Annual report on Activities Performed by the UK NRL for GMOs in Food and Feed

FSA Contract Reference Number: FS616029
Provision of UK National Reference Laboratory Services for Genetically Modified Organisms in food and feed

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Contact: Malcolm Burns
Email: Malcolm.Burns@lgcgroup.com

Prepared by: Malcolm Burns

Approved by: Alison Woolford

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Glossary

ACRE - Advisory Committee on Releases to the Environment

CA – Competent Authority

CRM - Certified Reference Material

Defra - Department for Environment, Food & Rural Affairs

DG SANTE - European Commission's Directorate-General for Health and Food Safety

DNA - Deoxyribonucleic acid

dPCR – Digital PCR

EFSA - European Food Safety Authority

ENGL - European Network of GMO Laboratories

EURL - **GMFF** - EU Reference Laboratory for GMOs in food and feed

Fera – The Food and Environment Research Agency

FSA - Food Standards Agency

FSS – Food Standards Scotland

GDPR - General Data Protection Regulation, (retained) Regulation (EC) 2016/679

GE – Gene Editing

GeMMA - Genetically Modified Material Analysis Scheme

GMM - Genetically Modified Microorganisms

GMO - Genetically Modified Organism

JRC – Joint Research Centre

NMT - New Mutagenesis Techniques

NRL - National Reference Laboratory (appointed under (retained) Regulation (EC) 2017/625)

OL – UK Official Laboratory

PCR - Polymerase Chain Reaction

SASA - Science & Advice for Scottish Agriculture

SC – Steering Committee

WG – Working Group

Role of the National Reference Laboratory

The Food Standards Agency (FSA) and Food Standards Scotland (FSS) are respectively designated as the Competent Authority (CA) for Official Feed and Food Controls within their area of responsibility. The UK has a legal obligation to appoint National Reference Laboratories (NRLs) pursuant to retained European Commission Regulation (EU) 2017/625. This regulation relates to official controls designed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules. NRLs provide advice and support to food and feed enforcement laboratories and CAs to ensure a harmonised approach to food and feed enforcement. NRLs are responsible for setting standards for routine procedures and reliable testing methods in the regulated areas of food and feed. This delivers consumer protection and effective, risk-based and proportionate regulation and enforcement.

NRLs play an important role following EU transition (1st January 2021) as they incorporate some of the activities previously performed by their lab counterparts in the EU (the European Reference Laboratories). This includes sharing and developing new and emerging disease intelligence, methodologies, reference materials and training. Following EU transition, NRLs continue to play a pivotal role in the UK enforcement process.

NRL GMO Services

As the duly appointed laboratory, LGC carries out the provision of services for the UK National Reference Laboratory for GMOs. The NRL GMO provides support to the UK official laboratories for GMO control and identifies and participates as an independent expert at international GMO meetings and networks to further harness expertise and knowledge in the area.
The NRL liaises with and provides advice to the Competent Authority appointed laboratory responsible for the scientific assessment and validation of detection methods for GMOs in food and feed as part of the UK GMO authorisation of regulated products procedure.

The basic duties of National Reference Laboratories include:

(a) Co-operate internationally in their area of competence, including collaborating and participating inter-laboratory comparative tests organised by international laboratories (where appropriate);
(b) Co-ordinate, for their area of competence, the activities of Official Laboratories (OLs) responsible for the analysis of official controls samples to ensure the verification of compliance with feed and food law;
(c) Where appropriate, organise comparative tests between the official national laboratories and ensure an appropriate follow-up of such comparative testing;
(d) Ensure the dissemination of any information required by the CA;
(e) Provide scientific and technical assistance to the CA, especially for the implementation of Multi Annual National Control Plans;
(f) Participate in relevant national and international networks, workshops and training courses and, where necessary, conduct training courses for the staff of OLs;
(g) Upon request by the appropriate authority, actively assist in relevant foodborne incident and outbreak situations, should be equipped with, or have access to, the necessary equipment to perform their tasks in emergency situations and in cases of non-compliance of consignments, by carrying out confirmatory analysis;
(h) Carry out research, evaluation and development of new and existing methods for the analysis of UK regulated and officially monitored foods and feed and emerging new risks to UK food safety;
(i) Provide advice and expertise on standardisation of methods at CEN and ISO;
(j) Obtain and maintain accreditation for official reference and other relevant regulatory methods for food and feed within the NRL area of competence;

(k) Be responsible for carrying out other specific duties as required by the CA, where appropriate and by prior agreement;

LGC has maintained the position for the UK National Reference Laboratory for Genetically Modified Organisms (GMOs) in food and feed since the inception of the position in 2009, following open competitive tenders in 2009, 2013, 2017 and 2021. LGC's appointment by the Food Standards Agency is pursuant to UK legislation (retained Regulation (EU) 2017/625). As the National Reference Laboratory for GMOs, LGC conducts the following activities, as specified in the contract with the FSA:

Core Function
Objective 01 – Secretariat services
Objective 02 – Advice and representation within the UK and internationally
Objective 03 – Production of standard operating procedures, codes of practice, guidance documents and databases
Objective 04 – Compliance assessment via audits, ring trials and provision of reference materials
Objective 05 – Co-ordination within the UK of international initiatives
Objective 06 – Liaison and support work on GMO food/feed authorisation
Objective 07 – Communication of results and data use

Production of the NRL annual report

This report details the activities carried out during the 14th year of the NRL operation (April 2022-March 2023) in relation to the duties of the NRL.

Objective 01 – Secretariat services

Tasks:

a) Disseminating relevant information/advice to the OLs, CA, when required, and other relevant laboratories in a timely and effective manner;
b) Co-ordinating the activities of OLs and other relevant laboratories in food and feed below;
c) Creating and maintaining an efficient two-way channel of communication with OLs and relevant laboratories and international organisations, including information on analytical methods and relevant legislation;
d) Providing regular updates to the CA on NRL activities, and up-to-date information on UK OLs and other relevant laboratories to the CA as requested;
e) Creation and maintenance of a dedicated website for communication of the work of the NRL including provision of advice and support to OLs, information on methods of analyses, Standard Operating Procedures (SOPs), latest developments and other background information.

Example activities in relation to these Tasks:

- Published the GMO NRL Annual report (2022/2023) on the NRL webpages;
- Published the GMO NRL Annual Workplan for 2023/2024 on the NRL webpages;
- Kept the FSA informed of the following topics:
    - A brief summary and the publicly available minutes to the 42nd ENGL Steering Committee were circulated to the FSA/OLs.
    - Following approval from the FSA, the information gathered as part of the previous GMO NRL 2021 questionnaire sent to all OLs, was shared and incorporated into the wider GC/FSA/FSS/Defra initiative for the GC to conduct an annual survey to assess UK OL capability/capacity to undertake the analysis of food and feed to support official controls. Transfer of data complied with GDPR and the FSA GMO NRL function was cited in terms of the relevant GMO data gathered.
    - The official report to the 43rd ENGL Steering Committee meeting was circulated to the FSA/OLs, alongside an abbreviated synopsis of the report written by the NRL.
    - Advised the FSA that the EC had launched their open consultation on legislation for plants produced by certain new genomic techniques in April 2022.
    - The report entitled "*(EC) Legislation for plants produced by certain new genomic techniques - Public Consultation Factual Summary Report*", alongside a summary of the pertinent key-points for traceability of NGT products in the food/feed supply chain, was sent to the FSA.
    - Made the FSA/Defra aware that EFSA released an important FAQ regarding the risk assessment of plants produced by New Genomic Techniques, entitled "*Criteria for risk assessment of plants produced by targeted mutagenesis,*

cisgenesis and intragenesis". Intragenesis had been included in the definition of a New Genomic Technique (previously only qualified by targeted mutagenesis and cisgenesis).

Objective 02 - Advice and representation within the UK and internationally

Tasks:

a) Provide details of analytical methods including reference methods to OLs and co-ordinate application of these methods through proficiency testing (see 4c);
b) Provide impartial expert advice as requested to the CA, OLs and other relevant laboratories on analytical methodology in the context of official controls and risk assessment;
c) Represent the UK at relevant international meetings, networks and working groups, consulting the CA on objectives and requirements before each meeting and providing the CA with an internal report of the meeting within 10 working days of each meeting;
d) Participate in activities organised by international organisations and contributing to the scientific input at international meetings and in manner which supports UK policy based on best available scientific knowledge;
e) Provide advice to the CA, OLs and other relevant laboratories on best scientific practice in testing for official controls purposes and undertaking activities in consultation with the CA that facilitate and promote their application in the UK within the policy aims of the CA;
f) Keep abreast of and advise the CA, OLs and other relevant laboratories of research and development for the sampling, testing and detection of GMOs;
g) Identify and inform the CA, OLs and other relevant laboratories of emerging analytical issues or developments at a national or international level and recommending action to address them;
h) Provide technical assistance to the CA in cases of contested results of analyses;
i) Where appropriate, partake and/or keep abreast of standardisation activities (e.g. CEN, ISO, etc.) relevant to the work area.

Example activities in relation to these Tasks:

- Provision of bespoke advice to the FSA:
    - Attended a series of meetings and provided advice to the FSA on approximate OL costs for acquisition and maintenance of GMO analytical expertise, as estimated by specific OLs as part of the GMO analytical capability building exercise (see Objective 04).
    - Held discussions with the FSA regarding the current status of Roundup Ready soya (40-3-2) in the UK (first authorised in the EU in February 2012), as this was the model GM event being used to demonstrate fitness for purpose as part of the FSA GMO analytical capability building exercise.
    - Provided advice to the FSA regarding the content and specifications for a project to provide a review of methods for the potential detection of gene edited (precision bred) products.
    - The NRL fed back to the FSA an OL's views regarding the need for a UK based harmonised GMO screening approach for GMOs, as an efficient and inexpensive way of testing food and feed products for the presence of GMOs.
    - Responded to a query from the FSA regarding the analysis of GM seed or grains as part of the GMO NRL function.
    - