Cefas

Cefas contract report C7871

FSA Reference: FS616026

Summary technical report for the UK National Reference Laboratory for foodborne viruses & bacteriological contaminants of shellfish – April 2019 to March 2020

July 2020

Summary Technical Report for the UK National Reference Laboratory for foodborne viruses & bacteriological contaminants of shellfish – April 2019 to March 2020

Final V1

20 pages

Not to be quoted without prior reference to the authors

Authors: James Lowther [(1)] and Craig Baker-Austin [(1)], Cefas Laboratory, Barrack Road, Weymouth, Dorset, DT4 8UB

Cefas Document Control

Report submitted to:	FSA
Date submitted:	09/07/2020
Project reference:	C7871
Project manager:	Sharron Ganther
Report compiled by:	James Lowther & Craig Baker-Austin
Quality controlled by:	Michelle Price-Hayward, 23/04/2020 Myriam Algoet, 28/04/2020; 01/05/2020
Approved by and date:	Sharron Ganther 09/07/2020
Version:	Final V1
Classification:	Not restricted
Review date:	N/A

Version Control History			
Author	Date	Comment	Version
James Lowther & Craig Baker-Austin	22/04/2020		Draft V1 for internal review
Michelle Price-Hayward	23/04/2020		Draft V2 for internal approval
James Lowther	24/04/2020	Update to PT section	Draft V3 for internal review
Myriam Algoet	28/04/2020		Draft V4
James Lowther & Craig Baker-Austin	01/05/2020	Update to report	Draft V5
Myriam Algoet	01/05/2020		Draft V6 for internal approval
Sharron Ganther	04/05/2020		Draft V7 submitted to FSA
Myriam Algoet, James Lowther & Craig Baker-Austin	03/07/2020		Draft V8 addressing FSA's comments
Sharron Ganther	09/07/2020		Final V1 submitted to FSA

Contents

SUMMARY TECHNICAL REPORT FOR THE UK NATIONAL REFERENCE LABORATORY FOR FOODBORNE VIRUSES AND BACTERIOLOGICAL CONTAMINANTS OF SHELLFISH: APRIL 2019 - MARCH 2020

Introduction

The Centre for Environment, Fisheries and Aquaculture Science (Cefas) Weymouth is designated as the UK National Reference Laboratory (NRL) for foodborne viruses and bacteriological contaminants of shellfish. Previously the laboratory was designated for many years as UK NRL for monitoring bacteriological and viral contamination of bivalve molluscs; this contract was renewed in 2017 as a Government to Government agreement between Cefas and the Food Standards Agency (FSA). In 2018, the laboratory was separately designated as UK NRL in the newly formed network of NRLs for foodborne viruses (initially covering non-shellfish matrices only). Following the UK's decision to leave the EU, the European Commission redistributed the responsibilities of the former EURL for monitoring bacteriological and viral contamination of bivalve molluscs (based at Cefas) between four different EURLs:

- EURL for foodborne viruses (all matrices including bivalve shellfish)
- EURL for *Escherichia coli*
- EURL for *Salmonella*
- EURL for marine biotoxins and classification and monitoring of bivalve mollusc production areas

effective from 1 January 2019. Since 1st April 2019 the two shellfish related NRL designations at Cefas have been combined under the current single designation (although the NRL maintains different directors for foodborne viruses and bacteriological contaminants of shellfish). As a result of restructuring at the EURL level, the NRL at Cefas is one of multiple UK NRLs appointed within three of the four NRL networks described above. The other NRLs appointed by FSA are:

- The Agri-Food & Biosciences Institute (AFBI) for marine biotoxins
- Public Health England (PHE) for *Salmonella* and *E.coli* (in non-shellfish matrices)

The description of activities included herein comprises co-ordination of UK Official Control Laboratories (OCLs), provision of advice to the Competent Authority (CA) and collaboration with the EURL through participation in comparative testing, research and development and representation at EURL workshops (where relevant), support during outbreaks, and provision of reference materials among others. The roles and responsibilities of the NRLs have changed significantly in recent years. The services required to be delivered under the scope of the current Cefas/FSA agreement include the following basic duties of the National Reference Laboratory, based on Articles 100-101 of Regulation (EU) 2017/625:

(a) cooperate internationally in their area of competence (and where possible, the relevant EU-RL);

(b) collaborate with international laboratories (where possible with the relevant EU-RL) and participate in training courses and inter-laboratory comparative tests organised by these laboratories;

(c) coordinate the activities of OCLs responsible for the analysis of samples to ensure the verification of compliance with feed and food law;

(d) where appropriate, organise comparative tests between OCLs and ensure an appropriate follow-up of such comparative testing;

(e) ensure the dissemination of any information required by the competent authority;

(f) provide scientific and technical assistance to the Competent Authority for the implementation of MANCPs in accordance with Article 109 and of co-ordinated control plans adopted in accordance with Article 112 of Regulation (EU) 2017/625;

(g) where necessary, conduct training courses for OCL staff;

(h) upon request by the appropriate authority, actively assist in relevant emergency situations and in cases of non-compliance of consignments, carry out confirmatory analysis;

(i) be responsible for carrying out other specific duties as required by the competent authority, where appropriate and by prior agreement.

This technical report summarises the activities carried out by the NRL according to the requirements of Regulation (EC) No. 882/2004 and Regulation 2017/625, as defined in the Service Level Agreement (SLA) between the FSA and Cefas over the time period April 2019-March 2020.

1. Objective 1. Provision of secretariat services

1.1. *Dissemination of information via NRL website*

The NRL website has been completely redesigned to combine the contents of the previous separate websites for the NRLs for foodborne viruses and monitoring of bacteriological and viral contamination of bivalve molluscs. Relevant updates are shared across both NRL functions, within a single landing page. An overview document outlining all proposed changes was submitted to FSA for review (summer 2019). The most up to date version of the website can be found here: https://www.cefas.co.uk/nrl/ .

1.2. *Reporting to FSA*

Quarterly progress reports (RAG reports) were provided to the FSA against the key NRL objectives and tasks. In addition, the NRL has provided regular reporting on a more informal basis to the FSA by email, telephone (where appropriate) and face-to-face meetings held in Weymouth on 10th May and

01st October 2019.

1.3. *Dissemination of information/advice from engagement with international organisations*

No relevant information from the EURLs was provided during the reporting period. We have requested clarification on certain matters pertaining to classification (e.g. echinoderm inclusion in current regulations) from the EURL for marine biotoxins and classification and monitoring of bivalve mollusc production areas but have not received any advice to date.

In the early part of the reporting period the NRL provided regular updates to FSA and FSS on the progress of the European baseline survey for norovirus in oysters, organised by EFSA (final report published July 2019).

1.4. *Co-ordination of the activities of the laboratories responsible for Official Controls in the area of competence in the UK*

The eleventh meeting of OCLs undertaking bacteriological testing of bivalve shellfish was held at the Cefas laboratory on 1st and 2nd October 2019. Twenty-one delegates attended the two-day event. The first day (pm) consisted of a practical workshop-based session outlining a foodborne incident response following a shellfish-associated outbreak. A wide variety of topics were covered on the second day. These included OCL performance in PT, risks associated with pharmaceutical residues in shellfish, a summary of the UK's contribution to the EU-wide survey of norovirus in oysters, an update on shellfish classification, progress at ISO on revisions to relevant methods and standards, and discussion on recent changes to EU regulations pertaining to OCL testing. There was also some discussion on the future of the live bivalve network following Brexit, and the upcoming role of Cefas as an FAO (Food and Agriculture Organisation of the United Nations) reference centre in seafood safety. In particular, these discussions centred on how Cefas has replaced previous EURL designations (e.g. the virus and bacteriological aspects of the previous EURL), the subsequent roles and responsibilities and oversights in the vacuum created by the disbandment of the single EURL for bivalves and future work plans for the FAO reference laboratory in this arena of work.

Separate liaison meetings were held with Public Health England (PHE) and Public Health Wales (PHW) to maintain the use of NRL protocols and advice, to ensure a consistent approach to sample transport and microbiological examination of shellfish samples, as well as reporting of results and timely identification of results indicating non-compliance with legislative or statutory limits. Some specific issues have been highlighted that cross between NRL and classification areas, such as the need to provide better means of traceability through the microbial testing process and issues regarding the cool boxes used for sample transport to OCLs.

There are currently no Official Control requirements for foodborne viruses and as a result no UK OCLs are appointed in this area.

2. Objective 2. Advice and representation within the UK and internationally

2.1. *Provision of advice to the OCL Network*

The NRL provided advice throughout the year to OCLs (summarised in the quarterly RAG reports sent to FSA). Advice was also provided at the OCL meeting on 1st and 2nd October 2019 on the practical aspects of live bivalve mollusc (LBM) testing.

