Clean Seas Environmental Monitoring Programme (CSEMP) Western Channel, Irish Sea – (V4 – 2 Jun 16)

RV ENDEAVOUR; CEND14/16

SIC: Manuel Nicolaus

Sail: 30th June from Lowestoft
Dock: 11th July in Portland

LOCATION: Western English Channel, Irish Sea.

Name	Berth	Name	Berth
Manuel Nicolaus	SIC cabin	**Sara Losada Rivas**	Main Sci 6
Freya Goodsir	Upper Sci 1	**Alex Callaway**	Main Sci 7
John Bignell	Upper Sci 2	**Kuwait EPA/ Adam Porter***	Main Sci 8
Michelle Pond	Main Sci 1	**James Waggit**	Lower Sci 2
Tim Bean	Main Sci 2	**Kuwait EPA/Nathan Edmonds***	Lower Sci 3
Denise Doran	Main Sci 3	**TBA/ Fiona McNie***	Lower Sci 4
Paul Nelson	Main Sci 4		
Matt Green	Main Sci 5		

*Adam Porter, Nathan Edmonds and Fiona McNie will be picked up from Aberporth (Llangrannog) or New Quay in Wales on the 5th July and dropping off three people.

P&O contact: pomsukoffice@pomaritime.com

Objectives and aims

The information generated during this survey will be used to meet UK's obligations for reporting of contaminant, eutrophication and marine litter data to MERMAN and the ICES database and for subsequent assessments for OSPAR and Good Environmental Status (GES descriptors 1, 4, 5, 8, 9 & 10) under the Marine Strategy Framework Directive (MFSD). After discussions with EA and NRW staff a coordinated approach is being taken to help deliver additional EQSD requirements for the EA and NRW.

Specific aims:

1. To collect samples of demersal fish for chemical analysis from the Irish Sea, Celtic Sea and Western English Channel in support of the Clean Seas Environmental Monitoring Programme (CSEMP) (MSFD Descriptor 8 & 9). **Annex 1 and 2**

2. To collect fish samples at CSEMP sites for fish disease biochemical markers (e.g. EROD and bile metabolites analysis) (MSFD Descriptor 8). **Annex 2**

3. To sample representative CSEMP stations using day grab, for polycyclic aromatic hydrocarbons (PAHs), trace metal contaminants, organic contaminants (PCBs, PBDEs and HBCD), sediment particle size analysis (PSA), benthic fauna and marine litter (MSFD Descriptor 1, 4, 8 and 10). **Annex 1 and 2**

4. To conduct marine litter surveys (MSFD Descriptor 10) by collecting benthic litter information from the trawls and also collecting sediment samples for litter analysis.

5. To undertake sediment sampling as part of the C6794 dredge spoil monitoring project at Rames Head. **Annex 3**

6. To conduct surveys of marine animals (birds and cetaceans) and part of Marine Life UK programme.

7. To collect water conductivity, temperature and depth information, and Plankton community information to provide additional knowledge on Eutrophication levels (MSFD D5), as well as additional information on zooplankton community at the West Gabbard SmartBuoy site (MSFD D4, Food webs).

8. The recently completed draft assessment of eutrophication status under the OSPAR COMP has shown that there are very few data on the indicators for growing season (Mar-Oct) in chlorophyll and near-bed Dissolved Oxygen (June-Oct) for the western Channel and Celtic Sea, particularly in coastal waters (no data). It is a concern as the winter DIN levels in coastal waters exceed the threshold. For MSFD assessments, other member states have observed that there are very few data for the Eastern English Channel, which is also a concern. During this survey samples of chlorophyll (µg/l) and near-bed DO (mg/l) will be collected where possible in coastal waters (salinity <30) to deduce the lack of information. Additionally, we will collect and filter on board water samples for determination of chlorophyll and suspended particulate materials, that will be used for calibrating SmartBuoy, Ferrybox and ocean colour space-borne data (for the EU FP7 project HIGHROC, C5878);

9. To conduct 5 passive sampler transects to analyse samples for performance reference compounds (PRCs), PAHs, PCBs, OCPs and PBDEs in the water column (MSFD D8) using the Ferrybox water sampling system.

10. To collect triplicate plankton tows aiming to identify abundances of microplastics and plankton in as many unique settings as possible (usually one site per day). Plankton will also be depurated to look for plastic contamination in faecal pellets.

Overview

30th June

Scientific staff boarded ship and underwent safety inductions at 18:00hrs.

