

# **Annexes**

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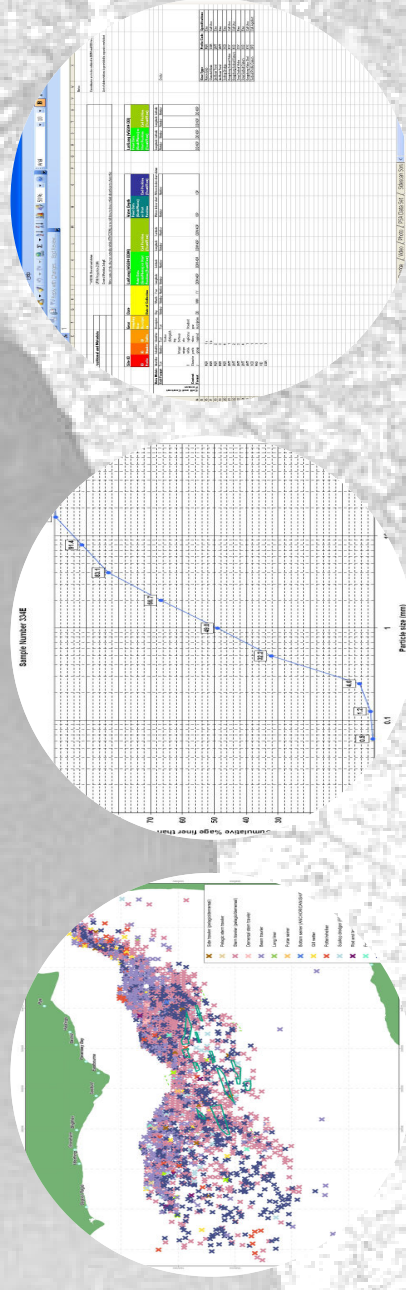
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# B – Tables

**Table 1 Results of Similarity Analyses for Species Number and Abundance between PIZ, SIZ and Reference Sites**

Licence Blocks	PIZ v SIZ	Ref 1	Ref 2	Ref 4	Ref 5	Ref 6
477 North						
Species	0.1669	0.0188	0.0161	0.2412	0.0297	0.2843
Abundance	0.1621	0.0219	0.6134	0.0131	0.0282	0.0464
477 South						
Species	0.5271	0.0308	0.0059	0.7345	0.0432	0.5532
Abundance	0.9955	0.0149	0.2729	0.8583	0.5304	0.5079
478						
Species	0.9278	0.0051	0.0005	0.5616	0.1827	0.9717
Abundance	0.2602	0.0013	0.0645	0.4540	0.3918	0.4141
475						
Species	0.6315	0.0048	0.0006	0.4531	0.2134	0.8797
Abundance	0.0563	0.0016	0.0183	0.0761	0.1309	0.1343
461						
Species	0.9942	0.0014	0.0001	0.1155	0.9578	0.5463
Abundance	0.8825	0.0001	0.0206	0.7193	0.9654	0.9782
464/458						
Species	0.6493	0.0003	0.0000	0.1044	0.6896	0.5992
Abundance	0.5297	0.0003	0.0642	0.6781	0.3157	0.3039
473 West						
Species	0.9283	0.0006	0.0005	0.0880	0.8489	0.5929
Abundance	0.8001	0.0000	0.0732	0.9539	0.7011	0.7513
473 East						
Species	0.4910	0.0000	0.0000	0.0084	0.7446	0.1568
Abundance	0.2516	0.0000	0.0341	0.4085	0.4966	0.5747
474 Central						
Species	0.7841	0.2000	0.0534	0.8800	0.9633	0.8697
Abundance	0.2735	0.0242	0.3157	0.2997	0.2807	0.2948
474 West						
Species	0.6878	0.0220	0.0051	0.6055	0.2599	0.8908
Abundance	0.4605	0.0244	0.2936	0.5609	0.4013	0.3902
474 East						
Species	0.0573	0.0200	0.0104	0.0884	0.0056	0.0667
Abundance	0.4305	0.0100	0.2908	0.4455	0.2855	0.2925

