East Anglia TWO Offshore Windfarm

Appendix 9.4

Benthic Statistical Analysis Report

Environmental Statement
Volume 3

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Revision Summary				
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Description of Revisions			
Rev	**Page**	**Section**	**Description**
01	n/a	n/a	Final for Submission

Table of Contents

The figures in ***Appendix 9.4*** are listed in the table below.

Figure number	Title
1.1	East Anglia TWO Infauna Ecology Baseline
3.1	Distribution of Statistical Groups
4.1	East Anglia TWO Biotope Classification of Faunal Groups

The plates in ***Appendix 9.4*** are listed in the table below.

Plate number	Title
3.1	nMDS plots showing the distribution of the samples by infaunal grouping. The top nMDS plot shows a couple of ‘outliers’ from within the aa group (B28 B19 and B33). The bottom nMDS plot shows the same nMDS plot zoomed in on the area with the majority of the samples plotted.

The following annexes associated with ***Appendix 9.4*** are listed in the table below.

Annex number	Title
1	Complete Taxa List
2	Diversity Indices Results
3	Anosim Routine Input
4	Simper Routine Input

Glossary of Acronyms

1-λ‘	Simpson’s Index
ANOSIM	Analysis of Similarity
EA1N	East Anglia ONE North
EA2	East Anglia TWO
H‘	Shannon-Wiener Index
J‘	Pielou’s Eveness
MNCR	Marine Classification System
nMDS	Non-metric Muti-Dimensional Scaling
PRIMER	Plymouth Routines in Multivariate Ecological Research
SIMPER	Similarity Percentages
SIMPROF	Similarity Profile Analysis
ZEA	Zone Environmental Appraisal

Glossary of Terminology

Biotope	The physical habitat with its biological community; a term which refers to the combination of the physical environment (habitat) and its distinctive assemblage of conspicuous species.
Dendrogram	A type of tree diagram showing hierarchical clustering – relationships between similar sets of data.
Diversity index	A mathematical measure of species diversity in a given community.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
Infauna	Benthic animals which live within in the seabed.
Multivariate Analysis	A set of statistical techniques used for the analysis of data that contain more than one variable.
Univariate Analysis	A set of statistical techniques used for the analysis of data that contain only one variable.

9.4 Introduction

1. This appendix contains the univariate and multivariate statistical analysis carried out in order to characterise the infaunal community which exists across the East Anglia Zone, in particular the East Anglia ONE North and East Anglia TWO offshore windfarm sites.

9.4.1 Survey Campaigns

2. Data from five separate survey campaigns have been used to inform the benthic ecology baseline as described in ***Chapter 9 Benthic Ecology***. ***Table A9.4.1*** below lists the survey campaign, the dataset name, the year the survey was carried out, and number of grab samples obtained. All samples were obtained using a $0.1m^2$ Hamon grab. ***Figure 1.1(a)*** to ***Figure 1.1(d)*** shows the locations of each sample point.

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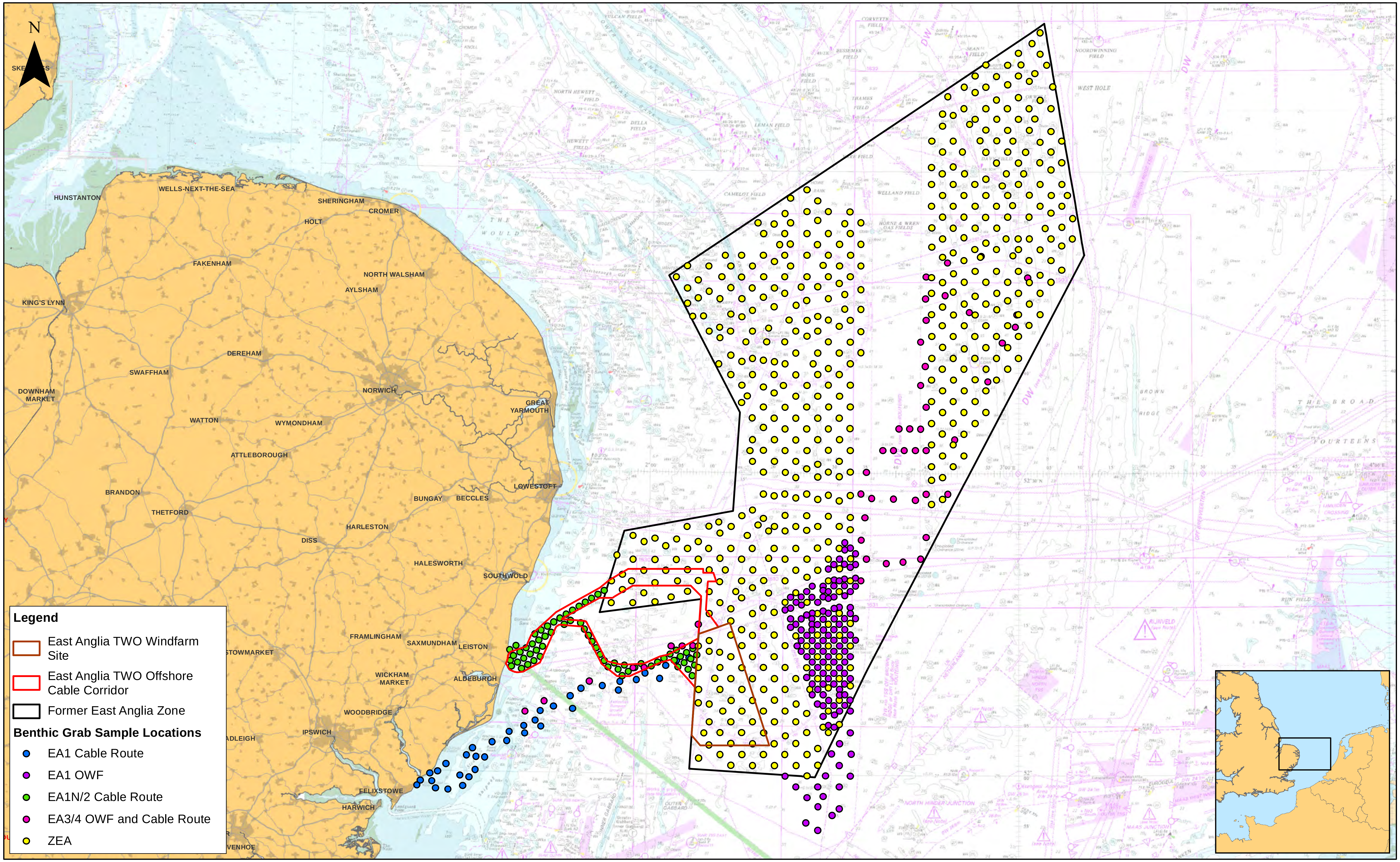

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East Anglia TWO

Datasets Used to Inform the Infauna Ecology Baseline

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Rev	1	Datum: WGS 1984 Projection: Zone 31N
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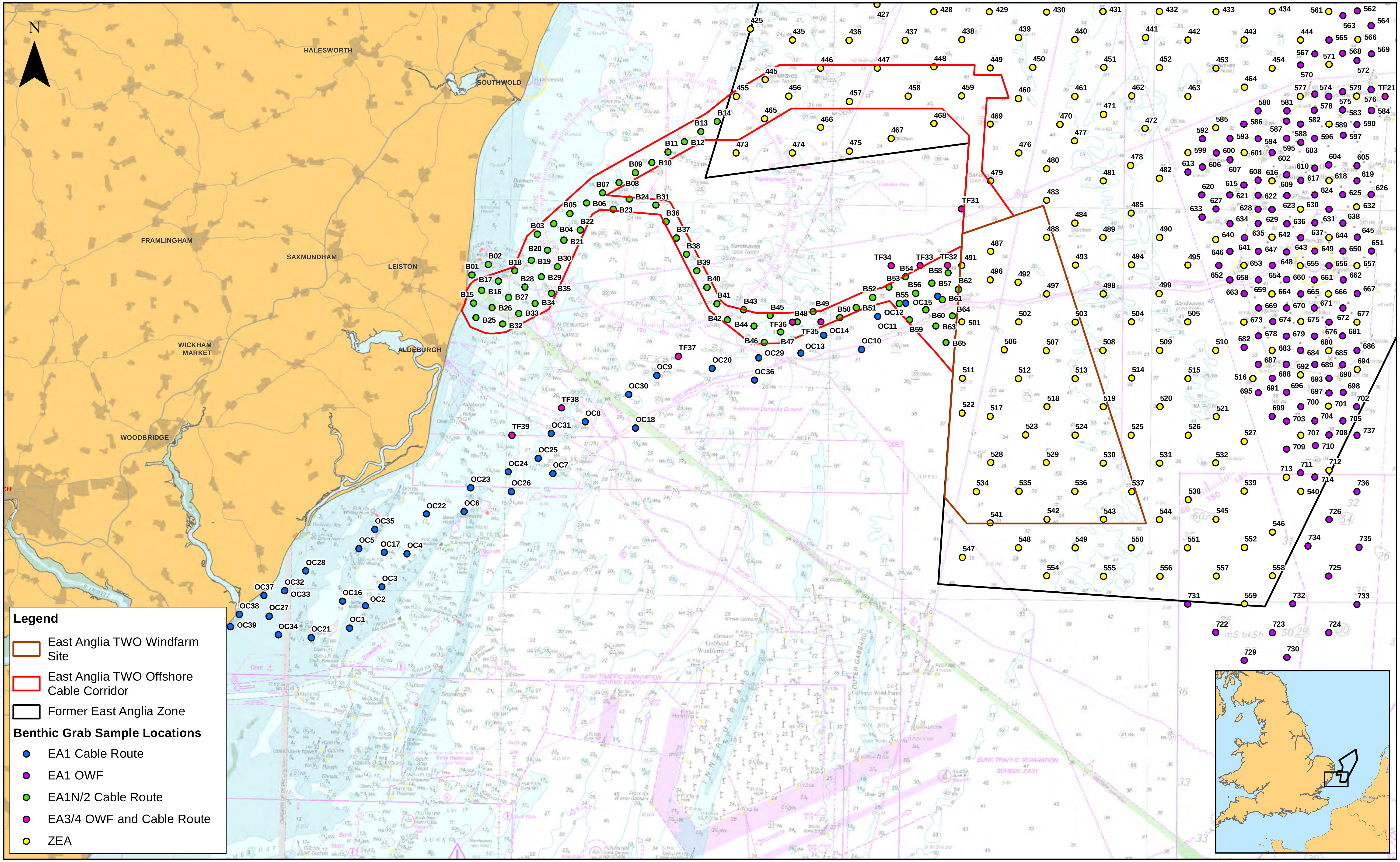

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Figure	1.1b

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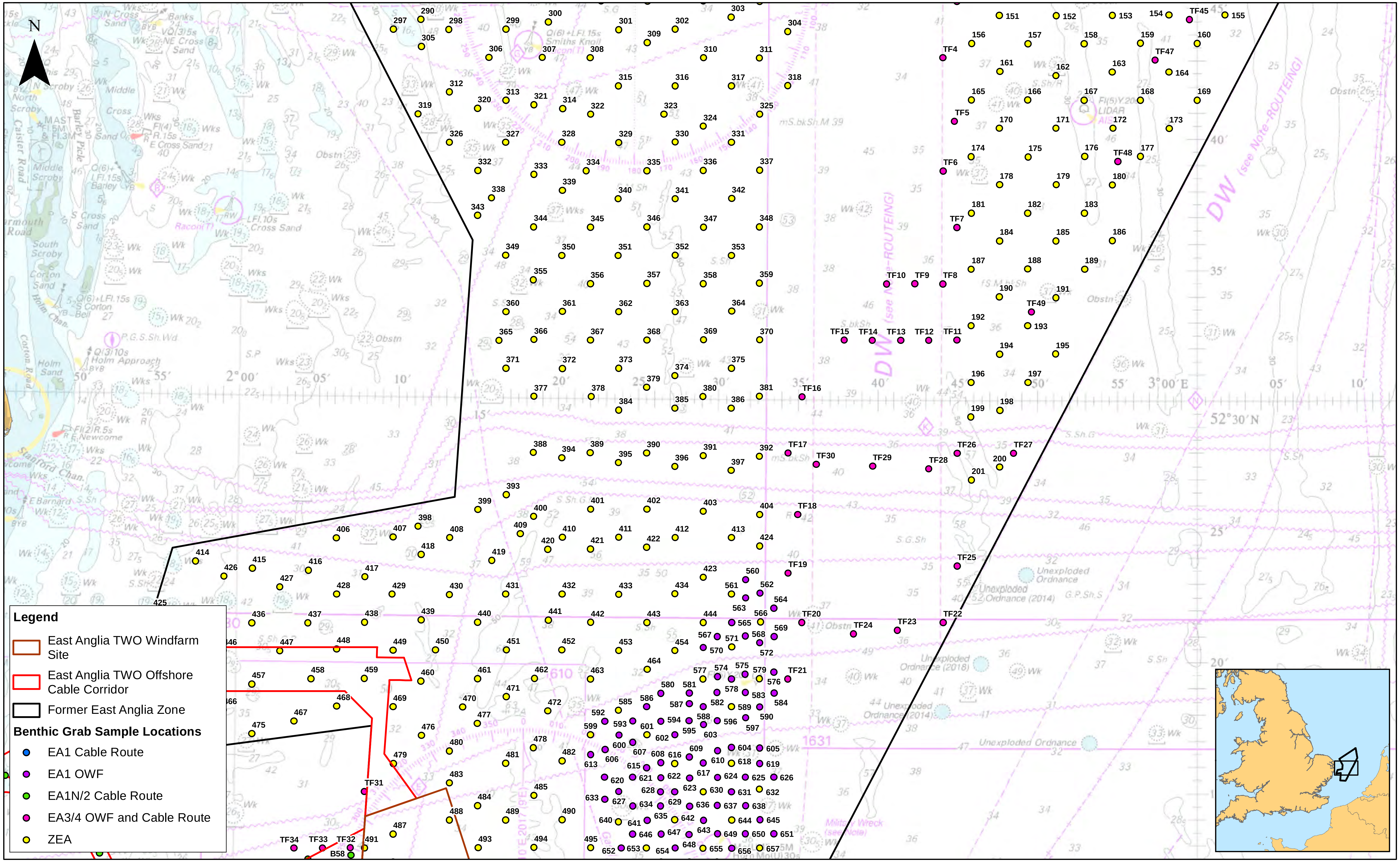

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Datasets Used to Inform the Infauna Ecology Baseline

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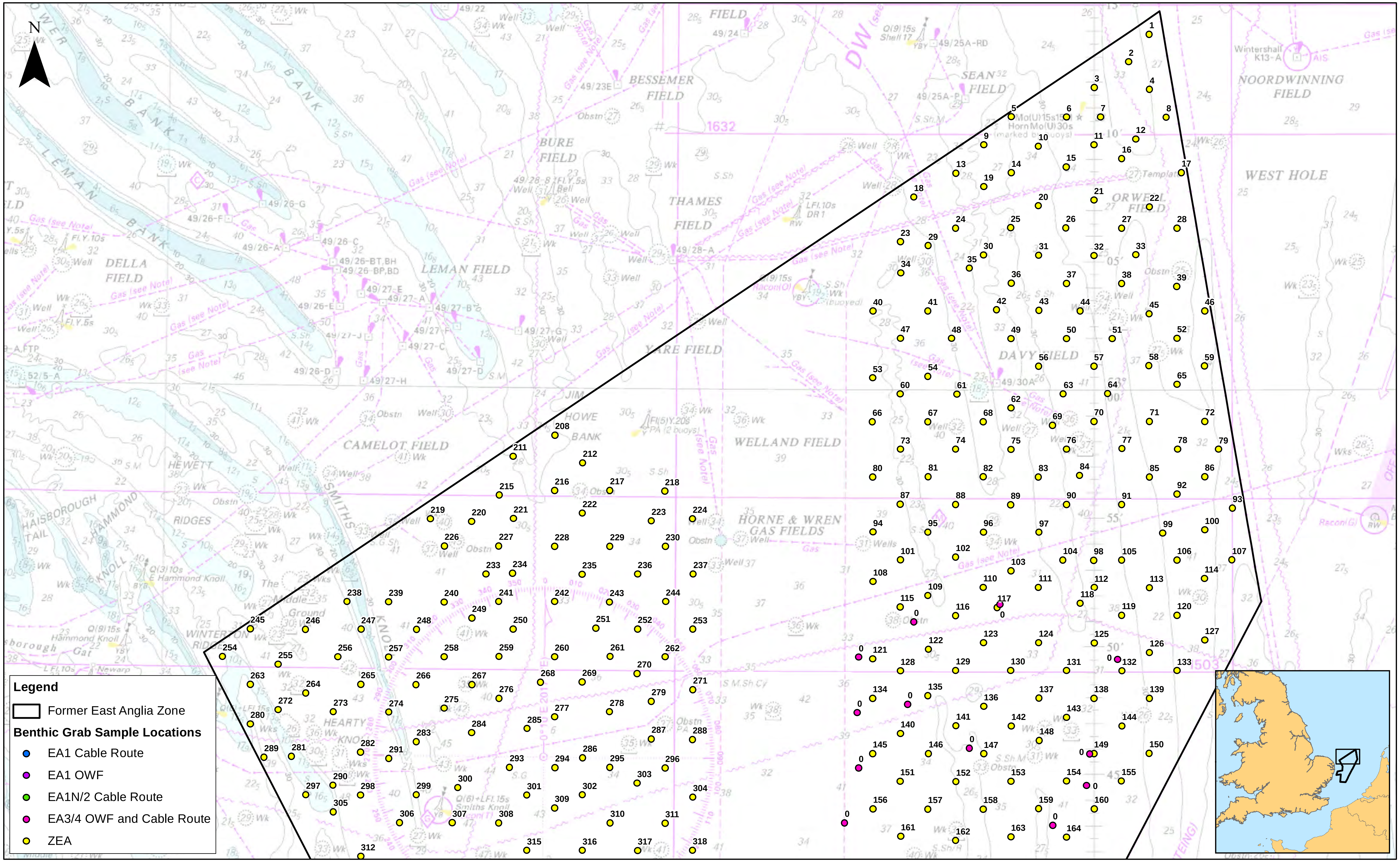

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Table A9.4.1 Survey Campaign Details and Datasets used to Inform the Infauna Ecology Baseline

Survey Campaign	Dataset Name	Survey Year	Number of Samples Obtained and Comments
East Anglia Offshore Windfarm Zone – Zonal Environmental Assessment (ZEA) Area	ZEA	2010	566 benthic samples obtained and analysed within this report. Note that the survey had also obtained a further 77 targeted samples. These have not been included as the sample locations were targeting specific areas and were not determined through the stratified sampling strategy.
East Anglia ONE Offshore Windfarm Cable Route Survey	EA1 Cable Route	2011	39 benthic samples obtained and analysed within this report. Note that the survey had also obtained further targeted samples which have not been included within this assessment.
East Anglia ONE Offshore Windfarm Survey	EA1 OWF	2010	133 benthic samples obtained during the survey and analysed within this report.
East Anglia THREE and FOUR Offshore Windfarm	EA3/4 OWF and Cable Route	2013	49 benthic samples were obtained, with nine samples obtained from the cable corridor route.
East Anglia ONE North and East Anglia TWO cable route corridor	EA1N/2 Cable Route	2018	65 benthic samples obtained.

9.4.2 Methods

9.4.2.1 Data Analysis

3. A variety of routine statistical analyses was performed on the datasets listed within ***Table A9.4.1***, chosen to characterise the community structure within the East Anglia ONE North and East Anglia TWO offshore windfarm sites and offshore cable corridor.

4. The following statistical analysis was carried out using the Plymouth Marine Laboratories statistical package PRIMER v7 (Clarke et al. 2014; Clarke and Gorley 2015).

9.4.2.1.1 Univariate Statistics

5. A range of diversity indices can be used to characterise the community structure from the raw species data. Diversity indices commonly use two community metrics: species richness (number of species (S)) and species evenness (how equally abundant the species are) to assess change in the community structure. The following diversity indices were used to characterise the diversity of infauna at the East Anglia offshore wind farm zones and cable route.

9.4.2.1.1.1 Pielou's Evenness

6. Pielou's Evenness (J') quantifies how equal the individuals in a population are distributed. J' ranges between 0 and 1 and the less variation in populations between species the higher J' is.

