NMBAQC

NE Atlantic Marine Biological Analytical Quality Control Scheme

INFORMATION NOTE – Year 32 (2025/2026)

This note provides details on the NMBAQC plans for 2025/2026. Please note: timings in this note are indicative only – more detailed information will be made available on the website (www.nmbaqcs.org).

Introduction

The NMBAQC Scheme aims to improve and maintain the standard of marine biological data being generated to assess the status of marine waters in the UK and the North East Atlantic. Through the provision of quality control exercises, training exercises, workshops, and information exchange it is hoped that marine biological laboratories can share and develop expertise. The Scheme does not aim to 'police' marine biological assessment, rather to facilitate improvements in assessment. ***While the aim of the Scheme is to quality assure biological data it is not a laboratory accreditation scheme. It should be seen as a source of external quality assurance only.*** Labs are strongly encouraged to sign up to appropriate accreditation schemes in addition to participation with the NMBAQC Scheme.

The Healthy, Biologically Diverse Seas Evidence Group (HBDSEG), part of UK Marine Monitoring and Assessment Strategy, sets the key areas in which this external quality control is particularly needed. For 2025/2026, the components are: Benthic Invertebrates, Fish, Particle Size Analysis, Macroalgae/Seagrass, Phytoplankton, Zooplankton and Epibiota.

Participation

The NMBAQC scheme is primarily developed for applicants within Europe. However, applications from laboratories and organisations outside of Europe will be accommodated if possible - contact graham.phillips@environment-agency.gov.uk for further information. Contractors undertaking analysis of samples on behalf of CMAs or for licensees may also be required to join the Scheme, or a similar QA scheme.

CMAs, contractors undertaking statutory programmes for CMAs and contractors undertaking programmes (e.g., Aquaculture Monitoring) for licensees which may support statutory programmes such as the Water Environment Regulations (WER) (England & Wales and Northern Ireland) and Water Environment and Water Services (WEWS) (Scotland) Act (replacements to the Water Framework Directive) should complete the relevant Own Sample modules as a minimum. NMBAQC recommends an external Own Sample QA requirement of 5% of samples or at least 3 samples

(whichever is higher) as well as a targeted reference or voucher material checks. CMAs are expected to also participate in other training modules and for contractor's other modules may be required if specified by their contract with CMAs.

For contractors or consultancies not involved in statutory monitoring programmes all relevant modules are recommended but participation is voluntary. Participation from others engaged in the production of marine biological data is welcomed.

For self-employed single analysts (Sole traders), participation fees are set at a discounted rate of 50% of the standard rates. Up to 3 individuals can share participation membership of the Benthic Invertebrate and Particle Size Component.

For new joiners to the Scheme in 2025/2026, an introductory discount of 50% is applied to the participation fees. The rate for following year's participation will be at the standard rate. Please note: this rate cannot be applied to organisations which have participated in previous years under a different name. For new participants with bespoke requirements for joining the scheme, the discount for new joining participants will not be applied.

The Scheme is required to be self-funding i.e. the cost for each module within a component needs to be covered by the participants of that component. Some specific work areas within the Scheme are entirely funded by UK Government Agencies. All committee-related administrative costs are met by the committee members' organisations. Fees are estimated on the previous year's level of participation for each component and estimated costs for the year ahead. Fees (for additional Ring Tests, workshops etc.) will be determined as they arise.

The NMBAQC is a not-for-profit scheme and participant fees have been balanced to ensure that participants receive the best value for money, whilst enabling the Scheme to run sustainably in light of potentially changeable running costs for the different modules. Surplus income generated by the Scheme will contribute towards the development of existing and future quality assurance protocols in marine ecological analysis procedures.

The NMBAQC Committee asks participants to adhere to the timetables for submissions, as it is necessary to avoid year-end contractual problems. With this in mind and the fact that the NMBAQC Scheme is entirely self-funding we will have to enforce a cut-off date for submissions, beyond which the analysis will not be possible despite payment into the Scheme.

