Food Standards Scotland protocol for appointed sampling officers for the collection and transport of shellfish samples for the purpose of Official Control Monitoring of classified shellfish production areas in Scotland

Version 10
For implementation from November 2026

35 pages

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1. INTRODUCTION

Current laws require that classified shellfish production areas are monitored for microbiological contamination, marine biotoxins, harmful algae and chemical contamination. This forms part of an official control monitoring programme. In Scotland, Food Standards Scotland is the Competent Authority with responsibility for the implementation and delivery of the shellfish official control monitoring programme. Cefas is the laboratory contracted by FSS to co-ordinate this programme, arrange the collection of samples and deliver the required testing. Under current arrangements, HMMH (Scotland) Ltd is responsible for sample collection and the transport of the samples to the laboratory is arranged by the laboratories responsible for testing.

The laboratories currently responsible for testing are:

- **Cefas:** All toxin & *E. coli* testing
- **Fera:** All chemical contaminants testing
- **SAMS:** All water monitoring for harmful phytoplankton

Official control shellfish samples must be collected by authorised sampling officers. This defines a '**verified' sample**. The only exception to this rule will be for specific sites in Scotland where the collection of unverified samples by a harvester on behalf of the authorised sampling officer has been agreed between FSS, HMMH and Cefas and complies with the conditions further specified in section 5.

Samples collected by Industry may fall in two categories:

1. A '**verified from shore' (VFS) sample** is defined as a sample collected by a harvester but where collection from the agreed monitoring point is observed by an authorised sampling officer from the shore.
2. An '**unverified' sample** is defined as a sample collected by a harvester from the agreed monitoring point but when the authorised sampling officer cannot observe this happening. In most cases, this will be because of the remoteness of the monitoring point or distance from any vantage point.

The definitions of verified, unverified and verified from shore used in this protocol are those prescribed by FSS as the Competent Authority, for the purpose of the Scottish official control shellfish monitoring programme.

All samples covered within the scope described in section 2 below must be collected in accordance with this protocol and from the monitoring points designated by FSS, details of which are available from FSS.

Samples which fail to meet the requirements of this protocol will not be accepted by the laboratories.

Version 10 of this protocol is released in November 2026 and is for immediate implementation. Full instructions for transport of samples from Shetland to Cefas were included in HMMH contract change notice C8644/6 and were implemented from 20th July 26.

2. SCOPE OF THIS DOCUMENT

Table 1: Scope of this document

Monitoring programme	Scotland
E. coli (microbiological monitoring)	Yes
Toxins	Yes
Chemical contaminants	Yes

This protocol is intended for use by appointed HMMH sampling officers collecting verified samples or handed over verified from shore/unverified samples collected by Industry. A separate protocol for the collection of shellfish and water samples by Industry is available from the Shellfish Partnership page of the Cefas website.

Please note that a separate protocol for the collection of water samples is available from the Shellfish Partnership page of the Cefas website. This protocol is for use by sampling officers for the monitoring of shellfish production areas for the presence of harmful phytoplankton.

3. TIME OF SAMPLING

All samples should be collected at the frequencies specified by FSS sampling plans, now viewable on the FSS Shellfish Monitoring and Classification system (SMC), unless sampling can be rescheduled by agreement or where circumstances are outside of the sampling officers' control. Please note that where a sample is assessed as unsuitable by the laboratory, a void result is obtained or where a high result has been recorded, additional samples will be requested by the laboratories. You must comply with these requests, unless exceptional circumstances prevent the collection of these samples.

Where industry support is required to access sites, you must liaise with the harvesters to agree a suitable time when sampling can take place. Industry have been advised that rescheduling of samples will not be accepted unless agreed in advance with HMMH.

To enable the laboratory to plan work for the forthcoming week, HMMH co-ordinators/sampling officers should upload their sampling schedule on SMC **by 3pm Friday** of the preceding week. HMMH co-ordinators/sampling officers should then update the sampling schedule (ideally on a daily basis and no later than 3 days post collection for detail of time of collection of E. coli samples) to confirm the status of samples scheduled to be collected each day and provide the date/time details of samples collected.

It is noted that unforeseen events (weather, issue with access to site due to industry boat breakdown/staff illness) may force a change to the agreed weekly schedule and may result in last minute cancellation of sampling. Where samples are collected by Industry or Industry are assisting you by providing access to site, Industry have been asked to provide you with as much notice as possible of any change request (ideally min 24h). Where changes to the weekly plan can be agreed, you will need to confirm the new arrangements to Industry and update the SMC sampling schedule. Should

further changes to the day's schedule be required, you must notify the laboratories before the samples arrive at Fera or Cefas. Industry have been made aware that changes to the sampling schedule will be subject to sampling officers' availability.

Please note that whilst laboratories will endeavour to accept changes to the weekly schedule, there may be times when staff/lab availability is restricted. This may lead to delays in sample processing. Where laboratory capacities are exceeded, samples will be stored at the laboratory and processed the next working day (subject to sample conditions being acceptable) so a delay in reporting results is possible. Temporary storage by the sampling officer is allowable if delays prevent the samples from reaching the post office before the cut-off time for next day delivery or from being delivered to DFDS on the day of collection. If a Shetland *E. coli* sample is not collected in time to meet the DFDS delivery for the day, it will need to be instead posted by Royal Mail next day delivery service, as soon as is possible. It should be noted that such samples are highly likely to be rejected on receipt of the laboratory as they are unlikely to reach the laboratory within 48h of sample collection – it is therefore essential that sample collection is scheduled so that onwards shipment by DFDS or Royal Mail takes place on the day of collection.

Please be aware of the arrangements agreed with FSS for the submission and testing of samples around bank holidays and Christmas. These are communicated to all at the start of each calendar year. Late samples will not be accepted, unless discussed and agreed in advance with Cefas.

There may be times when sampling at a site needs to be suspended. This will always be notified by FSS and shown on the weekly classification updates published by FSS. You should not suspend sampling at a site without prior agreement from FSS/Cefas. If you are aware that a harvester wishes to suspend harvesting in an area for 6 months or more, then please advise them to contact FSS direct to agree monitoring arrangements. FSS will then confirm these with Cefas and HMMH.

There are specific conditions which you must be aware of when collecting samples for specific programmes:

Samples for microhygiene (*E. coli*) testing:

- You must collect these samples, where practical, on as random a basis as possible with respect to likely influencing environmental factors e.g. tidal state, rainfall, wind etc. to avoid introducing any bias to the results.
- The frequency of testing of each site is specified by FSS and indicated on the classification listing which they maintain and publish on their website. This is translated into the sampling plan uploaded onto SMC and on the basis of which you schedule sampling events.
- We may request additional samples from a classified area. This may be because the previous sample was rejected on arrival at the laboratory, because of a void result or because of a high result requiring further investigations. When required, this will be notified to HMMH co-ordinators by Cefas and a new event created on SMC sampling plans.
- You should schedule your E. coli sample collection ideally on **Monday, Tuesday or Wednesday so that they arrive at Cefas Tuesday to Friday**.
- **Please note that *E. coli* samples collected from remote areas (all areas**

other than those with a SIN starting with DG, FF, RC, NA & SA) should be collected after 8:30am. This is because there is a risk that samples collected before this time will be rejected on arrival at the laboratory if they are not delivered to Cefas within two working days of collection (processing of *E. coli* samples does need to be initiated within 48h of sample collection for the sample to be accepted).

Samples for toxin analyses:

- You must collect these samples at the frequencies specified by FSS and shown in the site sampling plans on SMC.
- We may ask you to collect additional samples when either phytoplankton levels or flesh results reach or exceed the agreed trigger levels shown in Table 2. When required, this will be notified to HMMH co-ordinators by Cefas and a new event created on SMC sampling plans.

Table 2: Set phytoplankton and toxin trigger levels

Biotoxin produced	Phytoplankton species	Phytoplankton trigger level in water (in cells/litre)	toxin trigger level in shellfish flesh
STX - PSP	*Alexandrium spp*	≥40	≥400 µg [STX eq.]/kg shellfish
OA/DTX/PTX – DSP	*Dinophysis & Phalachroma spp*	≥100	≥80 µg [OA eq.]/kg shellfish
OA/DTX – DSP	*Prorocentrum lima*	≥100	
AZA – AZP	*Azadinium & Amphidoma spp*	Not monitored for No trigger set	≥80 µg [AZA1 eq.]/kg shellfish
YTX	*Protoceratium reticulatum Lingulaulax polyedra*	No trigger set	≥1.8 mg [YTX eq.]/kg shellfish
DA - ASP	*Pseudo-nitzschia spp*	≥50,000	≥10 mg/ kg shellfish flesh

- We may also request additional samples if the previous sample you submitted was found to be unsuitable/insufficient for analysis on receipt at the laboratory. When required, we will notify HMMH co-ordinators and update the SMC sampling plan.
- You should schedule your toxin sample collection ideally on **Monday, Tuesday or Wednesday so that they arrive at Cefas Tuesday to Friday**.

Samples for chemical contaminant analyses:

- The FSS chemical contaminants programme is defined in October/November each year and communicated to HMMH and Fera by early December. The programme defines which area must be monitored and for which contaminants. Sampling plans for chemical contaminants monitoring are uploaded onto SMC by early December.

- Samples collected for chemical contaminant analysis must be collected in **January – March** as this is prior to shellfish spawning.
- Other ad-hoc collections may be required and arrangements for these will be communicated to HMMH in advance of any sampling being required.
- You should schedule your sample collection so that samples arrive at the Fera – York laboratory between **9am Tuesday and 3pm Thursday**.
- The volume of shellfish required for chemical contaminants analyses will be defined by the number and nature of tests requested by FSS (see Section 7).
- We may request additional samples if the sample you submitted was found to be unsuitable/insufficient for analysis on receipt at the laboratory. When required, we will notify HMMH co-ordinators and update the sampling plan on SMC.