9.4.2.1.1.2 Shannon-Wiener

7. The Shannon-Wiener index (H') is a commonly used diversity index which measures the uncertainty of being able to predict the identity of the next species withdrawn from the sample. The index ranges from 0 to log(S), where S = the number of species. 0 is the minimum diversity, occurring when there is only one species. Therefore, the higher the index the greater the diversity.

8. As a reference, H'<0.5 is considered as a low value of diversity and H ~ 4.5 is a value found for large and diverse samples (Frontier et al. 2008)

9.4.2.1.1.3 Simpson's Index

9. Simpson's index (D or 1-λ') is the measure of probability of choosing two individuals from a sample that are different species. D ranges between 0.0 (minimum diversity) and 1.0 (maximum diversity).

9.4.2.1.2 Multivariate Statistics

10. Infauna data was imported into PRIMER and was transformed to the fourth root to downweight the contributions of quantitatively dominant species to the similarities calculated between samples. Fourth-root transformation allows for the less-abundant species in the matrix to play a more prominent role within the

emergent infauna community patterns. A resemblance matrix of the transformed data was calculated using a Bray-Curtis index of similarity.

9.4.2.1.2.1 Cluster Analysis and SIMPROF

11. Cluster analysis aims to find ‘natural groupings’ of samples with no *a priori* groupings, such that samples within a group are more similar to each other, generally, than samples in different groups. The clustering technique used here is the hierarchical agglomerative method. This takes a similarity matrix and successively fuses the samples into groups and the groups into larger clusters, starting with the highest mutual similarities then gradually lowering the similarity level at which groups are formed. The process ends with a single cluster containing all samples.

12. To best describe the ecological groupings identified during the cluster analysis, the groupings were identified on the basis of a slice at 20% similarity for the infaunal communities. This percentage similarity was informed by the SIMPROF (similarity profiles) test. Similarity slices at around 20% are commonly used for a dataset this size, and previous analysis carried out on these datasets also used a 20% cut-off (MESL 2011; MESL 2012; Fugro 2015).

9.4.2.1.2.2 Non-metric Multidimensional Scaling

13. Non-metric Multidimensional Scaling (nMDS) ordinations were produced to examine the similarity of sites in terms of their species composition. MDS plots a measure of similarity between the sites into 2 or more dimensional spaces so that the distance between objects corresponds closely to their input similarities. Simply stated, nMDS ordinations construct a “map” or configuration of the samples in a specified number of dimensions, which attempts to satisfy all the conditions imposed by the rank (dis)similarity matrix. For example, if sample 1 has a higher similarity to sample 2 than it does to sample 3 then sample 1 will be placed closer on the map to sample 2 than to sample 3.

14. The stress value indicates how faithfully the high-dimensional relationships among the samples are represented. The lower the stress value the less distortion occurs. Stress values <0.1 correspond to a good ordination; values <0.2 give a useful two-dimensional picture but one should not place too much reliance on the finer details of the plot; values >0.3 indicate that the samples are close to being positioned in an arbitrary manner and should not be regarded as necessarily similar to one another.

9.4.2.1.2.3 SIMPER

15. SIMPER (similarity percentages) analysis looks at the role of individual species in contributing to the separation between two groups of samples, or the closeness of samples within a group. Average Bray-Curtis dissimilarity was used between all pairs of samples and percentage contributions from each species was placed

in decreasing order of contribution. A 70% cumulative species count cut-off was used for the SIMPER analysis, with the first 50% used to characterise the infaunal groupings.

9.4.2.1.2.4 ANOSIM

16. ANOSIM was used to determine whether there was a difference between the datasets gathered during the different survey campaigns. The null hypothesis (H_o) is that there is no difference between the datasets. The R statistic, which is calculated by ANOSIM, is a useful comparative measure of the degree of separation of datasets. If R is approximately zero then the H_o is accepted. If R = 1 then all replicates within the datasets are more similar to each other than any replicates from the other datasets; therefore, the H_o is rejected. H_o can also be rejected is R is closer to 1 than 0. Technically R can never lie outside the range -1 and 1. If R is a negative number it means that the similarities across the different sites are higher than within the sites. Statistical significance is at $p < 0.1\%$.

9.4.2.1.3 Biotope Classification

17. Biotope code allocations were made using the current UK Marine Classification System (MNCR) v15.03 (JNCC 2015; Conner et al. 2004). Biotopes were allocated to faunal composition of each natural grouping identified by the cluster analysis. Accompanying survey data available, such as sediment type, was used to inform the biotope code allocation.

9.4.3 Results

18. This section provides information on the infauna community present at East Anglia ONE North and East Anglia TWO offshore wind farm sites and offshore cable corridor. In total, 852 infauna grab samples were analysed across all survey campaigns listed in ***Table A9.4.1***. ***Table A9.4.4*** in ***Annex 1 Complete Taxa List*** contains a list of all infaunal taxa present in the grab samples, their abundance, cumulative abundance and percentage occurrence of that taxon across all samples.

19. A total of 598 taxa were recorded from the grab samples across all survey campaigns. In total, 56,542 total number of individuals was recorded. Prior to performing multivariate analysis, the data from all five survey campaigns were combined and a species master list created. Where identified, the latest scientific name was used, e.g. *Malmgreniella arenicolae* is now *Malmgrenia arenicolae*. Where a presence of a species has been recorded, or a number of species per volume (i.e. three per cm^2) a value of 1 was used in the data.

9.4.3.1 Diversity Indices

20. ***Table A9.4.5*** in ***Annex 2 Diversity Indices Results*** provides the results of the diversity indices, Shannon-Wiener (H’), Pielou’s Eveness (J’), and Simpson’s

index (1-λ'), as well as species richness (S), and number of individuals (N) in each sample.

21. The Shannon-Wiener index results range from 0 to 3.536, with a mean value of 2.114. The closer H' is to 0 the less diverse the sample is. The majority of the samples can be considered to be of poor diversity, with only 24 samples above a value of 3, out of a total of 852 samples collected (bearing in mind a value of around 4.5 is considered to be of high diversity).

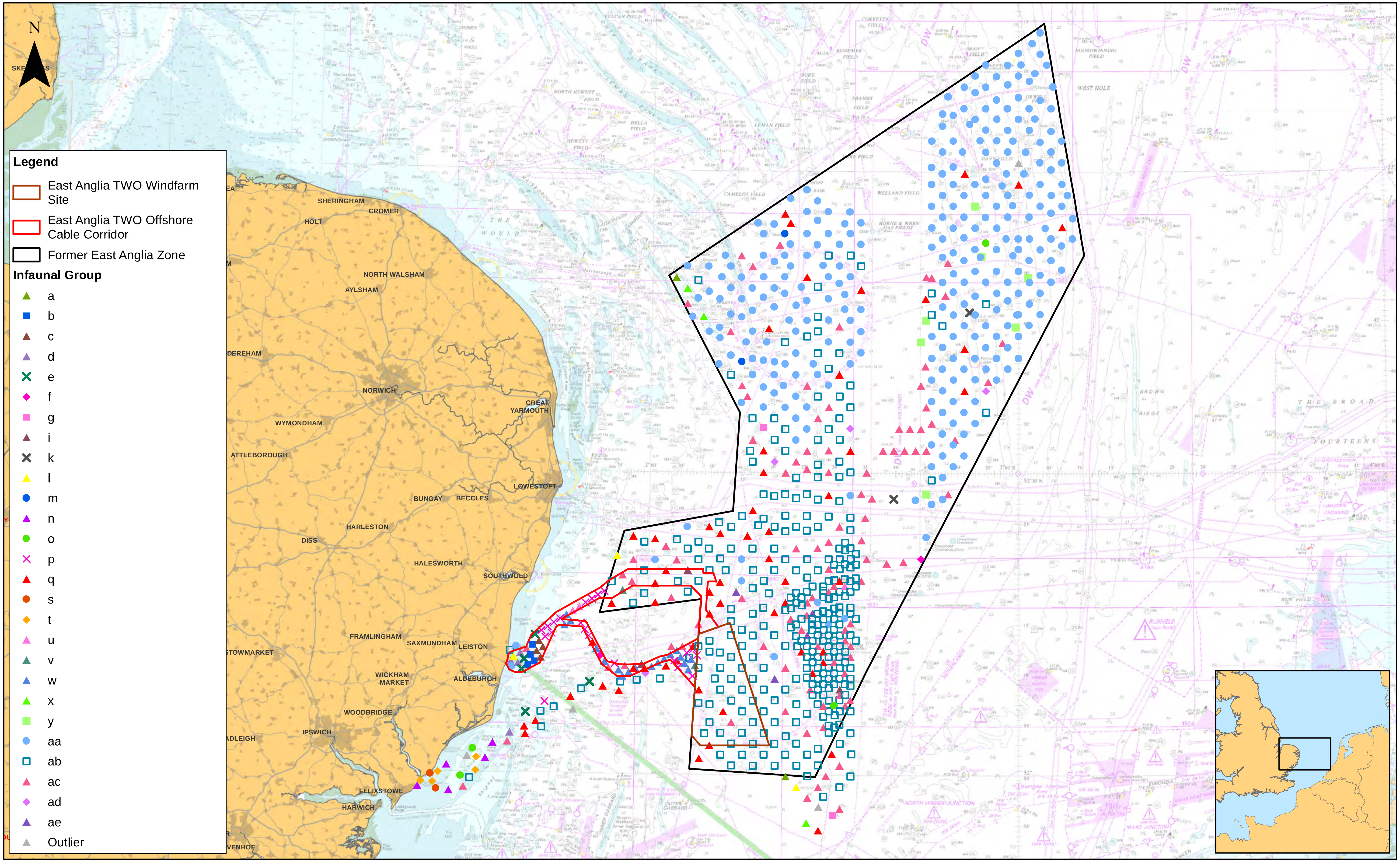
22. Pielou's Evenness index results range from 0.258 to 1.0, with a mean value of 0.847. J' for six samples (B15, B17, B40, B49, 728, 731) could not be calculated as the species richness within each sample was one. A sample with a J' of 1.0 is considered to be of high diversity as this indicates complete evenness, i.e. each taxon has the same number of individuals). Seventeen samples were calculated to have a J' of 1.0. This would indicate these samples, as well as those that are close to 1.0, have a high diversity. However, when these samples are examined in detail, it can be seen that there is a low number of taxa with a single individual from each taxon recorded. For example, at OC35, two species were identified, *Spiophanes bombyx* (a bristleworm) and *Sphaerosyllis bulbosa* (a syllid polychaete), with only one individual counted per species. Whilst this provides complete evenness, diversity can be considered to be low with only two individuals counted. H' for this sample was calculated as 0.693.

23. Simpson's index results range from 0 to 1.0, with a mean value of 0.853. 1-λ' could not be calculated for three samples, (B40, B49 and 728), as the species richness within each sample was one and only one individual per species was counted. With Simpson's index, a value of 1.0 is considered to have maximum diversity. However, like Pielou's Eveness, closer examination of those samples with a 1-λ' value of 1.0 show low numbers of species richness with only one individual counted per species (e.g. OC35 with two species identified and one individual counted per species). The H' value for these samples are low, ranging from 0.693 to 2.079, indicating poor diversity.

9.4.3.2 Infaunal Communities

24. Cluster analysis was used to identify infaunal community groupings at a 20% similarity slice. This resulted in 31 different groups identified. Of these, four samples failed to group with any other samples and were thus recorded as outliers: OC5, OC18, 57 and 720. ***Table A9.4.2*** lists the infaunal groups identified and the number of samples that make up the group. Due to the large number of samples, the resulting dendrogram is large and unable to be shown within the report or in print.

25. nMDS ordination plots of the infauna groups are presented within ***Plate 3.1***. ***Figure 3.1(a) to Figure 3.1(d)*** geographically represents the location of each infaunal grouping.



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East Anglia TWO

Distribution of Statistical Groups from Benthic Grab Samples

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Rev	1
Date	10/05/19
Figure	3.1a

Datum: WGS 1984
Projection: Zone 31N

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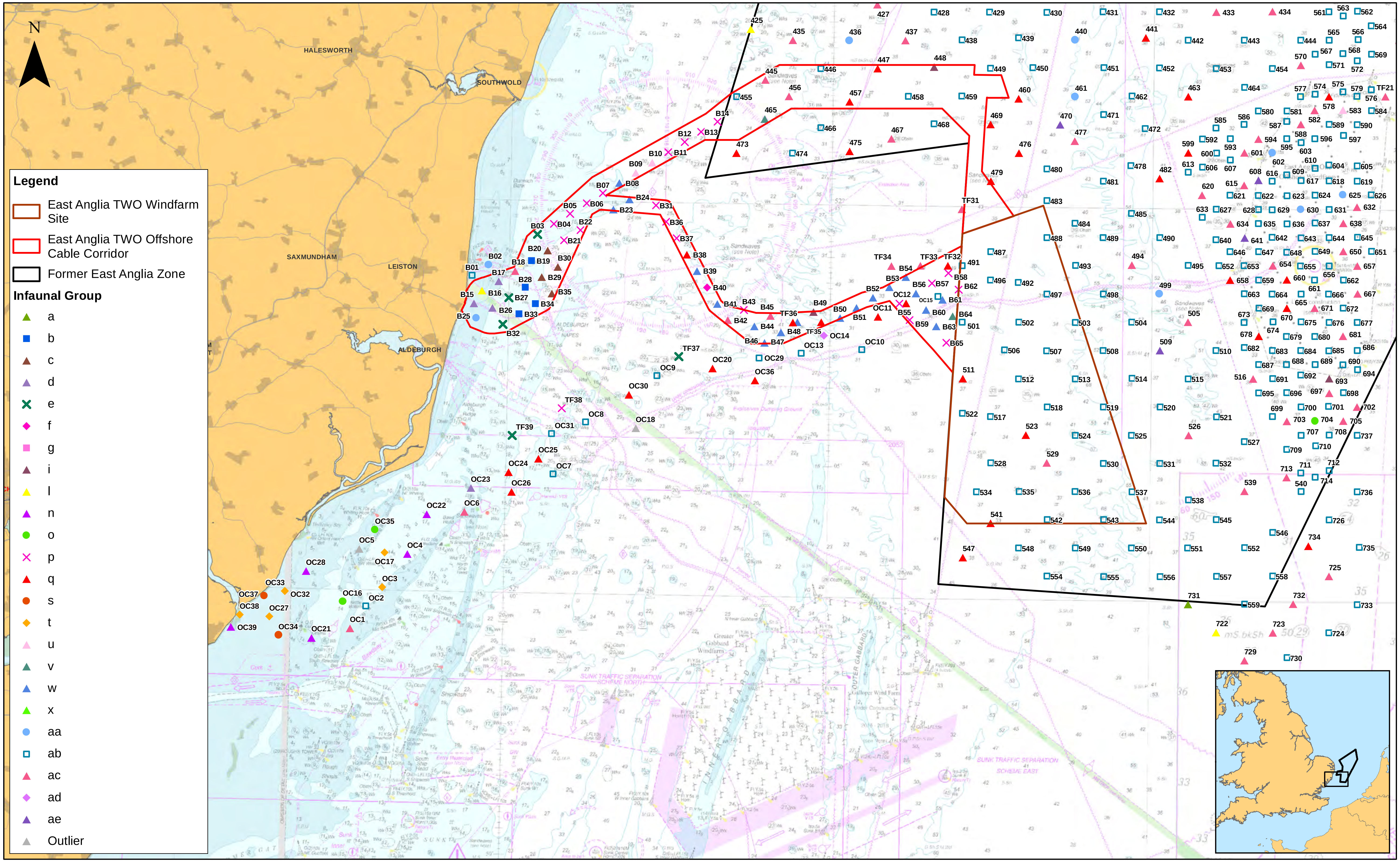

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East Anglia TWO

Ditribution of Statistical Groups from Benthic Grab Samples

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Date	10/05/19
Figure	3.1b

Datum: WGS 1984
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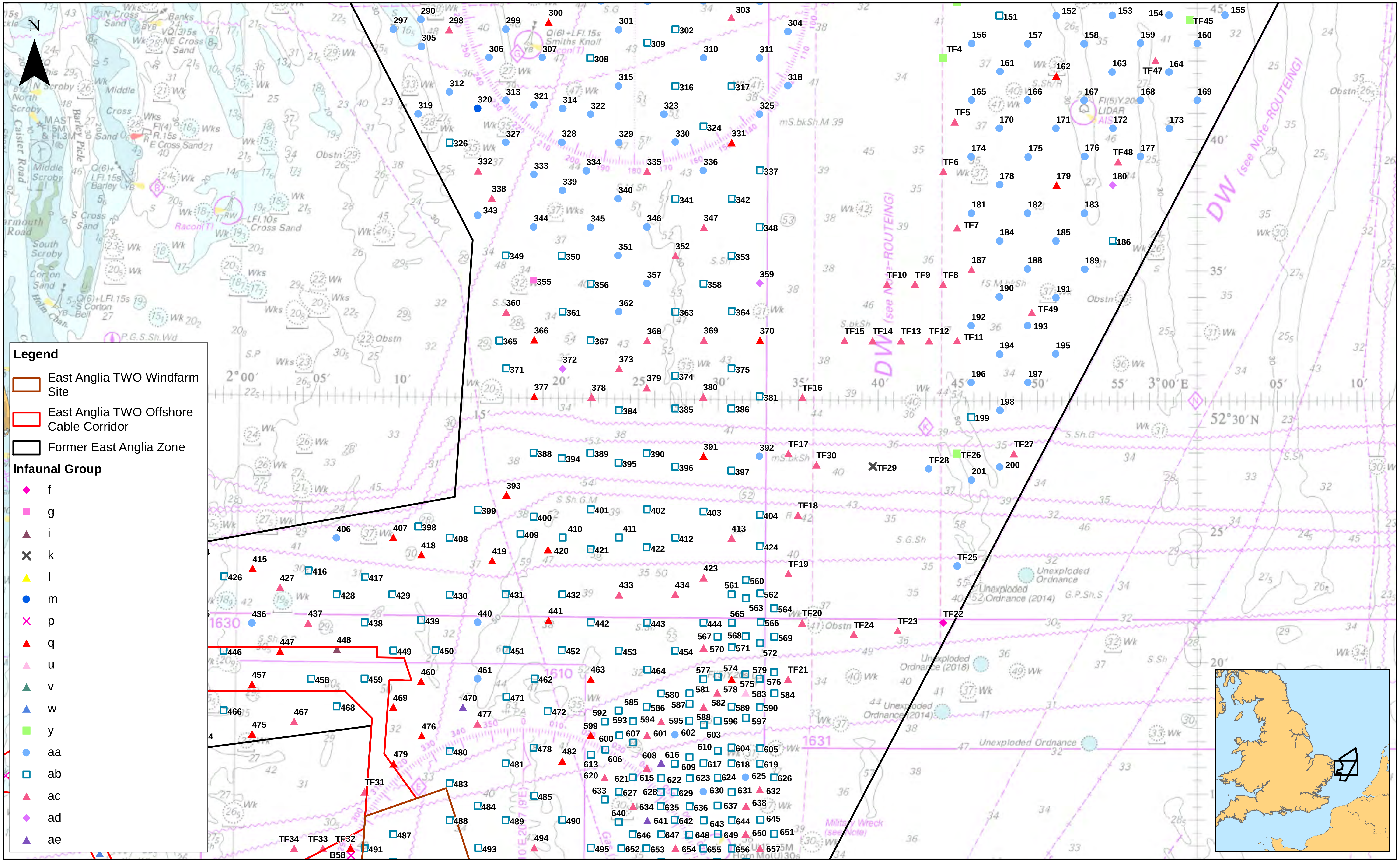

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Distribution of Statistical Groups from Benthic Grab Samples

