

Cefas contract report C5666-C5667

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

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the Biotoxin and Phytoplankton
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Quality statement: This report is a compilation of the information included on the reports provided daily/weekly to FSS and showing the results of the phytoplankton and toxin analyses undertaken on samples submitted via the Official Control programme. All results were quality checked and approved prior to release to FSS 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 contracted sampling 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 and Phytoplankton Monitoring Programmes for Scotland for the period 1st January to 31st December 2015.

The laboratory analyses for biotoxins in shellfish, co-ordination of the programme and its logistics were conducted by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) Weymouth Laboratory, whilst the laboratory phytoplankton analyses, co-ordination of the programme and its logistics were performed by the Scottish Association for Marine Science (SAMS - SRSL) in Oban under the scope of the contracted Shellfish Partnership.

The programmes were delivered on behalf of Food Standards Scotland (FSS), the national competent authority for food safety and are aimed at delivering the testing required for the statutory monitoring of biotoxins in shellfish and for identification and enumeration of potentially harmful algal species in selected shellfish harvesting areas, as described in EC Regulations 854/2004, 882/2004 and 2074/2005.

Toxin monitoring

A total of 3,012 bivalve shellfish samples from 100 inshore sampling locations (Figure 1) were submitted to Cefas for toxin analyses in the reporting period. They comprised of: common mussels (2,121), Pacific oysters (517), razors (200), common cockles (137), surf clams (31) and carpet clams (6).

Thirty four king scallop verification samples were also collected from 12 commercial establishments under the scope of the FSS official control verification programme and were submitted for toxin analysis during the reporting period.

Sixteen inshore samples (0.5% of those received) and one king scallop verification sample were rejected on arrival at the laboratory – eight of these were submitted in error as testing was not required in these areas and eight arrived at the laboratory in a condition unsuitable for analyses.

All samples received and assessed as suitable for testing provided sufficient material to perform all of the required analyses.

Phytoplankton monitoring

A total of 1,308 seawater samples from 52 inshore sampling locations (Figure 2) were submitted to SAMS Research Services Ltd. (SRSL) for the identification and enumeration of potentially harmful algal species during the reporting period and 1306 were analysed. Two samples were not analysed as they were not required, due to the reduced autumn sampling schedule.

Figure 1: Scottish inshore shellfish sampling locations – Food Standards Scotland biotoxin monitoring programme in 2015



Figure 2: Scottish water sampling locations – Food Standards Scotland phytoplankton monitoring programme in 2015



Monitoring for lipophilic toxins

Monitoring for lipophilic toxins (LTs) was conducted using a liquid chromatography with tandem mass spectrometry (LC-MS/MS) method. The method is able to characterise and quantify the following LT groups; Okadaic Acid (OA)/Dinophysin Toxins (DTXs) and Pectenotoxins (PTXs) – reported as μg OA equivalent (eq.)/kg shellfish flesh, Azaspiracid toxins (AZAs) – reported as μg AZA1 eq./kg shellfish flesh and Yessotoxins (YTXs) reported as mg YTX eq./kg shellfish flesh.

During this reporting period, 206 inshore samples breached maximum permitted levels (MPL) for lipophilic toxins. Where monitoring for lipophilic toxins had occurred in the previous two weeks, the LC-MS method provided an early warning, detecting low toxin levels either one or two weeks prior to closure in all but one instance, indicating the methods performance and advantage as an early warning mechanism, when applied to risk management practices such as the [FSS “traffic light” guidance](#).

In total, lipophilic toxins analyses were performed on 2,938 samples from inshore locations and 33 verification samples collected from commercial establishments. Results are summarised below.

OA/DTX/PTX group

- OA/DTX/PTX group toxins were detected in 887 inshore samples, comprising of mussels (852 samples), Pacific oysters (22), surf clams (11) and razors (2).
- OA/DTX/PTX group toxins were detected in all months throughout the reporting period, with the majority of recorded results occurring between June and November 2015 (773 samples).
- The distribution of OA/DTX/PTX toxins was widespread, affecting sites within all monitored council regions, with the exception of Comhairle nan Eilean Siar: Uist & Barra and East Lothian.
- Two hundred and six samples comprising of mussels (204 samples) and Pacific oysters (2) from 31 sites recorded results above the MPL. All above MPL results were recorded between June and December 2015 (Figure 3).
- The highest level recorded during 2015 was 1,214 μg OA eq./kg, more than seven times the regulatory limit, in a sample from Loch Beag (Highland: Lochaber) in mid July 2015. Levels of OA/DTX/PTX group toxins at this site rose from 64 μg OA eq./kg to 1,214 μg OA eq./kg within a two week period.
- Elsewhere, OA/DTX/PTX group toxins were detected below the MPL in a further 681 samples from 69 sites (Figure 4), between January and December 2015.
- YTX group toxins were detected in 12 samples which contained OA/DTX/PTX group above the MPL between June and December 2015, none of which exceeded the YTX group MPL. A further 10 samples were found to contain YTX and OA/DTX/PTX group toxins below the relative MPLs between January and October 2015.
- OA/DTX/PTX group toxins below the MPL were detected in four whole king scallop verification samples from the Clyde 02, Jura 11 and Jura 12 scallop grounds received between June and September 2015.

Figure 3: Inshore locations recording OA/DTX/PTX group results above the maximum permitted limit (>160µg OA eq./kg) in 2015



Figure 4: Inshore locations where toxins of OA/DTX/PTX group were detected below the maximum permitted limit (≤160µg OA eq./kg) in 2015



AZA group

- AZA group toxins were not detected above quantifiable levels in any inshore or scallop verification samples analysed in 2015.

YTX group

- YTXs were detected in 29 mussel samples from 9 sites during the reporting period. In comparison with 2014 (130 samples), this represents a significant decrease in the occurrence of YTX toxins in 2015.
- The occurrence of YTX toxins in 2015 was limited to sites within the Loch Fyne, Firth of Clyde and Firth of Lorn regions.
- Results from 2011 & 2012 indicated the distribution of the YTX group was fairly localised, predominantly within the Loch Fyne, Firth of Clyde and Firth of Lorn regions. Results from 2013 & 2014 indicated a geographic shift in the distribution of YTXs, with the above regions and Shetland Isles also being affected.
- YTXs were detected throughout the year, and were largely prevalent between April and August 2015, during which time they were detected in 19 samples.
- No samples exceeded the MPL (3.75mg YTX eq./kg) in 2015. The highest level recorded was 0.5mg/kg in two samples from Campbeltown Loch: Kildalloig Bay Indicator (Argyll & Bute) in mid to late June. The remaining samples recorded results between 0.2 and 0.4mg/kg (Figure 6).
- OA/DTX/PTX group toxins above the MPL were detected in 12 mussel samples, which also contained YTXs below the MPL (see above). OA/DTX/PTX group toxins below the MPL were also detected in 10 samples where YTX group toxins were present below the MPL.
- YTX toxins below the MPL were detected one whole King scallop verification sample from the Jura 12 scallop ground in August 2015. OA/DTX/PTX group toxins below the MPL were also present in this sample.

Figure 5: Inshore locations where toxins of the YTX group were detected below the maximum permitted limit ($\leq 3.75\text{mg YTX eq./kg}$) in 2015



Phytoplankton associated with the production of lipophilic toxins

- *Dinophysis* spp.* were present in 551 samples (42.2%) analysed during 2015 and was detected from February to October.
- It was observed at or above trigger level (set at 100 cells/L) in 252 samples (19.3%) between April and September.
- The earliest bloom exceeding trigger level was recorded in Loch Melfort (Argyll & Bute) in late April. *Dinophysis* spp. remained in Loch Melfort at or above trigger level for a continuous period of sixteen weeks, from late May until mid September.
- The densest *Dinophysis* spp. blooms were both observed in north-west Scotland in Highland: Ross & Cromarty. An abundance of 16,960 cells/L was recorded in Loch Torridon on 30th June and 9,540 cells/L in Loch Ewe on 28th July.
- Overall, the majority of *Dinophysis* spp. blooms occurred around the Scottish coast in July and August, with 51.5% of the samples exceeding threshold counts in July.
- *Dinophysis* spp. blooms were widespread around Argyll & Bute, and the Highland region from late May to early September, with associated DSP toxicity reported in shellfish. Toxic blooms also occurred in Loch Roag (Lewis & Harris) in July and August. The blooms of *Dinophysis* spp. that were observed around the Shetland Islands in July and August 2015 were not as dense as those that occurred in 2013, although *Dinophysis* spp. recorded in August and September did have some associated DSP toxicity.
- The percentage of *Dinophysis* spp. blooms at or exceeding trigger level over the reporting period was similar to that in 2014.

*references to *Dinophysis* spp. in this report also include *Phalacroma rotundatum* (synonym *Dinophysis rotundata*)

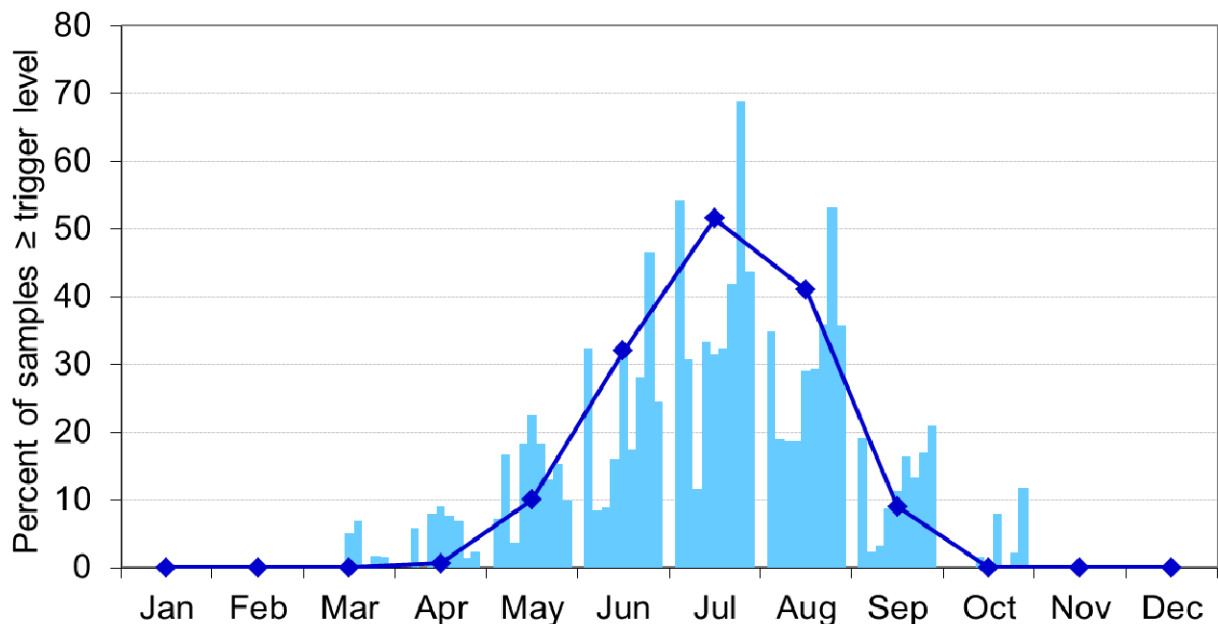


Figure 6: The percentage of samples in which *Dinophysis* spp. equalled or exceeded the trigger level of 100 cells/L in 2015 is indicated by the line. For comparison, the bars show the percentage of samples in which *Dinophysis* cells equalled or exceeded the trigger level between 2006 and 2014.

- *Prorocentrum lima* was present in 187 samples (14.3%) analysed during 2015 from March to December, and was generally most abundant in June and July. It was detected at or above the trigger level (set at 100 cells/L) in 19 samples (1.4%) between March and August. It was most frequently observed in samples from Colonsay: The Strand East and Loch Melfort (Argyll & Bute), Traigh Mhor (Uist & Barra) and Tingwall Pier (Orkney: mainland). The densest bloom of 2015 was 500 cells/L recorded in Vaila Sound: East of Linga (Shetland Islands) on 12th August.
- *Protoceratium reticulatum* was detected in 33 samples (2.5%) between March and September, and was most frequently observed in April and May. The densest bloom occurred in North Ayrshire, with 180 cells/L recorded in Arran: Lamlash Bay on 7th April and some associated YTX toxicity was detected at this site.
- *Lingulodinium polyedrum* was detected from June to September 2015 on only seven occasions (0.5 % of samples). It occurred most frequently in Loch Creran, where it appears to bloom annually, although it is rarely abundant. One other observation was recorded in Loch Leven (Highland: Lochaber), as was the case in 2014. The maximum bloom density of 380 cells/L was observed in Loch Creran on 26th August.

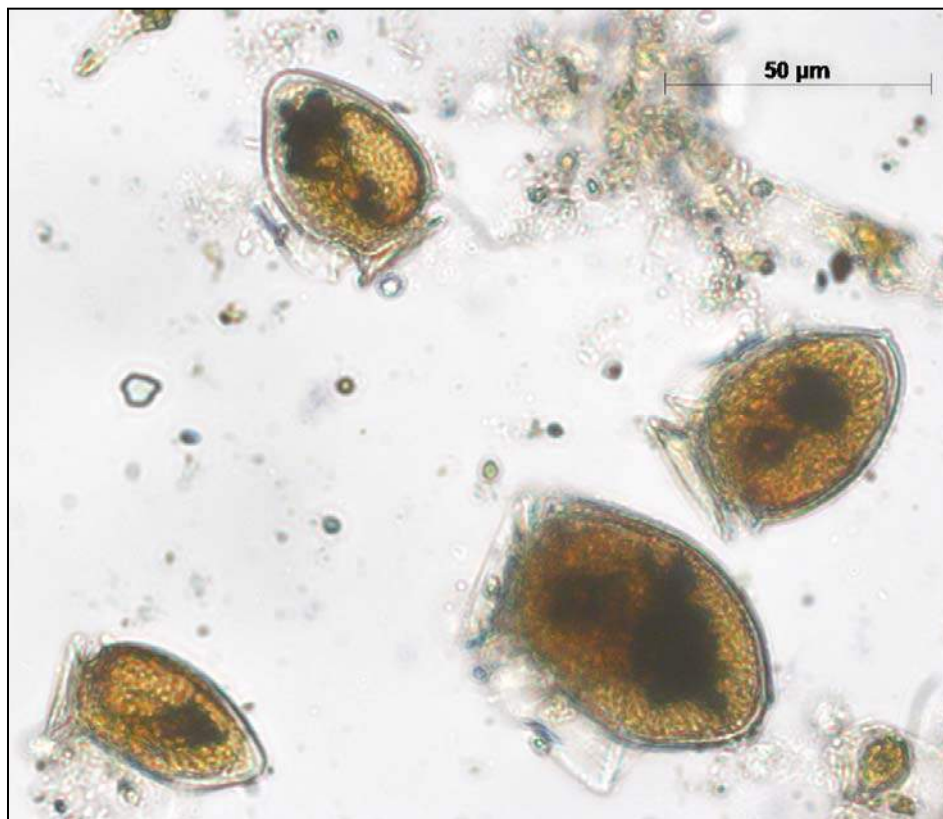


Figure 7: Species belonging to the genus *Dinophysis* were observed at a concentration of 3,580 cells/L on 2nd June at North Bay: Barassie (South Ayrshire).

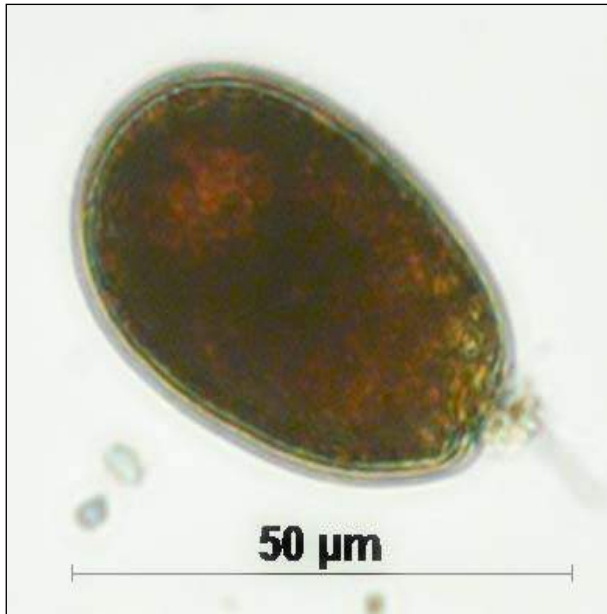


Figure 8: *Prorocentrum lima* recorded from Basta Voe (Shetland Islands) on 1st September at a concentration of 20 cells/L.

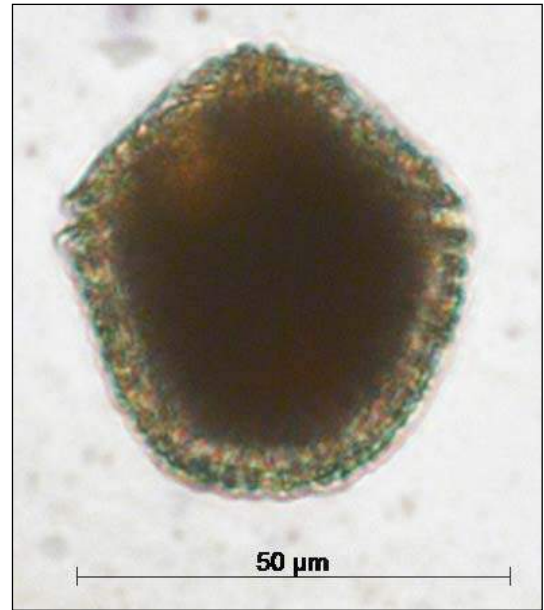


Figure 9: *Protoceratium reticulatum* was observed at a concentration of 20 cells/L in Loch Melfort (Argyll & Bute) on 22nd June.

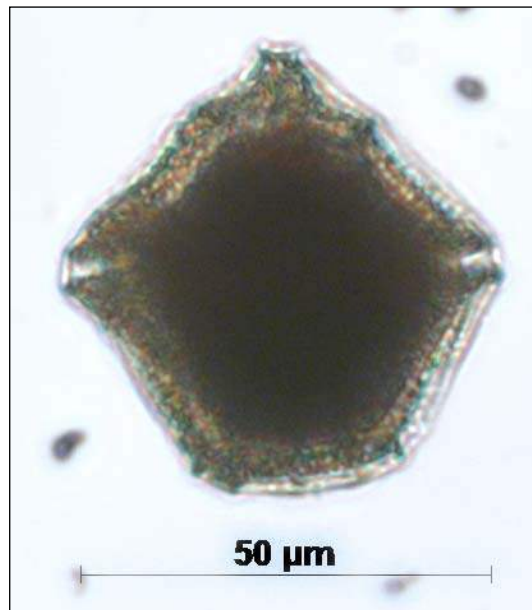


Figure 10: *Lingulodinium polyedrum* was recorded in Loch Creran (Argyll & Bute) on 26th August at a density of 380 cells/L.

Figure 11. Phytoplankton concentrations of *Dinophysis* spp. observed between Jan and Dec 15



Monitoring for PSP toxins

A total of 1,841 samples from inshore locations and 33 king scallop verification samples collected from commercial establishments were tested for paralytic shellfish poisoning (PSP) toxins. All samples were tested by a high performance liquid chromatography (HPLC) method, and are summarised below.

- Thirty eight mussel and four Pacific oyster samples from 15 separate inshore sites were found to contain PSP toxins above the MPL of 800µg STX eq./kg shellfish flesh between April and July 2015 (Figure 12). The highest level recorded was 27,822µg/kg, nearly thirty five times the regulatory limit in a mussel sample from Campbeltown Loch: Kildalloig Bay Indicator (Argyll & Bute) collected in April 2015. This result represents the highest level of PSP toxins recorded in shellfish analysed via the OC programme from inshore Scottish waters since 2001, eclipsing the previous highest result of 14,730 µg/kg recorded in mussels from Loch Striven: Troustan in June 2014. PSP toxin concentrations rose from trace levels to 27,822µg/kg within a two week period at this site.
- PSP toxins above reporting levels, but below the MPL were detected in a further 33 samples comprising of mussels (32) and Pacific oysters (1) from 16 sites (Figure 13). All occurrences were recorded between March and September 2015.
- Results from 2008 to 2014 indicated that PSP toxicity episodes began typically in March/April and tended to conclude by July or August. The March onset and duration into September indicate that in addition to the highest PSP toxin levels recorded, 2015 witnessed the longest PSP season since 2008.
- Overall, the period January to December 2015 saw a similar number of samples found containing PSP toxins in comparison with 2014. However, it must be noted that, as a consequence of the risk assessment, testing frequencies are reduced in many areas and monitoring for PSP toxins was suspended at sites where harvesting restrictions were placed due to the presence of lipophilic toxins above MPL. Given the high prevalence of lipophilic toxins in this reporting period and alterations to the testing frequencies, the PSP statistics for 2015 may therefore not be a true reflection of the prevalence of PSP toxins in Scotland but more a result of targeted monitoring throughout the high risk period.
- A range of PSP toxins, most notably the toxins STX, GTX1&4, GTX2&3, NEO and C1&2, were identified throughout the reporting period in samples breaching the MPL (data not shown). Lower concentrations of GTX5 and dcGTX2&3 were also detected. Proportions of each toxin were found to vary widely but indications were provided for these to fall into three specific groups of profiles. These were found to be similar to those expected from shellfish contaminated with *Alexandrium* as evidenced by validation work and similar to toxin distributions seen in previous years (Turner et al., 2014).
- Two whole king scallop verification samples, both originating from the Jura 12 scallop ground in June and August 2015 exceeded the MPL, recording a levels of 1,120 and 2,321 µg/kg respectively.
- In addition, trace levels of PSP toxins, but below quantifiable limits were detected in three whole king scallop and twelve shucked product samples between March and December 2015.

Figure 12: Inshore locations recording PSP toxin results above the maximum permitted limit ($>800\mu\text{g STX eq./kg}$) in 2015



Figure 13: Inshore locations recording PSP toxin results below the maximum permitted limit ($\leq 800\mu\text{g STX eq./kg}$) in 2015



Phytoplankton associated with the production of PSP toxins

- *Alexandrium* spp. were observed between February and October and were detected in 414 samples (31.7%) analysed during 2015. They were recorded at or above the trigger level (set at 40 cells/L) in 283 samples (21.7%) mostly between April and August, and were recorded at or exceeding trigger level in 30.2% of the samples analysed during April.
- The densest recorded *Alexandrium* spp. blooms were observed at Tingwall Pier (Orkney Islands) on 27th July with an abundance of 10,400 cells/L, and Loch Eishort (Highland: Skye & Lochalsh) on 25th May with an abundance of 9,600 cells/L.
- Highly toxic *Alexandrium* spp. blooms were detected around North Ayrshire and Argyll & Bute during April and May, most notably Arran: Lamlash Bay, Campbeltown Loch, Loch Striven, Loch Fyne: Otter Ferry and Loch Fyne: Ardkinglas. Blooms associated with PSP toxicity also occurred throughout Highland region in May and June around Loch Eishort (Skye & Lochalsh), Loch Torridon (Ross & Cromarty), Loch Laxford and Loch Inchard (Sutherland). Toxic *Alexandrium* spp. blooms were observed in Loch Roag: Miavaig and Loch Roag: Barraglom (Lewis & Harris) in early July.
- *Alexandrium* spp. blooms at or exceeding trigger level were less frequently detected in 2015 compared with both 2013 and 2014, which may be due in part to the absence of prolonged blooms around the Shetland Islands, in contrast to previous years.

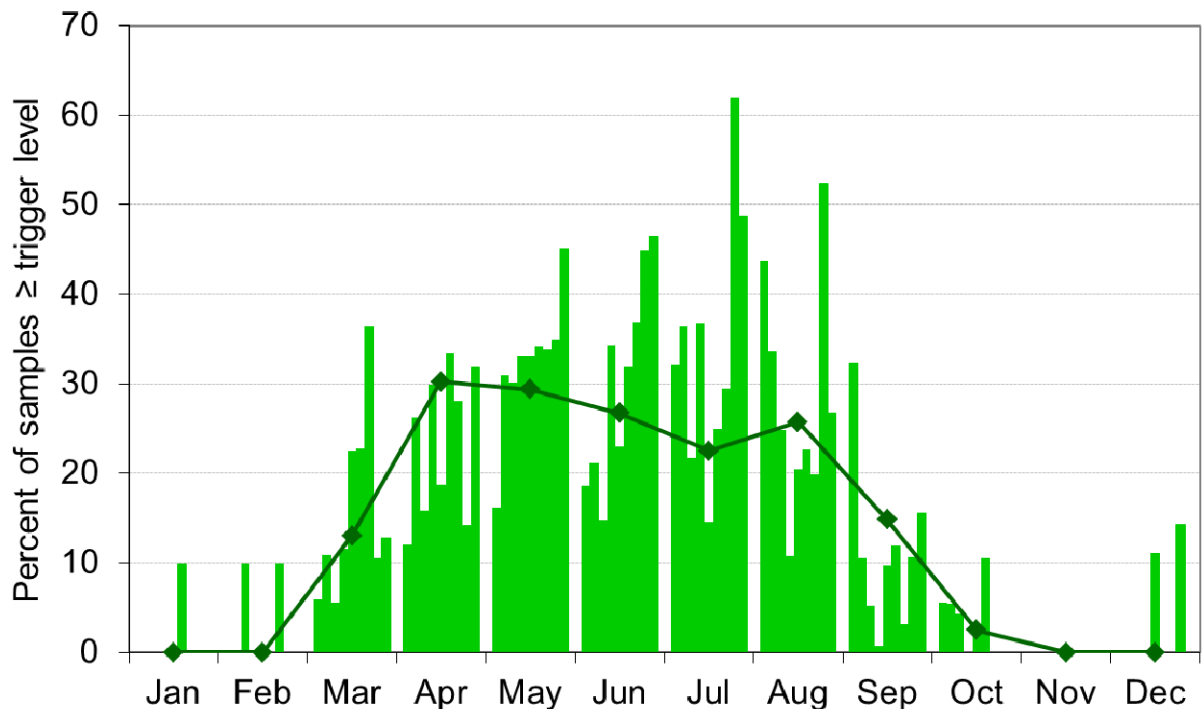


Figure 14: The percentage of samples in which *Alexandrium* spp. equalled or exceeded the trigger level of 40 cells/L in 2015 is indicated by the line. For comparison, the bars show the percentage of samples in which *Alexandrium* spp. equalled or exceeded the trigger level between 2006 and 2014. NOTE: Data collected prior to July 2014 have been adjusted to the revised trigger level of 40 cells/L for comparative purposes.

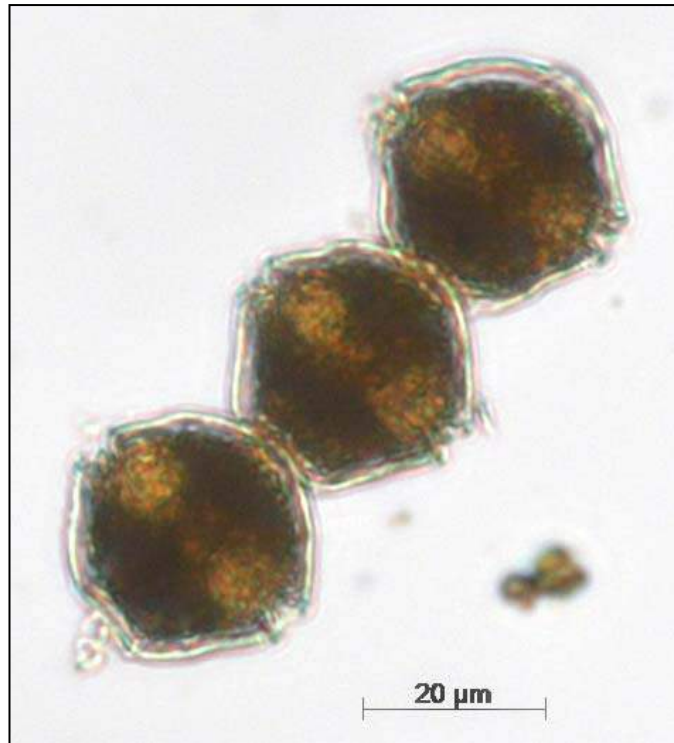
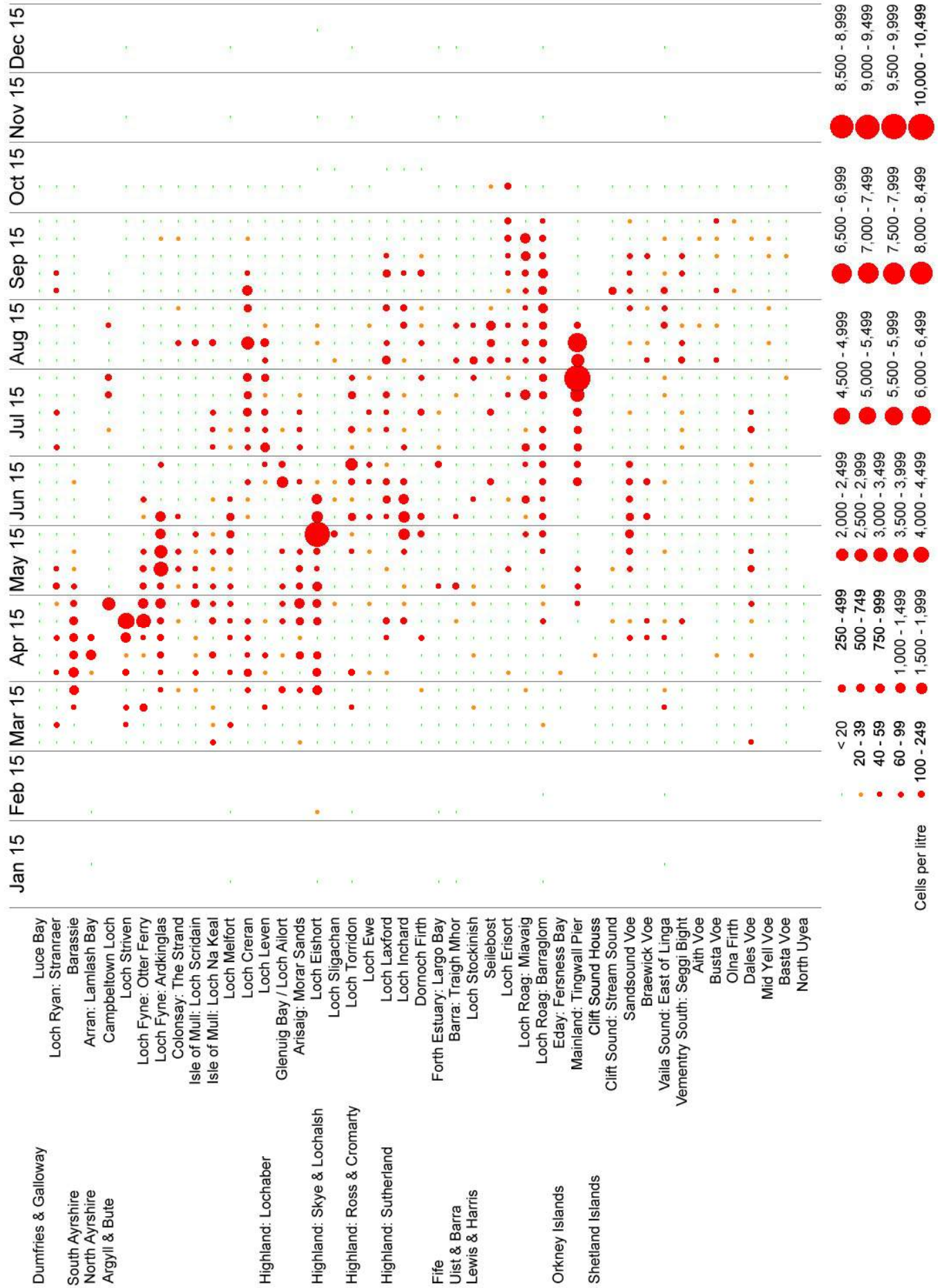


Figure 15: *Alexandrium* spp. were recorded at a density of 3,840 cells/L on 21st April at Loch Fyne: Otter Ferry (Argyll & Bute). This bloom developed rapidly and was associated with a PSP toxic event in shellfish.

Figure 16. Phytoplankton concentrations of *Alexandrium* spp. observed between Jan and Dec 15



Monitoring for ASP toxins

Analyses for amnesic shellfish poisoning (ASP) toxin were conducted on 1,326 samples from inshore locations and 33 king scallop verification samples collected from commercial establishments. All samples were analysed by an HPLC method. Results are summarised below.

- ASP was detected in 55 inshore samples comprising of: common mussels (18 samples), razors (12), Pacific oysters (8), common cockles (7), surf clams (7) and carpet clams (3).
- These samples originated from 29 sites, predominantly on the West Coast, Western Isles, Shetland Isles and Forth Estuary. All incidences were recorded between May and November 2015, with the peak period occurring between July & September, during which time, ASP was detected in 40 samples.
- No inshore samples exceeded the MPL of 20mg [domoic/epi domoic acid] (DA)/kg shellfish flesh. The highest level recorded was 6.1mg/kg in a cockle sample collected in mid July 2015, originating from Traigh Mhor: Traigh Mhor (Uist & Barra). The remaining samples recorded levels below the MPL at ranges between 1 and 6mg/kg (Figure 17).
- The periods where ASP was detected during this reporting period are consistent with previous years, with significant decrease in occurrence in comparison with 2014. However, it must be noted that, as a consequence of the risk assessment, testing frequencies are reduced in many areas and monitoring for ASP toxins was suspended at sites where harvesting restrictions were placed due to the presence of PSP and/or lipophilic toxins above the MPL. Given the high prevalence of lipophilic toxins in this reporting period and alterations to the testing frequencies, the statistics may therefore not be a true reflection of the prevalence of ASP toxins in Scotland but more a result of targeted monitoring throughout the high risk period.
- ASP was detected in 20 king scallop verification samples from 9 establishments. Six of these samples comprised of whole king scallop material, the remaining fourteen of shucked product. These shellfish samples were originally harvested in the following offshore scallop grounds; Jura (14 samples), Clyde (4 samples), South Minch (1 sample) with one further sample from unknown scallop grounds between February and December 2015. Toxin levels ranged between 1.2 and 278mg/kg DA/shellfish flesh, five of which exceeded the MPL.
- The five samples which exceeded the MPL comprised of whole scallop samples originating from the Clyde 03, Jura 02, Jura 11 and Jura 12 offshore scallop grounds collected by Argyll & Bute Council between February and December. The highest level recorded was 278mg/kg in a sample from the Jura 02 scallop ground in February 2015.

Figure 17: Inshore locations where ASP toxins were detected below the maximum permitted limit ($\leq 20\text{mg/kg}$) in 2015



Phytoplankton associated with the production of ASP toxins

- *Pseudo-nitzschia* spp. were detected every month in 2015 and at all sites, and were present in 1,196 (91.6%) of the samples analysed. Blooms (here referred to as cell densities exceeding 50,000 cells/L) were detected between March and October, and were most frequently observed in September, although none were detected in May.
- *Pseudo-nitzschia* spp. counts at or above the trigger level (set at 50,000 cells/L) were recorded in 116 samples (8.9%), with 16.9% of the samples analysed in September exceeding this level. The earliest blooms were recorded around the Shetland Islands, Dornoch Firth (Highland: Sutherland) and Loch Scridain (Argyll & Bute) during early March.
- *Pseudo-nitzschia* spp. were widespread around the Highland region, Lewis & Harris, and the Orkney Islands in June and July, and then around the Shetland Islands in August. The densest *Pseudo-nitzschia* spp. bloom was observed in Loch Ailort (Highland: Lochaber) on 21st September, where a maximum abundance exceeding 1.2 million cells/L was recorded. Some associated ASP toxicity was reported in Pacific oysters from Loch Ailort at this time. *Pseudo-nitzschia* spp. blooms were also detected nearby at Arisaig: Morar Sands (Highland: Lochaber) and in Argyll & Bute around the Isle of Mull (Loch Scridain, Loch Na Keal) and Loch Melfort through September and into early October.

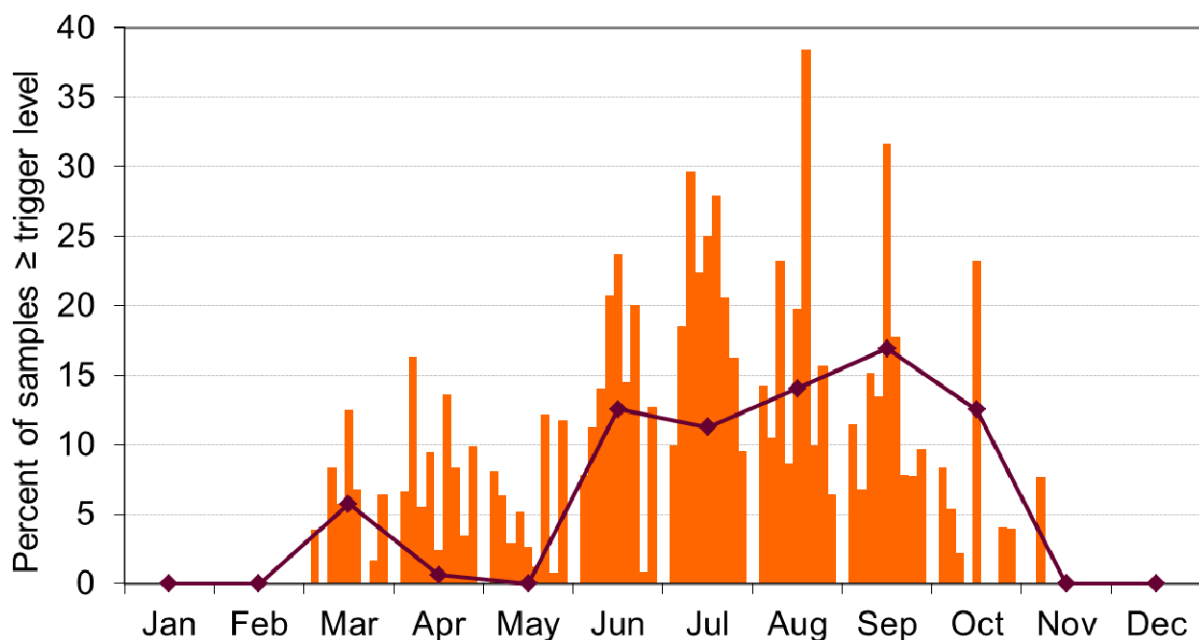
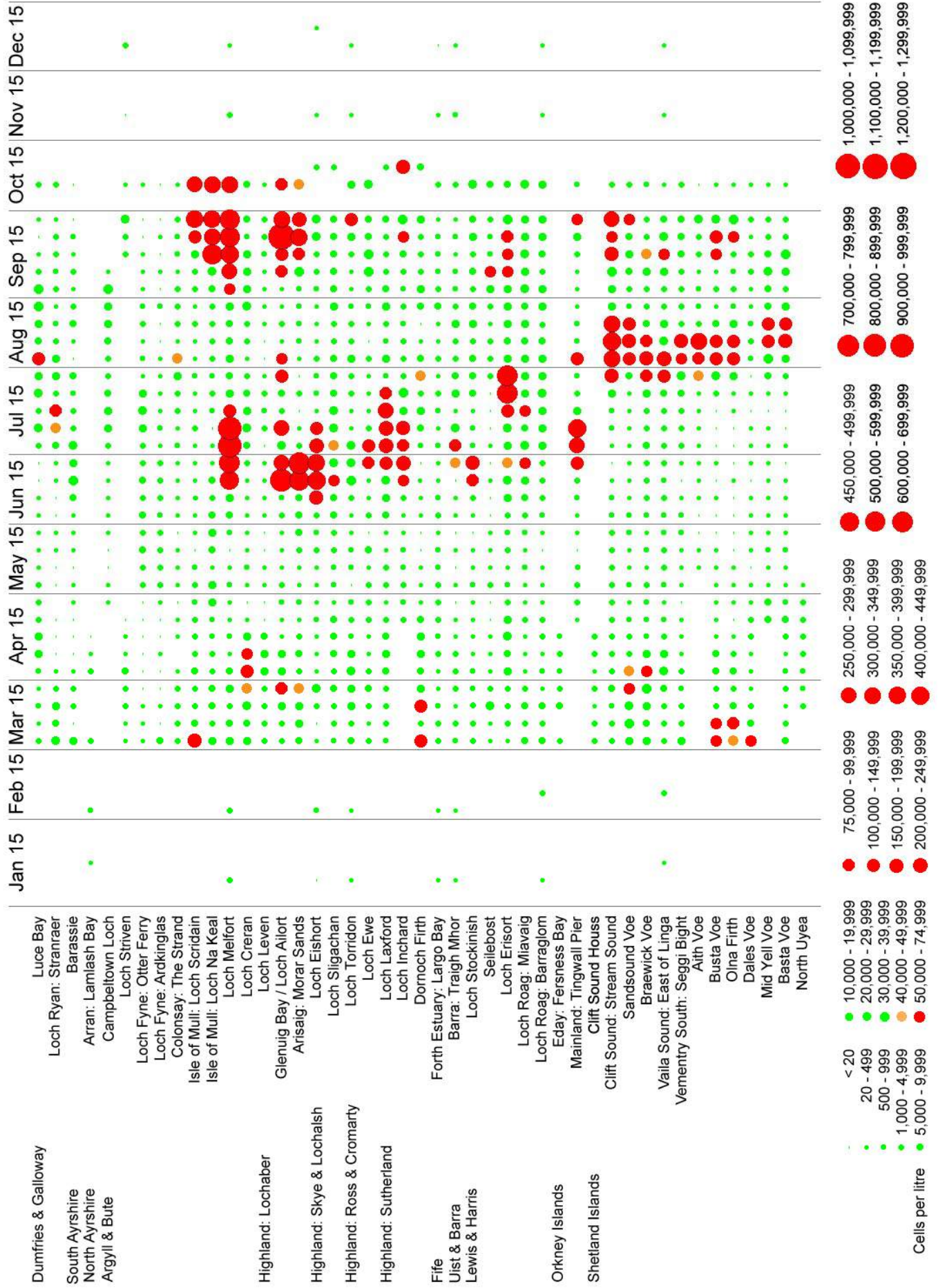


Figure 18: The percentage of samples in which *Pseudo-nitzschia* spp. equalled or exceeded the trigger level of 50,000 cells/L in 2015 is indicated by the line. For comparison, the bars show the percentage of samples in which *Pseudo-nitzschia* spp. equalled or exceeded the trigger level between 2006 and 2014.



Figure 19: *Pseudo-nitzschia* spp. were observed at a concentration of greater than 1.2 million cells/L in Loch Ailort (Highland: Lochaber) on 21st September.

Figure 20: Phytoplankton concentrations of *Pseudo-nitzschia* spp. observed between Jan and Dec 15



Other potentially harmful phytoplankton

Prorocentrum cordatum was detected in 694 samples analysed in 2015 (53.1%). It was observed from February through to October and was most abundant in May and June, being recorded in 81.9% and 81.7% of the samples analysed, respectively. The densest blooms of 2015 occurred in Largo Bay (Fife) at a concentration of 162,769 cells/L on 13th July, and also in Braewick Voe (Shetland Islands) at 123,898 cells/L on 3rd June.



Figure 21: *Prorocentrum cordatum* observed in Loch Scridain (Argyll & Bute) on 5th May at a density of 720 cells/L.

Similar to 2014, the potentially problematic dinoflagellate *Karenia mikimotoi* was not observed in densities likely to negatively impact aquaculture during 2015, and was detected in only 3.5% of the samples analysed. This species is not an issue in terms of shellfish harvesting, as it does not produce biotoxins that are harmful to human health. However, it does produce ichthyotoxins that can kill finfish, and dense blooms may result in both fish and invertebrate mortality as a result of hypoxia. The densest *Karenia mikimotoi* bloom was observed in Arran: Lamlash Bay on 7th April, with an abundance of 340 cells/L.

2. Abbreviations used in the text

AHA	Associated Harvesting Area
AOAC	AOAC International
ASP	Amnesic Shellfish Poisoning
AZA	Azaspiracid
AZP	Azaspiracid Poisoning
CI	Cyclic Imines
DA	Domoic Acid
DSP	Diarrhetic Shellfish Poisoning
DTX	Dinophysistoxin
dcSTX	decarbamoyl saxitoxin
EC	European Commission
EU	European Union
EURL	European Union Reference Laboratory for Marine Biotoxins
EHO	Environmental Health Officer
EPT	End product test
FSA	Food Standards Agency
FSS	Food Standards Scotland
GTX	Gonyautoxin
HPLC	High Performance Liquid Chromatography
LA	Local Authority
LC-MS/MS	Liquid Chromatography with tandem Mass Spectrometry
LOD	Limit of detection
LOQ	Limit of quantitation
LT(s)	Lipophilic Toxin(s)
MPL	Maximum Permitted Level
ND	Not Detected
UKNRL	UK National Reference Laboratory for Marine Biotoxins
OA	Okadaic Acid
PSP	Paralytic Shellfish Poisoning
PST(s)	Paralytic Shellfish Toxin(s)
PTX	Pectenotoxin
PTX2	Pectenotoxin 2
PTX2sa	Pectenotoxin 2 seco-acid
RL	Reporting limit
RMP	Representative Monitoring Point
SAMS	The Scottish Association for Marine Science
SOP(s)	Standard Operating Procedure(s)
STX	Saxitoxin
YTX	Yessotoxin

3. Introduction

Phytoplankton are the organisms at the bottom of the marine food chain and are the primary food source for filter-feeding marine animals, such as bivalve molluscs.

