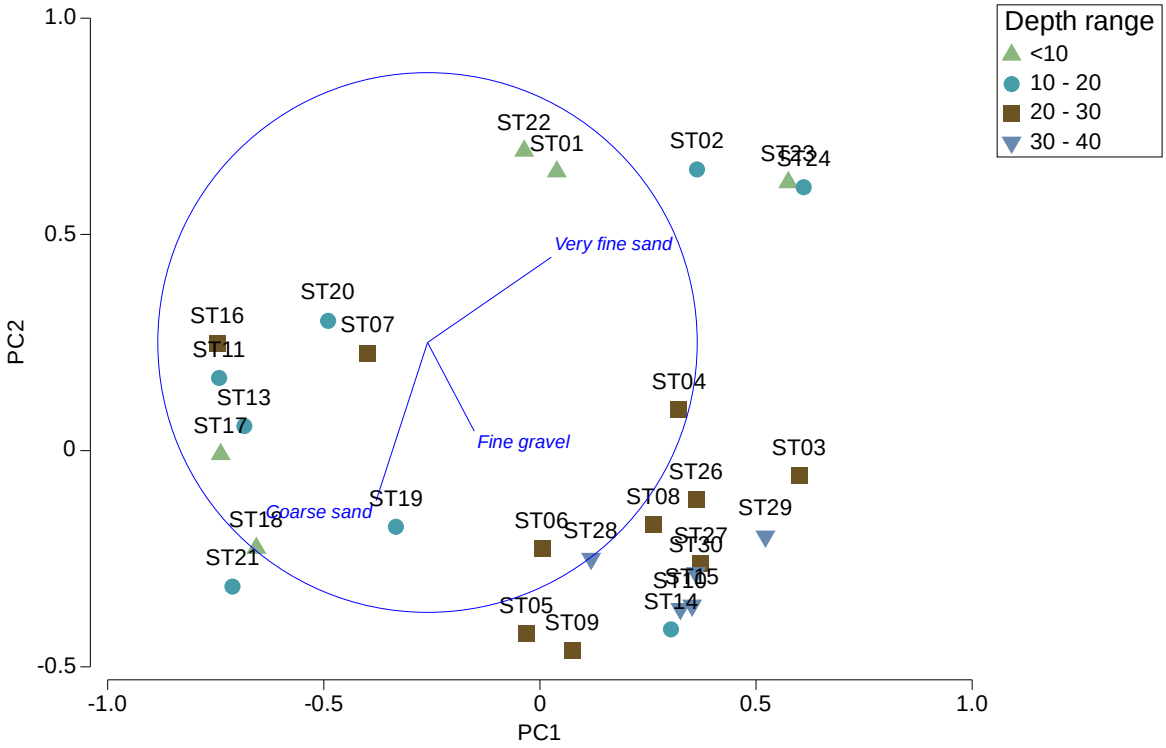
The principal component analysis (PCA) was used to reduce the sediment PSD across all samples into a smaller number of key variables. This highlighted the importance of the less represented sediment fractions in accounting for grain size variations, which are critical

factors in determining the associated biological communities. The PCA also allowed to visually present the association of sediment type with environmental and biological variables. Data were fourth root transformed. All data were in percentage therefore normalisation was not required.

Results of the PCA indicated that the first two principal components accounted for 80.4 % of the variation, with the percentage of very fine sand explaining most of the variation (49.7 %) along principal component one and the percentage of fines explaining most of the variation (30.7 %) along principal component two. Fine gravel explained 9.8 % of the variation along principal component three and coarse gravel explained 3.6 % of the variation along principal component four.

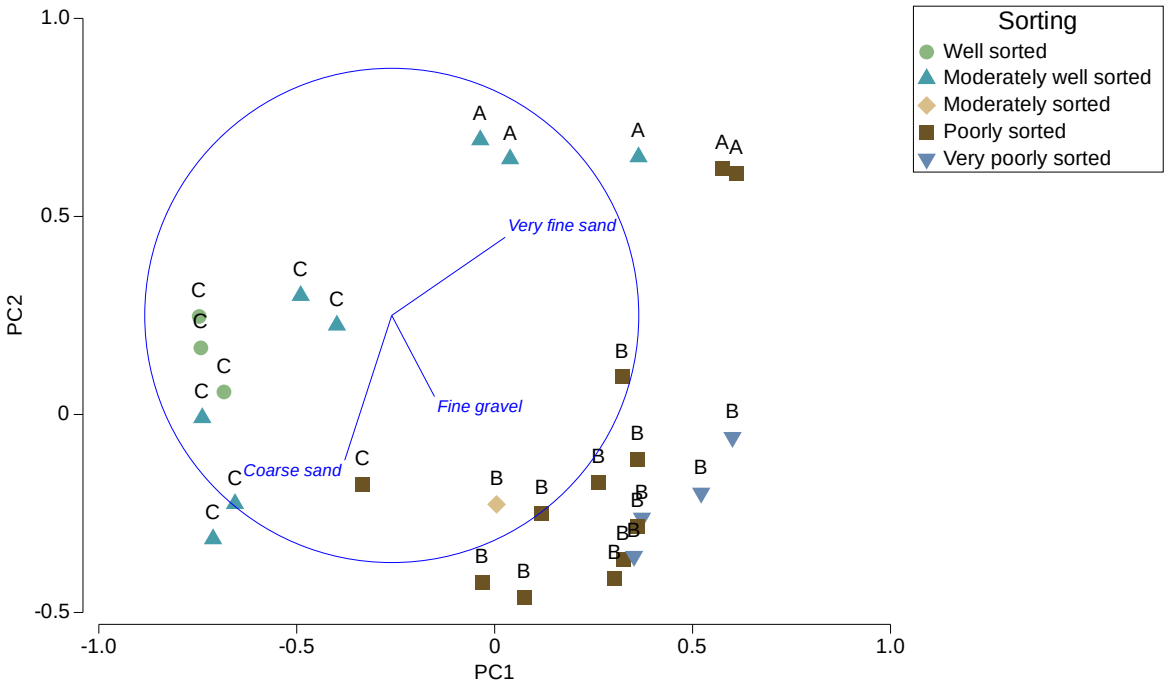
Depth had little influence on the sediment distribution pattern, as stations grouped on the basis of the sediment characteristics rather than depth (Figure 4.9). In general, stations in water depth of up to 20 m were characterised by very fine sand, the coarseness and heterogeneity of the sediment increased at depths greater than 20 m.

Figure 4.10 presents the PCA with, superimposed, the sediment groups identified through the cluster analysis (Section 4.2.2) and sorting coefficient, highlighting the increase of the sorting coefficient as the heterogeneity of the sediments increased from sand to gravelly sand and muddy sand.



Notes
Depth is in m below sea level (BSL)
PC = Principal component

Figure 4.9: 2D PCA of sediment composition with superimposed depth range [m BSL], Dublin Array



Notes
PC = Principal component

Figure 4.10: 2D PCA of sediment composition with superimposed multivariate groups and sorting coefficient, Dublin Array

4.3 Sediment Chemistry

4.3.1 Sediment Hydrocarbons

Appendix E.1 presents the GC-FID profiles illustrating the hydrocarbon components detected in each of the sediment samples. The relative standard deviation (RSD) was calculated to assess the extent of variability of the hydrocarbons across the survey area. For the purpose of this report, RSD of less than 30 % were considered low variability, 30 % to 70 % were considered moderate variability and more than 70 % were considered high variability.

4.3.1.1 Total Hydrocarbon and n-Alkanes (nC_{12} to nC_{36}) Content

Table 4.6 presents the concentrations of THC, total n-alkanes and pristane and phytane, along with the CPI ratios (nC_{12} to nC_{36}) and pristane/phytane ratios reported from the surface sediment from the Dublin Array survey area. Appendix E.2 presents individual n-alkane concentrations for the sediments analysed across the survey area.

The THC was below the MRV (0.5 µg/g) at station ST21; at the remaining stations the THC ranged from 0.5 µg/g (station ST13) to 10.6 µg/g (station ST03), with a mean of 3.1 µg/g.

Total n-alkane (nC_{12} to nC_{36}) concentrations ranged from 0.04 µg/g (stations ST11 and ST21) to 0.63 µg/g (station ST03), with a mean of 0.17 µg/g.

The CPI ratio, defined as the ratio of odd number n-alkanes over even number n-alkanes, is used to assess the proportion of biogenic and petrogenic hydrocarbons. In this study, the CPI

ratio (nC_{12} to nC_{36}) ranged from 0.68 (station ST21) to 3.06 (station ST03), with a mean of 1.81.

The pristane content ranged from 0.0006 µg/g (station ST01) to 0.0093 µg/g (station ST03), with a mean of 0.0028 µg/g.

The phytane content ranged from 0.0004 µg/g (stations ST16 and ST21) to 0.0051 µg/g (station ST24), with a mean of 0.0016 µg/g.

The ratio of pristane to phytane ranged from 0.24 (station ST01) to 2.53 (station ST21), with a mean of 1.78.

The variability of sediment hydrocarbons was high across the survey area, as indicated by the values of the RSD which ranged from 84 % for phytane to 100 % for THC, whereas that of the CPI and the phytane to pristane ratios was moderate, with RSD values of 44 % and 37 %, respectively.

Table 4.6: Summary of sediment hydrocarbon analysis, Dublin Array

Station	THC*	Total n-Alkanes* (nC_{12-36})	CPI Ratio (nC_{12-36})	Pristane*	Phytane*	Pr/Ph Ratio
ST01	2.6	0.12	1.79	0.0006	0.0025	0.24
ST03	10.6	0.63	3.06	0.0093	0.0038	2.44
ST05	2.0	0.09	1.78	0.0012	0.0012	1.00
ST07	1.4	0.08	1.57	0.0007	0.0009	0.84
ST08	2.3	0.13	2.26	0.0013	0.0009	1.40
ST11	0.6	0.04	1.13	0.0008	0.0005	1.75
ST13	0.5	0.05	1.00	0.0019	0.0008	2.40
ST14	3.4	0.26	2.99	0.0031	0.0017	1.85
ST15	3.8	0.21	2.08	0.0023	0.0014	1.70
ST16	0.6	0.05	0.82	0.0009	0.0004	2.10
ST19	0.6	0.05	0.85	0.0017	0.0007	2.37
ST21	< 0.5	0.04	0.68	0.0010	0.0004	2.53
ST23	5.5	0.20	1.79	0.0032	0.0014	2.25
ST24	8.9	0.44	2.63	0.0087	0.0051	1.72
ST26	3.6	0.23	2.69	0.0046	0.0023	2.05
Minimum	**< 0.5**	**0.04**	**0.68**	**0.0006**	**0.0004**	**0.24**
Maximum	**10.6**	**0.63**	**3.06**	**0.0093**	**0.0051**	**2.53**
Median	**2.3**	**0.12**	**1.79**	**0.0017**	**0.0012**	**1.85**
Mean	**3.1**	**0.17**	**1.81**	**0.0028**	**0.0016**	**1.78**
Standard Deviation	**3.11**	**0.168**	**0.803**	**0.00277**	**0.00134**	**0.663**
RSD	**100**	**99**	**44**	**99**	**84**	**37**

Notes
THC = Total hydrocarbon content
CPI = Carbon preference index
Pr/Ph = Ratio of pristane to phytane
RSD = Relative standard deviation
* = Concentrations expressed as µg/g of dry sediment
Values below the minimum reporting value (MRV) have been treated as equal to ½ the value of MRV to derive the summary statistics

4.3.1.2 Sediment Aromatic Hydrocarbon Content

The distribution and concentration of aromatic compounds in seabed sediments were analysed by GC-MS. The aromatic compounds quantified were the US EPA 16 PAH, the concentration of which are presented in Table 4.7.

The total US EPA 16 PAH concentrations were calculated as the sum of individual US EPA 16 PAH concentrations. Some of the individual US EPA 16 PAH concentrations were less than the MRV, as such unlikely to significantly influence the total US EPA 16 PAH concentrations. For this report, US EPA 16 PAH concentrations less than MRV have been treated as absolute values to provide comparison between stations. Consequently, the total US EPA 16 PAH concentrations resulted in a less than value.

Total US EPA 16 PAH concentrations ranged from < 1.7 ng/g (station ST21) to 252 ng/g (station ST03) and were below the lower level (4000 ng/g) of the Irish sediment quality guidelines. When assessed individually, the concentrations of each US EPA 16 PAH were below their respective 95th percentile of the Irish data from the Marine Institute which were used to derive the lower level of the Irish sediment quality guidelines (Cronin et al., 2006).

Table 4.7: Summary of sediment polycyclic aromatic hydrocarbon (PAH) concentrations, Dublin Array

PAH [ng/g of Dry Sediment]	ST01	ST03	ST05	ST07	ST08	ST11	ST13	ST14	ST15	ST16	ST19	ST21	ST23	ST24	ST26	95th Percentile of Background Values*	Irish Sediment Quality Guidelines Lower Level
Naphthalene	0.5	6.2	0.5	0.4	0.7	0.1	0.1	2.0	1.7	0.1	0.1	< 0.1	1.5	5.7	2.3	**93**	-
Acenaphthylene	< 0.1	0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	0.2	0.7	0.1	**34**	-
Acenaphthene	0.1	3.3	0.1	0.1	0.1	< 0.1	< 0.1	0.2	0.2	< 0.1	< 0.1	< 0.1	0.3	1.8	0.2	**54**	-
Fluorene	0.4	5.3	0.3	0.2	0.4	< 0.1	< 0.1	1.1	0.9	< 0.1	0.1	< 0.1	0.9	3.6	1.0	**129**	-
Phenanthrene	1.4	31.3	1.1	0.9	1.8	0.2	0.4	4.2	3.4	0.1	0.5	0.1	3.4	18.3	4.1	**397**	-
Anthracene	0.4	4.8	0.1	0.1	0.2	< 0.1	< 0.1	0.5	0.4	< 0.1	< 0.1	< 0.1	1.2	4.7	0.6	**116**	-
Fluoranthene	2.7	38.1	1.4	1.2	2.1	0.4	0.7	4.3	3.3	0.2	0.3	0.1	4.1	28.1	4.7	**524**	-
Pyrene	2.5	32.0	1.1	1.1	1.7	0.5	0.9	3.2	2.2	0.2	0.2	0.1	4.1	27.5	3.3	**459**	-
Benzo(a)anthracene	1.3	16.8	0.6	0.4	0.8	0.1	0.2	1.8	1.6	0.1	0.2	< 0.1	2.7	15.1	2.1	**265**	-
Chrysene	1.5	18.0	0.9	0.6	1.1	0.2	0.4	2.8	2.2	0.1	0.2	0.1	2.7	15.4	2.8	**336**	-
Benzo(b)fluoranthene	3.9	34.2	2.7	2.3	4.4	0.8	1.2	8.1	5.6	0.6	0.6	0.2	8.0	28.0	7.0	**331**	-
Benzo(k)fluoranthene	1.2	10.5	0.7	0.6	1.1	0.2	0.3	2.1	1.6	0.1	0.1	< 0.1	2.3	8.8	2.0	**234**	-
Benzo(a)pyrene	1.2	16.3	0.5	0.3	0.6	0.1	0.1	1.4	1.7	0.1	0.1	< 0.1	2.7	14.5	1.8	**250**	-
Indeno(1,2,3-cd)pyrene	1.7	16.5	0.9	0.7	1.0	0.1	0.1	2.6	3.3	0.2	0.1	< 0.1	3.1	12.6	3.2	**249**	-
Benzo(ghi)perylene	1.4	14.3	0.7	0.5	0.6	0.1	0.1	1.9	2.3	0.1	0.1	< 0.1	1.5	10.5	2.0	**225**	-
Dibenzo(a,h)anthracene	0.3	3.4	0.1	0.1	0.1	< 0.1	< 0.1	0.4	0.5	< 0.1	< 0.1	< 0.1	0.5	2.6	0.5	**63**	-
Total US EPA 16	**< 20.6**	**252**	**< 11.8**	**< 9.6**	**< 16.8**	**< 3.3**	**< 5.0**	**36.7**	**31.0**	**< 2.4**	**< 3.0**	**< 1.7**	**39.2**	**198**	**37.7**	**3759**	**4000**

Notes
Concentrations expressed as ng/g dry sediment
PAH = Polycyclic aromatic hydrocarbon
US EPA 16 = United States Environmental Protection Agency's 16 priority polycyclic aromatic hydrocarbons
US EPA 16 PAH concentrations less than MRV have been treated as being equal to their respective MRVs, resulting in the total US EPA 16 concentration being less than the total value
* = PAH levels derived from 95th percentile of background values, from Marine Institute data, 2001 to 2003; values not normalised for organic carbon; total sediment < 2 mm (Cronin et al., 2006)

4.3.2 Sediment Metals

Table 4.8 summarises the concentrations of the extractable metals in the sediment samples from an aqua regia digest.

Arsenic concentrations ranged from 4.10 mg/kg (station ST24) to 20.8 mg/kg (station ST21), the latter being above the lower level (9 mg/kg) of the Irish sediment quality guidelines. Concentrations above the lower level were also recorded at stations ST05, ST07, ST11, ST13 and ST19. All concentrations were below the upper level (70 mg/kg) of the Irish sediment quality guidelines. The mean concentration of arsenic across the survey area was 9.77 mg/kg and the median was 8.20 mg/kg.

Cadmium concentrations were below the MRV (0.10 mg/kg) at 12 of the 15 stations; at the remaining three stations ST03, ST23 and ST24, cadmium concentrations were 0.11 mg/kg. Cadmium concentrations were below the lower level (0.7 mg/kg) of the Irish sediment quality guidelines.

Chromium concentrations ranged from 6.60 mg/kg (station ST16) to 23.4 mg/kg (station ST03), with a mean of 13.3 mg/kg across the survey area, all concentrations being below the lower level (120 mg/kg) of the Irish sediment quality guidelines.

Copper concentrations ranged from 0.80 mg/kg (station ST16) to 7.10 mg/kg (station ST03), with a mean of 2.67 mg/kg across the survey area, all concentrations being below the lower level (40 mg/kg) of the Irish sediment quality guidelines.

Mercury concentrations were below the MRV (0.01 mg/kg) at 10 of the 15 stations; of the remaining five stations, stations ST01, ST03 and ST15 had mercury concentrations of 0.02 mg/kg, whereas stations ST23 and ST24 had mercury concentrations of 0.01 mg/kg.

Nickel concentrations ranged from 3.90 mg/kg (station ST16) to 12.4 mg/kg (stations ST03 and ST24), with a mean of 7.15 mg/kg across the survey area, all concentrations being below the lower level (21 mg/kg) of the Irish sediment quality guidelines.

Lead concentrations ranged from 3.20 mg/kg (station ST16) to 15.3 mg/kg (station ST03), with a mean of 8.05 mg/kg, all concentrations being below the lower level (60 mg/kg) of the Irish sediment quality guidelines.

Zinc concentrations ranged from 11.9 mg/kg (station ST16) to 43.3 mg/kg (station ST03), with a mean of 24.3 mg/kg across the survey area, all concentrations being below the lower level (160 mg/kg) of the Irish sediment quality guidelines.

Table 4.8: Summary of sediment metals analysis, Dublin Array

Station	Al	As	Cd	Cr	Cu	Hg	Li	Ni	Pb	Zn
ST01	5990	4.40	< 0.10	22.4	2.20	0.02	14.4	6.80	7.70	21.6
ST03	13900	7.50	0.11	23.4	7.10	0.02	21.8	12.4	15.3	43.3
ST05	5630	16.6	< 0.10	11.2	1.90	< 0.01	12.8	7.10	8.50	22.3
ST07	4630	9.70	< 0.10	10.1	1.90	< 0.01	11.4	5.50	7.00	18.6
ST08	5400	7.00	< 0.10	11.1	2.20	< 0.01	14.4	5.70	7.70	24.6
ST11	4110	12.9	< 0.10	9.50	1.60	< 0.01	< 10.00	6.50	7.20	19.9
ST13	5170	16.0	< 0.10	9.80	1.90	< 0.01	13.3	7.60	7.70	19.9
ST14	7030	8.40	< 0.10	12.7	2.80	< 0.01	16.8	6.80	8.80	33.5
ST15	5870	7.10	< 0.10	11.8	2.20	0.02	14.3	6.60	5.40	19.1
ST16	3190	8.20	< 0.10	6.60	0.80	< 0.01	< 10.00	3.90	3.20	11.9
ST19	3070	12.2	< 0.10	7.30	1.00	< 0.01	< 10.00	4.60	5.40	12.9
ST21	4130	20.8	< 0.10	8.70	1.30	< 0.01	< 10.00	6.10	4.40	13.4
ST23	9480	5.00	0.11	19.8	4.00	0.01	14.9	8.60	10.7	30.7
ST24	13200	4.10	0.11	21.8	6.10	0.01	21.2	12.4	12.5	39.4
ST26	7720	6.70	< 0.10	13.2	3.10	< 0.01	12.7	6.70	9.30	33.3
Minimum	**3070**	**4.10**	**< 0.10**	**6.60**	**0.80**	**< 0.01**	**< 10.00**	**3.90**	**3.20**	**11.9**
Maximum	**13900**	**20.8**	**0.11**	**23.4**	**7.10**	**0.02**	**21.8**	**12.4**	**15.3**	**43.3**
Median	**5630**	**8.20**	**-**	**11.2**	**2.20**	**-**	**13.3**	**6.70**	**7.70**	**21.6**
Mean	**6570**	**9.77**	**-**	**13.3**	**2.67**	**-**	**12.5**	**7.15**	**8.05**	**24.3**
Standard Deviation	**3300**	**4.93**	**-**	**5.67**	**1.80**	**-**	**5.51**	**2.41**	**3.10**	**9.66**
RSD	**50**	**50**	**-**	**43**	**67**	**-**	**44**	**34**	**39**	**40**

Station	Al	As	Cd	Cr	Cu	Hg	Li	Ni	Pb	Zn
Irish Sediment Quality Guidelines (Cronin et al., 2006)										
Lower level	-	9‡	0.7	120	40	0.2	-	21	60	160
Upper level†	-	70^	4.2	370	110#	0.7	-	60	218	410

Notes
Concentrations expressed in mg/kg dry sediment
Al = Aluminium As = Arsenic Cd = Cadmium Cr = Chromium Cu = Copper Hg = Mercury Ni = Nickel
Pb = Lead Li = Lithium Zn = Zinc
RSD Relative standard deviation
* = Irish sediment guidelines based on total sediment fraction < 2 mm
† = Upper level based on effects range median (ERM) rounded up
‡ = ERL (rounded up) – no background Irish data available
^ = In some locations natural levels of arsenic will exceed this value and in such instances this guidance value will not be appropriate
# = Probable effect level (PEL) as effects range median (ERM) considered high
Values below the minimum reporting value (MRV) have been treated as equal to ½ the value of MRV to derive the summary statistics
Summary statistics were not calculated for datasets where > 50 % data were < MRV

Key:	Below Lower Level	Above Lower Level	Above Upper Level

4.3.3 Sediment Polychlorinated Biphenyls

Table 4.9 summarises the concentrations of PCBs in the sediment samples. All concentrations were below the respective MRVs and below the lower level (1 µg/kg) and upper level (100 µg/kg) of the Irish sediment quality guidelines.

Table 4.9: Summary of polychlorinated biphenyls (PCBs) analysis, Dublin Array

Station	PCB - 028	PCB - 052	PCB - 101	PCB - 118	PCB - 138	PCB - 153	PCB - 180	Total ICES 7 PCBs
ST01	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST03	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST05	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST07	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST08	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST11	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST13	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST14	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST15	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST16	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST19	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST21	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST23	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST24	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
ST26	< 0.9	< 0.7	< 0.6	< 0.8	< 0.4	< 0.5	< 0.6	< 4.7
Irish Sediment Quality Guidelines (Cronin et al., 2006)*								
Lower Level	**1**							**7**
Upper Level†	**180**							**1260**

Notes
Concentrations expressed in µg/kg dry sediment
* = Irish sediment guidelines based on total sediment fraction < 2 mm
† = Upper level based on effects range median (ERM) rounded up

4.3.4 Sediment Organotins

Table 4.10 summarises the concentrations of organotins in the sediment samples from the Dublin Array survey area.

The organotins analysed included dibutyl tin (DBT) and tributyl tin (TBT), the concentrations of which were below their respective MRV at all stations and below the lower level (100 µg/kg) and upper level (500 µg/kg) of the Irish sediment quality guidelines.

Table 4.10: Summary of organotins analysis, Dublin Array

Station	Dibutyl Tin (DBT)	Tributyl Tin (TBT)
ST01	< 5.00	< 2.00
ST03	< 5.00	< 2.00
ST05	< 5.00	< 2.00
ST07	< 5.00	< 2.00
ST08	< 5.00	< 2.00
ST11	< 5.00	< 2.00
ST13	< 5.00	< 2.00
ST14	< 5.00	< 2.00
ST15	< 5.00	< 2.00
ST16	< 5.00	< 2.00
ST19	< 5.00	< 2.00
ST21	< 5.00	< 2.00
ST23	< 5.00	< 2.00
ST24	< 5.00	< 2.00
ST26	< 5.00	< 2.00
Irish Sediment Quality Guidelines (Cronin et al., 2006)*		
Lower Level (sum of TBT and DBT)	**100**	
Upper Level (sum of TBT and DBT)	**500**	

Notes
Concentrations expressed as µg/kg (cation) dry sediment
* = Irish sediment guidelines based on total sediment fraction < 2 mm

4.3.5 Sediment Organochlorine Pesticides

Table 4.11 presents a summary of the organochloride pesticides (OCP) in the sediment samples from the Dublin Array survey area.

The OCPs analysed included alpha-hexachlorocyclohexane (alpha-HCH), beta-hexachlorocyclohexane (beta-HCH), delta-hexachlorocyclohexane (delta-HCH) and gamma-hexachlorocyclohexane (lindane). The concentration of all OCPs analysed were below their respective MRV at all stations; the MRV of lindane is above the lower level (0.3 µg/kg) but below the upper level (1 µg/kg) of the Irish sediment quality guidelines.

Table 4.11: Summary of organochlorine pesticide analysis, Dublin Array

Station	Alpha-hexachlorocyclohexane (alpha-HCH)	Beta-hexachlorocyclohexane (beta-HCH)	Delta-hexachlorocyclohexane (delta-HCH)	Gamma-hexachlorocyclohexane (lindane)
ST01	< 0.5	< 0.5	< 0.3	< 0.4
ST03	< 0.5	< 0.5	< 0.3	< 0.4
ST05	< 0.5	< 0.5	< 0.3	< 0.4
ST07	< 0.5	< 0.5	< 0.3	< 0.4
ST08	< 0.5	< 0.5	< 0.3	< 0.4
ST11	< 0.5	< 0.5	< 0.3	< 0.4
ST13	< 0.5	< 0.5	< 0.3	< 0.4
ST14	< 0.5	< 0.5	< 0.3	< 0.4
ST15	< 0.5	< 0.5	< 0.3	< 0.4
ST16	< 0.5	< 0.5	< 0.3	< 0.4
ST19	< 0.5	< 0.5	< 0.3	< 0.4
ST21	< 0.5	< 0.5	< 0.3	< 0.4
ST23	< 0.5	< 0.5	< 0.3	< 0.4
ST24	< 0.5	< 0.5	< 0.3	< 0.4
ST26	< 0.5	< 0.5	< 0.3	< 0.4
Irish Sediment Quality Guidelines (Cronin et al., 2006)*				
Lower Level	-	-	-	**0.3**
Upper Level	-	-	-	**1**

Notes
Concentrations expressed as µg/kg
* = Irish sediment guidelines based on total sediment fraction < 2 mm

4.4 Sediment Macrofauna

The macrofauna from the grab samples included infauna and epifauna, the latter comprising solitary and sessile organisms. The infauna and solitary epifauna were enumerated and were analysed together in terms of phyletic composition, species diversity, abundance and distribution. The sessile colonial epifauna, recorded as P, was removed from the enumerated dataset and assessed for taxa composition and distribution. Appendix F.1 presents the full species list.

4.4.1 Enumerated Macrofauna

4.4.1.1 Phyletic Composition

Following rationalisation (details in Section 3.3.2), the enumerated macrofaunal dataset comprised 189 taxa represented by 2482 individuals. The excluded taxa included juveniles (24 taxa and 389 individuals) and damaged fauna (7 taxa, of which 3 recorded as P and 21 individuals). Three species of *Polycirrus*, one species of *Cheirocratus* and one species of *Gnathia* were aggregated to their respective genus level.

Of the juveniles, species of the genus *Abra* were numerically dominant, followed by species of the class Ophiuroidea.

Table 4.12 summarises the phyletic composition of the enumerated macrofauna across the Dublin Array survey area, and Figure 4.11 presents the phyletic composition of taxa and individuals of the enumerated macrofauna.

Table 4.12: Taxonomic groups of enumerated macrofauna, Dublin Array

Taxonomic Group	Number of Taxa	Composition of Taxa [%]	Abundance	Composition of Individuals [%]
Annelida	87	46.0	928	37.4
Arthropoda	40	21.2	177	7.1
Mollusca	37	19.6	871	35.1
Echinodermata	13	6.9	391	15.8
Other phyla	12	6.3	115	4.6
Total	**189**	**100**	**2482**	**100**

Notes
Macrofaunal samples were processed through a 1 mm sieve
Other phyla include Chordata, Cnidaria, Nematoda, Nemertea, Phoronida, Platyhelminthes and Sipuncula

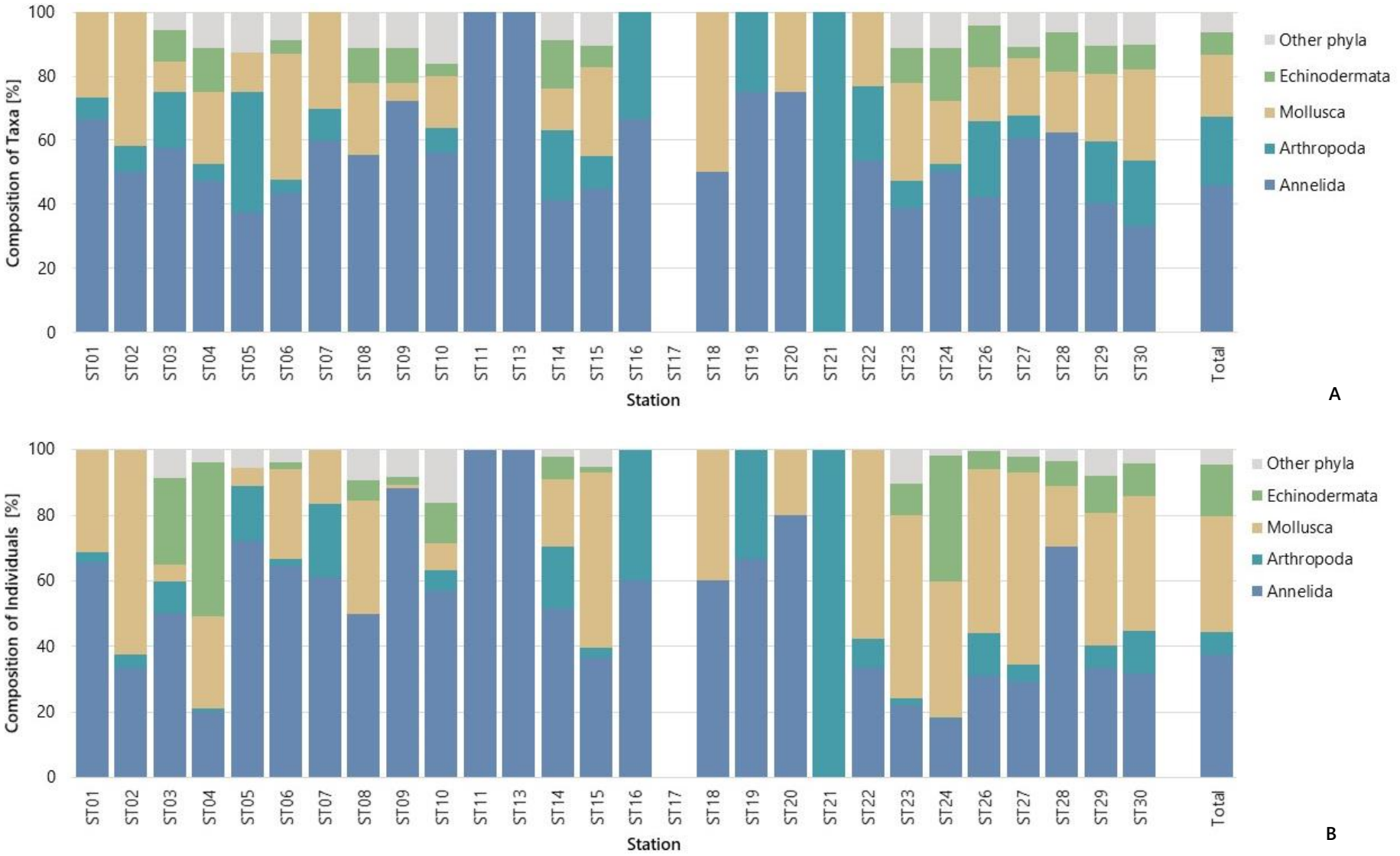


Figure 4.11: Phyletic composition of macrofaunal (A) taxa and (B) individuals, Dublin Array

Annelida comprised most of the taxa composition (46.0 %) followed by Arthropoda (21.2 %), Mollusca (19.6 %) and Echinodermata (6.9 %). Other phyla comprised 6.3 % of the taxa composition and were represented by Chordata, Cnidaria, Nematoda, Nemertea, Phoronida, Platyhelminthes and Sipuncula.

When assessed on a station basis, results indicated that station ST17 was devoid of enumerated fauna, and analysis of the species list indicated the presence of damaged polychaetes (details in Section 4.4.1.4) and colonial invertebrates of the family Folliculinidae (details in Section 4.4.2). Stations ST11 and ST21 had a single individual each, represented by the polychaete *Nephtys cirrosa* and the mysid *Gastrosaccus spinifer*, respectively, in addition to Folliculinidae (details in Section 4.4.2). Station ST13 comprised the polychaetes *Magelona mirabilis* and *N. cirrosa*. At station ST05 Annelida and Arthropoda had equal percentages, whereas at station ST18 Annelida and Mollusca had equal percentages. At the remaining stations, Annelida comprised most of the taxa composition, followed by Mollusca. Echinodermata were recorded at 15 of the 28 stations investigated, whereas other phyla were recorded at 16 stations.

Annelida comprised most of the enumerated faunal abundance (37.4 %) followed by Mollusca (35.1 %), Echinodermata (15.8 %) and Arthropoda (7.1 %), whereas other phyla comprised 4.6 % of the enumerated faunal abundance.

When assessed on a station basis, results indicated that Annelida were numerically dominant at 16 stations; Mollusca were numerically dominant at eight stations, whereas Echinodermata and Arthropoda were numerically dominant at stations ST04 and ST21, respectively. Other phyla had comparatively low abundances, the highest percentage being recorded at station ST10.

4.4.1.2 Community Statistics

Table 4.13 presents the results of the univariate analysis of the enumerated macrofaunal dataset, which was undertaken to gauge information on faunal richness and diversity and allow subsequent contextualisation of the results within the geographical context of the study area. Univariate indices, including faunal richness (Margalef's index d), diversity (Shannon-Wiener Index H'Log_2), evenness (Pielou's index J') and dominance (Simpson's index λ) could not be derived for stations ST11 and ST21, owing to the low number of species and individuals. Figures 4.12 and 4.13 present the spatial distribution of enumerated macrofaunal taxa and individuals.

Station ST17 was devoid of enumerated fauna, whereas stations ST11 and ST21 had a single individual each. The remaining stations had a number of taxa ranging from two (station ST13) to 52 (station ST03). Station ST13 had also the lowest abundance with three individuals, whereas station ST26 had the highest with 344 individuals.

The richness reflected the number of individuals per species recorded, ranging from 0.91 (station ST13) to 9.10 (station ST03).

The Shannon-Wiener Diversity, assessed in line with the Dauvin et al (2012) criteria (details in Section 3.3.4), was:

- High ($H'Log_2$ > 4.00) at seven stations;
- Good ($H'Log_2$ of 3.00 to 4.00) at ten stations;
- Moderated ($H'Log_2$ of 2.00 to 3.00) at three stations;
- Poor ($H'Log_2$ of 1.00 to 2.00) at four stations;
- Bad ($H'Log_2$ = < 1.00) at station ST13.

The faunal abundances were fairly evenly distributed across the taxa recorded as indicated by the values of evenness which ranged from 0.601 (station ST24) to 0.961 (station ST18), and the values of dominance which ranged from 0.060 (station ST10) and 0.556 (station ST13).

Analysis of the species list indicated that the evenness at station ST24 was associated with a numerical dominance of the bivalve *Kurtiella* (formerly *Mysella*) *bidentata*, which comprised 116 individuals, representing 38 % of the enumerated faunal abundance at this station. The value of evenness at station ST18 was associated with the low number of individuals across the taxa recorded at this station.

Table 4.13: Macrofaunal community statistics (0.1 m^2), Dublin Array

Station	Numbers		Richness	Diversity	Evenness	Dominance
	Taxa	Individuals	Margalef [d]	Shannon-Wiener [$H'Log_2$]	Pielou [J']	Simpson [λ]
ST01	15	32	4.04	3.51	0.899	0.107
ST02	12	24	3.46	3.03	0.846	0.184
ST03	52	271	9.10	4.75	0.833	0.065
ST04	36	213	6.53	3.27	0.633	0.211
ST05	8	18	2.42	2.55	0.851	0.216
ST06	23	51	5.60	4.12	0.911	0.075
ST07	10	18	3.11	3.09	0.929	0.136
ST08	18	32	4.91	3.83	0.918	0.090
ST09	18	84	3.84	2.65	0.635	0.340
ST10	25	49	6.17	4.35	0.936	0.060
ST11	1	1	-	-	-	-
ST13	2	3	0.91	0.92	0.918	0.556
ST14	46	196	8.53	4.08	0.738	0.120
ST15	29	131	5.74	3.23	0.664	0.221
ST16	3	5	1.24	1.52	0.960	0.360
ST17	0	0	-	-	-	-
ST18	4	5	1.86	1.92	0.961	0.280
ST19	4	6	1.67	1.92	0.959	0.278

Station	Numbers		Richness	Diversity	Evenness	Dominance
	Taxa	Individuals	Margalef [d]	Shannon-Wiener [H'Log$_2$]	Pielou [J']	Simpson [λ]
ST20	4	5	1.86	1.92	0.961	0.280
ST21	1	1	-	-	-	-
ST22	13	33	3.43	2.96	0.800	0.183
ST23	36	144	7.04	4.33	0.838	0.084
ST24	36	302	6.13	3.11	0.601	0.211
ST26	47	344	7.88	3.57	0.642	0.173
ST27	28	140	5.46	3.12	0.649	0.268
ST28	16	27	4.55	3.84	0.960	0.078
ST29	47	233	8.44	4.04	0.727	0.123
ST30	39	114	8.02	4.28	0.809	0.097
Minimum	**0**	**0**	**0.91**	**0.92**	**0.601**	**0.060**
Maximum	**52**	**344**	**9.10**	**4.75**	**0.961**	**0.556**
Median	**17**	**32.5**	**4.91**	**3.23**	**0.846**	**0.183**
Mean	**20**	**89**	**4.88**	**3.20**	**0.823**	**0.192**
Standard Deviation	**17**	**103**	**2.48**	**0.99**	**0.125**	**0.116**

Notes
FA, FB, FC = Faunal sample A, B and C

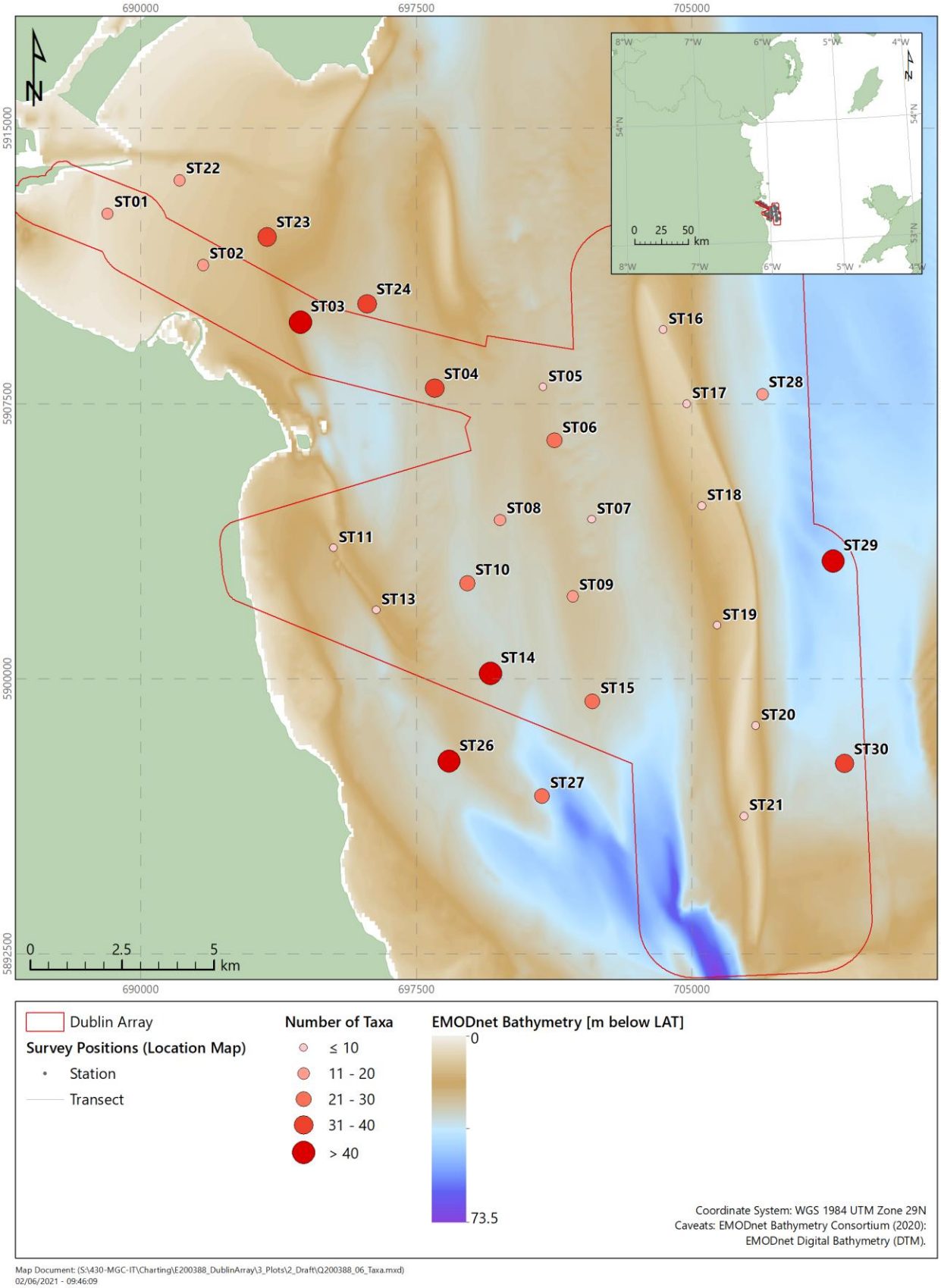


Figure 4.12: Number of macrofaunal taxa (0.1 m^2) overlaid on bathymetry, Dublin Array

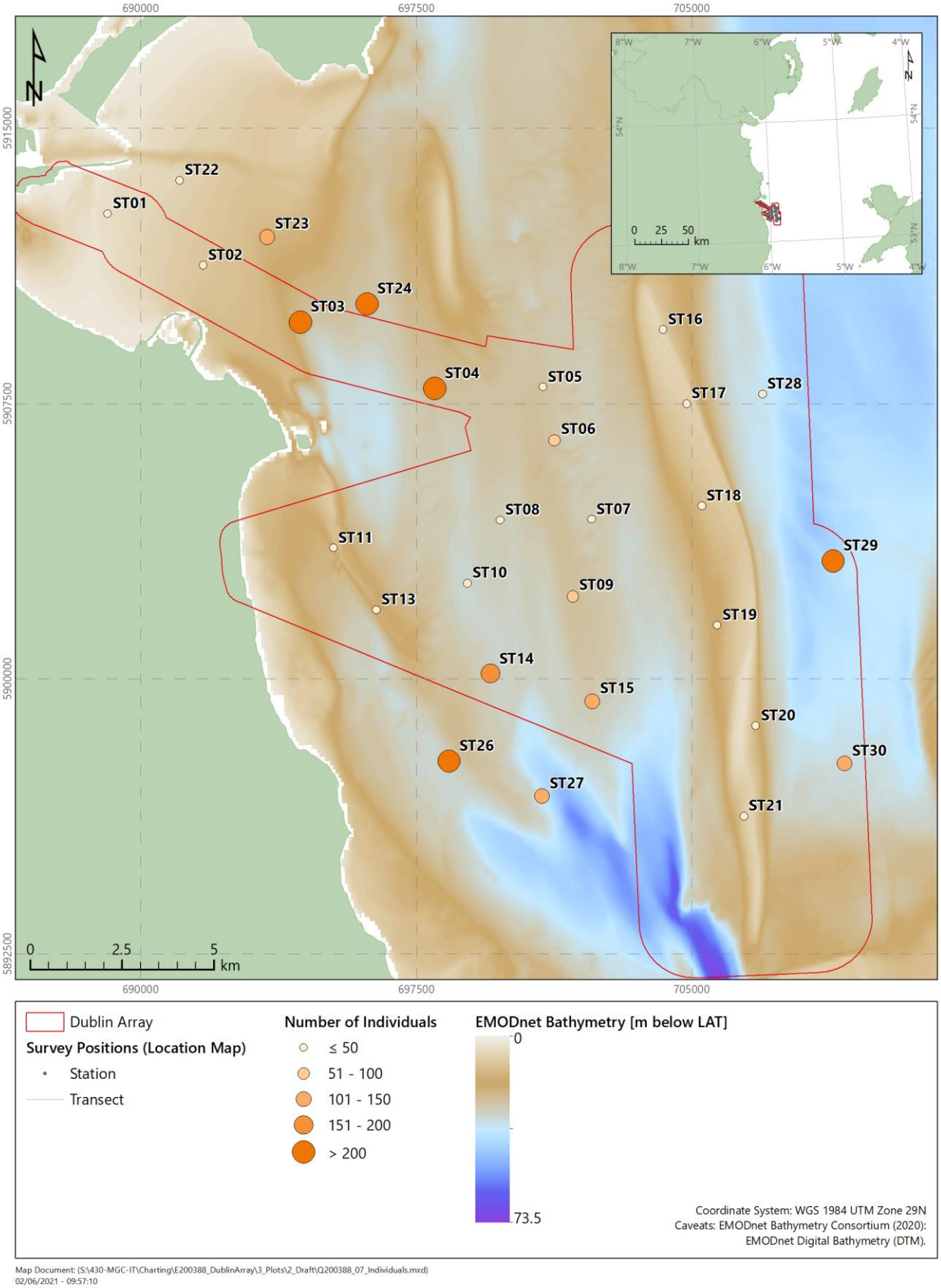
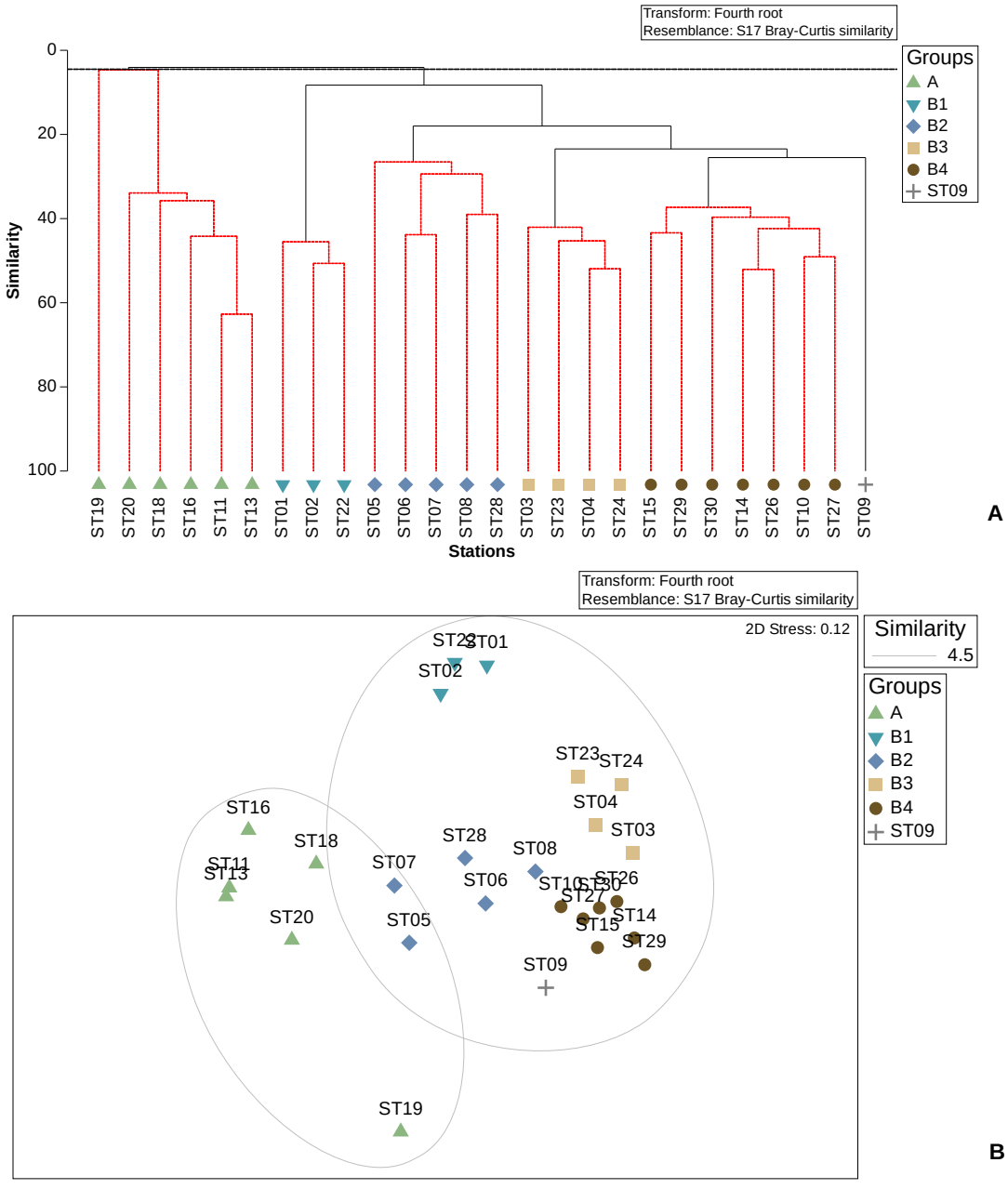


Figure 4.13: Number of macrofaunal individuals (0.1 m^2) overlaid on bathymetry, Dublin Array

4.4.1.3 Investigation of Faunal Similarities

The enumerated macrofaunal dataset was transformed prior to multivariate analysis. A fourth root transformation provided the best assessment, down weighting the numerically dominant species and allowing more detailed interrogation of less abundant taxa and the underlying community. Faunal similarities were investigated using the hierarchical clustering analysis, results of which are in Figure 4.14. The SIMPROF test, undertaken in conjunction with the cluster analysis, was interpreted in ecological terms and, where appropriate, coarser groups were created (Section 3.3.6).



Notes
Stations ST17 and ST21 were removed from the dataset

Figure 4.14: (A) Dendrogram and (B) nMDS of hierarchical clustering analysis of enumerated fauna, Dublin Array

Station ST17 and ST21 were removed from the data set prior to multivariate analysis, as they behaved as outliers owing to lack of enumerated fauna at station ST17 and the presence of a single individual of *G. spinifer* at station ST21 (details in Sections 4.4.1.1 and 4.4.1.2). It is worth noting that a single individual of *G. spinifer* occurred across the whole survey area; conversely, *N. cirrosa*, which was the only invertebrate recorded at station ST11 also occurred at other eight stations, hence station ST11 did not behave as an outlier. The sediment at stations ST17 and ST21 was characterised by moderately well sorted sand (Folk BGS modified) which was described as medium at station ST17 and coarse at station ST21 through the Wentworth scale (details in Section 4.2).

Two multivariate groups, A and B, were identified at a similarity of 4.5 %. Group B was further split through the SIMPROF test into four groups (B1, B2, B3 and B4) and station ST09 at a similarity of 26 %.

The groups identified through the multivariate analysis were further assessed by means of the SIMPER analysis. Table 4.14 presents the top ten characterising taxa identified through the SIMPER analysis along with a summary of the physical variables characterising each multivariate group; the average abundance of the characterising taxa refers to untransformed data. The information presented in Table 4.14 was used in conjunction with the results of the Environmental Features Report (Fugro 2021a) for biotope classification (details in Section 4.5.1).

Group A comprised six stations and had an average similarity of 27.8 %. It was characterised by moderately well sorted sand (Folk BGS modified), with a mean median sediment particle size of 317 µm (medium sand), in mean water depth of 14.9 m (BSL). Group A had mean numbers of three taxa and four individuals, of which *N. cirrosa* was the most frequently occurring, followed by species of *Notomastus*. The amphipods *Urothoe brevicornis* and *Centraloecetes kroyeranus* and the bivalve *Nucula nitidosa* also occurred in group A albeit at low abundances and frequency of occurrence.

Group B1 comprised three stations and had an average similarity of 47.2 %. It was characterised by moderately well sorted sand (Folk BGS modified), with a mean median sediment particle size of 143 µm (fine sand), in mean water depth of 8.3 m (BSL). Group B1 had mean numbers of 13 taxa and 30 individuals, of which *N. nitidosa* was the most abundant and frequently occurring. Other characterising taxa included the bivalve *Fabulina fabula* and the polychaetes *Magelona johnstoni*, *Galathowenia oculata*, *Sigalion mathildae* and *Spiophanes bombyx*, all of which were recorded at all stations in group B1. The polychaetes *Polydora ciliata*, *Owenia borealis* and *Nephtys hombergii* and the bivalve *Thyasira flexuosa*, featured within the top ten characterising taxa although they were less frequently occurring.

Group B2 comprised five stations and had an average similarity of 30.6 %. It was characterised by poorly sorted gravelly sand (Folk BGS modified), with a mean median sediment particle size of 306 µm (medium sand) in mean water depth of 29.7 m (BSL). Group B2 had mean numbers of 15 taxa and 29 individuals, of which *Lumbrineris* cf. *cingulata* was

the most abundant and frequently occurring. Other characterising taxa included the polychaetes *N. cirrosa*, *Ophelia borealis*, *S. bombyx* and *Glycera lapidum*, the bivalves *Kurtiella bidentata* and *Abra prismatica* and the gastropod *Euspira nitida*, all of which had lower frequency of occurrence than that of *L.* cf. *cingulata*.

Group B3 comprised four stations and had an average similarity of 44.8 %. It was characterised by poorly sorted muddy sand (Folk BGS modified), with a mean median sediment particle size of 160 µm (fine sand), in mean water depth of 19.1 m (BSL). Group B3 had mean numbers of 40 taxa and 233 individuals, of which the bivalve *K. bidentata* was the most abundant and frequently occurring. Other characterising taxa included the brittlestars *Amphiura filiformis* and *Ophiothrix fragilis* the bivalves *N. nitidosa* and *Tellimya ferruginosa*, the polychaete *Pholoe baltica* and *Subadyte pellucida*, the urchin *Echinocardium cordatum*, Nemertea and species of the genus *Phoronis*.

Group B4 comprised seven stations and had an average similarity of 40.3 %. It was characterised by poorly sorted gravelly sand (Folk BGS modified), with mean median sediment particle size of 280 µm (medium sand) in mean water depth of 31.0 m (BSL). Group B4 had mean numbers of 37 taxa and 172 individuals, of which *Nucula nucleus* was the most abundant and recorded in six of the seven station in group B4. Other characterising taxa included the polychaetes *Spirobranchus lamarcki*, *L.* cf. *cingulata*, *Chaetozone zetlandica*, *Owenia borealis* and species of the genus *Polycirrus*, the bivalves *Abra alba*, the amphipod *Urothoe elegans* and Nemertea.

Station ST09 was different enough to separate at a similarity of 26 %; it was characterised by poorly sorted gravelly sand (Folk BGS modified) with a median sediment particle size of 503 µm (coarse sand) in water depth of 26.3 m (BSL). Station ST09 comprised 18 taxa and 84 individuals, of which *O. borealis*, with 48 individuals, was by far the most abundant. Other taxa included *Mediomastus fragilis*, *Hesionura elongata*, *Glycera lapidum*, *Microphthalmus similis* and *Aonides paucibranchiata*, which had abundances of between three and four individuals.

The dissimilarity between multivariate groups was between 74.5 % (group B4 and station ST09) and 98.5 % (group A and station ST09). The taxa responsible for the separation of the multivariate groups included (but were not limited to) *K. bidentata*, *F. fabula*, *O. fragilis* and *N. nucleus* (Figure 4.15).

The combination of physical variables that best explained the observed pattern of macrofaunal distribution included the 2800 µm (granule), the 250 µm (medium sand), the 125 µm (fine sand), the 31.25 µm (coarse silt) and the 22.10 µm (medium silt) sediment particle sizes, as identified through the BIOENV analysis, which returned a value of rho of 0.759 at a significance level of 1 %. Depth had no influence on the observed pattern of macrofaunal distribution.

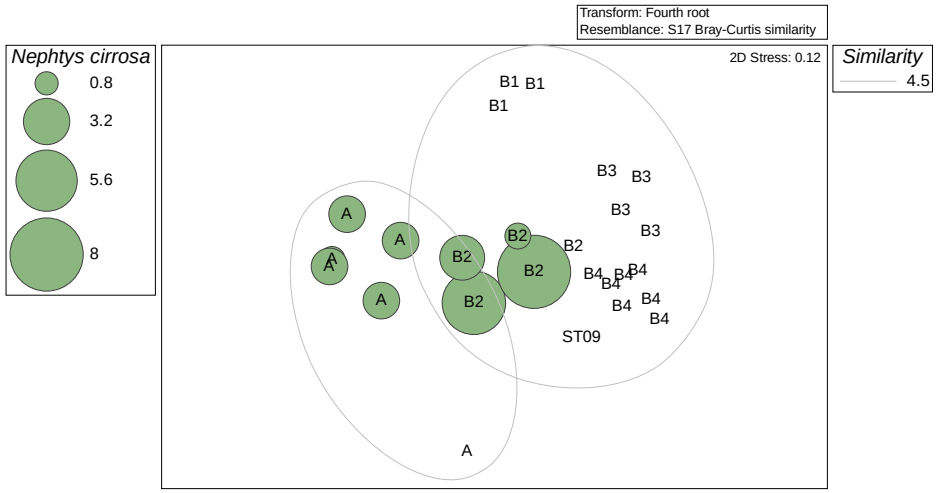
Figure 4.16 illustrates the relationships between sediment type and macrofauna, highlighting the increase in enumerated faunal diversity ($H'Log_2$) with increased sediment heterogeneity.

Table 4.14: Summary of attributes of multivariate groups of enumerated macrofauna, Dublin Array

Group	Station	Characterising Features	Characterising Taxa	Abundance [N]	Frequency [%]
A Average similarity: 27.8 %	ST11 ST13 ST16 ST18 ST19 ST20	Taxa: 3 Individuals: 4 Depth [m]: 14.9 Gravel [%]: 1.5 Sand [%]: 98.5 Fines [%]: 0.0 Median [µm]: 317 Sorting [µm]: 1.53	*Nephtys cirrosa*	1.5	83.3
			Notomastus	0.3	33.3
			Urothoe brevicornis	0.3	16.7
			Centraloecetes kroyeranus	0.3	16.7
			Nucula nitidosa	0.2	16.7
B1 Average similarity: 47.2 %	ST01 ST02 ST22	Taxa: 13 Individuals: 30 Depth [m]: 8.3 Gravel [%]: 1.0 Sand [%]: 97.5 Fines [%]: 1.5 Median [µm]: 143 Sorting [µm]: 1.46	*Nucula nitidosa*	6.7	100
			Fabulina fabula	5.7	100
			Magelona johnstoni	3.0	100
			Galathowenia oculata	2.3	100
			Polydora ciliata	1.7	33.3
			Owenia borealis	1.3	33.3
			Sigalion mathildae	1.0	100
			Spiophanes bombyx	1.0	100
			Nephtys hombergii	0.7	66.7
			Thyasira flexuosa	0.7	33.3
B2 Average similarity: 30.6 %	ST05 ST06 ST07 ST08 ST28	Taxa: 15 Individuals: 29 Depth [m]: 29.7 Gravel [%]: 5.1 Sand [%]: 92.9 Fines [%]: 2.0 Median [µm]: 306 Sorting [µm]: 2.02	*Lumbrineris* cf. *cingulata*	4.2	100
			Nephtys cirrosa	3.6	80.0
			Kurtiella bidentata	1.6	80.0
			Ophelia borealis	1.6	60.0
			Spiophanes bombyx	1.2	60.0
			Nemertea	1.0	80.0
			Abra prismatica	0.8	60.0
			Euspira nitida	0.6	60.0
			Glycera lapidum	0.6	40.0
			Dosinia lupinus	0.4	40.0
B3 Average similarity: 44.8 %	ST03 ST04 ST23 ST24	Taxa: 40 Individuals: 233 Depth [m]: 19.1 Gravel [%]: 1.2 Sand [%]: 83.4 Fines [%]: 15.4 Median [µm]: 160 Sorting [µm]: 3.09	*Kurtiella bidentata*	50.3	100
			Ophiothrix fragilis	41.8	75.0
			Amphiura filiformis	24.0	100
			Pholoe baltica	16.3	100
			Nemertea	7.0	100
			Nucula nitidosa	5.5	100
			Subadyte pellucida	4.8	75.0
			Phoronis	3.3	100
			Echinocardium cordatum	2.8	100
			Tellimya ferruginosa	2.8	75.0

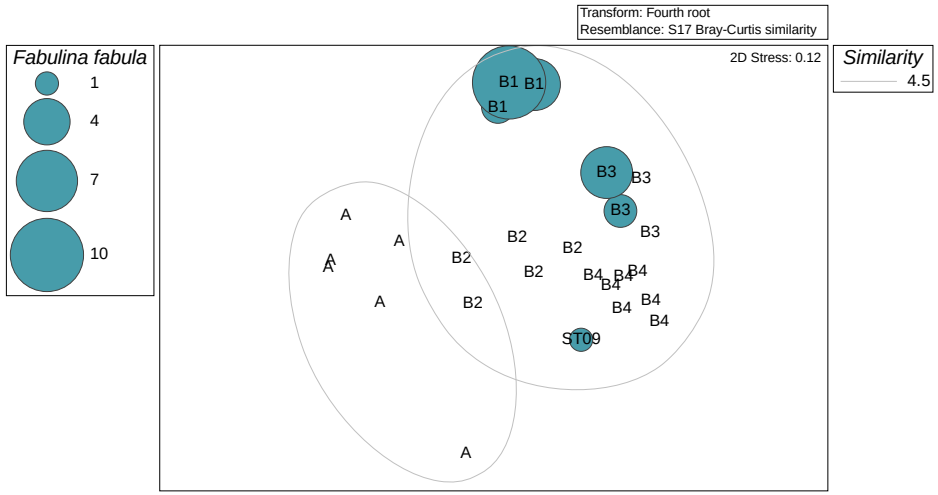
Group	Station	Characterising Features	Characterising Taxa	Abundance [N]	Frequency [%]
B4 ● Average similarity: 40.3 %	ST10 ST14 ST15 ST26 ST27 ST29 ST30	Taxa: 37 Individuals: 172 Depth [m]: 31.0 Gravel [%]: 13.8 Sand [%]: 80.7 Fines [%]: 5.5 Median [µm]: 280 Sorting [µm]: 3.86	*Nucula nucleus*	50.9	85.7
			Spirobranchus lamarcki	31.3	100
			Abra alba	10.7	100
			Urothoe elegans	6.4	85.7
			Lumbrineris cf. *cingulata*	5.4	87.7
			Ophiura albida	3.9	85.7
			Chaetozone zetlandica	1.6	71.4
			Nemertea	1.4	100
			Polycirrus	1.3	85.7
			Owenia borealis	0.9	85.7
ST09 +		Taxa: 18 Individuals: 84 Depth [m]: 26.3 Gravel [%]: 6.7 Sand [%]: 90.4 Fines [%]: 2.9 Median [µm]: 503 Sorting [µm]: 2.32	*Ophelia borealis*	48	-
			Mediomastus fragilis	4	-
			Nematoda	4	-
			Hesionura elongata	3	-
			Glycera lapidum	3	-
			Microphthalmus similis	3	
			Polycirrus	3	-
			Nemertea	3	-
			Aonides paucibranchiata	3	-
			Syllis pontxioi	2	-

Notes
Values refer to mean of untransformed data within each multivariate group, except for single station ST09
Frequency refers to number of stations within each multivariate group
Taxa listed are the top ten identified by the SIMPER analysis at a cut off for percentage contribution of 90 %
Taxa listed in decreasing order of abundance
Depth is in metres (m) below sea level (BSL)



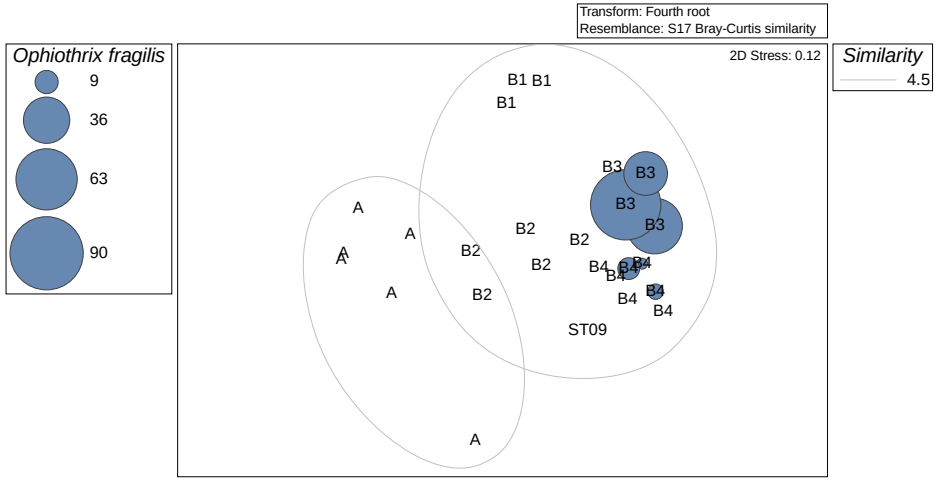
Notes

Circles proportional in diameter to the abundance of *Nephtys cirrosa*



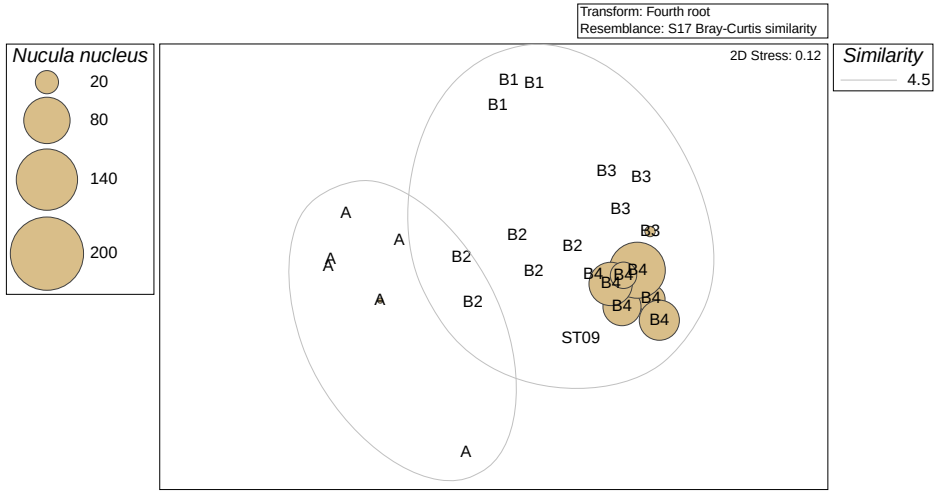
Notes

Circles proportional in diameter to the abundance of *Fabulina fabula*



Notes

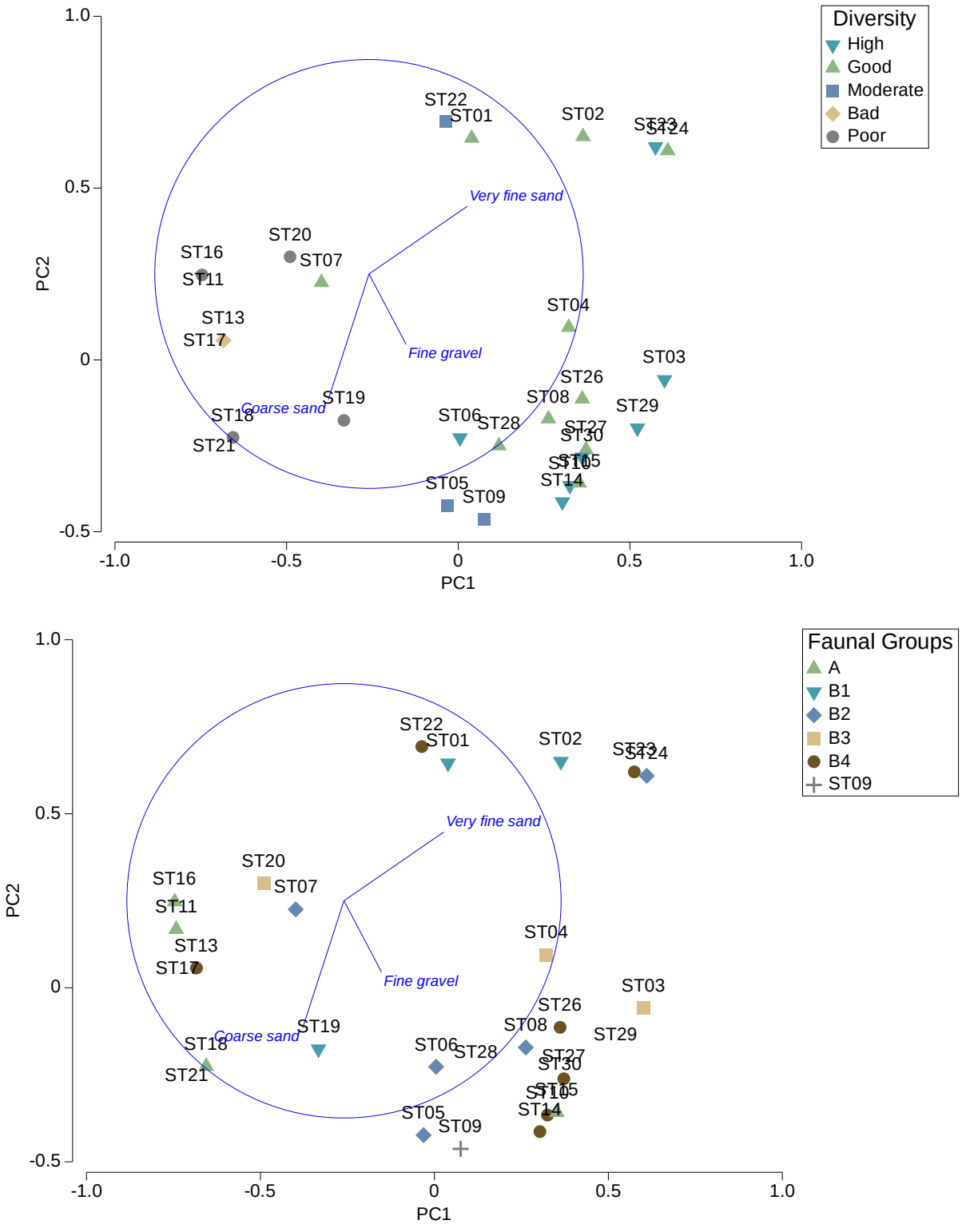
Circles proportional in diameter to the abundance of *Ophiothrix fragilis*



Notes

Circles proportional in diameter to the abundance of *Nucula nucleus*

Figure 4.15: nMDS of hierarchical clustering analysis with superimposed multivariate groups and circles proportional in diameter to the abundance of taxa responsible for the separations of groups, Dublin Array



Notes
PC = Principal component

Figure 4.16: 2D PCA of sediment composition with superimposed macrofaunal (A) Shannon-Wiener [H'Log$_2$} index of diversity and (B) multivariate groups, Dublin Array

4.4.1.4 Biomass

Biomass was undertaken on the infaunal invertebrates only; solitary epifauna, such as *Verruca stroemia*, Balanidae, Actiniaria, *Ciona intestinalis* and *Dendrodoa grossularia*, and colonial epifauna were excluded from the biomass.