Miscellaneous advice was provided to the FSA and local authorities on a number of matters in the period. These include the following:

i. outbreak-associated matters regarding seafoods (October and November 2019)
ii. import testing and national monitoring plan sampling priorities to FSA (December 2019)
iii. NRL perspective on laboratory performance (e.g. Starcross laboratory, August 2019)
iv. advice to FSA on echinoderm testing and current risks and legislative requirements around classification (January and February 2020)
v. NRL opinion on the current Incident Schedule (January 2020)
vi. Confirmation of OCL and NRL capacities & status during COVID-19 (March 2020)
vii. assessing the potential for shellfish-borne transmission of SARS-CoV-2 (March 2020)

The NRL also provided *ad hoc* advice to Defra regarding current interpretation of EU regulations regarding the trade in shellfish between EU and USA (January and February 2020).

2.2. *Representation at relevant international meetings*

James Lowther as director of the UK NRL for foodborne viruses attended the 2nd workshop of NRLs hosted by the EURL in Uppsala, Sweden, 13-14th June 2019.

In accordance with instructions received from the FSA and UK government after change of Prime Minister on 24th July 2019 re: non-attendance at EU meetings in the lead up to Brexit, NRL representatives did not attend any subsequent EU meetings during the reporting period.

2.3. *Participation in other international activities*

No relevant activities were identified during the period.

2.4. *Advice on best practice*

2.4.1. Provision of technical advice and support to the CA in development and management of the OCL network.

The NRL contributed to a series of Seafish-led stakeholder meetings (July 2019 and October 2019) which were instigated following the elevated results at PHE Porton in July 2015. This contribution and follow-up included provision of information and data to different stakeholder groups (Seafish, SAGB, EA, FSA, etc).

2.4.2. Other advice

The NRL gave other advice to FSA in relation to the following:

i. Where relevant, current or upcoming amendments to ISO methods and the associated impact on shellfish-associated methods (generally provided within the quarterly RAG reports).
ii. Water quality and virus testing issues at offshore sites in the South West UK (various).
iii. Providing more detailed clarity around sampling expectations for Local Authorities (joint responses with classification team), November 2019.

Ad hoc advice was given to individual OCLs on the following aspects of the microbiological examination of LBM:

i. Appropriate methods for end-product testing (EPT) purposes in LBM, including *E. coli* and norovirus testing.
ii. Issues regarding time and temperature impacts on OCL testing.
iii. Changes to EU legislation (e.g. 2017/625) and associated impacts on OCL testing.
iv. Risks associated with vibrios in seafood produce in the UK, including testing approaches to identify and quantify these pathogens in shellfish matrices.
v. Scallop testing and current EU regulations.
vi. Traceability of samples through an OCL testing procedure.

2.5. *Maintenance of expertise*

Over the course of the reporting period the NRL has undertaken a wide variety of activities in support of maintenance of UKAS accreditation for a variety of bacteriological and viral methods in bivalve shellfish. A UKAS surveillance visit was carried out in October 2019. The recommendation of the auditors was that accreditation is maintained at Cefas for the current scope of accreditation to ISO/ IEC 17025:2005.

Laboratory expertise in testing fresh produce (including berries and salad vegetables) for viruses has been expanded with additional staff trained in the methodology.

Three placement-year students have been undertaking research projects with partial support from the NRL over the course of the reporting year:

1. Dawn Lau has been engaged in a project using whole genome sequencing data to assess risks associated with vibrios. This project is looking at the types of pathogenic vibrios circulating globally and compares these strains with those currently identified in the UK (e.g. from PHE) from a variety of foodborne sources. This data analysis will build upon and help maintain a UK-specific database for analysis of these foodborne pathogens.
2. Nicholas Yuen has been conducting a project to establish capability to utilise the commonly used norovirus surrogate viruses, murine norovirus and Tulane virus, within the laboratory. This capability will allow us to better understand the inactivation of norovirus and its interactions with shellfish.
3. Rohan Bapna has been carrying out a project to establish several faecal indicator culture methods in the laboratory. The methods include both bacterial indicators (such as faecal coliforms and E. coli) in water and F-RNA bacteriophages in shellfish flesh (comparing both the EU and the US methodologies). This project will strengthen our understanding and experience of alternative methods applied in other regulatory areas (potential trade partners).

2.6. *Involvement in standardisation activities relevant to work area*

NRL representatives continued to participate in a range of international standardisation programmes during the reporting period. Craig Baker-Austin as leader of ISO/TC34/SC9/WG27 "Vibrios" was involved in a variety of standardisation efforts related to vibrios, including reviewing FDIS documents and providing comments to the secretariat. James Lowther was leader of CEN/TC275/WG6/TAG4 "Viruses in foods" up until late 2019. The group has now been disbanded due to restructuring of the parent committees and completion of its activities, which included completion of the final draft and publication of ISO 15216-2:2019 in July 2019. James Lowther has also been appointed as convenor of an Ad hoc group within ISO/TC34/SC9 which is preparing an amendment to ISO 15216-1:2017. The amendment is necessary to address technical matters arising during the revision of ISO 15216-2:2019. Nationally the NRL participated in the BSI Food Microbiology Committee AW/9 during 2019-2020 and provided oral and written comment on standards relevant to the area of foodborne viruses and shellfish microbiology. Craig Baker-Austin provided a presentation on method standardisation at BSI AW/9 meeting 16th October 2019. More recently, we have been involved in reviewing relevant documentation from the BSI on methods impinging on our laboratory methods (e.g. *Salmonella*, seafoods, sample preparation etc). The NRL circulated key information on standards to the laboratory network and the CA, including changes to methods that impinged on current protocols. Where significant changes in testing methods were identified through the year, these were communicated to

the OCL network during the annual network meeting.

2.7. *Support with emergency situations*

The NRL provided advice and feedback on testing to FSA and PHE relating to two separate outbreaks of apparent foodborne norovirus illness; an outbreak in London and SE England during August linked to consumption of wakame seaweed salad, and an outbreak in SW England during August and September linked to consumption of oysters from Cornwall.

In addition, the NRL provided advice regarding virological testing to Poole LA during a shellfish-associated outbreak in November 2019. Food sample testing was not necessary on this occasion.

2.8. *Scientific and technical assistance with the implementation of MANCPs and co-ordinated control plans*

No assistance was requested during the period, other than a review of the National Monitoring Plan sampling priorities for 2020/2021. This was completed at the request of FSA's Imports & Exports Unit in December 2019.

3. Objective 3. Production of standard operating procedures, codes of practice and guidance documents

3.1. *Contribution to the development of standardised protocols and advisory documents*

The NRL facilitated best practice through provision of laboratory method protocols on the NRL website, including newly prepared protocols on the quantification of viruses in bivalve shellfish and fresh produce and the detection of viruses on surfaces. In addition, the protocol for the enumeration of *E. coli* was reviewed, updated and re-published.

3.2. *Validation of reagents*

No relevant activities were identified during the reporting period.

4. Objective 4. Compliance assessment via audits and ring trials

Note relating to the activity of the NRL for foodborne viruses: as there are currently no OCLs or candidate OCLs in the UK, no activity was scheduled or delivered this year for Objective 4 other than participation of the NRL in the international proficiency testing schemes (4.6). Sections 4.1 to 4.6 refer exclusively to activities delivered by the NRL for bacteriological contaminants of shellfish in the

reporting period.

4.1. *Assessment of OCL performance in whole animal distributions*

In November 2019, the NRL organised a PT distribution to the OCL network comprising whole Pacific oysters (*Crassostrea gigas*) and encompassing three separate samples (PT 80). Briefly, Sample 1: A single batch of 600 Pacific oysters was collected from a UK commercial harvesting area on the 25th November 2019. Prior to packing, the shellfish were placed in a large disinfected container and thoroughly mixed. Sample 1 comprised of approximately 24 randomly selected oysters from this bulk material. Samples 2 and 3 were prepared from a single batch of approximately 500 Pacific oysters collected from a UK commercial harvesting area on the 20th November 2019 and were tested to confirm the absence of *E. coli* and Salmonella. On arrival, the oysters were shucked and homogenised before being pooled together to form one homogenate. The pooled homogenate was aliquoted in 100 ml volumes on 21st November and stored at 3±2 °C. Prior to distribution, the homogenate aliquots were labelled as either Sample 2 or Sample 3. Sample 2 was spiked with *E. coli* (≈1.4 x 10^4 cfu/sample); Sample 3 was spiked with *E. coli* (≈2.7 x 10^3 cfu/sample) and *Salmonella* spp. (*S. typhimurium* at ≈1.8 x 10^2 cfu/sample). Whole matrix and spiked shellfish homogenate samples were distributed to all 11 UK OCLs to test aspects of the methodology not covered by the Cefas/PHE EQA shellfish scheme i.e. opening of shellfish and preparation of initial dilutions. Samples were dispatched using Royal Mail with the exception of laboratory 578 (due to the laboratory's location a courier service was used for this sample).

Ten OCLs received the samples within 24 hours of dispatch as recommended by the NRL with the exception of Laboratory 166 who received the samples on 27th November (2 days after dispatch). Information provided by the laboratories on the arrival temperature of the samples showed that the maximum temperature (with the exception of Laboratory 166) recorded by participants did not exceed the recommended transport temperature of <10°C set out in the NRL generic protocol. The increased arrival temperature (10.5°C) for laboratory 166 may have been due to the unexpected delay during transportation.

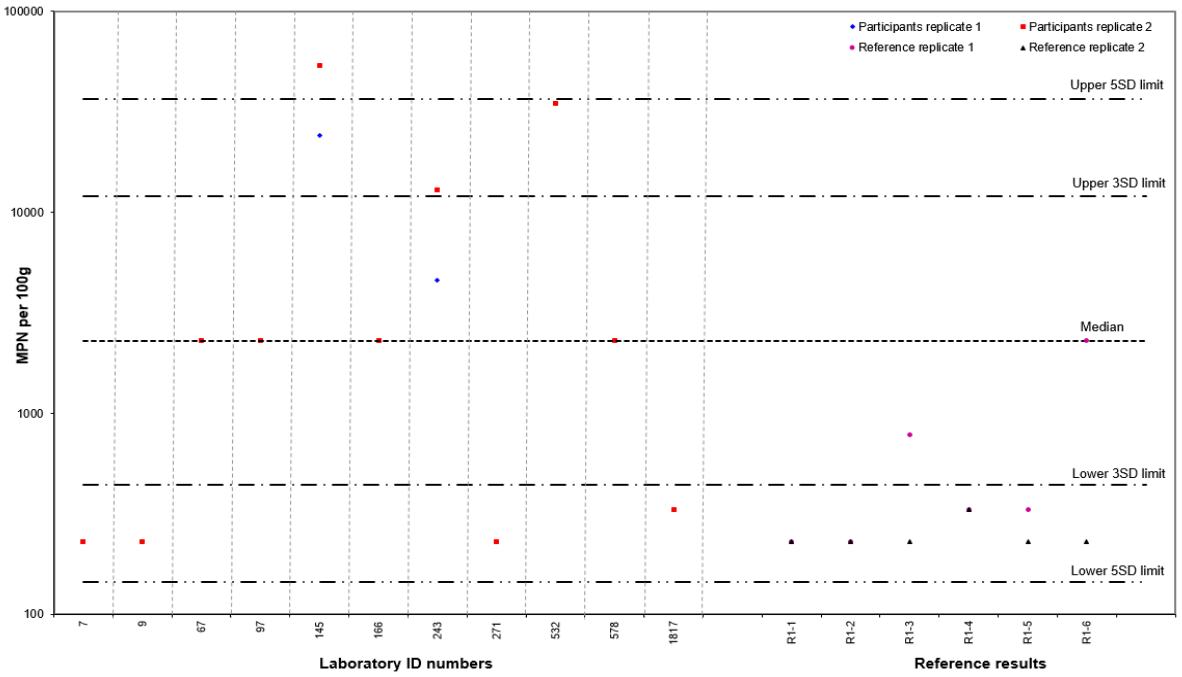
The NRL observed a range of MPN values amongst participants results returned in excess of 2 $\log_{10}$ for Sample 2 and 1 $\log_{10}$ for Sample 3. A review of historical PT datasets from 2008 to 2019 demonstrated that this was within the normal range. In addition, the NRL and several participant's results were approximately 2 $\log_{10}$ lower than expected for sample 2 and 1 $\log_{10}$ lower for sample 3 (spiking levels were estimated at ≈1.4 x 10^4 ml^{-1} for Sample 2 and ≈2.7 x 10^3 ml^{-1} for Sample 3). This anomaly triggered an investigation at the organising laboratory (see troubleshooting guide). The homogeneity tests were

found to be satisfactory and the investigation did not identify clear causal factors, although it suggested a number of avenues for further investigation, including the effect of refrigerated storage of homogenates prior to spiking. Therefore, the organisers made the decision not to score participants for *E. coli* for samples 2 and 3. The potential for storage to impact *E. coli* results will be considered further within the work programme of the UK NRL.

For sample 1, for *E. coli* – Eleven laboratories returned replicate *E. coli* MPN/100g results and reported the absence of *E. coli* in the sample and received a maximum score of 12. For *Salmonella spp.* – Ten laboratories returned results for *Salmonella* spp., all correctly reported the absence of *Salmonella* spp. in Sample 1 and received a score of 2.