Marine waters contain a diverse array of phytoplankton, the vast majority of which are harmless. However, under certain conditions, a relatively few species produce toxins, some of which can accumulate in the tissue and organs of filter-feeding shellfish and also sometimes in other shellfish such as grazing gastropods. The ingestion of shellfish contaminated with biotoxins above certain levels is known to pose risks to the human consumer.

All phytoplankton grow by harvesting light energy from the sun through the process of photosynthesis, primarily using the pigment chlorophyll. Some phytoplankton species may also exhibit mixotrophic growth, being able to both photosynthesize and ingest smaller phytoplankton. Phytoplankton are characteristic of relatively shallow depths where sunlight can still penetrate into the water column. Photosynthesis allows phytoplankton to take up dissolved carbon dioxide from the water, along with inorganic nutrients such as nitrate, phosphate, silicate and trace metals, such as iron, which are also required for growth. Phytoplankton require sufficient light, warmth and nutrients to grow.

In winter, in temperate regions, the day length is too short and the water too cold for growth to occur in most species. However, at this time, mixing of the water column returns nutrients to the surface layers.

In spring, with increasing daylight and water temperatures, rapid phytoplankton growth begins. This growth phase is called the spring bloom and is, in Scottish waters, characterised by diatom species that are capable of rapid utilisation of available nutrients and fast growth. Diatoms often dominate the spring bloom and early spring blooms may be large if the population of zooplankton grazers has not yet begun to increase. The spring bloom is terminated by the exhaustion of nutrients (usually the elements nitrogen or silicon) in the water column, and a rapid decline in phytoplankton density may occur as cells die, or are grazed down. This will also serve to return some nutrients, particularly nitrogen, into the water.

During summer, the composition of the phytoplankton community is of a different character to that of spring and contains a greater proportion of dinoflagellate species. Autumnal phytoplankton blooms can also occur due to enhanced nutrient availability following water column mixing and the breakdown of any summer stratification.

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), Azaspiracids (AZAs), and the Saxitoxin (STX), Domoic Acid (DA) and the Brevetoxin groups. These groups are responsible for Diarrhetic Shellfish Poisoning (DSP), Azaspiracid Poisoning (AZP), Paralytic Shellfish Poisoning (PSP), Amnesic Shellfish Poisoning (ASP) and Neurotoxin Shellfish Poisoning (NSP) respectively. Pectenotoxins (PTXs), Yessotoxins (YTXs) and Cyclic Imines (CIs) form the remaining three groups and currently, there is a lack of toxicological evidence regarding human illness from these compounds.

Of the five major shellfish biotoxin groups known to induce human illness, there are currently three which are subject to statutory testing across the European Union (including the UK) to protect human health:

1. PSP toxins: PSP is associated with algae of the genus *Alexandrium* in Scottish waters. The active component in PSP is STX 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 contaminated 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. PSP outbreaks have occurred in Scottish waters such as those along the west coast, Shetlands, Orkney Isles and Offshore Scallop Grounds. PSP toxicity is usually an annual event at the above locations, although levels may not exceed the maximum permitted limit (MPL) of 800 µg STX equivalence (STX eq.) per kg of flesh (EC Regulation 853/2004).
2. Lipophilic toxins: Of the lipid-soluble toxins, it is the OA/DTXs, AZAs, YTXs, PTXs that contribute to this class and collectively, they are referred to as lipophilic toxins (LTs). OA/DTXs are responsible for human DSP, whilst AZAs are responsible for AZP if present in shellfish flesh at concentrations above those defined as the MPL by EC Regulation 853/2004. Predominant symptoms include 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). In the UK, LT positive samples have been found mostly in Southern English waters and throughout Scotland, where approximately 5 - 10% of samples submitted through the official control programme record results above the MPL.

DSP toxins (OA and DTX groups) are produced by algae of the genera *Dinophysis*, *Phalacroma* and *Prorocentrum*. AZAs are produced by dinoflagellates of the genera *Azadinium* and *Amphidoma*, whilst PTX toxins are produced by algae of the genera *Dinophysis*. YTX toxins are produced by a number of algal species including, *Lingulodinium polyedrum*, *Gonyaulax spinifera* and *Protoceratium reticulatum*.

3. ASP toxins: ASP is caused by DA 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 can often be detected in Scottish shellfish during the period April to November, at concentrations which at times exceed the MPL of 20 mg per kg of flesh (EC Regulation 853/2004).

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 Chapter V of Section VII, Annex III prescribes the statutory maximum levels of biotoxins permitted in live bivalve molluscs being placed on the market by food business operators (Table 1).

Table 1: Maximum Permitted Limits of toxins in shellfish flesh

Toxin group	Maximum Permitted Limits
ASP	>20 mg Domoic/epi-domoic acid/kg [shellfish flesh]
LTs	Diarrhetic shellfish poisoning (DSP) toxins and pectenotoxins (PTXs) together, >160µg okadaic acid eq./kg [shellfish flesh] or Yessotoxins, >3.75mg yessotoxin eq./kg [shellfish flesh] or Azaspiracids, >160µg azaspiracid eq./kg [shellfish flesh]
PSP	>800µg saxitoxin eq./kg [shellfish flesh]

Regulation (EC) 882/2004 provides a regulatory framework for competent authorities including general requirements for the methods used for analysis of official control samples and the validation of these methods. The regulations are further supported by Regulation (EC) 2074/2005 which sets out the analytical methods to be used for shellfish toxins. The above packages of EU Regulations are directly applicable across all member states and are intended to ensure a uniform approach to food and food law across Europe. The Regulations are enabled in Scotland by The Food Hygiene (Scotland) Regulations 2006 (as amended).

Whilst it is the responsibility of Food Business Operators to ensure that the products they sell do not contain toxins above regulatory limits, there are very specific requirements placed upon 'Competent Authorities' in all member states. The legal requirements essentially require EU Member States to have in place an 'Official Control' monitoring system which checks i) for the presence of regulated marine biotoxins in shellfish production and relaying areas, and in products placed on the market and ii) checks for the possible presence of toxin producing phytoplankton in production and relaying areas. The competent authority is required to take action to close the production or relaying area and prevent further harvesting or sale of products found to contain levels of biotoxins above the limits prescribed in the legislation.

Under EU legislation the competent authority has the statutory responsibility for ensuring delivery of an effective official control programme including such aspects as the monitoring scope and frequency, test methods used, etc. The competent authority is required to act within the legal framework set by the legislation including, for example, the use of methods prescribed by the legislation.

In Scotland, the national Competent Authority is Food Standards Scotland (FSS), which, through its office in Aberdeen, delegates certain official control functions through Local Authorities e.g. local enforcement and sampling activities in some parts of the country. In 2012, the delivery of the FSA/FSS official control shellfish monitoring programmes (co-ordination, logistics and analyses) was contracted out to a consortium of UK laboratories and organisations known as the Shellfish Partnership. Within the context of the marine Biotoxin programmes, activities relating to the shellfish toxin programme in Scotland are delivered by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) whilst those relating to the phytoplankton monitoring are delivered by the Scottish Association for Marine Science (SAMS).

Within Scotland, monitoring for algal biotoxins is divided into two aspects, the flesh and phytoplankton monitoring programmes. For the flesh monitoring programme, samples of shellfish from designated shellfish harvesting areas and wild pectinidae from commercial processors are tested. In the phytoplankton monitoring programme, water samples are collected from fixed sites within selected harvesting areas and the composition of marine algae identified and enumerated. The presence of toxin-producing phytoplankton in the water column does not necessarily mean that toxin will be present. While the reasons for toxin production remain unclear, some phytoplankton may produce toxins as a deterrent for grazers, with some species only becoming toxic as a stress response to nutrient unavailability or other, as yet poorly understood environmental factors. Even when toxic phytoplankton are present in the water column, to some extent the amount ingested by filter-feeding shellfish will depend on the availability of other harmless phytoplankton species. Different genera of bivalves also vary in their rates of biotoxin accumulation and retention. Furthermore, the toxicity of harmful species may vary with the condition of the water column or the physiological state of the cell and the current analysis cannot be used to determine actual toxin production.

The shellfish monitoring programme encompassed two elements:

- The inshore biotoxin monitoring programme whereby shellfish production areas are sampled through representative monitoring points (RMPs) and associated harvesting areas (AHAs). Under the current inshore monitoring programme, classified shellfish production areas are grouped into 'pods', where sites within a pod are thought to be similar hydrographically and environmentally. The pods are sampled through RMPs, which were chosen as the sites most likely to be representative or indicative of any toxicity in the area. Other sites within the pods are designated as AHAs.
- Wild pectinidae control in the form of onshore verification checks by authorised officers of the Local Authorities, as required under Regulations (EC) 854/2004 and 882/2004.

During this reporting period, the pods were monitored in accordance with the FSS risk assessment, at the following pod specific routine frequencies prior to and during periods of expected or active harvesting:

- PSP: either weekly, fortnightly or monthly, as determined by risk assessment
- LTs: weekly March to December, monthly January and February
- ASP: either weekly, fortnightly or monthly, as determined by risk assessment

The phytoplankton monitoring programme focuses on a number of selected sampling locations amongst the active shellfish RMPs. During the reporting period, monitoring frequency was set by the FSS as follows:

- Weekly for all sites between March and September;
- Fortnightly in October;
- Monthly sampling from November to February in a limited number of selected areas, to reflect the low abundance of phytoplankton in the water column during the winter months.

Monitoring at the selected water sampling locations focuses on those algal species which are considered as potentially harmful. In the reporting period, water samples collected from designated shellfish harvesting areas were monitored for seven potentially toxic genera or species of phytoplankton (Table 2).

Table 2: The eight genera or species of phytoplankton monitored in Scottish coastal waters in 2015

Toxin group	Genus/species
ASP toxins	<i>Pseudo-nitzschia</i> (genus)
PSP toxins	<i>Alexandrium</i> (genus)
OA/DTX/PTX	<i>Dinophysis</i> & <i>Phalochroma</i> (genera)
OA/DTX	<i>Prorocentrum lima</i>
Unknown	<i>Prorocentrum cordatum</i>
YTX	<i>Protoceratium reticulatum</i>
YTX	<i>Lingulodinium polyedrum</i>

In addition, the monitoring programme will report unusually large occurrences of any of the other harmful species detailed on the IOC-UNESCO taxonomic reference list of harmful micro algae at <http://www.marinespecies.org/hab/index.php>

Pseudo-nitzschia spp. are associated with the production of ASP toxins. Nine species have been observed in Scottish coastal waters, although it is not possible to routinely discriminate between species of *Pseudo-nitzschia* using light microscopy. Hence, determination of *Pseudo-nitzschia* spp. is only carried out to genus level. In Scotland, a trigger level of 50,000 cells/L for *Pseudo-nitzschia* spp. was defined by the UKNRL network. Cell counts above this level are regarded as having the potential to cause an ASP toxic event in shellfish.

In Scottish waters, species belonging to the dinoflagellate genus *Alexandrium* are associated with the production of PSP toxins. Dense blooms are not required before there is a cause for concern, and the presence of *Alexandrium* spp. (40 cells/L) is taken as an indication of the potential for a PSP event. Four species have been reported from around Scotland, one of which is thought to be non-toxic (*Alexandrium tamutum*) and both toxic and non-toxic strains of another species (*Alexandrium tamarense*) have been found at some locations. However, it is difficult to determine *Alexandrium* spp. to species level in a Lugol's-fixed sample using light microscopy and *Alexandrium* spp. are therefore reported to genus level within the monitoring programme.

Dinoflagellate phytoplankton are also associated with the production of toxins belonging to different LT groups. Okadaic acid and dinophysistoxins are produced by several species of *Dinophysis* and *Phalochroma*, and also by the benthic dinoflagellate *Prorocentrum lima*. In addition to these toxins, *Dinophysis acuta* is also associated with pectenotoxins, although this species is not particularly abundant in Scottish coastal waters.

Prorocentrum lima is epiphytic in nature and it is unlikely that abundance in the water column is a true reflection of the actual abundance of this species. Algal cells of the genus *Dinophysis* and *Phalochroma rotundatum* are reported as *Dinophysis* spp. within the monitoring programme, and cell counts above a threshold level of 100 cells/L for both *Dinophysis* spp. and *Prorocentrum lima* may be regarded as having the potential to cause a DSP toxic event in shellfish.

Prorocentrum cordatum is a small dinoflagellate that can form highly dense blooms, often exceeding several million cells/L, resulting in a visible discolouration of the water. One strain isolated from the French Mediterranean coast was found to be a neurotoxin producer, although the toxicity of *Prorocentrum cordatum* around UK waters is currently unknown.

Protoceratium reticulatum and *Lingulodinium polyedrum* are not frequently observed in Scottish coastal waters, but both species are associated with the production of yessotoxins. No threshold level has been applied to these species within the monitoring programme.

The azaspiracid producers, *Azadinium* and *Amphidoma*, are difficult to accurately identify using light microscopy and are not currently monitored as part of the programme.

4. Biotxin Methodology

4.1. Shellfish collection

Inshore Monitoring Programme (classified shellfish production areas):

For the monitoring period of 1st January to 31st December 2015, 3,012 samples from 100 inshore sampling locations were submitted for toxin analyses. These sampling locations covered 85 pods within 13 Local Authority regions.

The inshore samples received by Cefas during the reporting period comprised of mussels (*Mytilus* spp.) (2,121 samples - 70% of all samples), Pacific oysters (*Crassostrea gigas*) (517 - 17%), razors (*Ensis* spp.) (200 - 7%), common cockles (*Cerastoderma edule*) (137 - 5%), surf clams (*Spisula solida*) (31 - 1%) and carpet clams (*Venerupis senegalensis*) (6 - <1%).

Samples were collected by officers operating on behalf of several contractors appointed by FSS. A list is provided in Table 3. The majority of samples were collected by appointed sampling officers. However, in specific incidences and dependent on location or accessibility, FSS also allowed the collection of samples by the industry. These samples qualified as “unverified” were collected under the direction of the responsible sampling contractor. During this reporting period, 14% of the samples received were of unverified origin. Numbers however, varied significantly between Local Authority regions. A further breakdown of unverified samples received (by species and fishery type) is provided in Table 4.

Table 3: Number of verified and unverified inshore biotoxin samples collected during the reporting period by Local Authority region and by sampling contractor.

Local Authority	Sampling contractor	No. samples received	No. verified samples received	No. unverified samples received
Argyll & Bute Council	Argyll & Bute Council	775	742 (96%)	33 (4%)
Comhairle nan Eilean Siar: Lewis & Harris	Hall Mark Meat Hygiene	349	306 (88%)	43 (12%)
Comhairle nan Eilean Siar: Uist & Barra	Hall Mark Meat Hygiene	159	149 (94%)	10 (6%)
Dumfries & Galloway Council	FSS Operations	81	43 (53%)	38 (47%)
Fife Council	Hall Mark Meat Hygiene	82	18 (22%)	64 (78%)
East Lothian Council	Hall Mark Meat Hygiene	35	0	35 (100%)
Highland Council: Lochaber	Highland Council	245	143 (58%)	102 (42%)
Highland Council: Ross & Cromarty	Highland Council	131	129 (98%)	2 (2%)
Highland Council: Skye & Lochalsh	Highland Council	130	129 (99%)	1 (1%)
Highland Council: Sutherland	Highland Council	205	161 (79%)	44 (21%)
North Ayrshire Council	FSA Operations	59	58 (98%)	1 (2%)
Orkney Islands Council	Hall Mark Meat Hygiene	0	0	0
Shetland Islands Council	Hall Mark Meat Hygiene	722	715 (99%)	7 (1%)
South Ayrshire Council	FSS Operations	39	1 (3%)	38 (97%)
Totals		3,012	2,594 (86%)	418 (14%)

Table 4: Number of unverified inshore biotoxin samples collected during the reporting period by species and fishery type.

Species	Fishery type	No. unverified samples received	Proportion of unverified samples received per species
Common cockles	Wild harvest	0	0%
Common mussels	Aquaculture	173	8.5%
Common mussels	Wild harvest	9	
Pacific oysters	Aquaculture	4	1%
Razors	Wild harvest	5	97.5%
Surf clams	Wild harvest	31	100%
Carpet clams	Wild harvest	6	100%

Shellfish were collected and packaged in accordance with the Shellfish Partnership sampling and transport protocol, itself based upon UKNRL guidance and sent to the Cefas Weymouth laboratory for analyses. All samples were posted using Royal Mail next day delivery service. The majority of samples (~99%) arrived at the laboratory within one or two working days of sample collection (84 and 15%, respectively) (Table 5). When delays occurred, these were generally attributed to the time at which the samples were collected, thus missing the routine post office collection deadline or to other events outside of the laboratory or sampling officers' control, such as inclement weather or transport network problems.

Table 5: Number of inshore samples received from each Local Authority region in 2015 and time taken between collection and receipt at Cefas

Local Authority	No. samples received	No. received 1 working day post collection	No. received 2 working days post collection	No. received 3 working days post collection	No. received 4 working days post collection
Argyll & Bute Council	775	655	115	5	0
Comhairle nan Eilean Siar: Lewis & Harris	349	313	34	2	0
Comhairle nan Eilean Siar: Uist & Barra	159	102	50	7	0
Dumfries & Galloway Council	81	70	10	1	0
Fife Council	82	61	20	1	0
East Lothian Council	35	24	11	0	0
Highland Council: Lochaber	245	158	78	9	0
Highland Council: Ross & Cromarty	131	117	12	2	0
Highland Council: Skye & Lochalsh	130	93	34	3	0
Highland Council: Sutherland	205	193	12	0	0
North Ayrshire Council	59	53	6	0	0
Orkney Islands Council	0	0	0	0	0
Shetland Islands Council	722	666	52	4	0
South Ayrshire Council	39	15	22	2	0
Totals	3,012	2,520 (84%)	456 (15%)	36 (1%)	0 (0%)

Careful programme management, training and liaison with sampling officers minimised the occurrence and impact of delays on the programme, with only 1% of samples (n=36) being received three working days post collection throughout this reporting period. None of these late samples were rejected as unsuitable for analyses, based on poor organoleptic properties upon arrival at the laboratory (see section 4.2).

Wild pectinidae – Onshore Surveillance Programme:

Thirty four king scallop samples (comprising of shucked product (n=27) or whole shellfish (n=7)) were collected from 12 separate premises by authorised officers from five LA regions (Argyll & Bute, Comhairle nan Eilean Siar: Uist & Barra, Fife, Shetland Isles and South Ayrshire) during the reporting period and submitted to Cefas for toxin analyses.

These premises represented approximately 17% of the circa 70 approved shellfish processing, auction and dispatch centres in Scotland.

The scallop samples were originally harvested from the following offshore scallop grounds: Clyde (C01, C02 & C03), Jura (J02, J05, J06, J08, J11 & J12), Shetlands (S06, S09, S10, S11 & S14) and South Minch (SM01 & SM05) (Figure 23, page 152). One further sample was received from an un-specified offshore scallop ground.

Thirty three samples arrived within one working day of collection, with one sample received two working days post collection.

4.2. Shellfish analysis

Assessment of suitability of the samples for analysis

On arrival at the laboratory, all samples were assigned a unique laboratory number and assessed for their suitability for analysis.

Shellfish which failed to respond to a percussion test, and/or did not exhibit the correct organoleptic characteristics associated with freshness or were accompanied by incorrect or missing paperwork were rejected and reported as unsuitable for analyses. A summary of the number of samples assessed as unsuitable during the reporting period is given in Table 6. Overall, only sixteen inshore samples were rejected in 2015. One king scallop verification sample was rejected as unsuitable for analysis, the remaining 33 samples collected from commercial establishments were received in a suitable condition for analyses. Therefore 99.5% of all samples received were assessed as suitable for analysis and tested in 2015.

Table 6: Summary of inshore samples found unsuitable for toxin analyses, by Local Authority region.

Local Authority	No. samples received	No. rejected due to unsatisfactory quality or provenance	No. rejected due to other reasons (eg: arrived late or unscheduled sample)
Argyll & Bute Council	775	0	0
Comhairle nan Eilean Siar: Lewis & Harris	349	0	0
Comhairle nan Eilean Siar: Uist & Barra	159	0	0
Dumfries & Galloway Council	81	2	1
Fife Council	82	1	0
East Lothian Council	35	0	0
Highland Council: Lochaber	245	0	1
Highland Council: Ross & Cromarty	131	1	0
Highland Council: Skye & Lochalsh	130	0	0
Highland Council: Sutherland	205	1	0
North Ayrshire Council	59	2	5
Orkney Islands Council	0	0	0
Shetland Islands Council	722	0	0
South Ayrshire Council	39	1	1
Totals	3,012	8 (0.26 %)	8 (0.26%)

Insufficient samples

Samples which were assessed as suitable for analysis were then prepared for ASP, LTs and/or PSP analyses (as required). The analyses to be conducted on each batch of samples were defined by the current risk assessment and co-ordinated by Cefas. All inshore and king scallop verification samples assessed as suitable for analyses yielded sufficient material for the required tests.

Analytical Methods

The methods used for routine toxin analysis of shellfish were those specified by FSS 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.

Table 7 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.

Table 7: List of analytical methods used in 2015

Toxin group	Methods employed	Species tested	Dates	Accreditation status (as of 31 st December 2015) to ISO 17025:2005 standard
ASP	LC-UV	All species	1 st January to 31 st December 2015	Accredited
PSP	LC-FLD (screen, semi – quantitative screen & full quantitation)	All species	1 st January to 31 st December 2015	Accredited
Lipophilic toxins	LC-MS/MS	All species*	1 st January to 31 st December 2015	Accredited

*With the exception of carpet clams

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 1, Page 32). Where these levels were exceeded, recommendations were that temporary harvesting restrictions be put in place on 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 negative or below action level results for the toxin groups which had not exceeded the MPL.

In accordance with the FSS risk assessment, requests were made for weekly shellfish monitoring to be instigated (if not already ongoing) when set trigger levels, indicative of heightened toxicity risk were breached. The trigger levels used in the 2015 reporting period are summarised in Table 8.

Table 8: Flesh and phytoplankton trigger levels

Toxin group	Levels of toxin or cell concentrations triggering additional monitoring if breached
ASP	≥10mg domoic/epi-domoic acid/kg shellfish flesh and/or <i>Pseudo-nitzschia</i> spp. ≥ 50,000 cells/L
LTs	OA/DTX/PTX group: ≥80 µg OA eq/kg shellfish flesh AZA group: ≥80 µg AZA1eq./kg shellfish flesh YTX group: ≥1.8mg/kg shellfish flesh and/or <i>Prorocentrum limal/Dinophysis</i> spp. ≥ 100 cells/L
PSP	≥400µg STX eq./kg shellfish flesh and/or <i>Alexandrium</i> spp. (40 cells/L)

4.3. Reporting of results

Upon completion of the required analyses, the results were collated and quality control checked prior to submission to FSS.

Results were reported on a daily basis. During this reporting period, Cefas were able to report all results from 93% of all samples received within one working day of receipt and 100% within three working days (Table 9).

Of the 203 samples results which were reported after one working day of receipt, 110 samples (54%) required additional PSP LC-FLD quantitative analyses, thus incurring a delay in the reporting timeframe.

For reference, the turnaround times agreed with FSS and required from Cefas during the reporting period were as follows:

Table 9: Sample turnaround times (from sample receipt) specified by FSS and achieved by the laboratory

Toxin and analysis method	FSA specified targets	Laboratory statistics in the reporting period (all results combined)
ASP by HPLC	80% within 1 working day 100% within 3 working days	93% within 1 working day 99.8% within 2 working days 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 FSS.

In addition to daily reports, all results from samples received between Monday and Friday the previous week were collated and reported in a weekly results sheet to FSS, released by the following Tuesday.

A summary of results turnaround times, for inshore samples from day of receipt to completion of all required analyses for the period 1st January to 31st December 2015 is given in Table 10.

Table 10: Turnaround times, by Local Authority region, for samples received from inshore areas in 2015

Local Authority	No. samples received	No. completed results reported within one working day of receipt of sample	No. completed results reported two working days after receipt of sample	No. completed results reported three working days after receipt of sample
Argyll & Bute Council	775	714	61	0
Comhairle nan Eilean Siar: Lewis & Harris	349	321	25	3
Comhairle nan Eilean Siar: Uist & Barra	159	153	6	0
Dumfries & Galloway Council	81	77	4	0
Fife Council	82	77	5	0
East Lothian Council	35	35	0	0
Highland Council: Lochaber	245	235	9	1
Highland Council: Ross & Cromarty	131	119	11	1
Highland Council: Skye & Lochalsh	130	115	15	0
Highland Council: Sutherland	205	187	18	0
North Ayrshire Council	59	50	9	0
Orkney Islands Council	0	0	0	0
Shetland Islands Council	722	690	32	0
South Ayrshire Council	39	36	3	0
Totals	3,012	2,809 (93%)	198 (7%)	5 (<1%)

5. Phytoplankton Methodology

5.1. Water collection

For the monitoring period 1st January to 31st December 2015, a total of 1,308 seawater samples were collected from 52 sampling locations within 13 Local Authority regions (Table 11). As for shellfish samples, seawater samples were collected by officers operating on behalf of several contractors appointed by the FSS. A list is provided in Table 11.

Table 11: Number of water samples collected during the reporting period by Local Authority region and by sampling contractor.

Local Authority	Sampling contractor	No. samples received	No. samples rejected
Argyll & Bute Council	Argyll & Bute Council	262	1
Comhairle nan Eilean Siar: Lewis & Harris	Hall Mark Meat Hygiene	164	
Comhairle nan Eilean Siar: Uist & Barra	Hall Mark Meat Hygiene	37	
Dumfries & Galloway Council	FSS Operations	64	
Fife Council	Hall Mark Meat Hygiene	36	
Highland Council: Lochaber	Highland Council	96	
Highland Council: Ross & Cromarty	Highland Council	69	1
Highland Council: Skye & Lochalsh	Highland Council	68	
Highland Council: Sutherland	Highland Council	89	
North Ayrshire Council	FSS Operations	6	
Orkney Islands Council	Hall Mark Meat Hygiene	31	
Shetland Islands Council	Hall Mark Meat Hygiene	354	
South Ayrshire Council	FSS Operations	32	
TOTAL		1,308	2

Samples were collected and packaged in accordance with SRSL's guidance and protocols and sent to the SRSL Oban laboratory for analysis. Two samples were not analysed as they were not required, due to the reduced autumn sampling schedule.

The sampling protocol used by appointed officers followed that described by the UKNRL SOP for the collection of water samples for toxic phytoplankton analysis. The aim of this method is to collect samples of phytoplankton that are representative of the community in the water body. The water sample is taken as close to the shellfish bed as possible and at the same location from where shellfish samples for tissue analysis are collected. The sampling method used depends on the depth of water at the site, and water samples are collected with either a PVC sample tube (the preferred method) or a bucket, as appropriate. A well-mixed 500 mL sub-sample of this water is then preserved using Lugol's iodine and returned (usually by post) to SRSL for analysis.

The majority of samples (99.31%) arrived at the laboratory within one or two working days of sample collection, 87.23% and 12.08%, respectively (Table 12). Of the samples taking more than one working day to arrive, over 88.6% were from remote areas, with the majority of these samples being collected on islands (77.7%). Delays from non-remote areas were generally attributed to the time at which the samples were collected, thus missing the routine post office collection deadline.

Table 12: Number of phytoplankton samples received from each Local Authority region and time taken between collection and receipt at SRSL in 2015.

Local Authority	No. samples	No. received 1 working	No. received 2 working	No. received 3 working	No. received ≥4 working
-----------------	-------------	------------------------	------------------------	------------------------	-------------------------

	received	day post collection	days post collection	days post collection	days post collection
Argyll & Bute Council	262	229	31	2	0
Comhairle nan Eilean Siar: Lewis & Harris	164	149	15	0	0
Comhairle nan Eilean Siar: Uist & Barra	37	23	11	2	1
Dumfries & Galloway Council	64	64	0	0	0
Fife Council	36	25	11	0	0
Highland Council: Lochaber	96	70	24	2	0
Highland Council: Ross & Cromarty	69	61	8	0	0
Highland Council: Skye & Lochalsh	68	51	17	0	0
Highland Council: Sutherland	89	87	2	0	0
North Ayrshire Council	6	4	1	1	0
Orkney Islands Council	31	22	9	0	0
Shetland Islands Council	354	327	27	0	0
South Ayrshire Council	32	29	2	0	1
Totals	1,308	1,141 (87.23%)	158 (12.08%)	7 (0.54%)	2 (0.15%)

5.2. Phytoplankton analysis

Assessment of suitability of the samples for analysis

On arrival at the laboratory, all samples were assigned a unique laboratory number and assessed for their suitability for analysis.

Methodology

The UKNRL protocol for the identification and enumeration of potential toxin-producing phytoplankton was used to analyse all water samples. In the laboratory, a sub-sample of 50 mL is routinely settled (Figure 22), but if the amount of sediment present in the sub-sample is excessive, 25 mL or 10 mL sub-samples may be used.



Figure 22: Phytoplankton cells in a 50 mL sub sample of Lugol's-fixed seawater are allowed to settle onto the base plate of the chamber prior to analysis.

The phytoplankton cells within the sub-sample are allowed to sink onto the base of a settling chamber for a minimum period of 20 hours (for a 50 mL sub-sample) before analysis. The cells are then identified and enumerated using an inverted light microscope. Final cell densities are calculated to express phytoplankton concentration as the number of cells per litre (cells/L) of sample. The method is accredited to ISO 17025 standard.

Test outcome

“Trigger” levels for toxic phytoplankton concentrations in the water column have been determined historically by comparing phytoplankton count data with the presence of biotoxins in shellfish tissue. Trigger levels remained at the same cell concentrations as used in 2014 (Table 8, Page 41).

5.3. Reporting of results

Upon completion of analyses, results were collated and quality control checked prior to submission to the FSS. During 2015, SRSL was able to report all results within three working days of sample receipt. This turnaround time is in full compliance with the targets specified by the FSS (98% of results reported within 3 working days of sample receipt).

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 FSS, released by the following Tuesday.

6. Results of the inshore biotoxin & phytoplankton monitoring programmes

The following section gives an overview of all shellfish biotoxin and phytoplankton sampling locations and results by Local Authority region and pod for the period 1st January to 31st December 2015.

Site locations and corresponding maps are correct as of 31st December 2015, in accordance with the FSS Biotoxin RMP information list.

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Key to shellfish results summary

	No sample received/No result
	Test not required
	ASP: <Limit of Quantitation (LOQ) LTs: <Reporting Limit (RL) PSP: Not detected (ND), <400 ug/kg (by semi quantitative analyses) or <RL (by full quantitative analyses)
	ASP: >LOQ but ≤20mg/kg LTs: >RL but ≤MPL PSP: Quantifiable levels ≤800ug/kg
	ASP: >20mg/kg LTs: >MPL PSP: >800ug/kg
▲	Toxin levels increasing from previous week(s)
▼	Toxin levels decreasing from previous week(s)

Key to phytoplankton results summary

	No sample received/No result
	Test not required
	<i>Pseudo-nitzschia</i> spp.: <40,000 cells/L <i>Dinophysis</i> spp.: <80 cells/L <i>Prorocentrum lima</i> : <80 cells/L <i>Alexandrium</i> spp.: Not detected
	<i>Pseudo-nitzschia</i> spp.: 40,000 to <50,000 cells/L <i>Dinophysis</i> spp.: 80 cells/L <i>Prorocentrum lima</i> : 80 cells/L <i>Alexandrium</i> spp.: 20 cells/L
	<i>Pseudo-nitzschia</i> spp.: ≥50,000 cells/L <i>Dinophysis</i> spp.: ≥100 cells/L <i>Prorocentrum lima</i> : ≥100 cells/L <i>Alexandrium</i> spp.: ≥40 cells/L

6.1. ARGYLL & BUTE COUNCIL

Pod 1



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
1	Argyll and Bute Council	Loch Na Keal West	Eilean Casach	AB 286 082 13	Pacific oysters	Yes	NM45723919
1	Argyll and Bute Council	Ulva: Loch Tuath Soriby Bay	Loch Tuath Soriby Bay	AB 285 081 13	Pacific oysters		NM42944022
1	Argyll and Bute Council	Loch Na Keal	Eilean Liath	AB 284 080 13	Pacific oysters		NM47423929

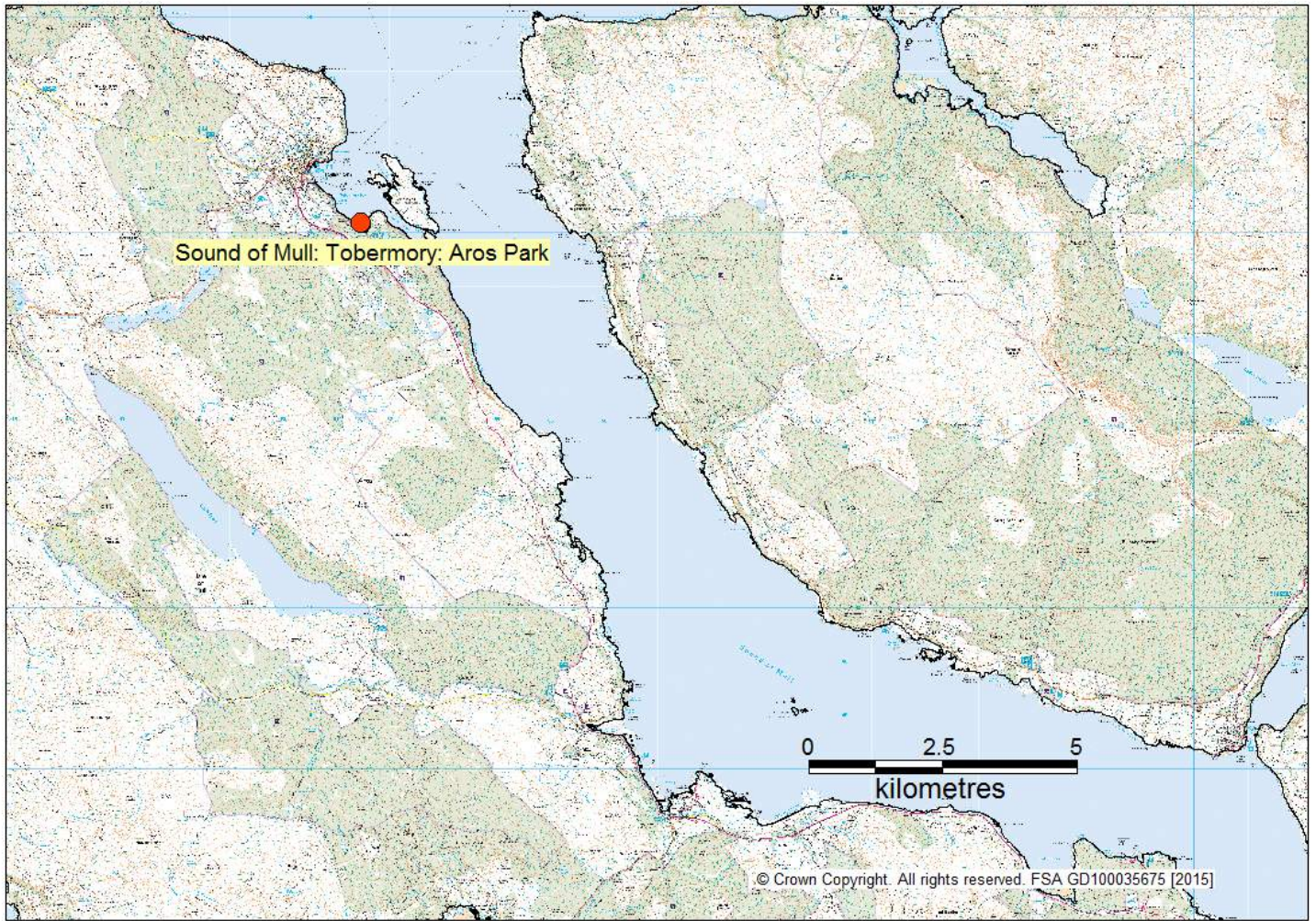
Biotoxin results from Loch Na Keal West: Eilean Casach

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																															
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
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LT - OA/DTX/PTXs																																																						
LT - AZAs																																																						
LT - YTXs																																																						
PSP																																																						

Phytoplankton results from Loch Na Keal West: Eilean Casach

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
Pseudo-nitzschia																																																							
Dinophysis																																																							
Prorocentrum lima																																																							
Alexandrium																																																							

Pod 2

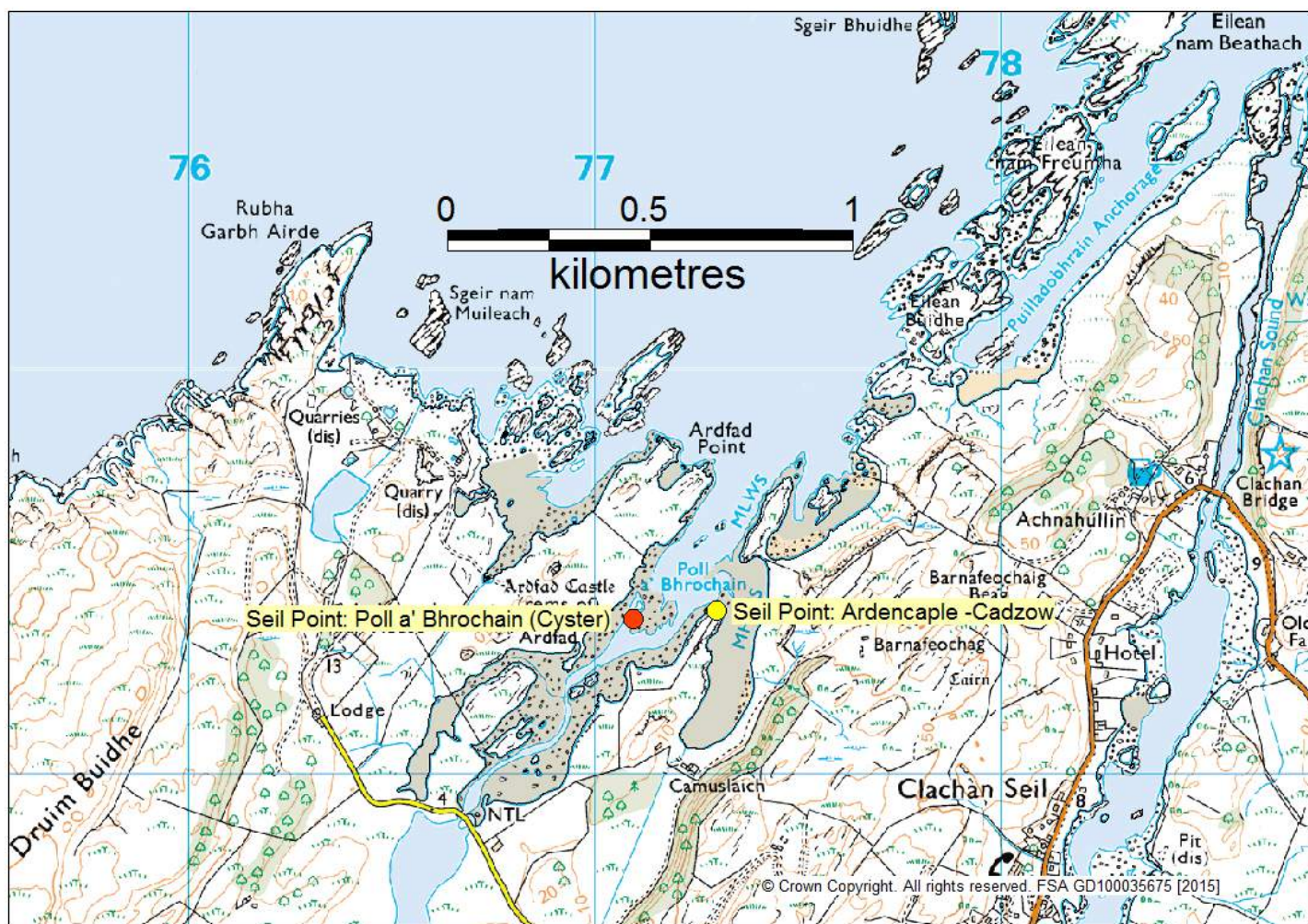


RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
2	Argyll and Bute Council	Sound of Mull: Tobermory	Aros Park	AB 258 076 08	Common mussels	Yes	NM51505420

No samples received from Pod 2 between 1st January and 31st December 2015

Pod 4



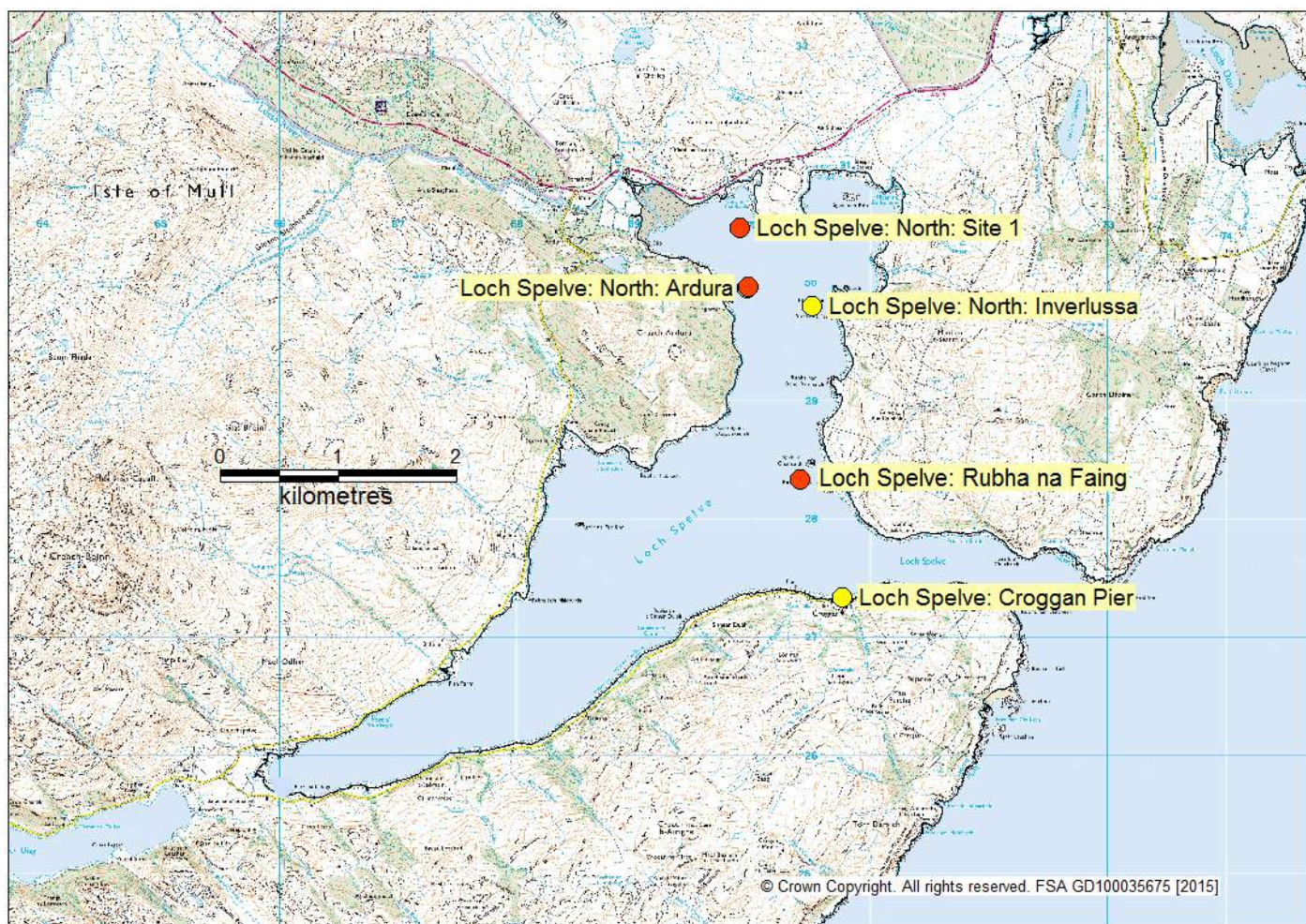
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
4	Argyll and Bute Council	Seil Point	Ardencaple - Cadzow	AB 245 069 13	Pacific oysters		NM773194
4	Argyll and Bute Council	Seil Point	Poll a' Bhrochain (Cyster)	AB 245 070 13	Pacific oysters	Yes	NM77091938

Biotoxin results from Seil Point: Poll a' Bhrochain (Cyster)

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52						
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LT - YTXs																																																										
PSP																																																										