4. EQUIPMENT

Collection by sampling officers:

The following equipment is required for shellfish sampling and will be provided to you weekly by the laboratories:

a. Food grade polythene bags*
b. Cable ties*
c. Coolboxes*
d. Lining bag*
e. Ice packs
f. Insulating foam
g. Return address labels and pre-paid delivery labels
h. Gloves* or antibacterial wipes
i. Cefas sample submission form*

Items marked in the above list with * are the only items provided for samples to be delivered to Cefas via DFDS cold chain transport.

Please contact the laboratories if you are running low on equipment. Damaged transport boxes must be returned to the laboratories for replacement. For contact information please see the section at the end of this protocol.

Cefas has also provided the following items to HMMH:

j. GPS have been loaned by Cefas
k. A spray water bottle and some strong adhesive tape have been given to all sampling officers. Contact the Cefas toxin laboratory if you require more tape.

The following equipment should also be available to you (**to be provided by HMMH**):

a. Thermometer
b. Scrubbing brush
c. Rulers/calipers
d. Colander or other draining vessel
e. Absorbent paper towel
f. Disinfectant (see section 12)
g. Safety equipment as per HMMH risk and Coshh assessments

Collection by Industry on behalf of sampling officers:
When samples are collected by industry, on behalf of the sampling officer, the following equipment will need to be provided to the industry collector by HMMH:

a. Food grade polythene bags*
b. Cable ties*
c. Blank industry sample submission form (please note that a blank template of this form is available on the Cefas website)

Items marked in the above list with a * will be the supplies provided by the laboratories to HMMH. We ask that you manage these supplies well to limit plastic use and wastage & reduce supply costs as much as possible.

Industry will be expected to provide the rest including GPS/plotter/Nautical charts; thermometer; cool box/bag for temporary storage; disinfectant for industry own use (see Industry protocol on the Cefas website for details).

5. COLLECTION OF SAMPLES

Sampling method:
Wherever possible, you should collect a shellfish sample using the method normally used for commercial harvesting as this can influence the degree of microbial contamination. Cefas requests information on sampling practice as this will be considered during analysis of historical monitoring results in subsequent surveys or reviews.
For toxin and chemical contaminant monitoring, as levels of contaminants can vary in the water column it is important to combine shellfish collected at different depths during sampling, this is especially true in the case of suspended mussel lines. In order to provide a representative sample, shellfish should be collected along the depth profile at the RMP (or alternate sampling point if one is used for biotoxin sampling), these shellfish should then be pooled to form the final sample.
For *E. coli* monitoring, the sample should be collected from the depth specified by the sanitary survey.

Sampling location:
You must use the FSS Representative Monitoring Point (RMP) or Representative Monitoring Zone (RMZ) location as the starting point to identifying the position from which samples should be taken. FSS maintains the list of production areas currently classified, dormant, provisionally classified or in pre-classification status and circulates updates when changes occur. A list of the current RMP and RMZ locations is available on the FSS website and should be used by HMMH to plan sampling activities. An example of how RMP and RMZ are currently displayed by FSS is shown in Appendix 2.

Sampling for microbiological monitoring:

- you must collect the shellfish from the *E. coli* RMP or within the tolerance set around this RMP and shown on FSS classification list/SMC.
- If the area has been allocated a RMZ instead of a RMP, you must collect the sample from within the boundaries of the zone. Details of the RMZ are shown on the FSS classification listing.

Sampling for toxin monitoring:

- For the majority of the sites, the *E. coli* RMP will also be the RMP for toxin sampling. However, for some sites, other monitoring points have been designated for toxin sampling. The FSS classification list/SMC shows the details of the RMPs for the toxin programme so please consult the list prior to sampling.
- You must collect from the toxin RMP (or within the agreed *E. coli* tolerance for that point). Where this is not possible, you may collect your toxin sample from another point within the boundaries of the production area.
- If the area has been allocated a RMZ instead of a RMP, you must collect the sample from within the boundaries of the zone. Details of the RMZ are shown on the FSS classification listing.

Sampling for chemical contaminants monitoring:

- The annual FSS chemical contaminants programme circulated by early December each year provides details of the monitoring points or areas which must be sampled. Where other ad-hoc monitoring is requested by FSS, the details of the monitoring points will be provided by FSS and available on SMC sampling plans.
- You must collect from the set RMP (or within the agreed *E. coli* tolerance for that point). Where this is not possible, you may collect your chemical contaminants sample from another point within the boundaries of the production area.
- If the area has been allocated a RMZ instead of a RMP, you must collect the sample from within the boundaries of the zone. Details of the RMZ are shown on the FSS classification listing.

You are asked to confirm that you have complied with the above requirements when completing your sample submission form for a verified sample. Industry are also asked this question on their submission form for samples that they collect.

If you cannot comply with the sampling requirements described above for your *E. coli*, toxin or chemical contaminants samples (for example, because of no harvesting activity, lack of stock, access issue), you should inform the Cefas programme co-ordinators. Discussions will take place with FSS so that monitoring arrangements can be amended and the classification list updated. This should ideally take place before you collect a sample from the affected area. If this is not possible, you may collect a sample from an alternative monitoring point BUT you must add a note to your submission form to explain why you have not been able to sample from the agreed point, tolerance or area. Cefas will then contact you to discuss and agree arrangements for the site.

Samples collected outside of the RMP tolerance or RMZ (for *E. coli* samples) will generally not be rejected but discussions will subsequently take place between HMMH and Cefas/FSS to understand why this is occurring and to try and address it to prevent further occurrences. Samples collected out of the boundaries of the area will be rejected.

Recording of actual sampling location:

- **Verified samples**: you must report the *actual* location of sampling to a **10m accuracy** in Ordnance Survey national grid reference (NGR) format i.e. **AB 1234 5678**. A GPS device must be used for this purpose. To achieve the maximum level of accuracy the WAAS or EGNOS option must be enabled. Please ensure

that handsets are set to coordinate system WGS84.

- **Samples collected by Industry**: the collector must fill in an Industry sample submission form for each sample they collect and hand this over to you together with the sample. You must ensure that you have blank forms available to hand out to collectors.
    - Where a GPS is available to the boat operator, they must provide details of actual sampling location as described above.
    - When no GPS is available, Industry can use a plotter or an Admiralty Chart (or similar) and the location of sampling must be recorded in degrees and decimal minutes format i.e. 00°00.001'N, 00° 00.001'W (or E as appropriate) or in degrees, minutes and seconds format i.e. 00°00'01''N, 00°00'01''W (or E as appropriate). It is important that the format of the latitude and longitude position is recorded accurately. If the position is provided by the operator for unverified or verified from shore samples in another format (e.g. decimal degrees), this should be noted on the sample submission form. For example:
        - a location in degrees and decimal minutes is: 54°59.062'N, 5°2.132'W.
        - The same location recorded in degrees, min, sec is: 54°59'3.73''N, 5°2'7.9''W.
        - And the same location recorded in decimal degrees is: 54.98437, -5.03553

      For samples where the location is provided in latitude and longitude format, you must convert this position to the OS NGR format and write this NGR on your sample submission form (there is no need for you to copy the NGR provided by Industry on your submission form, if they have used a NGR format when recording their sample location on their submission form). The online converter nearby.org.uk must be used to convert the coordinates. Screenshots of this converter & examples of use are shown in Appendix 1.

      If in exceptional circumstances you are unable to undertake the conversion prior to box packing (for example, lack of network preventing the use of the Nearby website), you can submit this by email to the relevant laboratory (using the contact details provided for weekly sampling schedules in Section 11 of this protocol). Please add "to be submitted by email" in the relevant section of the submission form. This must be received by the laboratory before they receive the sample.

Recording of location of verification from shore:

- **Verified from shore samples**: you must report the *actual* location of the vantage point from which you verify Industry sampling activity to a 10m accuracy in OS NGR format i.e. AB 1234 5678. A GPS device must be used for this purpose. To achieve the maximum level of accuracy the WAAS or EGNOS option must be enabled. Please ensure that handsets are set to coordinate system WGS84.The time of the observation must also be noted.

Exceptional situations where sampling by Industry for official control purposes may be authorised:

FSS recognises that there are situations where industry sampling may have to be considered for the purpose of the Scottish shellfish official control monitoring. To allow

industry sampling, you must be of the clear view that you cannot undertake sampling for reasons of either practicality or health and safety.

Practicality reasons could be:

- Extreme difficulties in the timing of sampling (e.g. short notice through necessity of specific weather and/or environmental conditions that mean fitting in with sampling officer work schedules is impractical, harvest times which authorised sampling officers cannot reasonably be expected to meet) or
- Extremely long sampling runs. This will most likely occur in sites conforming to the following definition of '*Remote*[1] *area*':

  An area where no human or animal sources had been shown to impact on the fishery in the sanitary survey and where no potential changes to sources have been identified during the annual review process. An offshore bivalve shellfishery (≥5 km from shore) not impacted by long sea outfalls is an example of a remote area.

The use of specialist equipment such as dredges (for example oyster dredges), mechanical winches (for example as used in rope mussel fisheries) is not in itself grounds for industry lone sampling as it may be quite possible for you to supervise or observe the industry operating such equipment to take the sample. Similarly, it may also be possible for you to accompany an industry operator on a boat where diver-gathered sampling may be necessary. Each of these scenarios have been employed under the programme in Scotland and have worked successfully.

