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Annual report on the results of the Biotoxin and Phytoplankton Official Control Monitoring Programmes for England and Wales - 2015

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Authors: Lewis Coates [1], Tim Wilkinson [2], Ben Stubbs [1], Andrew Turner [1], Steve Milligan [2] and Myriam Algoet [1]

1) Cefas Laboratory, Barrack Road, Weymouth, Dorset, DT4 8UB
2) Cefas Laboratory, Pakefield Road, Lowestoft, Suffolk, NR33 0BR

Document prepared by:	Lewis Coates & Tim Wilkinson	
Document checked by:	Myriam Algoet Stephen Milligan Ben Stubbs	Review Date: N/A
Document approved by:	C5666 Project Manager: Stephen Milligan, 29/03/16 C5667 Project Manager: Myriam Algoet, 18/05/16	Classification: Not classified

Quality statement: This report is a compilation of the information included on the reports provided daily/weekly to the FSA and showing the results of the phytoplankton and toxin analyses undertaken on samples submitted by local authorities. All results were quality checked and approved prior to release to the FSA and the results compiled in this report have been further checked against a copy of the original reports held on a central database. Information relating to the origin of the samples (place (including co-ordinates), date and time of collection) is as provided by local authority staff and has not undergone verification checks by Cefas.

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1. Executive summary

This report describes the results of the Official Control Biotoxin Monitoring Programme for England and Wales for the period 1st January to 31st December 2015.

The laboratory testing for biotoxins in shellfish and potentially harmful phytoplankton species in water samples, the co-ordination of the programme and its logistics were conducted by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) on behalf of the Food Standards Agency (FSA), the central competent authority for food safety. The programme aimed at delivering the testing required for the statutory monitoring of marine biotoxins in shellfish from classified production and relaying areas in England and Wales, and for identification and enumeration of potentially harmful algal species in selected shellfish harvesting areas, as required by EC Regulations 854/2004, 882/2004 and 2074/2005.

In the reported period, 55 of the 57 classified English and Welsh harvesting and relaying areas were monitored (directly or indirectly[1]) from 81 inshore sampling locations (Figures 1 and 2), giving a coverage rate of 96%[2]. A total of 804 inshore shellfish samples and 933 phytoplankton samples were submitted for analyses by staff from 36 Local Authorities (LAs).

In addition to the samples collected from inshore classified production and relaying areas, samples of wild Pectenidae were collected from auction houses, dispatch centres and/or processing plants in 2015 for the purpose of wild pectenidae verification monitoring.
A total of 93 samples (consisting of 50 samples of whole king scallops and 43 processed products) were submitted by 7 LAs.

As part of the ongoing FSA risk assessment into the occurrence and distribution of marine biotoxins in England and Wales, a number of analyses were performed retrospectively on samples which did not require the specific analyses at the time of sampling. These were reported for information only to the FSA and no further actions were required on the part of the LAs. The results of these tests are however included in this report.

[1] In this case, the classified production areas were monitored by sampling adjacent areas where appropriate
[2] 4% of the classified production areas were commercially inactive during the reporting period and hence not monitored

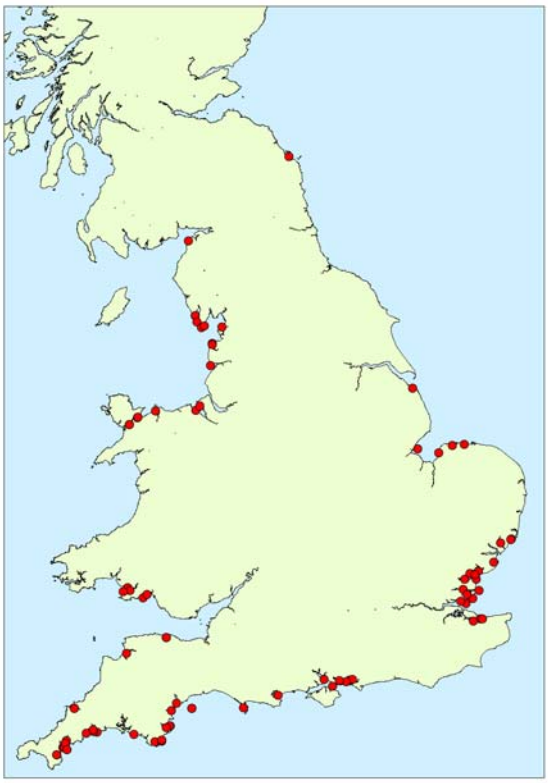


Figure 1: English and Welsh flesh sampling locations – 2015 Biotoxin monitoring programme

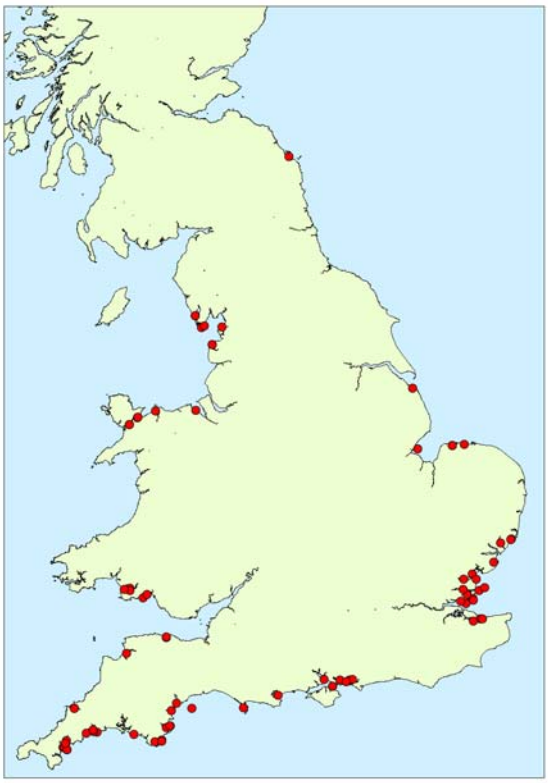


Figure 2. English and Welsh water sampling locations – 2015 Biotoxin monitoring programme

Results of the shellfish monitoring programme for the twelve-month period were as follows (all toxin results stated for Paralytic Shellfish Poisoning (PSP) toxins and Lipophilic Toxins (LTs) refer to the high value calculated from method uncertainty):

- **Amnesic Shellfish Poisoning (ASP) toxins - summary**

794 inshore shellfish samples were tested for ASP toxins using a high performance liquid chromatography (HPLC) method (46 analysed retrospectively). ASP toxins were detected in 21 samples from 12 production areas (Figure 3). The greatest proportion of samples containing ASP originated from the south-west of England (17 samples). None of the inshore shellfish samples tested for ASP exceeded the maximum permitted level (MPL) of 20 mg/kg in 2015. The shellfish species affected included cockles (1 sample), mussels (10 samples), Pacific oysters (5 samples) and surf clams (5 samples).

The highest ASP concentration was recorded in April (15 mg/kg) from the Brixham production area.

Figure 3: Location of classified production and/or relaying areas where ASP toxins were detected in 2015 (all below the MPL (20 mg [domoic+*epi*-domoic acid]/kg [shellfish tissue])

Ninety-three samples of king scallops were analysed for ASP toxins, comprising 50 whole shellfish samples and 43 samples which had been shucked prior to submission to the laboratory (pre-shucked). Of the 50 whole king scallop samples, 48 contained ASP toxins, with 36 exceeding the MPL (see Figure 4). All samples which exceeded the MPL were collected by LAs along the south west coast of England (Cornwall to Dorset). Where ASP toxins were detected in whole scallop samples, concentrations ranged from 2.9 to 178 mg/kg. Results peaked in October 2015. Of the 43 pre-shucked samples, 12 contained low levels of ASP toxins, ranging from 1.2 to 3.7 mg/kg.

Figure 4: Approximate origin of wild pectenidae samples where ASP toxins were detected above the MPL (20 mg [domoic+*epi*-domoic [shellfish tissue]acid]/kg) in 2015

- **Paralytic Shellfish Poisoning (PSP) toxins - summary**

794 inshore shellfish samples were screened for PSP toxins using the HPLC semi-quantitative method (5 analysed retrospectively). No samples required analysis by the full quantitative method. This is consistent with the number and levels detected in 2014, however, is still markedly lower than detection rates recorded between 2010 and 2013.

Ninety-three king scallop verification samples were analysed for PSP toxins (50 whole scallops and 43 pre-shucked samples). One sample (originating from “Off Exmouth”) required analysis by the quantitative method, however concentrations did not exceed the method reporting limit of 160 µg STX eq/kg.

- **Lipophilic toxins (LTs) - summary**

A total of 795 samples were analysed for LTs using the Liquid Chromatography - tandem mass spectrometry (LC-MS/MS) method (41 analysed retrospectively). The lipophilic toxins are sub-divided into three regulated groups.

Yessotoxins (YTXs)
Not detected in any samples received in 2015

Azaspiracid group toxins (AZAs)
Detected in 21 inshore samples, all from the south Cornish coast (Figure 5). Seven samples from Lantivet Bay and the Fowey production areas contained AZAs below the MPL, with results ranging from 28 to 128 µg AZA1 eq/kg between August and October.

AZAs were detected consistently in St. Austell Bay from late July to late October (Figure 6). Peak concentrations exceeded the MPL on three occasions; once in late August (177 µg AZA1 eq/kg) and twice in late September (251 and 188 µg AZA1 eq/kg). The St. Austell Bay production area was already closed due to the earlier presence of OA/DTX/PTX group toxins exceeding the MPL (described below).

Figure 5: Location of classified production and/or relaying areas where AZAs group toxins were detected below the MPL of 160 µg [AZA1 equivalent]/kg [shellfish tissue] in 2015

Figure 6: Location of classified production and/or relaying areas where AZAs group toxins were detected above the MPL of 160 µg [AZA1 equivalent]/kg [shellfish tissue] in 2015

Okadaic Acid/Dinophysistoxins/Pectenotoxins (OA/DTX/PTX)
Detected in 98 samples from 12 production areas (Figure 7). This is the highest number of recorded instances of LTs in inshore shellfish samples since the LC-MS/MS method was introduced in 2011. Thirty-four mussel samples from six production areas contained OA/DTX/PTXs above the MPL (set at 160 µg OA eq/kg) (Table 1 & Figure 8).

The St. Austell Bay production area recorded 16 results above the MPL between 15/06/2015 and 14/10/2015. *Dinophysiaceae,* the predominant toxin producing algal genera in this area, were detected in a water sample on the 28/05/2015, prior to the detection of OA/DTX/PTX group toxins above the MPL (297 µg/kg) on 15/06/2015. Two subsequent flesh samples, collected on the 22/06/2015 and 24/06/2015, returned results below the MPL and the production area was briefly allowed to reopen. In late June, *Dinophysiaceae* were again detected and from 09/07/2015 toxin levels increased sharply, rising above the MPL (668 µg/kg). Toxin concentrations reached a peak on 06/08/2015 of 3277 µg/kg. Toxin levels subsequently fluctuated over the following weeks but a general decreasing trend was observed. It was not until a sample collected on the 25/10/2015 that the site recorded a second consecutive result below the MPL and was allowed to reopen. Toxins continued to be detected in this production area until the end of November 2015 (due to unsafe weather conditions, the area could not be sampled in December 2015). The initial detection of this toxin group occurred at a similar time of year in 2014, although in 2015 the MPL was exceeded earlier and the occurrence of toxins has continued to the end of the reporting period. The peak concentration recorded in 2015 was lower than that recorded in 2014 (3700 µg/kg), but occurred in early August in both cases.

The Fowey production area (adjacent to the St. Austell Bay area), recorded three results above the MPL in mussel samples collected between 22/07/2015 and 06/08/2015. These samples were collected from the Pont Pill monitoring site. The highest concentration recorded during this event was from a sample collected on 22/07/2015 (425 µg/kg). Closures for this toxin group occurred at a similar time in 2014, although peak concentrations and the number of results above the MPL were lower in 2015. Of the two monitoring sites in the Fowey production area (Wisemans and Pont Pill) it is Pont Pill that has recorded the highest concentrations and the longest period of toxin occurrence in 2014 and 2015.

Lantivet Bay (also adjacent to St. Austell Bay and Fowey production areas) was a new production area for 2015. Monitoring commenced in late April. From 09/07/2015 *Dinophysiaceae* were detected consistently in water samples, with OA/DTX/PTX group toxins exceeding the MPL from 15/07/2015 to the 14/10/2015. In total, eight samples exceeded the MPL with the highest concentration (1107 µg/kg) recorded on 28/07/2015.

The Taw/Torridge production area recorded three consecutive results above the MPL in samples collected between 10/08/2015 and 25/08/2015. The highest concentration during this event was recorded in a sample collected on 10/08/2015 (260 µg/kg). The second consecutive result below the MPL was recorded in a sample collected on 07/09/2015. This toxin group continued to be detected in this production area until the end of September. This toxin group appeared at a similar time in 2014, although peak concentrations and the number of results above the MPL were lower in 2015.

The Porlock production area was introduced to the programme in February 2015. One sample, collected on 15/06/2015, exceeded the MPL with a result of 205 µg/kg. Subsequent samples recorded results below the reporting limit (<RL) and the second negative result was recorded on 15/07/2015. No *Dinophysiaceae* were recorded in this particular event.

Lyme Bay was also a new production area for 2015. The first two samples collected on the 22/07/2015 and 12/08/2015 contained OA/DTX/PTX toxins, with the latter exceeding the MPL with a result of 328 µg/kg. The subsequent two samples also exceeded the MPL with the highest concentration recorded on 27/08/2015 (339 µg/kg). The second negative sample was recorded on 21/09/2015 and no further toxins were detected from November onward.

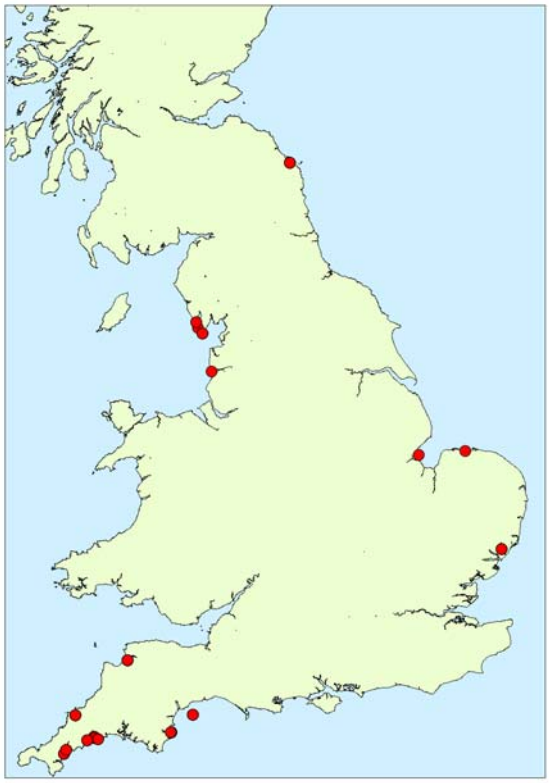


Figure 7: Location of classified production and/or relaying areas where OA/DTXs/PTXs group toxins were detected below the MPL of 160 µg [OA equivalent]/kg [shellfish tissue] in 2015

Figure 8: Location of classified production and relaying areas where OA/DTXs/PTXs group toxins were detected above the MPL of 160 µg [OA equivalent]/kg [shellfish tissue] in 2015

Ninety-three king scallop verification samples were analysed for LT toxins (50 whole scallops and 43 shucked samples).

OA/DTX/PTX group toxins were detected in 6 whole king scallop samples. Two offshore samples landed at Scarborough in January and February and one from Plymouth in July returned results which exceeded the MPL for this toxin group (Figure 9). Two subsequent samples from Plymouth recorded results below the MPL in August. One further sample, taken from Guernsey waters, recorded toxins below the MPL in September. YTXs and AZAs were not detected in any of the whole scallop samples.

No lipophilic toxins were detected in the processed scallop samples submitted for analyses.

Figure 9: Approximate origin of wild pectenidae samples where OA/DTXs/PTXs group toxins were detected above the MPL of 160 µg [OA equivalent]/kg [shellfish tissue] in 2015

Table 1: Summary of sites where either ASP, PSP or lipophilic toxins were detected above the maximum permitted limits in 2015.

Toxin	Samples where toxin levels exceeded the maximum permitted level (ASP: > 20 mg [domoic +*epi*-domoic acid]/kg [shellfish flesh]; OA/DTXs/PTXs: >160 µg [OA eq.]/kg [shellfish flesh]; AZAs: >160 µg [AZA1 eq.]/kg [shellfish flesh]; YTXs: >3.75 mg [YTX eq.]/kg [shellfish flesh]; PSP: > 800 µg [STX eq.]/kg [shellfish flesh])			
	Local Authority	**Production area & site**	**Date samples collected**	**Highest value reported (Shellfish species)**
ASP	None	None	None	None
OA/DTXs/ PTXs	Cornwall PHA	St. Austell Bay: Ropehaven Outer	15/06/2015 & 09/07/2015 to 14/10/2015 (15 samples over this period)	3277 µg/kg (Mussels)
		Fowey: Pont Pill	22 & 28/07/2015 & 06/08/2015	425 µg/kg (Mussels)
		Lantivet Bay: Sandheap Point	15/07/2015 to 22/09/2015 (7 samples over this period), 14/10/2015	1107 µg/kg (Mussels)
	Torridge DC	Taw/Torridge: Spratt Ridge East	10, 17 & 25/08/2014	260 µg/kg (Mussels)
	West Somerset Council	Porlock: Porlock Beach	15/06/2015	205 µg/kg (Pacific oysters)
	Torbay BC	Lyme Bay: Site 1	12, 19 & 27/08/2015	339 µg/kg (Mussels)
AZAs	None	None	None	None
YTXs	None	None	None	None
PSP	None	None	None	None

- **Insufficient/unsuitable samples**

Nine shellfish samples (1.1% of all samples submitted) were not tested during the reported period for various reasons including sample quality, origin and/or frequency of submission.

Phytoplankton monitoring - summary

The results of the phytoplankton monitoring of classified production and relaying areas for 2015 are summarised below. Where the stated trigger levels (see Annex 2, Table 1) were exceeded, additional flesh and water samples were requested the following week.

- *Alexandrium* species were recorded in 55 samples from 19 production areas (Figure 10,). Since 2013, the number of recorded occurrences and the concentrations detected in England and Wales have remained comparatively low. Recorded occurrences have not exceeded 55 samples per calendar year and maximum concentrations have not exceeded 27,000 cells/L. Between 2006 and 2012, recorded occurrences exceeded 80 in each year and highest concentrations exceeded half a million cells/L. Part of this decline can be attributed to a reduction in the monitoring of sites with historic issues with PSP toxins and *Alexandrium* species (eg Milford Haven). Also, the lower number of recorded instances of PSP toxins in flesh samples reflects the decrease in *Alexandrium* species detection over the period from 2013 to 2015.
- *Pseudo-nitzschia* species were recorded in 449 samples from 46 production areas. The trigger level (set at 150,000 cells/L) was exceeded on 10 occasions from 8 production areas (Figure 11). The highest concentration was recorded in a sample from Burry Inlet: Machynys collected on 06/05/2015 (873,000 cells/L). The number of samples which exceed the trigger level each year varies considerably. There were relatively fewer breaches in 2015 and the peak concentration recorded was lower than in recent years.
- *Dinophysiaceae* were recorded in 78 samples from 21 production areas. The trigger level (set at 100 cells/L) was exceeded by 47 samples from 17 production areas (Figure 12). This is a reduction in the number of trigger level breaches from 2014. However, *Dinophysiaceae* did occur more frequently and at higher concentrations than in previous years. *Dinophysiaceae* were detected consistently prior to and during toxins events at several production areas in Cornwall. The highest cell concentration (2,800 cells/L) was recorded in a sample from the Helford River, Cornwall in July.
- *Prorocentrum lima* were detected in 3 samples from 2 production areas (Figure 13). The trigger level (set at 100 cells/L) was exceeded by 1 sample from the Fleet Lagoon, Dorset**.** This is consistent with previous reporting periods with *Prorocentrum lima* occurring infrequently and at low concentrations.

Of the 933 phytoplankton samples submitted, 3.75% (n=35) of the samples were rejected as unsuitable for analysis, 28 due to high sediment content. This is a reduction of 5.4% from the previous year and is the lowest number of high sediment samples since 2006. A further 7 samples were not analysed for various reasons including incorrect frequency of submission or incorrect sampling method.

Figure 10: Locations of sites where *Alexandrium* species were detected above trigger level in 2015

Figure 11: Locations of sites where *Pseudo – nitzschia* species were detected above trigger level in 2015

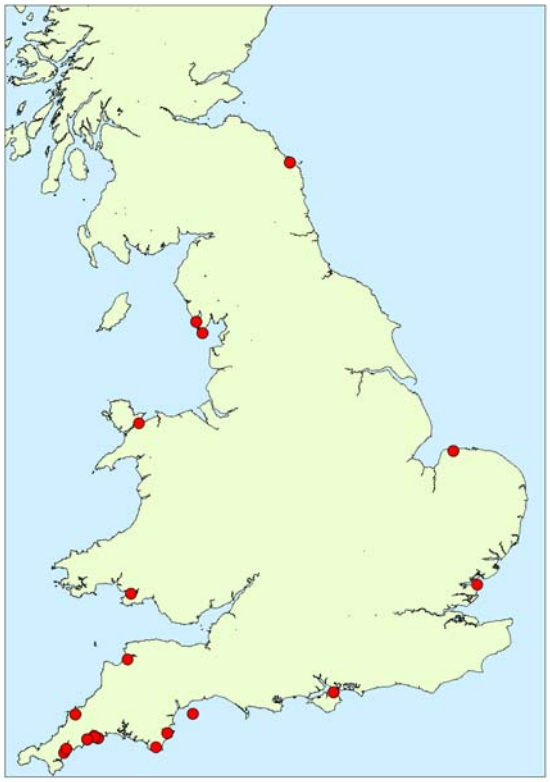


Figure 12: Locations of sites where *Dinophysiaceae* were detected above trigger level in 2015

Figure 13: Locations of sites where *Prorocentrum lima* was detected above trigger level in 2015

2. Glossary

AOAC	AOAC International
ASP	Amnesic Shellfish Poisoning
AZA	Azaspiracid
AZP	Azaspiracid Poisoning
Cefas	The Centre for Environment, Fisheries and Aquaculture Sciences
DA	Domoic Acid
DSP	Diarrhetic Shellfish Poisoning
DTX	Dinophysistoxin
dcSTX	decarbomoyl Saxitoxin
EC	European Commission
EU	European Union
EURL	European Union Reference Laboratory for Marine Biotoxins
EHO	Environmental Health Officer
FSA	Food Standards Agency
GTX	Gonyautoxin
HPLC	High Performance Liquid Chromatography
LA(s)	Local Food Authority(ies)
LC-MS	Liquid Chromatography – Mass Spectrometry
LTs	Lipophilic toxins
MPL	Maximum permitted limit
N/A (na)	Not Applicable
ND	Not Detected
OC	Official Controls
OA	Okadaic Acid
PSP	Paralytic Shellfish Poisoning
PST	Paralytic Shellfish Toxins
PTX	Pectenotoxin
PTX2sa	Pectenotoxin 2 seco acid
7-*epi* PTX2sa	7-epi-Pectenotoxin 2 seco acid
RL (<RL)	Reporting Limit
SOP(s)	Standard Operating Procedure(s)
STX	Saxitoxin
UKNRL	UK National Reference Laboratory for Marine Biotoxins
YTX	Yessotoxin

3. Introduction

At certain times of the year, naturally occurring algae in the sea can give rise to blooms, which may not necessarily be visible or noticeable. Algae in these blooms may produce potent and secondary metabolites which can accumulate in filter-feeding bivalve molluscs and also sometimes in other shellfish such as grazing gastropods.

Consumption of shellfish contaminated with biotoxins may pose risks to the human consumer and impact the seafood industry. To date, eight major classes of marine phytotoxins have been identified and are distinguished by their chemical structure and physico-chemical behaviour. Five of these groups are known to induce human illness - Okadaic acid and Dinophysistoxins (OA/DTXs) responsible for Diarrhetic Shellfish Poisoning (DSP), Azaspiracids (AZAs) responsible for Azaspiracid Poisoning (AZP), the Saxitoxins linked to Paralytic Shellfish Poisoning (PSP), domoic acid responsible for Amnesic Shellfish Poisoning (ASP) and the brevetoxins linked with Neurotoxic Shellfish Poisoning (NSP). Pectenotoxins (PTXs), Yessotoxins (YTXs) and Cyclic Imines (CIs) form the remaining three groups, although currently there is a lack of toxicological evidence regarding human illness from these compounds.

In the European Union (including the UK), there are three major shellfish biotoxin groups which are subject to statutory testing to protect human health:

1. PSP toxins: PSP is associated with algae of the genera *Alexandrium, Gymnodinium* and *Pyrodinium*. The active component in PSP is saxitoxin and its derivatives, which act upon blocking the voltage dependent sodium channels in nerves, thereby blocking nerve conduction. The symptoms seen following consumption of PSP affected shellfish include numbness in the mouth and fingertips followed by impaired muscle co-ordination. Respiratory distress and paralysis can occur and this may be fatal.

   In recent years, PSP toxins have been detected in flesh samples from the Helford, Fal, Fowey, Yealm and Salcombe production areas in the South West, in the Milford Haven production area in South Wales and in the Holy Island production area in the Northwest. PSP toxicity is usually an annual event in many of the above locations, although levels may not exceed the maximum permitted limit (MPL) of 800µg [saxitoxin equivalent (STX eq.)] per kilogram [shellfish tissue] (EC Regulation 853/2004).

   Lipophilic toxins: Of the lipid-soluble toxins, it is the OA/DTXs, AZAs, YTXs, PTXs, and CIs that contribute to this class and collectively, they are referred to as lipophilic toxins (LTs). DSP toxins (OA and DTX groups) are produced by algae of the genera *Dinophysis* and *Prorocentrum.* PTXs are also produced by algae of the genera *Dinophysis*. AZP toxins (AZAs) are produced by *Azadinium* and *Amphidoma* species. Predominant symptoms of DSP and AZP are diarrhoea, nausea, vomiting and abdominal pain. OA and DTX-1 have also been shown to be cancer promoters in mouse skin bioassays and this poses another possible health problem (van Egmond *et al*. 1993). YTXs are produced by a number of algal species including *Lingulodinium polyedrum, Gonyaulax spiniferia* and *Protoceratium reticulatum.*

Since the introduction of the LC-MS/MS method to the Biotoxin monitoring programme in July 2011, OA/DTX/PTXs have been detected in 21 production areas. Samples from eight of these areas; Lyme Bay, Lantivet Bay, St. Austell Bay, Fowey, Taw/Torridge and Porlock in South West England, Swansea Bay in South Wales and Blackwater on the east of England have recorded concentrations which exceed the MPL. AZAs have been detected in four production areas; Holy Island in the North East and Fowey, Lantivet Bay and St. Austell Bay in the South West of England. AZAs have exceeded the MPL in St. Austell Bay only. YTXs have been detected in one mussel sample from the Brixham production area collected in June 2014.

2. ASP toxins: ASP is caused by domoic acid produced by marine diatoms of the genus *Pseudo-nitzschia.* Symptoms include vomiting, diarrhoea, abdominal cramps and loss of short term memory which may be permanent. In a small number of cases ASP has been fatal.

   ASP toxins have been detected in 40 production areas since 2001 including the Blackwater, River Alde and Colne production areas on the East coast; in the Holy Island production area in the North East; in the Liverpool Bay production area in the North West; in the Three Rivers and Burry Inlet production areas in South Wales and in the Fal, Start Bay, Brixham and Portland production areas in the South West. There has been one instance of ASP exceeding the MPL set at 20mg [Domoic/epi-domoic acid] per kg, this was recorded in a sample of mussels collected from the Portland production area in May 2014

Because of the above health risks to consumers of shellfish, legal controls are placed on the production and marketing of fishery products worldwide. In the European Union controls are prescribed in Regulation (EC) 854/2004. Regulation (EC) 853/2004 prescribes the statutory maximum levels of biotoxins permitted in live bivalve molluscs being placed on the market by food business operators. Chapter V of Section VII, Annex III applies to the statutory levels of biotoxins. The regulations are further supported by Regulation (EC) 2074/2005 which lays down the implementing measures for certain products, including live bivalve molluscs. Regulation (EC) 882/2004 further specifies requirements for the methods used for analysis of official control samples and the validation status of these methods. The above package of EU Regulations is directly applicable across all member states and is intended to ensure a uniform approach to feed and food law across Europe.

Table 2: Maximum permitted limits of toxins in shellfish flesh[3]

Toxin	Maximum Permitted Limits
ASP	Exceeding 20 mg [Domoic/epi-domoic acid]/kg [shellfish flesh]
LTs	Diarrhetic shellfish poisoning (DSP) toxins and pectenotoxins (PTX) together, exceeding 160µg [okadaic acid (OA) equivalents]/kg [shellfish flesh] or Yessotoxins, exceeding 3.75mg [yessotoxin (YTX) equivalents]/kg [shellfish flesh] or Azaspiracids, exceeding 160µg [azaspiracid (AZA) equivalents]/kg [shellfish flesh].
PSP	Exceeding 800µg [saxitoxin equivalents (STX di-HCl eq.)]/kg [shellfish flesh]

[3] Regulation (EC) 853/2004

In the UK the national competent authority is the Food Standards Agency (FSA), which delegates stated official control functions through local Food Authorities e.g. local enforcement and sampling activities. The Centre for Environment, Fisheries and Aquaculture Science (Cefas) is contracted by the FSA to undertake the co-ordination of the programme and its logistics, laboratory analysis for marine biotoxins and harmful phytoplankton and provide scientific advisory duties for the official control monitoring programme for marine biotoxins in England and Wales.

Monitoring for algal biotoxins during the reported period was divided into three elements:

- the flesh monitoring programme, where samples of shellfish from designated shellfish harvesting areas were tested
- the phytoplankton monitoring programme, where water samples were collected from fixed sites within selected harvesting areas and the composition of marine algae identified and enumerated, and
- the wild pectinidae verification programme: In 2015, samples of wild pectenidae were collected from auction houses, processing plants and/or dispatch centres in accordance with FSA guidelines. Sampling frequencies, analysis required and sample composition (shucked or whole animal) were defined on a risk based strategy by the local authority submitting the sample.

This report summarises the findings of the English and Welsh biotoxin monitoring programme for the period 1st January to 31st December 2015.

4. Results of the 2015 English and Welsh biotoxin monitoring programme from classified production and relaying areas

Between 1st January and 31st December 2015, shellfish and phytoplankton samples were collected for analysis from inshore sampling sites selected from 55 designated bivalve mollusc production and relaying areas classified in England and Wales.

The Anglesey – Inland Sea and Anglesey – Red Wharf Bay production areas were not monitored in 2015 as no commercial harvesting took place during the reporting period. In previous years, the Morecambe Bay – Roosebeck area had been monitored indirectly. In 2015, following a sanitary survey and additional information from the LA, direct monitoring of this production area was initiated. For the purpose of this report, the Fal (Upper) and Fal (Lower) are all listed as The Fal production area.

Methodologies for the collection of shellfish samples, their transport to the laboratory, the assessment of samples on arrival, toxin analyses and reporting of results to the FSA are described in Appendix 1 of this report.

Methodologies for the collection of water samples, their transport to the laboratory, their assessment on arrival, the enumeration and identification of phytoplankton cells and the reporting of results to the FSA are described in Appendix 2 of this report.

The following section gives a breakdown of all results and logistics overview by local authority and production area for the period 1st January to 31st December 2015.

