

INVITATION TO TENDER:

**Developing an assurance scheme for shellfish and human health
(DASSHH)**

17 August 2018

Seafish Contact Details

Name: Dr Eunice Pinn
Tel: +44 (0) 7876035723
Email: eunice.pinn@seafish.co.uk

Seafish Ref No: TD2018-007

Seafish

18 Logie Mill, Logie Green Road, Edinburgh EH7 4HS
T: 0131 558 3331
W: www.seafish.org

Contents

1. Background	3
1.1 About Seafish.....	3
1.2 The Project	4
2. Project Scope.....	5
3. Project Phases	6
4. Tender and Contract.....	9
4.1 Timetable for Delivery	9
4.2 Outputs.....	10
4.3 Costs.....	10
4.4 Responsibilities of the contractor	11
4.5 Responses to this tender.....	11
4.6 Timeline of tender process.....	11
4.7 Awarding criteria	11
4.8 Contract and project management.....	12
4.9 Contact information at Seafish	12
5. References	12
Appendix 1: Details to be included in the submitted tenders.....	13
Appendix 2: Awarding criteria.....	14

1. Background

1.1 About Seafish

Seafish sits at the heart of the seafood industry, bringing all its sectors together in support of a shared agenda. We offer a central pool of products, services and expertise that can support our stakeholders, raise standards, drive improvement and improve efficiencies across all areas of the industry.

Seafish is a Non-Departmental Public Body (NDPB), set up by the Fisheries Act 1981. The organisation is led by industry and governed by an independent Board. We are accountable to the four Fisheries Administrations who, in turn, must answer to their respective parliament or assembly for the overall performance of Seafish.

We are funded through a statutory levy made on the first sale of sea fish, shellfish, sea fish products. Our focus, which in turn shapes our work programme, is to enable transformative industry-wide change by working to overcome the five key challenges that are acting as barriers to a thriving seafood sector. Going forward, all our products, services and insights will be aligned to at least one of these challenges:

Challenge 1: Changing political, economic and regulatory landscape as the UK exits the EU.

Challenge 2: Stagnant consumer demand and strong competition from other protein and non-protein foods.

Challenge 3: Competing with other food production sectors for access to a suitably skilled workforce, while addressing complex challenges around workplace safety.

Challenge 4: Sourcing sustainable seafood in an increasingly competitive global market, alongside continued public concern over practices that compromise human welfare and the environment.

Challenge 5: Successfully accessing the data, information and knowledge that will ensure the sector is equipped to understand and respond innovatively to a changing environment. Our work is diverse and spans the seafood supply chain covering everything from fishing to eating seafood. Our 80-plus professional staff works alongside their industry colleagues in pursuit of a range of objectives.

For more information on our current strategy you can visit [our website](#) and current Corporate Plan (2018-2021).

1.2 The Project

Current regulation and control of shellfish quality in relation to human health depends on the classification of shellfish waters. The routine monitoring of the faecal indicator organism (FIO) *Escherichia coli* in shellfish is used to grade beds and determine required harvesting protocols. When *E. coli* counts in shellfish exceed particular threshold levels, shellfish beds may be downgraded. This introduces stricter harvesting controls or the beds may be closed entirely until product quality levels recover sufficiently. The loading of *E. coli* in shellfish depends on a range of environmental variables, including agricultural land use in the catchment, sources of sewage, tidal flow, rainfall and run off into estuaries and extreme weather resulting in overflow from combined sewage outfalls (CSO) (e.g. CEFAS, 2011; Chahinian et al., 2012; Campos et al., 2013; Malham et al., 2017). The current classification system and its control monitoring is a blunt instrument that can result in a downgrade that affects future harvesting even when the high risk event has passed. The downgrading or temporary closure of shellfish beds can therefore have significant negative effects on businesses with no obvious benefit to consumer safety.