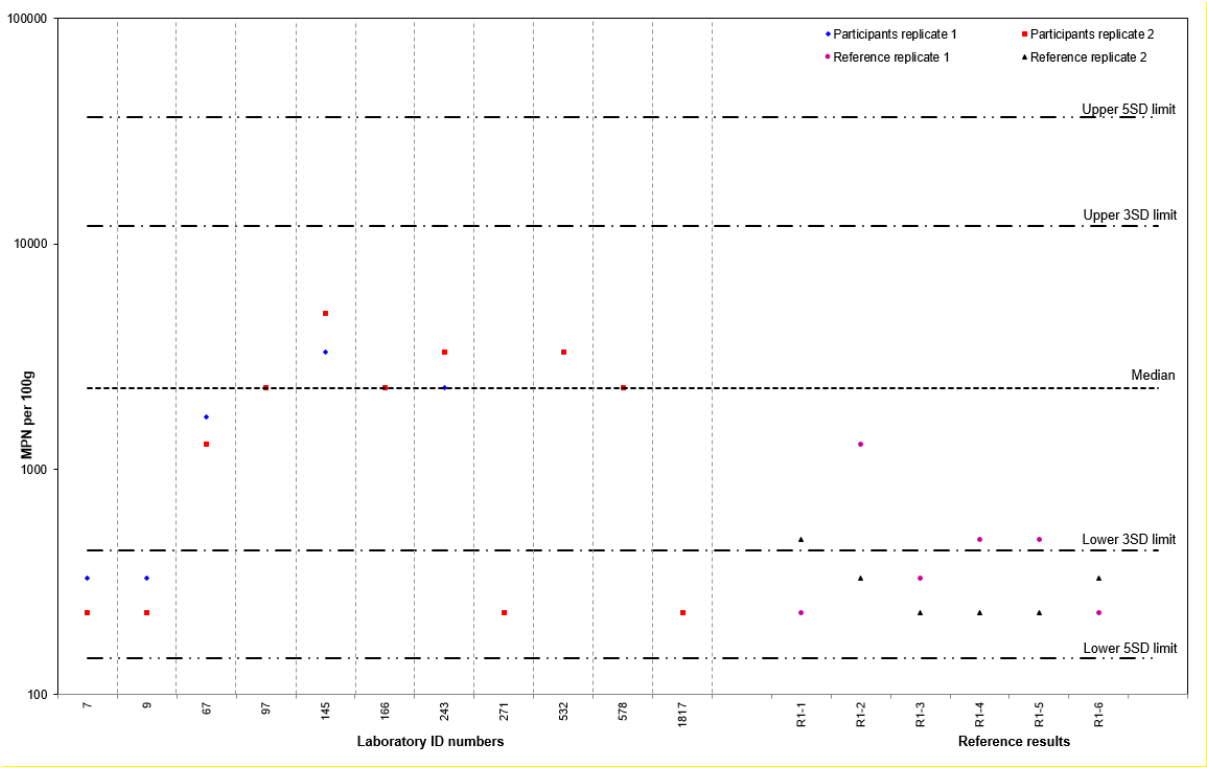
For sample 2, for *E. coli* - four laboratories (67, 97, 166 and 578) returned replicate *E. coli* MPN/100g results between ±3 SD of the participants' median for Sample 2 (Figure 1). Laboratory 243 reported one replicate result between ±3 SD of the participants' median and a second replicate result between ±3 SD and ±5 SD of the participants' median. Laboratories 7, 9, 271, 532 and 1817 reported both replicate results between ±3 SD and ±5 SD of the participants' median. Laboratory 145 reported one replicate result between ±3 SD and ±5 SD of the participants' median and a second replicate result outside ±5 SD of the participants' median. For *Salmonella* spp. – Ten laboratories returned results for *Salmonella* spp., all correctly reported the absence of *Salmonella* spp. in Sample 2 and received a score of 2.

Figure 1. Sample 2 – Pacific oysters - OCLs and NRL reference *E. coli* MPN results plotted against the OCLs median



For sample 3, for *E. coli* - Seven laboratories (67, 97, 145, 166, 243, 532 and 578) returned replicate *E. coli* MPN/100g results between ±3 SD of the participants' median for Sample 3 (Figure 2). Laboratories 7, 9, 271 and 1817 reported both replicate results between ±3 SD and ±5 SD of the participants' median. For *Salmonella* spp. – Nine laboratories returned results for *Salmonella* spp. Eight laboratories reported the presence of *Salmonella* spp. in Sample 3 and received a score of 2. Laboratory 166 reported the absence of *Salmonella* spp. and received a score of 0.