Health and safety reasons could be:

- From 09th July 2018, Cefas and FSS request that sampling officers only board vessels that show a valid small vessel certificate issued by the Maritime and Coastguard Agency (MCA) (or other authorised certifying authority) ("coded vessel"), as per the requirements of MCA Code of Practice for the safety of small workboats or pilot boats (workboat code) or MGN280 (M), and are maintained to this MCA standard by the operator and are suitably insured. These codes are applicable to vessels of up to 24m load line length which are engaged at sea in commercial activities; where larger vessels are used for sample collection, compliance with the MCA code of practice(s) relevant to these vessels will be required.
- From this date, you must request from the industry evidence of coding or dispensation from the MCA and compliance with the MCA code for each vessel made available to sampling officers. You must keep a record of this evidence.
- Where it has been established that the vessel is suitably coded or dispensed from coding, you will undertake a succinct check of the vessel safety before boarding, in accordance with HMMH's vessel safety checklist. This check will be a quick confirmation of vessel safety. Where all checks are satisfactory, you will be authorised to board the vessel and undertake verified sampling. You will not be allowed to board the vessels if the safety check cannot be completed or if they reveal that the vessel does not meet minimum safety requirements in accordance with the checklist.
- Working with the industry, HMMH have established a list of sites from which verified sample collection should be the norm or alternatively where onshore

[1] This definition of "remote" for the purpose of sampling differs from the definition of remote locations for the purpose of logistics (see Section 9).

verification can be organised. Unverified samples collected by the industry and handed over to sampling officers will be accepted only if no suitable coded vessel is available and no onshore verification by sampling officer can be implemented for the site.

- For the following, *E. coli* samples, investigation samples collected following possible human illness and toxin samples collected in order to achieve a 2nd negative result prior to reopening of an area, the expectation will remain that these will be verified samples collected by sampling officers (from suitably coded vessels) or collected by harvesters with collection verified from the shore by sampling officers. This is subject to suitably coded vessels being available.

In summary, if the taking of samples by the appointed sampling officer is not possible, then the next consideration should be officer supervision of the industry taking the sample. Only in the exceptional situations outlined above, could industry take the OC samples unsupervised. Ultimately the decision rests with FSS as the Competent Authority.

Unless exceptional circumstances, unverified samples must be handed over to HMMH at the point of landing. You will be requested to provide a justification for collections other than at point of landing (to be recorded on the sample submission form).

Specific considerations for the collection of razor clams:
Following adoption of the Razor Clams (Prohibition on Fishing and landing (Scotland) order 2017 ((Scottish Statutory Instrument 2017/49) (https://www.legislation.gov.uk/ssi/2017/419/pdfs/ssi_20170419_en.pdf), you must ensure that for the duration of the Scottish electrofishing on razor clams trial, samples of razor clams are only collected using vessels that have been issued a formal derogation to participate in the trial by Marine Directorate (MD) and only at times when the trial is live and fishing is permitted by MD. A list of approved vessels has been provided to HMMH and is updated when required.

6. SIZE OF INDIVIDUAL ANIMALS

The shellfish you collect for the sample must be animals that are within normal commercial size range. Immature, juvenile, old or excessively large animals may provide results that are unrepresentative of mature stock that will be harvested for commercial sale/human consumption. In circumstances where less mature stock is being commercially harvested for human consumption then samples of these smaller animals may be collected for analysis.

7. SAMPLE COMPOSITION

We need you to collect a minimum sample size (in terms of number of live animals by species or weight in shell) for analysis. This is summarised in Table 3 below.

You must not use open, gaping or damaged shells in your sample. Also note that the laboratories will need a minimum of ten live (not moribund or dead) animals to accept a sample as suitable for analysis. If this criterion cannot be met, the sample will be rejected on receipt at the laboratory. Where the shellfish show an unusually low yield or where morbidity may be an issue, please consider providing more shells or animals than those recommended below to ensure sufficient animals remain available for analysis.

Table 3: Minimum sample size (in terms of number of live animals by species or weight in shell) recommended for submission for each type of analysis

Shellfish species	***E. coli***	**Toxin - to provide 50g flesh[1]**	**Chemical Contaminants – to provide 100g flesh[3]**	**Chemical Contaminants – to provide 500g flesh[2]**
King scallops (*Pecten maximus*)	12 to 15	12 to 15	12 to 15	50 to 70
Queen scallops (*Aequipecten opercularis*)	15 to 30	15 to 30	20	80 to 100
Oysters (*Crassostrea gigas* and *Ostrea edulis*)	12 to 18	12 to 18	20	80 to 100
Hard clams (*Mercenaria mercenaria*)	12 to 18	12 to 18	20	80 to 100
Manila clams (*Tapes philippinarum*)	18 to 35	18 to 35	16 to 25	80 to 125
Otter clams (*Lutraria lutraria*)	12 to 18	12 to 15	12 to 15	50 to 70
Pullet carpet shell (*Venerupis senegalensis*)	20 to 25	20 to 25	40 to 50	100 to 140
Palourdes or carpet shell clams (*Tapes decussatus / Venerupis decussata*)	18 to 35	18 to 35	16 to 25	80 to 125
Surf clams (*Spisula solida*)	30 to 50	30 to 50	16 to 25 or 1 kg shells	80 to 125
Sand Gapers (*Mya arenaria*)	12 to 18	N/A	10 to 15	50 to 70
Razor clams (*Ensis* spp.)	12 to 18	12 to 15	10 to 15	50 to 70
Rope grown mussels (*Mytilus* spp.)	15 to 30	15 to 30	60 or 600g shells	300 or 3kg shells
Shore mussels (*Mytilus* spp.)	N/A	25 to 40	80 or 800g shells	400 or 4kg shells
Cockles (*Cerastoderma edule*)	35 to 55	35 to 55[4]	100 or 600g shells	500 or 3 kg shells

Notes:

1. Min. 50g of flesh is required for all samples submitted for toxin analyses, regardless of the type of analysis required.
2. Min. 500g of flesh will be required for a full suite of chemical contaminants testing (heavy metals, PAHs and PCBs or dioxins) or PCBs and dioxins testing alone.
3. Min. 100g of flesh will be required for heavy metals and/or PAHs testing.
4. Where minimum landing sizes have been reduced, more individuals may be required.

Other species:	***E. coli***
Abalone (*Haliotis* spp.)	12-18
Purple sea urchins (*Paracentrotus lividus*. up to 7cm diameter)	50-60
Common sea-urchins (*Echinus esculentus*, up to 20 cm diameter)	12-15
Green sea-urchins (*Psammechinus miliaris*, up to 11 cm diameter)	35-55

8. PREPARATION AND PACKAGING OF SAMPLES

Preparation of unverified and VFS samples collected by Industry:

Industry representatives are required to follow the instructions given in the Industry protocol available on the Cefas website when collecting shellfish for the FSS programme. Under their protocol, Industry will:

- Collect shellfish samples for the purpose of the FSS programme, from the RMP/RMZ specified by FSS and as agreed with you.
- Prepare, bag and clearly label the samples. They will take, bag and label separate samples for toxin, microbiological and chemical analyses. They must attach an industry sample submission form to each sample. They must ensure that the form is completed in full and accurately and that it is signed.
- Place the labelled bagged samples in a temporary storage container promoting the cooling of the samples whilst they are in their possession.
- Hand over the samples to you as quickly as possible after collection to ensure that you have time to finish preparing the samples, complete the paperwork and pack the samples for dispatch to the laboratories on that day.

You will:

- In advance of the sampling run, provide Industry with the correct colour bags and cable ties required for the packing of the samples they collect. If they cannot access the online version of the Industry submission form, also provide them with blank forms.
- You must be personally handed the sample by an Industry representative. You must not accept samples left unattended; you must not arrange for samples to be left unattended before you can collect them.
- Measure the temperature of the shellfish sample when handed over to you and record this on your sample submission form. This is to provide the laboratory with additional information on the conditions of the sample prior to shipping.
- Fill in a Cefas submission form for each unverified or VFS sample you accept, filling in the unverified or VFS section and general sections of the form**.** This form must be attached to the sample, together with the Industry form.
- Check the submission form provided by Industry:
    - You must not accept a sample without a completed and signed Industry sample submission form. You must ask Industry to complete the form if some details are missing.
    - You must not accept a sample if the form shows incorrect details. You must not correct Industry forms yourself. You must ask Industry to confirm the details of the sample and if required, to correct the form if some details shown on the form are clearly incorrect (for example: wrong date, SIN/site details which are not as expected or OS NGR which is visibly not within the area's boundaries).
    - Industry is allowed to pre-print the first 3 lines of the Industry submission form (namely: shellfish species, production area & site name and SIN). They must hand fill the rest of the information requested on the form at the time of collection of the sample or soon after. You must not accept a form which shows pre-printed OS NGRs or co-ordinates.
    - If you are unable to obtain a completed and signed form or if Industry cannot correct the form, leave the sample with Industry, take a photo of

the form and send it to the relevant laboratory with an explanation as to why you did not accept the sample on this occasion.

- Pack the sample(s) in accordance with this protocol (Follow points 9 to 13 of the guidance below for preparation of verified samples)
- Send these samples to the testing laboratories.

Please note:

- Handover of samples by Industry will be in person (no unattended samples). This will allow you to ask any query you may have on the samples or forms you are handed over. It is FSS' expectation that this Industry person will be the sample collector.
- Overnight storage of samples by Industry is allowable for razor and surf clams as it is noted that harvesting may take place at night or at weekends and return to harbour at times when sampling officers may not be available. In this case, the samples must be stored by Industry in their closed bag (to avoid cross contamination), in a secured (to avoid tampering of samples) cold storage (at a temperature of 0 to 10°C) and handed over to you at a time that you arrange. You must not accept a sample if you have reasons to believe that it has not been stored correctly (for example, the sample is not chilled when handed over to you).
- Industry sample with OS NGR visibly not within the area's boundaries: Boundaries of the site are provided by FSS on their RMP/RMZ list. You should be able to identify from the NGR provided by Industry or obtained following conversion of co-ordinates if the sample is clearly not from the production area. By clearly not, we mean sample provided with details relating to a different production area or from a point >1000m from the boundaries.