Map Key

Biotoxin monitoring point

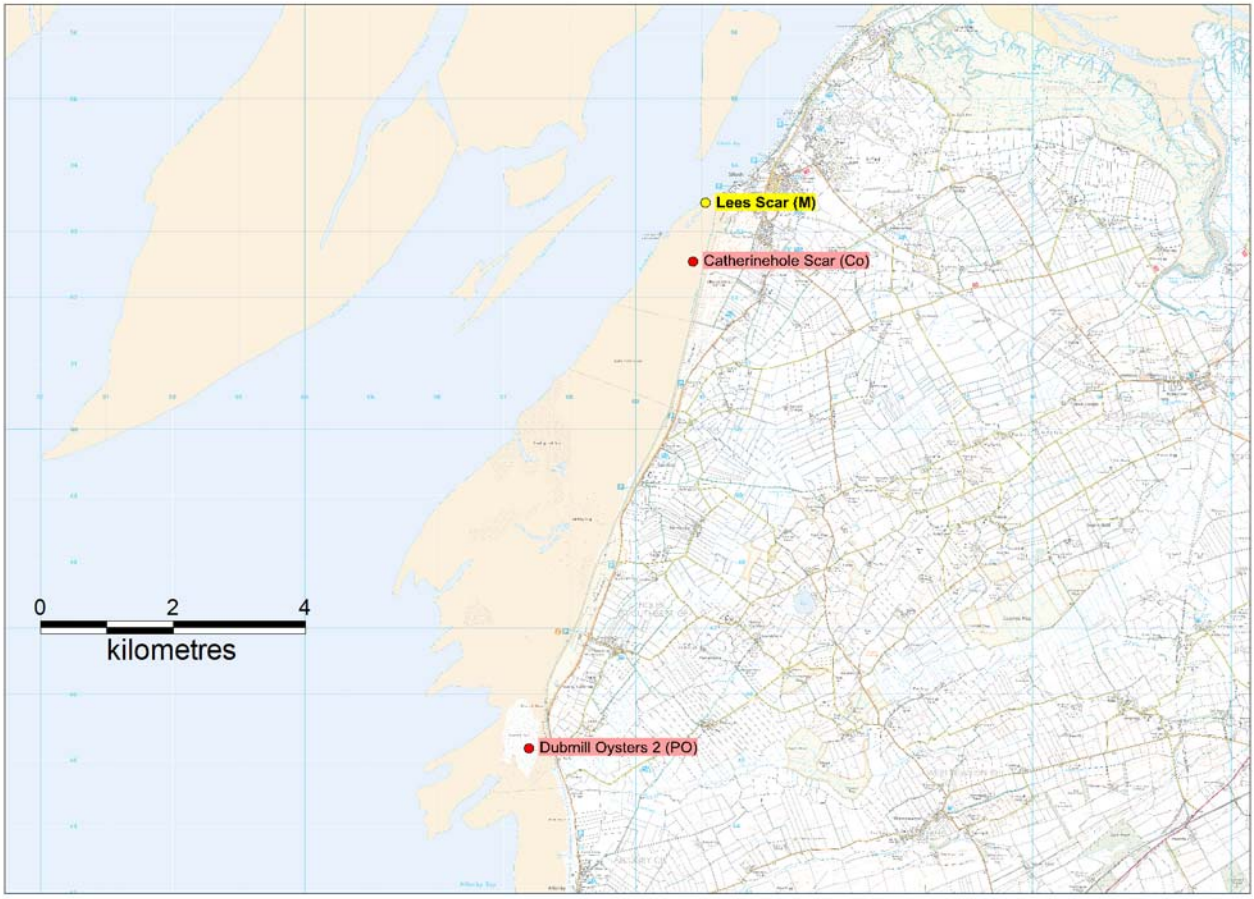
Classification monitoring point only

Species abbreviations:

M: Mussels (*Mytilus* spp)
PO: Pacific oysters (*C. gigas*)
NO: Native oysters (*O. edulis*)
Co: Cockles (*C. edule)*
HC: Hard clams (*M. mercenaria*)
CLS: Sand Gapers (*Mya arenaria*)
Man: Manila clams (*T. philippinarum*)
PFS: Peppery Furrow Shell (*S. plana*)
Raz: Razor shells (*Ensis* spp)
SC: Surf clams (*S. solida*)
Ts: *Tapes* species
Qrty: Quarterly classification sampling (bed dormant)

4.1. Allerdale BC

Silloth



Sample details

	Flesh	Water
Biotoxin monitoring point	Lees Scar (B059L) - Mussels	N/A (see comments)
Classification points only	Catherine Hole Scar (Co), Dubmill Oysters (PO)	
Alternate Point used	No (see comments)	N/A
Fortnightly monitoring (April to Sept)	No	N/A

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	N/A
No. of samples received	10	N/A
No. of Insufficient/ unsuitable samples	0	N/A

Silloth (cont)

Flesh results

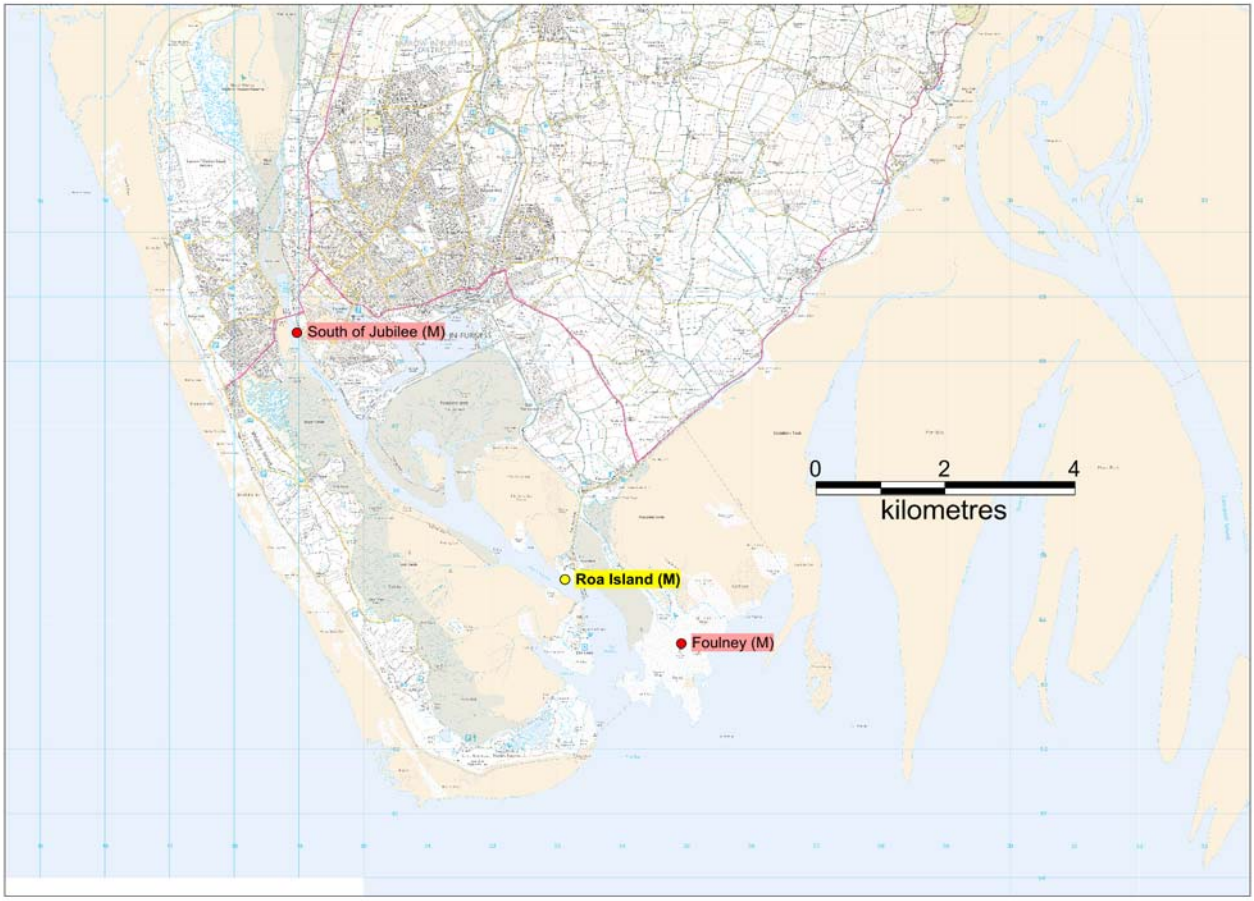
ASP	**No. of samples tested**	0
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	0
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	0
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	0
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	0
	Toxins detected	0
	Above MPL	0

Comments

LA unable to collect water samples due to access issues (agreed with the competent authority) One sample collected from Mawbray was not analysed as the RMP had been removed from the classification programme

4.2 Barrow-in-Furness BC

Morecambe Bay – Barrow



Sample details

	Flesh	Water
Biotoxin monitoring point	Roa Island (B077Q) - Mussels	Roa Island (B077Q)
Classification points only	Foulney (M), South of Jubilee Bridge (M)	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Roa Island – 12 Cocken Tunnel - 7	18
No. of samples received	Roa Island – 13 Cocken Tunnel - 7	18
No. of insufficient/ unsuitable samples	0	0

Morecambe Bay – Barrow (cont.)

Flesh results

		Roa Island	Cocken Tunnel
ASP	**No. of samples tested**	13	7
	Toxins detected	0	0
	Above MPL	0	0
OA/DTX/PTXs	**No. of samples tested**	13	7
	Toxins detected	3	1
	Above MPL	0	0
AZAs	**No. of samples tested**	13	7
	Toxins detected	0	0
	Above MPL	0	0
YTX	**No. of samples tested**	13	7
	Toxins detected	0	0
	Above MPL	0	0
PSP	**No. of samples tested**	13	7
	Toxins detected	0	0
	Above MPL	0	0

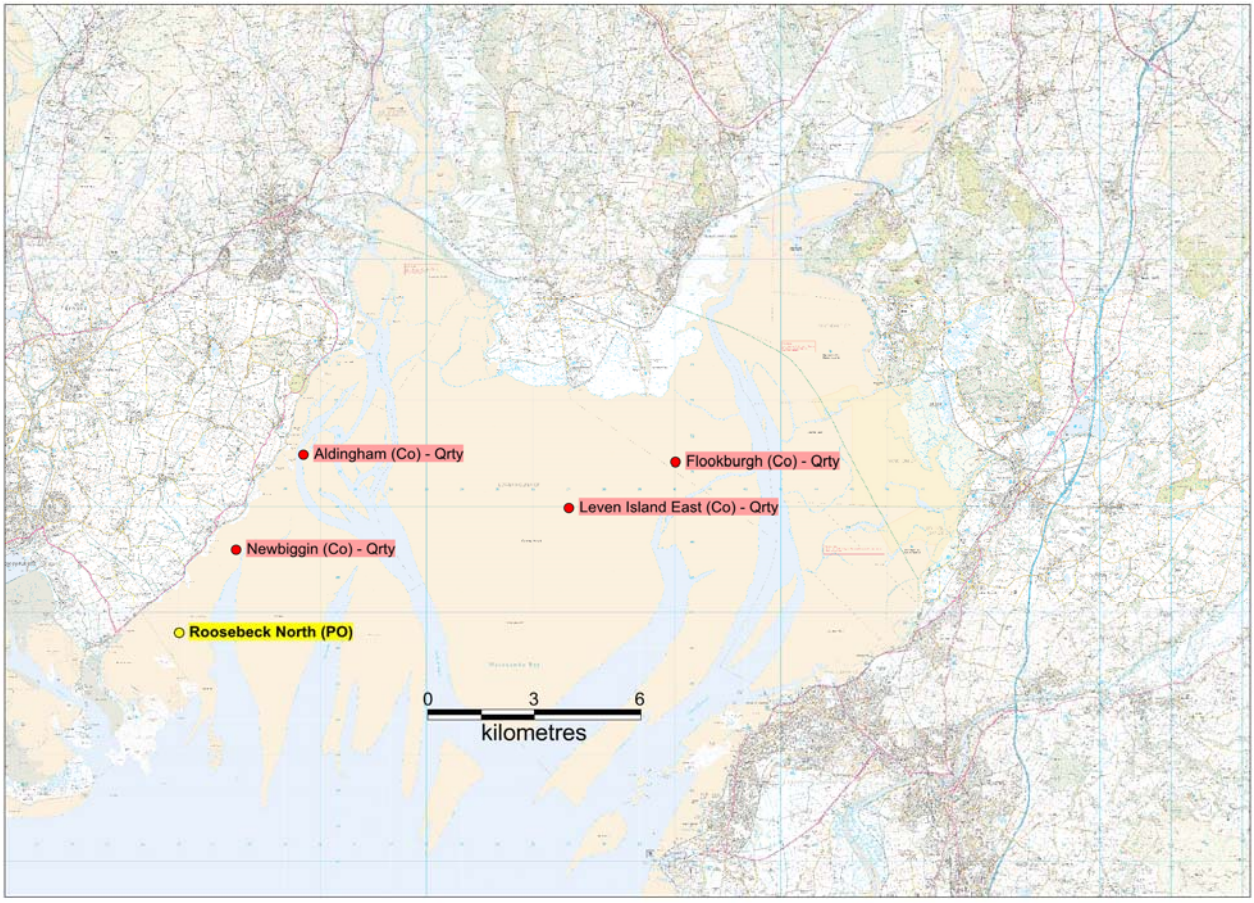
Water results

***Pseudo-nitzschia* species**	**Detected**	13
	Above the trigger level	0
Dinophysiaceae	**Detected**	5
	Above the trigger level	2
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Flesh sampling from Cocken Tunnel (replaced by Jubilee Bridge in August 2015) ceased in July due to a lack of commercial interest
1 water sample was submitted from Cocken Tunnel in February 2015, this sample was not tested.
In August 2015, following a sanitary survey, the Roa Island RMP was adjusted to a new position

Morecambe Bay – Roosebeck



Sample details

	Flesh	Water
Biotoxin monitoring point	Roosebeck North (B48AX) – Pacific oysters	Roosebeck North (B48AX)
Classification points only	Newbiggin (Co) – Qrty, Aldingham (Co) – Qrty, Flookburgh (Co) – Qrty, Leven Island (Co) - Qrty	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st August to 31st December 2015	
No. of samples expected	5	5
No. of samples received	5	4
No. of insufficient/ unsuitable samples	0	0

Morecambe Bay – Roosebeck (cont.)

Flesh results

ASP	**No. of samples tested**	5
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	5
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	5
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	5
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	5
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	2
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Duddon

Sample details

	Flesh	Water
Biotoxin monitoring point	Duddon Channel Upstream End (B052E) - Mussels	Duddon Channel Upstream End (B052E
Classification points only	As above	
Alternate point used	Yes	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 30th September 2015	
No. of samples expected	14	14
No. of samples received	13	16
No. of insufficient/ unsuitable samples	0	1

Duddon (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	13
	Toxins detected	2
	Above MPL	0
AZAs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

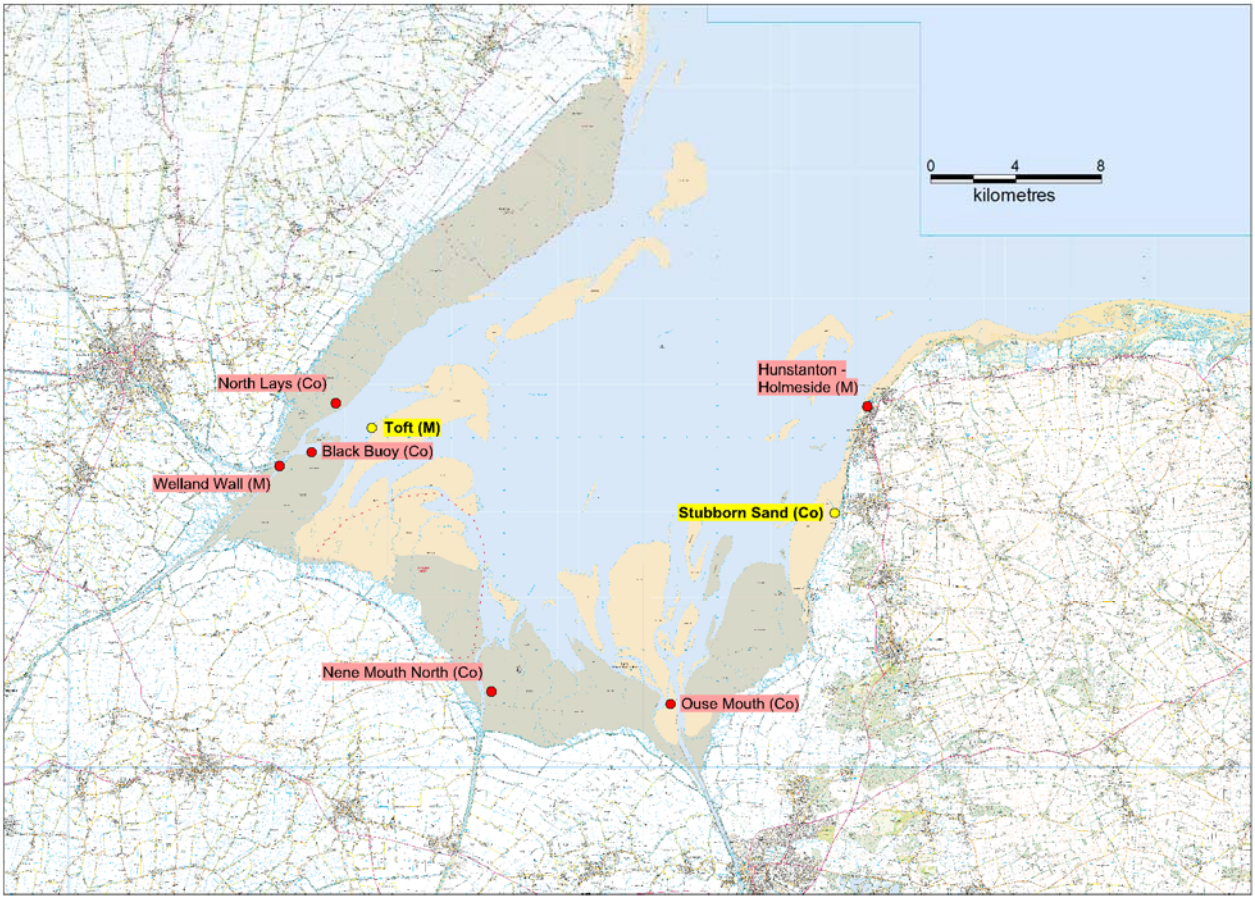
***Pseudo-nitzschia* species**	**Detected**	12
	Above the trigger level	0
Dinophysiaceae	**Detected**	4
	Above the trigger level	3
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	1
	Above the trigger level	1

Comments

Following a sanitary survey, from April 2015 B052D Duddon Channel was replaced by B052E Duddon Channel Upstream End.
Biotoxin flesh and water monitoring ceased in September 2015 due to lack of commercial interest.
One water sample was submitted after the closure of the bed; this sample was not analysed.

4.3 Boston BC

The Wash



Sample details

	Flesh	Water
Biotoxin monitoring point	Toft (B003V) - Mussels	Toft (B003V)
Classification points only	North Lays (Co), Black Buoy (Co), Welland Wall (M), Nene Mouth North (Co), Ouse Mouth (Co) Hunstanton – Holmeside (M)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	No

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	12
No. of samples received	10	10
No. of insufficient/ unsuitable samples	1	0

The Wash (cont.)

ASP	**No. of samples tested**	**9**
	Toxins detected	**0**
	Above MPL	**0**
OA/DTX/PTXs	**No. of samples tested**	**9**
	Toxins detected	**1**
	Above MPL	**0**
AZAs	**No. of samples tested**	**9**
	Toxins detected	**0**
	Above MPL	**0**
YTX	**No. of samples tested**	**9**
	Toxins detected	**0**
	Above MPL	**0**
PSP	**No. of samples tested**	**9**
	Toxins detected	**0**
	Above MPL	**0**

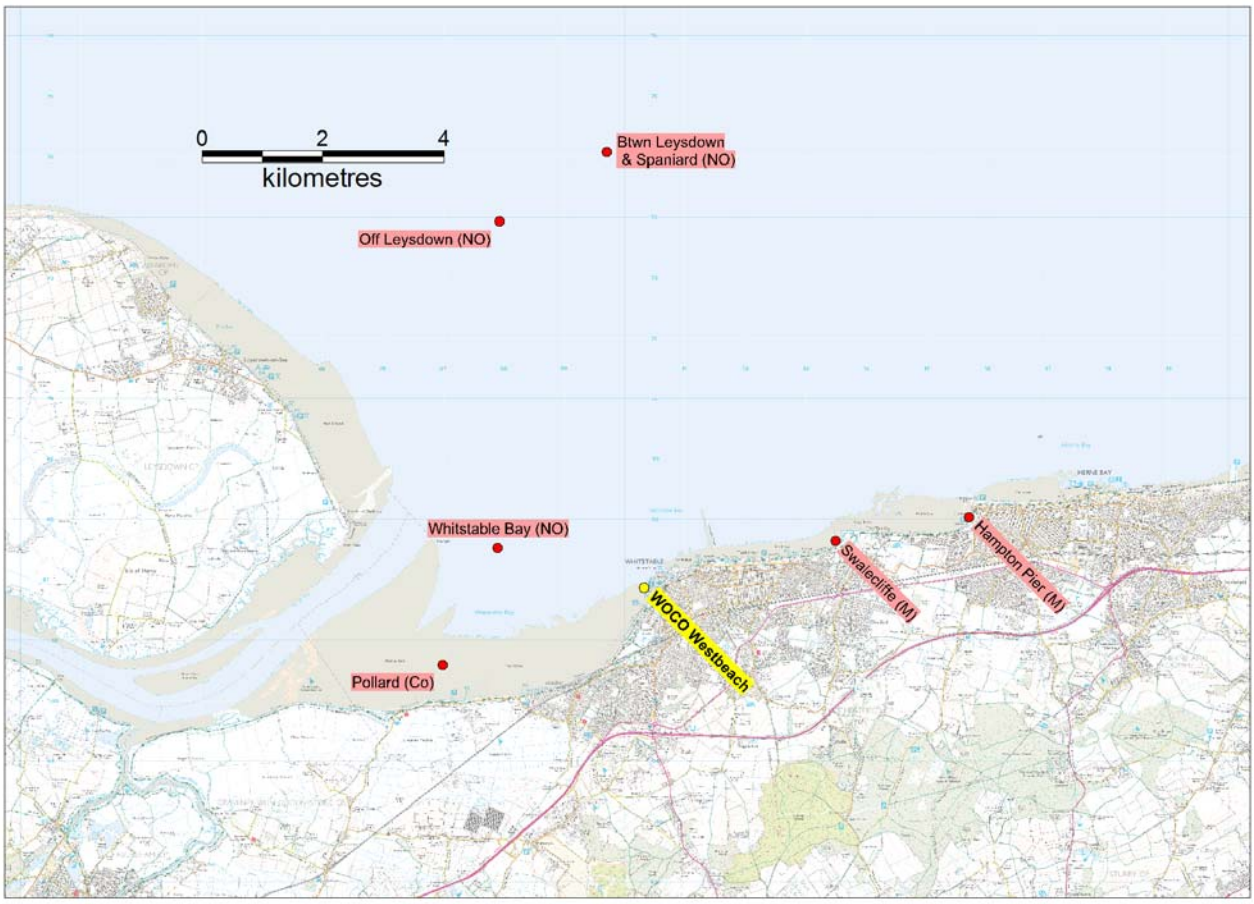
Water results

***Pseudo-nitzschia* species**	**Detected**	4
	Above the trigger level	0
Dinophysiaceae	**Detected**	2
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.4 Canterbury CC

North Kent Coast



Sample details

	Flesh	Water
Biotoxin monitoring point	WOCO Westbeach (B17BS) – Pacific Oysters	WOCO Westbeach (B17BS)
Classification points only	Between Leysdown and Spaniard (NO), Off Leysdown (NO), Whitstable Bay (NO), Pollard (Co), Swalecliffe (M), Hampton Pier (M)	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	17
No. of insufficient/ unsuitable samples	0	1

North Kent Coast (cont.)

ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

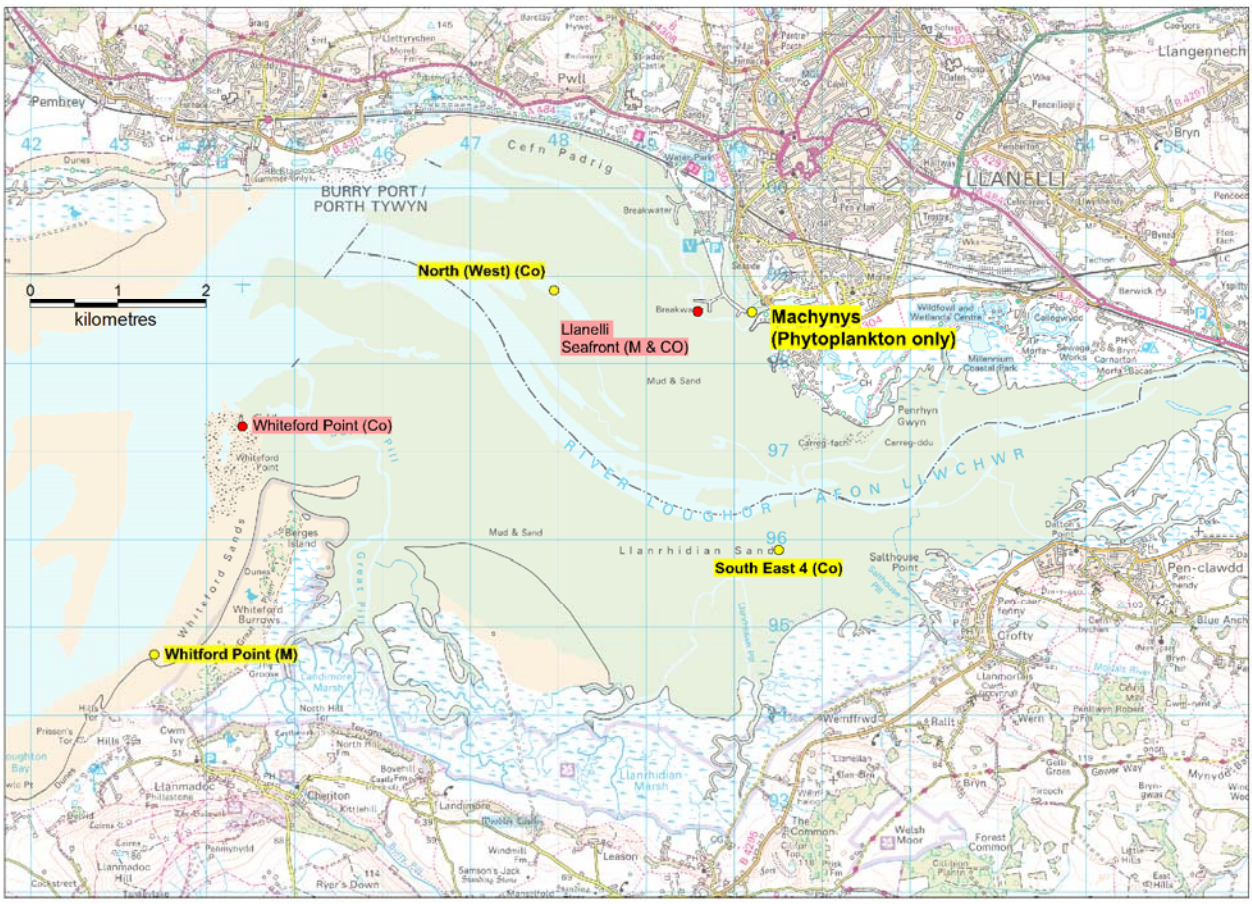
***Pseudo-nitzschia* species**	**Detected**	0
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Biotoxin monitoring moved from Pollard to WOCO Westbeach in May 2015,due to changes in local harvesting patterns

4.5 Carmarthenshire CC

Burry Inlet



Sample details

	Flesh	Water
Biotoxin monitoring point	North (West) (B038B) - Cockles	Machynys (B038D)
Classification points only	Whitford Point (Co), Llanelli Seafront (M & Co)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	21
No. of insufficient/ unsuitable samples	0	0

Burry Inlet (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	1
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

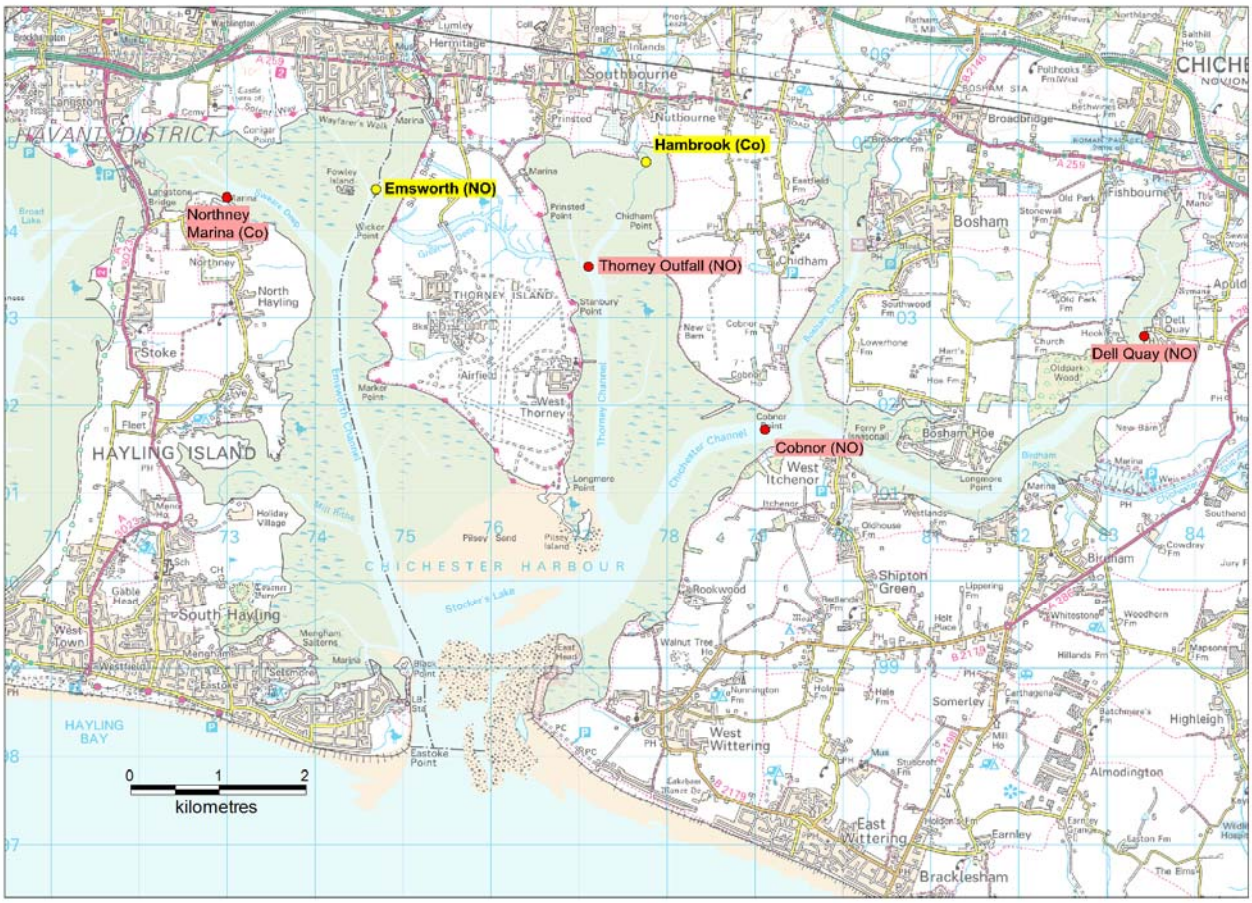
***Pseudo-nitzschia* species**	**Detected**	17
	Above the trigger level	2
Dinophysiaceae	**Detected**	2
	Above the trigger level	2
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

For results from Whitford Point (M) and South East 4 (Co) please see the City and Council of Swansea.
Water samples are collected from an old site B038D Machynys as the LA are unable to access the North (West) sampling point at high tide

4.6 Chichester DC

Chichester Harbour



Sample details

	Flesh	Water
Biotoxin monitoring point	Emsworth (B018M) – Native Oysters Hambrook (B018P) – Manila clams	Emsworth (B018M) Hambrook (B018P)
Classification points only	Northney Marina (Co), Thorney Outfall (NO), Cobnor (NO), Dell Quay (NO)	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	No

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Emsworth - 3 Hambrook - 9	Emsworth – 3 Hambrook – 15
No. of samples received	Emsworth - 3 Hambrook - 7	Emsworth – 2 Hambrook – 13
No. of insufficient/ unsuitable samples	0	Hambrook – 1

Chichester Harbour (cont.)

Flesh results

		Emsworth	Hambrook
ASP	**No. of samples tested**	3	7
	Toxins detected	0	0
	Above MPL	0	0
OA/DTX/PTXs	**No. of samples tested**	3	7
	Toxins detected	0	0
	Above MPL	0	0
AZAs	**No. of samples tested**	3	7
	Toxins detected	0	0
	Above MPL	0	0
YTX	**No. of samples tested**	3	7
	Toxins detected	0	0
	Above MPL	0	0
PSP	**No. of samples tested**	3	7
	Toxins detected	0	0
	Above MPL	0	0

Water results

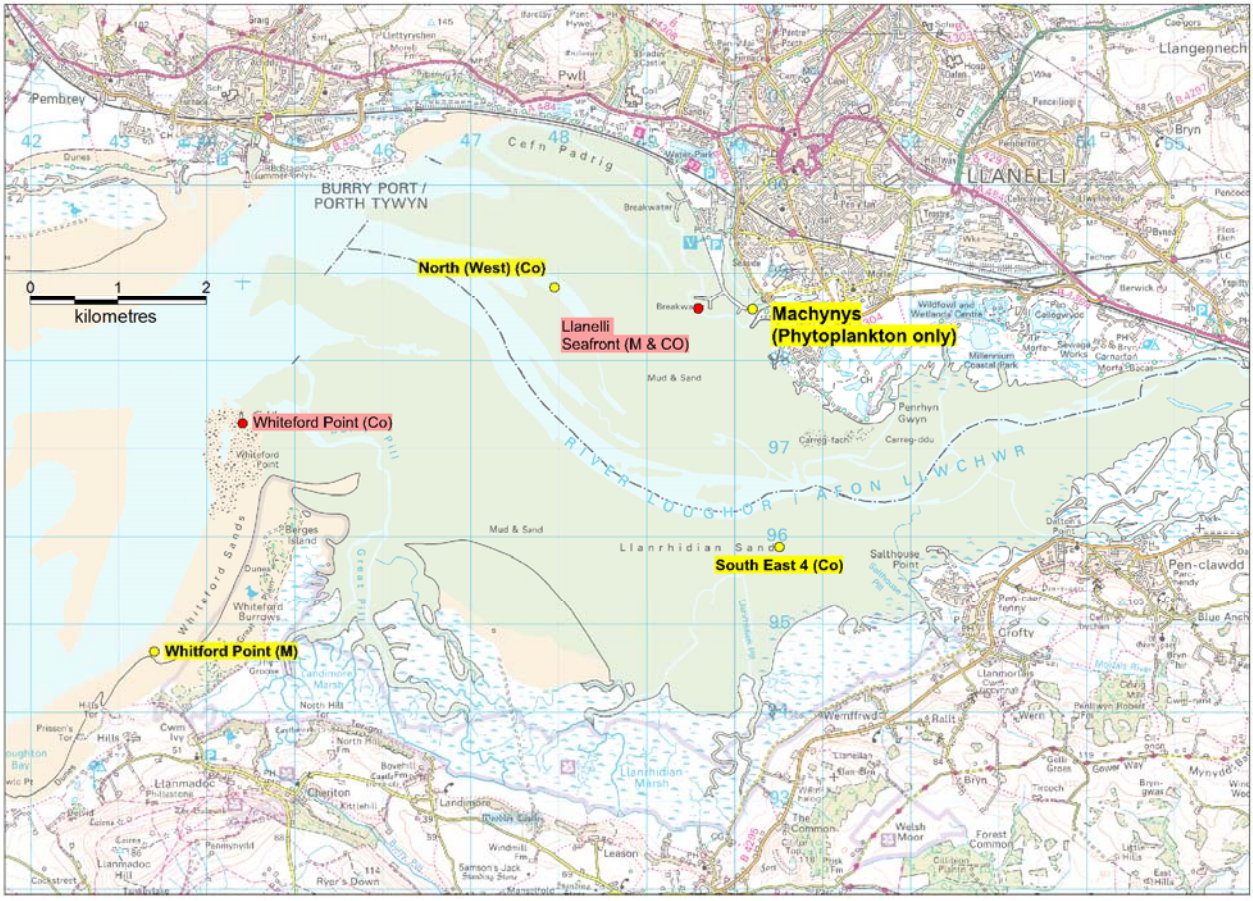
		Emsworth	Hambrook
***Pseudo-nitzschia* species**	**Detected**	0	4
	Above the trigger level	0	0
Dinophysiaceae	**Detected**	0	0
	Above the trigger level	0	0
Prorocentrum lima	**Detected**	0	0
	Above the trigger level	0	0
***Alexandrium* species**	**Detected**	0	1
	Above the trigger level	0	1

Comments

This production area is subject to the Sussex IFCA Native oyster emergency byelaw which closed large sections of the production area in 2015. Southern IFCA also have jurisdiction over part of Emsworth Channel.
Monitoring of Manila clams from Hambrook was implemented during the native oyster closed season.