Identification of non-conforming work, problems with the management system or with technical activities may occur. Should the participant feel that there are discrepancies with results or other work carried out by the contractor, the procedure that should be followed is outlined below:

1. In first instance, the participant should contact the Contractor for the relevant component. In the case of possible misidentifications, samples may be sent to an external expert to resolve the dispute.

2. If the matter cannot be resolved between the participant and the Contractor, the participant should contact the NMBAQC Contract manager, who can mediate between the Contractor and participant.

If no agreement can be reached between the Contract manager and the participant, the participant can contact the Contractor's representative, who will take the matter up with the NMBAQC Committee. The NMBAQC Committee decision will be final in all cases.

Scheme Components

1) MEMBERSHIP ONLY

Competent Monitoring Authorities (CMA) who are ***not participating*** in the scheme modules are encouraged to support the NMBAQC Scheme to ensure overall promotion of quality in marine data. The NMBAQC Scheme was set up for the CMAs to have a form of external quality assurance of their data, which are being used for reporting for statutory purposes.

NMBAQC provides a website with best practice guidance, and other resources that help all to improve the quality of analyses and therefore data. The NMBAQC Committee continuously strives to develop external quality assurance modules when new requirements arise through monitoring needs.

The work programme for the NMBAQC Committee is dictated by the HBDSEG (Healthy and Biologically Diverse Seas Evidence Group) which is part of the UKMMAS (UK Marine Monitoring Assessment Strategy).

2) BENTHIC INVERTEBRATE COMPONENT – BENTHIC INFAUNA

NOTE: For self-employed single analysts up to 3 individuals can share participation membership of the Benthic Invertebrate and Particle Size Components. Laboratories wishing to advertise that they participate in the NMBAQC benthic invertebrate components must participate in the Own Sample modules to demonstrate participation within the auditing of real samples and the completion of remedial actions raised.

Own Sample (OS) module – data/sampling auditing exercise. Also provides Pass/Fail flag for CSEMP/WER/WEWS samples (and all other statutory monitoring data)

Three samples to be supplied from participant to contractor to be (re)analysed by the contractor. If you are required to provide evidence of external AQC this module satisfies this.

Benthic invertebrate Own Sample (OS) provisional timetable:
The Own Sample module is split into two submission batch timetables (participants can choose to submit their three Own Samples in one or over both batches). Please note that Own Samples are worked through in order of receipt:

Test	Event	Date
BI-OS Batch 1	Call for data and samples	Early October 2025
	Data submission deadline	Mid-November 2025
	Selected Own Sample submission deadline	End November 2025
	Interim report	End March 2026
	Final report	End July 2026
BI-OS Batch 2	Call for data and samples	Early October 2025
	Data submission deadline	End March 2026
	Selected Own Sample submission deadline	Early May 2026
	Interim report	Early July 2026
	Final report	End July 2026

Ring Test (RT) module – Training exercises
There are two Ring Test circulations supplied by the contractor to participating labs:

- Standard Ring Test of 25 invertebrate taxa from a broad range of marine or estuarine phyla.
- Targeted Ring Test of 25 invertebrate taxa from a specific fauna group or from a particular habitat.

The aim of the Ring Test training exercise is to enable participants to become familiar with a wide variety of invertebrate species, including taxa from a wide range of geographic localities or specified habitats to which they may not have access. This is useful to gain awareness of taxa that may appear in your waters via effects of climate change, or non-natives progressing around the coast. The targeted Ring Test allows participants to hone their identification skills on taxonomically difficult faunal groups and provides access to verified specimens.

Benthic invertebrate Ring Test (RT) provisional timetable:

Test	Event	Date
BI-RT standard test	Distribution	Early October 2025
	Results deadline	End November 2025
	Interim reports	Mid-December 2025
	Final report	Mid-January 2026
BI-RT targeted test	Distribution	End January 2026
	Results deadline	End March 2026
	Interim reports	Mid-April 2026
	Final report	Mid-May 2026

Laboratory Reference (LR) module – Training exercise

A reliably verified reference collection is an invaluable tool in any benthic laboratory and ensures consistent correct identification and high-quality data.