Pod 5



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
5	Argyll and Bute Council	Loch Spelve: North	Inverlussa	AB 200 056 08	Common mussels		NM705298
5	Argyll and Bute Council	Loch Spelve: North	Site 1	AB 200 057 08	Common mussels	Alternate RMP	NM69893046
5	Argyll and Bute Council	Loch Spelve: Rubha na Faing	Rubha na Faing	AB 202 059 08	Common mussels	Alternate RMP	NM70402833
5	Argyll and Bute Council	Loch Spelve: Croggan Pier	Croggan Pier	AB 199 055 13	Pacific oysters		NM70752733
5	Argyll and Bute Council	Loch Spelve: North	Ardura	AB 200 1915 08	Common mussels	Yes	NM69952995

Biotoxin results from Loch Spelve: Rubha na Faing

Week	Jan					Feb				Mar					Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
LT - OA/DTX/PTXs	█																																																			
LT - AZAs	█																																																			
LT - YTXs	█																																																			
PSP	█																																																			

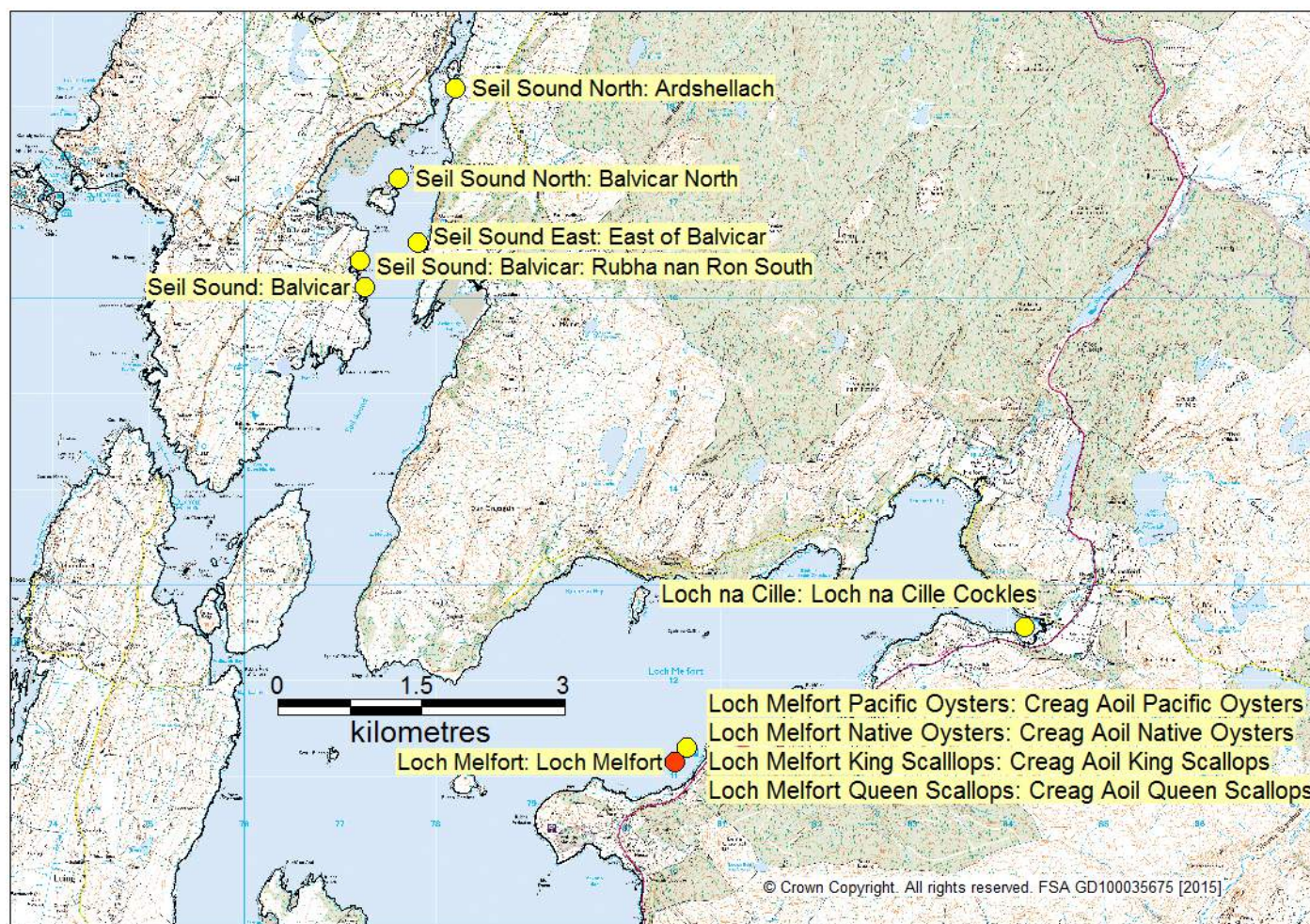
Biotoxin results from Loch Spelve: North: Ardura

Week	Jan					Feb				Mar					Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
LT - OA/DTX/PTXs	█																																																			
LT - AZAs	█																																																			
LT - YTXs	█																																																			
PSP	█																																																			

Biotoxin results from Loch Spelve: North: Site1

Week	Jan					Feb				Mar					Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
LT - OA/DTX/PTXs	█																																																			
LT - AZAs	█																																																			
LT - YTXs	█																																																			
PSP	█																																																			

Pod 6



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
6	Argyll and Bute Council	Loch Melfort	Loch Melfort	AB 178 051 08	Common mussels	Yes	NM80441090
6	Argyll and Bute Council	Seil Sound East	East of Balvicar	AB 247 703 08	Common mussels		NM77801659
6	Argyll and Bute Council	Seil Sound North	Ardshellach	AB 247 071 13	Pacific oysters		NM782182
6	Argyll and Bute Council	Seil Sound: Balvicar	Balvicar	AB 247 072 13	Pacific oysters		NM77251612
6	Argyll and Bute Council	Seil Sound North	Balvicar North	AB 247 735 13	Pacific oysters		NM77601726
6	Argyll and Bute Council	Seil Sound: Balvicar	Rubha nan Ron South	AB 247 728 13	Pacific oysters		NM772164
6	Argyll and Bute Council	Loch na Cille	Loch na Cille Cockles	AB 617 1204 04	Common cockles		NM84231259
6	Argyll and Bute Council	Loch Melfort Pacific Oysters	Creag Aoil Pacific Oysters	AB 671 1448 13	Pacific oysters		NM80611113
6	Argyll and Bute Council	Loch Melfort Native Oysters	Creag Aoil Native Oysters	AB 672 1449 12	Native oysters		NM80611113
6	Argyll and Bute Council	Loch Melfort King Scallops	Creag Aoil King Scallops	AB 673 1450 07	King scallops		NM80611113
6	Argyll and Bute Council	Loch Melfort Queen Scallops	Creag Aoil Queen Scallops	AB 674 1451 15	Queen scallops		NM80611113

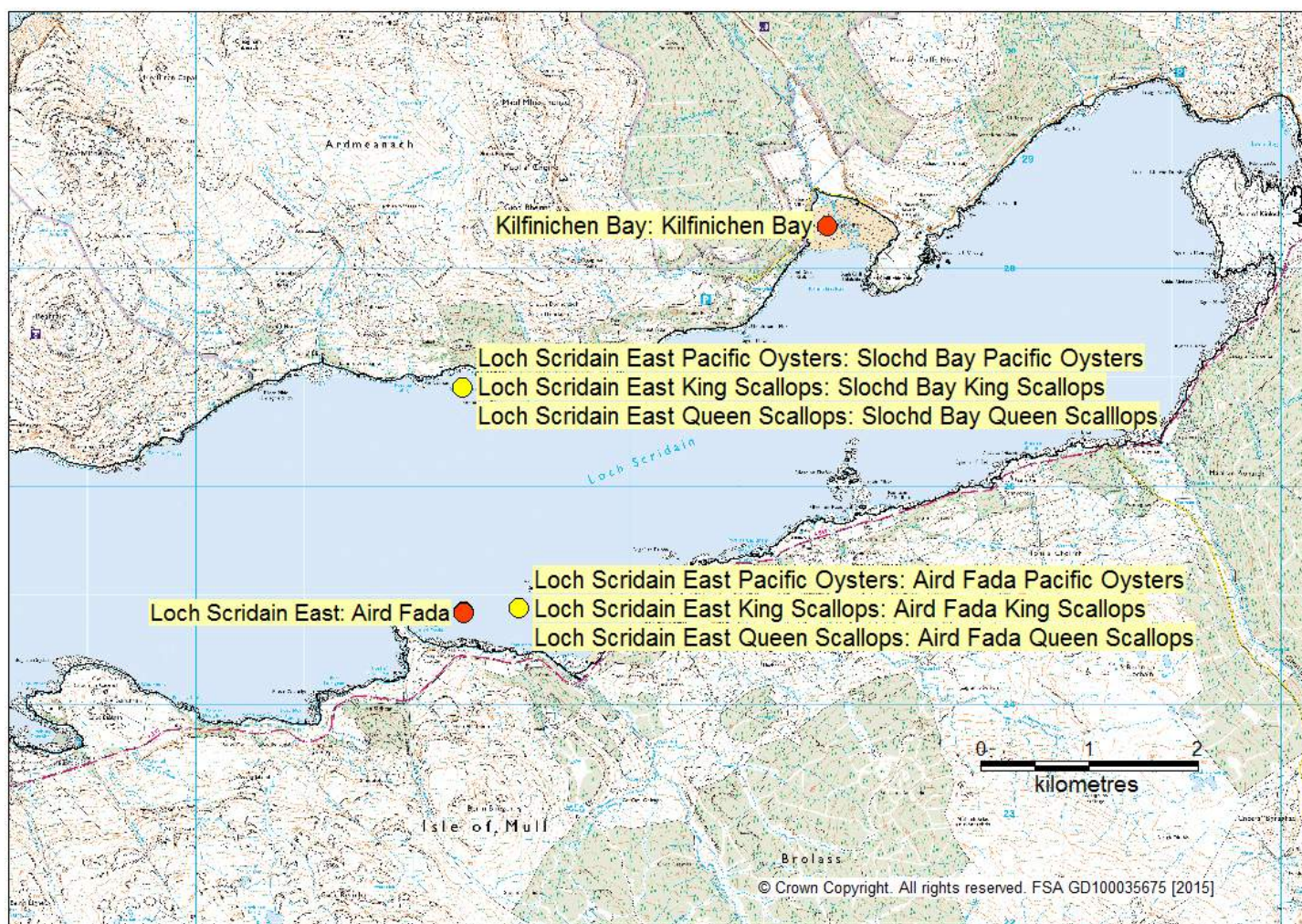
Biotoxin results from Loch Melfort: Loch Melfort

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Phytoplankton results from Loch Melfort: Loch Melfort

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
Pseudo-nitzschia																																																											
Dinophysis																																																											
Prorocentrum lima																																																											
Alexandrium																																																											

Pod 7



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
7	Argyll and Bute Council	Loch Scridain East	Aird Fada	AB 314 054 08	Common mussels	Yes	NM454652484
7	Argyll and Bute Council	Kilfinichen Bay	Kilfinichen Bay	AB 695 1507 04	Common cockles	Alternate RMP	NM48792838
7	Argyll and Bute Council	Loch Scridain East Pacific Oysters	Aird Fada Pacific Oysters	AB 663 1439 13	Pacific oysters		NM4595724892
7	Argyll and Bute Council	Loch Scridain East Pacific Oysters	Slochd Bay Pacific Oysters	AB 663 1443 13	Pacific oysters		Not given
7	Argyll and Bute Council	Loch Scridain East King Scallops	Aird Fada King Scallops	AB 665 1441 07	King scallops		NM4595724892
7	Argyll and Bute Council	Loch Scridain East King Scallops	Slochd Bay King Scallops	AB 665 1445 07	King scallops		Not given
7	Argyll and Bute Council	Loch Scridain East Queen Scallops	Aird Fada Queen Scallops	AB 666 1442 15	Queen scallops		NM4595724892
7	Argyll and Bute Council	Loch Scridain East Queen Scallops	Slochd Bay Queen Scallops	AB 666 1446 15	Queen scallops		Not given

Biotoxin results from Loch Scridain East: Loch Scridain

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP	[Green]																																																										
LT - OA/DTX/PTXs	[Black]																																																										
LT - AZAs	[Black]																																																										
LT - YTXs	[Black]																																																										
PSP	[Black]																																																										

Biotoxin results from Loch Scridain East: Aird Fada

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP	[Green]																																																										
LT - OA/DTX/PTXs	[Black]																																																										
LT - AZAs	[Black]																																																										
LT - YTXs	[Black]																																																										
PSP	[Black]																																																										

Biotoxin results from Kilfinichen Bay: Kilfinichen Bay (mussels)

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP	[Black]																																																										
LT - OA/DTX/PTXs	[Black]																																																										
LT - AZAs	[Black]																																																										
LT - YTXs	[Black]																																																										
PSP	[Black]																																																										

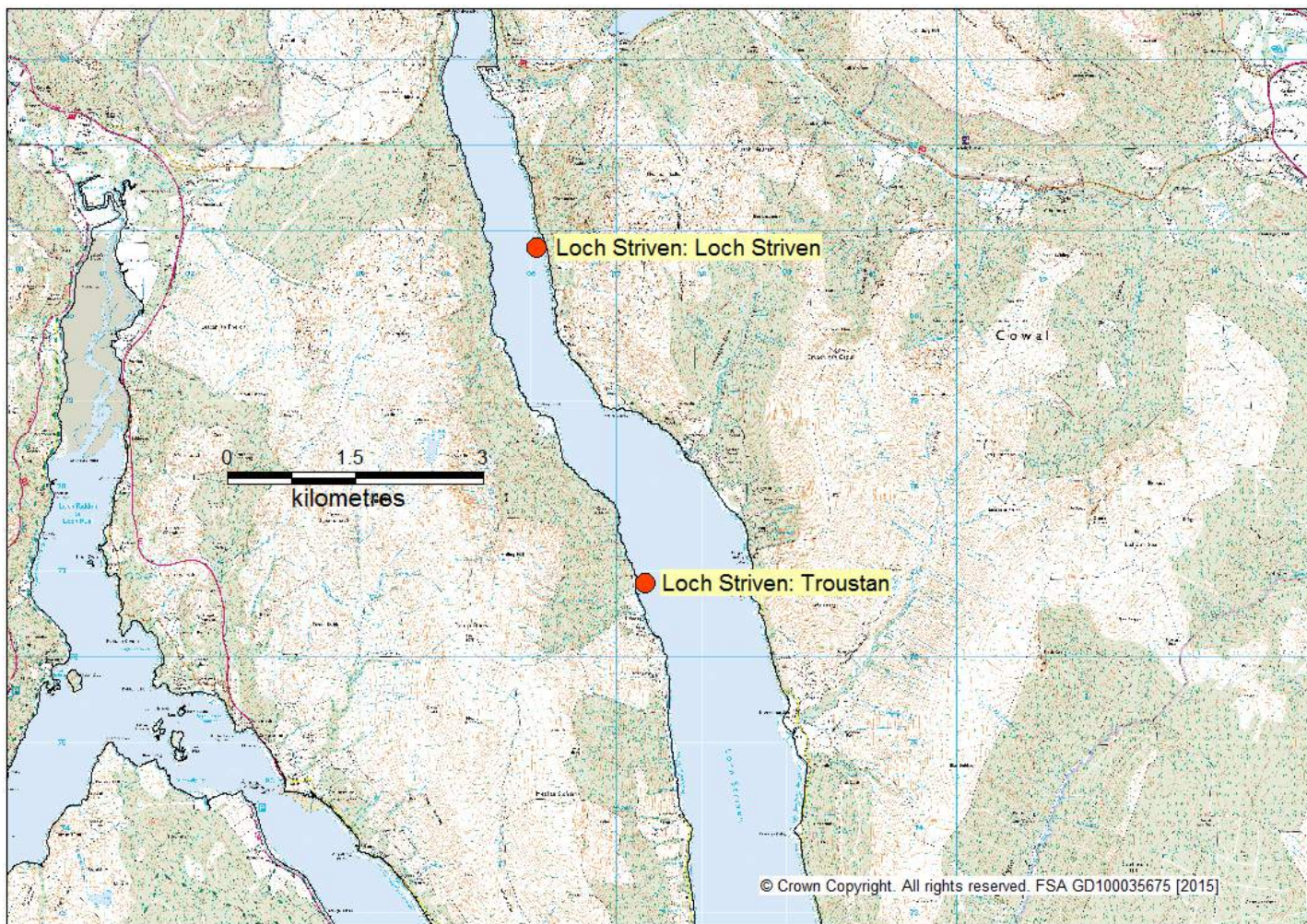
Phytoplankton results from Loch Scridain East: Loch Scridain

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
Pseudo-nitzschia	[Green]																																																										
Dinophysis	[Green]																																																										
Prorocentrum lima	[Green]																																																										
Alexandrium	[Green]																																																										

Phytoplankton results from Kilfinichen Bay: Kilfinichen Bay

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
Pseudo-nitzschia	[Green]																																																										
Dinophysis	[Green]																																																										
Prorocentrum lima	[Green]																																																										
Alexandrium	[Green]																																																										

Pod 8



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
8	Argyll and Bute Council	Loch Striven	Troustan	AB 205 063 08	Common mussels	Alternate RMP	NS07337686
8	Argyll and Bute Council	Loch Striven	Loch Striven	AB 205 062 08	Common mussels	Yes	NS06078086

Biotoxin results from Loch Striven: Loch Striven

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Biotoxin results from Loch Striven: Troustan

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

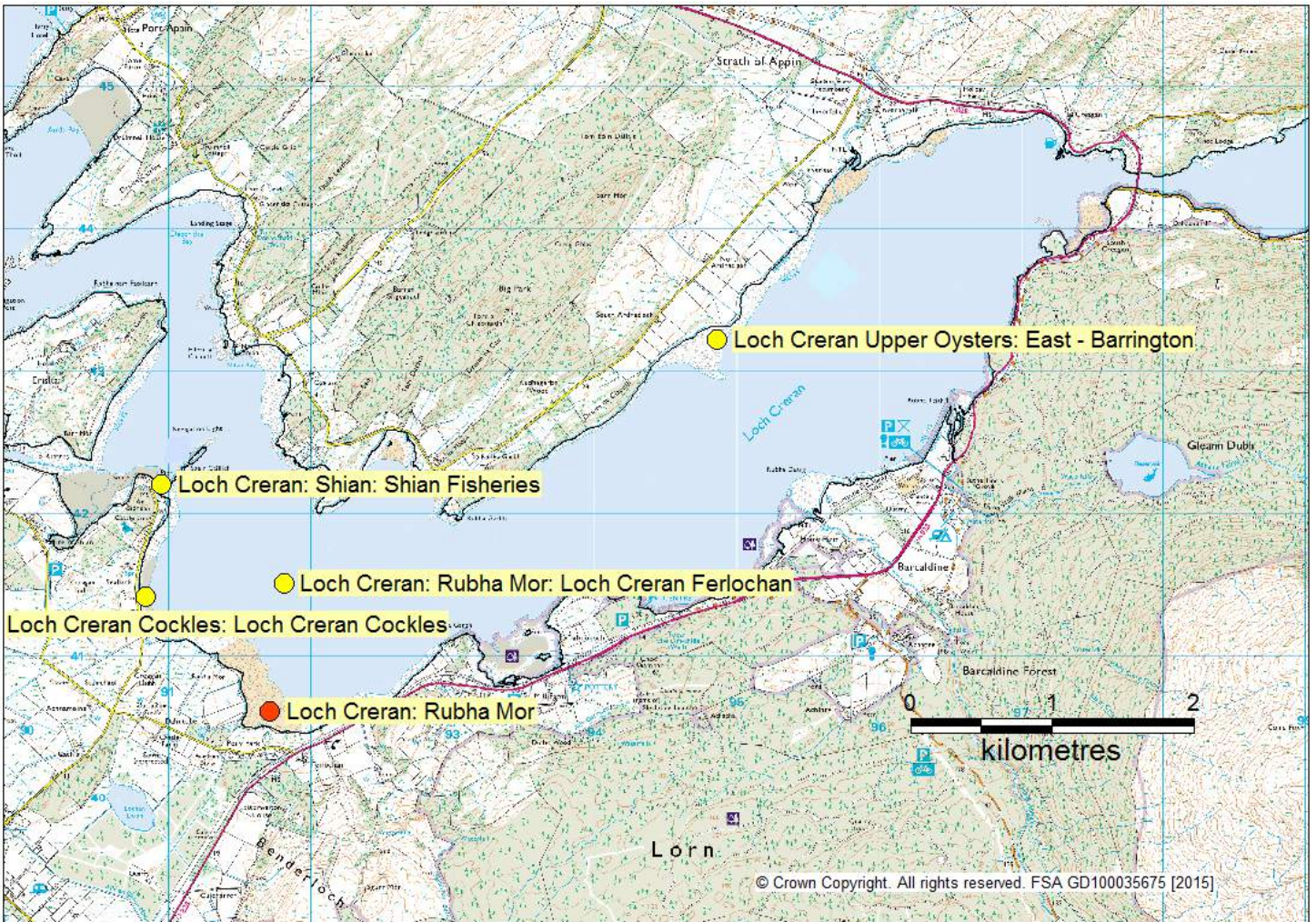
Phytoplankton results from Loch Striven: Troustan

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
Pseudo - nitzschia																																																											
Dinophysis																																																											
Prorocentrum lima																																																											
Alexandrium																																																											

Phytoplankton results from Loch Striven: Loch Striven

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec						
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52									
Pseudo - nitzschia																																																													
Dinophysis																																																													
Prorocentrum lima																																																													
Alexandrium																																																													

Pod 9



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
9	Argyll and Bute Council	Loch Creran: Shian	Shian Fisheries	AB 131 023 13	Pacific oysters		NM90944220
9	Argyll and Bute Council	Loch Creran Upper Oysters	East - Barrington	AB 129 021 13	Pacific oysters		NM94854322
9	Argyll and Bute Council	Loch Creran: Rubha Mor	Rubha Mor	AB 130 022 13	Pacific oysters	Yes	NM917406
9	Argyll and Bute Council	Loch Creran: Rubha Mor	Loch Creran Ferlochan	AB 130 742 13	Pacific oysters		NM918415
9	Argyll and Bute Council	Loch Creran Cocksles	Loch Creran Cocksles	AB 729 1685 04	Common cockles		NM90834140

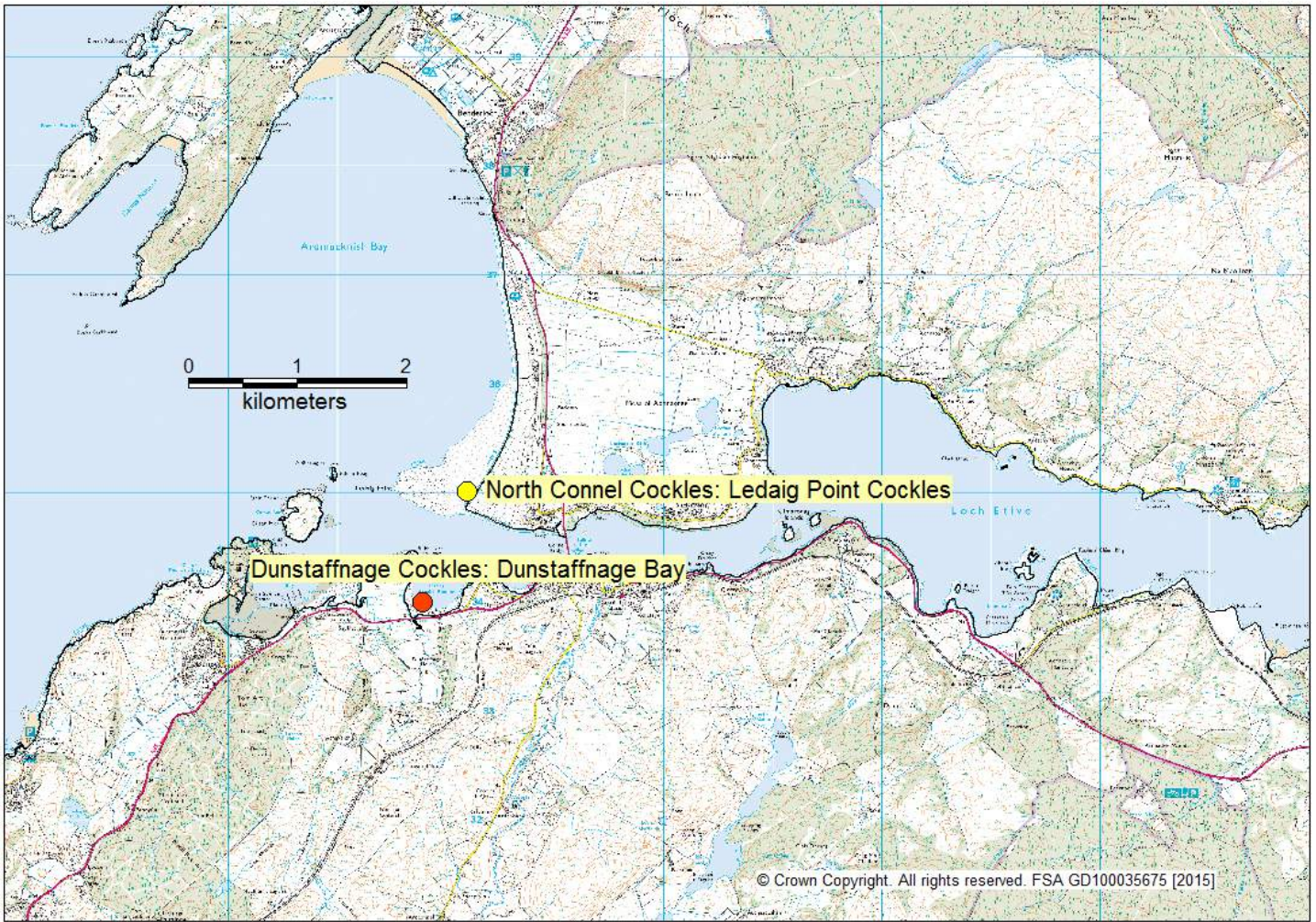
Biotoxin results from Loch Creran: Rubha Mor: Rubha Mor

Week	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec							
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
ASP																																																				
LT - OA/DTX/PTXs																																																				
LT - AZAs																																																				
LT - YTXs																																																				
PSP																																																				

Phytoplankton results from Loch Creran: Rubha Mor: Rubha Mor

Week	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec							
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Pseudo-nitzschia																																																				
Dinophysis																																																				
Prorocentrum lima																																																				
Alexandrium																																																				

Pod 10



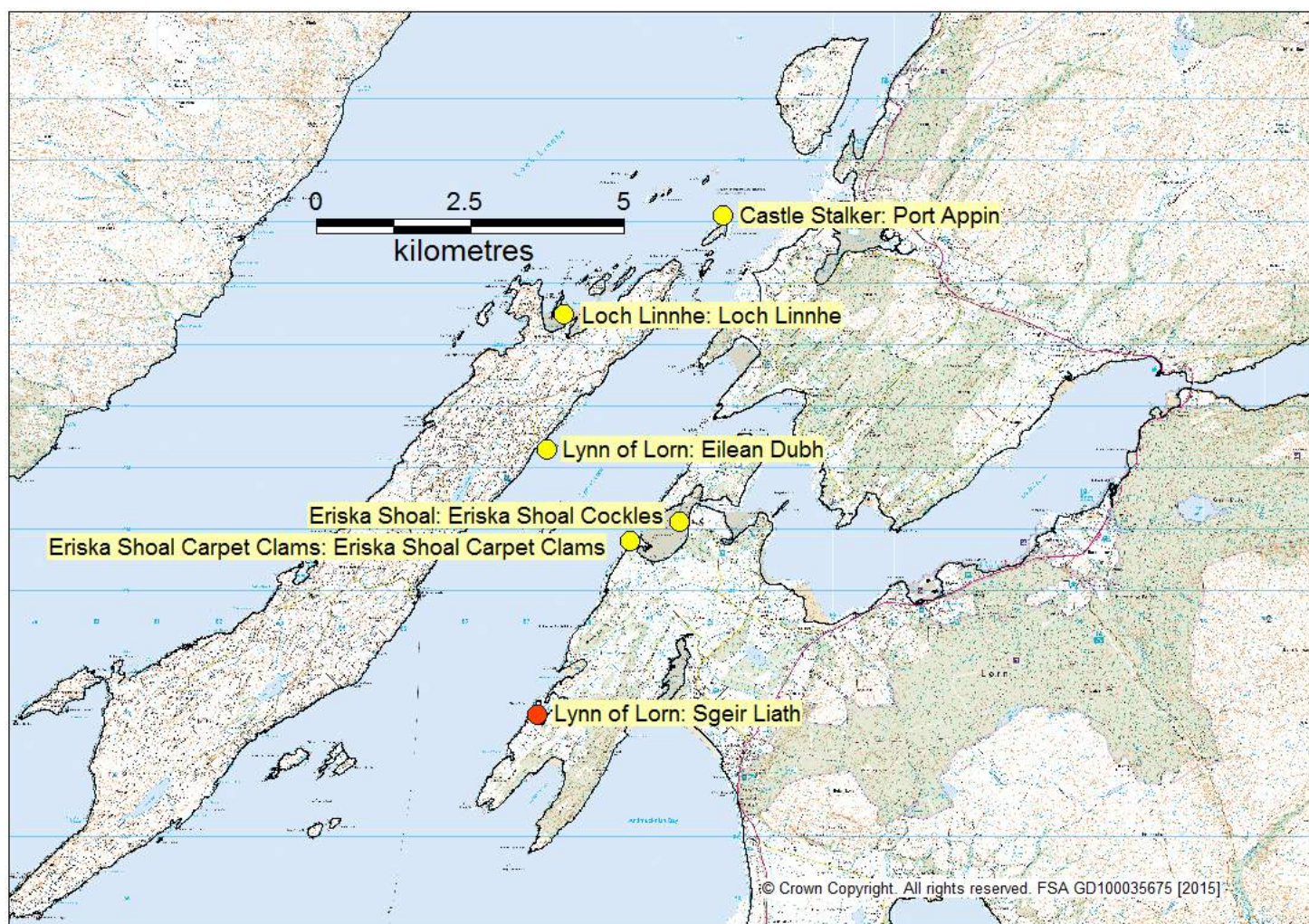
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
10	Argyll and Bute Council	North Connel Cockles	Ledaig Point Cockles	AB 758 1909 04	Common cockles		NM90183500
10	Argyll and Bute Council	Dunstaffnage Cockles	Dunstaffnage Bay	AB 696 1511 04	Common cockles	Yes	NM88973420

Biotoxin results from Dunstaffnage Cockles: Dunstaffnage Bay Indicator (mussels)

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52									
ASP																																																												
LT - OA/DTX/PTXs																				▲	▼		▲	▼																																				
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

Pod 11



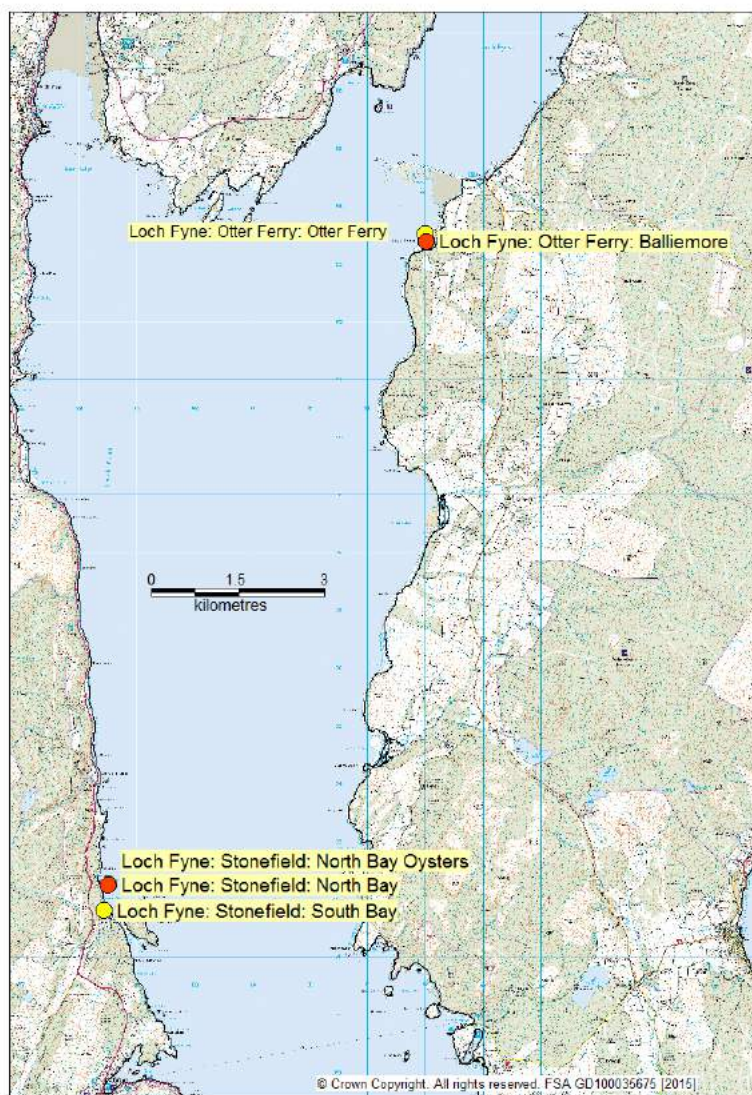
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
11	Argyll and Bute Council	Lynn of Lorn: Sgeir Liath	Sgeir Liath	AB 318 068 13	Pacific oysters	Yes	NM87163899
11	Argyll and Bute Council	Loch Linnhe	Loch Linnhe	AB 172 047 13	Pacific oysters		NM87614548
11	Argyll and Bute Council	Lynn of Lorn: Eilean Dubh	Eilean Dubh	AB 319 066 08	Common mussels		NM873433
11	Argyll and Bute Council	Eriska Shoal	Eriska Shoal Cockles	AB 490 907 04	Common cockles		NM89474213
11	Argyll and Bute Council	Eriska Shoal Carpet Clams	Eriska Shoal Carpet Clams	AB 547 1006 02	Carpet clams		NM88774188
11	Argyll and Bute Council	Castle Stalker	Port Appin	AB 492 909 04	Common cockles		NM90194710

Biotoxin results from Lynn of Lorn: Sgeir Liath (mussels)

	Jan		Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																																
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52													
ASP																																																																	
LT - OA/DTX/PTXs																																																																	
LT - AZAs																																																																	
LT - YTXs																																																																	
PSP																																																																	

Pod 14



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
14	Argyll and Bute Council	Loch Fyne: Stonefield	North Bay	AB 154 043 15	Queen scallops	Yes	NR86487225
14	Argyll and Bute Council	Loch Fyne: Stonefield	South Bay	AB 154 044 15	Queen scallops		NR864718
14	Argyll and Bute Council	Loch Fyne: Otter Ferry	Balliemore	AB 151 039 13	Pacific oysters	Alternate RMP	NR92178350
14	Argyll and Bute Council	Loch Fyne: Otter Point	Otter Point	AB 714 1659 04	Common cockles		NR91998340
14	Argyll and Bute Council	Loch Fyne: Stonefield	North Bay Oysters	AB 435 840 13	Pacific oysters		NR86487225

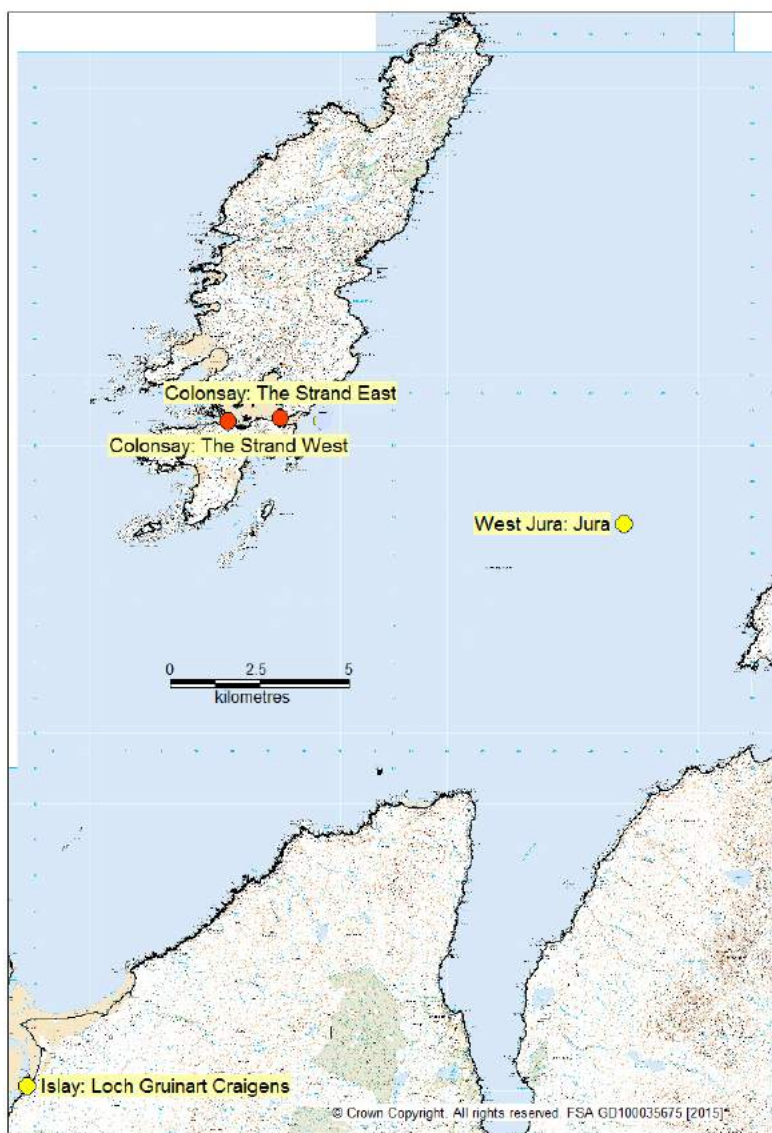
Biotoxin results from Loch Fyne: Otter Ferry: Balliemore

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52						
ASP																																																										
LT - OA/DTX/PTXs																																																										
LT - AZAs																																																										
LT - YTXs																																																										
PSP																																																										

Phytoplankton results from Loch Fyne: Otter Ferry: Balliemore

	Jan		Feb		Mar		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																					
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52						
Pseudo-nitzschia																																																										
Dinophysis																																																										
Prorocentrum lima																																																										
Alexandrium																																																										

Pod 15



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
15	Argyll and Bute Council	Colonsay	The Strand East	AB 041 1199 13	Pacific oysters	Yes	NR37318979
15	Argyll and Bute Council	Colonsay	The Strand West	AB 041 009 13	Pacific oysters	Alternate RMP	NR35858971
15	Argyll and Bute Council	Islay	Loch Gruinart Craigens	AB 094 011 13	Pacific oysters		NR30247116
15	Argyll and Bute Council	West Jura	Jura	AB 482 805 16	Razors		NR46908684

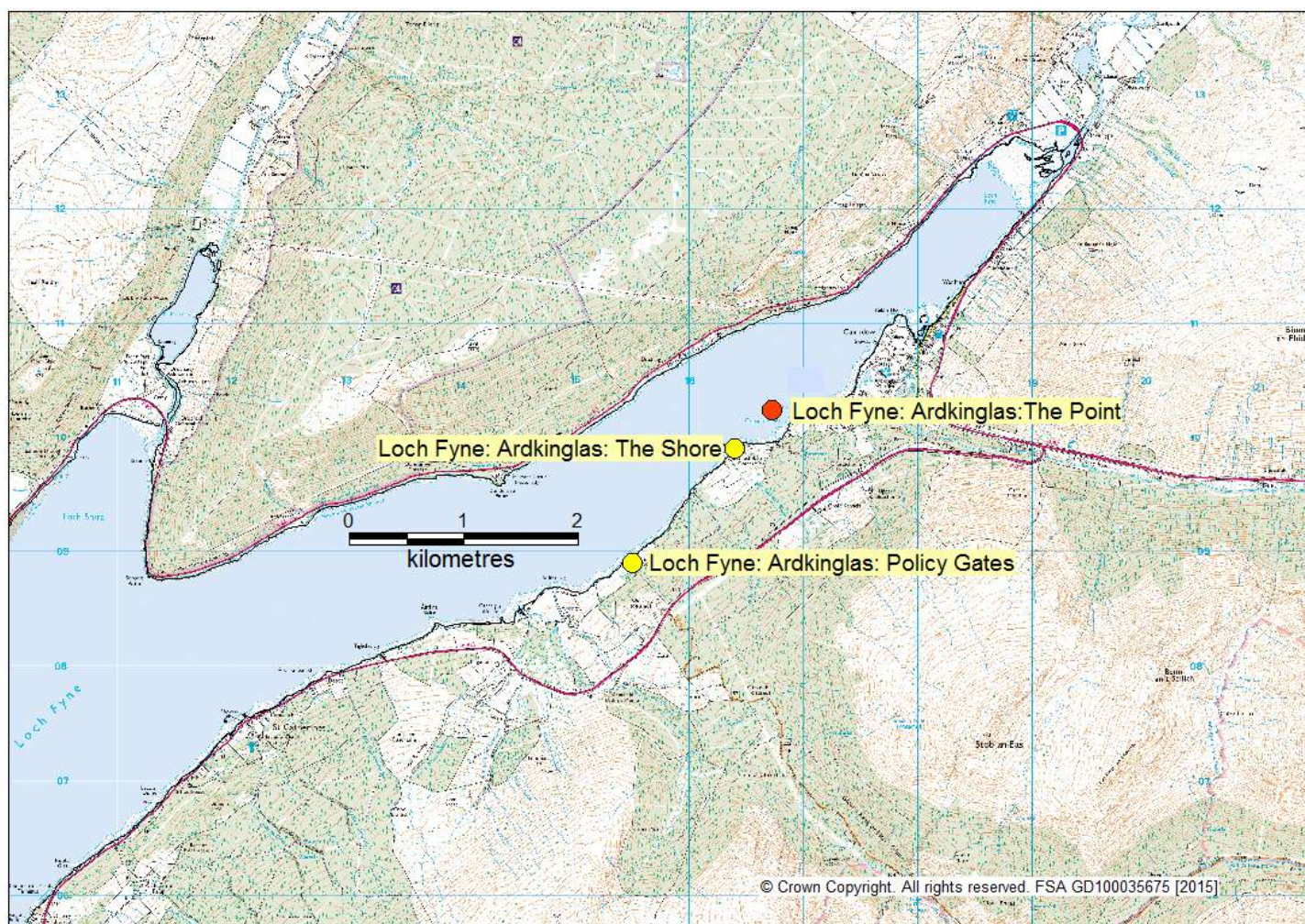
Biotoxin results from Colonsay: The Strand East

Week	Jan			Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
ASP	[Green/Black cells representing biotoxin data]																																																			
LT - OA/DTX/PTXs	[Green/Black cells]																																																			
LT - AZAs	[Green/Black cells]																																																			
LT - YTXs	[Green/Black cells]																																																			
PSP	[Green/Black cells]																																																			

Phytoplankton results from Colonsay: The Strand: East

Week	Jan			Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Pseudo-nitzschia	[Green/Red/Black cells]																																																			
Dinophysis	[Green/Black cells]																																																			
Prorocentrum lima	[Green/Red/Black cells]																																																			
Alexandrium	[Green/Red/Black cells]																																																			

Pod 16



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
16	Argyll and Bute Council	Loch Fyne: Ardinglas	The Point	AB 147 035 08	Common mussels	Yes	NN16731024
16	Argyll and Bute Council	Loch Fyne: Ardinglas	Policy Gates	AB 147 034 08	Common mussels		NN155089
16	Argyll and Bute Council	Loch Fyne: Ardinglas	The Shore	AB 147 036 13	Pacific oysters		NN164099
16	Argyll and Bute Council	Loch Fyne: Ardinglas	The Point	AB 147 035 13	Pacific oysters	Alternate RMP	NN17411015
16	Argyll and Bute Council	Loch Fyne: Ardinglas	Policy Gates	AB 147 034 13	Pacific oysters		NN155089
16	Argyll and Bute Council	Loch Fyne: Ardinglas	The Shore	AB 147 036 08	Common mussels		NN164099