4.7 City and Council of Swansea

Burry Inlet



Sample details

	Flesh	Water
Biotoxin monitoring point	Whitford Point (B038L) - Mussels South East 4 (B038L) - Cockles	Whitford Point (B038T) South East 4 (B038L)
Classification points only	Whitford Point (Co), Llanelli Seafront (M & Co)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Whitford Point (Mussels) - 12 South East 4 (Cockles) – 12	Whitford Point - 12 South East 4 - 12
No. of samples received	Whitford Point (Mussels) - 11 South East 4 (Cockles) – 12	Whitford Point – 11 South East 4 – 12
No. of insufficient/ unsuitable samples	Whitford Point - 1	0

Burry Inlet (cont.)

Flesh results

		Whitford Point	South East 4
ASP	**No. of samples tested**	10	12
	Toxins detected	0	0
	Above MPL	0	0
OA/DTX/PTXs	**No. of samples tested**	10	12
	Toxins detected	0	0
	Above MPL	0	0
AZAs	**No. of samples tested**	10	12
	Toxins detected	0	0
	Above MPL	0	0
YTX	**No. of samples tested**	10	12
	Toxins detected	0	0
	Above MPL	0	0
PSP	**No. of samples tested**	10	12
	Toxins detected	0	0
	Above MPL	0	0

Water results

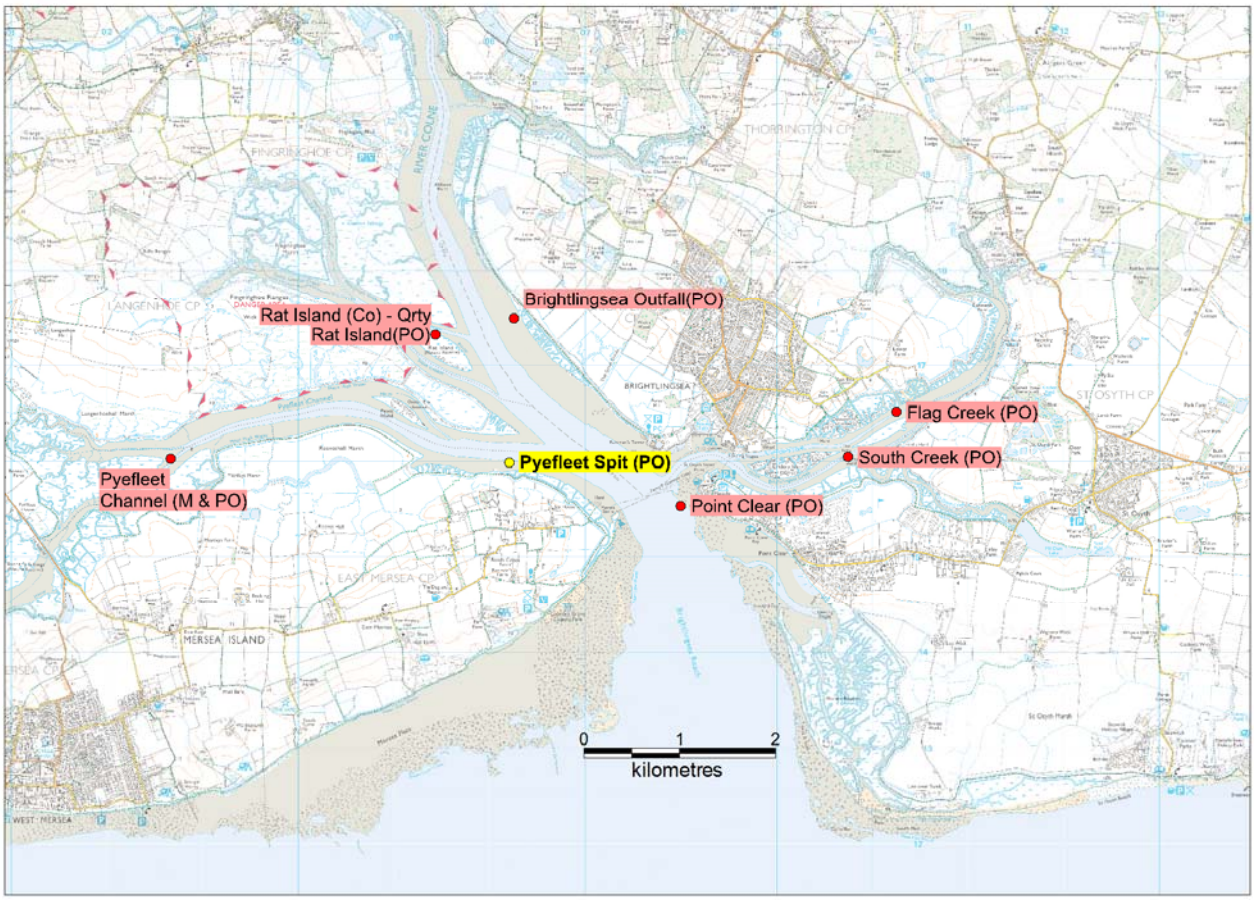
		Whitford Point	South East 4
***Pseudo-nitzschia* species**	**Detected**	4	4
	Above the trigger level	0	0
Dinophysiaceae	**Detected**	0	0
	Above the trigger level	0	0
Prorocentrum lima	**Detected**	0	0
	Above the trigger level	0	0
***Alexandrium* species**	**Detected**	0	0
	Above the trigger level	0	0

Comments

For results from North (West) & Machynys please see Carmarthenshire CC

4.8 Colchester BC

Colne



Sample details

	Flesh	Water
Biotoxin monitoring point	Pyefleet Spit (B012F) – Pacific Oysters	N/A
Classification points only	Pyefleet Channel (M) – Qrty, Pyefleet Channel (PO), Rat Island (Co) - Qrty, Rat Island (PO) Brightlingsea Outfall (PO), Point Clear (PO), South Creek (PO), Flag Creek (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	N/A

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	N/A
No. of samples received	12	N/A
No. of insufficient/ unsuitable samples	0	N/A

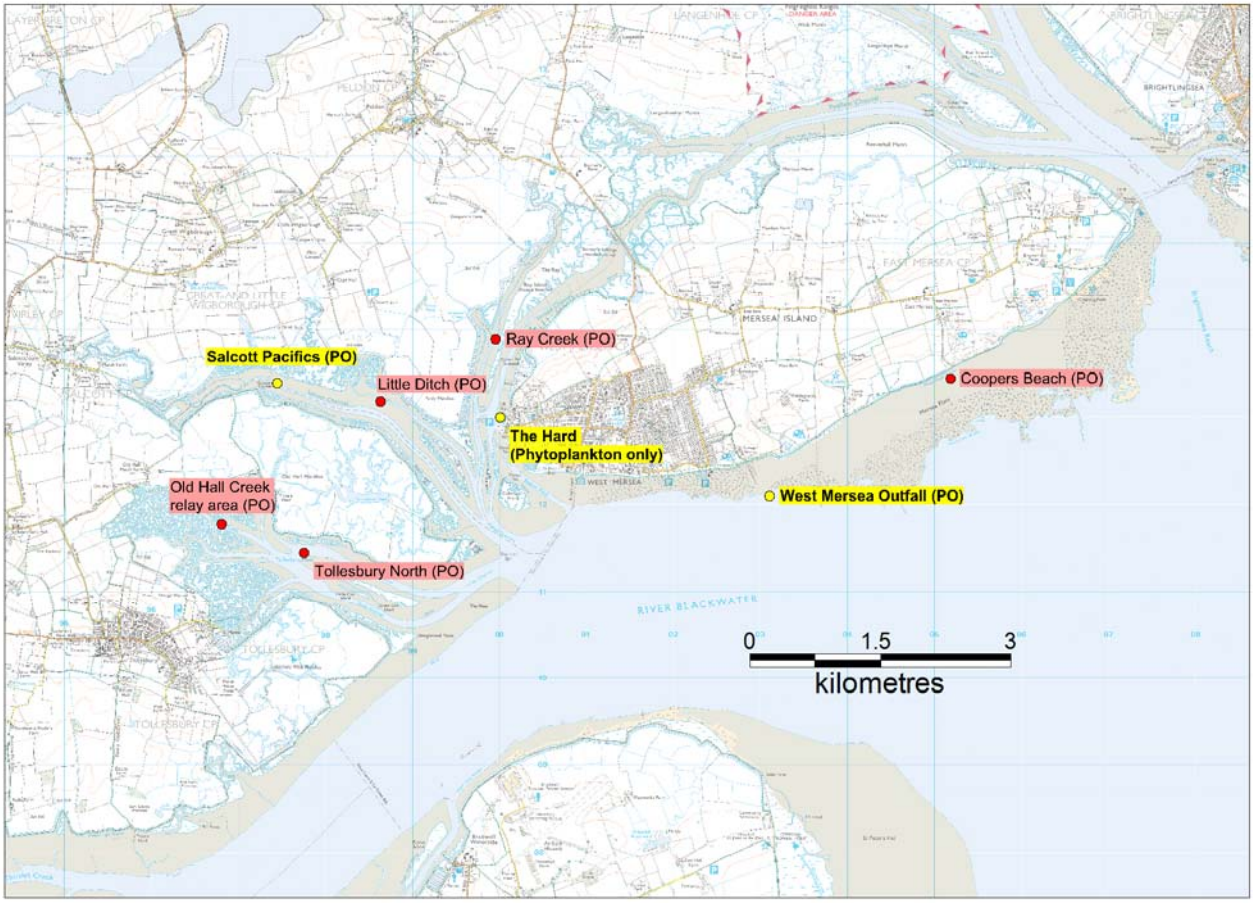
Colne (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Comments

West Mersea



Sample details

	Flesh	Water
Biotoxin monitoring point	Salcott Pacifics (B13AG) – Pacific oysters West Mersea Outfall (B13AA) – Pacific oysters	The Hard (B013Z)
Classification points only	Tollesbury North (PO), Old Hall Creek relay area (PO), Little Ditch (PO), Ray Creek (PO), Coopers Beach (PO)	
Alternate point used	Yes (see comments)	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Salcott Pacifics/Upper – 12 West Mersea Outfall - 12	18
No. of samples received	Salcott Pacifics/Upper – 12 West Mersea Outfall - 12	19
No. of insufficient/ unsuitable samples	0	0

West Mersea (cont.)

Flesh results

		Salcott Pacifics	West Mersea Outfall
ASP	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0
OA/DTX/PTXs	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0
AZAs	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0
YTX	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0
PSP	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0

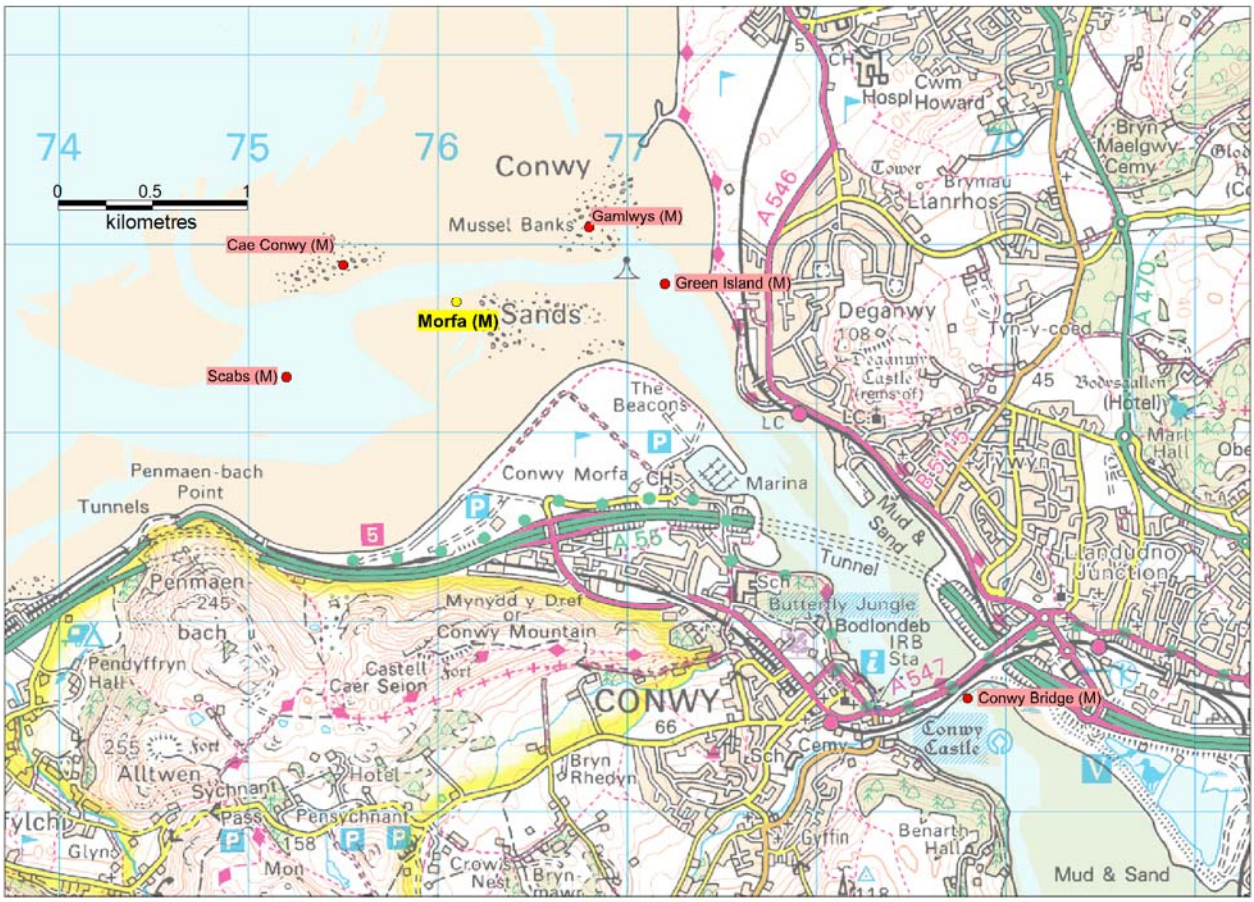
Water results

***Pseudo-nitzschia* species**	**Detected**	0
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.9 Conwy CBC

Conwy



Sample details

	Flesh	Water
Biotoxin monitoring point	Morfa (B044H) - Mussels	Morfa (B044H)
Classification points only	Scabs (M), Cae Conwy (M), Gamlwys (M), Green Island (M) Conwy Bridge (M)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	10	12
No. of samples received	10	12
No. of insufficient/ unsuitable samples	0	4

Conwy (cont.)

Flesh results

ASP	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0

Water results

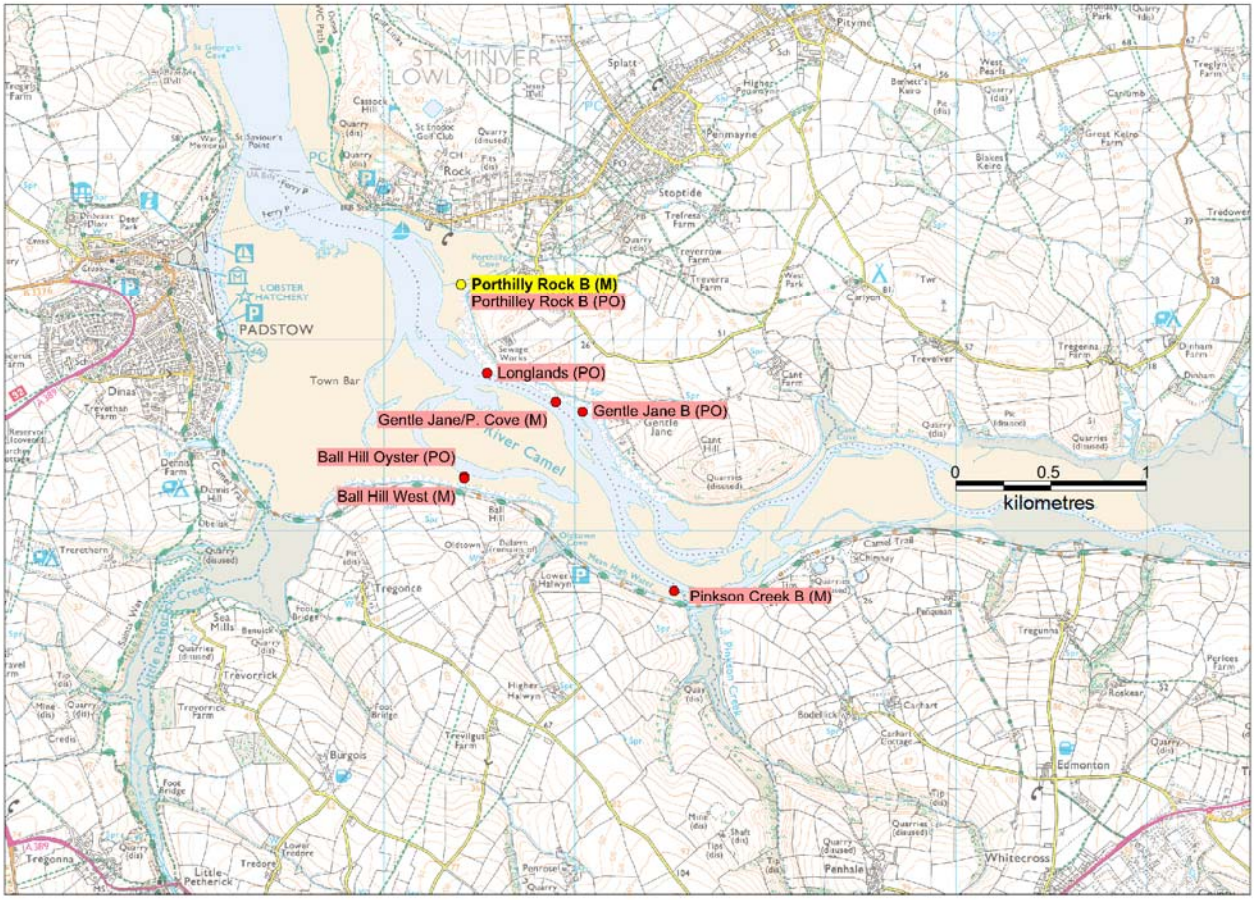
***Pseudo-nitzschia* species**	**Detected**	7
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

No harvesting occurred in this production area between April and August, therefore biotoxin monitoring also ceased during that time

4.10 Cornwall PHA

Camel



Sample details

	Flesh	Water
Biotoxin monitoring point	Porthilly Rock B (B35AE) - Mussels	Porthilly Rock B (B35AE)
Classification points only	Porthilley Rock B (PO), Longlands (PO), Gentle Jane/ P.Cove (M), Gentle Jane B (PO), Ball Hill Oysters (PO), Ball Hill West (M), Pinkson Creek B (M)	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	16	21
No. of insufficient/ unsuitable samples	0	2

Camel (Cont.)

Flesh results

ASP	**No. of samples tested**	16
	Toxins detected	2
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	16
	Toxins detected	5
	Above MPL	0
AZAs	**No. of samples tested**	16
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	16
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	16
	Toxins detected	0
	Above MPL	0

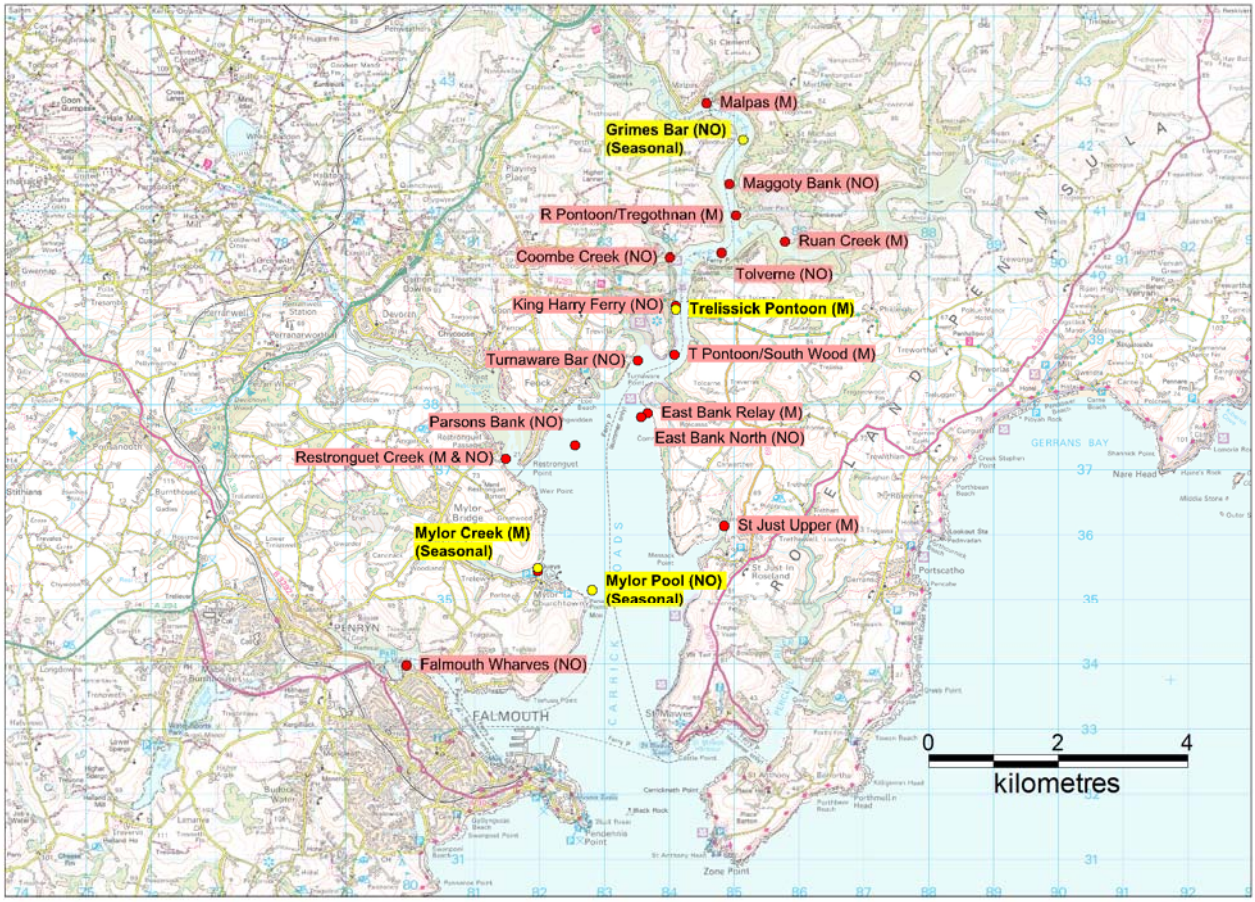
Water results

***Pseudo-nitzschia* species**	**Detected**	13
	Above the trigger level	0
Dinophysiaceae	**Detected**	4
	Above the trigger level	3
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	2
	Above the trigger level	2

Comments

Following a sanitary survey, the monitoring point at Porthilly Cove (B035X) was moved to Porthilly Rock B in August 2015

Fal



Sample details

	Flesh	Water
Biotoxin monitoring point	Mylor Pool (B33BG) – Native Oysters Mylor Creek (B33AN) - Mussels Trelissick Pontoon (B33BD) - Mussels Grimes Bar (B033E) – Native oysters	Mylor Pool (B33BG) Mylor Creek (B33AN) Trelissick Pontoon (B33BD) Grimes Bar (B033E)
Classification points only	Malpas (M), Maggoty Bank (NO), R Pontoon/Tregothnan (M), Ruan Creek (M), Tolverne (NO), Coombe Creek (NO), King Harry Ferry (NO), T – Pontoon/South Wood (M), Turnaware Bar (NO), East Bank Relay (M), East Bank North (NO), Parsons Bank (NO), Restronguet Creek (M & NO), Mylor Creek (NO), Falmouth Wharves (NO)	
Alternate point used	Yes	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Fal (cont.)

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Mylor Pool/ Mylor Creek – 18 Trelissick Pontoon– 18 Grimes Bar - 9	Mylor Pool/Mylor Creek – 18 Trelissick– 18 Grimes Bar - 9
No. of samples received	Mylor Pool/ Mylor Creek – 18 Trelissick Pontoon– 21 Grimes Bar - 8	Mylor Pool/Mylor Creek – 19 Trelissick – 22 Grimes Bar – 8
No. of insufficient/ unsuitable samples	Mylor Creek - 1	0

Flesh results

		Mylor Pool & Mylor Creek	Trelissick Pontoon	Grimes Bar
ASP	**No. of samples tested**	17	21	8
	Toxins detected	0	0	0
	Above MPL	0	0	0
OA/DTX/PTXs	**No. of samples tested**	17	21	8
	Toxins detected	4	2	0
	Above MPL	0	0	0
AZAs	**No. of samples tested**	17	21	8
	Toxins detected	0	0	0
	Above MPL	0	0	0
YTX	**No. of samples tested**	17	21	8
	Toxins detected	0	0	0
	Above MPL	0	0	0
PSP	**No. of samples tested**	17	21	8
	Toxins detected	0	0	0
	Above MPL	0	0	0

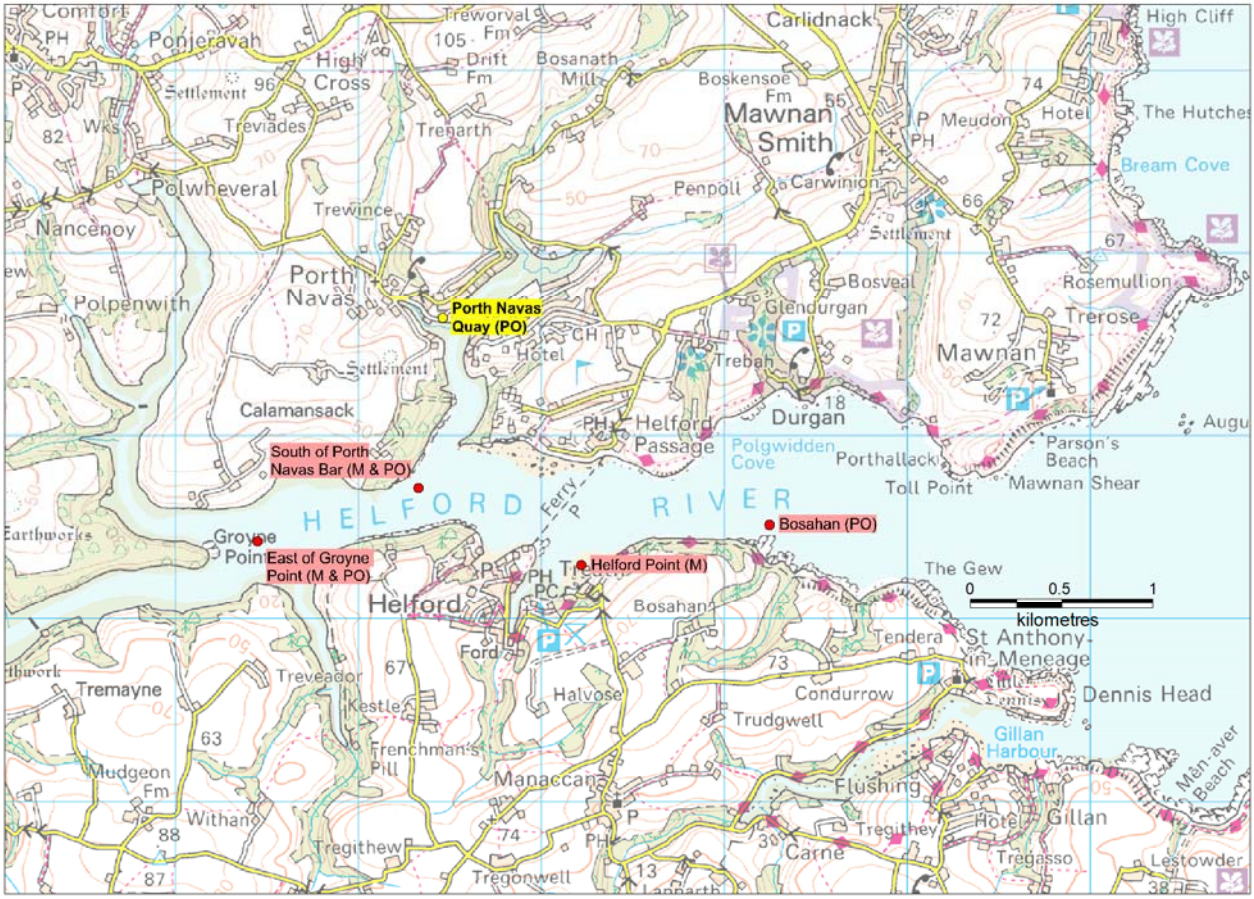
Water results

		Mylor Creek & Pool	Trelissick Pontoon	Grimes Bar
***Pseudo-nitzschia* species**	**Detected**	15	17	3
	Above the trigger level	0	0	0
Dinophysiaceae	**Detected**	4	4	0
	Above the trigger level	1	3	0
Prorocentrum lima	**Detected**	2	0	0
	Above the trigger level	0	0	0
***Alexandrium* species**	**Detected**	2	6	0
	Above the trigger level	2	6	0

Comments

Monitoring of Mylor Creek (M) takes place between April and September 2015. Monitoring of Mylor Pool takes place at all other times, to follow the harvesting seasons for native oysters in these areas.

Helford



Sample details

	Flesh	Water
Biotoxin monitoring point	Porth Navas Quay (B034W) – Pacific oysters	Porth Navas Quay (B034W)
Classification points only	Porth Navas Quay (M), East of Groyne Point (M & PO), Calamansack East (M), Helford Point (M), South of Porth Navas Bar (M & PO), Bosahan (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	18	18
No. of samples received	19	18
No. of insufficient/ unsuitable samples	0	2

Helford (cont.)

Flesh results

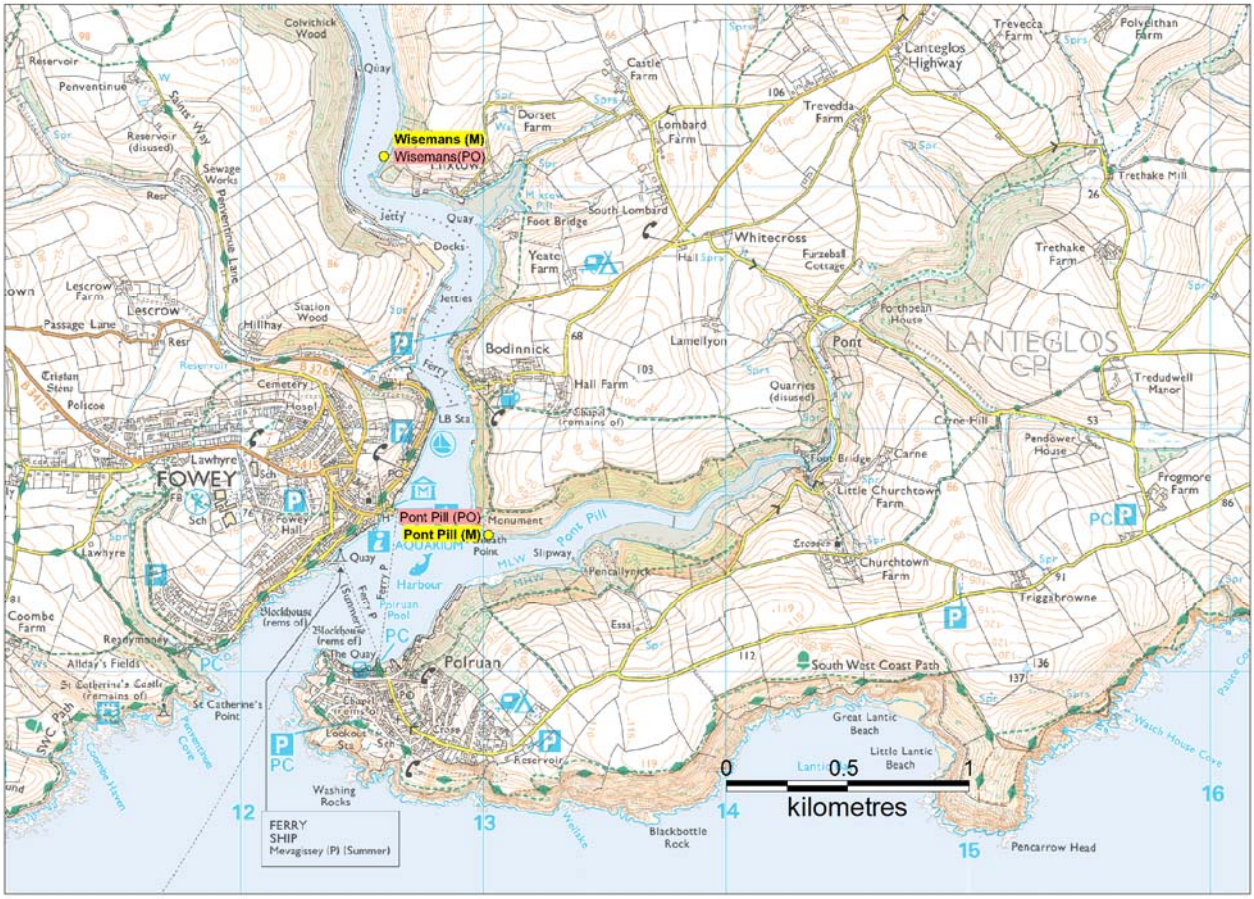
ASP	**No. of samples tested**	19
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	19
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	19
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	19
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	19
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	7
	Above the trigger level	0
Dinophysiaceae	**Detected**	3
	Above the trigger level	3
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	4
	Above the trigger level	4

Comments

Fowey



Sample details

	Flesh	Water
Biotoxin monitoring point	Wisemans (B070Z) - Mussels Pont Pill (B70AB) - Mussels	Wisemans (B070Z) Pont Pill (B70AB)
Classification points only	Wisemans (PO), Pont Pill (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Pont Pill – 18 Wisemans – 18	Pont Pill – 18 Wisemans – 18
No. of samples received	Pont Pill – 18 Wisemans – 15	Pont Pill – 18 Wisemans – 18
No. of insufficient/ unsuitable samples	0	0

Fowey (cont.)