Table 4.15 presents the percentage contribution of phyla to biomass across the Dublin Array survey area and Table 4.16 presents the biomass of major taxonomic groups at each station. Figure 4.17presents the phyletic composition of the biomass at each station and Figure 4.18 presents the spatial variations of the total macrofaunal biomass across the survey area. Appendix F.2 presents the raw data. The biomass raw data include damaged invertebrates that were excluded from the data analysis as they may represent drift material therefore, not representative of the established benthic communities. Specifically, damaged polychaetes, *Phoronis* and Echinodermata were recorded at stations ST17, ST16 and ST18, respectively.

Table 4.15: Taxonomic groups of macrofaunal biomass, Dublin Array

Phylum	Biomass [AFDW g/0.1 m^2]	Biomass [%]
Annelida	111.67	1.5
Arthropoda	100.15	1.4
Mollusca	2687.2	36.3
Echinodermata	4498.8	60.8
Other phyla	5.216	< 0.1
Total	**7403.0**	**100**

Notes
Annelida comprised oligochaeta and polychaeta
Other phyla included Chordata, Cnidaria, Nemertea, Nematoda, Phoronida, Platyhelminthes and Sipuncula

Echinodermata comprised 60.8 % of the infaunal biomass across the Dublin Array survey area, followed by Mollusca (36.3 %). Annelida and Arthropoda had similar contributions to the infaunal biomass with 1.5 % and 1.4 %, respectively, whereas other phyla comprised less than 0.1 % of the infaunal biomass.

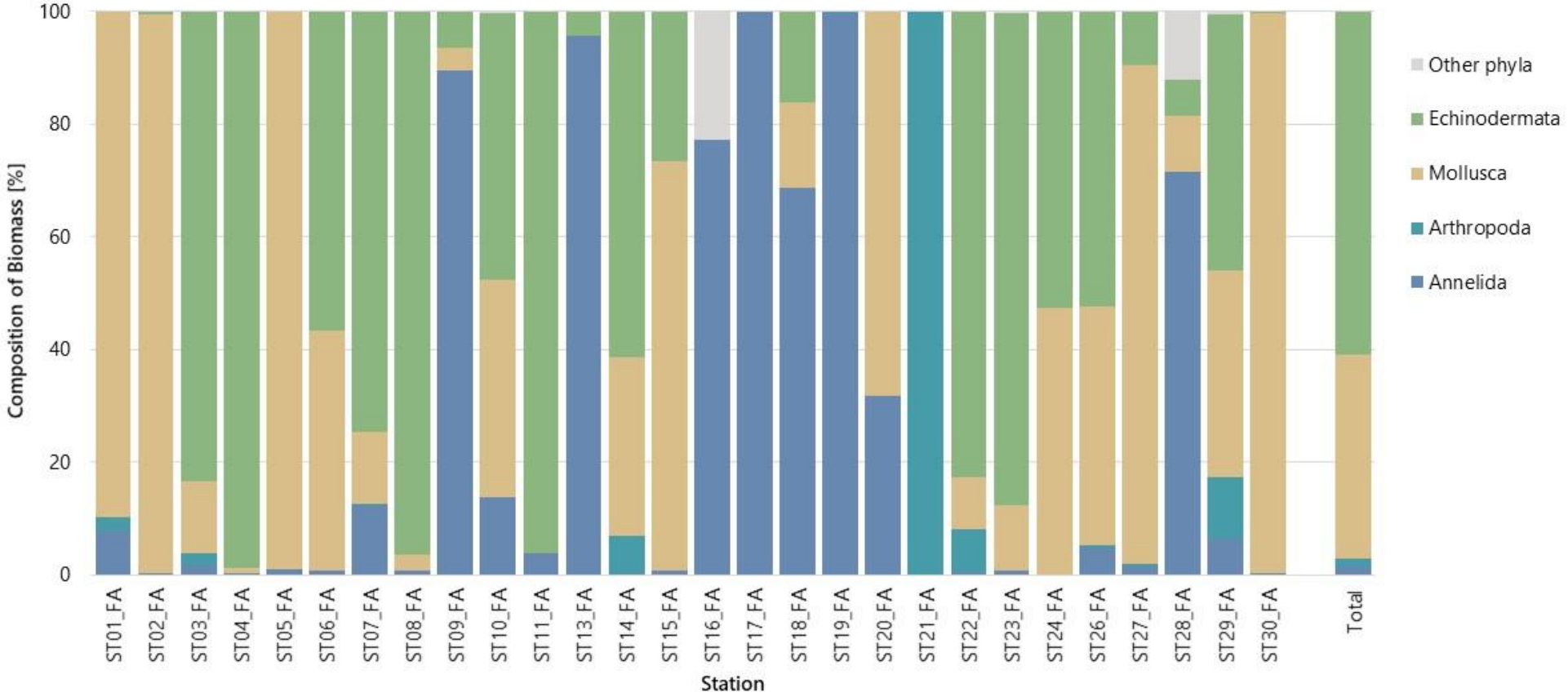
The total biomass ranged from 0.0413 AFDW g/0.1 m^2 (station ST21) to 1582.3 AFDW g/0.1 m^2 (station ST24), with a mean of 274.18 AFDW g/0.1 m^2 across the survey area. Analysis of the species list indicated that the biomass at station ST24 was associated with a numerical dominance of the bivalve *K. bidentata* and the brittlestars *O. fragilis*, *Acrocnida brachiata* and *A. filiformis*, in addition to large echinoderms such as the sea urchin *E. cordatum* and the holothurian *Leptosynapta bergensis*.

When assessed on a station basis, results indicated that the highest biomass of Annelida was recorded at station ST26 and was associated with a numerical abundance of *S. lamarcki*. The highest biomass of Arthropoda was recorded at station ST14 and was associated with large crustaceans such as the crabs *Atelecyclus rotundatus* and *Pagurus bernhardus*.

Table 4.16: Phyletic composition of infaunal biomass, Dublin Array

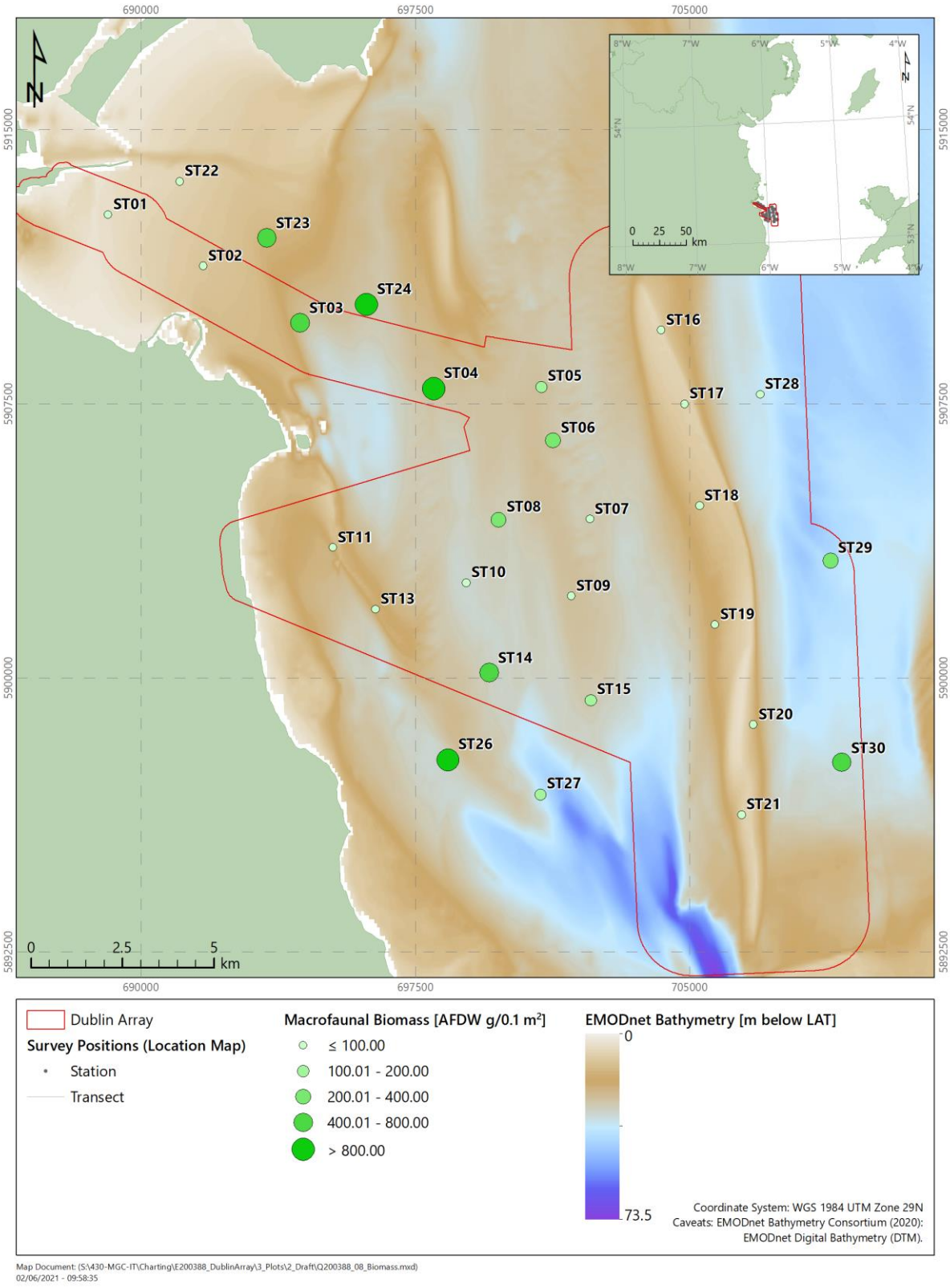
Station	Biomass [AFDW g/0.1m^2]					
	Annelida	Arthropoda	Mollusca	Echinodermata	Other Phyla	Total
ST01	0.4865	0.1400	5.5388	0.0063	0.0026	**6.1741**
ST02	0.1987	0.0040	67.813	0.4213	0.0000	**68.437**
ST03	8.6826	12.353	68.941	452.70	0.5832	**543.26**
ST04	3.4981	0.0040	12.574	1245.1	0.5994	**1261.7**
ST05	1.0529	0.0080	106.94	0.0038	0.0065	**108.01**
ST06	2.1135	0.0049	140.67	185.93	0.0045	**328.73**
ST07	0.4910	0.0138	0.5059	2.9625	0.0000	**3.9731**
ST08	2.2800	0.0000	7.2471	258.27	0.2755	**268.08**
ST09	6.6219	0.0000	0.2953	0.4750	0.0090	**7.4013**
ST10	6.8697	0.0138	19.280	23.676	0.0890	**49.929**
ST11	0.1013	0.0000	0.0000	2.6025	0.0000	**2.7038**
ST13	0.3890	0.0000	0.0000	0.0175	0.0000	**0.4065**
ST14	2.5890	45.872	219.75	423.89	0.1052	**692.21**
ST15	1.4161	0.0204	140.24	51.208	0.0452	**192.93**
ST16	0.1219	0.0000	0.0000	0.0000	0.0000	**0.1219**
ST18	0.2458	0.0000	0.0541	0.0000	0.0000	**0.2999**
ST19	1.0671	0.0027	0.0000	0.0000	0.0000	**1.0698**
ST20	0.2606	0.0000	0.5600	0.0000	0.0000	**0.8206**
ST21	0.0000	0.0413	0.0000	0.0000	0.0000	**0.0413**
ST22	0.2994	5.5613	6.8400	60.328	0.0000	**73.028**
ST23	3.0381	0.0236	48.585	362.80	0.7929	**415.24**
ST24	2.0019	0.0022	747.045	833.20	0.0671	**1582.3**
ST26	40.662	3.9111	364.36	448.64	0.0071	**857.58**
ST27	2.2535	0.7871	133.17	14.373	0.0594	**150.64**
ST28	5.4110	0.0000	0.7518	0.4813	0.9123	**7.5562**
ST29	18.496	31.315	106.251	130.845	1.3355	**288.24**
ST30	1.0084	0.0738	489.77	0.8675	0.2858	**492.00**
Minimum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0413**
Maximum	**40.662**	**45.872**	**747.04**	**1245.1**	**1.335**	**1582.3**
Median	**1.4161**	**0.0080**	**12.5741**	**2.9625**	**0.0071**	**73.028**
Mean	**4.1354**	**3.7093**	**99.525**	**166.62**	**0.1919**	**274.18**
Standard Deviation	**8.2801**	**10.584**	**175.83**	**299.86**	**0.3473**	**408.44**

Notes
Biomass expressed as ash free dry weight in g/0.1 m^2 grab sample
Annelida comprised oligochaeta and polychaeta



Notes
Biomass expressed as ash free dry weight in g/0.1 m^2 grab sample

Figure 4.17: Phyletic composition of biomass, Dublin Array



Notes

Biomass expressed as ash free dry weight (AFDW) in g/0.1 m² grab sample

Figure 4.18: Infaunal biomass overlaid on bathymetry, Dublin Array

4.4.2 Colonial Epifauna

4.4.2.1 Phyletic Composition

Table 4.17 presents the community structure of sessile colonial epifauna and Table 4.18 presents the top ten most frequently occurring colonial epifaunal taxa across the survey area. Figure 4.19 illustrates the relationships between sediment type and the occurrence of colonial epifauna and Figure 4.20 illustrates the colonial epifauna community structure at single stations.

Colonial epifauna comprised 37 taxa, of which Bryozoa accounted for the highest percentage of taxa (59.5 %) followed by Cnidaria (35.1 %) and Porifera (2.7 %), whereas other phyla comprised a single taxon represented by Folliculinidae. Juveniles of the phylum Cnidaria were recorded at seven stations but excluded from further analysis of the dataset.

Station ST16 was devoid of colonial epifauna and at the remaining stations, the number of colonial epifaunal taxa ranged from one (stations ST02, ST11, ST17, ST19, ST21, ST22) to 18 (station ST27). Comparatively high number of colonial epifaunal taxa were recorded at stations ST09 and ST14, which had 14 taxa each.

Folliculinidae were the most frequently occurring colonial epifauna taxon being recorded at 19 of the 28 stations investigated, followed by hydroids of the order Leptothecata, sponges of the genus *Cliona* and bryozoans of the genus *Schizomavella*.

In general, the number of colonial epifaunal taxa increased with increased heterogeneity of the sediment (Figure 4.19).

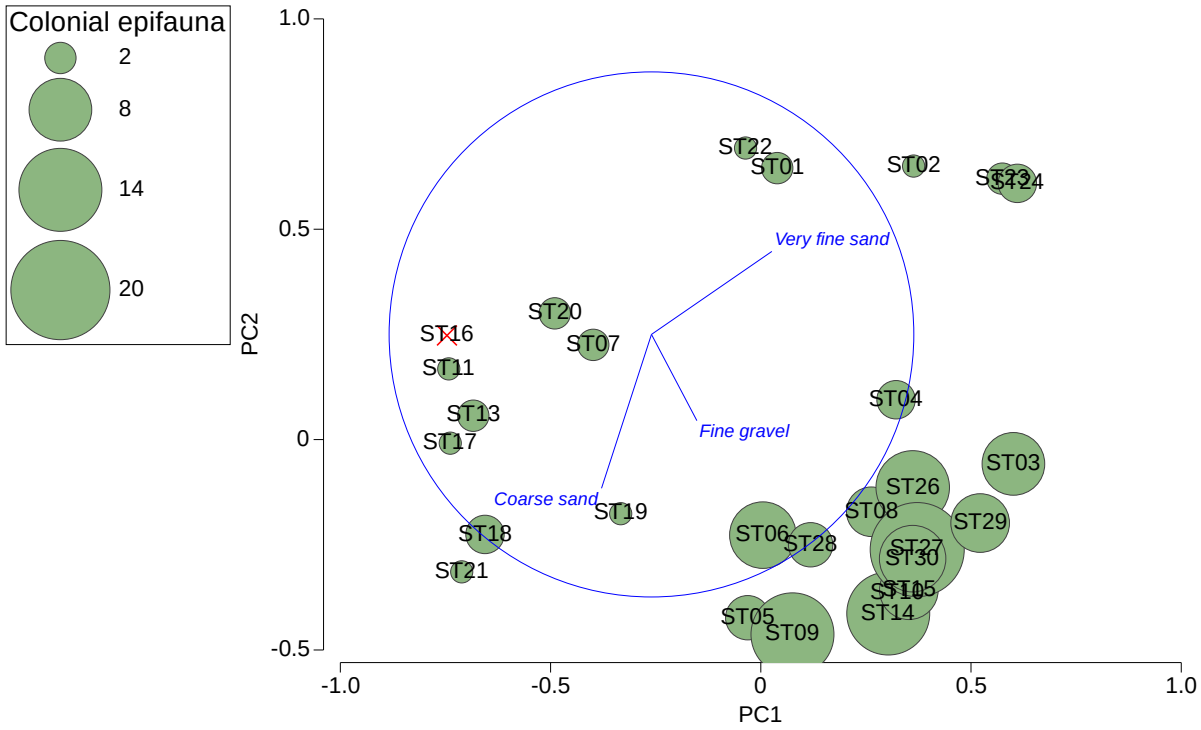
Table 4.17: Taxonomic groups of colonial epifauna, Dublin Array

Taxonomic Group	Number of Taxa	Composition of Taxa [%]
Porifera	1	2.7
Cnidaria	13	35.1
Bryozoa	22	59.5
Other phyla	1	2.7
Total	**37**	**100**

Notes
Macrofaunal samples were processed through a 1 mm mesh sieve
Other phyla include Folliculinidae

Table 4.18: Top ten most frequently occurring colonial epifaunal taxa, Dublin Array

Taxon	Frequency [%]
Folliculinidae	67.9
Leptothecata	64.3
Cliona	39.3
Schizomavella	35.7
Conopeum reticulum	32.1
Escharella immersa	21.4
Sertularia	17.9
Hydrallmania falcata	14.3
Anthozoa	14.3
Alcyonium digitatum	14.3



Notes
PC = Principal component

Figure 4.19: 2D PCA of sediment composition with superimposed circles proportional in diameter to the number of colonial epifauna, Dublin Array

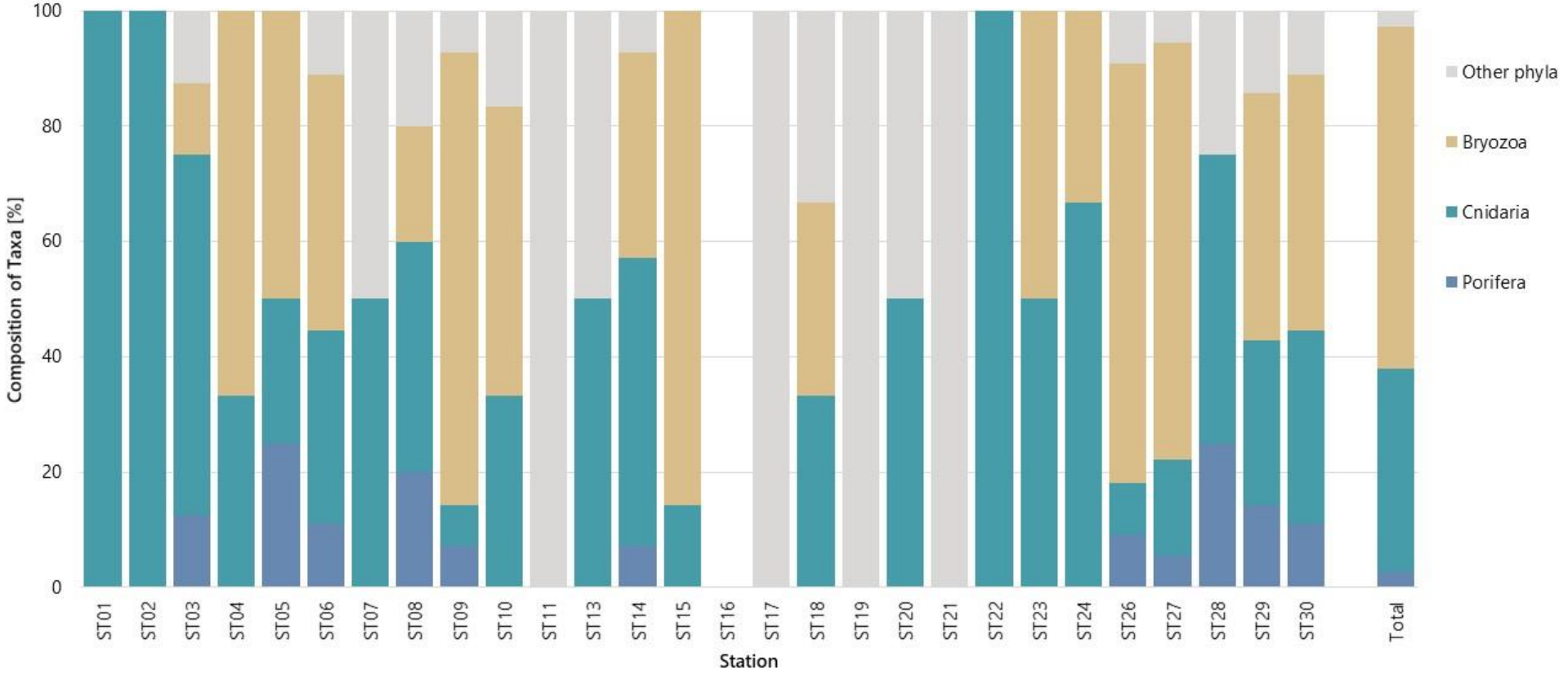


Figure 4.20: Phyletic composition of colonial epifaunal taxa, Dublin Array

4.5 Seabed Habitats and Biotopes

The physical and biological characteristics of the multivariate groups identified through the multivariate analysis (Section 4.4.1.3) were evaluated in conjunction with the available geophysical data and the results of the habitat assessment, detailed in the Environmental Features Report (Fugro 2021a), to provide a comprehensive habitat assessment. The seabed video provides an overview of the seabed over a wider area and can identify isolated features. By comparison, grab sampling provides detailed information of the sediment composition and associated fauna at a single point source and is essential for the biotope classification of sedimentary habitats. Conversely, hard substrates habitats, where grab sampling is unsuitable, can be classified through photographic data only.

Stations ST17 and ST21, which were removed from the multivariate analysis, were individually assessed in relation to physical and biological characteristics from video and grab sampling data.

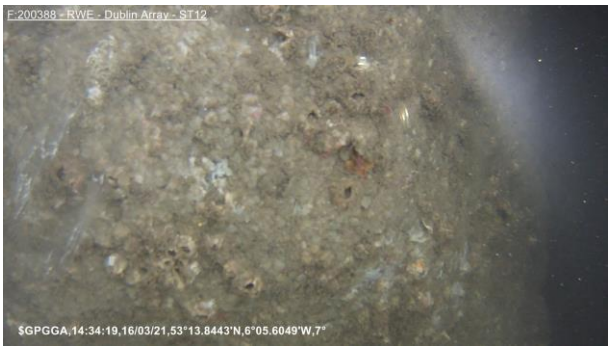
Results of the seabed video indicated the presence of the following habitats:

- 'Sublittoral sand' (A5.2), described as clean medium to fine sands or non-cohesive slightly muddy sands, often subject to a degree of wave action or tidal currents and characterised by polychaetes, bivalve molluscs and amphipods (EEA, 2019).
- 'Sublittoral sand' (A5.2) was assigned to most stations across the Dublin Array survey area including:
  - ST16, ST17, ST18, ST19, ST20 and ST21, on the Kish and Bray sandbanks, and characterised by rippled sand, with a slight proportion of gravel and shell fragments; epibiota included sand eels (Ammodytidae);
  - ST05, ST06, ST07, ST08, ST09, ST11, ST13 and ST28, which featured similar sediments, albeit with a richer epibiota including soft *Alcyonium digitatum*, Paguridae, *Ophiura albida*, *Asterias rubens*, *Lanice conchilega*, crabs of the genus *Liocarcinus* and sand eels (Ammodytidae);
  - ST02, ST03, ST04, ST24 and ST26, characterised by sand with a mud component and shell fragments; epibiota included brittlestars and anemones;
  - ST01, ST22 and ST23, characterised by sand with shell fragments; epibiota included *Lanice conchilega*.
- 'Circalittoral mixed sediment' (A5.14), described as mixed sediments (muddy gravelly sands or mosaics of shell, cobbles and pebbles with upon mud, sand or gravel) in water depths of 15 m and 20 m. A wide range of infauna is present in such habitat, with the hard substrata component providing a suitable surface for epifaunal species (EEA, 2019). 'Circalittoral mixed sediment' (A5.14) was assigned to stations ST10, ST14, ST15, ST29 and ST30, characterised by dense shells aggregations on slightly gravelly, slightly muddy sand; epibiota included faunal turf, barnacles, *Alcyonium digitatum*, brittlestars including *Ophiothrix fragilis* and *Ophiura albida*, scallops including *Aequipecten opercularis* and hermit crabs.

- 'Atlantic and Mediterranean high energy infralittoral rock' (A3.1), described as a rocky habitat in the infralittoral zone subject to exposed to extremely exposed wave action or strong tidal streams; epibiota include kelp, such as *Laminaria hyperborea* with foliose seaweeds and invertebrates, the latter becoming more prominent in areas of strong water movement (EEA, 2019). 'Atlantic and Mediterranean high energy infralittoral rock' (A3.1) was assigned to station ST12, characterised by cobbles and boulders with small patches of gravelly sand, pebbles and shell fragments, as well as mud on mixed sediment. Epibiota included crab, faunal turf including *Nemertesia antennina* and species of the family Haleciidae, barnacles, red algae and faunal tubes.

Owing to coarseness of the sediment, no grab sampling could be undertaken at station ST12, which was assessed based the seabed video and photographic data. Station ST12 was further assessed in relation to the Annex I habitat 'Stony reef', owing to the presence of dense aggregation of cobbles and boulders. The results of the assessment, detailed in Appendix C.4 and summarised in Table 4.19, returned an overall assessment of 'medium resemblance' to a stony reef along two sections of the transect.

Table 4.19: Station ST12 stony reef assessment summary, Dublin Array

Station	Assessment Criteria		Representative Image
ST12	Length	64 m	
	Elevation	64 mm – 5 m	
	Cobbles and boulders composition	40 % - 95 %	
	Epifauna coverage	> 80 %	
	Resemblance to a stony reef	Medium	
	Length	21 m	
	Elevation	64 mm – 5 m	
	Cobbles and boulders composition	40 % - 95 %	
	Epifauna coverage	> 80 %	
	Resemblance to a stony reef	Medium	

4.5.1 Biotope Classification

Table 4.20 presents the EUNIS hierarchical structure of the biotopes identified across the Dublin Array survey area, by integration of the grab samples and the video and photographic data.

Table 4.21 presents the biotopes identified for each of the multivariate groups, as well as stations ST17 and ST21, which were excluded from the multivariate analysis (details in Section 4.4.1.3).

Table 4.20: EUNIS classification habitats, Dublin Array

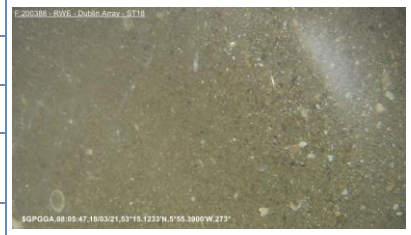
EUNIS (2019) Habitat Classification				
Environment Level 1	Broad Habitat Level 2	Habitat Level 3	Biotope Complex Level 4	Biotope Level 5
A Marine	A3 Infralittoral rock and other hard substrata	A3.1 Atlantic and Mediterranean high energy infralittoral rock	-	-
	A5 Sublittoral sediment	A5.1 Sublittoral coarse sediment	A5.13 Infralittoral coarse sediment	*Hesionura elongata* and *Microphthalmus similis* with other interstitial polychaetes in infralittoral mobile coarse sand (A5.134)
				A5.135 *Glycera lapidum* in impoverished infralittoral mobile gravel and sand
		A5.2 Sublittoral sand	A5.24 Infralittoral muddy sand	A5.242 *Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand
			A5.26 Circalittoral muddy sand	A5.261 *Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment
		A5.3 Sublittoral mud	A5.35 Circalittoral sandy mud	A5.351 *Amphiura filiformis*, *Mysella bidentata** and *Abra nitida* in circalittoral sandy mud

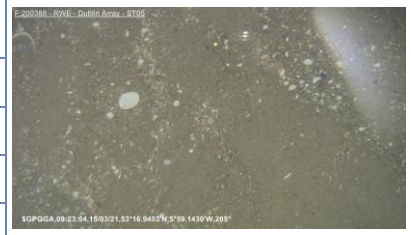
Notes

EUNIS = European Nature Information System

* = *Mysella bidentata* is currently regarded as *Kurtiella bidentata*, but the EUNIS biotope has retained the former taxonomic name

Table 4.21: Characteristics of EUNIS habitats identified from the grab samples, Dublin Array

Habitat Classification (EUNIS, 2019)	Multivariate Faunal Group	Physical Characteristics	Epibiota (from video and photographs)	Characterising Taxa (from grab samples)		Representative Photograph from Video Analysis
				Infaunal	Epifaunal	
Infralittoral coarse sediment (A5.13)	A ▲ ST11, ST13, ST16 ST18, ST19, ST20	Moderately well sorted (medium) sand Depth: 6.5 m to 27 m	Ophiuroidea	*Nephtys cirrosa*	Folliculinidae	
			Paguridae	*Notomastus*	*Cnidaria*	
			Ammodytidae	*Urothoe brevicornis*	Leptothecata	
			-	*Centraloecetes kroyeranus*	*Disporella hispida*	
			-	*Nucula nitidosa*	-	
	Station ST17	Moderately well sorted (medium) sand Depth: 5 m	-	-	Folliculinidae	
	Station ST21	Moderately well sorted (coarse) sand Depth: 16 m	-	*Gastrosaccus spinifer*	Folliculinidae	
Fabulina fabula and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand (A5.242)	B1 ▼ ST01, ST02, ST22	Moderately well sorted (fine) sand Depth: 6 m to 12 m	*Lanice conchilega*	*Nucula nitidosa*	Bougainvilliidae	
			Ophiothrix fragilis	*Fabulina fabula*	Leptothecata	
			Ophiura albida	*Magelona johnstoni*	-	
			Actiniaria	*Galathowenia oculata*	-	
			? Chaetopteridae	*Spiophanes bombyx*	-	

Habitat Classification (EUNIS, 2019)	Multivariate Faunal Group	Physical Characteristics	Epibiota (from video and photographs)	Characterising Taxa (from grab samples)		Representative Photograph from Video Analysis
				Infaunal	Epifaunal	
Glycera lapidum in impoverished infralittoral mobile gravel and sand (A5.135)	B2 ◆ ST05, ST06, ST07 ST08, ST28	Poorly sorted gravelly (medium) sand Depth: 26 m to 39 m	*Alcyonium digitatum*	*Lumbrineris* cf. *cingulata*	*Cliona*	
			Paguridae	*Nephtys cirrosa*	Leptothecata	
			Ophiura albida	*Kurtiella bidentata*	*Sertularia*	
			Lanice conchilega	*Ophelia borealis*	*Membraniporoidea*	
			Ammodytidae	*Spiophanes bombyx*	*Schizomavella*	
Amphiura filiformis, *Mysella bidentata** and *Abra nitida* in circalittoral sandy mud (A5.351)	B3 ■ ST03, ST04, ST23, ST24	Poorly sorted muddy (fine) sand Depth: 9 m to 26.5 m	*Ophiothrix fragilis*	*Kurtiella bidentata*	*Cliona*	
			Ophiura albida	*Ophiothrix fragilis*	Leptothecata	
			Ophiura ophiura	*Amphiura filiformis*	*Conopeum reticulum*	
			Asterias rubens	*Pholoe baltica*	*Bougainvilliidae*	
			Urticina sp.	*Nucula nitidosa*	*Alcyonidiidae*	
Abra alba and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment (A5.261)	B4 ● ST10, ST14, ST15, ST26, ST27, ST29, ST30	Poorly sorted gravelly (medium) sand Depth: 20 m to 40 m	*Ophiothrix fragilis*	*Nucula nucleus*	*Cliona*	
			Ophiura albida	*Spirobranchus lamarcki*	Leptothecata	
			Hydrallmania falcata	*Abra alba*	*Conopeum reticulum*	
			Asterias rubens	*Urothoe elegans*	*Escharella immersa*	
			Alcyonium digitatum	*Lumbrineris* cf. *cingulata*	*Schizomavella*	
Hesionura elongata and *Microphthalmus similis* with other interstitial polychaetes in infralittoral mobile coarse sand (A5.134)	Station ST09	Poorly sorted gravelly (coarse) sand Depth: 26.3 m	Paguridae	*Ophelia borealis*	Folliculinidae	
			Ammodytidae	*Mediomastus fragilis*	*Cliona*	
			-	*Hesionura elongata*	*Hydrallmania falcata*	
			-	*Glycera lapidum*	*Conopeum reticulum*	
			-	*Microphthalmus similis*	Electridae	

Habitat Classification (EUNIS, 2019)	Multivariate Faunal Group	Physical Characteristics	Epibiota (from video and photographs)	Characterising Taxa (from grab samples)		Representative Photograph from Video Analysis
				Infaunal	Epifaunal	
Atlantic and Mediterranean high energy infralittoral rock (A3.1)	Station ST12	Pebbles, cobbles boulders; gravelly sand, shell fragments and mud† Depth: 13.5 m	Decapoda *Nemertesia antennina* Haleciidae Sessilia Rhodophyta	No grab sampling		

Notes
EUNIS = European Nature Information System
Multivariate groups identified by hierarchical clustering analysis of enumerated fauna
Depth is in m below sea level (BSL)
Sediment classification based on Folk (British Geological Survey (BGS) modified)
Description based on Wentworth (1922) scale
Characterising taxa from grab samples are the top five identified through the similarity percentage analysis (SIMPER)
* = *Mysella bidentata* is currently regarded as *Kurtiella bidentata*, but the EUNIS biotope has retained the former taxonomic name
† = Qualitative description from video and photographic data
Epifauna from the grab samples lists the most frequently occurring taxa
Station ST17 and ST21 were excluded from the multivariate analysis and assessed individually
Station ST12 was assessed only by video and photographic data, owing to the coarseness of the sediment which prevented grab sampling

4.5.1.1 Infralittoral Coarse Sediment (A5.13)

The biotope complex 'Infralittoral coarse sediment' (A5.13) is described as typical of moderately exposed habitats with coarse and/or gravelly sand, shingle and gravel in the infralittoral, subject to disturbance by tidal streams and wave action. As consequence of the physical disturbance, the fauna of this habitat is restricted to robust infaunal polychaetes, crustaceans and venerid bivalves (EEA, 2019).

This biotope complex was assigned to multivariate group A, and stations ST17 and ST21, characterised by moderately well sorted coarse sand, with no fines, in water depth < 20 m (BSL), except for station ST16 which was in 27 m (BSL) water depth. Infaunal species richness and abundance were low and represented by the polychaetes *N. cirrosa* and *Notomastus*, crustacean amphipods such as *Centraloecetes kroyeranus* and *G. spinifer* and the bivalve *N. nitidosa*. Epifauna included Folliculinidae, Cnidaria and bryozoans such as *Disporella hispida*. In situ observation, detailed in Appendix C.2, indicated the presence of sand eels at stations ST19 and ST20.

The seabed video and photographic analysis of stations in group A, and stations ST17 and ST21 (presented in Appendix C.3) indicated a seabed comprising rippled sand with shell fragments. Epibiota, where present, was represented by Ophiuroidea, Paguridae and Ammodytidae.

4.5.1.2 *Fabulina fabula* and *Magelona mirabilis* with Venerid Bivalves and Amphipods in Infralittoral Compacted Fine Muddy Sand (A5.242)

The biotope '*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand' (A5.242) is described as stable, fine, compacted sands and slightly muddy sands in the infralittoral and littoral fringe, hosting communities dominated by venerid bivalves. This biotope may have a prevalence of *F. fabula* and polychaetes of the genus *Magelona*. Amphipods of the genus *Bathyporeia* and polychaetes such as *Spiophanes bombyx*, *Chaetozone* and *Nephtys* spp. may be commonly recorded while bivalves such as *Spisula* spp. may occur in low numbers (EEA, 2019).

This biotope was assigned to multivariate group B1, characterised by moderately well sorted fine sand, with < 2 % gravel and fines, in water depth ≤ 12 m (BSL). Characterising taxa included *F. fabula*, *M. johnstoni*, *N. nitidosa* and *S. bombyx*. Additional species from the analysis of the species list included *Nephtys hombergii*, *Spisula subtruncata*, *Chaetozone gibber* and *Bathyporeia elegans*. Epifauna was poorly represented and included hydroids of the family Bougainvilliidae and the order Leptothecata.

The seabed video and photographic analysis of stations in group B1 (Appendix C.3) indicated a seabed comprising sand with shell fragments and some mud within recesses at station ST22; epibiota, where present, comprised faunal tubes, such as *Lanice conchilega*.

4.5.1.3 *Glycera lapidum* in Impoverished Infralittoral Mobile Gravel and Sand (A5.135)

The biotope '*Glycera lapidum* in impoverished infralittoral mobile gravel and sand' (A5.135) is described as mixed slightly gravelly sands in the infralittoral on exposed open coasts, hosting impoverished communities characterised by the polychaete *Glycera lapidum* (agg.) and other species such as *S. bombyx* and *Nephtys* spp.

This biotope was assigned to multivariate group B2, characterised by poorly sorted gravelly sand, with < 5 % mud, in water depth ≤ 39 m (BSL). Characterising taxa included *L.* cf. *cingulata*, *N. cirrosa*, *K. bidentata*, *O. borealis* and *S. bombyx*, and analysis of the species list indicated the presence of *G. lapidum* and *Glycera tridactyla*. Epifauna included species of *Cliona*, Leptothecata, *Sertularia*, Membraniporoidea and *Schizomavella*. In situ observation, detailed in Appendix C.2 indicated the presence of sand eels at stations ST05 and ST07.

The seabed video and photographic analysis of stations in group B2 (Appendix C.3) indicated a seabed comprising slightly gravelly rippled sand with shell fragments. Epibiota comprised faunal turf including *Hydrallmania falcata, Nemertesia* sp. and *Sertularia* sp.; *Alcyonium digitatum*, Paguridae, brittlestars including *Ophiura albida*, the starfish *Asterias rubens*, Ammodytidae, crabs of the genus *Liocarcinus*, Actiniaria, Buccinidae and the polychaete *L. conchilega*.

4.5.1.4 *Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in Circalittoral Sandy Mud (A5.351)

The biotope '*Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud (A5.351)' is described as a community characterised by *A. filiformis* with *Kurtiella* (formerly *Mysella*) *bidentata* and *Abra nitida* in muddy sands in moderately deep water. This community may also include polychaetes of the genera *Nephtys* and *Pholoe*, as well as *Phoronis*, the sea urchin *Echinocardium cordatum*, the bivalve *Nucula nitidosa* and the cumacean *Eudorella truncatula* (EEA, 2019).

This biotope was assigned to multivariate group B3, characterised by poorly sorted muddy sand in water depth ≤ 26.5 m (BSL). Characterising taxa included *K. bidentata*, *Ophiothrix fragilis*, *A. filiformis*, *Pholoe baltica* and *N. nitidosa*. Additional taxa from the analysis of the species list included *Abra alba*, *N. hombergii* and *Nephtys kersivalensis*, *Phoronis*, *E. cordatum* and *E. truncatula*. Epifauna included the bryozoan *Conopeum reticulum* and species of *Cliona*, Leptothecata, Bougainvilliidae and Alcyonidiidae.

The seabed video and photographic analysis of stations in group B3 (Appendix C.3) indicated a seabed featuring sand with shell fragments and sparse gravel, with patches of clay at station ST04 and mud deposition in recesses at stations ST23 and ST24. Sand ripples were recorded at stations ST23 and ST24. Epibiota included *O. fragilis*, *O. albida*, anemones such as *Urticina* sp. and polychaete tubes, in addition to *A. rubens* and ?*Virgularia mirabilis* at station ST23.

4.5.1.5 *Abra alba* and *Nucula nitidosa* in Circalittoral Muddy Sand or Slightly Mixed Sediment (A5.261)

The biotope '*Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment' (A5.261) is described as non-cohesive muddy sands or slightly shelly/gravelly muddy sand characterised by the bivalves *A. alba* and *N. nitidosa*. Other important taxa include species of *Nephtys* and *Chaetozone* and *Spiophanes bombyx*. The echinoderms *O. albida* and *A. rubens* may also be present (EEA, 2019).

This biotope was assigned to multivariate group B4, characterised by poorly sorted gravelly sand and mud content ≤ 7.7 %, in water depth ≤ 40 m. Characterising taxa included *N. nucleus*, *Spirobranchus lamarcki*, *A. alba*, *Urothoe elegans* and *L.* cf. *cingulata*. Additional taxa from the analysis of the species list included *Chaetozone zetlandica, O. albida*, *E. cordatum*, *Nephtys caeca*, *N. hombergii* and *Nephtys kersivalensis*. Epifauna included *C. reticulum* and *Escharella immersa*, as well as species of *Cliona*, Leptothecata and *Schizomavella*.

The seabed video and photographic analysis of stations in group B4 (Appendix C.3) indicated a seabed comprising gravelly sand and/or mixed sediments with shell fragments. Epibiota included *O. fragilis* and *O. albida*, Pectinidae, faunal turf including *Hydrallmania falcata*, Buccinidae, Paguridae, *Asterias rubens*, Ascidiacea and faunal tubes (?Chaetopteridae).

4.5.1.6 *Hesionura elongata* and *Microphthalmus similis* with Other Interstitial Polychaetes in Infralittoral Mobile Coarse Sand (A5.134)

The biotope '*Hesionura elongata* and *Microphthalmus similis* with other interstitial polychaetes in infralittoral mobile coarse sand' (A5.134), is described as mobile medium to coarse sand on infralittoral sandbanks and sandwaves with populations of interstitial polychaetes such as *Hesionura elongata* and *Microphthalmus similis*. Meiofaunal population is an important feature of this biotope (EEA, 2019).

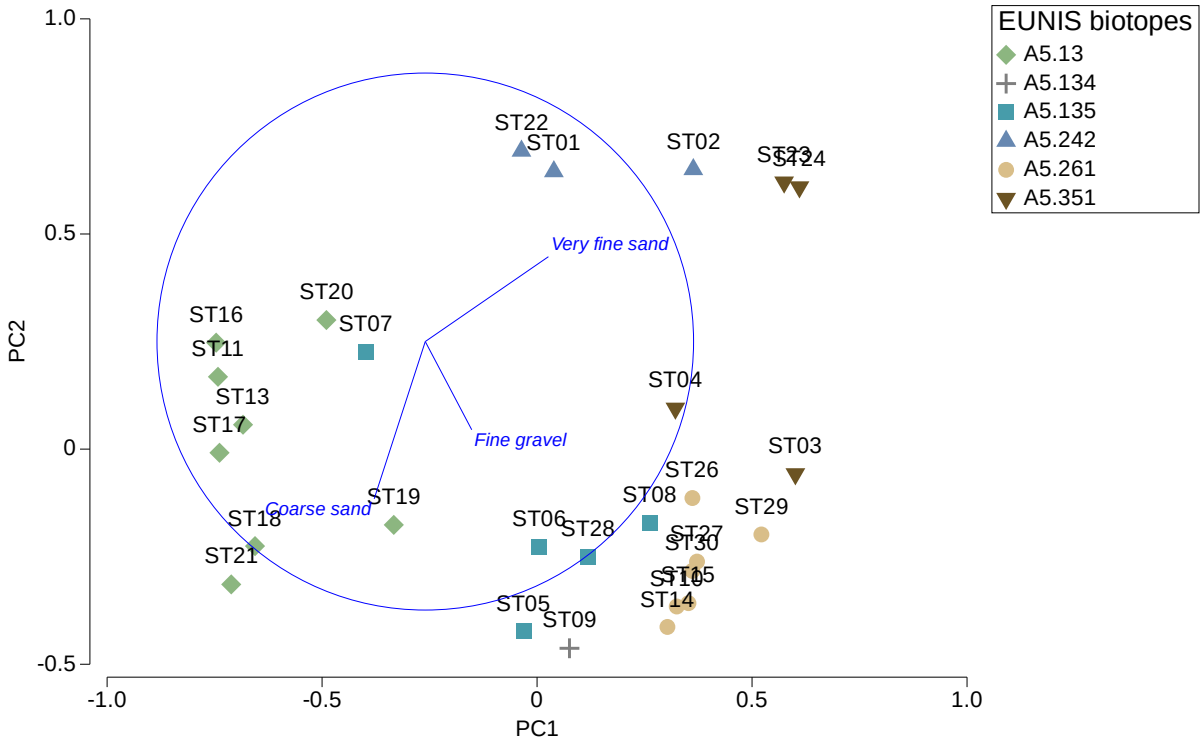
This biotope was assigned to station ST09 characterised by poorly sorted sand in water depth of 26.3 m. Results of the multivariate analysis indicated that station ST09 was different enough to separate from the other stations at a similarity of 26 % (details in Section 4.4.1.3). Characterising taxa included *O. borealis*, *M. fragilis*, *H. elongata*, *G. lapidum* and *M. similis*. Additional taxa from the analysis of the species list included Nematoda, Nemertea and *Polycirrus*.

The seabed video and photographic analysis of stations ST09 (Appendix C.3) indicated a seabed comprising gravelly sand with shell fragments and occasional pebbles, hosting Paguridae and Ammodytidae.

Figure 4.21 illustrates the association between the habitats and biotopes and the sediment type, highlighting the gradation from infralittoral coarse sediment with little or no fauna, to circalittoral muddy sand and mixed sediments as depth and sediment heterogeneity

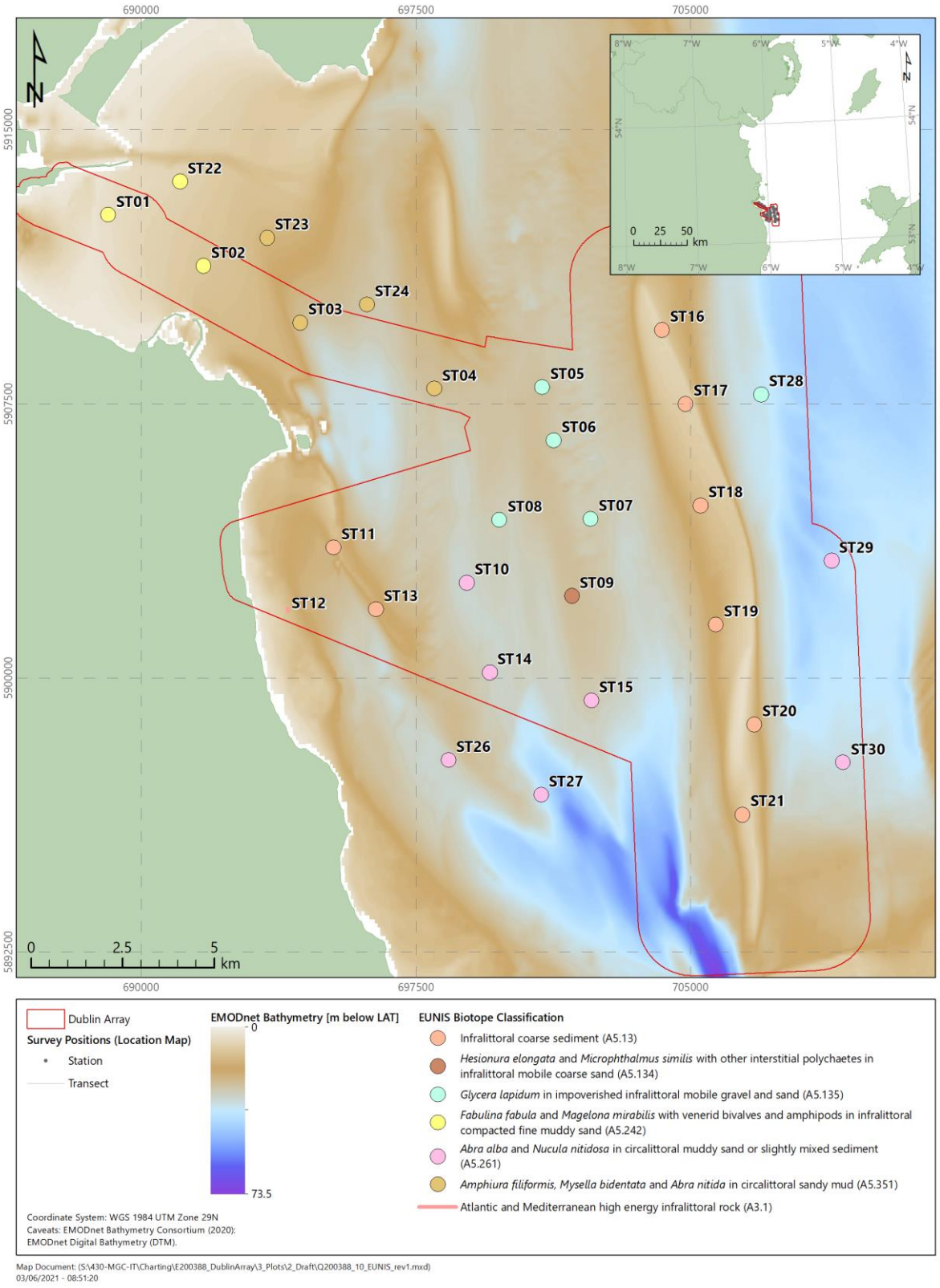
increased. The proportion of fine sediment increased the compactness of the sediment allowing the establishment of biotopes typified by venerid bivalves.

Figure 4.22 presents the spatial distribution of the habitats and biotopes across the Dublin Array survey area.



Notes
EUNIS = European Nature Information System
'Infralittoral coarse sediment' (A5.13)
'*Hesionura elongata* and *Microphthalmus similis* with other interstitial polychaetes in infralittoral mobile coarse sand' (A5.134)
'*Glycera lapidum* in impoverished infralittoral mobile gravel and sand' (A5.135)
'*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand' (A5.242)
'*Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment' (A5.261)
'*Amphiura filiformis*, *Mysella bidentata** and *Abra nitida* in circalittoral sandy mud' (A5.351)
* = *Mysella bidentata* is currently *Kurtiella bidentata*, but the EUNIS biotope has retained its original name

Figure 4.21: 2D PCA of sediment composition with superimposed EUNIS biotopes, Dublin Array



Notes
EUNIS = European Nature Information System
LAT = Lowest Astronomical Tide

Figure 4.22: Spatial distribution of EUNIS (2019) habitats and biotopes, Dublin Array

5. Discussion

5.1 Sediment Characterisation

Physical and chemical analysis of the seabed grab samples provided information for the sediment characterisation across the Dublin Array survey area. Sediment characterisation is an important component of environmental studies to support engineering design and/or environmental impact assessment.

Results indicated a TOC content of between < 0.02 % and 1.43 %, with a median of 0.09 %. Values of organic carbon in the south-west Irish Sea have been reported in the range of 0.02 % to 0.55 % for sediments with low silt/clay levels, whereas levels ranging from 0.04 % to 1.39 % have been reported in the south-east Irish Sea (Wilson et al., 2001). In the northern Irish Sea, the levels of organic carbon are reported to increase with decreasing sediment particle size reaching values of 1.5 % in the muddy *Nephrops* grounds (Wilson et al., 2001), north of Dublin Bay. Roche et al. (2007) reported values of organic carbon in the range of 0.032 % to 0.120 % for the Kish Bank, and in the range of 0.018 % to 0.072 % for the Blackwater Bank, both banks being characterised by sandy sediment, with low proportions of silt/clay.

The carbonate content in this study was between 4.49 % and 25.0 % with a median of 13.3 %. The carbonate level of the sand and gravel in the southern Irish Sea is reported to be high but variable, with levels of between 9.5 % and 72 % along two transects between Wales and Ireland. In general, the size frequency of the carbonate component is reported to peak in the gravel and coarse to medium sand regions (Wilson et al., 2001). The carbonate of Irish Sea sediments is derived mostly from calcareous skeletons of bivalve molluscs, cirripedes, bryozoans, gastropods, echinoids and ophiuroids (Wilson et al., 2001) all of which were recorded in this study. Additionally, the seabed video and photography indicated the presence of shells at most stations.

Results of the sediment PSD indicated a predominantly sandy sediment, the coarseness of which ranged from 'very fine sand' to 'coarse sand', with a median in the 'medium sand' region, based on the Wentworth (1922) scale. Percentages of gravel and fines were low by comparison, the gravel content being up to 22.04 % with a median of 2.51 %, the fines content being up to 18.01 %, with a median of 2.85 %. Three sediment classes were identified using the Folk (BGS modified) classification, including 'gravelly sand' and 'sand', each typifying 43 % of stations, whereas 'muddy sand' typified 14 % of stations. The sorting coefficient reflected the heterogeneity of the sediment and ranged from well sorted to very poorly sorted, with most stations having poorly sorted sediments.

Roche et al. (2007) reported the sediment on the Kish Bank to comprise sand, with coarseness ranging from medium to very fine sand. Most stations were reported to comprise fine sand, one station was reported to comprise very fine sand and three stations were

reported to comprise medium sand. The gravel and fines contents were up to 16.48 % and 5.7 %, respectively, the latter being lower than the maximum recorded in this study, likely due to the wider sediment types encompassed in the Dublin Array survey area.

Five stations had bimodal or polymodal distribution, indicating different sources of sediment (Hein, 2007), likely to be associated with the physical disturbance from the hydrodynamics of the study area. In the Irish Sea, the hydrographic regime is controlled mostly by tidal energy, along with seasonal stratification of the water column (Coughlan et al., 2020). This results in high energy environments characterised by low rate of sediment deposition and sandbanks and sand ripples (Wilson et al., 2001) such those found in study area. The interaction of bed-stresses with unconsolidated sediments results in their mobilisation, which is primarily controlled by sediment grain size (Coughlan et al., 2020). The sediment in the Irish Sea is reported to be generally sandy gravel, except for some northern parts with finer sediment deposits (Wilson et al., 2001), associated with the northward pathways of sediment transport and subsequent deposition in areas of low bed-stress (Coughlan et al., 2020). Specifically, gravel is reported to be dominant in the Bray Bank area, grading to sands in the Kish and Burford Banks (Wheeler et al., 2001). In this study, the stations with polymodal PSD were at the southern and eastern boundary of the survey area marked by notable bathymetric changes.

5.2 Sediment Chemistry

5.2.1 Sediment Hydrocarbons

5.2.1.1 Total and Aliphatic Hydrocarbons

Marine sediments contain hydrocarbons derived from sources that enter the marine environment via three general processes: biosynthesis (marine and land organisms biosynthesised hydrocarbons), geochemical processes (submarine and coastal/terrestrial oil-seeps) and anthropogenic sources (Farrington & Meyer, 1975; Myers & Gunnerson, 1976). Anthropogenic hydrocarbon inputs to the marine environment include marine transportation, coastal oil refineries, accidental shipping losses, industrial and municipal waste (which includes sewage and dredged spoils). A significant contribution to the global budget enters the marine environment via urban and river run-off, atmospheric deposition (from combustion sources including PAHs) and natural seepages (Johnston, 1980; Dicks et al., 1987; North Sea Task Force [NSTF], 1993; OSPAR, 2000; 2010).

Total hydrocarbon content across the Dublin Array survey area was between < 0.5 µg/g and 10.6 µg/g with a median of 2.3 µg/g, indicating low anthropogenic input, as in general, marine sediments are considered unpolluted if the THC is below 10 µg/g (Farrington & Tripp, 1977; Volkman et al., 1992; Readman et al., 2002). The lower level of the Irish sediment quality guidelines for total extractable hydrocarbons is 1000 µg/g (Cronin et al., 2006).

The highest concentrations of n-alkanes were the odd carbon number n-alkanes between nC_{27} and nC_{33} at most stations, indicating predominantly biogenic sources of hydrocarbons. Biosynthesised hydrocarbons are ubiquitous in the marine environment (Harada et al., 1995; Parinos et al., 2013). Odd carbon number, long chain n-alkanes are widely distributed in the plant kingdom (Eglinton et al., 1962; Douglas & Eglinton, 1966; Bush & McInerney, 2013) as components of cuticle waxes. These are common on the surfaces of leaves, stems, flowers and pollen and their presence in sediment is indicative of terrestrial inputs. Relatively high concentrations of nC_{29}, nC_{31} and nC_{33} are therefore a common feature of many marine sediments (Farrington et al., 1977), particularly inshore marine sediments (Bouloubassi et al., 1997).

At stations ST11, ST13, ST16, ST19 and ST21, nC_{12} was the most abundant n-alkane. The GC-FID profiles of these stations (Appendix E) and n-alkane distribution did not indicate petrogenic contamination at these stations. In addition, the THC at these stations was low and ranged from < 0.5 µg/g and 0.6 µg/g. The elevated nC_{12} concentration has also influenced the carbon preference index (CPI) values which were < 1.00 at stations ST16, ST19 and ST21, whereas stations ST11 and ST13 had CPI values of 1.00 and 1.13, respectively. The remaining stations had CPI values of between 1.57 and 3.7 with a median of 1.79 across the survey area. Elevated CPI ratios (i.e. those > 1.00) over the nC_{12} to nC_{36} carbon range are due to the dominance of the odd-chain length n-alkanes (nC_{27} to nC_{33}) and are typically associated/observed with inputs from terrestrial run-off. Marine sediments containing a predominance of biologically derived (odd carbon number) n-alkanes have a CPI greater than 2.0, whereas crude oil or refined products have a CPI close to unity (McDougall, 2000).

Pristane (Pr) and phytane (Ph) are isoprenoid hydrocarbons usually present in most petroleum as major constituents and are good indicators of petroleum contamination (Berthou & Friocourt, 1981). However, phytane is generally absent or present only at low levels in uncontaminated natural systems (Blumer & Snyder, 1965), although it can be biosynthesised by methanogenic and photosynthetic bacteria (Gunkel & Gassmann, 1980) whereas pristane, in the marine environment, can also be derived from zooplanktons including calanoid copepods and fish (National Research Council [NRC], 1985). In this study, values of the Pr/Ph ratio were ≤ 1.00 at stations ST01, ST07 and ST21, whereas at the remaining stations the Pr/Ph ratio was between 1.72 and 2.53.

5.2.1.2 Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs) are widely spread in the environment (Butler et al., 1984) with natural sources occurring primarily through synthesis by plants (Neff, 1979; Sims & Overcash, 1983), related to natural seeps of petroleum (NRC, 1983; Kennicutt et al., 1988) and to formation during natural forest and prairie fires (Youngblood & Blumer, 1975; Wakeham et al., 1979). By far the greatest proportion of PAHs released into the environment are formed during fossil fuel combustion and man-made forest and agricultural fires (Edwards, 1983; Sims & Overcash, 1983;

Haritash & Kaushik, 2009). PAHs primarily enter marine sediments from atmospheric and riverine inputs and tend to adsorb to suspended inorganic and organic particulate matter, ultimately settling on the seabed where they can accumulate (Latimer & Zheng, 2003; Culotta et al., 2006).

Monitoring of aromatic hydrocarbon type and content is important due to the mutagenic/carcinogenic nature of several PAHs, particularly the heavier weight PAHs. The US EPA has identified 16 priority PAHs to be monitored (Keith, 2015) and the co-ordinated environmental monitoring programme (CEMP) specifies 9 PAHs of specific concern (OSPAR, 2014), which primarily reflect inputs from man-made combustion sources.

The total US EPA 16 PAHs concentrations were below the Irish sediment quality guidelines lower level at all stations and the individual US EPA 16 were below their respective 95th percentile of the Irish data from the Marine Institute (Cronin et al. 2006). As such, the total US EPA 16 PAHs can be categorised as 'class one' whereby no biological effects are likely following sediment disturbance and potential re-mobilisation of contaminants in the marine environment.

5.2.2 Sediment Metals

Metals and metalloids occur naturally in the marine environment and are widely distributed in both dissolved and sedimentary forms. Some metals, when present in trace concentrations, are important for marine life, however, when discharged into natural waters at increased concentration (from e.g., sewage, industrial effluent or from mining operations), can have toxicological effects on the aquatic ecosystem (Paez-Osuna & Ruiz-Fernandez, 1995; Boening, 1999). Metals can enter the environment via natural methods such as riverine transport, coastal discharges, geological weathering and atmospheric fallout (Brady et al., 2015). Other routes into marine sediments are from anthropogenic activities such as direct discharges from industrial activities.

Trace metal contaminants in the marine environment tend to form associations with the non-residual phases of mineral matter, such as iron and manganese oxides and hydroxides, metal sulphides, clays, organics and carbonates (Warren & Zimmerman, 1993; Dang et al., 2015; Wang et al., 2015). Non-residual trace metals are associated with more reactive and available sediment components through processes such as adsorption onto mineral surfaces and organic complexation. Metals associated with these more reactive phases are prone to environmental and biological interactions and transformations potentially increasing their mobility and biological availability (Tessier et al., 1979; Warren & Zimmerman, 1993; Du Laing et al., 2009). Residual trace metals are defined as those that are part of the crystal structure of the component minerals and are generally unavailable to organisms (de Orte et al., 2018). Therefore, in monitoring trace metal contamination in the marine environment, it is important to distinguish the more mobile non-residual trace metals from the residual metals held tightly in the sediment lattice

(Chester & Voutsinou, 1981), which are of comparatively lesser environmental significance because of their low reactivity and availability.

Most metals analysed had concentrations below the lower level of the Irish sediment quality guidelines at all stations, thus falling in 'class one' of the Irish sediment quality guidelines. Arsenic concentrations were above the lower level at stations ST05, ST07, ST11, ST13, ST19 and ST21, but below the upper level. As such, the arsenic concentrations at these stations were categorised as 'class two', whereby sediments are considered marginally contaminated, requiring consideration for potential further sampling and analysis. However, it is worth noting that the lower level of the Irish sediment quality guidelines (9 µg/g) has been derived by rounding up the effect range (ERL) value (8.2 µg/g) owing to lack of background Irish data (Cronin et al., 2006).

The numerical values of ERL were derived from biological toxicity assays and synoptic sampling and are incorporated in sediment quality guidelines that were developed for the National Oceanic and Atmospheric Administration (NOAA) National Status and trends program as informal tools to evaluate whether a concentration of a contaminant in sediment might have toxicological effects (Long & Morgan, 1990). As such, the ERL are not threshold values to determine whether toxicity will occur, rather relationships between bulk chemical concentrations and toxicity effects that are expressed along a continuum, meaning that there is no concentration above which toxicity will occur and below which toxicity will not occur (O'Connor, 2004). The ERL value for arsenic has been considered too low (de Mora et al., 2004), particularly as uncontaminated coastal sediments are generally reported to have arsenic concentrations between 5 µg/g and 15 µg/g (Neff, 1997). By comparison, arsenic concentrations in the North Sea off the English coast have been reported as high as 137 µg/g (Whalley et al., 1999) compared to the highest value of 20.8 µg/g recorded in this study. The ERLs used by the CEMP as part of the monitoring commitments under the OSPAR Convention, do not include arsenic (and nickel), because their values are less than the OSPAR BAC (OSPAR, 2014). Cronin et al. (2006) state that in some locations natural level of arsenic will exceed the upper value of the Irish sediment quality guidelines (70 mg/kg) and in such instances the guidance value will not be appropriate. The median arsenic concentration in this study was 8.20 µg/g, below the lower level of the Irish sediment quality guidelines.

5.2.3 Sediment Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) are industrial chemicals used in electrical equipment. They are manufactured by reacting chlorine with biphenyl resulting in the formation of a complex mixture of compounds (known as congeners). The properties of the final product are modified by varying the proportion of chlorine to biphenyl present. In environmental samples PCBs are therefore present as technical mixtures rather than individual compounds. Polychlorinated biphenyls have entered the marine environment by leakage, discharge, recycling, transboundary influx via major rivers and long-range atmospheric transport (Van Wezel et al., 2000). Although the use of PCBs has been banned for many years, they can persist in marine sediments owing to their resistance to degradation (Geyer et al., 1984).

The PCBs analysed in this study had concentrations below their respective MRVs across the entire survey area and below the lower and upper levels of the Irish sediment quality guidelines.