30th June

Sailing from Lowestoft at 16:00 and headed out into southern North Sea. On route sampling water for chlorophyll and suspended particulate materials analysis, and collection of sample for zooplankton community analysis, at the West Gabbard SmartBuoy site. Moving through the English Channel in a westerly direction. Start passive Sample 1. Start after leaving Lowestoft. Start passive Sample 5 (trap 6). after leaving Lowestoft.

1st July

Carry on moving west towards CSEMP station 584 South Eddystone/ Rame Head disposal site. Total distance is around 380Nm.

2nd July

Depending on arrival time (around 10am) we fish CSEMP station 584 South Eddystone and then carry out grabbing work at the Rames Head disposal site (Annex 3; for at each station, 3 reps with mini Hamon for fauna sieved on 1mm mesh sieve and PSA; 1 Shipek (or 2 if needed) for metals/PSA, OHs and PAHs; around 20 stations) and at CSEMP 575 (Off Tamar 1) for 14hrs. (Annex 6)

3rd July

Finishing sampling Rames head around 4am. Start sampling Lantic Bay dredge disposal site with 14 stations (Annex 4; Shipek grab sediments for the determination of metals, PAHs and OHs; should take around 6hrs).
Steaming for 16 hrs to Celtic Deep (CSEMP 605) sediment station and collect sediment samples (00:00) (Annex 5). Steam over night to Camarthen Bay CSEMP 616 fishing station (Annex 5). Stop passive sample 1. when passing Scilly Isles. Start passive Sample 2 when passing Scilly Isles.

4th July

Spending the morning to fish CSEMP 616 Camarthen Bay (Annex 5). Then moving on to South Cardigan Bay (CSEMP 654) (Annex 7).

5th July

Fishing South Cardigan Bay (CSEMP 654) (Annex 7); small boat transfer from Aberporth (Llangrannog) or New Quay in Wales to pick up Adam Porter, before moving on to complete two spatial and one temporal CSEMP 655 sediment station. Then fishing the CSEMP 649 North Cardigan fishing station and complete the spatial CSEMP 655 sediment station. Stop passive Sample 2 when passing Anglesey. Start passive Sample 3. when passing Anglesey going north.

6th July

Over daytime fishing CSEMP 715 (Liverpool Bay), CSEMP 706 (Burbo Bight) and Liverpool Bay Trend. Then in the evening/night collecting sediment samples at CSEMP 715 temporal and spatial sediment stations (Annex 8).

7th July

Fishing Morecambe Bay (CSEMP 796) and SE Isle of Man (805). Then collecting sediment samples before moving on to St Bees Head (Annex 8).

8th July

Sampling St Bees Head (CSEMP 769) fishing station and moving south to Red Wharf Bay (CSEMP 776) to sample in the afternoon. Stop passive Sample 3. when passing Anglesey going south. Start passive Sample 4. when passing Anglesey going South.

9th July

Arrival at Celtic Deep CSEMP 605 fishing station and starting fishing in the afternoon. Moving East to conduct fishing at West Lundy fishing station, CSEMP 604 (Annex 5). Then steaming starting to steam back towards Portland.

10th July

Steaming back to Portland

11th July

Stop passive Sample 4 when entering Portland Bay.
Stop passive Sample 5 (trap 6) when entering Portland Bay.
Arrival in Portland.