Flesh results

		Pont Pill	Wisemans
ASP	**No. of samples tested**	18	15
	Toxins detected	0	0
	Above MPL	0	0
OA/DTX/PTXs	**No. of samples tested**	18	15
	Toxins detected	9	5
	Above MPL	3	0
AZAs	**No. of samples tested**	18	15
	Toxins detected	1	1
	Above MPL	0	0
YTX	**No. of samples tested**	18	15
	Toxins detected	0	0
	Above MPL	0	0
PSP	**No. of samples tested**	18	15
	Toxins detected	0	0
	Above MPL	0	0

Water results

		Pont Pill	Wisemans
***Pseudo-nitzschia* species**	**Detected**	17	12
	Above the trigger level	1	1
Dinophysiaceae	**Detected**	6	3
	Above the trigger level	3	1
Prorocentrum lima	**Detected**	0	0
	Above the trigger level	0	0
***Alexandrium* species**	**Detected**	4	2
	Above the trigger level	4	2

Comments

Lantivet Bay

Sample details

	Flesh	Water
Biotoxin monitoring point	Sandheap Point (B70AH) – Razors Sandheap Point (B70AI) - Mussels	Percuil (B033R)
Classification points only	As above	
Alternate point used	Yes (see comments)	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st April to 31st December 2015	
No. of samples expected	14	14
No. of samples received	15	18
No. of insufficient/ unsuitable samples	2	0

Lantivet Bay (cont.)

Flesh results

ASP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	13
	Toxins detected	11
	Above MPL	8
AZAs	**No. of samples tested**	13
	Toxins detected	5
	Above MPL	0
YTX	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0

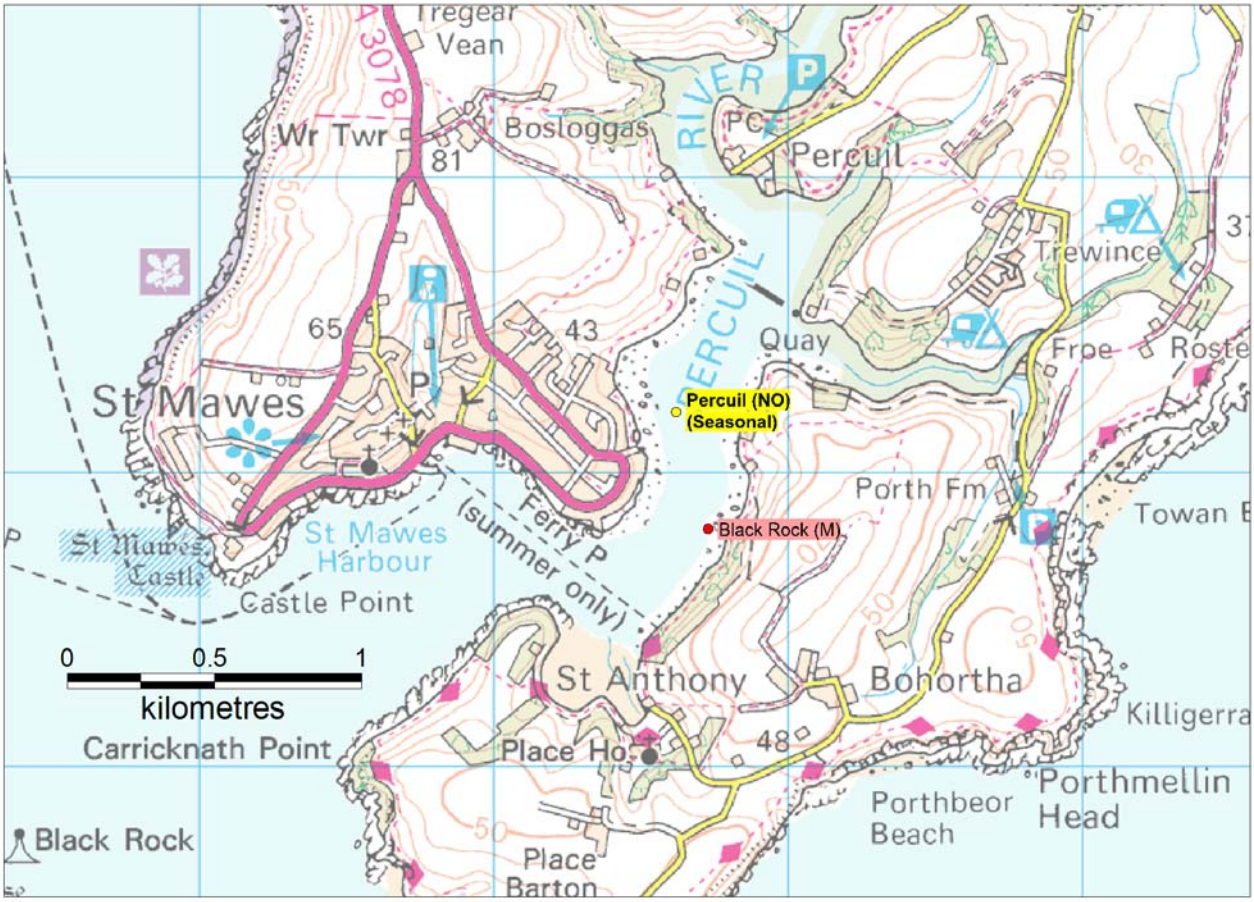
Water results

***Pseudo-nitzschia* species**	**Detected**	16
	Above the trigger level	1
Dinophysiaceae	**Detected**	4
	Above the trigger level	4
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	1
	Above the trigger level	1

Comments

Due to issues with obtaining Razors for the purpose of toxin monitoring, it was agreed with the FSA and the LA that mussels would be used as an alternative monitoring species for this sampling point. This was implemented in June 2015.

Percuil



Sample details

	Flesh	Water
Biotoxin monitoring point	Percuil (B033R) – Native oysters	Percuil (B033R)
Classification points only	Black Rock (M)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	8	9
No. of samples received	7	5
No. of insufficient/ unsuitable samples	0	0

Percuil (cont.)

Flesh results

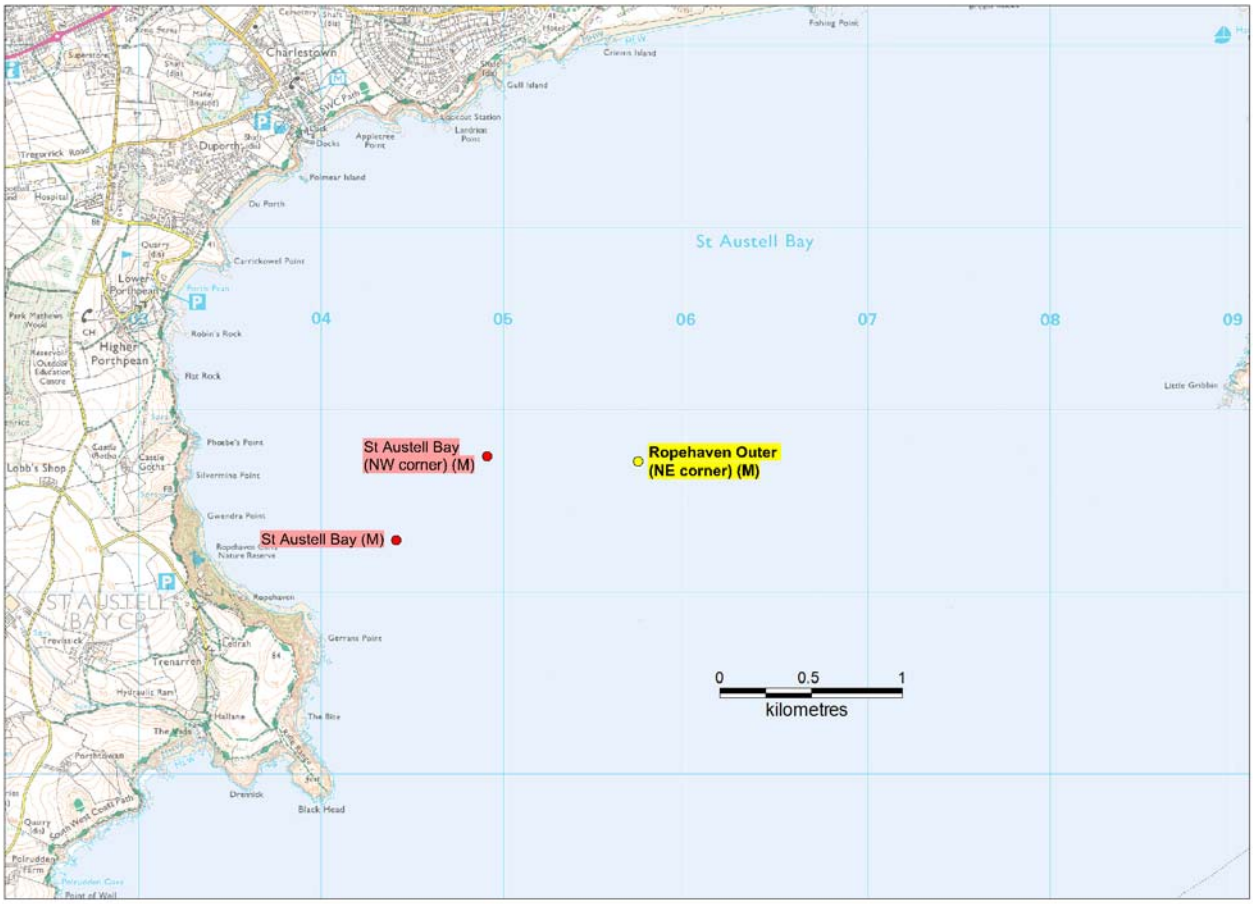
ASP	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	3
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

St. Austell Bay



Sample details

	Flesh	Water
Biotoxin monitoring point	Ropehaven Outer (B70AE) - Mussels	Ropehaven Outer (B70AE)
Classification points only	St. Austell Bay (NW Corner) (M), St. Austell Bay (M)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	28	29
No. of insufficient/ unsuitable samples	0	0

St. Austell Bay (cont.)

Flesh results

ASP	**No. of samples tested**	28
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	28
	Toxins detected	21
	Above MPL	16
AZAs	**No. of samples tested**	28
	Toxins detected	14
	Above MPL	3
YTX	**No. of samples tested**	28
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	28
	Toxins detected	0
	Above MPL	0

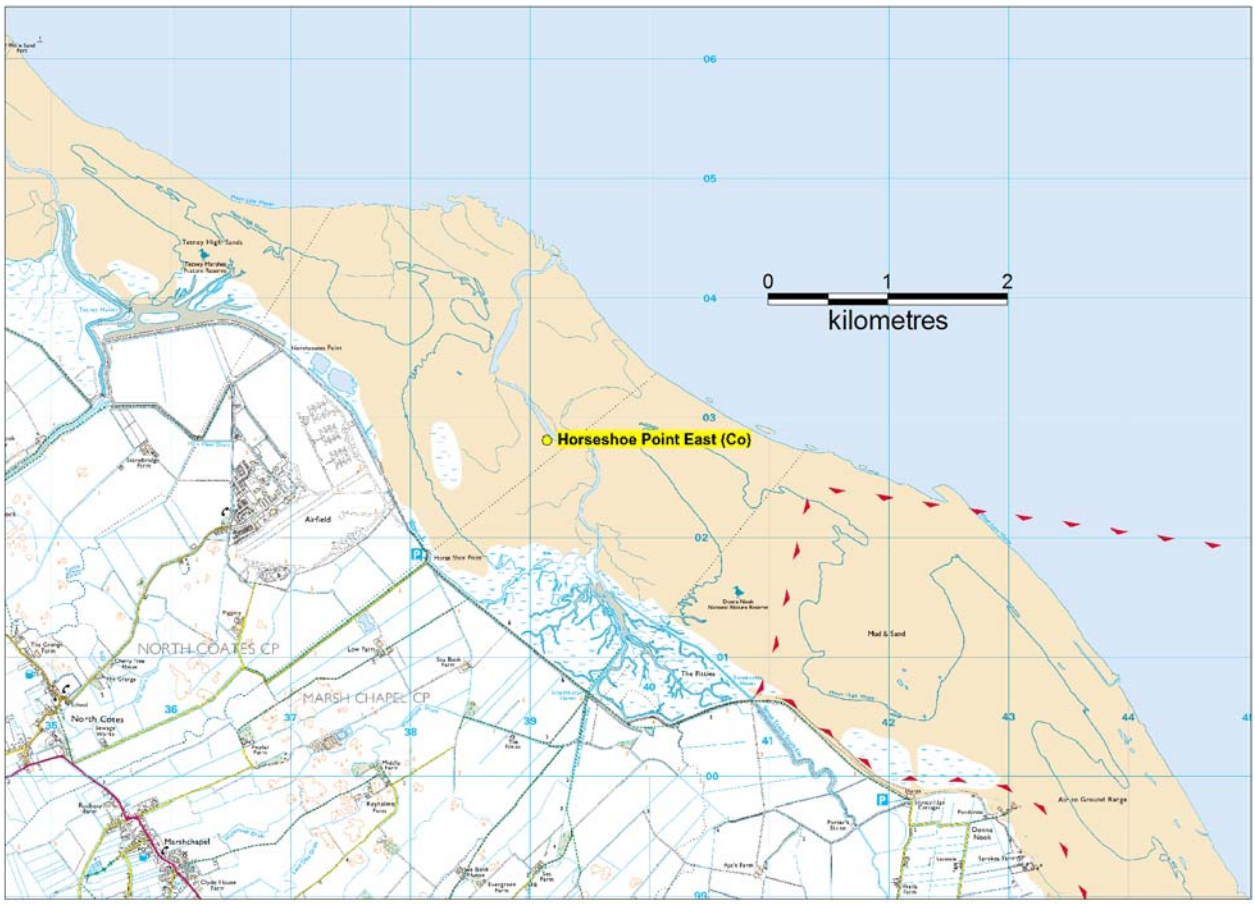
Water results

***Pseudo-nitzschia* species**	**Detected**	29
	Above the trigger level	1
Dinophysiaceae	**Detected**	9
	Above the trigger level	8
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	5
	Above the trigger level	5

Comments

4.11 East Lindsey

Humber



Sample details

	Flesh	Water
Biotoxin monitoring point	Horseshoe Point East (B067J) – Cockles	Horseshoe Point East (B067J)
Classification points only	As above	
Alternate point used		
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st March to 31st July 2015	
No. of samples expected	9	5
No. of samples received	8	6
No. of insufficient/ unsuitable samples	0	0

Humber (cont.)

Flesh results

ASP	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	8
	Toxins detected	0
	Above MPL	0

Water results

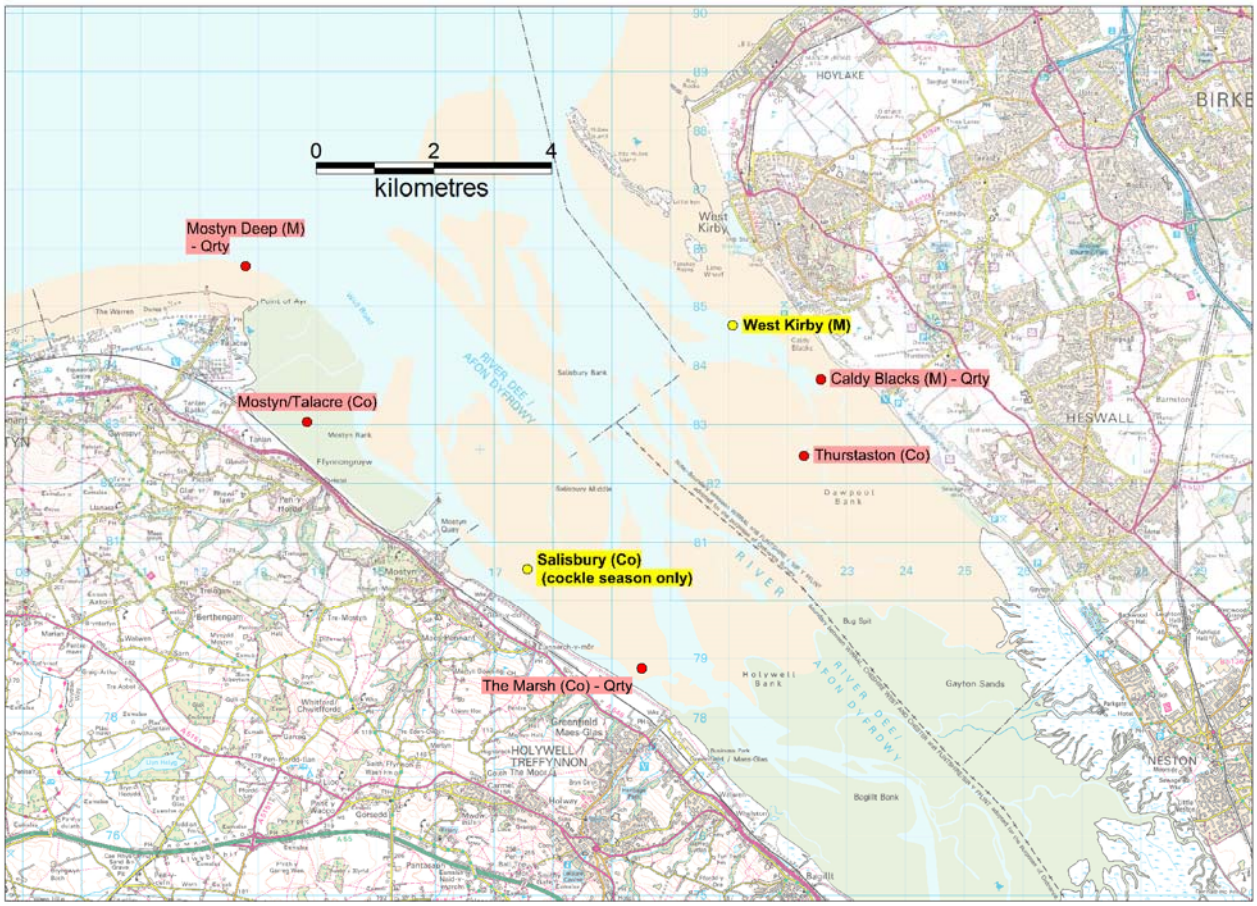
***Pseudo-nitzschia* species**	**Detected**	2
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Monitoring in this production area commenced in March, but ceased in July due to unresolved access issues for harvesters of the site. No further harvesting and monitoring occurred during the reported period.

4.12 Flintshire CC

Dee



Sample details

	Flesh	Water
Biotoxin monitoring point	Salisbury (B45AB) - Cockles	Salisbury (B45AB)
Classification points only	West Kirby (Co), Caldy Blacks (M) - Qrty, Thurstaston (Co), Mostyn/Talacre (Co), The Marshes (Co)- Qrty, Mostyn Deep (M) - Qrty	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st June to 31st December 2015	
No. of samples expected	4	5
No. of samples received	4	5
No. of insufficient/ unsuitable samples	0	0

Dee (cont.)

Flesh results

ASP	**No. of samples tested**	4
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	4
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	4
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	4
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	4
	Toxins detected	0
	Above MPL	0

Water results

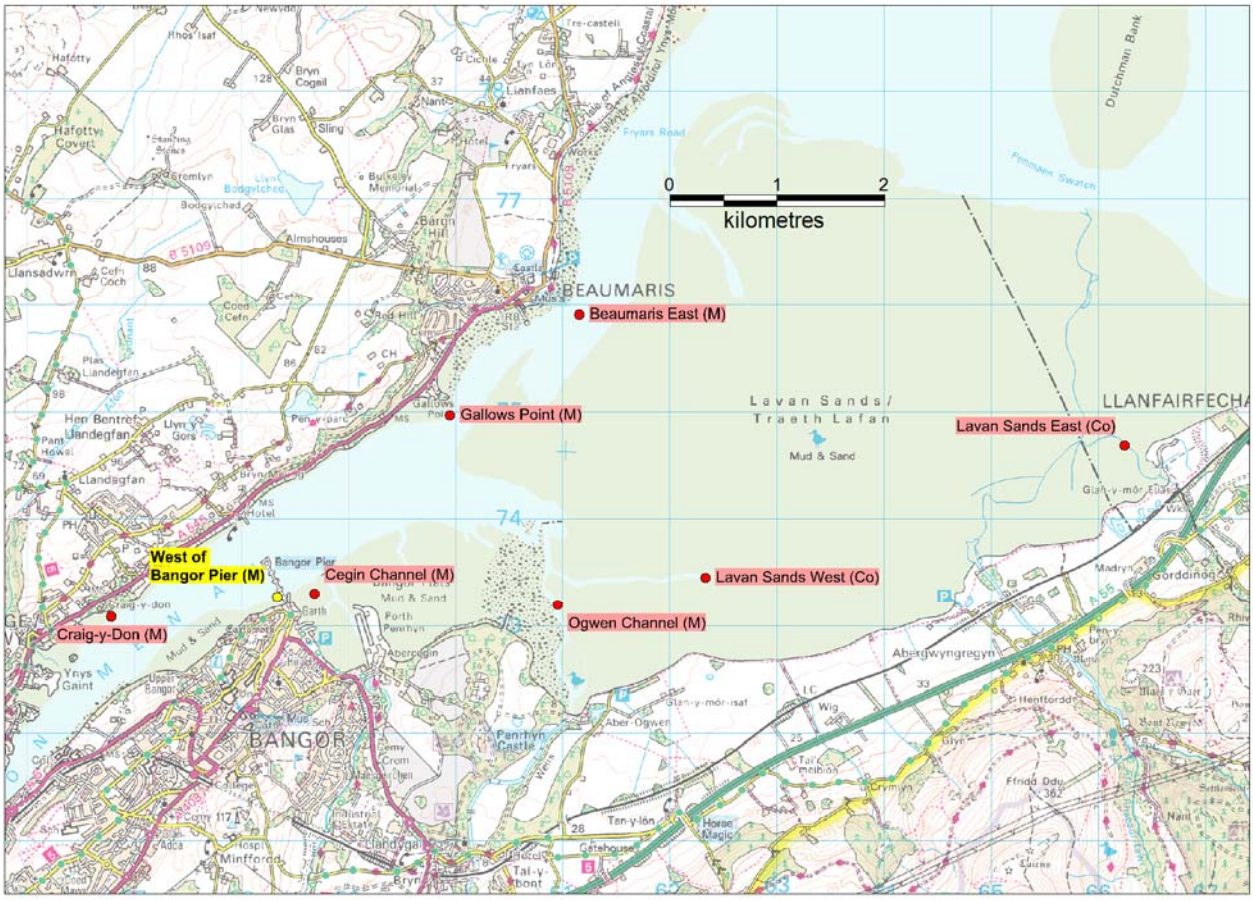
***Pseudo-nitzschia* species**	**Detected**	3
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Regulating order prevents cockle harvesting within the Dee estuary from January to June in any given year. Monitoring was initiated to coincide with the reopening of the area in June 2015.
For results from West Kirby please see Wirral BC

4.13 Gwynedd CC

Menai Strait – East



Sample details

	Flesh	Water
Biotoxin monitoring point	West of Bangor Pier Bangor (B055S) - Mussels	West of Bangor Pier Bangor (B055S)
Classification points	Beaumaris East (M), Gallows Point (M), Craig-y-Don (M), Cegin Channel (M), Ogwen Channel (M), Lavan Sands West (Co), Lavan Sands East (Co)	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	18	18
No. of samples received	17	17
No. of insufficient/ unsuitable samples	0	0

Menai Strait – East (cont.)

Flesh results

ASP	**No. of samples tested**	17
	Toxins detected	1
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	17
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	17
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	17
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	17
	Toxins detected	0
	Above MPL	0

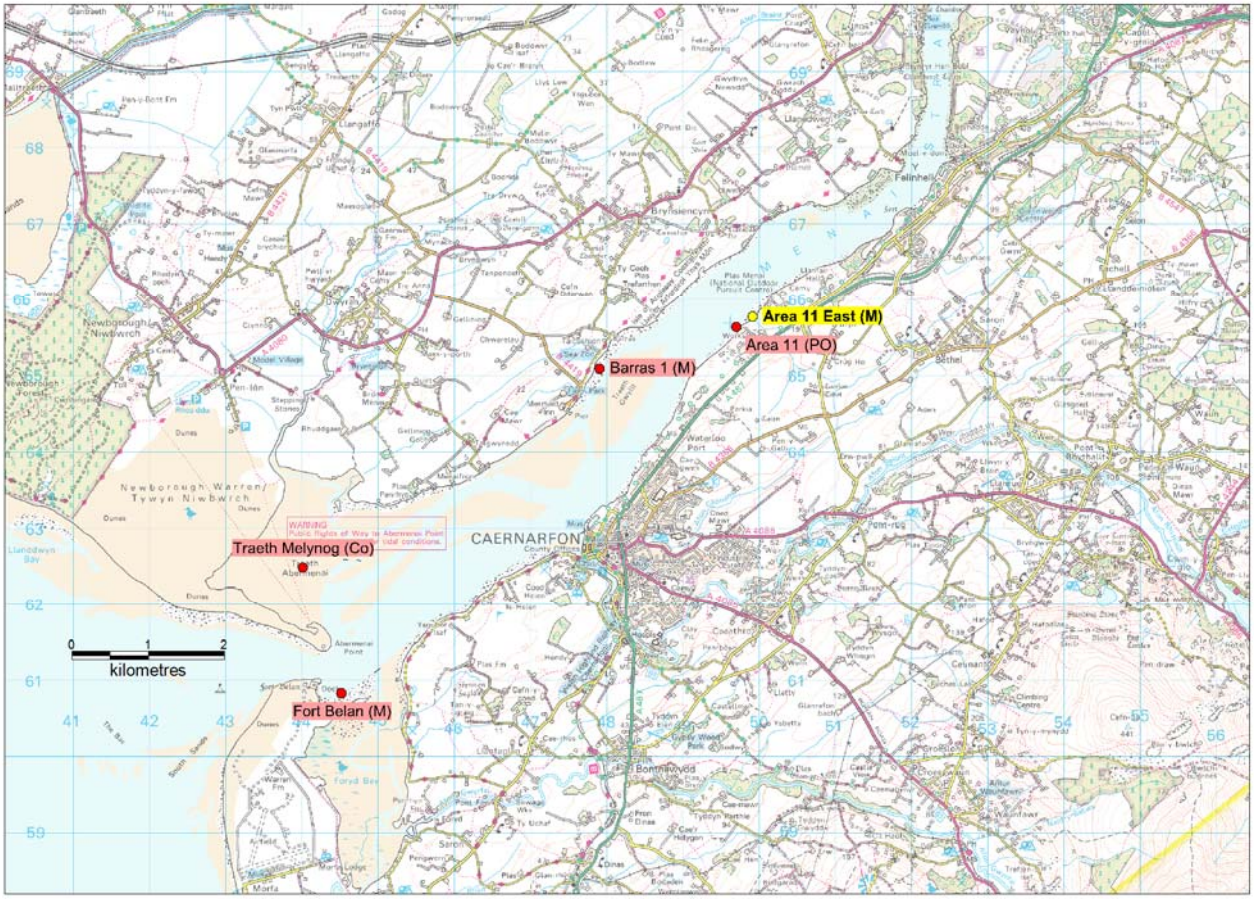
Water results

***Pseudo-nitzschia* species**	**Detected**	9
	Above the trigger level	0
Dinophysiaceae	**Detected**	1
	Above the trigger level	1
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Following a sanitary survey, new RMPs were introduced from February 2015. B055N Bangor was replaced with B055S West of Bangor Pier.

Menai Strait – West



Sample details

	Flesh	Water
Biotoxin monitoring point	Area 11 East (B042O) - Mussels	Area 11 East (B042O)
Classification points only	Area 11 (PO), Barras 1 (M), Traeth Melynog (Co), Fort Belan (M)	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	13	17
No. of insufficient/ unsuitable samples	1	0

Menai Strait – West (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	9
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Following a sanitary survey, new RMPs were introduced from February 2015. B042N Llanfairisgaer was replaced with B042O Area 11 East.

4.14 Kings Lynn and West Norfolk BC

Brancaster

Sample details

	Flesh	Water
Biotoxin monitoring point	Loose – J (B005F) Mussels	Loose – J (B005F)
Classification points only	Nudds (M), Large (M), Loose R (PO), Southerland (M & PO), Thornham Oysters (Meales Creek) (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	18
No. of insufficient/ unsuitable samples	0	0

Brancaster (cont.)

Flesh results

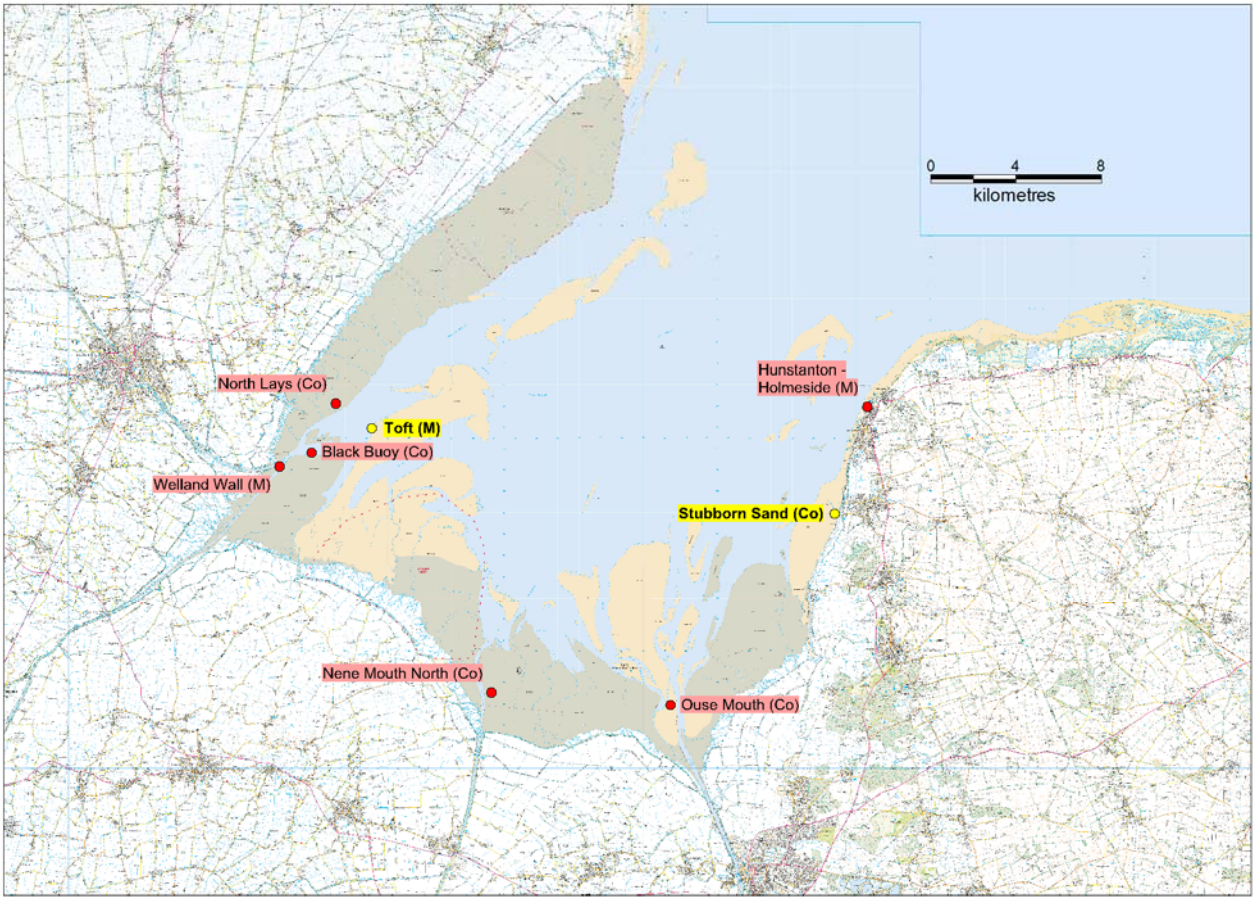
ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	7
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

The Wash – Kings Lynn



Sample details

	Flesh	Water
Biotoxin monitoring point	Stubborn Sand (B04AP) - Cockles	Stubborn Sand (B04AP)
Classification points only	North Lays (Co), Black Buoy (Co), Welland Wall (M), Nene Mouth (Co), Ouse Mouth (Co) Hunstanton – Holmeside (M)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	No

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	13	12
No. of samples received	13	10
No. of insufficient/ unsuitable samples	0	1

The Wash - Kings Lynn (cont.)

Flesh results

ASP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	4
	Above the trigger level	0
Dinophysiaceae	**Detected**	2
	Above the trigger level	2
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

For results from Toft please see Boston BC

4.15 Lancaster CC

Morecambe Bay - East

Sample details

	Flesh	Water
Biotoxin monitoring point	Bare Ayre (B047A) - Mussels	Bare Ayre (B047A)
Classification points only	As above	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	11	19
No. of insufficient/ unsuitable samples	0	2

Morecambe Bay – East (cont.)

Flesh results

ASP	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0

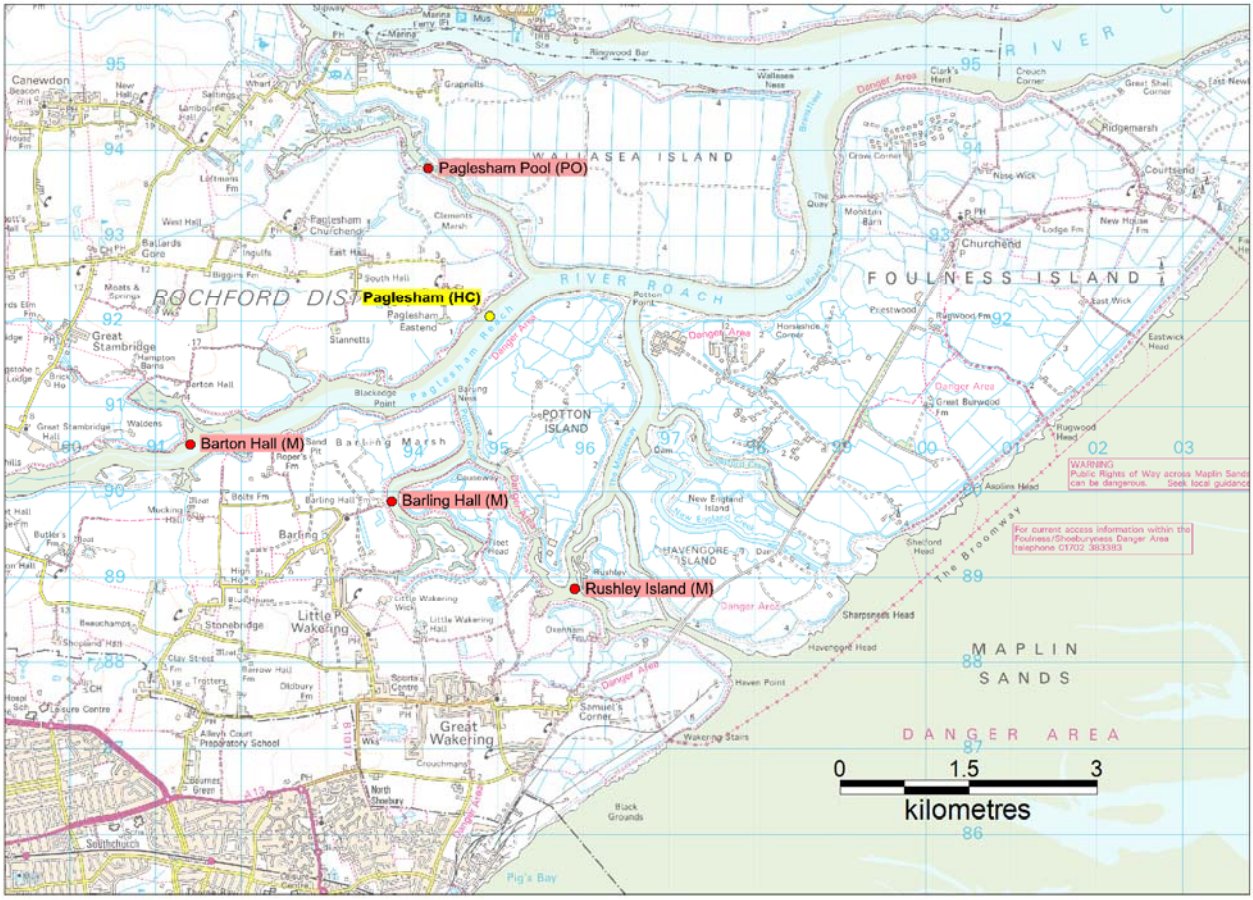
Water results

***Pseudo-nitzschia* species**	**Detected**	6
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.16 London PHA

Roach



Sample details

	Flesh	Water
Biotoxin monitoring point	Paglesham (B73AF) – Hard clams	Paglesham (B73AF)
Classification points only	Paglesham Pool (PO), Barton Hall (M), Barling Hall (M), Rushey Island (M)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	19
No. of insufficient/ unsuitable samples	0	1

Roach (cont.)

Flesh results

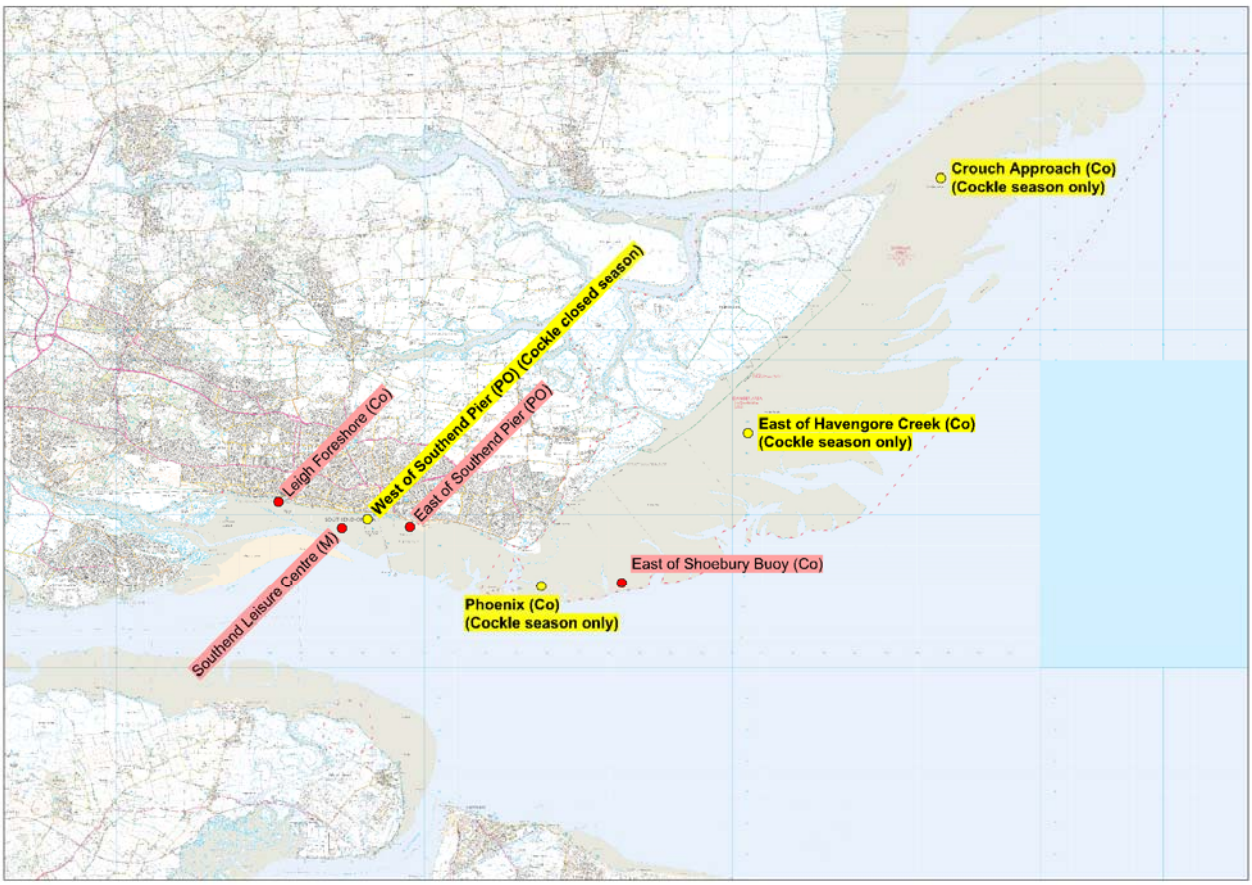
ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	1
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

The Thames



Sample details

	Flesh	Water
Biotoxin monitoring point	Crouch Approach (B16CM) - Cockles East of Havengore Creek (B16CN) - Cockles Phoenix (B16BR) – Cockles West of Southend Pier (B16BS) – Pacific oysters	Crouch Approach (B16CM) East of Havengore Creek (B16CN) Phoenix (B16BR) West of Southend Pier (B16BS)
Classification points only		
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Crouch Approach - 4 East of Havengore Creek – 4 Phoenix – 4 West of Southend Pier - 8	Crouch Approach - 8 East of Havengore Creek – 8 Phoenix – 8 West of Southend Pier - 10
No. of samples received	Crouch Approach - 4 East of Havengore Creek – 4 Phoenix – 4 West of Southend Pier - 8	Crouch Approach – 8 East of Havengore Creek – 8 Phoenix – 9 West of Southend Pier – 10
No. of insufficient/ unsuitable samples	East of Havengore Creek – 4 Phoenix – 4	3 (see comments)

The Thames (cont.)

Flesh results

		Crouch Approach	East of Havengore Creek	Phoenix	West of Southend Pier
ASP	**No. of samples tested**	4	4	4	8
	Toxins detected	0	0	0	0
	Above MPL	0	0	0	0
OA/DTX/PTXs	**No. of samples tested**	4	4	4	8
	Toxins detected	0	0	0	0
	Above MPL	0	0	0	0
AZAs	**No. of samples tested**	4	4	4	8
	Toxins detected	0	0	0	0
	Above MPL	0	0	0	0
YTX	**No. of samples tested**	4	4	4	8
	Toxins detected	0	0	0	0
	Above MPL	0	0	0	0
PSP	**No. of samples tested**	4	4	4	8
	Toxins detected	0	0	0	0
	Above MPL	0	0	0	0

Water results

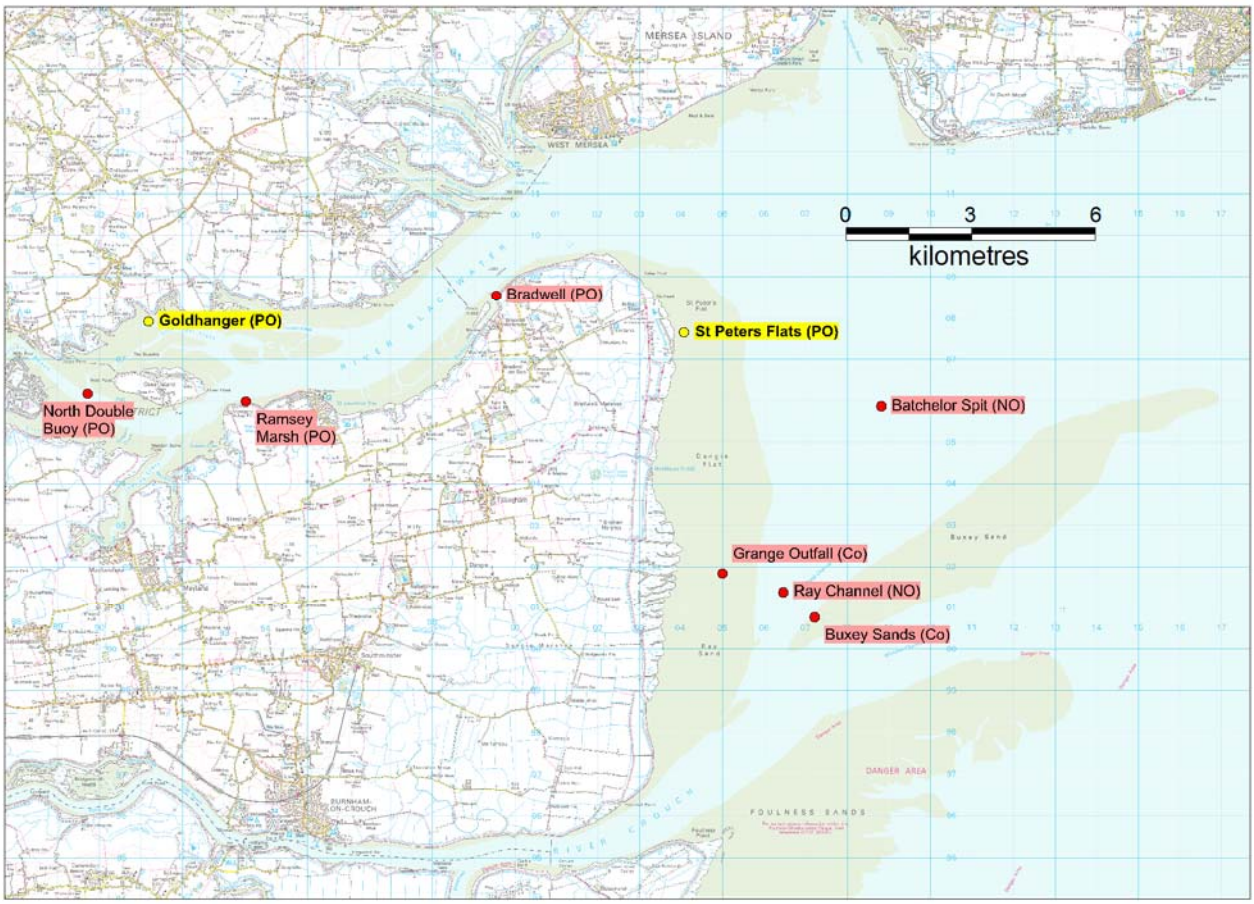
		Crouch Approach	East of Havengore Creek	Phoenix	West of Southend Pier
***Pseudo-nitzschia* species**	**Detected**	2	0	1	1
	Above the trigger level	0	0	0	0
Dinophysiaceae	**Detected**	0	0	0	0
	Above the trigger level	0	0	0	0
Prorocentrum lima	**Detected**	0	0	0	0
	Above the trigger level	0	0	0	0
***Alexandrium* species**	**Detected**	1	0	0	0
	Above the trigger level	1	0	0	0

Comments

The Thames Regulating order prevents cockle harvesting between November and May.
During the cockle closed season, monitoring (Pacific oysters) is undertaken at B16BS West of Southend Pier.
Three water samples were submitted from old cockle RMPs in April, these samples were not analysed.

4.17 Maldon DC

Blackwater



Sample details

	Flesh	Water
Biotoxin monitoring point	Goldhanger (B014V) – Pacific oysters St. Peters Flats (B14AD) – Pacific oysters	Goldhanger (B014V) St. Peters Flats (B14AD)
Classification points only	North Double Buoy (PO), Ramsey Marsh (PO), Bradwell (PO), Batchelor Spit (NO) Ray Channel (NO), Buxey Sands (Co), Grange Outfall (Co)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Goldhanger – 12 St. Peters Flats - 12	Goldhanger – 18 St. Peters Flats – 18
No. of samples received	Goldhanger – 12 St. Peters Flats - 12	Goldhanger – 19 St. Peters Flats – 19
No. of insufficient/ unsuitable samples	0	St. Peters Flats – 1

Blackwater (cont.)

Flesh results

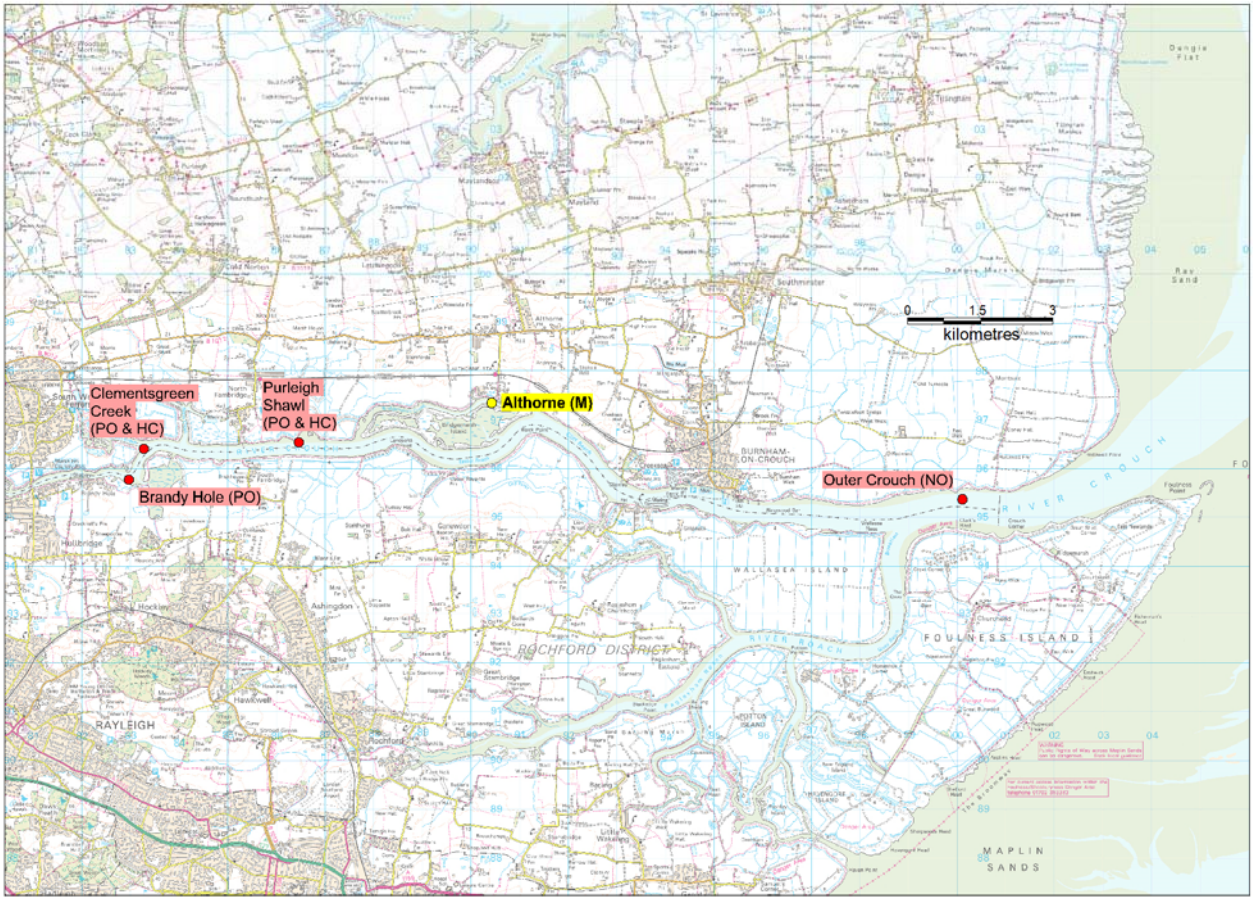
		Goldhanger	St. Peters Flats
ASP	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0
OA/DTX/PTXs	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0
AZAs	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0
YTX	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0
PSP	**No. of samples tested**	12	12
	Toxins detected	0	0
	Above MPL	0	0

Water results

		Goldhanger	St. Peters Flats
***Pseudo-nitzschia* species**	**Detected**	0	2
	Above the trigger level	0	0
Dinophysiaceae	**Detected**	0	1
	Above the trigger level	0	1
Prorocentrum lima	**Detected**	0	0
	Above the trigger level	0	0
***Alexandrium* species**	**Detected**	0	0
	Above the trigger level	0	0

Comments

Crouch



Sample details

	Flesh	Water
Biotoxin monitoring point	Althorne (B015Y) – Mussels	Althorne (B015Y) – Mussels
Classification points only	Clementsgreen Creek (PO & HC), Brandy Hole (PO), Purleigh Shawl (PO & HC), Outer Crouch (NO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	21
No. of insufficient/ unsuitable samples	0	2

Crouch (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

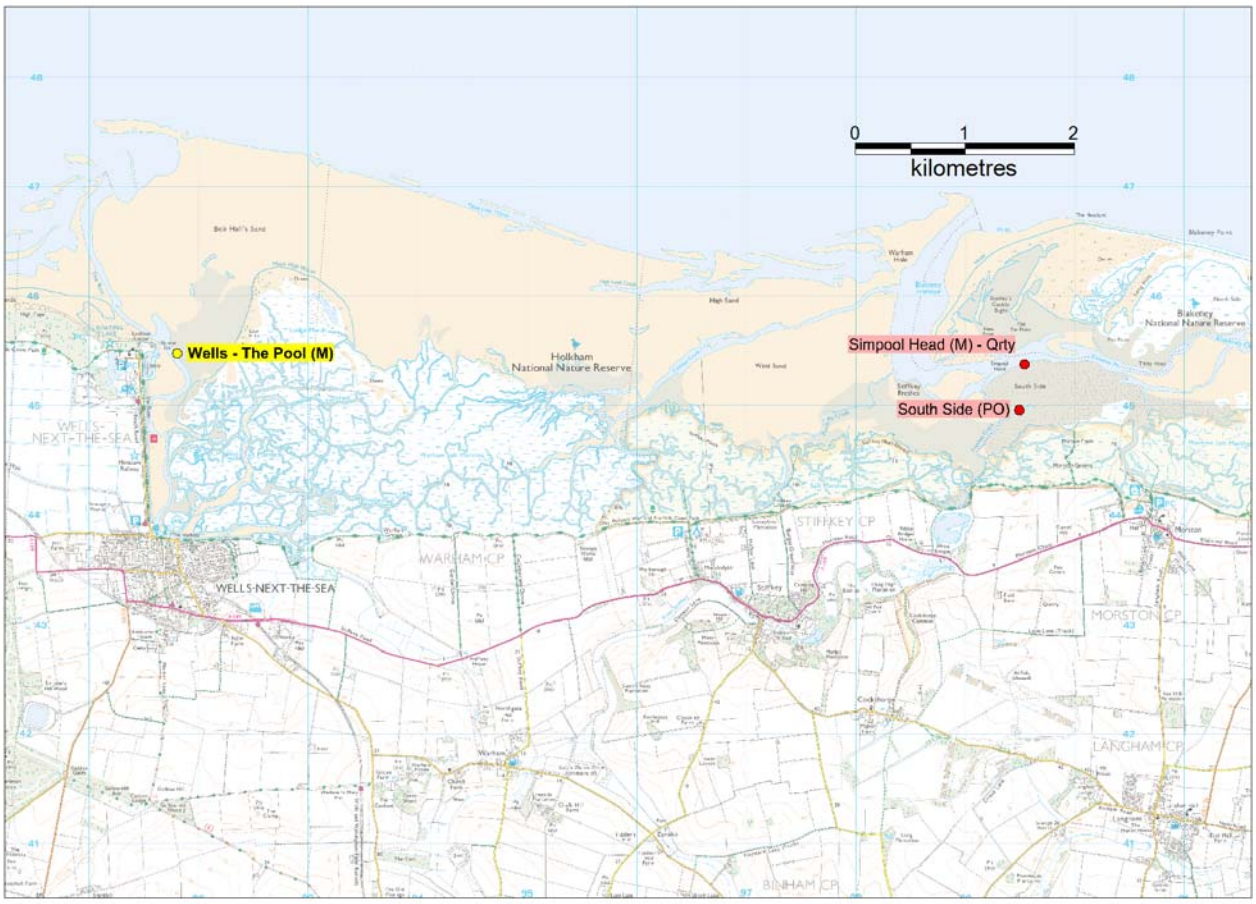
Water results

***Pseudo-nitzschia* species**	**Detected**	0
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.18 North Norfolk DC

Blakeney



Sample details

	Flesh	Water
Biotoxin monitoring point	Wells - The Pool (B006R) - Mussels	Wells - The Pool (B006R)
Classification points only	Simpool Head (M) - Qrty, South Side (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	11	15
No. of samples received	12	15
No. of insufficient/ unsuitable samples	0	0

Blakeney (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	1
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	9
	Above the trigger level	1
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Biotoxin monitoring ceased in July and August due to seasonal closure of the fishery.

4.19 Northumberland CC

Holy Island – Ross Links

Sample details

	Flesh	Water
Biotoxin monitoring point	Ross Link (B001M) – Pacific oysters	Ross Link (B001M)
Classification points only	As above	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	18	18
No. of samples received	21	22
No. of insufficient/ unsuitable samples	0	2

Holy Island – Ross Links (cont.)

Flesh results

ASP	**No. of samples tested**	21
	Toxins detected	1
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	21
	Toxins detected	5
	Above MPL	0
AZAs	**No. of samples tested**	21
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	21
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	21
	Toxins detected	0
	Above MPL	0

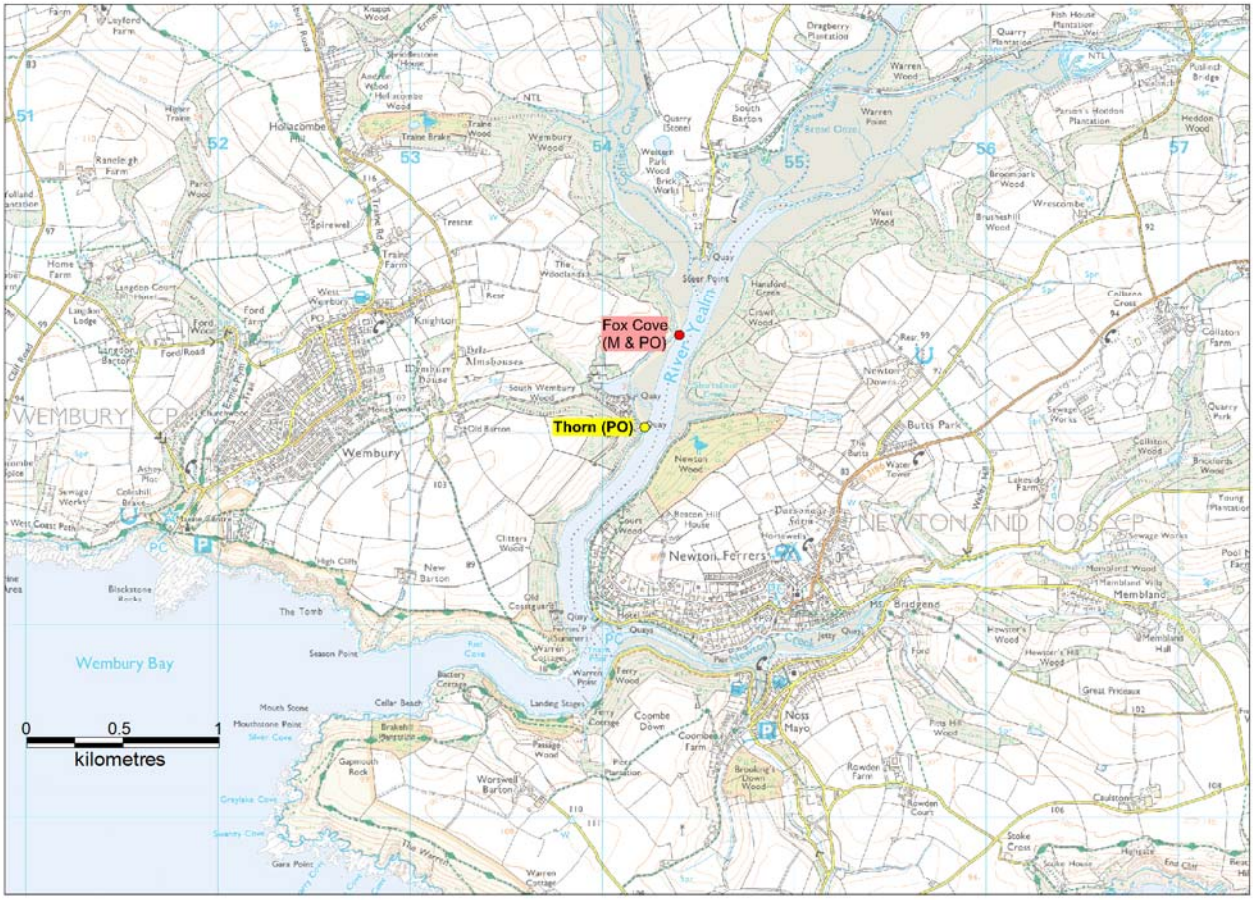
Water results

***Pseudo-nitzschia* species**	**Detected**	15
	Above the trigger level	0
Dinophysiaceae	**Detected**	5
	Above the trigger level	4
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.20 Plymouth PHA

Yealm



Sample details

	Flesh	Water
Biotoxin monitoring point	Thorn (B031J) – Pacific oysters	Thorn (B031J)
Classification points only	Fox Cove (M & PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	18	18
No. of samples received	23	24
No. of insufficient/ unsuitable samples	0	2

Yealm (cont.)

Flesh results

ASP	**No. of samples tested**	23
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	23
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	23
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	23
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	23
	Toxins detected	0
	Above MPL	0

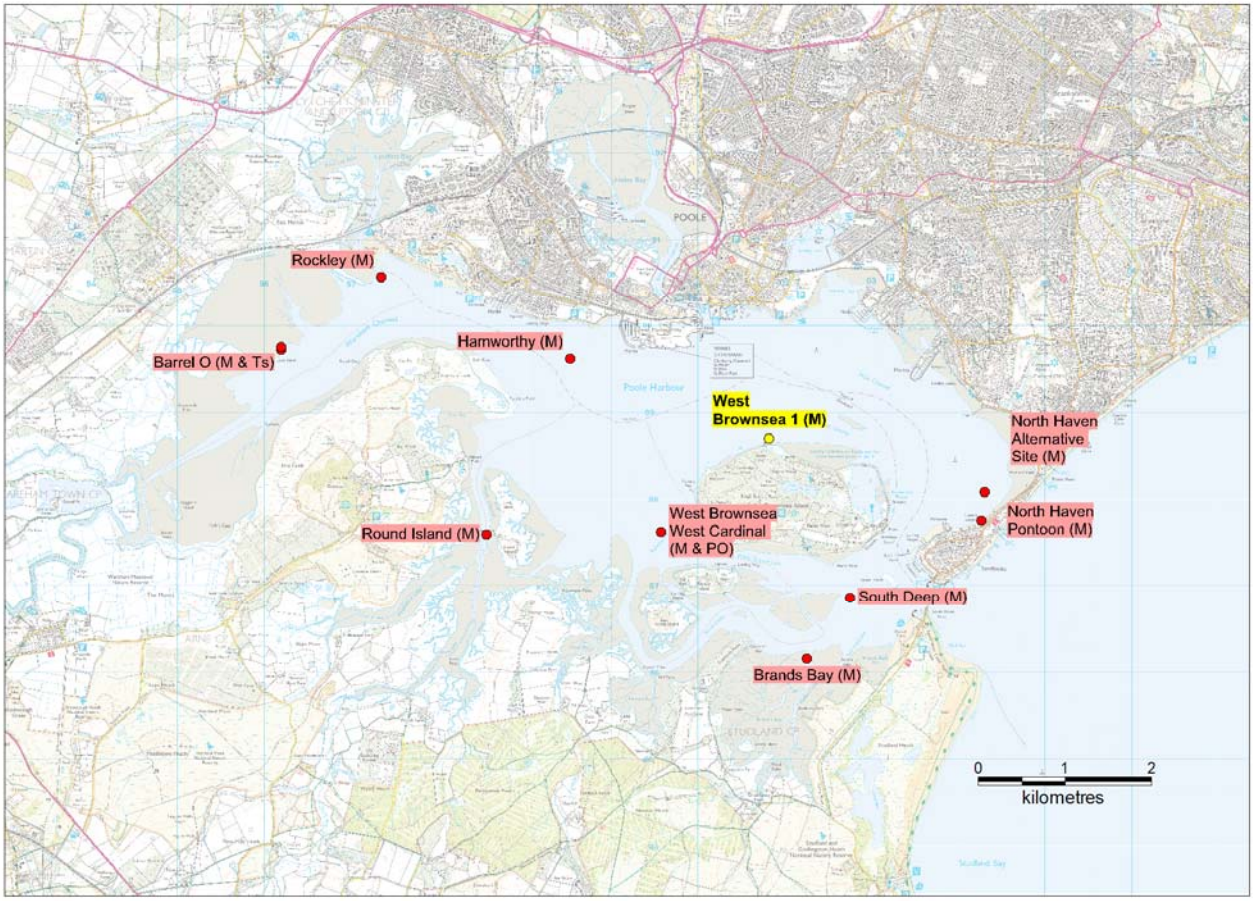
Water results

***Pseudo-nitzschia* species**	**Detected**	14
	Above the trigger level	0
Dinophysiaceae	**Detected**	1
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	6
	Above the trigger level	6

Comments

4.21 Poole BC

Poole



Sample details

	Flesh	Water
Biotoxin monitoring point	West of Brownsea 1 (B54CL) - Mussels	West of Brownsea 1 (B54CL)
Classification points only	Rockley (M), Barrell 'O' (M), Barrell 'O' (Man) - Qrty, Hamworthy (M), Round Island (M), West Brownsea West Cardinal (M & PO), South Deep (M), West Brownsea 1 (PO), Brands Bay (M), North Haven Pontoon (M)	
Alternate point used	Yes (see comments)	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	18	18
No. of samples received	18	18
No. of insufficient/ unsuitable samples	0	0

Poole (cont.)

Flesh results

ASP	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0

Water results

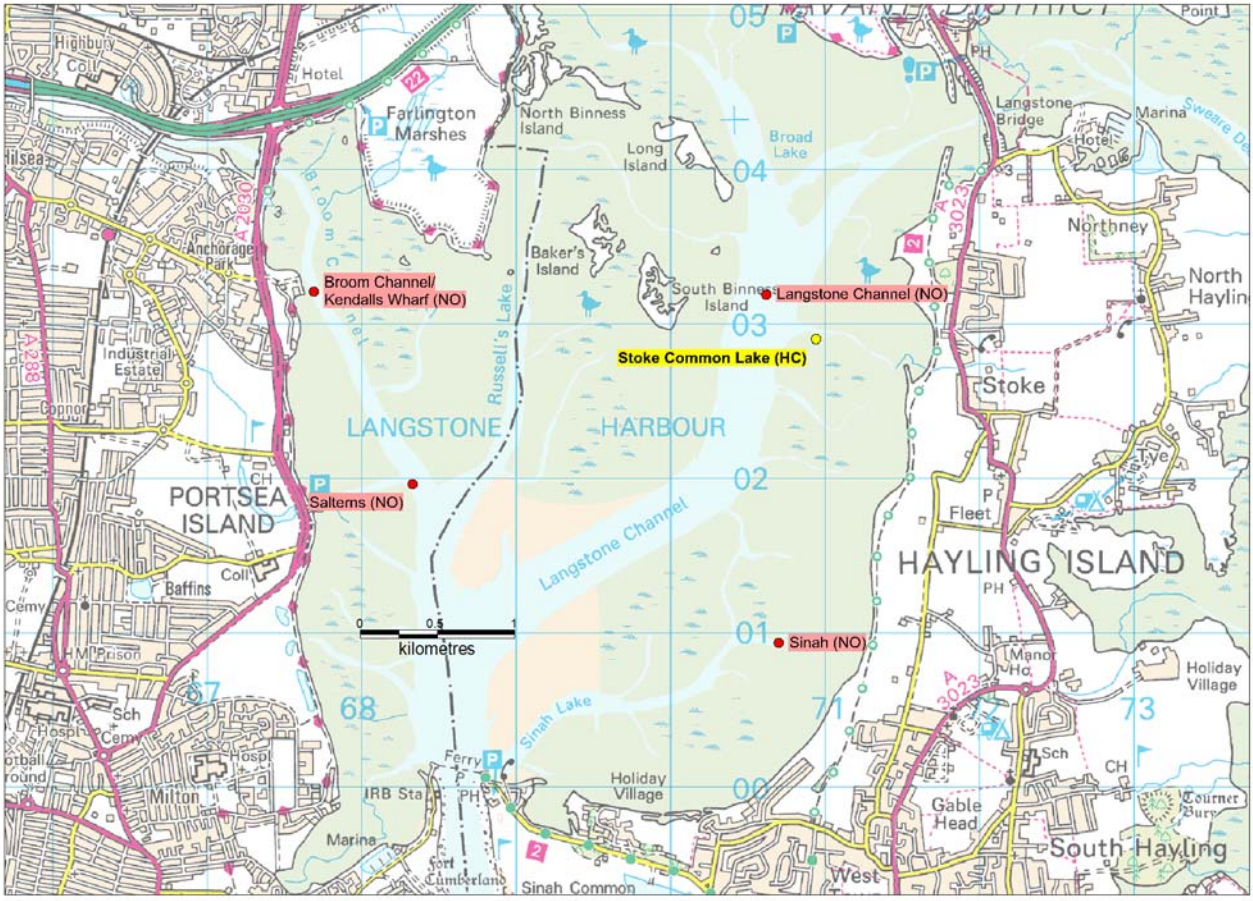
***Pseudo-nitzschia* species**	**Detected**	7
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

In August, one sample of Pacific oysters from West Brownsea 1 was analysed due to a lack of available mussels. The results are included in the mussel data

4.22 Portsmouth PHA

Langstone Harbour



Sample details

	Flesh	Water
Biotoxin monitoring point	Stoke Lake Common (B019l) – Hard clams	Stoke Lake Common (B019l)
Classification points only	Broom Channel/Kendalls Wharf (NO), Langstone Channel (NO), Salterns (NO), Sinah (NO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	No

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	17
No. of insufficient/ unsuitable samples	0	2

Langstone Harbour (cont.)

Flesh results

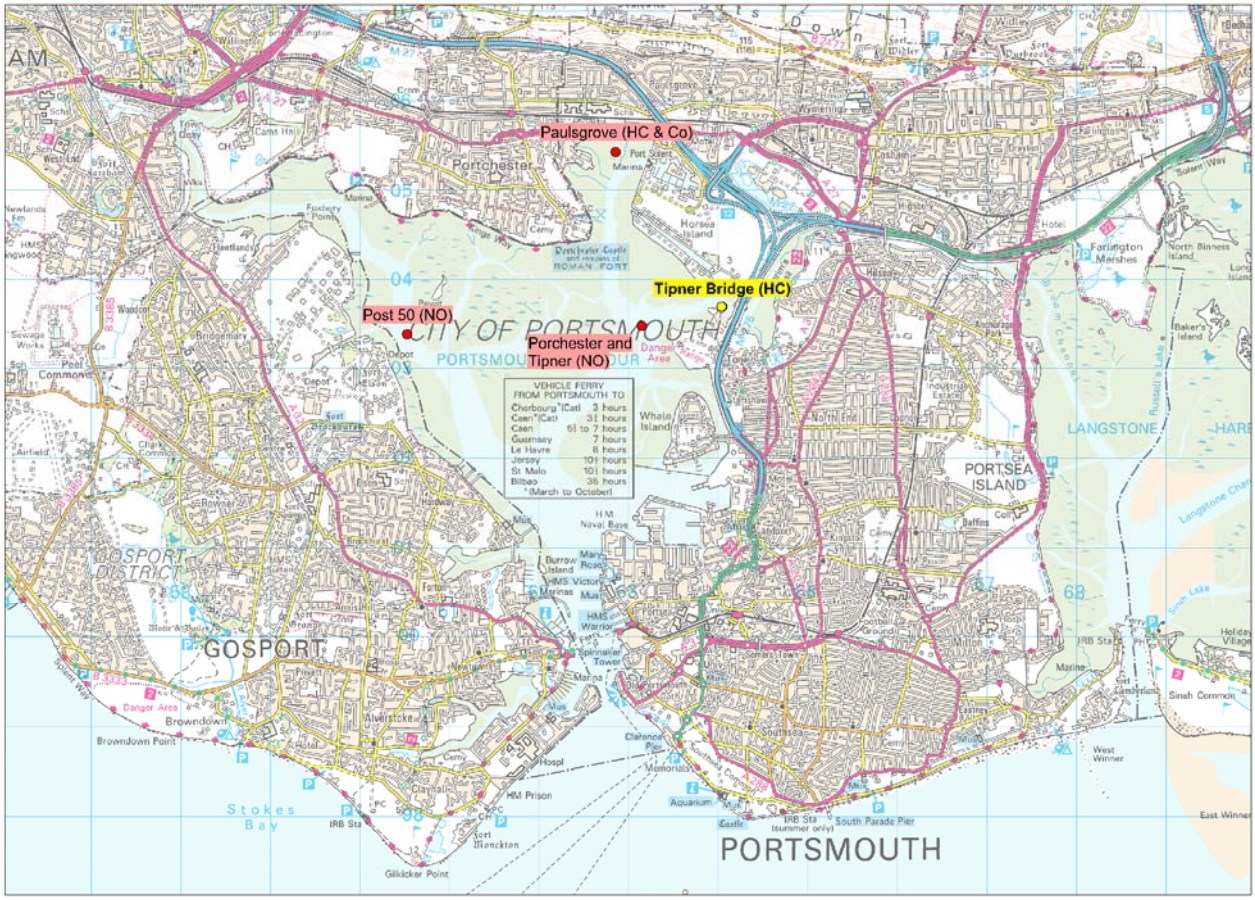
ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	3
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	1
	Above the trigger level	1

Comments

Portsmouth Harbour



Sample details

	Flesh	Water
Biotoxin monitoring point	Tipner Bridge (B020I) – Hard clams	Tipner Bridge (B020I)
Classification points only	Post 50 (NO), Portchester and Tipner (NO), Paulsgrove (Co & HC)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	No

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	13	18
No. of insufficient/ unsuitable samples	0	0

Portsmouth Harbour (cont.)

Flesh results

ASP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0

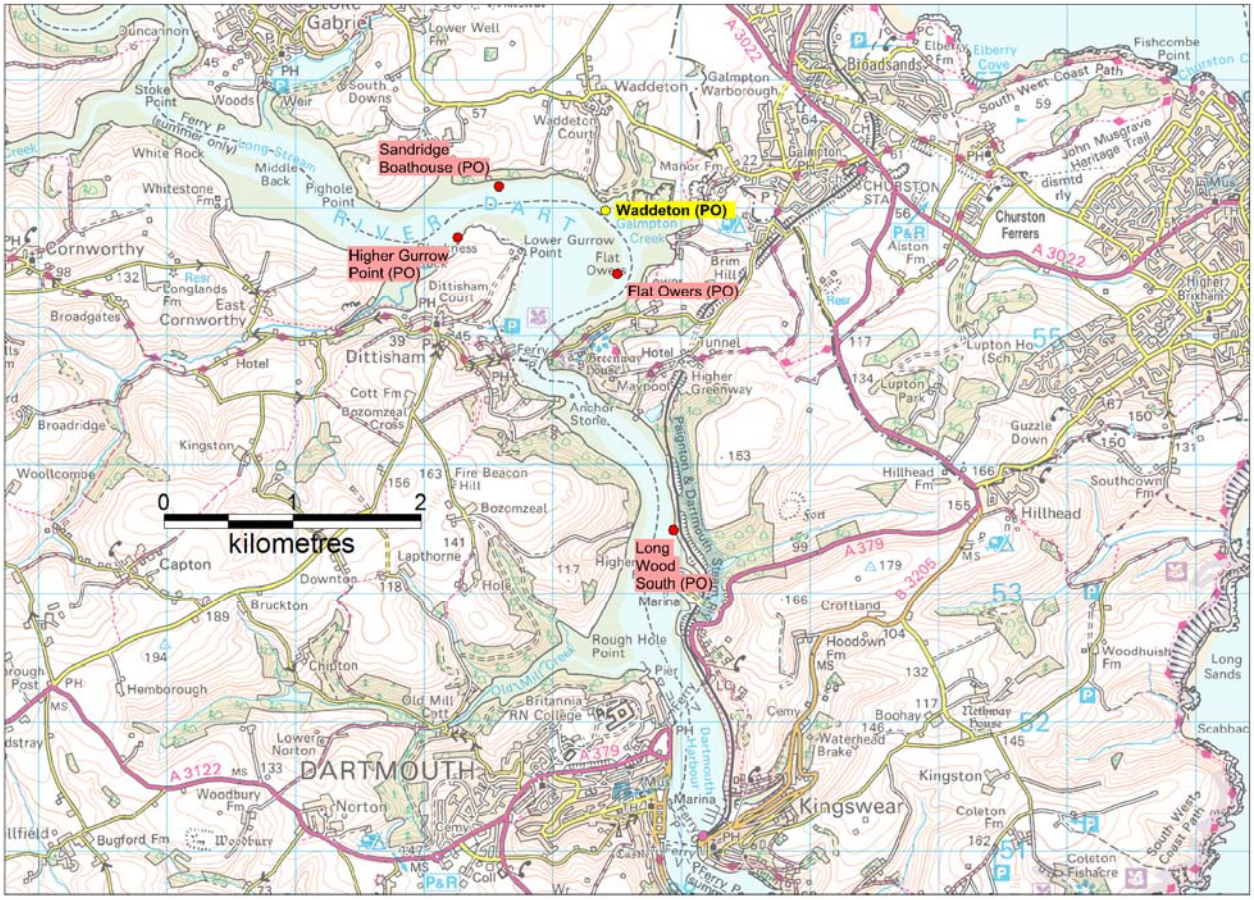
Water results

***Pseudo-nitzschia* species**	**Detected**	7
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	3
	Above the trigger level	3

Comments

4.23 South Hams DC

Dart



Sample details

	Flesh	Water
Biotoxin monitoring point	Waddeton (B028B) – Pacific oysters	Waddeton (B028B)
Classification points only	Sandridge Boathouse (PO), Higher Gurrow Point (PO), Flat Owers (PO), Long Wood South (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	13	18
No. of insufficient/ unsuitable samples	0	0

Dart (cont.)

Flesh results

ASP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0

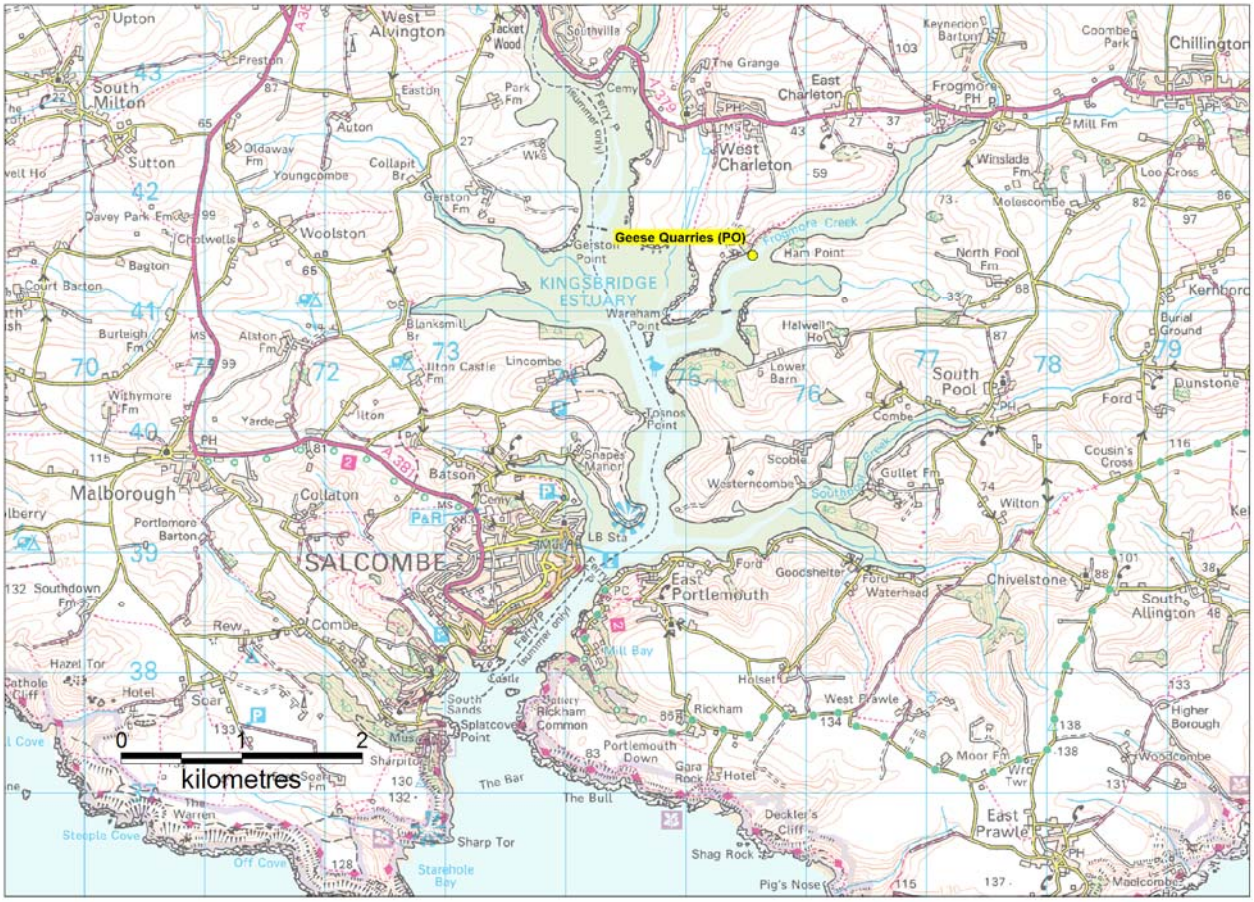
Water results

***Pseudo-nitzschia* species**	**Detected**	12
	Above the trigger level	0
Dinophysiaceae	**Detected**	2
	Above the trigger level	2
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	1
	Above the trigger level	1

Comments

In June, monitoring changed from monitoring mussels to Pacific oysters following changes in the local harvesting patterns. In May, one sample was submitted outside the routine testing frequency. This sample was not tested

Salcombe



Sample details

	Flesh	Water
Biotoxin monitoring point	Salcombe (B029D) – Pacific oysters	Salcombe (B029D)
Classification points only	As above	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	12
No. of samples received	12	12
No. of insufficient/ unsuitable samples	0	0

Salcombe (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

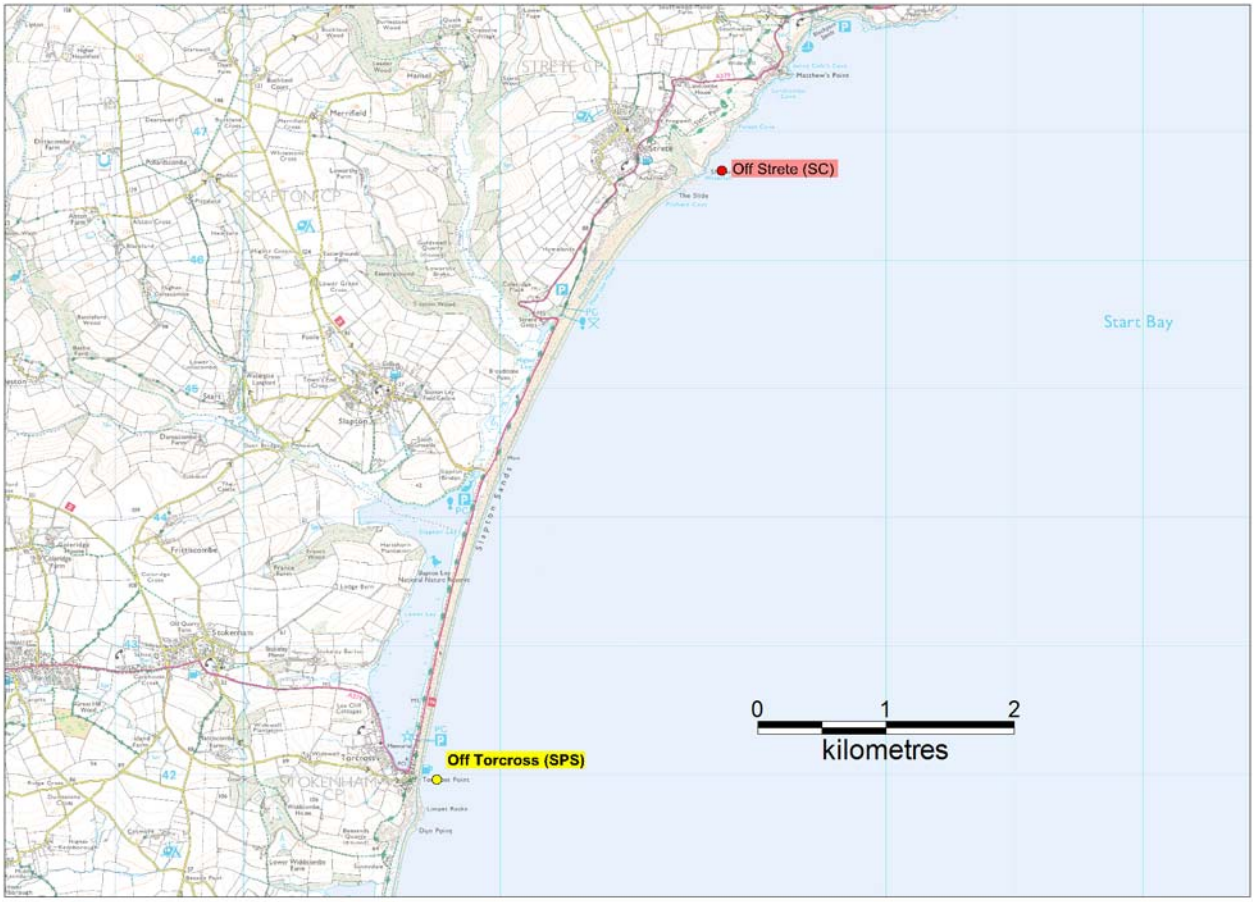
Water results

***Pseudo-nitzschia* species**	**Detected**	4
	Above the trigger level	0
Dinophysiaceae	**Detected**	1
	Above the trigger level	1
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	4
	Above the trigger level	4

Comments

Due to lack of commercial interest (as advised by the local authority), monitoring of this production area was suspended between April and June 2015

Start Bay



Sample details

	Flesh	Water
Biotoxin monitoring point	Off Torcross (B087J) – Surf Clams	Off Torcross (B087J)
Classification points only	Off Strete (SC)	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	No

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	12
No. of samples received	10	10
No. of insufficient/ unsuitable samples	0	0

Start Bay (cont.)

Flesh results

ASP	**No. of samples tested**	10
	Toxins detected	5
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	10
	Toxins detected	0
	Above MPL	0

Water results

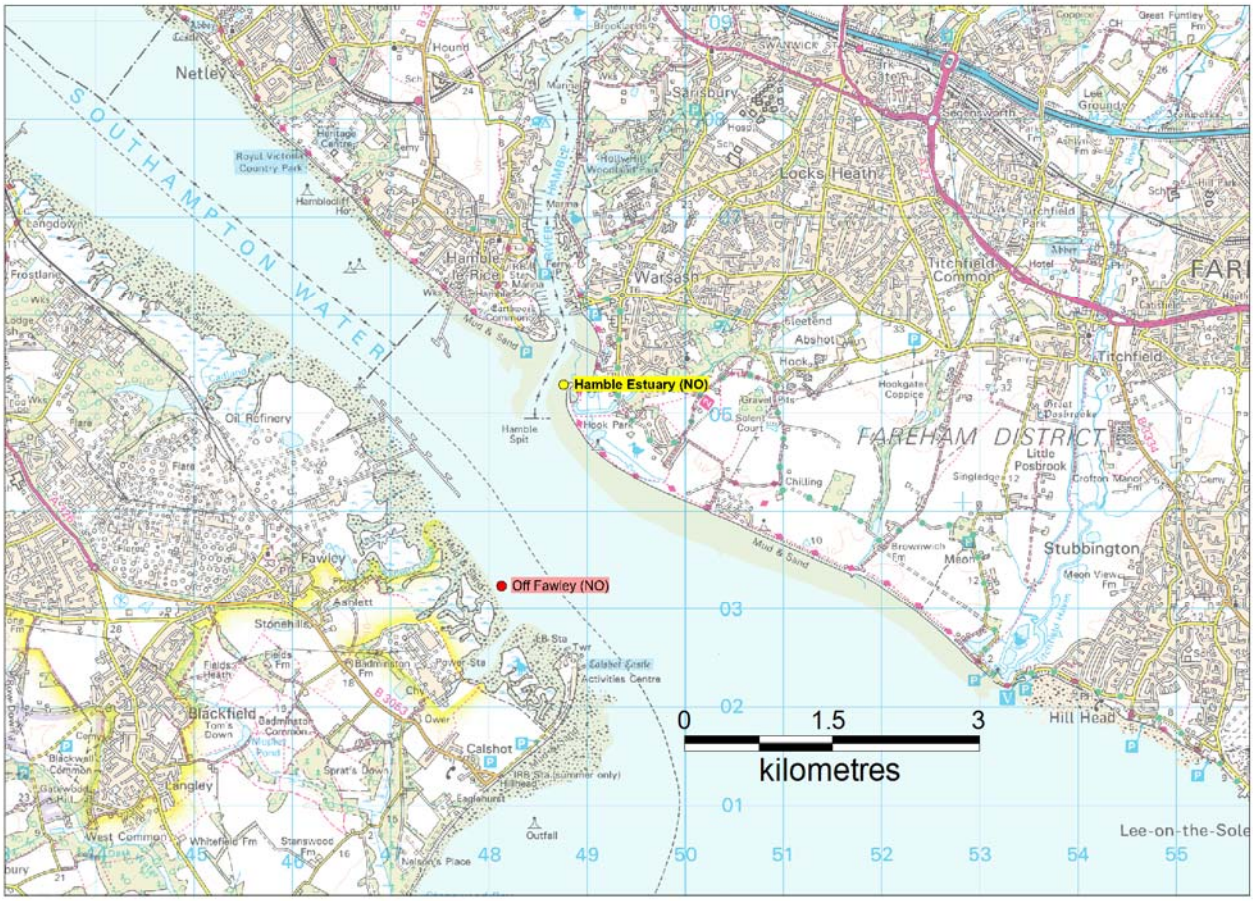
***Pseudo-nitzschia* species**	**Detected**	8
	Above the trigger level	0
Dinophysiaceae	**Detected**	1
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	1
	Above the trigger level	1

Comments

Following a sanitary survey, new RMPs were incorporated in September 2015

4.24 Southampton PHA

Southampton Water



Sample details

	Flesh	Water
Biotoxin monitoring point	Hamble Estuary (B021Y) – native oysters	Hamble Estuary (B021Y)
Classification points only	Off Fawley (NO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	18
No. of insufficient/ unsuitable samples	0	0

Southampton Water (cont.)

Flesh results

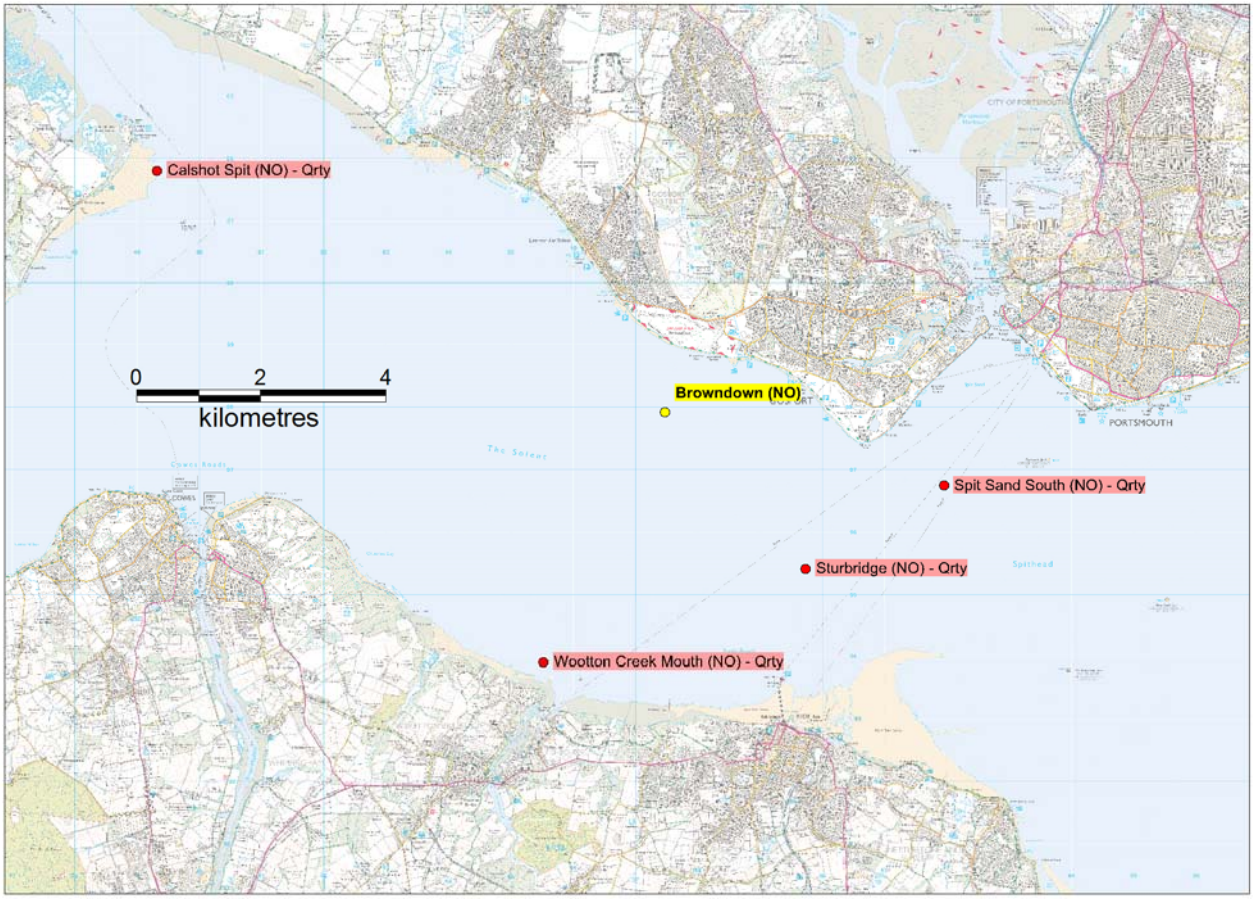
ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	8
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

The Solent (East)



Sample details

	Flesh	Water
Biotoxin monitoring point	Browndown (B24BK) – Native oysters	Browndown (B24BK)
Classification points only	Calshott Spit (NO) – Qrty, Wooton Creek Mouth (NO) – Qrty, Sturbridge (NO) – Qrty, Spit Sand South (NO) - Qrty	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	18
No. ofInsufficient/ unsuitable samples	0	0

The Solent (East) (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	6
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.25 Suffolk Coastal DC

Butley

Sample details

	Flesh	Water
Biotoxin monitoring point	Pumping Station Outfall (B009E) – Pacific Oysters	Pumping Station Outfall (B009E)
Classification points	As above	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	13	20
No. of insufficient/ unsuitable samples	0	2

Butley (cont.)

Flesh results

ASP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	13
	Toxins detected	0
	Above MPL	0

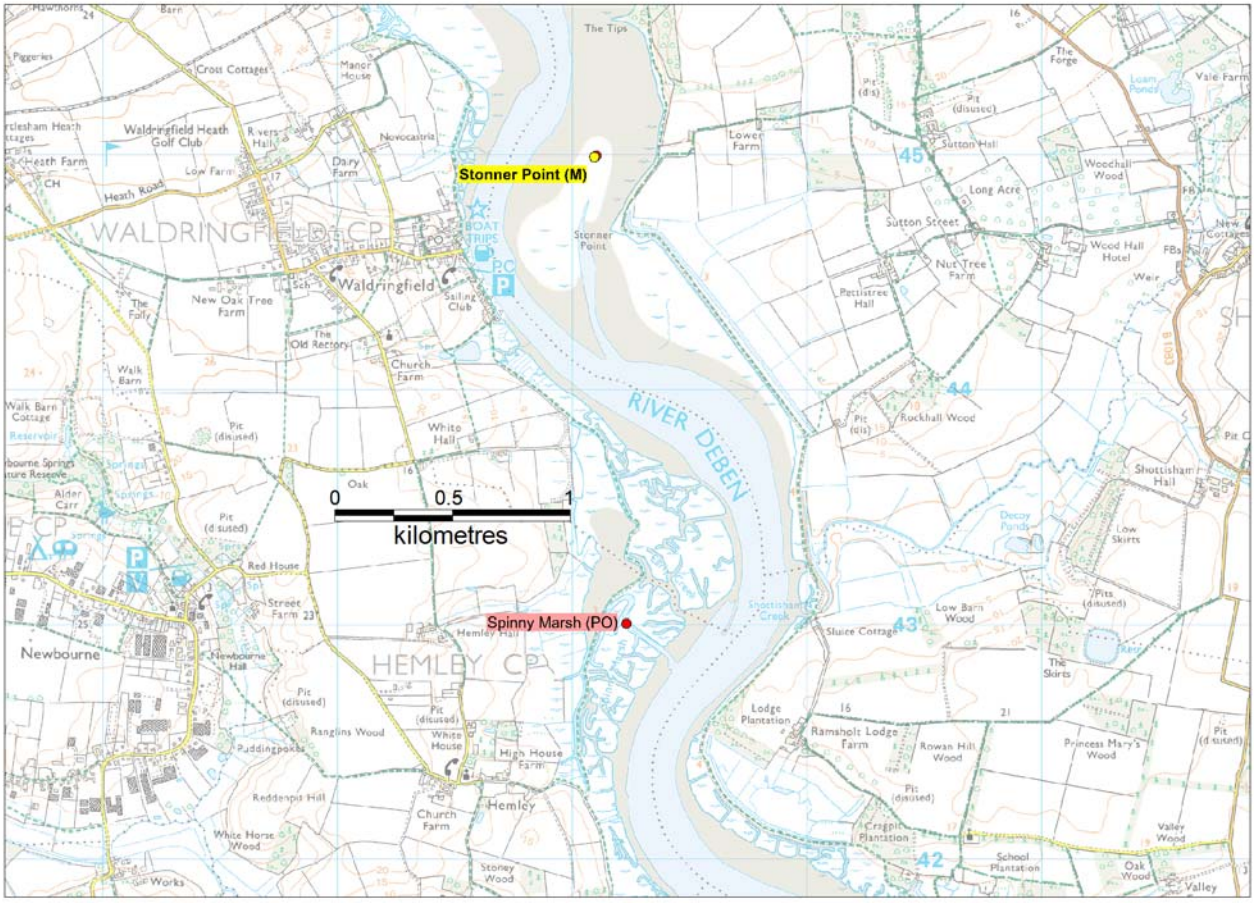
Water results

***Pseudo-nitzschia* species**	**Detected**	2
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Following a sanitary survey, new RMPs were incorporated in May 2015

Deben



Sample details

	Flesh	Water
Biotoxin monitoring point	Stonner Point (B010O) - Mussels	Stonner Point (B010O)
Classification points	Spinny Marsh (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	15	20
No. of insufficient/ unsuitable samples	1	1

Deben (cont.)