This project seeks to develop an innovative risk based approach to enable the production of high quality shellfish that fully meets consumer safety and regulatory requirements while recognising the variable water quality environment in which most UK aquaculture production occurs. The specific project aims include:

- Improving our understanding of the sources of microbial contamination and how uptake by shellfish varies with a range of potentially predictive environmental factors, so that producers can more accurately predict, manage and intervene to reduce the risk of contaminated product being harvested.
- Assessing the risk implications associated with microbial contamination and determining if there are post-harvest measures that can be used to remedy or mitigate this risk so that product is safe for consumption.
- Developing a risk based management system that:
 - Compliments the current retrospective classification system (which is based on fixed sample location and dates) by guiding the management action that should be taken when poor water quality is predicted, in line with agreed mitigation measures.

- Enables regulators and industry to cooperate on the application of the regulatory framework, with the aim of reducing incorrect downgrading of shellfish beds while ensuring that the required standards for public health are maintained.
- Provides the shellfish industry with the ability to engage in real time management of their harvesting operations, outside the regulatory sampling periods.

This document is intended to provide a high level view of the key requirements in order to develop an assurance scheme for shellfish and human health (DASSHH). It is not:

- A complete and/or detailed representation of every requirement for the project
- Prescriptive and may be subject to alteration

The intention is to provide enough information for you to put forward a recommended plan in order to deliver the required research.

2. Project Scope

The purpose of this research is to assess the technical feasibility of developing a third party accreditation scheme specific for bivalve shellfish to ensure the delivery of high quality shellfish that fully meets consumer safety and regulatory requirements. The overall project will focus on three key shellfish production areas across the UK: Belfast Lough (Northern Ireland), the Conwy Estuary and Menai Strait (Wales) and the Camel Estuary, Cornwall (England). This ITT relates specifically to the work associated with the Camel Estuary. Together these three sites encompass a range of environmental regimes and different microbial load risks and will act as case studies for generation of detailed environmental evidence, using innovative approaches and methods, to demonstrate both site specific and more generalised risk management frameworks to complement the current shellfish waters classification system.

This project is a collaborative, multidisciplinary project involving industry partners, regulators and scientific expertise. Consistency will be ensured through the oversight provided by the Shellfish Stakeholder Working Group (SSWG) which will be responsible for overall programme governance. Membership of the SSWG will include representatives from each of the three local projects. In addition Seafish has appointed a project manager to oversee all elements of the programme. This will include ensuring that the contractors are working to consistent standards for sampling and interpretation protocols so that results are comparable across all three sites.

In summary, this ITT covers the provision of the technical elements for the Camel Estuary (Cornwall) including:

- *Preliminary research:* A desk based study, using hindcast modelling, to identify the most likely environmental variables affecting microbial contamination in shellfish in the Camel Estuary;
- *Testing and confirming of the key environmental indicators of microbial contamination risk:* The risk of harvesting unsafe shellfish and the links to the environmental indicators will be quantified (e.g. does high microbial loading equate with a poor or unsafe product?) over a two year field work period. The suitability of end product testing and the effectiveness of mitigation measures (e.g. variation in depuration times) should be investigated as should an assessment of the variability in the shellfish testing procedure, the Most Probable Number (MPN) test, to confirm its ongoing suitability;
- *Developing a risk based approach to guide management interventions when environmental indicators are triggered:* Establish a site specific risk framework to test the ability of the environmental indicators to provide a more sophisticated management response to elevated microbial readings. In collaboration with the other local projects, identify the commonalties across the environmental indicators and in turn the principles of the risk based approach so that a generic approach capable of being applied to other shellfish areas can be developed.

3. Project Phases

The project will consist of three key phases.

Phase 1: Preliminary research.