Significantly different @ P<0.05

Borderline difference

Not significantly different

**Table 2 Identification of Clusters Existing in PIZs, SIZs and Reference Areas**

Cluster 1	461	464 458	473 W	473 E	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ										
No sites in SIZ		3			1					
No sites in Ref	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6				
	0	6	0	0	0	0				
Data in both reference areas and two SIZs but no PIZ. No merger possible.										
Cluster 2	461	464 458	473 W	473 E	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ	2			1	4		1	1		
No sites in SIZ	2							2		
No sites in Ref	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6				
	1	2	0	0	0	0				
Poor overall coherence but two reference areas available with cluster occurring in both PIZ and SIZ.										
Cluster 3	461	464 458	473 W	473 E	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ		3		2	1					
No sites in SIZ		2		1					1	
No sites in Ref	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6				
	16	1	0	0	0	0				
Poor overall coherence but good reference site at Ref 1 and two blocks with both PIZ and SIZ. May be merged with Cluster 2, 4 and 5										
Cluster 4	461	464 458	473 W	473 E	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ	1						2	2	1	
No sites in SIZ	3							2	2	1
No sites in Ref	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6				
	0	0	0	2	0	0				
Relatively high coherence but only 2 reference sites. Merger with clusters 3 and 5 appropriate.										

# B – Tables

Table 2 continued

Cluster 5	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ			1				1	1	
No sites in SIZ			1					2	1
No sites in Ref	0	0	0	0	0	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	No reference sites hence merger with cluster 3 and 4 may be necessary to determine impacts		

Cluster 6	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ	1						1	2	1
No sites in SIZ			5	1			6	2	1
No sites in Ref	0	1	0	1	0	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	Limited reference sites. Merger with cluster 8 will provide sufficient reference areas to determine impacts.		

Cluster 7	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ			6		1				
No sites in SIZ			3	2	3			1	
No sites in Ref	0	1	0	1	0	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	No reference sites hence merger with clusters 7 and 8 necessary.		

Cluster 8	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ	3						2		
No sites in SIZ	15						6		1
No sites in Ref	0	0	0	2	6	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	Sufficient sites to be considered as a standalone cluster for monitoring but may also be merged with 6 and 7.		

Cluster 9	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ	2						1		1
No sites in SIZ	1						1		3
No sites in Ref	0	0	0	0	0	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	Inappropriate as a standalone cluster as no reference areas. Combine with 10, 11, 12, and 13.		

Table 2 continued

Cluster 10	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ	2		3			2	6	7	5
No sites in SIZ	1					4	2	4	8
No sites in Ref	1	1	0	0	1	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	Appropriate as a standalone cluster but limited reference sites, hence merger with 11 required.		

Cluster 11	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ									1
No sites in SIZ							1		1
No sites in Ref	0	0	0	14	0	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	Appropriate as the reference cluster for 9, 10, 12 and 13.		

Cluster 12	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ	7					1	2		8
No sites in SIZ	1						4		1
No sites in Ref	0	0	0	0	0	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	No reference sites hence merger with cluster 11 necessary		

Cluster 13	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ		1	1	2	3	1			
No sites in SIZ		1	1	3	3				
No sites in Ref	0	0	0	0	0	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	No reference sites hence merger with cluster 11 necessary		

Cluster 14	461	464 458	473 W	474 E	474 C	474 W	477 S	477 N	478
No sites in PIZ		2		1	1	1			
No sites in SIZ		5	1	2				1	
No sites in Ref	0	2	0	0	0	0	0	0	0
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	Limited reference sites hence merger with clusters 15 and 16 necessary		

**Table 2 continued**

Cluster 15	461	464 458	473 W	474 C	474 E	474 W	474 S	477 N	478
No sites in PIZ		1			3	1			
No sites in SIZ		1			6				
No sites in Ref	0	0	0	0	0	11	Appropriate as a standalone cluster but suitable as a reference for clusters 14 and 16		
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6			

Cluster 16	461	464 458	473 W	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ		2				1			
No sites in SIZ		2					2		
No sites in Ref	0	0	0	2			Limited reference sites hence merger with 15 necessary		
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6			

Cluster 17	461	464 458	473 W	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ		1			2	5	1		
No sites in SIZ		1			2	3	2		2
No sites in Ref	0	1	0	0	1	Limited reference sites hence merger with 15 necessary			
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6			

Cluster 18	461	464 458	473 W	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ		2	1						
No sites in SIZ		2			1				
No sites in Ref	0	0	0	1	1	Limited reference sites hence merger with 19 and 20 necessary			
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6			

Cluster 19	461	464 458	473 W	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ		13		1	2	8			
No sites in SIZ		8		1	1		1		
No sites in Ref	0	0	0	1	3	Limited reference sites hence merger with 19 and 20 necessary			
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6			

Cluster 20	461	464 458	473 W	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ		4	1		1	1			
No sites in SIZ		7	1	6	1	2	3		5
No sites in Ref	1	0	0	0	0	Limited reference sites hence merger with 19 and 20 necessary			
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6			

**Table 2 continued**

Cluster 21	461	464 458	473 W	474 C	474 E	474 W	475 S	477 N	478
No sites in PIZ									
No sites in SIZ									
No sites in Ref	0	0	0	0	18	Inappropriate as a reference area as no sites in impact zone.			
	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6			