5.2.4 Sediment Organotins

Organotin compounds have historically been used in marine antifouling products however, their use is now prohibited, following evidence of their toxicity to selected marine organisms. Ireland was one of the first countries to ban the use of all organotin containing compounds on vessels < 25 m long in 1987 (Minchin, 2003). However, TBT, one of the most toxic contaminants, may still enter the marine environment through sources such as wastewater, as TBT is used as biocide in preserving wood, textile, papers and stonework (Díez et al., 2005). Amongst the toxic effects of TBT is imposex, that is the imposition of male characteristics on the female gastropod *Nucella lapillus*, following exposure to concentration levels as low as 1 ng/L, with severe cases resulting in sterilisation of the organisms (Bryan et al., 1987). The TBT degradation in sediments is slow, particularly in low oxygen conditions (Dowson et al., 1996; Gadd, 2000) and results in the production of DBT and monobutyl tin. These are used as stabilisers in PVC production (Díez et al., 2005) and although found to be less toxic than their parent compound, cause toxicity to some aquatic organisms (Huang et al., 2004).

The organotin compounds analysed in this study, specifically DBT and TBT, had concentrations below their respective minimum reporting values (MRVs) and below the lower and upper levels of the Irish sediment quality guidelines across the entire survey area.

5.2.5 Sediment Organochlorine Pesticides

Organochlorine pesticides (OCPs) are organic compounds attached to five or more chlorine atoms. They represent one of the first categories of synthesized pesticides used in agriculture as insecticides and have a long-term residual effect in the environment. Examples of these pesticides include dichlorodiphenyltrichloroethane (DDT), lindane, endosulfan, aldrin, dieldrin, heptachlor, toxaphene, and chlordane (Abubakar et al., 2020).

The OCPs analysed in this study included alpha-HCH, beta-HCH, delta-HCH and lindane. All, OCPs had concentrations below their respective MRVs however, the MRV of lindane is above the lower level but below the upper level of the Irish sediment quality guidelines.

5.3 Macrofaunal Communities

The macrofaunal community structure and composition of the enumerated fauna across the Dublin Array survey was represented mainly by annelids and molluscs, with comparatively low contributions from arthropods and other phyla. There was considerable variability in the number of taxa across the survey area, with station ST17 being devoid of enumerated fauna. This station was on the Kish Bank, along with stations ST16 and ST18, whereas stations ST19, ST20 and ST21 were on the Bray Bank, the latter being considered a southerly continuation of the Kish Bank (Wheeler et al., 2001). These stations were characterised by low species richness

(≤ 4 taxa) and abundance (≤ 6 individuals) as were stations ST11 and ST13. The low macrofauna richness and abundance at these stations is likely to be associated with the mobility of the sediment, which featured mostly well sorted to moderately well sorted medium sand, with sand ripples visible on the seabed video and photography. A contribution to gravel emanated from shell fragments recorded by the seabed video and photography, and which provided suitable substrate for colonial epifauna such as ciliates of the family Folliculinidae. Consequently, these stations had 'poor' to 'bad' faunal diversity, based on the Shannon-Wiener index ($H'Log_2$) assessed in line with the criteria in Dauvin et al. (2012).

The remaining stations had up to 52 taxa and 344 individuals, resulting in 'good' to 'high' faunal diversity at most stations, with faunal abundances being evenly distributed across the taxa recorded, as indicated by the high values of evenness and the low values of dominance.

Within the geographical context of the survey area, Roche et al. (2007) reported a median richness of 4.65, a median evenness of 0.82 and a median diversity of 2.57 in their benthic survey of the Kish Bank, based on 12 replicate sampling stations. In this study, the median values of richness, evenness and diversity were 4.91, 0.846 and 3.23, respectively, across the entire Dublin Array survey area.

In terms of macrofaunal composition, Annelida had a numerical dominance of *Spirobranchus lamarcki*, *Lumbrineris* cf. *cingulata*, *Pholoe baltica*, *Ophelia borealis* and *Nephtys cirrosa* which featured amongst the top five most abundant annelids. Of these, *L.* cf. *cingulata*, *S. lamarcki* and *P. baltica* were also most frequently occurring along with *Spiophanes bombyx* and *Owenia borealis*. These polychaetes are fast growing and have robust and/or flexible body structures and high reproductive rates. The opportunistic and ephemeral nature of these invertebrates makes them typical of habitats subject to continuous physical disturbance and subsequent seasonal and temporal variation (Tillin & Tyler-Walters, 2016; Tillin & Garrard, 2019; Ager, 2005). This was further confirmed by the presence of the crustacean amphipods *Urothoe elegans*, *Harpinia antennaria* and *Othomaera othonis* which were within the top five most abundant and frequently occurring arthropods.

Mollusca were represented by bivalves including *Nucula nucleus*, *Kurtiella bidentata*, *Abra alba*, *Nucula nitidosa* and *Fabulina fabula*, which were amongst the most abundant and frequently occurring molluscs, along with *Euspira nitida* and *Tellimya ferruginosa*. These molluscs are generally opportunistic species, for example, bivalves of the genus *Abra* are capable of exploiting newly disturbed substratum through larval recruitment, secondary settlement of post-metamorphosis juveniles and/or redistribution of adults (De-Bastos, 2016). Similarly, *K. bidentata* is reported to occur in association with burrows of brittlestars of the order Ophiouroidea (Gofas & Salas, 2008) which were also recorded in this study.

High density populations of *N. nitidosa* have been reported in Dublin Bay, where this species occurs in muddy sandy habitats exposed to a degree of wave action that prevents the accumulation of mud (Sabatini & Ballerstedt, 2008). This species has also been reported to

occur on sandbanks offshore Dublin Bay (Roche et al., 2007), along with *N. nucleus* (Walker & Rees, 1980).

The Echinodermata composition was dominated by brittlestars including *Ophiothrix fragilis*, *Amphiura filiformis*, *Ophiura albida* and *Amphipholis squamata*. Brittlestars such as *O. fragils* are typical of habitats with mixed coarse sediments exposed to strong tidal currents (Jackson, 2008). Others, such as *A. filiformis* are filter feeders and important sediment bioturbators, due to their feeding mechanism, of collecting and transporting food particles from the arms to the mouth, buried down to 6 cm in the sediment, which allows sediment oxygenation (International Council for the Exploration of the Sea [ICES], 2008). In addition, *A. filiformis* has a flexible behaviour, from scavenger and predator, to suspension and deposit feeder, enabling this species to compete successfully and to withstand relatively rapid changes, caused by high mortality and successive recolonisation in areas of fluctuating hydrodynamic conditions (Sköld, et al., 1984), such as those experienced in the Irish Sea.

Five macrofaunal assemblages were identified through the multivariate analysis, each assemblage having < 50 % average similarity, reflecting the high energy environment which prevents the establishment of stable faunal communities. The macrofaunal pattern of distribution was found to be associated with the sediment type whereas depth had little influence. Granulometry and bathymetry are reported to be the major physical variables affecting macrofauna distribution (Künitzer et al., 1992; Reiss et al., 2010; Callaway et al., 2002; ICES, 2008). The sediment particle size affects the biological assemblages because some organism have specific niche sediment requirements, thus, in muddy sand habitats, deposit feeders attain higher densities compared to suspension feeders as the resuspension of fine sediments may stress the organisms through clogging of filtering structures (Coates et al., 2016). The sediment is more important than depth in determining the distribution of benthic fauna where the bathymetric range is minimal (Künitzer et al., 1992) and/or in highly hydrodynamic areas where the sediment is constantly reworked.

The infaunal biomass was represented mainly by Echinodermata and Mollusca, the former associated with numerical abundance of brittlestars as well as the size of invertebrates such as the sea urchins *E. cordatum*, *Echinocardium flavescens, Psammechinus miliaris*, and the holothurians *Leptosynapta bergensis* and *Thyone fusus*, which had low abundance by comparison. For example, *E. cordatum* can grow up to 9 cm (Hill, 2008), whereas *L. bergensis* can reach 30 cm (Hayward & Ryland, 1996).

Colonial epifauna from the grab samples comprised Porifera, Cnidaria, Bryozoa and ciliates of the family Folliculinidae, the latter being the most frequently occurring colonial taxon across the survey area. Colonial epifauna recorded by mean of the seabed video and photography included *Alcyonium digitatum*, *Hydrallmania falcata, Nemertesia* sp. and *Sertularia*. Overall, the epifaunal communities recorded in this study are typical of areas subject to strong water flow, sediment re-suspension and subsequent degree of scour (Readman, 2016).

The number of colonial epifauna increased at stations featuring coarse mixed sediment, owing to the sediment coarseness and heterogeneity which provide microhabitats and hard substrate for the settlement of epifaunal species. This in turn increases the structural complexity of the habitat and may provide additional microhabitats for smaller fauna, such as amphipods, thus increasing the overall richness and diversity (Biodiversity Reporting and Information Group [BRIG], 2011), as recorded in this study.

5.4 Seabed Habitats and Biotopes

One biotope complex and five biotopes and were identified across the Dublin Array survey area.

The biotope complex 'Infralittoral coarse sediment' (A5.13) typified eight stations, including all those on the Kish and Bray Banks and the nearshore stations ST11 and ST13. These stations featured moderately well sorted rippled sand with little infauna represented by robust polychaetes (e.g. *N. cirrosa*) and amphipods (e.g. *U. elegans*), capable of rapid burrowing or swimming in response to physical disturbance. Infralittoral coarse sediments are typical of areas subject to strong tidal currents resulting in sediment mobility and transport during each tidal cycle. As such, only invertebrate capable to withstand or escape from sand abrasion can inhabits these habitats (Roche et al., 2007).

The biotope '*Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment' (A5.261) typified seven stations, including five stations at the southern boundary and two stations at the eastern boundary of the survey area. These stations featured poorly mixed sediments and infauna characterised by bivalves such as *N. nucleus* and *A. alba*. This biotope is part of the '*Abra* community' (EEA, 2019) and the 'infralittoral étage' described by Glémarec (1973). Roche et al. (2007) reported this biotope to occur on the Kish Bank.

The biotope '*Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud (A5.351)' typified four stations in the north-western part of the survey area. These stations featured poorly sorted muddy sand and infauna characterised by brittlestars including *A. filiformis* and *O. fragilis* and bivalves including *K. bidentata*, *N. nitidosa* and *A. alba*. This biotope may be related to the 'off-shore muddy sand association' (EEA, 2019) and is part of the 'infralittoral étage' described by Glémarec (1973), along with '*Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment' (A5.261). Indeed, the two biotopes are similar and grade into each other depending on the proportion of mud (JNCC, 2015).

The biotope '*Glycera lapidum* in impoverished infralittoral mobile gravel and sand' (A5.135) typified four stations to the west and one station to the east of the Kish Bank. These stations featured poorly sorted gravelly sand and infauna characterised by polychaetes including *G. lapidum* and *Glycera tridactyla*. *Glycera lapidum* is a species complex, rarely considered a characteristic species and where this is the case it is normally due to the exclusion of other species. As such, habitats containing this biotope may be subject to sediment disturbance from wave action, which prevents the establishment of a more stable community. This

biotope is considered representative of impoverished, transitional community, which in more settled conditions develops into other more stable communities, therefore there may be high seasonal or spatial variability within this community (EEA, 2019). Roche et al. (2007) reported this biotope to occur on the Kish Bank.

The biotope '*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand' (A5.242) typified three stations at the north-western boundary of the survey area. These stations featured moderately well sorted sand with < 5 % mud content and infauna characterised by bivalves (e.g. *F. fabula* and *N. nitidosa*) and polychaetes (e.g. *M. johnstoni* and *S. bombyx*). Sites with this biotope may experience transitions in community composition, and even in stable conditions, the abundance of *Magelona* spp. and *F. fabula* vary in relation to the percentage of mud in the sediment (EEA, 2019). For example, Roche et al. (2007) did not found this biotope on the Kish Bank, but reported the occurrence of *F. fabula* and *Magelona mirabils*; the authors reported the biotope '*Nephtys cirrosa* and *Bathyporeia* spp. in infralittoral sand' (A5.233). The two biotopes are similar and may grade into each other based on the degree of sediment disturbance and subsequent settlement of the finer sediment fractions (JNCC, 2015). This biotope is part of the 'shallow *Venus* community' or 'boreal off-shore sand association' (EEA, 2019).

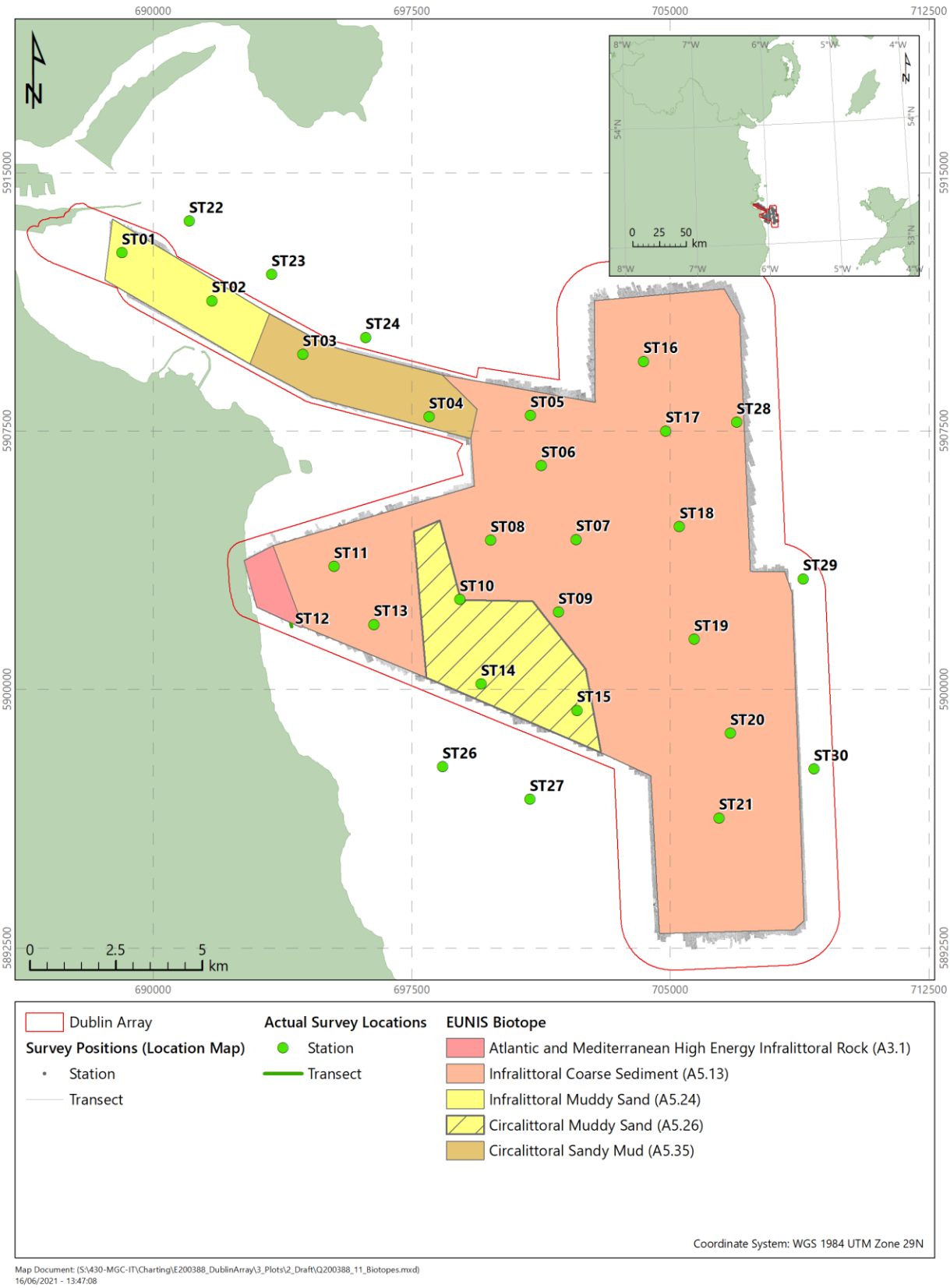
The biotope '*Hesionura elongata* and *Microphthalmus similis* with other interstitial polychaetes in infralittoral mobile coarse sand' (A5.134) typified station ST09 in the central section of the survey area. This station featured poorly sorted coarse sand and separated from all other stations through the multivariate analysis. The polychaetes *H. elongata* and *M. similis*, which featured amongst the characterising taxa, were recorded only at this station. This biotope is similar to '*Glycera lapidum* in impoverished infralittoral mobile gravel and sand' (A5.135) (JNCC, 2015).

The biotope 'Atlantic and Mediterranean high energy infralittoral rock' (A3.1) typified station ST12 which was assessed by means of seabed video and photography owing to the presence of hard substrate and had been detailed in the Environmental Features Report (Fugro 2021a).

The biotopes identified through the video data and single point grab sampling were contextualised with the results of the SSS to attempt extrapolation of the biotopes across the Dublin Survey area. It is worth noting that the SSS data were being processed at the time of writing the Benthic Ecology Monitoring Report. therefore, the biotope complexes distribution is considered provisional and may be further refined on finalisation of the SSS data processing.

Biotope complexes were deemed more representative for extrapolation as they encompass biotopes that may grade into each other depending on the hydrodynamics and the sediment deposition, which are seasonal, particularly in high energy areas. Figure 5.1 present the spatial distribution of the biotope complexes across the Dublin survey area. Most of the area was characterised by infralittoral coarse sediment, including the Kish and Bray sandbanks,

where accumulation of coarse sediment is likely in the troughs. Areas of fine sediment deposition were located in inshore areas along the proposed export cable route to the north and in comparatively deeper areas to the south of the survey area. A rocky area characterised the nearshore section of the export cable route to the south of the survey area.



Notes
EUNIS = European Nature Information System

Figure 5.1: Spatial distribution of EUNIS biotope complexes identified through single point grab sampling and side scan sonar data, Dublin Array

5.4.1 Potentially Sensitive Habitats and Species

Areas of cobbles and boulders along transect at station ST12 were assessed for potential resemblance to stony reef habitats. The results of the stony reef assessment, undertaken following the criteria in Irving (2009) and Golding et al. (2020) and detailed in the Environmental Features Report (Fugro 2021a), identified two areas with 'medium' resemblance to a stony reef. Stony reefs are ecologically important for increasing the seabed complexity and providing habitats to organisms that would not otherwise occur, thus enhancing biological diversity (JNCC, n.d.).

No other Annex I habitats or Annex II species, OSPAR threatened and/or declining species and habitats (OSPAR, 2008) were recorded within the survey area.

6. Conclusions

The benthic environment of the site selected for the Dublin Array Offshore Wind Farm development was characterised through a subtidal survey which comprised acquisition of seabed video and photographic data and grab samples, which were analysed to identify habitats and to evaluate the physico-chemical and biological conditions of the seabed. The results were used to derive biotopes, in line with the EUNIS habitat classification, which were contextualised within the wider geographical setting of the survey area.

The TOC content was low across the survey area with a median of 0.09 %, whereas the carbonate content had a median of 13.3 %.

The seabed was predominantly sandy, whereas percentages of gravel and fines were low by comparison, the gravel content being up to 22.04 % and the fines content being up to 18.01 %. Four Wentworth (1922) classes were identified including 'medium sand' which characterised 15 stations, 'fine sand' which characterised seven stations, 'coarse sand' which characterised four stations and 'very fine' sand which characterised two stations. Three sediment classes were identified using the Folk (BGS modified) classification, including 'sand' which typified 12 stations, 'muddy sand' which typified four stations, and 'gravelly sand' which typified 12 stations. The sorting coefficient reflected the heterogeneity of the sediment and ranged from well sorted to very poorly sorted, with most stations having poorly sorted sediments.

Total hydrocarbon content was relatively low across the survey area with concentrations ≤ 10.6 µg/g, below the lower level of the Irish sediment quality guidelines for total extractable hydrocarbons. The analysis of the n-alkanes in the range nC_{12} to nC_{36} indicated biogenic sources of terrestrial and marine origin. This was further confirmed by the CPI of the nC_{12} to nC_{36} n-alkanes which was ≤ 3.06 and the Pr/Ph ratio which was ≤ 2.53.

The total US EPA 16 PAHs concentrations were below the Irish sediment quality guidelines lower level at all stations and the individual US EPA 16 were below their respective 95th percentile of the Irish data from the Marine Institute.

The concentrations of most metals analysed were below the lower level of the Irish sediment quality guidelines. Arsenic was the exception with concentrations above the lower level at six stations but below the upper level at all stations. Arsenic concentrations were contextualised with areas with naturally high occurrence of this metal within the OSPAR maritime area, where ERL values for arsenic are below the current BC and BAC concentration for the assessment of contamination status.

The concentrations of PCBs, organotins and OCPs were below their respective MRVs, and below the lower level of the Irish sediment quality guidelines, where available, except for lindane, the MRV of which is above the lower level and below the upper level of the Irish sediment quality guidelines.

The macrofaunal community comprised infaunal and epifaunal taxa, the latter being represented by solitary and colonial organisms. The community structure and composition of the enumerated was mainly represented by Annelida and Mollusca, whereas Arthropoda and other phyla were less represented by comparison. There was considerable variability in the number of taxa across the survey area, with stations on the Kish and Bray Banks and two nearshore stations having low faunal richness and abundance compared to the other stations. The low macrofauna richness and abundance at these stations is likely to be associated with the mobility of the sediment, which featured mostly well sorted to moderately well sorted sand, with sand ripples visible from the seabed video and photography.

Characteristic taxa included fast growing and robust polychaetes such *S. lamarcki*, *L.* cf. *cingulata*, *P. baltica*, *O. borealis*, *N. cirrosa*, *S. bombyx* and *O. borealis* and fast swimming crustacean amphipods such as *U. elegans*, *H. antennaria* and *O. othonis*. Mollusca comprised opportunistic species such as the bivalves *N. nucleus*, *K. bidentata*, *A. alba*, *N. nitidosa*, *F. fabula* and *T. ferruginosa*, along with the gastropod *E. nitida*. The Echinodermata composition was dominated by species typical of habitats exposed to strong tidal currents and/or with flexible eating behaviour, such as the brittlestars *O. fragilis*, *A. filiformis*, *O. albida* and *A. squamata*.

Five macrofaunal assemblages were identified through the multivariate analysis, each assemblage having < 50 % average similarity, and associated with the sediment type.

Echinodermata and Mollusca comprised most of the infaunal biomass, owing to the numerical abundance of brittlestars as well as the size of invertebrates such as the sea urchins *E. cordatum*, *E. flavescens* and *P. miliaris*, and the holothurians *L. bergensis* and *T. fusus*. The biomass of Mollusca was associated with the numerical abundance of bivalves.

Colonial epifauna from the grab samples comprised Porifera, Cnidaria, Bryozoa and ciliates of the family Folliculinidae, the latter being the most frequently occurring colonial taxon across the survey area. Colonial epifauna recorded by mean of the seabed video and photography included taxa typical of areas subject to strong water flow, sediment re-suspension and subsequent degree of scour such as *A. digitatum*, *H. falcata*, and species of *Nemertesia* and *Sertularia*.

Overall, the results are indicative of a dynamic seabed sediment subject to physical disturbance with subsequent reworking of the sediments with faunal communities typical of high energy environment.

One biotope complex and five biotopes were identified across the Dublin Array survey area, including 'Infralittoral coarse sediment' (A5.13); '*Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment' (A5.261); '*Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud (A5.351)'; '*Glycera lapidum* in impoverished infralittoral mobile gravel and sand' (A5.135); '*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand' (A5.242); 'Atlantic and

Mediterranean high energy infralittoral rock' (A3.1). The latter biotope was assigned to station ST12 which was assessed only by means of seabed video and photographic data, owing to the nature of the substrate which prevented grab sampling. Station ST12 was assessed for the potential of stony reef, and the results indicated a 'medium' resemblance to a stony reef along two sections of the transect.

No other Annex I habitats or Annex II species, Oslo and Paris (OSPAR) threatened and/or declining species and habitats were recorded within the survey area.

7. References

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Appendices

Appendix A

Guidelines on Use of Report

This report (the "Report") was prepared as part of the services (the "Services") provided by Fugro GB Marine Limited ("Fugro") for its client (the "Client") under terms of the relevant contract between the two parties (the "Contract"). The Services were performed by Fugro based on requirements of the Client set out in the Contract or otherwise made known by the Client to Fugro at the time.

Fugro's obligations and liabilities to the Client or any other party in respect of the Services and this Report are limited in time and value as defined in Contract (or in the absence of any express provision in the Contract as implied by the law of the Contract) and Fugro provides no other representation or warranty whether express or implied, in relation to the Services or for the use of this Report for any other purpose. Furthermore, Fugro has no obligation to update or revise this Report based on changes in conditions or information which emerge following issue of this Report unless expressly required by the Contract.

The Services were performed by Fugro exclusively for the Client and any other party identified in the Contract for the purpose set out therein. Any use and/or reliance on the Report or the Services for purposes not expressly stated in the Contract, by the Client or any other party is that party's risk and Fugro accepts no liability whatsoever for any such use and/or reliance.

Appendix B

Methodologies

B.1 Survey Methods

B.1.1 Sediment Grab Sampling

Seabed samples were acquired using a mini Hamon grab. A 0.1 m^2 Day grab was used to acquire chemistry samples.

Operational procedures for grab sampling were as follows:

- The mini Hamon grab was prepared for operations prior to arrival on station. The Bridge communicated to the deck via a VHF radio and hand signals when the vessel was steady and on location, and the grab was deployed from the crane on port side;
- When the engineer operating the winch observed that the grab had reached the seabed as indicated by a distinct slackening of the wire rope and snatch block, the environmental scientist was informed via VHF radio and a fix was taken;
- On recovery to the deck, the sample was inspected and deemed acceptable or discarded;
- One grab sample was retained for faunal analysis. If required, another drop was performed with the 0.1 m^2 Day grab for a chemistry sample.
- Deck logs were completed for each grab deployment with details of date, time, sample number, fix number, sediment type, depth and colour of strata in the sediment, where present, using Munsell colour codes, odour (i.e. H_2S), bioturbation or debris.

Samples were deemed unacceptable if any of the following occurred:

- Evidence of sediment washout caused by improper closure of grab jaws or inspection hatch;
- Sediment sample taken at an angle, e.g. where the grab jaws were not parallel to the seabed when the grab fired;
- Disruption of the sample by striking the side of the vessel;
- Sample volume less than approximately 5 litres of the sediment (unless deemed acceptable by the client representative);
- Sample location more than 25 m from the target location (unless deemed acceptable by the client representative);

B.1.2 Physico-chemical Sample Processing

- Samples for sediment PSD were collected using a plastic scoop to a nominal depth of 5 cm. The samples were preserved in polythene bags, sealed and labelled with code (e.g. PSDA1), and stored at a temperature of approximately −20 ºC.
- Samples for metals analysis were collected using a plastic scoop to a nominal depth of 2 cm. The samples were preserved in polythene bags, sealed and labelled with code (e.g. HMA1), and stored at a temperature of approximately −20 ºC.
- Samples for hydrocarbon analysis were collected using a metal scoop to a nominal depth of 2 cm. The samples were preserved in clear glass jars, sealed and labelled with code (e.g. HCA1), and stored at a temperature of approximately −20 ºC.

B.1.3 Macrofauna Sample Processing

Macrofauna samples were processed as follows:

- Macrofauna samples were processed in their entirety, by opening the trigger arm to drop the grab into a container. All supernatant water was processed along with the sediment;
- The sample was transferred to a 1 mm mesh sieve and transferred to the Wilson Autosiever and sediment washed out;
- Once sieved, samples were transferred to containers labelled with the job number, station code and fauna code (e.g. FA) and fixed in 10 % buffered formal saline. The sample containers were then sealed, hazard labelled and stored securely on deck.

B.2 Laboratory Analysis

A sample delivery log accompanied the samples to Fugro laboratories as part of the chain of custody. Upon receipt of samples at Fugro laboratories, sample handling and labelling of each sample was inspected to ascertain correct storage in line with the sampling methods. Where samples are deemed deviating or potentially deviating from sampling methods, these are reported to the Fugro Project Manager, who will then inform the Client, in line with Fugro Quality Assurance Management System.

B.2.1 Hydrocarbon Analysis

B.2.1.1 General Precautions

To effectively eliminate all possible sources of hydrocarbon contamination from the analysis the following precautionary measures were taken prior to sample work-up:

- All solvents were purchased as high purity grade. Each batch was checked for purity by concentrating approximately 400 mL down to a small volume (< 1 mL) and analysing by gas chromatography (GC);
- All water used was distilled through an all glass still and dichloromethane extracted to minimise contamination from plasticisers;
- All glassware was cleaned using an acid/base machine wash. The glassware was rinsed with acetone then finally with dichloromethane prior to use;
- Procedural blanks, replicate analyses and laboratory reference material were run with each batch.

B.2.1.2 Ultrasonication Extraction for Hydrocarbons in Sediment

Sediment samples were thawed, homogenised and accurately weighed into a 250 mL conical flask. A solution containing an appropriate amount of the following internal standards was added to each sample using a microsyringe.

Aliphatic Standards	Aromatic Standards
Heptamethylnonane	D_8 Naphthalene
D_{34} Hexadecane	D_{10} Acenaphthene
D_{42} Eicosane	D_{10} Phenanthrene
Squalane	D_{10} Pyrene
	D_{12} Chrysene
	D_{12} Perylene

Methanol (50 mL) and solvent were mixed with the sediment. Dichloromethane (DCM) (60 mL) was then added and the sample mixed again. The flasks were then capped with solvent cleaned aluminium foil and ultrasonicated for 30 minutes.

After being allowed to settle the solvent was decanted through a GF-C filter paper into a 1 litre separating funnel. The extract was then partitioned with 100 mL of DCM extracted distilled water and the DCM layer run-off into a clean 500 mL round-bottomed flask. The ultrasonic extraction was repeated a further two times using 50 mL DCM and 15 minutes of ultrasonication. Each time the filtered extract was partitioned with the remaining methanol/water in the separating funnel. The DCM extracts were bulked and reduced in volume to approximately 2 mL using a rotary evaporator, then further reduced to approximately 1 mL under a gentle stream of nitrogen prior to clean-up.

Correction factors for wet/dry sediments were obtained by drying a subsample of the homogenised sediment to constant weight at 105 °C.

B.2.1.3 Clean-up of Extracts by Column Chromatography

Removal of polar material, including lipids was carried out using a silica gel column. The silica gel used was 70 to 230 mesh which was heated at 400 °C for at least 4 hours to remove impurities and residual moisture and then stored at 200 °C prior to use. The sample extract was added to the silica gel column, containing 5 g of adsorbent and eluted with 35 mL of DCM/pentane (1:2). The eluant was reduced in volume using the evaporator to approximately 2 mL, with activated copper powder (for removal of free sulphur), before being further reduced under a gentle stream of nitrogen to an appropriate volume and analysed by both gas chromatography (GC) and gas chromatography-mass spectrometry (GC MS).

	Gas Chromatography [GC]	Gas Chromatography-Mass Spectrometry [GC-MS]
Instrument	HP 6890 Series GC with 7673 autoinjector	HP 7890 Series GC with autoinjector and 5977A MSD
Column	100 %-dimethylpolysiloxane bonded fused silica, 60 m, 0.25 µm film thickness, 0.32 mm internal diameter	(5 %phenyl)-methylpolysiloxane bonded fused silica, 60 m, 0.32 µm film thickness 0.25 mm internal diameter
Carrier Gas	Hydrogen (constant flow 3.5 mL/min)	Hydrogen (constant flow 1.4 mL/min)
Injector	On–column (2 µL injection)	Splitless, 280 °C, split flow 40 mL/min, vent time 1.5 min (1 µL injection)
Oven Temperature Programme	80 °C – 2 min 80 °C to 320 °C at 18 °C/min 320 °C – 13 min 320 °C to 350 °C at 30 °C/min	60 °C – 1 min 60 °C to 180 °C at 11 °C/min 180 °C to 260 °C at 6 °C/min 260 °C to 320 °C at 6 °C/min 330 °C – 7 min
Source/Detector Temperature	350 °C (FID)	230 °C
Electron Energy	-	70 eV
Selected Ion Monitoring (SIM)	-	9 groups - 6 ions per group
Dwell Time (per ion)	-	0.035 second

B.2.1.4 Total Hydrocarbons by Gas Chromatography–Flame Ionisation Detection (GC-FID)

The total hydrocarbon material present was quantified using response factors calculated from the analysis of mixed oil standard solutions over an appropriate range. The unresolved complex mixture (UCM) was determined by subtracting the area of all the resolved peaks from the total hydrocarbon area and applying the total hydrocarbon response factor. The minimum reporting value (MRV) is 0.5 µg/g dry weight.

B.2.1.5 n-Alkanes, Pristane and Phytane

Calibration was undertaken using a range of n-alkane standard solutions containing the even carbon number compounds between nC_{12} and nC_{36}, and a range of suitable internal standards. Individual response factors were calculated for each of the n-alkanes present in the calibration solution. Response factors for the non-calibrated n-alkanes (and pristane and phytane) were taken to be equivalent to closely eluting compounds. The MRV of individual n-alkanes is 0.1 ng/g dry weight.

The n-alkanes between nC_{12} and nC_{36} were reported, as were the ranges between nC_{12} and nC_{20} and nC_{21} and nC_{36}. Carbon preference index (CPI) values (the ratio of odd to even carbon numbered compounds) for the same ranges were also calculated. Pristane and phytane (and associated ratio) were also determined.

B.2.1.6 Polycyclic Aromatic Hydrocarbons (PAHs)

The sediment samples were analysed for the US EPA 16 PAHs.

Calibration was undertaken using a range of PAH standard solutions, a number of alkylated PAH, dibenzothiophene and a range of suitable internal standards. Individual response factors were calculated for each of the compounds present in the calibration solution. Response factors for the non calibrated alkylated PAH were taken to be equivalent to closely related compounds. The MRV of individual PAHs is 0.1 ng/g.

B.2.2 Macrofaunal Analysis

B.2.2.1 Macrofaunal Identification and Enumeration

Samples for faunal analysis were analysed in accordance with in house quality assured procedure EUAF-FGBM-BEN-TM-001 and are consistent with the standards for macrobenthic analysis BS EN ISO 16665:2013, BS EN 14996:2006 and BS EN 16493:2014 and the NMBAQC's own guidance document (Worsfold et al, 2010). Macrofaunal analysis was undertaken at a Fugro benthic laboratory.

Macrofaunal grab samples were initially washed over a 1 mm mesh sieve, to remove all fine sediment and fixative. This sieve was used as the working sieve at all stages of analysis, although larger sieves were available to fraction material into similar sizes for ease of processing. Faunal samples underwent initial sorting by elutriation to remove the less dense fauna. The remaining sediment residue was then be transferred to white trays and scanned

for larger or heavier fauna, such as bivalve molluscs. Epifauna on rocks and stones was removed at this stage. Fauna was sorted from the sieved sample under a dissecting microscope and subsequently identified to the lowest possible taxonomic level and enumerated. All biological faunal material retained was stored in 70 % industrial denatured alcohol. A reference collection was prepared with a minimum of one individual of all species identified retained.

B.2.2.2 Benthic Infaunal Biomass

Biomass analysis was undertaken on the infauna from the grab samples, following identification and enumeration. The infauna from each sample was sorted into seven groups, to include Oligochaeta, Polychaeta, Arthropoda, Mollusca, Echinodermata, Cnidaria (including only burrowing species) and other phyla. Biomass was undertaken using the wet blot method.

B.2.2.3 Benthic Infauna Quality Control

Sample analyses are subject to in-house quality control (QC) procedures, which are documented in Fugro benthic laboratory method statements. These method statements are subject to routine external audit under Fugro's British Standards Institution (BSI) accreditation, in addition to participation in an internal audit schedule. The QC manager and deputised senior taxonomist are responsible for conducting QC checks for all aspects of benthic analyses and for initiating remedial action. Staff competence levels for all aspects of benthic analyses are regularly assessed and documented. Staff that have achieved the appropriate competence level are engaged for each aspect of the analysis.

A minimum of 10 % of the faunal samples from each sample collection are selected randomly and accuracy of extraction, nomenclature and enumeration checked. Results of the QC are compared to the original analysis using Bray-Curtis similarity analysis. Samples should attain 90 % or greater similarity via this comparison. Remedial action is taken if similarity falls below this level. These levels are consistent with those required by the NMBAQC scheme. The QC manager also checks the identifications via the project specific reference collection, making changes where appropriate and following up with suitable remedial action.

All errors regarding sorting and identification, together with the results of any corrective action are reported by the QC manager or deputized senior taxonomist, thoroughly documented and used to guide further staff training. Results of QC procedures are available upon Client request. All Fugro's operations are covered by a Procedures Manual and Methods Manual. These documents together with Fugro working practices are routinely audited under ISO 9001:2008 and/or United Kingdom Accreditation Service (UKAS) 17025 as appropriate.

B.2.2.4 Sample Analysis Outputs and Deliverables

Provision of macrofaunal analysis (abundance and biomass) data in Excel spreadsheet. Species nomenclature is consistent with that of World Register of Marine Species

(WoRMS Editorial Board, 2020). The taxonomic order is based on Species Directory codes (Howson & Picton, 1997) to give an idea of 'evolutionary rank'.