Preparation of Verified samples:

You must follow this guidance to prepare your shellfish samples:

1. Collect enough shellfish of the correct size to satisfy the requirement for one or more samples to be collected from the site.
2. Remove the mud and sediment adhering to the shellfish. To do this, rinse or scrub the shellfish with fresh water of potable quality or seawater from the immediate area of sampling.
3. Allow to drain.
4. Ensure that if samples are required for more than one analysis, you prepare, bag and label separate samples for toxin, microbiological and chemical analyses. To do this, place the shellfish inside a strong food grade plastic bag (see below for further details). Place the first bag in a second bag if the sample is likely to puncture the first plastic bag.
5. Using a permanent marker pen, label each bag with the origin of the sample (site name) and fill in the Cefas sample submission form, circling at the top of the form what type of testing the sample is for.
6. Sign, date and add your name to the form.
7. Securely attach the form to the correct sample bag (ideally the bagged sample and form should be placed in a second or third bag and resealed). Samples which are not correctly labelled will be rejected by the laboratory. You may place the submission form in a small, sealed plastic bag to help keep it clean and dry.

8. Where required, place the labelled bagged sample in a temporary container to promote the cooling of the sample. This may be required when the location of sampling makes the immediate use of a validated cool box difficult or impractical. For example, if out on extensive mud flats or on a small boat etc. In such cases, it would be acceptable to place samples for a short period of time (up to 4 hours) in a more easily portable non-validated container prior to packing in a validated cool box for final transport to the laboratory. The temporary storage container should promote cooling of the sample[2]. For example, a ruck sack, bag or box with cool packs where necessary (e.g. in summer) suitably separated so as not to come into direct contact with the shellfish should be adequate. Use insulating material (for example newspaper) to ensure that samples do not come into direct contact with the coolpacks and freeze.
9. For samples from the Shetland Islands, due to be shipped with DFDS (Mondays and Tuesdays): see Appendix 3
10. Other samples or samples from Shetland Islands due to be shipped with Royal Mail:
    a. As soon as practically possible after collection from the harvesting area, place the sample(s) in the cool box provided by the laboratory and pack the box in accordance with this protocol (see below). This should ensure that samples are maintained at a temperature not exceeding 10°C. Care must be taken to correctly place the coolpacks and foam spacers to ensure that the sample does not come into contact with the cool packs and freeze. **Frozen samples cannot be tested and will be rejected by the laboratory.**
    b. Once correctly packed, secure the box lid with adhesive tape to prevent leakage/sample loss.
    c. Attach a prepaid postage label before posting to the relevant laboratory. Shellfish samples sent using Royal Mail must be labelled as “perishable”, to comply with Royal Mail labelling rules. Please note that Royal Mail has defined specific conditions for the transport of “live creatures/animals”. These are not suitable for shellfish samples destined to testing. Sampling officers are therefore advised not to log/describe the samples as live creatures for the purpose of Royal Mail. “Perishable” labels should be affixed to the tape used to secure the transport box. Alternatively, please write on the tape using a marker pen. Affix a sender’s address label to the tape used to secure the sample box. Do not write on the box or affix any label to the box itself.
    d. If sending samples to Cefas: tick either toxins (BTX) and/or E. coli (Class) on the box label to indicate the nature of the samples contained in the box. Importantly, for all E. coli samples, write the

[2] *The NRL for microbiological contaminant in bivalve shellfish has carried out a significant body of work in this area, to underpin the time-temperature criteria used for E. coli testing in the UK for shellfish classification purposes. This data, derived over numerous laboratory studies, as well as previous published work in this area indicated that E. coli concentrations do not significantly deviate under short-term conditions of moderate warming (up to 20°C), however longer term temperature abuse may impact recovery of E. coli from bivalve shellfish tissues*

date and time of collection on the label to allow the laboratory to identify samples and prioritise those close to the 48h cut-off time at their arrival at the laboratory. If this information is not visible on arrival at the laboratory, the cool box will be processed last and the sample will be rejected if found to exceed the 48h threshold once booked in.

11. Follow the instructions listed in Section 9 to send the samples to the correct laboratories.

Please note:

- Laboratories are supplying bags and cable ties of specific colours to help the identification of samples from the various programmes. Using these allows you to place *E. coli* and toxin samples destined to Cefas in the same box. You must use the supplies as provided by the laboratories and when samples are collected by Industry, ensure that you provide them with the correct colour bags/ties for the samples they collect:
    - Submitting *E. coli* and toxin samples to Cefas:
        - Toxin testing: use green cable ties & clear plastic bags
        - *E. coli* testing at Cefas: use yellow cable ties & blue plastic bags.
    - Submitting chemical contaminants to Fera: use any colour bag or tie provided by Cefas for these samples.
    - Note that laboratories may supply you with alternative bag or cable ties colours if normal supplies are affected. Please use the supplies provided by the laboratories in those circumstances.
    - **Unidentified samples cannot be analysed by the laboratories.**

Re-immersion of shellfish after collection from the monitoring point:

You or Industry **must not** re-immerse shellfish in water (for example for short-term storage) once you have collected them from the monitoring point. This may cause the shellfish to open or introduce a source of microbial contamination.

Method for packing of coolboxes (Royal Mail and courier delivery):

Please note that a number of different Coleman boxes, Igloo boxes and Thermos boxes are used for the purpose of the programmes covered by this protocol. You must use the correct packing instructions for the boxes delivered to you, to ensure optimal performance of the boxes.

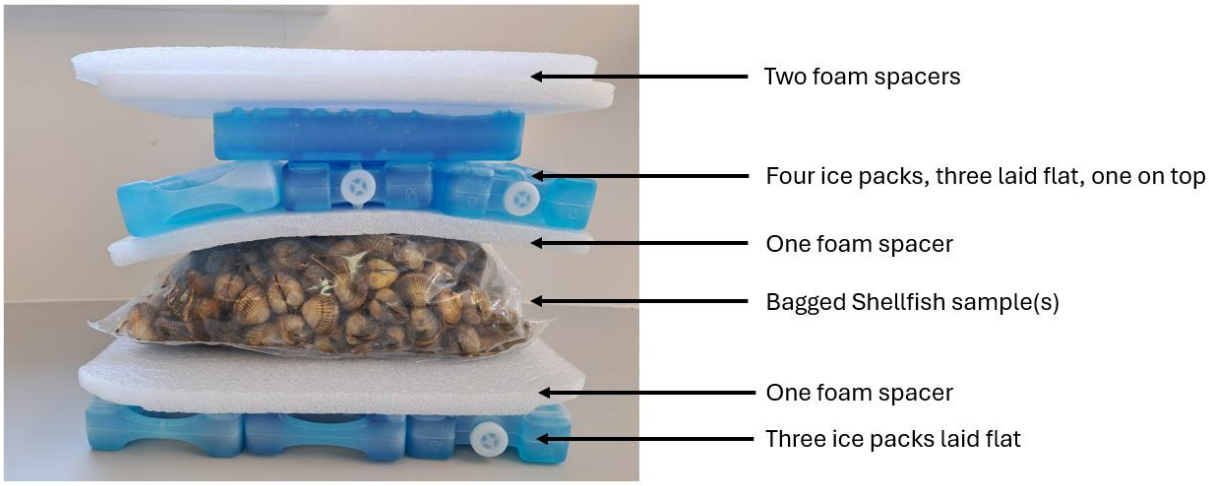
Packing of Coleman box model number 6216/6215, Igloo Profile 16 and Igloo Latitude 16 15L boxes







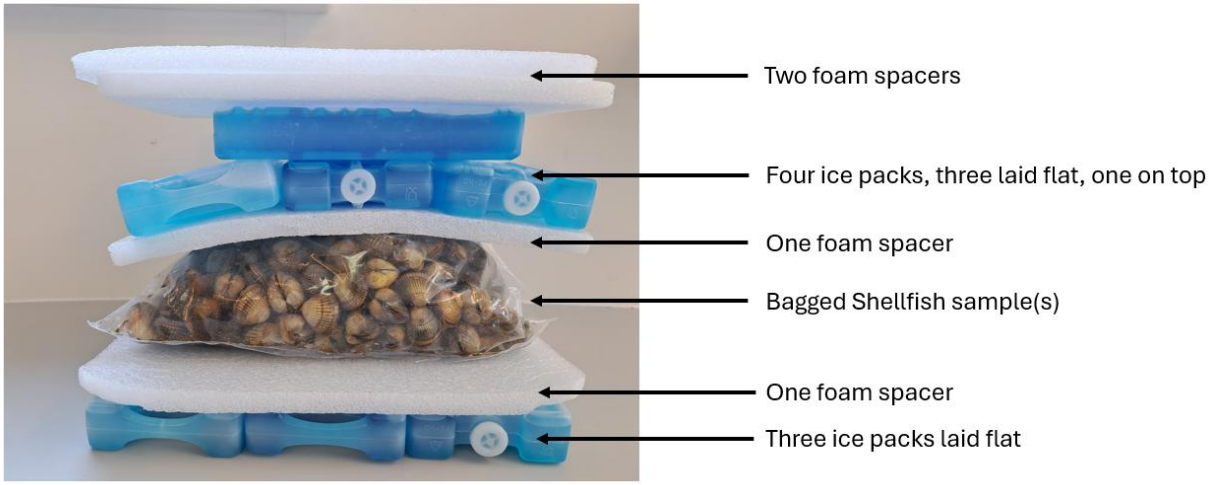
Boxes of these models are suitable for the storage and transport of **all samples**. Prior to shellfish collection, the provided coolpacks (**7** per box) must be placed in a freezer for a minimum of 24 hours. Ensure cool packs are completely frozen before use. Boxes of these types should be packed according to the diagram below:



Packing of Coleman box model number 5877

Boxes of this model may be used for biotoxin and/or chemical contaminants analyses **BUT not *E. coli* samples as they will not maintain sufficient temperature control over 48h**. Prior to shellfish collection, the provided coolpacks (**7** per Coleman box) must be chilled in a freezer for a minimum of 24 hours. Boxes of this type should be packed according to the diagram below:





Packing of Polystyrene boxes for DFDS transport – See Appendix 3

Please note for Royal Mail and courier transport (non-DFDS):

- If submitting multiple samples on any given day, it is possible to place more than one sample in the same coolbox (packaged as above) providing the box can be securely sealed and the total weight of the box (including sample(s), coolpacks and spacers) does not exceed 10kg. If two/three samples do not fit securely into the box, or the total weight exceeds 10kg, samples **must** be sent in separate boxes. If packing more than one sample in one box, you must ensure that each bagged sample is correctly sealed and identified.
- The volumes of shellfish required for chemical contaminants analyses are much greater than for toxin or *E. coli* analyses. This means that some samples are likely to have to be split between 2 if not 3 boxes per sample. When this is required, ensure that all boxes are accompanied by a completed submission form marked 1 out of 3, 2 out of 3, ...
- **Ensure that boxes are packed with coolpacks that have freshly been taken out of the freezer. This will help keep samples within temperature for as long as possible on their way to the laboratories and will reduce the risk of samples being rejected due to high temperature on arrival.**
- **The use of a 7th coolpack per Coleman box model number 6216/6215 and Igloo Profile 16 box is authorised to help mitigate the impact of high summer temperatures. Always ensure that samples are suitably protected from direct contact with coolpacks by using spacers.**
- **Samples that do not comply with the packaging protocols may be rejected by the laboratory.**

<u>Short term storage of samples prior to dispatch to laboratories:</u>

There may be times when you cannot make the cut-off time for sample dispatch/delivery on the day of sample collection. In those circumstances, you should store the samples overnight prior to dispatch/delivery the following day and keep them in either the Coleman or the Igloo boxes, packed as described in the above section. You must not

store samples in your own appliances or in the Thermos box. Samples must not be frozen.

The following day, the samples should be re-packed with new coolpacks immediately before final box sealing and posting/transfer to the laboratory in the morning.

Where short term storage has been required, you must record the temperature (prior to repacking) and duration of storage on the sample submission form.

For Shetland Islands samples missing the DFDS cutoff: see Appendix 3.

9. SAMPLE TRANSPORT

You must dispatch samples to the laboratories as soon as practically possible after sampling. Samples should be sent to the following laboratories:

- *E. coli* & Toxin samples: Cefas Weymouth
- Chemical contaminants samples: Fera York

See section 8. for situations when you may be able to store samples prior to dispatch and delivery.

Dispatch of samples to Cefas via DFDS including cut-off time: see Appendix 3

Dispatch of samples to Cefas & Fera via Royal Mail or non-cool chain courier:
Samples destined to Cefas or Fera should be sent via Royal Mail Special Delivery (unless alternative courier arrangements have been agreed). For the purposes of the FSS monitoring programme, sampling locations have been designated as either **NOT REMOTE** or **REMOTE**. Remote areas are defined by Royal Mail special delivery terms and conditions. HMMH have been advised of the status of each production area and will be informed if this changes.

- **Samples from areas designated as NOT REMOTE (covering areas in DG, FF, RC, NA & SA):** Samples should be delivered to the designated courier drop off point in time for next day delivery to the laboratory.

- **Samples from areas designated as REMOTE:** Unless exceptional circumstances, samples **must** be delivered to the designated courier drop off point in time for dispatch **on the day of sampling**, for arrival at the laboratory on the next day or the following day.

- **Specific note relating to samples for *E. coli* testing**: Samples from areas designated as NOT REMOTE should arrive at the laboratory in order that analysis can be commenced within 24 hours of collection. Samples from REMOTE areas must arrive at the laboratory in order that analysis can be commenced within 48 hours of collection. Samples cannot be tested if the time elapsed between collection and onset of analysis exceeds 48 hours and these samples will be rejected on arrival at the laboratory.

Samples destined for Cefas, Weymouth: Samples should be sent using the relevant prepaid labels to:
Shellfish Microbiology and BTX
Cefas Weymouth laboratory
Barrack Rd,
WEYMOUTH, Dorset
DT4 8UB
Please note that old address labels may be used up until new labels are issued. In this case, write 'Class' and/or 'BTX' on the shipping label accordingly if the box contains *E. coli* and/or Biotoxin samples so that they can be directed to the correct laboratory on arrival at Cefas.

Samples destined for Fera, York: Samples should be sent using the relevant prepaid labels to:
FAO Frankie Smith/Melanie Holland,
Fera Science Limited,
York Biotech Campus
Sand Hutton,
YORK, North Yorkshire
YO41 1LZ
Please note that old address labels may be used up until new labels are issued.

In case of emergency (for example in case of industrial action by Royal Mail staff), the alternative courier service will be either TNT or Parcelforce. We will advise you of the revised transport arrangements if contingency measures are required.

There may also be times when emergency situations affect laboratories and when samples need to be directed to an alternative testing laboratory. We will advise you of the revised arrangements if such emergency arises.

10. SAMPLE SUBMISSION FORM

All samples must be accompanied by one or more submission forms:

- **Each unverified/VFS sample** collected by Industry must be accompanied by an Industry sample submission form, completed in full and accurately by the industry collector and signed. The template for this form is available on the Shellfish Partnership page of the Cefas website. You must not accept Industry samples if not accompanied by a fully completed and signed form or if showing incorrect details which Industry cannot amend. The form must include the actual location of the sample (not pre-printed OS NGRs or co-ordinates).

- You must also fill in a Cefas sample submission form for **each verified, VFS or unverified sample** that you submit (see below when more than one sampling officer are involved in the collection of unverified or VFS samples)**.** Blank sample submission forms are provided to you by the laboratories and are also available on Shellfish Partnership page of the Cefas website. The form must be completed in full and accurately. Incomplete or inaccurate submission forms may lead to the

rejection of samples. The previous version of the submission form can continue to be accepted by the laboratory until printed stocks have ran out.

When filling in the Cefas sample submission form:

- Please use black ink and capital letters, where possible.
- All dates must be recorded as dd/mm/20yy and times in 24h clock.
- All OS NGR must be recorded to 10m accuracy minimum (e.g. NS12345678)
- All temperatures must be recorded in °C.
- You are allowed to pre-print the following information on the Cefas submission forms: Production area, site name, SIN, Pod number, species and name of sampling officer. The rest of the information requested on the form must be **hand filled** at the time of collection of the sample or soon after. **To protect personal data, there is no longer a requirement for mobile phone numbers to be added to the submission form.**

Situations when more than one sampling officer are involved in the collection of unverified or VFS samples: It is acknowledged that there are circumstances when more than one sampling officer are involved in the verification of a sample collected by Industry (for example: verification by one officer but sample handed over to another). In this case, as the officer filling in the form, you must liaise with colleagues to ensure that you have all the information that you need to complete the form and you must log the initials of the sampling officer(s) involved in the onshore verification and handing over against each of these sections on the form.

You must fill in the following information on the **Cefas sample submission form**:

- **For all samples**:
  - Testing required: Circle either *E. coli*, toxins or chemical contaminants
  - Details of site: production area, site name, SIN, Pod number
  - Your name
  - Storage of sample prior to dispatch: tick Yes or No and if samples have been stored record the temperature and duration of storage (if the samples were stored by Industry, tick Yes but write “unknown” on the form).
  - Date of last and next harvesting if known. If this information is not known, write N/A or “unknown” on the form This information will support discussions with FSS and local authorities about follow up monitoring should a high result be recorded with the sample.
  - Specific details for *E. coli* samples:
    - Where you or Industry is asked to collect an additional sample for example for further dilution testing, you should tick the ‘**Resample’** box on the submission form.
    - Where you or Industry is asked to submit a sample from a site undergoing classification, you should tick the “**Sample from area pending classification**” on the submission form.
  - Any other relevant information:

- In addition to the information requested, you must report unusual observations (e.g. weather, boating activity, dredging, animals in water, plankton bloom, etc.) which can help target investigations and possible remedial actions. Information on harvesting activity will also be useful.
- For razor samples: you must provide the name and licence number (PLN) of the vessel used to collect these samples to verify that these were acquired in compliance with the new legislation on razor clam fishing.

- **For each verified sample**, tick the "Verified sample" box and record the following information in the Verified sample section:
  - Date and time of collection
  - Actual location of sampling in OS NGR
  - Confirmation that you have collected the *E. coli* sample from within the RMP tolerance (or RMZ boundaries if site defined by RMZ) or the toxin/ or chemical contaminants sample from within the boundaries of the zone. If you tick "no", add reason why in the "other relevant information" box.
  - Method of collection (Please note that the option "hand-picked" should be ticked when samples are collected from a sampling box or when shellfish are manually removed from a shellfish line)
  - Temperature: You must take the temperature of the surrounding seawater at the time of sampling. Where this is not possible (e.g. for inter-tidal shellfish sampled dry) the between-shellfish temperature of the sample should be recorded immediately after collection.

- **For each unverified or VFS sample**: tick the relevant "unverified" or "verified from shore" box and record the following information in this section:
  - Date and time of collection
  - If the actual location of sampling provided by Industry was given in Lat/Long format, convert it to OS NGR and record it here
  - For sites verified from shore: location (as OS NGR) from which you are verifying and time when sampling was verified (if another sampling officer witnessed this element, please enter their initials here).
  - Reason why the sample was not verified.
  - Date and time when the VFS/unverified sample was handed over to you (if another sampling officer collected the sample on your behalf, please enter their initials here)
  - Sample temperature when handed over: you must measure and record the between-shellfish temperature of the sample at the time it is handed to you. To do this the temperature probe should be placed in the centre of the bagged shellfish sample.

11. CONTACT INFORMATION

Sampling officers' enquiries relating to the delivery of the FSS monitoring programmes (including monitoring points, frequency of sampling, actions in case of breach of pre-defined levels, general queries or problems relating to sampling) or to sample collection/delivery should be referred to the Cefas Programme Co-ordinators listed in Table 4.

Table 4: Name and contact details of the Cefas programme co-ordinators responsible for the delivery of the *E. coli*, toxins and chemical contaminants programmes

Monitoring programmes	Cefas Programme Co-ordinators
***E. coli* Monitoring Programme - Cefas**	ecoliscotland@cefas.gov.uk
Chemical Contaminant & Toxin Monitoring Programmes	biotoxinmonitoring@cefas.gov.uk

Industry enquiries and complaints: We advise that you ask Industry to raise any query/concern they may have relating to sampling with FSS. We ask that you report any Industry complaint you receive directly to Cefas by email. If you are exposed to any form of unacceptable behaviour, you must report it to HMMH management who will immediately inform Cefas.

12. HEALTH, SAFETY & BIOSECURITY ADVICE

You must comply with the HMMH Health and Safety policies and procedures. This includes compliance with all safety measures prescribed in risk assessments relevant to you travelling to the agreed sampling locations and the collection and handling of shellfish samples from such areas for the purpose of the FSS monitoring programmes. The drafting, implementation and review of all relevant H&S documentations are the responsibility of HMMH.

When undertaking sampling duties, you must be mindful of the risks of introduction or transfer of aquatic pathogens and invasive species to the areas you visit, through your sampling activities. You must comply with minimum biosecurity measures such as cleaning and disinfection of instruments, equipment and shoes/boots between sites and not driving/parking onto beaches or in close proximity to shellfish beds. All disposable items must be treated as clinical waste. Advice on suitable disinfectant and disinfection procedures are available from MD. As a minimum, MD recommends removing all organic matter (e.g. mud) from PPE and equipment surfaces, followed by the application of Virkon S or Virkon Aquatic S at 2% and with a minimum contact time of 10 min (or spray onto clean surface and leave to dry). You can find a list of other suitable disinfectants at: http://www.defra.gov.uk/aahm/guidance/disinfectant/list/.
When making working solutions of Virkon, or equivalent disinfectant, care must be taken if using the powdered form. These disinfectant powders can be harmful if inhaled, so utilising tablet form or pre-made disinfectants should be the preferred method to

minimise risk. If powdered forms must be used, then the solution should be made up in a well-ventilated area in batches that minimise exposure. Respiratory protection for those making up disinfectant solutions should be considered, especially where the powdered form is used with regularity. At all times when preparing any disinfectant solutions gloves and eye protection should be used to limit exposure pathways.

When using the disinfectant on site care must be taken if spraying to avoid creating excessive aerosols. Disinfectants should be used in a well-ventilated area and PPE such as gloves and eye protection should be available to avoid contact with the disinfectant.

To prevent environmental impact during field use, disinfectants should only be used away from watercourses and only sprayed on surfaces which have already been rinsed and cleared of organic debris using clean water (a portable pressure washer may be used for this purpose). This rinse step is best conducted on return to the car. When using Virkon, a spraying method is recommended to reduce the volume of disinfectant used. Using a tray to collect mist/drops and leaving to dry will avoid release of Virkon in the environment.

You must also be mindful of the health status of the sites that you visit and schedule your visits to ensure that the risk of transfer of pathogens and invasive species from site to site is minimised. We will advise you when new designations are published. You can also find details of sites under specific designations and for which specific movement controls do apply by contacting Scottish Government Marine Directorate (MD). MD maintains up to date lists and maps of designated areas on the following links: notifiable diseases page on the Scottish Government website

You must familiarise yourself with biosecurity plans operated by operators in each harvesting area and with rules that apply to site visitors.

Where new risks of transfer of specific fish or shellfish pathogens are identified, the requirement for implementation of additional biosecurity measures will be discussed between Cefas programme co-ordinators and HMMH as soon as reasonably practicable following notification by MD.

If you wish to transfer shellfish between sites for the purpose of the FSS official monitoring programmes, you must contact the Fish Health Inspectorate office and obtain written approval prior to any transfer taking place. The same applies if Industry wishes to transfer shellfish for the purpose of sampling for the FSS programme.

If you observe unusually high shellfish or fish mortalities during the course of your activities, you must report your findings to the Fish Health Inspectorate:

Fish Health Inspectorate,
Marine Directorate
Marine Laboratory
375, Victoria Street
Aberdeen AB11 9DB
Tel: 0131 244 3498
Email: MS.FishHealth@gov.scot

You can find information on non-invasive aquatic species and how to prevent their introduction and spread on the GB non native species Secretariat webpage. This website includes access to identification sheets for all UK invasive species.

Change record

Version	Date released	Change
1	29 March 18	New Shellfish Partnership protocol drawn up at contract start
2	6 July 18	Section 5: • Clarification as to when actual sampling location can be reported in degrees and minutes • Clarification as to where unverified samples should be collected from • Further clarification on verified from shore and unverified conditions • Clarification on the format required for reporting of latitude/longitude positions and requirement for conversion Section 8: • Introduction of provisions for sharing of transport box for E. coli and toxin samples destines to Cefas Weymouth Section 9: • Amendment to labelling of samples destined to Cefas Weymouth Section 10: • Amendment to sample submission form, now combining E. coli toxin and chemical contaminants programmes requirements. • New additions to sample submission forms • Reference to HMMH unverified sample submission form for unverified and verified from shore samples Throughout: o Reference to Industry protocol for collection of shellfish (V1 issued 06/07/18)
3	20 December 18	Section 1: • “should” replaced by” must” in a number of sentences • Addition of FSS definitions for verified, unverified and verified from shore samples • Addition of note to clarify that samples not meeting the protocol requirements will be rejected Section3: • Addition of paragraph re. liaison with industry • Addition of notes in 1st paragraph re. possible requirement for additional samples. • Addition of note referring to late samples not being accepted around bank holidays and Christmas (unless pre-arranged) Section 4: • Addition of section relating to equipment required for industry sampling Section 5: • Addition of reference to transition period (Jan 19) • Addition of notes about sampling officers having copies of blank unverified submission forms to hand out to collectors

		• Clarification of what constitutes a “verified from shore” sample • Change to recording of location of sample collection when harvesters do not provide information • Withdrawal of option where collectors do not have GPS, plotter or charts to confirm location of sampling • Addition of reference to EURL Good Practice Guide Section 7: • Minor change to wording Section 8: • Addition of section clarifying how industry will collect and hand over samples • Addition of note stating that the HMMH unverified sample submission for is available from Cefas website • Clarification on requirement for safety checks Section 9: • Update to Fera contacts Section 10: • Addition of note clarifying that unverified/verified from shore samples must be accompanied with completed unverified submission form or they will be rejected at the laboratory • Instructions for measuring shellfish temp for harvester-collected samples added Section 11: • Update to Fera contacts Section 12: • Deleted link to FRS disinfection protocol – no longer available on Marine Scotland website Appendix 1 added
4	8 August 2020	Document updated throughout to comply with UK Accessibility Laws & list of abbreviations added Document title amended Throughout the document: update to document links Section 1: • Remove reference to specific EU legislation • Add reference to sampling officers being required to record their location when verifying from shore Section 2: • Add statement to clarify protocol applies to sampling officers Section 3: • Add requirement that a minimum notice is required to a change to the weekly sampling schedule and that testing by laboratories will be subject to capacities not being exceeded • Additions to chemical contaminants section Section 5: • Reference to FSS RMP list and requirement to contact FSS if sampling at RMP is no longer possible added • Changes to Lat/Long format required • Addition of requirement to record location of verification from shore

		• Removed reference to Good practice guide as this document is no longer current (revisions from EURL awaited) • Added reference to a change to the way the nature of samples is recorded on submission form • Added clarification to section on razor trial to specify that sampling can only take place when fishing is permitted by Marine Scotland Section 8: • Added that Industry submission forms must be completed in full and accurately and clarify that sampling officers must not accept samples if forms are not completed/accurate or with pre-printed locations • Clarification that sampling officers must not collect samples that have been left unattended and must not arrange for samples to be left unattended. • Clarification that samples must not be re-immersed after collection • Clarification that overnight storage by Industry is allowed for razor and surf clams but conditions apply. • Update to packing section to include reference to new box (Igloo profile 16) Section 10: • Update to details required on sample submission forms • Clarification on requirements for temperature measurements Section 11: • Update to contact details Section 12: • Reference to compliance with Government advice and restrictions re. COVID19 Appendix 1: EURL Good Practice Guide removed New Appendix 1: Nearby.org added Protocol to be implemented from 31/08/2020
5	16 September 2020	Clarifications provided, at HMMH request, on the following sections: Section 3: • requirement for prior notification when samples are collected before 07:45 or between 07:45 and 09:00am Section 4: • Equipment provided by SSQC Section 5: • Emailing of converted NGRs when conversion cannot be done prior to sample packing Section 8: • What you need to confirm or ask for before you can accept a sample and submission form from Industry; what you must not do • Use of colour bags and cable ties for the various programmes • Addition of reference to Thermos boxes used by SSQC and conditions for use of these boxes Section 10:

		• When you can't accept a sample/submission form Other additions made to the text in the following sections: Section 3: • Requirement for labelling of boxes for *E. coli* samples collected between 7:45 and 9:00am Section 4: • Requirement for damaged boxes to be returned to the laboratories • Requirement for management of supplies provided by the laboratories to reduce plastic use and wastage Section 5: • Simplification of the text relating to identifying the correct sampling location for E. coli, toxin or chemical contaminants samples Section 8: • Reference to the provision of bags/cable ties to Industry by the sampling officers • Clarification re. who the Industry representative handing over the sample should be. Section 10: • Addition of section on industry enquiries/complaints and reporting of unacceptable behaviour. Throughout the document: • Update to arrangement for samples collected from Orkney (Westray) Corrections made to text in Section 8 – point 9
6	02 December 2020	Typos and format corrected throughout the document (incl inconsistent format of footers in previous version). A number of duplications in the text have been removed and some text has been moved between sections to simplify the document. Changes made to the following sections, following issues and observations made during implementation of Versions 4/5 and to incorporate further feedback from the laboratories and FSS: Section 1 updated Sections 3 & 8: • Clarification that samples should be stored overnight if they cannot be dispatched prior to the cut-off time for SSQC/Post-office. Section 3: • Added section on suspension of sampling at a site. • Added reference to possible requirement for adhoc chemical contaminants sampling and possible request for additional sample if previous sample reported as unsuitable/insufficient on arrival at lab. • Added requirement to notify laboratories of schedule changes before the samples arrive at Fera/SSQC/Cefas. Section 4: • Equipment routinely provided by the laboratories or provided as and when requested.