Annex 1: A: CSEMP fishing stn positions

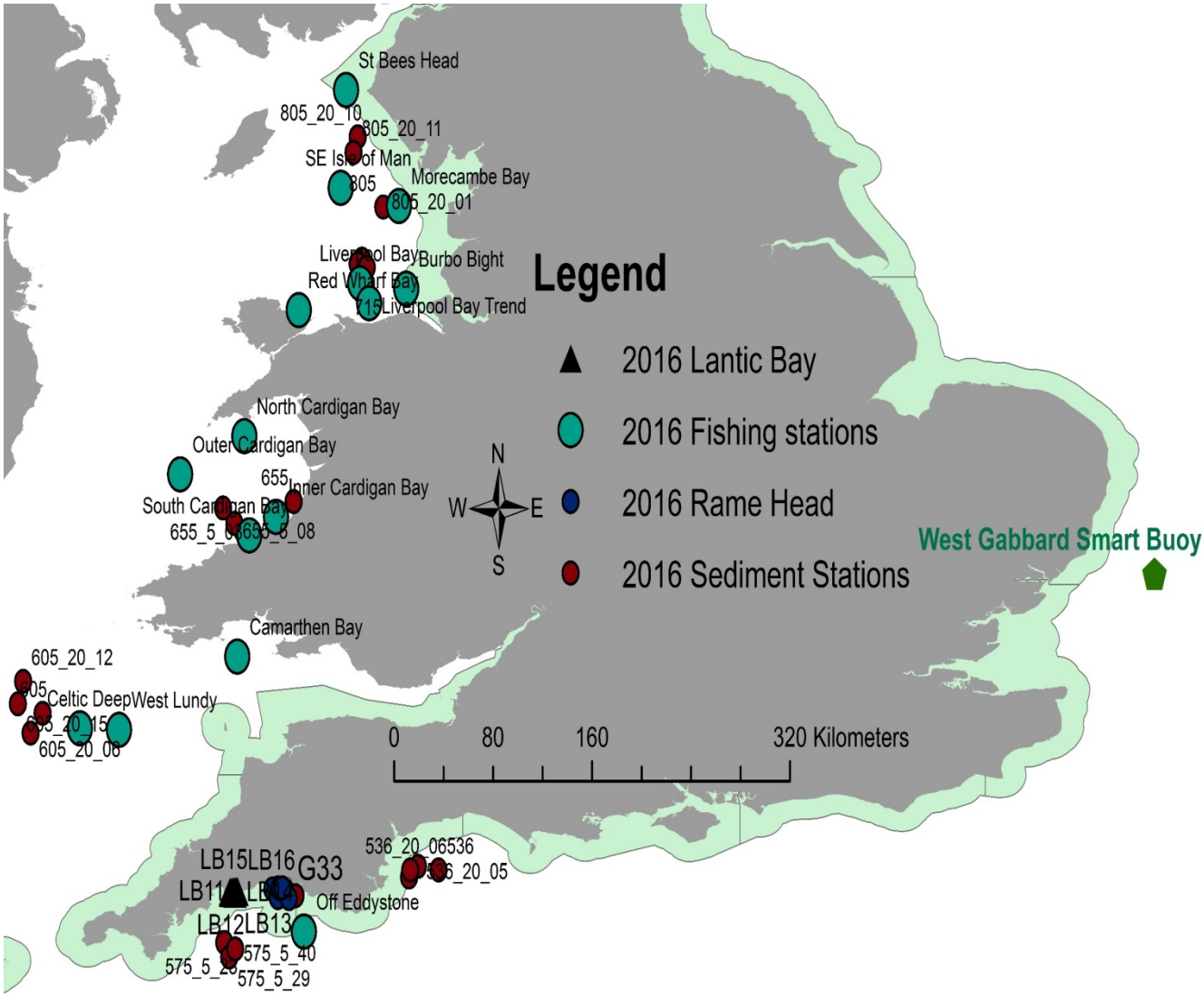
CSEMP Number	Location	Mid tow Lat. Long.
New	Off Eddystone	50 06.44 N 04 06.06 W
New	West Lundy	51 09.79 N 05 26.67 W
605	Celtic Deep	51 10.29 N 05 43.75 W
616	Camarthen Bay	51 32.82 N 04 35.13 W
649	North Cardigan Bay	52 42.44 N 04 32.29 W
654	South Cardigan Bay	52 10.90 N 04 29.87 W
656	Inner Cardigan Bay	52 18.00 N 04 16.35 W
665	Outer Cardigan Bay	52 23.76 N 04 53.72 W
706	Burbo Bight	53 28.24 N 03 20.47 W
715	Liverpool Bay	53 28.32 N 03 41.91 W
769	St Bees Head	54 30.71 N 03 47.63 W
776	Red Wharf Bay	53 22.46 N 04 12.84 W
796	Morecambe Bay	53 55.31 N 03 23.23 W
805	SE Isle of Man	54 03.36 N 03 52.47 W