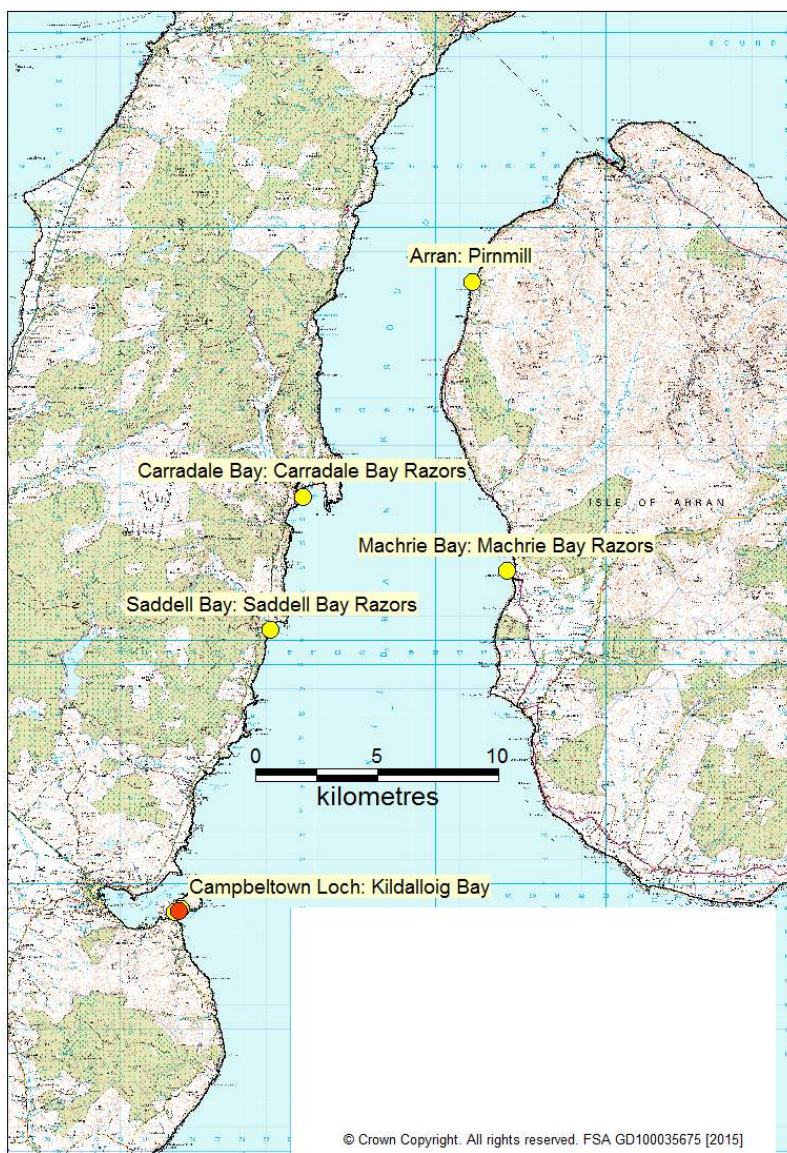
Biotoxin results from Loch Fyne: Ardinglas: The Point (mussels)

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Phytoplankton results from Loch Fyne: Ardinglas: The Point

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
Pseudo-nitzschia																																																											
Dinophysis																																																											
Prorocentrum lima																																																											
Alexandrium																																																											

Pod 18



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
18	North Ayrshire Council	Machrie Bay	Machrie Bay Razors	AB 510 929 16	Razors		NR88853380
18	Argyll and Bute Council	Campbeltown Loch	Kildalloig Bay	AB 029 008 04	Common cockles	Yes	NR752198
18	Argyll and Bute Council	Carradale Bay	Carradale Bay Razors	AB 511 930 16	Razors		NR80503690
18	Argyll and Bute Council	Saddell Bay	Saddell Bay Razors	AB 512 931 16	Razors		NR7915031420
18	North Ayrshire Council	Arran: Pirnmill	Pirnmill	NA 008 330 16	Razors		NR87004400

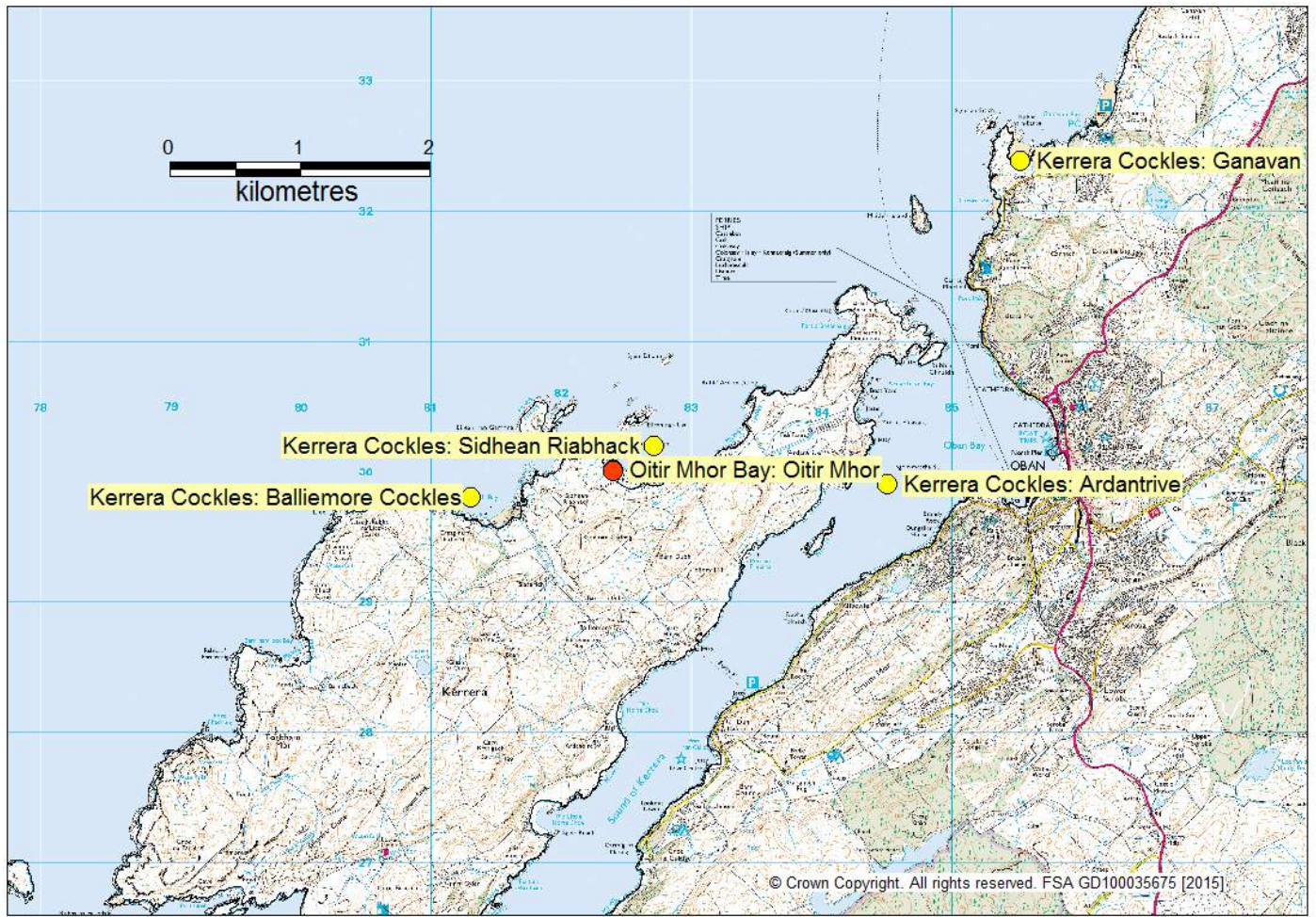
Biotoxin results from Campbeltown Loch: Kildalloig Bay (mussels)

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																															
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
ASP																																																						
LT - OA/DTX/PTXs																																																						
LT - AZAs																																																						
LT - YTXs																																																						
PSP																																																						

Phytoplankton results from Campbeltown Loch: Kildalloig Bay

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																	
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
Pseudo-nitzschia																																																								
Dinophysis																																																								
Prorocentrum lima																																																								
Alexandrium																																																								

Pod 84



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
84	Argyll and Bute Council	Oitir Mhor Bay	Oitir Mhor	AB 308 701 13	Pacific oysters	Yes	NM82393001
84	Argyll and Bute Council	Kerrera Cockles	Ganavan	AB 697 1512 04	Common cockles		NM85523239
84	Argyll and Bute Council	Kerrera Cockles	Ardantrive	AB 697 1513 04	Common cockles		NM8405129900
84	Argyll and Bute Council	Kerrera Cockles	Sidhean Riabhack	AB 697 1514 04	Common cockles		Not given
84	Argyll and Bute Council	Kerrera Cockles	Balliemoire Cockles	AB 697 1515 04	Common cockles		Not given

Biotoxin results from Oitir Mhor Bay: Oitir Mhor (mussels)

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
ASP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█				
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█		
LT - AZAs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
LT - YTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
PSP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

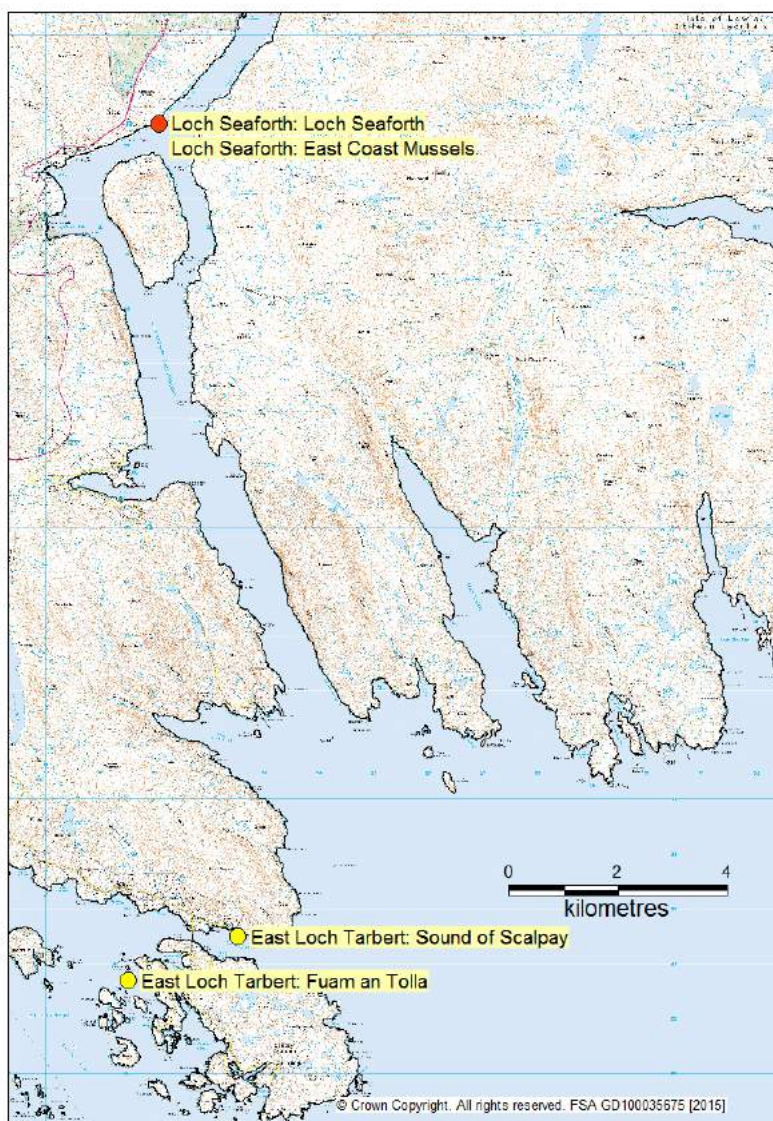
Pod 22 South



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
22	Comhairle nan Eilean Siar - Lewis & Harris	Loch Stockinish	Loch Stockinish	LH 203 127 08	Common mussels	Yes	NG13319076
22	Comhairle nan Eilean Siar - Lewis & Harris	East Loch Tarbert	Fuam an Tolla	LH 057 104 08	Common mussels		NG205967
22	Comhairle nan Eilean Siar - Lewis & Harris	East Loch Tarbert	Sound of Scalpay	LH 057 106 08	Common mussels		NG225975
22	Comhairle nan Eilean Siar - Lewis & Harris	Loch Seaforth	Loch Seaforth	LH 193 126 08	Common mussels		NB21051239
22	Comhairle nan Eilean Siar - Lewis & Harris	Loch Seaforth	East Coast Mussels	LH 484 811 08	Common mussels	Alternate RMP	NB21051239

Pod 22 North



Biotoxin results from Loch Stockinish: Loch Stockinish

Week	Jan					Feb				Mar					Apr					May				Jun				Jul				Aug				Sep				Oct				Nov				Dec							
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
ASP																																																							
LT - OA/DTX/PTXs																																																							
LT - AZAs																																																							
LT - YTXs																																																							
PSP																																																							

Phytoplankton results from Loch Stockinish: Loch Stockinish

Week	Jan					Feb				Mar					Apr					May				Jun				Jul				Aug				Sep				Oct				Nov				Dec											
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
Pseudo-nitzschia																																																											
Dinophysis																																																											
Prorocentrum lima																																																											
Alexandrium																																																											

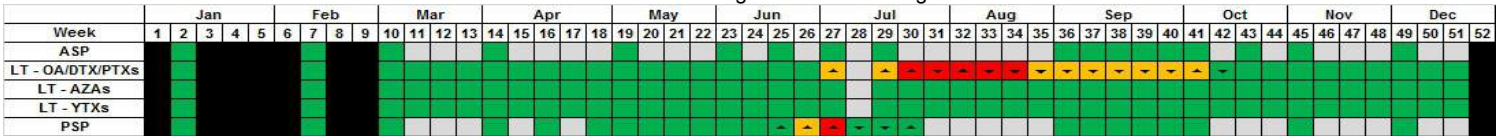
Pod 24



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
24	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Barraglom	Loch Barraglom	LH 185 120 08	Common mussels	Alternate RMP	NB16693413
24	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Eilean Chearstaigh	Eilean Scarastaigh	LH 344 697 08	Common mussels		NB196328
24	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Eilean Chearstaigh	Buckle Point	LH 344 791 08	Common mussels	Yes	NB201324
24	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Ceabhagh	Keava	LH 381 772 08	Common mussels		NB20053450

Biotoxin results from Loch Roag: Eilean Chearstaigh: Buckle Point



Phytoplankton results from Loch Roag: Barraglom: Loch Barraglom



Pod 76



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
76	Comhairle nan Eilean Siar - Lewis & Harris	Seilebost	Seilebost	LH 249 129 04	Common cockles	Yes	NG078978

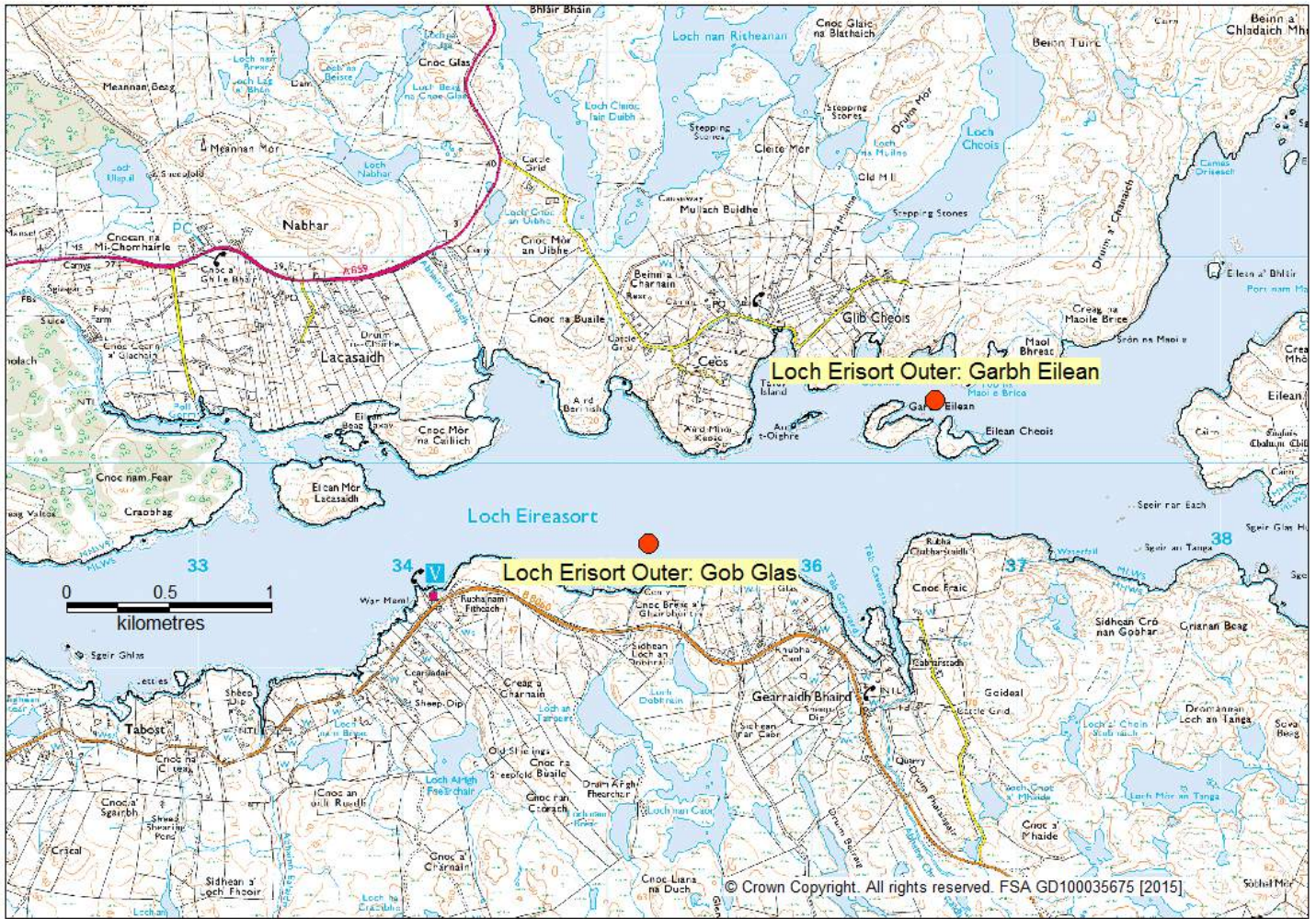
Biotoxin results from Seilebost: Seilebost (mussels)

Week	Jan			Feb					Mar							Apr							May							Jun							Jul							Aug							Sep							Oct							Nov							Dec						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																										
ASP																																																																														
LT - OA/DTX/PTXs																																																																														
LT - AZAs																																																																														
LT - YTXs																																																																														
PSP																																																																														

Phytoplankton results from Seilebost: Seilebost

Week	Jan			Feb					Mar							Apr							May							Jun							Jul							Aug							Sep							Oct							Nov							Dec						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																										
Pseudo-nitzschia																																																																														
Dinophysis																																																																														
Prorocentrum lima																																																																														
Alexandrium																																																																														

Pod 124



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
124	Comhairle nan Eilean Siar - Lewis & Harris	Loch Eirsart Outer	Gob Glas	LH 357 711 08	Common mussels	Yes	NB352206
124	Comhairle nan Eilean Siar - Lewis & Harris	Loch Eirsart Outer	Garbh Eilean	LH 357 747 08	Common mussels	Alternate RMP	NB366213

Biotoxin results from Loch Eirsart Outer: Gob Glas

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ASP	█	█	█	█	█	█	█	█	█	█	█	█
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█	█	█
LT - AZAs	█	█	█	█	█	█	█	█	█	█	█	█
LT - YTXs	█	█	█	█	█	█	█	█	█	█	█	█
PSP	█	█	█	█	█	█	█	█	█	█	█	█

Biotoxin results from Loch Eirsart Outer: Garbh Eilean

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ASP	█	█	█	█	█	█	█	█	█	█	█	█
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█	█	█
LT - AZAs	█	█	█	█	█	█	█	█	█	█	█	█
LT - YTXs	█	█	█	█	█	█	█	█	█	█	█	█
PSP	█	█	█	█	█	█	█	█	█	█	█	█

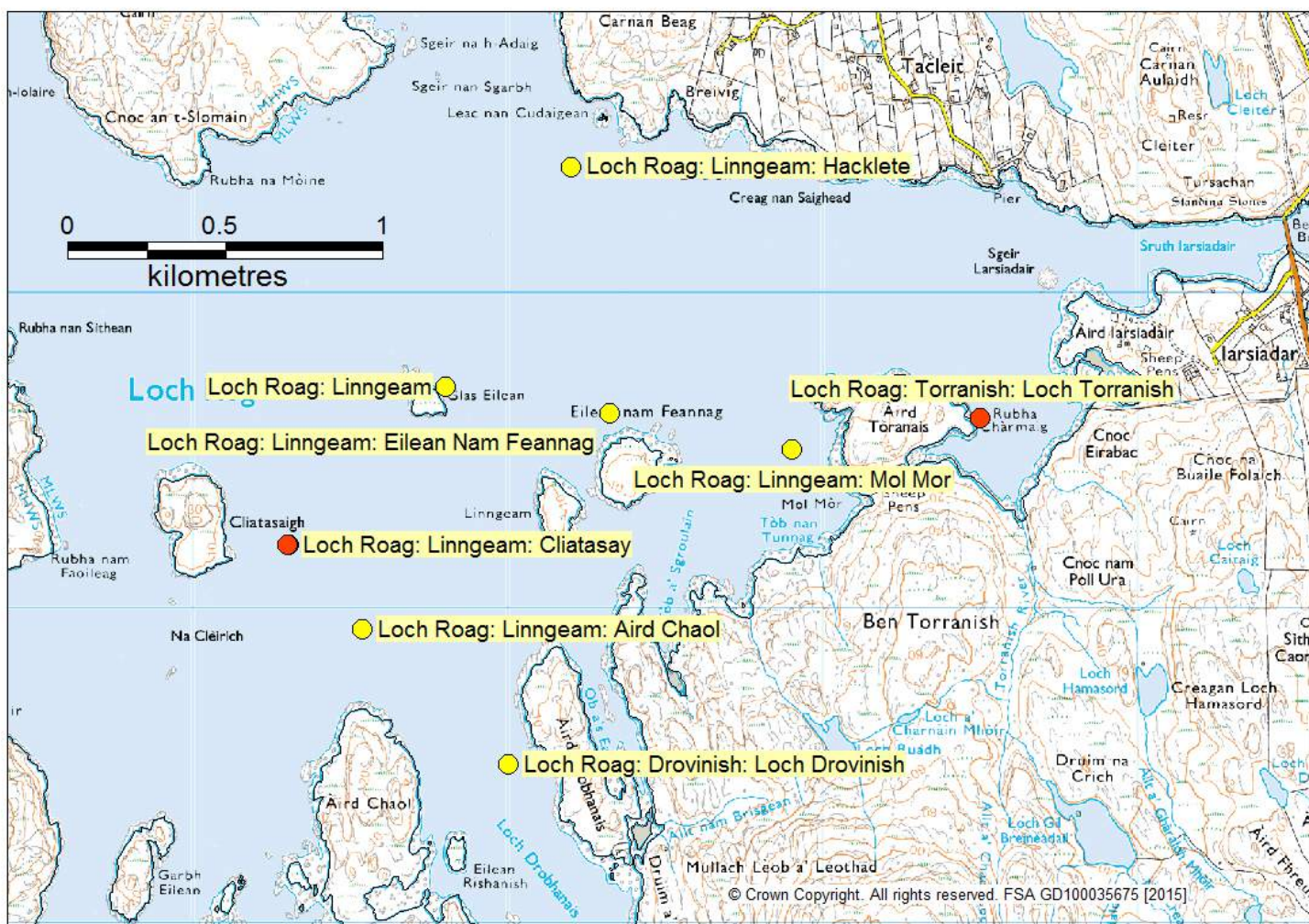
Phytoplankton results from Loch Eirsart Outer: Gob Glas

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pseudo-nitzschia	█	█	█	█	█	█	█	█	█	█	█	█
Dinophysis	█	█	█	█	█	█	█	█	█	█	█	█
Prorocentrum lima	█	█	█	█	█	█	█	█	█	█	█	█
Alexandrium	█	█	█	█	█	█	█	█	█	█	█	█

Phytoplankton results from Loch Eirsart Outer: Garbh Eilean

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pseudo-nitzschia	█	█	█	█	█	█	█	█	█	█	█	█
Dinophysis	█	█	█	█	█	█	█	█	█	█	█	█
Prorocentrum lima	█	█	█	█	█	█	█	█	█	█	█	█
Alexandrium	█	█	█	█	█	█	█	█	█	█	█	█

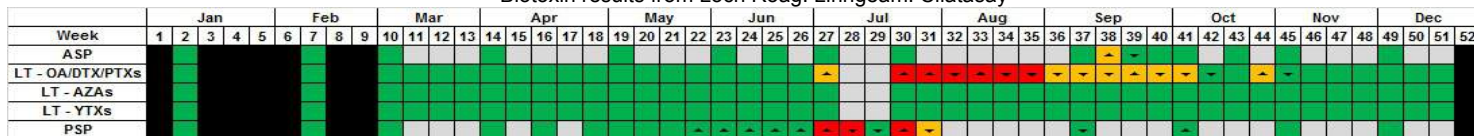
Pod 125



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
125	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Linngheam	Cliatasay	LH 187 699 08	Common mussels	Yes	NB13283323
125	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Linngheam	Mol Mòr	LH 187 710 08	Common mussels		NB149335
125	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Linngheam	Linngheam	LH 187 122 08	Common mussels		NB138337
125	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Linngheam	Hacklete	LH 187 698 08	Common mussels		NB142344
125	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Torranish	Loch Torranish	LH 189 124 08	Common mussels	Alternate RMP	NB155336
125	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Drovinish	Loch Drovinish	LH 186 121 08	Common mussels		NB140325
125	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Linngheam	Eilean Nam Feannag	LH 187 939 08	Common mussels		NB143336
125	Comhairle nan Eilean Siar - Lewis & Harris	Loch Roag: Linngheam	Aird Chaol	LH 187 941 08	Common mussels		NB135329

Biotoxin results from Loch Roag: Linngheam: Cliatasay



6.3. COMHAIRLE NAN EILEAN SIAR: UIST & BARRA

Pod 77



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
77	Comhairle nan Eilean Siar - Uist & Barra	Traigh Mhor	Traigh Mhor	UB 282 165 04	Common cockles	Yes	NF705055
77	Comhairle nan Eilean Siar - Uist & Barra	Cidhe Eolaigearraidh	Sound of Barra: Pacific oysters	UB 427 830 13	Pacific oysters		NF71200710
77	Comhairle nan Eilean Siar - Uist & Barra	Traigh Cille Bharra	Traigh Cille Bharra Cockles	UB 392 790 04	Common cockles		NF71380818
77	Comhairle nan Eilean Siar - Uist & Barra	Oitir Mhor Razors	Rubha nan Eun	UB 683 1484 16	Razors		NF73840660
77	Comhairle nan Eilean Siar - Uist & Barra	Traigh Cille Razors	Traigh Cille Razors	UB 711 1574 16	Razors		NF71590729
77	Comhairle nan Eilean Siar - Uist & Barra	Traigh Mhor Razors	Traigh Mhor Razors	UB 615 1194 16	Razors		NF71300571

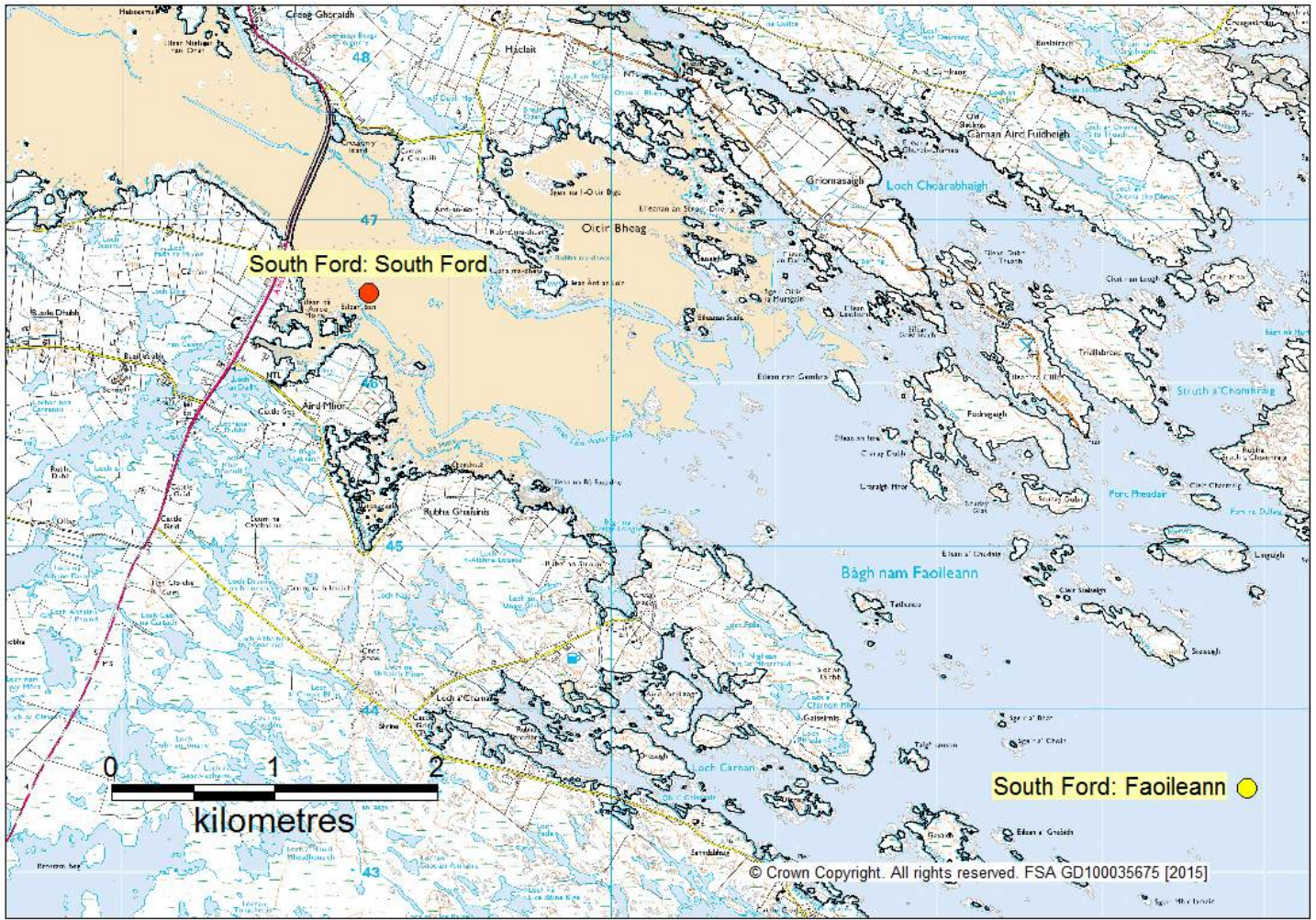
Biotoxin results from Traigh Mhor: Traigh Mhor

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
LT - OA/DTX/PTXs	Green																																																											
LT - AZAs	Green																																																											
LT - YTXs	Green																																																											
PSP	Green																																																											

Phytoplankton results from Traigh Mhor: Traigh Mhor

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Pseudo-nitzschia	Green																																																											
Dinophysis	Green																																																											
Prorocentrum lima	Green																																																											
Alexandrium	Green																																																											

Pod 86



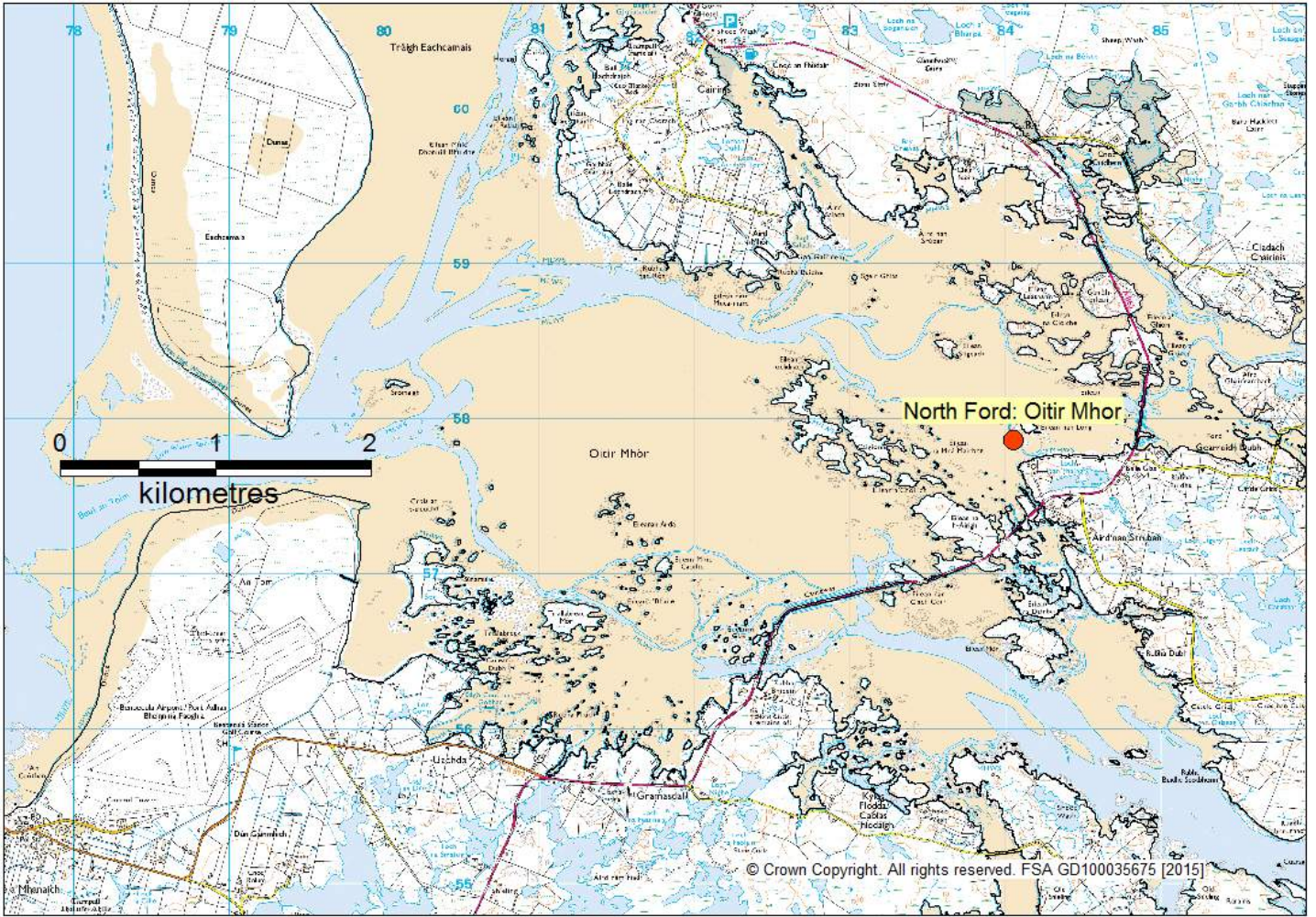
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
86	Comhairle nan Eilean Siar - Uist & Barra	South Ford	South Ford	UB 259 162 04	Common cockles	Yes	NF8050146551
86	Comhairle nan Eilean Siar - Uist & Barra	South Ford Faileann	Faileann	UB 734 1705 16	Razors		NF85904350

Biotoxin results from South Ford: South Ford



Pod 133



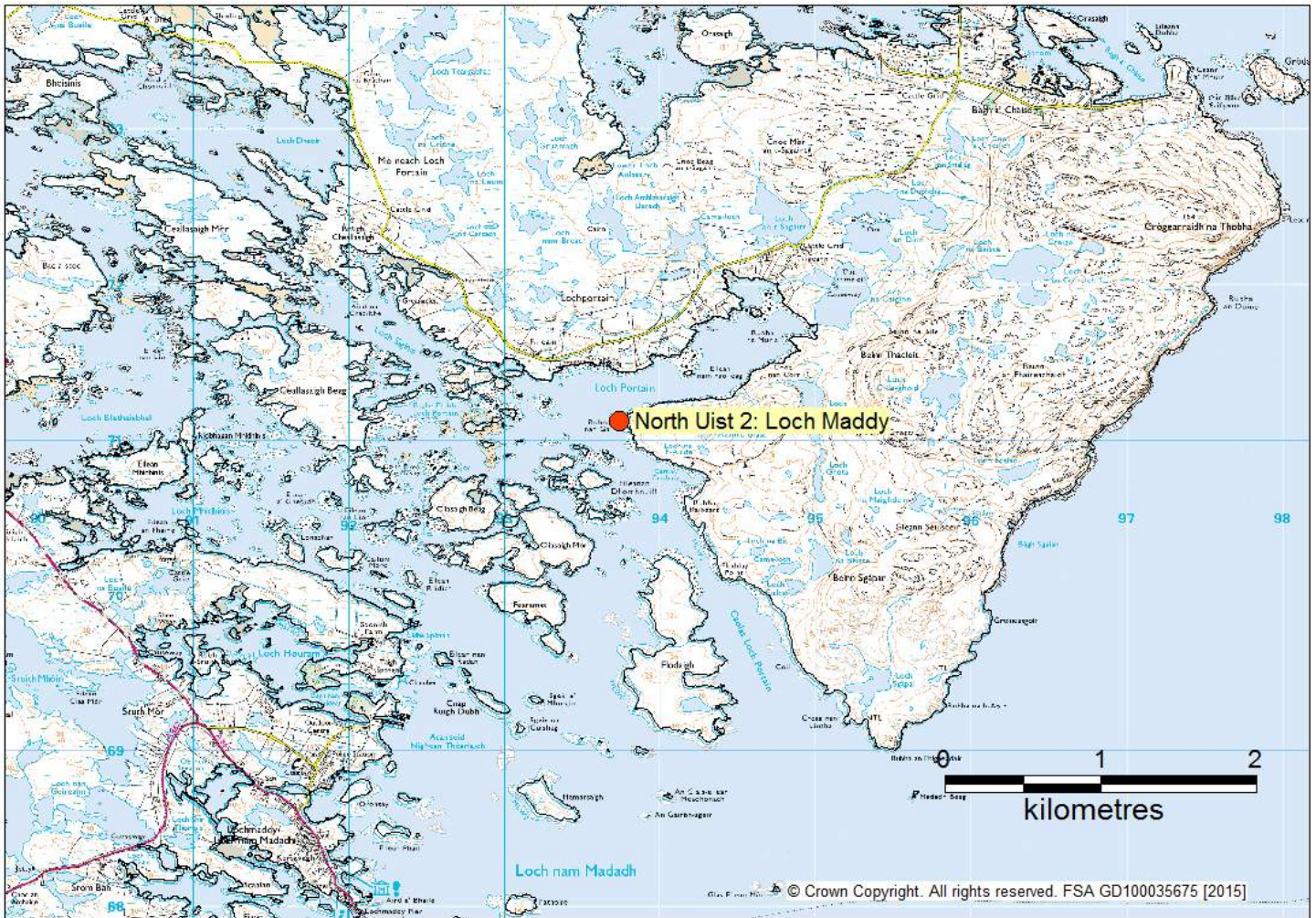
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
133	Comhairle nan Eilean Siar - Uist & Barra	North Ford	Oitir Mhor	UB 493 852 04	Common cockles	Yes	NF84055786

Biotoxin results from North Ford: Oitir Mhor

	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																												
LT - OA/DTX/PTXs																																																												
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

Pod 135



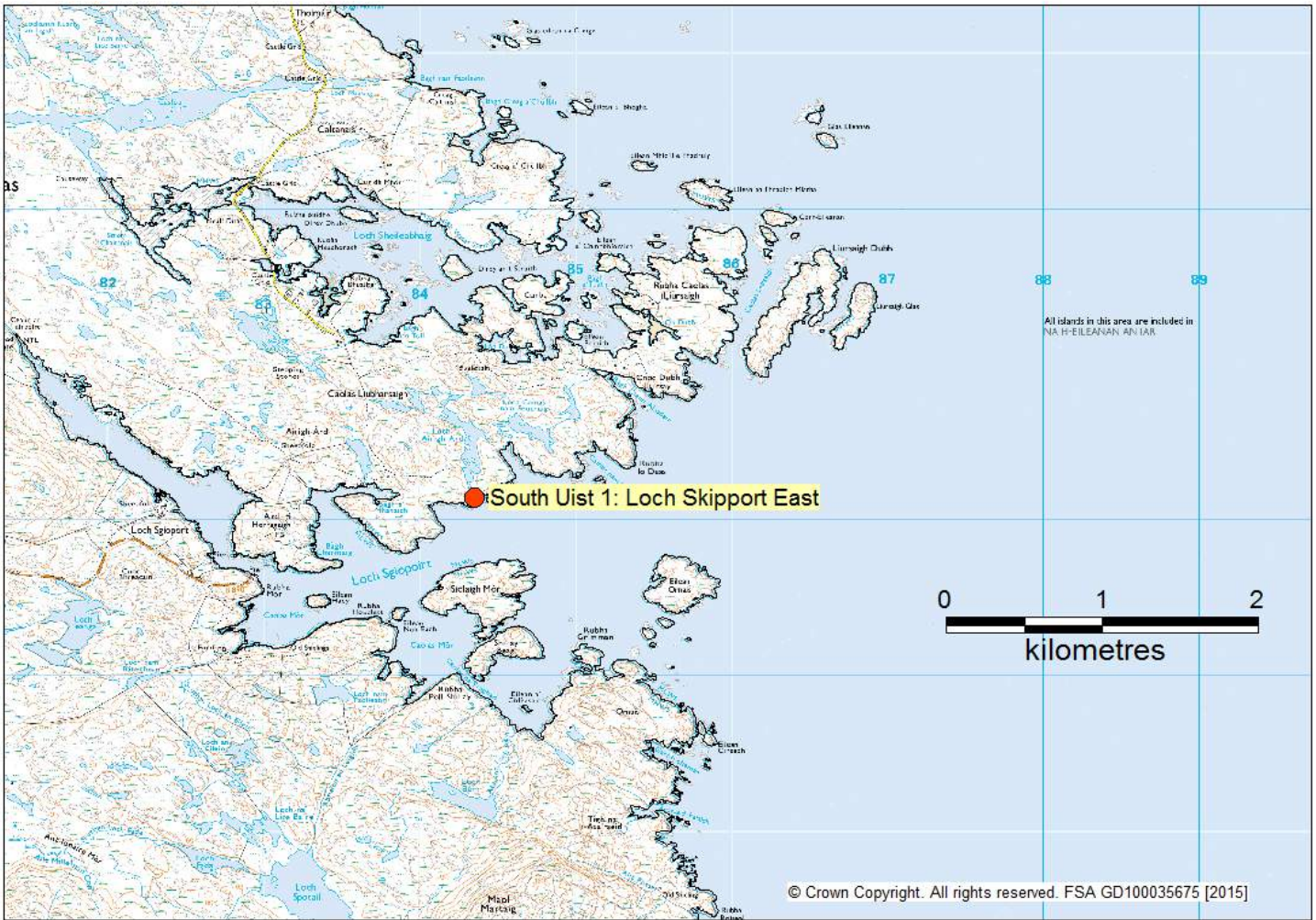
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
135	Comhairle nan Eilean Siar - Uist & Barra	North Uist 2	Loch Maddy	UB 540 969 08	Common mussels	Yes	NF93737112

Biotoxin results from North Uist 2: Loch Maddy

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec					
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																												
LT - OA/DTX/PTXs																																																												
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

Pod 136



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
136	Comhairle nan Eilean Siar - Uist & Barra	South Uist 1	Loch Skipport East	UB 537 966 08	Common mussels	Yes	NF84353914

Biotoxin results from South Uist 1: Loch Skipport East

Week	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																					
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█																																													
LT - AZAs	█	█	█	█	█	█	█	█	█	█																																													
LT - YTXs	█	█	█	█	█	█	█	█	█	█																																													
PSP	█	█	█	█	█	█	█	█	█	█																																													

Phytoplankton results from South Uist 1: Loch Skipport East

Week	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																								
Pseudo-nitzschia	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52						
Dinophysis	█																																																									
Proocentrum lima	█																																																									
Alexandrium	█																																																									