		Section 5: • renamed “Collection of samples” (previously sampling method) • Added reference to Appendix 2 • Clarification of process if you cannot comply with the sampling location requirements. Sections 5, 8 & 10: • Amendment to instructions re. pre-printing of forms by Industry Section 6: • Clarification that old/excessively large animals should not be sampled Section 7: • Addition of Carpet shell clams and Pullet shell clams to the list of species in the table • Removal of reference to NRL guidance re. volumes of shells required for submission. Section 8: • Reference to blank Industry forms being provided by HMMH, where required • Clarification on allowable/non-allowable pre-printing of submission forms. • Clarification that Industry samples should not be accepted if OS NGR provided is visibly not within the area’s boundaries. • Clarification on cable ties/bags provided by laboratories • Addition of requirement to write date and time of collection of *E. coli* samples on label of boxes sent to Cefas (also in Section 9) • Clarification that Coleman 6216/15 and Igloo Profile 16 box are suitable for storage and transport for all types of samples • Clarification re. rejection of RZ/SC samples not meeting set storage conditions. Section 9: • update to Fera’s address • Addition of reference to emergency laboratory situations Section 10: • Addition of possibility to pre-print some details on the Cefas sample submission form • Addition of reference to situations when more than 1 officer is involved in verification/handing over of Industry samples. Section 11: • Update to distribution list for weekly sampling schedules • Update to contact details for S. Panton List of abbreviations updated Appendix 2 added: example of details of RMP/RMZ details shown on FSS listing Protocol to be implemented from 04/01/2021
7	30/08/2024	Section 1: • Removed reference to FSS DVD

		• Updated reference to Industry protocol and submission form Section 3: • Update Section throughout to include reference to SMC and implementation of this system for monitoring management (including scheduling of samples) • Change to minimum period required before dormancy can be considered • Added reference to void results • Clarified conditions relating to Friday submission of E. coli samples • Clarification of risk re. collection of early E. coli samples from remote areas (before 8:45 am) – preference being for samples to be collected after 8:45 • Clarified phytoplankton trigger levels in table 2 Section 5: • Update throughout to include reference to SMC • Clarified definition of what constitutes a remote are in relation to sample transport Section 8: • New specification for box packing and labelling of boxes containing E. coli samples • New packing information for Igloo Latitude 16L 15L coolbox • Update to instructions re. use of coolpacks (freezing requirements, packing and number to be used) Section 9: • Clarified remote areas • Update to Fera contact Section 11: • Update to contact details for laboratories Section12: • removed reference to COVID 19 • update to link for invasive species ID sheets
8	22/05/2025	Section 8: • New harmonised packing instructions for Coleman 6216/6215, Igloo profile 16 and Igloo latitude 16 boxes. 7 ice packs in all boxes now standard. This change was implemented earlier in 2025. The change reflects the updated instructions provided to HMMH by email. Section 12: • New information added relating to the health and safety considerations of using Virkon for disinfection of equipment.
9	17/04/2026	Document updated throughout to reflect the change of name of SSQC Ltd to SAS Ltd

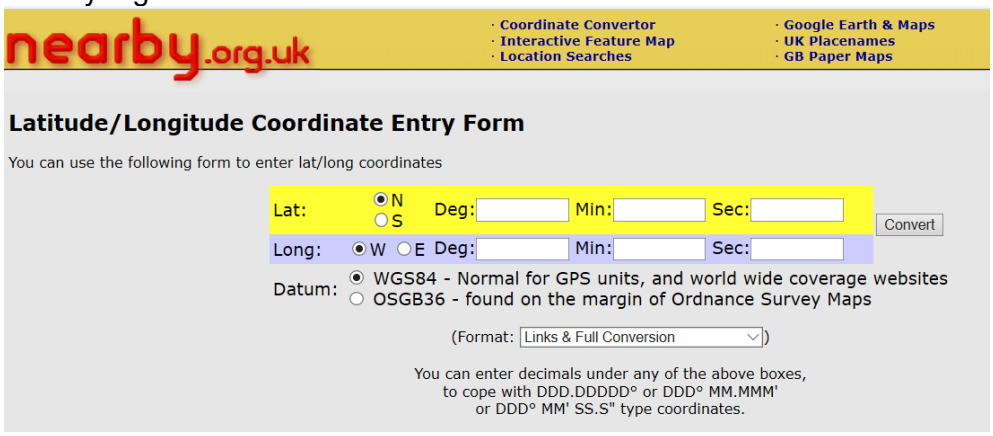
		Section 3: • Taxonomy update for *Lingulaulax polyedra* Section 5: • Specific change made at FSS request in relation to sampling representativeness (depth profile) • Addition of reference to coordinate system WGS84 Section 8: • Update to wording of temperature requirements for storage and transport to clarify temperature range is 0 to 10°C
10	09/11/2026	Document updated throughout to remove reference to SAS Ltd and to detail the specific arrangements of the use of the cold chain transport service, DFDS, for samples collected on the Shetland Islands. Section 3 • Table 2 – updated to add the parent causative toxin as well as the syndrome to standardise between all methods and poisoning type descriptions. Section 5 Update to text in relation to samples collected outside of area boundaries: they will be rejected on submission. Section 10 • Withdrawal of requirement to include telephone number on submission forms. Section 12 • Update to name for Marine Scotland Science – now Marine Directorate

List of abbreviations used in this document:

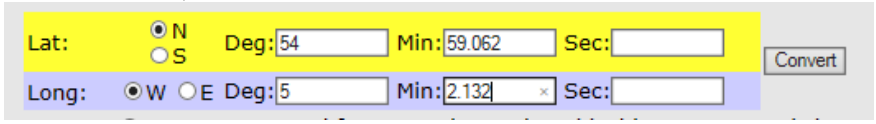
Cefas:	Centre for Environment Fisheries and Aquaculture Science
Fera:	Fera Science Limited, formerly the Food and Environment Research Agency
FSS:	Food Standards Scotland
GPS:	Global positioning system
HMMH:	Hallmark Scotland Ltd
Lat/Long:	Latitude and Longitude coordinates
MCA:	Maritime Coastguard Agency
MD:	Marine Directorate
Min.:	Minimum
OC:	Official control
PAHs:	polycyclic aromatic hydrocarbons
PCBs:	polychlorinated biphenyls
RMP:	Representative monitoring point
RMZ:	Representative monitoring zone
SAMS:	Scottish Association for Marine Science (SAMS)
SIN:	Site identification number
VFS:	Verified from shore (sample)

Appendix 1: Screenshots of Nearby.org and examples of use

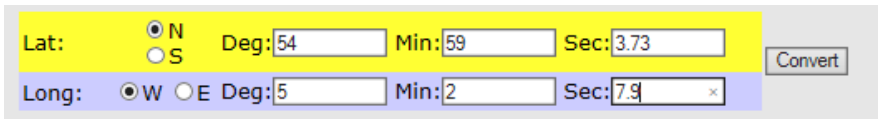
To convert Lat/Long provided by Industry into NGR, please navigate to this page of the Nearby.org website:



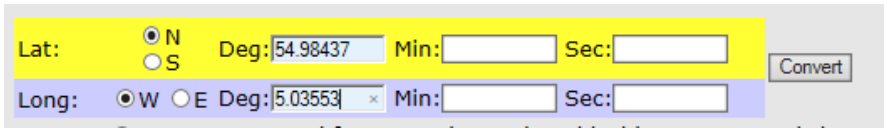
It is important that the Lat/Long coordinates are entered correctly, paying attention to the units used by Industry. For example, a location in degrees and decimal minutes is 54°59.062'N, 5°2.132'W and will be entered as:



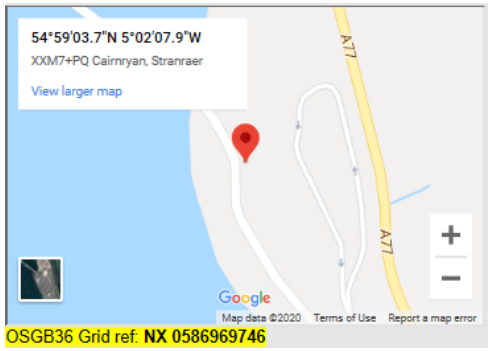
The same location recorded in degrees, min, sec is 54°59'3.73''N, 5°2'7.9''W. and will be entered as:



And the same location recorded in decimal degrees is 54.98437, -5.03553 and will be entered as:



When pressing the "Convert" button, the conversion for all 3 sets of Lat/Long readings above will provide the same Grid Ref: NX 0586969746 – please write this NGR on your sample submission form.