This phase will focus on a desk based assessment which will include the identification of the key environmental indicators associated with periods of increased microbial contamination of bivalves in the Camel Estuary. There is evidence to indicate that elevated *E. coli* levels in shellfish may be linked to various factors including the increased presence of suspended particulate matter, nutrients, rainfall, tidal movements, seasonal variations, temperature, UV and salinity. Other important factors include catchment characteristics such as land use, pollution sources (both diffuse and point), the presences of Sewage Treatment Works (STWs) and Combined Sewer Overflows (CSOs). However, it is also important to identify ‘trigger’ thresholds (e.g. by rainfall, catchment and other conditions which have been shown to predict increases in pathogen load), interactions between the environmental variables, and the impact of shellfish physiological characteristics on *E. coli* uptake and clearance in

the presence of contamination. This will be challenging because of the uncertain and at times inconsistent relationship between water quality and shellfish flesh quality, as well as the variable rates of microbial uptake and processing of contamination by the shellfish.

For the modelling and analysis, the contractor will be expected to make use of freely available data. Noting this is a non-exhaustive list, examples include

- FSA site classification data
- Data on *E. coli* in shellfish available from the CEFAS database and from the CEFAS sanitary survey of the Camel Estuary (CEFAS, 2015)
- Observational climatic data, e.g. rainfall data, wind direction and air temperature) from the nearest UK Met. Office station and sea surface temperature and salinity data from CEFAS
- River flow and tidal gauge data from the Environment Agency
- Catchment characterisation, using catchment boundaries from the CEFAS Sanitary Survey report (CEFAS, 2015). Land cover classes are available from the Centre for Ecology and Hydrology Land Cover Map 2007.
- Data on combined sewer overflows, intermittent private discharges can be collated from the sanitary survey (CEFAS, 2015). The availability of CSO location, operation and flow data will need to be identified from statutory monitoring of shellfish beds.
- Water quality data from the Harmonised Monitoring Scheme database.

The contractor will be expected to outline their preferred approach to the analysis and modelling required.

Deliverable:

- A desk based study, using hindcast modelling, to identify the most likely environmental variables and trigger points affecting microbial contamination in shellfish for the Camel Estuary.

Phase 2: Testing and confirming of the key environmental indicators of microbial contamination risk.

This will focus on testing and confirming the suitability of the environmental indicators identified during Phase 1. This will likely require 2 years of field testing in order to refine the environmental indicators and to trial suitable risk based management options which may include:

- delayed harvesting during periods of high risk,

- additional statutory testing of shellfish beds during periods of high microbial contamination risk as identified through the use of the environmental indicators,
- repeat testing within 24 or 48 hours before determining if a downgrading or temporary closure decision is necessary.

While these are being considered, standard monitoring and classification of shellfish beds by the local authority will continue using current practice.

The risk of harvesting unsafe shellfish and the links to the environmental indicators will be quantified, e.g. do any environmental indicators equate to high microbial loading in shellfish and does high microbial loading equate with a poor or unsafe product? The suitability of end product testing and the effectiveness of mitigation measures (e.g. variation in depuration times) should also be investigated. Finally an assessment of the variability in the shellfish testing procedure, the Most Probable Number (MPN) test, will be required to confirm its ongoing suitability. Additional complimentary tests in order to identify the source of contamination, e.g. viral indicators, should be investigated.

The contractor will be expected to devise a field sampling schedule that enables shellfish and water quality data collection and analysis on a bi-weekly basis, building in the need for enhanced sampling during periods of predicted high risk. In addition, the trials of risk based management options, variability in MPN testing and other complimentary tests will need to be scientifically robust, e.g. include sufficient replication and statistical power in order to provide a good underpinning for phase 3.

Deliverables:

- A report detailing the evidenced based identification of key environmental variables associated with periods of high microbial risk for shellfish harvesters and an informed assessment of possible management options to unpin a risk based management approach.
- An assessment quantifying the risk of harvesting unsafe shellfish and the value of using end product testing and varying depuration times to mitigate that risk.
- A review of sample and seasonal variability in the MPN test in order to alleviate producer concerns in the current testing and classification regime. This will also include the potential of use of additional complimentary tests, e.g. viral indicators, in order to determine the source of contamination (e.g. human sewage or agricultural runoff).