Figure 2. Sample 3 – Pacific oysters - OCLs and NRL reference *E. coli* MPN results plotted against the OCLs median



4.2. *Support for OCLs*

Some miscellaneous issues relating to the ring trials were raised by the OCLs and addressed by the NRL during the network meeting (1st and 2nd Oct 2019). These included provision for OCL laboratory performance when samples were removed from sample boxes by customs during the PT scheme in November 2018.

4.3. *Assessment of OCL performance in external quality assessment (EQA)*

The ongoing performance of the UK OCLs was assessed for three distributions of the Cefas/PHE EQA shellfish scheme comprising six Lenticule discs for *E. coli* and *Salmonella* spp. between June 2019 and February 2020 (SF063, SF064 and SF065). Eleven OCLs analysed 2 or more distributions during the reporting period for the enumeration of *E. coli* and the detection of *Salmonella* spp. as agreed at the NRL laboratory network meeting in 2018. OCL performances are summarised in Tables 1 and 2. All OCLs achieved scores in excess of 70% over 2 or more distributions for the enumeration of *E. coli* (deemed satisfactory). Ten OCLs achieved scores in excess of 70% over 2 or more distributions for the detection of *Salmonella* spp. And OCL 243 achieved 50% over 2 distributions. The NRL recommends OCL 243 completes an investigation into their procedures and refers to the trouble-shooting guidance available on the NRL website.

Table 1 Performance assessment for *E. coli* MPNs for distributions, SF063 - SF065

Lab no.	Distribution SF063		Distribution SF064		Distribution SF065		All distributions		
	SF0134	SF0135	SF0136	SF0137	SF0138	SF0139	Cumulative score	Max score	%
7	12	12	12	12	12	12	72	72	100
9	12	12	12	12	12	12	72	72	100
67	DNR	DNR	12	12	7	12	43	48	90
97	12	12	12	12	12	12	72	72	100
145	12	12	12	12	12	12	72	72	100
166	12	12	12	12	12	12	72	72	100
243	NE	NE	12	12	12	12	48	48	100
271	10	12	12	12	12	12	70	72	97
532	12	12	12	12	12	12	72	72	100
578	12	12	12	12	12	12	72	72	100
1817	12	12	12	12	12	12	72	72	100

DNR – Did not register for this distribution.

NE – Not examined.

Table 2 Performance assessment for *Salmonella* spp. for distributions, SF063 - SF065

Lab no.	Distribution SF063		Distribution SF064		Distribution SF065		All distributions		
	SF0134	SF0135	SF0136	SF0137	SF0138	SF0139	Cumulative score	Max score	%
7	2	2	2	2	2	2	12	12	100
9	2	2	2	2	2	2	12	12	100
67	DNR	DNR	2	2	2	2	8	8	100
97	2	0	2	2	2	2	10	12	83
145	2	2	2	2	2	2	12	12	100
166	2	2	2	2	2	2	12	12	100
243	NE	NE	0	2	0	2	4	8	50
271	2	2	2	2	2	2	12	12	100
532 [a]	NE	NE	NE	NE	NE	NE	-	-	-
578	2	2	0	2	2	2	10	12	83
1817	2	2	2	2	2	2	12	12	100

[a] This laboratory does not undertake *Salmonella* testing of official control samples.

DNR – Did not register for this distribution.

4.4. *Participation in international practical initiatives*

No appropriate initiatives were identified during the reporting period.

4.5. *Provision of laboratory-based training*

The NRL provided training on outbreak-associated incidents to the OCL network on 1st October 2019. This included a short workshop-based training practical regarding a foodborne outbreak that the OCL delegates participated in.

4.6. *NRL participation in international proficiency tests*

4.6.1. EURL PT for E. coli

The UK NRL participated in one PT distribution organised by the EURL for *E. coli* during July 2019 (PT 24). The distribution comprised one whole animal sample (Common mussels). The UK NRL scored full marks (12).

4.6.2. FAO reference centre PT for E. coli and Salmonella spp.

The UK NRL participated in the FAO reference centre PT distribution (PT 80) for the enumeration of *E. coli* and the detection of *Salmonella* spp. in shellfish matrices in November 2019, comprising 3 samples (1 x whole animal sample of Pacific oysters (*Crassostrea gigas*) and 2 x homogenised shellfish samples). The NRL achieved a performance assessment of 100% for *E. coli* and *Salmonella* spp. for all samples

4.6.3. Cefas/PHE EQA shellfish scheme for E. coli and Salmonella spp.

The UK NRL participated in 3 distributions of the Cefas/PHE EQA shellfish scheme which took place in June 2019 (SF0134, SF0135), October 2019 (SF0136, SF0137) and February 2020 (SF0138, SF0138). The results obtained by the UK NRL were assessed and a cumulative performance assessment of 75% for *E. coli* enumeration and 100% for *Salmonella* spp. detection were recorded.