The LR module involves the submission of up to 25 specimens to the scheme contractor. The contractor identifies or re-identifies these specimens and then returns them to the lab. The 25 specimens can be from a laboratory's reference collection or may consist of any problem taxa with incomplete or uncertain identifications submitted as an "identity amnesty". Hence, there is no scoring in this exercise for incorrect identifications.

The objectives of this exercise are:

- To encourage the assemblage and use of reference collections;
- To examine the accuracy of identifications of fauna recorded in the 'home' area of each participating laboratory. To encourage participants to resolve identification issues with problem taxa.

The benefits of this exercise are:

- It allows the participants to get a second opinion and verification of any problem taxa. If the contractor is unable to identify a specimen they may refer the participant to a known expert for verification;
- It provides the participant an opportunity to build up a good reference collection based on independently verified material. With verified material, participants can easily cross check additional replicated reference material from different locations. This in turn improves the taxonomic skills of the participants;
- It gives participating labs verified specimens for use as teaching tools for new starts and provides an accurate legacy collection as an insurance against departure of experienced staff.

From the 2016-17 Scheme, a summary report of the Laboratory Reference exercise was introduced, with lists of the various taxa submitted by different labs and taxonomic discrepancies arising being highlighted such that all participants can benefit from an assessment of any issues arising. Individual labs still retain their codes and thus remain unidentifiable.

Benthic invertebrate Laboratory Reference (LR) provisional timetable:

Test	Event	Date
BI-LR test	Request for specimens	Early October 2025
	Specimen submission deadline	End November 2025
	Final report	End March 2026

3) PARTICLE SIZE COMPONENT

A guidance document on Particle Size Analysis for supporting biological data was produced in 2011 and is available on the NMBAQC website. This document has been continuously updated since to reflect outcomes of workshops.

Particle Size (PS) module –Training exercises, with Pass/Fail flags for CSEMP/WER/WEWS laboratories in development.

These comprise sediment samples supplied by the contractor to participating labs for analysis by a standard operating procedure: the NMBAQC particle size analysis for supporting biological data. Four samples per year, for laser and sieve analysis will be sent. Sediment types covered are:

Test 1: set of two - one diamicton (mixed sediment), one mud/sand sample

Test 2: set of two - one gravel sample, one diamicton

Particle Size (PS) provisional timetable:

Test	Event	Date
PS Test 1 (set of two)	Sample distribution	October 2025
	Data submission deadline	November 2025
	Interim reports	December 2025
	Final report	January 2026
PS Test 2 (set of two)	Sample distribution	January 2026
	Data submission deadline	March 2026
	Interim reports	April 2026
	Final report	May 2026

Particle Size Own Sample (PS-OS) module – data/sampling auditing exercise. Pass/Fail flag for CSEMP/WER/WEWS samples (and all other statutory monitoring data) in development.

Three samples to be supplied from participant to contractor to be (re)analysed by the contractor. Data to be supplied from a range of sediment types, where possible. If you are required to provide evidence of external AQC this module satisfies this.

Laboratories should ensure that their PS results are reported in the requested format and review their data before submission. Data should be provided at half phi intervals to enable the direct comparison of data from all participants and simplify the creation of cumulative curve figures.

Particle Size Own Sample (PS-OS) provisional timetable:
Please note that Particle Size Own Samples are worked through in order of receipt.

Test	Event	Date
PS-OS Batch 1	Request for data and samples	October 2025
	Data submission deadline	November 2025
	Selected Own Sample submission deadline	November 2025
	Interim report	March 2026
	Final report	August 2026
PS-OS Batch 2	Request for data and samples	October 2025
	Data submission deadline	March 2026
	Selected Own Sample submission deadline	May 2026
	Interim report	July 2026
	Final report	August 2026

4) FISH COMPONENT
In April 2009 the complete revision of Alwyne Wheeler's 1978 'Key to the Fishes of Northern Europe' was published. This has been provided to all participants of the fish component. For further details contact please contact us through the NMBAQC website "contact us" page.