Pod 141



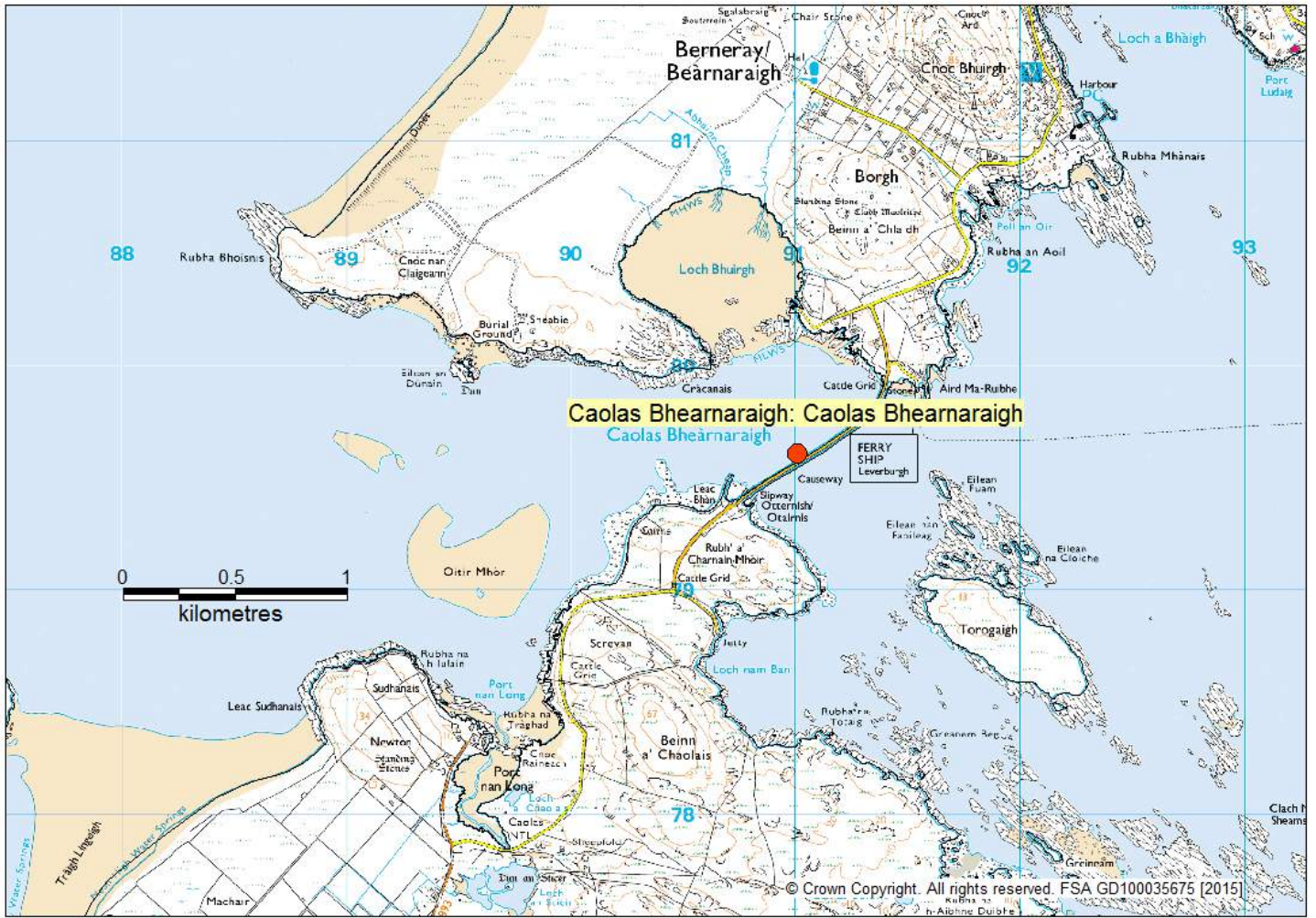
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
141	Comhairle nan Eilean Siar - Uist & Barra	Caolas Eiriosgaigh Razors	Eiriosgaigh Razors	UB 684 1485 16	Razors	Yes	NF79821245

Biotoxin results from Caolas Eiriosgaigh Razors: Eiriosgaigh Razors

Week	Jan							Feb							Mar							Apr							May							Jun							Jul							Aug							Sep							Oct					Nov					Dec				
ASP																																																																														
LT - OA/DTX/PTXs																																																																														
LT - AZAs																																																																														
LT - YTXs																																																																														
PSP																																																																														

Pod 147



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
147	Comhairle nan Eilean Siar - Uist & Barra	Caolas Bhearnaigh	Caolas Bhearnaigh	UB 735 1706 16	Razors	Yes	NF910769

No samples received from Pod 147 between 1st January and 31st December 2015

6.4. DUMFRIES & GALLOWAY COUNCIL

Pod 26



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
26	Dumfries and Galloway Council	Loch Ryan	Loch Ryan	DG 191 175 12	Native oysters	Yes	NX035665
26	Dumfries and Galloway Council	Loch Ryan	Lefnoll Point	DG 191 174 12	Native oysters		NX072652
26	Dumfries and Galloway Council	Loch Ryan Cockles	Loch Ryan Cockles	DG 746 1809 04	Common cockles		NX07106140
26	Dumfries and Galloway Council	Loch Ryan Soleburn	Soleburn Cockles	DG 762 1935 04	Common cockles		NX04016786

Biotoxin results from Loch Ryan: Loch Ryan (mussels)

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Phytoplankton results from Loch Ryan: Loch Ryan (Stranraer Pier)

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Pseudo-nitzschia																																																											
Dinophysis																																																											
Prorocentrum lima																																																											
Alexandrium																																																											

Pod 89



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
89	Dumfries and Galloway Council	Luce Bay Razors	Luce Sands Razors	DG 499 865 16	Razors	Yes	NX120510
89	Dumfries and Galloway Council	Luce Bay Gapers	Luce Sands Gapers	DG 784 2010 18	Sand gapers		Not given
89	Dumfries and Galloway Council	Luce Bay Razors	Auchenmalg Bay	DG 499 1823 16	Razors		Not given
89	Dumfries and Galloway Council	Luce Bay Gapers	Auchenmalg Bay Gapers	DG 784 2011 18	Sand gapers		Not given
89	Dumfries and Galloway Council	Luce Bay Drummore	Drummore Razors	DG 751 1824 16	Razors		NX12993958
89	Dumfries and Galloway Council	Luce Bay Drummore Gapers	Drummore Gapers	DG 783 2009 18	Sand gapers		Not given

Biotoxin results from Luce Bay Razors: Luce Sands Razors

	Jan					Feb				Mar					Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
ASP																																																				
LT - OA/DTX/PTXs																																																				
LT - AZAs																																																				
LT - YTXs																																																				
PSP																																																				

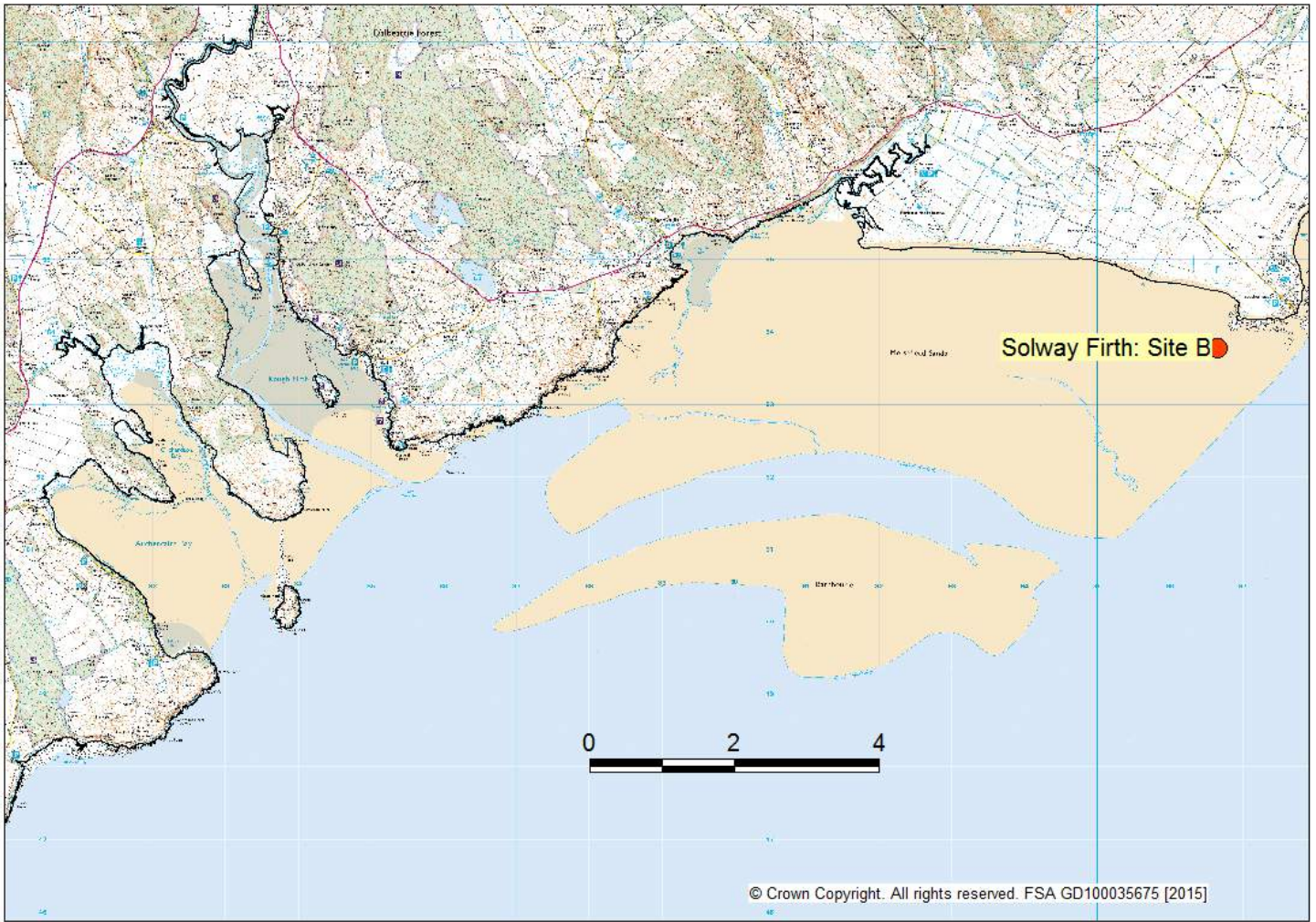
Biotoxin results from Luce Bay Drummors: Drummors Razors

	Jan					Feb				Mar					Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
ASP																																																				
LT - OA/DTX/PTXs																																																				
LT - AZAs																																																				
LT - YTXs																																																				
PSP																																																				

Phytoplankton results from Luce Bay Razors: Luce Sands Razors

	Jan					Feb				Mar					Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Pseudo-nitzschia																																																				
Dinophysis																																																				
Prorocentrum lima																																																				
Alexandrium																																																				

Pod 142



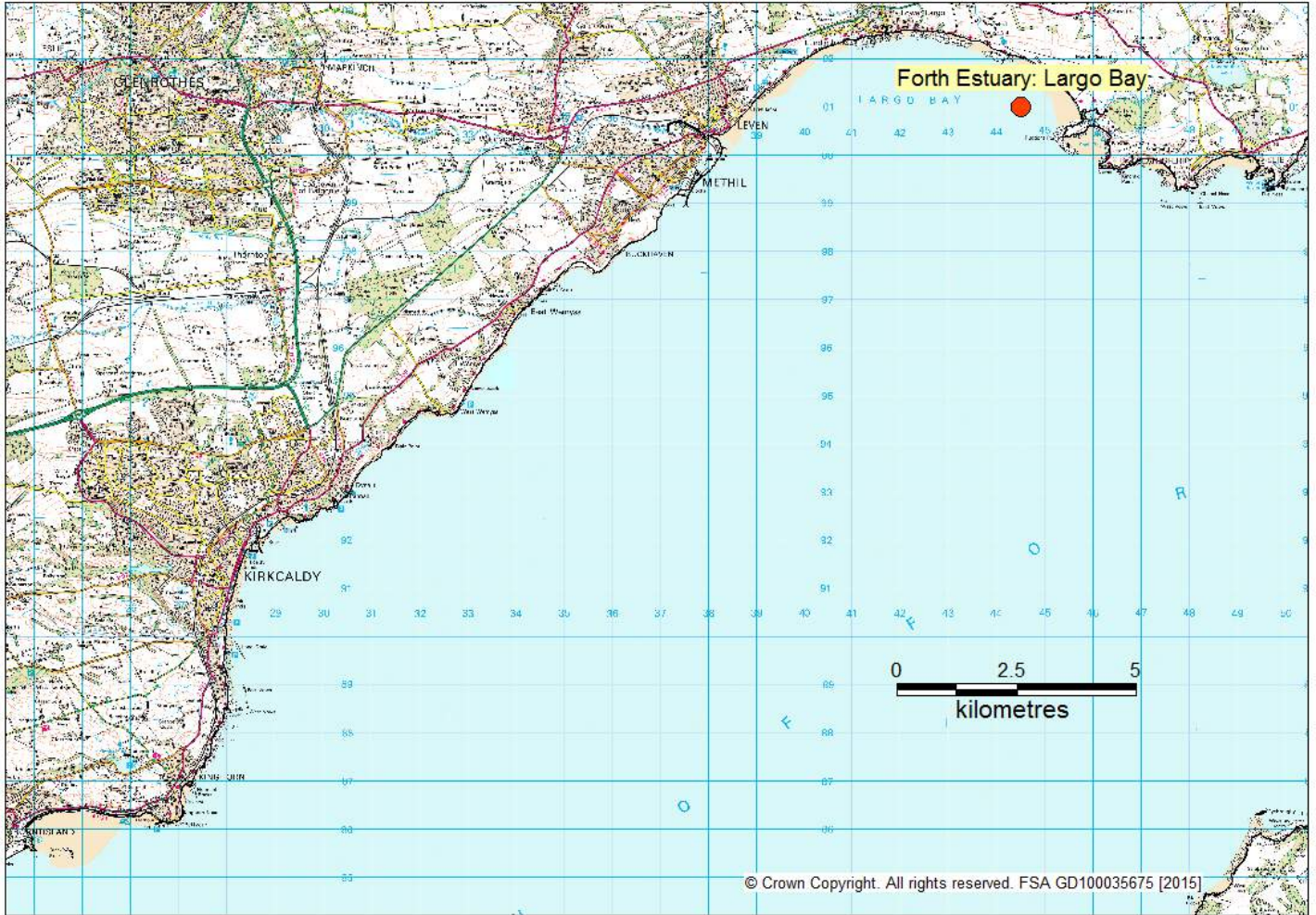
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
142	Dumfries and Galloway Council	Solway Firth	Site B	DG 253 1509 04	Common cockles	Yes	NX96665378

No samples received from Pod 142 between 1st January and 31st December 2015

6.5. FIFE COUNCIL

Pod 80



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
80	Fife Council	Forth Estuary: Largo Bay	Largo Bay	FF 072 188 16	Razors	Yes	NO445010

Biotoxin results from Forth Estuary: Largo Bay (razors)

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP	[Green]																																																										
LT - OA/DTX/PTXs	[Green]																																																										
LT - AZAs	[Green]																																																										
LT - YTXs	[Green]																																																										
PSP	[Green]																																																										

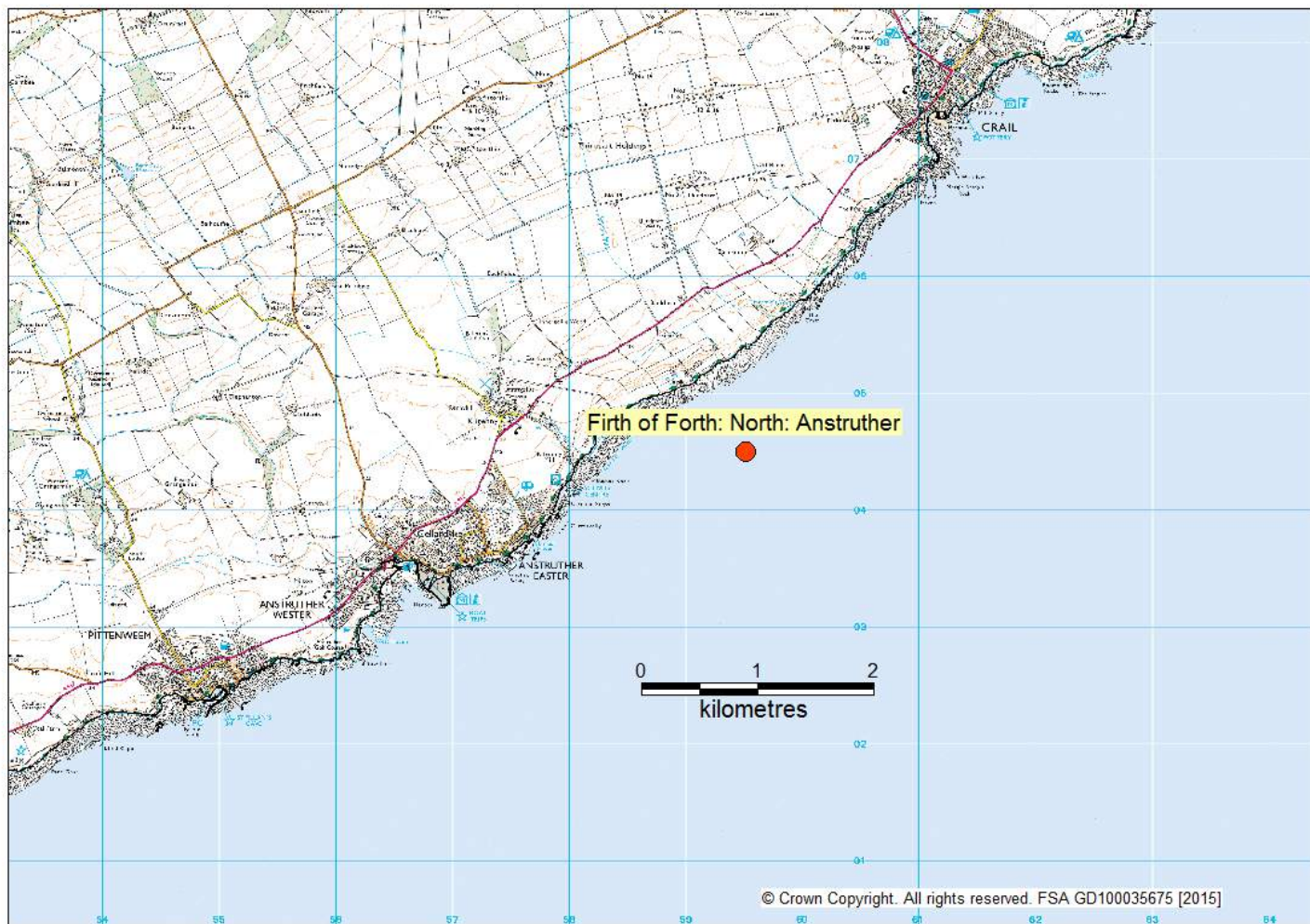
Biotoxin results from Forth Estuary: Largo Bay (mussels)

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP	[Green]																																																										
LT - OA/DTX/PTXs	[Green]																																																										
LT - AZAs	[Green]																																																										
LT - YTXs	[Green]																																																										
PSP	[Green]																																																										

Phytoplankton results from Forth Estuary: Largo Bay

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
Pseudo-nitzschia	[Green]																																																										
Dinophysis	[Green]																																																										
Prorocentrum lima	[Green]																																																										
Alexandrium	[Green]																																																										

Pod 87



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
87	Fife Council	Firth of Forth: North	Anstruther	FF 068 184 19	Surf clams	Yes	NO59500450

Biotoxin results from Firth of Forth: North: Anstruther (surf clams)

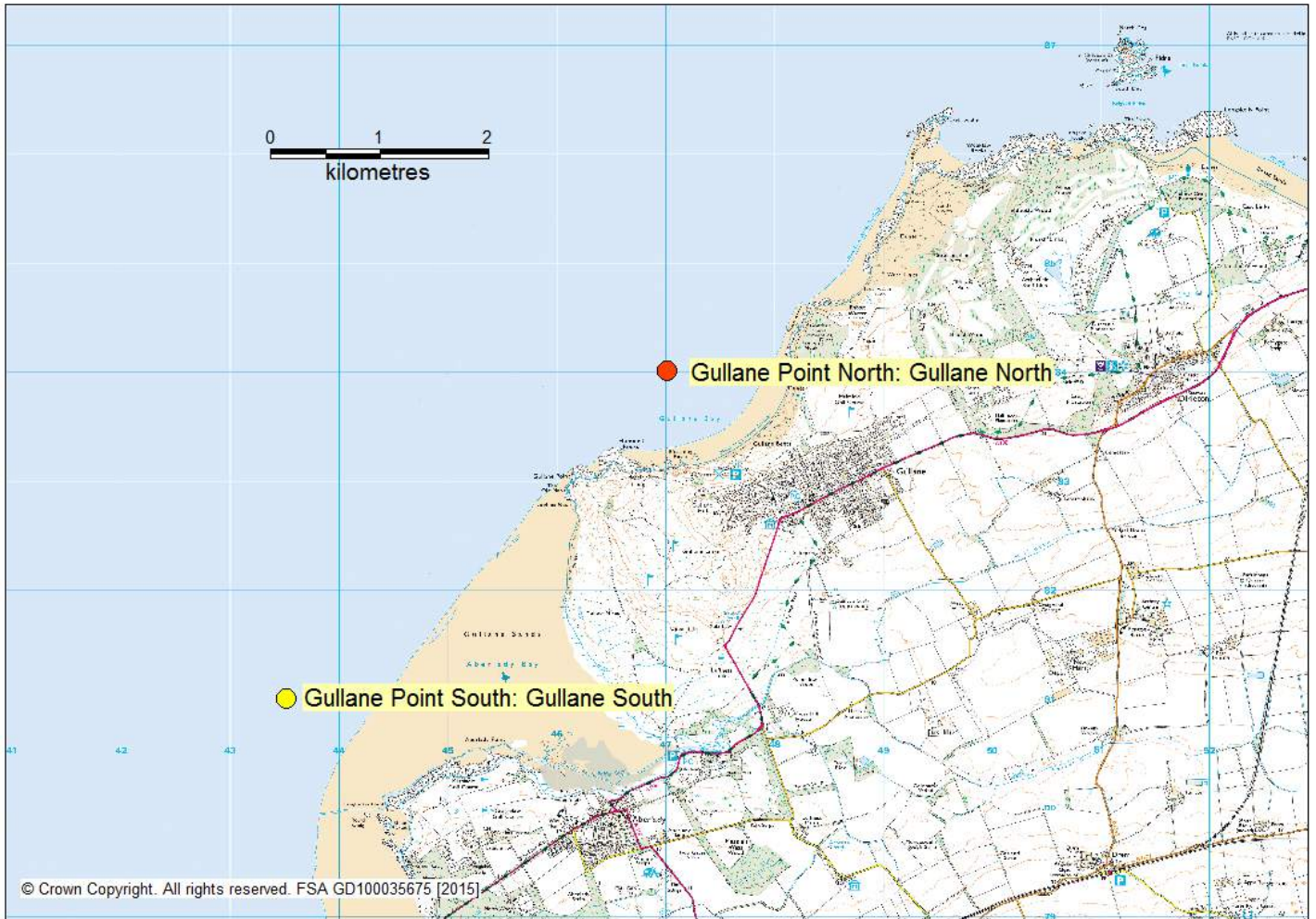
Week	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
ASP																																																							
LT - OA/DTX/PTXs																																																							
LT - AZAs																																																							
LT - YTXs																																																							
PSP																																																							

Biotoxin results from Firth of Forth: North: Anstruther Indicator (mussels)

Week	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52					
ASP																																																									
LT - OA/DTX/PTXs																																																									
LT - AZAs																																																									
LT - YTXs																																																									
PSP																																																									

6.6. EAST LoTHIAN COUNCIL

Pod 90



RMP position: ● AHA position: ●

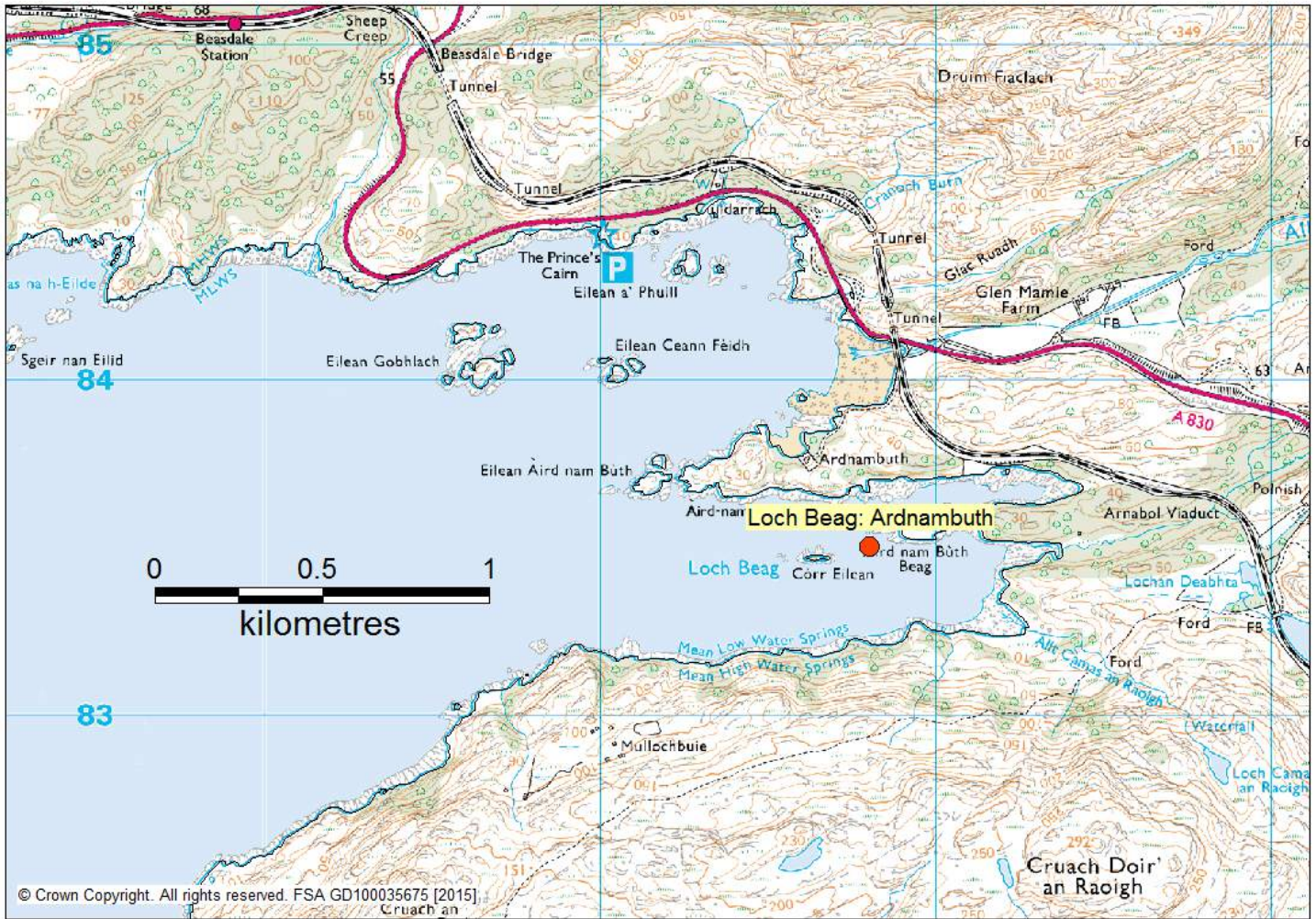
Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
90	East Lothian Council	Gullane Point North	Gullane North	EL 601 1087 16	Razors	Yes	NT47008400
90	East Lothian Council	Gullane Point South	Gullane South	EL 703 1525 16	Razors		NT43508100

Biotoxin results from Gullane Point North: Gullane North

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec						
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█		
LT - AZAs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█		
LT - YTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█		
PSP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█		

6.7. HIGHLAND COUNCIL: LOCHABER

Pod 28



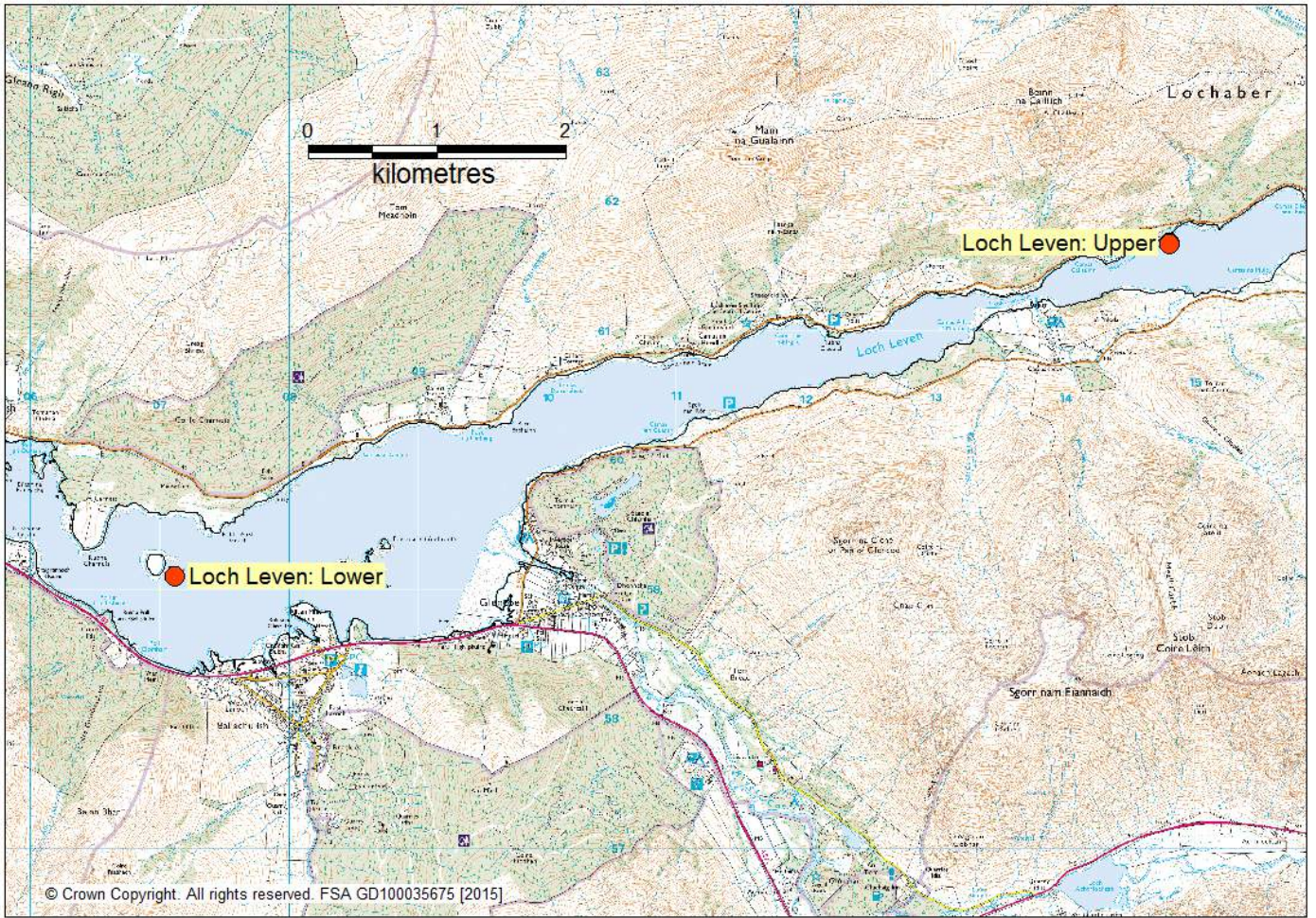
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
28	Highland Council: Lochaber	Loch Beag	Ardnabuth	HL 118 215 08	Common mussels	Yes	NM728835

Biotoxin results from Loch Beag: Ardnabuth

	Jan		Feb				Mar					Apr					May				Jun				Jul				Aug				Sep				Oct				Nov				Dec										
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
ASP																																																							
LT - OA/DTX/PTXs																																																							
LT - AZAs																																																							
LT - YTXs																																																							
PSP																																																							

Pod 31



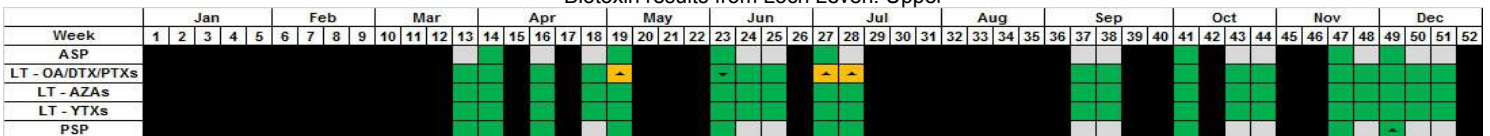
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
31	Highland Council: Lochaber	Loch Leven: Lower	Lower	HL 170 222 08	Common mussels	Yes	NN0710059105
31	Highland Council: Lochaber	Loch Leven : Upper	Upper	HL 171 223 08	Common mussels	Alternate RMP	NN1480061680

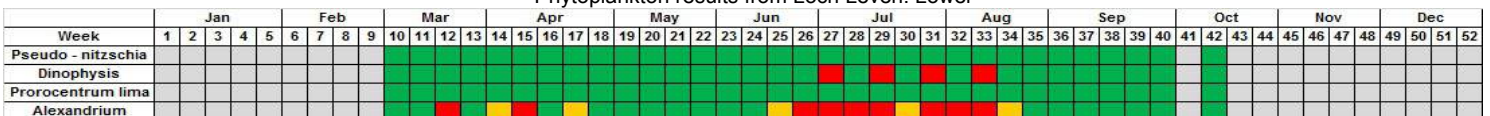
Biotoxin results from Loch Leven: Lower



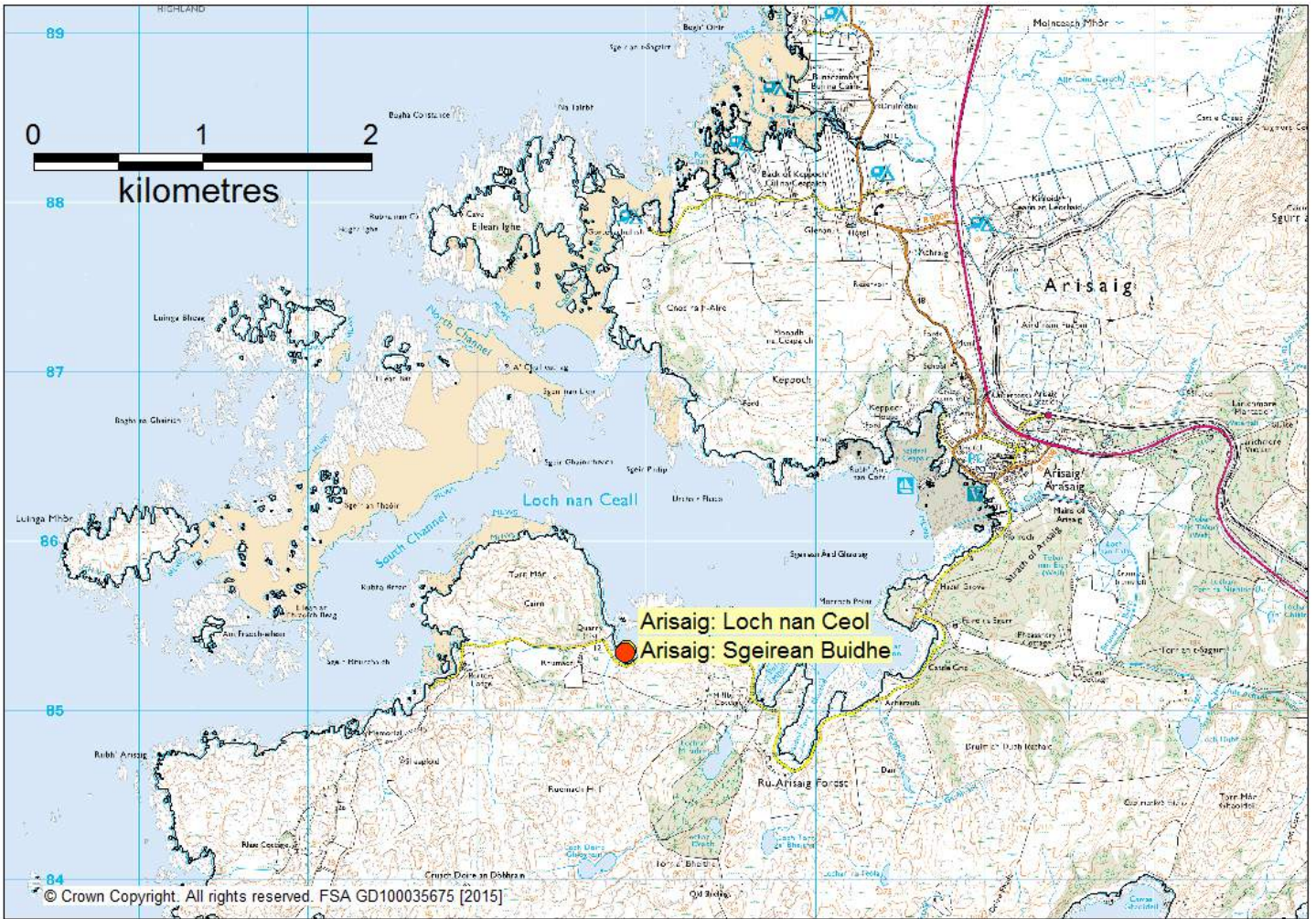
Biotoxin results from Loch Leven: Upper



Phytoplankton results from Loch Leven: Lower



Pod 33



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
33	Highland Council: Lochaber	Arisaig	Sgeirean Buidhe	HL 004 202 13	Pacific oysters	Yes	NM6387085350
33	Highland Council: Lochaber	Arisaig	Loch nan Ceall	HL 004 198 13	Pacific oysters		NM6387085350

Biotoxin results from Arisaig: Sgeirean Buidhe

Week	Jan					Feb				Mar					Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Pod 34



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
34	Highland Council: Lochaber	Loch Eil: Fassfern	Fassfern	HL 136 219 08	Common mussels	Yes	NN02977815
34	Highland Council: Lochaber	Loch Eil	Duisky	HL 134 216 08	Common mussels		NN00527753
34	Highland Council: Lochaber	Loch Eil	Garvan	HL 134 217 08	Common mussels		NN005786

Biotoxin results from Loch Eil: Fassfern

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec															
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																		
ASP																																																																						
LT - OA/DTX/PTXs																																																																						
LT - AZAs																																																																						
LT - YTXs																																																																						
PSP																																																																						

Pod 85



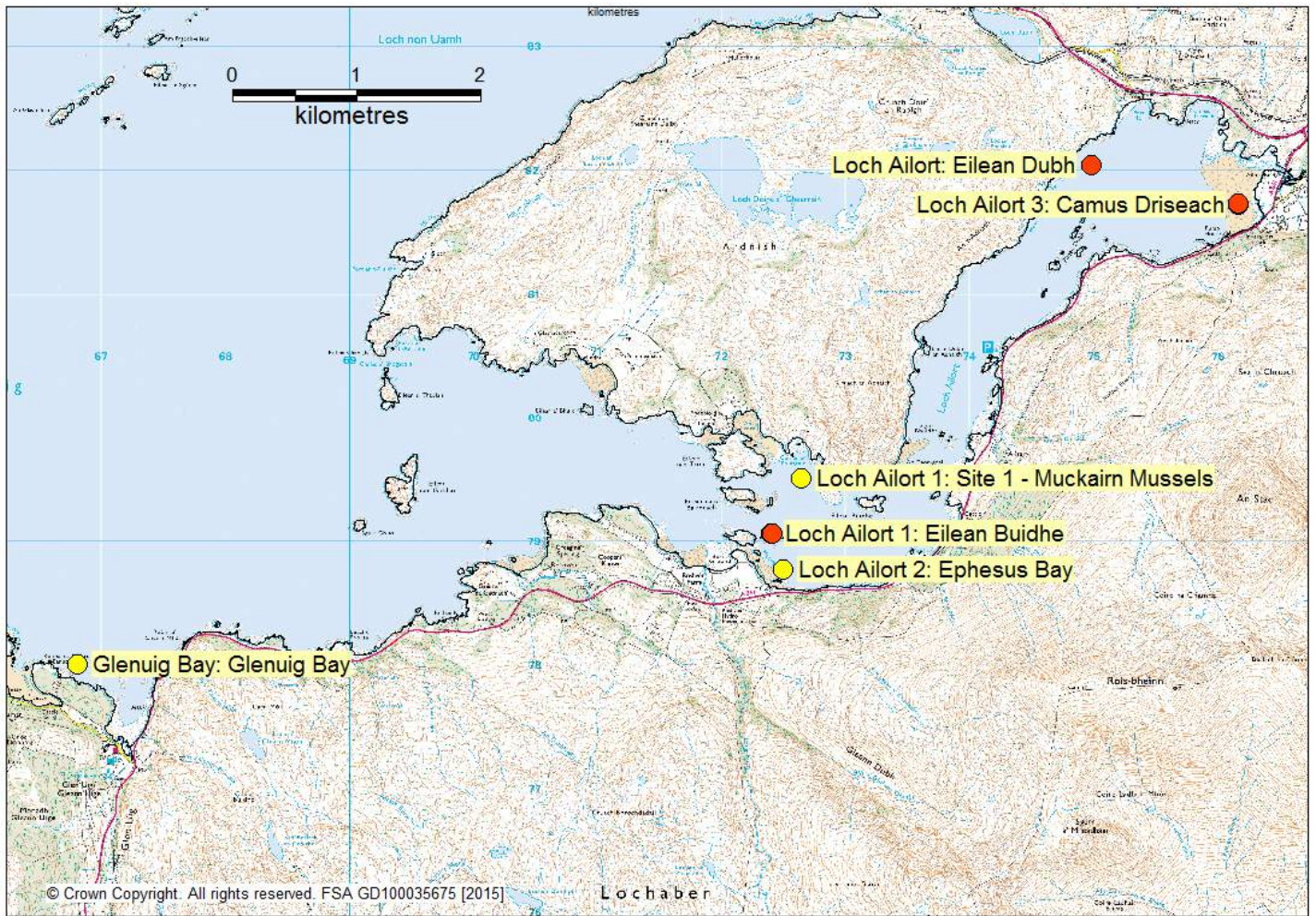
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
85	Highland Council: Lochaber	Loch Moidart	South Channel	HL 179 227 13	Pacific oysters	Yes	NM64397197
85	Highland Council: Lochaber	Loch Moidart: South Channel East	South Channel East	HL 761 1925 04	Common cockles		Not given

Biotoxin results from Loch Moidart: South Channel (mussels)

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																	
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
ASP																																																								
LT - OA/DTX/PTXs																																																								
LT - AZAs																																																								
LT - YTXs																																																								
PSP																																																								

Pod 126



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
126	Highland Council: Lochaber	Loch Ailort	Eilean Dubh	HL 114 937 08	Common mussels	Yes	NM7498082040
126	Highland Council: Lochaber	Glenuig Bay	Glenuig Bay	HL 075 205 08	Common mussels		NM668780
126	Highland Council: Lochaber	Loch Ailort 1	Site 1 – Muckairn Mussels	HL 114 214 08	Common mussels		NM7264079510
126	Highland Council: Lochaber	Loch Ailort 1	Eilean Buidhe	HL 114 209 08	Common mussels	Alternate RMP	NM72397906
126	Highland Council: Lochaber	Loch Ailort 3	Camus Driseach	HL 114 207 13	Pacific oysters	Alternate RMP	NM7616081720
126	Highland Council: Lochaber	Loch Ailort 2	Ephesus Bay	HL 539 968 12	Native oysters		NM72497877

Biotoxin results from Loch Ailort 3: Camus Driseach

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
ASP																																																			
LT - OA/DTX/PTXs																																																			
LT - AZAs																																																			
LT - YTXs																																																			
PSP																																																			

Biotoxin results from Loch Ailort: Eilean Dubh

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
ASP																																																			
LT - OA/DTX/PTXs																																																			
LT - AZAs																																																			
LT - YTXs																																																			
PSP																																																			

Phytoplankton results from Glenuig Bay: Glenuig Bay

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Pseudo-nitzschia																																																			
Dinophysis																																																			
Prorocentrum lima																																																			
Alexandrium																																																			

Phytoplankton results from Loch Ailort: Eilean Dubh

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Pseudo-nitzschia																																																			
Dinophysis																																																			
Prorocentrum lima																																																			
Alexandrium																																																			

Pod 137



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
137	Highland Council: Lochaber	Loch Sunart	Liddesdale	HL 206 1237 08	Common mussels	Yes	NM78306012

Biotoxin results from Loch Sunart: Liddesdale

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec																			
ASP																																																																											
LT - OA/DTX/PTXs																																																																											
LT - AZAs																																																																											
LT - YTXs																																																																											
PSP																																																																											

Pod 150



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
150	Highland Council: Lochaber	Camas Garbh Clams	Sound of Sleat Clams	HL 765 1961 02	Carpet clams	Yes	NG74200840

Biotoxin results from Camas Garbh Clams: Sound of Sleat Clams

Week	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																																																											
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																																									
ASP																																										▲	▲	▲	▲	▲																																															
LT - OA/DTX/PTXs																																										▲	▲	▲	▲	▲																																															
LT - AZAs																																										▲	▲	▲	▲	▲																																															
LT - YTXs																																										▲	▲	▲	▲	▲																																															
PSP																																										▲	▲	▲	▲	▲																																															

6.8. HIGHLAND COUNCIL: ROSS & CROMARTY

Pod 35



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
35	Highland Council: Ross & Cromarty	Inner Loch Torridon	Ob Gorm Mor	RC 090 245 08	Common mussels		NG86975502
35	Highland Council: Ross & Cromarty	Inner Loch Torridon	Ob Gorm Beag	RC 090 1617 08	Common mussels		NG860547
35	Highland Council: Ross & Cromarty	Inner Loch Torridon	Dubh Aird	RC 090 1616 08	Common mussels	Yes	NG8753655034