B: CSEMP and dredge disposal sediment stations

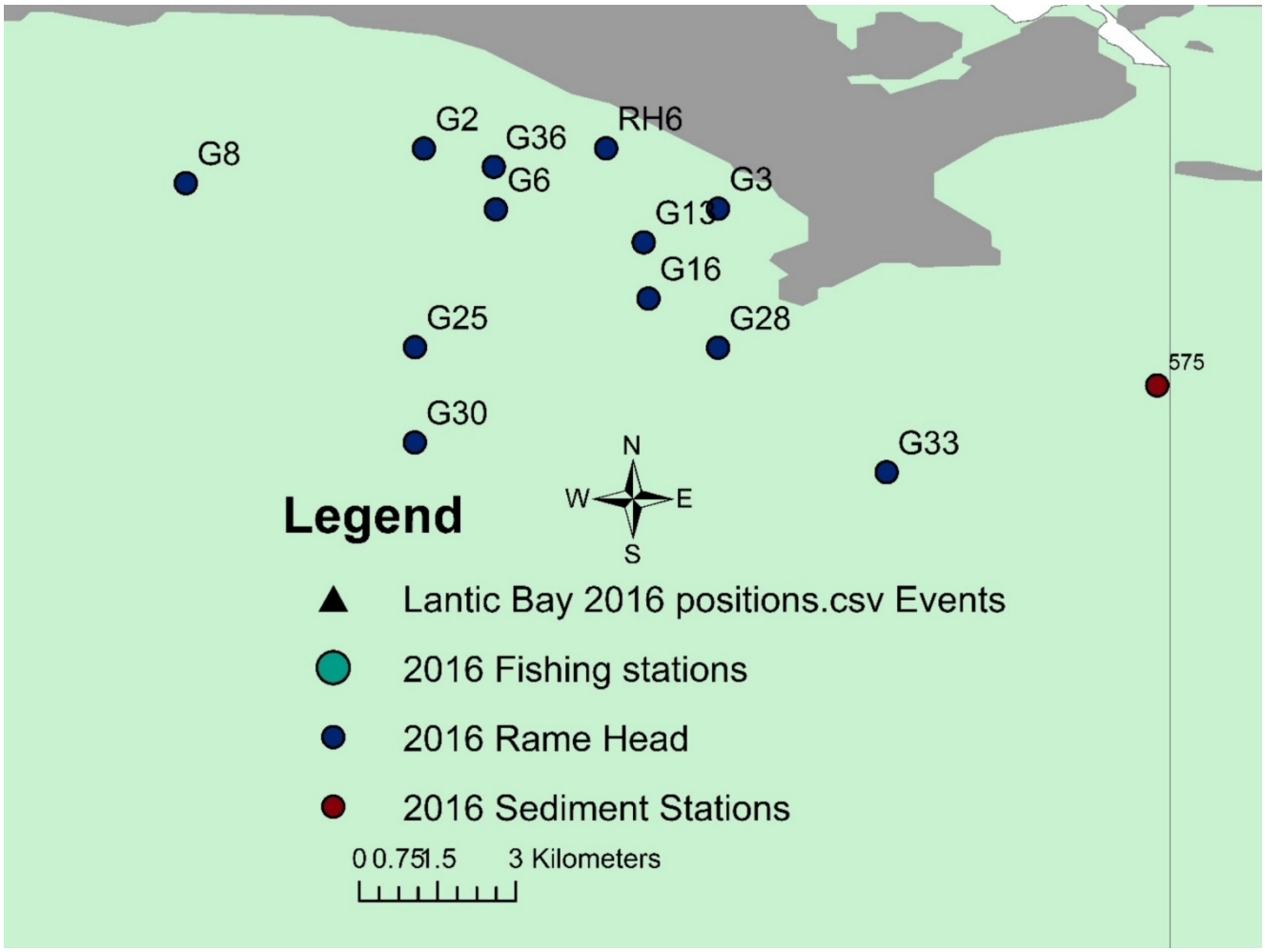
Long	Lat	Station Name	Sampler type
-3.1217	50.43	536	Day grab
-4.1622	50.295	575	Day grab
-6	51.25	605	Day grab
-4.175	52.3583	655	Day grab
-3.6917	53.5	715	Day grab
-3.8333	54	805	Day grab
-3.33663	50.3933	536_20_01	Day grab
-3.27153	50.449	536_20_05	Day grab
-3.32708	50.4299	536_20_06	Day grab
-4.6790991	50.0505943	575_5_23	Day grab
-4.6432476	49.9741554	575_5_29	Day grab
-4.5998273	50.0166206	575_5_40	Day grab
-6.08697	51.1465	605_20_06	Day grab
-6.1414	51.4168	605_20_12	Day grab
-6.17964	51.3	605_20_15	Day grab
-4.6881471	52.3240776	655_5_03	Day grab
-4.3064775	52.2840004	655_5_04	Day grab
-4.6058278	52.2433014	655_5_08	Day grab
-3.678236	53.6267967	715_5_11	Day grab