4.6.4. PHE EQA scheme for pathogenic Vibrio spp.

The UK NRL participated in the PHE pathogenic *Vibrio* scheme. Six samples were analysed across three distributions in June 2019 (V0152, V0153), October 2019 (V0154, V0155) and February 2020 (V0156, V0157). The UK NRL results for the detection of *V. parahaemolyticus* and *V. vulnificus* were satisfactory for 2 distributions (June 2019 and February 2020). *V. parahaemolyticus* and *V. vulnificus* were incorrectly reported for 1 sample received.

4.6.5. EURL PT for norovirus and hepatitis A virus

The NRL participated in a PT Scheme for viruses in soft fruit (19EFV02) organised by the EURL for foodborne viruses in May 2019. The NRL scored 100% for the presence/absence for all sample/virus combinations (no quantitative scoring was carried out).

The NRL also participated in a PT scheme for viruses in oysters (19EFV03) organised by the EURL for

foodborne viruses in November 2019. For one sample, upon testing we obtained an extraction efficiency below the threshold acceptability. In accordance with ISO 15216-1:2017, we reported the results as positive but not quantifiable for norovirus GI (which was detected) and invalid for norovirus GII and HAV (which were not detected). The intended results as distributed by the EURL were positive for GI, and negative for GII and HAV. For other samples the presence/absence of all 3 viruses was correctly identified. For performance scoring, the EURL discounted not valid and non-quantifiable results as appropriate – as a result the UK NRL scored 100% for presence/absence and quantification in this scheme.

4.6.6. FAO reference centre PT for norovirus and hepatitis A virus

The UK NRL participated in one PT distribution organised by the FAO reference centre for norovirus and hepatitis A virus during June 2019 (PT 79). The distribution comprised four separate shellfish matrix samples (1 whole animal and 3 x shellfish digestive gland blends). The UK NRL received 100% scores for presence/absence data and quantification for all sample/virus combinations.

4.6.7. Cefas/PHE EQA scheme for norovirus and hepatitis A virus

The UK NRL participated in one PT distribution organised by Cefas/PHE in October 2019 (NHV006). The distribution comprised of two Lenticule disc samples. The NRL scored 100% for both presence/absence and quantification for all sample/virus combinations.

5. Objective 5. Co-ordination within the UK of International initiatives

No relevant EURL initiatives occurred during the period covered by this report.

6. Objective 6. Communication of results and data use

In addition to the interim progress reports delivered under Objective 1, the UK NRL's report on the second workshop on Foodborne Virus NRLs was provided to FSA in July 2019. Formal project review meetings were held with FSA on 10th May and 01st October 2019, and EURL reports on the workshop and proficiency testing, plus additional notifications of significant developments were provided by e-mail.

7. Objective 7. Provision of additional services where requested by FSA.

No additional services were requested by FSA during the period covered by this report.

8. Planned activities for 2020-2021

The NRL for foodborne viruses and bacteriological contaminants of shellfish will continue to provide support to FSA as CA during 2020-21, providing advice as and when requested including relevant incident investigations. We will continue to engage internationally, including with the EURL, for foodborne viruses and bacteriological contaminants of shellfish in a manner consistent with Government policy covering the UK'S changing relationship with the EU. In addition, we will continue to participate in international standardisation groups working on virus methods, including leading the Ad hoc group within ISO/TC34/SC9 preparing an amendment to ISO 15216-1:2017 and subsequent amendments to ISO 21872-1:2017. Being involved and leading ISO working groups relevant to method standardisation we will keep abreast of technical changes relevant to standards and methods impinging on areas of work covered by both NRLs. We will maintain expertise in the testing of foods for viruses through maintenance of our current accreditation status and participation in international proficiency testing schemes, including those organised by PHE, Cefas as the FAO reference centre, and if possible, the EURL for foodborne viruses and bacteriological contaminants of shellfish.

It should be noted that, with FSA's agreement, this programme of work has been classed as non-critical during the COVID19 outbreak. This means that whilst desk-based elements of this work can continue (subject to staff availability), no laboratory work will take place until restrictions are eased and normal work can resume at Cefas and the OCLs. FSA has been appraised of the situation and will continue to be updated as and when developments occur.

The NRL's ability to take part in EURL meetings and initiatives will continue to be guided by Government's guidelines and instructions. How the NRL interacts with the EURLs after 31st December 2020 will depend on the arrangements agreed between the UK and the EU.