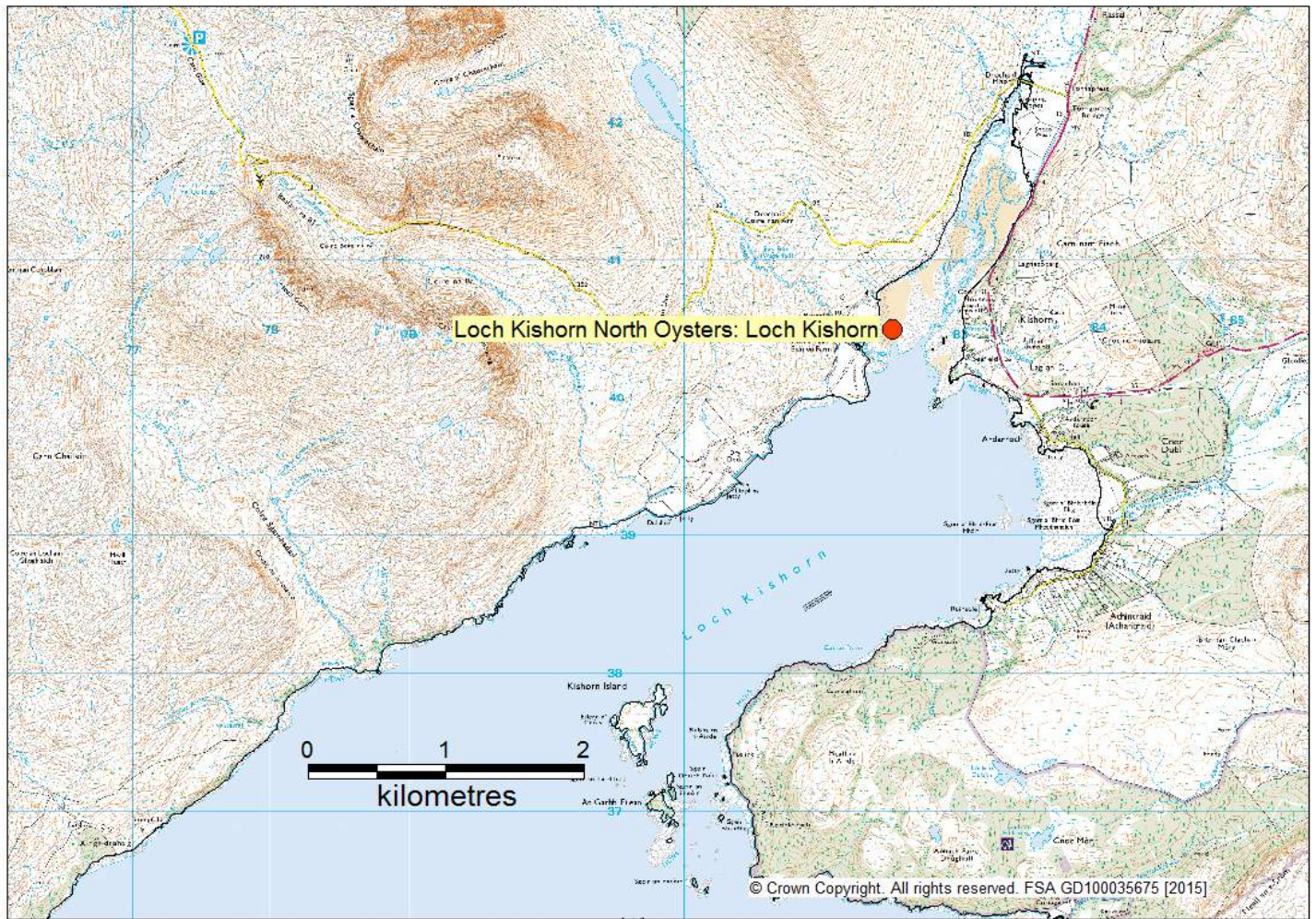
Biotoxin results from Inner Loch Torridon: Dubh Aird

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
LT - OA/DTX/PTXs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
LT - AZAs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
LT - YTXs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
PSP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								

Phytoplankton results from Inner Loch Torridon: Dubh Aird

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Pseudo-nitzschia	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
Dinophysis	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
Prorocentrum lima	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
Alexandrium	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								

Pod 37

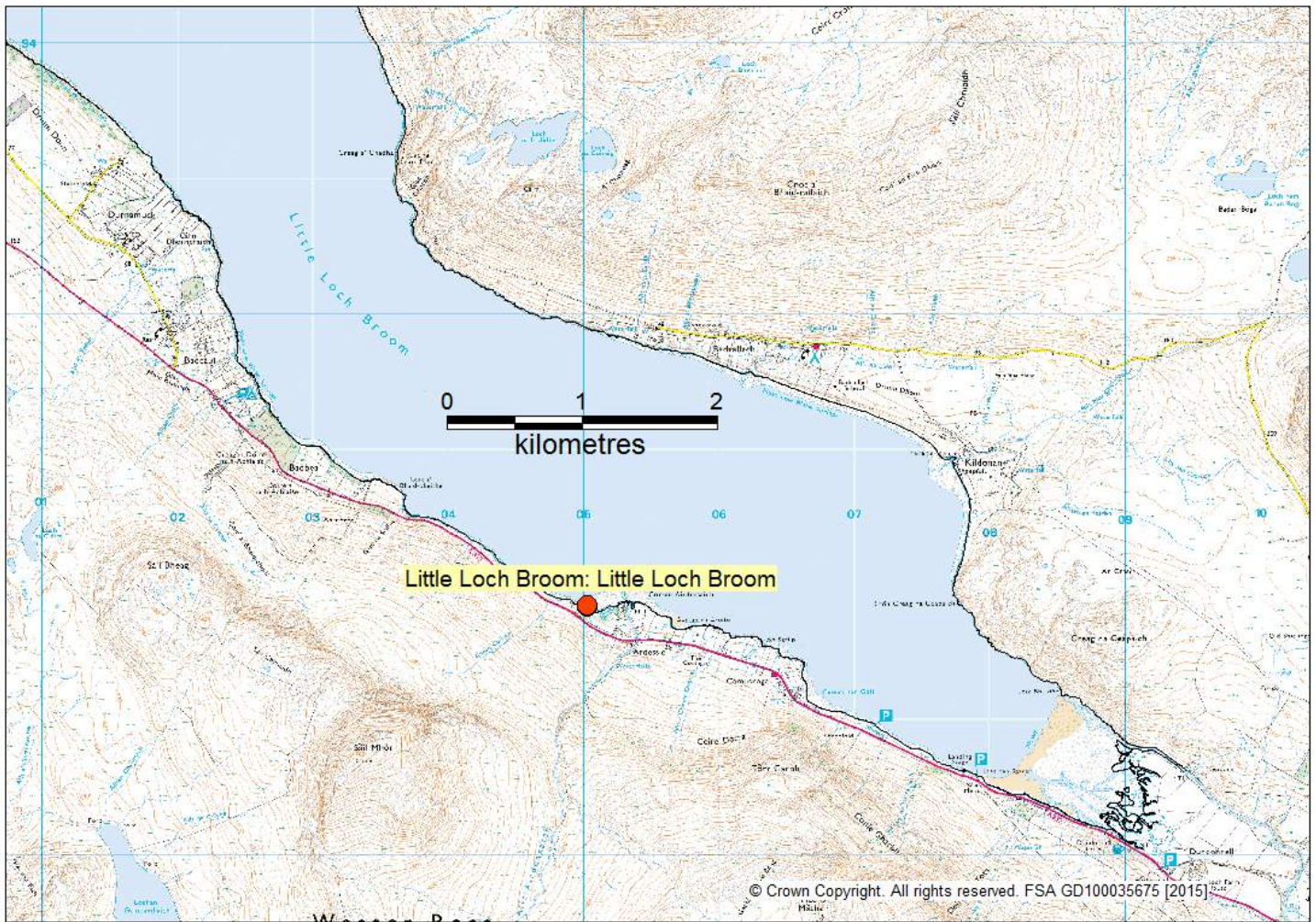


RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
37	Highland Council: Ross & Cromarty	Loch Kishorn North Oysters	Loch Kishorn	RC 329 254 13	Pacific oysters	Yes	NG825405

No samples received from Pod 37 between 1st January and 31st December 2015

Pod 39

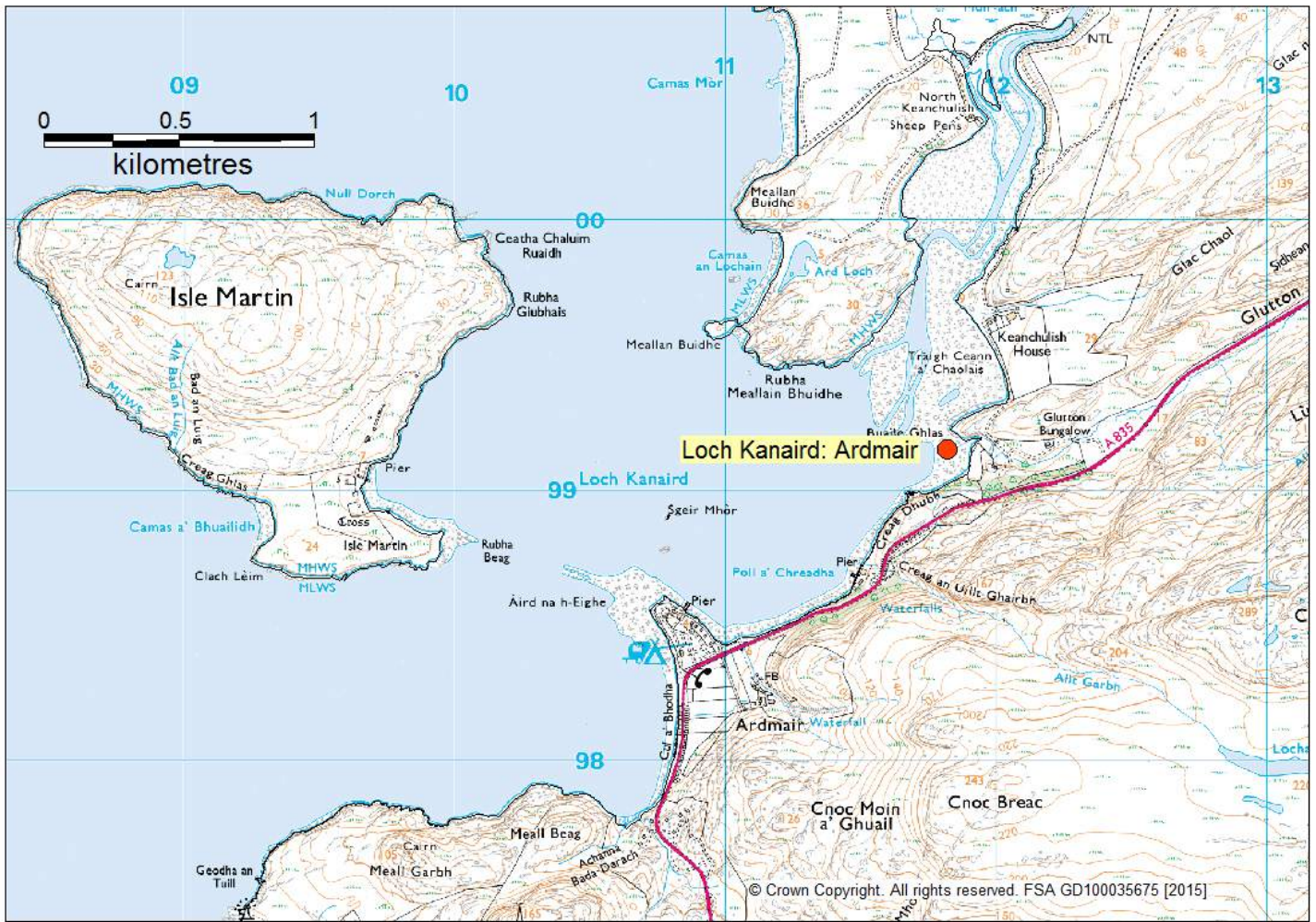


RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
39	Highland Council: Ross & Cromarty	Little Loch Broom	Little Loch Broom	RC 110 247 08	Common mussels	Yes	NH05028983

No samples received from Pod 39 between 1st January and 31st December 2015

Pod 144



RMP position: ● AHA position: ●

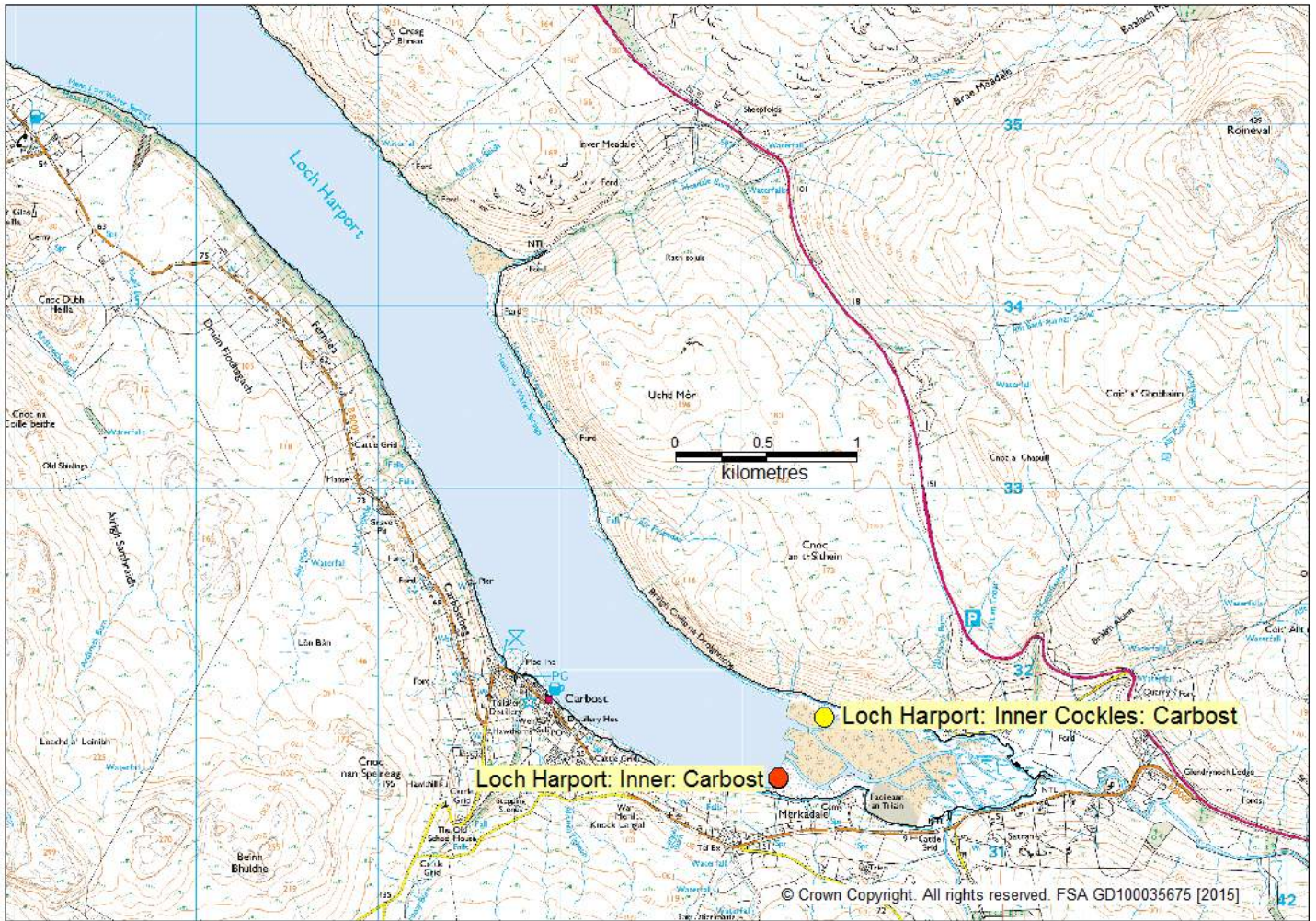
Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
144	Highland Council: Ross & Cromarty	Loch Kanaird	Ardmail	RC 625 1233 13	Pacific oysters	Yes	NG11799917

Biotoxin results from Loch Kanaird: Ardmail

	Jan		Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
ASP																																																					
LT - OA/DTX/PTXs																																																					
LT - AZAs																																																					
LT - YTXs																																																					
PSP																																																					

6.9. HIGHLAND COUNCIL: SKYE & LOCHALSH

Pod 40



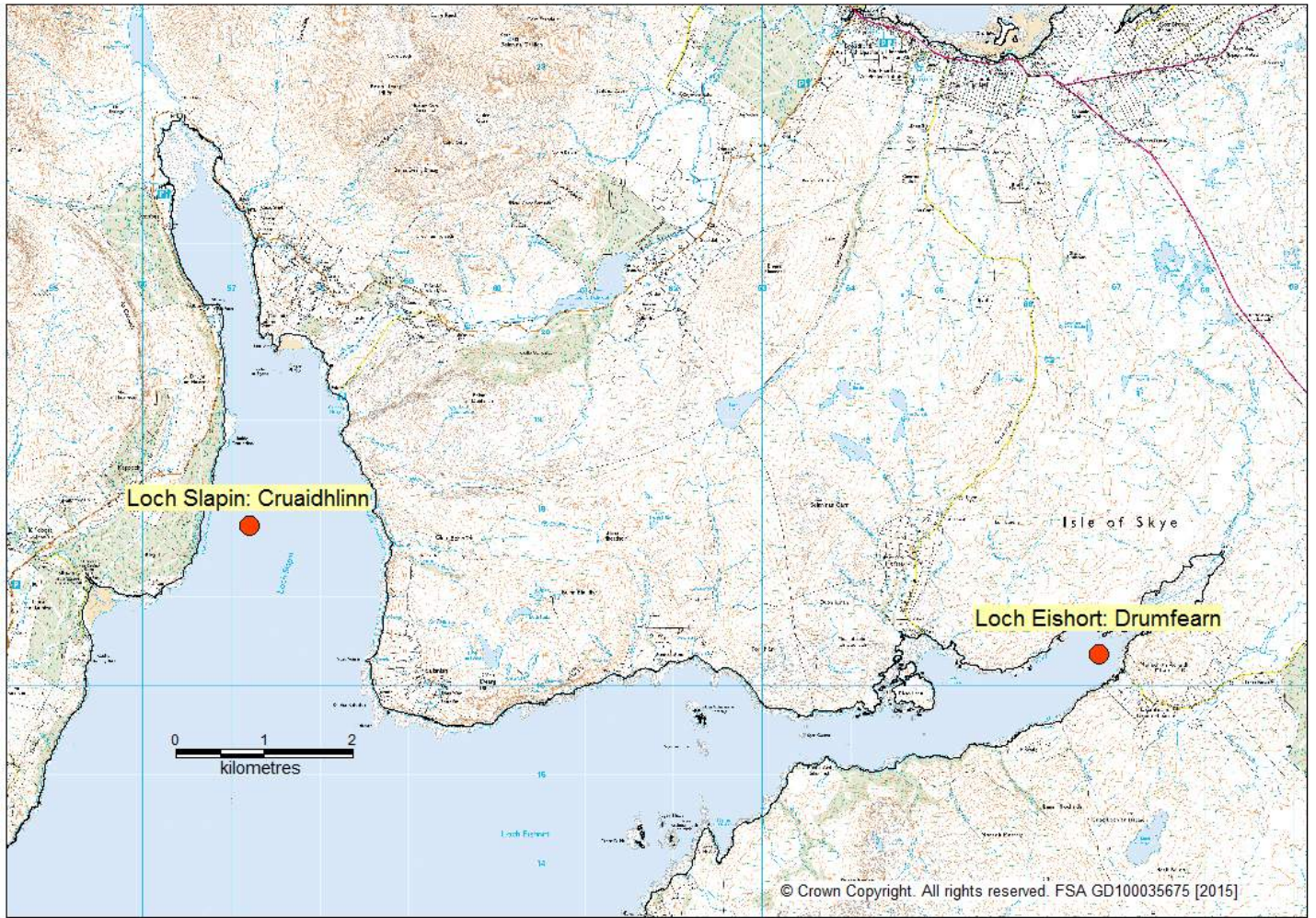
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
40	Highland Council: Skye & Lochalsh	Loch Harport: Inner	Carbost	SL 159 286 13	Pacific oysters	Yes	NG392314
40	Highland Council: Skye & Lochalsh	Loch Harport: Inner Cockles	Carbost	SL 159 286 04	Common cockles		NG39443174

Biotoxin results from Loch Harport: Inner: Carbost

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					
LT - AZAs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					
LT - YTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					
PSP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					

Pod 41



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
41	Highland Council: Skye & Lochalsh	Loch Eishort	Drumfearn	SL 137 281 08	Common mussels	Yes	NG66771629
41	Highland Council: Skye & Lochalsh	Loch Slapin	Cruaidhlinn	SL 194 290 08	Common mussels	Alternate RMP	NG572178

Biotoxin results from Loch Eishort: Drumfearn

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec																										
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																													
ASP																																																																																	
LT - OA/DTX/PTXs																																																																																	
LT - AZAs																																																																																	
LT - YTXs																																																																																	
PSP																																																																																	

Phytoplankton results from Loch Eishort: Drumfearn

	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec													
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																
Pseudo-nitzschia																																																																				
Dinophysis																																																																				
Prorocentrum lima																																																																				
Alexandrium																																																																				

Pod 43



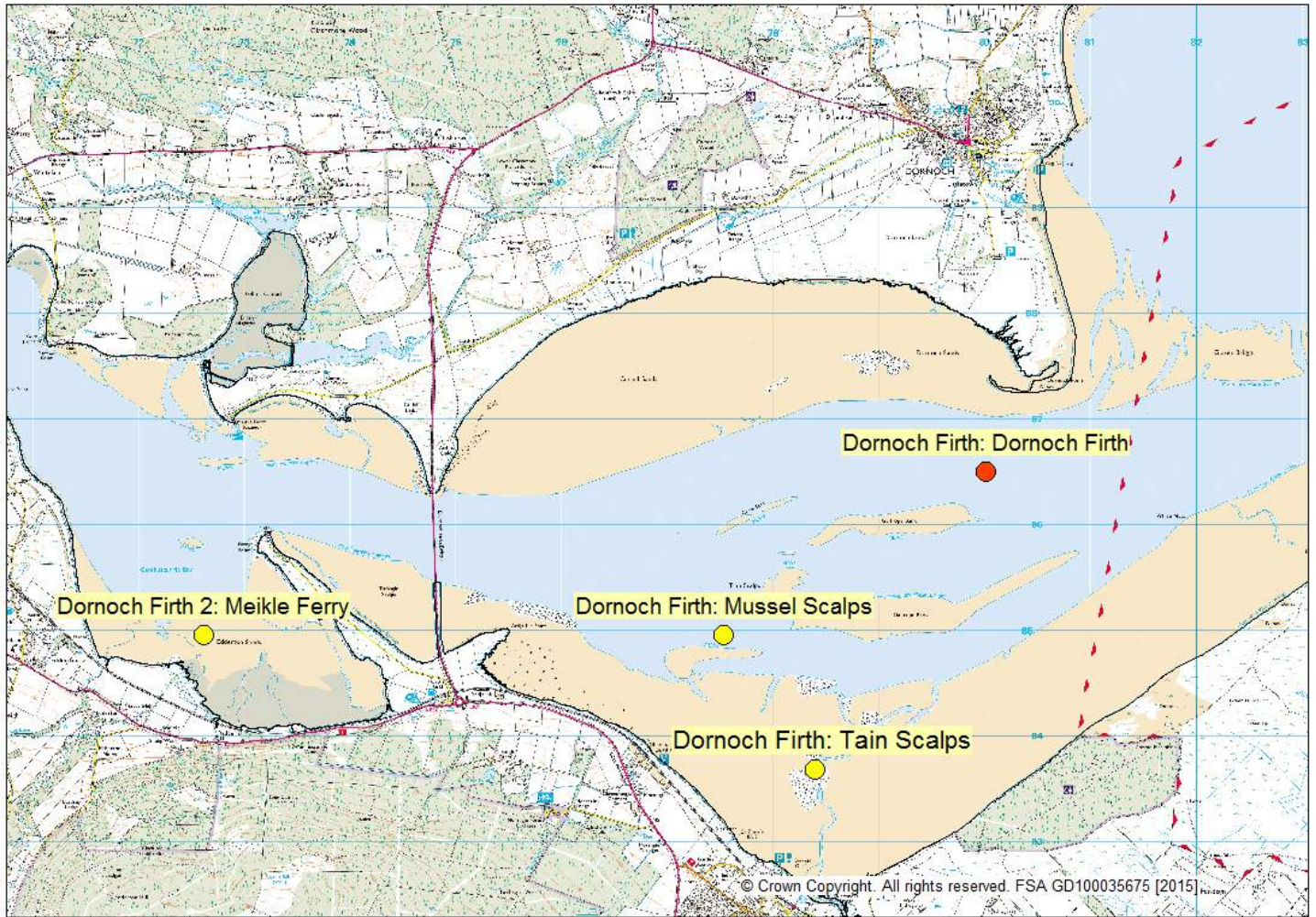
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
43	Highland Council: Skye & Lochalsh	Loch Bay	Loch Bay	SL 117 275 04	Common cockles	Yes	NG262541

No samples received from Pod 43 between 1st January and 31st December 2015

6.10. HIGHLAND COUNCIL: SUTHERLAND

Pod 38



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
38	Highland Council: Sutherland	Dornoch Firth	Dornoch Firth	HS 054 239 08	Common mussels	Yes	NH800865
38	Highland Council: Sutherland	Dornoch Firth 2	Meikle Ferry	HS 466 876 08	Common mussels		NH72608495
38	Highland Council: Sutherland	Dornoch Firth	Mussel Scalps	HS 464 872 08	Common mussels		NH77528495
38	Highland Council: Sutherland	Dornoch Firth	Tain Scalps	HS 465 873 08	Common mussels		NH7735981952

Biotoxin results from Dornoch Firth: Dornoch Firth

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
ASP																																																							
LT - OA/DTX/PTXs																																																							
LT - AZAs																																																							
LT - YTXs																																																							
PSP																																																							

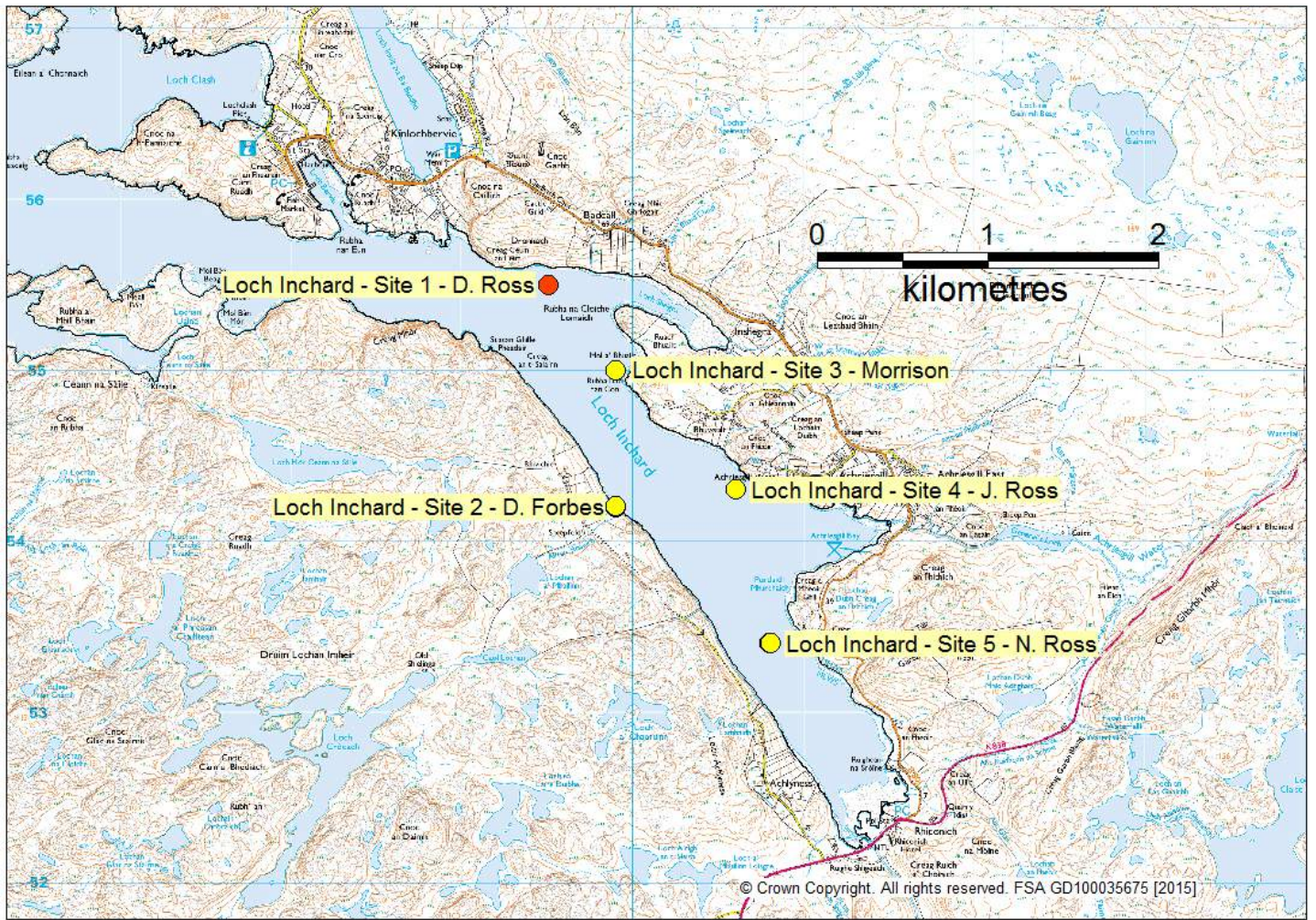
Phytoplankton results from Dornoch Firth: Dornoch Firth

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
Pseudo - nitzschia																																																							
Dinophysis																																																							
Prorocentrum lima																																																							
Alexandrium																																																							

Phytoplankton results from Dornoch Firth 2: Meikle Ferry

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
Pseudo - nitzschia																																																							
Dinophysis																																																							
Prorocentrum lima																																																							
Alexandrium																																																							

Pod 47



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
47	Highland Council: Sutherland	Loch Inchard	Loch Inchard - Site 1 - D. Ross	HS 162 311 08	Common mussels	Yes	NC235555
47	Highland Council: Sutherland	Loch Inchard	Loch Inchard - Site 2 - D. Forbes	HS 162 312 08	Common mussels		NC239542
47	Highland Council: Sutherland	Loch Inchard	Loch Inchard - Site 3 - Morrison	HS 162 313 08	Common mussels		NC239550
47	Highland Council: Sutherland	Loch Inchard	Loch Inchard - Site 4 - J. Ross	HS 162 314 08	Common mussels		NC246543
47	Highland Council: Sutherland	Loch Inchard	Loch Inchard - Site 5 - N. Ross	HS 162 315 08	Common mussels		NC248534

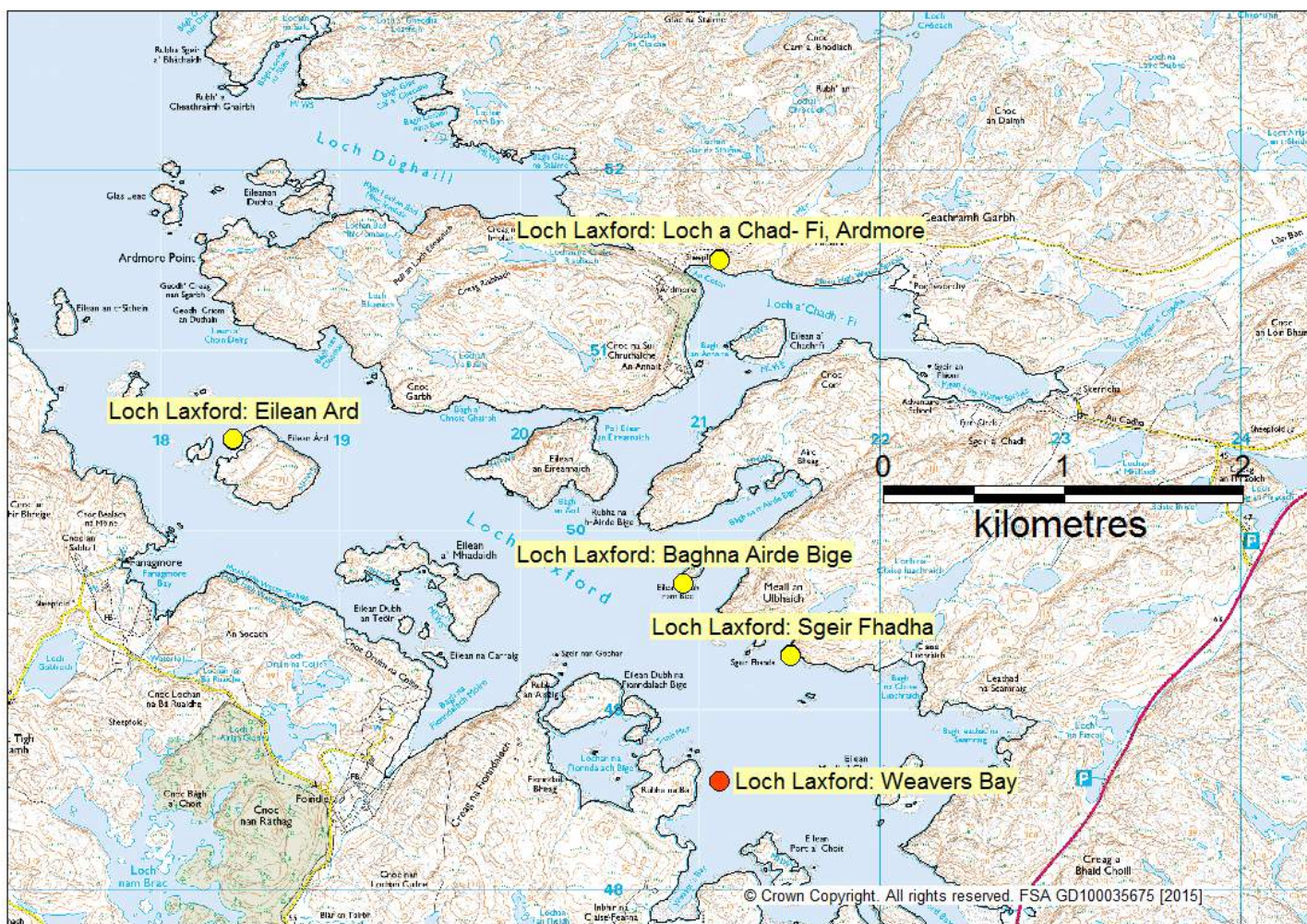
Biotoxin results from Loch Inchard: Loch Inchard – Site 1 – D. Ross

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec																																							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
ASP																																																			
LT - OA/DTX/PTXs																																																			
LT - AZAs																																																			
LT - YTXs																																																			
PSP																																																			

Phytoplankton results from Loch Inchard: Loch Inchard – Site 1 – D. Ross

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec																																								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
Pseudo-nitzschia																																																				
Dinophysis																																																				
Prorocentrum lima																																																				
Alexandrium																																																				

Pod 48



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
48	Highland Council: Sutherland	Loch Laxford	Weavers Bay	HS 167 320 08	Common mussels	Yes	NC211486
48	Highland Council: Sutherland	Loch Laxford	Eilean Ard	HS 167 317 08	Common mussels		NC184505
48	Highland Council: Sutherland	Loch Laxford	Baghna Airde Bige	HS 167 316 08	Common mussels		NC209497
48	Highland Council: Sutherland	Loch Laxford	Loch a Chad- Fi, Ardmore	HS 167 318 08	Common mussels		NC211515
48	Highland Council: Sutherland	Loch Laxford	Sgeir Fhadha	HS 167 319 08	Common mussels		NC215493

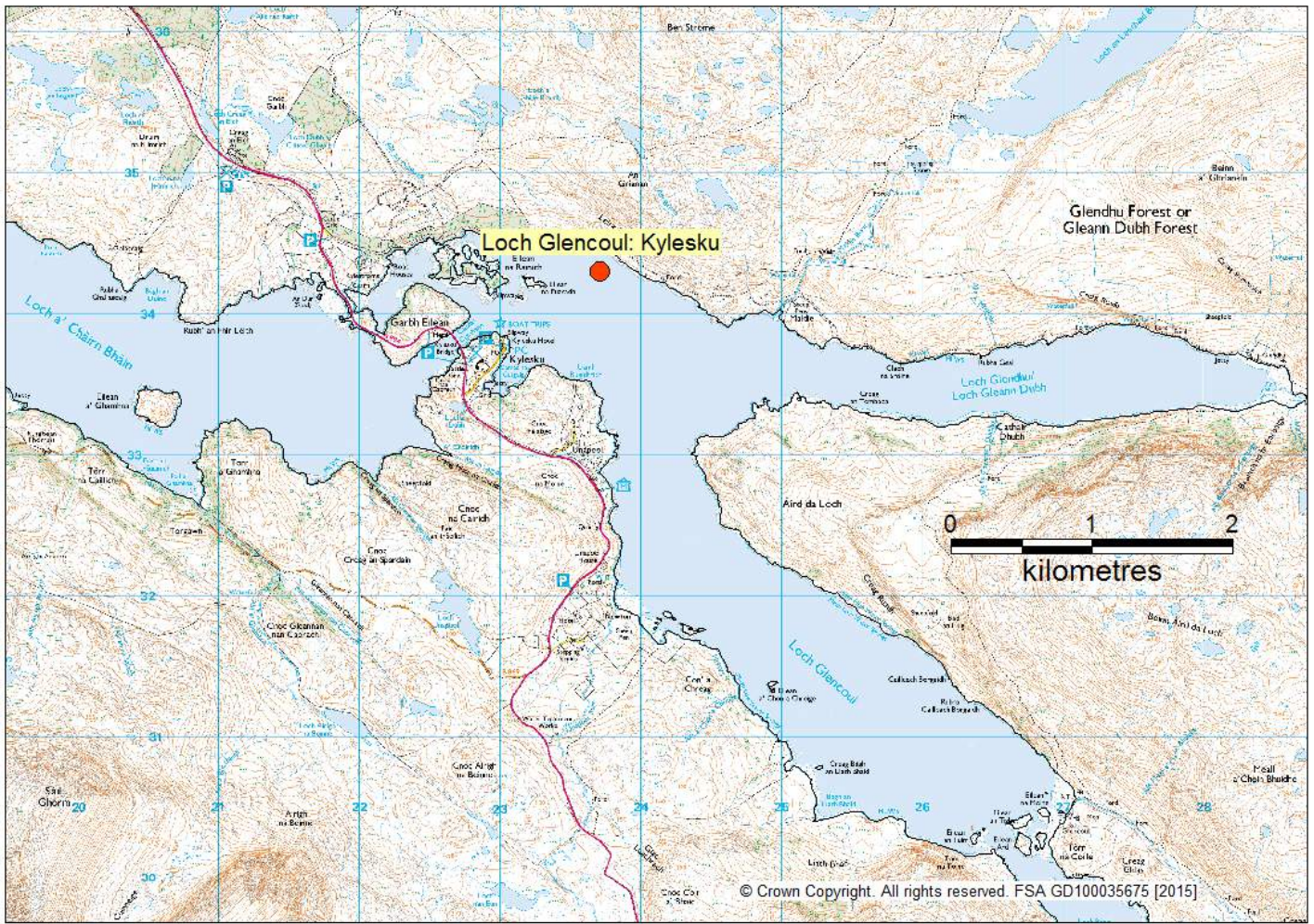
Biotoxin results from Loch Laxford: Weavers Bay

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Phytoplankton results from Loch Laxford: Weavers Bay

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Pseudo-nitzschia																																																											
Dinophysis																																																											
Prorocentrum lima																																																											
Alexandrium																																																											

Pod 49



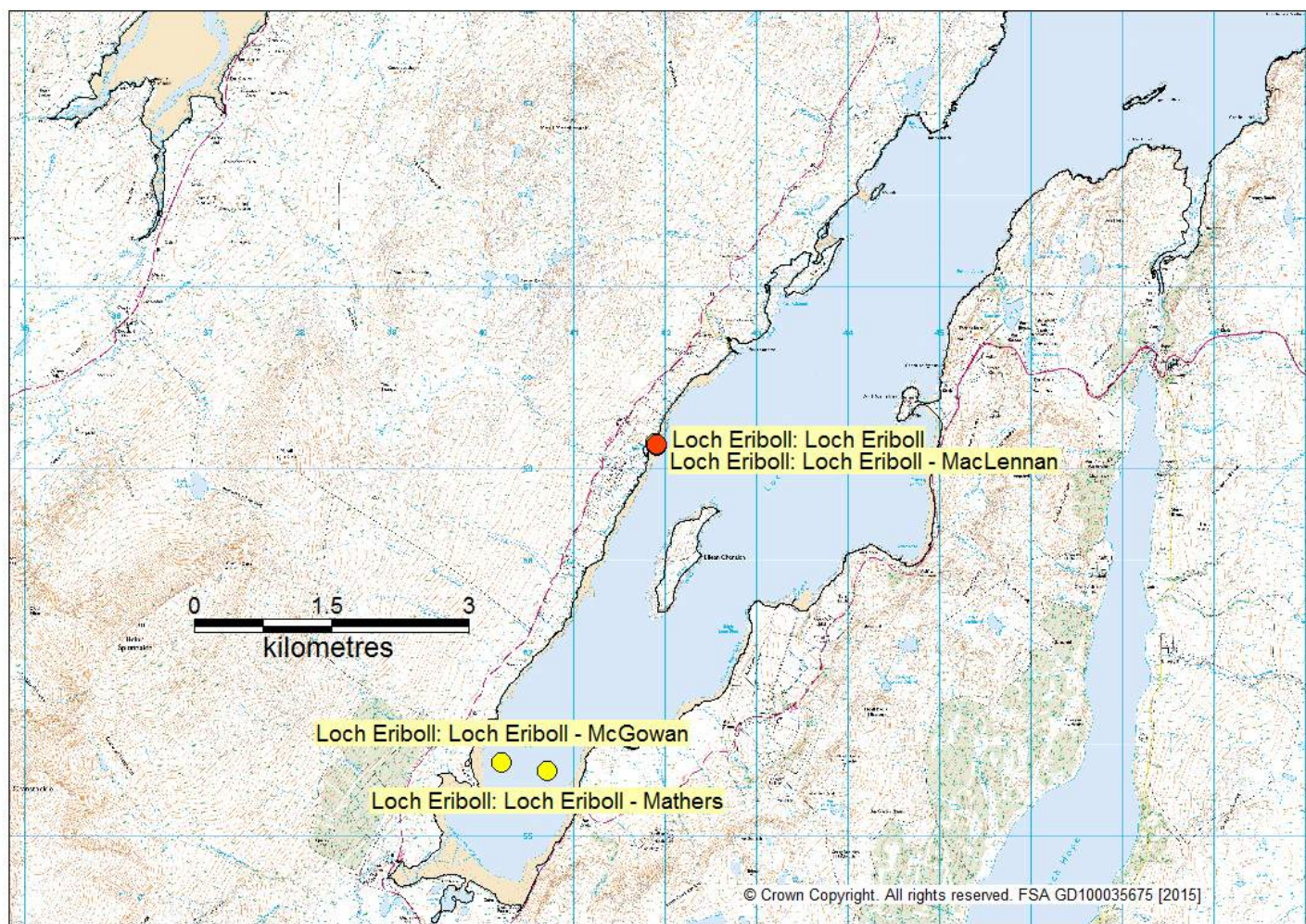
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
49	Highland Council: Sutherland	Loch Glencoul	Kylesku	HS 157 310 08	Common mussels	Yes	NC237343

Biotoxin results from Loch Glencoul: Kylesku

Week	Jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
ASP																																																								
LT - OA/DTX/PTXs																																																								
LT - AZAs																																																								
LT - YTXs																																																								
PSP																																																								

Pod 50



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
50	Highland Council: Sutherland	Loch Eriboll	Loch Eriboll - MacLennan	HS 139 307 08	Common mussels		NC41895928
50	Highland Council: Sutherland	Loch Eriboll	Loch Eriboll - McGowan	HS 139 309 08	Common mussels		NC402558
50	Highland Council: Sutherland	Loch Eriboll	Loch Eriboll - Mathers	HS 139 308 08	Common mussels		NC404564
50	Highland Council: Sutherland	Loch Eriboll	Loch Eriboll	HS 139 305 08	Common mussels	Yes	NC41885923

No samples received from Pod 50 between 1st January and 31st December 2015

Pod 51



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
51	Highland Council: Sutherland	Kyle of Tongue	Kyle of Tongue	HS 103 303 13	Pacific oysters	Yes	NC59105900

Biotoxin results from Kyle of Tongue: Kyle of Tongue

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					
LT - AZAs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					
LT - YTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					
PSP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█					

6.11. NORTH AYRSHIRE COUNCIL

Pod 52



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
52	North Ayrshire Council	Arran: Lamlash Bay	Lamlash Bay	NA 007 329 08	Common mussels	Yes	NS035298