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Figure	3.1c

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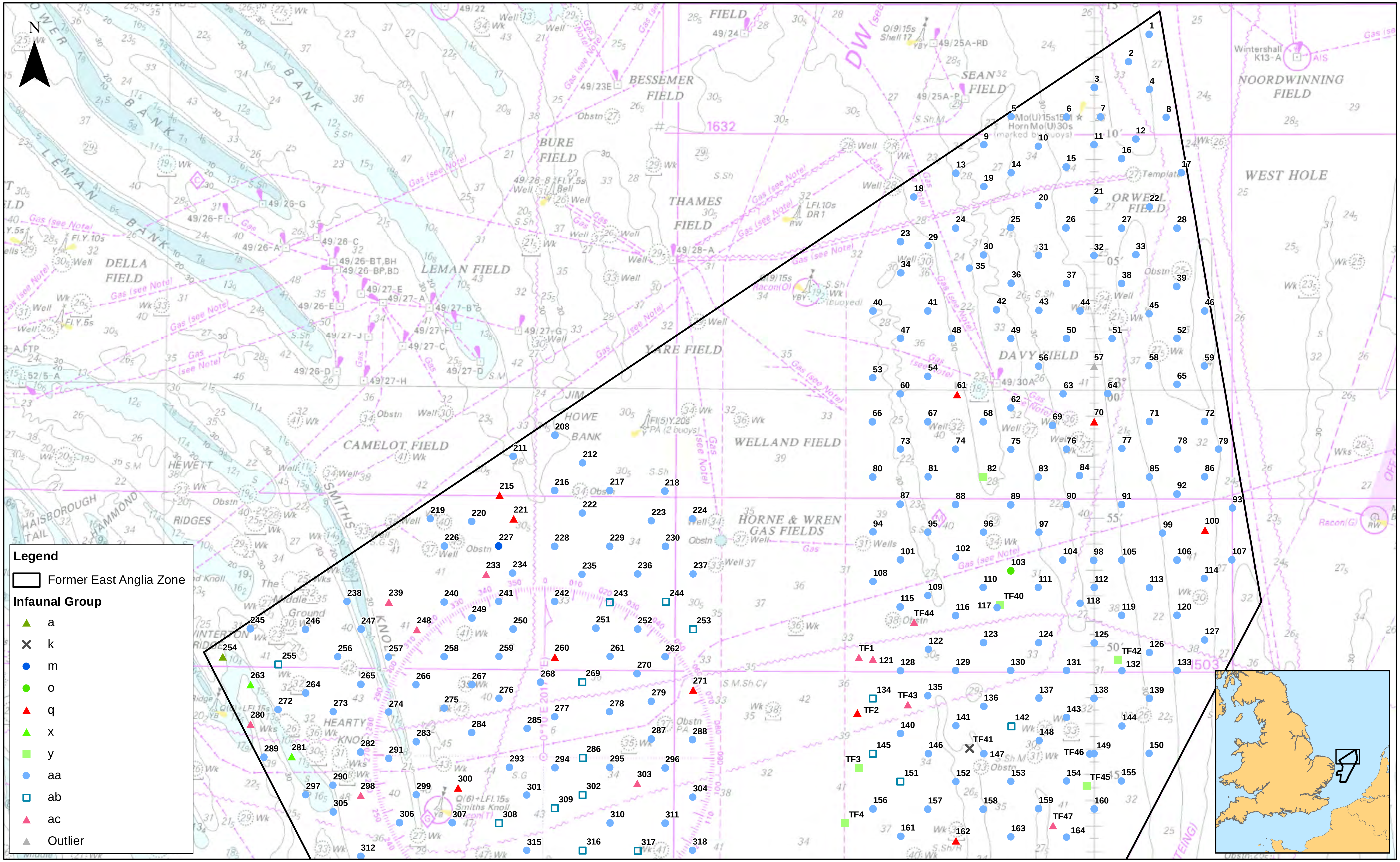

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East Anglia TWO

Distribution of Statistical Groups from Benthic Grab Samples

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Rev	1
Date	10/05/19
Figure	3.1d

Datum: WGS 1984
Projection: Zone 31N

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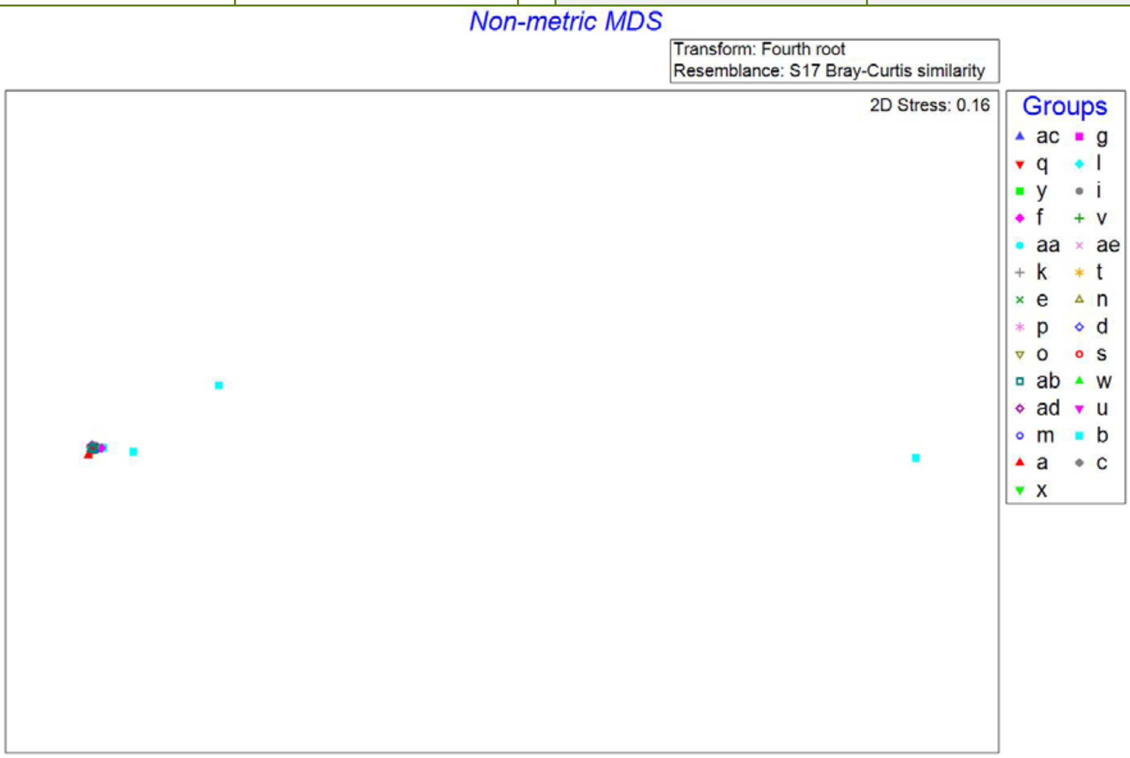
Table A9.4.2 Infaunal Groupings Identified by the Cluster Analysis

Infauna Group	Number of Samples		Infaunal Group	Number of Samples
a	2		**q**	**58**
b	4		s	2
c	4		t	7
d	4		u	3
e	5		v	2
f	2		w	18
g	2		x	3
i	3		y	7
k	2		aa	**295**
l	3		ab	**284**
m	2		ac	**98**
n	5		ad	4
o	4		ae	4
p	21			



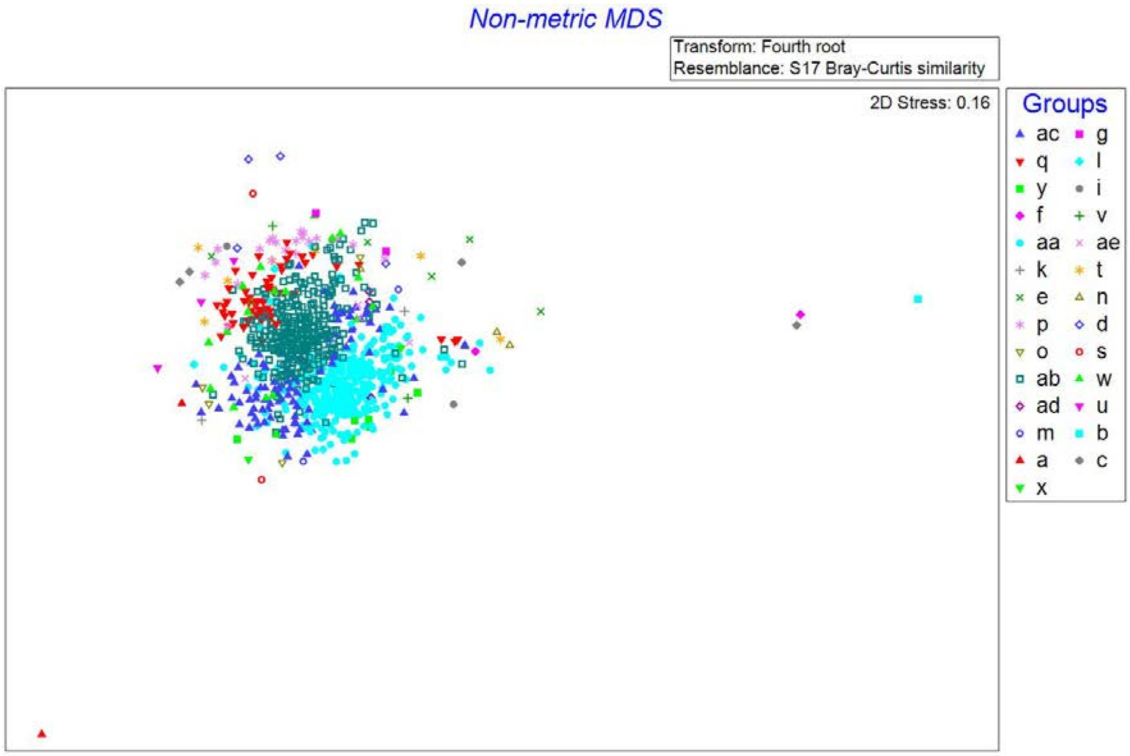


Plate 3.1 nMDS plots showing the distribution of the samples by infaunal grouping. The top nMDS plot shows a couple of 'outliers' from within the aa group (B28 B19 and B33). The bottom nMDS plot shows the same nMDS plot zoomed in on the area with the majority of the samples plotted.

26. The ANOSIM routine within PRIMER was carried out to determine whether there were any statistical differences between the datasets; results are found in ***Annex 3 ANOSIM Routine Output***. The ANOSIM test demonstrated that there were statistically significant differences between the datasets (p<0.01, R=0.361). The R value is a useful comparative measure of the degree of separation of sites. The low R value indicates that whilst the datasets are significantly different, the degree of difference between them is low. For example, the pairwise tests showed that for the ZEA and EA1 OWF datasets, there is no difference between the two (p<0.1%, R=0.092). Whilst the pairwise test for EA1N/2 cable route and EA1 OWF showed a high degree of separation between them (p<0.1%, R=0.626).

9.4.3.3 Biotope Classification

27. The SIMPER routine was used to identify which species made up 70% of each infaunal group. This list of species, along with sediment description (see ***Chapter 7, Marine Geology, Oceanography and Physical Processes***), was used to assign biotope codes to each group. For those samples that were outliers, individual biotope codes were assigned. ***Figure 4.1(a) to Figure 4.1(d)*** provides a geographical representation of the biotope codes assigned.

28. ***Annex 4 SIMPER Routine Output*** contains the PRIMER output of the SIMPER routine. ***Table A9.4.3*** contains the list of species assigned to each infaunal group

that contributed up to 50% of the within similarity of SIMPER groups (***Annex 4 SIMPER Routine Output*** contains the full list), the cumulative percentage contribution of each species, the samples that make up the group and the biotope code assigned to the group.

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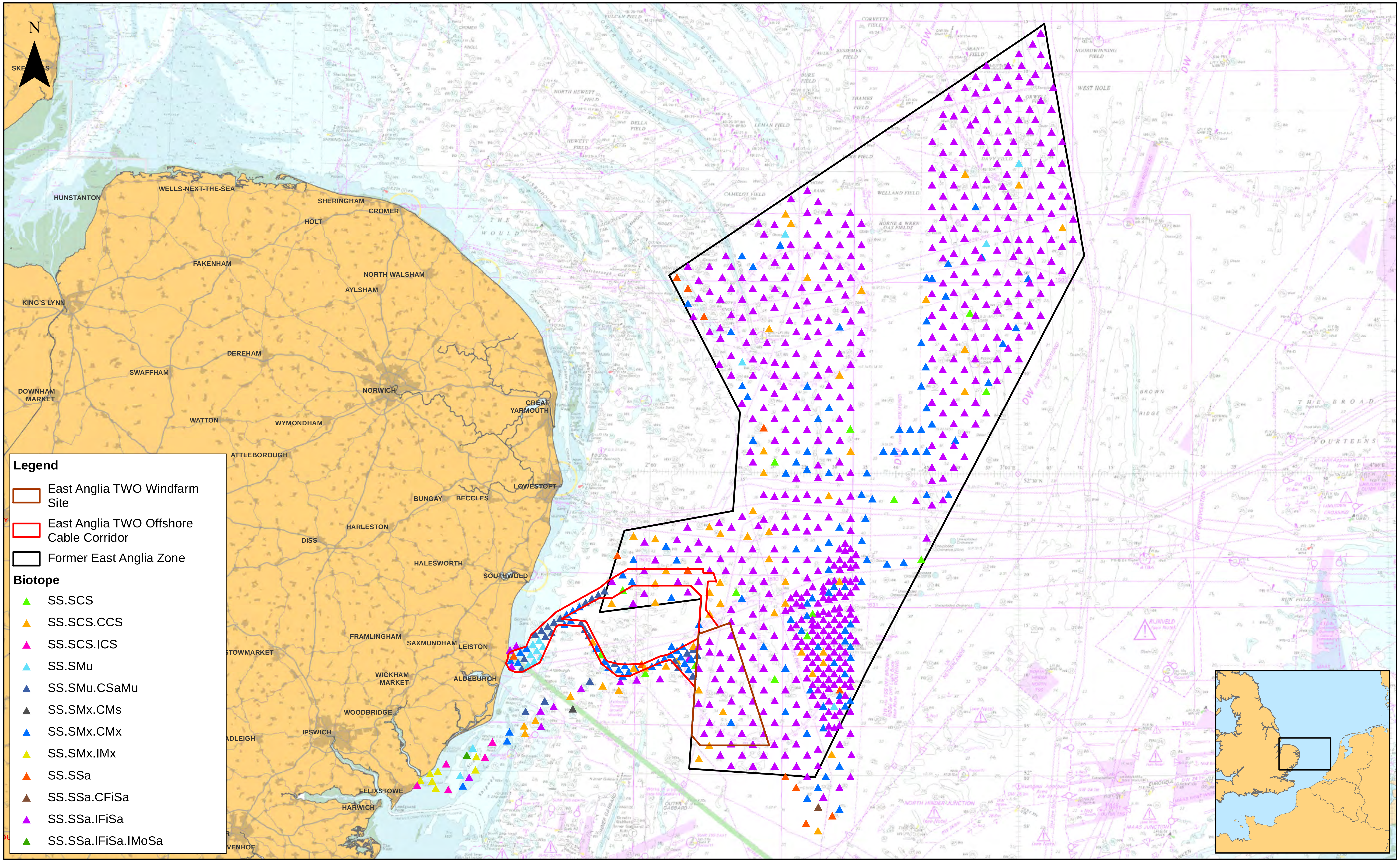

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1	10/05/2019	FC	First Issue.	Checked:	AC
Rev	Date	By	Comment	Approved:	PP

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SCOTTISHPOWER RENEWABLES

East Anglia TWO

Biotope Classification of Faunal Groups

Drg No	EA2-DEV-DRG-IBR-000553
Rev	1
Date	10/05/19
Figure	4.1a

Datum: WGS 1984
Projection: Zone 31N

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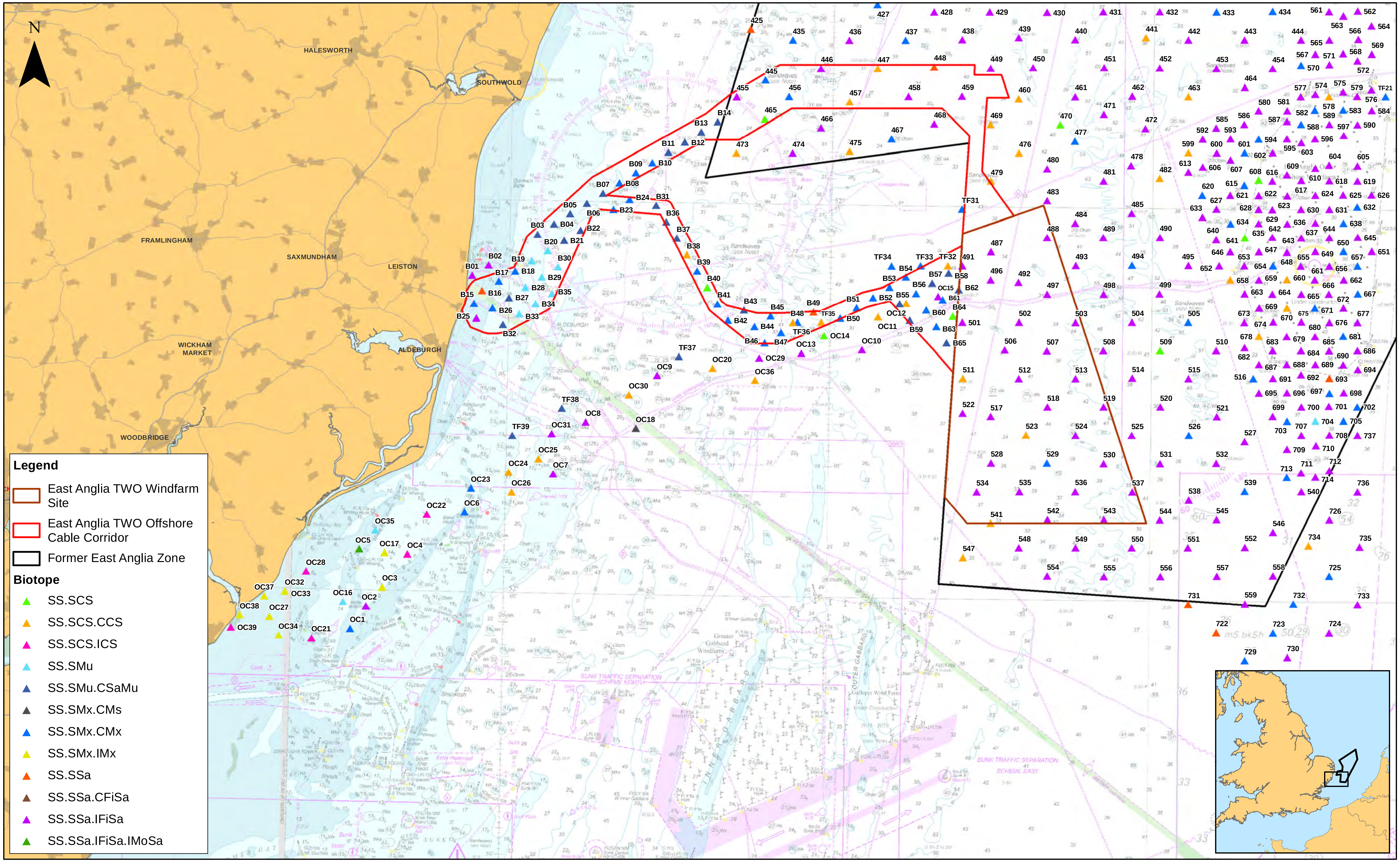

SCOTTISHPOWER RENEWABLES

Rev	Date	By	Comment		
1	10/05/2019	FC	First Issue.		
				Prepared:	FC
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East Anglia TWO

Biotope Classification of Faunal Groups

Drg No	EA2-DEV-DRG-IBR-000553
Rev	1
Date	10/05/19
Figure	4.1b

Datum: WGS 1984
Projection: Zone 31N

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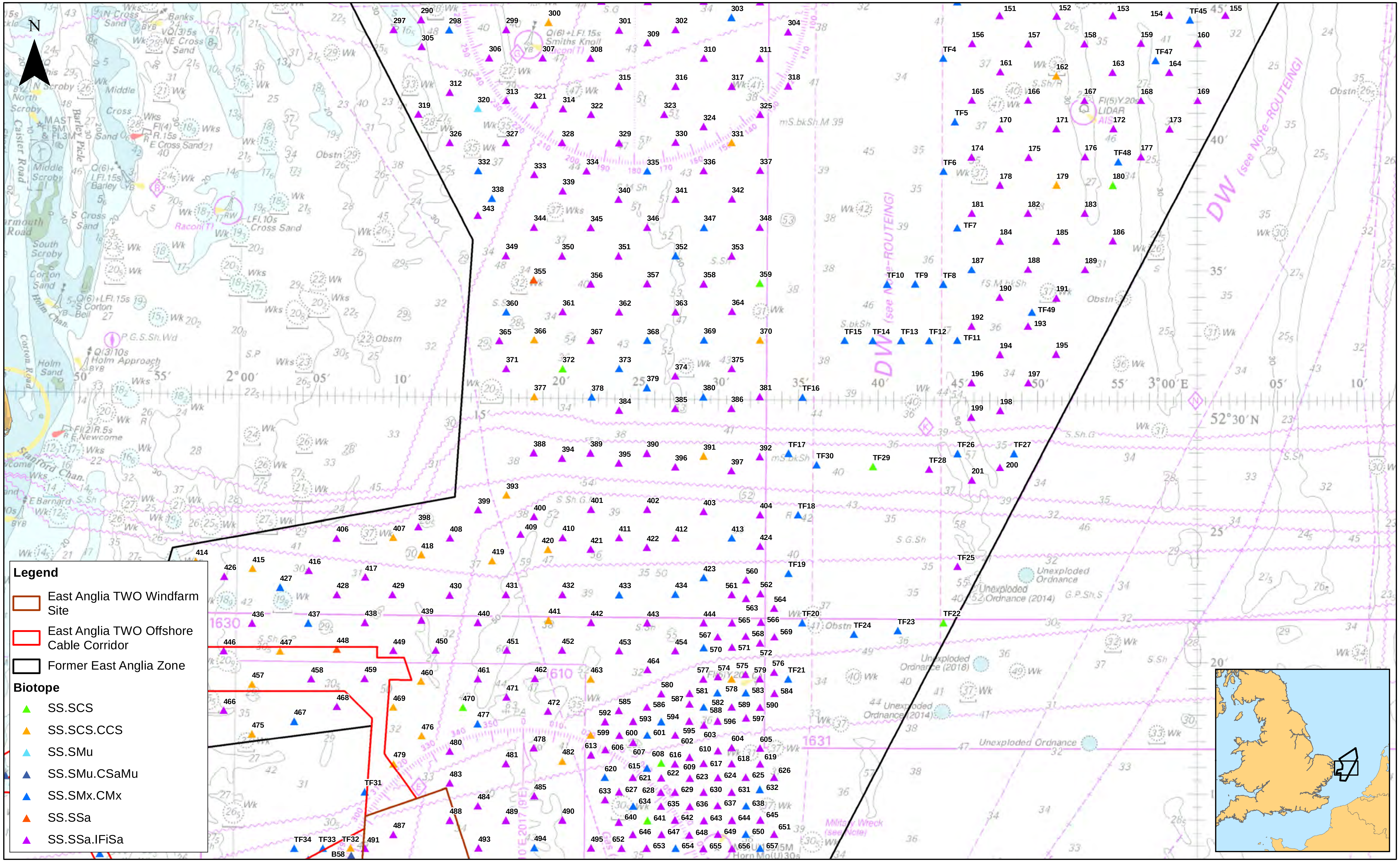

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Rev	Date	By	Comment
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East Anglia TWO

Biotope Classification of Faunal Groups

Drg No	EA2-DEV-DRG-IBR-000553
Rev	1
Date	10/05/19
Figure	4.1c

Datum: WGS 1984
Projection: Zone 31N

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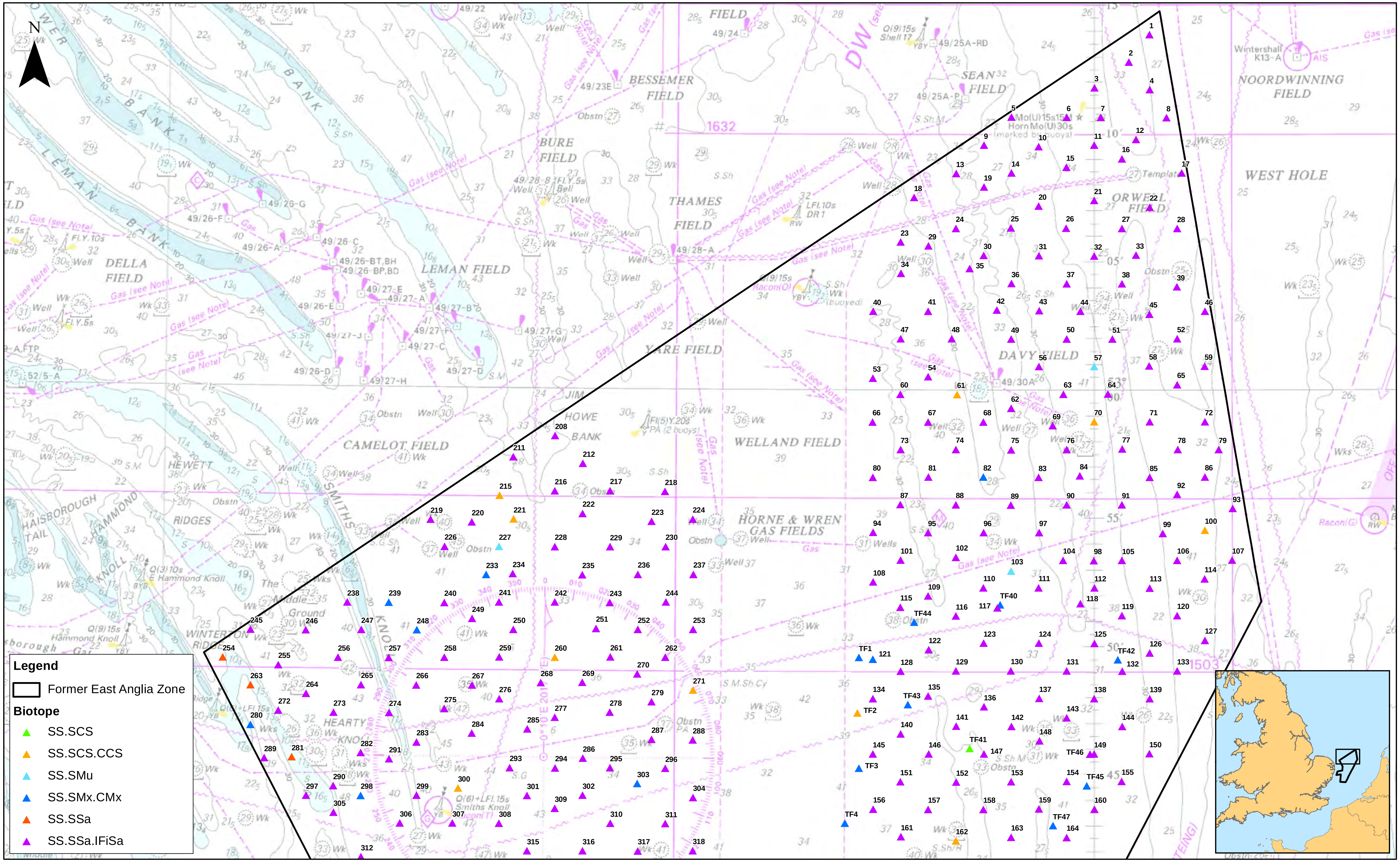

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1	10/05/2019	FC	First Issue.	Checked:	AC
Rev	Date	By	Comment	Approved:	PP

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SCOTTISHPOWER RENEWABLES

East Anglia TWO

Biotope Classification of Faunal Groups

Drg No	EA2-DEV-DRG-IBR-000553
Rev	1
Date	10/05/19
Figure	4.1d

Datum: WGS 1984
Projection: Zone 31N

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Table A9.4.3 Infaunal Groupings Identified by the Cluster Analysis

Species	Cum. %	Samples Label	Biotope Code
Group ▲ ac			
Nephtys cirrosa	44.27	121, 187, 233, 239, 248, 280, 298, 303, 332, 335, 338, 347, 352, 360, 368, 369, 373, 378, 379, 380, 413, 423, 427, 433, 434, 435, 437, 445, 456, 467, 477, 494, 505, 516, 526, 529, 539, 601, 632, 657, 713, OC1, OC6, 570, 582, 588, 594, 615, 620, 634, 638, 650, 654, 667, 671, 681, 697, 702, 703, 705, 721, 723, 725, 729, 732, B18, B42, B45, TF1, TF5, TF6, TF7, TF8, TF9, TF10, TF11, TF12, TF13, TF14, TF15, TF16, TF17, TF18, TF19, TF20, TF21, TF23, TF24, TF27, TF30, TF31, TF33, TF34, TF43, TF44, TF47, TF48, TF49	SS.SMx.CMx Circalittoral mixed sediment
Ophelia borealis	62.5		
Group ▼ q			
Nemertea	8.44	61, 70, 100, 162, 179, 215, 221, 260, 271, 300, 331, 366, 370, 377, 391, 393, 407, 414, 415, 418, 419, 420, 441, 447, 457, 460, 463, 469, 473, 475, 476, 479, 482, 511, 523, 541, 547, 599, OC11, OC12, OC20, OC24, OC25, OC26, OC30, OC36, 578, 658, 660, 670, 678, 719, 734, B38, TF2, TF32, TF35, TF36	SS.SCS.CCS Circalittoral coarse sediment
Ophiuroidea	14.39		
Spiophanes bombyx	20.21		
Echinocyamus pusillus	25.15		
Mediomastus fragilis	29.43		
Lumbrineris cingulata	33.7		
Sabellaria spinulosa	37.69		
Aonides paucibranchiata	41.55		
Glycera lapidum	44.88		
Lagis koreni	47.77		
Glycera	50.37		
Group ■ y			
Goniada maculata	24.52	82, TF3, TF4, TF26, TF40, TF42, TF45	SS.SMx.CMx Circalittoral mixed sediment
Nephtys cirrosa	42.15		
Scoloplos armiger	52.59		
Group ◆ f			
Pisione remota	100	B40, TF22	SS.SCS (impoverished coarse sand)
Group ● aa			
Spiophanes bombyx	15.08	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,	SS.SSa.IFiSa

Species	Cum. %	Samples Label	Biotope Code
Nephtys cirrosa	27.86	30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 62, 63, 64, 65, 66, 67, 68, 69, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 101, 102, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 135, 136, 137, 138, 139, 140, 141, 143, 144, 146, 147, 148, 149, 150, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 181, 182, 183, 184, 185, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 200, 201, 208, 211, 212, 216, 217, 218, 219, 220, 222, 223, 224, 226, 228, 229, 230, 234, 235, 236, 237, 238, 240, 241, 242, 245, 246, 247, 249, 250, 251, 252, 256, 257, 258, 259, 261, 262, 264, 265, 266, 267, 268, 270, 272, 273, 274, 275, 276, 277, 278, 279, 282, 283, 284, 285, 287, 288, 289, 290, 291, 293, 294, 295, 296, 297, 299, 301, 304, 305, 306, 307, 310, 311, 312, 313, 314, 315, 318, 319, 321, 322, 323, 325, 327, 328, 329, 330, 333, 334, 336, 339, 340, 343, 344, 345, 346, 351, 357, 362, 392, 406, 436, 440, 461, 499, 630, 602, 625, B02, B25, TF25, TF28, TF46	Circalittoral fine sand
Polinices pulchellus	36.29		
Bathyporeia elegans	43.22		
Scoloplos armiger	49.71		
Ophiuroidea	55.54		
Group + k			
Thia scutellata	100	TF29, TF41	SS.SCS (impoverished coarse sand)
Group x e			
Notomastus	45.48	B03, B27, B32, TF37, TF39	SS.SMu.CSaMu Circalittoral sandy mud
Eunereis longissima	62.36		
Group * p			
Kurtiella bidentata	6.63	B04, B05, B06, B07, B11, B12, B13, B14, B21, B22, B31, B36, B37, B43, B55, B57, B58, B59, B62, B65, TF38	SS.SMu.CSaMu Circalittoral sandy mud
Abra alba	12.96		
Lagis koreni	18.84		
Ophiura albida	24.1		
Ampelisca spinipes	29.21		
Owenia sp.	33.24		
Lumbrineris cingulata	37.23		
Schizomavella	41.2		

Species	Cum. %	Samples Label	Biotope Code
Actiniaria	44.84		
Nemertea	48.27		
Spirobranchus lamarcki	51.43		
Group ○ m			
Spiophanes bombyx	100	103, OC16, OC35, 704	SS.SMu Sublittoral cohesive mud and sandy mud communities (impoverished sandy mud)
Group □ ab			
Nephtys cirrosa	13.25	134, 142, 145, 151, 186, 199, 243, 244, 253, 255, 269, 286, 302, 308, 309, 316, 317, 324, 326, 337, 341, 342, 348, 349, 350, 353, 356, 358, 361, 363, 364, 365, 367, 371, 374, 375, 381, 384, 385, 386, 388, 389, 390, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 408, 409, 410, 411, 412, 416, 417, 421, 422, 424, 426, 428, 429, 430, 431, 432, 438, 439, 442, 443, 444, 446, 449, 450, 451, 452, 453, 454, 455, 458, 459, 462, 464, 466, 468, 471, 472, 474, 478, 480, 481, 483, 484, 485, 487, 488, 489, 490, 491, 492, 493, 495, 496, 497, 498, 501, 502, 503, 504, 506, 507, 508, 510, 512, 513, 514, 515, 517, 518, 519, 520, 521, 522, 524, 525, 527, 528, 530, 531, 532, 534, 535, 536, 537, 538, 540, 542, 543, 544, 545, 546, 548, 549, 550, 551, 552, 554, 555, 556, 557, 558, 559, 561, 566, 571, 577, 579, 585, 589, 616, 618, 640, 642, 644, 653, 655, 664, 666, 673, 675, 677, 683, 685, 692, 694, 701, 707, 712, OC2, OC7, OC8, OC9, OC10, OC13, OC15, OC29, OC31, 560, 562, 563, 564, 565, 567, 568, 569, 572, 574, 575, 576, 580, 581, 584, 586, 587, 590, 592, 593, 595, 596, 597, 600, 603, 604, 605, 606, 607, 609, 610, 613, 617, 619, 621, 622, 623, 624, 626, 627, 628, 629, 631, 633, 635, 636, 637, 643, 645, 646, 647, 648, 649, 651, 652, 656, 659, 661, 662, 663, 665, 669, 672, 674, 676, 679, 680, 682, 684, 686, 687, 688, 689, 690, 691, 695, 696, 698, 699, 700, 708, 709, 710, 711, 714, 724, 726, 730, 733, 735, 736, 737, B01	SS.SSa.IFiSa Circalittoral fine sand
Spiophanes bombyx	25.73		
Nemertea	35.55		
Polycirrus sp.	44.85		
Glycera sp.	52.15		
Group ◇ ad			
Ophiuroidea	39.26	180, 359, 372, OC14	SS.SCS (impoverished coarse sand)
Scolelepis bonnieri	57.99		
Group ○ m			
Scoloplos armiger	100	227, 320	SS.SMu

Species	Cum. %	Samples Label	Biotope Code
			(impoverished sandy mud)
Group ▲ a			
Pontocrates altamarinus	100	254, 731	SS.SSa (impoverished sand)
Group ▼ **x**			
Urothoe brevicornis	100	263, 281, 727	SS.SSa (impoverished sand)
Group ■ g			
Nemertea	100	355, 728	SS.SSa (impoverished sand)
Group ◆ l			
Ophelia borealis	100	425, 722, B16	SS.SSa (impoverished sand)
Group ● i			
Gastrosaccus spinifer	100	448, 693, B49	SS.SSa (impoverished sand)
Group + **v**			
Goodallia triangularis	50	465, B64	SS.SCS (impoverished coarse sand)
Group x ae			
Spatangoida	41.38	470, 509, 608, 641	SS.SCS (impoverished coarse sand)
Ophiocten affinis	77.62		
Group ✱ **t**			
Mytilidae	18.23	OC3, OC17, OC27, OC32, OC33, OC38, OC40	SS.SMx.IMx Infralittoral mixed sediment
Sabellaria spinulosa	31.14		
Polydora caulleryi	42.41		
Nematoda	50.57		
Group Δ n			
Spiophanes bombyx	39.14	OC4, OC21, OC22, OC28, OC39	SS.SCS.ICS Infralittoral coarse sediment
Nemertea	54.58		
Group ◇ d			

Species	Cum. %	Samples Label	Biotope Code
Scalibregma inflatum	94.17	OC23, B15, B17, B26	SS.SMx.CMx Circalittoral mixed sediment (fairly impoverished)
Group ○ s			
Sabellaria spinulosa	58.58	OC34, OC37	SS.SMx.IMx Infralittoral mixed sediment
Group ▲ w			
Membraniporella nitida	21.02	B08, B23, B24, B39, B41, B44, B46, B47, B48, B50, B51, B52, B53, B54, B56, B60, B61, B63	SS.SMx.CMx Circalittoral mixed sediment SS.SBR.PoR Polychaete worm reefs (on sublittoral sediment) – reef fragments remaining only
Folliculinidae	41.05		
Conopeum reticulum	50.6		
Group ▼ u			
Glycera oxycephala	65.14	583, B09, B10	SS.SMx.CMx Circalittoral mixed sediment
Group ■ b			
Corophium volutator	71.16	B19, B28, B33, B34	SS.SMu Sublittoral cohesive mud and sandy mud communities (impoverished)
Group ◆ c			
Sertularia cupressina	32.68	B20, B29, B30, B35	SS.SMu Sublittoral cohesive mud and sandy mud communities (very impoverished)
Vesicularia spinosa	65.37		

29. The outliers identified from the cluster analysis were classified with the following biotopes:

- Sample 57: a muddy, sandy sediment with a total of 9 individuals counted and 8 species total, making this an impoverished sandy mud community (SS.SMu)

- Sample OC5: a shallow, fine sand sediment type with a total of 9 individuals counted and 6 species identified, making this an impoverished infralittoral mobile clean sand with sparse fauna (SS.SSa.IFiSa.IMoSa).
- Sample OC18: a mixed sediment seabed with cobbles, large rocks and clay, supporting 67 individuals and 20 different species. The most common species identified were Mytilidae, Actinaria, and *Lumbrineris cingulata*. The most likely biotope classification is circalittoral mixed sediment (SS.SMx.CMs). Without further identification of the Mytilids and Actinaria it is difficult to further classify this biotope.
- Sample 720: a sandy seabed with a total of 16 individuals counted across 10 different species. *Maerella tenuimana* is the most abundant species with a total of 4 individuals. The most likely biotope characterising this sample is circalittoral fine sand (SS.SSa.CFiSa).

9.4.4 References

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Annex 1 Complete Taxa List

Table A9.4.4 List of Infauna Taxa Present in the Grab Samples

Taxa	Abundance Total	cum.	Occurrence (%)
Sabellaria spinulosa	10661	86	6.5
Spiophanes bombyx	4508	86	5.5
Ophiuroidea	2851	86	5.3
Echinocyamus pusillus	2195	87	7.0
Abra alba	1832	87	6.1
Pisidia longicornis	1299	87	8.7
Nemertea	1290	87	8.2
Nephtys cirrosa	1266	88	1.2
Abludomelita obtusata	1178	88	5.9
Ophelia borealis	1108	88	9.0
Mediomastus fragilis	1085	88	0.7
Ophiura albida	1016	88	6.3
Polycirrus	935	89	3.5
Urothoe brevicornis	882	89	6.9
Ophelia	837	89	8.9
Fabulina fabula	810	89	1.8
Glycera	691	89	5.8
Actiniaria	689	89	7.0
Scoloplos armiger	645	90	6.5
Aonides paucibranchiata	644	90	11.0
Polinices pulchellus	626	90	6.0
Bathyporeia elegans	586	90	2.5
Ophiuridae	538	90	5.4
Mytilidae	496	90	3.2
Kurtiella bidentata	490	91	7.0
Spatangoida	462	91	5.2
Nephtys sp.	414	91	3.8
Nematoda	399	91	4.7
Lumbrineris cingulata	380	91	4.8
Ophiocten affinis	374	91	2.0
Lagis koreni	373	91	2.2
Grania	353	91	1.5
Chaetozone christiei	321	92	1.9
Glycera lapidum	311	92	2.9
Pholoe baltica	304	92	6.2
Scalibregma inflatum	301	92	1.5
Pisione remota	295	92	6.0
Goniada maculata	293	92	1.6
Balanus crenatus	292	92	3.4
Capitella sp.	292	92	3.1
Sphaerosyllis bulbosa	286	93	4.9
Aonides oxycephala	281	93	1.3
Phoronis	264	93	0.9

Taxa	Abundance Total	cum.	Occurrence (%)
Spio goniocephala	261	93	2.7
Spisula sp.	258	93	3.5
Gastrosaccus spinifer	252	93	1.3
Ampelisca spinipes	239	93	5.4
Nucula nucleus	229	93	5.9
Magelona johnstoni	228	93	1.4
Notomastus latericeus	193	93	2.1
Abra sp.	191	93	3.2
Amphipholis squamata	188	94	0.9
Glycera oxycephala	184	94	0.6
Spirobranchus lamarcki	175	94	1.9
Hesionura elongata	159	94	4.1
Glycera alba	158	94	1.6
Bathyporeia guilliamsoniana	153	94	1.5
Spisula elliptica	153	94	4.3
Poecilochaetus serpens	142	94	1.4
Echinocardium cordatum	141	94	3.2
Pontocrates altamarinus	140	94	1.6
Eunereis longissima	137	94	3.3
Urothoe elegans	133	94	4.7
Goodallia triangularis	131	95	2.1
Urothoe poseidonis	127	95	3.4
Anaitides rosea	126	95	2.7
Moerella pygmaea	125	95	1.4
Golfingiidae	122	95	1.5
Pseudonotomastus southerni	117	95	2.3
Thia scutellata	112	95	4.3
Cirripedia	111	95	3.5
Spio filicornis	110	95	2.8
Nereididae	109	95	2.7
Chaetozone zetlandica	106	95	3.2
Scolelepis bonnieri	104	95	2.0
Notomastus	99	95	2.8
Caulleriella alata	97	95	2.2
Eteone longa	96	95	2.2
Anoplodactylus petiolatus	95	95	2.5
Aspidelectra melolontha	94	95	3.3
Podarkeopsis capensis	93	96	0.7
Polynoidae	88	96	3.3
Marphysa bellii	86	96	2.3
Clymenura	85	96	1.3
Copepoda	84	96	2.3
Lanice conchilega	83	96	1.5
Syllis sp.	82	96	2.3
Owenia fusiformis	80	96	0.2
Maerella tenuimana	76	96	2.3
Nucula nitidosa	75	96	1.1

Taxa	Abundance Total	cum.	Occurrence (%)
Psammechinus miliaris	74	96	1.3
Ascidiacea	73	96	2.8
Asterias rubens	72	96	2.3
Tubificoides pseudogaster	70	96	1.4
Aricidea wassi	69	96	2.6
Galathea intermedia	69	96	1.4
Aglaophamus rubella	67	96	1.4
Pomatoceros lamarcki	65	96	2.1
Callianassa subterranea	64	96	1.5
Polygordius	64	96	0.8
Scolelepis squamata	60	96	1.4
Asteroidea	58	96	1.1
Corophium volutator	58	96	0.8
Autolytus	57	97	1.4
Paradoneis lyra	57	97	2.2
Gammaropsis maculata	53	97	0.8
Nephtys caeca	51	97	0.9
Conopeum reticulum	50	97	1.1
Leiochone spp.	50	97	2.2
Polydora caulleryi	49	97	1.1
Tellimya ferruginosa	49	97	0.4
Thoralus cranchii	48	97	1.9
Angulus fabula	47	97	2.2
Praxillella affinis	47	97	1.1
Unciola planipes	47	97	1.1
Malmgrenia darbouxi	46	97	1.2
Owenia sp.	46	97	0.1
Abra prismatica	44	97	1.5
Eumida	44	97	2.0
Exogone verugera	44	97	1.2
Stenothoe marina	44	97	1.6
Exogone hebes	43	97	1.3
Nephtys longosetosa	43	97	1.9
Lepidonotus squamatus	41	97	0.8
Nephtys hombergii	40	97	0.9
Ampharete lindstroemi	39	97	1.2
Goniadidae	38	97	1.4
Tharyx killariensis	38	97	1.4
Turbellaria	38	97	0.4
Electra pilosa	37	97	0.5
Ammodytes	36	97	1.2
Eulalia mustela	35	97	1.5
Glycinde nordmanni	35	97	0.6
Atylus swammerdamei	33	97	1.1
Callianassidae	33	97	0.8
Perioculodes longimanus	32	97	0.9
Donax vittatus	30	98	0.4

Taxa	Abundance Total	cum.	Occurrence (%)
Cheirocratus	29	98	1.4
Atylus falcatus	28	98	1.1
Folliculinidae	28	98	0.9
Galathowenia oculata	28	98	1.3
Membraniporoidea	28	98	1.3
Anaitides groenlandica	27	98	0.4
Leiochone johnstoni	27	98	0.8
Pariambus typicus	27	98	0.9
Eumida sanguinea	26	98	1.4
Ophiura ophiura	26	98	0.8
Orchomenella nana	26	98	1.2
Aricidea minuta	25	98	0.4
Echinidae	25	98	0.5
Leptochiton asellus	25	98	1.1
Membraniporella nitida	24	98	0.4
Eurydice spinigera	23	98	1.1
Exogone naidina	23	98	0.5
Megaluropus agilis	23	98	1.3
Schistomeringos rudolphi	23	98	1.3
Sphaerodorum gracilis	23	98	0.8
Synchelidium maculatum	23	98	0.6
Urothoe	23	98	1.3
Achelia echinata	22	98	0.8
Bathyporeia pelagica	22	98	0.8
Urothoe marina	22	98	1.3
Aphelochaeta marioni	21	98	0.8
Eumida bahusiensis	21	98	1.2
Liocarcinus	21	98	1.2
Aoridae	20	98	0.9
Macrochaeta	20	98	1.2
Nucula	20	98	0.9
Philocheras trispinosus	20	98	1.1
Cheirocratus sundevallii	19	98	0.4
Galathea	19	98	1.1
Pontocrates arenarius	19	98	0.8
Schizomavella	19	98	1.1
Bodotria scorpioides	18	98	0.7
Echinocardium pennatifidum	18	98	0.8
Protodorvillea kefersteini	18	98	0.2
Syllis gracilis	18	98	0.5
Malmgrenia arenicolae	17	98	0.1
Sthenelais limicola	17	98	0.5
Syllides japonicus	17	98	0.5
Anaitides lineata	16	98	0.8
Pholoe inornata	16	98	0.4
Sertularia cupressina	16	98	0.9
Sthenelais boa	16	98	0.9

Taxa	Abundance Total	cum.	Occurrence (%)
Upogebia deltaura	16	98	0.5
Amphilochus neapolitanus	15	98	0.9
Diplodonta rotundata	15	98	0.8
Euspira nitida	15	98	0.6
Golfingia elongata	15	98	0.2
Iphimedia minuta	15	98	0.7
Pilumnus hirtellus	15	99	0.6
Spio decorata	15	99	0.6
Syllis cornuta	15	99	0.5
Terebellidae	15	99	0.4
Unciola crenatipalma	15	99	0.5
Dyopedos monacanthus	14	99	0.7
Elminius modestus	14	99	0.5
Mysidacea	14	99	0.5
Nudibranchia	14	99	0.8
Pelecypoda	14	99	0.9
Philocheras bispinosus	14	99	0.2
Branchiostoma lanceolatum	13	99	0.8
Eulalia ornata	13	99	0.8
Hippolyte varians	13	99	0.6
Lysilla	13	99	0.8
Pagurus bernhardus	13	99	0.4
Atherospio guillei	12	99	0.6
Cerianthus lloydii	12	99	0.7
Gwynia capsula	12	99	0.7
Loimia medusa	12	99	0.6
Microphthalmus similis	12	99	0.7
Onchidoris	12	99	0.5
Sphaerosyllis taylori	12	99	0.7
Aora gracilis	11	99	0.6
Cliona	11	99	0.1
Escharella immersa	11	99	0.6
Harpinia pectinata	11	99	0.4
Leptochiton cancellatus	11	99	0.6
Nephtys assimilis	11	99	0.7
Polydora caeca	11	99	0.6
Processa modica	11	99	0.6
Scolelepis	11	99	0.7
Bopyridae	10	99	0.6
Campanulariidae	10	99	0.4
Opisthodonta pterochaeta	10	99	0.6
Pectinidae	10	99	0.5
Sertularia	10	99	0.5
Tanaopsis graciloides	10	99	0.1
Thelepus cincinnatus	10	99	0.4
Caecum glabrum	9	99	0.4
Cheirocratus intermedius	9	99	0.6

Taxa	Abundance Total	cum.	Occurrence (%)
Decapoda	9	99	0.6
Hydrallmania falcata	9	99	0.6
Lysilla loveni	9	99	0.4
Magelona mirabilis	9	99	0.6
Nebalia bipes	9	99	0.4
Pandalina brevirostris	9	99	0.5
Socarnes erythrophthalmus	9	99	0.6
Spio armata	9	99	0.4
Syllis garciai	9	99	0.6
Ampharetidae	8	99	0.5
Anaitides maculata	8	99	0.6
Bathyporeia	8	99	0.6
Enteropneusta	8	99	0.5
Flabelligera affinis	8	99	0.6
Hippomedon denticulatus	8	99	0.5
Laonice bahusiensis	8	99	0.5
Leucothoe incisa	8	99	0.5
Mytilus edulis	8	99	0.5
Nucula hanleyi	8	99	0.5
Nymphon brevirostre	8	99	0.5
Opheliidae	8	99	0.1
Ophiura	8	99	0.4
Pholoe assimilis	8	99	0.5
Photis longicaudata	8	99	0.5
Prodajus	8	99	0.4
Serpulidae	8	99	0.4
Sipuncula	8	99	0.2
Travisia forbesii	8	99	0.5
Tubularia	8	99	0.2
Aeolidiidae	7	99	0.4
Anthoathecata spp.	7	99	0.2
Chaetozone setosa	7	99	0.4
Iphinoe trispinosa	7	99	0.5
Porifera	7	99	0.5
Acidostoma obesum	6	99	0.5
Ampelisca	6	99	0.4
Aphelochaeta	6	99	0.2
Clytia hemisphaerica	6	99	0.2
Edwardsiidae	6	99	0.4
Electra monostachys	6	99	0.5
Epitonium clathrus	6	99	0.5
Gattyana cirrhosa	6	99	0.4
Golfingia (Golfingia) vulgaris vulgaris	6	99	0.4
Leptosynapta	6	99	0.2
Lumbrineridae	6	99	0.2
Malmgrenia andreapolis	6	99	0.4
Melitidae	6	99	0.4

Taxa	Abundance Total	cum.	Occurrence (%)
Paguridae	6	99	0.4
Polycirrus medusa	6	99	0.1
Tubificoides benedii	6	99	0.2
Vesicularia spinosa	6	99	0.4
Alcyonidium sp.	5	99	0.4
Ampelisca diadema	5	99	0.1
Anaitides longipes	5	99	0.2
Anaitides mucosa	5	99	0.4
Anapagurus laevis	5	99	0.2
Anoplodactylus pygmaeus	5	99	0.2
Apherusa ovalipes	5	99	0.4
Buccinum undatum	5	99	0.4
Ebalia	5	99	0.4
Halecium sp.	5	99	0.4
Hypereteone foliosa	5	99	0.4
Lysilla nivea	5	99	0.2
Malmgrenia ljungmani	5	99	0.4
Minuspio cirrifera	5	99	0.2
Moerella donacina	5	99	0.2
Nemertesia	5	99	0.4
Phaxas pellucidus	5	99	0.4
Pseudomystides limbata	5	99	0.4
Schistomeringos neglecta	5	99	0.4
Spatangus purpureus	5	99	0.1
Streptosyllis bidentata	5	99	0.4
Tanaissus lilljeborgi	5	99	0.4
Thracia	5	99	0.1
Acanthomysis longicornis	4	99	0.2
Alcyonidium mytili	4	99	0.1
Alcyonidium parasiticum	4	99	0.4
Amathia sp.	4	99	0.4
Anaitides	4	99	0.4
Atelecyclus rotundatus	4	99	0.4
Barnea	4	99	0.4
Bathyporeia tenuipes	4	99	0.4
Clionaidae spp.	4	99	0.4
Echinocardium	4	99	0.1
Eusyllis blomstrandi	4	99	0.2
Lepidonotus	4	100	0.2
Nebalia herbsti	4	100	0.2
Nematonereis unicornis	4	100	0.2
Nephasoma (Nephasoma) minutum	4	100	0.2
Ophiodromus pallidus	4	100	0.2
Paraonidae	4	100	0.2
Parougia caeca	4	100	0.2
Phascolion (Phascolion) strombus strombus	4	100	0.2
Phylactella labrosa	4	100	0.2

Taxa	Abundance Total	cum.	Occurrence (%)
Pseudocuma similis	4	100	0.2
Saccoglossus	4	100	0.2
Spirorbidae	4	100	0.1
Streptosyllis websteri	4	100	0.2
Terebellides stroemii	4	100	0.1
Thracia villosiuscula	4	100	0.2
Tmetonyx similis	4	100	0.2
Turbonilla acuta	4	100	0.2
Upogebiidae	4	100	0.1
Ampharete grubei	3	100	0.2
Anobothrus gracilis	3	100	0.2
Bathyporeia sarsi	3	100	0.2
Buccinidae	3	100	0.2
Callipallene brevirostris	3	100	0.2
Chaetognatha	3	100	0.2
Cirriformia tentaculata	3	100	0.2
Crangon allmanni	3	100	0.1
Ensis	3	100	0.1
Euclymene oerstedii	3	100	0.2
Facelina	3	100	0.2
Gammaropsis cornuta	3	100	0.2
Harmothoe impar	3	100	0.2
Ione thoracica	3	100	0.2
Leiochone leiopygos	3	100	0.1
Liocarcinus depurator	3	100	0.2
Magelona	3	100	0.2
Magelona alleni	3	100	0.2
Magelona filiformis	3	100	0.2
Marphysa	3	100	0.2
Molgula spp.	3	100	0.2
Montacuta substriata	3	100	0.1
Mysta picta	3	100	0.2
Nereis zonata	3	100	0.2
Nototropis swammerdamei	3	100	0.2
Obelia bidentata	3	100	0.1
Obelia longissima	3	100	0.1
Parvipalpus capillaceus	3	100	0.2
Phtisica marina	3	100	0.2
Pinnotheres pisum	3	100	0.2
Proceraea	3	100	0.2
Pseudopolydora pulchra	3	100	0.2
Pseudoprotella phasma	3	100	0.2
Spio	3	100	0.2
Spirobranchus sp.	3	100	0.1
Thracia phaseolina	3	100	0.2
Timoclea ovata	3	100	0.2
Tornus subcarinatus	3	100	0.2

Taxa	Abundance Total	cum.	Occurrence (%)
Urothoe pulchella	3	100	0.2
Verruca stroemia	3	100	0.2
Achaeus cranchii	2	100	0.2
Acidostoma neglectum	2	100	0.1
Amaeana trilobata	2	100	0.2
Amphiuridae	2	100	0.2
Apherusa jurinei	2	100	0.2
Apseudes latreillii	2	100	0.2
Asbjornsenia pygmaea	2	100	0.1
Asclerocheilus intermedius	2	100	0.1
Axius stirhynchus	2	100	0.1
Bathyporeia gracilis	2	100	0.1
Bougainvilliidae	2	100	0.1
Calycella syringa	2	100	0.1
Crangon crangon	2	100	0.1
Diastylis lucifera	2	100	0.1
Diphasia	2	100	0.1
Dipolydora caulleryi	2	100	0.1
Dipolydora flava	2	100	0.1
Dosinia	2	100	0.1
Ebalia cranchii	2	100	0.1
Echinoidea	2	100	0.1
Ensis ensis	2	100	0.1
Epitonium clathratulum	2	100	0.1
Ericthonius	2	100	0.1
Eurydice pulchra	2	100	0.1
Gammaropsis nitida	2	100	0.1
Gastropoda	2	100	0.1
Golfingia spp.	2	100	0.1
Gyge branchialis	2	100	0.1
Gyptis propinqua	2	100	0.1
Harmothoe clavigera	2	100	0.1
Idotea	2	100	0.1
Lamprops fasciata	2	100	0.1
Lepidepecreum longicorne	2	100	0.1
Limecola balthica	2	100	0.1
Limnodriloides	2	100	0.1
Liocarcinus holsatus	2	100	0.1
Liocarcinus pusillus	2	100	0.1
Lysidice unicornis	2	100	0.1
Macropodia parva	2	100	0.1
Mactridae	2	100	0.1
Malmgrenia castanea	2	100	0.1
Malmgrenia spp.	2	100	0.1
Marphysa sanguinea	2	100	0.1
Mesopodopsis slabberi	2	100	0.1
Obelia	2	100	0.1

Taxa	Abundance Total	cum.	Occurrence (%)
Pagurus	2	100	0.1
Paraonis fulgens	2	100	0.1
Phyllodoce longipes	2	100	0.1
Phyllodocidae	2	100	0.1
Polydora ciliata	2	100	0.1
Pomatoceros	2	100	0.1
Pontocrates arcticus	2	100	0.1
Pseudocuma longicornis	2	100	0.1
Puellina	2	100	0.1
Pygospio elegans	2	100	0.1
Rissoides desmaresti	2	100	0.1
Sabellidae	2	100	0.1
Scalibregma celticum	2	100	0.1
Schistomeringos rudolphii	2	100	0.1
Scolelepis korsuni	2	100	0.1
Siriella armata	2	100	0.1
Spionidae	2	100	0.1
Streptosyllis	2	100	0.1
Syllis variegata	2	100	0.1
Triticella flava	2	100	0.1
Tubularia indivisa	2	100	0.1
Acarina	1	100	0.1
Aglaophamus agilis	1	100	0.1
Agonus cataphractus	1	100	0.1
Alcyonidium diaphanum	1	100	0.1
Alpheus macrocheles	1	100	0.1
Ammodytes marinus	1	100	0.1
Amothella longipes	1	100	0.1
Ampharete finmarchica	1	100	0.1
Amphicteis	1	100	0.1
Amphicteis gunneri	1	100	0.1
Amphiura filiformis	1	100	0.1
Anapagurus hyndmanni	1	100	0.1
Anomiidae	1	100	0.1
Apherusa bispinosa	1	100	0.1
Aphrodita aculeata	1	100	0.1
Aphroditidae	1	100	0.1
Arenicolidae	1	100	0.1
Astrorhiza	1	100	0.1
Atylus guttatus	1	100	0.1
Bicellariella ciliata	1	100	0.1
Bivalvia	1	100	0.1
Brania	1	100	0.1
Callionymus lyra	1	100	0.1
Callopora	1	100	0.1
Callopora dumerilli	1	100	0.1
Cardiidae	1	100	0.1

Taxa	Abundance Total	cum.	Occurrence (%)
Caridea	1	100	0.1
Caulleriella zetlandica	1	100	0.1
Chaetopterus variopedatus	1	100	0.1
Chaetozone	1	100	0.1
Chitinopoma serrula	1	100	0.1
Chorizopora brongniarti	1	100	0.1
Cirrophorus furcatus	1	100	0.1
Clytia	1	100	0.1
Crangonidae	1	100	0.1
Crassicorophium crassicorne	1	100	0.1
Crepidula fornicata	1	100	0.1
Cribrilinidae	1	100	0.1
Diastylis bradyi	1	100	0.1
Diastylis rugosa	1	100	0.1
Diastyloides serrata	1	100	0.1
Dipolydora coeca	1	100	0.1
Dodecaceria	1	100	0.1
Doto	1	100	0.1
Ebalia tuberosa	1	100	0.1
Ebalia tumefacta	1	100	0.1
Ensis arcuatus	1	100	0.1
Escharella	1	100	0.1
Escharella ventricosa	1	100	0.1
Escharina johnstoni	1	100	0.1
Eubranchus	1	100	0.1
Eudorella truncatula	1	100	0.1
Eulalia	1	100	0.1
Eunicidae	1	100	0.1
Euphausiidae	1	100	0.1
Eurydice sp.	1	100	0.1
Eurydice truncata	1	100	0.1
Euzonus flabelligerus	1	100	0.1
Flustra foliacea	1	100	0.1
Gibbomodiola adriatica	1	100	0.1
Gibbula cineraria	1	100	0.1
Gibbula tumida	1	100	0.1
Glycera tridactyla	1	100	0.1
Glycymeris glycymeris	1	100	0.1
Gnathia oxyuraea	1	100	0.1
Goniada	1	100	0.1
Graphis albida	1	100	0.1
Harmothoe	1	100	0.1
Harmothoe fernandi	1	100	0.1
Harmothoe glabra	1	100	0.1
Harmothoe spp.	1	100	0.1
Haustorius arenarius	1	100	0.1
Heteranomia squamula	1	100	0.1

Taxa	Abundance Total	cum.	Occurrence (%)
Isopoda	1	100	0.1
Jassa	1	100	0.1
Leptocheirus hirsutimanus	1	100	0.1
Lepton squamosum	1	100	0.1
Leucothoe lilljeborgi	1	100	0.1
Leucothoe procera	1	100	0.1
Liljeborgia pallida	1	100	0.1
Liocarcinus marmoreus	1	100	0.1
Lovenella clausa	1	100	0.1
Lumbrineris futilis	1	100	0.1
Lumbrineris latreilli	1	100	0.1
Lysianassidae	1	100	0.1
Macropodia	1	100	0.1
Malacoceros vulgaris	1	100	0.1
Maldanidae	1	100	0.1
Malmgrenia marphysae	1	100	0.1
Membranipora tenuis	1	100	0.1
Micromaldane ornithochaeta	1	100	0.1
Modiolus modiolus	1	100	0.1
Monopseudocuma gilsoni	1	100	0.1
Mya truncata	1	100	0.1
Mysidopsis	1	100	0.1
Nebalia	1	100	0.1
Nebalia strausi	1	100	0.0
Neomysis integer	1	100	0.0
Nephtys kersivalensis	1	100	0.0
Nototropis vedlomensis	1	100	0.0
Nymphon sp.	1	100	0.0
Odontosyllis fulgurans	1	100	0.0
Odostomia	1	100	0.0
Onchidorididae	1	100	0.0
Ophelia neglecta	1	100	0.0
Ophelina acuminata	1	100	0.0
Ophiodromus flexuosus	1	100	0.0
Ophiothrix fragilis	1	100	0.0
Ophryotrocha	1	100	0.0
Orchomene humilis	1	100	0.0
Ostracoda	1	100	0.0
Pagurus prideaux	1	100	0.0
Parasmittina trispinosa	1	100	0.0
Petricola pholadiformis	1	100	0.0
Pherusa	1	100	0.0
Photis reinhardi	1	100	0.0
Pirimela denticulata	1	100	0.0
Pomatoceros triqueter	1	100	0.0
Pomatoschistus	1	100	0.0
Procerastea nematodes	1	100	0.0

Taxa	Abundance Total	cum.	Occurrence (%)
Processa canaliculata	1	100	0.0
Protodrilus	1	100	0.0
Psamathe fusca	1	100	0.0
Psammodrilus balanoglossoides	1	100	0.0
pseudopolydora	1	100	0.0
Puellina praecox	1	100	0.0
Puellina venusta	1	100	0.0
Sabella pavonina	1	100	0.0
Saccocirrus	1	100	0.0
Sagitta	1	100	0.0
Schistomysis kervillei	1	100	0.0
Schistomysis ornata	1	100	0.0
Schistomysis spiritus	1	100	0.0
Schizomavella (Schizomavella) auriculata/cornuta	1	100	0.0
Scolelepis cantabra	1	100	0.0
Scolelepis foliosa	1	100	0.0
Scoletoma impatiens	1	100	0.0
Scoletoma magnidentata	1	100	0.0
Scrupocellaria scruposa	1	100	0.0
Sigalion	1	100	0.0
Siphonoecetes kroyeranus	1	100	0.0
Siphonoecetes striatus	1	100	0.0
Spatangus	1	100	0.0
Spiophanes	1	100	0.0
Spiophanes kroyeri	1	100	0.0
Spisula solida	1	100	0.0
Syllidae (epitoke)	1	100	0.0
Syllides benedicti	1	100	0.0
Syllides sp.	1	100	0.0
Syllis licheri	1	100	0.0
Syllis pontxioi	1	100	0.0
Themisto abyssorum	1	100	0.0
Tryphosella sp. indet	1	100	0.0
Tubificoides amplivasatus	1	100	0.0
Upogebia stellata	1	100	0.0
Zenobiana prismatica	1	100	0.0
Total	**56,542**		

Annex 2 Diversity Indices Results

Table A9.4.5 Diversity indices: J' - Pielou's Evenness, H'(loge) - Shannon-Wiener, 1-Lambda' - Simpson's Index.

Sample	S	N	J'	H'(loge)	1-Lambda'
1	12	34	0.828833	2.059573	0.857398
2	18	73	0.797763	2.305833	0.865297
3	15	21	0.95361	2.582424	0.957143
4	13	34	0.854348	2.19136	0.87344
5	17	61	0.868815	2.461539	0.900546
6	11	17	0.96466	2.313154	0.948529
7	10	32	0.805534	1.85481	0.800403
8	13	25	0.926721	2.376992	0.926667
9	7	11	0.924324	1.798652	0.890909
10	11	28	0.898993	2.155691	0.891534
11	14	25	0.959632	2.532525	0.95
12	18	50	0.878066	2.537936	0.915918
13	8	10	0.973976	2.025326	0.955556
14	10	20	0.928432	2.137793	0.910526
15	9	18	0.951718	2.091139	0.915033
16	12	40	0.870567	2.163278	0.870513
17	7	18	0.789541	1.536376	0.764706
18	15	25	0.923723	2.501488	0.936667
19	19	40	0.793782	2.337242	0.834615
20	5	12	0.884862	1.42413	0.787879
21	9	15	0.888325	1.951848	0.87619
22	15	49	0.879336	2.381286	0.90051
23	17	47	0.933405	2.644535	0.93802
24	12	22	0.939626	2.334882	0.930736
25	17	25	0.957384	2.712472	0.963333

Sample	S	N	J'	H'(loge)	1-Lambda'
26	13	28	0.898505	2.304619	0.899471
27	15	40	0.860637	2.330648	0.889744
28	10	14	0.974111	2.242973	0.956044
29	13	33	0.840937	2.15696	0.850379
30	11	32	0.835004	2.002253	0.840726
31	9	22	0.764269	1.679271	0.744589
32	8	21	0.963951	2.004479	0.9
33	8	15	0.894196	1.859429	0.866667
34	13	27	0.933448	2.394247	0.928775
35	18	40	0.902873	2.609638	0.929487
36	14	32	0.916493	2.418679	0.923387
37	16	30	0.910271	2.523808	0.931034
38	12	29	0.772885	1.920546	0.79803
39	7	9	0.970836	1.889159	0.944444
40	14	23	0.924098	2.438748	0.932806
41	12	15	0.94103	2.338372	0.942857
42	11	18	0.922583	2.212257	0.915033
43	16	41	0.782326	2.169067	0.831707
44	11	14	0.976687	2.341994	0.967033
45	13	20	0.941559	2.415052	0.942105
46	14	30	0.868211	2.291258	0.887356
47	15	40	0.829369	2.245973	0.861538
48	16	63	0.716762	1.987286	0.746544
49	10	15	0.920118	2.118649	0.914286
50	15	74	0.75553	2.046013	0.781933
51	9	10	0.984859	2.163956	0.977778
52	13	21	0.908888	2.331253	0.919048
53	13	30	0.942028	2.416254	0.931034

Sample	S	N	J'	H'(loge)	1-Lambda'
54	15	34	0.918093	2.486241	0.928699
56	13	28	0.921575	2.363793	0.92328
57	8	9	0.982568	2.043192	0.972222
58	16	32	0.900352	2.496307	0.917339
59	13	38	0.90694	2.326255	0.908962
60	9	11	0.954966	2.098274	0.945455
61	54	2181	0.317425	1.266202	0.419412
62	12	20	0.921544	2.289952	0.921053
63	13	34	0.830532	2.130272	0.860963
64	14	24	0.933327	2.463105	0.938406
65	19	35	0.907976	2.67348	0.936134
66	17	66	0.755324	2.139994	0.821445
67	8	12	0.91721	1.907284	0.893939
68	11	17	0.916118	2.196756	0.911765
69	16	38	0.886133	2.456882	0.906117
70	50	538	0.786645	3.077375	0.925824
71	16	42	0.902171	2.501349	0.921022
72	12	23	0.943279	2.34396	0.932806
73	20	38	0.927351	2.778094	0.950213
74	11	27	0.878087	2.105561	0.874644
75	8	13	0.906432	1.884871	0.884615
76	18	74	0.831184	2.402431	0.876342
77	6	9	0.935945	1.676988	0.888889
78	12	32	0.876195	2.177263	0.875
79	17	36	0.919399	2.604854	0.936508
80	21	56	0.84008	2.557643	0.896104
81	12	34	0.744384	1.849724	0.745098
82	12	21	0.902899	2.243619	0.904762

Sample	S	N	J'	H'(loge)	1-Lambda'
83	11	19	0.950049	2.278118	0.935673
84	15	48	0.70581	1.911369	0.760638
85	18	64	0.798838	2.308938	0.83879
86	21	39	0.918619	2.796756	0.944669
87	16	30	0.943389	2.615631	0.947126
88	13	64	0.798508	2.048131	0.842758
89	18	48	0.901478	2.605606	0.929078
90	18	85	0.718131	2.075666	0.763585
91	6	10	0.917209	1.643418	0.866667
92	18	36	0.914927	2.64448	0.934921
93	11	23	0.936723	2.246163	0.920949
94	14	32	0.860839	2.271803	0.889113
95	11	22	0.942653	2.260383	0.922078
96	13	23	0.888679	2.279416	0.897233
97	14	21	0.959658	2.532591	0.957143
98	12	39	0.801233	1.990989	0.834008
99	15	50	0.670896	1.816821	0.700408
100	70	835	0.684533	2.908233	0.877919
101	8	11	0.971326	2.019815	0.945455
102	9	13	0.93659	2.057898	0.923077
103	5	54	0.302517	0.486882	0.209644
104	8	13	0.906432	1.884871	0.884615
105	15	27	0.937301	2.538258	0.94302
106	17	51	0.819381	2.321481	0.847059
107	14	53	0.885383	2.336577	0.894049
108	13	29	0.897863	2.302973	0.906404
109	15	34	0.875111	2.369843	0.893048
110	12	37	0.864051	2.147085	0.863363

Sample	S	N	J'	H'(loge)	1-Lambda'
111	8	20	0.882146	1.834372	0.852632
112	15	38	0.775819	2.100956	0.795164
113	10	20	0.915566	2.10817	0.9
114	25	73	0.871732	2.805997	0.921613
115	12	16	0.9763	2.426015	0.966667
116	16	53	0.760859	2.109548	0.811321
117	19	171	0.604894	1.781073	0.732301
118	14	20	0.951298	2.510529	0.952632
119	13	20	0.941559	2.415052	0.942105
120	20	68	0.823037	2.465599	0.878402
121	14	32	0.879106	2.32001	0.893145
122	9	23	0.868036	1.907271	0.84585
123	8	14	0.89746	1.866216	0.868132
124	14	47	0.91461	2.413709	0.916744
125	13	31	0.909185	2.332013	0.911828
126	14	47	0.90594	2.390826	0.908418
127	16	36	0.829085	2.298712	0.874603
128	12	27	0.959483	2.384226	0.934473
129	10	28	0.884183	2.035907	0.87037
130	7	16	0.910122	1.771016	0.858333
131	14	25	0.870266	2.296682	0.893333
132	18	43	0.922048	2.66506	0.93577
133	15	69	0.75251	2.037834	0.79497
134	20	61	0.743263	2.226617	0.823497
135	12	38	0.900328	2.23723	0.896159
136	8	21	0.938401	1.95135	0.885714
137	15	61	0.941739	2.550278	0.927869
138	18	64	0.744162	2.150906	0.799603

Sample	S	N	J'	H'(loge)	1-Lambda'
139	17	43	0.883595	2.503413	0.906977
140	12	34	0.840475	2.088502	0.848485
141	20	98	0.785078	2.351884	0.870187
142	10	45	0.469337	1.080688	0.431313
143	24	190	0.486132	1.544954	0.545865
144	12	43	0.839949	2.087194	0.861573
145	22	59	0.81831	2.529432	0.888369
146	17	46	0.857533	2.429573	0.895652
147	6	15	0.798255	1.43028	0.742857
148	23	77	0.755134	2.367717	0.855434
149	16	78	0.772934	2.143029	0.814852
150	14	35	0.907234	2.394244	0.912605
151	21	63	0.787919	2.398837	0.866359
152	12	28	0.8624	2.142984	0.87037
153	16	172	0.375789	1.041907	0.395621
154	15	46	0.739443	2.002448	0.783575
155	26	89	0.880716	2.869458	0.93284
156	18	32	0.914285	2.642624	0.929435
157	21	71	0.68985	2.100265	0.747686
158	15	80	0.741304	2.007487	0.807595
159	15	56	0.802699	2.17375	0.846753
160	17	78	0.686348	1.944572	0.762904
161	15	40	0.854854	2.314989	0.879487
162	67	558	0.780433	3.28148	0.937163
163	21	277	0.306448	0.932989	0.344844
164	11	35	0.753907	1.80779	0.751261
165	12	48	0.875975	2.176715	0.879433
166	17	49	0.918406	2.602039	0.930272

Sample	S	N	J'	H'(loge)	1-Lambda'
167	15	40	0.815932	2.209585	0.85641
168	10	58	0.759749	1.749387	0.76225
169	20	76	0.702431	2.104296	0.761053
170	12	17	0.963698	2.3947	0.955882
171	18	36	0.854951	2.471125	0.88254
172	18	61	0.709559	2.050888	0.759563
173	23	137	0.587567	1.842313	0.643195
174	8	21	0.918637	1.910252	0.87619
175	11	53	0.783861	1.879616	0.814949
176	9	21	0.910778	2.001183	0.885714
177	10	31	0.820758	1.889864	0.827957
178	16	50	0.870898	2.414641	0.900408
179	26	154	0.633285	2.063304	0.763772
180	7	11	0.973215	1.893788	0.927273
181	5	16	0.88393	1.42263	0.766667
182	8	16	0.95282	1.981333	0.908333
183	9	16	0.931511	2.046739	0.908333
184	9	25	0.848002	1.86325	0.83
185	19	105	0.799153	2.353056	0.870696
186	15	40	0.856298	2.318897	0.888462
187	5	12	0.884862	1.42413	0.787879
188	12	34	0.833462	2.071076	0.84492
189	12	48	0.837433	2.080944	0.844858
190	13	74	0.673107	1.726486	0.689745
191	7	14	0.942379	1.833786	0.89011
192	12	50	0.759711	1.88781	0.767347
193	11	54	0.71698	1.719242	0.742837
194	12	22	0.930054	2.311098	0.926407

Sample	S	N	J'	H'(loge)	1-Lambda'
195	22	109	0.541016	1.672303	0.601257
196	17	45	0.836782	2.370783	0.874747
197	20	101	0.61476	1.841657	0.661782
198	14	48	0.797861	2.1056	0.841312
199	20	53	0.697138	2.08844	0.738752
200	10	25	0.820273	1.888749	0.816667
201	16	39	0.900525	2.496786	0.916329
208	15	26	0.912605	2.47138	0.926154
211	16	45	0.757945	2.101471	0.791919
212	11	26	0.734955	1.762346	0.741538
215	48	367	0.71097	2.752308	0.858296
216	7	18	0.831924	1.618849	0.797386
217	7	11	0.90845	1.767761	0.872727
218	15	38	0.817324	2.213353	0.854908
219	11	36	0.780871	1.872446	0.793651
220	25	101	0.824797	2.654919	0.905941
221	43	698	0.419704	1.57859	0.534242
222	11	25	0.766854	1.838835	0.766667
223	18	36	0.893156	2.581554	0.919048
224	14	33	0.841561	2.220927	0.871212
226	7	13	0.913831	1.778233	0.871795
227	5	7	0.962961	1.549826	0.904762
228	11	22	0.927605	2.2243	0.917749
229	13	18	0.965407	2.476221	0.960784
230	3	4	0.946395	1.039721	0.833333
233	17	28	0.95323	2.700703	0.957672
234	15	44	0.925159	2.505376	0.924947
235	11	31	0.846414	2.029612	0.845161

Sample	S	N	J'	H'(loge)	1-Lambda'
236	19	67	0.692594	2.039301	0.785617
237	17	30	0.933357	2.644399	0.947126
238	8	45	0.803719	1.671287	0.787879
239	6	28	0.422278	0.75662	0.330688
240	12	33	0.900638	2.238001	0.899621
241	11	20	0.956427	2.293413	0.936842
242	11	24	0.935541	2.24333	0.916667
243	11	20	0.938431	2.25026	0.926316
244	9	13	0.973227	2.138397	0.948718
245	11	57	0.646772	1.550892	0.684837
246	10	44	0.856872	1.97302	0.842495
247	9	24	0.838275	1.841878	0.82971
248	6	19	0.798156	1.430103	0.74269
249	11	13	0.980724	2.351673	0.974359
250	21	48	0.899582	2.738797	0.927305
251	12	28	0.92481	2.298068	0.915344
252	13	55	0.770141	1.975372	0.810774
253	27	93	0.879406	2.898378	0.936419
254	3	7	0.869916	0.9557	0.666667
255	12	29	0.928369	2.306911	0.918719
256	4	94	0.82125	1.138494	0.676047
257	16	65	0.649893	1.801885	0.684135
258	14	45	0.775185	2.045757	0.80202
259	14	40	0.827113	2.182799	0.851282
260	30	152	0.808374	2.749438	0.907372
261	13	16	0.979613	2.512659	0.975
262	18	45	0.81064	2.343051	0.854545
263	5	18	0.597036	0.960892	0.48366

Sample	S	N	J'	H'(loge)	1-Lambda'
264	5	15	0.9361	1.506595	0.819048
265	8	26	0.687283	1.429165	0.655385
266	18	71	0.701003	2.026158	0.789537
267	16	40	0.847888	2.350845	0.885897
268	6	10	0.946412	1.695743	0.888889
269	10	14	0.974111	2.242973	0.956044
270	12	32	0.712684	1.770953	0.715726
271	52	780	0.568325	2.245592	0.77508
272	5	13	0.814838	1.311431	0.730769
273	11	82	0.483387	1.15911	0.475158
274	6	35	0.783297	1.40348	0.717647
275	15	40	0.873193	2.364652	0.89359
276	16	74	0.758929	2.104197	0.826731
277	12	44	0.866986	2.154378	0.874207
278	19	35	0.879729	2.590308	0.909244
279	17	38	0.903287	2.559206	0.924609
280	6	13	0.895883	1.605207	0.833333
281	6	47	0.357499	0.640552	0.275671
282	8	42	0.801868	1.667438	0.787456
283	11	63	0.517894	1.241856	0.535074
284	17	30	0.946694	2.682186	0.951724
285	24	57	0.852176	2.708261	0.907895
286	24	62	0.919042	2.920764	0.950291
287	10	16	0.926516	2.133382	0.916667
288	14	38	0.732348	1.932708	0.746799
289	3	9	0.965634	1.060857	0.722222
290	6	14	0.831283	1.489459	0.78022
291	11	29	0.877039	2.103047	0.869458

Sample	S	N	J'	H'(loge)	1-Lambda'
293	10	27	0.905551	2.085107	0.88604
294	18	36	0.854951	2.471125	0.88254
295	13	26	0.867429	2.22491	0.883077
296	8	17	0.979943	2.037734	0.919118
297	4	4	1	1.386294	1
298	9	24	0.863251	1.896756	0.844203
299	5	14	0.700577	1.127535	0.593407
300	47	961	0.633794	2.440199	0.858693
301	11	21	0.897741	2.152688	0.895238
302	23	200	0.679279	2.129875	0.815226
303	10	18	0.949816	2.187033	0.928105
304	17	34	0.937189	2.655257	0.944742
305	6	11	0.792836	1.420572	0.727273
306	13	40	0.8434	2.163278	0.873077
307	15	91	0.608635	1.648215	0.664469
308	9	20	0.860655	1.891053	0.852632
309	18	59	0.708545	2.047958	0.749854
310	12	17	0.976085	2.42548	0.963235
311	10	16	0.940719	2.166085	0.925
312	8	17	0.909166	1.890557	0.875
313	10	35	0.767799	1.767923	0.77479
314	14	54	0.772234	2.037969	0.819008
315	12	43	0.790379	1.964018	0.82392
316	21	170	0.520942	1.586021	0.614897
317	26	86	0.786018	2.560923	0.863748
318	13	21	0.908888	2.331253	0.919048
319	11	26	0.9322	2.235317	0.913846
320	4	4	1	1.386294	1

Sample	S	N	J'	H'(loge)	1-Lambda'
321	11	210	0.50652	1.214582	0.566689
322	6	16	0.860593	1.541976	0.783333
323	7	19	0.854732	1.663232	0.818713
324	24	153	0.558269	1.77421	0.628655
325	16	31	0.878636	2.436097	0.911828
326	13	27	0.877044	2.249573	0.888889
327	10	35	0.817963	1.88343	0.808403
328	20	59	0.842018	2.52246	0.903565
329	9	46	0.633952	1.392936	0.629952
330	20	59	0.90328	2.705986	0.932203
331	37	329	0.671941	2.426322	0.825988
332	9	15	0.888325	1.951848	0.87619
333	21	1132	0.264476	0.805203	0.380646
334	12	25	0.934257	2.321541	0.923333
335	9	22	0.919628	2.020629	0.887446
336	8	24	0.805556	1.675106	0.793478
337	16	29	0.834722	2.31434	0.857143
338	13	30	0.891497	2.286644	0.905747
339	8	25	0.872896	1.815137	0.846667
340	16	32	0.951057	2.636891	0.949597
341	17	32	0.914333	2.5905	0.931452
342	17	26	0.939523	2.661869	0.950769
343	22	56	0.87849	2.71545	0.924675
344	11	34	0.85559	2.051615	0.860963
345	15	30	0.929486	2.517096	0.933333
346	12	41	0.855385	2.125552	0.853659
347	13	29	0.895761	2.297581	0.899015
348	21	39	0.963286	2.932746	0.964912

Sample	S	N	J'	H'(loge)	1-Lambda'
349	12	36	0.829019	2.060034	0.838095
350	5	6	0.969724	1.56071	0.933333
351	7	8	0.97957	1.906155	0.964286
352	9	15	0.932487	2.048883	0.914286
353	21	103	0.864099	2.630768	0.914715
355	7	21	0.790223	1.537703	0.761905
356	14	18	0.967481	2.553237	0.96732
357	21	48	0.903143	2.749638	0.937943
358	19	42	0.890594	2.6223	0.919861
359	10	12	0.978838	2.253858	0.969697
360	13	22	0.959438	2.460909	0.948052
361	16	25	0.958317	2.65702	0.96
362	15	20	0.968592	2.622996	0.968421
363	14	25	0.959632	2.532525	0.95
364	13	47	0.899005	2.305902	0.902868
365	12	27	0.879164	2.184639	0.874644
366	36	160	0.655466	2.348875	0.748664
367	6	6	1	1.791759	1
368	8	14	0.917811	1.908535	0.89011
369	10	22	0.911269	2.098274	0.891775
370	28	168	0.621275	2.070216	0.735529
371	20	44	0.929221	2.783698	0.943975
372	6	8	0.967132	1.732868	0.928571
373	11	20	0.938431	2.25026	0.926316
374	11	25	0.930636	2.231567	0.913333
375	18	27	0.934936	2.702313	0.951567
377	37	142	0.770213	2.781175	0.886824
378	9	11	0.976615	2.145842	0.963636

Sample	S	N	J'	H'(loge)	1-Lambda'
379	12	15	0.964184	2.395908	0.961905
380	12	21	0.939492	2.334549	0.933333
381	18	41	0.880208	2.544129	0.907317
384	17	36	0.897583	2.543045	0.91746
385	14	29	0.862865	2.277151	0.889163
386	9	16	0.946395	2.079442	0.916667
388	15	56	0.736334	1.994029	0.777922
389	9	18	0.888456	1.952138	0.875817
390	4	10	0.985475	1.366159	0.822222
391	49	401	0.749138	2.91551	0.89616
392	14	49	0.762503	2.01229	0.793367
393	44	155	0.800502	3.029252	0.90331
394	9	11	0.976615	2.145842	0.963636
395	18	41	0.898826	2.59794	0.929268
396	7	11	0.90845	1.767761	0.872727
397	11	93	0.488185	1.170615	0.497429
398	15	28	0.859988	2.328891	0.883598
399	29	480	0.251295	0.846184	0.266066
400	11	18	0.944182	2.264049	0.934641
401	8	10	0.948813	1.973001	0.933333
402	8	10	0.973976	2.025326	0.955556
403	15	46	0.903967	2.447988	0.916908
404	10	23	0.847566	1.951592	0.833992
406	13	26	0.90478	2.320715	0.907692
407	33	152	0.893455	3.123971	0.953294
408	9	19	0.868429	1.908134	0.847953
409	13	20	0.93001	2.385429	0.931579
410	17	88	0.570135	1.615315	0.620428

Sample	S	N	J'	H'(loge)	1-Lambda'
411	13	25	0.851922	2.185138	0.863333
412	24	162	0.820841	2.608676	0.906065
413	6	8	0.930628	1.667462	0.892857
414	30	130	0.744773	2.533119	0.843888
415	58	2067	0.281696	1.143812	0.391482
416	16	40	0.877741	2.433615	0.903846
417	13	66	0.656286	1.683341	0.714219
418	37	115	0.918892	3.318042	0.963539
419	35	133	0.715853	2.545105	0.801208
420	36	1717	0.301816	1.081564	0.533533
421	8	10	0.948813	1.973001	0.933333
422	14	26	0.865553	2.284243	0.876923
423	4	6	0.959148	1.329661	0.866667
424	8	11	0.971326	2.019815	0.945455
425	3	7	0.914101	1.004242	0.714286
426	23	31	0.970334	3.042476	0.978495
427	8	22	0.825725	1.717047	0.809524
428	10	11	0.98666	2.271869	0.981818
429	17	49	0.856636	2.427032	0.897959
430	19	63	0.867303	2.553721	0.913466
431	21	106	0.658272	2.004123	0.741779
432	14	24	0.925066	2.441303	0.934783
433	5	7	0.962961	1.549826	0.904762
434	4	6	0.896241	1.242453	0.8
435	6	14	0.954644	1.710493	0.868132
436	14	19	0.956609	2.524546	0.959064
437	10	12	0.978838	2.253858	0.969697
438	14	31	0.81172	2.142175	0.836559

Sample	S	N	J'	H'(loge)	1-Lambda'
439	12	13	0.989297	2.458311	0.987179
440	17	66	0.827459	2.344367	0.875058
441	37	2240	0.245471	0.886377	0.413342
442	14	36	0.757857	2.000029	0.773016
443	16	49	0.90547	2.510495	0.921769
444	25	89	0.815463	2.624874	0.897344
445	8	15	0.946741	1.968693	0.904762
446	6	8	0.930628	1.667462	0.892857
447	26	124	0.718314	2.340335	0.79583
448	4	4	1	1.386294	1
449	16	45	0.788934	2.18739	0.845455
450	17	26	0.961772	2.724906	0.963077
451	34	111	0.8912	3.142693	0.949222
452	18	56	0.804537	2.325411	0.857143
453	19	48	0.862173	2.538616	0.904255
454	13	18	0.976741	2.50529	0.96732
455	10	13	0.957526	2.204785	0.948718
456	7	8	0.97957	1.906155	0.964286
457	23	83	0.814527	2.553945	0.88804
458	13	36	0.868356	2.227289	0.88254
459	14	21	0.953526	2.51641	0.952381
460	57	742	0.553502	2.237837	0.770613
461	14	34	0.855102	2.256664	0.891266
462	14	48	0.896064	2.364764	0.906915
463	40	154	0.800378	2.952497	0.90943
464	13	27	0.893413	2.291559	0.905983
465	6	26	0.635697	1.139016	0.56
466	7	10	0.942681	1.834372	0.911111

Sample	S	N	J'	H'(loge)	1-Lambda'
467	10	20	0.928432	2.137793	0.910526
468	13	19	0.966539	2.479122	0.959064
469	33	147	0.787838	2.754681	0.889479
470	13	31	0.876622	2.248492	0.890323
471	9	11	0.976615	2.145842	0.963636
472	19	61	0.843005	2.482178	0.896721
473	52	151	0.894788	3.535524	0.963002
474	13	29	0.847125	2.172832	0.862069
475	47	216	0.775336	2.985157	0.899354
476	47	296	0.769635	2.963207	0.903642
477	5	32	0.34177	0.550057	0.237903
478	6	15	0.902495	1.617053	0.828571
479	27	118	0.751711	2.477516	0.848037
480	15	22	0.91328	2.473208	0.930736
481	19	65	0.787418	2.318506	0.86875
482	43	229	0.781893	2.940856	0.915077
483	16	45	0.746279	2.069126	0.787879
484	11	25	0.90445	2.168777	0.896667
485	8	14	0.935785	1.94591	0.901099
487	17	31	0.863704	2.447058	0.896774
488	16	23	0.939481	2.604795	0.948617
489	15	26	0.951983	2.578019	0.950769
490	10	15	0.945105	2.176186	0.933333
491	16	26	0.949054	2.631338	0.953846
492	14	39	0.908984	2.398861	0.910931
493	17	26	0.954669	2.704781	0.96
494	4	6	0.959148	1.329661	0.866667
495	9	12	0.953352	2.094729	0.939394

Sample	S	N	J'	H'(loge)	1-Lambda'
496	9	16	0.877194	1.927392	0.858333
497	10	41	0.851285	1.960157	0.841463
498	5	13	0.810143	1.303876	0.705128
499	6	11	0.93351	1.672625	0.872727
501	19	36	0.958687	2.822794	0.960317
502	18	28	0.91725	2.651193	0.939153
503	10	17	0.918624	2.115209	0.904412
504	10	34	0.751635	1.730704	0.773619
505	9	33	0.822567	1.807365	0.816288
506	16	30	0.899547	2.494073	0.91954
507	15	45	0.825183	2.234638	0.862626
508	11	22	0.879627	2.109254	0.878788
509	5	7	0.962961	1.549826	0.904762
510	16	100	0.723264	2.005315	0.809091
511	43	122	0.815773	3.068284	0.90191
512	15	33	0.894655	2.422772	0.910985
513	21	37	0.920456	2.802347	0.945946
514	8	12	0.951796	1.979205	0.924242
515	9	20	0.916016	2.012693	0.889474
516	6	7	0.975504	1.747868	0.952381
517	17	29	0.932346	2.641534	0.945813
518	19	264	0.372072	1.095543	0.398059
519	8	24	0.694184	1.443515	0.655797
520	12	50	0.588223	1.46168	0.586122
521	5	17	0.675864	1.087761	0.573529
522	16	48	0.77151	2.139079	0.808511
523	34	91	0.920557	3.246214	0.960684
524	10	26	0.867513	1.997523	0.852308

Sample	S	N	J'	H'(loge)	1-Lambda'
525	16	26	0.922565	2.557894	0.935385
526	9	17	0.941421	2.068513	0.911765
527	12	37	0.860813	2.13904	0.870871
528	16	53	0.838356	2.324416	0.880261
529	5	6	0.969724	1.56071	0.933333
530	14	31	0.847397	2.236329	0.862366
531	12	24	0.950433	2.361738	0.934783
532	18	32	0.947187	2.737723	0.953629
534	20	38	0.881016	2.639289	0.916074
535	11	39	0.791367	1.897615	0.788124
536	22	53	0.86483	2.673227	0.910015
537	17	31	0.842635	2.387365	0.870968
538	13	20	0.91981	2.359266	0.926316
539	4	6	0.959148	1.329661	0.866667
540	12	41	0.783021	1.945735	0.789024
541	38	72	0.942049	3.426784	0.973396
542	8	15	0.929966	1.93381	0.895238
543	17	66	0.827391	2.344175	0.866667
544	8	19	0.763006	1.586626	0.725146
545	14	21	0.928512	2.450396	0.938095
546	20	32	0.95798	2.869851	0.965726
547	47	225	0.802044	3.087989	0.92377
548	11	19	0.929587	2.229051	0.918129
549	10	13	0.957526	2.204785	0.948718
550	13	28	0.933592	2.394616	0.928571
551	13	21	0.882613	2.263858	0.890476
552	8	12	0.951796	1.979205	0.924242
554	10	14	0.957879	2.205598	0.945055

Sample	S	N	J'	H'(loge)	1-Lambda'
555	12	37	0.88869	2.208311	0.881381
556	13	21	0.924911	2.37235	0.928571
557	20	40	0.875267	2.622065	0.910256
558	10	23	0.874045	2.012562	0.865613
559	23	51	0.85944	2.694768	0.913725
560	16	79	0.757977	2.101559	0.830899
561	11	18	0.956305	2.293119	0.941176
562	17	32	0.948982	2.688668	0.951613
563	15	29	0.890394	2.411231	0.906404
564	11	24	0.871863	2.090636	0.876812
565	17	52	0.825335	2.338349	0.875566
566	17	34	0.939812	2.662688	0.946524
567	23	64	0.814096	2.552592	0.878472
568	3	27	0.287086	0.315396	0.145299
569	19	85	0.645131	1.899549	0.696639
570	5	11	0.804346	1.294545	0.709091
571	15	46	0.830034	2.247774	0.8657
572	15	45	0.830299	2.24849	0.873737
574	20	28	0.967625	2.898746	0.973545
575	11	20	0.897171	2.151322	0.9
576	14	38	0.863121	2.277826	0.890469
577	24	98	0.813602	2.585671	0.891227
578	33	167	0.655739	2.292797	0.778876
579	7	13	0.779662	1.517152	0.730769
580	15	26	0.939726	2.544824	0.944615
581	16	30	0.930808	2.580747	0.942529
582	9	12	0.953352	2.094729	0.939394
583	7	8	0.97957	1.906155	0.964286

Sample	S	N	J'	H'(loge)	1-Lambda'
584	20	44	0.824846	2.471018	0.871036
585	15	58	0.823899	2.231159	0.84997
586	9	15	0.938053	2.061113	0.914286
587	19	36	0.924557	2.722302	0.946032
588	10	15	0.920118	2.118649	0.914286
589	14	29	0.920742	2.429891	0.926108
590	9	15	0.948363	2.083766	0.92381
592	15	24	0.944158	2.556827	0.949275
593	39	162	0.730477	2.676149	0.864274
594	5	6	0.969724	1.56071	0.933333
595	28	66	0.901942	3.005455	0.947319
596	16	30	0.947475	2.626957	0.949425
597	21	55	0.796328	2.424439	0.850505
599	42	155	0.749194	2.800241	0.879765
600	35	71	0.903356	3.211744	0.953722
601	8	12	0.930827	1.935601	0.909091
602	10	24	0.686551	1.580841	0.666667
603	12	30	0.882092	2.191917	0.894253
604	23	85	0.860167	2.69705	0.912045
605	20	29	0.958437	2.87122	0.96798
606	21	76	0.752563	2.291193	0.818947
607	9	14	0.913678	2.007556	0.901099
608	6	13	0.828492	1.484458	0.769231
609	27	95	0.823004	2.712487	0.903471
610	16	64	0.709664	1.967605	0.758929
613	21	57	0.884746	2.693629	0.926065
615	8	16	0.90094	1.873452	0.875
616	11	19	0.950049	2.278118	0.935673

Sample	S	N	J'	H'(loge)	1-Lambda'
617	19	36	0.91131	2.683296	0.933333
618	11	16	0.961956	2.306669	0.95
619	13	22	0.93487	2.397895	0.935065
620	10	33	0.819111	1.886074	0.818182
621	22	45	0.917475	2.835955	0.947475
622	22	46	0.851434	2.631818	0.905314
623	22	95	0.812866	2.512604	0.88981
624	13	41	0.80205	2.057218	0.821951
625	14	29	0.866926	2.287868	0.894089
626	17	35	0.891128	2.524755	0.914286
627	10	20	0.922945	2.12516	0.905263
628	18	210	0.653167	1.887895	0.72823
629	13	15	0.983727	2.523211	0.980952
630	10	15	0.960255	2.211069	0.942857
631	16	29	0.904873	2.508841	0.923645
632	7	12	0.957742	1.86368	0.909091
633	27	84	0.871403	2.872002	0.932014
634	6	6	1	1.791759	1
635	31	188	0.652842	2.241852	0.817158
636	14	108	0.597129	1.575858	0.639148
637	15	25	0.93918	2.543348	0.943333
638	12	16	0.9763	2.426015	0.966667
640	19	58	0.875409	2.577587	0.912281
641	7	11	0.924324	1.798652	0.890909
642	14	24	0.929338	2.452577	0.934783
643	15	41	0.853189	2.310478	0.881707
644	20	103	0.706838	2.117497	0.813059
645	18	24	0.959641	2.773718	0.967391

Sample	S	N	J'	H'(loge)	1-Lambda'
646	13	19	0.925935	2.374977	0.929825
647	15	31	0.919099	2.488967	0.929032
648	18	66	0.8159	2.358255	0.876923
649	16	42	0.776651	2.153333	0.823461
650	8	12	0.872497	1.814308	0.848485
651	7	11	0.924324	1.798652	0.890909
652	23	81	0.826502	2.591491	0.9
653	5	13	0.856087	1.37782	0.75641
654	5	9	0.809657	1.303092	0.722222
655	11	17	0.916118	2.196756	0.911765
656	7	13	0.947948	1.844621	0.897436
657	4	5	0.960964	1.332179	0.9
658	31	247	0.609732	2.09381	0.728251
659	9	10	0.984859	2.163956	0.977778
660	54	464	0.617331	2.462525	0.759468
661	25	61	0.87601	2.819769	0.932787
662	12	12	1	2.484907	1
663	19	21	0.989151	2.912494	0.990476
664	10	19	0.936377	2.156088	0.912281
665	17	38	0.855581	2.424044	0.88478
666	10	19	0.894312	2.059229	0.883041
667	9	12	0.953352	2.094729	0.939394
669	8	9	0.982568	2.043192	0.972222
670	31	229	0.623765	2.142002	0.743507
671	7	12	0.957742	1.86368	0.909091
672	15	22	0.969762	2.626165	0.965368
673	15	50	0.761695	2.062707	0.8
674	19	56	0.855261	2.518264	0.903896

Sample	S	N	J'	H'(loge)	1-Lambda'
675	13	30	0.88118	2.260183	0.898851
676	14	27	0.961805	2.538258	0.948718
677	18	30	0.917685	2.652451	0.935632
678	92	3040	0.403683	1.825368	0.647051
679	11	14	0.961101	2.304619	0.956044
680	19	54	0.806277	2.374034	0.860936
681	7	11	0.94877	1.84622	0.909091
682	10	25	0.893723	2.057874	0.883333
683	5	8	0.928383	1.494175	0.857143
684	18	45	0.851468	2.46106	0.89899
685	18	39	0.896936	2.592478	0.924426
686	9	43	0.579121	1.27246	0.541528
687	16	35	0.910613	2.524755	0.927731
688	7	8	0.97957	1.906155	0.964286
689	21	38	0.939392	2.859999	0.957326
690	12	27	0.938821	2.332882	0.925926
691	4	5	0.960964	1.332179	0.9
692	25	62	0.777309	2.502061	0.860391
693	4	5	0.960964	1.332179	0.9
694	7	12	0.935334	1.820076	0.893939
695	11	18	0.857674	2.056613	0.856209
696	16	20	0.971046	2.692311	0.973684
697	10	13	0.975006	2.245035	0.961538
698	10	17	0.905256	2.08443	0.897059
699	12	21	0.966058	2.400563	0.947619
700	8	13	0.906432	1.884871	0.884615
701	7	13	0.913831	1.778233	0.871795
702	9	11	0.976615	2.145842	0.963636

Sample	S	N	J'	H'(loge)	1-Lambda'
703	6	11	0.91627	1.641735	0.854545
704	4	4	1	1.386294	1
705	7	12	0.816598	1.589027	0.772727
707	16	37	0.942335	2.612707	0.941441
708	11	17	0.96466	2.313154	0.948529
709	11	27	0.847524	2.032274	0.843305
710	10	16	0.940719	2.166085	0.925
711	26	99	0.793407	2.584996	0.881262
712	14	48	0.918941	2.425138	0.914894
713	3	4	0.946395	1.039721	0.833333
714	15	21	0.92479	2.504378	0.938095
719	12	19	0.915316	2.274475	0.918129
720	10	16	0.926516	2.133382	0.916667
721	6	10	0.835975	1.497866	0.777778
722	5	6	0.969724	1.56071	0.933333
723	7	12	0.935334	1.820076	0.893939
724	16	28	0.894639	2.480466	0.917989
725	8	13	0.938357	1.95126	0.910256
726	10	36	0.768067	1.768539	0.769841
727	5	18	0.670877	1.079735	0.555556
728	1	1		0	
729	2	4	0.811278	0.562335	0.5
730	5	24	0.490406	0.789277	0.376812
731	1	2		0	0
732	4	8	0.774397	1.073543	0.642857
733	13	22	0.890017	2.282849	0.896104
734	61	396	0.84941	3.491818	0.957627
735	22	41	0.839842	2.595987	0.889024

Sample	S	N	J'	H'(loge)	1-Lambda'
736	14	27	0.927663	2.448155	0.928775
737	16	27	0.930626	2.580244	0.94302
B01	10	19	0.930193	2.141848	0.912281
B02	6	9	0.935945	1.676988	0.888889
B03	10	23	0.802479	1.847776	0.798419
B04	13	54	0.722075	1.852087	0.747729
B05	21	120	0.582312	1.772863	0.662185
B06	28	124	0.762962	2.542347	0.873066
B07	24	73	0.803749	2.554357	0.85997
B08	11	16	0.948317	2.273966	0.941667
B09	2	2	1	0.693147	1
B10	10	12	0.978838	2.253858	0.969697
B11	41	169	0.788337	2.927546	0.918709
B12	51	204	0.81371	3.199366	0.931807
B13	14	25	0.934791	2.466966	0.936667
B14	46	170	0.747931	2.863561	0.869335
B15	1	2		0	0
B16	6	11	0.792836	1.420572	0.727273
B17	1	30		0	0
B18	8	12	0.91721	1.907284	0.893939
B19	2	15	0.56651	0.392674	0.247619
B20	5	6	0.969724	1.56071	0.933333
B21	19	44	0.754494	2.221561	0.791755
B22	31	107	0.770552	2.646067	0.868277
B23	10	15	0.935267	2.153532	0.92381
B24	18	28	0.937723	2.710367	0.952381
B25	6	34	0.616795	1.105149	0.597148
B26	9	16	0.875225	1.923066	0.866667

Sample	S	N	J'	H'(loge)	1-Lambda'
B27	10	51	0.677399	1.559769	0.694902
B28	2	23	0.258019	0.178845	0.086957
B29	7	22	0.775992	1.510011	0.748918
B30	6	6	1	1.791759	1
B31	26	54	0.865524	2.819962	0.925926
B32	8	8	1	2.079442	1
B33	4	16	0.496696	0.688567	0.35
B34	4	10	0.842738	1.168282	0.711111
B35	7	7	1	1.94591	1
B36	29	74	0.841943	2.835072	0.918919
B37	32	126	0.789831	2.737346	0.901206
B38	19	61	0.698036	2.055324	0.75847
B39	6	9	0.935945	1.676988	0.888889
B40	1	1		0	
B41	9	10	0.984859	2.163956	0.977778
B42	3	3	1	1.098612	1
B43	39	274	0.700869	2.567676	0.858079
B44	7	16	0.68527	1.333473	0.625
B45	7	8	0.97957	1.906155	0.964286
B46	17	28	0.910446	2.579487	0.928571
B47	11	19	0.856609	2.05406	0.859649
B48	8	17	0.813468	1.691559	0.779412
B49	1	1		0	
B50	11	15	0.960629	2.303488	0.952381
B51	12	20	0.842946	2.094641	0.847368
B52	11	15	0.905615	2.171571	0.904762
B53	10	32	0.724385	1.667958	0.709677
B54	5	8	0.969022	1.559581	0.892857

Sample	S	N	J'	H'(loge)	1-Lambda'
B55	28	70	0.863695	2.878008	0.929193
B56	16	27	0.945531	2.621567	0.951567
B57	43	213	0.662516	2.491855	0.829259
B58	45	260	0.652486	2.483795	0.835521
B59	34	111	0.692226	2.44104	0.814087
B60	12	13	0.989297	2.458311	0.987179
B61	12	18	0.921271	2.289273	0.921569
B62	34	106	0.714518	2.519648	0.813836
B63	24	49	0.713632	2.267961	0.762755
B64	7	7	1	1.94591	1
B65	38	183	0.624362	2.27117	0.788567
OC1	8	14	0.89746	1.866216	0.868132
OC10	27	118	0.807322	2.660803	0.896712
OC11	29	616	0.517876	1.743843	0.699129
OC12	23	52	0.902046	2.828361	0.941931
OC13	11	23	0.891357	2.13738	0.889328
OC14	9	14	0.941735	2.069202	0.923077
OC15	23	47	0.919253	2.882313	0.949121
OC16	2	6	0.650022	0.450561	0.333333
OC17	35	432	0.539626	1.91856	0.74478
OC18	20	67	0.739082	2.214091	0.837178
OC2	8	13	0.957714	1.991509	0.923077
OC20	51	224	0.809701	3.183604	0.927851
OC21	12	26	0.800866	1.990076	0.812308
OC22	12	54	0.449947	1.118076	0.425577
OC23	4	20	0.718333	0.995821	0.6
OC24	16	33	0.876471	2.430092	0.909091
OC25	36	147	0.842077	3.017599	0.924518

Sample	S	N	J'	H'(loge)	1-Lambda'
OC26	35	114	0.915611	3.255315	0.958236
OC27	38	227	0.543183	1.975875	0.6344
OC28	11	56	0.683276	1.638424	0.72013
OC29	12	30	0.89667	2.228141	0.898851
OC3	9	28	0.73512	1.615223	0.706349
OC30	31	117	0.880991	3.02531	0.936045
OC31	13	41	0.870705	2.233314	0.887805
OC32	21	120	0.621157	1.891125	0.742717
OC33	23	149	0.752399	2.359141	0.864502
OC34	6	15	0.883026	1.58217	0.819048
OC35	2	2	1	0.693147	1
OC36	39	73	0.918351	3.364436	0.965753
OC37	5	11	0.720493	1.159589	0.618182
OC38	22	442	0.397193	1.227742	0.538646
OC39	10	44	0.666515	1.534707	0.673362
OC4	10	21	0.917052	2.11159	0.895238
OC40	33	115	0.843763	2.950223	0.922654
OC5	6	9	0.935945	1.676988	0.888889
OC6	7	19	0.847414	1.648992	0.795322
OC7	26	247	0.346452	1.128775	0.369211
OC8	16	49	0.611806	1.696288	0.626701
OC9	30	398	0.465356	1.582768	0.539612
TF1	7	11	0.94877	1.84622	0.909091
TF10	11	13	0.980724	2.351673	0.974359
TF11	8	9	0.982568	2.043192	0.972222
TF12	13	17	0.945625	2.42548	0.948529
TF13	10	25	0.848745	1.954308	0.85
TF14	13	18	0.954074	2.447151	0.954248

Sample	S	N	J'	H'(loge)	1-Lambda'
TF15	11	41	0.782529	1.876423	0.782927
TF16	6	6	1	1.791759	1
TF17	13	22	0.8301	2.129164	0.839827
TF18	10	12	0.978838	2.253858	0.969697
TF19	6	7	0.975504	1.747868	0.952381
TF2	48	221	0.781637	3.025872	0.914233
TF20	16	26	0.894713	2.480672	0.916923
TF21	9	11	0.976615	2.145842	0.963636
TF22	3	4	0.946395	1.039721	0.833333
TF23	10	17	0.933759	2.15006	0.919118
TF24	18	25	0.972118	2.809783	0.973333
TF25	15	19	0.952576	2.579625	0.959064
TF26	13	23	0.921539	2.363701	0.924901
TF27	7	9	0.940958	1.83102	0.916667
TF28	12	26	0.896718	2.228261	0.901538
TF29	3	3	1	1.098612	1
TF3	10	24	0.821684	1.891996	0.826087
TF30	6	10	0.898244	1.609438	0.844444
TF31	9	31	0.583523	1.28213	0.544086
TF32	20	38	0.939528	2.814576	0.954481
TF33	5	19	0.703753	1.132648	0.619883
TF34	10	19	0.90469	2.083126	0.894737
TF35	36	100	0.855527	3.065798	0.932929
TF36	14	23	0.9185	2.423974	0.928854
TF37	13	35	0.750184	1.924184	0.77479
TF38	26	41	0.934266	3.04393	0.963415
TF39	6	37	0.388627	0.696326	0.3003
TF4	10	46	0.659067	1.517558	0.658937

Sample	S	N	J'	H'(loge)	1-Lambda'
TF40	9	18	0.83085	1.825564	0.823529
TF41	2	2	1	0.693147	1
TF42	9	26	0.798286	1.754013	0.787692
TF43	12	17	0.951312	2.363921	0.948529
TF44	8	20	0.879785	1.829461	0.842105
TF45	11	24	0.855386	2.051125	0.869565
TF46	11	26	0.922697	2.21253	0.907692
TF47	7	12	0.873002	1.698783	0.833333
TF48	9	26	0.866807	1.904569	0.852308
TF49	9	11	0.976615	2.145842	0.963636
TF5	5	7	0.916516	1.475076	0.857143
TF6	8	11	0.91072	1.893788	0.890909
TF7	9	13	0.973227	2.138397	0.948718
TF8	7	11	0.90845	1.767761	0.872727
TF9	7	15	0.833372	1.621668	0.8

Annex 3 ANOSIM Routine Output

Table A9.4.6 Results of the ANOSIM test carried out to determine if there are any differences between the different survey campaign datasets.

Factors			
Name	Type	Levels	
Dataset	Unordered	5	
Dataset levels:			
EA3/4 OWF and Cable Route			
ZEA			
EA1 cable route			
EA1N/2 cable route			
EA1 OWF			
Tests for differences between unordered Dataset groups			
Global Test			
Sample statistic (R): 0.361			
Significance level of sample statistic: 0.1%			
Number of permutations: 999 (Random sample from a large number)			
Number of permuted statistics greater than or equal to R: 0			

Pairwise Tests				
Groups	**R Statistic**	**Significance Level %**	**Possible Permutations**	**Actual Permutations**
EA3/4 OWF and Cable Route, ZEA	0.374	0.1	Very large	999
EA3/4 OWF and Cable Route, EA1 cable route	0.617	0.1	Very large	999
EA3/4 OWF and Cable Route, EA1N/2 cable route	0.309	0.1	Very large	999
EA3/4 OWF and Cable Route, EA1 OWF	0.424	0.1	Very large	999
ZEA, EA1 cable route	0.546	0.1	Very large	999
ZEA, EA1N/2 cable route	0.656	0.1	Very large	999
ZEA, EA1 OWF	0.092	0.1	Very large	999
EA1 cable route, EA1N/2 cable route	0.289	0.1	Very large	999
EA1 cable route, EA1 OWF	0.595	0.1	Very large	999
EA1N/2 cable route, EA1 OWF	0.626	0.1	Very large	999

Annex 4 SIMPER Routine Output

Table A9.4.7 Table summarising the key species that contributed to the similarity within the infaunal groups identified through cluster analysis on Bray-Curtis similarity of fourth root transformed infauna abundance data from five different survey campaigns. Similar

Group ac					
Average similarity: 24.81					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Nephtys cirrosa	1.12	10.98	1.73	44.27	44.27
Ophelia borealis	0.82	4.52	0.78	18.23	62.5
NEMERTEA	0.38	1.38	0.37	5.56	68.05
Gastrosaccus spinifer	0.36	1.2	0.33	4.83	72.88

Group q					
Average similarity: 31.93					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
NEMERTEA	1.6	2.69	2.74	8.44	8.44
OPHIUROIDEA	1.62	1.9	1.27	5.95	14.39
Spiophanes bombyx	1.55	1.86	1.05	5.82	20.21
Echinocyamus pusillus	1.34	1.58	1.01	4.94	25.15
Mediomastus fragilis	1.26	1.36	1.04	4.27	29.43
Lumbrineris cingulata	1.05	1.36	1.05	4.27	33.7
Sabellaria spinulosa	1.59	1.28	0.76	4	37.69
Aonides paucibranchiata	1.01	1.23	0.96	3.85	41.55
Glycera lapidum	0.9	1.06	0.89	3.33	44.88
Lagis koreni	0.85	0.92	0.78	2.89	47.77
Glycera	0.87	0.83	0.74	2.6	50.37
Scalibregma inflatum	0.81	0.8	0.72	2.51	52.89
Ophiura albida	0.78	0.67	0.59	2.1	54.99
NEMATODA	0.74	0.65	0.68	2.05	57.04
Pholoe baltica	0.81	0.64	0.63	2.01	59.05
Ampelisca spinipes	0.71	0.62	0.65	1.94	60.99
ACTINIARIA	0.86	0.62	0.67	1.93	62.92
Kurtiella bidentata	0.79	0.59	0.56	1.86	64.78
Chaetozone zetlandica	0.59	0.55	0.55	1.71	66.5
Grania	0.67	0.51	0.52	1.59	68.08
Eteone longa	0.6	0.49	0.57	1.54	69.62
Marphysa bellii	0.53	0.47	0.49	1.47	71.1

Group y					
Average similarity: 37.05					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Goniada maculata	1.21	9.09	4.83	24.52	24.52
Nephtys cirrosa	1.09	6.53	1.51	17.62	42.15
Scoloplos armiger	0.8	3.87	0.93	10.44	52.59
Angulus fabula	0.96	3.37	0.58	9.09	61.68
Urothoe brevicornis	0.76	2.53	0.61	6.83	68.5
Urothoe poseidonis	0.63	2.42	0.62	6.54	75.04

Group f					
Average similarity: 47.74					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Pisione remota	1.09	47.74	SD=0!	100	100

Group aa					
Average similarity: 29.53					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Spiophanes bombyx	1.12	4.45	1.11	15.08	15.08
Nephtys cirrosa	0.85	3.78	0.88	12.79	27.86
Polinices pulchellus	0.74	2.49	0.74	8.43	36.29
Bathyporeia elegans	0.66	2.05	0.58	6.93	43.22
Scoloplos armiger	0.66	1.92	0.58	6.49	49.71
OPHIUROIDEA	0.68	1.72	0.56	5.83	55.54
Fabulina fabula	0.68	1.66	0.53	5.63	61.18
Urothoe brevicornis	0.6	1.61	0.47	5.44	66.62
Nephtys	0.5	1.31	0.46	4.45	71.07

Group k					
Average similarity: 40.00					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Thia scutellata	1	40	SD=0!	100	100

Group e					
Average similarity: 31.25					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Notomastus	1.88	14.21	3.34	45.48	45.48
Eunereis longissima	0.9	5.28	1.15	16.88	62.36
Kurtiella bidentata	0.66	3.21	0.61	10.27	72.63

Group p					
Average similarity: 31.38					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Kurtiella bidentata	1.27	2.08	1.25	6.63	6.63
Abra alba	1.23	1.99	1.03	6.33	12.96
Lagis koreni	1.06	1.85	1.25	5.88	18.84
Ophiura albida	1.27	1.65	0.83	5.26	24.1
Ampelisca spinipes	0.99	1.6	0.93	5.11	29.21
Owenia sp.	0.81	1.27	0.71	4.04	33.24
Lumbrineris cingulata	0.95	1.25	0.84	3.98	37.23
Schizomavella	0.67	1.25	0.81	3.97	41.2
ACTINIARIA	0.86	1.14	0.7	3.64	44.84
NEMERTEA	0.76	1.08	0.84	3.43	48.27
Spirobranchus lamarcki	0.93	0.99	0.55	3.17	51.43
Marphysa bellii	0.74	0.98	0.74	3.13	54.56
Pholoe baltica	0.7	0.86	0.75	2.75	57.31
Echinocyamus pusillus	0.84	0.78	0.5	2.48	59.79
Phoronis	0.68	0.77	0.65	2.45	62.25

Group p					
Ampharete lindstroemi	0.62	0.76	0.66	2.42	64.67
Poecilochaetus serpens	0.71	0.74	0.57	2.36	67.03
Leiochone spp.	0.7	0.68	0.58	2.16	69.19
Goniada maculata	0.5	0.61	0.51	1.95	71.14

Group o					
Average similarity: 28.40					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Spiophanes bombyx	1.08	28.4	2.9	100	100

Group ab					
Average similarity: 27.55					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Nephtys cirrosa	0.86	3.65	0.96	13.25	13.25
Spiophanes bombyx	0.97	3.44	0.93	12.48	25.73
NEMERTEA	0.79	2.7	0.84	9.81	35.55
Polycirrus	0.83	2.56	0.76	9.31	44.85
Glycera	0.7	2.01	0.67	7.29	52.15
OPHIUROIDEA	0.63	1.49	0.54	5.4	57.54
Echinocyamus pusillus	0.63	1.19	0.48	4.33	61.87
Aonides paucibranchiata	0.53	1.07	0.46	3.9	65.77
Ophelia borealis	0.54	1.03	0.44	3.73	69.51
Ophiocten affinis	0.46	0.9	0.39	3.26	72.77

Group ad					
Average similarity: 33.01					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
OPHIUROIDEA	1.14	12.96	5.41	39.26	39.26
Scolelepis bonnieri	0.75	6.19	0.9	18.74	57.99
Ophelia borealis	0.83	5.7	0.9	17.26	75.25

Group m					
Average similarity: 21.33					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Scoloplos armiger	1.09	21.33	SD=0!	100	100

Group a					
Average similarity: 49.63					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Pontocrates altamarinus	1.3	49.63	SD=0!	100	100

Group x					
Average similarity: 37.56					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Urothoe brevicornis	2.09	27.98	14.24	74.49	74.49

Group g					
Average similarity: 21.06					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
NEMERTEA	1.31	21.06	SD=0!	100	100

Group l					
Average similarity: 29.39					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Ophelia borealis	1.29	21.83	4.9	74.29	74.29

Group i					
Average similarity: 34.32					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Gastrosaccus spinifer	1.06	34.32	3.99	100	100

Group v					
Average similarity: 27.33					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Goodallia triangularis	1	13.67	SD=0!	50	50
Lumbrineris cingulata	1.21	13.67	SD=0!	50	100

Group ae					
Average similarity: 33.54					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
SPATANGOIDA	1.21	13.88	2.67	41.38	41.38
Ophiocten affinis	1.05	12.15	3.58	36.24	77.62

Group t					
Average similarity: 29.80					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Mytilidae	2	5.43	2.03	18.23	18.23
Sabellaria spinulosa	2.21	3.85	1.3	12.9	31.14
Polydora caulleryi	1.13	3.36	3.17	11.27	42.41
NEMATODA	0.94	2.43	1.38	8.17	50.57
ASCIDIACEA	1.08	1.49	0.61	5	55.57
Autolytus	0.94	1.47	0.88	4.95	60.52
NEMERTEA	0.82	1.45	0.88	4.86	65.38
Nereididae	0.74	1.25	0.91	4.2	69.58
ACTINIARIA	0.97	1.08	0.6	3.61	73.19

Group n					
Average similarity: 29.25					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Spiophanes bombyx	1.84	11.45	4.74	39.14	39.14
NEMERTEA	0.8	4.52	1.16	15.44	54.58
Nucula nitidosa	1.06	3.22	0.61	10.99	65.57
Nephtys hombergii	0.7	2.38	0.62	8.13	73.7

Group d					
Average similarity: 37.22					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Scalibregma inflatum	1.66	35.05	1.94	94.17	94.17

Group s					
Average similarity: 37.57					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Sabellaria spinulosa	1.52	22.01	SD=0!	58.58	58.58
ASCIDIACEA	1.25	15.56	SD=0!	41.42	100

Group w					
Average similarity: 36.01					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Membraniporella nitida	0.94	7.57	2.2	21.02	21.02
Folliculinidae	0.94	7.21	2.31	20.03	41.05
Conopeum reticulum	0.67	3.44	0.82	9.55	50.6
Nephtys cirrosa	0.7	2.99	0.73	8.3	58.91
Ophelia borealis	0.62	2.74	0.6	7.62	66.53
Glycera oxycephala	0.53	1.72	0.54	4.77	71.3

Group u					
Average similarity: 26.33					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Glycera oxycephala	1.13	17.15	4.08	65.14	65.14
Membraniporoidea	0.67	5.39	0.58	20.45	85.59

Group b					
Average similarity: 58.27					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Corophium volutator	1.82	41.46	3.31	71.16	71.16

Group c					
Average similarity: 46.32					
Species	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Sertularia cupressina	1	15.14	8.31	32.68	32.68
Vesicularia spinosa	1	15.14	8.31	32.68	65.37
Amathia sp.	0.75	8.28	0.91	17.87	83.24

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