**Table 3 ANOSIM (R value output) from an a priori selection based on PIZ and reference area (faunal data)**

	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6
464/458 PIZ	0.621	0.592	0.946	0.630	0.299	0.457
473W PIZ	0.532	0.408	0.868	0.533	0.312	0.804
473E PIZ	0.756	0.422	0.867	0.781	0.327	0.780
474W PIZ	0.517	0.368	0.889	0.469	0.385	0.561
474C PIZ	0.412	0.208	0.831	0.711	0.390	0.634
474E PIZ	0.783	0.282	0.871	0.787	0.620	0.098
475 PIZ	0.596	0.560	0.916	0.418	0.260	0.743
461 PIZ	0.741	0.614	0.926	0.535	0.389	0.851
477N PIZ	0.318	0.592	0.915	0.237	0.491	0.748
477S PIZ	0.446	0.309	0.864	0.403	0.780	0.909
478 PIZ	0.768	0.619	0.927	0.574	0.633	0.903

	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5
Ref 2	0.425				
Ref 3	0.816	0.644			
Ref 4	0.768	0.581	0.921		
Ref 5	0.755	0.363	0.872	0.704	
Ref 6	0.877	0.447	0.900	0.872	0.669

	= R < 0.1
	= R < 0.2
	= R < 0.3
	= R < 0.4

# B – Tables

**Table 4 ANOSIM (R value output) from an a priori selection based on PIZ and reference areas (sediment data)**

	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6
464/458 PIZ	0.661	0.202	0.797	0.368	0.170	0.387
473W PIZ	0.736	0.465	0.754	0.026	0.325	0.872
473E PIZ	0.931	0.690	0.791	0.238	0.533	0.986
474W PIZ	0.816	0.341	0.668	0.216	0.148	0.653
474C PIZ	0.674	0.176	0.510	0.314	0.001	0.485
474E PIZ	0.909	0.221	0.502	0.612	0.223	0.170
475 PIZ	0.823	0.513	0.774	0.196	0.153	0.746
461 PIZ	0.809	0.645	0.834	0.298	0.248	0.848
477N PIZ	0.418	0.484	0.789	0.220	0.698	0.899
477S PIZ	0.901	0.758	0.684	0.325	0.658	0.998
478 PIZ	0.730	0.551	0.797	0.067	0.287	0.832

	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5
Ref 2	0.439				
Ref 3	0.688	0.479			
Ref 4	0.615	0.442	0.772		
Ref 5	0.871	0.375	0.584	0.403	
Ref 6	0.983	0.550	0.580	0.843	0.531

	= R < 0.1
	= R < 0.2
	= R < 0.3
	= R < 0.4

# C – Appendices

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15	Scallop Dredge OC Check Results
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16	4m Beam Trawl OC Check Results
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17	ECA Processing Requirements Protocol (EPRP) Epibiotic Species Enumeration
18	GIS Data Tables
19	Hamon Grab PSD Analysis pdfs
20	Methods for Use of Video Footage in Lieu of Grab Data for Community Description
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20	Outputs of the Stills Image Analysis
21	Initial output from PRIMER infaunal study
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24	GIS Review and Recommendations Report
25	FLP Consultees
26	Enumeration methods for colonial epifauna sampled by Hamon Grab



# D – Glossary

Abbreviation	Definition
AIS	Automatic Identification System
ALSF	Aggregate Levy Sustainability Fund
ARPA	Automatic Radar Plotting Aid
BAP	Biodiversity Action Plan
BMAPA	British Marine Aggregates Producers Association
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CHARM	Channel Habitat Atlas for Marine Resource Management
CNIS	Channel Navigation Information Service
CPA	Closest Point of Approach
DfT	Department for Transport
ECA	East Channel Association
ECDIS	Electronic Chart Display and Information System
ECEN	East Channel Environmental Network
ECR	East Channel Region
EH	English Heritage
EMS	Electronic Monitoring System
EN	English Nature
ENC	Electronic Navigational Charts
FLO	Fisheries Liaison Officer
GIS	Geographical Information System
GV	Government View
HAP	Habitat Action Plan

Abbreviation	Definition
HAWG	Herring Assessment Working Group
ICES	International Council for the Exploration of the Sea
IMO	International Maritime Organisation
ISM	International Safety Management Code
JNCC	Joint Nature Conservation Committee
MAIB	Marine Accident Investigation Branch
MCA	The Maritime and Coastguard Agency
MCA	Maritime and Coastguard Agency
MESH	Mapping European Seabed Habitats
nm	Nautical Miles (1nm = 1,852metres)
OOW	Officer of the Watch
PSA	Particle Size Analysis
PSD	Particle Size Distribution
RDM	Regional Development Manager
REA	Regional Environmental Assessment
REMM	Regional Environmental Monitoring and Management Report
RNC	Raster Navigational Charts
SAP	Species Action Plan
SOLAS	Safety of Life at Sea
TSS	Traffic Separation Scheme
TWG	Technical Working Group
UKHO	United Kingdom Hydrographic Office