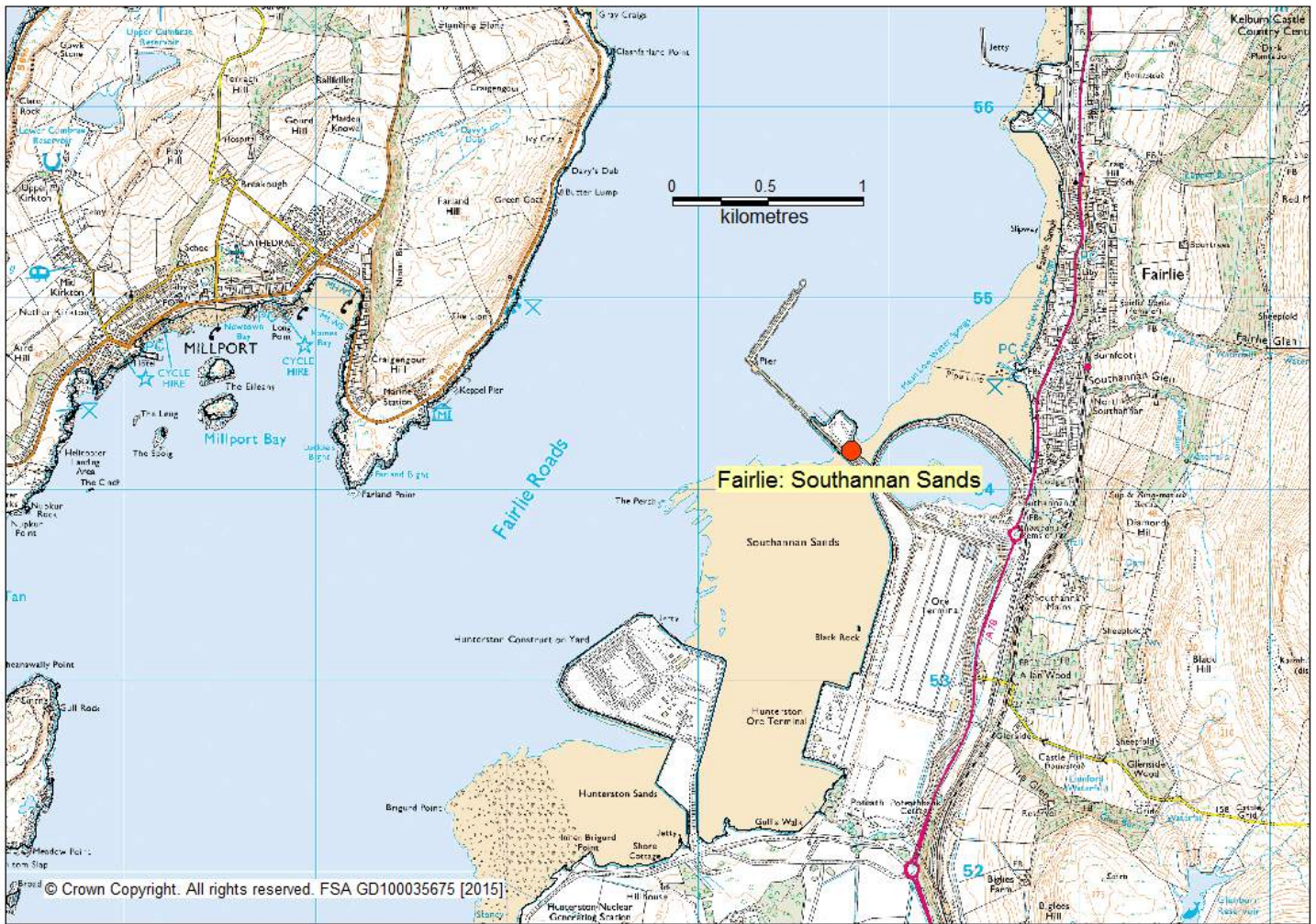
Biotoxin results from Arran: Lamlash Bay

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec				
ASP																																																		
LT - OA/DTX/PTXs																																																		
LT - AZAs																																																		
LT - YTXs																																																		
PSP																																																		

Phytoplankton results from Arran: Lamlash Bay

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec			
Pseudo-nitzschia																																																	
Dinophysis																																																	
Prorocentrum lima																																																	
Alexandrium																																																	

Pod 53



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
53	North Ayrshire Council	Fairlie	Southannan Sands	NA 065 332 13	Pacific oysters	Yes	NS198542

Biotoxin results from Fairlie: Southannan Sands

	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																												
LT - OA/DTX/PTXs																																																												
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

6.12. ORKNEY ISLANDS COUNCIL

Pod 130



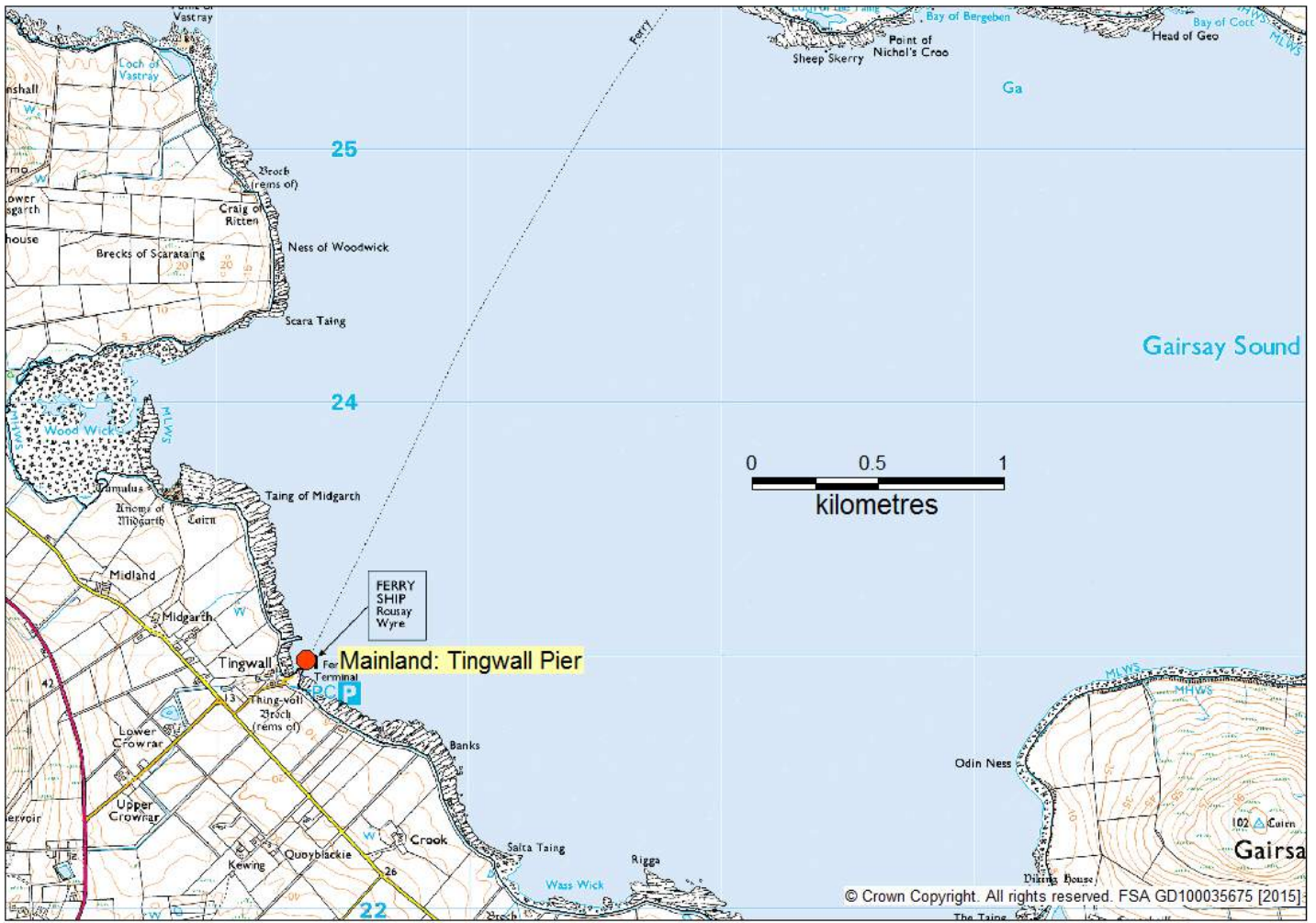
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
130	Orkney Islands Council	Fersness Bay	Fersness Razors	OI 455 859 08	Razors	Yes	HY54503358

Phytoplankton results from Fersness Bay: Fersness Razors

	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec							
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
<i>Pseudo-nitzschia</i>																																																				
<i>Dinophysis</i>																																																				
<i>Prorocentrum lima</i>																																																				
<i>Alexandrium</i>																																																				

Phytoplankton monitoring point only



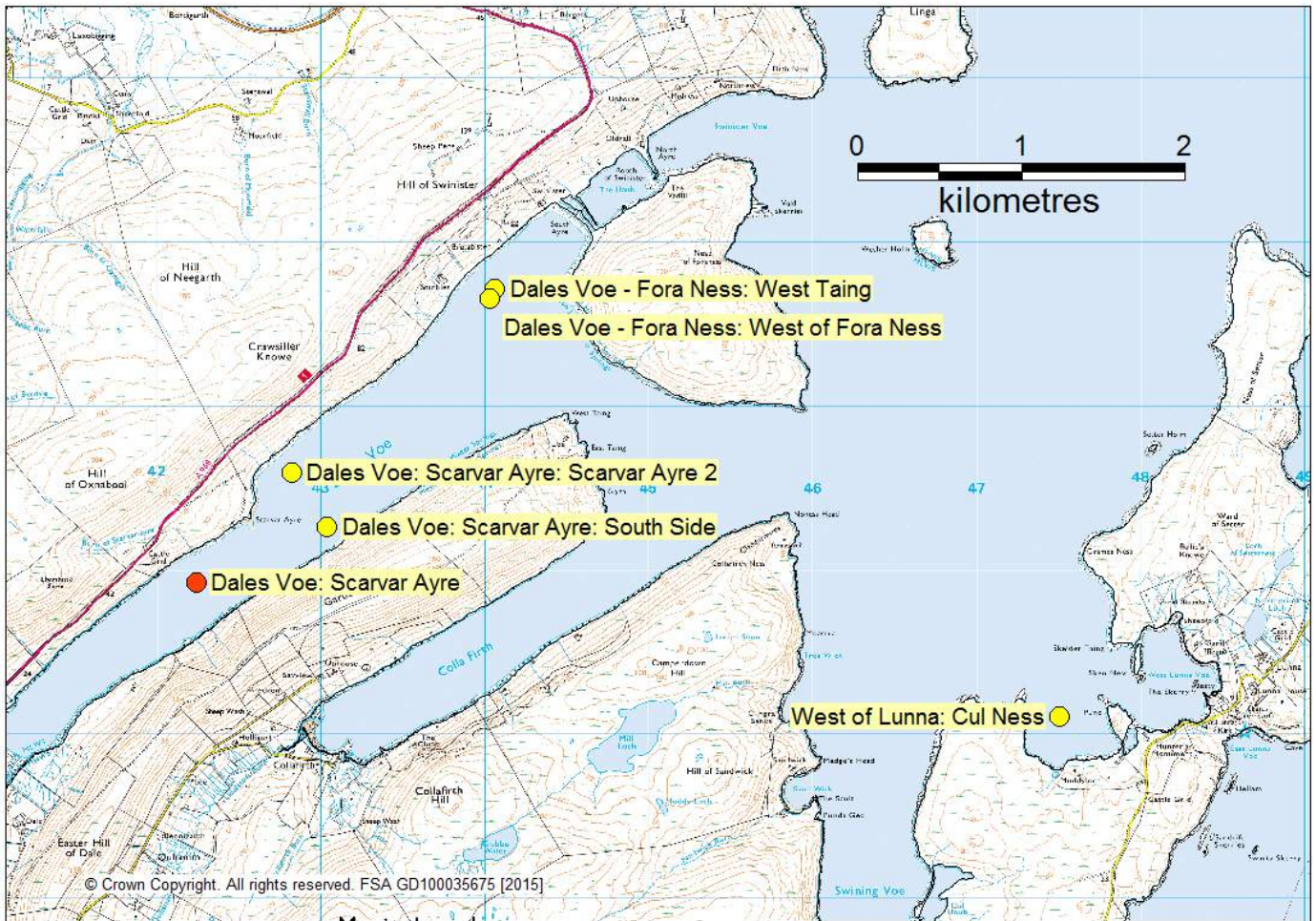
Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
N/A	Orkney Islands Council	Mainland	Tingwall Pier	N/A	N/A	N/A	HY40392298

Phytoplankton results from Mainland: Tingwall Pier

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
Pseudo-nitzschia																																																												
Dinophysis																																																												
Prorocentrum lima																																																												
Alexandrium																																																												

6.13. SHETLAND ISLANDS COUNCIL

Pod 56



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
56	Shetland Islands Council	Dales Voe: Scarvar Ayre	Scarvar Ayre	SI 050 420 08	Common mussels	Yes	HU42236992
56	Shetland Islands Council	Dales Voe – Fora Ness	West Taing	SI 502 869 08	Common mussels		HU44057171
56	Shetland Islands Council	West of Lunna	Cul Ness	SI 380 770 08	Common mussels		HU475691
56	Shetland Islands Council	Dales Voe – Fora Ness	West of Fora Ness	SI 503 870 08	Common mussels		HU44027165
56	Shetland Islands Council	Dales Voe: Scarvar Ayre	South Side	SI 501 868 08	Common mussels		HU43037026
56	Shetland Islands Council	Dales Voe: Scarvar Ayre	Scarvar Ayre 2	SI 504 871 08	Common mussels		HU42817059

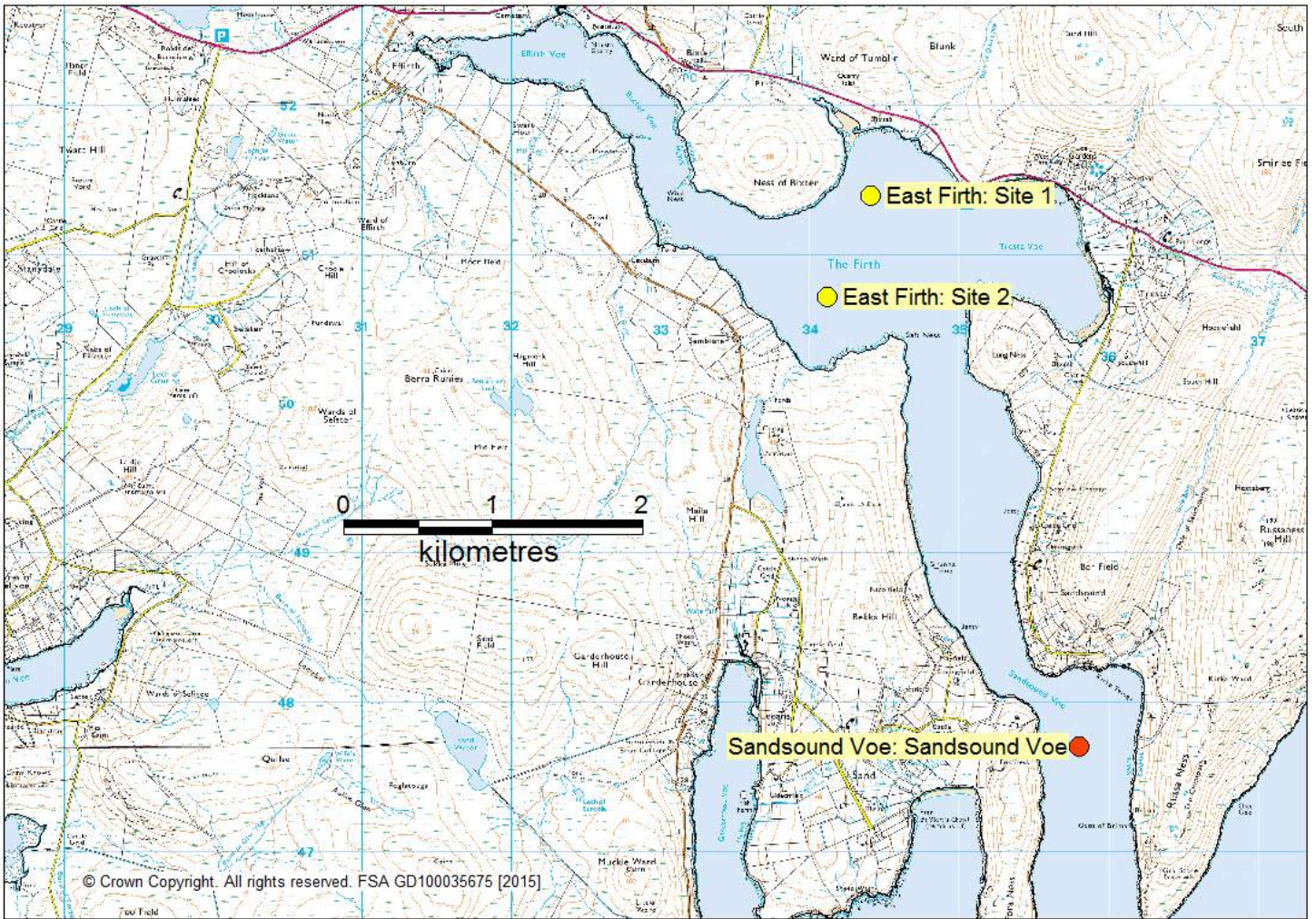
Biotoxin results from Dales Voe: Scarvar Ayre

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec																																												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52					
ASP																																																								
LT - OA/DTX/PTXs																																																								
LT - AZAs																																																								
LT - YTXs																																																								
PSP																																																								

Phytoplankton results from Dales Voe: Scarvar Ayre

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec																																													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52						
Pseudo - nitzschia																																																									
Dinophysis																																																									
Prorocentrum lima																																																									
Alexandrium																																																									

Pod 57



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
57	Shetland Islands Council	Sandsound Voe	Sandsound Voe	SI 242 443 08	Common mussels	Yes	HU358477
57	Shetland Islands Council	East Firth	Site 1	SI 379 769 08	Common mussels		HU344514
57	Shetland Islands Council	East Firth	Site 2	SI 379 831 08	Common mussels		HU34115072

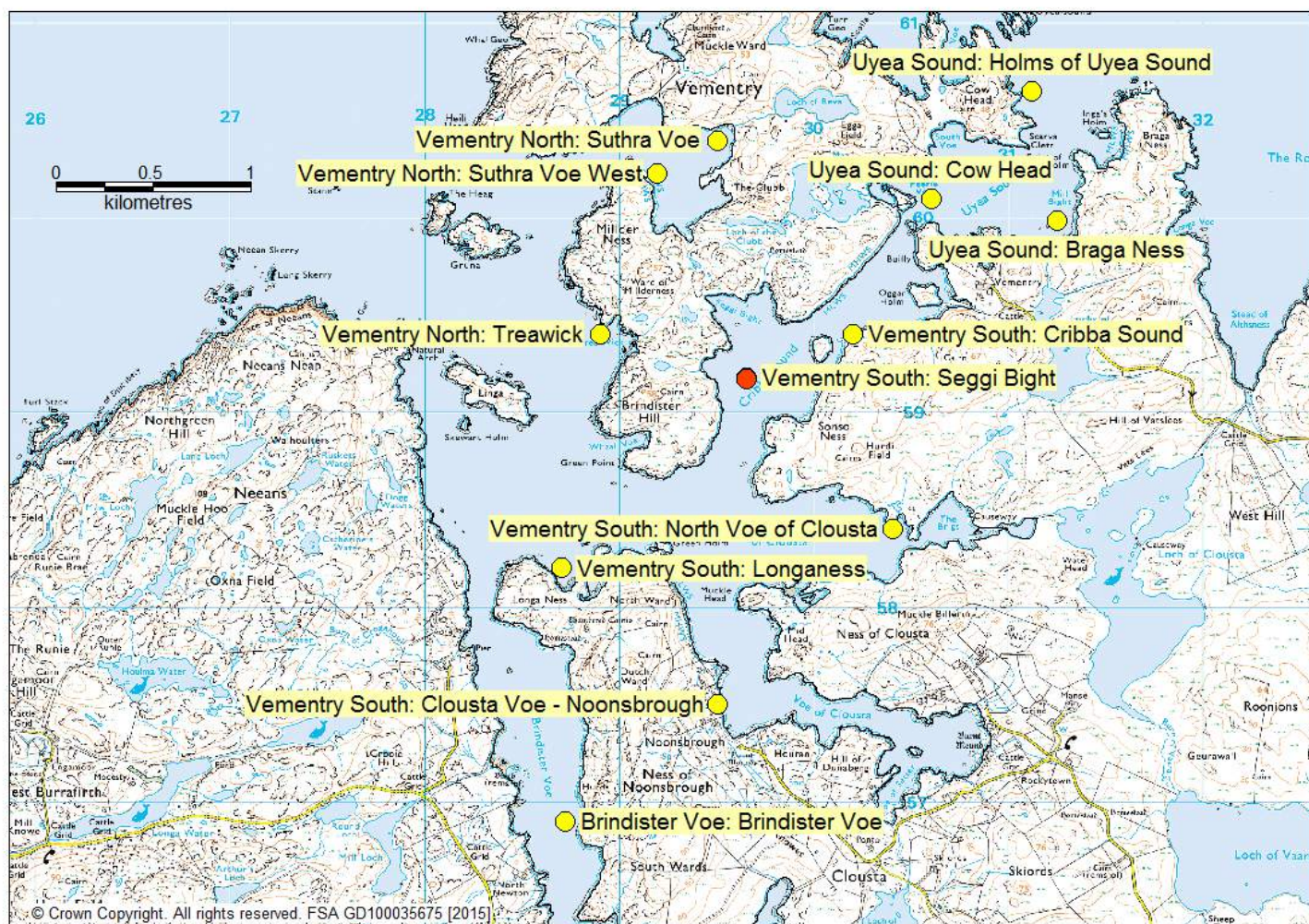
Biotoxin results from Sandsound Voe: Sandsound Voe

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52						
ASP																																																										
LT - OA/DTX/PTXs																																																										
LT - AZAs																																																										
LT - YTXs																																																										
PSP																																																										

Phytoplankton results from Sandsound Voe: Sandsound Voe

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																					
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
Pseudo-nitzschia																																																												
Dinophysis																																																												
Prorocentrum lima																																																												
Alexandrium																																																												

Pod 58



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
58	Shetland Islands Council	Vementry South	Seggi Bight	SI 321 462 08	Common mussels	Yes	HU29655918
58	Shetland Islands Council	Vementry South	Cribba Sound	SI 321 460 08	Common mussels		HU302594
58	Shetland Islands Council	Vementry South	Clousta Voe - Noonsbrough	SI 321 459 08	Common mussels		HU295575
58	Shetland Islands Council	Vementry South	North Voe of Clousta	SI 321 461 08	Common mussels		HU304584
58	Shetland Islands Council	Vementry North	Suthra Voe	SI 322 463 08	Common mussels		HU295604
58	Shetland Islands Council	Vementry North	Suthra Voe West	SI 322 464 08	Common mussels		HU29196023
58	Shetland Islands Council	Vementry North	Treawick	SI 322 465 08	Common mussels		HU289594
58	Shetland Islands Council	Brindister Voe	Brindister Voe	SI 023 406 08	Common mussels		HU28725690
58	Shetland Islands Council	Uyea Sound	Cow Head	SI 441 845 08	Common mussels		HU306601
58	Shetland Islands Council	Vementry South	Longaness	SI 321 885 08	Common mussels		HU287582
58	Shetland Islands Council	Uyea Sound	Holms of Uyea Sound	SI 487 842 08	Common mussels		HU31126065
58	Shetland Islands Council	Uyea Sound	Braga Ness	SI 441 874 08	Common mussels		HU31255999

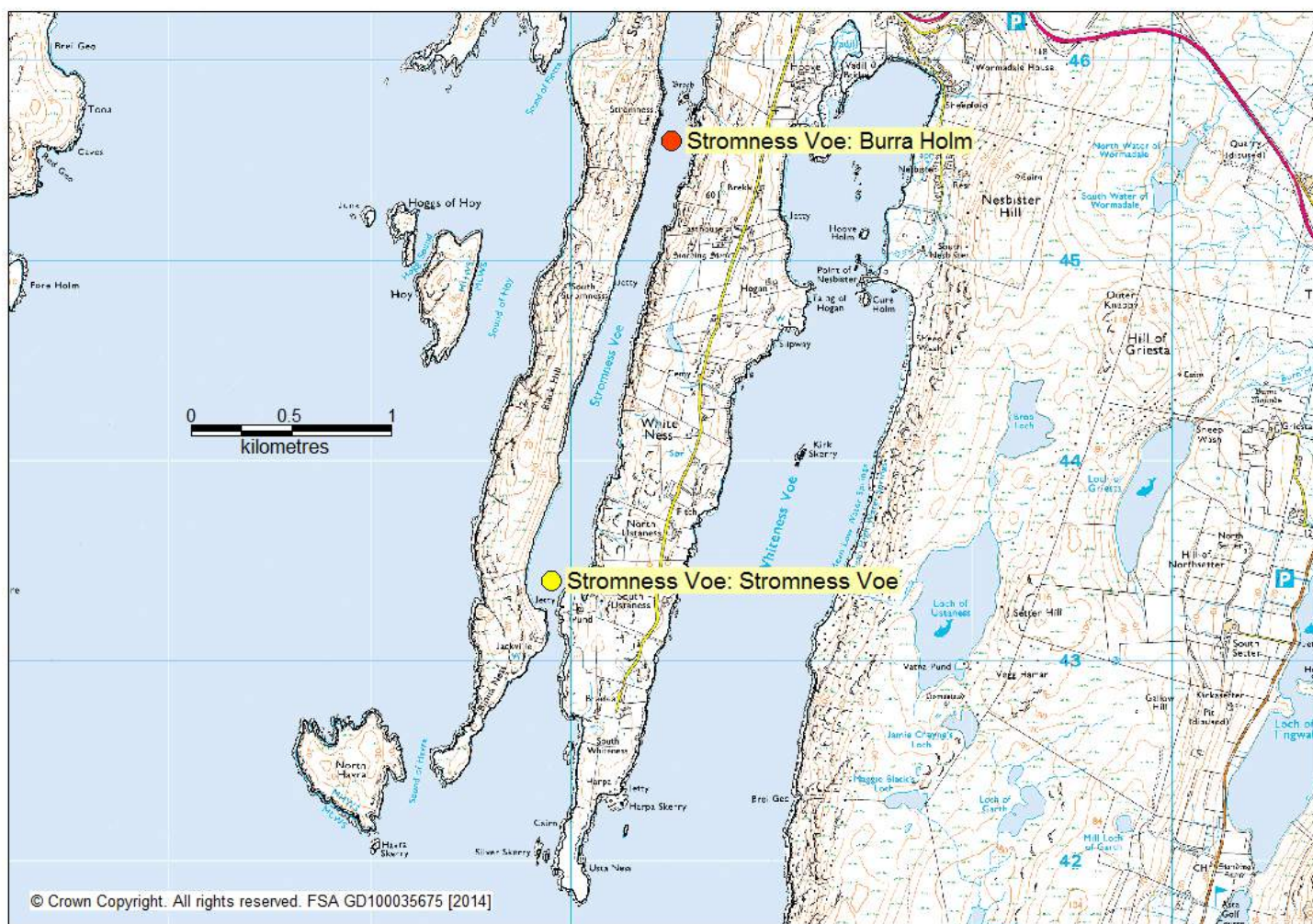
Biotoxin results from Vementry South: Seggi Bight

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
ASP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
LT - AZAs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
LT - YTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
PSP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

Phytoplankton results from Vementry South: Seggi Bight

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
Pseudo - nitzschia	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Dinophysis	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Prorocentrum lima	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Alexandrium	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

Pod 59



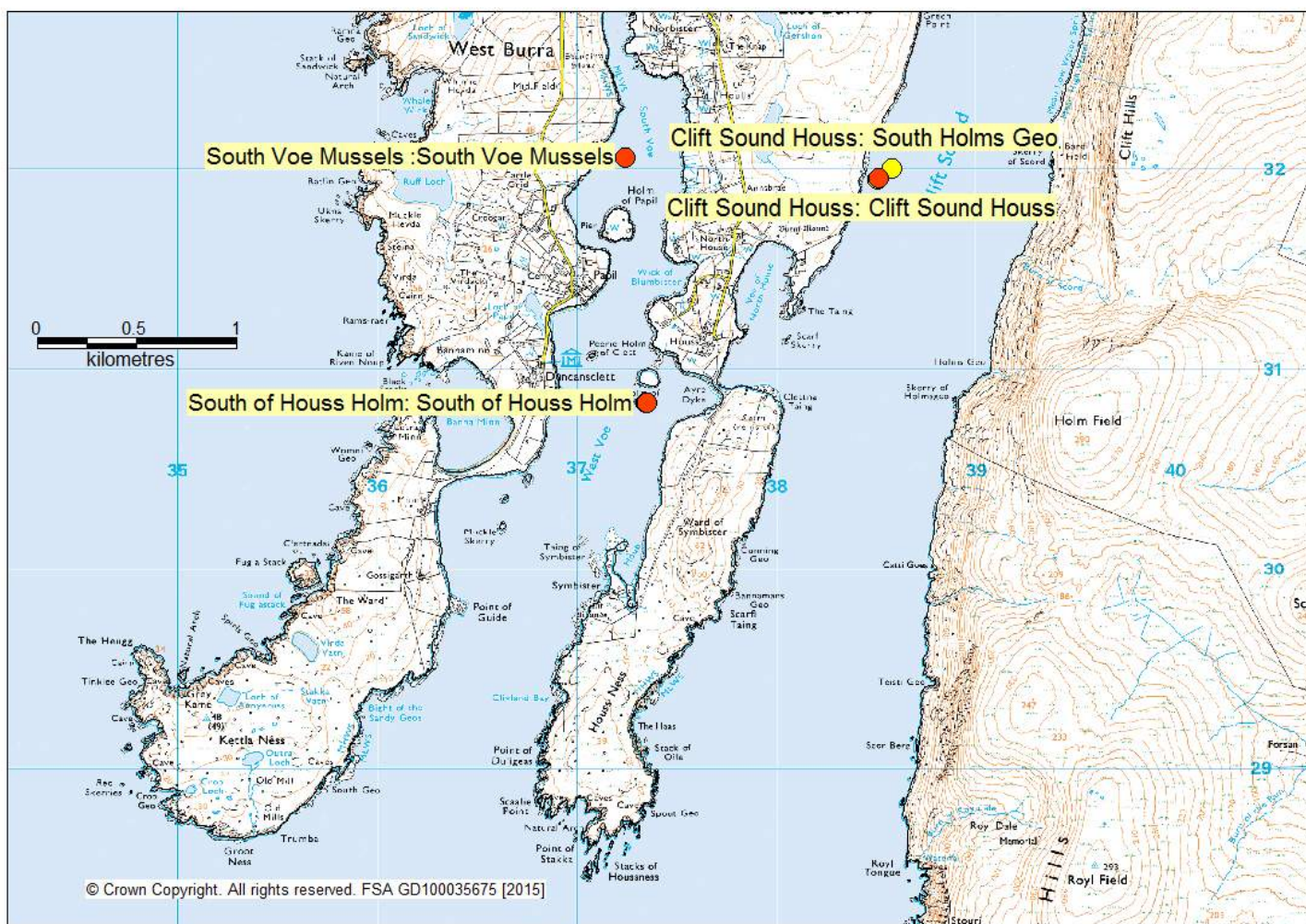
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
59	Shetland Islands Council	Stromness Voe	Burra Holm	SI 273 467 08	Common mussels	Yes	HU385456
59	Shetland Islands Council	Stromness Voe	Stromness Voe	SI 273 446 08	Common mussels		HU379434

Biotoxin results from Stromness Voe: Burra Holm

Week	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
ASP	█				█				█				█				█				█				█				█				█				█				█											
LT - OA/DTX/PTXs	█				█				█				█				█				█				█				█				█				█				█				█							
LT - AZAs	█				█				█				█				█				█				█				█				█				█				█				█				█			
LT - YTXs	█				█				█				█				█				█				█				█				█				█				█				█				█			
PSP	█				█				█				█				█				█				█				█				█				█				█				█				█			

Pod 60



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
60	Shetland Islands Council	South of Houss Holm	South of Houss Holm	SI 261 444 08	Common mussels	Yes	HU37343083
60	Shetland Islands Council	South Voe Mussells	South Voe Mussells	SI 421 825 08	Common mussels	Alternate RMP	HU37243206
60	Shetland Islands Council	Cliff Sound Houss	Cliff Sound Houss*	SI 633 1270 08	Common mussels	Alternate RMP	HU38503195
60	Shetland Islands Council	Cliff Sound Houss	South Holms Geo*	SI 633 1690 08	Common mussels		HU38573195

*Moved to Pod 67 November 2015

Biotoxin results from South of Houss Holm: South of Houss Holm

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP	[Green cells]																																																										
LT - OA/DTX/PTXs	[Green cells]																																																										
LT - AZAs	[Green cells]																																																										
LT - YTXs	[Green cells]																																																										
PSP	[Green cells]																																																										

Biotoxin results from Cliff Sound Houss: Cliff Sound Houss

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP	[Green cells]																																																										
LT - OA/DTX/PTXs	[Green cells]																																																										
LT - AZAs	[Green cells]																																																										
LT - YTXs	[Green cells]																																																										
PSP	[Green cells]																																																										

Phytoplankton results from Cliff Sound Houss: Cliff Sound Houss

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
Pseudo-nitzschia	[Green cells]																																																										
Dinophysis	[Green cells]																																																										
Proocentrum lima	[Green cells]																																																										
Alexandrium	[Green cells]																																																										

Pod 62



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
62	Shetland Islands Council	Catfirth	Catfirth	SI 032 412 08	Common mussels	Yes	HU44715361
62	Shetland Islands Council	Wadbister Voe	Wadbister	SI 294 466 08	Common mussels	Alternate RMP	HU43445045

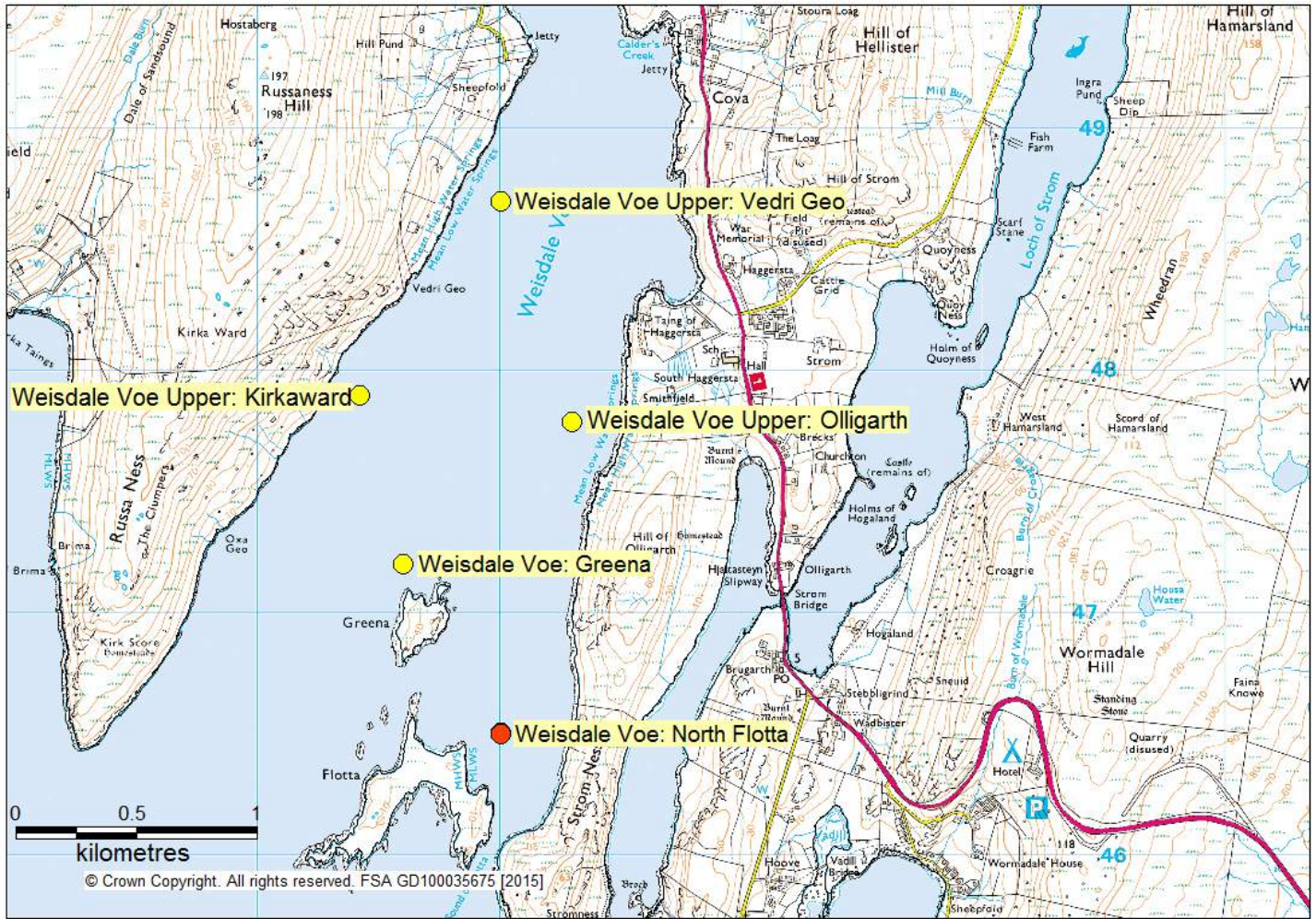
Biotoxin results from Catfirth: Catfirth

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																												
LT - OA/DTX/PTXs																																																												
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

Biotoxin results from Wadbister Voe: Wadbister

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																												
LT - OA/DTX/PTXs																																																												
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

Pod 63



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
63	Shetland Islands Council	Weisdale Voe	North Flotta	SI 297 469 08	Common mussels	Yes	HU380465
63	Shetland Islands Council	Weisdale Voe	Greena	SI 297 468 08	Common mussels		HU376472
63	Shetland Islands Council	Weisdale Voe Upper	Vedri Geo	SI 378 768 08	Common mussels		HU380487
63	Shetland Islands Council	Weisdale Voe Upper	Kirkaward	SI 378 1523 08	Common mussels		HU374479
63	Shetland Islands Council	Weisdale Voe Upper	Olligarth	SI 378 1521 08	Common mussels		HU383478

Biotoxin results from Weisdale Voe: North Flotta

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																															
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
ASP	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲			
LT - OA/DTX/PTXs	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
LT - AZAs	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
LT - YTXs	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
PSP	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲

Pod 64



Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
64	Shetland Islands Council	Busta Voe Lee North	Busta Voe Lee	SI 327 410 08	Common mussels	Yes	HU34616498
64	Shetland Islands Council	Busta Voe Lee North	Busta Voe	SI 327 409 08	Common mussels		HU347663
64	Shetland Islands Council	Busta Voe Lee North	Wetherstaness	SI 327 754 08	Common mussels		HU359648
64	Shetland Islands Council	Busta Voe Lee North	Hevden Ness	SI 327 755 08	Common mussels		HU357662
64	Shetland Islands Council	Busta Voe Lee North	North of Linga	SI 327 753 08	Common mussels		HU354645
64	Shetland Islands Council	Busta Voe Lee South	Linga	SI 328 411 08	Common mussels		HU358639
64	Shetland Islands Council	Busta Voe Lee South	Greentaing	SI 328 767 08	Common mussels		HU344643
64	Shetland Islands Council	Busta Voe Lee South	Buddascord	SI 328 936 08	Common mussels		HU34176369

Biotoxin results from Busta Voe Lee North: Busta Voe Lee

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52						
ASP																																																										
LT - OA/DTX/PTXs																																																										
LT - AZAs																																																										
LT - YTXs																																																										
PSP																																																										

Phytoplankton results from Busta Voe Lee North: Busta Voe Lee

	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec																																					
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
Pseudo-nitzschia																																																												
Dinophysis																																																												
Prorocentrum lima																																																												
Alexandrium																																																												

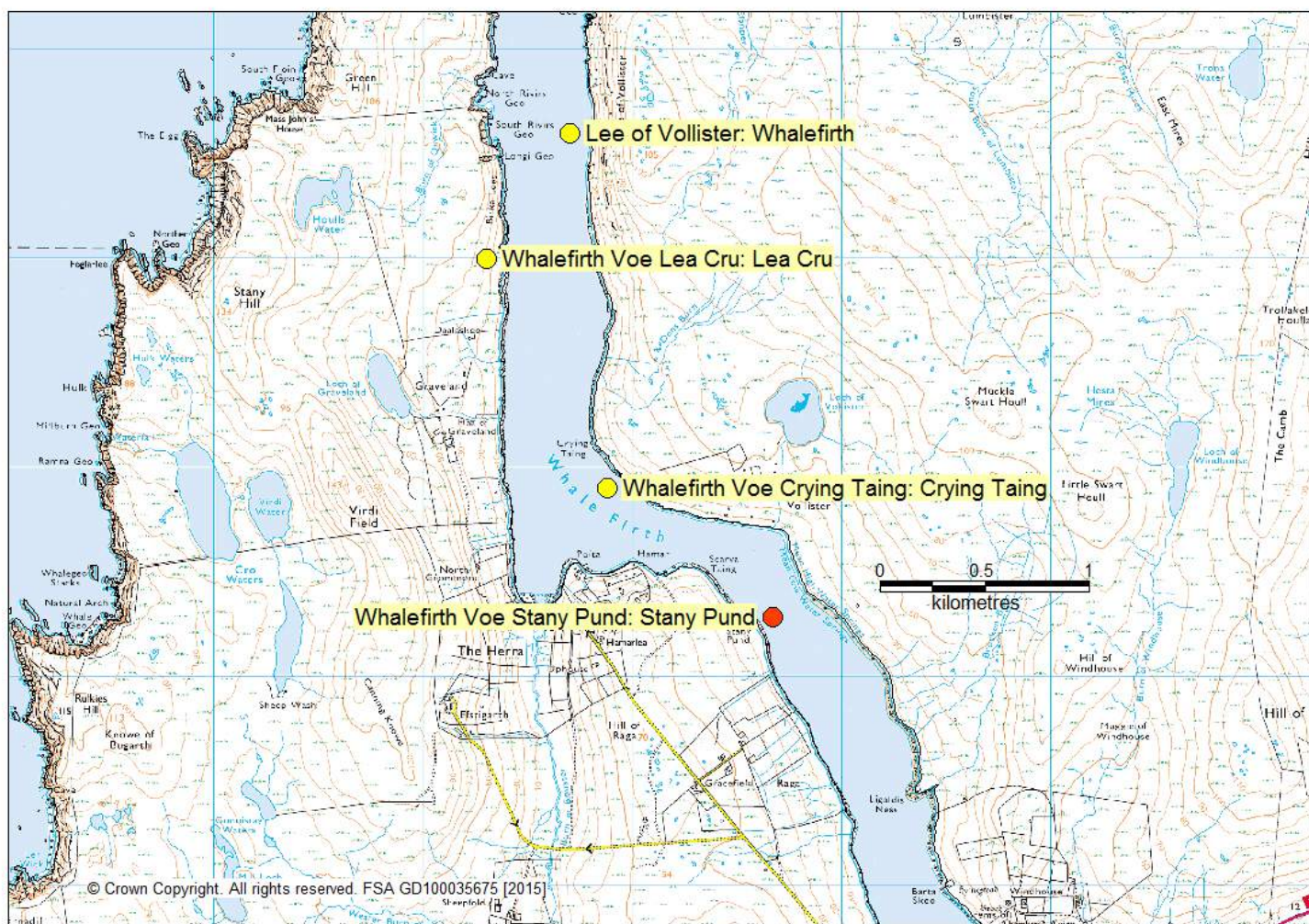
Pod 65



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
65	Shetland Islands Council	Basta Voe Outer	Outer	SI 323 403 08	Common mussels	Yes	HU52949568
65	Shetland Islands Council	Basta Voe Outer	Basta Ness	SI 323 396 08	Common mussels		HU538943
65	Shetland Islands Council	Basta Voe Outer	Inner - Site 1 - Thomason	SI 323 399 08	Common mussels	Alternate RMP	HU518972
65	Shetland Islands Council	Basta Voe Cove	Inner - Site 2 - Nisbet	SI 324 400 08	Common mussels	Alternate RMP	HU52239724

Pod 66



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
66	Shetland Islands Council	Whalefirth Voe Stany Pund	Stany Pund	SI 612 1165 08	Common mussels	Yes	HU47679328
66	Shetland Islands Council	Lee of Vollister	Whalefirth	SI 760 1920 08	Common mussels	Alternate RMP	HU467956
66	Shetland Islands Council	Whalefirth Lea Cru	Lea Cru	SI 613 1167 08	Common mussels		HU46395000
66	Shetland Islands Council	Whalefirth Crying Taing	Crying Taing	SI 616 1195 08	Common mussels		HU46889390

Biotoxin results from Whalefirth Voe Stany Pund: Stany Pund

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																												
LT - OA/DTX/PTXs																																																												
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