-3.7108047	53.6032677	715_5_12	Day grab
-3.6435056	53.5836868	715_5_15	Day grab
-3.52387	53.8992	805_20_01	Day grab
-3.70927	54.2669	805_20_10	Day grab (extra 10 sediment grabs for Chemistry)
-3.73993	54.1846	805_20_11	Day grab
50.33587	-4.28875	G2	Hamon Grab/Shipek
50.3255	-4.238	G3	Hamon Grab/Shipek
50.32537	-4.27634	G6	Hamon Grab/Shipek
50.3299	-4.32986	G8	Hamon Grab/Shipek
50.3197	-4.25083	G13	Hamon Grab/Shipek
50.31	-4.25	G16	Hamon Grab/Shipek
50.3016	-4.2903	G25	Hamon Grab/Shipek
50.3015	-4.238	G28	Hamon Grab/Shipek
50.28517	-4.29033	G30	Hamon Grab/Shipek
50.28	-4.20889	G33	Hamon Grab/Shipek
50.3327	-4.2767	G36	Hamon Grab/Shipek
50.3359	-4.2573	RH6	Hamon Grab/Shipek
50.3197	-4.61383	LB01	Shipek
50.3153	-4.6116	LB02	Shipek
50.3199	-4.60397	LB03	Shipek
50.3166	-4.60029	LB04	Shipek
50.319	-4.62554	LB05	Shipek
50.3133	-4.62514	LB06	Shipek
50.3176	-4.63842	LB07	Shipek
50.3111	-4.63369	LB08	Shipek
50.3166	-4.58924	LB09	Shipek
50.3114	-4.61041	LB10	Shipek
50.3116	-4.602	LB11	Shipek
50.3081	-4.59647	LB12	Shipek
50.3072	-4.6066	LB13	Shipek
50.321	-4.59174	LB14	Shipek
50.3215	-4.58503	LB15	Shipek
50.3174	-4.58359	LB16	Shipek

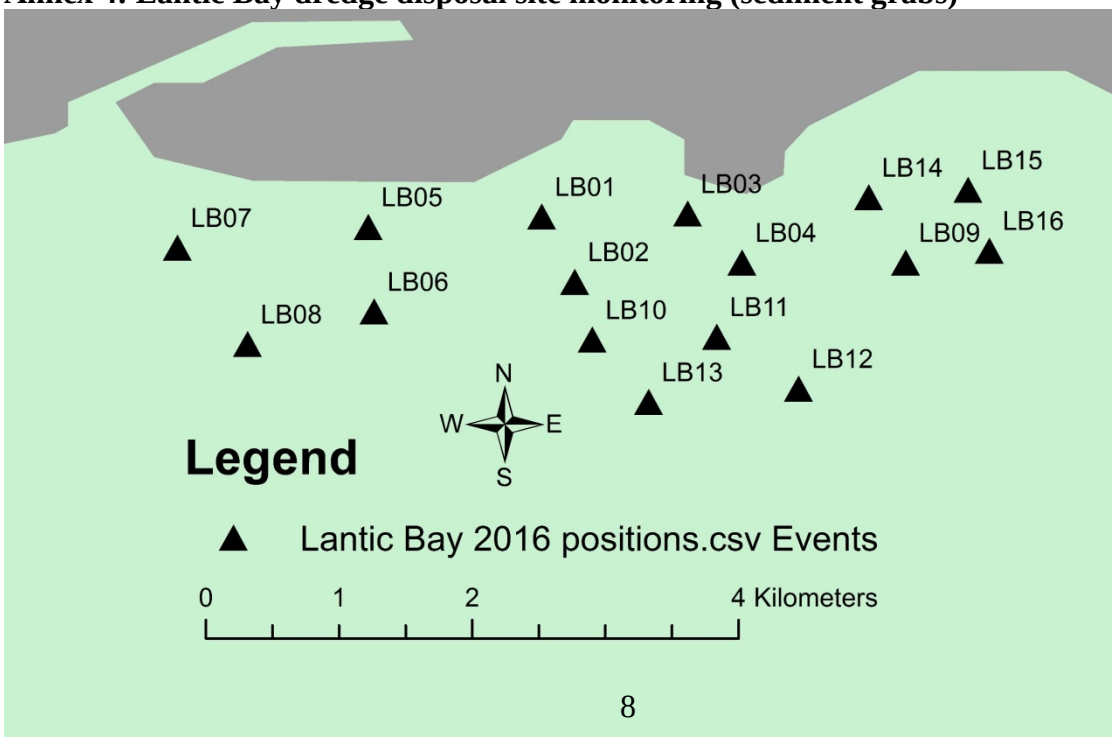
Annex 2: CSEMP fishing and temporal/spatial sediment, and dredge disposal sediment stations