Appendix C

Logs

C.1 Survey Log

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
21/02/2021	12:20:48	ST01	Video	SOL	2	6.0	689 094.1	5 912 677.4	689 113.5	5 912 695.4	26.5	-
21/02/2021	12:21:08	ST01	Still	200388_ST01_01	3	6.0	689 094.1	5 912 677.4	689 109.7	5 912 690.6	20.5	-
21/02/2021	12:21:25	ST01	Still	200388_ST01_02	4	6.0	689 094.1	5 912 677.4	689 103.5	5 912 688.7	14.7	-
21/02/2021	12:21:33	ST01	Still	200388_ST01_03	5	6.0	689 094.1	5 912 677.4	689 101.1	5 912 687.9	12.6	-
21/02/2021	12:21:42	ST01	Still	200388_ST01_04	6	6.0	689 094.1	5 912 677.4	689 097.4	5 912 687.7	10.8	-
21/02/2021	12:21:56	ST01	Still	200388_ST01_05	7	6.0	689 094.1	5 912 677.4	689 092.2	5 912 686.9	9.7	-
21/02/2021	12:22:06	ST01	Still	200388_ST01_06	8	6.0	689 094.1	5 912 677.4	689 088.2	5 912 684.5	9.2	-
21/02/2021	12:22:29	ST01	Still	200388_ST01_07	9	6.0	689 094.1	5 912 677.4	689 081.5	5 912 676.0	12.7	-
21/02/2021	12:22:58	ST01	Still	200388_ST01_08	10	6.0	689 094.1	5 912 677.4	689 079.9	5 912 660.5	22.0	-
21/02/2021	12:23:11	ST01	Still	200388_ST01_09	12	6.0	689 094.1	5 912 677.4	689 082.5	5 912 656.6	23.9	-
21/02/2021	12:23:45	ST01	Video	EOL	13	6.0	689 094.1	5 912 677.4	689 087.7	5 912 650.5	27.7	-
21/02/2021	13:02:26	ST02	Video	SOL	15	12.0	691 702.2	5 911 261.4	691 697.8	5 911 283.7	22.8	-
21/02/2021	13:02:26	ST02	Still	200388_ST02_01	15	12.0	691 702.2	5 911 261.4	691 697.8	5 911 283.7	22.8	-
21/02/2021	13:02:39	ST02	Still	200388_ST02_02	16	12.0	691 702.2	5 911 261.4	691 704.9	5 911 277.8	16.6	-
21/02/2021	13:02:56	ST02	Still	200388_ST02_03	17	12.0	691 702.2	5 911 261.4	691 709.9	5 911 266.9	9.4	-
21/02/2021	13:03:09	ST02	Still	200388_ST02_04	18	12.0	691 702.2	5 911 261.4	691 706.5	5 911 257.3	5.9	-
21/02/2021	13:03:22	ST02	Still	200388_ST02_05	19	12.0	691 702.2	5 911 261.4	691 701.0	5 911 252.1	9.4	-
21/02/2021	13:03:34	ST02	Still	200388_ST02_06	20	12.0	691 702.2	5 911 261.4	691 696.6	5 911 250.6	12.2	-
21/02/2021	13:03:52	ST02	Still	200388_ST02_07	21	12.0	691 702.2	5 911 261.4	691 690.1	5 911 251.8	15.4	-
21/02/2021	13:04:07	ST02	Still	200388_ST02_08	22	12.0	691 702.2	5 911 261.4	691 685.4	5 911 252.9	18.8	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
21/02/2021	13:04:16	ST02	Still	200388_ST02_09	23	12.0	691 702.2	5 911 261.4	691 680.9	5 911 251.8	23.3	-
21/02/2021	13:04:28	ST02	Video	EOL	24	12.0	691 702.2	5 911 261.4	691 673.4	5 911 249.0	31.3	-
21/02/2021	13:23:35	ST22	Video	SOL	25	9.0	691 067.8	5 913 578.9	691 083.3	5 913 555.4	28.1	-
21/02/2021	13:23:49	ST22	Still	200388_ST22_01	26	9.0	691 067.8	5 913 578.9	691 079.7	5 913 566.8	17.0	-
21/02/2021	13:23:57	ST22	Still	200388_ST22_02	27	9.0	691 067.8	5 913 578.9	691 078.8	5 913 571.5	13.3	-
21/02/2021	13:24:09	ST22	Still	200388_ST22_03	28	9.0	691 067.8	5 913 578.9	691 075.4	5 913 578.8	7.6	-
21/02/2021	13:24:19	ST22	Still	200388_ST22_04	29	9.0	691 067.8	5 913 578.9	691 072.6	5 913 584.8	7.6	-
21/02/2021	13:24:28	ST22	Still	200388_ST22_05	30	9.0	691 067.8	5 913 578.9	691 069.4	5 913 590.6	11.8	-
21/02/2021	13:24:45	ST22	Still	200388_ST22_06	31	9.0	691 067.8	5 913 578.9	691 063.5	5 913 601.0	22.5	-
21/02/2021	13:24:54	ST22	Video	EOL	32	9.0	691 067.8	5 913 578.9	691 060.2	5 913 606.6	28.7	-
21/02/2021	15:07:36	ST22	HG	NS	33	9.0	691 067.8	5 913 578.9	691 060.5	5 913 584.9	9.4	-
21/02/2021	15:30:51	ST22	HG	FA	34	9.0	691 067.8	5 913 578.9	691 052.7	5 913 586.6	16.9	-
21/02/2021	16:24:29	ST02	HG	FA	36	12.0	691 702.2	5 911 261.4	691 697.7	5 911 273.8	13.2	-
21/02/2021	16:56:15	ST01	HG	FA	37	6.0	689 094.1	5 912 677.4	689 092.9	5 912 686.5	9.2	-
21/02/2021	17:07:22	ST01	DG	NS	38	6.0	689 094.1	5 912 677.4	689 092.3	5 912 690.3	13.1	-
21/02/2021	17:15:01	ST01	DG	NS	39	6.0	689 094.1	5 912 677.4	689 090.2	5 912 689.2	12.4	-
22/02/2021	11:45:06	ST21	Video	SOL	40	7.0	706 424.2	5 896 268.8	706 411.1	5 896 222.7	48.0	-
22/02/2021	11:58:06	ST21	Still	200388_ST21_01	41	7.0	706 424.2	5 896 268.8	706 411.9	5 896 236.5	34.6	-
22/02/2021	09:42:16	ST21	Still	200388_ST21_02	42	7.0	706 424.2	5 896 268.8	706 414.3	5 896 237.0	33.3	-
22/02/2021	09:54:21	ST21	Still	EOL	43	7.0	706 424.2	5 896 268.8	706 417.5	5 896 236.1	33.4	-
22/02/2021	10:04:38	ST21	Still	SOL	44	7.0	706 424.2	5 896 268.8	706 407.6	5 896 245.4	28.7	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
22/02/2021	10:39:45	ST21	Still	200388_ST21_03	45	7.0	706 424.2	5 896 268.8	706 413.3	5 896 251.4	20.5	-
22/02/2021	11:25:31	ST21	Still	200388_ST21_04	46	7.0	706 424.2	5 896 268.8	706 415.8	5 896 255.9	15.4	-
22/02/2021	12:41:00	ST21	Still	200388_ST21_05	47	7.0	706 424.2	5 896 268.8	706 418.5	5 896 260.5	10.1	-
22/02/2021	13:47:31	ST21	Still	200388_ST21_06	48	7.0	706 424.2	5 896 268.8	706 426.2	5 896 268.3	2.0	-
22/02/2021	14:06:01	ST21	Still	200388_ST21_07	49	7.0	706 424.2	5 896 268.8	706 431.2	5 896 271.7	7.6	-
22/02/2021	14:19:37	ST21	Still	EOL	50	7.0	706 424.2	5 896 268.8	706 426.4	5 896 294.3	25.5	-
22/02/2021	14:04:37	ST21	Still	SOL	51	7.0	706 424.2	5 896 268.8	706 408.9	5 896 248.5	25.4	-
22/02/2021	14:51:04	ST21	Still	200388_ST21_08	52	7.0	706 424.2	5 896 268.8	706 399.9	5 896 260.5	25.7	-
22/02/2021	15:21:30	ST21	Still	200388_ST21_09	53	7.0	706 424.2	5 896 268.8	706 402.3	5 896 266.6	22.0	-
22/02/2021	15:34:11	ST21	Still	200388_ST21_10	54	7.0	706 424.2	5 896 268.8	706 406.2	5 896 268.3	18.0	-
22/02/2021	08:10:54	ST21	Still	200388_ST21_11	55	7.0	706 424.2	5 896 268.8	706 409.8	5 896 266.2	14.6	-
22/02/2021	08:31:06	ST21	Still	200388_ST21_12	56	7.0	706 424.2	5 896 268.8	706 416.6	5 896 259.6	11.9	-
22/02/2021	09:03:57	ST21	Still	200388_ST21_13	57	7.0	706 424.2	5 896 268.8	706 424.4	5 896 256.2	12.6	-
22/02/2021	10:01:59	ST21	Still	200388_ST21_14	58	7.0	706 424.2	5 896 268.8	706 432.2	5 896 258.0	13.4	-
22/02/2021	10:39:10	ST21	Still	200388_ST21_15	59	7.0	706 424.2	5 896 268.8	706 435.8	5 896 259.8	14.6	-
22/02/2021	10:53:14	ST21	Still	200388_ST21_16	60	7.0	706 424.2	5 896 268.8	706 439.6	5 896 258.8	18.4	-
22/02/2021	11:39:28	ST21	Still	200388_ST21_17	61	7.0	706 424.2	5 896 268.8	706 444.8	5 896 253.6	25.6	-
22/02/2021	16:20:45	ST21	Video	EOL	62	7.0	706 424.2	5 896 268.8	706 448.9	5 896 245.7	33.9	-
22/02/2021	16:29:40	ST20	Video	SOL	63	16.0	706 749.4	5 898 724.8	706 744.9	5 898 700.8	24.4	-
22/02/2021	16:58:03	ST20	Still	200388_ST20_01	64	16.0	706 749.4	5 898 724.8	706 745.1	5 898 704.5	20.7	-
22/02/2021	17:06:45	ST20	Still	200388_ST20_02	65	16.0	706 749.4	5 898 724.8	706 745.7	5 898 707.1	18.1	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
22/02/2021	18:09:13	ST20	Still	EOL	66	16.0	706 749.4	5 898 724.8	706 745.7	5 898 709.4	15.8	-
22/02/2021	09:16:26	ST20	Still	SOL	67	16.0	706 749.4	5 898 724.8	706 750.6	5 898 701.4	23.4	-
22/02/2021	09:38:37	ST20	Still	200388_ST20_03	68	16.0	706 749.4	5 898 724.8	706 751.8	5 898 704.0	20.9	-
22/02/2021	09:48:35	ST20	Still	200388_ST20_04	69	16.0	706 749.4	5 898 724.8	706 753.8	5 898 708.2	17.2	-
22/02/2021	15:46:15	ST20	Still	200388_ST20_05	70	16.0	706 749.4	5 898 724.8	706 753.3	5 898 714.4	11.1	-
22/02/2021	16:16:34	ST20	Still	200388_ST20_06	71	16.0	706 749.4	5 898 724.8	706 752.4	5 898 717.8	7.6	-
22/02/2021	16:28:12	ST20	Still	200388_ST20_07	72	16.0	706 749.4	5 898 724.8	706 751.0	5 898 721.7	3.5	-
22/02/2021	17:09:11	ST20	Still	200388_ST20_08	73	16.0	706 749.4	5 898 724.8	706 749.5	5 898 724.6	0.2	-
22/02/2021	18:09:35	ST20	Still	200388_ST20_09	74	16.0	706 749.4	5 898 724.8	706 748.5	5 898 727.1	2.4	-
22/02/2021	18:15:48	ST20	Still	200388_ST20_10	75	16.0	706 749.4	5 898 724.8	706 746.8	5 898 730.6	6.4	-
22/02/2021	08:45:52	ST20	Still	200388_ST20_11	76	16.0	706 749.4	5 898 724.8	706 744.3	5 898 744.3	20.2	-
22/02/2021	10:02:13	ST20	Still	200388_ST20_12	77	16.0	706 749.4	5 898 724.8	706 742.3	5 898 757.5	33.5	-
22/02/2021	10:14:43	ST20	Video	EOL	78	16.0	706 749.4	5 898 724.8	706 741.0	5 898 760.9	37.0	-
22/02/2021	14:31:06	ST19	Video	SOL	79	16.5	705 698.0	5 901 455.7	705 704.2	5 901 429.6	26.8	-
22/02/2021	15:05:21	ST19	Still	200388_ST19_01	80	16.5	705 698.0	5 901 455.7	705 704.7	5 901 441.8	15.4	-
22/02/2021	15:45:22	ST19	Still	200388_ST19_02	81	16.5	705 698.0	5 901 455.7	705 702.2	5 901 448.6	8.2	-
22/02/2021	15:56:37	ST19	Still	200388_ST19_03	82	16.5	705 698.0	5 901 455.7	705 699.0	5 901 454.9	1.3	-
22/02/2021	16:48:13	ST19	Still	200388_ST19_04	83	16.5	705 698.0	5 901 455.7	705 693.3	5 901 463.9	9.4	-
22/02/2021	16:57:45	ST19	Still	200388_ST19_05	84	16.5	705 698.0	5 901 455.7	705 690.9	5 901 466.4	12.8	-
22/02/2021	09:00:34	ST19	Still	200388_ST19_06	85	16.5	705 698.0	5 901 455.7	705 686.2	5 901 470.9	19.2	-
22/02/2021	09:01:13	ST19	Video	EOL	86	16.5	705 698.0	5 901 455.7	705 678.0	5 901 477.1	29.3	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
22/02/2021	09:32:11	ST18	Video	SOL	87	10.7	705 260.1	5 904 718.1	705 244.1	5 904 684.6	37.1	-
22/02/2021	09:32:32	ST18	Still	200388_ST18_01	89	10.7	705 260.1	5 904 718.1	705 244.3	5 904 691.8	30.7	-
22/02/2021	09:32:54	ST18	Still	200388_ST18_02	91	10.7	705 260.1	5 904 718.1	705 245.5	5 904 699.3	23.8	-
22/02/2021	09:33:12	ST18	Still	200388_ST18_03	93	10.7	705 260.1	5 904 718.1	705 247.3	5 904 706.1	17.6	-
22/02/2021	09:33:27	ST18	Still	200388_ST18_04	94	10.7	705 260.1	5 904 718.1	705 249.9	5 904 711.2	12.3	-
22/02/2021	09:33:44	ST18	Still	200388_ST18_05	96	10.7	705 260.1	5 904 718.1	705 253.6	5 904 716.8	6.6	-
22/02/2021	09:34:02	ST18	Still	200388_ST18_06	97	10.7	705 260.1	5 904 718.1	705 257.9	5 904 724.7	7.0	-
22/02/2021	09:34:31	ST18	Still	200388_ST18_07	99	10.7	705 260.1	5 904 718.1	705 264.2	5 904 731.9	14.4	-
22/02/2021	09:34:53	ST18	Still	200388_ST18_08	100	10.7	705 260.1	5 904 718.1	705 269.6	5 904 737.4	21.5	-
22/02/2021	09:35:16	ST18	Video	EOL	101	10.7	705 260.1	5 904 718.1	705 272.7	5 904 741.0	26.1	-
22/02/2021	10:36:20	ST17	Video	SOL	102	6.5	704 861.7	5 907 490.8	704 871.7	5 907 463.1	29.4	-
22/02/2021	10:36:20	ST17	Still	200388_ST17_01	102	6.5	704 861.7	5 907 490.8	704 871.7	5 907 463.1	29.4	-
22/02/2021	10:36:35	ST17	Still	200388_ST17_02	103	6.5	704 861.7	5 907 490.8	704 864.4	5 907 471.8	19.2	-
22/02/2021	10:36:45	ST17	Still	200388_ST17_03	105	6.5	704 861.7	5 907 490.8	704 862.7	5 907 473.3	17.5	-
22/02/2021	10:37:05	ST17	Still	200388_ST17_04	106	6.5	704 861.7	5 907 490.8	704 861.0	5 907 475.5	15.3	-
22/02/2021	10:37:26	ST17	Still	200388_ST17_05	107	6.5	704 861.7	5 907 490.8	704 858.1	5 907 480.4	11.0	-
22/02/2021	10:37:38	ST17	Still	200388_ST17_06	108	6.5	704 861.7	5 907 490.8	704 855.3	5 907 486.7	7.6	-
22/02/2021	10:37:45	ST17	Still	200388_ST17_07	109	6.5	704 861.7	5 907 490.8	704 854.4	5 907 488.9	7.5	-
22/02/2021	10:38:08	ST17	Still	200388_ST17_08	110	6.5	704 861.7	5 907 490.8	704 849.6	5 907 489.0	12.3	-
22/02/2021	10:38:46	ST17	Still	200388_ST17_09	111	6.5	704 861.7	5 907 490.8	704 851.4	5 907 508.4	20.4	-
22/02/2021	10:39:07	ST17	Still	200388_ST17_10	112	6.5	704 861.7	5 907 490.8	704 853.2	5 907 516.1	26.7	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
22/02/2021	10:39:23	ST17	Still	200388_ST17_11	113	6.5	704 861.7	5 907 490.8	704 855.2	5 907 521.1	31.0	-
22/02/2021	10:39:23	ST17	Video	EOL	113	6.5	704 861.7	5 907 490.8	704 855.2	5 907 521.1	31.0	-
22/02/2021	11:14:42	ST16	Video	SOL	114	5.2	704 212.5	5 909 508.2	704 236.3	5 909 524.2	28.7	-
22/02/2021	11:15:06	ST16	Still	200388_ST16_01	115	5.2	704 212.5	5 909 508.2	704 227.4	5 909 522.3	20.5	-
22/02/2021	11:15:21	ST16	Still	200388_ST16_02	116	5.2	704 212.5	5 909 508.2	704 222.9	5 909 523.5	18.5	-
22/02/2021	11:15:45	ST16	Still	200388_ST16_03	117	5.2	704 212.5	5 909 508.2	704 217.5	5 909 524.5	17.0	-
22/02/2021	11:16:06	ST16	Still	EOL	118	5.2	704 212.5	5 909 508.2	704 209.4	5 909 524.8	16.8	-
22/02/2021	11:22:00	ST16	Still	SOL	119	5.2	704 212.5	5 909 508.2	704 183.8	5 909 520.1	31.1	-
22/02/2021	11:22:15	ST16	Still	200388_ST16_04	120	5.2	704 212.5	5 909 508.2	704 189.3	5 909 522.5	27.3	-
22/02/2021	11:22:27	ST16	Still	200388_ST16_05	121	5.2	704 212.5	5 909 508.2	704 194.3	5 909 526.9	26.1	-
22/02/2021	11:22:38	ST16	Still	200388_ST16_06	122	5.2	704 212.5	5 909 508.2	704 201.9	5 909 528.7	23.1	-
22/02/2021	11:23:00	ST16	Still	200388_ST16_07	123	5.2	704 212.5	5 909 508.2	704 215.8	5 909 531.4	23.4	-
22/02/2021	11:23:32	ST16	Still	200388_ST16_08	124	5.2	704 212.5	5 909 508.2	704 221.2	5 909 531.1	24.5	-
22/02/2021	11:24:01	ST16	Still	200388_ST16_09	125	5.2	704 212.5	5 909 508.2	704 213.7	5 909 519.7	11.5	-
22/02/2021	11:24:10	ST16	Still	200388_ST16_10	126	5.2	704 212.5	5 909 508.2	704 209.3	5 909 515.0	7.5	-
22/02/2021	11:24:24	ST16	Still	200388_ST16_11	127	5.2	704 212.5	5 909 508.2	704 197.3	5 909 505.2	15.5	-
22/02/2021	11:24:39	ST16	Still	200388_ST16_12	128	5.2	704 212.5	5 909 508.2	704 184.1	5 909 497.7	30.3	-
22/02/2021	11:24:49	ST16	Video	EOL	129	5.2	704 212.5	5 909 508.2	704 175.9	5 909 497.4	38.1	-
25/02/2021	06:52:28	ST02A	Video	SOL	130	12.0	691 702.2	5 911 261.4	691 693.9	5 911 280.4	20.7	-
25/02/2021	06:52:38	ST02A	Still	200388_ST02_01	131	12.0	691 702.2	5 911 261.4	691 696.8	5 911 275.7	15.3	-
25/02/2021	06:53:17	ST02A	Still	200388_ST02_02	132	12.0	691 702.2	5 911 261.4	691 707.3	5 911 256.6	7.0	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
25/02/2021	06:53:27	ST02A	Still	200388_ST02_03	133	12.0	691 702.2	5 911 261.4	691 710.4	5 911 253.7	11.3	-
25/02/2021	06:53:39	ST02A	Still	200388_ST02_04	134	12.0	691 702.2	5 911 261.4	691 714.0	5 911 250.9	15.8	-
25/02/2021	06:53:53	ST02A	Still	200388_ST02_05	136	12.0	691 702.2	5 911 261.4	691 717.6	5 911 245.9	21.8	-
25/02/2021	06:54:16	ST02A	Video	EOL	138	12.0	691 702.2	5 911 261.4	691 724.6	5 911 236.4	33.6	-
25/02/2021	09:17:25	ST23	Video	SOL	139	15.0	693 421.5	5 912 050.3	693 445.4	5 912 047.5	24.1	-
25/02/2021	09:18:09	ST23	Still	200388_ST23_01	141	15.0	693 421.5	5 912 050.3	693 426.3	5 912 046.3	6.3	-
25/02/2021	09:18:14	ST23	Still	200388_ST23_02	142	15.0	693 421.5	5 912 050.3	693 424.3	5 912 045.4	5.6	-
25/02/2021	09:18:24	ST23	Still	200388_ST23_03	143	15.0	693 421.5	5 912 050.3	693 419.5	5 912 044.0	6.6	-
25/02/2021	09:18:39	ST23	Still	200388_ST23_04	144	15.0	693 421.5	5 912 050.3	693 409.5	5 912 047.5	12.3	-
25/02/2021	09:18:53	ST23	Still	200388_ST23_05	145	15.0	693 421.5	5 912 050.3	693 402.3	5 912 048.0	19.3	-
25/02/2021	09:19:11	ST23	Still	200388_ST23_06	146	15.0	693 421.5	5 912 050.3	693 394.9	5 912 050.5	26.6	-
25/02/2021	09:19:19	ST23	Video	EOL	147	15.0	693 421.5	5 912 050.3	693 392.7	5 912 054.1	29.1	-
25/02/2021	09:45:39	ST23A	Video	SOL	149	15.0	693 421.5	5 912 050.3	693 458.2	5 912 044.2	37.2	-
25/02/2021	09:46:21	ST23A	Still	200388_ST23_01	150	15.0	693 421.5	5 912 050.3	693 438.7	5 912 042.3	19.0	-
25/02/2021	09:46:37	ST23A	Still	200388_ST23_02	151	15.0	693 421.5	5 912 050.3	693 433.2	5 912 042.9	13.9	-
25/02/2021	09:46:54	ST23A	Still	200388_ST23_03	152	15.0	693 421.5	5 912 050.3	693 431.5	5 912 043.8	11.9	-
25/02/2021	09:47:04	ST23A	Still	200388_ST23_04	153	15.0	693 421.5	5 912 050.3	693 432.0	5 912 044.1	12.2	-
25/02/2021	09:47:21	ST23A	Still	200388_ST23_05	154	15.0	693 421.5	5 912 050.3	693 430.1	5 912 044.3	10.5	-
25/02/2021	09:47:51	ST23A	Still	200388_ST23_06	155	15.0	693 421.5	5 912 050.3	693 416.5	5 912 049.7	5.0	-
25/02/2021	09:48:22	ST23A	Still	200388_ST23_07	156	15.0	693 421.5	5 912 050.3	693 402.3	5 912 053.5	19.5	-
25/02/2021	09:48:44	ST23A	Still	200388_ST23_08	157	15.0	693 421.5	5 912 050.3	693 397.5	5 912 057.1	25.0	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
25/02/2021	09:49:08	ST23A	Video	EOL	158	15.0	693 421.5	5 912 050.3	693 394.8	5 912 061.7	29.0	-
25/02/2021	11:45:06	ST23A	HG	FA	159	15.0	693 421.5	5 912 050.3	693 434.2	5 912 045.8	13.4	-
25/02/2021	11:58:06	ST23A	DG	PC	160	15.0	693 421.5	5 912 050.3	693 429.7	5 912 051.4	8.3	-
25/02/2021	13:46:43	ST26	Video	SOL	163	30.0	698 395.5	5 897 758.2	698 408.4	5 897 723.3	37.2	-
25/02/2021	13:47:03	ST26	Still	200388_ST26_01	164	30.0	698 395.5	5 897 758.2	698 408.0	5 897 731.7	29.3	-
25/02/2021	13:47:15	ST26	Still	200388_ST26_02	165	30.0	698 395.5	5 897 758.2	698 406.6	5 897 736.0	24.8	-
25/02/2021	13:47:29	ST26	Still	200388_ST26_03	166	30.0	698 395.5	5 897 758.2	698 404.3	5 897 739.6	20.5	-
25/02/2021	13:47:40	ST26	Still	200388_ST26_04	167	30.0	698 395.5	5 897 758.2	698 403.0	5 897 743.9	16.2	-
25/02/2021	13:47:56	ST26	Still	200388_ST26_05	168	30.0	698 395.5	5 897 758.2	698 402.4	5 897 749.2	11.4	-
25/02/2021	13:48:11	ST26	Still	200388_ST26_06	169	30.0	698 395.5	5 897 758.2	698 399.2	5 897 753.2	6.2	-
25/02/2021	13:48:20	ST26	Still	200388_ST26_07	170	30.0	698 395.5	5 897 758.2	698 398.1	5 897 756.4	3.2	-
25/02/2021	13:48:31	ST26	Still	200388_ST26_08	171	30.0	698 395.5	5 897 758.2	698 397.3	5 897 760.4	2.8	-
25/02/2021	13:48:46	ST26	Still	200388_ST26_09	172	30.0	698 395.5	5 897 758.2	698 395.1	5 897 766.2	8.0	-
25/02/2021	13:48:57	ST26	Still	200388_ST26_10	173	30.0	698 395.5	5 897 758.2	698 393.1	5 897 768.4	10.5	-
25/02/2021	13:49:21	ST26	Still	200388_ST26_11	174	30.0	698 395.5	5 897 758.2	698 383.0	5 897 776.2	21.9	-
25/02/2021	13:49:27	ST26	Still	200388_ST26_12	175	30.0	698 395.5	5 897 758.2	698 382.3	5 897 778.7	24.4	-
25/02/2021	13:50:03	ST26	Video	EOL	176	30.0	698 395.5	5 897 758.2	698 380.8	5 897 789.9	35.0	-
25/02/2021	14:31:35	ST27	Video	SOL	177	39.0	700 902.4	5 896 813.4	700 923.6	5 896 794.1	28.7	-
25/02/2021	14:31:56	ST27	Still	200388_ST27_01	178	39.0	700 902.4	5 896 813.4	700 913.8	5 896 796.9	20.0	-
25/02/2021	14:32:17	ST27	Still	200388_ST27_02	179	39.0	700 902.4	5 896 813.4	700 910.5	5 896 800.6	15.1	-
25/02/2021	14:32:52	ST27	Still	200388_ST27_03	180	39.0	700 902.4	5 896 813.4	700 905.7	5 896 805.7	8.4	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
25/02/2021	14:33:21	ST27	Still	200388_ST27_04	181	39.0	700 902.4	5 896 813.4	700 897.0	5 896 810.6	6.1	-
25/02/2021	14:33:57	ST27	Still	200388_ST27_05	182	39.0	700 902.4	5 896 813.4	700 885.1	5 896 817.6	17.8	-
25/02/2021	14:34:10	ST27	Still	200388_ST27_06	183	39.0	700 902.4	5 896 813.4	700 884.1	5 896 817.5	18.8	-
25/02/2021	14:34:53	ST27	Still	200388_ST27_07	184	39.0	700 902.4	5 896 813.4	700 879.9	5 896 823.3	24.6	-
25/02/2021	14:35:15	ST27	Still	200388_ST27_08	185	39.0	700 902.4	5 896 813.4	700 876.4	5 896 827.7	29.7	-
25/02/2021	14:36:19	ST27	Video	EOL	186	39.0	700 902.4	5 896 813.4	700 863.8	5 896 838.8	46.2	-
26/02/2021	09:42:16	ST16	HG	NS	187	5.2	704 212.5	5 909 508.2	704 218.0	5 909 522.3	15.1	-
26/02/2021	09:54:21	ST16	HG	FA	188	5.2	704 212.5	5 909 508.2	704 217.4	5 909 515.0	8.4	-
26/02/2021	10:04:38	ST16	DG	PC	189	5.2	704 212.5	5 909 508.2	704 218.4	5 909 506.6	6.2	-
26/02/2021	10:39:45	ST17	HG	FA	191	6.5	704 861.7	5 907 490.8	704 864.0	5 907 496.9	6.5	-
26/02/2021	11:25:31	ST18	HG	FA	192	10.7	705 260.1	5 904 718.1	705 266.0	5 904 716.3	6.2	-
26/02/2021	12:41:00	ST27	HG	FA	193	39.0	700 902.4	5 896 813.4	700 923.2	5 896 803.1	23.2	-
26/02/2021	13:47:31	ST26	HG	FA	194	30.0	698 395.5	5 897 758.2	698 390.0	5 897 752.0	8.3	-
26/02/2021	14:06:01	ST26	DG	NS	195	30.0	698 395.5	5 897 758.2	698 403.5	5 897 752.8	9.6	-
26/02/2021	14:19:37	ST26	DG	PC	196	30.0	698 395.5	5 897 758.2	698 394.3	5 897 754.5	3.9	-
27/02/2021	14:04:37	ST21	HG	FA	198	7.0	706 424.2	5 896 268.8	706 418.1	5 896 261.4	9.6	-
27/02/2021	14:51:04	ST20	HG	FA	199	16.0	706 749.4	5 898 724.8	706 745.3	5 898 724.0	4.2	-
27/02/2021	15:21:30	ST19	HG	FA	200	16.5	705 698.0	5 901 455.7	705 692.5	5 901 456.9	5.6	-
27/02/2021	15:34:11	ST19	DG	PC	201	16.5	705 698.0	5 901 455.7	705 696.1	5 901 447.8	8.1	-
14/03/2021	08:07:00	ST12	Video	SOL	202	13.5	693 990.7	5 901 880.2	694 003.7	5 901 914.2	36.4	-
14/03/2021	08:07:25	ST12	Still	200388_ST12_01	205	13.5	693 990.7	5 901 880.2	694 000.6	5 901 906.7	28.3	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
14/03/2021	08:08:12	ST12	Still	200388_ST12_02	206	13.5	693 990.7	5 901 880.2	693 995.6	5 901 888.5	9.6	-
14/03/2021	08:08:35	ST12	Still	200388_ST12_03	207	13.5	693 990.7	5 901 880.2	693 992.6	5 901 880.7	2.0	-
14/03/2021	08:09:52	ST12	Video	EOL	208	13.5	693 990.7	5 901 880.2	693 985.5	5 901 854.6	26.1	-
15/03/2021	09:15:33	ST05	Video	SOL	209	26.0	700 944.1	5 907 928.9	700 945.7	5 907 996.7	67.8	-
15/03/2021	09:15:44	ST05	Still	200388_ST05_01	210	26.0	700 944.1	5 907 928.9	700 948.7	5 907 996.4	67.7	-
15/03/2021	09:16:19	ST05	Still	200388_ST05_02	211	26.0	700 944.1	5 907 928.9	700 955.8	5 907 989.5	61.7	-
15/03/2021	09:16:37	ST05	Still	200388_ST05_03	212	26.0	700 944.1	5 907 928.9	700 958.1	5 907 985.1	57.9	-
15/03/2021	09:17:33	ST05	Still	200388_ST05_04	213	26.0	700 944.1	5 907 928.9	700 951.7	5 907 969.0	40.8	-
15/03/2021	09:17:44	ST05	Still	200388_ST05_05	214	26.0	700 944.1	5 907 928.9	700 950.7	5 907 968.7	40.3	-
15/03/2021	09:17:46	ST05	Still	200388_ST05_06	215	26.0	700 944.1	5 907 928.9	700 950.6	5 907 968.9	40.5	-
15/03/2021	09:17:58	ST05	Still	200388_ST05_07	216	26.0	700 944.1	5 907 928.9	700 949.9	5 907 969.1	40.6	-
15/03/2021	09:18:36	ST05	Still	200388_ST05_08	217	26.0	700 944.1	5 907 928.9	700 944.6	5 907 962.1	33.2	-
15/03/2021	09:18:44	ST05	Still	200388_ST05_09	218	26.0	700 944.1	5 907 928.9	700 943.0	5 907 960.6	31.7	-
15/03/2021	09:18:53	ST05	Still	200388_ST05_10	219	26.0	700 944.1	5 907 928.9	700 942.0	5 907 959.2	30.4	-
15/03/2021	09:19:00	ST05	Still	200388_ST05_11	220	26.0	700 944.1	5 907 928.9	700 942.0	5 907 958.6	29.8	-
15/03/2021	09:19:01	ST05	Still	200388_ST05_12	221	26.0	700 944.1	5 907 928.9	700 942.1	5 907 958.5	29.7	-
15/03/2021	09:19:37	ST05	Still	200388_ST05_13	222	26.0	700 944.1	5 907 928.9	700 948.6	5 907 957.4	28.9	-
15/03/2021	09:20:35	ST05	Still	200388_ST05_14	223	26.0	700 944.1	5 907 928.9	700 940.9	5 907 943.0	14.5	-
15/03/2021	09:20:44	ST05	Still	200388_ST05_15	224	26.0	700 944.1	5 907 928.9	700 938.7	5 907 941.4	13.6	-
15/03/2021	09:20:49	ST05	Still	200388_ST05_16	225	26.0	700 944.1	5 907 928.9	700 938.2	5 907 940.9	13.4	-
15/03/2021	09:21:07	ST05	Still	200388_ST05_17	226	26.0	700 944.1	5 907 928.9	700 937.4	5 907 941.5	14.3	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	09:21:11	ST05	Still	200388_ST05_18	227	26.0	700 944.1	5 907 928.9	700 937.6	5 907 941.9	14.5	-
15/03/2021	09:21:24	ST05	Still	200388_ST05_19	228	26.0	700 944.1	5 907 928.9	700 938.4	5 907 943.1	15.3	-
15/03/2021	09:21:39	ST05	Still	200388_ST05_20	229	26.0	700 944.1	5 907 928.9	700 941.4	5 907 942.8	14.2	-
15/03/2021	09:22:44	ST05	Still	200388_ST05_21	230	26.0	700 944.1	5 907 928.9	700 943.8	5 907 927.2	1.7	-
15/03/2021	09:22:49	ST05	Still	200388_ST05_22	231	26.0	700 944.1	5 907 928.9	700 942.7	5 907 926.8	2.5	-
15/03/2021	09:22:56	ST05	Still	200388_ST05_23	232	26.0	700 944.1	5 907 928.9	700 941.9	5 907 926.8	3.0	-
15/03/2021	09:22:58	ST05	Still	200388_ST05_24	233	26.0	700 944.1	5 907 928.9	700 941.3	5 907 926.9	3.4	-
15/03/2021	09:23:03	ST05	Still	200388_ST05_25	234	26.0	700 944.1	5 907 928.9	700 940.8	5 907 927.0	3.8	-
15/03/2021	09:24:11	ST05	Still	200388_ST05_26	235	26.0	700 944.1	5 907 928.9	700 939.4	5 907 918.2	11.7	-
15/03/2021	09:24:15	ST05	Still	200388_ST05_27	236	26.0	700 944.1	5 907 928.9	700 940.9	5 907 918.8	10.6	-
15/03/2021	09:25:15	ST05	Still	200388_ST05_28	237	26.0	700 944.1	5 907 928.9	700 963.9	5 907 921.2	21.2	-
15/03/2021	09:25:19	ST05	Still	200388_ST05_29	238	26.0	700 944.1	5 907 928.9	700 963.9	5 907 920.6	21.5	-
15/03/2021	09:25:30	ST05	Still	200388_ST05_30	239	26.0	700 944.1	5 907 928.9	700 961.5	5 907 919.9	19.6	-
15/03/2021	09:26:55	ST05	Still	200388_ST05_31	240	26.0	700 944.1	5 907 928.9	700 930.8	5 907 911.8	21.7	-
15/03/2021	09:27:17	ST05	Video	EOL	241	26.0	700 944.1	5 907 928.9	700 923.0	5 907 907.2	30.3	-
15/03/2021	09:56:38	ST06	Video	SOL	242	27.0	701 280.3	5 906 492.8	701 256.2	5 906 553.3	65.1	-
15/03/2021	09:58:24	ST06	Still	200388_ST06_01	244	27.0	701 280.3	5 906 492.8	701 279.7	5 906 533.5	40.7	-
15/03/2021	09:58:32	ST06	Still	200388_ST06_02	245	27.0	701 280.3	5 906 492.8	701 280.7	5 906 531.8	39.0	-
15/03/2021	09:58:41	ST06	Still	200388_ST06_03	246	27.0	701 280.3	5 906 492.8	701 280.9	5 906 530.1	37.3	-
15/03/2021	09:58:56	ST06	Still	200388_ST06_04	247	27.0	701 280.3	5 906 492.8	701 279.0	5 906 528.0	35.2	-
15/03/2021	09:59:10	ST06	Still	200388_ST06_05	248	27.0	701 280.3	5 906 492.8	701 277.3	5 906 524.9	32.2	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	09:59:21	ST06	Still	200388_ST06_06	249	27.0	701 280.3	5 906 492.8	701 277.9	5 906 521.6	28.9	-
15/03/2021	09:59:53	ST06	Still	200388_ST06_07	250	27.0	701 280.3	5 906 492.8	701 283.5	5 906 511.2	18.7	-
15/03/2021	10:00:02	ST06	Still	200388_ST06_08	251	27.0	701 280.3	5 906 492.8	701 283.7	5 906 509.1	16.7	-
15/03/2021	10:00:07	ST06	Still	200388_ST06_09	252	27.0	701 280.3	5 906 492.8	701 284.0	5 906 508.4	16.0	-
15/03/2021	10:00:20	ST06	Still	200388_ST06_10	253	27.0	701 280.3	5 906 492.8	701 284.1	5 906 506.4	14.1	-
15/03/2021	10:00:27	ST06	Still	200388_ST06_11	254	27.0	701 280.3	5 906 492.8	701 283.8	5 906 506.2	13.8	-
15/03/2021	10:00:29	ST06	Still	200388_ST06_12	255	27.0	701 280.3	5 906 492.8	701 284.4	5 906 506.8	14.6	-
15/03/2021	10:00:50	ST06	Still	200388_ST06_13	256	27.0	701 280.3	5 906 492.8	701 285.2	5 906 506.7	14.7	-
15/03/2021	10:01:11	ST06	Still	200388_ST06_14	257	27.0	701 280.3	5 906 492.8	701 282.7	5 906 504.9	12.3	-
15/03/2021	10:01:19	ST06	Still	200388_ST06_15	258	27.0	701 280.3	5 906 492.8	701 282.4	5 906 503.7	11.1	-
15/03/2021	10:02:07	ST06	Still	200388_ST06_16	259	27.0	701 280.3	5 906 492.8	701 274.8	5 906 489.3	6.5	-
15/03/2021	10:02:15	ST06	Still	200388_ST06_17	260	27.0	701 280.3	5 906 492.8	701 275.0	5 906 488.0	7.2	-
15/03/2021	10:02:27	ST06	Still	200388_ST06_18	261	27.0	701 280.3	5 906 492.8	701 274.5	5 906 486.7	8.4	-
15/03/2021	10:02:42	ST06	Still	200388_ST06_19	262	27.0	701 280.3	5 906 492.8	701 274.4	5 906 485.5	9.4	-
15/03/2021	10:03:01	ST06	Still	200388_ST06_20	263	27.0	701 280.3	5 906 492.8	701 274.6	5 906 483.1	11.3	-
15/03/2021	10:03:08	ST06	Still	200388_ST06_21	264	27.0	701 280.3	5 906 492.8	701 275.9	5 906 483.0	10.7	-
15/03/2021	10:03:27	ST06	Still	200388_ST06_22	265	27.0	701 280.3	5 906 492.8	701 280.4	5 906 483.5	9.3	-
15/03/2021	10:04:19	ST06	Still	200388_ST06_23	266	27.0	701 280.3	5 906 492.8	701 285.1	5 906 472.1	21.2	-
15/03/2021	10:04:47	ST06	Still	200388_ST06_24	267	27.0	701 280.3	5 906 492.8	701 287.6	5 906 468.8	25.1	-
15/03/2021	10:04:55	ST06	Video	EOL	268	27.0	701 280.3	5 906 492.8	701 287.9	5 906 468.7	25.3	-
15/03/2021	11:03:39	ST08	Video	SOL	269	29.0	699 774.6	5 904 314.5	699 764.3	5 904 364.7	51.2	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	11:04:21	ST08	Still	200388_ST08_01	271	29.0	699 774.6	5 904 314.5	699 769.0	5 904 356.0	41.9	-
15/03/2021	11:04:41	ST08	Still	200388_ST08_02	272	29.0	699 774.6	5 904 314.5	699 770.4	5 904 351.2	36.9	-
15/03/2021	11:05:10	ST08	Still	200388_ST08_03	273	29.0	699 774.6	5 904 314.5	699 773.4	5 904 342.1	27.6	-
15/03/2021	11:05:23	ST08	Still	200388_ST08_04	274	29.0	699 774.6	5 904 314.5	699 773.5	5 904 337.2	22.7	-
15/03/2021	11:05:29	ST08	Still	200388_ST08_05	275	29.0	699 774.6	5 904 314.5	699 774.3	5 904 335.9	21.4	-
15/03/2021	11:05:37	ST08	Still	200388_ST08_06	276	29.0	699 774.6	5 904 314.5	699 773.3	5 904 333.7	19.2	-
15/03/2021	11:05:46	ST08	Still	200388_ST08_07	277	29.0	699 774.6	5 904 314.5	699 772.9	5 904 331.5	17.1	-
15/03/2021	11:05:51	ST08	Still	200388_ST08_08	278	29.0	699 774.6	5 904 314.5	699 772.8	5 904 329.6	15.2	-
15/03/2021	11:06:32	ST08	Still	200388_ST08_09	279	29.0	699 774.6	5 904 314.5	699 776.9	5 904 312.1	3.3	-
15/03/2021	11:06:37	ST08	Still	200388_ST08_10	280	29.0	699 774.6	5 904 314.5	699 776.5	5 904 310.7	4.2	-
15/03/2021	11:07:07	ST08	Still	200388_ST08_11	281	29.0	699 774.6	5 904 314.5	699 773.7	5 904 304.3	10.2	-
15/03/2021	11:07:29	ST08	Still	200388_ST08_12	282	29.0	699 774.6	5 904 314.5	699 771.6	5 904 301.8	13.0	-
15/03/2021	11:07:41	ST08	Still	200388_ST08_13	283	29.0	699 774.6	5 904 314.5	699 770.2	5 904 299.5	15.6	-
15/03/2021	11:07:56	ST08	Still	200388_ST08_14	284	29.0	699 774.6	5 904 314.5	699 769.9	5 904 297.3	17.8	-
15/03/2021	11:08:12	ST08	Still	200388_ST08_15	285	29.0	699 774.6	5 904 314.5	699 769.9	5 904 294.8	20.3	-
15/03/2021	11:08:31	ST08	Still	200388_ST08_16	286	29.0	699 774.6	5 904 314.5	699 771.6	5 904 292.2	22.5	-
15/03/2021	11:08:42	ST08	Still	200388_ST08_17	287	29.0	699 774.6	5 904 314.5	699 770.9	5 904 290.2	24.6	-
15/03/2021	11:08:52	ST08	Still	200388_ST08_18	288	29.0	699 774.6	5 904 314.5	699 770.3	5 904 288.1	26.7	-
15/03/2021	11:08:59	ST08	Still	200388_ST08_19	289	29.0	699 774.6	5 904 314.5	699 770.0	5 904 286.5	28.4	-
15/03/2021	11:09:07	ST08	Still	200388_ST08_20	290	29.0	699 774.6	5 904 314.5	699 770.8	5 904 284.6	30.1	-
15/03/2021	11:09:25	ST08	Still	200388_ST08_21	291	29.0	699 774.6	5 904 314.5	699 772.0	5 904 281.2	33.4	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	11:09:27	ST08	Video	EOL	292	29.0	699 774.6	5 904 314.5	699 772.0	5 904 280.9	33.7	-
15/03/2021	11:17:06	ST08A	Video	SOL	293	29.0	699 774.6	5 904 314.5	699 734.0	5 904 281.5	52.3	-
15/03/2021	11:23:39	ST08A	Still	SOL	294	29.0	699 774.6	5 904 314.5	699 814.1	5 904 368.7	67.1	-
15/03/2021	11:24:03	ST08A	Still	200388_ST08_01	295	29.0	699 774.6	5 904 314.5	699 809.7	5 904 365.6	62.0	-
15/03/2021	11:24:17	ST08A	Still	200388_ST08_02	296	29.0	699 774.6	5 904 314.5	699 807.3	5 904 362.3	57.9	-
15/03/2021	11:24:25	ST08A	Still	200388_ST08_03	297	29.0	699 774.6	5 904 314.5	699 806.1	5 904 360.5	55.8	-
15/03/2021	11:24:35	ST08A	Still	200388_ST08_04	298	29.0	699 774.6	5 904 314.5	699 805.4	5 904 357.7	53.1	-
15/03/2021	11:24:55	ST08A	Still	200388_ST08_05	299	29.0	699 774.6	5 904 314.5	699 801.1	5 904 350.5	44.7	-
15/03/2021	11:24:59	ST08A	Still	200388_ST08_06	300	29.0	699 774.6	5 904 314.5	699 800.2	5 904 349.8	43.6	-
15/03/2021	11:25:15	ST08A	Still	200388_ST08_07	301	29.0	699 774.6	5 904 314.5	699 795.8	5 904 347.1	38.9	-
15/03/2021	11:25:36	ST08A	Still	200388_ST08_08	302	29.0	699 774.6	5 904 314.5	699 789.2	5 904 341.4	30.6	-
15/03/2021	11:25:41	ST08A	Still	200388_ST08_09	303	29.0	699 774.6	5 904 314.5	699 787.8	5 904 339.7	28.4	-
15/03/2021	11:26:11	ST08A	Still	200388_ST08_10	304	29.0	699 774.6	5 904 314.5	699 781.3	5 904 336.1	22.6	-
15/03/2021	11:26:21	ST08A	Still	200388_ST08_11	305	29.0	699 774.6	5 904 314.5	699 779.8	5 904 334.1	20.3	-
15/03/2021	11:26:39	ST08A	Still	200388_ST08_12	306	29.0	699 774.6	5 904 314.5	699 777.2	5 904 328.7	14.4	-
15/03/2021	11:26:53	ST08A	Still	200388_ST08_13	307	29.0	699 774.6	5 904 314.5	699 775.7	5 904 326.3	11.9	-
15/03/2021	11:27:04	ST08A	Still	200388_ST08_14	308	29.0	699 774.6	5 904 314.5	699 773.8	5 904 323.5	9.0	-
15/03/2021	11:27:30	ST08A	Still	200388_ST08_15	309	29.0	699 774.6	5 904 314.5	699 770.5	5 904 314.6	4.1	-
15/03/2021	11:27:59	ST08A	Still	200388_ST08_16	310	29.0	699 774.6	5 904 314.5	699 769.3	5 904 303.2	12.5	-
15/03/2021	11:28:07	ST08A	Still	200388_ST08_17	311	29.0	699 774.6	5 904 314.5	699 769.2	5 904 300.3	15.2	-
15/03/2021	11:28:21	ST08A	Still	200388_ST08_18	312	29.0	699 774.6	5 904 314.5	699 769.3	5 904 296.3	19.0	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	11:28:54	ST08A	Still	200388_ST08_19	313	29.0	699 774.6	5 904 314.5	699 768.3	5 904 290.9	24.4	-
15/03/2021	11:29:14	ST08A	Still	200388_ST08_20	314	29.0	699 774.6	5 904 314.5	699 767.8	5 904 287.9	27.5	-
15/03/2021	11:29:29	ST08A	Video	EOL	315	29.0	699 774.6	5 904 314.5	699 766.9	5 904 285.2	30.3	-
15/03/2021	12:21:19	ST09	Video	SOL	316	26.3	701 764.6	5 902 250.5	701 839.3	5 902 247.1	74.8	-
15/03/2021	12:21:53	ST09	Still	200388_ST09_01	317	26.3	701 764.6	5 902 250.5	701 829.4	5 902 252.9	64.8	-
15/03/2021	12:22:20	ST09	Still	200388_ST09_02	318	26.3	701 764.6	5 902 250.5	701 826.2	5 902 252.0	61.6	-
15/03/2021	12:22:24	ST09	Still	200388_ST09_03	319	26.3	701 764.6	5 902 250.5	701 825.5	5 902 250.9	60.9	-
15/03/2021	12:22:59	ST09	Still	200388_ST09_04	320	26.3	701 764.6	5 902 250.5	701 816.0	5 902 241.5	52.2	-
15/03/2021	12:23:12	ST09	Still	200388_ST09_05	321	26.3	701 764.6	5 902 250.5	701 812.4	5 902 238.3	49.3	-
15/03/2021	12:24:01	ST09	Still	200388_ST09_06	322	26.3	701 764.6	5 902 250.5	701 804.3	5 902 239.0	41.3	-
15/03/2021	12:24:10	ST09	Still	200388_ST09_07	323	26.3	701 764.6	5 902 250.5	701 803.4	5 902 238.6	40.6	-
15/03/2021	12:24:11	ST09	Still	200388_ST09_08	324	26.3	701 764.6	5 902 250.5	701 803.2	5 902 238.7	40.4	-
15/03/2021	12:24:58	ST09	Still	200388_ST09_09	325	26.3	701 764.6	5 902 250.5	701 798.8	5 902 238.3	36.3	-
15/03/2021	12:25:56	ST09	Still	200388_ST09_10	326	26.3	701 764.6	5 902 250.5	701 780.8	5 902 233.8	23.3	-
15/03/2021	12:26:23	ST09	Still	200388_ST09_11	328	26.3	701 764.6	5 902 250.5	701 774.5	5 902 237.3	16.5	-
15/03/2021	12:26:36	ST09	Still	200388_ST09_12	329	26.3	701 764.6	5 902 250.5	701 772.8	5 902 238.1	14.9	-
15/03/2021	12:26:38	ST09	Still	200388_ST09_13	330	26.3	701 764.6	5 902 250.5	701 772.8	5 902 238.4	14.6	-
15/03/2021	12:26:56	ST09	Still	200388_ST09_14	331	26.3	701 764.6	5 902 250.5	701 770.2	5 902 238.7	13.1	-
15/03/2021	12:27:11	ST09	Still	200388_ST09_15	332	26.3	701 764.6	5 902 250.5	701 767.2	5 902 239.8	11.0	-
15/03/2021	12:27:44	ST09	Still	200388_ST09_16	333	26.3	701 764.6	5 902 250.5	701 761.4	5 902 246.8	4.9	-
15/03/2021	12:28:06	ST09	Still	200388_ST09_17	334	26.3	701 764.6	5 902 250.5	701 759.9	5 902 251.9	4.9	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	12:28:31	ST09	Still	200388_ST09_18	335	26.3	701 764.6	5 902 250.5	701 759.4	5 902 257.4	8.6	-
15/03/2021	12:28:46	ST09	Still	200388_ST09_19	336	26.3	701 764.6	5 902 250.5	701 760.1	5 902 258.8	9.4	-
15/03/2021	12:28:47	ST09	Still	200388_ST09_20	337	26.3	701 764.6	5 902 250.5	701 760.0	5 902 258.8	9.5	-
15/03/2021	12:29:22	ST09	Still	200388_ST09_21	338	26.3	701 764.6	5 902 250.5	701 758.7	5 902 269.7	20.1	-
15/03/2021	12:29:28	ST09	Still	200388_ST09_22	339	26.3	701 764.6	5 902 250.5	701 759.3	5 902 270.8	21.0	-
15/03/2021	12:29:54	ST09	Still	200388_ST09_23	340	26.3	701 764.6	5 902 250.5	701 759.8	5 902 274.0	24.0	-
15/03/2021	12:29:55	ST09	Still	200388_ST09_24	341	26.3	701 764.6	5 902 250.5	701 760.7	5 902 274.2	24.0	-
15/03/2021	12:30:48	ST09	Still	200388_ST09_25	342	26.3	701 764.6	5 902 250.5	701 761.3	5 902 279.4	29.1	-
15/03/2021	12:30:49	ST09	Still	200388_ST09_26	343	26.3	701 764.6	5 902 250.5	701 761.7	5 902 279.5	29.1	-
15/03/2021	12:30:51	ST09	Still	200388_ST09_27	344	26.3	701 764.6	5 902 250.5	701 761.5	5 902 279.4	29.1	-
15/03/2021	12:31:01	ST09	Video	EOL	345	26.3	701 764.6	5 902 250.5	701 762.2	5 902 279.3	28.9	-
15/03/2021	14:49:11	ST29	Video	SOL	346	40.0	708 844.1	5 903 199.4	708 853.7	5 903 144.0	56.2	-
15/03/2021	14:49:34	ST29	Still	200388_ST29_01	347	40.0	708 844.1	5 903 199.4	708 851.7	5 903 148.4	51.6	-
15/03/2021	14:49:50	ST29	Still	200388_ST29_02	348	40.0	708 844.1	5 903 199.4	708 850.5	5 903 151.4	48.4	-
15/03/2021	14:50:38	ST29	Still	200388_ST29_03	349	40.0	708 844.1	5 903 199.4	708 843.3	5 903 160.0	39.4	-
15/03/2021	14:51:17	ST29	Still	200388_ST29_04	350	40.0	708 844.1	5 903 199.4	708 845.7	5 903 170.8	28.6	-
15/03/2021	14:51:26	ST29	Still	200388_ST29_05	351	40.0	708 844.1	5 903 199.4	708 844.2	5 903 172.9	26.5	-
15/03/2021	14:51:49	ST29	Still	200388_ST29_06	352	40.0	708 844.1	5 903 199.4	708 845.3	5 903 179.2	20.2	-
15/03/2021	14:52:18	ST29	Still	200388_ST29_07	353	40.0	708 844.1	5 903 199.4	708 847.9	5 903 186.8	13.2	-
15/03/2021	14:52:30	ST29	Still	200388_ST29_08	354	40.0	708 844.1	5 903 199.4	708 844.4	5 903 189.4	10.0	-
15/03/2021	14:52:51	ST29	Still	200388_ST29_09	355	40.0	708 844.1	5 903 199.4	708 844.1	5 903 195.1	4.3	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	14:53:01	ST29	Still	200388_ST29_10	356	40.0	708 844.1	5 903 199.4	708 848.8	5 903 196.6	5.5	-
15/03/2021	14:53:24	ST29	Still	200388_ST29_11	357	40.0	708 844.1	5 903 199.4	708 851.8	5 903 205.0	9.5	-
15/03/2021	14:53:38	ST29	Still	200388_ST29_12	358	40.0	708 844.1	5 903 199.4	708 847.5	5 903 206.5	7.9	-
15/03/2021	14:53:44	ST29	Still	200388_ST29_13	359	40.0	708 844.1	5 903 199.4	708 845.4	5 903 206.2	6.9	-
15/03/2021	14:54:03	ST29	Still	200388_ST29_14	360	40.0	708 844.1	5 903 199.4	708 842.6	5 903 210.7	11.4	-
15/03/2021	14:54:14	ST29	Still	200388_ST29_15	361	40.0	708 844.1	5 903 199.4	708 845.4	5 903 213.0	13.7	-
15/03/2021	14:54:41	ST29	Still	200388_ST29_16	362	40.0	708 844.1	5 903 199.4	708 852.7	5 903 222.9	25.0	-
15/03/2021	14:54:48	ST29	Still	200388_ST29_17	363	40.0	708 844.1	5 903 199.4	708 851.2	5 903 222.8	24.5	-
15/03/2021	14:55:25	ST29	Still	200388_ST29_18	364	40.0	708 844.1	5 903 199.4	708 848.8	5 903 229.0	30.0	-
15/03/2021	14:55:32	ST29	Still	200388_ST29_19	365	40.0	708 844.1	5 903 199.4	708 848.6	5 903 230.7	31.6	-
15/03/2021	14:55:46	ST29	Video	EOL	366	40.0	708 844.1	5 903 199.4	708 850.6	5 903 232.7	33.9	-
15/03/2021	15:25:24	ST19A	Video	SOL	367	16.5	705 698.0	5 901 455.7	705 680.4	5 901 385.1	72.8	-
15/03/2021	15:25:52	ST19A	Still	200388_ST19_01	368	16.5	705 698.0	5 901 455.7	705 680.1	5 901 393.8	64.4	-
15/03/2021	15:28:54	ST19A	Still	200388_ST19_02	369	16.5	705 698.0	5 901 455.7	705 699.0	5 901 402.5	53.2	-
15/03/2021	15:29:32	ST19A	Video	EOL	370	16.5	705 698.0	5 901 455.7	705 701.8	5 901 411.0	44.9	-
15/03/2021	15:45:43	ST19A	Video	SOL	371	16.5	705 698.0	5 901 455.7	705 686.4	5 901 356.6	99.8	-
15/03/2021	15:45:51	ST19A	Still	200388_ST19_01	372	16.5	705 698.0	5 901 455.7	705 686.4	5 901 357.7	98.7	-
15/03/2021	15:46:34	ST19A	Still	200388_ST19_02	373	16.5	705 698.0	5 901 455.7	705 688.7	5 901 369.6	86.6	-
15/03/2021	15:47:06	ST19A	Still	200388_ST19_03	374	16.5	705 698.0	5 901 455.7	705 682.5	5 901 377.9	79.3	-
15/03/2021	15:47:27	ST19A	Still	200388_ST19_04	375	16.5	705 698.0	5 901 455.7	705 679.3	5 901 380.7	77.3	-
15/03/2021	15:47:56	ST19A	Still	200388_ST19_05	No fix	16.5	705 698.0	5 901 455.7	-	-	-	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	15:48:02	ST19A	Still	200388_ST19_06	376	16.5	705 698.0	5 901 455.7	705 680.1	5 901 387.0	71.0	-
15/03/2021	15:48:35	ST19A	Still	200388_ST19_07	377	16.5	705 698.0	5 901 455.7	705 684.1	5 901 395.5	61.8	-
15/03/2021	15:49:07	ST19A	Still	200388_ST19_08	378	16.5	705 698.0	5 901 455.7	705 685.5	5 901 406.6	50.7	-
15/03/2021	15:49:16	ST19A	Still	200388_ST19_09	379	16.5	705 698.0	5 901 455.7	705 686.9	5 901 408.4	48.6	-
15/03/2021	15:49:45	ST19A	Still	200388_ST19_10	380	16.5	705 698.0	5 901 455.7	705 688.0	5 901 415.5	41.4	-
15/03/2021	15:50:14	ST19A	Still	200388_ST19_11	381	16.5	705 698.0	5 901 455.7	705 687.8	5 901 418.3	38.8	-
15/03/2021	15:50:28	ST19A	Still	200388_ST19_12	382	16.5	705 698.0	5 901 455.7	705 686.7	5 901 419.5	37.9	-
15/03/2021	15:50:36	ST19A	Still	200388_ST19_13	383	16.5	705 698.0	5 901 455.7	705 686.7	5 901 419.4	38.0	-
15/03/2021	15:50:50	ST19A	Still	200388_ST19_14	384	16.5	705 698.0	5 901 455.7	705 687.0	5 901 417.9	39.4	-
15/03/2021	15:50:58	ST19A	Still	200388_ST19_15	385	16.5	705 698.0	5 901 455.7	705 687.3	5 901 417.6	39.6	-
15/03/2021	15:51:36	ST19A	Still	200388_ST19_16	386	16.5	705 698.0	5 901 455.7	705 687.4	5 901 421.3	36.0	-
15/03/2021	15:52:23	ST19A	Still	200388_ST19_17	387	16.5	705 698.0	5 901 455.7	705 696.1	5 901 435.6	20.2	-
15/03/2021	15:52:28	ST19A	Still	200388_ST19_18	388	16.5	705 698.0	5 901 455.7	705 695.5	5 901 436.5	19.4	-
15/03/2021	15:52:47	ST19A	Still	200388_ST19_19	389	16.5	705 698.0	5 901 455.7	705 693.9	5 901 442.9	13.4	-
15/03/2021	15:53:17	ST19A	Still	200388_ST19_20	390	16.5	705 698.0	5 901 455.7	705 695.9	5 901 450.9	5.2	-
15/03/2021	15:53:22	ST19A	Still	200388_ST19_21	391	16.5	705 698.0	5 901 455.7	705 696.1	5 901 451.3	4.8	-
15/03/2021	15:53:44	ST19A	Still	200388_ST19_22	392	16.5	705 698.0	5 901 455.7	705 700.5	5 901 458.5	3.8	-
15/03/2021	15:54:02	ST19A	Still	200388_ST19_23	393	16.5	705 698.0	5 901 455.7	705 702.9	5 901 461.3	7.4	-
15/03/2021	15:54:27	ST19A	Still	200388_ST19_24	394	16.5	705 698.0	5 901 455.7	705 703.5	5 901 466.4	12.0	-
15/03/2021	15:54:30	ST19A	Still	200388_ST19_25	395	16.5	705 698.0	5 901 455.7	705 703.3	5 901 467.1	12.6	-
15/03/2021	15:54:48	ST19A	Still	200388_ST19_26	396	16.5	705 698.0	5 901 455.7	705 701.3	5 901 473.4	18.0	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	15:54:50	ST19A	Still	200388_ST19_27	397	16.5	705 698.0	5 901 455.7	705 701.4	5 901 473.5	18.1	-
15/03/2021	15:55:04	ST19A	Still	200388_ST19_28	398	16.5	705 698.0	5 901 455.7	705 703.2	5 901 476.3	21.2	-
15/03/2021	15:55:20	ST19A	Still	200388_ST19_29	399	16.5	705 698.0	5 901 455.7	705 701.9	5 901 481.8	26.4	-
15/03/2021	15:55:43	ST19A	Still	200388_ST19_30	400	16.5	705 698.0	5 901 455.7	705 700.0	5 901 487.2	31.6	-
15/03/2021	15:55:51	ST19A	Video	EOL	401	16.5	705 698.0	5 901 455.7	705 698.1	5 901 489.5	33.8	-
15/03/2021	16:15:50	ST20A	Video	SOL	402	16.0	706 749.4	5 898 724.8	706 755.0	5 898 672.7	52.4	-
15/03/2021	16:16:25	ST20A	Still	200388_ST20_01	403	16.0	706 749.4	5 898 724.8	706 743.8	5 898 678.8	46.3	-
15/03/2021	16:16:56	ST20A	Still	200388_ST20_02	404	16.0	706 749.4	5 898 724.8	706 732.5	5 898 691.9	37.0	-
15/03/2021	16:17:57	ST20A	Still	200388_ST20_03	405	16.0	706 749.4	5 898 724.8	706 753.6	5 898 705.4	19.8	-
15/03/2021	16:18:27	ST20A	Still	200388_ST20_04	406	16.0	706 749.4	5 898 724.8	706 751.4	5 898 710.1	14.8	-
15/03/2021	16:18:28	ST20A	Still	200388_ST20_05	407	16.0	706 749.4	5 898 724.8	706 751.5	5 898 710.1	14.8	-
15/03/2021	16:18:50	ST20A	Still	200388_ST20_06	408	16.0	706 749.4	5 898 724.8	706 749.5	5 898 712.2	12.6	-
15/03/2021	16:18:52	ST20A	Still	200388_ST20_07	409	16.0	706 749.4	5 898 724.8	706 749.7	5 898 712.0	12.8	-
15/03/2021	16:19:29	ST20A	Still	200388_ST20_08	410	16.0	706 749.4	5 898 724.8	706 751.0	5 898 722.0	3.2	-
15/03/2021	16:19:30	ST20A	Still	200388_ST20_09	411	16.0	706 749.4	5 898 724.8	706 750.9	5 898 722.1	3.1	-
15/03/2021	16:19:32	ST20A	Still	200388_ST20_10	412	16.0	706 749.4	5 898 724.8	706 750.5	5 898 722.1	2.9	-
15/03/2021	16:20:28	ST20A	Still	200388_ST20_11	413	16.0	706 749.4	5 898 724.8	706 746.6	5 898 733.5	9.1	-
15/03/2021	16:20:32	ST20A	Still	200388_ST20_12	414	16.0	706 749.4	5 898 724.8	706 746.7	5 898 733.3	8.9	-
15/03/2021	16:20:41	ST20A	Still	200388_ST20_13	415	16.0	706 749.4	5 898 724.8	706 747.1	5 898 732.1	7.7	-
15/03/2021	16:20:41	ST20A	Still	200388_ST20_14	No fix	16.0	706 749.4	5 898 724.8	-	-	-	-
15/03/2021	16:20:51	ST20A	Still	200388_ST20_15	416	16.0	706 749.4	5 898 724.8	706 746.9	5 898 730.4	6.1	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	16:21:35	ST20A	Still	200388_ST20_16	417	16.0	706 749.4	5 898 724.8	706 753.9	5 898 734.4	10.6	-
15/03/2021	16:21:56	ST20A	Still	200388_ST20_17	418	16.0	706 749.4	5 898 724.8	706 756.6	5 898 741.4	18.1	-
15/03/2021	16:21:58	ST20A	Still	200388_ST20_18	419	16.0	706 749.4	5 898 724.8	706 756.2	5 898 741.7	18.2	-
15/03/2021	16:22:20	ST20A	Still	200388_ST20_19	420	16.0	706 749.4	5 898 724.8	706 754.9	5 898 744.6	20.5	-
15/03/2021	16:22:21	ST20A	Still	200388_ST20_20	421	16.0	706 749.4	5 898 724.8	706 755.3	5 898 744.7	20.8	-
15/03/2021	16:22:23	ST20A	Still	200388_ST20_21	422	16.0	706 749.4	5 898 724.8	706 754.6	5 898 744.5	20.4	-
15/03/2021	16:22:37	ST20A	Still	200388_ST20_22	423	16.0	706 749.4	5 898 724.8	706 753.3	5 898 744.5	20.1	-
15/03/2021	16:23:32	ST20A	Still	200388_ST20_23	424	16.0	706 749.4	5 898 724.8	706 748.4	5 898 751.1	26.3	-
15/03/2021	16:23:34	ST20A	Still	200388_ST20_24	425	16.0	706 749.4	5 898 724.8	706 748.6	5 898 751.7	26.9	-
15/03/2021	16:23:36	ST20A	Still	200388_ST20_25	426	16.0	706 749.4	5 898 724.8	706 748.5	5 898 751.7	26.9	-
15/03/2021	16:24:08	ST20A	Still	200388_ST20_26	427	16.0	706 749.4	5 898 724.8	706 751.1	5 898 758.1	33.3	-
15/03/2021	16:24:10	ST20A	Still	200388_ST20_27	428	16.0	706 749.4	5 898 724.8	706 751.1	5 898 758.7	33.9	-
15/03/2021	16:24:13	ST20A	Still	200388_ST20_28	429	16.0	706 749.4	5 898 724.8	706 751.3	5 898 759.3	34.6	-
15/03/2021	16:24:22	ST20A	Video	EOL	430	16.0	706 749.4	5 898 724.8	706 751.2	5 898 760.4	35.6	-
15/03/2021	16:39:06	ST21A	Video	SOL	431	7.0	706 424.2	5 896 268.8	706 431.1	5 896 308.0	39.8	-
15/03/2021	16:43:55	ST21A	Still	200388_ST21_01	434	7.0	706 424.2	5 896 268.8	706 417.5	5 896 254.2	16.1	-
15/03/2021	16:44:15	ST21A	Still	200388_ST21_02	435	7.0	706 424.2	5 896 268.8	706 419.8	5 896 257.4	12.2	-
15/03/2021	16:44:49	ST21A	Still	200388_ST21_03	436	7.0	706 424.2	5 896 268.8	706 419.6	5 896 268.3	4.6	-
15/03/2021	16:45:08	ST21A	Still	200388_ST21_04	437	7.0	706 424.2	5 896 268.8	706 423.8	5 896 272.9	4.1	-
15/03/2021	16:45:09	ST21A	Still	200388_ST21_05	438	7.0	706 424.2	5 896 268.8	706 423.8	5 896 273.1	4.3	-
15/03/2021	16:45:10	ST21A	Still	200388_ST21_06	439	7.0	706 424.2	5 896 268.8	706 424.1	5 896 273.0	4.2	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	16:45:35	ST21A	Still	200388_ST21_07	440	7.0	706 424.2	5 896 268.8	706 427.8	5 896 275.0	7.2	-
15/03/2021	16:45:39	ST21A	Still	200388_ST21_08	441	7.0	706 424.2	5 896 268.8	706 427.8	5 896 275.7	7.8	-
15/03/2021	16:46:06	ST21A	Still	200388_ST21_09	442	7.0	706 424.2	5 896 268.8	706 430.5	5 896 285.5	17.8	-
15/03/2021	16:46:08	ST21A	Still	200388_ST21_10	443	7.0	706 424.2	5 896 268.8	706 430.8	5 896 285.5	18.0	-
15/03/2021	16:46:53	ST21A	Still	200388_ST21_11	444	7.0	706 424.2	5 896 268.8	706 435.9	5 896 291.5	25.5	-
15/03/2021	16:46:54	ST21A	Still	200388_ST21_12	445	7.0	706 424.2	5 896 268.8	706 435.9	5 896 291.6	25.6	-
15/03/2021	16:47:13	ST21A	Still	200388_ST21_13	446	7.0	706 424.2	5 896 268.8	706 437.5	5 896 293.8	28.3	-
15/03/2021	16:47:25	ST21A	Still	200388_ST21_14	447	7.0	706 424.2	5 896 268.8	706 436.7	5 896 294.0	28.1	-
15/03/2021	16:47:44	ST21A	Video	EOL	448	7.0	706 424.2	5 896 268.8	706 434.9	5 896 293.6	27.0	-
15/03/2021	17:24:53	ST26A	Video	SOL	449	30.0	698 395.5	5 897 758.2	698 369.2	5 897 713.9	51.5	-
15/03/2021	17:27:01	ST26A	Still	200388_ST26_01	451	30.0	698 395.5	5 897 758.2	698 398.5	5 897 763.5	6.1	-
15/03/2021	17:27:21	ST26A	Still	200388_ST26_02	452	30.0	698 395.5	5 897 758.2	698 395.6	5 897 762.8	4.6	-
15/03/2021	17:27:42	ST26A	Still	200388_ST26_03	453	30.0	698 395.5	5 897 758.2	698 390.0	5 897 762.8	7.2	-
15/03/2021	17:28:35	ST26A	Still	200388_ST26_04	454	30.0	698 395.5	5 897 758.2	698 377.8	5 897 778.5	26.9	-
15/03/2021	17:28:58	ST26A	Video	EOL	455	30.0	698 395.5	5 897 758.2	698 377.0	5 897 780.2	28.7	-
15/03/2021	18:20:34	ST15	Video	SOL	456	27.0	702 295.0	5 899 381.6	702 235.5	5 899 396.3	61.3	-
15/03/2021	18:21:10	ST15	Still	200388_ST15_01	457	27.0	702 295.0	5 899 381.6	702 249.2	5 899 400.8	49.7	-
15/03/2021	18:21:41	ST15	Still	200388_ST15_02	458	27.0	702 295.0	5 899 381.6	702 255.5	5 899 399.5	43.4	-
15/03/2021	18:22:54	ST15	Still	200388_ST15_03	459	27.0	702 295.0	5 899 381.6	702 270.3	5 899 403.1	32.7	-
15/03/2021	18:22:56	ST15	Still	200388_ST15_04	460	27.0	702 295.0	5 899 381.6	702 270.3	5 899 403.0	32.7	-
15/03/2021	18:23:02	ST15	Still	200388_ST15_05	461	27.0	702 295.0	5 899 381.6	702 272.3	5 899 403.0	31.2	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
15/03/2021	18:23:19	ST15	Still	200388_ST15_06	462	27.0	702 295.0	5 899 381.6	702 276.9	5 899 402.1	27.3	-
15/03/2021	18:23:30	ST15	Still	200388_ST15_07	463	27.0	702 295.0	5 899 381.6	702 279.7	5 899 401.0	24.7	-
15/03/2021	18:23:38	ST15	Still	200388_ST15_08	464	27.0	702 295.0	5 899 381.6	702 281.6	5 899 400.5	23.2	-
15/03/2021	18:23:59	ST15	Still	200388_ST15_09	465	27.0	702 295.0	5 899 381.6	702 285.8	5 899 399.7	20.3	-
15/03/2021	18:24:20	ST15	Still	200388_ST15_10	466	27.0	702 295.0	5 899 381.6	702 292.1	5 899 396.2	14.9	-
15/03/2021	18:24:29	ST15	Still	200388_ST15_11	467	27.0	702 295.0	5 899 381.6	702 294.5	5 899 393.7	12.1	-
15/03/2021	18:24:41	ST15	Still	200388_ST15_12	468	27.0	702 295.0	5 899 381.6	702 296.8	5 899 390.5	9.1	-
15/03/2021	18:24:47	ST15	Still	200388_ST15_13	469	27.0	702 295.0	5 899 381.6	702 298.2	5 899 388.2	7.3	-
15/03/2021	18:25:05	ST15	Still	200388_ST15_14	470	27.0	702 295.0	5 899 381.6	702 300.4	5 899 382.6	5.5	-
15/03/2021	18:25:12	ST15	Still	200388_ST15_15	471	27.0	702 295.0	5 899 381.6	702 301.0	5 899 380.0	6.2	-
15/03/2021	18:25:18	ST15	Still	200388_ST15_16	472	27.0	702 295.0	5 899 381.6	702 301.5	5 899 378.7	7.1	-
15/03/2021	18:25:47	ST15	Still	200388_ST15_17	473	27.0	702 295.0	5 899 381.6	702 300.8	5 899 373.3	10.1	-
15/03/2021	18:25:59	ST15	Still	200388_ST15_18	474	27.0	702 295.0	5 899 381.6	702 299.0	5 899 371.6	10.8	-
15/03/2021	18:26:13	ST15	Still	200388_ST15_19	475	27.0	702 295.0	5 899 381.6	702 296.5	5 899 368.7	13.0	-
15/03/2021	18:26:27	ST15	Still	200388_ST15_20	476	27.0	702 295.0	5 899 381.6	702 294.6	5 899 365.6	16.0	-
15/03/2021	18:26:48	ST15	Still	200388_ST15_21	477	27.0	702 295.0	5 899 381.6	702 294.4	5 899 363.1	18.5	-
15/03/2021	18:27:17	ST15	Still	200388_ST15_22	478	27.0	702 295.0	5 899 381.6	702 295.1	5 899 359.8	21.8	-
15/03/2021	18:27:40	ST15	Still	200388_ST15_23	479	27.0	702 295.0	5 899 381.6	702 302.8	5 899 354.0	28.7	-
15/03/2021	18:27:49	ST15	Video	EOL	480	27.0	702 295.0	5 899 381.6	702 305.2	5 899 353.5	29.9	-
16/03/2021	08:10:54	ST05	HG	FA	481	26.0	700 944.1	5 907 928.9	700 945.6	5 907 946.9	18.1	-
16/03/2021	08:31:06	ST05	DG	NS	482	26.0	700 944.1	5 907 928.9	700 937.4	5 907 935.5	9.4	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
16/03/2021	09:03:57	ST05	DG	PC	483	26.0	700 944.1	5 907 928.9	700 947.3	5 907 939.6	11.2	-
16/03/2021	10:01:59	ST06	HG	FA	484	27.0	701 280.3	5 906 492.8	701 262.2	5 906 490.8	18.2	-
16/03/2021	10:39:10	ST08	HG	FA	485	29.0	699 774.6	5 904 314.5	699 780.8	5 904 322.1	9.8	-
16/03/2021	10:53:14	ST08	DG	PC	486	29.0	699 774.6	5 904 314.5	699 766.8	5 904 321.3	10.3	-
16/03/2021	11:39:28	ST09	HG	FA	487	26.3	701 764.6	5 902 250.5	701 759.6	5 902 242.6	9.3	-
16/03/2021	13:22:30	ST13	Video	SOL	488	20.0	696 409.4	5 901 881.4	696 407.2	5 901 789.5	91.9	-
16/03/2021	13:23:01	ST13	Still	200388_ST13_01	489	20.0	696 409.4	5 901 881.4	696 403.2	5 901 799.5	82.1	-
16/03/2021	13:23:28	ST13	Still	200388_ST13_02	490	20.0	696 409.4	5 901 881.4	696 403.7	5 901 805.4	76.2	-
16/03/2021	13:23:38	ST13	Still	200388_ST13_03	491	20.0	696 409.4	5 901 881.4	696 401.8	5 901 805.5	76.3	-
16/03/2021	13:24:21	ST13	Still	200388_ST13_04	492	20.0	696 409.4	5 901 881.4	696 399.6	5 901 821.6	60.6	-
16/03/2021	13:24:35	ST13	Still	200388_ST13_05	493	20.0	696 409.4	5 901 881.4	696 401.7	5 901 824.3	57.6	-
16/03/2021	13:25:36	ST13	Still	200388_ST13_06	494	20.0	696 409.4	5 901 881.4	696 404.8	5 901 843.7	38.0	-
16/03/2021	13:25:42	ST13	Still	200388_ST13_07	495	20.0	696 409.4	5 901 881.4	696 406.0	5 901 845.1	36.5	-
16/03/2021	13:26:35	ST13	Still	200388_ST13_08	496	20.0	696 409.4	5 901 881.4	696 408.7	5 901 863.4	18.0	-
16/03/2021	13:26:45	ST13	Still	200388_ST13_09	497	20.0	696 409.4	5 901 881.4	696 408.3	5 901 864.2	17.2	-
16/03/2021	13:26:48	ST13	Still	200388_ST13_10	498	20.0	696 409.4	5 901 881.4	696 408.8	5 901 864.0	17.4	-
16/03/2021	13:27:06	ST13	Still	200388_ST13_11	499	20.0	696 409.4	5 901 881.4	696 411.2	5 901 865.0	16.5	-
16/03/2021	13:27:20	ST13	Still	200388_ST13_12	500	20.0	696 409.4	5 901 881.4	696 412.9	5 901 866.8	15.0	-
16/03/2021	13:27:33	ST13	Still	200388_ST13_13	501	20.0	696 409.4	5 901 881.4	696 410.9	5 901 868.4	13.1	-
16/03/2021	13:27:37	ST13	Still	200388_ST13_14	502	20.0	696 409.4	5 901 881.4	696 410.0	5 901 868.8	12.6	-
16/03/2021	13:27:40	ST13	Still	200388_ST13_15	503	20.0	696 409.4	5 901 881.4	696 409.6	5 901 868.9	12.5	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
16/03/2021	13:28:20	ST13	Still	200388_ST13_16	504	20.0	696 409.4	5 901 881.4	696 414.0	5 901 877.5	6.0	-
16/03/2021	13:28:22	ST13	Still	200388_ST13_17	505	20.0	696 409.4	5 901 881.4	696 414.7	5 901 877.6	6.5	-
16/03/2021	13:29:12	ST13	Still	200388_ST13_18	506	20.0	696 409.4	5 901 881.4	696 414.2	5 901 885.5	6.3	-
16/03/2021	13:29:13	ST13	Still	200388_ST13_19	507	20.0	696 409.4	5 901 881.4	696 414.5	5 901 885.6	6.6	-
16/03/2021	13:29:50	ST13	Still	200388_ST13_20	508	20.0	696 409.4	5 901 881.4	696 413.5	5 901 895.4	14.6	-
16/03/2021	13:29:55	ST13	Still	200388_ST13_21	509	20.0	696 409.4	5 901 881.4	696 413.7	5 901 895.6	14.8	-
16/03/2021	13:29:56	ST13	Still	200388_ST13_22	510	20.0	696 409.4	5 901 881.4	696 414.2	5 901 895.6	15.0	-
16/03/2021	13:30:12	ST13	Still	200388_ST13_23	511	20.0	696 409.4	5 901 881.4	696 416.5	5 901 896.3	16.5	-
16/03/2021	13:30:43	ST13	Still	200388_ST13_24	512	20.0	696 409.4	5 901 881.4	696 414.0	5 901 904.6	23.7	-
16/03/2021	13:30:51	ST13	Still	200388_ST13_25	513	20.0	696 409.4	5 901 881.4	696 411.8	5 901 906.2	24.9	-
16/03/2021	13:30:57	ST13	Still	200388_ST13_26	514	20.0	696 409.4	5 901 881.4	696 411.0	5 901 906.3	25.0	-
16/03/2021	13:31:06	ST13	Video	EOL	515	20.0	696 409.4	5 901 881.4	696 410.8	5 901 904.9	23.5	-
16/03/2021	13:58:22	ST11	Video	SOL	516	15.0	695 241.9	5 903 564.7	695 242.8	5 903 509.4	55.3	-
16/03/2021	13:59:03	ST11	Still	200388_ST11_01	517	15.0	695 241.9	5 903 564.7	695 243.6	5 903 520.5	44.2	-
16/03/2021	13:59:06	ST11	Still	200388_ST11_02	518	15.0	695 241.9	5 903 564.7	695 243.7	5 903 520.7	44.0	-
16/03/2021	13:59:47	ST11	Still	200388_ST11_03	519	15.0	695 241.9	5 903 564.7	695 240.9	5 903 527.8	36.9	-
16/03/2021	14:00:59	ST11	Still	200388_ST11_04	520	15.0	695 241.9	5 903 564.7	695 244.0	5 903 549.4	15.4	-
16/03/2021	14:01:02	ST11	Still	200388_ST11_05	521	15.0	695 241.9	5 903 564.7	695 244.0	5 903 549.6	15.2	-
16/03/2021	14:01:11	ST11	Still	200388_ST11_06	522	15.0	695 241.9	5 903 564.7	695 246.0	5 903 550.5	14.8	-
16/03/2021	14:01:51	ST11	Still	200388_ST11_07	523	15.0	695 241.9	5 903 564.7	695 244.4	5 903 558.7	6.5	-
16/03/2021	14:01:52	ST11	Still	200388_ST11_08	524	15.0	695 241.9	5 903 564.7	695 244.4	5 903 559.1	6.1	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
16/03/2021	14:01:55	ST11	Still	200388_ST11_09	525	15.0	695 241.9	5 903 564.7	695 244.1	5 903 560.1	5.1	-
16/03/2021	14:03:41	ST11	Still	200388_ST11_10	526	15.0	695 241.9	5 903 564.7	695 243.1	5 903 572.0	7.4	-
16/03/2021	14:03:57	ST11	Still	200388_ST11_11	527	15.0	695 241.9	5 903 564.7	695 244.0	5 903 573.3	8.9	-
16/03/2021	14:04:00	ST11	Still	200388_ST11_12	528	15.0	695 241.9	5 903 564.7	695 243.9	5 903 573.3	8.8	-
16/03/2021	14:04:02	ST11	Still	200388_ST11_13	529	15.0	695 241.9	5 903 564.7	695 243.8	5 903 572.9	8.4	-
16/03/2021	14:04:06	ST11	Still	200388_ST11_14	530	15.0	695 241.9	5 903 564.7	695 243.6	5 903 572.4	7.9	-
16/03/2021	14:05:37	ST11	Still	200388_ST11_15	531	15.0	695 241.9	5 903 564.7	695 223.8	5 903 587.2	28.9	-
16/03/2021	14:05:38	ST11	Still	200388_ST11_16	532	15.0	695 241.9	5 903 564.7	695 223.8	5 903 587.3	29.0	-
16/03/2021	14:05:41	ST11	Still	200388_ST11_17	533	15.0	695 241.9	5 903 564.7	695 223.8	5 903 587.6	29.2	-
16/03/2021	14:06:02	ST11	Video	EOL	534	15.0	695 241.9	5 903 564.7	695 225.6	5 903 589.2	29.4	-
16/03/2021	14:27:21	ST12A	Video	SOL	535	13.5	693 990.7	5 901 880.2	694 010.8	5 901 825.6	58.2	-
16/03/2021	14:27:57	ST12A	Still	200388_ST12_01	536	13.5	693 990.7	5 901 880.2	694 001.6	5 901 828.0	53.3	-
16/03/2021	14:28:00	ST12A	Still	200388_ST12_02	537	13.5	693 990.7	5 901 880.2	694 001.7	5 901 827.9	53.4	-
16/03/2021	14:28:03	ST12A	Still	200388_ST12_03	538	13.5	693 990.7	5 901 880.2	694 002.3	5 901 827.2	54.3	-
16/03/2021	14:28:38	ST12A	Still	200388_ST12_04	539	13.5	693 990.7	5 901 880.2	694 005.4	5 901 833.7	48.8	-
16/03/2021	14:28:40	ST12A	Still	200388_ST12_05	540	13.5	693 990.7	5 901 880.2	694 006.0	5 901 834.6	48.1	-
16/03/2021	14:28:57	ST12A	Still	200388_ST12_06	541	13.5	693 990.7	5 901 880.2	694 004.6	5 901 838.5	44.0	-
16/03/2021	14:28:59	ST12A	Still	200388_ST12_07	542	13.5	693 990.7	5 901 880.2	694 004.5	5 901 838.7	43.7	-
16/03/2021	14:29:46	ST12A	Still	200388_ST12_08	543	13.5	693 990.7	5 901 880.2	694 007.5	5 901 841.7	42.0	-
16/03/2021	14:29:48	ST12A	Still	200388_ST12_09	544	13.5	693 990.7	5 901 880.2	694 007.0	5 901 841.7	41.8	-
16/03/2021	14:30:18	ST12A	Still	200388_ST12_10	545	13.5	693 990.7	5 901 880.2	694 002.0	5 901 847.0	35.1	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
16/03/2021	14:30:20	ST12A	Still	200388_ST12_11	546	13.5	693 990.7	5 901 880.2	694 002.2	5 901 847.3	34.9	-
16/03/2021	14:30:54	ST12A	Still	200388_ST12_12	547	13.5	693 990.7	5 901 880.2	694 006.7	5 901 850.6	33.6	-
16/03/2021	14:30:56	ST12A	Still	200388_ST12_13	548	13.5	693 990.7	5 901 880.2	694 006.8	5 901 851.2	33.2	-
16/03/2021	14:31:35	ST12A	Still	200388_ST12_14	549	13.5	693 990.7	5 901 880.2	693 997.8	5 901 856.7	24.5	-
16/03/2021	14:31:39	ST12A	Still	200388_ST12_15	550	13.5	693 990.7	5 901 880.2	693 997.6	5 901 856.4	24.8	-
16/03/2021	14:32:29	ST12A	Still	200388_ST12_16	551	13.5	693 990.7	5 901 880.2	694 001.6	5 901 864.4	19.2	-
16/03/2021	14:32:31	ST12A	Still	200388_ST12_17	552	13.5	693 990.7	5 901 880.2	694 003.0	5 901 865.4	19.2	-
16/03/2021	14:33:08	ST12A	Still	200388_ST12_18	553	13.5	693 990.7	5 901 880.2	693 991.9	5 901 867.1	13.2	-
16/03/2021	14:33:38	ST12A	Still	200388_ST12_19	554	13.5	693 990.7	5 901 880.2	693 990.0	5 901 868.8	11.4	-
16/03/2021	14:33:41	ST12A	Still	200388_ST12_20	555	13.5	693 990.7	5 901 880.2	693 991.6	5 901 869.1	11.1	-
16/03/2021	14:33:44	ST12A	Still	200388_ST12_21	556	13.5	693 990.7	5 901 880.2	693 993.3	5 901 870.0	10.5	-
16/03/2021	14:34:17	ST12A	Still	200388_ST12_22	557	13.5	693 990.7	5 901 880.2	693 997.0	5 901 881.9	6.5	-
16/03/2021	14:34:19	ST12A	Still	200388_ST12_23	558	13.5	693 990.7	5 901 880.2	693 997.7	5 901 882.1	7.3	-
16/03/2021	14:34:20	ST12A	Still	200388_ST12_24	559	13.5	693 990.7	5 901 880.2	693 997.7	5 901 882.2	7.3	-
16/03/2021	14:34:20	ST12A	Still	200388_ST12_25	560	13.5	693 990.7	5 901 880.2	693 997.7	5 901 882.4	7.3	-
16/03/2021	14:34:56	ST12A	Still	200388_ST12_26	561	13.5	693 990.7	5 901 880.2	694 004.7	5 901 891.0	17.7	-
16/03/2021	14:35:07	ST12A	Still	200388_ST12_27	562	13.5	693 990.7	5 901 880.2	694 001.5	5 901 890.7	15.1	-
16/03/2021	14:35:35	ST12A	Still	200388_ST12_28	563	13.5	693 990.7	5 901 880.2	693 981.2	5 901 893.6	16.4	-
16/03/2021	14:35:57	ST12A	Still	200388_ST12_29	564	13.5	693 990.7	5 901 880.2	693 976.3	5 901 899.2	23.8	-
16/03/2021	14:36:02	ST12A	Still	200388_ST12_30	565	13.5	693 990.7	5 901 880.2	693 978.0	5 901 899.4	23.0	-
16/03/2021	14:36:05	ST12A	Still	200388_ST12_31	566	13.5	693 990.7	5 901 880.2	693 979.2	5 901 899.2	22.2	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
16/03/2021	14:36:07	ST12A	Still	200388_ST12_32	567	13.5	693 990.7	5 901 880.2	693 980.2	5 901 898.6	21.2	-
16/03/2021	14:36:42	ST12A	Still	200388_ST12_33	568	13.5	693 990.7	5 901 880.2	693 995.9	5 901 898.7	19.2	-
16/03/2021	14:36:43	ST12A	Still	200388_ST12_34	569	13.5	693 990.7	5 901 880.2	693 995.7	5 901 898.9	19.4	-
16/03/2021	14:36:47	ST12A	Still	200388_ST12_35	570	13.5	693 990.7	5 901 880.2	693 995.7	5 901 899.7	20.1	-
16/03/2021	14:37:05	ST12A	Still	200388_ST12_36	571	13.5	693 990.7	5 901 880.2	693 991.3	5 901 900.9	20.7	-
16/03/2021	14:37:07	ST12A	Still	200388_ST12_37	572	13.5	693 990.7	5 901 880.2	693 990.4	5 901 901.3	21.1	-
16/03/2021	14:37:09	ST12A	Still	200388_ST12_38	573	13.5	693 990.7	5 901 880.2	693 989.3	5 901 901.6	21.4	-
16/03/2021	14:37:29	ST12A	Video	EOL	574	13.5	693 990.7	5 901 880.2	693 987.5	5 901 906.4	26.4	-
16/03/2021	15:32:44	ST10	Video	SOL	575	33.0	698 883.4	5 902 602.4	698 895.4	5 902 557.5	46.5	-
16/03/2021	15:33:36	ST10	Still	200388_ST10_01	576	33.0	698 883.4	5 902 602.4	698 890.5	5 902 567.8	35.3	-
16/03/2021	15:33:54	ST10	Still	200388_ST10_02	577	33.0	698 883.4	5 902 602.4	698 887.0	5 902 571.4	31.2	-
16/03/2021	15:34:20	ST10	Still	200388_ST10_03	578	33.0	698 883.4	5 902 602.4	698 897.6	5 902 580.5	26.1	-
16/03/2021	15:34:30	ST10	Still	200388_ST10_04	579	33.0	698 883.4	5 902 602.4	698 898.7	5 902 585.9	22.5	-
16/03/2021	15:35:02	ST10	Still	200388_ST10_05	580	33.0	698 883.4	5 902 602.4	698 886.0	5 902 589.1	13.6	-
16/03/2021	15:35:20	ST10	Still	200388_ST10_06	581	33.0	698 883.4	5 902 602.4	698 884.2	5 902 593.6	8.8	-
16/03/2021	15:35:34	ST10	Still	200388_ST10_07	582	33.0	698 883.4	5 902 602.4	698 883.0	5 902 594.2	8.2	-
16/03/2021	15:36:13	ST10	Still	200388_ST10_08	583	33.0	698 883.4	5 902 602.4	698 886.3	5 902 602.1	2.9	-
16/03/2021	15:36:25	ST10	Still	200388_ST10_09	584	33.0	698 883.4	5 902 602.4	698 890.8	5 902 605.5	8.0	-
16/03/2021	15:37:58	ST10	Still	200388_ST10_10	585	33.0	698 883.4	5 902 602.4	698 900.0	5 902 621.4	25.2	-
16/03/2021	15:38:06	ST10	Still	200388_ST10_11	586	33.0	698 883.4	5 902 602.4	698 898.1	5 902 621.9	24.4	-
16/03/2021	15:39:25	ST10	Still	200388_ST10_12	587	33.0	698 883.4	5 902 602.4	698 887.8	5 902 620.6	18.7	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
16/03/2021	15:39:42	ST10	Video	EOL	588	33.0	698 883.4	5 902 602.4	698 882.6	5 902 628.3	25.9	-
16/03/2021	16:20:45	ST13	HG	FA	589	20.0	696 409.4	5 901 881.4	696 407.5	5 901 879.5	2.7	-
16/03/2021	16:29:40	ST13	DG	PC	590	20.0	696 409.4	5 901 881.4	696 411.4	5 901 874.9	6.8	-
16/03/2021	16:58:03	ST11	HG	FA	591	15.0	695 241.9	5 903 564.7	695 240.7	5 903 562.4	2.6	-
16/03/2021	17:06:45	ST11	DG	PC	592	15.0	695 241.9	5 903 564.7	695 244.2	5 903 563.2	2.7	-
16/03/2021	17:43:31	ST10A	Video	SOL	593	33.0	698 883.4	5 902 602.4	698 898.4	5 902 571.2	34.6	-
16/03/2021	17:44:22	ST10A	Still	200388_ST10_01	594	33.0	698 883.4	5 902 602.4	698 880.7	5 902 583.5	19.1	-
16/03/2021	17:44:38	ST10A	Still	200388_ST10_02	595	33.0	698 883.4	5 902 602.4	698 876.2	5 902 591.3	13.2	-
16/03/2021	17:44:44	ST10A	Still	200388_ST10_03	596	33.0	698 883.4	5 902 602.4	698 876.8	5 902 593.1	11.4	-
16/03/2021	17:45:30	ST10A	Still	200388_ST10_04	597	33.0	698 883.4	5 902 602.4	698 879.6	5 902 605.9	5.2	-
16/03/2021	17:46:06	ST10A	Still	200388_ST10_05	598	33.0	698 883.4	5 902 602.4	698 895.7	5 902 616.3	18.6	-
16/03/2021	17:46:33	ST10A	Still	200388_ST10_06	600	33.0	698 883.4	5 902 602.4	698 897.0	5 902 629.8	30.6	-
16/03/2021	17:46:47	ST10A	Video	EOL	601	33.0	698 883.4	5 902 602.4	698 899.9	5 902 630.7	32.8	-
16/03/2021	18:09:13	ST10	HG	FA	602	33.0	698 883.4	5 902 602.4	698 890.0	5 902 608.7	9.1	-
17/03/2021	08:23:44	ST28	Video	SOL	605	34.0	706 918.6	5 907 770.3	706 922.0	5 907 831.3	61.1	-
17/03/2021	08:23:58	ST28	Still	200388_ST28_01	606	34.0	706 918.6	5 907 770.3	706 922.5	5 907 824.8	54.6	-
17/03/2021	08:24:11	ST28	Still	200388_ST28_02	607	34.0	706 918.6	5 907 770.3	706 925.3	5 907 821.6	51.7	-
17/03/2021	08:24:20	ST28	Still	200388_ST28_03	608	34.0	706 918.6	5 907 770.3	706 928.8	5 907 819.6	50.3	-
17/03/2021	08:24:29	ST28	Still	200388_ST28_04	609	34.0	706 918.6	5 907 770.3	706 929.0	5 907 816.2	47.1	-
17/03/2021	08:24:41	ST28	Still	200388_ST28_05	610	34.0	706 918.6	5 907 770.3	706 929.5	5 907 813.5	44.6	-
17/03/2021	08:25:11	ST28	Still	200388_ST28_06	611	34.0	706 918.6	5 907 770.3	706 931.4	5 907 807.1	39.0	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	08:25:29	ST28	Still	200388_ST28_07	612	34.0	706 918.6	5 907 770.3	706 932.5	5 907 804.2	36.6	-
17/03/2021	08:26:28	ST28	Still	200388_ST28_08	613	34.0	706 918.6	5 907 770.3	706 926.4	5 907 797.6	28.4	-
17/03/2021	08:26:47	ST28	Still	200388_ST28_09	614	34.0	706 918.6	5 907 770.3	706 927.2	5 907 793.8	25.0	-
17/03/2021	08:26:56	ST28	Still	200388_ST28_10	615	34.0	706 918.6	5 907 770.3	706 927.1	5 907 792.1	23.4	-
17/03/2021	08:27:11	ST28	Still	200388_ST28_11	616	34.0	706 918.6	5 907 770.3	706 928.2	5 907 790.5	22.4	-
17/03/2021	08:27:22	ST28	Still	200388_ST28_12	617	34.0	706 918.6	5 907 770.3	706 928.0	5 907 789.7	21.6	-
17/03/2021	08:27:41	ST28	Still	200388_ST28_13	618	34.0	706 918.6	5 907 770.3	706 928.9	5 907 783.4	16.7	-
17/03/2021	08:27:46	ST28	Still	200388_ST28_14	619	34.0	706 918.6	5 907 770.3	706 929.2	5 907 782.1	15.9	-
17/03/2021	08:28:18	ST28	Still	200388_ST28_15	620	34.0	706 918.6	5 907 770.3	706 927.1	5 907 772.8	8.9	-
17/03/2021	08:28:56	ST28	Still	200388_ST28_16	621	34.0	706 918.6	5 907 770.3	706 923.0	5 907 766.2	6.0	-
17/03/2021	08:29:06	ST28	Still	200388_ST28_17	622	34.0	706 918.6	5 907 770.3	706 924.3	5 907 764.8	7.9	-
17/03/2021	08:29:18	ST28	Still	200388_ST28_18	623	34.0	706 918.6	5 907 770.3	706 924.0	5 907 762.9	9.2	-
17/03/2021	08:29:39	ST28	Still	200388_ST28_19	624	34.0	706 918.6	5 907 770.3	706 926.4	5 907 759.1	13.6	-
17/03/2021	08:29:46	ST28	Still	200388_ST28_20	625	34.0	706 918.6	5 907 770.3	706 925.5	5 907 757.7	14.4	-
17/03/2021	08:29:55	ST28	Still	200388_ST28_21	626	34.0	706 918.6	5 907 770.3	706 927.2	5 907 756.3	16.4	-
17/03/2021	08:30:08	ST28	Still	200388_ST28_22	627	34.0	706 918.6	5 907 770.3	706 928.1	5 907 755.1	17.9	-
17/03/2021	08:30:19	ST28	Still	200388_ST28_23	628	34.0	706 918.6	5 907 770.3	706 928.8	5 907 754.0	19.2	-
17/03/2021	08:30:27	ST28	Still	200388_ST28_24	629	34.0	706 918.6	5 907 770.3	706 928.6	5 907 752.9	20.1	-
17/03/2021	08:30:37	ST28	Still	200388_ST28_25	630	34.0	706 918.6	5 907 770.3	706 929.9	5 907 752.2	21.3	-
17/03/2021	08:30:50	ST28	Still	200388_ST28_26	631	34.0	706 918.6	5 907 770.3	706 932.0	5 907 751.9	22.8	-
17/03/2021	08:31:16	ST28	Still	200388_ST28_27	632	34.0	706 918.6	5 907 770.3	706 932.1	5 907 750.4	24.0	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	08:31:28	ST28	Still	200388_ST28_28	633	34.0	706 918.6	5 907 770.3	706 931.1	5 907 747.6	25.9	-
17/03/2021	08:31:59	ST28	Still	200388_ST28_29	634	34.0	706 918.6	5 907 770.3	706 930.7	5 907 738.9	33.7	-
17/03/2021	08:32:12	ST28	Still	200388_ST28_30	635	34.0	706 918.6	5 907 770.3	706 932.9	5 907 734.8	38.3	-
17/03/2021	08:32:30	ST28	Still	200388_ST28_31	636	34.0	706 918.6	5 907 770.3	706 935.0	5 907 732.0	41.7	-
17/03/2021	08:32:56	ST28	Still	200388_ST28_32	637	34.0	706 918.6	5 907 770.3	706 935.9	5 907 729.3	44.5	-
17/03/2021	08:33:10	ST28	Still	200388_ST28_33	638	34.0	706 918.6	5 907 770.3	706 936.0	5 907 728.9	44.9	-
17/03/2021	08:33:38	ST28	Still	200388_ST28_34	639	34.0	706 918.6	5 907 770.3	706 933.3	5 907 723.2	49.3	-
17/03/2021	08:33:48	ST28	Still	200388_ST28_35	640	34.0	706 918.6	5 907 770.3	706 932.6	5 907 720.7	51.5	-
17/03/2021	08:34:20	ST28	Still	200388_ST28_36	641	34.0	706 918.6	5 907 770.3	706 932.8	5 907 718.6	53.6	-
17/03/2021	08:34:44	ST28	Still	200388_ST28_37	642	34.0	706 918.6	5 907 770.3	706 933.6	5 907 712.9	59.3	-
17/03/2021	08:35:11	ST28	Still	200388_ST28_38	643	34.0	706 918.6	5 907 770.3	706 929.4	5 907 706.6	64.6	-
17/03/2021	08:35:32	ST28	Still	200388_ST28_39	644	34.0	706 918.6	5 907 770.3	706 931.4	5 907 702.1	69.4	-
17/03/2021	08:35:39	ST28	Still	200388_ST28_40	645	34.0	706 918.6	5 907 770.3	706 930.3	5 907 701.3	70.0	-
17/03/2021	08:35:47	ST28	Still	200388_ST28_41	646	34.0	706 918.6	5 907 770.3	706 931.6	5 907 701.2	70.3	-
17/03/2021	08:36:28	ST28	Video	EOL	647	34.0	706 925.6	5 907 690.6	706 927.9	5 907 693.0	3.3	-
17/03/2021	09:16:26	ST28	HG	FA	648	34.0	706 918.6	5 907 770.3	706 925.8	5 907 756.2	15.8	-
17/03/2021	09:38:37	ST28	DG	NS	649	34.0	706 918.6	5 907 770.3	706 917.5	5 907 752.6	17.7	-
17/03/2021	09:48:35	ST28	DG	NS	650	34.0	706 918.6	5 907 770.3	706 920.5	5 907 772.0	2.5	-
17/03/2021	12:02:51	ST04	Video	SOL	648	26.5	697 993.5	5 907 917.5	698 053.0	5 907 931.3	61.1	-
17/03/2021	12:03:07	ST04	Still	200388_ST04_01	649	26.5	697 993.5	5 907 917.5	698 045.3	5 907 930.3	53.4	-
17/03/2021	12:03:12	ST04	Still	200388_ST04_02	650	26.5	697 993.5	5 907 917.5	698 043.6	5 907 929.9	51.6	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	12:03:19	ST04	Still	200388_ST04_03	651	26.5	697 993.5	5 907 917.5	698 041.1	5 907 928.8	48.9	-
17/03/2021	12:03:33	ST04	Still	200388_ST04_04	652	26.5	697 993.5	5 907 917.5	698 037.5	5 907 928.6	45.4	-
17/03/2021	12:04:26	ST04	Still	200388_ST04_05	653	26.5	697 993.5	5 907 917.5	698 020.2	5 907 928.9	29.0	-
17/03/2021	12:04:28	ST04	Still	200388_ST04_06	654	26.5	697 993.5	5 907 917.5	698 019.6	5 907 928.5	28.3	-
17/03/2021	12:04:38	ST04	Still	200388_ST04_07	655	26.5	697 993.5	5 907 917.5	698 016.2	5 907 929.4	25.6	-
17/03/2021	12:04:38	ST04	Still	200388_ST04_08	No fix	26.5	697 993.5	5 907 917.5	-	-	-	-
17/03/2021	12:05:17	ST04	Still	200388_ST04_09	656	26.5	697 993.5	5 907 917.5	698 006.6	5 907 929.3	17.6	-
17/03/2021	12:05:22	ST04	Still	200388_ST04_10	657	26.5	697 993.5	5 907 917.5	698 005.8	5 907 929.6	17.3	-
17/03/2021	12:05:24	ST04	Still	200388_ST04_11	658	26.5	697 993.5	5 907 917.5	698 005.9	5 907 929.8	17.5	-
17/03/2021	12:05:26	ST04	Still	200388_ST04_12	659	26.5	697 993.5	5 907 917.5	698 005.2	5 907 930.1	17.2	-
17/03/2021	12:05:47	ST04	Still	200388_ST04_13	660	26.5	697 993.5	5 907 917.5	698 000.5	5 907 930.7	14.9	-
17/03/2021	12:05:57	ST04	Still	200388_ST04_14	661	26.5	697 993.5	5 907 917.5	697 998.4	5 907 931.4	14.7	-
17/03/2021	12:06:01	ST04	Still	200388_ST04_15	662	26.5	697 993.5	5 907 917.5	697 997.6	5 907 931.5	14.6	-
17/03/2021	12:06:02	ST04	Still	200388_ST04_16	663	26.5	697 993.5	5 907 917.5	697 997.5	5 907 931.5	14.6	-
17/03/2021	12:06:03	ST04	Still	200388_ST04_17	664	26.5	697 993.5	5 907 917.5	697 997.4	5 907 931.4	14.4	-
17/03/2021	12:06:04	ST04	Still	200388_ST04_18	665	26.5	697 993.5	5 907 917.5	697 997.2	5 907 931.6	14.6	-
17/03/2021	12:06:17	ST04	Still	200388_ST04_19	666	26.5	697 993.5	5 907 917.5	697 994.3	5 907 932.8	15.3	-
17/03/2021	12:06:32	ST04	Still	200388_ST04_20	667	26.5	697 993.5	5 907 917.5	697 991.3	5 907 934.4	17.0	-
17/03/2021	12:06:34	ST04	Still	200388_ST04_21	668	26.5	697 993.5	5 907 917.5	697 991.1	5 907 933.8	16.5	-
17/03/2021	12:06:35	ST04	Still	200388_ST04_22	669	26.5	697 993.5	5 907 917.5	697 991.1	5 907 934.1	16.8	-
17/03/2021	12:06:36	ST04	Still	200388_ST04_23	670	26.5	697 993.5	5 907 917.5	697 990.9	5 907 934.6	17.3	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	12:07:28	ST04	Still	200388_ST04_24	671	26.5	697 993.5	5 907 917.5	697 976.7	5 907 935.2	24.4	-
17/03/2021	12:07:33	ST04	Still	200388_ST04_25	672	26.5	697 993.5	5 907 917.5	697 975.5	5 907 934.9	25.0	-
17/03/2021	12:07:37	ST04	Still	200388_ST04_26	673	26.5	697 993.5	5 907 917.5	697 974.6	5 907 934.5	25.4	-
17/03/2021	12:08:16	ST04	Video	EOL	674	26.5	697 993.5	5 907 917.5	697 970.1	5 907 937.5	30.8	-
17/03/2021	12:50:41	ST03	Video	SOL	675	26.0	694 338.4	5 909 729.5	694 387.2	5 909 673.4	74.4	-
17/03/2021	12:51:24	ST03	Still	200388_ST03_01	676	26.0	694 338.4	5 909 729.5	694 355.5	5 909 670.3	61.6	-
17/03/2021	12:52:43	ST03	Still	200388_ST03_02	677	26.0	694 338.4	5 909 729.5	694 342.9	5 909 686.0	43.7	-
17/03/2021	12:52:49	ST03	Still	200388_ST03_03	678	26.0	694 338.4	5 909 729.5	694 343.1	5 909 688.1	41.7	-
17/03/2021	12:52:51	ST03	Still	200388_ST03_04	679	26.0	694 338.4	5 909 729.5	694 343.8	5 909 688.5	41.4	-
17/03/2021	12:52:58	ST03	Still	200388_ST03_05	680	26.0	694 338.4	5 909 729.5	694 344.2	5 909 691.3	38.6	-
17/03/2021	12:53:03	ST03	Still	200388_ST03_06	681	26.0	694 338.4	5 909 729.5	694 344.6	5 909 693.3	36.7	-
17/03/2021	12:53:12	ST03	Still	200388_ST03_07	682	26.0	694 338.4	5 909 729.5	694 345.4	5 909 698.3	32.0	-
17/03/2021	12:53:17	ST03	Still	200388_ST03_08	683	26.0	694 338.4	5 909 729.5	694 344.6	5 909 700.5	29.7	-
17/03/2021	12:53:49	ST03	Still	200388_ST03_09	684	26.0	694 338.4	5 909 729.5	694 339.5	5 909 709.2	20.3	-
17/03/2021	12:53:53	ST03	Still	200388_ST03_10	685	26.0	694 338.4	5 909 729.5	694 339.1	5 909 710.0	19.5	-
17/03/2021	12:54:11	ST03	Still	200388_ST03_11	686	26.0	694 338.4	5 909 729.5	694 337.7	5 909 713.3	16.2	-
17/03/2021	12:54:30	ST03	Still	200388_ST03_12	687	26.0	694 338.4	5 909 729.5	694 340.6	5 909 719.5	10.2	-
17/03/2021	12:54:45	ST03	Still	200388_ST03_13	688	26.0	694 338.4	5 909 729.5	694 341.0	5 909 724.6	5.5	-
17/03/2021	12:55:03	ST03	Still	200388_ST03_14	689	26.0	694 338.4	5 909 729.5	694 343.3	5 909 734.7	7.1	-
17/03/2021	12:55:41	ST03	Still	200388_ST03_15	690	26.0	694 338.4	5 909 729.5	694 343.9	5 909 744.7	16.2	-
17/03/2021	12:56:06	ST03	Still	200388_ST03_16	691	26.0	694 338.4	5 909 729.5	694 347.3	5 909 752.2	24.4	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	12:56:10	ST03	Still	200388_ST03_17	692	26.0	694 338.4	5 909 729.5	694 347.6	5 909 753.7	25.9	-
17/03/2021	12:56:11	ST03	Still	200388_ST03_18	693	26.0	694 338.4	5 909 729.5	694 347.9	5 909 754.0	26.3	-
17/03/2021	12:56:16	ST03	Still	200388_ST03_19	694	26.0	694 338.4	5 909 729.5	694 348.4	5 909 755.3	27.7	-
17/03/2021	12:56:44	ST03	Still	200388_ST03_20	695	26.0	694 338.4	5 909 729.5	694 350.7	5 909 759.3	32.2	-
17/03/2021	12:56:45	ST03	Still	200388_ST03_21	696	26.0	694 338.4	5 909 729.5	694 350.7	5 909 759.4	32.3	-
17/03/2021	12:56:53	ST03	Still	200388_ST03_22	697	26.0	694 338.4	5 909 729.5	694 352.3	5 909 760.3	33.8	-
17/03/2021	12:57:05	ST03	Video	EOL	698	26.0	694 338.4	5 909 729.5	694 354.7	5 909 760.8	35.3	-
17/03/2021	13:52:27	ST02B	Video	SOL	699	12.0	691 702.2	5 911 261.4	691 742.8	5 911 194.8	78.0	-
17/03/2021	13:53:53	ST02B	Still	200388_ST02_01	No fix	12.0	691 702.2	5 911 261.4	-	-	-	-
17/03/2021	13:54:53	ST02B	Still	200388_ST02_02	700	12.0	691 702.2	5 911 261.4	691 726.9	5 911 217.6	50.3	-
17/03/2021	13:55:29	ST02B	Still	200388_ST02_03	701	12.0	691 702.2	5 911 261.4	691 725.3	5 911 219.9	47.5	-
17/03/2021	13:55:30	ST02B	Still	200388_ST02_04	702	12.0	691 702.2	5 911 261.4	691 725.5	5 911 220.0	47.5	-
17/03/2021	13:55:32	ST02B	Still	200388_ST02_05	703	12.0	691 702.2	5 911 261.4	691 725.2	5 911 219.7	47.6	-
17/03/2021	13:55:35	ST02B	Still	200388_ST02_06	704	12.0	691 702.2	5 911 261.4	691 725.1	5 911 219.4	47.8	-
17/03/2021	13:55:37	ST02B	Still	200388_ST02_07	705	12.0	691 702.2	5 911 261.4	691 725.8	5 911 219.5	48.1	-
17/03/2021	13:55:41	ST02B	Still	200388_ST02_08	706	12.0	691 702.2	5 911 261.4	691 725.3	5 911 219.2	48.1	-
17/03/2021	13:56:33	ST02B	Still	200388_ST02_09	707	12.0	691 702.2	5 911 261.4	691 725.7	5 911 226.5	42.1	-
17/03/2021	13:57:08	ST02B	Still	200388_ST02_10	708	12.0	691 702.2	5 911 261.4	691 724.4	5 911 233.7	35.5	-
17/03/2021	13:57:09	ST02B	Still	200388_ST02_11	709	12.0	691 702.2	5 911 261.4	691 724.2	5 911 233.7	35.4	-
17/03/2021	13:57:56	ST02B	Still	200388_ST02_12	710	12.0	691 702.2	5 911 261.4	691 718.2	5 911 239.2	27.4	-
17/03/2021	13:58:47	ST02B	Still	200388_ST02_13	711	12.0	691 702.2	5 911 261.4	691 708.3	5 911 242.0	20.3	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	13:59:01	ST02B	Still	200388_ST02_14	712	12.0	691 702.2	5 911 261.4	691 705.7	5 911 243.4	18.3	-
17/03/2021	13:59:06	ST02B	Still	200388_ST02_15	713	12.0	691 702.2	5 911 261.4	691 705.5	5 911 244.7	17.0	-
17/03/2021	13:59:50	ST02B	Still	200388_ST02_16	714	12.0	691 702.2	5 911 261.4	691 703.0	5 911 252.3	9.1	-
17/03/2021	14:00:16	ST02B	Still	200388_ST02_17	715	12.0	691 702.2	5 911 261.4	691 705.9	5 911 253.8	8.5	-
17/03/2021	14:00:17	ST02B	Still	200388_ST02_18	716	12.0	691 702.2	5 911 261.4	691 705.9	5 911 253.7	8.5	-
17/03/2021	14:00:18	ST02B	Still	200388_ST02_19	717	12.0	691 702.2	5 911 261.4	691 706.0	5 911 253.6	8.7	-
17/03/2021	14:00:19	ST02B	Still	200388_ST02_20	718	12.0	691 702.2	5 911 261.4	691 706.3	5 911 253.5	8.9	-
17/03/2021	14:00:20	ST02B	Still	200388_ST02_21	719	12.0	691 702.2	5 911 261.4	691 706.3	5 911 253.6	8.8	-
17/03/2021	14:01:17	ST02B	Still	200388_ST02_22	720	12.0	691 702.2	5 911 261.4	691 712.3	5 911 266.2	11.2	-
17/03/2021	14:01:19	ST02B	Still	200388_ST02_23	721	12.0	691 702.2	5 911 261.4	691 711.5	5 911 266.8	10.8	-
17/03/2021	14:02:13	ST02B	Still	200388_ST02_24	722	12.0	691 702.2	5 911 261.4	691 706.7	5 911 278.1	17.3	-
17/03/2021	14:02:15	ST02B	Still	200388_ST02_25	723	12.0	691 702.2	5 911 261.4	691 706.0	5 911 278.3	17.3	-
17/03/2021	14:02:46	ST02B	Video	EOL	724	12.0	691 702.2	5 911 261.4	691 714.2	5 911 280.5	22.6	-
17/03/2021	14:26:16	ST23B	Video	SOL	725	15.0	693 421.5	5 912 050.3	693 424.7	5 911 991.8	58.6	-
17/03/2021	14:26:54	ST23B	Still	200388_ST23_01	726	15.0	693 421.5	5 912 050.3	693 425.2	5 911 998.0	52.4	-
17/03/2021	14:26:56	ST23B	Still	200388_ST23_02	727	15.0	693 421.5	5 912 050.3	693 424.8	5 911 998.6	51.8	-
17/03/2021	14:27:00	ST23B	Still	200388_ST23_03	728	15.0	693 421.5	5 912 050.3	693 424.5	5 911 999.8	50.6	-
17/03/2021	14:27:14	ST23B	Still	200388_ST23_04	729	15.0	693 421.5	5 912 050.3	693 424.7	5 912 003.1	47.3	-
17/03/2021	14:27:26	ST23B	Still	200388_ST23_05	730	15.0	693 421.5	5 912 050.3	693 425.6	5 912 005.0	45.5	-
17/03/2021	14:27:45	ST23B	Still	200388_ST23_06	731	15.0	693 421.5	5 912 050.3	693 425.1	5 912 010.2	40.3	-
17/03/2021	14:27:50	ST23B	Still	200388_ST23_07	732	15.0	693 421.5	5 912 050.3	693 425.2	5 912 011.2	39.3	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	14:28:29	ST23B	Still	200388_ST23_08	733	15.0	693 421.5	5 912 050.3	693 425.8	5 912 017.0	33.6	-
17/03/2021	14:28:56	ST23B	Still	200388_ST23_09	734	15.0	693 421.5	5 912 050.3	693 427.4	5 912 023.2	27.7	-
17/03/2021	14:29:06	ST23B	Still	200388_ST23_10	735	15.0	693 421.5	5 912 050.3	693 425.8	5 912 025.9	24.8	-
17/03/2021	14:29:06	ST23B	Still	200388_ST23_11	736	15.0	693 421.5	5 912 050.3	693 425.8	5 912 025.9	24.8	-
17/03/2021	14:29:31	ST23B	Still	200388_ST23_12	737	15.0	693 421.5	5 912 050.3	693 423.5	5 912 030.9	19.5	-
17/03/2021	14:30:07	ST23B	Still	200388_ST23_13	738	15.0	693 421.5	5 912 050.3	693 422.1	5 912 042.6	7.7	-
17/03/2021	14:30:18	ST23B	Still	200388_ST23_14	739	15.0	693 421.5	5 912 050.3	693 422.6	5 912 044.6	5.8	-
17/03/2021	14:30:32	ST23B	Still	200388_ST23_15	740	15.0	693 421.5	5 912 050.3	693 423.1	5 912 046.4	4.2	-
17/03/2021	14:30:51	ST23B	Still	200388_ST23_16	741	15.0	693 421.5	5 912 050.3	693 423.7	5 912 048.8	2.7	-
17/03/2021	14:31:08	ST23B	Still	200388_ST23_17	742	15.0	693 421.5	5 912 050.3	693 423.6	5 912 051.9	2.6	-
17/03/2021	14:31:22	ST23B	Still	200388_ST23_18	743	15.0	693 421.5	5 912 050.3	693 423.9	5 912 055.6	5.8	-
17/03/2021	14:31:45	ST23B	Still	200388_ST23_19	744	15.0	693 421.5	5 912 050.3	693 425.3	5 912 064.2	14.4	-
17/03/2021	14:31:45	ST23B	Still	200388_ST23_20	745	15.0	693 421.5	5 912 050.3	693 425.3	5 912 064.2	14.4	-
17/03/2021	14:31:46	ST23B	Still	200388_ST23_21	746	15.0	693 421.5	5 912 050.3	693 425.3	5 912 064.5	14.7	-
17/03/2021	14:31:49	ST23B	Still	200388_ST23_22	747	15.0	693 421.5	5 912 050.3	693 425.5	5 912 065.3	15.5	-
17/03/2021	14:32:28	ST23B	Still	200388_ST23_23	748	15.0	693 421.5	5 912 050.3	693 427.9	5 912 072.7	23.3	-
17/03/2021	14:32:29	ST23B	Still	200388_ST23_24	749	15.0	693 421.5	5 912 050.3	693 427.6	5 912 072.8	23.3	-
17/03/2021	14:32:34	ST23B	Still	200388_ST23_25	750	15.0	693 421.5	5 912 050.3	693 427.6	5 912 073.9	24.4	-
17/03/2021	14:32:36	ST23B	Still	200388_ST23_26	751	15.0	693 421.5	5 912 050.3	693 427.2	5 912 074.6	25.0	-
17/03/2021	14:33:00	ST23B	Video	EOL	752	15.0	693 421.5	5 912 050.3	693 427.6	5 912 077.6	28.0	-
17/03/2021	14:54:00	ST22A	Video	SOL	753	9.0	691 067.8	5 913 578.9	691 086.1	5 913 547.0	36.8	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	14:54:13	ST22A	Still	200388_ST22_01	754	9.0	691 067.8	5 913 578.9	691 084.1	5 913 549.0	34.1	-
17/03/2021	14:55:15	ST22A	Still	200388_ST22_02	755	9.0	691 067.8	5 913 578.9	691 085.7	5 913 560.8	25.5	-
17/03/2021	14:55:24	ST22A	Still	200388_ST22_03	756	9.0	691 067.8	5 913 578.9	691 083.8	5 913 563.4	22.3	-
17/03/2021	14:55:31	ST22A	Still	200388_ST22_04	757	9.0	691 067.8	5 913 578.9	691 082.5	5 913 565.4	20.0	-
17/03/2021	14:55:40	ST22A	Still	200388_ST22_05	758	9.0	691 067.8	5 913 578.9	691 080.3	5 913 566.9	17.3	-
17/03/2021	14:55:42	ST22A	Still	200388_ST22_06	759	9.0	691 067.8	5 913 578.9	691 079.8	5 913 567.1	16.8	-
17/03/2021	14:56:33	ST22A	Still	200388_ST22_07	760	9.0	691 067.8	5 913 578.9	691 067.1	5 913 572.4	6.5	-
17/03/2021	14:56:33	ST22A	Still	200388_ST22_08	761	9.0	691 067.8	5 913 578.9	691 067.1	5 913 572.4	6.5	-
17/03/2021	14:56:49	ST22A	Still	200388_ST22_09	762	9.0	691 067.8	5 913 578.9	691 062.0	5 913 576.5	6.3	-
17/03/2021	14:56:50	ST22A	Still	200388_ST22_10	763	9.0	691 067.8	5 913 578.9	691 061.4	5 913 576.8	6.7	-
17/03/2021	14:56:50	ST22A	Still	200388_ST22_11	764	9.0	691 067.8	5 913 578.9	691 061.4	5 913 576.8	6.7	-
17/03/2021	14:57:24	ST22A	Still	200388_ST22_12	765	9.0	691 067.8	5 913 578.9	691 058.1	5 913 587.1	12.7	-
17/03/2021	14:57:24	ST22A	Still	200388_ST22_13	766	9.0	691 067.8	5 913 578.9	691 058.1	5 913 587.1	12.7	-
17/03/2021	14:57:25	ST22A	Still	200388_ST22_14	767	9.0	691 067.8	5 913 578.9	691 058.1	5 913 587.4	12.9	-
17/03/2021	14:57:50	ST22A	Still	200388_ST22_15	768	9.0	691 067.8	5 913 578.9	691 062.4	5 913 591.2	13.4	-
17/03/2021	14:58:27	ST22A	Still	200388_ST22_16	769	9.0	691 067.8	5 913 578.9	691 071.2	5 913 595.3	16.7	-
17/03/2021	14:58:28	ST22A	Still	200388_ST22_17	770	9.0	691 067.8	5 913 578.9	691 071.3	5 913 595.3	16.8	-
17/03/2021	14:59:10	ST22A	Still	200388_ST22_18	771	9.0	691 067.8	5 913 578.9	691 072.5	5 913 602.5	24.1	-
17/03/2021	14:59:10	ST22A	Still	200388_ST22_19	772	9.0	691 067.8	5 913 578.9	691 072.5	5 913 602.8	24.4	-
17/03/2021	14:59:25	ST22A	Video	EOL	773	9.0	691 067.8	5 913 578.9	691 071.6	5 913 608.1	29.4	-
17/03/2021	15:14:06	ST01A	Video	SOL	774	6.0	689 094.1	5 912 677.4	689 109.9	5 912 643.4	37.5	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	15:14:33	ST01A	Still	200388_ST01_01	775	6.0	689 094.1	5 912 677.4	689 111.4	5 912 653.7	29.3	-
17/03/2021	15:14:58	ST01A	Still	200388_ST01_02	776	6.0	689 094.1	5 912 677.4	689 110.4	5 912 662.9	21.8	-
17/03/2021	15:15:05	ST01A	Still	200388_ST01_03	777	6.0	689 094.1	5 912 677.4	689 109.6	5 912 665.3	19.7	-
17/03/2021	15:15:10	ST01A	Still	200388_ST01_04	778	6.0	689 094.1	5 912 677.4	689 109.1	5 912 666.6	18.5	-
17/03/2021	15:15:34	ST01A	Still	200388_ST01_05	779	6.0	689 094.1	5 912 677.4	689 106.1	5 912 672.1	13.1	-
17/03/2021	15:15:51	ST01A	Still	200388_ST01_06	780	6.0	689 094.1	5 912 677.4	689 103.4	5 912 676.8	9.3	-
17/03/2021	15:16:07	ST01A	Still	200388_ST01_07	781	6.0	689 094.1	5 912 677.4	689 099.5	5 912 680.1	6.0	-
17/03/2021	15:16:11	ST01A	Still	200388_ST01_08	782	6.0	689 094.1	5 912 677.4	689 098.9	5 912 680.7	5.8	-
17/03/2021	15:16:12	ST01A	Still	200388_ST01_09	783	6.0	689 094.1	5 912 677.4	689 098.7	5 912 680.9	5.8	-
17/03/2021	15:16:15	ST01A	Still	200388_ST01_10	784	6.0	689 094.1	5 912 677.4	689 098.3	5 912 681.3	5.7	-
17/03/2021	15:16:28	ST01A	Still	200388_ST01_11	785	6.0	689 094.1	5 912 677.4	689 094.9	5 912 683.3	6.0	-
17/03/2021	15:16:30	ST01A	Still	200388_ST01_12	786	6.0	689 094.1	5 912 677.4	689 094.6	5 912 683.7	6.3	-
17/03/2021	15:16:58	ST01A	Still	200388_ST01_13	787	6.0	689 094.1	5 912 677.4	689 090.9	5 912 687.0	10.1	-
17/03/2021	15:16:59	ST01A	Still	200388_ST01_14	788	6.0	689 094.1	5 912 677.4	689 090.6	5 912 687.1	10.3	-
17/03/2021	15:17:03	ST01A	Still	200388_ST01_15	789	6.0	689 094.1	5 912 677.4	689 090.1	5 912 687.5	10.9	-
17/03/2021	15:17:26	ST01A	Still	200388_ST01_16	790	6.0	689 094.1	5 912 677.4	689 086.9	5 912 692.4	16.6	-
17/03/2021	15:17:27	ST01A	Still	200388_ST01_17	791	6.0	689 094.1	5 912 677.4	689 086.8	5 912 692.6	16.9	-
17/03/2021	15:17:30	ST01A	Still	200388_ST01_18	792	6.0	689 094.1	5 912 677.4	689 086.6	5 912 693.3	17.6	-
17/03/2021	15:17:47	ST01A	Still	200388_ST01_19	793	6.0	689 094.1	5 912 677.4	689 085.7	5 912 698.5	22.7	-
17/03/2021	15:17:47	ST01A	Still	200388_ST01_20	794	6.0	689 094.1	5 912 677.4	689 085.7	5 912 698.5	22.7	-
17/03/2021	15:18:16	ST01A	Video	EOL	795	6.0	689 094.1	5 912 677.4	689 086.1	5 912 704.8	28.5	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	15:46:15	ST01	DG	PC	798	6.0	689 094.1	5 912 677.4	689 097.3	5 912 673.9	4.7	-
17/03/2021	16:16:34	ST03	DG	PC	799	26.0	694 338.4	5 909 729.5	694 343.3	5 909 723.1	8.1	-
17/03/2021	16:28:12	ST03	HG	FA	800	26.0	694 338.4	5 909 729.5	694 326.6	5 909 725.6	12.4	-
17/03/2021	17:09:11	ST04	HG	FA	801	26.5	697 993.5	5 907 917.5	697 996.9	5 907 909.1	9.1	-
17/03/2021	17:44:59	ST24	Video	SOL	802	28.1	696 153.0	5 910 223.0	696 154.9	5 910 158.8	64.2	-
17/03/2021	17:45:05	ST24	Still	200388_ST24_01	803	28.1	696 153.0	5 910 223.0	696 154.9	5 910 159.2	63.8	-
17/03/2021	17:45:07	ST24	Still	200388_ST24_02	804	28.1	696 153.0	5 910 223.0	696 154.5	5 910 159.7	63.3	-
17/03/2021	17:46:08	ST24	Still	200388_ST24_03	805	28.1	696 153.0	5 910 223.0	696 149.0	5 910 179.7	43.5	-
17/03/2021	17:46:16	ST24	Still	200388_ST24_04	806	28.1	696 153.0	5 910 223.0	696 147.6	5 910 181.8	41.6	-
17/03/2021	17:46:25	ST24	Still	200388_ST24_05	807	28.1	696 153.0	5 910 223.0	696 146.4	5 910 184.0	39.6	-
17/03/2021	17:46:38	ST24	Still	200388_ST24_06	808	28.1	696 153.0	5 910 223.0	696 146.6	5 910 187.2	36.4	-
17/03/2021	17:46:56	ST24	Still	200388_ST24_07	809	28.1	696 153.0	5 910 223.0	696 146.1	5 910 191.2	32.5	-
17/03/2021	17:47:33	ST24	Still	200388_ST24_08	810	28.1	696 153.0	5 910 223.0	696 149.1	5 910 205.3	18.1	-
17/03/2021	17:48:15	ST24	Still	200388_ST24_09	811	28.1	696 153.0	5 910 223.0	696 149.1	5 910 205.3	18.1	-
17/03/2021	17:48:27	ST24	Still	200388_ST24_10	812	28.1	696 153.0	5 910 223.0	696 157.8	5 910 217.7	7.2	-
17/03/2021	17:48:33	ST24	Still	200388_ST24_11	813	28.1	696 153.0	5 910 223.0	696 159.4	5 910 218.8	7.7	-
17/03/2021	17:48:37	ST24	Still	200388_ST24_12	814	28.1	696 153.0	5 910 223.0	696 160.1	5 910 219.5	7.9	-
17/03/2021	17:48:46	ST24	Still	200388_ST24_13	815	28.1	696 153.0	5 910 223.0	696 161.7	5 910 222.2	8.7	-
17/03/2021	17:49:06	ST24	Still	200388_ST24_14	816	28.1	696 153.0	5 910 223.0	696 162.9	5 910 230.8	12.6	-
17/03/2021	17:49:31	ST24	Still	200388_ST24_15	817	28.1	696 153.0	5 910 223.0	696 161.1	5 910 240.2	19.0	-
17/03/2021	17:50:10	ST24	Video	EOL	818	28.1	696 153.0	5 910 223.0	696 155.5	5 910 254.4	31.5	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
17/03/2021	18:09:35	ST24	HG	FA	819	28.1	696 153.0	5 910 223.0	696 159.4	5 910 212.4	12.4	-
17/03/2021	18:15:48	ST24	DG	PC	820	28.1	696 153.0	5 910 223.0	696 151.8	5 910 215.8	7.3	-
18/03/2021	07:16:40	ST16A	Still	SOL	822	5.2	704 212.5	5 909 508.2	704 280.8	5 909 452.9	87.9	-
18/03/2021	07:17:38	ST16A	Still	200388_ST16_01	823	5.2	704 212.5	5 909 508.2	704 267.6	5 909 468.8	67.7	-
18/03/2021	07:18:03	ST16A	Still	200388_ST16_02	824	5.2	704 212.5	5 909 508.2	704 256.9	5 909 475.5	55.1	-
18/03/2021	07:18:13	ST16A	Still	200388_ST16_03	825	5.2	704 212.5	5 909 508.2	704 254.6	5 909 476.8	52.5	-
18/03/2021	07:18:18	ST16A	Still	200388_ST16_04	826	5.2	704 212.5	5 909 508.2	704 253.0	5 909 475.8	51.9	-
18/03/2021	07:18:36	ST16A	Still	200388_ST16_05	827	5.2	704 212.5	5 909 508.2	704 248.1	5 909 476.6	47.6	-
18/03/2021	07:18:47	ST16A	Still	200388_ST16_06	828	5.2	704 212.5	5 909 508.2	704 245.4	5 909 480.2	43.2	-
18/03/2021	07:18:55	ST16A	Still	200388_ST16_07	829	5.2	704 212.5	5 909 508.2	704 243.6	5 909 480.6	41.6	-
18/03/2021	07:19:15	ST16A	Still	200388_ST16_08	830	5.2	704 212.5	5 909 508.2	704 240.6	5 909 483.2	37.6	-
18/03/2021	07:19:21	ST16A	Still	200388_ST16_09	831	5.2	704 212.5	5 909 508.2	704 239.7	5 909 484.4	36.1	-
18/03/2021	07:19:26	ST16A	Still	200388_ST16_10	832	5.2	704 212.5	5 909 508.2	704 238.5	5 909 485.0	34.8	-
18/03/2021	07:19:33	ST16A	Still	200388_ST16_11	833	5.2	704 212.5	5 909 508.2	704 237.6	5 909 485.8	33.6	-
18/03/2021	07:19:39	ST16A	Still	200388_ST16_12	834	5.2	704 212.5	5 909 508.2	704 236.9	5 909 486.4	32.7	-
18/03/2021	07:19:40	ST16A	Still	200388_ST16_13	835	5.2	704 212.5	5 909 508.2	704 237.0	5 909 486.6	32.7	-
18/03/2021	07:19:43	ST16A	Still	200388_ST16_14	836	5.2	704 212.5	5 909 508.2	704 236.5	5 909 486.6	32.3	-
18/03/2021	07:19:58	ST16A	Still	200388_ST16_15	837	5.2	704 212.5	5 909 508.2	704 234.5	5 909 486.0	31.3	-
18/03/2021	07:20:03	ST16A	Still	200388_ST16_16	838	5.2	704 212.5	5 909 508.2	704 234.1	5 909 486.7	30.5	-
18/03/2021	07:20:29	ST16A	Still	200388_ST16_17	839	5.2	704 212.5	5 909 508.2	704 227.8	5 909 486.6	26.5	-
18/03/2021	07:20:41	ST16A	Still	200388_ST16_18	840	5.2	704 212.5	5 909 508.2	704 228.1	5 909 489.9	24.0	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	07:20:42	ST16A	Still	200388_ST16_19	841	5.2	704 212.5	5 909 508.2	704 227.6	5 909 489.3	24.2	-
18/03/2021	07:20:43	ST16A	Still	200388_ST16_20	842	5.2	704 212.5	5 909 508.2	704 227.5	5 909 489.5	24.0	-
18/03/2021	07:20:54	ST16A	Still	200388_ST16_21	843	5.2	704 212.5	5 909 508.2	704 228.1	5 909 491.2	23.1	-
18/03/2021	07:21:47	ST16A	Still	200388_ST16_22	844	5.2	704 212.5	5 909 508.2	704 217.1	5 909 496.5	12.6	-
18/03/2021	07:21:56	ST16A	Still	200388_ST16_23	845	5.2	704 212.5	5 909 508.2	704 214.6	5 909 497.2	11.2	-
18/03/2021	07:21:59	ST16A	Still	200388_ST16_24	846	5.2	704 212.5	5 909 508.2	704 215.6	5 909 498.0	10.7	-
18/03/2021	07:22:00	ST16A	Still	200388_ST16_25	847	5.2	704 212.5	5 909 508.2	704 214.2	5 909 497.3	11.0	-
18/03/2021	07:22:00	ST16A	Still	200388_ST16_26	848	5.2	704 212.5	5 909 508.2	704 214.2	5 909 497.3	11.0	-
18/03/2021	07:22:03	ST16A	Still	200388_ST16_27	849	5.2	704 212.5	5 909 508.2	704 215.1	5 909 497.7	10.8	-
18/03/2021	07:22:08	ST16A	Still	200388_ST16_28	850	5.2	704 212.5	5 909 508.2	704 217.3	5 909 498.9	10.5	-
18/03/2021	07:23:14	ST16A	Still	200388_ST16_29	851	5.2	704 212.5	5 909 508.2	704 218.2	5 909 518.5	11.8	-
18/03/2021	07:23:19	ST16A	Still	200388_ST16_30	852	5.2	704 212.5	5 909 508.2	704 216.8	5 909 519.9	12.5	-
18/03/2021	07:23:23	ST16A	Still	200388_ST16_31	853	5.2	704 212.5	5 909 508.2	704 215.8	5 909 520.8	13.0	-
18/03/2021	07:23:34	ST16A	Still	200388_ST16_32	854	5.2	704 212.5	5 909 508.2	704 210.9	5 909 521.9	13.8	-
18/03/2021	07:23:50	ST16A	Still	200388_ST16_33	855	5.2	704 212.5	5 909 508.2	704 205.6	5 909 520.5	14.1	-
18/03/2021	07:24:06	ST16A	Still	200388_ST16_34	856	5.2	704 212.5	5 909 508.2	704 201.3	5 909 524.0	19.4	-
18/03/2021	07:24:10	ST16A	Still	200388_ST16_35	857	5.2	704 212.5	5 909 508.2	704 200.9	5 909 526.1	21.3	-
18/03/2021	07:24:13	ST16A	Still	200388_ST16_36	858	5.2	704 212.5	5 909 508.2	704 200.8	5 909 527.3	22.4	-
18/03/2021	07:24:16	ST16A	Still	200388_ST16_37	859	5.2	704 212.5	5 909 508.2	704 201.2	5 909 528.5	23.2	-
18/03/2021	07:24:21	ST16A	Still	200388_ST16_38	860	5.2	704 212.5	5 909 508.2	704 202.3	5 909 530.3	24.3	-
18/03/2021	07:24:28	ST16A	Video	EOL	861	5.2	704 212.5	5 909 508.2	704 203.5	5 909 534.1	27.4	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	07:36:57	ST17A	Video	SOL	862	6.5	704 861.7	5 907 490.8	704 901.3	5 907 442.1	62.8	-
18/03/2021	07:37:10	ST17A	Still	200388_ST17_01	863	6.5	704 861.7	5 907 490.8	704 905.5	5 907 449.5	60.2	-
18/03/2021	07:37:35	ST17A	Still	200388_ST17_02	864	6.5	704 861.7	5 907 490.8	704 902.9	5 907 461.1	50.8	-
18/03/2021	07:37:49	ST17A	Still	200388_ST17_03	865	6.5	704 861.7	5 907 490.8	704 897.6	5 907 467.5	42.8	-
18/03/2021	07:38:16	ST17A	Still	200388_ST17_04	866	6.5	704 861.7	5 907 490.8	704 881.9	5 907 463.5	34.0	-
18/03/2021	07:38:23	ST17A	Still	200388_ST17_05	867	6.5	704 861.7	5 907 490.8	704 878.6	5 907 463.0	32.5	-
18/03/2021	07:38:24	ST17A	Still	200388_ST17_06	868	6.5	704 861.7	5 907 490.8	704 878.3	5 907 463.4	32.0	-
18/03/2021	07:38:45	ST17A	Still	200388_ST17_07	869	6.5	704 861.7	5 907 490.8	704 872.1	5 907 461.3	31.3	-
18/03/2021	07:38:50	ST17A	Still	200388_ST17_08	870	6.5	704 861.7	5 907 490.8	704 870.9	5 907 460.4	31.8	-
18/03/2021	07:38:55	ST17A	Still	200388_ST17_09	871	6.5	704 861.7	5 907 490.8	704 869.7	5 907 461.1	30.8	-
18/03/2021	07:39:08	ST17A	Still	200388_ST17_10	872	6.5	704 861.7	5 907 490.8	704 868.9	5 907 460.6	31.0	-
18/03/2021	07:39:16	ST17A	Still	200388_ST17_11	874	6.5	704 861.7	5 907 490.8	704 867.3	5 907 460.6	30.7	-
18/03/2021	07:39:27	ST17A	Still	200388_ST17_12	875	6.5	704 861.7	5 907 490.8	704 864.4	5 907 459.8	31.1	-
18/03/2021	07:39:34	ST17A	Still	200388_ST17_13	876	6.5	704 861.7	5 907 490.8	704 864.5	5 907 458.3	32.6	-
18/03/2021	07:39:39	ST17A	Still	200388_ST17_14	877	6.5	704 861.7	5 907 490.8	704 863.2	5 907 458.6	32.2	-
18/03/2021	07:40:05	ST17A	Still	200388_ST17_15	878	6.5	704 861.7	5 907 490.8	704 859.5	5 907 467.8	23.1	-
18/03/2021	07:40:19	ST17A	Still	200388_ST17_16	879	6.5	704 861.7	5 907 490.8	704 859.3	5 907 473.3	17.7	-
18/03/2021	07:40:30	ST17A	Still	200388_ST17_17	880	6.5	704 861.7	5 907 490.8	704 860.2	5 907 479.0	11.9	-
18/03/2021	07:40:33	ST17A	Still	200388_ST17_18	881	6.5	704 861.7	5 907 490.8	704 861.1	5 907 480.8	10.0	-
18/03/2021	07:41:14	ST17A	Still	200388_ST17_19	882	6.5	704 861.7	5 907 490.8	704 873.6	5 907 494.3	12.4	-
18/03/2021	07:41:22	ST17A	Still	200388_ST17_20	883	6.5	704 861.7	5 907 490.8	704 878.6	5 907 499.7	19.1	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	07:41:43	ST17A	Still	200388_ST17_21	884	6.5	704 861.7	5 907 490.8	704 886.3	5 907 506.9	29.4	-
18/03/2021	07:41:44	ST17A	Still	200388_ST17_22	885	6.5	704 861.7	5 907 490.8	704 886.6	5 907 506.8	29.6	-
18/03/2021	07:41:47	ST17A	Still	200388_ST17_23	886	6.5	704 861.7	5 907 490.8	704 888.1	5 907 507.6	31.3	-
18/03/2021	07:41:56	ST17A	Video	EOL	887	6.5	704 861.7	5 907 490.8	704 891.1	5 907 510.6	35.4	-
18/03/2021	07:59:48	ST18A	Video	SOL	888	10.7	705 260.1	5 904 718.1	705 305.6	5 904 673.2	63.9	-
18/03/2021	08:00:00	ST18A	Still	200388_ST18_01	889	10.7	705 260.1	5 904 718.1	705 304.0	5 904 673.6	62.5	-
18/03/2021	08:00:07	ST18A	Still	200388_ST18_02	890	10.7	705 260.1	5 904 718.1	705 303.4	5 904 674.3	61.6	-
18/03/2021	08:00:27	ST18A	Still	200388_ST18_03	891	10.7	705 260.1	5 904 718.1	705 301.4	5 904 677.1	58.2	-
18/03/2021	08:00:38	ST18A	Still	200388_ST18_04	892	10.7	705 260.1	5 904 718.1	705 300.0	5 904 677.3	57.1	-
18/03/2021	08:00:45	ST18A	Still	200388_ST18_05	893	10.7	705 260.1	5 904 718.1	705 301.3	5 904 678.4	57.2	-
18/03/2021	08:00:59	ST18A	Still	200388_ST18_06	894	10.7	705 260.1	5 904 718.1	705 302.0	5 904 679.4	57.0	-
18/03/2021	08:01:13	ST18A	Still	200388_ST18_07	895	10.7	705 260.1	5 904 718.1	705 303.6	5 904 680.1	57.8	-
18/03/2021	08:01:18	ST18A	Still	200388_ST18_08	896	10.7	705 260.1	5 904 718.1	705 303.6	5 904 681.0	57.2	-
18/03/2021	08:02:23	ST18A	Still	200388_ST18_09	897	10.7	705 260.1	5 904 718.1	705 296.7	5 904 691.6	45.2	-
18/03/2021	08:02:47	ST18A	Still	200388_ST18_10	898	10.7	705 260.1	5 904 718.1	705 295.8	5 904 696.6	41.7	-
18/03/2021	08:02:59	ST18A	Still	200388_ST18_11	899	10.7	705 260.1	5 904 718.1	705 294.6	5 904 697.3	40.3	-
18/03/2021	08:03:02	ST18A	Still	200388_ST18_12	900	10.7	705 260.1	5 904 718.1	705 294.4	5 904 697.3	40.1	-
18/03/2021	08:03:17	ST18A	Still	200388_ST18_13	901	10.7	705 260.1	5 904 718.1	705 291.7	5 904 698.9	37.0	-
18/03/2021	08:03:35	ST18A	Still	200388_ST18_14	902	10.7	705 260.1	5 904 718.1	705 288.7	5 904 699.6	34.1	-
18/03/2021	08:04:13	ST18A	Still	200388_ST18_15	903	10.7	705 260.1	5 904 718.1	705 276.4	5 904 706.3	20.1	-
18/03/2021	08:04:21	ST18A	Still	200388_ST18_16	904	10.7	705 260.1	5 904 718.1	705 276.3	5 904 709.2	18.5	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	08:04:35	ST18A	Still	200388_ST18_17	905	10.7	705 260.1	5 904 718.1	705 274.6	5 904 714.9	14.8	-
18/03/2021	08:04:43	ST18A	Still	200388_ST18_18	906	10.7	705 260.1	5 904 718.1	705 271.6	5 904 717.0	11.6	-
18/03/2021	08:04:46	ST18A	Still	200388_ST18_19	907	10.7	705 260.1	5 904 718.1	705 271.0	5 904 717.8	10.9	-
18/03/2021	08:04:56	ST18A	Still	200388_ST18_20	908	10.7	705 260.1	5 904 718.1	705 268.8	5 904 721.1	9.2	-
18/03/2021	08:05:02	ST18A	Still	200388_ST18_21	909	10.7	705 260.1	5 904 718.1	705 268.2	5 904 725.7	11.1	-
18/03/2021	08:05:24	ST18A	Still	200388_ST18_22	910	10.7	705 260.1	5 904 718.1	705 261.2	5 904 731.6	13.5	-
18/03/2021	08:05:35	ST18A	Still	200388_ST18_23	911	10.7	705 260.1	5 904 718.1	705 254.0	5 904 728.9	12.4	-
18/03/2021	08:05:40	ST18A	Still	200388_ST18_24	912	10.7	705 260.1	5 904 718.1	705 254.3	5 904 727.1	10.7	-
18/03/2021	08:05:44	ST18A	Still	200388_ST18_25	913	10.7	705 260.1	5 904 718.1	705 255.0	5 904 727.4	10.6	-
18/03/2021	08:05:44	ST18A	Still	200388_ST18_26	914	10.7	705 260.1	5 904 718.1	705 255.0	5 904 727.4	10.6	-
18/03/2021	08:05:47	ST18A	Still	200388_ST18_27	915	10.7	705 260.1	5 904 718.1	705 255.9	5 904 727.3	10.1	-
18/03/2021	08:05:58	ST18A	Still	200388_ST18_28	916	10.7	705 260.1	5 904 718.1	705 260.1	5 904 727.7	9.6	-
18/03/2021	08:06:01	ST18A	Still	200388_ST18_29	917	10.7	705 260.1	5 904 718.1	705 261.4	5 904 728.0	10.0	-
18/03/2021	08:06:10	ST18A	Still	200388_ST18_30	-	10.7	705 260.1	5 904 718.1	-	-	-	-
18/03/2021	08:06:18	ST18A	Still	200388_ST18_31	-	10.7	705 260.1	5 904 718.1	-	-	-	-
18/03/2021	08:06:40	ST18A	Still	200388_ST18_32	-	10.7	705 260.1	5 904 718.1	-	-	-	-
18/03/2021	08:06:42	ST18A	Still	200388_ST18_33	-	10.7	705 260.1	5 904 718.1	-	-	-	-
18/03/2021	08:06:45	ST18A	Still	200388_ST18_34	-	10.7	705 260.1	5 904 718.1	-	-	-	-
18/03/2021	08:06:48	ST18A	Still	200388_ST18_35	-	10.7	705 260.1	5 904 718.1	-	-	-	-
18/03/2021	08:06:50	ST18A	Still	200388_ST18_36	-	10.7	705 260.1	5 904 718.1	-	-	-	-
18/03/2021	08:06:58	ST18A	Still	200388_ST18_37	-	10.7	705 260.1	5 904 718.1	-	-	-	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	08:07:35	ST18A	Video	EOL	918	10.7	705 260.1	5 904 718.1	705 259.8	5 904 742.8	24.7	-
18/03/2021	08:45:52	ST29	HG	FA	919	40.0	708 844.1	5 903 199.4	708 849.7	5 903 204.3	7.4	-
18/03/2021	10:02:13	ST15	HG	FA	920	27.0	702 295.0	5 899 381.6	702 295.0	5 899 386.1	4.5	-
18/03/2021	10:14:43	ST15	DG	PC	921	27.0	702 295.0	5 899 381.6	702 290.7	5 899 383.4	4.7	-
18/03/2021	11:06:34	ST07	Video	SOL	922	27.5	702 258.2	5 904 349.2	702 236.6	5 904 403.8	58.7	-
18/03/2021	11:06:52	ST07	Still	200388_ST07_01	923	27.5	702 258.2	5 904 349.2	702 239.2	5 904 398.9	53.2	-
18/03/2021	11:06:52	ST07	Still	200388_ST07_02	924	27.5	702 258.2	5 904 349.2	702 239.2	5 904 398.9	53.2	-
18/03/2021	11:07:13	ST07	Still	200388_ST07_03	925	27.5	702 258.2	5 904 349.2	702 247.1	5 904 395.9	48.0	-
18/03/2021	11:07:16	ST07	Still	200388_ST07_04	926	27.5	702 258.2	5 904 349.2	702 248.3	5 904 395.4	47.2	-
18/03/2021	11:07:25	ST07	Still	200388_ST07_05	927	27.5	702 258.2	5 904 349.2	702 250.7	5 904 394.5	45.9	-
18/03/2021	11:07:40	ST07	Still	200388_ST07_06	928	27.5	702 258.2	5 904 349.2	702 255.5	5 904 393.0	43.9	-
18/03/2021	11:07:54	ST07	Still	200388_ST07_07	929	27.5	702 258.2	5 904 349.2	702 257.5	5 904 390.2	41.0	-
18/03/2021	11:08:02	ST07	Still	200388_ST07_08	930	27.5	702 258.2	5 904 349.2	702 258.8	5 904 389.4	40.2	-
18/03/2021	11:08:04	ST07	Still	200388_ST07_09	931	27.5	702 258.2	5 904 349.2	702 258.8	5 904 389.2	40.0	-
18/03/2021	11:08:08	ST07	Still	200388_ST07_10	932	27.5	702 258.2	5 904 349.2	702 259.5	5 904 389.2	40.0	-
18/03/2021	11:08:17	ST07	Still	200388_ST07_11	933	27.5	702 258.2	5 904 349.2	702 259.6	5 904 387.5	38.3	-
18/03/2021	11:08:29	ST07	Still	200388_ST07_12	934	27.5	702 258.2	5 904 349.2	702 260.3	5 904 384.2	35.1	-
18/03/2021	11:08:47	ST07	Still	200388_ST07_13	935	27.5	702 258.2	5 904 349.2	702 259.9	5 904 382.0	32.8	-
18/03/2021	11:08:52	ST07	Still	200388_ST07_14	936	27.5	702 258.2	5 904 349.2	702 258.7	5 904 381.5	32.3	-
18/03/2021	11:09:11	ST07	Still	200388_ST07_15	937	27.5	702 258.2	5 904 349.2	702 256.7	5 904 377.8	28.6	-
18/03/2021	11:09:15	ST07	Still	200388_ST07_16	938	27.5	702 258.2	5 904 349.2	702 256.8	5 904 377.8	28.6	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	11:09:25	ST07	Still	200388_ST07_17	939	27.5	702 258.2	5 904 349.2	702 256.4	5 904 376.0	26.9	-
18/03/2021	11:09:55	ST07	Still	200388_ST07_18	940	27.5	702 258.2	5 904 349.2	702 256.6	5 904 367.6	18.5	-
18/03/2021	11:10:04	ST07	Still	200388_ST07_19	941	27.5	702 258.2	5 904 349.2	702 255.8	5 904 364.8	15.8	-
18/03/2021	11:10:24	ST07	Still	200388_ST07_20	942	27.5	702 258.2	5 904 349.2	702 256.1	5 904 362.2	13.2	-
18/03/2021	11:10:25	ST07	Still	200388_ST07_21	943	27.5	702 258.2	5 904 349.2	702 256.6	5 904 362.4	13.3	-
18/03/2021	11:10:26	ST07	Still	200388_ST07_22	944	27.5	702 258.2	5 904 349.2	702 255.8	5 904 363.1	14.1	-
18/03/2021	11:10:28	ST07	Still	200388_ST07_23	945	27.5	702 258.2	5 904 349.2	702 256.9	5 904 363.7	14.6	-
18/03/2021	11:10:29	ST07	Still	200388_ST07_24	946	27.5	702 258.2	5 904 349.2	702 256.2	5 904 363.8	14.7	-
18/03/2021	11:10:53	ST07	Still	200388_ST07_25	947	27.5	702 258.2	5 904 349.2	702 258.0	5 904 359.4	10.2	-
18/03/2021	11:11:00	ST07	Still	200388_ST07_26	948	27.5	702 258.2	5 904 349.2	702 259.7	5 904 358.5	9.4	-
18/03/2021	11:11:14	ST07	Still	200388_ST07_27	949	27.5	702 258.2	5 904 349.2	702 262.0	5 904 354.8	6.8	-
18/03/2021	11:11:23	ST07	Still	200388_ST07_28	950	27.5	702 258.2	5 904 349.2	702 262.4	5 904 354.1	6.5	-
18/03/2021	11:11:38	ST07	Still	200388_ST07_29	951	27.5	702 258.2	5 904 349.2	702 261.7	5 904 351.7	4.3	-
18/03/2021	11:11:39	ST07	Still	200388_ST07_30	952	27.5	702 258.2	5 904 349.2	702 261.4	5 904 351.9	4.2	-
18/03/2021	11:11:51	ST07	Still	200388_ST07_31	953	27.5	702 258.2	5 904 349.2	702 260.8	5 904 351.9	3.7	-
18/03/2021	11:11:52	ST07	Still	200388_ST07_32	954	27.5	702 258.2	5 904 349.2	702 261.0	5 904 351.5	3.6	-
18/03/2021	11:12:06	ST07	Still	200388_ST07_33	955	27.5	702 258.2	5 904 349.2	702 258.1	5 904 349.9	0.7	-
18/03/2021	11:12:08	ST07	Still	200388_ST07_34	956	27.5	702 258.2	5 904 349.2	702 257.5	5 904 350.3	1.3	-
18/03/2021	11:12:10	ST07	Still	200388_ST07_35	957	27.5	702 258.2	5 904 349.2	702 257.1	5 904 351.6	2.6	-
18/03/2021	11:12:11	ST07	Still	200388_ST07_36	958	27.5	702 258.2	5 904 349.2	702 257.1	5 904 351.6	2.6	-
18/03/2021	11:12:13	ST07	Still	200388_ST07_37	959	27.5	702 258.2	5 904 349.2	702 257.3	5 904 352.1	3.0	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	11:12:41	ST07	Still	200388_ST07_38	960	27.5	702 258.2	5 904 349.2	702 254.7	5 904 350.6	3.8	-
18/03/2021	11:13:04	ST07	Still	200388_ST07_39	961	27.5	702 258.2	5 904 349.2	702 251.4	5 904 344.6	8.2	-
18/03/2021	11:13:09	ST07	Still	200388_ST07_40	962	27.5	702 258.2	5 904 349.2	702 252.0	5 904 344.5	7.8	-
18/03/2021	11:13:31	ST07	Still	200388_ST07_41	963	27.5	702 258.2	5 904 349.2	702 256.1	5 904 337.6	11.8	-
18/03/2021	11:13:34	ST07	Still	200388_ST07_42	964	27.5	702 258.2	5 904 349.2	702 257.4	5 904 337.0	12.2	-
18/03/2021	11:14:10	ST07	Still	200388_ST07_43	965	27.5	702 258.2	5 904 349.2	702 266.9	5 904 328.7	22.3	-
18/03/2021	11:14:14	ST07	Still	200388_ST07_44	966	27.5	702 258.2	5 904 349.2	702 267.7	5 904 331.0	20.5	-
18/03/2021	11:14:17	ST07	Still	200388_ST07_45	967	27.5	702 258.2	5 904 349.2	702 267.8	5 904 331.7	20.0	-
18/03/2021	11:14:35	ST07	Still	200388_ST07_46	968	27.5	702 258.2	5 904 349.2	702 269.1	5 904 330.1	22.0	-
18/03/2021	11:14:40	ST07	Still	200388_ST07_47	969	27.5	702 258.2	5 904 349.2	702 270.1	5 904 329.6	22.9	-
18/03/2021	11:14:52	ST07	Still	200388_ST07_48	970	27.5	702 258.2	5 904 349.2	702 270.8	5 904 326.7	25.8	-
18/03/2021	11:14:56	ST07	Still	200388_ST07_49	971	27.5	702 258.2	5 904 349.2	702 270.9	5 904 325.8	26.6	-
18/03/2021	11:15:05	ST07	Still	200388_ST07_50	972	27.5	702 258.2	5 904 349.2	702 271.9	5 904 324.6	28.2	-
18/03/2021	11:15:06	ST07	Still	200388_ST07_51	973	27.5	702 258.2	5 904 349.2	702 271.5	5 904 324.7	27.9	-
18/03/2021	11:15:13	ST07	Video	EOL	974	27.5	702 258.2	5 904 349.2	702 272.1	5 904 325.5	27.5	-
18/03/2021	12:38:41	ST14	Still	SOL	977	32.0	699 505.9	5 900 159.7	699 479.6	5 900 139.4	33.2	-
18/03/2021	12:40:40	ST14	Still	200388_ST14_01	982	32.0	699 505.9	5 900 159.7	699 505.0	5 900 163.0	3.4	-
18/03/2021	12:40:56	ST14	Still	200388_ST14_02	983	32.0	699 505.9	5 900 159.7	699 507.2	5 900 165.4	5.8	-
18/03/2021	12:41:05	ST14	Still	200388_ST14_03	NF	32.0	699 505.9	5 900 159.7	-	-	-	-
18/03/2021	12:41:29	ST14	Still	200388_ST14_04	NF	32.0	699 505.9	5 900 159.7	-	-	-	-
18/03/2021	12:42:38	ST14	Still	200388_ST14_05	987	32.0	699 505.9	5 900 159.7	699 511.1	5 900 184.6	25.4	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	12:42:53	ST14	Still	200388_ST14_06	988	32.0	699 505.9	5 900 159.7	699 512.8	5 900 189.4	30.5	-
18/03/2021	12:43:06	ST14	Still	200388_ST14_07	NF	32.0	699 505.9	5 900 159.7	-	-	-	-
18/03/2021	12:43:20	ST14	Still	200388_ST14_08	989	32.0	699 505.9	5 900 159.7	699 513.5	5 900 192.4	33.6	-
18/03/2021	12:43:33	ST14	Still	200388_ST14_09	NF	32.0	699 505.9	5 900 159.7	-	-	-	-
18/03/2021	12:44:04	ST14	Still	200388_ST14_10	NF	32.0	699 505.9	5 900 159.7	-	-	-	-
18/03/2021	12:44:35	ST14	Video	EOL	NF	32.0	699 505.9	5 900 159.7	-	-	-	-
18/03/2021	13:46:55	ST30	Video	SOL	1011	34.5	709 166.3	5 897 688.7	709 174.3	5 897 637.5	51.8	-
18/03/2021	13:47:43	ST30	Still	200388_ST30_01	1012	34.5	709 166.3	5 897 688.7	709 170.8	5 897 646.3	42.6	-
18/03/2021	13:48:10	ST30	Still	200388_ST30_02	1013	34.5	709 166.3	5 897 688.7	709 170.0	5 897 652.9	35.9	-
18/03/2021	13:48:22	ST30	Still	200388_ST30_03	1014	34.5	709 166.3	5 897 688.7	709 170.0	5 897 652.5	36.3	-
18/03/2021	13:48:32	ST30	Still	200388_ST30_04	1015	34.5	709 166.3	5 897 688.7	709 168.6	5 897 652.8	35.9	-
18/03/2021	13:48:44	ST30	Still	200388_ST30_05	1016	34.5	709 166.3	5 897 688.7	709 169.1	5 897 652.7	36.1	-
18/03/2021	13:49:03	ST30	Still	200388_ST30_06	1017	34.5	709 166.3	5 897 688.7	709 168.5	5 897 658.0	30.7	-
18/03/2021	13:49:19	ST30	Still	200388_ST30_07	1018	34.5	709 166.3	5 897 688.7	709 169.2	5 897 664.0	24.8	-
18/03/2021	13:49:28	ST30	Still	200388_ST30_08	1019	34.5	709 166.3	5 897 688.7	709 169.0	5 897 665.2	23.6	-
18/03/2021	13:49:41	ST30	Still	200388_ST30_09	1020	34.5	709 166.3	5 897 688.7	709 170.2	5 897 665.8	23.2	-
18/03/2021	13:49:49	ST30	Still	200388_ST30_10	1021	34.5	709 166.3	5 897 688.7	709 172.5	5 897 666.8	22.7	-
18/03/2021	13:50:03	ST30	Still	200388_ST30_11	1022	34.5	709 166.3	5 897 688.7	709 174.2	5 897 666.8	23.2	-
18/03/2021	13:50:38	ST30	Still	200388_ST30_12	1023	34.5	709 166.3	5 897 688.7	709 174.0	5 897 669.8	20.4	-
18/03/2021	13:51:19	ST30	Still	200388_ST30_13	1024	34.5	709 166.3	5 897 688.7	709 176.1	5 897 683.2	11.2	-
18/03/2021	13:51:42	ST30	Still	200388_ST30_14	1025	34.5	709 166.3	5 897 688.7	709 180.1	5 897 688.5	13.8	-