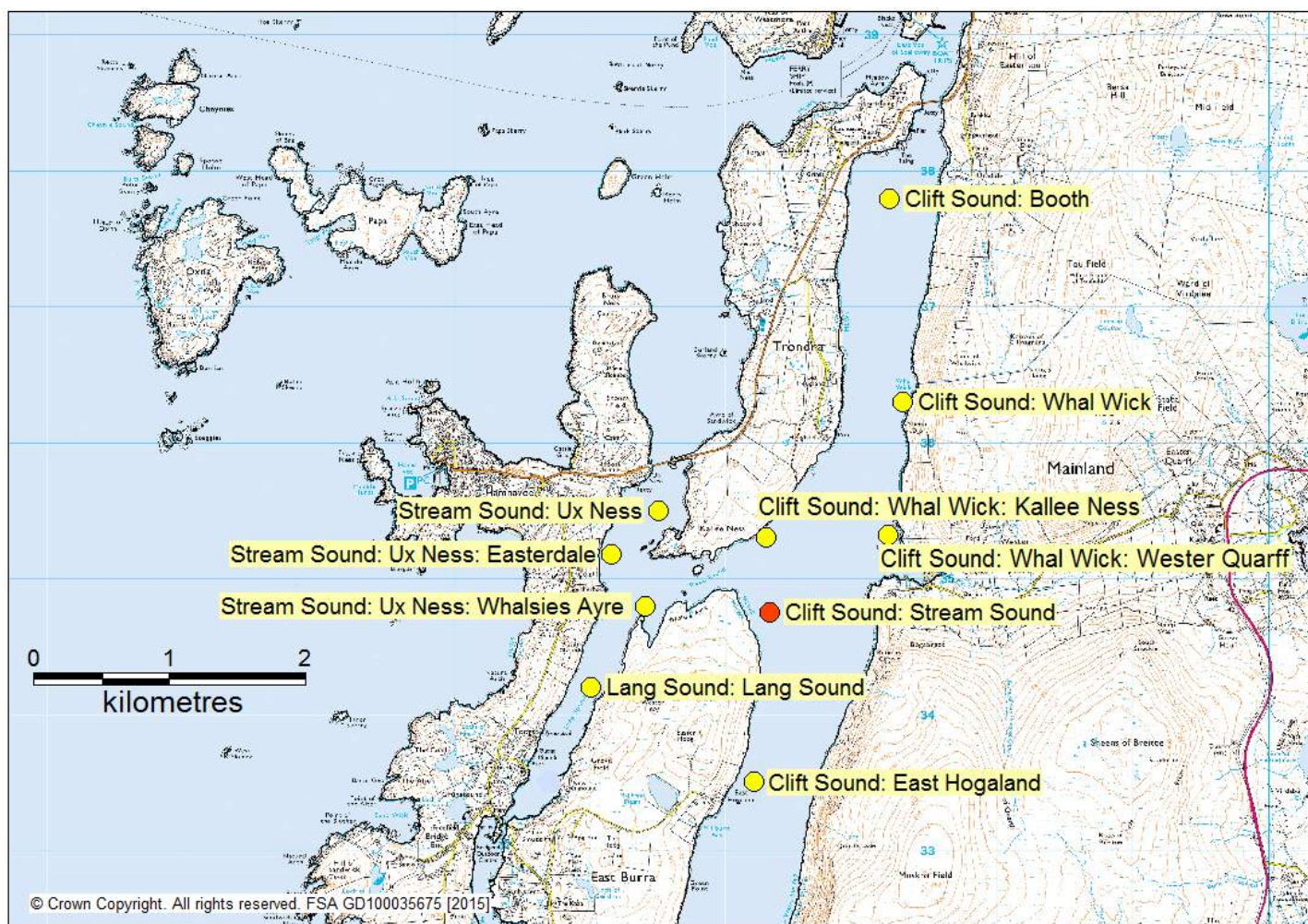
Biotoxin results from Lee of Vollister: Whalefirth

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																	
ASP																																																																					
LT - OA/DTX/PTXs																																																																					
LT - AZAs																																																																					
LT - YTXs																																																																					
PSP																																																																					

Biotoxin results from Whalefirth Lea Cru: Lea Cru

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																												
LT - OA/DTX/PTXs																																																												
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

Pod 67



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
67	Shetland Islands Council	Clift Sound: Stream Sound	Stream Sound	SI 037 415 08	Common mussels	Yes	HU39323475
67	Shetland Islands Council	Clift Sound: Whal Wick	Whal Wick	SI 038 416 08	Common mussels		HU403363
67	Shetland Islands Council	Clift Sound: Booth	Booth	SI 036 413 08	Common mussels		HU402378
67	Shetland Islands Council	Stream Sound: Ux Ness	Whalsies Ayre	SI 518 945 08	Common mussels		HU384348
67	Shetland Islands Council	Lang Sound	Lang Sound	SI 107 429 08	Common mussels		HU380342
67	Shetland Islands Council	Stream Sound: Ux Ness	Easterdale	SI 373 1096 08	Common mussels		HU38153518
67	Shetland Islands Council	Stream Sound: Ux Ness	Ux Ness	SI 373 762 08	Common mussels		HU385355
67	Shetland Islands Council	Clift Sound	East Hogaland	SI 035 414 08	Common mussels		HU392335
67	Shetland Islands Council	Clift Sound: Whal Wick	Wester Quarff	SI 038 1522 08	Common mussels		HU40183532
67	Shetland Islands Council	Clift Sound: Whal Wick	Kallee Ness	SI 038 2007 08	Common mussels		HU39303532

Biotoxin results from Cliff Sound: Stream Sound

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52					
ASP																																																									
LT - OA/DTX/PTXs																																																									
LT - AZAs																																																									
LT - YTXs																																																									
PSP																																																									

Phytoplankton results from Cliff Sound: Stream Sound

Week	Jan					Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52					
Pseudo - nitzschia																																																									
Dinophysis																																																									
Prorocentrum lima																																																									
Alexandrium																																																									

Pod 68



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
68	Shetland Islands Council	Vaia Sound: Riskaness	Riskaness	SI 289 458 08	Common mussels	Alternate RMP	HU232483
68	Shetland Islands Council	East of Linga and Galtaskerry	East of Linga	SI 288 455 08	Common mussels	Yes	HU242480
68	Shetland Islands Council	East of Linga and Galtaskerry	Whitesness	SI 288 1061 08	Common mussels		HU244470
68	Shetland Islands Council	Vaia Sound	Linga	SI 288 457 08	Common mussels		HU240484
68	Shetland Islands Council	Vaia Sound: Riskaness	Lera Voe	SI 289 805 08	Common mussels		HU221483

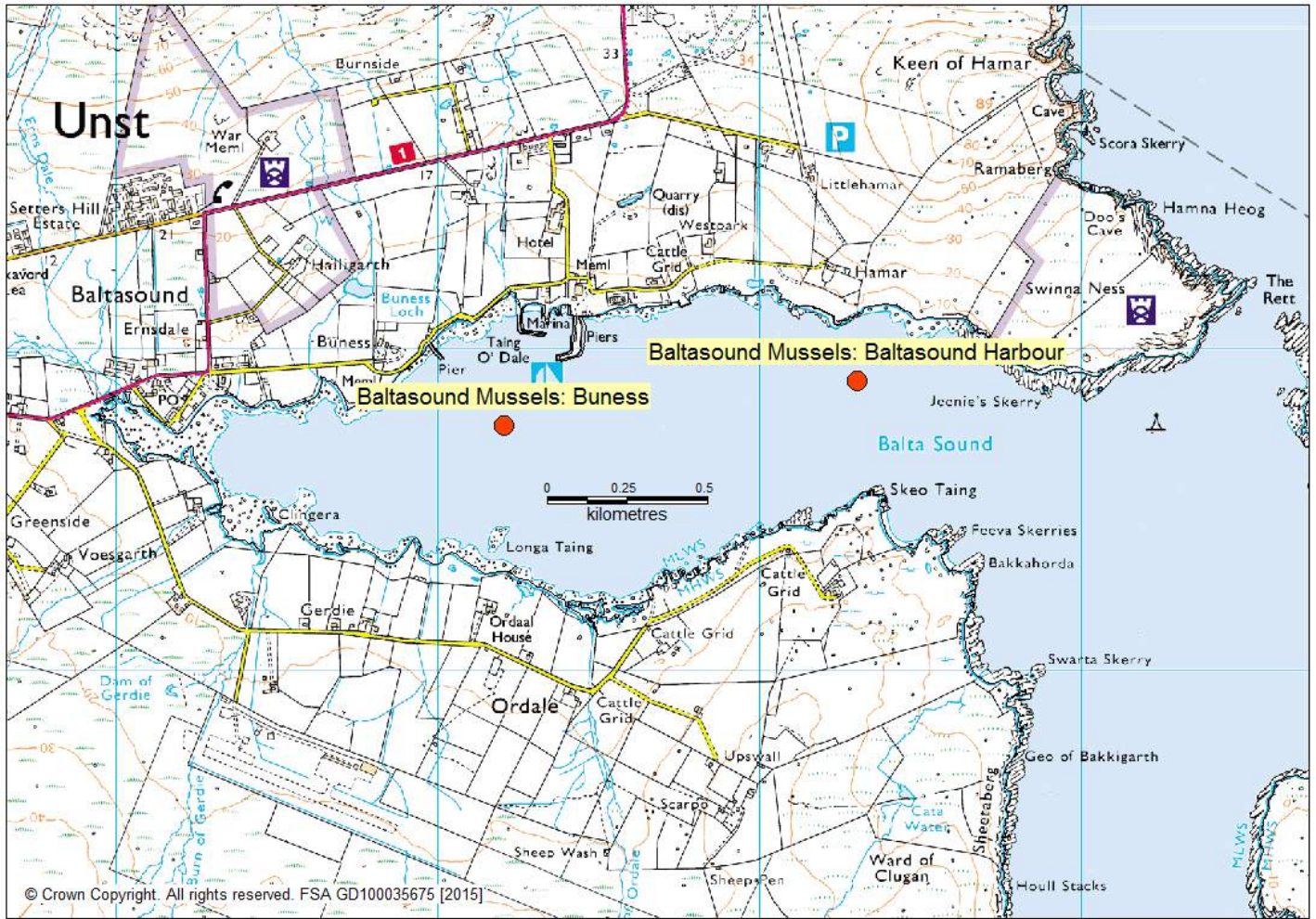
Biotoxin results from East of Linga and Galtaskerry: East of Linga

	Jan		Feb			Mar				Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec									
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Phytoplankton results from East of Linga and Galtaskerry: East of Linga

	Jan		Feb			Mar				Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec											
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52									
Pseudo-nitzschia																																																													
Dinophysis																																																													
Prorocentrum lima																																																													
Alexandrium																																																													

Pod 69



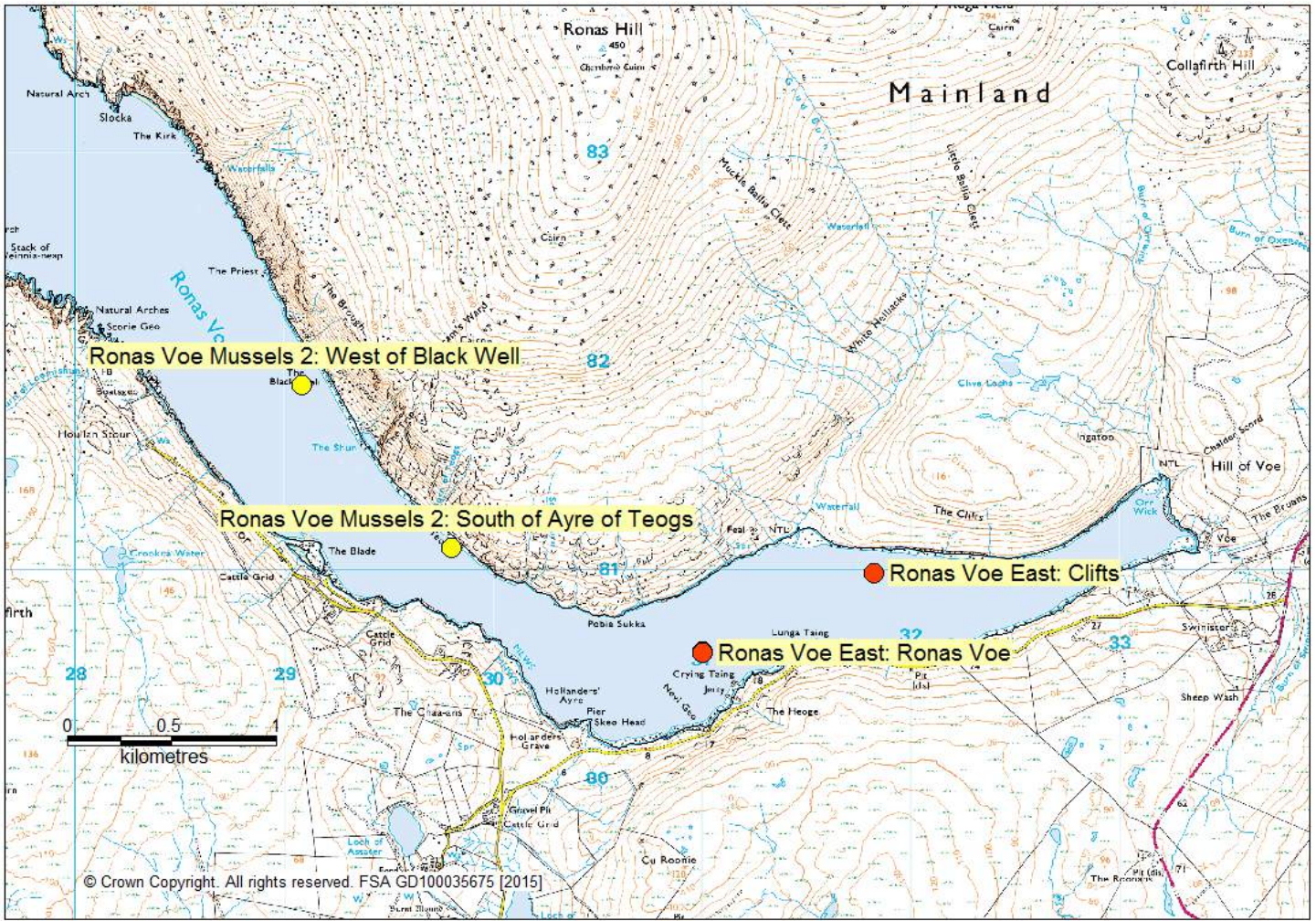
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
69	Shetland Islands Council	Baltasound Mussels	Baltasound Harbour	SI 010 395 08	Common mussels	Yes	HP643089
69	Shetland Islands Council	Baltasound Mussels	Bunes	SI 010 1128 08	Common mussels	Alternate RMP	HP63200876

Biotoxin results from Baltasound Mussels: Baltasound Harbour

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49	50	51	52
ASP												
LT - OA/DTX/PTXs												
LT - AZAs												
LT - YTXs												
PSP												

Pod 71



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
71	Shetland Islands Council	Ronas Voe East	Ronas Voe	SI 239 441 08	Common mussels	Alternate RMP	HU310806
71	Shetland Islands Council	Ronas Voe Mussels 2	South of Ayre of Teogs	SI 239 442 08	Common mussels		HU298811
71	Shetland Islands Council	Ronas Voe East	Cliffs	SI 523 919 08	Common mussels	Yes	HU31828098
71	Shetland Islands Council	Ronas Voe Mussels 2	West of Black Well	SI 522 918 08	Common mussels		HU29088188

Biotoxin results from Ronas Voe East: Cliffs

Week	Jan		Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																						
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
ASP																																																							
LT - OA/DTX/PTXs																																																							
LT - AZAs																																																							
LT - YTXs																																																							
PSP																																																							

Pod 73



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
73	Shetland Islands Council	Roe Sound	Ness of Hull	SI 334 715 08	Common mussels	Yes	HU328670

Biotoxin results from Roe Sound: Ness of Hull

Week	Jan																												Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																				
ASP	-																																																																							
LT - OA/DTX/PTXs	-																																																																							
LT - AZAs	-																																																																							
LT - YTXs	-																																																																							
PSP	-																																																																							

Pod 81



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
81	Shetland Islands Council	North Uyea	North	SI 230 453 08	Common mussels	Yes	HU60119997
81	Shetland Islands Council	South Uyea	South	SI 263 454 08	Common mussels		HU607981

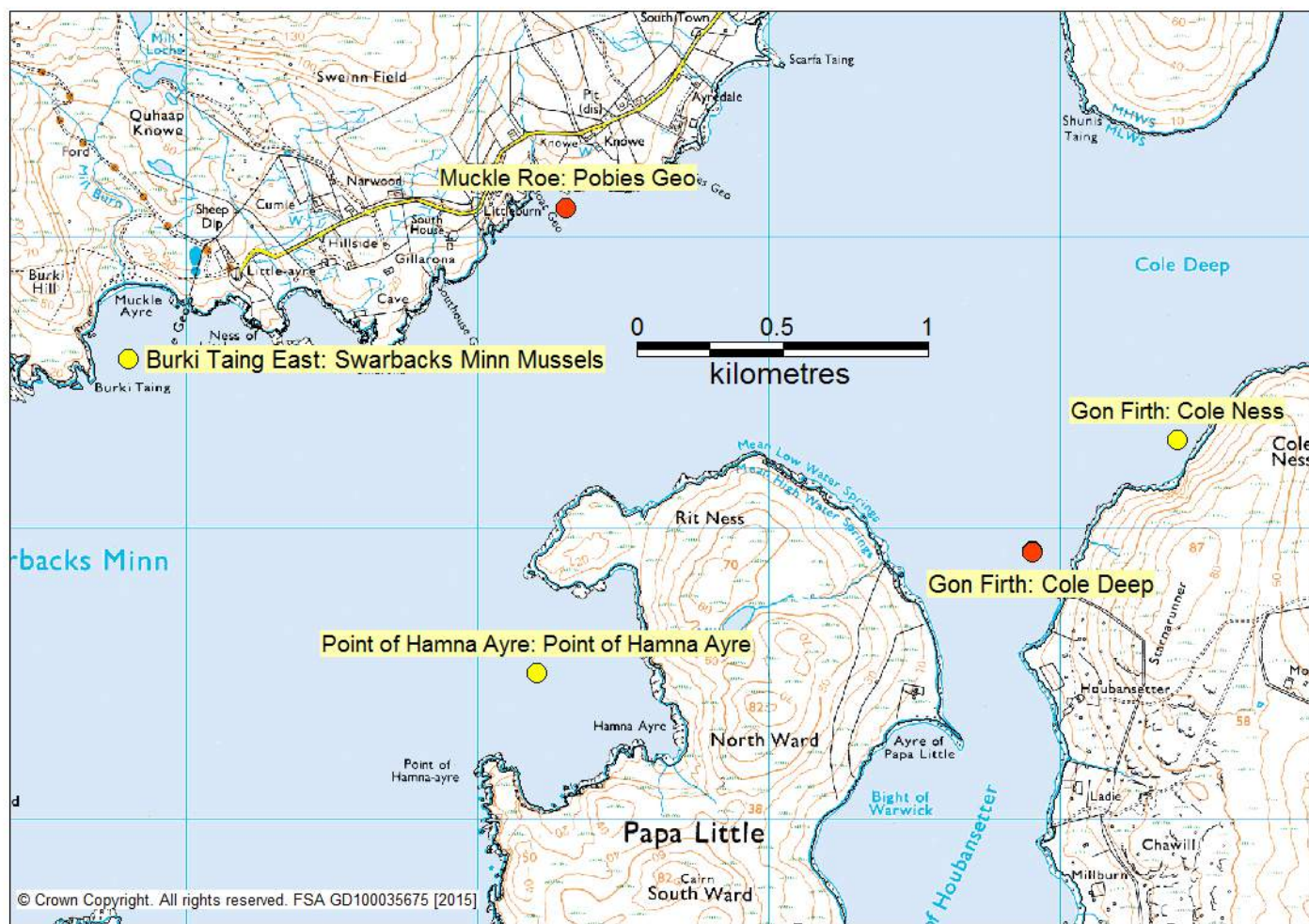
Biotoxin results from North Uyea: North

Week	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec										
ASP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
LT - OA/DTX/PTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█			
LT - AZAs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█		
LT - YTXs	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
PSP	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

Phytoplankton results from North Uyea: North

Week	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec											
Pseudo - nitzschia	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
Dinophysis																																																								
Proocentrum lima																																																								
Alexandrium																																																								

Pod 127



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
127	Shetland Islands Council	Muckle Roe	Pobies Geo	SI 221 433 08	Common mussels	Yes	HU333631
127	Shetland Islands Council	Point of Hamna Ayre	Point of Hamna Ayre	SI 374 763 08	Common mussels		HU332615
127	Shetland Islands Council	Gon Firth	Cole Ness	SI 076 423 08	Common mussels		HU354623
127	Shetland Islands Council	Gon Firth	Cole Deep	SI 076 1338 08	Common mussels	Alternate RMP	HU34916192
127	Shetland Islands Council	Burki Taing East	Swarbacks Minn Mussels	SI 755 1897 08	Common mussels		HU318626

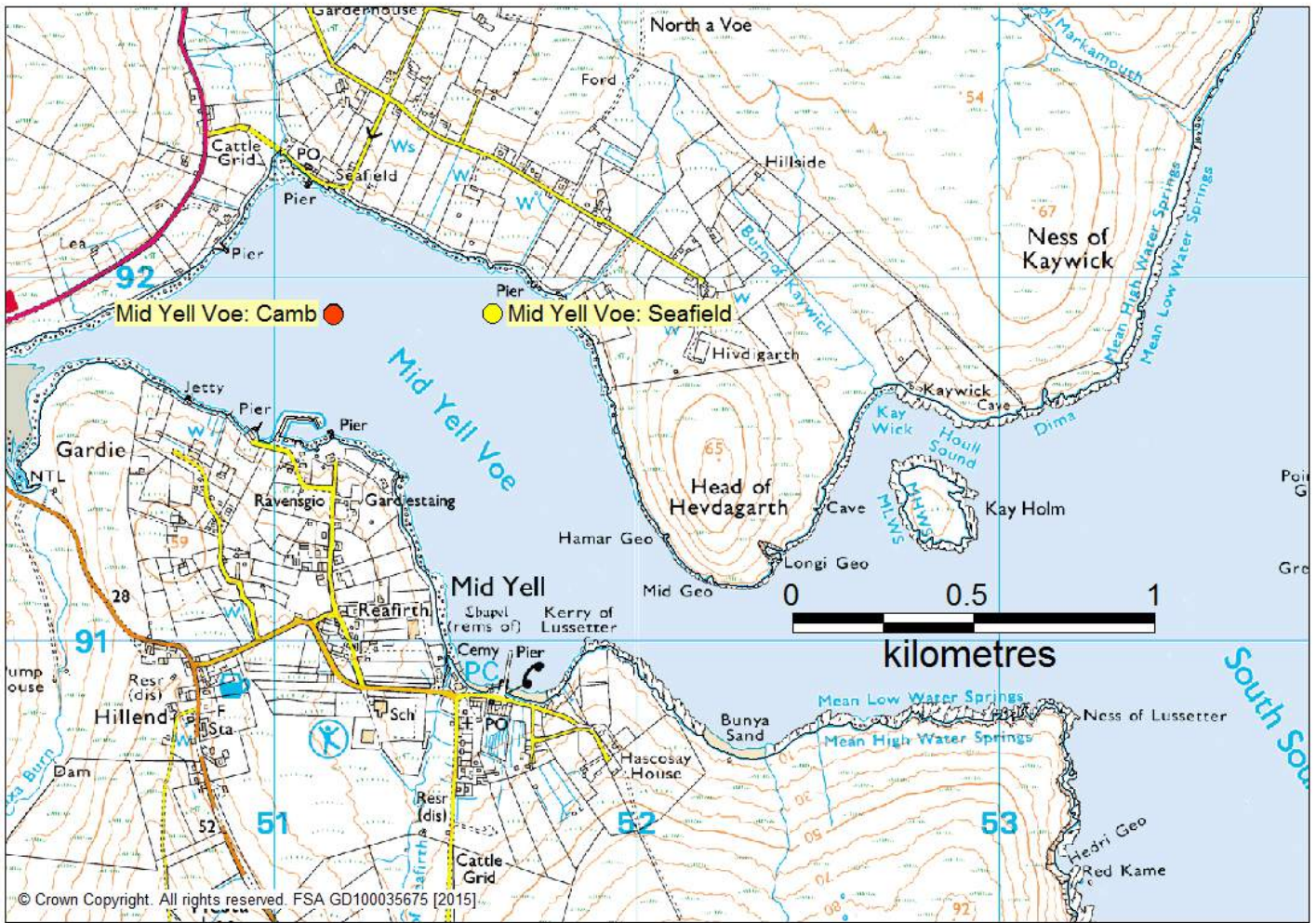
Biotoxin results from Muckle Roe: Pobies Geo

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Biotoxin results from Gon Firth: Cole Deep

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Pod 128



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
128	Shetland Islands Council	Mid Yell Voe	Camb	SI 216 430 08	Common mussels	Yes	HU51169190
128	Shetland Islands Council	Mid Yell Voe	Seafield	SI 216 432 08	Common mussels		HU516919

Biotoxin results from Mid Yell Voe: Camb

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
ASP	[Green]																																																											
LT - OA/DTX/PTXs	[Green]																																																											
LT - AZAs	[Green]																																																											
LT - YTXs	[Green]																																																											
PSP	[Green]																																																											

Phytoplankton results from Mid Yell Voe: Camb

Week	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Pseudo - nitzschia	[Green]																																																											
Dinophysis	[Green]																																																											
Prorocentrum lima	[Green]																																																											
Alexandrium	[Green]																																																											

Pod 129



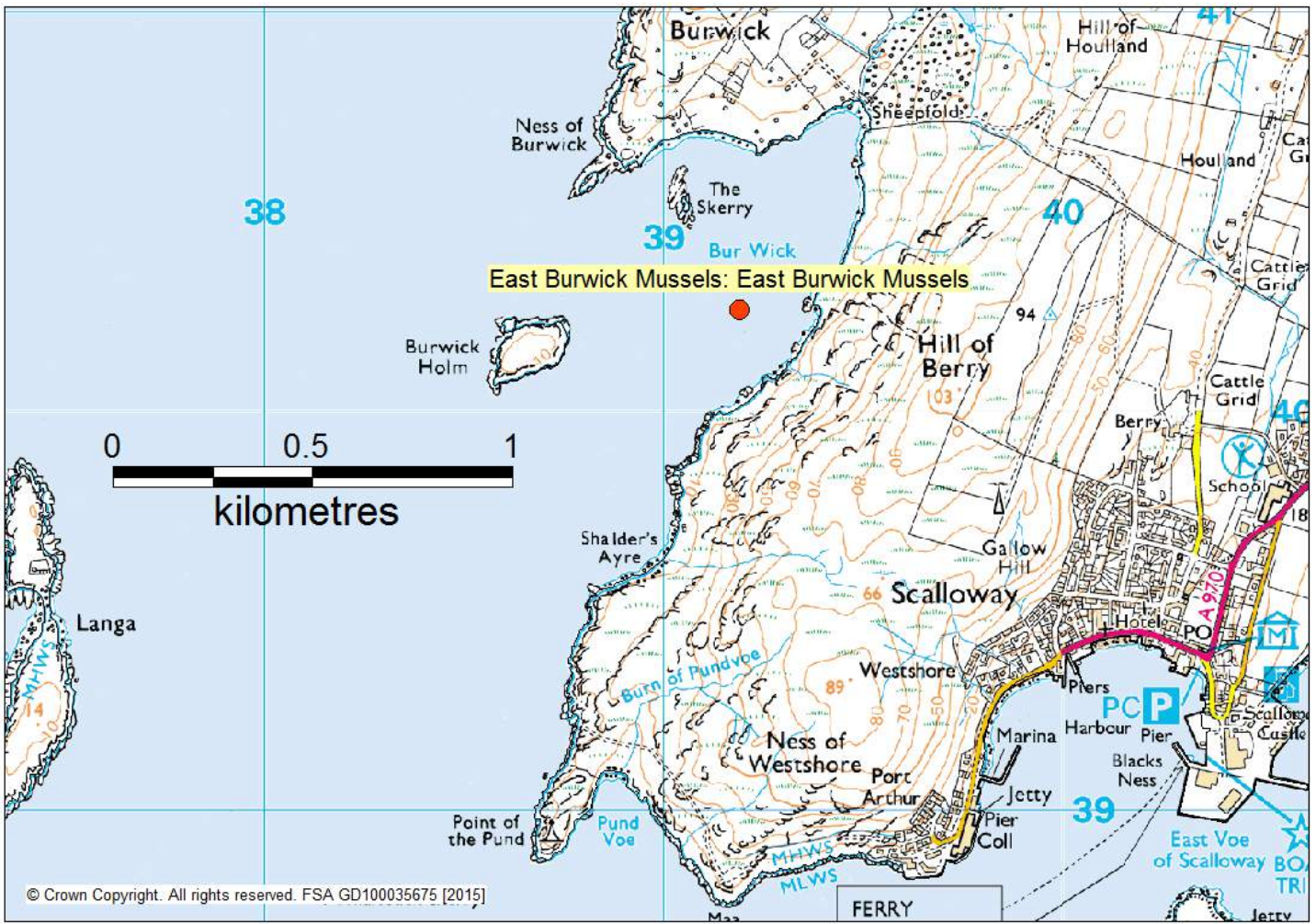
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
129	Shetland Islands Council	Hamnavoe	Copister	SI 348 736 08	Common mussels	Yes	HU486795

Biotoxin results from Hamnavoe: Copister

Week	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ASP												
LT - OA/DTX/PTXs												
LT - AZAs												
LT - YTXs												
PSP												

Pod 132



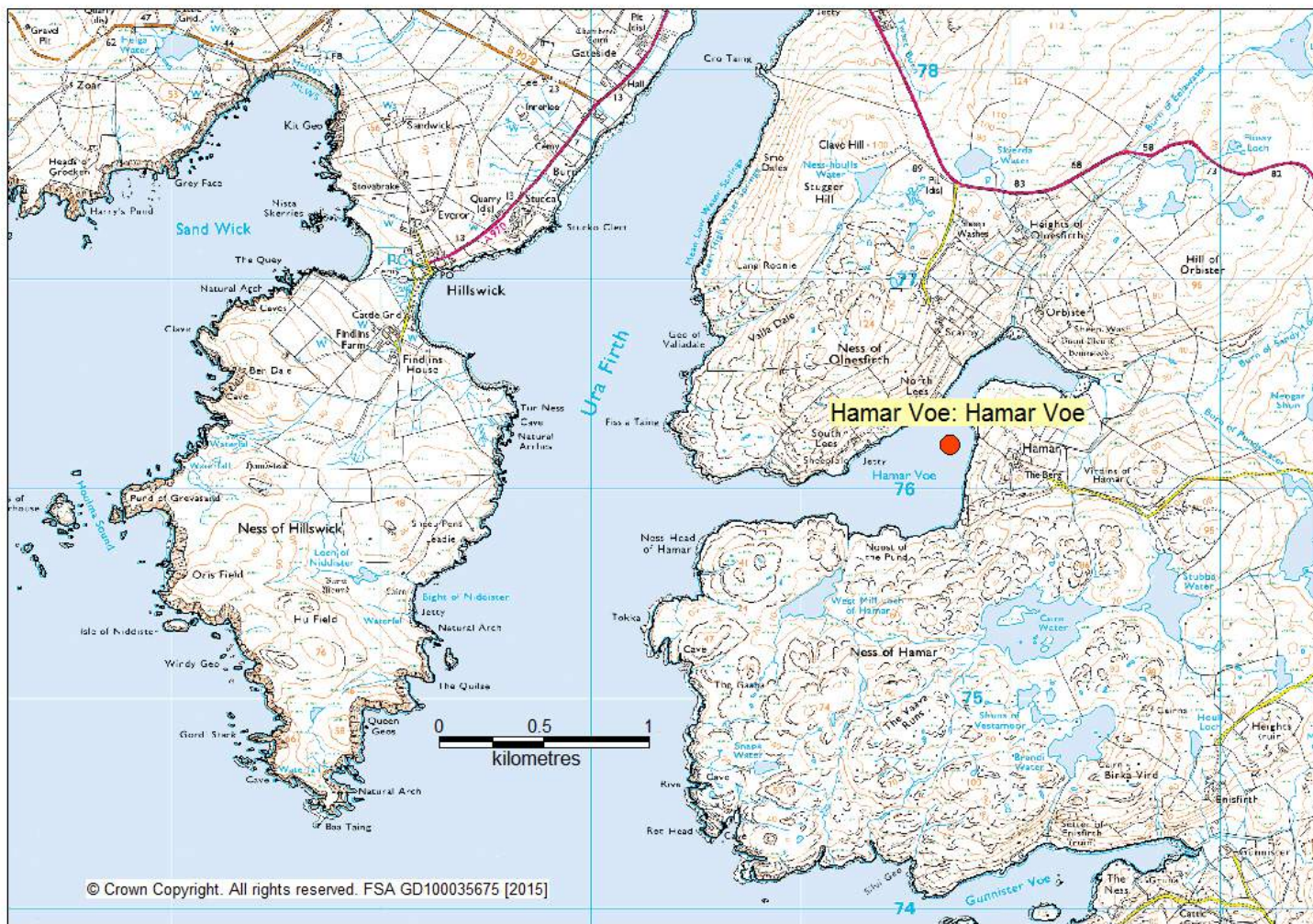
RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
132	Shetland Islands Council	East Burwick Mussels	East Burwick Mussels	SI 583 1060 08	Common mussels	Yes	HU39194027

Biotoxin results from East Burwick Mussels: East Burwick Mussels

	Jan		Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec																										
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52							
ASP																																																											
LT - OA/DTX/PTXs																																																											
LT - AZAs																																																											
LT - YTXs																																																											
PSP																																																											

Pod 146



RMP position: ● AHA position: ●

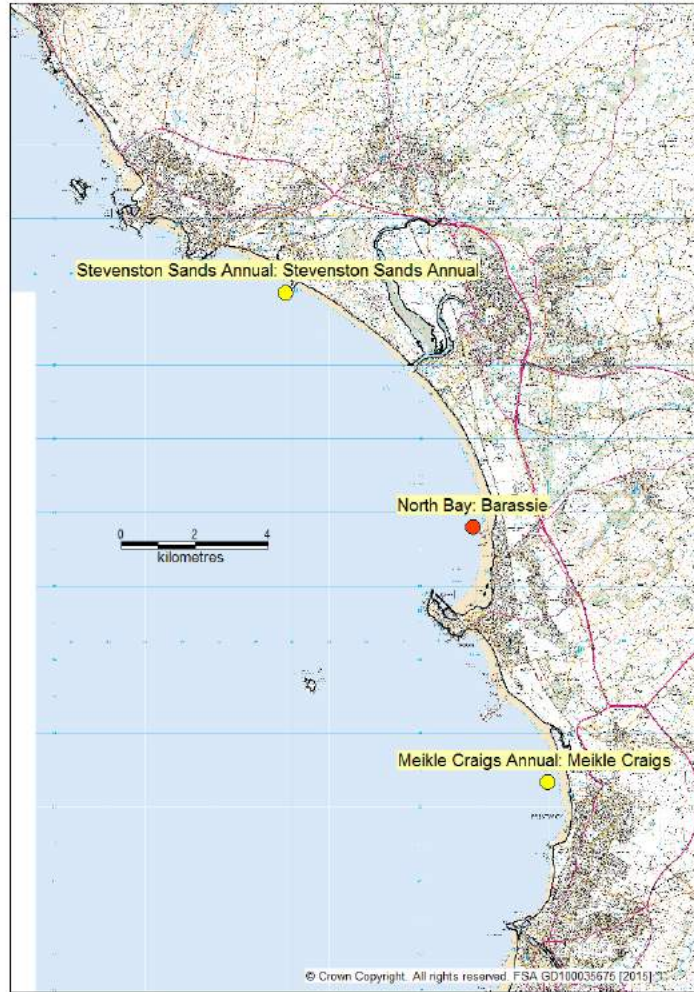
Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
146	Shetland Islands Council	Hamar Voe	Hamar Voe	SI 655 1404 08	Common mussels	Yes	HU30717621

Biotoxin results from Hamar Voe: Hamar Voe

	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec				
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								
ASP																																																												
LT - OA/DTX/PTXs																																																												
LT - AZAs																																																												
LT - YTXs																																																												
PSP																																																												

6.14. SOUTH AYRSHIRE COUNCIL

Pod 74



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
74	South Ayrshire Council	North Bay	Barassie	SA 337 719 16	Razors	Yes	NS319334
74	North Ayrshire Council	Stevenston Sands Annual	Stevenston Sands Annual	NA 207 1238 23	Wedge clams		Not given
74	South Ayrshire Council	Meikle Craigs Annual	Meikle Craigs	SA 643 1316 16	Razors		NS33892672

Biotoxin results from North Bay: Barassie

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct				Nov				Dec			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
ASP	[Green]																																																							
LT - OA/DTX/PTXs	[Green]																																																							
LT - AZAs	[Green]																																																							
LT - YTXs	[Green]																																																							
PSP	[Green]																																																							

Phytoplankton results from North Bay: Barassie

Week	Jan					Feb				Mar					Apr					May					Jun					Jul					Aug					Sep					Oct				Nov				Dec			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
Pseudo-nitzschia	[Green]																																																							
Dinophysis	[Green]																																																							
Prorocentrum lima	[Green]																																																							
Alexandrium	[Green]																																																							

Pod 140



RMP position: ● AHA position: ●

Pod Number	Local Authority	Production Area	Site Name	Site SIN Number	Species	Biotoxin RMP	Grid Reference for Sample
140	South Ayrshire Council	Croy Bay	Culzean Bay	SA 681 1482 16	Razors	Yes	NS23921110

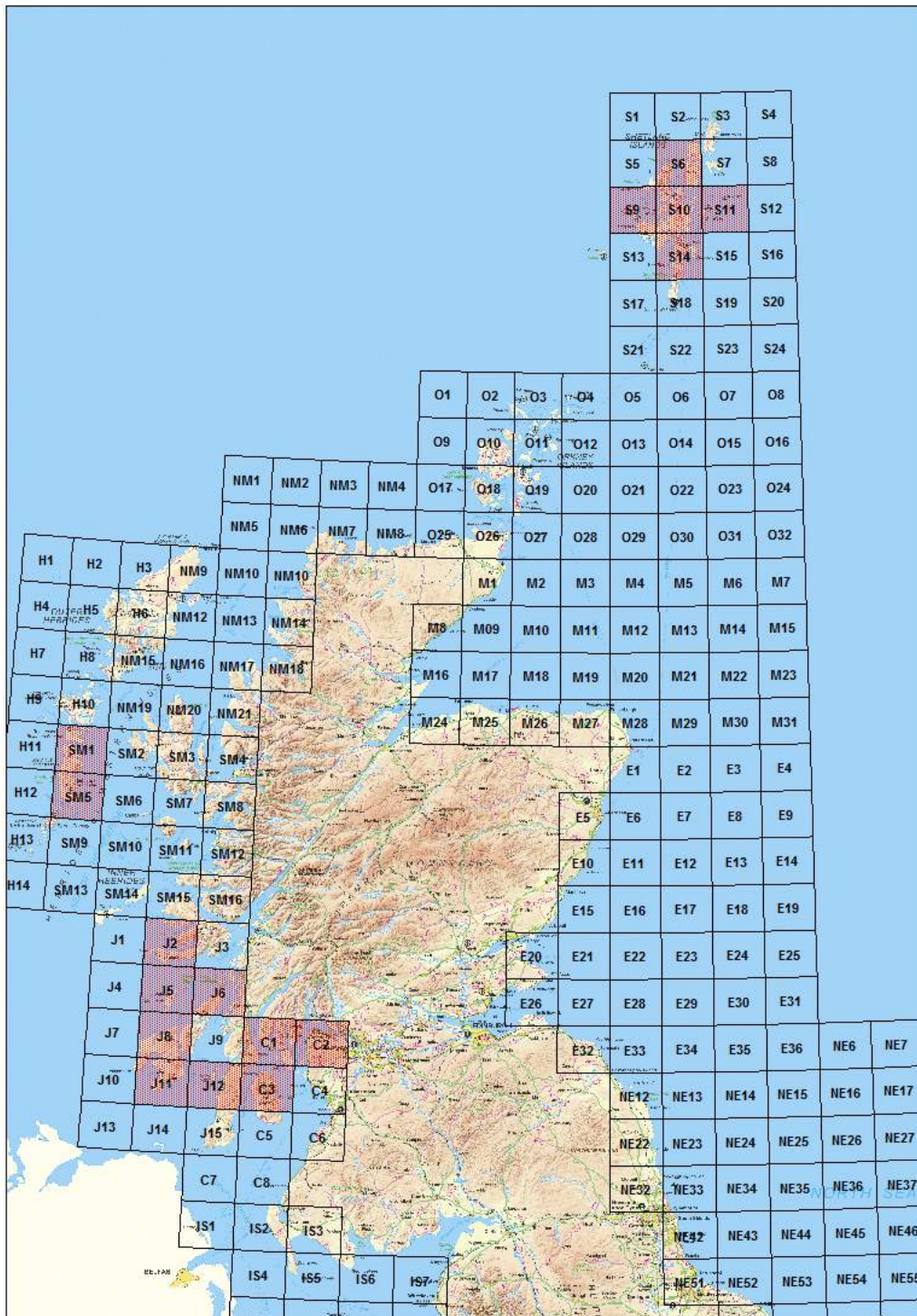
Biotoxin results from Croy Bay: Culzean Bay

Week	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
ASP																																																						
LT - OA/DTX/PTXs																																																						
LT - AZAs																																																						
LT - YTXs																																																						
PSP																																																						

7. Results of the wild pectinidae onshore verification programme

ASP, PSP and LTs analyses were performed on 33 samples from 12 separate establishments received via the wild pectinidae onshore verification programme. The origin of harvest for the scallop samples received during the reporting period (when specified by the sampling officer) is indicated by the shaded cells in Figure 23.

Figure 23: Origins of the wild pectinidae samples received via the FSS onshore official control verification programme in 2015



ASP results

- ASP was detected in 20 king scallop verification samples from 9 establishments. Six of these samples comprised of whole king scallop material, the remaining fourteen of shucked product. These shellfish samples were originally harvested in the following offshore scallop grounds; Jura (14 samples), Clyde (4 samples), South Minch (1 sample) with one further sample from unknown scallop grounds between February and December 2015. Toxin levels ranged between 1.2 and 278mg/kg DA/shellfish flesh, five of which exceeded the MPL.
- The five samples which exceeded the MPL comprised of whole scallop samples originating from the Clyde 03, Jura 02, Jura 11 and Jura 12 offshore scallop grounds collected by Argyll & Bute Council between February and December. The highest level recorded was 278mg/kg in a sample from the Jura 02 scallop ground in February 2015.

Lipophilic toxin results

- OA/DTX/PTX group toxins below the MPL were detected in four whole king scallop verification samples from the Clyde 02, Jura 11 and Jura 12 scallop grounds received between June and September 2015.
- YTX toxins below the MPL were detected one whole King scallop verification sample from the Jura 12 scallop ground in August 2015. OA/DTX/PTX group toxins below the MPL were also present in this sample.
- AZA group toxins were not detected in any of the 33 samples analysed via the onshore verification programme.

PSP results

- Two whole king scallop verification samples, both originating from the Jura 12 scallop ground in June and August 2015 exceeded the MPL, recording a levels of 1,120 and 2,321 µg/kg respectively.
- In addition, trace levels of PSP toxins, but below quantifiable limits were detected in three whole king scallop and twelve shucked product samples between March and December 2015.

8. 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) 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.

European Communities (2004). Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29th 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.

Statutory Instruments, (2006). The Food Safety (Fishery products and live shellfish) (Hygiene) Regulations : Schedule 2 (Production and placing on the market conditions for live shellfish) p36-45.

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

M.D. Guiry in Guiry, M.D. & Guiry, G.M. (2015). *Prorocentrum cordatum*. In: *AlgaeBase*. World-wide electronic publication, National University of Ireland, Galway.
<http://www.algaebase.org>

About us

Cefas is a multi-disciplinary scientific research and consultancy centre providing a comprehensive range of services in fisheries management, environmental monitoring and assessment, and aquaculture to a large number of clients worldwide.

We have more than 500 staff based in 2 laboratories, our own ocean-going research vessel, and over 100 years of fisheries experience.

We have a long and successful track record in delivering high-quality services to clients in a confidential and impartial manner.
(www.cefas.defra.gov.uk)

Cefas Technology Limited (CTL) is a wholly owned subsidiary of Cefas specialising in the application of Cefas technology to specific customer needs in a cost-effective and focussed manner.

CTL systems and services are developed by teams that are experienced in fisheries, environmental management and aquaculture, and in working closely with clients to ensure that their needs are fully met.
(www.cefastechnology.co.uk)

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Customer focus

With our unique facilities and our breadth of expertise in environmental and fisheries management, we can rapidly put together a multi-disciplinary team of experienced specialists, fully supported by our comprehensive in-house resources.

Our existing customers are drawn from a broad spectrum with wide ranging interests. Clients include:

- international and UK government departments
- the European Commission
- the World Bank
- Food and Agriculture Organisation of the United Nations (FAO)
- oil, water, chemical, pharmaceutical, agro-chemical, aggregate and marine industries
- non-governmental and environmental organisations
- regulators and enforcement agencies
- local authorities and other public bodies

We also work successfully in partnership with other organisations, operate in international consortia and have several joint ventures commercialising our intellectual property

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