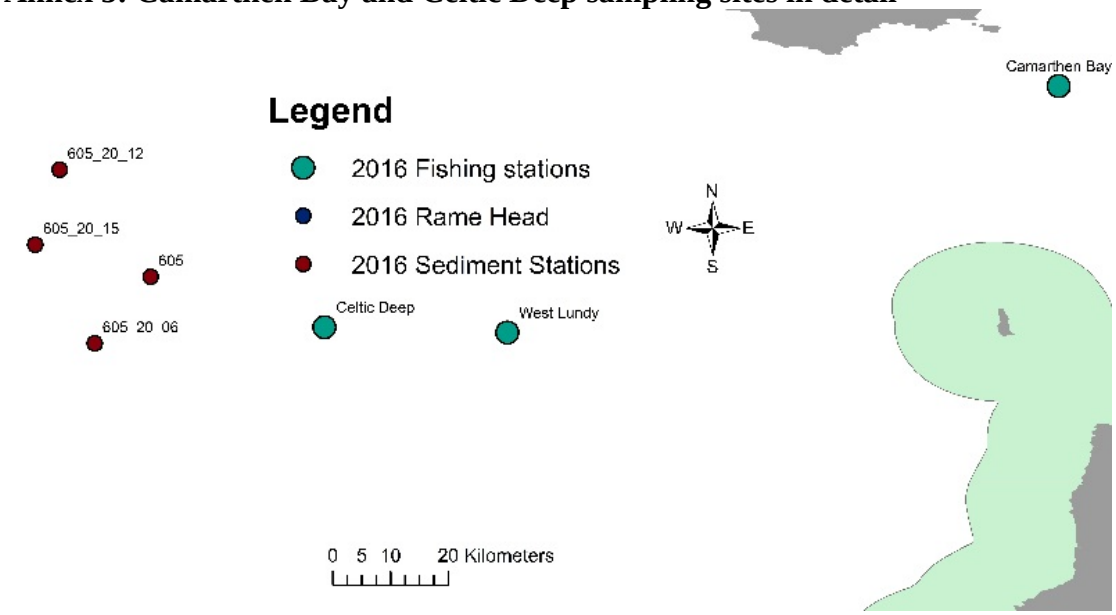
Annex 3: Rame's Head dredge disposal site monitoring (sediment grabs)



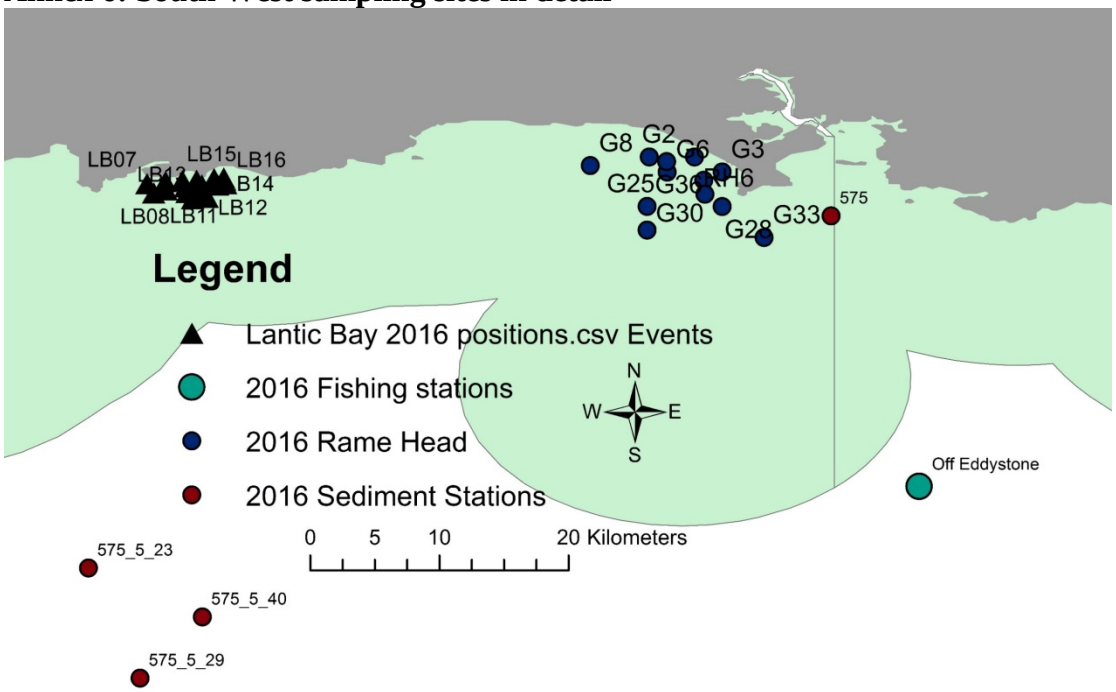
Annex 4: Lantic Bay dredge disposal site monitoring (sediment grabs)