Phase 3: Developing a risk based approach to guide management interventions when environmental indicators are triggered.

Phase 3 will consist of two stages.

- Stage 1 will seek to establish a site specific risk framework for the Camel Estuary to test the ability of the environmental indicators to provide a more sophisticated management response to elevated readings. This will be challenging because of the uncertain and at times inconsistent relationship between water quality and flesh quality, the variable rates of microbial uptake and processing of contamination by the shellfish, and the unique nature of each production area.
- In conjunction with the two other local projects, Stage 2 will focus on identifying the commonalities across the environmental indicators and in turn the principles of the risk based approach so that a generic approach capable of being applied to other shellfish areas can be developed. The transferability of generic predictors is key to supporting a potential future industry system that is scalable for differing environmental conditions.

Inherent in both stage 1 and 2 will be the appropriateness of using post-harvest techniques to minimise risk.

Deliverables:

- The key deliverable from Phase 3 is a risk-based framework to provide a more sophisticated management response to elevated microbial readings that informs the regulatory regime and is capable of being used by shellfish growers regardless of site location or farmed species.
- In conjunction with the other two local projects, participation in a 3 day project review workshop to assess the technical feasibility of developing a third party accreditation scheme for bivalve shellfish and to provide recommendations on the most appropriate way in which to develop and implement such a scheme. Contractors should only cost for their active participation in the workshop which may include assistance with note taking. Seafish will organise and manage the workshop on behalf of SSWG.

4. Tender and Contract

4.1 Timetable for Delivery

The start date for the project is expected to be 1 April 2019. The required deadline for completion of the project is 31 March 2022. Please be aware that this project is contingent on EMFF funding being secured to enable its commencement.

The contractor is required to provide a detailed plan specifying timescales for the project delivery by the tasks required. As a minimum, the contractor expects that this plan clearly articulates delivery against the project phases detailed in section 3 and to include regular project updates.

4.2 Outputs

The required deliverables of the project are:

- A desk based study, using hindcast modelling, to identify the most likely environmental variables and trigger points affecting microbial contamination in shellfish for the Camel Estuary.
- A report detailing the evidenced based identification of key environmental variables associated with periods of high microbial risk for shellfish harvesters and an informed assessment of possible management options to unpin a risk based management approach.
- An assessment quantifying the risk of harvesting unsafe shellfish and the value of using end product testing and varying depuration times to mitigate that risk.
- A review of sample and seasonal variability in the MPN test in order to alleviate producer concerns in the current testing and classification regime. This will also include the potential of use of additional complimentary tests, e.g. viral indicators, in order to determine the source of contamination (e.g. human sewage or agricultural runoff).
- A risk-based framework to provide a more sophisticated management response to elevated microbial readings that informs the regulatory regime and is capable of being used by shellfish growers regardless of site location or farmed species.
- In conjunction with the other two local projects, participation in a 3 day project review workshop to assess the technical feasibility of developing a third party accreditation scheme for bivalve shellfish and to provide recommendations on the most appropriate way in which to develop and implement such a scheme. Contractors should only cost for their active participation in the workshop which may include assistance with note taking. Seafish will organise and manage the workshop on behalf of SSWG.

4.3 Costs

Seafish will not provide an indicative budget for this work, in advance of the tender submission date. This is, however, an accelerated tender process complying with the OJEU process.

Tenders should be submitted covering all costs associated with the project. Each phase of the work should be costed separately. Costs should be stated exclusive and inclusive of VAT, if applicable.

An applicant is not entitled to claim from Seafish any costs or expenses incurred in preparing the tender document whether or not it is successful.

4.4 Responsibilities of the contractor

The contractor will be responsible for completing the project and producing the required deliverables within the agreed deadlines.

The contractor is responsible for fulfilling all responsibilities within the quoted costs.

4.5 Responses to this tender

Contractors are requested to submit a response to this tender, providing detail of the approach to be taken, expertise, and a detailed plan specifying timescales for the project, by main tasks. See Appendix 1 for further information.