## E – References

Andrews Survey Ltd. 2005. Licence Area 473 East Sample Analysis. Report to the ECA.
Beverton, R.J.H. and Holt, S.J. 1959. A review of the lifespans and mortality rates of fish in nature and their relation to growth and other physiological characteristics. p. 142-180. In: G.E.W. Wolstenholme and M. O'Connor (eds.) CIBA Foundation colloquia on ageing: the lifespan of animals: Volume 5.
BMAPA/English Heritage. 2005. Protocol for Reporting Finds of Archaeological Interest.
Clarke, K. R. and Warwick, R. M. 1994. Change in Marine Communities: An Approach to Statistical Analysis and Interpretation.
Clarke, K. R. and Warwick, R. M. 2001. Change in Marine Communities: An Approach to Statistical Analysis and Interpretation.
Clarke, K.R. and R.N. Gorley. 2001. PRIMER v5: User manual/tutorial. PRIMER-E, Plymouth,
Clarke, K.R. and R.N. Gorley. 2006. PRIMER v6: User manual/tutorial. PRIMER-E, Plymouth,
Connor, D.W., Allen, J.H., Golding, N., Howell, K.L., Lieberknecht, L.M., Northen, K.O. and Reker, J.B. 2004. The Marine Habitat Classification for Britain and Ireland. Version 04.05. JNCC, Peterborough.
Davies, J., Baxter, J., Bradley, M., Connor, D., Khan, J., Murray, E., Sanderson, W., Turnbull, C. and Vincent, M. 2001. The Marine Monitoring Handbook March 2001. Joint Nature Conservation Committee, Peterborough.
Dorel, D. 1986. Poissons de l'Atlantique nord-est relations taille-poids. Institut Francais de Recherche pour l'Exploitation de la Mer.
Eleftheriou, A. and Basford, D. J. 1989. The macrobenthic infauna of the offshore northern North Sea. J. Mar. Bio. Ass. UK, 69, 123-143.
Eleftheriou, A. and McIntyre, A. 2005. Methods for the study of Marine Benthos. Third Edition. Oxford: Blackwell Science Ltd.
Emu Ltd. 2004. Method for the Processing, Identification, Enumeration and Recording of Marine Benthic Macro-invertebrates (MET/07)
Emu Ltd. 2005. Procedures for PSA of Hamon Grab Samples
Emu Ltd. 2006. Area 473 East Pre-dredge Monitoring Reports.
Gardline. 2002. Regional Seabed Sediment Survey.
Hiscock, K. (eds). 1996. Marine Nature Conservation Review: Rationale and methods. Coasts and Seas of the United Kingdom. MNCR Series. Joint Nature Conservation Committee, Peterborough.
Jennings, S., Lancaster, J., Woolmer, A. and Cotter, J. 1999. Distribution, diversity and abundance of epibenthic fauna in the North Sea. JMBA (UK) 79:385
LAWP. 2005. London Regional Aggregates Working Party 2005 Annual Report
Mills, C., Eastwood, P. D. and Rogers, S. I. 2003. Herring Spawning Grounds in the Eastern English Channel. (FB-ECOS) Working Paper - Herring Spawning grounds in the Eastern English Channel. CEFAS Lowestoft.
Posford Haskoning. 2003. Regional Environmental Assessment for Aggregate Extraction in the Eastern English Channel
The ECA and Emu Ltd. 2005. Regional Monitoring Blueprint Related to Marine Aggregate Extraction Operations in the Eastern English Channel
The ECA, MCA and Anatec. 2006. Common Measures for Ensuring Navigation Safety During Dredging Operations in the East Channel Region (Technical Note) Version 2.1 (January 2006).
UTEC. 2005. EECA: Newhaven Benthic Survey Operations. Volume 1: Results. Revision 1. UTEC Report Reference: 530G.
UTEC. 2006. Baseline Seabed Sediment Survey Eastern English Channel License Area 473 East. UTEC Report Reference: 541A.

## **F – ECA GIS**

**Please ensure that you read the GIS operating instructions included with the CD-ROM files.**

**Comments regarding construction and operation of the GIS should be directed to Emu Ltd.**

**Queries regarding the use of data should be directed to the ECA Facilitator or RDM.**