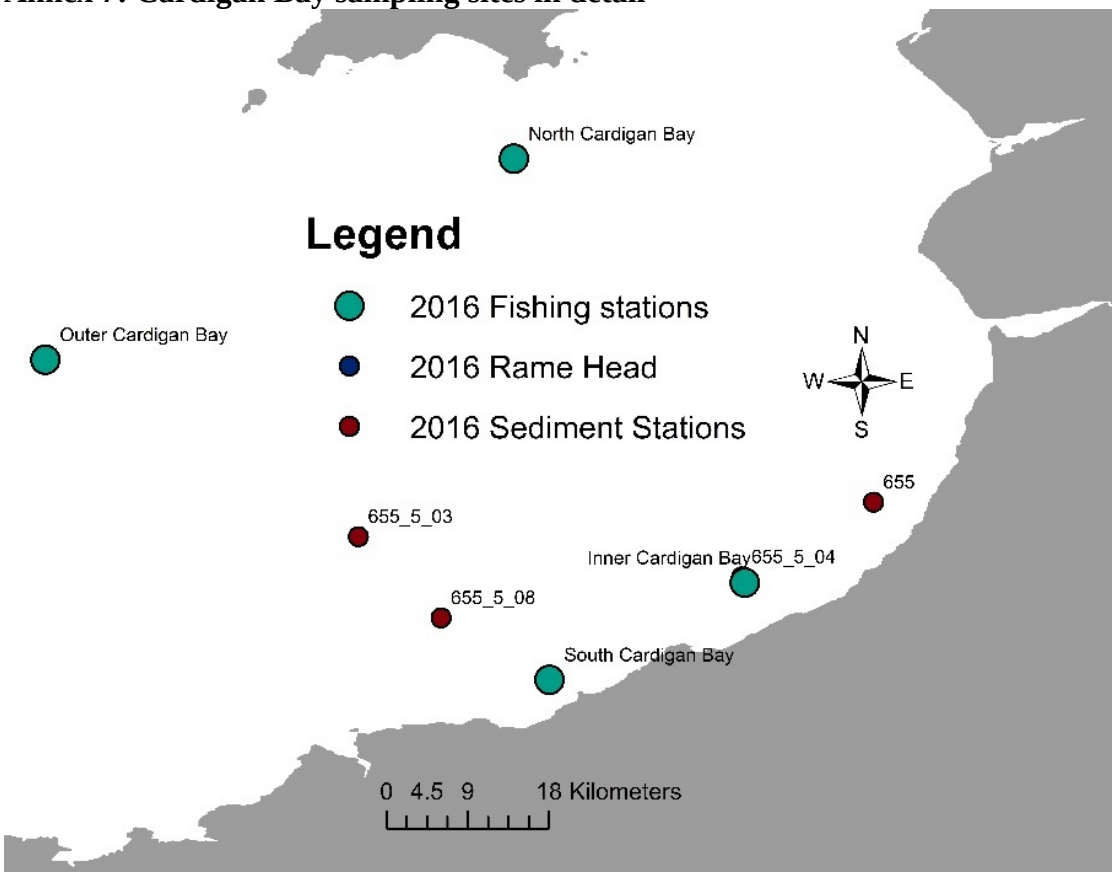
Annex 5: Camarthen Bay and Celtic Deep sampling sites in detail



Annex 6: South West sampling sites in detail



Annex 7: Cardigan Bay sampling sites in detail



Annex 8: Liverpool Bay sampling sites in detail