Appendix 2: Example of details of RMP/RMZ details shown on FSS classification listing

Below is an extract of the FSS classification listing (some columns of the FSS document have been hidden) showing the details of 3 production areas. Please note that these are shown for illustration purposes for this protocol only; refer to the published FSS listing for the latest details for these sites:

- Site 1 (Dunstaffnage) has a set *E. coli* RMP (location shown in column K) and a set tolerance around this RMP (shown in column O). The site is also sampled for toxin (shown in column S) but has a separate RMP for toxin samples (shown in column T).
- Site 2 (Eilean Gainimh) does not have a set RMP but a RMZ is defined. FSS is currently showing this by including NGRs of the boundaries of the zone in columns K to P. RMZs do not have tolerances defined and hence no *E. coli* tolerance is shown in column R.
- Site 3 (Eriska shoal) has a set *E. coli* RMP (location shown in column K) and a set tolerance around this RMP (shown in column O – please note that a tolerance is site specific; the tolerance for this site is not the same as that for site 1). This site is not sampled for toxin as indicated in Column S.

Column B	Column C	Column D	Column E	Column F	Column H	Column K	Column L	Column M	Column R	Column S	Column T
Local Authority	**Production Area**	**Site Name**	**SIN**	**Species**	**Boundaries**	**E. coli Sample RMP (RMZ NGR - 1)**	**RMZ NGR - 2**	**RMZ NGR - 3**	**E. coli Tolerance limit Sample depth**	**Biotoxin_RMP**	**Biotoxin RMP ref - if different from Micro RMP**
AB (Argyll and Bute Council)	Dunstaffnage Cockles	Dunstaffnage Bay	(AB-696-1511-04)	Common cockles	Area bounded by lines drawn between NM 8837 3452, NM 9022 3450, NM 9022 3414 extending to MHWS	NM88133382			Tolerance = 50m Depth = n/a	YES	NM90113404
AB (Argyll and Bute Council)	Eilean Gainimh	Eilean Gainimh	(AB-870-2379-24)	Pullet Carpet Shell	Area bounded by lines drawn between NM 88924 47749, NM 90271 47932, NM 90144 47076, and NM 88864 47066	RMZ - NM 8989547295	NM8986247077	NM9014447076	Tolerance = N/A Depth = N/A	NO	
AB (Argyll and Bute Council)	Eriska Shoal	Eriska Shoal Cockles	(AB-490-907-04)	Common cockles	Area bounded by lines drawn between NM88844188 to NM89124229 and from NM89794241 to NM89834248 extending to MHWS	NM89474213			Tolerance = 100m Depth = N/A	NO	

Appendix 3: FSS SAMPLE TRANSPORT ARRANGEMENTS FROM SHETLAND FROM 20th July 2026

1. **Scope.**

The below is an extract of Annex F included in the signed HMMH CCN C8644/6. It is provided for reference only, to document the key elements of the transport arrangements agreed for Shetland microbiological and toxins samples destined to Cefas Weymouth from 20th July 2026. Sampling officers and HMMH are required to follow all elements of CCN C8644/6, not just those listed below.

This Appendix is valid until further notice. Monday and Tuesday collections shall be transported via DFDS on the day of collection. Wednesday Royal Mail dispatch shall be used only by exception where Monday or Tuesday collection is not supported by Industry or where otherwise agreed in writing with Cefas.

2. Equipment, consumables and maintenance responsibilities

Item	Supply, maintenance and replenishment responsibility
DFDS depot fridge and fridge thermometer	Cefas to confirm provision and maintenance arrangements. HMMH to monitor and report availability or temperature issues immediately.
Temperature log and shelf labels	Cefas to provide or approve format. HMMH to complete records and submit monthly evidence.
Temperature loggers	Cefas to provide pre-programmed loggers or written instructions for use. HMMH to use only loggers assigned to the relevant shipment date and to return or retain unused loggers as instructed.
Polystyrene transport boxes, large blue box liners, security ties, all EC and BT sample bags, cable ties, packing tape and address labels.	Cefas to confirm supply arrangements. HMMH to manage stock at the DFDS depot, notify Cefas of shortages and ensure only suitable packaging is used.
DFDS consignment labels/Cefas address labels.	HMMH to obtain and affix any labels issued by DFDS as part of the booking process. HMMH to affix Cefas address labels to boxes as well as DFDS label.

3. Collection, depot delivery and fridge requirements

1. HMMH shall collect samples from shellfish harvesters, confirm sample details and condition, double-bag samples, complete the required submission forms and transport the samples to the DFDS depot in coolboxes with frozen cold packs. The DFDS depot address is DFDS, Greenhead, Lerwick, ZE1 0PY.
2. For *E. coli* samples, HMMH shall comply with the 8:30 cut-off times for collection of samples, delivered via DFDS and Royal Mail. If collection is before 08:30 HMMH is requested to mark the sample bag with a black stripe or similar marking to enable swift prioritisation at the receiving laboratory.
3. HMMH shall place bagged samples in the designated fridge at the DFDS depot. Samples for *E. coli* testing shall be kept separate from biotoxin samples within the fridge. HMMH shall follow any shelf allocation or labelling instructions issued by Cefas.

4. Where a Sampling Officer is the first to place samples in the fridge on a shipment day, they shall record the fridge temperature, date, time and initials on the temperature log. If the refrigerator temperature is above 4°C, or if the fridge is unavailable, damaged or unsuitable, HMMH shall notify Cefas immediately.
5. All samples for Monday or Tuesday DFDS shipment shall be delivered to the depot fridge by 15:00, or earlier where required by ferry schedule changes, DFDS cut-off requirements or written instruction from Cefas.

4. Packing requirements

1. For each Monday or Tuesday DFDS shipment, HMMH shall designate one Sampling Officer to undertake final packing and shipment booking. Samples for E. coli testing and samples for biotoxin testing shall be packed in separate transport boxes (boxes currently in use and provided by DFDS are: 25kg road freight boxes with lid. Dimensions: Length 800mm Width 400mm Height (inc lid) 220mm – note that this may change)



2. Each transport box shall be lined with one or two blue plastic liners before samples are placed inside. Samples shall be packed securely and accompanied by the correct completed submission forms.



3. HMMH shall use only temperature loggers assigned to the relevant shipment date. Unless otherwise instructed in writing, one logger shall be placed in a sealed plastic bag in the middle of the load. Unused loggers shall be returned, retained or packed as instructed by Cefas.



4. HMMH shall close and secure the liner with a security tie, fit the lid, secure the box with packing tape and apply the required Cefas address label and any DFDS consignment label.
5. Boxes containing *E. coli* samples shall be clearly marked “EC”. Boxes containing biotoxin samples shall be clearly marked BT. All boxes shall be clearly identifiable as Cefas consignments and suitable for refrigerated transport.
6. Where samples are mixed in a box, to save on transport and packing costs, this must be communicated to the laboratory prior to boxes being receipted at the lab. Boxes and bags must be clearly labelled.

5. DFDS booking, dispatch and evidence requirements

1. HMMH shall ensure that the consignment is booked into the DFDS system using the Cefas DFDS credit account number before DFDS reception closes and before any applicable consignment cut-off time. HMMH shall confirm the number of boxes in the consignment.
2. HMMH shall ensure that any DFDS labels and the shipment number issued during the booking process are affixed to the relevant boxes as well as the Cefas address label. When the boxes are packed and shipments booked, HMMH shall take photographic evidence of the label on each box and hand over to DFDS.
3. DFDS will then assume responsibility for the boxes once packed, labelled and booked in. DFDS will be responsible for moving the boxes to the loading bay, loading on to the refrigerated trailer and delivery to the Cefas laboratory.
4. For each DFDS shipment, HMMH shall retain or provide on request evidence of the shipment date, number of boxes, DFDS booking or consignment reference where available, confirmation that required temperature loggers were included, and photographic evidence of DFDS booking confirmation document. HMMH shall email the receiving laboratory with the number of BT and EC boxes shipped and the DFDS booking reference/shipment(s) number on the day of shipment to enable the laboratory to track sample delivery.

6. Wednesday Royal Mail dispatch

1. Where Shetland shellfish samples are collected on a Wednesday and Royal Mail dispatch is approved or required, HMMH shall follow the existing Royal Mail process and shall transfer samples into Royal Mail custody on the day of collection before the applicable Special Delivery cut-off time.
2. Wednesday Royal Mail dispatch of *E. coli* samples is an exception and shall be avoided where Monday or Tuesday DFDS shipment is reasonably available. HMMH shall record the reason for any Wednesday Royal Mail dispatch in the daily update or monthly report.
3. For *E. coli* samples, HMMH shall comply with the 8:30 cut-off times for collection of samples, delivered via DFDS and Royal Mail.

7. Contingency arrangements

1. Where the Monday or Tuesday DFDS route cannot be used, HMMH shall seek written instruction from Cefas before using an alternative route, unless immediate action is required to protect sample suitability.
2. Where contingency arrangements are required and the DFDS route cannot be used, examples may include:
    - Rescheduling of samples not already collected.
    - For Biotoxin samples already collected, posting by Royal Mail the same day before the cut-off time for special delivery to Cefas Weymouth (currently 12:30pm), or posting by the following day, or booked on the next day DFDS shipment (if available).
    - For *E. coli* samples already collected, posting by Royal Mail the same day before the cut-off time for special delivery to Cefas Weymouth (currently 12:30pm). *E. coli* samples may need to be disposed of and rescheduled if Royal Mail same day cut-off times cannot be achieved. This needs to be notified to Cefas on the day.
3. If immediate action is taken without prior written instruction, HMMH shall notify Cefas as soon as practicable and shall record the reason for the deviation and the action taken.
4. No overnight storage of microbiological samples is permitted unless expressly agreed in writing by Cefas.