Fish - Reverse Ring Test (F-RRT) module – Training exercise
This module examines inter-laboratory variation in the participants' ability to identify marine and estuarine fish specimens from their own surveys and attempts to determine whether any errors are the result of inadequate keys, lack of reference material (e.g. growth series), or the incorrect use of satisfactory keys. The Fish RRT also attempts to improve the examination method by addressing participants' concerns over the Fish RT, namely by analysing fresh samples instead of preserved and analysing fishes only caught locally.

Over a set survey period, participants are asked to provide 15 specimens for verification. The participants are also asked to provide photos and details of keys used for identification.

Fish Reverse Ring Test (F-RRT) provisional timetable:

Test	Event	Date
F-RRT	Protocol and request for specimens distributed	October 2025
	Specimen submission deadline	December 2025
	Final report	February 2026

Fish - Ring Test (F-RT) module – Training exercise
This module examines inter-laboratory variation in the participants' ability to identify fish specimens and attempts to determine whether any errors are the result of inadequate keys, lack of reference material (e.g. growth series), or the incorrect use of satisfactory keys.

A set of 15 fish specimens are distributed in each Scheme year. Details of substratum, salinity, depth and geographical location and a series of specimen images are provided for all ring test specimens to assist identification. Circulated material may comprise preserved specimens (small bodied individuals) and/or frozen specimens (larger individuals).

Fish Ring Test (F-RT) provisional timetable:

Test	Event	Date
F-RT	Samples distributed	November 2025
	Result deadline	January 2026
	Final report	April 2026

5) MACROALGAE/ANGIOSPERMS COMPONENT

Exercises for macroalgae (macroalgal blooming and rocky shore algae identification) are available. The exercise reports can be seen on the Macroalgae Reports page of the website. The exercises may be used as training exercises or for assessment of analytical performance. Estimation of % cover for seagrass has now been incorporated into the macroalgal blooming % cover exercise.

Please note: running of the Rocky shore macroalgae Ring Test (RM-RT) module is currently suspended. Updates on the future running of this module will be provided on the NMBAQC website (www.nmbaqcs.org).

Opportunistic macroalgae/Seagrass % cover ring test (OMC-RT) module – Training exercise. Also provides Pass/Fail flag WER/WEWS laboratories
This exercise consists of 15 photographs of quadrats with different levels of percentage cover of bloom-forming algae and 15 of seagrasses. Seagrasses form a separate monitoring requirement for the WER/WEWS and can co-occur with algae. Participants will assess the percentage cover within quadrats using their normal estimation method. Results will be circulated in a bulletin, along with commentary where any significant discrepancies arise.

Opportunistic macroalgae/Seagrass % cover ring test (OMC-RT) provisional timetable:

Test	Event	Date
OMC-RT	Samples distributed	January 2026
	Sample deadline	March 2026
	Interim reports issued	April 2026
	Final reports issued	May 2026

Opportunistic macroalgae biomass ring test (OMB-RT) module – Training exercise. Also provides guideline Pass/Fail flag WER/WEWS laboratories

Several mock algal samples are circulated to each participating laboratory (NB: each sample can be done only once within each laboratory). Samples are made up primarily of synthetic material, as it is impractical to send round live material due to the risks of deterioration and non-reproducibility. Mock algal samples are mixed with sediment; participants rinse and remove excess water, using their normal method. The sample is then weighed both wet and air dried. Results will be compared with the original weights to give an assessment of the efficacy of participants' sample treatment. Results will be provided in a report.

Opportunistic macroalgae biomass ring test (OMB-RT) provisional timetable:

Test	Event	Date
OMB-RT	Samples distributed	January 2026
	Sample deadline	March 2026
	Interim reports issued	April 2026
	Final reports issued	May 2026

6) PHYTOPLANKTON

The International Phytoplankton Intercomparison (IPI) test, run in association with the NMBAQC, has previously been run by the Canary Islands Harmful Algal Bloom Observatory (OCHAB), University of Las Palmas de Gran Canaria (ULPGC), Spain in collaboration with the IOC Science and Communication Centre for Harmful Algae, Denmark. The delivery of future IPI programmes is currently undergoing finalisation. The IPI proficiency test compared marine phytoplankton abundance and composition amongst laboratories and included two main areas:

Identification – in the form of a "Taxonomic Quiz", this test is set up on a distant learning web platform called 'Ocean teacher'. Participants need to log on with a username and password and answer the questions online.

Enumeration and identification – a number of preserved seawater samples spiked with phytoplankton cultured material or/and natural field samples are sent to each

laboratory. The number and type of samples has not been decided yet and will be adapted to be relevant to the participants.

Details on the IPI, information about forthcoming programmes and associated registration forms can be found by visiting the website portal www.iphyi.org.

No 2025/2026 programme currently planned.

7) EPIBIOTA COMPONENT

The NMBAQC's Epibiota Video Ring Test Pilot was run over 2008 - 2009 and involved three tests and a concluding workshop. The final report, ring test reports and workshop proceedings from this video ring test pilot are available on the Epibiota Reports page.

NMBAQC has established two "Best Practice guides" for epibiota. These can be found on our web site:
NMBAQC Epibiota interpretation guidelines, 2016
Turner, J.A., Hitchin, R., Verling, E., van Rein, H., 2016. Epibiota remote monitoring from digital imagery: Interpretation guidelines.

NMBAQC Epibiota operational guidelines, 2015
Hitchin, R., Turner, J.A., and Verling, E., 2015. NMBAQC/JNCC Epibiota Remote Monitoring from Digital Imagery: Operational Guidelines. 25 pp, July 2015.

The Epibiota Quality Assurance framework has been set up through the Big Picture Group to help standardise the analysis of epifaunal imagery data. Further information, along with all the necessary documentation can be found at http://www.nmbaqcs.org/scheme-components/epibiota/epibiota-quality-assurance-framework-and-documents/

8) ZOOPLANKTON COMPONENT

The Marine Biological Association (MBA) have been running Zooplankton ring tests every two years since 2015. The last ring test was undertaken during 2023, with a results workshop undertaken during July 2023. Sixteen participants undertook this ring test from 11 laboratories, including those outside the UK.

The 2025/2026 zooplankton ring test is pending finalisation. For further information regarding this, please contact Martina Brunetta, CPR Training Manager, Marine Biological Association or Claire Taylor, Technical Secretary for NMBAQC, Marine Biological Association.

NMBAQC COMMITTEE (2025-2026)

The Committee comprises representatives from the various Competent Monitoring Authorities and a representative for independent contractors/consultancies:

David Johns	(Chair) Marine Biological Association (MBA)
Claire Taylor	(Technical Secretary) MBA
Myles O'Reilly	(Technical Manager Benthic Invertebrate component) Scottish Environment Protection Agency (SEPA)
***Graham Phillips**	(Financial Manager – Benthic, Macroalgae and Fish component) - Environment Agency (EA)
Tim Mackie	Marine Division - Department of Agriculture Environment & Rural Affairs – Marine & Fisheries Division, Northern Ireland
Paul Mcilwaine	Centre for Environment, Fisheries and Aquaculture Science (Cefas)
Gillian Annett	(Technical Manager Macroalgae component) Department of Agriculture Environment & Rural Affairs – Marine & Fisheries Division, Northern Ireland
Claire Mason	(Technical Manager PSA component) Cefas
Jim Ellis	(Technical Manager Fish component) Cefas
Rafael Salas	(Technical Manager Phytoplankton Component) Canary Islands Harmful Algal Blooms Observatory (OCHAB)
Martina Brunetta	(Technical Manager Zooplankton) MBA
David Hall	(Scheme Project Manager: Benthic Invertebrates, Fish and PSA) APEM Ltd
Matthew Green	Natural Resources for Wales (NRW)
Kate Wade	(Technical Manager Epibiota component) Joint Nature Conservation Committee (JNCC)
Matthew Service, Alex Callaway and Adele Boyd	Agri-Food and Bioscience Institute, Northern Ireland (AFBI-NI)
Ross Griffin	Ocean Ecology, Representative for non-agency labs/independent consultancies

Component contractors (may attend some committee meetings)

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