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]												
Date	Time [UTC]	Station	Type	Sample Rep/ Still No.	Fix No.	Water Depth [m BSL]	Proposed Location		Actual Location		Offset [m]	Notes
							Easting	Northing	Easting	Northing		
18/03/2021	13:51:52	ST30	Still	200388_ST30_15	1026	34.5	709 166.3	5 897 688.7	709 177.0	5 897 689.9	10.8	-
18/03/2021	13:52:05	ST30	Still	200388_ST30_16	1027	34.5	709 166.3	5 897 688.7	709 174.0	5 897 690.1	7.8	-
18/03/2021	13:52:31	ST30	Still	200388_ST30_17	1028	34.5	709 166.3	5 897 688.7	709 170.7	5 897 697.0	9.4	-
18/03/2021	13:52:39	ST30	Still	200388_ST30_18	1029	34.5	709 166.3	5 897 688.7	709 172.0	5 897 698.6	11.5	-
18/03/2021	13:52:48	ST30	Still	200388_ST30_19	1030	34.5	709 166.3	5 897 688.7	709 172.7	5 897 698.4	11.6	-
18/03/2021	13:53:13	ST30	Still	200388_ST30_20	1031	34.5	709 166.3	5 897 688.7	709 180.2	5 897 700.9	18.5	-
18/03/2021	13:53:30	ST30	Still	200388_ST30_21	1032	34.5	709 166.3	5 897 688.7	709 178.9	5 897 704.2	20.0	-
18/03/2021	13:53:58	ST30	Video	EOL	1033	34.5	709 166.3	5 897 688.7	709 182.8	5 897 713.3	29.6	-
18/03/2021	14:31:06	ST30	HG	FA	1034	34.5	709 166.3	5 897 688.7	709 165.4	5 897 684.7	4.1	-
18/03/2021	15:05:21	ST21	DG	PC	1036	7.0	706 424.2	5 896 268.8	706 413.3	5 896 263.4	12.2	-
18/03/2021	15:45:22	ST14	DG	PC	1037	32.0	699 505.9	5 900 159.7	699 514.1	5 900 150.9	12.0	-
18/03/2021	15:56:37	ST14	HG	FA	1038	32.0	699 505.9	5 900 159.7	699 490.7	5 900 145.7	20.7	-
18/03/2021	16:48:13	ST07	HG	FA	1039	27.5	702 258.2	5 904 349.2	702 268.0	5 904 344.6	10.8	-
18/03/2021	16:57:45	ST07	DG	PC	1040	27.5	702 258.2	5 904 349.2	702 259.6	5 904 345.8	3.7	-

Notes
UTC = Coordinated Universal Time
BSL = Below sea level
SOL = Start of line
EOL = End of line
HG = Hamon grab
NS = No sample
FA = Fauna sample A
DG = Day grab
PC = Physico-chemical sample
NF = No fix

C.2 Grab Log

Date	Time [UTC]	Station	Sample Rep	Fix No.	Sample Depth/ Volume	Sediment Description (including stratigraphy)			Comments (fauna, smell, bioturbation, debris)
						Sediment Type	Sediment Description	Munsell Colour	
21/02/2021	15:07:36	ST22	NS	33	< 2 L	S	Slightly muddy sand	-	Insufficient sample
21/02/2021	15:30:51	ST22	FA	34	5 L	S	Slightly muddy sand	3/1 10YR	-
21/02/2021	16:24:29	ST02	FA	36	5 L	S	Slightly muddy sand	3/1 10YR	-
21/02/2021	16:56:15	ST01	FA	37	5 L	S	Slightly muddy sand	3/1 10YR	-
21/02/2021	17:07:22	ST01	NS	38	< 1 cm	S	Slightly muddy sand	-	Insufficient sample and sediment washout
21/02/2021	17:15:01	ST01	NS	39	< 1 cm	S	Slightly muddy sand	-	Insufficient sample and sediment washout
25/02/2021	11:45:06	ST23	FA	159	5 L	S	Top 1 cm slightly muddy sand, > 1 cm sandy mud	Top 1 cm 5Y 4/2 > 1 cm 5Y 3/1	-
25/02/2021	11:58:06	ST23	PC	160	9 cm	S	Slightly muddy sand	5Y 3/1	-
26/02/2021	09:42:16	ST16	NS	187	0	-	-	-	Triggered in water column
26/02/2021	09:54:21	ST16	FA	188	5 L	S	Sand	2.5Y 5/4	-
26/02/2021	10:04:38	ST16	PC	189	8 cm	S	Sand	2.5Y 5/4	-
26/02/2021	10:39:45	ST17	FA	191	5 L	S	Sand	2.5Y 5/4	-
26/02/2021	11:25:31	ST18	FA	192	5 L	S	Sand	2.5Y 4/2	-
26/02/2021	12:41:00	ST27	FA	193	5 L	mS	Muddy sand and gravel	2.5Y 5/2	-
26/02/2021	13:47:31	ST26	FA	194	5 L	S	Sand	2.5Y 4/2	-
26/02/2021	14:06:01	ST26	NS	195	< 1 cm	S	Sand	-	-
26/02/2021	14:19:37	ST26	PC	196	6 cm	S	Top 1 cm sand > 1 cm muddy sand	Top 1 cm 5Y 4/2, > 1 cm 5YR 3/1	-
27/02/2021	14:04:37	ST21	FA	198	5 L	S	Sand	2.5Y 5/4	-
27/02/2021	14:51:04	ST20	FA	199	5 L	S	Sand	2.5Y 5/3	Sand eels × 3 (photos taken and released)

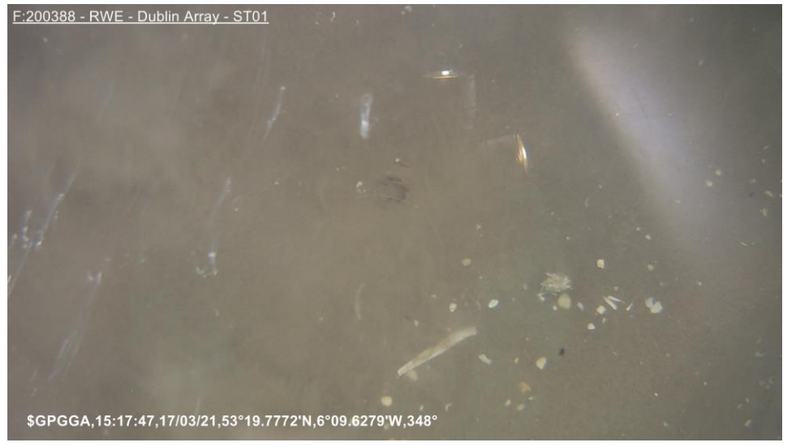
Date	Time [UTC]	Station	Sample Rep	Fix No.	Sample Depth/ Volume	Sediment Description (including stratigraphy)			Comments (fauna, smell, bioturbation, debris)
						Sediment Type	Sediment Description	Munsell Colour	
27/02/2021	15:21:30	ST19	FA	200	5 L	S	Sand	2.5Y 4/3	Sand eel × 1 (photos taken and released)
27/02/2021	15:34:11	ST19	PC	201	9 cm	S	Sand	2.5Y 4/3	Sand eels × 2 (photos taken and released)
16/03/2021	08:10:54	ST05	FA	481	5 L	gS	Gravelly sand	2.5Y 3/3	
16/03/2021	08:31:06	ST05	NS	482	-	-	-	-	Sample out of tolerance circle
16/03/2021	09:03:57	ST05	PC	483	10 cm	gS	Gravelly sand and shell	2.5Y 3/3	Sand eel × 1 (photos taken and released)
16/03/2021	10:01:59	ST06	FA	484	5 L	gS	Gravelly sand and shell	2.5Y 3/3	-
16/03/2021	10:39:10	ST08	FA	485	5 L	S	Sand and shell	2.5Y 3/3	-
16/03/2021	10:53:14	ST08	PC	486	7 cm	S	Sand and shell	2.5Y 3/3	-
16/03/2021	11:39:28	ST09	FA	487	5 L	S	Sand and shell	2.5Y 4/3	-
16/03/2021	16:20:45	ST13	FA	589	5 L	S	Sand	2.5Y 4/2	-
16/03/2021	16:29:40	ST13	PC	590	7 cm	S	Sand	2.5Y 4/2	-
16/03/2021	16:58:03	ST11	FA	591	5 L	S	Sand and shell	2.5Y 4/2	-
16/03/2021	17:06:45	ST11	PC	592	9 cm	S	Sand and shell	2.5Y 4/2	-
16/03/2021	18:09:13	ST10	FA	602	5 L	(g)mS	Gravelly, muddy sand and shell	5Y 4/2	-
17/03/2021	09:16:26	ST28	FA	648	7 cm	S	Sand and shell	2.5Y 4/2	
17/03/2021	09:38:37	ST28	NS	649	-	-	-	-	Grab triggered in water column
17/03/2021	09:48:35	ST28	NS	650	-	-	-	-	Grab triggered in water column
17/03/2021	15:46:15	ST01	PC	798	4.5 cm	S	Sand	2.5Y 4/2	-
17/03/2021	16:16:34	ST03	PC	799	10 cm	sM	Sandy mud	2.5Y 3/2	-
17/03/2021	16:28:12	ST03	FA	800	5 L	mS	Top 0.5 cm muddy sand > 0.5 cm sandy mud	2.5Y 4/2 and 2.5Y 3/2	-
17/03/2021	17:09:11	ST04	FA	801	5 L	mS	Top 0.5 cm muddy sand > 0.5 cm sandy mud	2.5Y 4/2 and 2.5Y 3/2	-

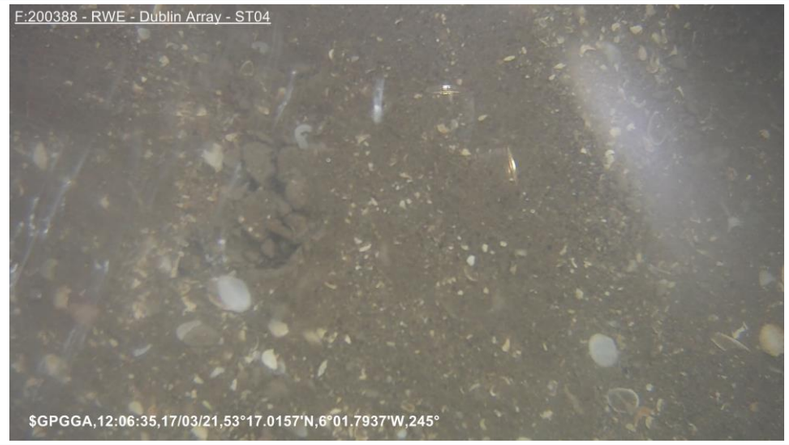
Date	Time [UTC]	Station	Sample Rep	Fix No.	Sample Depth/ Volume	Sediment Description (including stratigraphy)			Comments (fauna, smell, bioturbation, debris)
						Sediment Type	Sediment Description	Munsell Colour	
17/03/2021	18:09:35	ST24	FA	819	5 L	mS	Top 0.5 cm muddy sand > 0.5 cm sandy mud	2.5Y 4/2 and 2.5Y 3/2	-
17/03/2021	18:15:48	ST24	PC	820	11 cm	mS	Top 0.5 cm muddy sand > 0.5 cm sandy mud	2.5Y 4/2 and 2.5Y 3/2	-
18/03/2021	08:45:52	ST29	FA	919	5 L	mS	Muddy sand and shell	2.5Y 4/2	-
18/03/2021	10:02:13	ST15	FA	920	5 L	(g)mS	Muddy sand and gravel	2.5Y 4/2	-
18/03/2021	10:14:43	ST15	PC	921	7 cm	(g)mS	Muddy sand and gravel	2.5Y 4/2	-
18/03/2021	14:31:06	ST30	FA	1034	5 L	mS	Muddy sand and shell	2.5Y 4/2	-
18/03/2021	15:05:21	ST21	PC	1036	10 cm	S	Sand	10YR 4/4	-
18/03/2021	15:45:22	ST14	PC	1037	4.5 cm	mS	Muddy sand	2.5Y 4/2	-
18/03/2021	15:56:37	ST14	FA	1038	5 L	mS	Muddy sand	2.5Y 4/2	-
18/03/2021	16:48:13	ST07	FA	1039	5 L	S	Sand	10YR 3/2	Sand eel × 5 (photos taken and released)
18/03/2021	16:57:45	ST07	PC	1040	10 cm	S	Sand	10YR 3/2	-

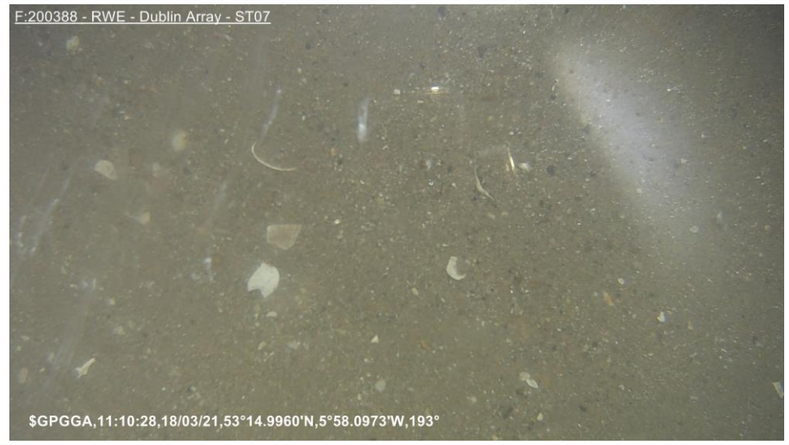
Notes

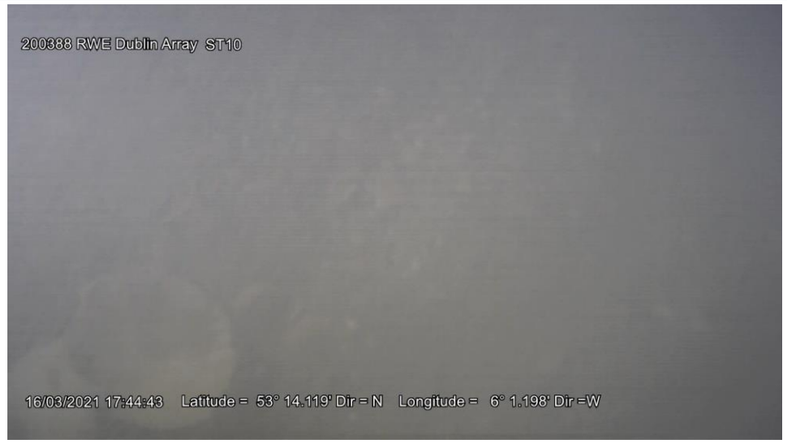
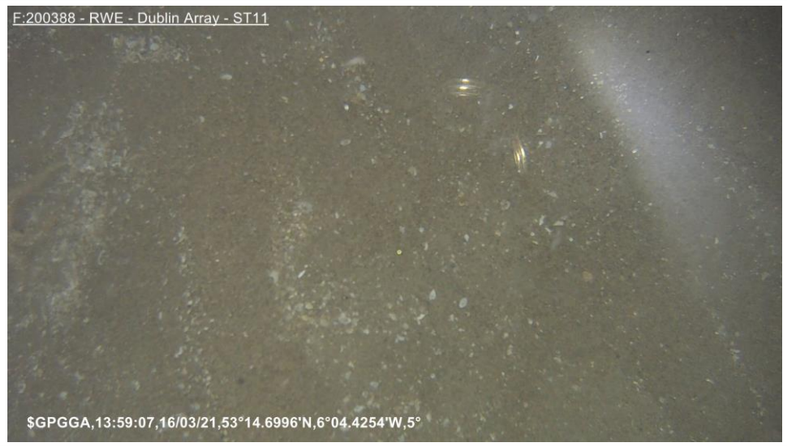
UTC = Coordinated Universal Time
NS = No sample
FA = Fauna sample A
PC = Physico-chemical sample

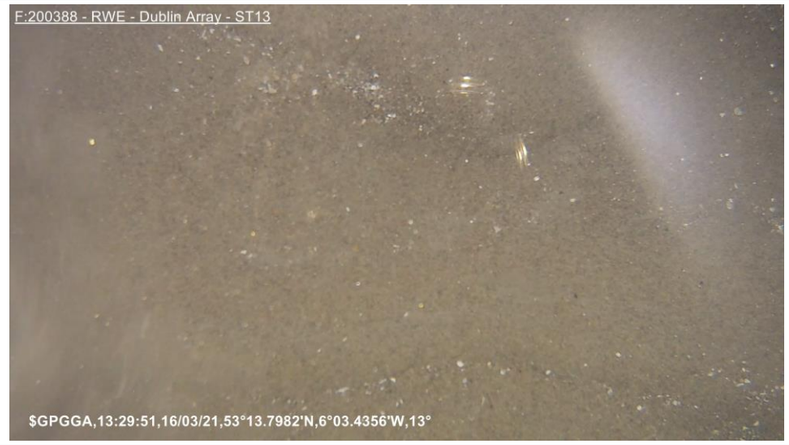
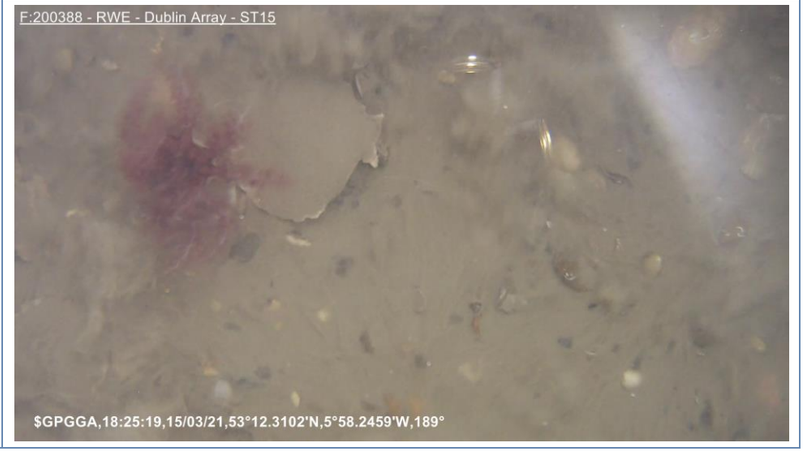
C.3 Video and Photographic Log

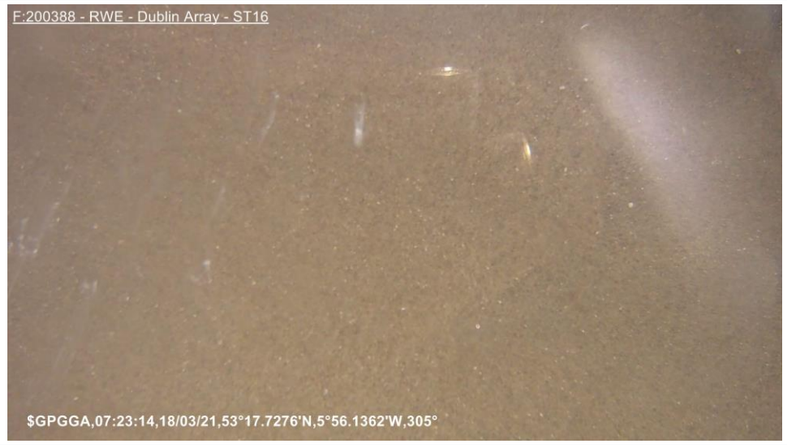
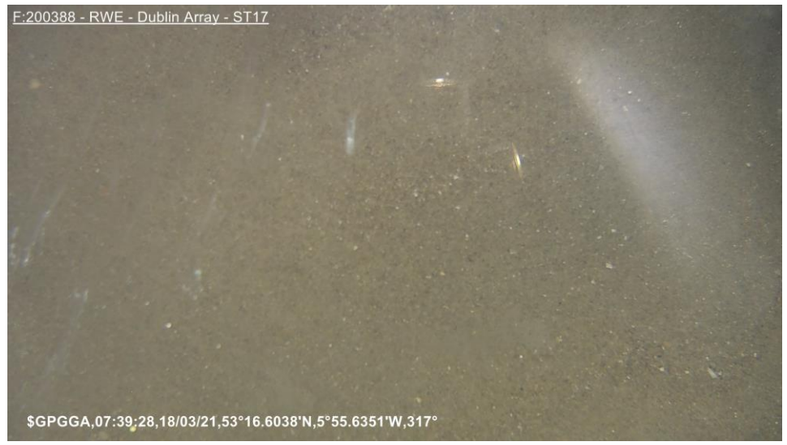
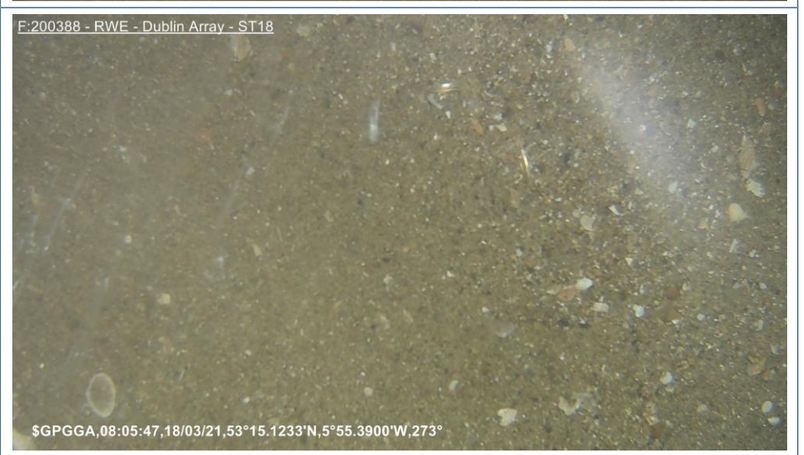
Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
17/03/2021	ST01A	15:14:05	689 109.9	5 912 643.4	66	1 to 20	Sand with shell fragments	Sand mason worm (*Lanice conchilega*)	
		15:18:15	689 086.1	5 912 704.8					
17/03/2021	ST02B	13:52:27	691 742.8	5 911 194.8	90	1 to 25	Sand with occasional shell fragments	No fauna observed	
		14:02:43	691 714.2	5 911 280.5					
17/03/2021	ST03	12:50:39	694 387.2	5 909 673.4	93	1 to 22	Sand with shell fragments and sparse gravel	Brittlestars (incl. *Ophiothrix fragilis* and *Ophiura albida*), anemone (Actiniaria), worm tube (?Chaetopteridae)	
		12:57:04	694 354.7	5 909 760.8					

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
17/03/2021	ST04	12:02:51	698 053.0	5 907 931.3	83	1 to 26	Slightly muddy, slightly gravelly sand with shell fragments. Patches of clay	Anemone (*Urticina* sp.), brittlestars (including *Ophiothrix fragilis, Ophiura ophiura* and *Ophiura albida*)	
		12:08:14	697 970.1	5 907 937.5					
15/03/2021	ST05	09:15:33	700 945.7	5 907 996.7	92	1 to 31	Slightly gravely sand (rippled) with shell fragments	Soft coral (*Alcyonium digitatum*), hermit crab (Paguridae), brittlestars (including *Ophiura albida*), sand mason worm (*Lanice conchilega*)	
		09:27:17	700 923.0	5 907 907.2					
15/03/2021	ST06	09:56:39	701 256.2	5 906 553.3	90	1 to 24	Slightly gravelly sand (rippled) with shell fragments	Sparse faunal turf (Hydrozoa/Bryozoa), brittlestars (including *Ophiura albida*), soft coral (*Alcyonium digitatum*), sandeel (Ammodytidae), hermit crabs (Paguridae), possible anemone (Anthozoa)	
		10:04:55	701 287.9	5 906 468.7					

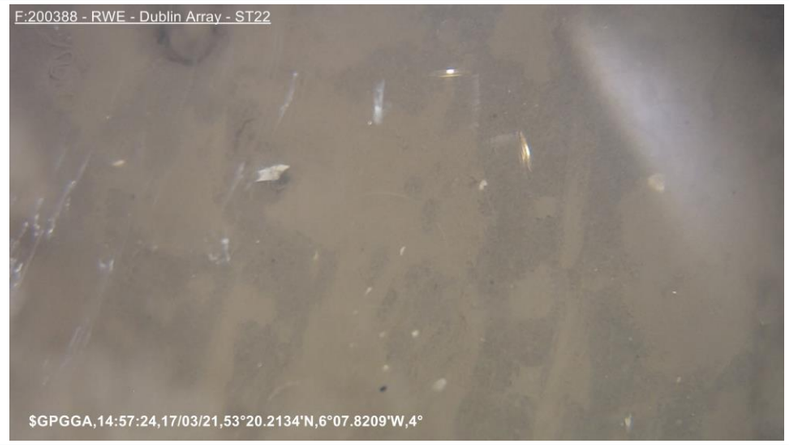
Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
18/03/2021	ST07	11:06:35	702 236.6	5 904 403.8	86	1 to 51	Slightly gravelly sand (rippled) with shell fragments	Sand mason worm (*Lanice conchilega*), hermit crabs (Paguridae), starfish (*Asterias rubens*), anemone (Anthozoa)	
		11:15:13	702 272.1	5 904 325.5					
15/03/2021	ST08A	11:23:39	699 814.1	5 904 368.7	96	1 to 32	Slightly gravelly sand (rippled) with shell fragments	Brittlestars (including *Ophiura albida*), sparse faunal turf (Hydrozoa/Bryozoa), hermit crabs (Paguridae), soft coral (*Alcyonium digitatum),* anemone (Anthozoa), crab (*Liocarcinus* sp.), sandeel (Ammodytidae)	
		11:29:28	699 766.9	5 904 285.2					
15/03/2021	ST09	12:21:20	701 839.3	5 902 247.1	84	1 to 27	Gravelly sand with shell fragments. Occasional pebbles	Hermit crabs (Paguridae), sandeel (Ammodytidae)	
		12:31:01	701 762.2	5 902 279.3					

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
16/03/2021	ST10A	17:43:29	698 898.4	5 902 571.2	60	1 to 13	Gravelly sand with shell fragments	No fauna observed	
		17:46:43	698 899.9	5 902 630.7					
16/03/2021	ST11	13:58:23	695 242.8	5 903 509.4	82	1 to 17	Sand (rippled) with shell fragments	Brittlestar (Ophiuroidea), hermit crab (Paguridae)	
		14:06:02	695 225.6	5 903 589.2					
16/03/2021	ST12A	14:27:21	694 010.8	5 901 825.6	84	1 to 38	Mixed sediment comprising pebbles, cobbles and boulders with small patches of gravelly sand with shell fragments. Mud deposition on mixed sediment evident	Crab (Decapoda), faunal turf (Hydrozoa/Bryozoa including *Nemertesia antennina* and Haleciidae), barnacles (Sessilia), red algae (Rhodophyta). Faunal tubes	
		14:37:29	693 987.5	5 901 906.4					

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
16/03/2021	ST13	13:22:31	696 407.2	5 901 789.5	115	1 to 26	Sand (rippled) with shell fragments	Hermit crab (Paguridae)	
		13:31:05	696 410.8	5 901 904.9					
18/03/2021	ST14	12:38:37	699 528.7	5 900 186.1	50	1 to 35	Mixed sediment comprising sandy gravel with shell fragments. Mud deposition on mixed sediment evident	Brittlestars (incl. *Ophiothrix fragilis* and *Ophiura albida*), scallop (Pectinidae), faunal turf (Hydrozoa/Bryozoa including *Hydrallmania falcata*), whelk (Buccinidae), hermit crabs (Paguridae), starfish (*Asterias rubens*)	
		12:44:31	699 518.5	5 900 137.4					
15/03/2021	ST15	18:20:35	702 235.5	5 899 396.3	82	1 to 23	Pebbly, gravelly sand with shell fragments. Mud deposition evident	Burrowing sea cucumber (Holothuroidea), brittlestars (Ophiuroidea), hermit crab (Paguridae)	
		18:27:50	702 305.2	5 899 353.5					

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
18/03/2021	ST16A	07:16:41	704 280.8	5 909 452.9	112	1 to 38	Sand (possible mobile sand bank)	Sandeels (Ammodytidae)	
		07:24:28	704 203.5	5 909 534.1					
18/03/2021	ST17A	07:36:57	704 901.3	5 907 442.1	69	1 to 23	Slightly gravelly sand (rippled) with shell fragments	No fauna observed	
		07:41:55	704 891.1	5 907 510.6					
18/03/2021	ST18A	07:59:49	705 305.6	5 904 673.2	83	1 to 37	Slightly gravelly sand (rippled) with shell fragments	Sandeels (Ammodytidae)	
		08:07:32	705 259.8	5 904 742.8					

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
15/03/2021	ST19A	15:45:55	705 686.4	5 901 356.6	133	1 to 30	Slightly gravelly sand (rippled) with shell fragments	Sandeels (Ammodytidae)	
		15:55:52	705 698.1	5 901 489.5					
15/03/2021	ST20A	16:15:51	706 755.0	5 898 672.7	88	1 to 28	Slightly gravelly sand (rippled) with shell fragments	Sandeels (Ammodytidae)	
		16:24:22	706 751.2	5 898 760.4					
15/03/2021	ST21	16:42:47	706 396.3	5 896 235.2	70	1 to 14	Sand (possible mobile sand bank)	No fauna observed	
		16:47:44	706 434.9	5 896 293.6					

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
17/03/2021	ST22	14:54:00	691 086.1	5 913 547.0	63	1 to 19	Sand (rippled) with shell fragments. Mud deposition evident within recesses	Faunal tube	
		14:59:24	691 071.6	5 913 608.1					
17/03/2021	ST23	14:26:15	693 424.7	5 911 991.8	86	1 to 26	Sand (rippled) with shell fragments. Mud deposition evident within recesses	No fauna observed	
		14:32:57	693 427.6	5 912 077.6					
17/03/2021	ST24	17:44:59	696 154.9	5 910 158.8	96	1 to 15	Sand (rippled) with shell fragments. Mud deposition evident within recesses	Brittlestars (including *Ophiothrix fragilis and Ophiura albida*), sparse faunal turf (Hydrozoa/Bryozoa), starfish (*Asterias rubens*), possible sea pen (*Virgularia mirabilis*), anemone (Actiniaria)	
		17:50:08	696 155.5	5 910 254.4					

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
15/03/2021	ST26	17:24:51	698 367.6	5 897 713.0	68	1 to 10	Gravelly sand (rippled) with shell fragments. Mud deposition evident within recesses	Hermit crab (Paguridae), brittlestars (including *Ophiura albida*)	
		17:28:56	698 377.1	5 897 780.3					
25/02/2021	ST27	14:31:36	700 923.6	5 896 794.1	75	1 to 8	Sand	No fauna observed	
		14:36:18	700 863.8	5 896 838.8					

Geodetic Parameters: WGS 84 Zone 29N [EPSG 32629]									
Date	Station	Time [UTC]	Video Coordinates		Length [m]	Still Nos.	Sediment Description	Fauna/Bioturbation/Debris	Representative Image
			Easting	Northing					
17/03/2021	ST28	08:23:43	706 922.0	5 907 831.3	138	1 to 49	Slightly gravelly sand (rippled) with shell fragments. Occasional scattered pebbles and cobbles	Brittlestars (incl. *Ophiura albida*), faunal turf (Hydrozoa/Bryozoa including *Hydrallmania falcata, Nemertesia* sp. and *Sertularia* sp.), sand mason worm (*Lanice conchilega*), crab (Inachidae), starfish (*Asterias rubens*), whelks (Buccinidae), crab (*Liocarcinus* sp.), hermit crabs (Paguridae)	
		08:36:27	706 927.9	5 907 693.0					
15/03/2021	ST29	14:49:11	708 853.7	5 903 144.0	89	1 to 23	Mixed sediment comprising slightly gravelly shelly sand. Mud deposition evident	Barnacles (Sessilia, mainly dead), soft coral (*Alcyonium digitatum*), sparse faunal turf (Hydrozoa/Bryozoa), queen scallops (*Aequipecten opercularis*), starfish (*Asterias rubens*), solitary ascidians (Ascidiacea), faunal tubes	
		14:55:43	708 850.6	5 903 232.7					
18/03/2021	ST30	13:46:55	709 174.3	5 897 637.5	76	1 to 29	Mixed sediment comprising slightly gravelly shelly sand. Mud deposition evident	Soft coral (*Alcyonium digitatum*), brittlestars (including *Ophiura albida*), hermit crab (Paguridae), sparse faunal turf (Hydrozoa/Bryozoa), urchin (Echinoidea), whelk (Buccinidae), starfish (*Asterias rubens*), snail (?*Aporrhais* sp.) solitary ascidians (Ascidiacea), faunal tubes (possible ?Chaetopteridae)	
		13:53:58	709 182.8	5 897 713.3					

Notes
UTC = Coordinated Universal Time ? = Identification is uncertain

C.4 Stony Reef Assessment

Station ST12 Stony Reef Assessment.

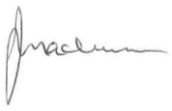
Geodetic Parameters: WGS84 Zone 29N [m] [EPSG 32629]						
Video Coordinates		Length [m]	Stony Reef Characteristic			
Easting [m]	Northing [m]		Elevation	% Cover Cobbles and Boulders	Epifauna Coverage	Overall Assessment
693 569.3	5 901 807.6	12	Flat seabed	< 10	< 80	Not a reef
693 557.6	5 901 809.2					
693 557.6	5 901 809.2	64	64 mm – 5 m	40 – 95	> 80	Medium
693 562.6	5 901 872.5					
693 562.6	5 901 872.5	49	Flat seabed	< 10	< 80	Not a reef
693 513.7	5 901 879.4					
693 513.7	5 901 879.4	21	64 mm – 5 m	40 - 95	> 80	Medium
693 533.4	5 901 887.8					
Notes Sum of section lengths may not equal to reported overall length of transect as strong current prevented transects being run in a straight line						
Key:	Not a reef	Low	Medium	High		

Appendix D

Sediment Particle Size and Grab Sample Photographs

Certificate of Analysis

Certificate Number	EP/21/4962	**Revision Number**	0
Job Number	200388		
Job Reference	Dublin Array OWF		
Prepared For		**Prepared By**	
Innogy		**Adam Burtonshaw** **Fugro GB Marine Limited** Trafalgar Wharf (Unit 16) Hamilton Road Portchester Portsmouth PO6 4PX United Kingdom	
		Phone: +44 (0) 2392 205500 **Email:** sediment@fugro.com **Web:** www.fugro.com	

Sampling Undertaken By	FGBML	**Sampling Date**	16/02/2021 – 18/03/2021
Date of Receipt	28/04/2021	**Date of Analysis**	06/05/2021 – 11/05/2021
Sample Matrix	Marine Sediments		
Method Reference	Particle Size Distribution by Dry Sieving – EUAF-FGBM-SED-TM-001 based on NMBAQC's Best Practice Guidance - Particle Size Analysis (PSA) for Supporting Biological Analysis 2016 and EUAF-FGBM-SED-TM-002 based on BS 1377: Parts 1: 2016 and 2: 1990. Particle Size Distribution by Laser Diffraction using a Malvern Mastersizer 2000 and Hydro 2000G Dispersion Unit – EUAF-FGBM-SED-TM-006 based on NMBAQC's Best Practice Guidance - Particle Size Analysis (PSA) for Supporting Biological Analysis 2016 and BS ISO 13320: 2020.		
Test Results	Refer to pages 2-4 of 4 Refer to Excel results file for laser diffraction metadata.		
Laboratory Comments	**Deviating Codes:** None		
Authorised Signature			
Name	Fiona Maclennan		
Position	Marine Environmental Scientist		
Issue Date	13/05/2021		

- Further information on methods of analysis may be obtained from the above address
- Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
- Test results reported relate only to those items tested
- Test results reported specifically refer to sample(s) tested as received unless otherwise stated
- [Sub]Indicates subcontracted test
- [DS]Indicates relevant Deviating Code applies to test results

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0919

TEST RESULTS

Test Results: Particle Size Distribution by Dry Sieving (63000 - 1000 µm) and Laser Diffraction (< 1000 - < 0.98 µm) @ 0.5 Phi Intervals
Job Number: 200388
Job Reference: Dublin Array OWF

SAMPLE ID:	ST01	ST02	ST03	ST04	ST05	ST06	ST07	ST08	ST09	ST10	ST11	ST13	ST14
LAB ID:	WL038314	WL038315	WL038316	WL038317	WL038318	WL038319	WL038320	WL038321	WL038322	WL038323	WL038324	WL038325	WL038326
Aperture [µm]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]
63000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22400	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16000	0.00	0.00	0.00	0.00	2.65	0.00	0.00	0.00	1.33	0.81	0.00	0.00	0.00
11200	0.00	0.00	0.00	0.00	0.93	0.80	0.00	0.44	0.00	2.37	0.00	0.00	1.96
8000	0.00	0.00	0.52	0.00	0.48	0.00	0.00	1.18	0.39	0.94	0.00	0.00	2.19
5600	0.90	0.00	0.45	0.16	0.19	0.10	0.04	0.80	0.72	1.10	0.00	0.09	3.81
4000	0.10	0.00	1.00	0.08	1.24	0.31	0.15	0.97	0.70	1.47	0.00	0.06	3.13
2800	0.58	0.03	0.99	0.20	1.22	0.62	0.10	1.38	1.34	1.31	0.00	0.00	4.02
2000	0.72	0.09	1.07	0.25	1.70	0.88	0.60	1.69	2.27	1.60	0.03	0.06	3.55
1400	0.41	0.11	1.21	0.50	2.30	1.38	1.12	2.15	4.54	1.89	0.02	0.11	3.53
1000	0.23	0.18	1.37	0.59	3.13	1.62	1.31	1.90	8.75	2.47	0.07	0.12	2.94
707	0.00	0.00	1.56	1.39	9.13	5.49	0.00	0.94	14.16	6.52	0.05	0.01	5.73
500.00	0.00	0.00	2.27	4.05	15.92	12.77	0.99	2.96	16.07	9.62	5.79	4.71	9.21
353.55	0.00	0.12	6.12	10.30	20.38	20.31	11.76	11.64	16.36	13.30	31.69	33.56	12.91
250.00	2.10	5.77	13.26	20.11	19.67	23.62	32.64	24.73	15.06	17.10	43.73	46.94	15.51
176.78	17.39	24.45	18.77	25.52	13.50	19.11	35.25	27.29	10.59	17.41	17.48	13.95	14.51
125.00	37.46	37.38	17.64	18.96	5.55	9.32	14.73	15.02	4.39	11.91	1.15	0.42	9.29
88.39	30.93	22.88	11.11	6.99	0.67	1.68	1.31	3.00	0.44	4.43	0.00	0.00	3.26
62.50	8.87	4.81	4.67	0.58	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.15
44.19	0.30	0.06	1.57	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00
31.25	0.00	0.00	1.14	0.42	0.07	0.16	0.00	0.36	0.35	0.29	0.00	0.00	0.25
22.10	0.00	0.31	1.42	1.13	0.06	0.21	0.00	0.67	0.30	0.63	0.00	0.00	0.49
15.63	0.00	0.89	1.50	1.04	0.04	0.11	0.00	0.35	0.20	0.50	0.00	0.00	0.41
11.05	0.00	0.61	1.51	0.91	0.16	0.13	0.00	0.20	0.25	0.43	0.00	0.00	0.38
7.81	0.00	0.31	1.66	1.07	0.26	0.27	0.00	0.35	0.36	0.55	0.00	0.00	0.48
5.52	0.00	0.36	1.89	1.31	0.30	0.36	0.00	0.52	0.42	0.70	0.00	0.00	0.58
3.91	0.00	0.52	1.97	1.35	0.26	0.35	0.00	0.54	0.39	0.72	0.00	0.00	0.58
2.76	0.00	0.53	1.81	1.16	0.19	0.27	0.00	0.43	0.31	0.61	0.00	0.00	0.49
1.95	0.00	0.38	1.39	0.83	0.02	0.12	0.00	0.29	0.18	0.44	0.00	0.00	0.34
1.38	0.00	0.22	0.96	0.52	0.00	0.00	0.00	0.18	0.07	0.29	0.00	0.00	0.21
0.98	0.00	0.00	0.67	0.34	0.00	0.00	0.00	0.00	0.01	0.19	0.00	0.00	0.10
<0.98	0.00	0.00	0.53	0.25	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00
TOTAL:	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TEST RESULTS

Test Results: Particle Size Distribution by Dry Sieving (63000 - 1000 µm) and Laser Diffraction (< 1000 - < 0.98 µm) @ 0.5 Phi Intervals
Job Number: 200388
Job Reference: Dublin Array OWF

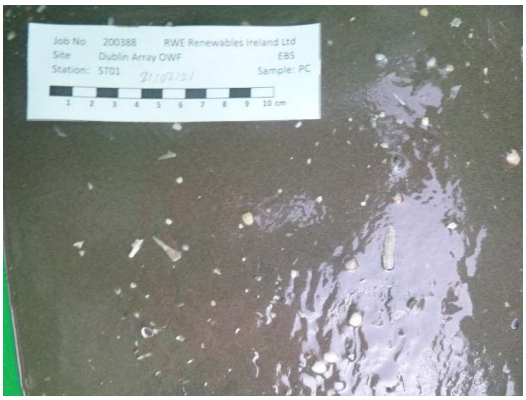
SAMPLE ID:	ST15	ST16	ST17	ST18	ST19	ST20	ST21	ST22	ST23	ST24	ST26	ST27	ST28
LAB ID:	WL038327	WL038328	WL038329	WL038330	WL038331	WL038332	WL038333	WL038334	WL038335	WL038336	WL038337	WL038338	WL038339
Aperture [µm]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]	Fractional [%]
63000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22400	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11200	0.30	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	1.04	5.12	1.36
8000	4.08	0.00	0.00	0.25	1.47	0.00	0.00	0.00	0.00	0.00	0.13	0.95	0.28
5600	2.42	0.00	0.00	0.00	2.28	0.00	0.00	0.08	0.00	0.00	2.03	2.06	1.70
4000	5.77	0.00	0.04	0.08	1.00	0.00	0.14	0.26	0.00	0.01	0.64	2.23	1.32
2800	3.77	0.00	0.00	0.16	1.03	0.05	0.35	0.05	0.03	0.02	0.61	1.79	0.90
2000	5.70	0.00	0.06	0.34	1.51	0.04	0.86	0.11	0.04	0.04	0.67	1.64	1.51
1400	3.84	0.00	0.22	0.49	1.36	0.15	2.18	0.17	0.03	0.12	0.95	1.97	1.35
1000	3.29	0.00	0.26	0.74	1.31	0.28	4.57	0.25	0.04	0.12	0.87	1.99	1.42
707	1.02	0.00	2.68	2.84	1.25	0.09	25.37	0.00	0.00	0.00	0.65	1.93	1.60
500.00	3.66	4.28	17.12	19.04	7.04	3.02	32.51	0.00	0.00	0.00	3.32	3.45	7.13
353.55	10.98	28.39	34.19	37.38	18.62	15.75	23.72	0.03	0.36	0.66	10.91	9.21	17.52
250.00	19.08	44.51	31.43	29.71	27.71	32.80	9.18	3.88	6.58	6.38	21.63	18.74	25.72
176.78	18.87	20.87	12.76	8.62	23.61	32.40	1.13	22.23	19.60	17.32	25.81	22.93	22.72
125.00	10.10	1.96	1.23	0.35	10.23	14.00	0.00	38.78	27.81	25.11	17.79	15.69	10.93
88.39	2.12	0.00	0.00	0.00	1.14	1.42	0.00	27.37	21.54	21.57	5.93	5.03	1.73
62.50	0.01	0.00	0.00	0.00	0.00	0.00	0.00	6.69	8.66	10.72	0.33	0.24	0.00
44.19	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.10	1.19	2.57	0.00	0.00	0.00
31.25	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.32	0.27	0.25	0.35
22.10	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.99	0.72	0.67	0.46
15.63	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69	1.75	0.58	0.50	0.22
11.05	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.64	1.76	0.46	0.34	0.17
7.81	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	1.64	0.61	0.44	0.32
5.52	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69	1.78	0.84	0.62	0.43
3.91	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81	1.95	0.92	0.69	0.40
2.76	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68	1.84	0.83	0.60	0.30
1.95	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26	1.39	0.62	0.43	0.16
1.38	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.90	0.41	0.28	0.00
0.98	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.59	0.27	0.17	0.00
<0.98	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.45	0.17	0.02	0.00
TOTAL:	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TEST RESULTS

Test Results: Particle Size Distribution by Dry Sieving (63000 - 1000 µm) and Laser Diffraction (< 1000 - < 0.98 µm) @ 0.5 Phi Intervals
Job Number: 200388
Job Reference: Dublin Array OWF

SAMPLE ID:	ST29	ST30
LAB ID:	WL038340	WL038341
Aperture [µm]	Fractional [%]	Fractional [%]
63000	0.00	0.00
45000	0.00	0.00
31500	0.00	0.00
22400	0.00	0.00
16000	0.00	2.00
11200	4.38	0.00
8000	0.56	1.62
5600	2.28	2.79
4000	1.22	1.59
2800	1.74	3.15
2000	1.93	3.81
1400	2.37	3.21
1000	2.05	2.48
707	3.24	1.54
500.00	2.94	2.67
353.55	4.82	8.85
250.00	10.98	19.11
176.78	17.84	22.95
125.00	18.75	15.03
88.39	12.49	4.48
62.50	4.66	0.13
44.19	0.46	0.00
31.25	0.04	0.23
22.10	0.63	0.61
15.63	0.89	0.46
11.05	0.77	0.34
7.81	0.73	0.45
5.52	0.85	0.61
3.91	0.92	0.64
2.76	0.85	0.53
1.95	0.64	0.37
1.38	0.43	0.23
0.98	0.29	0.12
<0.98	0.23	0.00
TOTAL:	100.00	100.00

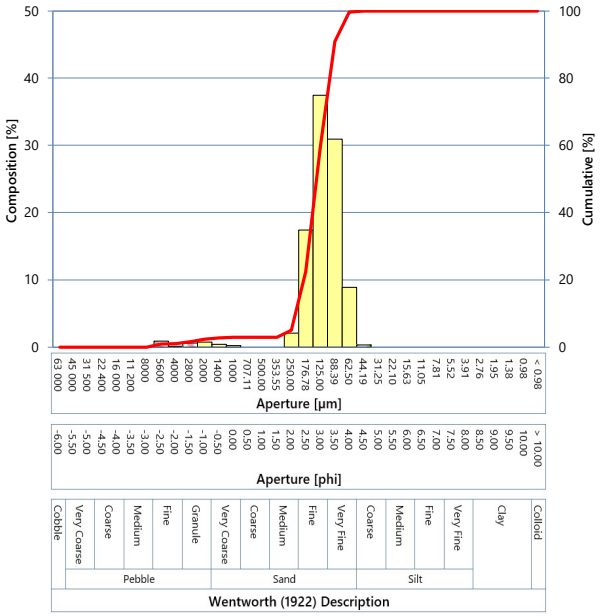
STATION: ST01



FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.90	0.90
4000	-2.00	0.10	1.00
2800	-1.50	0.58	1.59
2000	-1.00	0.72	2.31
1400	-0.50	0.41	2.72
1000	0.00	0.23	2.95
707.11	0.50	0.00	2.95
500.00	1.00	0.00	2.95
353.55	1.50	0.00	2.95
250.00	2.00	2.10	5.05
176.78	2.50	17.39	22.44
125.00	3.00	37.46	59.90
88.39	3.50	30.93	90.83
62.50	4.00	8.87	99.70
44.19	4.50	0.30	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	151	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	137	Fine sand
Median [phi]*	2.87	
Mean [µm]*†	138	Fine sand
Mean [phi]*†	2.86	
Sorting [µm]†	1.45	Moderately well sorted
Sorting [phi]†	0.53	
Skewness [µm]†	0.02	Symmetrical
Skewness [phi]†	-0.02	
Gravel [%]‡	2.31	Sand
Sand [%]‡	97.39	
Fines [%]‡	0.30	

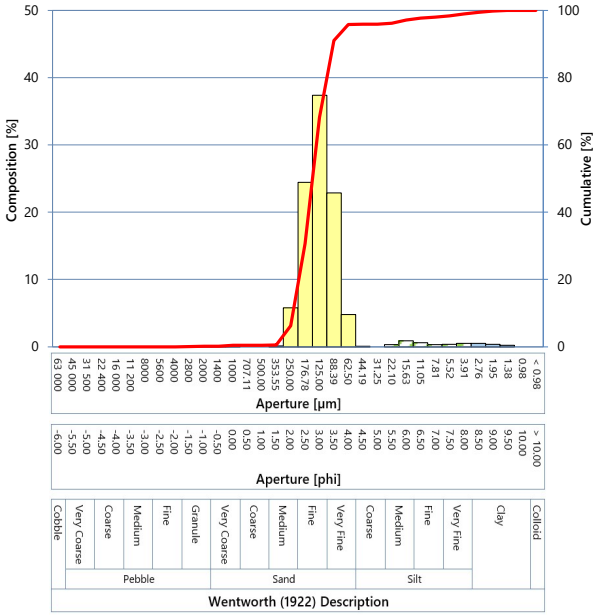
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST02

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.00	0.00
4000	-2.00	0.00	0.00
2800	-1.50	0.03	0.03
2000	-1.00	0.09	0.12
1400	-0.50	0.11	0.23
1000	0.00	0.18	0.40
707.11	0.50	0.00	0.40
500.00	1.00	0.00	0.40
353.55	1.50	0.12	0.52
250.00	2.00	5.77	6.29
176.78	2.50	24.45	30.74
125.00	3.00	37.38	68.12
88.39	3.50	22.88	91.00
62.50	4.00	4.81	95.81
44.19	4.50	0.06	95.86
31.25	5.00	0.00	95.86
22.10	5.50	0.31	96.17
15.63	6.00	0.89	97.06
11.05	6.50	0.61	97.67
7.81	7.00	0.31	97.98
5.52	7.50	0.36	98.35
3.91	8.00	0.52	98.86
2.76	8.50	0.53	99.39
1.95	9.00	0.38	99.78
1.38	9.50	0.22	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	151	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	148	Fine sand
Median [phi]*	2.76	
Mean [µm]*†	147	Fine sand
Mean [phi]*†	2.77	
Sorting [µm]†	1.51	Moderately well sorted
Sorting [phi]†	0.59	
Skewness [µm]†	-0.08	Symmetrical
Skewness [phi]†	0.08	
Gravel [%]‡	0.12	Sand
Sand [%]‡	95.69	
Fines [%]‡	4.19	

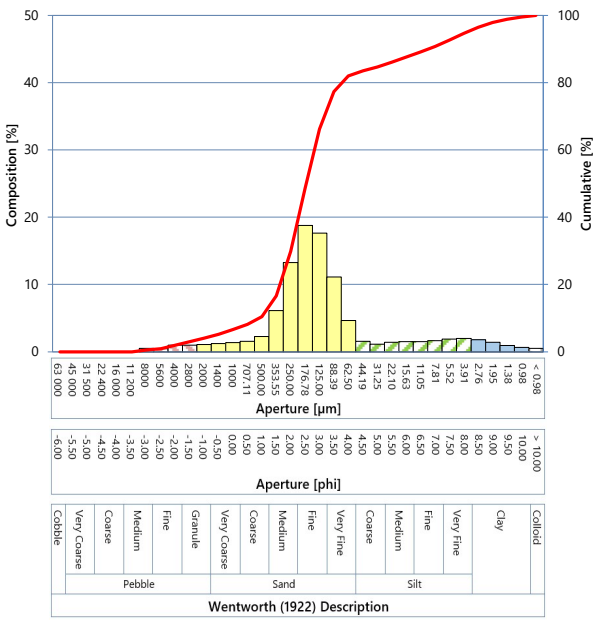
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST03

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.52	0.52
5600	-2.50	0.45	0.96
4000	-2.00	1.00	1.96
2800	-1.50	0.99	2.95
2000	-1.00	1.07	4.02
1400	-0.50	1.21	5.23
1000	0.00	1.37	6.60
707.11	0.50	1.56	8.16
500.00	1.00	2.27	10.43
353.55	1.50	6.12	16.55
250.00	2.00	13.26	29.80
176.78	2.50	18.77	48.57
125.00	3.00	17.64	66.21
88.39	3.50	11.11	77.32
62.50	4.00	4.67	81.99
44.19	4.50	1.57	83.56
31.25	5.00	1.14	84.71
22.10	5.50	1.42	86.12
15.63	6.00	1.50	87.62
11.05	6.50	1.51	89.13
7.81	7.00	1.66	90.79
5.52	7.50	1.89	92.67
3.91	8.00	1.97	94.64
2.76	8.50	1.81	96.45
1.95	9.00	1.39	97.84
1.38	9.50	0.96	98.80
0.98	10.00	0.67	99.47
< 0.98	> 10.00	0.53	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	213	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	172	Fine sand
Median [phi]*	2.54	
Mean [µm]*†	134	Fine sand
Mean [phi]*†	2.90	
Sorting [µm]†	4.36	Very poorly sorted
Sorting [phi]†	2.12	
Skewness [µm]†	-0.30	Very fine skewed
Skewness [phi]†	0.30	
Gravel [%]‡	4.02	Muddy sand
Sand [%]‡	77.97	
Fines [%]‡	18.01	

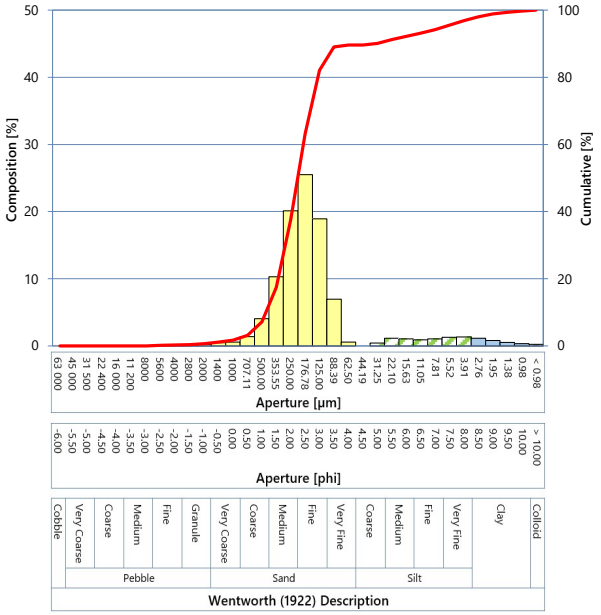
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST04

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.16	0.16
4000	-2.00	0.08	0.24
2800	-1.50	0.20	0.44
2000	-1.00	0.25	0.69
1400	-0.50	0.50	1.19
1000	0.00	0.59	1.78
707.11	0.50	1.39	3.18
500.00	1.00	4.05	7.22
353.55	1.50	10.30	17.52
250.00	2.00	20.11	37.63
176.78	2.50	25.52	63.15
125.00	3.00	18.96	82.11
88.39	3.50	6.99	89.11
62.50	4.00	0.58	89.68
44.19	4.50	0.00	89.68
31.25	5.00	0.42	90.11
22.10	5.50	1.13	91.24
15.63	6.00	1.04	92.28
11.05	6.50	0.91	93.19
7.81	7.00	1.07	94.26
5.52	7.50	1.31	95.56
3.91	8.00	1.35	96.91
2.76	8.50	1.16	98.07
1.95	9.00	0.83	98.89
1.38	9.50	0.52	99.42
0.98	10.00	0.34	99.75
< 0.98	> 10.00	0.25	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]†	213	Fine sand
Mode 2 [µm]†	-	-
Mode 3 [µm]†	-	-
Median [µm]†	211	Fine sand
Median [phi]†	2.24	
Mean [µm]†‡	208	Fine sand
Mean [phi]†‡	2.27	
Sorting [µm]‡	2.68	Poorly sorted
Sorting [phi]‡	1.42	
Skewness [µm]‡	-0.29	Fine skewed
Skewness [phi]‡	0.29	
Gravel [%]#	0.69	Muddy sand
Sand [%]#	88.99	
Fines [%]#	10.32	

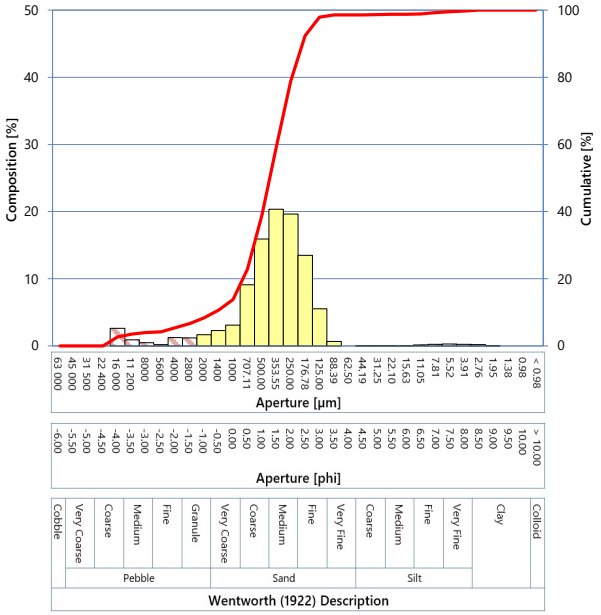
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST05

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	2.65	2.65
11 200	-3.50	0.93	3.58
8000	-3.00	0.48	4.06
5600	-2.50	0.19	4.24
4000	-2.00	1.24	5.49
2800	-1.50	1.22	6.71
2000	-1.00	1.70	8.41
1400	-0.50	2.30	10.70
1000	0.00	3.13	13.83
707.11	0.50	9.13	22.96
500.00	1.00	15.92	38.88
353.55	1.50	20.38	59.26
250.00	2.00	19.67	78.93
176.78	2.50	13.50	92.43
125.00	3.00	5.55	97.97
88.39	3.50	0.67	98.64
62.50	4.00	0.00	98.64
44.19	4.50	0.00	98.64
31.25	5.00	0.07	98.71
22.10	5.50	0.06	98.77
15.63	6.00	0.04	98.82
11.05	6.50	0.16	98.98
7.81	7.00	0.26	99.24
5.52	7.50	0.30	99.54
3.91	8.00	0.26	99.79
2.76	8.50	0.19	99.98
1.95	9.00	0.02	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	427	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	414	Medium sand
Median [phi]*	1.27	
Mean [µm]*†	437	Medium sand
Mean [phi]*†	1.19	
Sorting [µm]†	2.40	Poorly sorted
Sorting [phi]†	1.26	
Skewness [µm]†	0.26	Coarse skewed
Skewness [phi]†	-0.26	
Gravel [%]‡	8.41	Gravelly sand
Sand [%]‡	90.23	
Fines [%]‡	1.36	

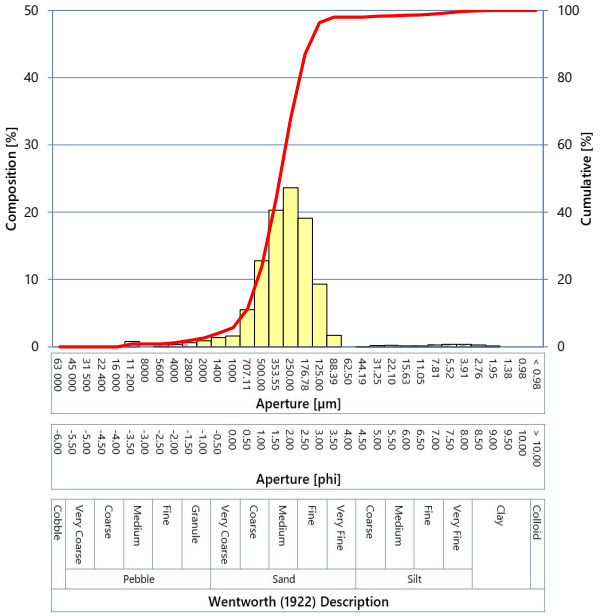
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST06

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.80	0.80
8000	-3.00	0.00	0.80
5600	-2.50	0.10	0.90
4000	-2.00	0.31	1.21
2800	-1.50	0.62	1.83
2000	-1.00	0.88	2.71
1400	-0.50	1.38	4.09
1000	0.00	1.62	5.71
707.11	0.50	5.49	11.20
500.00	1.00	12.77	23.97
353.55	1.50	20.31	44.27
250.00	2.00	23.62	67.89
176.78	2.50	19.11	87.00
125.00	3.00	9.32	96.32
88.39	3.50	1.68	98.01
62.50	4.00	0.00	98.01
44.19	4.50	0.00	98.01
31.25	5.00	0.16	98.17
22.10	5.50	0.21	98.38
15.63	6.00	0.11	98.49
11.05	6.50	0.13	98.62
7.81	7.00	0.27	98.89
5.52	7.50	0.36	99.25
3.91	8.00	0.35	99.60
2.76	8.50	0.27	99.88
1.95	9.00	0.12	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	325	Medium sand
Median [phi]*	1.62	
Mean [µm]*†	335	Medium sand
Mean [phi]*†	1.58	
Sorting [µm]†	1.88	Moderately sorted
Sorting [phi]†	0.91	
Skewness [µm]†	0.12	Coarse skewed
Skewness [phi]†	-0.12	
Gravel [%]‡	2.71	Sand
Sand [%]‡	95.29	
Fines [%]‡	1.99	

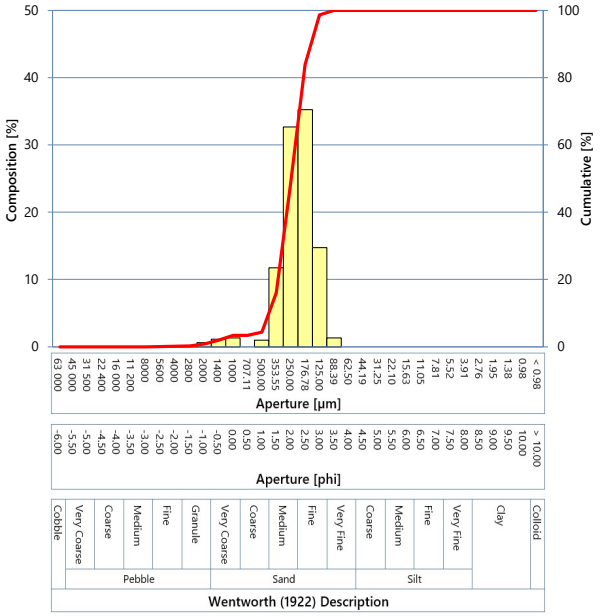
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST07

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.04	0.04
4000	-2.00	0.15	0.19
2800	-1.50	0.10	0.29
2000	-1.00	0.60	0.89
1400	-0.50	1.12	2.01
1000	0.00	1.31	3.32
707.11	0.50	0.00	3.32
500.00	1.00	0.99	4.31
353.55	1.50	11.76	16.07
250.00	2.00	32.64	48.71
176.78	2.50	35.25	83.96
125.00	3.00	14.73	98.69
88.39	3.50	1.31	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	213	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	247	Fine sand
Median [phi]*	2.02	
Mean [µm]*†	249	Fine sand
Mean [phi]*†	2.01	
Sorting [µm]†	1.44	Moderately well sorted
Sorting [phi]†	0.53	
Skewness [µm]†	0.05	Symmetrical
Skewness [phi]†	-0.05	
Gravel [%]‡	0.89	Sand
Sand [%]‡	99.11	
Fines [%]‡	0.00	

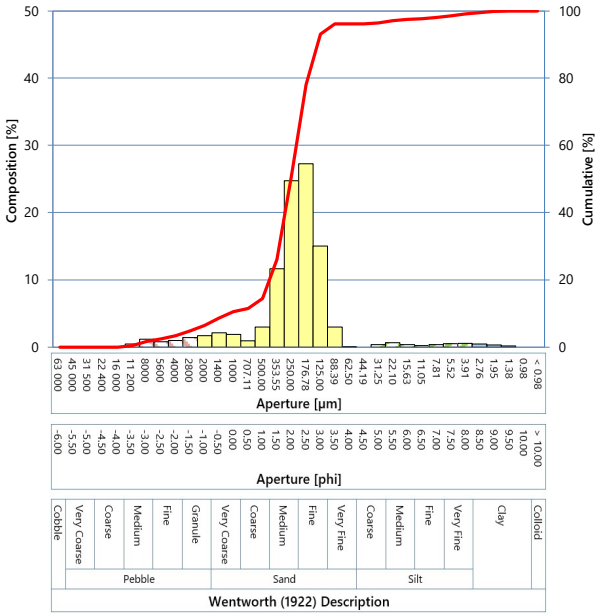
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST08

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.44	0.44
8000	-3.00	1.18	1.62
5600	-2.50	0.80	2.42
4000	-2.00	0.97	3.39
2800	-1.50	1.38	4.78
2000	-1.00	1.69	6.47
1400	-0.50	2.15	8.62
1000	0.00	1.90	10.52
707.11	0.50	0.94	11.46
500.00	1.00	2.96	14.41
353.55	1.50	11.64	26.06
250.00	2.00	24.73	50.79
176.78	2.50	27.29	78.07
125.00	3.00	15.02	93.10
88.39	3.50	3.00	96.09
62.50	4.00	0.00	96.10
44.19	4.50	0.00	96.10
31.25	5.00	0.36	96.46
22.10	5.50	0.67	97.13
15.63	6.00	0.35	97.48
11.05	6.50	0.20	97.69
7.81	7.00	0.35	98.04
5.52	7.50	0.52	98.56
3.91	8.00	0.54	99.10
2.76	8.50	0.43	99.53
1.95	9.00	0.29	99.82
1.38	9.50	0.18	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	213	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	253	Medium sand
Median [phi]*	1.98	
Mean [µm]*†	265	Medium sand
Mean [phi]*†	1.92	
Sorting [µm]†	2.18	Poorly sorted
Sorting [phi]†	1.13	
Skewness [µm]†	0.28	Coarse skewed
Skewness [phi]†	-0.28	
Gravel [%]‡	6.47	Gravelly sand
Sand [%]‡	89.63	
Fines [%]‡	3.90	

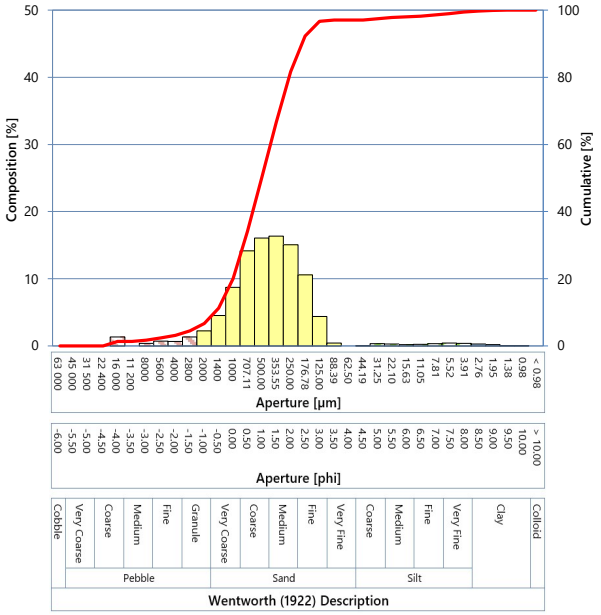
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST09

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	1.33	1.33
11 200	-3.50	0.00	1.33
8000	-3.00	0.39	1.72
5600	-2.50	0.72	2.43
4000	-2.00	0.70	3.13
2800	-1.50	1.34	4.47
2000	-1.00	2.27	6.74
1400	-0.50	4.54	11.27
1000	0.00	8.75	20.02
707.11	0.50	14.16	34.18
500.00	1.00	16.07	50.26
353.55	1.50	16.36	66.62
250.00	2.00	15.06	81.69
176.78	2.50	10.59	92.28
125.00	3.00	4.39	96.67
88.39	3.50	0.44	97.12
62.50	4.00	0.00	97.12
44.19	4.50	0.05	97.17
31.25	5.00	0.35	97.51
22.10	5.50	0.30	97.81
15.63	6.00	0.20	98.02
11.05	6.50	0.25	98.26
7.81	7.00	0.36	98.62
5.52	7.50	0.42	99.04
3.91	8.00	0.39	99.43
2.76	8.50	0.31	99.74
1.95	9.00	0.18	99.93
1.38	9.50	0.07	99.99
0.98	10.00	0.01	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	427	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	503	Coarse sand
Median [phi]*	0.99	
Mean [µm]*†	514	Coarse sand
Mean [phi]*†	0.96	
Sorting [µm]†	2.32	Poorly sorted
Sorting [phi]†	1.22	
Skewness [µm]†	0.09	Symmetrical
Skewness [phi]†	-0.09	
Gravel [%]‡	6.74	Gravelly sand
Sand [%]‡	90.38	
Fines [%]‡	2.88	

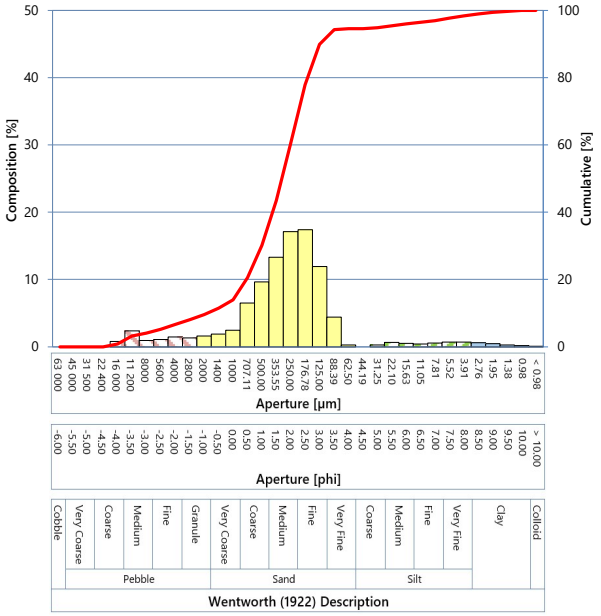
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST10

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.81	0.81
11 200	-3.50	2.37	3.18
8000	-3.00	0.94	4.12
5600	-2.50	1.10	5.22
4000	-2.00	1.47	6.69
2800	-1.50	1.31	8.00
2000	-1.00	1.60	9.60
1400	-0.50	1.89	11.48
1000	0.00	2.47	13.96
707.11	0.50	6.52	20.47
500.00	1.00	9.62	30.10
353.55	1.50	13.30	43.40
250.00	2.00	17.10	60.51
176.78	2.50	17.41	77.91
125.00	3.00	11.91	89.83
88.39	3.50	4.43	94.25
62.50	4.00	0.28	94.54
44.19	4.50	0.00	94.54
31.25	5.00	0.29	94.83
22.10	5.50	0.63	95.46
15.63	6.00	0.50	95.96
11.05	6.50	0.43	96.39
7.81	7.00	0.55	96.95
5.52	7.50	0.70	97.64
3.91	8.00	0.72	98.36
2.76	8.50	0.61	98.98
1.95	9.00	0.44	99.42
1.38	9.50	0.29	99.71
0.98	10.00	0.19	99.90
< 0.98	> 10.00	0.10	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	213	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	309	Medium sand
Median [phi]*	1.69	
Mean [µm]*†	345	Medium sand
Mean [phi]*†	1.54	
Sorting [µm]†	3.53	Poorly sorted
Sorting [phi]†	1.82	
Skewness [µm]†	0.15	Coarse skewed
Skewness [phi]†	-0.15	
Gravel [%]‡	9.60	Gravelly sand
Sand [%]‡	84.94	
Fines [%]‡	5.46	

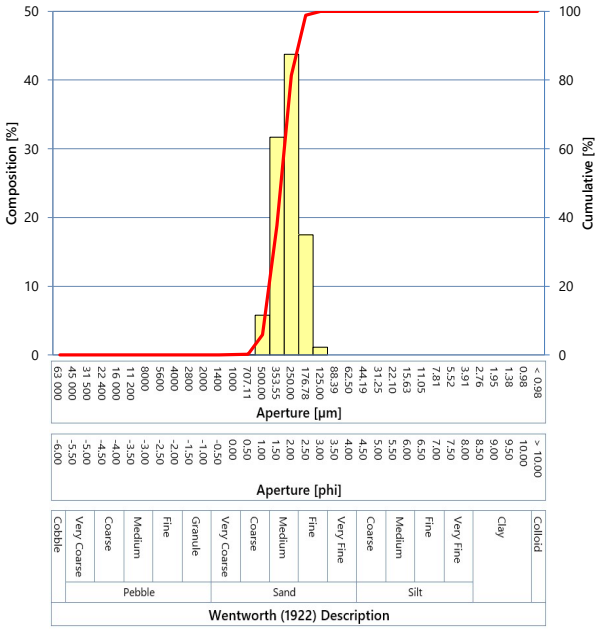
Notes
Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals
* = Particle size expressed in accordance with Wentworth (1922) scale
† = Statistics calculated using Folk and Ward (1957) method
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST11

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.00	0.00
4000	-2.00	0.00	0.00
2800	-1.50	0.00	0.00
2000	-1.00	0.03	0.03
1400	-0.50	0.02	0.05
1000	0.00	0.07	0.12
707.11	0.50	0.05	0.17
500.00	1.00	5.79	5.96
353.55	1.50	31.69	37.65
250.00	2.00	43.73	81.38
176.78	2.50	17.48	98.85
125.00	3.00	1.15	100.00
88.39	3.50	0.00	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	321	Medium sand
Median [phi]*	1.64	
Mean [µm]*†	324	Medium sand
Mean [phi]*†	1.62	
Sorting [µm]†	1.37	Well sorted
Sorting [phi]†	0.45	
Skewness [µm]†	0.02	Symmetrical
Skewness [phi]†	-0.02	
Gravel [%]‡	0.03	Sand
Sand [%]‡	99.97	
Fines [%]‡	0.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

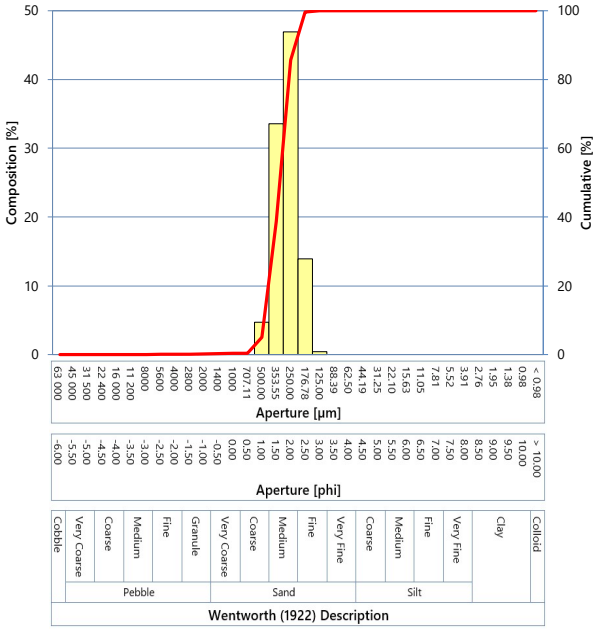
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST13

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.09	0.09
4000	-2.00	0.06	0.14
2800	-1.50	0.00	0.14
2000	-1.00	0.06	0.20
1400	-0.50	0.11	0.31
1000	0.00	0.12	0.43
707.11	0.50	0.01	0.44
500.00	1.00	4.71	5.14
353.55	1.50	33.56	38.70
250.00	2.00	46.94	85.64
176.78	2.50	13.95	99.58
125.00	3.00	0.42	100.00
88.39	3.50	0.00	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	325	Medium sand
Median [phi]*	1.62	
Mean [µm]*†	333	Medium sand
Mean [phi]*†	1.59	
Sorting [µm]†	1.33	Well sorted
Sorting [phi]†	0.41	
Skewness [µm]†	0.03	Symmetrical
Skewness [phi]†	-0.03	
Gravel [%]‡	0.20	Sand
Sand [%]‡	99.80	
Fines [%]‡	0.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

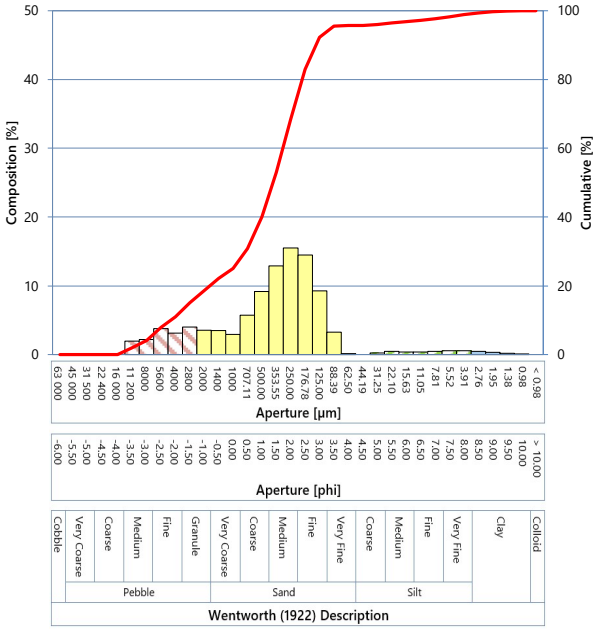
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST14

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	1.96	1.96
8000	-3.00	2.19	4.15
5600	-2.50	3.81	7.96
4000	-2.00	3.13	11.08
2800	-1.50	4.02	15.10
2000	-1.00	3.55	18.66
1400	-0.50	3.53	22.18
1000	0.00	2.94	25.12
707.11	0.50	5.73	30.85
500.00	1.00	9.21	40.06
353.55	1.50	12.91	52.97
250.00	2.00	15.51	68.48
176.78	2.50	14.51	82.99
125.00	3.00	9.29	92.29
88.39	3.50	3.26	95.55
62.50	4.00	0.15	95.70
44.19	4.50	0.00	95.70
31.25	5.00	0.25	95.95
22.10	5.50	0.49	96.44
15.63	6.00	0.41	96.85
11.05	6.50	0.38	97.22
7.81	7.00	0.48	97.70
5.52	7.50	0.58	98.28
3.91	8.00	0.58	98.87
2.76	8.50	0.49	99.35
1.95	9.00	0.34	99.69
1.38	9.50	0.21	99.90
0.98	10.00	0.10	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	3400	Granule
Mode 3 [µm]*	6800	Fine pebble
Median [µm]*	383	Medium sand
Median [phi]*	1.38	
Mean [µm]*†	551	Coarse sand
Mean [phi]*†	0.86	
Sorting [µm]†	3.82	Poorly sorted
Sorting [phi]†	1.93	
Skewness [µm]†	0.38	Very coarse skewed
Skewness [phi]†	-0.38	
Gravel [%]‡	18.66	Gravelly sand
Sand [%]‡	77.04	
Fines [%]‡	4.30	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

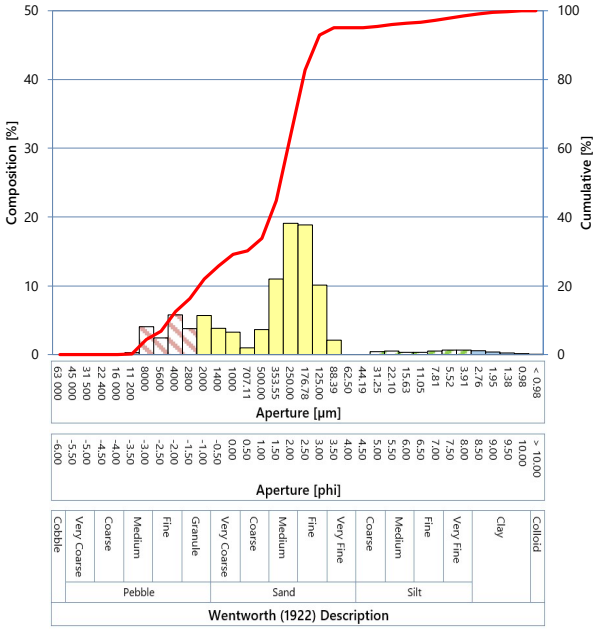
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST15

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.30	0.30
8000	-3.00	4.08	4.38
5600	-2.50	2.42	6.80
4000	-2.00	5.77	12.57
2800	-1.50	3.77	16.34
2000	-1.00	5.70	22.04
1400	-0.50	3.84	25.88
1000	0.00	3.29	29.17
707.11	0.50	1.02	30.19
500.00	1.00	3.66	33.84
353.55	1.50	10.98	44.82
250.00	2.00	19.08	63.90
176.78	2.50	18.87	82.78
125.00	3.00	10.10	92.87
88.39	3.50	2.12	94.99
62.50	4.00	0.01	95.00
44.19	4.50	0.01	95.01
31.25	5.00	0.42	95.43
22.10	5.50	0.53	95.96
15.63	6.00	0.36	96.32
11.05	6.50	0.35	96.67
7.81	7.00	0.51	97.18
5.52	7.50	0.66	97.84
3.91	8.00	0.67	98.51
2.76	8.50	0.57	99.08
1.95	9.00	0.41	99.49
1.38	9.50	0.27	99.75
0.98	10.00	0.18	99.93
< 0.98	> 10.00	0.07	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	4800	Fine pebble
Mode 3 [µm]*	2400	Granule
Median [µm]*	322	Medium sand
Median [phi]*	1.64	
Mean [µm]*†	540	Coarse sand
Mean [phi]*†	0.89	
Sorting [µm]†	4.19	Very poorly sorted
Sorting [phi]†	2.07	
Skewness [µm]†	0.43	Very coarse skewed
Skewness [phi]†	-0.43	
Gravel [%]‡	22.04	Gravelly sand
Sand [%]‡	72.96	
Fines [%]‡	5.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

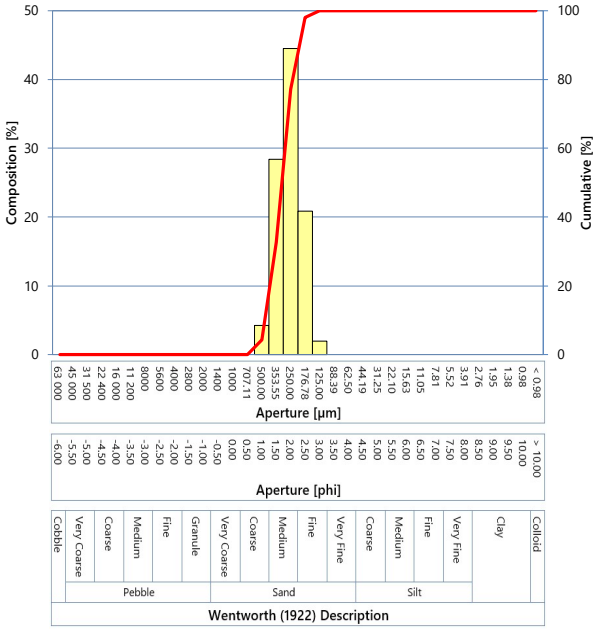
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST16

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.00	0.00
4000	-2.00	0.00	0.00
2800	-1.50	0.00	0.00
2000	-1.00	0.00	0.00
1400	-0.50	0.00	0.00
1000	0.00	0.00	0.00
707.11	0.50	0.00	0.00
500.00	1.00	4.28	4.28
353.55	1.50	28.39	32.67
250.00	2.00	44.51	77.17
176.78	2.50	20.87	98.04
125.00	3.00	1.96	100.00
88.39	3.50	0.00	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	309	Medium sand
Median [phi]*	1.69	
Mean [µm]*†	310	Medium sand
Mean [phi]*†	1.69	
Sorting [µm]†	1.37	Well sorted
Sorting [phi]†	0.45	
Skewness [µm]†	-0.01	Symmetrical
Skewness [phi]†	0.01	
Gravel [%]‡	0.00	Sand
Sand [%]‡	100.00	
Fines [%]‡	0.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

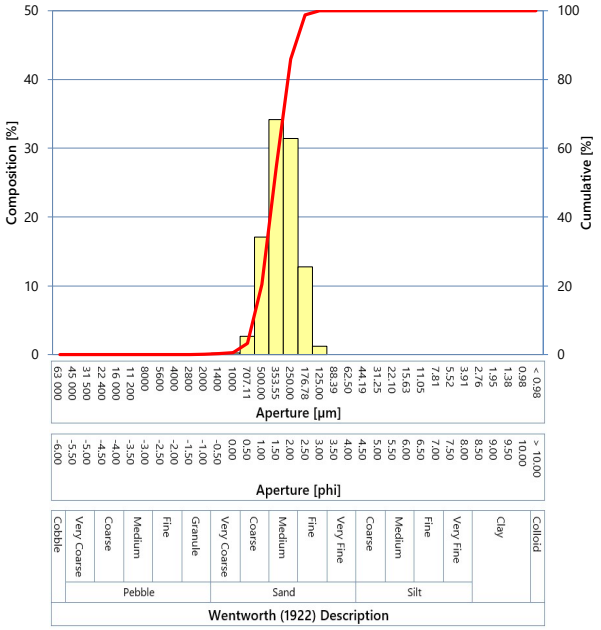
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST17

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.00	0.00
4000	-2.00	0.04	0.04
2800	-1.50	0.00	0.04
2000	-1.00	0.06	0.10
1400	-0.50	0.22	0.32
1000	0.00	0.26	0.58
707.11	0.50	2.68	3.27
500.00	1.00	17.12	20.39
353.55	1.50	34.19	54.58
250.00	2.00	31.43	86.01
176.78	2.50	12.76	98.77
125.00	3.00	1.23	100.00
88.39	3.50	0.00	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	427	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	370	Medium sand
Median [phi]*	1.43	
Mean [µm]*†	373	Medium sand
Mean [phi]*†	1.42	
Sorting [µm]†	1.46	Moderately well sorted
Sorting [phi]†	0.55	
Skewness [µm]†	0.00	Symmetrical
Skewness [phi]†	0.00	
Gravel [%]‡	0.10	Sand
Sand [%]‡	99.90	
Fines [%]‡	0.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

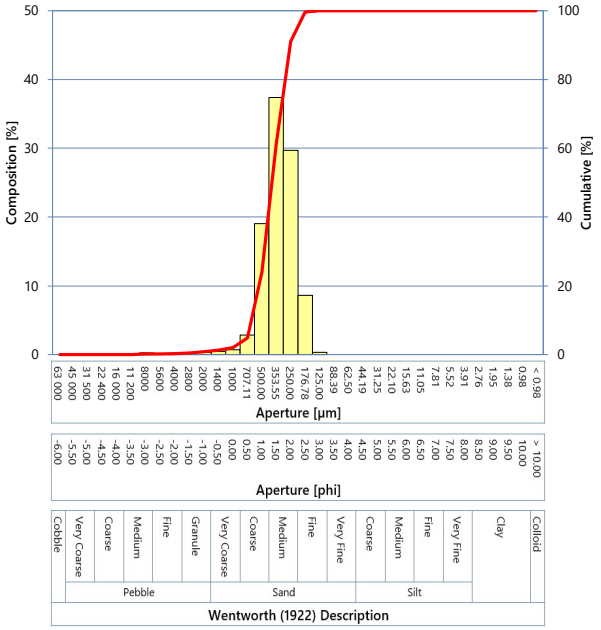
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST18

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.25	0.25
5600	-2.50	0.00	0.25
4000	-2.00	0.08	0.34
2800	-1.50	0.16	0.50
2000	-1.00	0.34	0.83
1400	-0.50	0.49	1.33
1000	0.00	0.74	2.07
707.11	0.50	2.84	4.91
500.00	1.00	19.04	23.95
353.55	1.50	37.38	61.33
250.00	2.00	29.71	91.03
176.78	2.50	8.62	99.65
125.00	3.00	0.35	100.00
88.39	3.50	0.00	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	427	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	393	Medium sand
Median [phi]*	1.35	
Mean [µm]*†	395	Medium sand
Mean [phi]*†	1.34	
Sorting [µm]†	1.45	Moderately well sorted
Sorting [phi]†	0.53	
Skewness [µm]†	0.00	Symmetrical
Skewness [phi]†	0.00	
Gravel [%]‡	0.83	Sand
Sand [%]‡	99.17	
Fines [%]‡	0.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

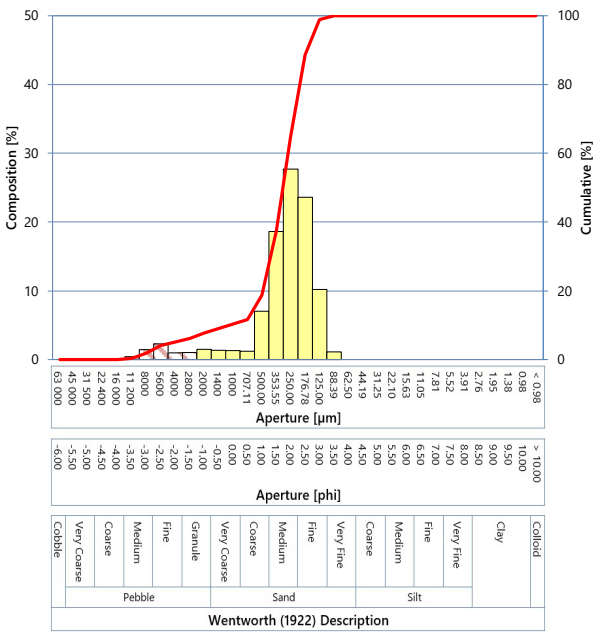
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST19

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.44	0.44
8000	-3.00	1.47	1.90
5600	-2.50	2.28	4.19
4000	-2.00	1.00	5.19
2800	-1.50	1.03	6.22
2000	-1.00	1.51	7.73
1400	-0.50	1.36	9.09
1000	0.00	1.31	10.39
707.11	0.50	1.25	11.64
500.00	1.00	7.04	18.68
353.55	1.50	18.62	37.30
250.00	2.00	27.71	65.02
176.78	2.50	23.61	88.63
125.00	3.00	10.23	98.86
88.39	3.50	1.14	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	302	Medium sand
Median [phi]*	1.73	
Mean [µm]*†	319	Medium sand
Mean [phi]*†	1.65	
Sorting [µm]†	2.21	Poorly sorted
Sorting [phi]†	1.14	
Skewness [µm]†	0.36	Very coarse skewed
Skewness [phi]†	-0.36	
Gravel [%]‡	7.73	Gravelly sand
Sand [%]‡	92.27	
Fines [%]‡	0.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

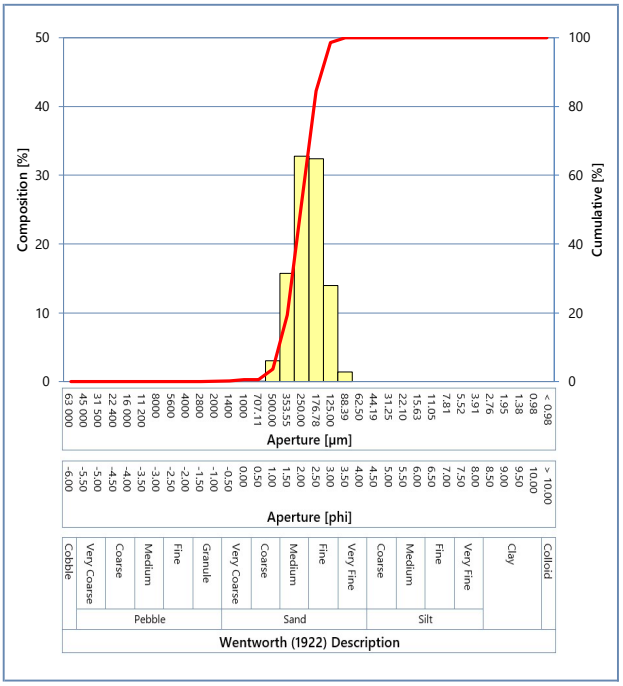
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST20

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.00	0.00
4000	-2.00	0.00	0.00
2800	-1.50	0.05	0.05
2000	-1.00	0.04	0.09
1400	-0.50	0.15	0.24
1000	0.00	0.28	0.52
707.11	0.50	0.09	0.61
500.00	1.00	3.02	3.63
353.55	1.50	15.75	19.38
250.00	2.00	32.80	52.18
176.78	2.50	32.40	84.58
125.00	3.00	14.00	98.58
88.39	3.50	1.42	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	256	Medium sand
Median [phi]*	1.97	
Mean [µm]*†	259	Medium sand
Mean [phi]*†	1.95	
Sorting [µm]†	1.47	Moderately well sorted
Sorting [phi]†	0.55	
Skewness [µm]†	0.03	Symmetrical
Skewness [phi]†	-0.03	
Gravel [%]‡	0.09	Sand
Sand [%]‡	99.91	
Fines [%]‡	0.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

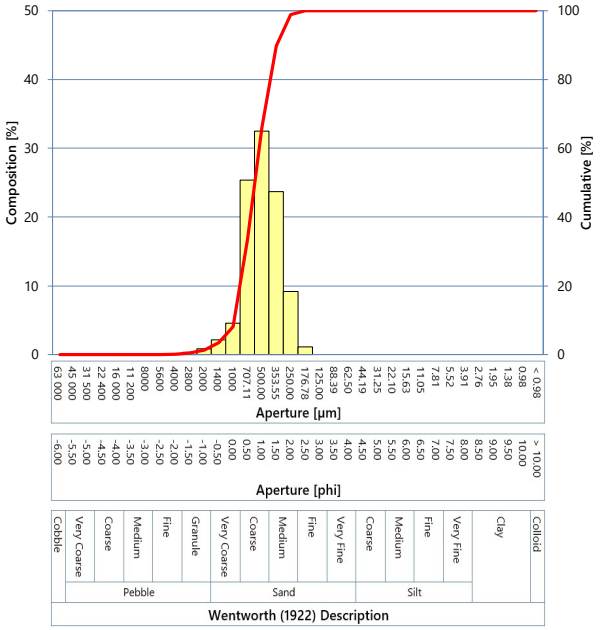
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST21

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.00	0.00
4000	-2.00	0.14	0.14
2800	-1.50	0.35	0.49
2000	-1.00	0.86	1.35
1400	-0.50	2.18	3.53
1000	0.00	4.57	8.10
707.11	0.50	25.37	33.46
500.00	1.00	32.51	65.98
353.55	1.50	23.72	89.69
250.00	2.00	9.18	98.87
176.78	2.50	1.13	100.00
125.00	3.00	0.00	100.00
88.39	3.50	0.00	100.00
62.50	4.00	0.00	100.00
44.19	4.50	0.00	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	604	Coarse sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	593	Coarse sand
Median [phi]*	0.75	
Mean [µm]*†	589	Coarse sand
Mean [phi]*†	0.76	
Sorting [µm]†	1.54	Moderately well sorted
Sorting [phi]†	0.63	
Skewness [µm]†	0.00	Symmetrical
Skewness [phi]†	0.00	
Gravel [%]‡	1.35	Sand
Sand [%]‡	98.65	
Fines [%]‡	0.00	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

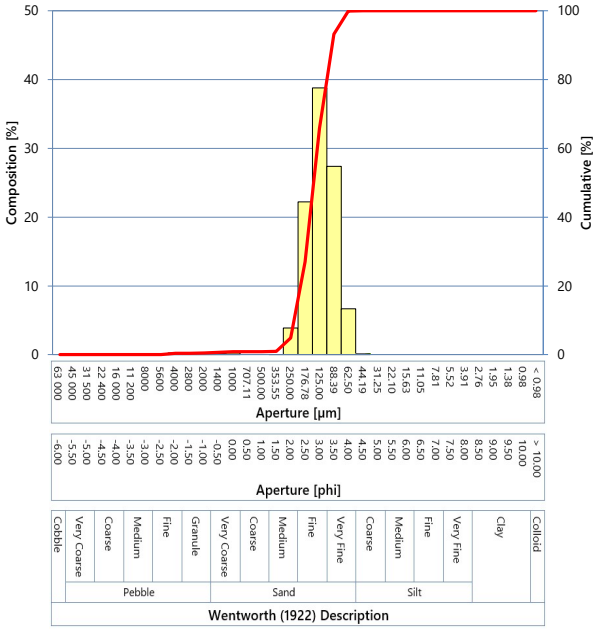
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST22

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.08	0.08
4000	-2.00	0.26	0.34
2800	-1.50	0.05	0.39
2000	-1.00	0.11	0.50
1400	-0.50	0.17	0.67
1000	0.00	0.25	0.91
707.11	0.50	0.00	0.91
500.00	1.00	0.00	0.91
353.55	1.50	0.03	0.95
250.00	2.00	3.88	4.83
176.78	2.50	22.23	27.06
125.00	3.00	38.78	65.84
88.39	3.50	27.37	93.21
62.50	4.00	6.69	99.90
44.19	4.50	0.10	100.00
31.25	5.00	0.00	100.00
22.10	5.50	0.00	100.00
15.63	6.00	0.00	100.00
11.05	6.50	0.00	100.00
7.81	7.00	0.00	100.00
5.52	7.50	0.00	100.00
3.91	8.00	0.00	100.00
2.76	8.50	0.00	100.00
1.95	9.00	0.00	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	151	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	144	Fine sand
Median [phi]*	2.80	
Mean [µm]*†	144	Fine sand
Mean [phi]*†	2.79	
Sorting [µm]†	1.43	Moderately well sorted
Sorting [phi]†	0.52	
Skewness [µm]†	-0.01	Symmetrical
Skewness [phi]†	0.01	
Gravel [%]‡	0.50	Sand
Sand [%]‡	99.41	
Fines [%]‡	0.10	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

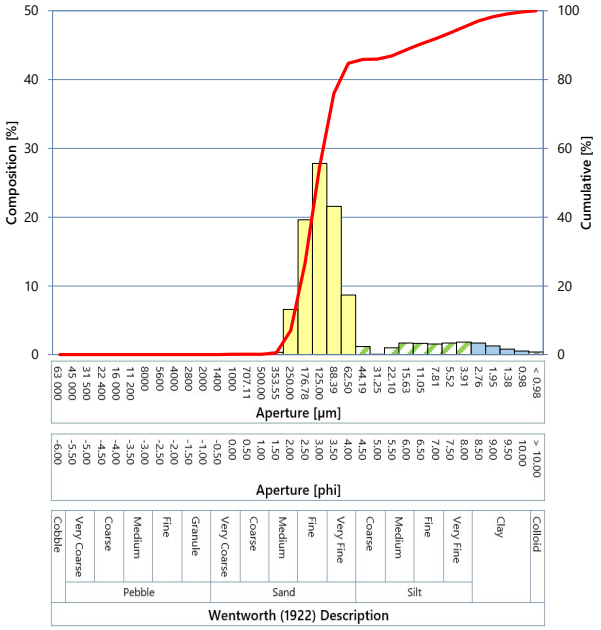
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST23

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.00	0.00
4000	-2.00	0.00	0.00
2800	-1.50	0.03	0.03
2000	-1.00	0.04	0.07
1400	-0.50	0.03	0.10
1000	0.00	0.04	0.14
707.11	0.50	0.00	0.14
500.00	1.00	0.00	0.14
353.55	1.50	0.36	0.51
250.00	2.00	6.58	7.08
176.78	2.50	19.60	26.69
125.00	3.00	27.81	54.49
88.39	3.50	21.54	76.04
62.50	4.00	8.66	84.70
44.19	4.50	1.19	85.89
31.25	5.00	0.05	85.94
22.10	5.50	0.98	86.92
15.63	6.00	1.69	88.61
11.05	6.50	1.64	90.25
7.81	7.00	1.54	91.79
5.52	7.50	1.69	93.48
3.91	8.00	1.81	95.29
2.76	8.50	1.68	96.97
1.95	9.00	1.26	98.23
1.38	9.50	0.81	99.05
0.98	10.00	0.54	99.58
< 0.98	> 10.00	0.42	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	151	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	132	Fine sand
Median [phi]*	2.92	
Mean [µm]*†	122	Very fine sand
Mean [phi]*†	3.04	
Sorting [µm]†	2.56	Poorly sorted
Sorting [phi]†	1.35	
Skewness [µm]†	-0.42	Very fine skewed
Skewness [phi]†	0.42	
Gravel [%]‡	0.07	Muddy sand
Sand [%]‡	84.63	
Fines [%]‡	15.30	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

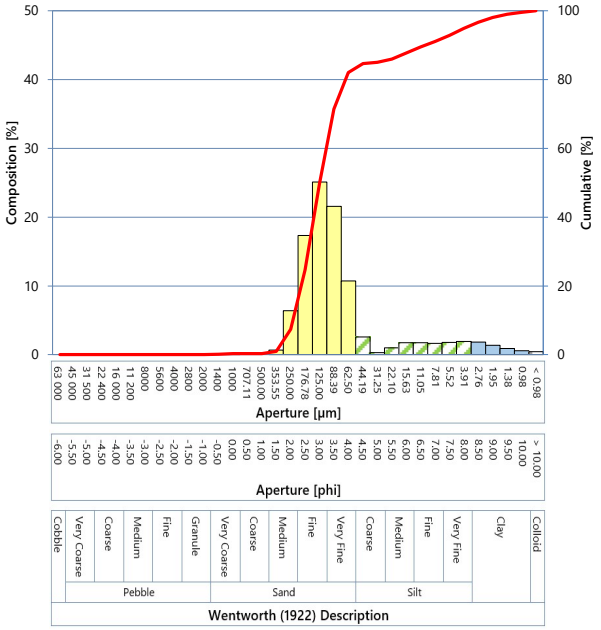
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST24

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	0.00	0.00
8000	-3.00	0.00	0.00
5600	-2.50	0.00	0.00
4000	-2.00	0.01	0.01
2800	-1.50	0.02	0.03
2000	-1.00	0.04	0.07
1400	-0.50	0.12	0.19
1000	0.00	0.12	0.31
707.11	0.50	0.00	0.31
500.00	1.00	0.00	0.31
353.55	1.50	0.66	0.97
250.00	2.00	6.38	7.35
176.78	2.50	17.32	24.67
125.00	3.00	25.11	49.78
88.39	3.50	21.57	71.35
62.50	4.00	10.72	82.07
44.19	4.50	2.57	84.65
31.25	5.00	0.32	84.96
22.10	5.50	0.99	85.95
15.63	6.00	1.75	87.70
11.05	6.50	1.76	89.46
7.81	7.00	1.64	91.09
5.52	7.50	1.78	92.87
3.91	8.00	1.95	94.82
2.76	8.50	1.84	96.67
1.95	9.00	1.39	98.06
1.38	9.50	0.90	98.96
0.98	10.00	0.59	99.55
< 0.98	> 10.00	0.45	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	151	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	125	Very fine sand
Median [phi]*	3.01	
Mean [µm]*†	108	Very fine sand
Mean [phi]*†	3.21	
Sorting [µm]†	2.78	Poorly sorted
Sorting [phi]†	1.48	
Skewness [µm]†	-0.45	Very fine skewed
Skewness [phi]†	0.45	
Gravel [%]‡	0.07	Muddy sand
Sand [%]‡	82.00	
Fines [%]‡	17.93	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

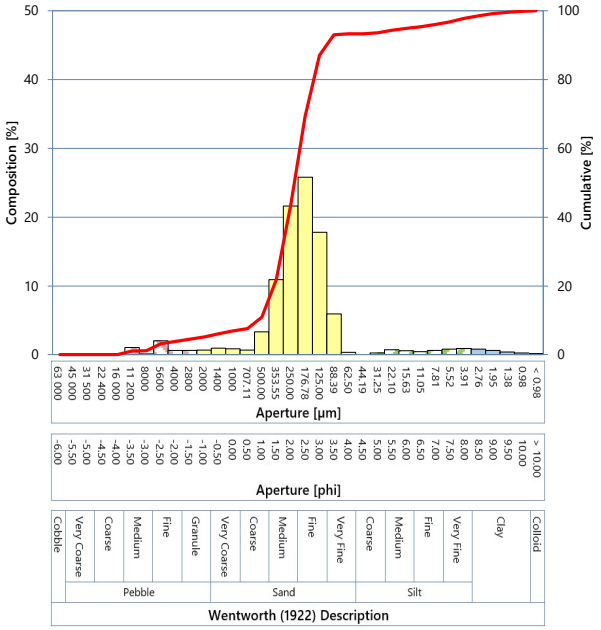
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST26

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	1.04	1.04
8000	-3.00	0.13	1.17
5600	-2.50	2.03	3.20
4000	-2.00	0.64	3.84
2800	-1.50	0.61	4.45
2000	-1.00	0.67	5.12
1400	-0.50	0.95	6.07
1000	0.00	0.87	6.95
707.11	0.50	0.65	7.60
500.00	1.00	3.32	10.92
353.55	1.50	10.91	21.82
250.00	2.00	21.63	43.45
176.78	2.50	25.81	69.26
125.00	3.00	17.79	87.05
88.39	3.50	5.93	92.98
62.50	4.00	0.33	93.31
44.19	4.50	0.00	93.31
31.25	5.00	0.27	93.58
22.10	5.50	0.72	94.30
15.63	6.00	0.58	94.88
11.05	6.50	0.46	95.34
7.81	7.00	0.61	95.95
5.52	7.50	0.84	96.78
3.91	8.00	0.92	97.70
2.76	8.50	0.83	98.54
1.95	9.00	0.62	99.16
1.38	9.50	0.41	99.56
0.98	10.00	0.27	99.83
< 0.98	> 10.00	0.17	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	213	Fine sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	229	Fine sand
Median [phi]*	2.13	
Mean [µm]*†	235	Fine sand
Mean [phi]*†	2.09	
Sorting [µm]†	2.86	Poorly sorted
Sorting [phi]†	1.51	
Skewness [µm]†	-0.02	Symmetrical
Skewness [phi]†	0.02	
Gravel [%]‡	5.12	Gravelly sand
Sand [%]‡	88.18	
Fines [%]‡	6.69	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

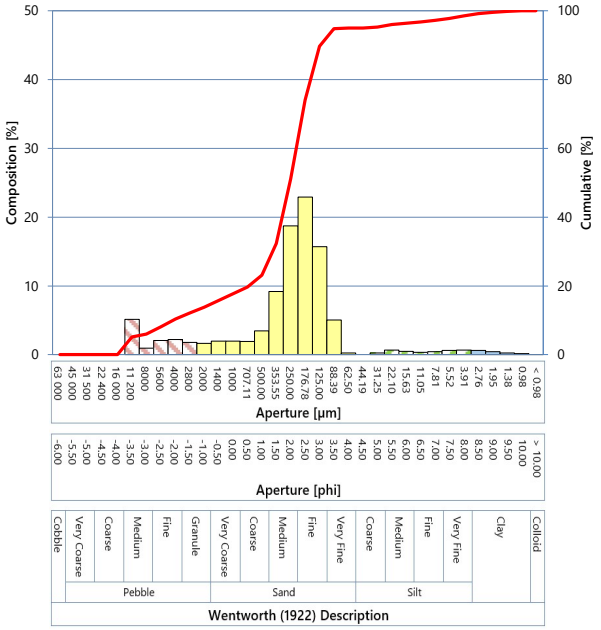
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST27

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	5.12	5.12
8000	-3.00	0.95	6.07
5600	-2.50	2.06	8.13
4000	-2.00	2.23	10.36
2800	-1.50	1.79	12.16
2000	-1.00	1.64	13.79
1400	-0.50	1.97	15.77
1000	0.00	1.99	17.76
707.11	0.50	1.93	19.69
500.00	1.00	3.45	23.14
353.55	1.50	9.21	32.35
250.00	2.00	18.74	51.09
176.78	2.50	22.93	74.03
125.00	3.00	15.69	89.72
88.39	3.50	5.03	94.75
62.50	4.00	0.24	94.99
44.19	4.50	0.00	94.99
31.25	5.00	0.25	95.24
22.10	5.50	0.67	95.91
15.63	6.00	0.50	96.40
11.05	6.50	0.34	96.74
7.81	7.00	0.44	97.18
5.52	7.50	0.62	97.81
3.91	8.00	0.69	98.49
2.76	8.50	0.60	99.10
1.95	9.00	0.43	99.53
1.38	9.50	0.28	99.81
0.98	10.00	0.17	99.98
< 0.98	> 10.00	0.02	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	213	Fine sand
Mode 2 [µm]*	13600	Medium pebble
Mode 3 [µm]*	-	-
Median [µm]*	255	Medium sand
Median [phi]*	1.97	
Mean [µm]*†	365	Medium sand
Mean [phi]*†	1.45	
Sorting [µm]†	4.08	Very poorly sorted
Sorting [phi]†	2.03	
Skewness [µm]†	0.42	Very coarse skewed
Skewness [phi]†	-0.42	
Gravel [%]‡	13.79	Gravelly sand
Sand [%]‡	81.19	
Fines [%]‡	5.01	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

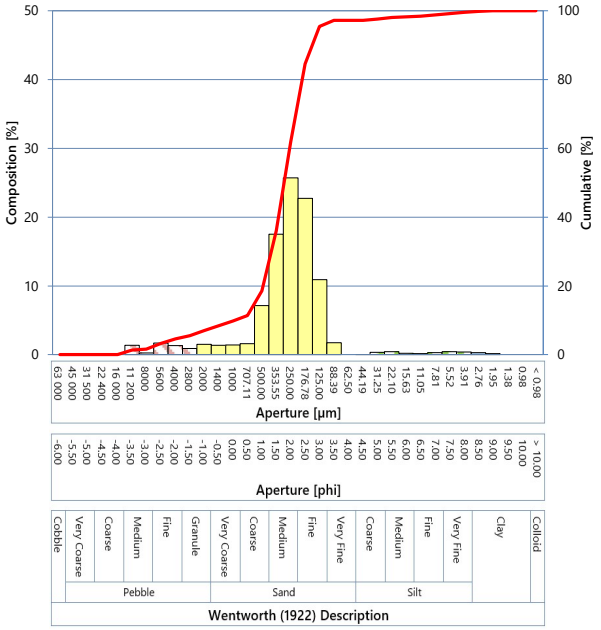
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST28

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	1.36	1.36
8000	-3.00	0.28	1.64
5600	-2.50	1.70	3.33
4000	-2.00	1.32	4.66
2800	-1.50	0.90	5.56
2000	-1.00	1.51	7.06
1400	-0.50	1.35	8.41
1000	0.00	1.42	9.83
707.11	0.50	1.60	11.43
500.00	1.00	7.13	18.56
353.55	1.50	17.52	36.09
250.00	2.00	25.72	61.81
176.78	2.50	22.72	84.53
125.00	3.00	10.93	95.46
88.39	3.50	1.73	97.18
62.50	4.00	0.00	97.18
44.19	4.50	0.00	97.19
31.25	5.00	0.35	97.54
22.10	5.50	0.46	98.00
15.63	6.00	0.22	98.22
11.05	6.50	0.17	98.40
7.81	7.00	0.32	98.71
5.52	7.50	0.43	99.14
3.91	8.00	0.40	99.54
2.76	8.50	0.30	99.84
1.95	9.00	0.16	100.00
1.38	9.50	0.00	100.00
0.98	10.00	0.00	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	302	Medium sand
Mode 2 [µm]*	-	-
Mode 3 [µm]*	-	-
Median [µm]*	293	Medium sand
Median [phi]*	1.77	
Mean [µm]*†	309	Medium sand
Mean [phi]*†	1.69	
Sorting [µm]†	2.21	Poorly sorted
Sorting [phi]†	1.14	
Skewness [µm]†	0.32	Very coarse skewed
Skewness [phi]†	-0.32	
Gravel [%]‡	7.06	Gravelly sand
Sand [%]‡	90.12	
Fines [%]‡	2.82	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

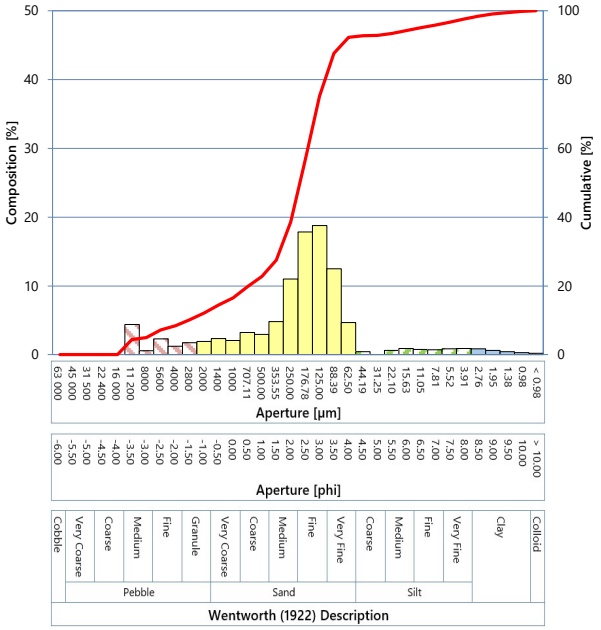
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST29

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	0.00	0.00
11 200	-3.50	4.38	4.38
8000	-3.00	0.56	4.95
5600	-2.50	2.28	7.23
4000	-2.00	1.22	8.45
2800	-1.50	1.74	10.19
2000	-1.00	1.93	12.12
1400	-0.50	2.37	14.49
1000	0.00	2.05	16.54
707.11	0.50	3.24	19.78
500.00	1.00	2.94	22.72
353.55	1.50	4.82	27.53
250.00	2.00	10.98	38.52
176.78	2.50	17.84	56.36
125.00	3.00	18.75	75.11
88.39	3.50	12.49	87.60
62.50	4.00	4.66	92.26
44.19	4.50	0.46	92.72
31.25	5.00	0.04	92.76
22.10	5.50	0.63	93.39
15.63	6.00	0.89	94.28
11.05	6.50	0.77	95.06
7.81	7.00	0.73	95.79
5.52	7.50	0.85	96.64
3.91	8.00	0.92	97.56
2.76	8.50	0.85	98.41
1.95	9.00	0.64	99.05
1.38	9.50	0.43	99.48
0.98	10.00	0.29	99.77
< 0.98	> 10.00	0.23	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	151	Fine sand
Mode 2 [µm]*	13600	Medium pebble
Mode 3 [µm]*	854	Coarse sand
Median [µm]*	200	Fine sand
Median [phi]*	2.32	
Mean [µm]*†	277	Medium sand
Mean [phi]*†	1.85	
Sorting [µm]†	4.93	Very poorly sorted
Sorting [phi]†	2.30	
Skewness [µm]†	0.27	Coarse skewed
Skewness [phi]†	-0.27	
Gravel [%]‡	12.12	Gravelly sand
Sand [%]‡	80.14	
Fines [%]‡	7.74	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

† = Statistics calculated using Folk and Ward (1957) method

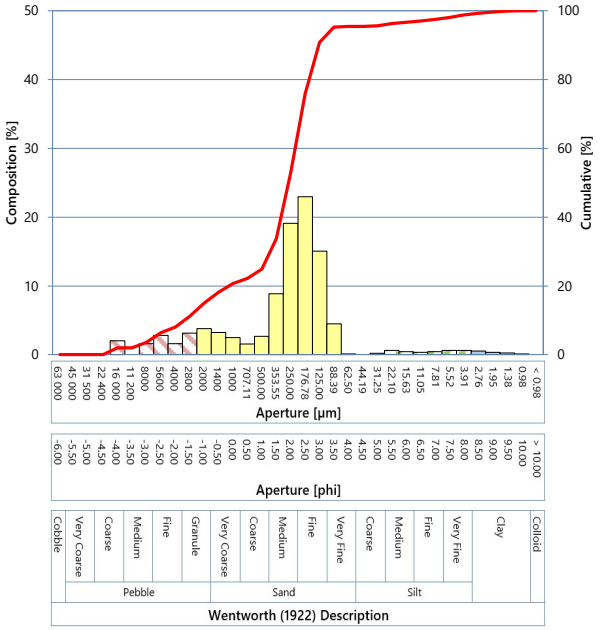
‡ = Description based on BGS modified Folk classification (Long, 2006)

STATION: ST30

FRACTIONAL DATA

Aperture [µm]	Aperture [phi]	Fractional [%]	Cumulative [%]
63 000	-6.00	0.00	0.00
45 000	-5.50	0.00	0.00
31 500	-5.00	0.00	0.00
22 400	-4.50	0.00	0.00
16 000	-4.00	2.00	2.00
11 200	-3.50	0.00	2.00
8000	-3.00	1.62	3.63
5600	-2.50	2.79	6.42
4000	-2.00	1.59	8.01
2800	-1.50	3.15	11.16
2000	-1.00	3.81	14.97
1400	-0.50	3.21	18.18
1000	0.00	2.48	20.67
707.11	0.50	1.54	22.21
500.00	1.00	2.67	24.88
353.55	1.50	8.85	33.73
250.00	2.00	19.11	52.83
176.78	2.50	22.95	75.79
125.00	3.00	15.03	90.81
88.39	3.50	4.48	95.29
62.50	4.00	0.13	95.42
44.19	4.50	0.00	95.42
31.25	5.00	0.23	95.65
22.10	5.50	0.61	96.25
15.63	6.00	0.46	96.71
11.05	6.50	0.34	97.05
7.81	7.00	0.45	97.50
5.52	7.50	0.61	98.11
3.91	8.00	0.64	98.74
2.76	8.50	0.53	99.28
1.95	9.00	0.37	99.65
1.38	9.50	0.23	99.88
0.98	10.00	0.12	100.00
< 0.98	> 10.00	0.00	100.00
Total		**100.00**	-

PARTICLE SIZE DISTRIBUTION



SUMMARY STATISTICS

Mode 1 [µm]*	213	Fine sand
Mode 2 [µm]*	2400	Granule
Mode 3 [µm]*	-	-
Median [µm]*	263	Medium sand
Median [phi]*	1.93	
Mean [µm]*†	409	Medium sand
Mean [phi]*†	1.29	
Sorting [µm]†	3.59	Poorly sorted
Sorting [phi]†	1.84	
Skewness [µm]†	0.52	Very coarse skewed
Skewness [phi]†	-0.52	
Gravel [%]‡	14.97	Gravelly sand
Sand [%]‡	80.45	
Fines [%]‡	4.58	

Notes

Particle Size Distribution by Dry Sieving (63 000 µm - 1000 µm) and Laser Diffraction (< 1000 µm - < 0.98 µm) at 0.5 phi Intervals

* = Particle size expressed in accordance with Wentworth (1922) scale

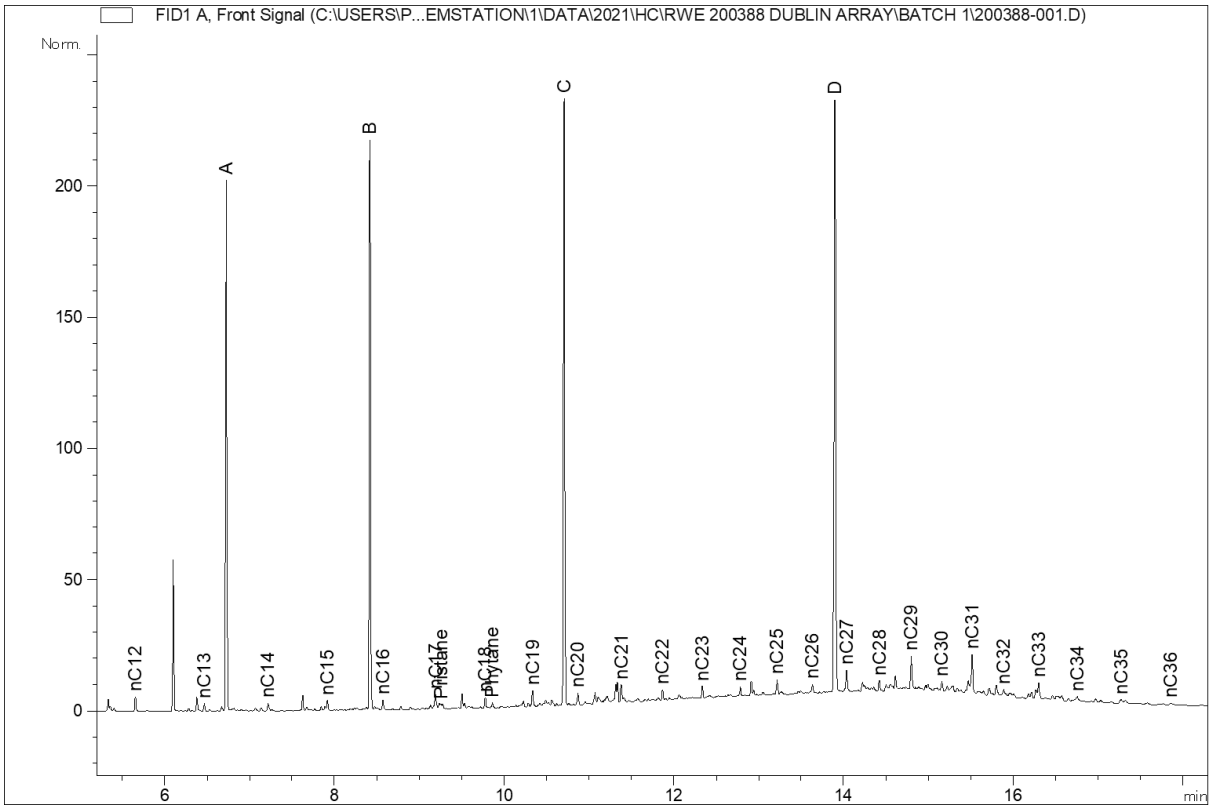
† = Statistics calculated using Folk and Ward (1957) method

‡ = Description based on BGS modified Folk classification (Long, 2006)

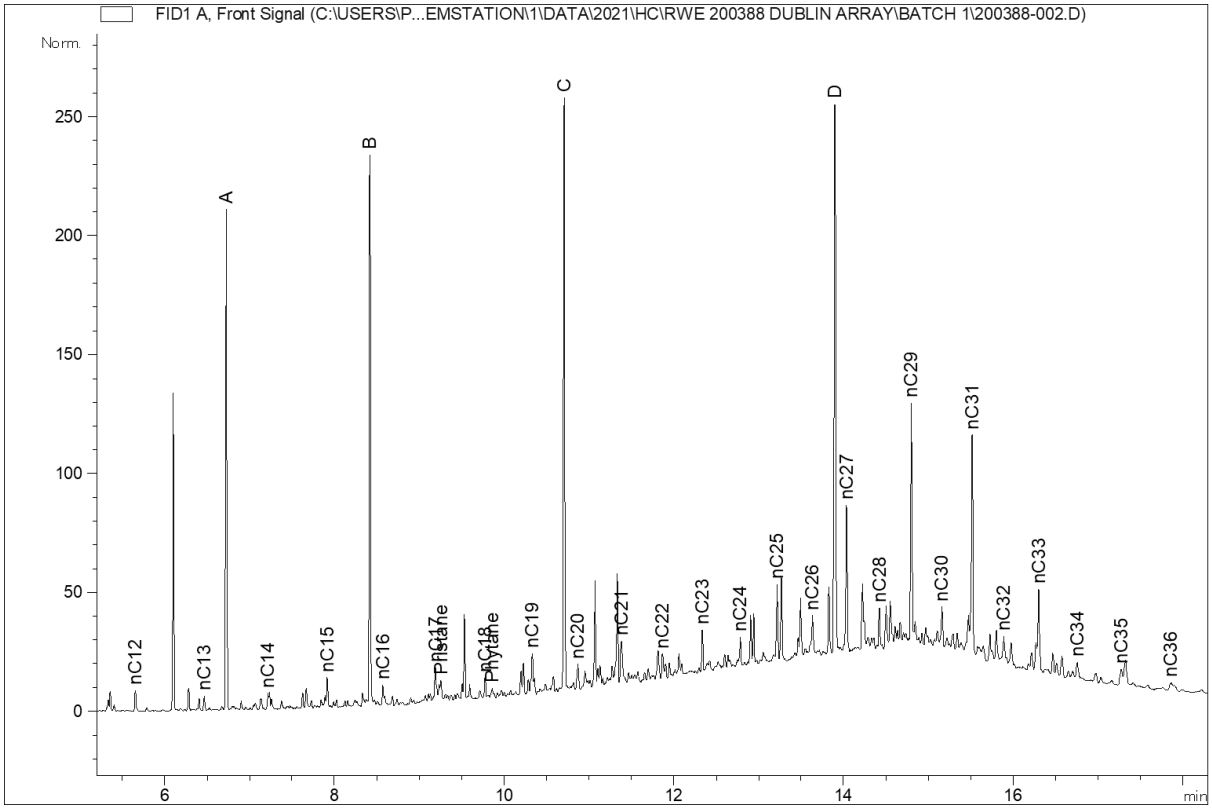
Appendix E

Sediment Hydrocarbon Analysis

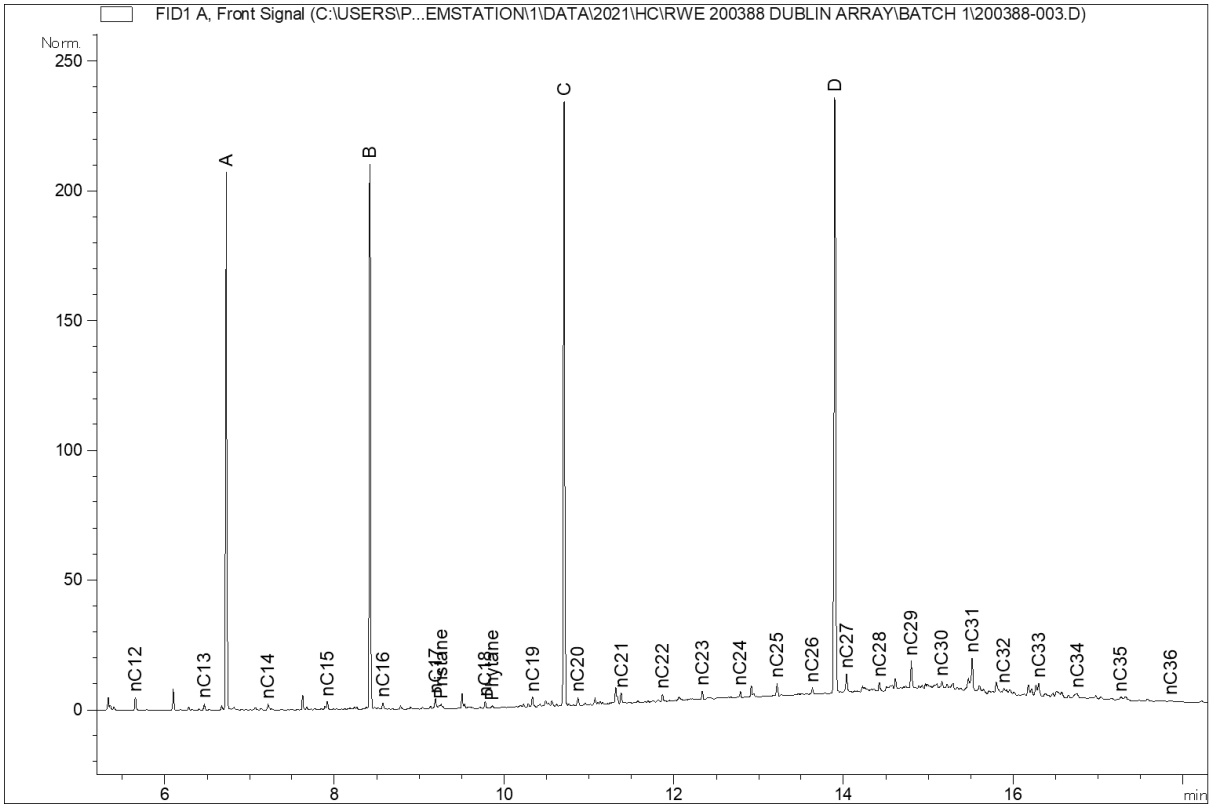
E.1 Gas Chromatography Traces



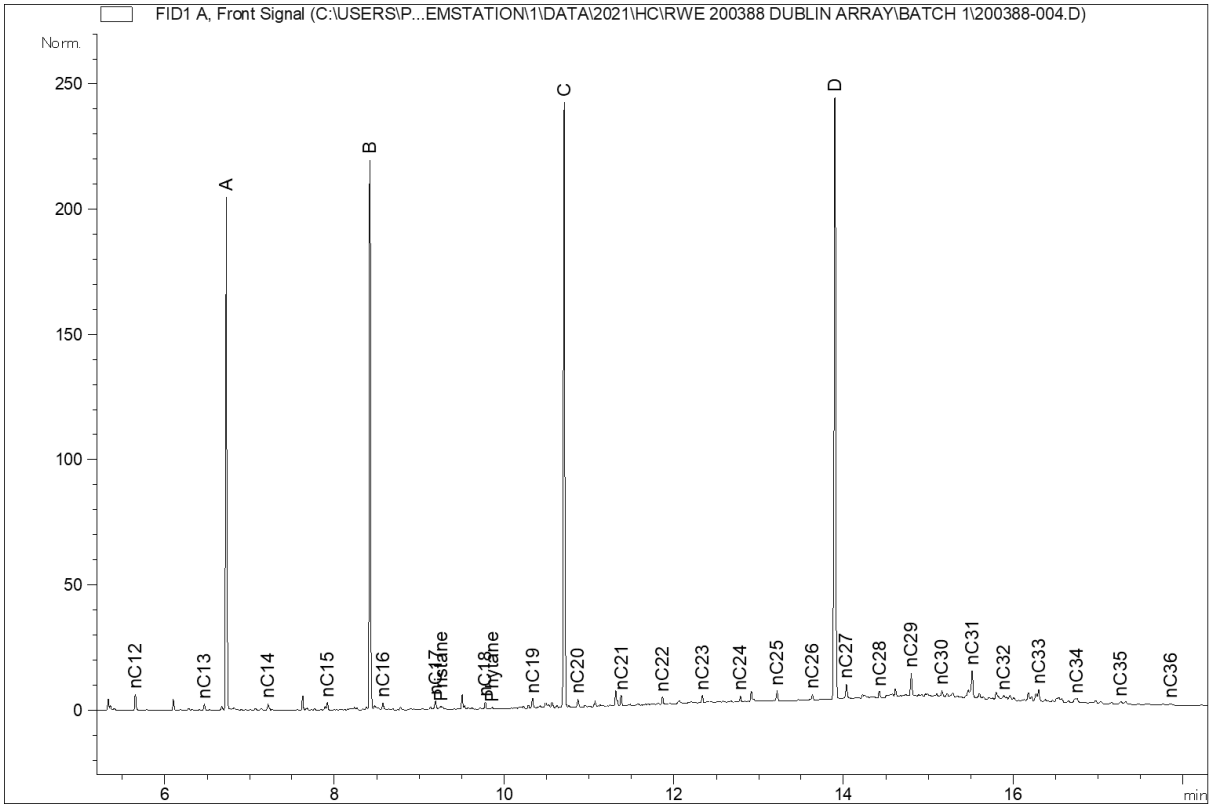
ST01



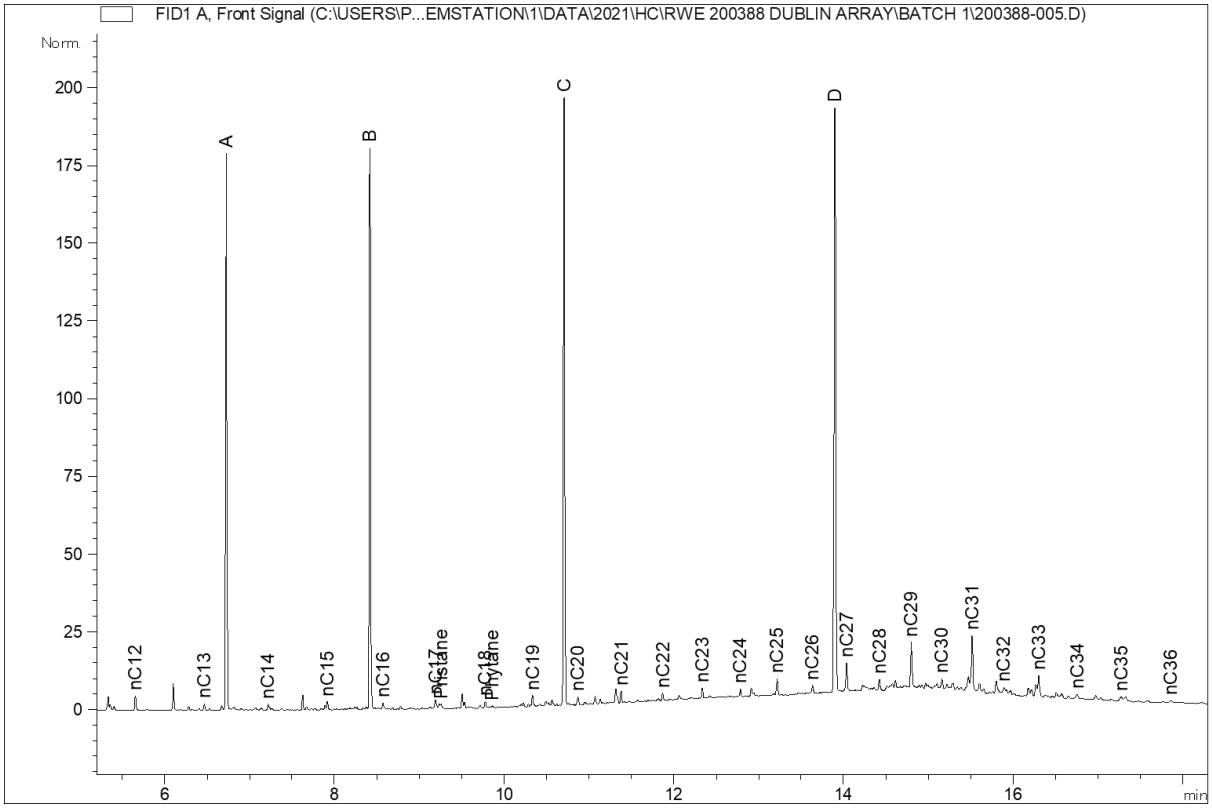
ST03


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 1\200388-003.D)
Norm.
250
200
150
100
50
0
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
nC17
Phytane
nC18
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
6
8
10
12
14
16
min

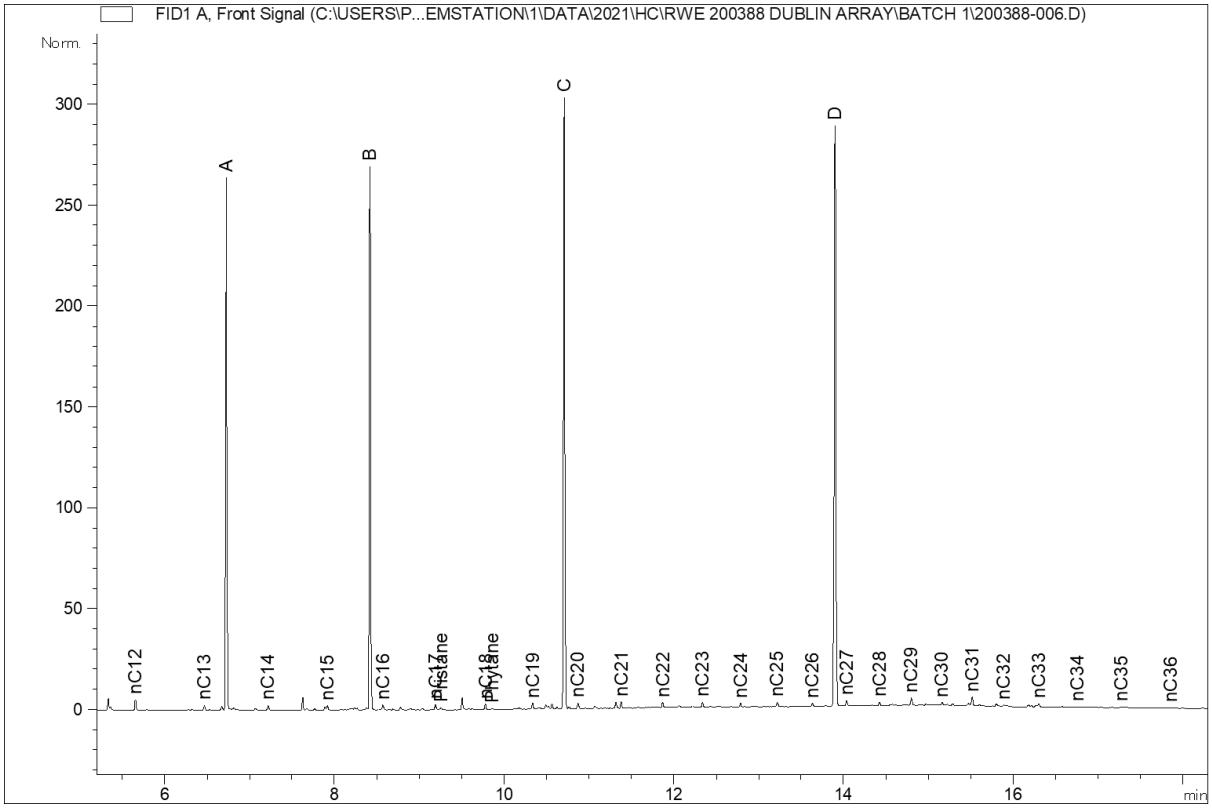
ST05


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 1\200388-004.D)
Norm.
250
200
150
100
50
0
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
nC17
Phytane
nC18
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
6
8
10
12
14
16
min

ST07


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 1\200388-005.D)
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
min

ST08


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 1\200388-006.D)
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
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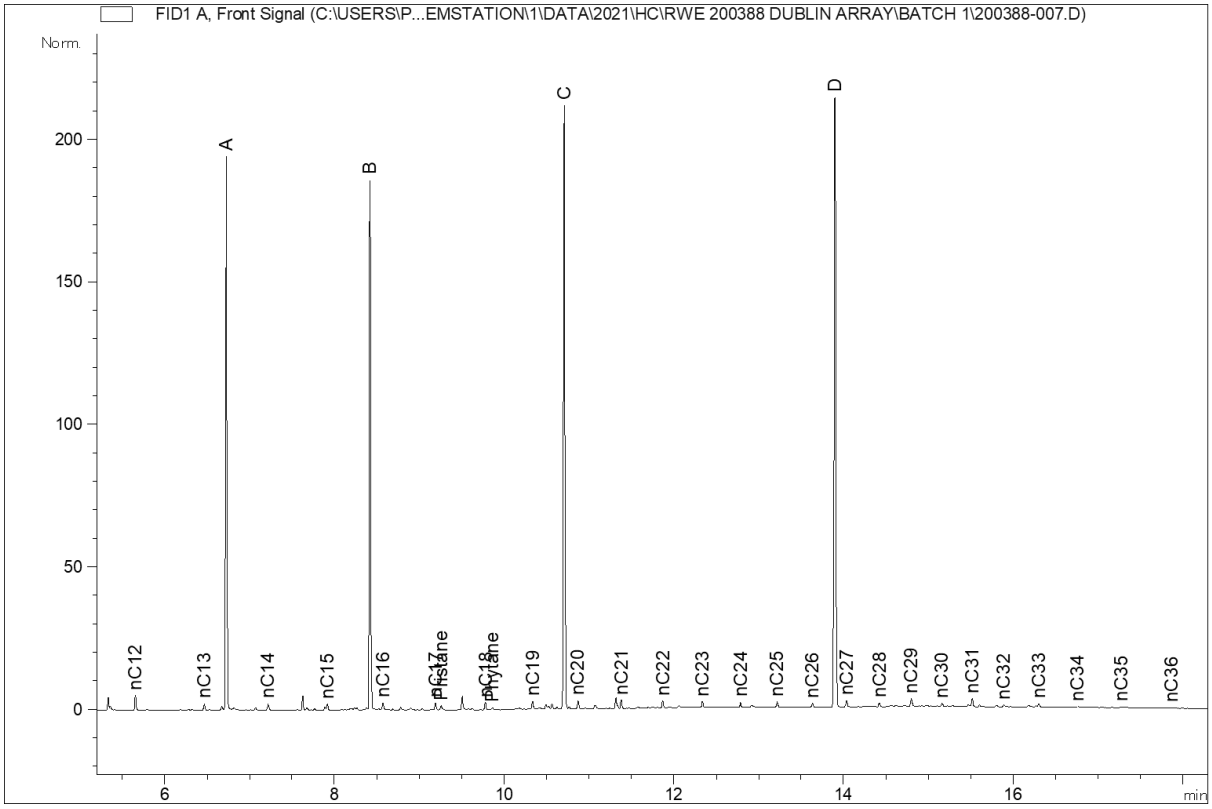
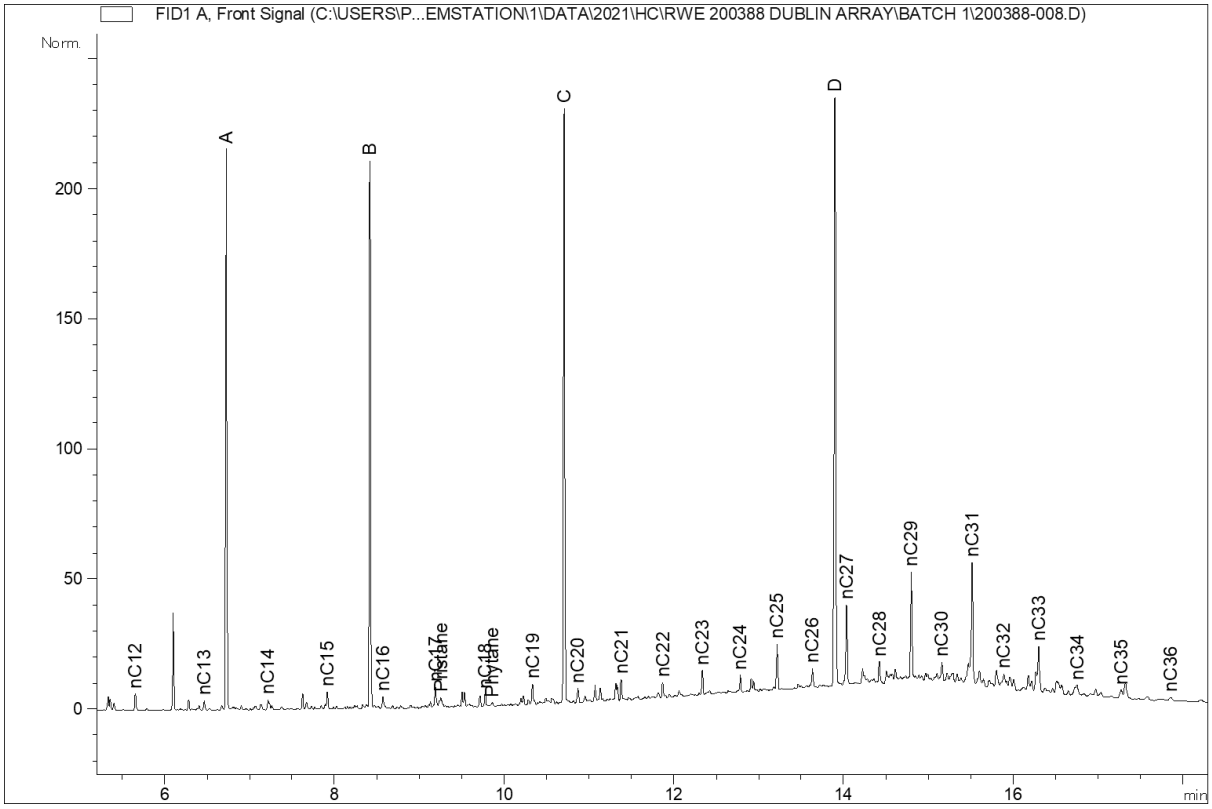
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
min

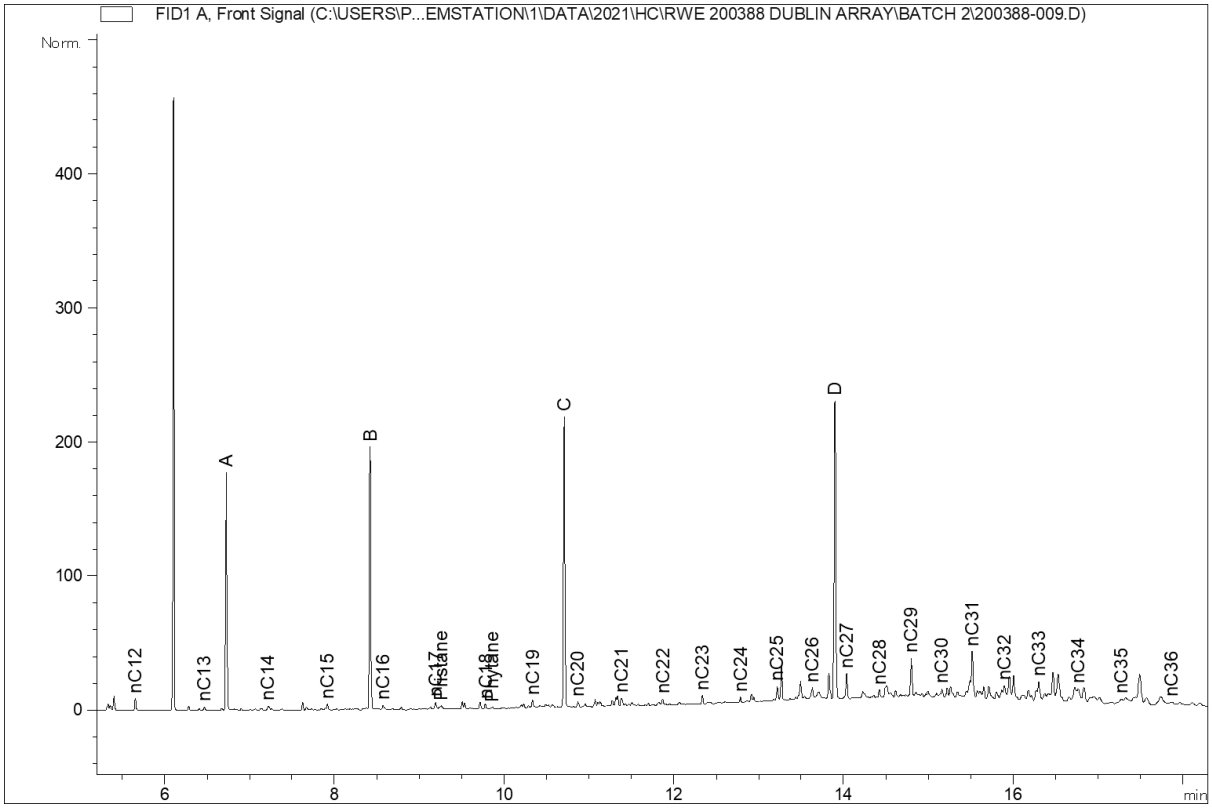
ST11


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 1\200388-007.D)
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
nC17
Pristane
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
min

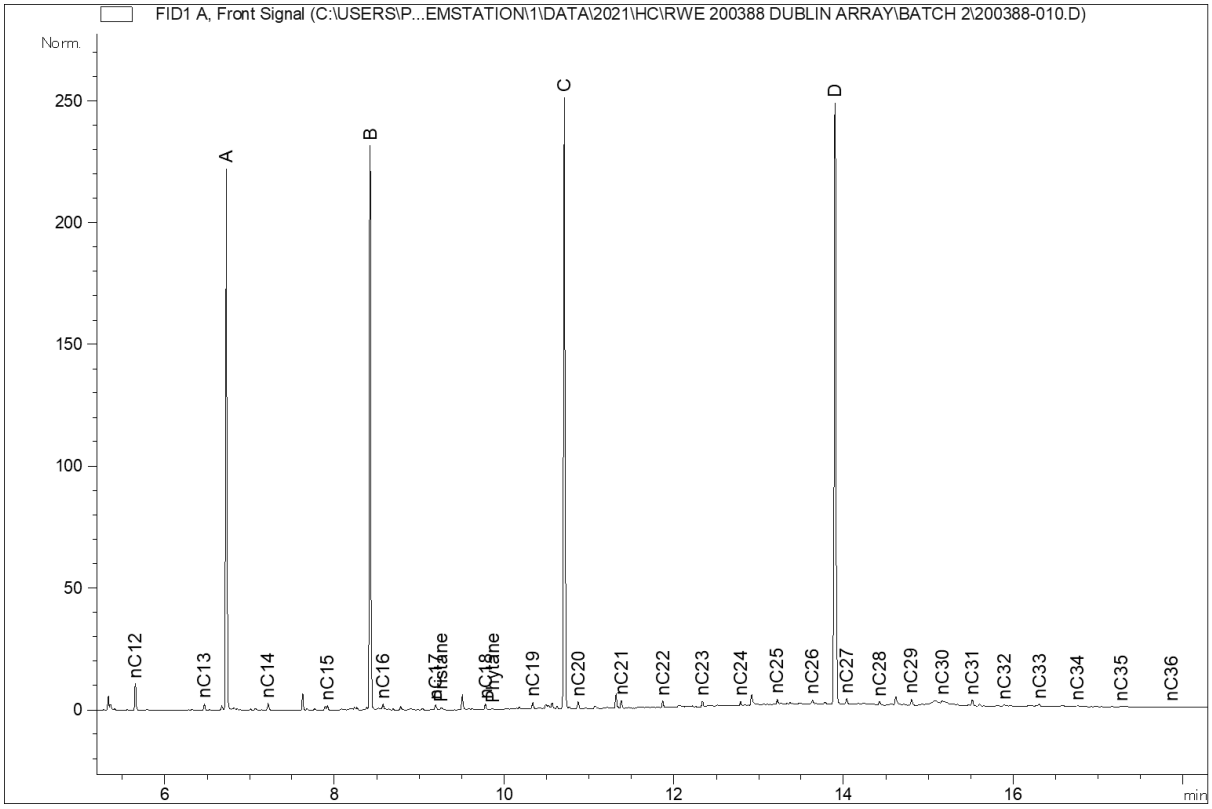
ST13


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 1\200388-008.D)
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
nC17
Pristane
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
min

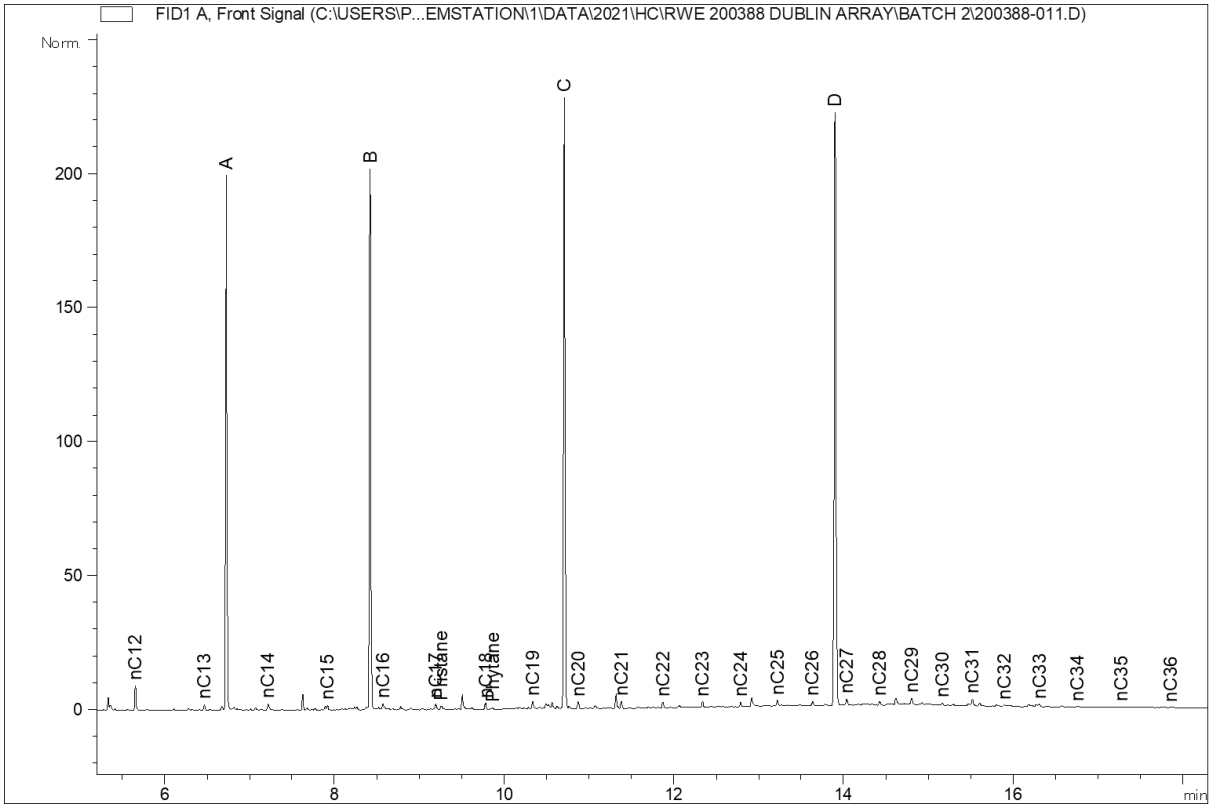
ST14


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 2\200388-009.D)
Norm.
400
300
200
100
0
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
6
8
10
12
14
16
min

ST15


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 2\200388-010.D)
Norm.
250
200
150
100
50
0
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
6
8
10
12
14
16
min

ST16


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 2\200388-011.D)
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
nC17
Pristane
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
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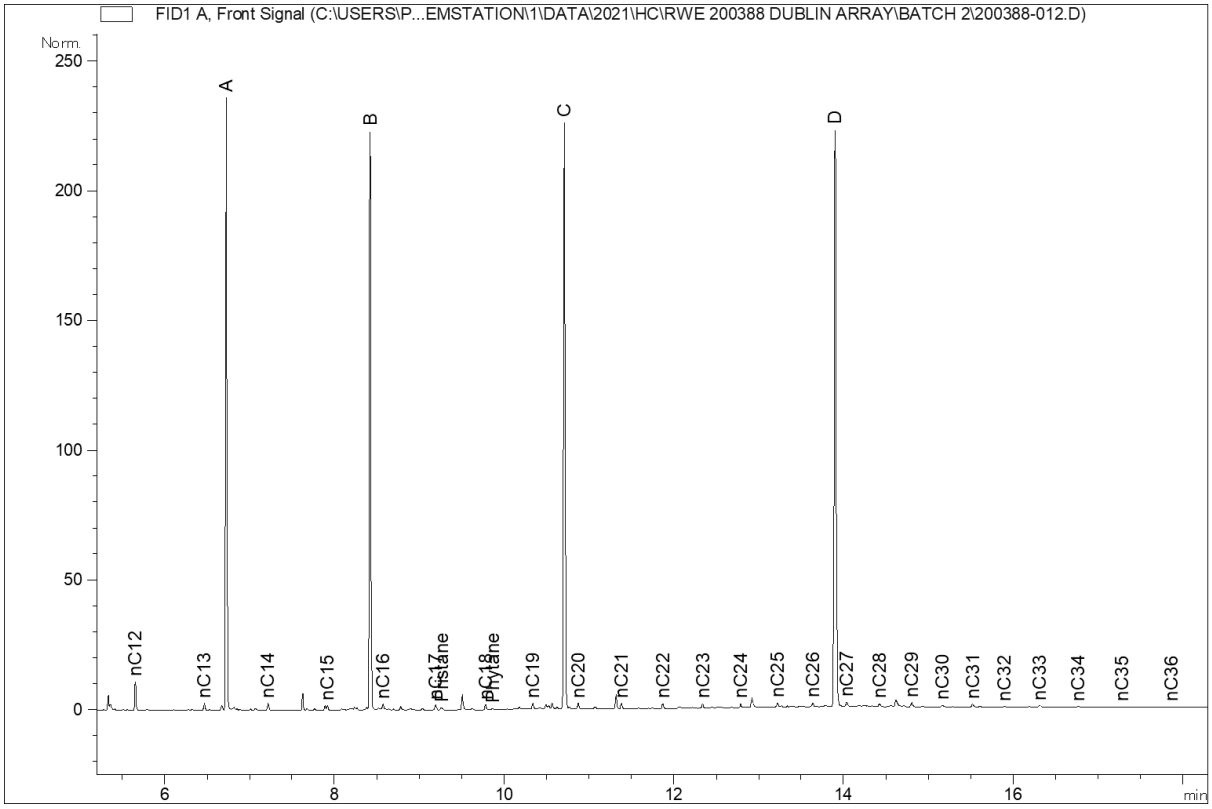
nC30
nC31
nC32
nC33
nC34
nC35
nC36
min

ST19


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 2\200388-012.D)
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
nC17
Pristane
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
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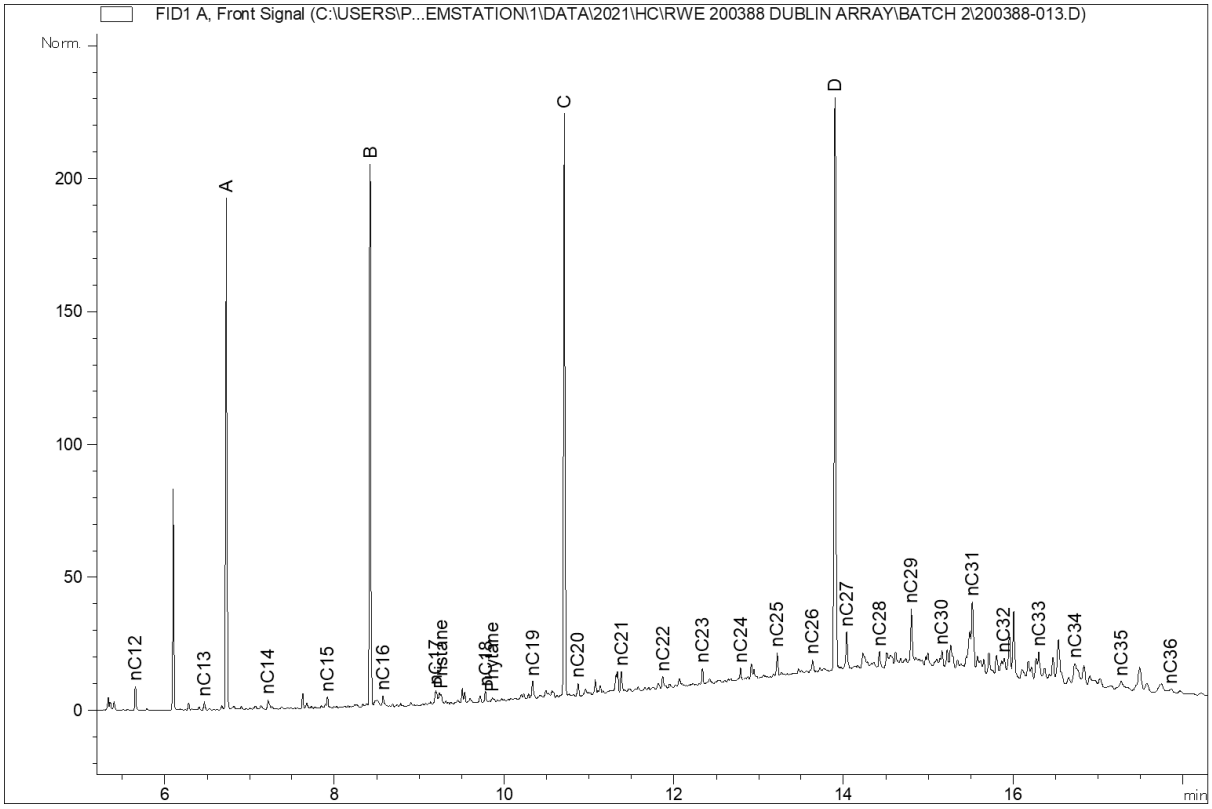
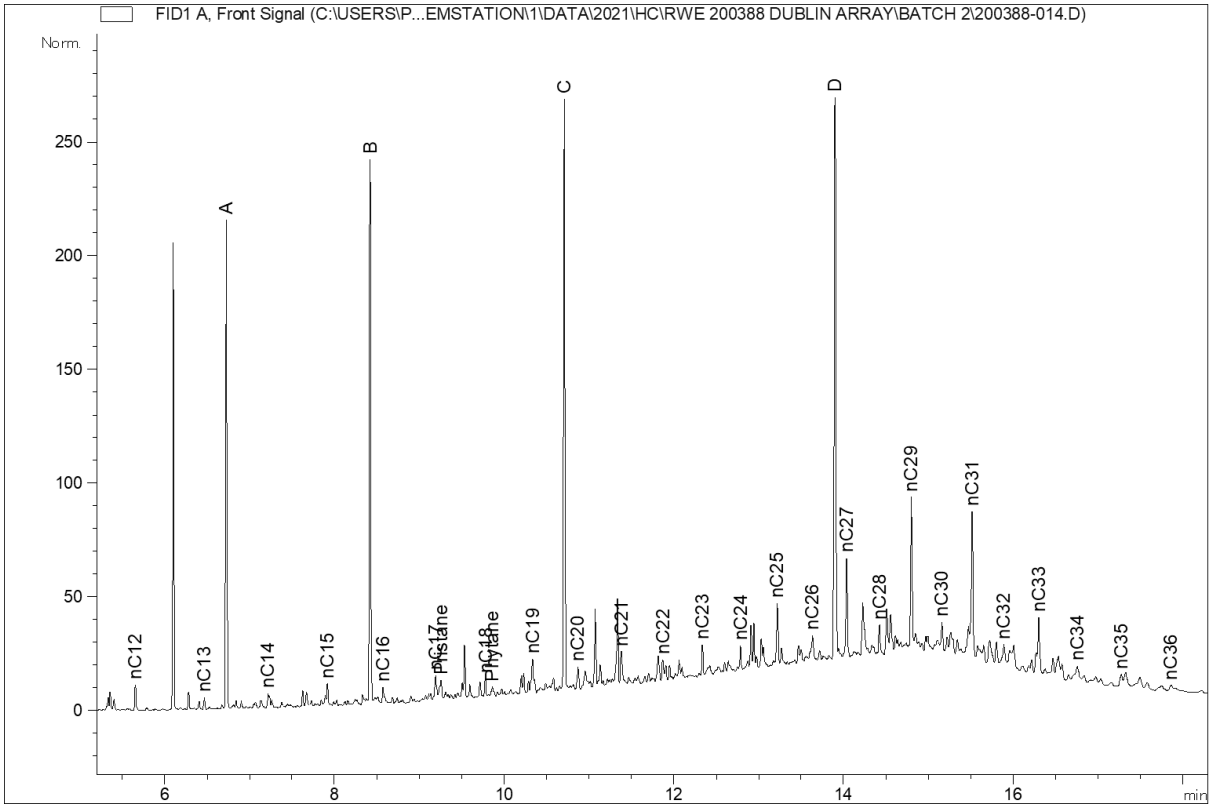
nC31
nC32
nC33
nC34
nC35
nC36
min

ST21


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 2\200388-013.D)
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
min

ST23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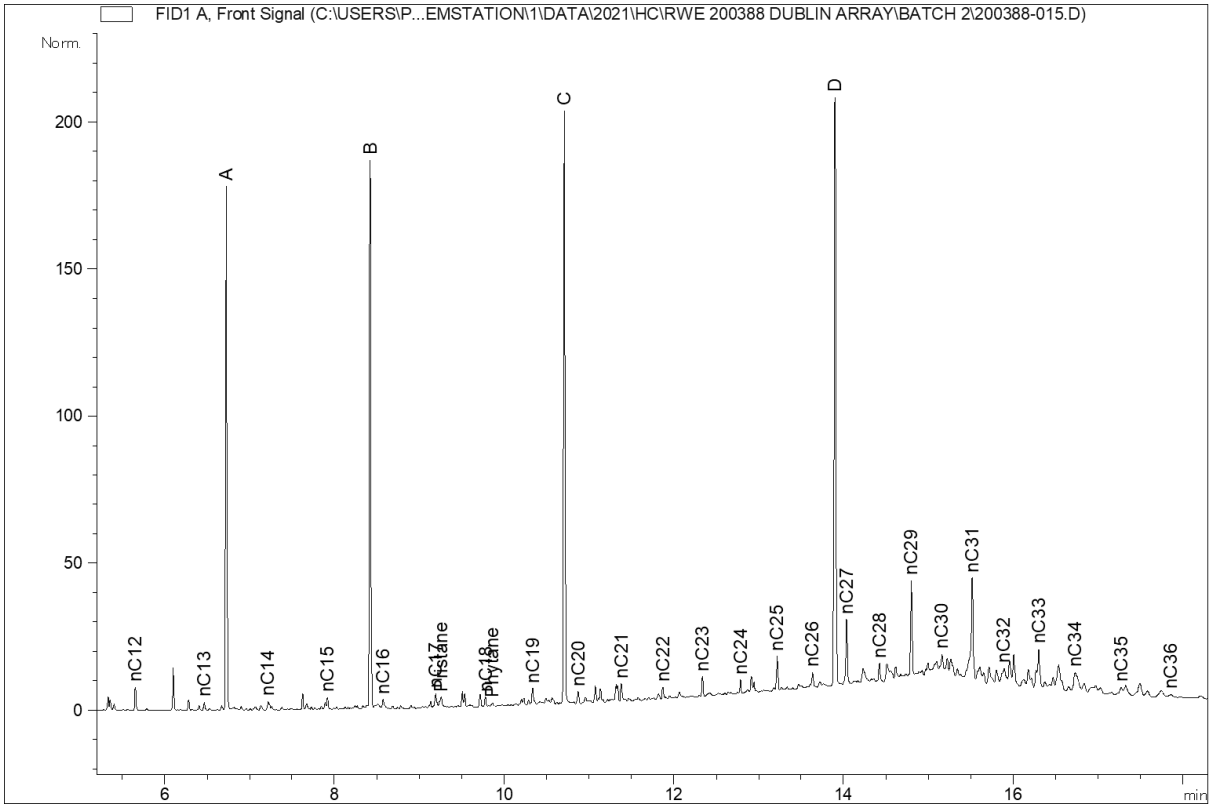
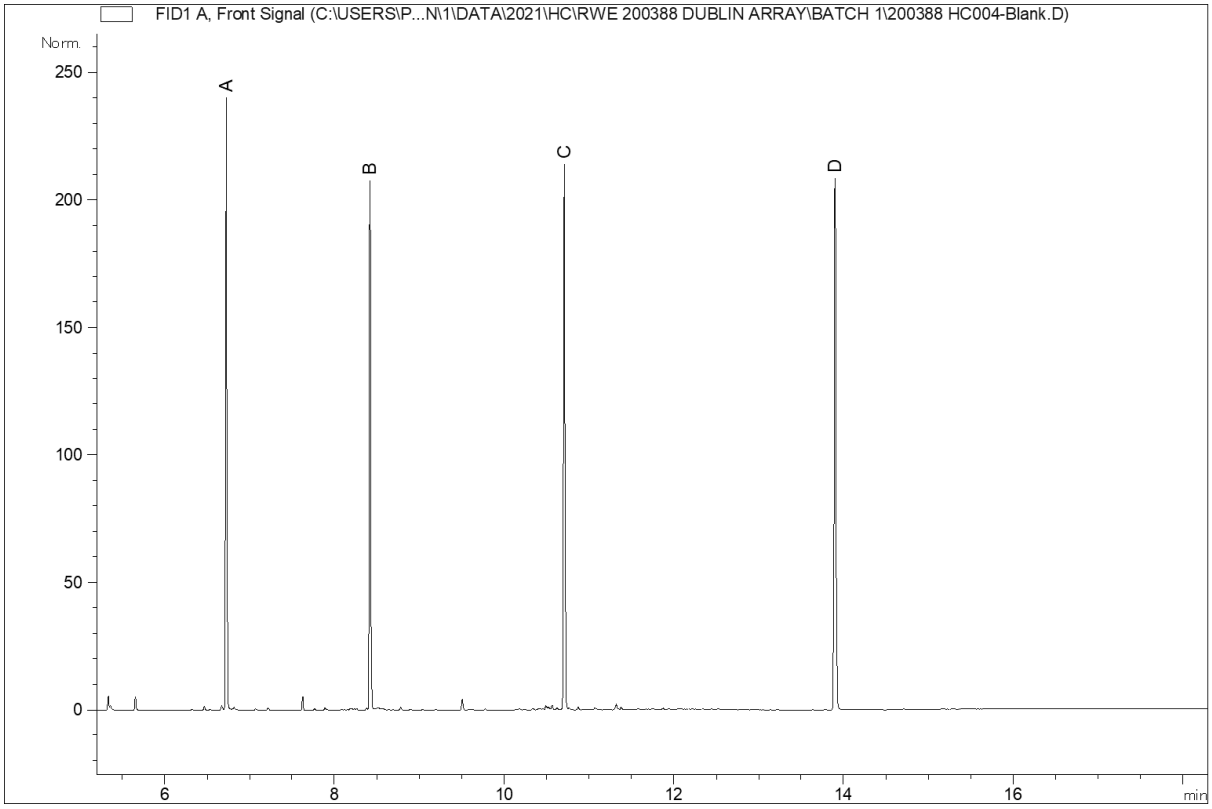
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
min

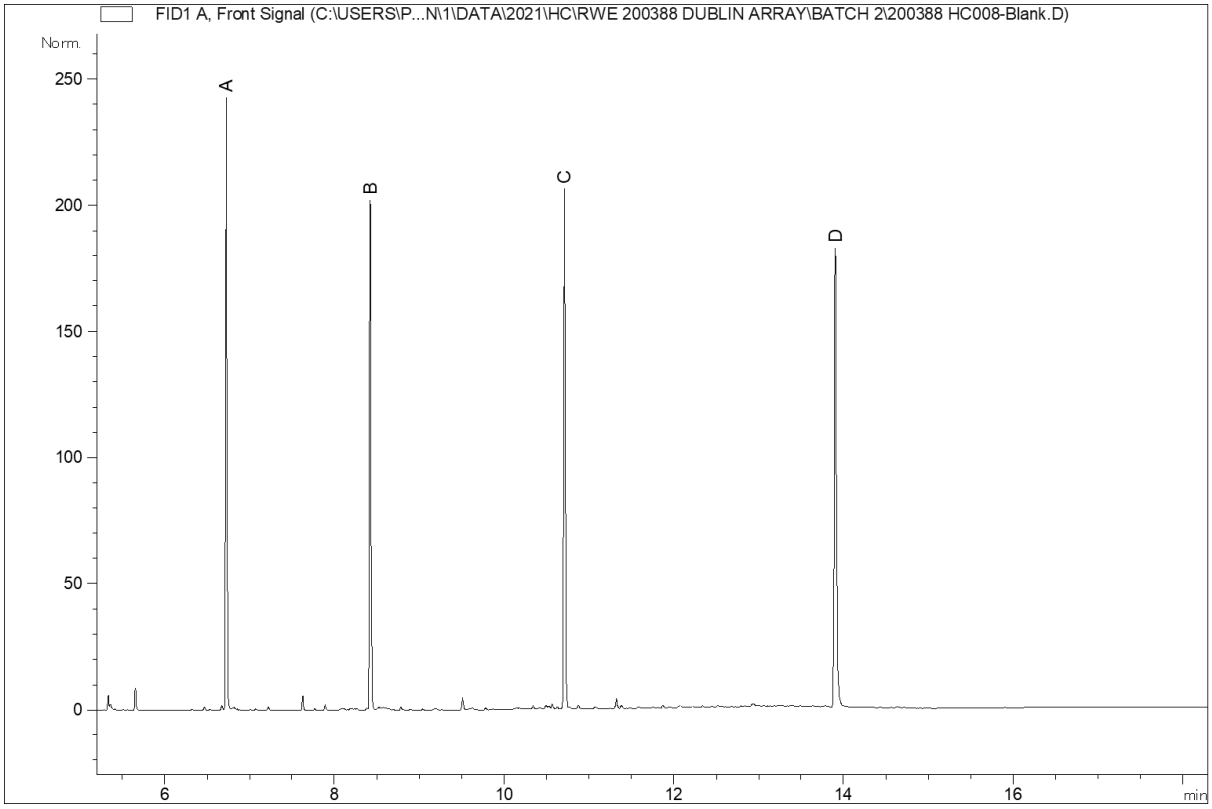
ST24


FID1 A, Front Signal (C:\USERS\P...EMSTATION\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 2\200388-015.D)
Norm.
A
B
C
D
nC12
nC13
nC14
nC15
nC16
Pristane
nC17
nC18
Phytane
nC19
nC20
nC21
nC22
nC23
nC24
nC25
nC26
nC27
nC28
nC29
nC30
nC31
nC32
nC33
nC34
nC35
nC36
min

ST26


FID1 A, Front Signal (C:\USERS\P...N\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 1\200388 HC004-Blank.D)
Norm.
A
B
C
D
min

Blank 1


FID1 A, Front Signal (C:\USERS\P...N\1\DATA\2021\HC\RWE 200388 DUBLIN ARRAY\BATCH 2\200388 HC008-Blank.D)
Norm.
250
200
150
100
50
0
A
B
C
D
6
8
10
12
14
16
min

Blank 2

E.2 Individual n-Alkane Concentrations

n-Alkane [ng/g]	Station														
	ST01	ST03	ST05	ST07	ST08	ST11	ST13	ST14	ST15	ST16	ST19	ST21	ST23	ST24	ST26
nC_{12}	5.7	10.5	5.1	6.3	5.6	4.2	5.6	6.4	8.6	9.0	8.8	9.1	9.9	11.9	9.3
nC_{13}	2.9	7.1	2.5	2.5	2.5	2.0	2.6	3.6	2.7	2.3	2.1	2.3	3.4	5.4	3.1
nC_{14}	3.4	6.9	2.3	2.8	2.4	1.9	2.7	3.6	3.2	2.6	2.8	2.6	3.9	6.5	3.6
nC_{15}	3.9	13.1	3.0	2.9	3.4	1.7	2.3	6.2	4.5	1.5	1.6	1.4	4.6	9.5	4.8
nC_{16}	4.2	8.7	2.9	2.8	2.8	2.1	2.7	4.3	3.2	1.9	1.9	1.9	3.7	7.0	3.1
nC_{17}	5.9	17.7	3.9	3.5	3.7	2.1	2.8	7.3	5.3	2.0	2.3	1.9	5.1	11.7	6.5
nC_{18}	4.1	9.1	2.5	2.8	2.6	2.1	2.8	4.5	3.3	2.0	2.3	1.9	4.5	7.9	3.9
nC_{19}	7.0	18.2	4.0	4.0	4.5	2.5	3.4	8.0	5.7	2.5	3.0	2.1	7.9	17.2	7.5
nC_{20}	5.0	16.0	3.8	3.8	4.0	2.6	3.5	6.7	4.9	2.6	2.9	2.3	6.0	13.0	5.9
nC_{21}	6.6	25.9	3.4	3.5	4.1	2.1	2.7	6.9	6.9	2.5	2.3	1.8	7.7	16.0	6.4
nC_{22}	3.5	11.5	2.5	2.5	2.7	1.7	2.3	5.0	3.9	2.0	1.9	1.6	4.4	9.3	4.3
nC_{23}	3.9	17.2	2.7	2.5	3.4	1.5	1.9	7.7	5.2	1.7	1.7	1.4	5.5	12.0	6.4
nC_{24}	3.1	13.6	2.1	1.9	2.6	1.2	1.6	5.4	3.8	1.3	1.4	1.2	4.3	9.6	4.6
nC_{25}	5.0	31.9	4.1	3.4	5.8	1.6	1.8	15.1	9.8	1.4	1.6	1.2	8.4	28.5	12.0
nC_{26}	2.9	17.7	2.3	1.9	2.6	1.1	1.3	5.5	8.2	1.2	1.3	1.1	4.8	13.0	4.8
nC_{27}	7.7	68.5	6.2	5.3	10.1	1.9	1.9	28.0	16.7	1.8	2.0	1.4	15.5	44.9	24.8
nC_{28}	3.6	16.5	3.0	2.4	4.2	1.3	1.5	7.1	5.2	1.3	1.4	1.1	6.4	12.3	6.4
nC_{29}	12.2	103	9.3	7.8	16.8	2.8	2.7	36.8	26.7	2.2	2.4	1.4	20.2	64.2	35.1
nC_{30}	3.4	18.4	2.3	2.0	3.4	0.8	1.1	6.0	4.8	0.8	0.8	0.7	4.9	11.7	5.5
nC_{31}	13.9	113	11.3	10.4	22.0	3.0	2.7	48.4	35.6	2.1	2.5	1.0	32.7	69.5	41.7
nC_{32}	1.9	9.9	1.0	1.0	1.8	0.6	0.7	2.9	5.8	0.4	0.5	0.4	4.4	8.7	3.6
nC_{33}	7.5	48.6	5.3	4.5	9.3	1.4	1.3	21.4	17.5	0.8	1.0	0.4	12.6	34.0	20.0
nC_{34}	2.1	10.9	1.7	1.6	2.5	0.4	0.5	5.0	10.3	0.3	0.4	0.3	12.2	6.8	6.7
nC_{35}	1.8	10.4	0.9	0.9	2.0	0.4	0.4	4.0	3.0	0.3	0.2	0.1	3.9	6.8	2.5
nC_{36}	1.0	5.4	0.7	0.8	1.5	0.3	0.2	2.3	2.2	0.2	0.2	0.1	1.8	3.8	2.0
Total n-Alkane [µg/g]	**0.122**	**0.629**	**0.089**	**0.083**	**0.126**	**0.043**	**0.053**	**0.258**	**0.207**	**0.046**	**0.049**	**0.040**	**0.199**	**0.441**	**0.234**
Pristane [ng/g]	**0.6**	**9.3**	**1.2**	**0.7**	**1.3**	**0.8**	**1.9**	**3.1**	**2.3**	**0.9**	**1.7**	**1.0**	**3.2**	**8.7**	**4.6**
Phytane [ng/g]	**2.5**	**3.8**	**1.2**	**0.9**	**0.9**	**0.5**	**0.8**	**1.7**	**1.4**	**0.4**	**0.7**	**0.4**	**1.4**	**5.1**	**2.3**

Notes
Individual n-alkane, pristane and phytane concentrations expressed as ng/g of dry sediment
Total n-alkane concentrations expressed as ng/g of dry sediment

Appendix F

Macrofaunal Analysis

F.1 Infaunal Abundance

Taxa	Qualifier	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA	TOTAL
CNIDARIA																																	
Cerianthus lloydii	-	D0632	283798	Gosse, 1859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
ACTINIARIA	-	D0662	1360	Hertwig, 1882	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	10	-	12
Edwardsiidae	-	D0759	100665	Andres, 1881	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	4
PLATYHELMINTHES	-	F0001	793	Minot, 1876	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	1	-	5
NEMERTEA	-	G0001	152391	-	-	-	17	5	1	1	-	2	3	3	-	-	1	1	-	-	-	-	-	-	-	4	2	1	1	1	1	2	46
NEMATODA	-	HD0001	799	-	-	-	3	-	-	-	-	-	4	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	12
SIPUNCULA																																	
Golfingia elongata	-	N0014	175026	(Keferstein, 1862)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Nephasoma minutum	-	N0025	136060	(Keferstein, 1862)	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	5	-	8
Phascolion strombus	-	N0034	410749	(Montagu, 1804)	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3
ANNELIDA																																	
Subadyte pellucida	-	P0032	130833	(Ehlers, 1864)	-	-	7	8	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	4	1	-	-	-	-	21
Malmgrenia arenicolae	-	P0050	152276	(Saint-Joseph, 1888)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	2
Malmgrenia darbouxi	-	P0050	863197	(Pettibone, 1993)	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2
Malmgrenia andreapolis	-	P0051	147008	McIntosh, 1874	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	3
Malmgrenia castanea	-	P0055	152357	McIntosh, 1876	-	-	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	4
Harmothoe fragilis	-	P0059	130763	Moore, 1910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Pholoe baltica	-	P0091	130599	Örsted, 1843	-	-	18	12	-	-	-	-	1	3	-	-	1	3	-	-	-	-	-	-	-	9	26	2	-	-	1	-	76
Pholoe inornata	-	P0092	130601	Johnston, 1839	-	-	6	1	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
Sigalion mathildae	-	P0104	131072	Audouin & Milne Edwards, 1832	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	-	-	-	-	-	-	7
Sthenelais boa	-	P0107	131074	(Johnston, 1833)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Sthenelais limicola	-	P0109	131077	(Ehlers, 1864)	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	2
Eteone longa	agg.	P0118	130616	(Fabricius, 1780)	-	-	1	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	1	-	-	-	5
Hesionura elongata	-	P0122	130649	(Southern, 1914)	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Phyllodoce groenlandica	-	P0141	334506	Örsted, 1842	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2
Eulalia aurea	-	P0151	130623	Gravier, 1896	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Eulalia viridis	-	P0161	130639	(Linnaeus, 1767)	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Eumida sanguinea	agg.	P0167	130644	(Örsted, 1843)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	7
Notophyllum foliosum	-	P0174	130661	(Sars, 1835)	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Glycera alba	-	P0256	130116	(O.F. Müller, 1776)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	3
Glycera lapidum	-	P0260	130123	Quatrefages, 1866	-	-	-	-	-	-	-	1	3	2	-	-	5	1	-	-	-	-	-	-	-	-	-	-	-	-	2	4	1	19
Glycera tridactyla	-	P0265	130130	Schmarda, 1861	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Glycinde nordmanni	-	P0268	130136	(Malmgren, 1866)	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2
Goniada maculata	-	P0271	130140	Örsted, 1843	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3
Sphaerodorum gracilis	-	P0291	131100	(Rathke, 1843)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2
Podarkeopsis capensis	-	P0319	130195	(Day, 1963)	-	-	2	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	7
Microphthalmus similis	-	P0333	130176	Bobretzky, 1870	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Syllis parapari	-	P0358	196002	San Martín & López, 2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Syllis pontxioi	-	P0358	196003	San Martín & López, 2000	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Eusyllis blomstrandi	-	P0380	131290	Malmgren, 1867	-	-	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6

Taxa	Qualifier	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA	TOTAL
Odontosyllis fulgurans	-	P0387	131327	(Audouin & Milne Edwards, 1833)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Exogone naidina	-	P0422	327985	Örsted, 1845	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Myrianida	-	P0449	129659	Milne Edwards, 1845	-	-	3	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Nephtys assimilis	-	P0495	130353	Örsted, 1843	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	2
Nephtys caeca	-	P0496	130355	(Fabricius, 1780)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2	-	-	1	1	6
Nephtys cirrosa	-	P0498	130357	Ehlers, 1868	-	-	-	-	6	8	3	-	-	-	1	2	-	-	2	-	2	-	2	-	-	-	-	-	-	1	-	-	27
Nephtys hombergii	-	P0499	130359	Savigny in Lamarck, 1818	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	2	1	-	-	-	-	8
Nephtys kersivalensis	-	P0502	130363	McIntosh, 1908	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	4
Nephtys longosetosa	-	P0503	130364	Örsted, 1842	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Nothria	-	P0543	129402	Malmgren, 1867	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Lumbrineris cf. *cingulata*	-	P0572	130240	Ehlers, 1897	-	-	17	4	5	7	1	6	1	3	-	-	15	2	-	-	-	-	-	-	-	-	-	9	8	2	-	1	81
Notocirrus scoticus	-	P0597	129861	McIntosh, 1869	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
Protodorvillea kefersteini	-	P0638	130041	(McIntosh, 1869)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Scoloplos armiger	-	P0672	130537	(Müller, 1776)	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	-	-	-	1	-	-	-	-	-	3	-	-	1	9
Poecilochaetus serpens	-	P0718	130711	Allen, 1904	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3
Dipolydora sp. A	-	P0720	129611	Verrill, 1881	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	5
Aonides oxycephala	-	P0722	131106	(Sars, 1862)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Aonides paucibranchiata	-	P0723	131107	Southern, 1914	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Laonice bahusiensis	-	P0733	131127	Söderström, 1920	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Polydora ciliata	agg.	P0752	131141	(Johnston, 1838)	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Dipolydora saintjosephi	-	P0761	131123	(Eliason, 1920)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Prionospio fallax	-	P0765	131157	Söderström, 1920	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	6
Scolelepis bonnieri	-	P0779	131171	(Mesnil, 1896)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Spiophanes bombyx	agg.	P0794	131187	(Claparède, 1870)	1	1	-	2	2	2	-	2	-	1	-	-	-	-	-	-	-	-	-	-	1	-	1	1	1	-	-	1	16
Spiophanes kroyeri	-	P0796	131188	Grube, 1860	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Magelona johnstoni	-	P0803	130269	Fiege, Licher & Mackie, 2000	1	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	-	-	10
Magelona alleni	-	P0804	130266	Wilson, 1958	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	6
Magelona filiformis	-	P0805	130268	Wilson, 1959	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Magelona mirabilis	-	P0807	130271	(Johnston, 1865)	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Caulleriella alata	-	P0829	129943	(Southern, 1914)	-	-	8	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	14
Chaetozone zetlandica	-	P0831	336485	McIntosh, 1911	-	-	-	-	-	3	-	-	1	2	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3	-	1	2	15
Chaetozone christiei	-	P0832	152217	Chambers, 2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
Chaetozone gibber	-	P0833	129953	Woodham & Chambers, 1994	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	5
Dodecaceria	-	P0840	129246	Örsted, 1843	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3
Tharyx killariensis	Type A	P0846	152269	(Southern, 1914)	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	3
Diplocirrus glaucus	-	P0878	130100	(Malmgren, 1867)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2
Flabelligera	-	P0880	129291	Sars, 1829	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Mediomastus fragilis	-	P0919	129892	Rasmussen, 1973	-	-	5	-	-	-	-	-	4	1	-	-	1	3	-	-	-	-	-	-	-	2	1	2	1	-	-	-	20
Notomastus	-	P0920	129220	M. Sars, 1851	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	2	-	-	-	-	6
Praxillura longissima	-	P0944	130327	Arwidsson, 1906	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Euclymene lombricoides	-	P0963	209899	(Quatrefages, 1866)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	5

Taxa	Qualifier	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA	TOTAL
Euclymene oerstedii	-	P0964	130294	(Claparède, 1863)	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	4	10	-	-	5	27
Praxillella affinis	-	P0971	130322	(M. Sars in G.O. Sars, 1872)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	-	-	-	4
Ophelia borealis	-	P0999	130491	Quatrefages, 1866	-	-	-	-	-	1	3	-	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	56
Travisia forbesii	-	P1007	130512	Johnston, 1840	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Galathowenia oculata	-	P1093	146950	(Zachs, 1923)	5	1	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	23
Owenia borealis	-	P1097	329882	Koh, Bhaud & Jirkov, 2003	4	-	1	2	-	-	-	1	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	3	1	1	17
Amphictene auricoma	-	P1102	152448	(O.F. Müller, 1776)	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	4
Lagis koreni	-	P1107	152367	Malmgren, 1866	-	-	-	-	-	-	-	1	-	4	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	9
Sabellaria spinulosa	-	P1117	130867	(Leuckart, 1849)	-	-	7	-	-	-	-	1	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	14
Melinna palmata	-	P1124	129808	Grube, 1870	-	-	16	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	19
Ampharete lindstroemi	-	P1139	129781	Malmgren, 1867 sensu Hessle, 1917	-	-	3	1	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	1	3	1	-	-	-	12
Anobothrus gracilis	-	P1147	129789	(Malmgren, 1866)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Polycirrus	**-**	**P1235**	**129710**	**Grube, 1850**	**-**	**-**	**3**	**1**	**-**	**-**	**1**	**-**	**3**	**1**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4**	**1**	**-**	**1**	**-**	**17**
Sabellidae	-	P1257	985	Latreille, 1825	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Spirobranchus lamarcki	-	P1340	560033	(Quatrefages, 1866)	-	-	3	-	-	4	-	1	1	5	-	-	53	27	-	-	-	-	-	-	-	-	-	65	3	-	47	19	228
Spirobranchus triqueter	-	P1341	555935	(Linnaeus, 1758)	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3
Limnodriloides	-	P1469	137362	Pierantoni, 1903	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
ARTHROPODA																																	
Anoplodactylus petiolatus	-	Q0044	134723	(Krøyer, 1844)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Verruca stroemia	-	R0041	106257	(O.F. Müller, 1776)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Balanidae	-	R0073	106057	Leach, 1817	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3
Gastrosaccus spinifer	-	S0044	120020	(Goës, 1864)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Synchelidium maculatum	-	S0138	102928	Stebbing, 1906	-	-	1	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	5
Leucothoe spinicarpa	-	S0180	102470	(Abildgaard, 1789)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
Metopa rubrovittata	-	S0219	160514	G.O. Sars, 1883	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Urothoe brevicornis	-	S0247	103226	Spence Bate, 1862	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Urothoe elegans	-	S0248	103228	Spence Bate, 1857	-	-	-	-	1	-	-	-	-	2	-	-	23	-	-	-	-	-	-	-	-	-	-	15	3	-	1	1	46
Harpinia antennaria	-	S0254	102960	Meinert, 1890	-	-	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	4	-	-	-	1	13
Iphimedia minuta	-	S0380	102345	G.O. Sars, 1883	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Nototropis swammerdamei	-	S0412	488966	(H. Milne Edwards, 1830)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Nototropis vedlomensis	-	S0413	179538	(Spence Bate & Westwood, 1862)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	2	-	3
Tritaeta gibbosa	-	S0420	102141	(Spence Bate, 1862)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4
Ampelisca brevicornis	-	S0427	101891	(Costa, 1853)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Ampelisca spinipes	-	S0438	101928	Boeck, 1861	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	4	-	-	-	9
Ampelisca tenuicornis	-	S0440	101930	Liljeborg, 1856	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Ampelisca typica	-	S0442	101933	(Spence Bate, 1856)	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Bathyporeia elegans	-	S0452	103058	Watkin, 1938	-	-	-	-	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	7
Abludomelita obtusata	-	S0498	102788	(Montagu, 1813)	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	15	-	-	-	-	18
Cheirocratus	-	**S0503**	**101669**	**Norman, 1867**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**4**
Othomaera othonis	-	S0519	534781	(H. Milne Edwards, 1830)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	6	1	9

Taxa	Qualifier	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA	TOTAL
Maerella tenuimana	-	S0521	102831	(Spence Bate, 1862)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	2	5
Megamphopus cornutus	-	S0539	102377	Norman, 1869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Gammaropsis nitida	-	S0542	102367	(Stimpson, 1853)	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Centraloecetes kroyeranus	-	S0618	1059646	(Spence Bate, 1857)	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3
Pariambus typicus	-	S0651	101857	(Krøyer, 1845)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Gnathia	**-**	**S0793**	**118437**	**Leach, 1814**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
Tanaopsis graciloides	-	S1142	136458	(Lilljeborg, 1864)	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Bodotria scorpioides	-	S1197	110445	(Montagu, 1804)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Iphinoe trispinosa	-	S1203	110462	(Goodsir, 1843)	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eudorella truncatula	-	S1208	110535	(Bate, 1856)	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	6
Anapagurus hyndmanni	-	S1448	107217	(Bell, 1845)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Pagurus bernhardus	-	S1457	107232	(Linnaeus, 1758)	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Pisidia longicornis	-	S1482	107188	(Linnaeus, 1767)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Ebalia tuberosa	-	S1508	107301	(Pennant, 1777)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Corystes cassivelaunus	-	S1552	107277	(Pennant, 1777)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Atelecyclus rotundatus	-	S1555	107273	(Olivi, 1792)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2
Liocarcinus depurator	-	S1580	107387	(Linnaeus, 1758)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Pinnotheres pisum	-	S1638	107473	(Linnaeus, 1767)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
MOLLUSCA																																	
Leptochiton asellus	-	W0053	140199	(Gmelin, 1791)	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	1	3	-	6	3	16
Steromphala tumida	-	W0161	1477356	(Montagu, 1803)	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	5	-	-	9	-	19
Steromphala cineraria	-	W0163	1039839	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2
Jujubinus montagui	-	W0174	141811	(Wood, 1828)	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3
Aporrhais pespelecani	-	W0430	138760	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Euspira nitida	-	W0491	151894	(Donovan, 1803)	-	1	-	-	-	1	1	1	-	1	-	-	1	1	-	-	-	-	-	-	-	1	-	-	-	-	1	-	9
Buccinum undatum	-	W0708	138878	Linnaeus, 1758	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	2
Colus jeffreysianus	-	W0717	138903	(P. Fischer, 1868)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Sorgenfreispira brachystoma	-	W0798	847930	(Philippi, 1844)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Cylichna cylindracea	-	W1028	139476	(Pennant, 1777)	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Dendronotus	-	W1266	137885	Alder & Hancock, 1845	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Nucula nitidosa	-	W1569	140589	Winckworth, 1930	3	9	1	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	8	14	5	-	-	1	-	1	45
Nucula nucleus	-	W1570	140590	(Linnaeus, 1758)	-	-	4	-	-	-	-	-	-	-	-	-	29	54	-	-	-	-	1	-	-	-	-	117	70	-	60	26	361
Modiolus modiolus	-	W1702	140467	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Aequipecten opercularis	-	W1773	140687	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Lucinoma borealis	-	W1829	140283	(Linnaeus, 1767)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Thyasira flexuosa	-	W1837	141662	(Montagu, 1803)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	-	9
Tellimya ferruginosa	-	W1902	146952	(Montagu, 1808)	-	-	-	5	-	2	-	4	-	1	-	-	-	1	-	-	1	-	-	-	-	4	2	3	-	-	-	-	23
Kurtiella bidentata	-	W1906	345281	(Montagu, 1803)	-	-	6	47	-	1	1	4	-	-	-	-	-	1	-	-	-	-	-	-	-	33	115	2	1	2	4	5	222
Acanthocardia echinata	-	W1943	138992	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Spisula elliptica	-	W1975	140300	(T. Brown, 1827)	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Spisula subtruncata	-	W1978	140302	(da Costa, 1778)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Ensis ensis	-	W1999	140733	(Linnaeus, 1758)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Taxa	Qualifier	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA	TOTAL
Ensis magnus	-	W2000	160539	Schumacher, 1817	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Pharus legumen	-	W2004	140736	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Phaxas pellucidus	-	W2006	140737	(Pennant, 1777)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	1	4
Fabulina fabula	-	W2019	146907	(Gmelin, 1791)	5	2	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	10	5	-	-	-	-	-	-	25
Gari fervensis	-	W2051	140870	(Gmelin, 1791)	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	4
Abra alba	-	W2059	141433	(W. Wood, 1802)	-	-	2	1	-	-	-	-	-	1	-	-	5	6	-	-	-	-	-	-	-	3	-	42	7	-	9	5	81
Abra prismatica	-	W2062	141436	(Montagu, 1808)	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	4
Chamelea striatula	-	W2098	141908	(da Costa, 1778)	-	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Timoclea ovata	-	W2104	141929	(Pennant, 1777)	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	4
Venerupis corrugata	-	W2124	181364	(Gmelin, 1791)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Dosinia lupinus	-	W2128	141912	(Linnaeus, 1758)	-	-	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	4
Varicorbula gibba	-	W2157	378492	(Olivi, 1792)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Hiatella arctica	-	W2166	140103	(Linnaeus, 1767)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3
Thracia phaseolina	-	W2231	152378	(Lamarck, 1818)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	9
PHORONIDA																																	
Phoronis	-	ZA0003	128545	Wright, 1856	-	-	4	1	-	1	-	-	-	1	-	-	-	4	-	-	-	-	-	-	-	7	1	-	1	-	-	-	20
ECHINODERMATA																																	
Ophiothrix fragilis	-	ZB0124	125131	(Abildgaard in O.F. Müller, 1789)	-	-	52	83	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	32	2	-	-	-	8	181
Acrocnida brachiata	-	ZB0151	236130	(Montagu, 1804)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	-	-	1	-	-	13
Amphiura filiformis	-	ZB0154	125080	(O.F. Müller, 1776)	-	-	13	12	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	7	64	1	-	1	-	-	99
Amphipholis squamata	-	ZB0161	125064	(Delle Chiaje, 1828)	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-	19	2	25
Ophiura albida	-	ZB0168	124913	Forbes, 1839	-	-	4	1	-	-	-	-	-	6	-	-	3	-	-	-	-	-	-	-	-	-	-	9	7	-	1	1	32
Ophiura ophiura	-	ZB0170	124929	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	6
Psammechinus miliaris	-	ZB0193	124319	(P.L.S. Müller, 1771)	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-	-	-	-	2	-	-	5	-	11
Echinus esculentus	-	ZB0198	124287	Linnaeus, 1758	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Echinocyamus pusillus	-	ZB0212	124273	(O.F. Müller, 1776)	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Echinocardium cordatum	-	ZB0223	124392	(Pennant, 1777)	-	-	1	3	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	5	2	2	-	-	1	-	16
Echinocardium flavescens	-	ZB0224	124394	(O.F. Müller, 1776)	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Thyone fusus	-	ZB0262	124670	(O.F. Müller, 1776)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leptosynapta bergensis	-	ZB0292	124462	(Östergren, 1905)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	3
CHORDATA																																	
Ciona intestinalis	-	ZD0071	103732	(Linnaeus, 1767)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2
Dendrodoa grossularia	-	ZD0120	103882	(Van Beneden, 1846)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1

Number of taxa	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189	189
Abundance	32	24	271	213	18	51	18	32	84	49	1	3	196	131	5	0	5	6	5	1	33	144	302	344	140	27	233	114	2482				

Taxa	Qualifier	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA	TOTAL
PRESENCE/ABSENCE DATA																																	
Folliculinidae	-	A0000	1692	Dons, 1914	-	-	P	-	-	P	P	P	P	P	P	P	P	-	-	P	P	P	P	P	-	-	-	P	P	P	P	P	P
PORIFERA	-	C0001	558	Grant, 1836	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Cliona	agg.	C0475	132026	Grant, 1826	-	-	P	-	P	P	-	P	P	-	-	-	P	-	-	-	-	-	-	-	-	-	-	P	P	P	P	P	P
CNIDARIA	juv.	D0001	1267	Hatschek, 1888	-	-	-	-	P	P	-	P	-	-	-	-	-	-	-	-	P	-	-	-	-	-	P	-	-	P	P	-	P
HYDROZOA	-	D0058	1337	Owen, 1843	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
ANTHOATHECATA	-	D0140	13551	Cornelius, 1992	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Bougainvilliidae	-	D0246	1594	Lütken, 1850	P	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Hydractinia echinata	-	D0273	117644	(Fleming, 1828)	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
LEPTOTHECATA	-	D0295	13552	Cornelius, 1992	P	P	P	P	P	P	P	P	-	P	-	P	-	-	-	-	P	-	P	-	P	P	-	P	P	P	-	P	P
Diphasia attenuata / rosacea	-	D0415/ D0420	117877 / 117883	(Hincks, 1866) / (Linnaeus, 1758)	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Hydrallmania falcata	-	D0424	117890	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	P	-	-	-	P	-	-	-	-	-	-	-	-	-	P	-	P	-	-	-	P
Sertularella	-	D0427	117233	Gray, 1848	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Sertularia	-	D0433	117234	Linnaeus, 1758	-	-	-	-	-	P	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	P	-	P	P	-	-	P
Campanulariidae	-	D0491	1606	Johnston, 1836	-	-	P	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Clytia	-	D0501	117030	Lamouroux, 1812	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
ANTHOZOA	-	D0583	1292	Ehrenberg, 1834	-	-	P	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	P	P	P
Alcyonium digitatum	-	D0597	125333	Linnaeus, 1758	-	-	-	-	-	-	-	-	-	-	-	-	P	P	-	-	-	-	-	-	-	-	-	-	-	-	P	P	P
Disporella hispida	-	Y0066	111730	(Fleming, 1828)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	P
Alcyonidiidae	-	Y0072	110783	Johnston, 1837	-	-	-	P	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	P
Alcyonidium diaphanum	-	Y0076	111597	(Hudson, 1778)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P
Eucratea loricata	-	Y0165	111361	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	P	-	-	-	P
MEMBRANIPOROIDEA	-	Y0168	153579	Busk, 1854	-	-	-	-	-	P	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P
Conopeum reticulum	-	Y0172	111351	(Linnaeus, 1767)	-	-	P	P	P	-	-	-	P	P	-	-	P	P	-	-	-	-	-	-	-	P	-	-	P	-	-	-	P
Electridae	-	Y0174	110746	Stach, 1937 (1851)	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Electra monostachys	-	Y0177	111354	(Busk, 1854)	-	-	-	-	-	-	-	-	P	-	-	-	-	P	-	-	-	-	-	-	-	-	-	P	P	-	-	-	P
Electra pilosa	-	Y0178	111355	(Linnaeus, 1767)	-	-	-	-	-	P	-	-	P	-	-	-	P	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Bicellariella ciliata	-	Y0256	111147	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P
Scrupocellaria scruposa	-	Y0279	111250	(Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P
Cribrilina punctata / Collarina balzaci	-	Y0310/ Y0314	111314 / 111310	(Hassall, 1841) / (Audouin, 1826)	-	-	-	-	-	P	-	-	P	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P
Hippothoa divaricata	-	Y0332	111399	Lamouroux, 1821	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Chorizopora brongniartii	-	Y0344	111304	(Audouin, 1826)	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Escharella immersa	-	Y0364	111484	(Fleming, 1828)	-	-	-	-	-	-	-	-	P	-	-	-	-	P	-	-	-	-	-	-	-	-	-	P	P	-	P	P	P
Escharella ventricosa	-	Y0370	111496	(Hassall, 1842)	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	P	-	P
Neolagenipora collaris	-	Y0376	111509	(Norman, 1867)	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P
Hippoporina pertusa	-	Y0414	111079	(Esper, 1796)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P	P
Phylactella labrosa	-	Y0421	111579	(Busk, 1854)	-	-	-	-	-	-	-	-	P	P	-	-	-	-	-	-	-	-	-	-	-	-	-	P	P	-	-	-	P
Schizomavella	-	Y0467	110829	Canu & Bassler, 1917	-	-	-	-	P	P	-	-	P	P	-	-	P	P	-	-	-	-	-	-	-	-	-	P	P	-	P	P	P
Fenestrulina delicia	-	Y0482	408266	Winston, Hayward & Craig, 2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P
Turbicellepora avicularis	-	Y0504	111285	(Hincks, 1860)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P	P

Taxa	Qualifier	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA	TOTAL
The following taxa (highlighted in bold) were merged for statistical analysis																																	
Polycirrus	-	P1235	129710	Grube, 1850	-	-	3	1	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	8
Polycirrus denticulatus	-	P1239	131527	Saint-Joseph, 1894	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	4	-	-	1	-	7
Polycirrus medusa	-	P1242	131531	Grube, 1850	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Polycirrus	**-**	**P1235**	**129710**	**Grube, 1850**	**-**	**-**	**3**	**1**	**-**	**-**	**1**	**-**	**3**	**1**	**-**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4**	**1**	**-**	**1**	**-**	**17**
Cheirocratus	female	S0503	101669	Norman, 1867	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3
Cheirocratus sundevallii	-	S0506	102798	(Rathke, 1843)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Cheirocratus	**-**	**S0503**	**101669**	**Norman, 1867**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**4**
Gnathia	**female**	S0793	118437	Leach, 1814	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Gnathia oxyuraea	-	S0796	118437	Leach, 1814	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Gnathia	**-**	**S0793**	**118437**	**Leach, 1814**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
The following taxa have been removed from the main data matrix to facilitate analysis																																	
JUVENILES																																	
SIPUNCULA	juv.	N0001	1268	Stephen, 1964	-	-	-	-	-	-	-	-	1	-	-	-	5	2	-	-	-	-	-	-	-	-	-	-	-	1	1		10
Polynoinae	juv.	P0025	155091	Kinberg, 1856	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		1
Nephtyidae	juv.	P0490	956	Grube, 1850	-	2	2	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-		7
Lumbrineridae	juv.	P0569	967	Schmarda, 1861	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-		1
Owenia	juv.	P1097	129427	Delle Chiaje, 1844	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-		2
Ampelisca	juv.	S0423	101445	Krøyer, 1842	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-		1
Gnathia	praniza	S0793	118437	Leach, 1814	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-		1
Nucula	juv.	W1565	138262	Lamarck, 1799	-	1	-	-	-	-	-	-	-	-	-	-	5	2	-	-	-	-	-	-	-	-	1	-	5	-	-	1	15
Mytilus	juv.	W1693	138228	Linnaeus, 1758	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		2
Modiolinae	juv.	W1697	510724	G. Termier & H. Termier, 1950	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-		3
Anomiidae	juv.	W1805	214	Rafinesque, 1815	-	-	21	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-		33
Abra	juv.	W2058	138474	Lamarck, 1818	-	5	26	2	-	-	-	-	-	1	-	-	27	-	-	-	-	-	-	-	1	3	-	-	44	1	-	6	116
Veneridae	juv.	W2086	243	Rafinesque, 1815	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	3
Dosinia	juv.	W2126	138636	Scopoli, 1777	-	-	1	-	1	1	6	1	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
Mya	juv.	W2144	138211	Linnaeus, 1758	-	-	1	-	-	-	-	-	-	1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	7
THRACIOIDEA	juv.	W2226	382318	Stoliczka, 1870 (1839)	-	-	-	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Thracia	juv.	W2227	138549	Blainville, 1824	-	4	-	-	-	2	3	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	18
ASTEROIDEA	juv.	ZB0018	123080	de Blainville, 1830	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
OPHIUROIDEA	juv.	ZB0105	123084	Gray, 1840	-	-	16	39	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	10	-	1	5	10	4	87
Amphiuridae	juv.	ZB0148	123206	Ljungman, 1867	1	1	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	1	3	1	-	-	-	-	1	11
Ophiuridae	juv.	ZB0165	123200	Müller & Troschel, 1840	-	-	14	10	-	3	1	-	-	-	-	1	-	2	-	-	-	-	-	-	-	6	3	-	-	-	1	-	41
Echinocardium	juv.	ZB0222	123426	Gray, 1825	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leptosynapta	juv.	ZB0291	123449	Verrill, 1867	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
ASCIDIACEA	juv.	ZD0002	1839	Blainville, 1824	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	3

Taxa	Qualifier	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA	TOTAL
DAMAGED FAUNA																																		
POLYCHAETA (frag.)	dam.	P0002	883	Grube, 1850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	P
Nephtyidae	dam.	P0490	956	Grube, 1850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Spiophanes	dam.	P0793	129626	Grube, 1860	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Spirobranchus	dam.	P1339	129582	Blainville, 1818	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	14
Thyasiridae	dam.	W1833	219	Dall, 1900 (1895)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Abra	dam.	W2058	138474	Lamarck, 1818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2
Phoronis (frag.)	dam.	ZA0003	128545	Wright, 1856	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	P
ECHINODERMATA (frag.)	dam.	ZB0002	1806	Bruguière, 1791 [ex Klein, 1734]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	P
Echinocardium	dam.	ZB0222	123426	Gray, 1825	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2

Notes
agg. = aggregate dam. = Damaged fauna juv. = Juvenile fauna

F.2 Epifaunal Presence/Absence Data

Taxa	SDC	AphiaID	Authority	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA
Folliculinidae	A0000	1692	Dons, 1914			1			1	1	1	1	1	1	1	1			1	1	1	1	1				1	1	1	1	1
Cliona	C0475	132026	Grant, 1826			1		1	1		1	1				1											1	1	1	1	1
HYDROZOA	D0058	1337	Owen, 1843										1																		
ANTHOATHECATA	D0140	13551	Cornelius, 1992			1																									
Bougainvilliidae	D0246	1594	Lütken, 1850	1		1																									
Hydractinia echinata	D0273	117644	(Fleming, 1828)													1															
LEPTOTHECATA	D0295	13552	Cornelius, 1992	1	1	1	1	1	1	1	1		1		1					1		1		1	1		1	1	1		1
Diphasia attenuata / rosacea	D0415/ D0420	117877/ 117882	(Hincks, 1866) / (Linnaeus, 1758)						1																						
Hydrallmania falcata	D0424	117890	(Linnaeus, 1758)									1				1										1		1			
Sertularella	D0427	117233	Gray, 1848													1															
Sertularia	D0433	117234	Linnaeus, 1758						1							1										1		1	1		
Campanulariidae	D0491	1606	Johnston, 1836			1					1																				
Clytia	D0501	117030	Lamouroux, 1812													1															
ANTHOZOA	D0583	1292	Ehrenberg, 1834			1										1														1	1
Alcyonium digitatum	D0597	125333	Linnaeus, 1758													1	1													1	1
Disporella hispida	Y0066	111730	(Fleming, 1828)																	1											
Alcyonidiidae	Y0072	110783	Johnston, 1837				1									1											1				
Alcyonidium diaphanum	Y0076	111597	(Hudson, 1778)																									1			
Eucratea loricata	Y0165	111361	(Linnaeus, 1758)																							1		1			
MEMBRANIPOROIDEA	Y0168	153579	Busk, 1854						1		1																	1			
Conopeum reticulum	Y0172	111351	(Linnaeus, 1767)			1	1	1				1	1			1	1								1			1			
Electridae	Y0174	110746	Stach, 1937 (1851)									1																			
Electra monostachys	Y0177	111354	(Busk, 1854)									1					1										1	1			
Electra pilosa	Y0178	111355	(Linnaeus, 1767)						1			1				1	1														
Bicellariella ciliata	Y0256	111147	(Linnaeus, 1758)																									1			
Scrupocellaria scruposa	Y0279	111250	(Linnaeus, 1758)																									1			
Cribrilina punctata / Collarina balzaci	Y0310/ Y0314	111314/ 111310	(Hassall, 1841) / (Audouin, 1826)						1			1				1												1			
Hippothoa divaricata	Y0332	111399	Lamouroux, 1821									1																			
Chorizopora brongniartii	Y0344	111304	(Audouin, 1826)														1														
Escharella immersa	Y0364	111484	(Fleming, 1828)									1					1										1	1		1	1
Escharella ventricosa	Y0370	111496	(Hassall, 1842)									1															1			1	
Neolagenipora collaris	Y0376	111509	(Norman, 1867)									1																1			
Hippoporina pertusa	Y0414	111079	(Esper, 1796)																								1				1
Phylactella labrosa	Y0421	111579	(Busk, 1854)									1	1														1	1			
Schizomavella	Y0467	110829	Canu & Bassler, 1917					1	1			1	1			1	1										1	1		1	1
Fenestrulina delicia	Y0482	408266	Winston, Hayward & Craig, 2000																									1			
Turbicellepora avicularis	Y0504	111285	(Hincks, 1860)																								1				1
			Number of taxa	2	1	8	3	4	9	2	5	14	6	1	2	14	7	0	1	3	1	2	1	1	2	3	11	18	4	7	9
The following taxa have been removed from the main data matrix to facilitate analysis																															
PORIFERA	C0001	558	Grant, 1836													1															
CNIDARIA	D0001	1267	Hatschek, 1888					1	1		1									1						1			1	1	

Notes

agg. = aggregate juv. = Juvenile fauna

F.3 Biomass

Taxon	ST01_FA	ST02_FA	ST03_FA	ST04_FA	ST05_FA	ST06_FA	ST07_FA	ST08_FA	ST09_FA	ST10_FA	ST11_FA	ST13_FA	ST14_FA	ST15_FA
CNIDARIA	-	-	-	-	-	-	-	-	-	0.0024	-	-	-	-
POLYCHAETA	0.0754	0.0308	1.3458	0.5422	0.1632	0.3276	0.0761	0.3534	1.0264	1.0646	0.0157	0.0603	0.4013	0.2195
OLIGOCHAETA	-	-	-	-	-	-	-	-	-	0.0002	-	-	-	-
CRUSTACEA	0.0315	0.0009	2.7794	0.0009	0.0018	0.0011	0.0031	-	-	0.0031	-	-	10.321	0.0046
MOLLUSCA	0.4708	5.764	5.860	1.069	9.09	11.96	0.0430	0.6160	0.0251	1.639	-	-	18.68	11.9202
ECHINODERMATA	0.0005	0.0337	36.22	99.6	0.0003	14.87	0.2370	20.66	0.0380	1.894	0.2082	0.0014	33.91	4.0966
OTHERS	0.0004	-	0.0904	0.0929	0.0010	0.0007	-	0.0427	0.0014	0.0114	-	-	0.0163	0.0070
Total	0.5786	5.830	46.29	101.3	9.26	27.16	0.3592	21.67	1.0909	4.615	0.2239	0.0617	63.33	16.25

Taxon	ST16_FA	ST17_FA	ST18_FA	ST19_FA	ST20_FA	ST21_FA	ST22_FA	ST23_FA	ST24_FA	ST26_FA	ST27_FA	ST28_FA	ST29_FA	ST30_FA
CNIDARIA	-	-	-	-	-	-	-	-	-	-	0.0056	-	0.1877	-
POLYCHAETA	0.0189	0.0014	0.0381	0.1654	0.0404	-	0.0464	0.4709	0.3103	6.3026	0.3493	0.8387	2.8669	0.1563
OLIGOCHAETA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRUSTACEA	-	-	-	0.0006	-	0.0093	1.2513	0.0053	0.0005	0.8800	0.1771	-	7.0459	0.0166
MOLLUSCA	-	-	0.0046	-	0.0476	-	0.5814	4.130	63.499	30.971	11.319	0.0639	9.031	41.63
ECHINODERMATA	-	-	0.0046	-	-	-	4.826	29.024	66.656	35.891	1.150	0.0385	10.468	0.0694
OTHERS	0.0056	-	-	-	-	-	-	0.1229	0.0104	0.0011	0.0036	0.1414	0.0193	0.0443
Total	0.0245	0.0014	0.0473	0.1660	0.0880	0.0093	6.705	33.75	130.48	74.05	13.00	1.0825	29.62	41.92

Notes
Raw biomass data expressed as blotted wet weight (g)