4.6 Timeline of tender process

This is an accelerated open tender process through OJEU. The accelerated process has been necessitated by the EMFF funding panel deadline of 14 September for submission of applications. The deadline for submitting tenders by e-mail is 4pm on Wednesday 5 September 2018. Submissions received after this time will not be accepted.

The tender process timetable is as follows:

Actions	Date(s)
Distribution of application to tender document	Friday 17 August 2018
Last date for receipt of tender document submission	4pm on Wednesday 5 September 2018
Assessment of tenders received and follow up as required	6 to 12 September 2018
Submission of EMFF bid	14 September 2018
Notification to successful applicant of intent to award contract	TBC
Contract commencement date if EMFF funding secured	1 April 2019

4.7 Awarding criteria

All submissions will be assessed for their value-for-money and quality. The detailed criteria for assessing submitted tenders are included in Appendix 2.

Following the evaluation of tenders it is feasible that one provider is unable to fulfil all the requirements. In this case we may ask two separate contractors to consider partnering on this work.

4.8 Contract and project management

The contract and project will be managed by Seafish who will be responsible for ensuring the project is delivered. The project will be managed within Seafish's standard project management process. The contractor is required to submit regular (monthly if appropriate) updates on progress.

Upon appointment, the successful contractor will be required to sign a contract including a confidentiality agreement.

4.9 Contact information at Seafish

For further information on this tender and to submit completed tenders by e-mail by the deadline (4pm on Wednesday 5th September, 2018) to:

Dr Eunice Pinn (eunice.pinn@seafish.co.uk).

5. References

- Campos et al., 2013. Environmental influences on faecal indicator organisms in coastal waters and their accumulation in bivalve shellfish. *Estuaries and Coasts*, 36, 834-853.
- CEFAS, 2011. Factor affecting the microbial quality of shellfish. Final report to DEFRA, project WT1001.
- CEFAS, 2015. Review of the Camel 2009 Sanitary Survey. CEFAS report on behalf of the Food Standards Agency to demonstrate compliance with the requirements for classification of bivalve mollusc production areas in England and Wales under EC Regulation 854/2004.
- Chahinian et al., 2012. The role of river sediments in contamination storage downstream of a waste water treatment plant in low flow conditions: organotins, faecal indicator bacteria and nutrients. *Estuarine, Coastal and Shelf Science*, 114, 70-81.
- Malham et al., 2017. Review of current evidence to inform selection of environmental predictors for active management systems in classified shellfish harvesting areas. FSA Project FS103001. Report prepared by Bangor University and the NERC Centre for Ecology and Hydrology.

Appendix 1: Details to be included in the submitted tenders

Contractors are requested to submit a response to this proposal, providing details of the approach to be taken, expertise, timeline and costs. As a minimum, tenderers are required to submit the following:

- Name of the tenderer(s), status in the company / organisation.
- The proposed main point of contact.
- Evidence of capabilities and track records in this area, including
 - o Examples of relevant projects successfully completed.
 - o Overview of the team who will undertake the work, including credentials.
- Explanation of how the work will be undertaken, including;
 - o Approach to be taken.
 - o Timeline for undertaking the work, including a Gantt chart, completion date and milestones.
- Detailed costs under the following subheadings:
 - o Fees – by activity/staff time
 - o Reporting and management fees
 - o Any other costs
 - o VAT where applicable
 - o Total
- Explanation of any projects previously undertaken for Seafish, including point of contact at Seafish.

Appendix 2: Awarding criteria

All submissions will be assessed for their value-for-money and quality. In the interest of ascertaining the highest level of transparency, fairness and competition, the following evaluation matrix will be used to score each response:

Selection and Awarding Criteria	Weighting (%)
Understanding of project requirements	30
Your interpretation of the specification and approach to meeting the requirements, demonstrating best value for money in the approach taken.	30
Relevant experience and expertise in this field	20
Staff availability and contingency plans should key staff become unavailable during the project.	20