Flesh results

ASP	**No. of samples tested**	14
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	14
	Toxins detected	4
	Above MPL	0
AZAs	**No. of samples tested**	14
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	14
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	14
	Toxins detected	0
	Above MPL	0

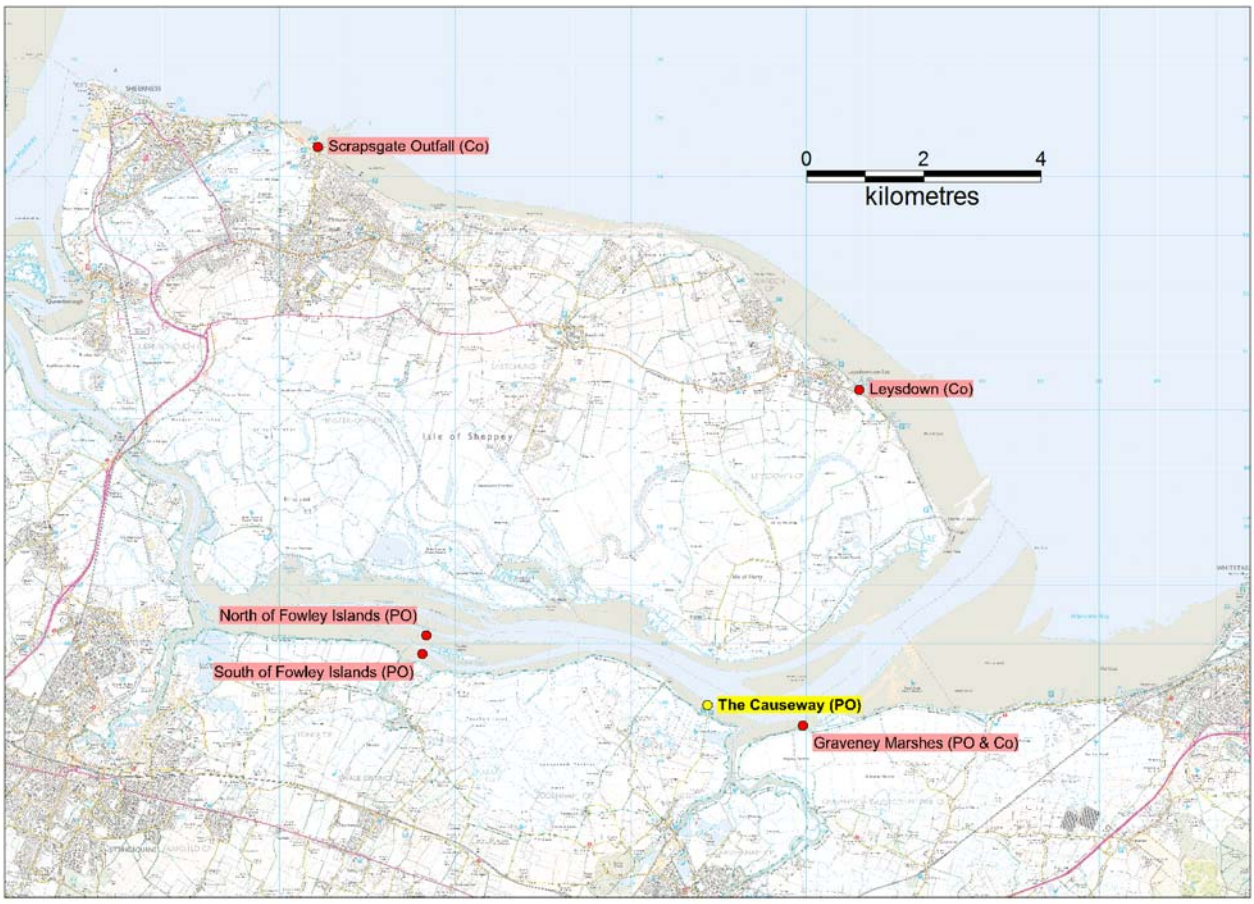
Water results

***Pseudo-nitzschia* species**	**Detected**	1
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.26 Swale BC

Swale



Sample details

	Flesh	Water
Biotoxin monitoring point	The Causeway (B076P) – Pacific oysters	The Causeway (B076P)
Classification points only	North of Fowley Island (PO), South of Fowley Islands (PO), Graveney Marshes (PO & Co), Scrapsgate Outfall (Co), Leysdown (Co)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	12
No. of samples received	11	11
No. of insufficient/ unsuitable samples	0	0

Swale (cont.)

Flesh results

ASP	**No. of samples tested**	11
	Toxins detected	1
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	11
	Toxins detected	0
	Above MPL	0

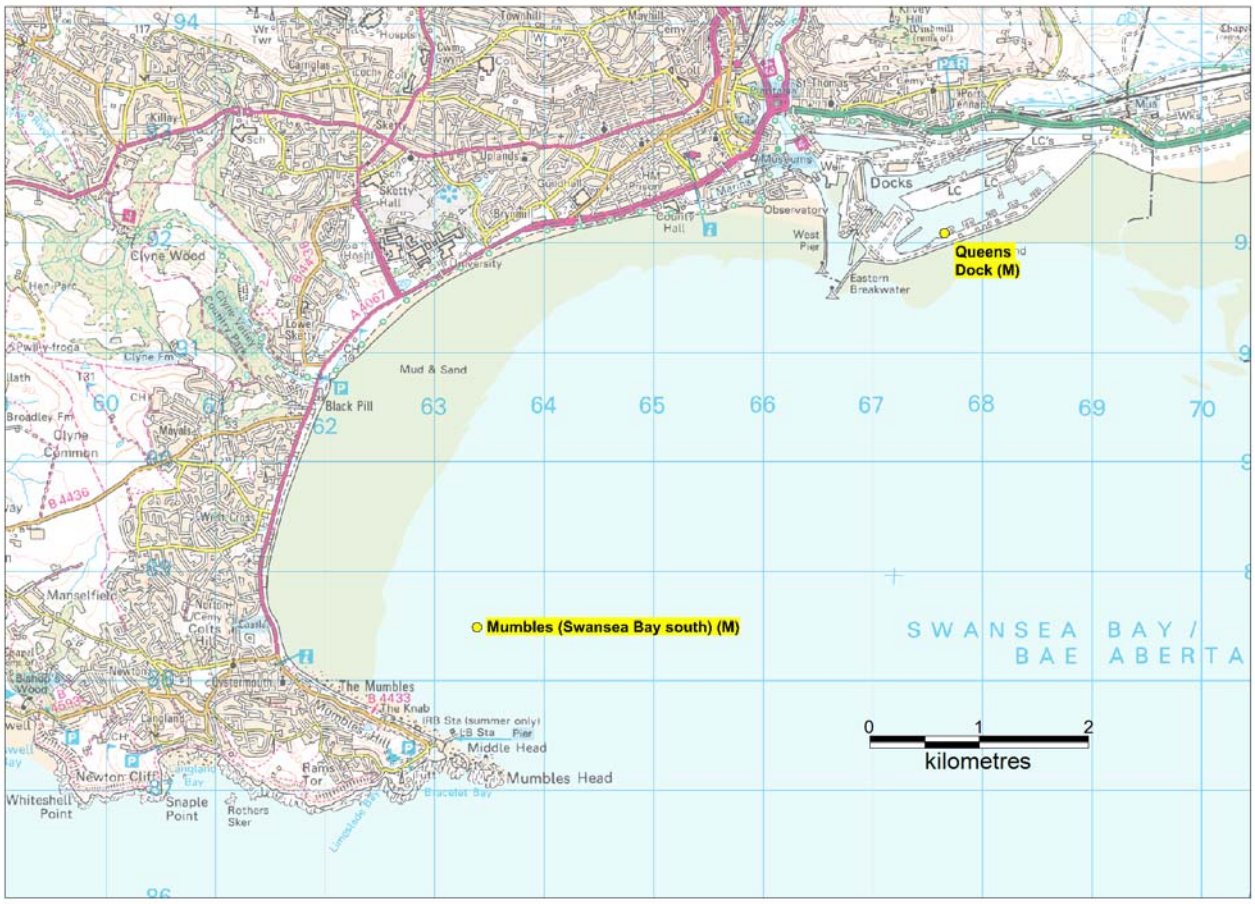
Water results

***Pseudo-nitzschia* species**	**Detected**	1
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.27 Swansea PHA

Swansea Bay



Sample details

	Flesh	Water
Biotoxin monitoring point	Queens Dock (B037U) – Mussels Mumbles (Swansea Bay south) (B037G) – Mussels - Dormant	Queens Dock (B037U) – Mussels Mumbles (Swansea Bay south) (B037G) – Mussels - Dormant
Classification points only	As above	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	Queens Dock - 12 Mumbles (Swansea Bay south) - 3	Queens Dock - 18 Mumbles (Swansea Bay south) - 4
No. of samples received	Queens Dock - 12 Mumbles (Swansea Bay south) - 3	Queens Dock – 19 Mumbles (Swansea Bay south) – 4
No. of insufficient/ unsuitable samples	0	0

Swansea Bay (cont.)

Flesh results

		Queens Dock	Mumbles (Swansea Bay south)
ASP	**No. of samples tested**	12	3
	Toxins detected	0	0
	Above MPL	0	0
3OA/DTX/PTXs	**No. of samples tested**	12	3
	Toxins detected	0	0
	Above MPL	0	0
AZAs	**No. of samples tested**	12	3
	Toxins detected	0	0
	Above MPL	0	0
YTX	**No. of samples tested**	12	3
	Toxins detected	0	0
	Above MPL	0	0
PSP	**No. of samples tested**	12	3
	Toxins detected	0	0
	Above MPL	0	0

Water results

		Queens Dock	Mumbles (Swansea Bay south)
***Pseudo-nitzschia* species**	**Detected**	15	0
	Above the trigger level	0	0
Dinophysiaceae	**Detected**	3	0
	Above the trigger level	0	0
Prorocentrum lima	**Detected**	0	0
	Above the trigger level	0	0
***Alexandrium* species**	**Detected**	1	0
	Above the trigger level	1	0

Comments

Sampling at Mumbles (Swansea Bay south) ceased in March 2015 due to lack of commercial activity

4.28 Teignbridge DC

Exe

Sample details

	Flesh	Water
Biotoxin monitoring point	Cockwood Harbour (B26BH) - Mussels	Cockwood Harbour (B26BH)
Classification points	River Kenn (M), Beacon Point (M)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	14	19
No. of insufficient/ unsuitable samples	0	0

Exe (cont.)

Flesh results

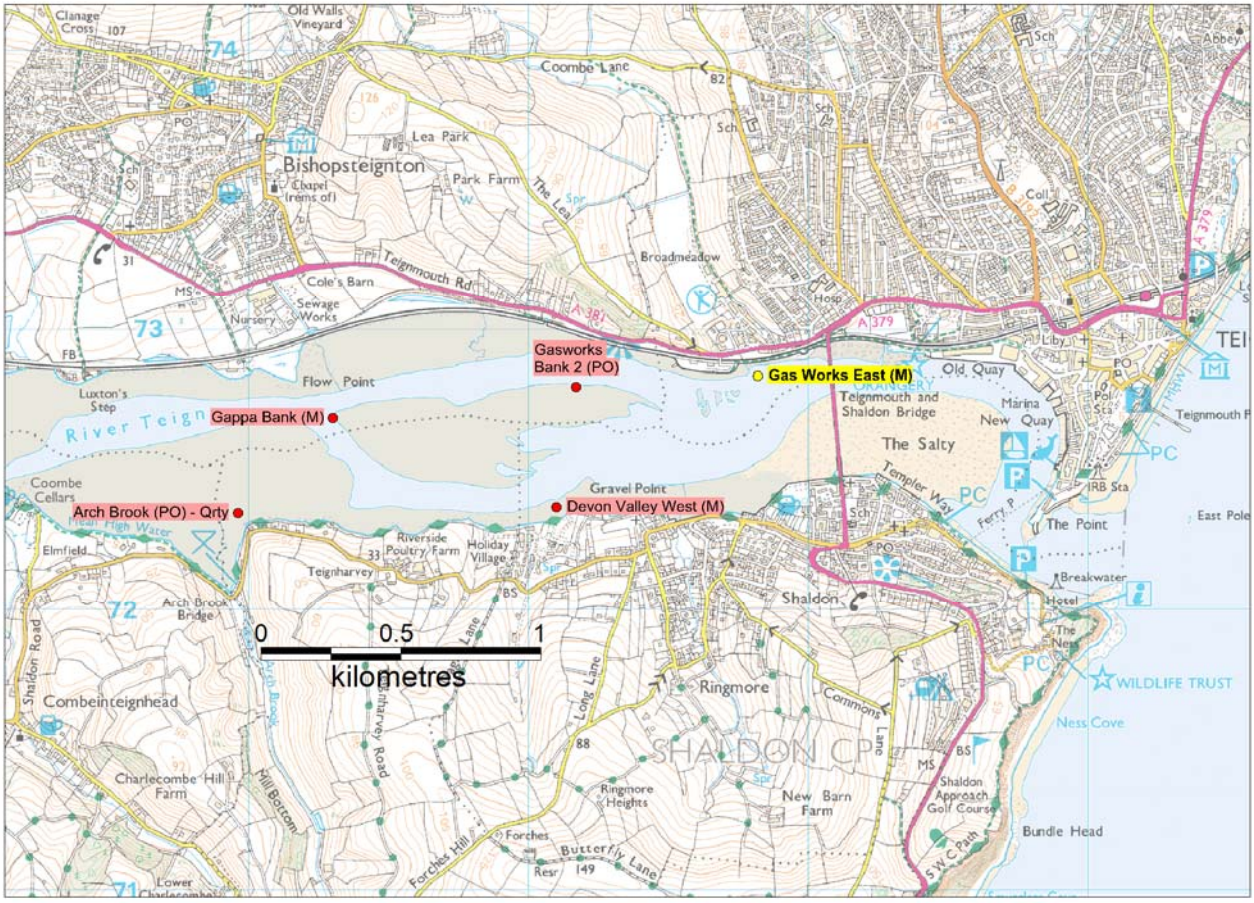
ASP	**No. of samples tested**	14
	Toxins detected	3
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	14
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	14
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	14
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	14
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	17
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	2
	Above the trigger level	2

Comments

Teign



Sample details

	Flesh	Water
Biotoxin monitoring point	Gas Works East (B27AC) – Mussels	Gas Works East (B27AC)
Classification points only	Arch Brook (PO) - Qrty, Gappa Bank (M), Devon Valley West (M), Gasworks Bank 2 (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	18
No. of insufficient/ unsuitable samples	0	0

Teign (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	2
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

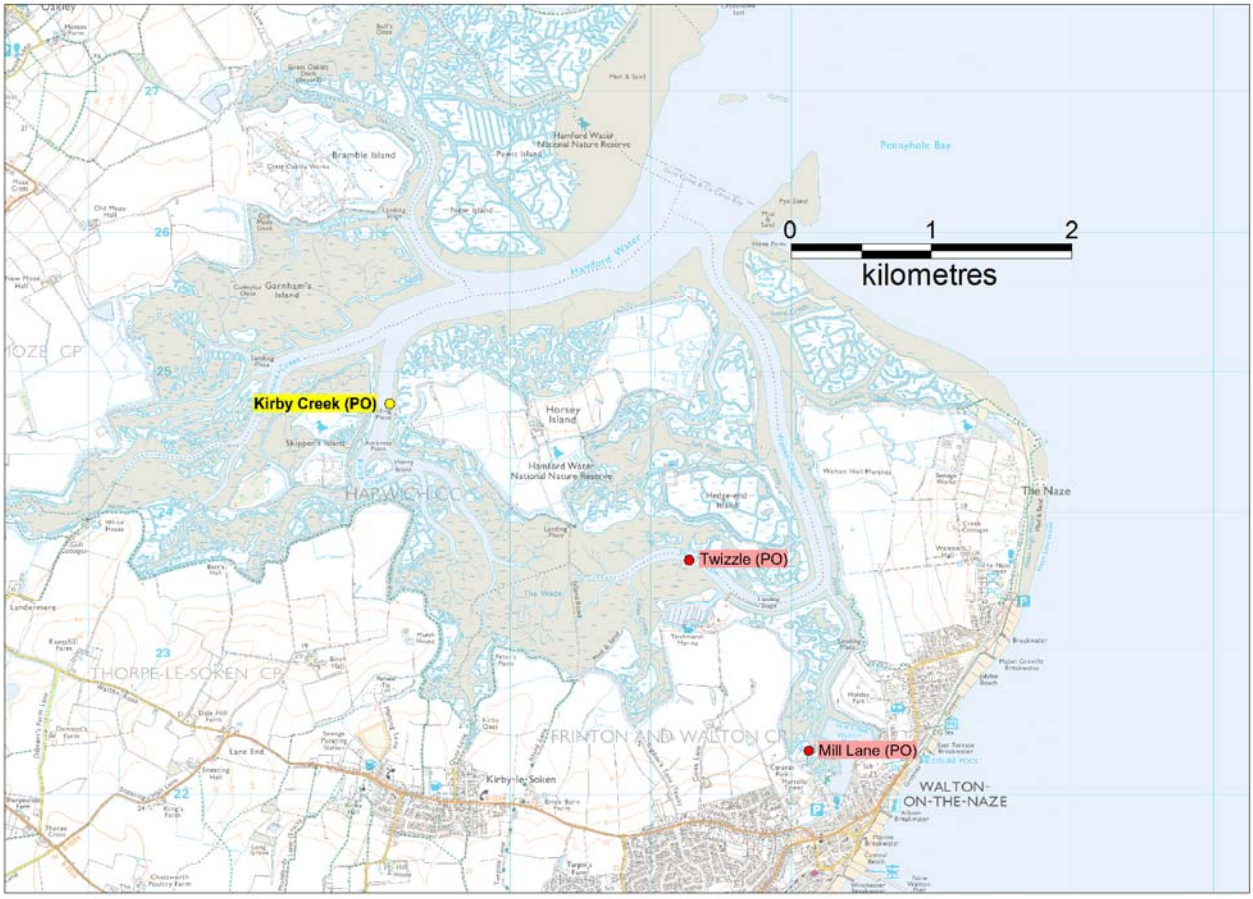
Water results

***Pseudo-nitzschia* species**	**Detected**	15
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4.29 Tendring

Walton Backwaters



Sample details

	Flesh	Water
Biotoxin monitoring point	Kirby Creek (B011R) – Pacific Oysters	Kirby Creek (B011G)
Classification points	Twizzle (PO), Mill Lane (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st September to 31st November 2015	
No. of samples expected	3	3
No. of samples received	2	2
No. of insufficient/ unsuitable samples	0	0

Walton Backwaters (cont.)

Flesh results

ASP	**No. of samples tested**	2
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	2
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	2
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	2
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	2
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	0
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

The fishing season only opened during part of October and November in 2015

4.30 Torbay BC

Brixham

Sample details

	Flesh	Water
Biotoxin monitoring point	Fishcombe SW Corner (B082B) - Mussels	Fishcombe SW Corner (B082B)
Classification points only	As above	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	18	
No. of insufficient/ unsuitable samples	0	

Brixham (cont.)

Flesh results

ASP	**No. of samples tested**	18
	Toxins detected	2
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	18
	Toxins detected	6
	Above MPL	0
AZAs	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0

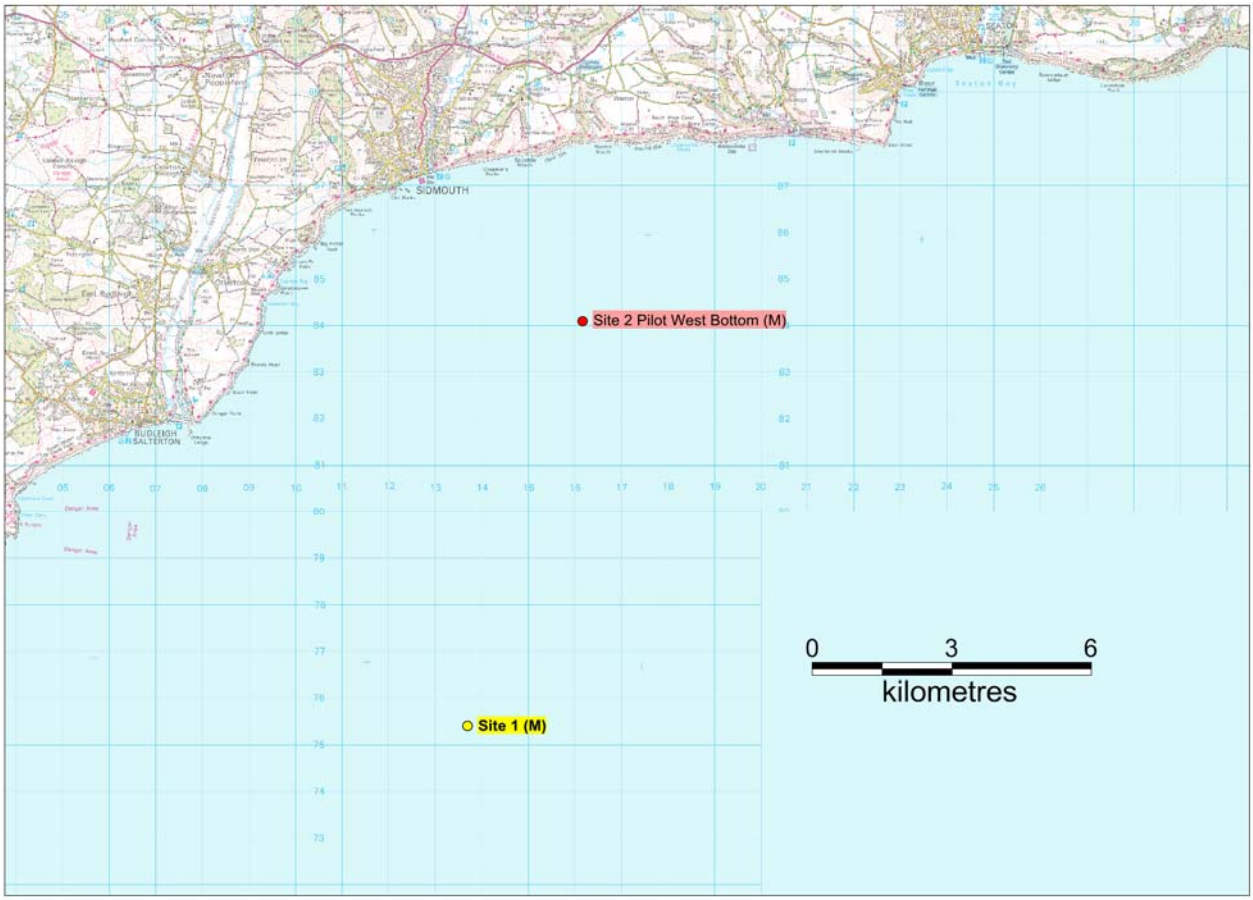
Water results

***Pseudo-nitzschia* species**	**Detected**	17
	Above the trigger level	1
Dinophysiaceae	**Detected**	6
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	4
	Above the trigger level	4

Comments

Following a sanitary survey, new RMPs were incorporated from December 2015

Lyme Bay



Sample details

	Flesh	Water
Biotoxin monitoring point	Site 1 (B090M) – Mussels	Site 1 (B090M) – Mussels
Classification points only	As above	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st July to 31st December 2015	
No. of samples expected	8	8
No. of samples received	9	10
No. of insufficient/ unsuitable samples	0	0

Brixham (cont.)

Flesh results

ASP	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	9
	Toxins detected	7
	Above MPL	3
AZAs	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0

Water results

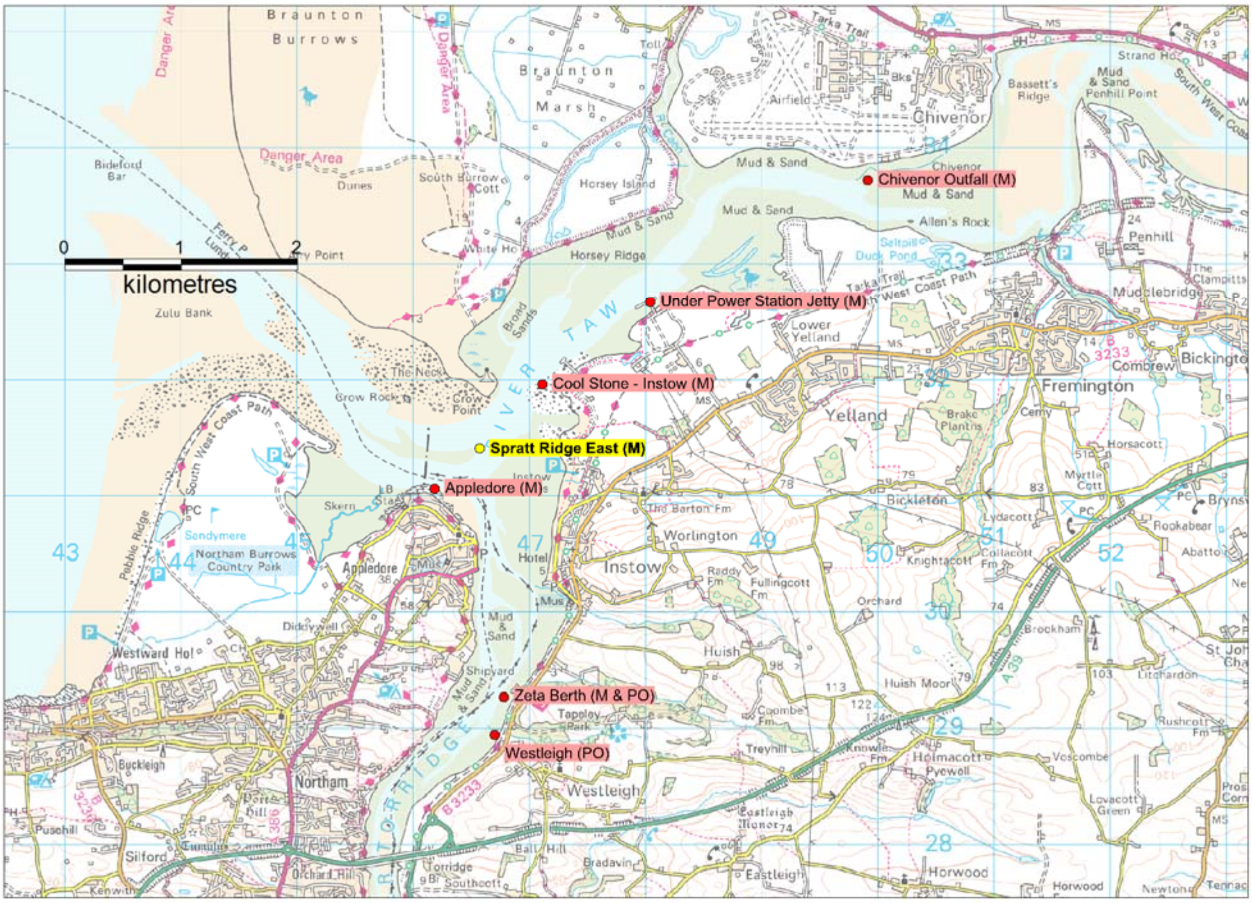
***Pseudo-nitzschia* species**	**Detected**	9
	Above the trigger level	1
Dinophysiaceae	**Detected**	4
	Above the trigger level	2
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Following a sanitary survey, new RMPs were incorporated from December 2015

4.31 Torridge DC

Taw / Torridge



Sample details

	Flesh	Water
Biotoxin monitoring point	Spratt Ridge East (B36AB) - Mussels	Spratt Ridge East (B36AB)
Classification points only	Chivenor Outfall (M), Under Power Station Jetty (M), Cool Stone – Instow (M), Appledore (M), Zeta Berth (M & PO), Westleigh (PO)	
Alternate point used	No	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	18	19
No. of insufficient/ unsuitable samples	0	0

Taw / Torridge (cont.)

Flesh results

ASP	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	18
	Toxins detected	9
	Above MPL	3
AZAs	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0

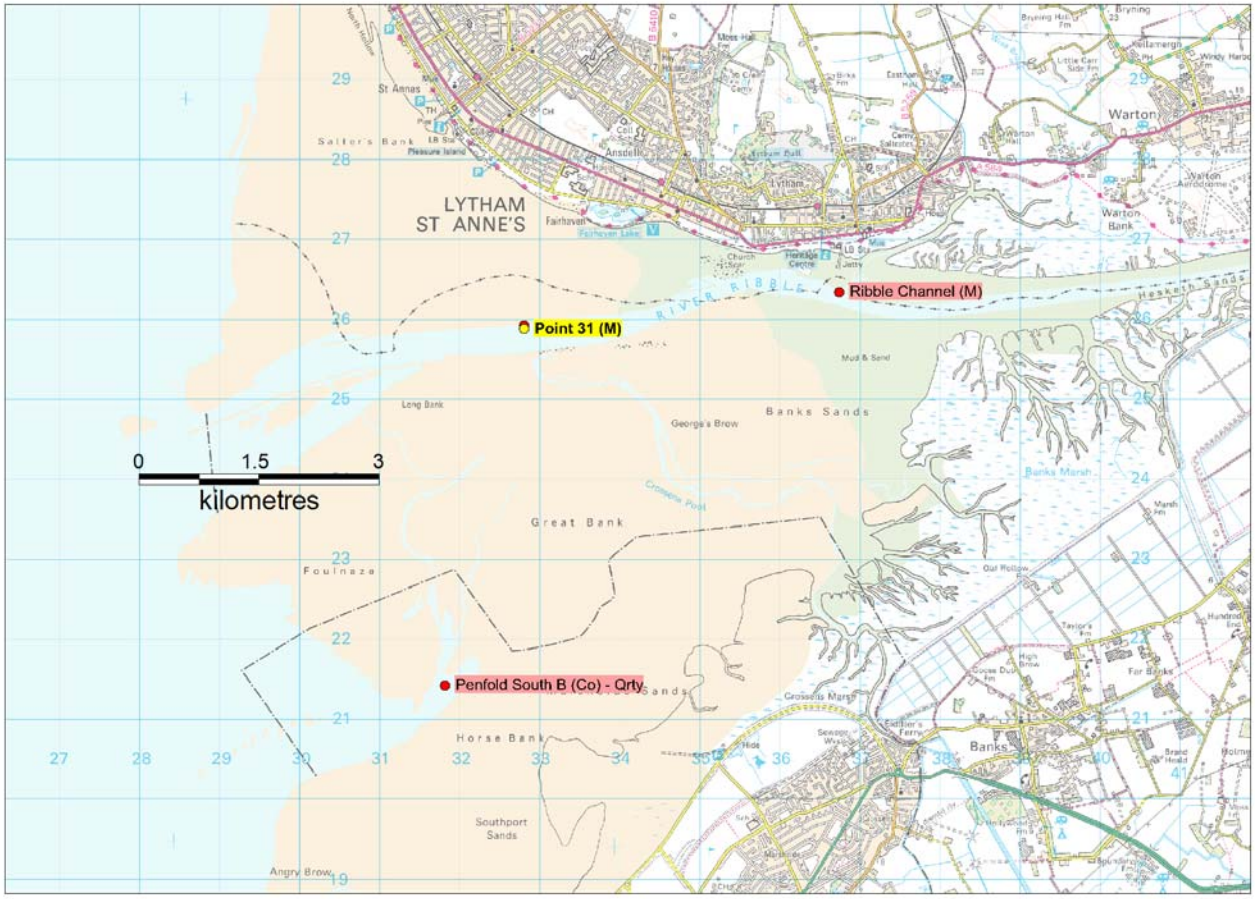
Water results

***Pseudo-nitzschia* species**	**Detected**	14
	Above the trigger level	1
Dinophysiaceae	**Detected**	1
	Above the trigger level	1
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	3
	Above the trigger level	3

Comments

4.32 West Lancashire DC

Ribble



Sample details

	Flesh	Water
Biotoxin monitoring point	Point 31 (B046C) – Mussels	Not sampled
Classification points only	Ribble Channel (M), Penfold South B (Co) - Qrty	
Alternate point used	No	N/A
Fortnightly monitoring (April to Sept)	No	N/A

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	N/A
No. of samples received	9	N/A
No. of insufficient/ unsuitable samples	0	N/A

Ribble (cont.)

Flesh results

ASP	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	9
	Toxins detected	0
	Above MPL	0

Comments

4.33 West Somerset Council

Porlock

Sample details

	Flesh	Water
Biotoxin monitoring point	Porlock East (B094C) – Pacific oysters	Porlock East (B094C)
Classification points only	As above	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	Yes	Yes

Sample logistics

	Flesh	Water
Sampling period	1st February to 31st December 2015	
No. of samples expected	18	18
No. of samples received	18	18
No. of insufficient/ unsuitable samples	0	1

Porlock (cont.)

Flesh results

ASP	**No. of samples tested**	18
	Toxins detected	1
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	18
	Toxins detected	1
	Above MPL	1
AZAs	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	18
	Toxins detected	0
	Above MPL	0

Water results

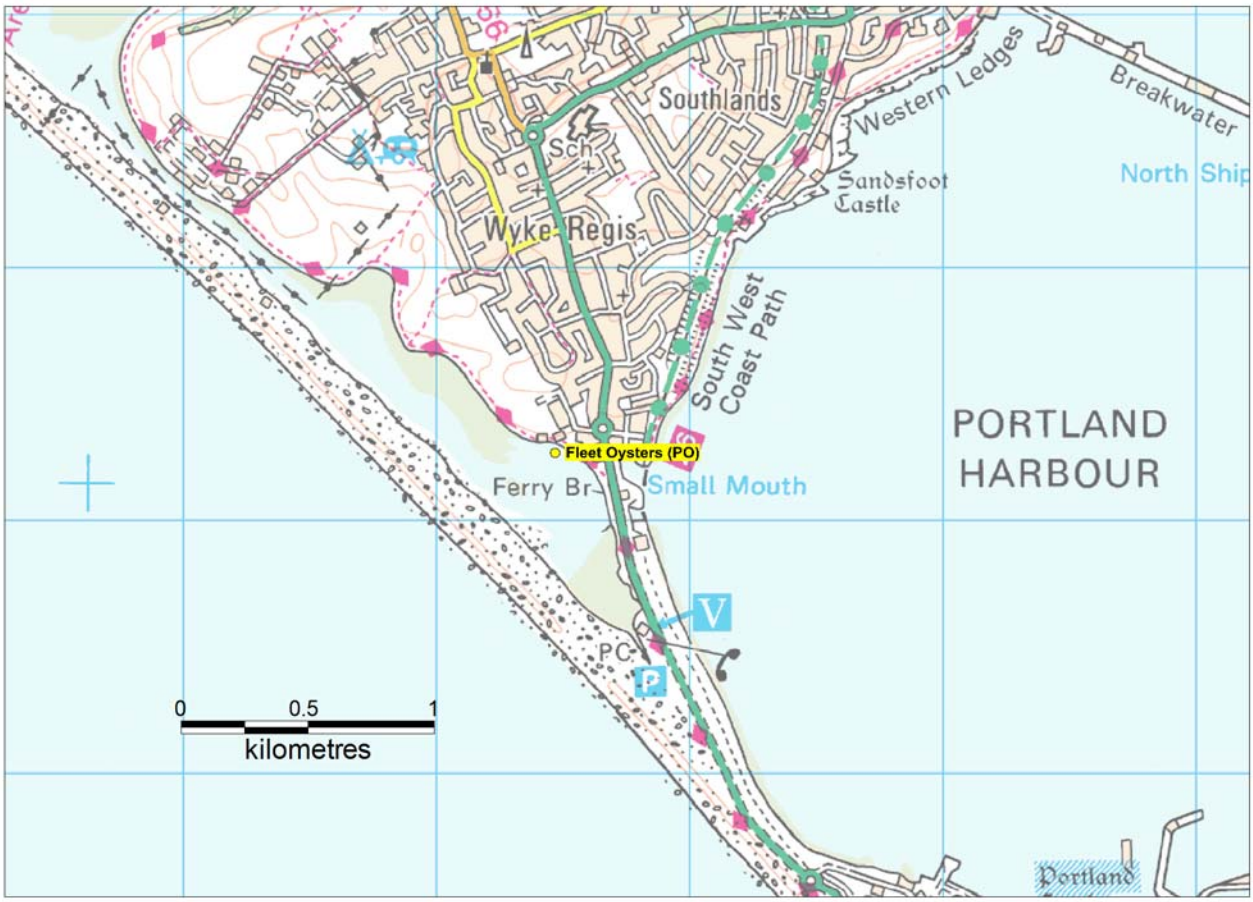
***Pseudo-nitzschia* species**	**Detected**	6
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

Following a sanitary survey, the RMP was adjusted to Porlock East in November 2015

4.34 Weymouth PHA

The Fleet



Sample details

	Flesh	Water
Biotoxin monitoring point	Fleet Oysters (B25AI) – Pacific Oysters	Fleet Oyster Farm (B25AI)
Classification points	As above	
Alternate point used	Yes (see comments)	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st January to 31st December 2015	
No. of samples expected	12	18
No. of samples received	12	19
No. of insufficient/ unsuitable samples	0	0

The Fleet (cont.)

Flesh results

ASP	**No. of samples tested**	12
	Toxins detected	1
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	12
	Toxins detected	0
	Above MPL	0

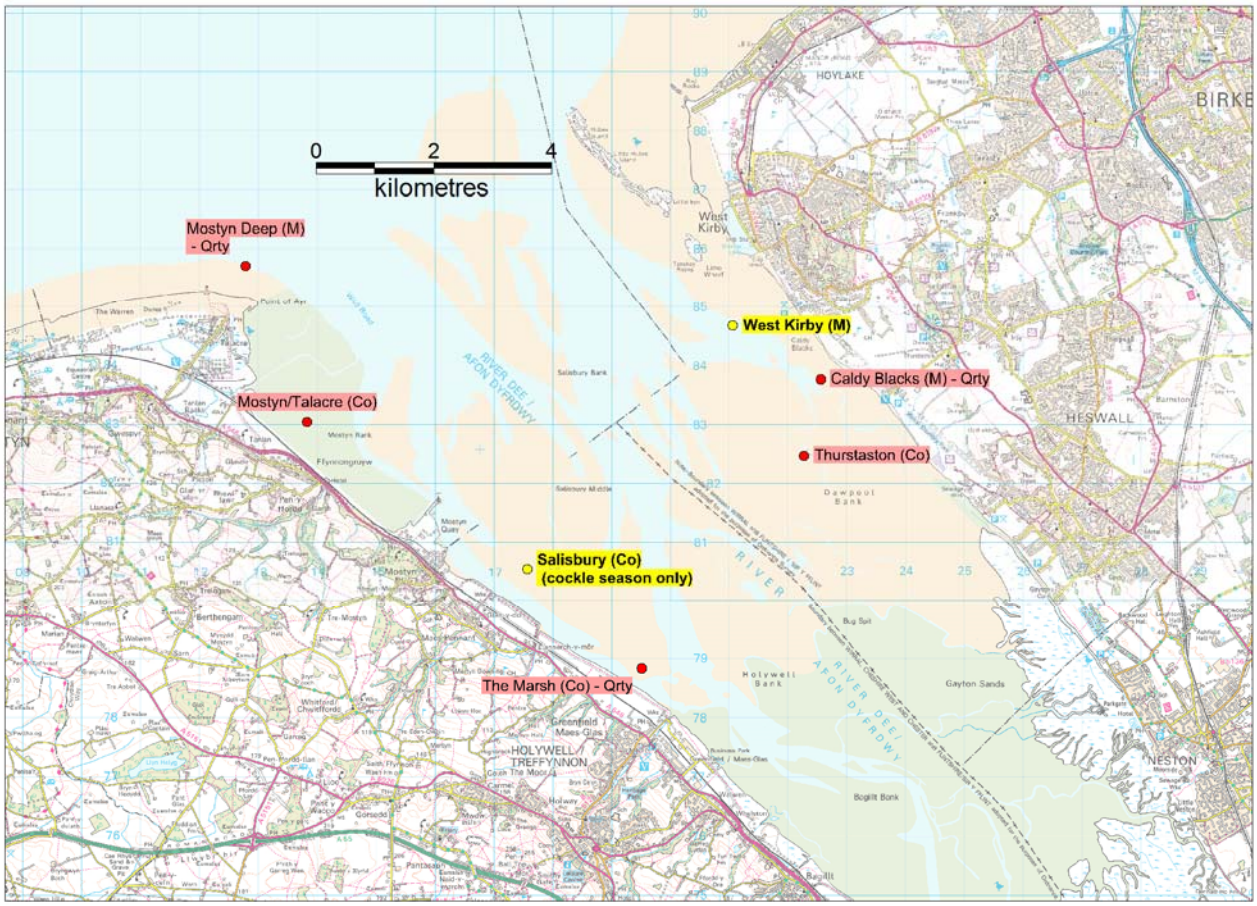
Water results

***Pseudo-nitzschia* species**	**Detected**	12
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	1
	Above the trigger level	1
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

4. 35 Wirral BC

Dee



Sample details

	Flesh	Water
Biotoxin monitoring point	West Kirby (B45AG) - Mussels	None collected (see comments)
Classification points only	Caldy Blacks (M) – Qrty, West Kirby (Co), Thurstaston (Co), Mostyn Deep (M), Mostyn/Talacre (Co), The Marshes (Co)	
Alternate point used	Yes (see comments)	No
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st July to 30th September 2015	
No. of samples expected	4	N/A
No. of samples received	3	N/A
No. of insufficient/ unsuitable samples	0	

Dee (cont.)

Flesh results

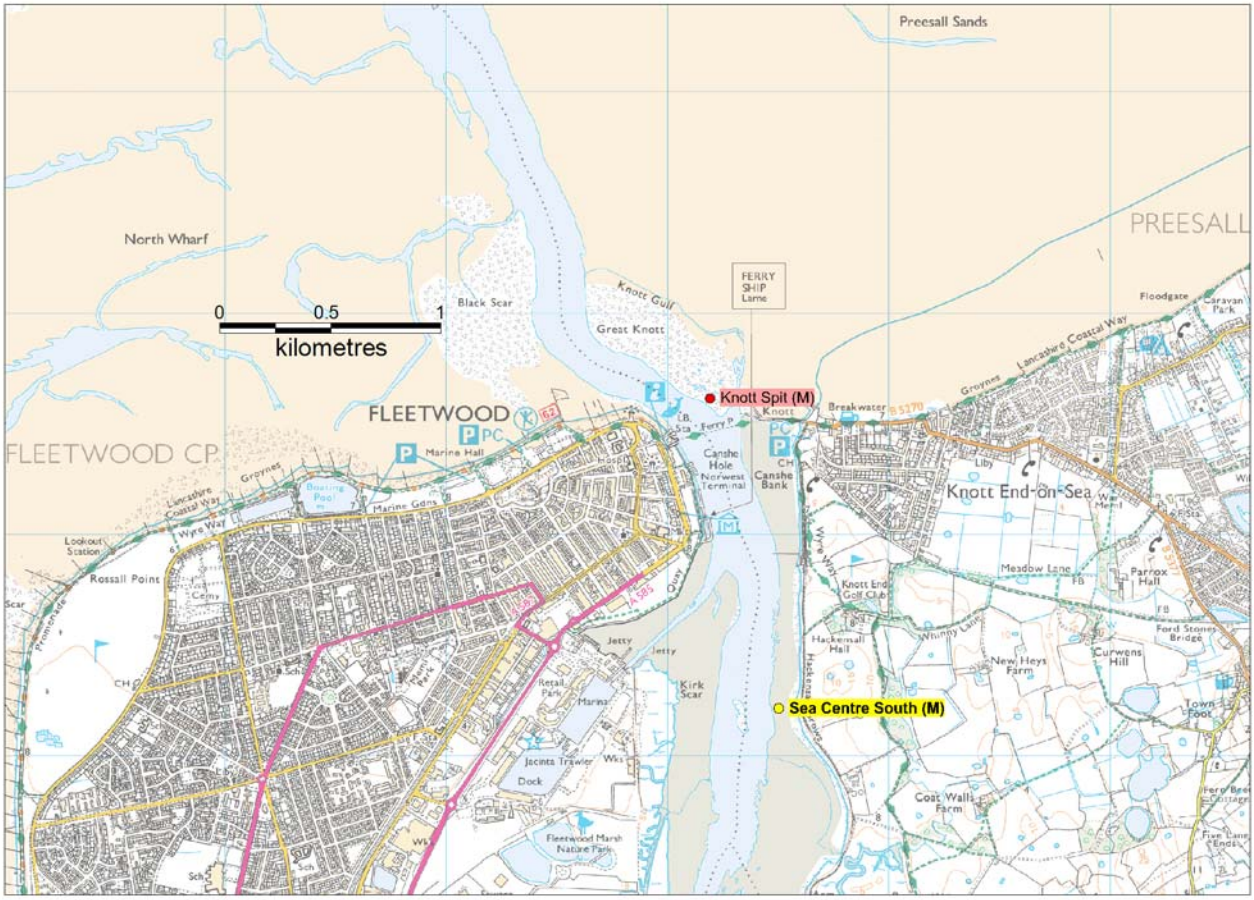
ASP	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0

Comments

Cockles were monitored during the open season (September to December), mussels are monitored at all other times whilst harvesting continues.
Wirral BC also reported that conditions were not suitable for water sampling on most occasions and therefore no water samples were collected.
For results from Salisbury Bank please see Flintshire CC

4.36 Wyre BC

Lune



Sample details

	Flesh	Water
Biotoxin monitoring point	Sea Centre South (B066Y) Mussels	Sea Centre (B066L)
Classification points only	Knott Spit (M)	
Alternate point used	Yes (see comments)	Yes (see comments)
Fortnightly monitoring (April to Sept)	No	Yes

Sample logistics

	Flesh	Water
Sampling period	1st October to 31st December 2015	
No. of samples expected	4	4
No. of samples received	3	6
No. of insufficient/ unsuitable samples	0	3

Lune (cont.)

Flesh results

ASP	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0
OA/DTX/PTXs	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0
AZAs	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0
YTX	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0
PSP	**No. of samples tested**	3
	Toxins detected	0
	Above MPL	0

Water results

***Pseudo-nitzschia* species**	**Detected**	1
	Above the trigger level	0
Dinophysiaceae	**Detected**	0
	Above the trigger level	0
Prorocentrum lima	**Detected**	0
	Above the trigger level	0
***Alexandrium* species**	**Detected**	0
	Above the trigger level	0

Comments

5. Results of the 2015 wild pectenidae verification programme

Samples of wild pectenidae were collected by 7 local authorities from auction houses, processing plants and/or dispatch centres. As the samples are not collected from designated monitoring points, the information on the origin of the samples was taken from the shellfish movement document by the LA collecting the sample. Their approximate origins are indicated in Figure 14.

Samples were collected and submitted as either whole scallops or shucked product. (Please note in the table below unless otherwise stated, shucked product refers to samples consisting of adductor muscle and roe). Results are summarised in Table 3 below.

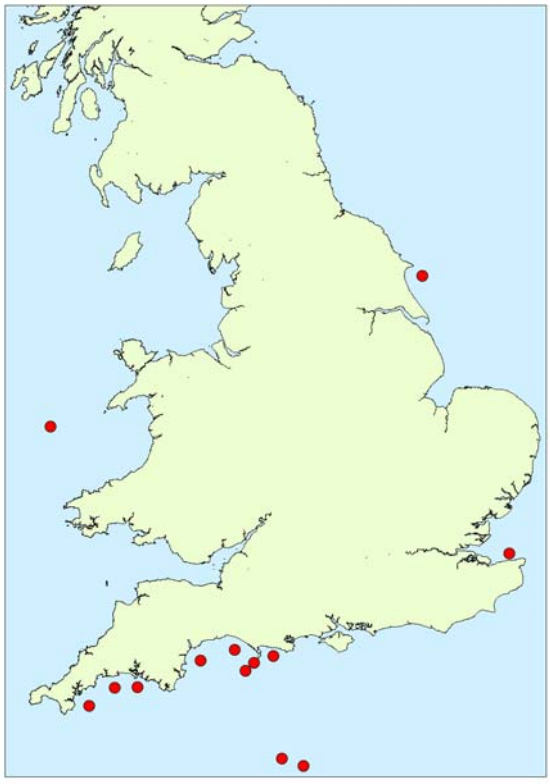


Figure 14: Approximate origins of wild pectenidae samples collected in 2015

Table 3. Results of the 2015 wild pectenidae verification programme (England & Wales)

Local Authority	Sample composition	No of samples submitted	No of unsuitable samples	PSP detected (>MPL)	OA/DTX/PTX group detected (> MPL)	AZA group detected (>MPL)	YTX group detected (>MPL)	ASP detected (>MPL)
Cornwall PHA	Whole	1	0	0	0	0	0	1
	Shucked	1	0	0	0	0	0	0
North Tyneside Council	Shucked	1	0	0	0	0	0	0
Pembrokeshire CC	Shucked	1	0	0	0	0	0	0
Plymouth PHA	Shucked	1	0	0	0	0	0	0
Poole BC	Whole	3	0	0	0	0	0	0
Torbay BC	Whole	3	0	0	0	0	0	1
	Shucked	3*	0	0	0	0	0	0
Weymouth PHA	Whole	43	0	0	3	0	0	34
	Shucked	36	0	0	0	0	0	0

***One sample submitted consisted of adductor only**

6. References:

AOAC International. (2005). AOAC Official method 2005.06 Quantitative determination of Paralytic Shellfish Poisoning Toxins in shellfish using pre-chromatographic oxidation and liquid chromatography with fluorescence detection. Gaithersburg, MD, USA: AOAC International.

European Communities (2004). Regulation (EC) 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption.

European Communities (2005). Regulation (EC) 2074/2005 of the European Parliament and of the Council of 5th December 2005 which lays down the implementing measures for certain products under Regulation (EC) 853/2004 and for the organisation of official controls under Regulation (EC) 854/2004 and 882/2004, derogating from Regulation (EC) No 852/2004 and amending Regulations (EC) Nos 853/2004 and 854/2004.

European Communities (2004). Regulation (EC) 882/2004 of the European Parliament and of the Council of 29th April 2004, which prescribes requirements for Official Controls performed to ensure the verification of compliance with feed and food law.

European Communities (2004). Regulation (EC) 853/2004 of the European Parliament and of the Council of 29th April 2004 laying down the specific hygiene rules for the hygiene of foodstuffs.

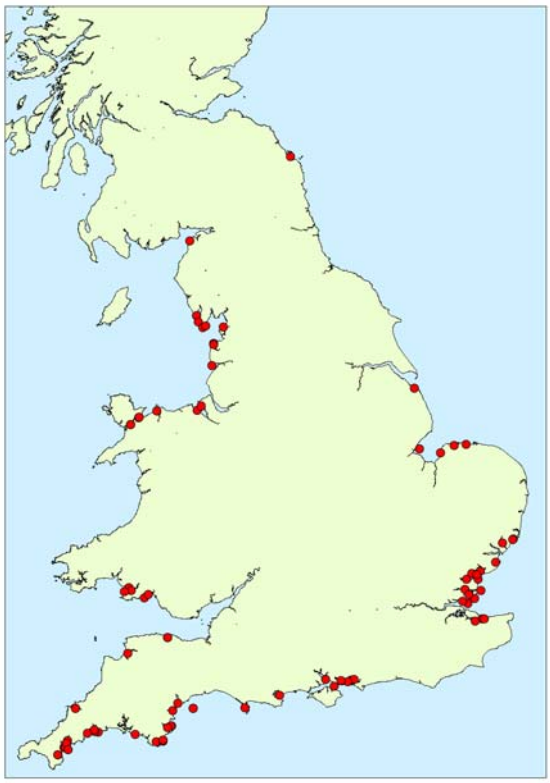
Turner, A.D., Stubbs, B., Coates, L., Dhanji-Rapkova, M., Hatfield, R.G., Lewis, A.M., Rowland-Pilgrim, S., O'Neil, A., Stubbs, P., Ross, S., Baker, C. and Algoet, M. (2014) Variability of paralytic shellfish toxin occurrence and profiles in bivalve molluscs from Great Britain from official control monitoring as determined by pre-column oxidation liquid chromatography and implications for applying immunochemical tests. *Harmful Algae.* **31,** 87-99

van Egmond, H.P., Aune, T., Lassus, P., Speijers, G.J.A. and Waldock, M., (1993). Paralytic and Diarrhoeic Shellfish Poisons, Occurrence in Europe, Toxicity, Analysis and Regulation. *Journal of Natural Toxins*, Vol. 2, No. 1, pp 41-83.

Appendix 1 – Methodology for official control monitoring of toxins in shellfish

A. *Shellfish collection and transport*

In 2015, 36 local authorities (LAs) contributed to the sampling of shellfish from 81 inshore locations (Appended figure 1).



Appended figure 1: English and Welsh flesh sampling locations - Biotoxin monitoring programme 1st January to 31st December 2015

In total, 804 shellfish samples were submitted from classified production and relaying areas along with 93 samples of wild scallops collected from auction houses, dispatch centres and/or processing plants. Samples were submitted for amnesic shellfish poisoning (ASP) toxins, paralytic shellfish poisoning (PSP) toxins and/or lipophilic toxins (LTs) testing. Environmental Health Officers (EHOs) from Local Authorities (LAs) collected or supervised the collection of shellfish samples from designated monitoring points within classified shellfish production or relaying areas. The samples received from classified production and relaying areas comprised mainly of mussels (*Mytilus* spp.), native oysters (*Ostrea edulis)*, common cockles (*Cerastoderma edule)* and Pacific oysters (*Crassostrea gigas)* (Appended table 1). The remainder of the samples consisted of surf clams (*Spisula solida*), razor clams (*Ensis* spp*)*, manila clams (*Tapes philipinarum)* and hard clams (*Mercenaria mercenaria*). Samples received through the wild pectinidae verification programme were all king scallops which were either whole or shucked prior to arrival at the testing laboratory.

Shellfish samples reached Cefas between 1 and 72 hours post collection, with 93% of samples reaching the lab within 1 working day and over 99% reaching the lab within 2 working days.

Shellfish samples were transported to the testing laboratory using a validated chilled transport system (Coleman 16 Qrt coolboxes). Over 93% of the samples transported in these boxes arrived at the laboratory within the recommended temperature range (2-10°C). Forty samples recorded temperatures between 10.1 and 19.3°C. However, upon inspection, all of these samples met the criteria set by the UK Marine Biotoxins National Reference Laboratory (UKNRL) for testing.

A further 91 samples were submitted for analyses by Weymouth PHA (12 from classified areas and 79 wild pectinidae samples). As the samples generally take less than two hours from collection to arrival at the lab, these samples were hand delivered in alternative coolboxes with coolpacks (in accordance with the recommendations of the UKNRL Standard Operating Procedures (SOPs) for the transportation of samples).

B. Shellfish sample assessment

Unsuitable samples

On arrival at the laboratory, samples were assigned a unique laboratory number and their temperature recorded before they were assessed for their suitability for analysis, in accordance with UKNRL SOPs. Shellfish which failed to respond to a percussion test and/or did not exhibit organoleptic characteristics associated with freshness were excluded from testing and reported as unsuitable for analysis (except for pre-shucked wild Pectenidae samples, which were processed in accordance with UKNRL SOPs. No pre-shucked samples were rejected as unsuitable for analyses in 2015.

Two samples collected from a classified production area were rejected as the samples contained an insufficient number of shellfish. One further sample was rejected as the shells supplied were not of a commercial size.

Samples were also assessed on the basis of their compliance with the requirement of the monitoring programme (namely, shellfish species submitted, frequency of submission and geographical origin of the sample). Samples taken from non-active sites or unclassified species were queried with the LA. If no suitable reason was provided, then the sample was rejected. Six samples were rejected on the following grounds:

- 2 samples were submitted outside the routine testing frequency;
- 2 samples were not tested as the incorrect species was submitted;
- 2 samples were collected from incorrect monitoring points.

Insufficient samples

Samples which were assessed as suitable for analysis were then prepared for ASP, PSP and/or lipophilic toxins analyses as required. In accordance with agreed procedures, should the amount of shellfish available provide insufficient material for all required tests, prioritisation of analyses is based on the historic prevalence of toxin group or lack of

previous monitoring results for any toxin group at each site. Where no information is available or prioritisation cannot be ascertained on the above criteria, PSP toxin analyses are prioritised over LT and ASP analyses. No samples were found to be insufficient for the required tests in 2015.

Appended table 1. Summary of samples received and found insufficient/unsuitable for ASP, PSP or lipophilic toxins analyses, by species, in 2015.

Species	Total no. of samples submitted for analysis	No. of samples found insufficient for any of the required tests	No. of samples found unsuitable	No. of samples found unsuitable due to location or frequency	Percentage of samples found insufficient/unsuitable for the required tests (%)
Mussels	407	0	3	5	2
Pacific oysters	230	0	0	0	0
Native oysters	50	0	0	1	2
Common cockles	61	0	0	0	0
Surf clams	10	0	0	0	0
Manila clams	7	0	0	0	0
Hard clams	37	0	0	0	0
Razors	2	0	0	0	0
King scallops (whole)	50	0	0	0	0
King scallops (adductor and roe)	42	0	0	0	0
King scallops (adductor only)	1	0	0	0	0
TOTAL	*897*	0	3	6	1

C. Methodology of shellfish analysis

The methods used for routine toxin analysis of shellfish were those specified by the FSA and involved the application of a range of analytical methods. These included liquid chromatography (LC) with Ultra-violet (UV) or fluorescence (FLD) detection or LC with tandem mass spectrometry (MS/MS) for either qualitative screening of samples (screen), semi-quantitation or full toxin quantitation. The methods used for toxin testing were as follows:

ASP testing

- Shellfish species received in the reporting period were tested by LC-UV analysis following extraction with 50% aqueous methanol and filtration of the crude extracts. The quantitative method was applied to all shellfish species and is based on the method of Quilliam et al., 1995.

PSP testing

- Shellfish species received in the reporting period have all been validated at Cefas for the use of a refined LC-FLD method based on AOAC 2005.06. Samples were all extracted with 1% acetic acid and forwarded for qualitative screening and semi-quantitation by LC-FLD. Any samples returning a positive LC screen result and a

semi-quantitative total toxicity of >400 µg STX eq/kg were then forwarded for quantitation by LC-FLD.

- Screen positive samples under this limit were reported as <400 µg STX eq/kg. Since implementation, this approach has significantly increased the number of sample results reported within 1 day of sample receipt and increased the ability of the laboratory to deal with large numbers of positive samples during periods of high PSP toxicity.
- Quantitation was conducted following the fully quantitative AOAC 2005.06 method, with final results reported as total toxicities in µg STX eq/kg.

Lipophilic toxins testing

- All shellfish species were analysed by LC-MS/MS for the quantitation of all EU regulated lipophilic toxins. The method used was validated at Cefas based on the conditions stipulated by the EU Reference Laboratory (EU RL) for Marine Biotoxins.

Appended table 2 summarises the methods of analysis used throughout this reporting period together with a summary of the current UKAS accreditation status of each method to ISO 17025:2005 standard.

Appended table 2: List of analytical methods used, by species, in 2015

Toxin group	Methods employed	Species tested	Dates	Accreditation status (as of 31st December 2015) to ISO 17025:2005 standard
ASP	LC-UV	All species	1st January to 31st December 2015	Accredited
PSP	LC-FLD (screen, semi-quantitative screen & full quantitation)	All species	1st January to 31st December 2015	Accredited
Lipophilic toxins	LC-MS/MS	All species (except Hard clams)	1st January to 31st December 2015	Accredited
Lipophilic toxins	LC-MS/MS	Hard clams	1st January to 9th February 2015	Not accredited*
Lipophilic toxins	LC-MS/MS	Hard clams	10th February to 31st December 2015	Accredited

* The performance of the LC-MS/MS method was validated on one of the Cefas LC-MS/MS systems and found to be acceptable. However, due to the unavailability of hard clam samples at the time of original method validation, the matrix variability of the method could not be assessed. However, during 2014, more hard clam samples became available, facilitating the completion of the validation exercises during 2014. The method was accredited by UKAS in January 2015, with formal notification dated 10th Feb 2015, but the accreditation does not extend to the 4 samples run from 1st Jan 2015 until this date.

Test outcome

Samples were considered as positive if they were found to breach the maximum permitted limits (MPL) for marine toxins specified in EC regulation 853/2004 (Table 2).

Where these levels were exceeded, recommendations were for temporary harvesting restrictions to be put in place for all shellfish species classified in the affected area until two consecutive negative or below action level (action level equals MPL) results were achieved for the toxin which was the cause of the closure, and at least one further negative or below action level result for the toxin groups which had not exceeded the MPL.

Routine flesh testing frequencies were defined by the FSA and followed one of two set plans:

1. **Areas with a historic risk of PSP toxins occurrence AND/OR have insufficient historic data**.
   Fortnightly from 1st of April to 30th of September
   Four weekly from 1st of October to 31st of March

2. **Areas with no historic risk of PSP toxins AND historic data**
   Four weekly throughout the year

In addition, requests were made for weekly shellfish monitoring to be instigated when set trigger levels, indicative of heightened toxicity risk were breached. The trigger levels used in the 2015 reporting period are summarised in Appended table 3:

Appended table 3: Flesh trigger levels

Toxin group	Levels of toxin or cell concentrations triggering additional monitoring if breached
ASP	≥10mg domoic/epi-domoic acid/kg shellfish flesh
LTs	OA/DTX/PTX group: ≥80 µg OAeq./kg shellfish flesh AZA group: ≥80 µg AZA1eq./kg shellfish flesh YTX group: ≥1.8mg/kg shellfish flesh
PSP	≥400µg STX eq./kg shellfish flesh

From the 13th of July 2015, as part of the ongoing FSA risk assessment into the occurrence and distribution of marine biotoxins in shellfish flesh, all suitable samples received at the laboratory were analysed for all three toxin groups (PSP, LTs and ASP) irrespective of the reason for the sample submission. Also, a number of samples which were submitted between the 1st of January and the 12th of July 2015, but did not require all three analyses at the time of submission, were retrospectively analysed using stored, frozen, shellfish homogenate. This included five PSP tests, 41 LT tests and 46 ASP tests. The results of these retrospective samples were reported to the FSA for information and are included in this report. No additional actions were required by the LAs.

D. Reporting of results

Upon completion of the required analyses, the results were collated and quality controlled prior to submission to FSA. Results were reported on a daily basis. A summary of results turnaround times, from day of receipt to completion of each analysis for 2015 is given in Appended tables 4 and 5.

For reference, the turnaround times agreed with the FSA and required from Cefas during the reporting period are given in Appended table 6.

Appended table 4: Turnaround times, by test carried out, for samples received from classified production and relay areas in 2015

Territory	No. of tests performed	No. of completed results reported within one working day of receipt of sample	No. of completed results reported two working days post receipt of sample	No. of completed results reported three working days post receipt of sample
ASP by HPLC	794	794 (100%)	0	0
Lipophilic toxins by LC-MS	795	772 (97%)	23 (3%)	0
PSP by HPLC (screen)	794	787 (99%)	7 (1%)	0
PSP by HPLC (quantitation)	0	0	0	0
Totals	**2383**	**2353 (99%)**	**30 (1%)**	**0**

Appended table 5: Turnaround times, by test carried out, for samples of wild pectenidae collected from auction houses, dispatch centres and/or processing plants in 2015

Territory	No. of tests performed	No. of completed results reported within one working day of receipt of sample	No. of completed results reported two working days post receipt of sample	No. of completed results reported three working days post receipt of sample
ASP by HPLC	93	91 (98%)	2 (2%)	0
Lipophilic toxins by LC-MS	93	91 (98%)	2 (2%)	0
PSP by HPLC (screen)	93	91 (98%)	2 (2%)	0
PSP by HPLC (quantitation)	0	0	0	0
Totals	**279**	**273 (98%)**	**6 (2%)**	**0**

Appended table 6: Sample turnaround times (from sample receipt) specified by FSA

Toxin and analysis method	FSA specified targets
ASP by HPLC	80% within 1 working day 100% within 3 working days
Lipophilic toxins by LC-MS	70% within 1 working day 100% within 3 working days
PSP by HPLC (screen)	80% within 1 working day 100% within 3 working days
PSP by HPLC (quantitation)	80% within 2 working days 100% within 4 working days

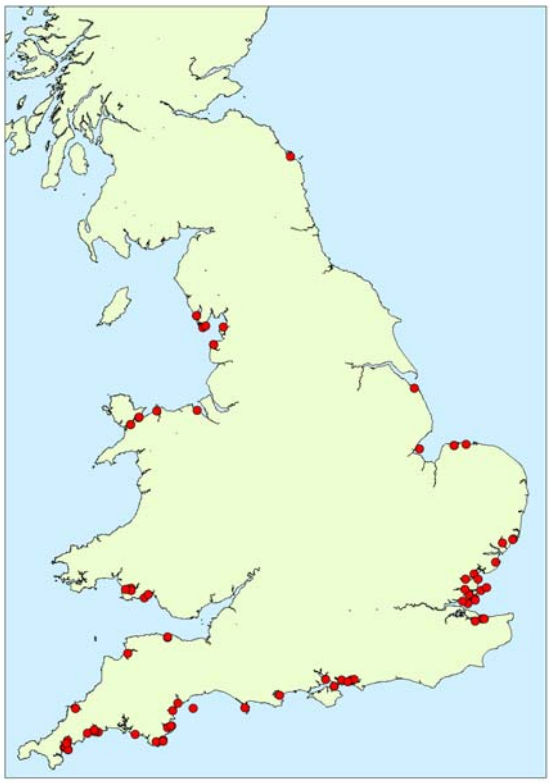
Required turnaround times were therefore all met and for all analyses, delivery by the laboratory exceeded the targets agreed with FSA.

In addition to the daily reporting schedule, all results from samples received between Monday and Friday the previous week were collated and reported in a weekly results sheet to FSA, released the following week.

Appendix 2 – Methodology for official control monitoring of toxic phytoplankton in classified shellfish production areas

A. *Phytoplankton sample collection and transport*

933 phytoplankton samples were collected by environmental health officers from 51 classified production or relaying areas around the coast of England and Wales (Appended figure 1).



Appended figure 1. English and Welsh water sampling locations – 2015 Biotoxin monitoring programme

Sample collectors were requested to take depth integrated water samples from above the harvesting areas, at high water, whenever possible. Tube samplers were provided to local authority staff who had access to boats, or where piers and jetties were sufficiently close to the flesh sampling points to allow a depth integrated sample to be taken. However, it was recognised that their use was not always practical in shallow, coastal areas and a pole sampler was recommended as a preferential alternative to sampling surface water with a bucket.

A 500mL bottle was filled with water from each sample collection which was then preserved with the addition of 2mL of acidified Lugol's Iodine. Once preserved, the samples were sent in pre-paid special delivery bags, together with a sample label (containing details of the sample collection), to the Cefas plankton laboratory for analysis.

B. Assessment of sample suitability

On arrival at the laboratory, samples were assigned a unique laboratory number. Sub-samples were then set up in 25mL Utermöhl chambers and allowed to settle. After three hours each sample was given a preliminary examination. If the viewing area contained too much sediment, then an additional sub-sample was set up in a 10mL or 5mL Utermöhl chamber. All samples were allowed to settle for a minimum of 12 hours before the final suitability assessment was made. If after 12 hours, the viewing area of the smaller chamber was also obscured by sediment then these samples were reported as "unable to analyse" in the weekly results sheet.

A total of 35 samples (3.75%) were unsuitable for analysis, the majority of these (n=28, 3.0%) were due to high sediment concentrations in the water. This is a significant decrease on last year's figures in which 9.1% (n=79) were rejected due to high sediment concentrations. This reflects a concerted effort by Cefas and the collectors to resolve ongoing issues in some locations by either changing the sampling location or the sampling method. Seven other samples were rejected; four were submitted outside of the routine testing frequency, two were submitted outside routine sampling periods and one had been sampled using the incorrect method for that site.

C. Water sample analysis

Water analyses followed the standard operating procedures drawn up by the UK national reference laboratory for marine biotoxins. Phytoplankton analyses are accredited to ISO17025:2005 standard.

Test outcome

The use of 'Trigger' levels[4] remained at the same cell concentrations as used in previous years (Appended table 1). When these levels were breached, the FSA was immediately contacted and requests were made for additional water and shellfish samples to be collected and submitted for analysis the following week.

Appended table 1: Trigger levels for toxin producing algae

Toxin	Toxin producing algae (trigger Level)
ASP	*Pseudo-nitzschia spp* (150,000 cells/L)
LTs	*Dinophysiaceae* (100 cells/L) *Prorocentrum lima* (100 cells/L)
PSP	*Alexandrium spp* (Presence)

D. Reporting of results

Upon completion of analyses, results were collated and quality control checked prior to submission to the FSAS. During 2015, Cefas was able to report all results within one working day of sample receipt. This turnaround time is in full compliance with the targets specified by the FSA which is set at 98% of results reported within 3 working days of sample receipt.

[4] From January 2011 algal thresholds are referred to as trigger levels (formerly action levels)

In addition to the daily reporting schedule, all results from samples received the previous week were collated and reported in a weekly results sheet to FSA, released by the following week.

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Head office
Centre for Environment,
Fisheries & Aquaculture Science
Pakefield Road, Lowestoft,
Suffolk NR33 0HT UK

Tel +44 (0) 1502 56 2244
Fax +44 (0) 1502 51 3865
Web www.cefas.defra.gov.uk

Centre for Environment,
Fisheries & Aquaculture Science
Weymouth Laboratory,
Barrack Road, The Nothe, Weymouth,
Dorset DT4 8UB

Tel +44 (0) 1305 206600
Fax +44 (0) 1305 206601

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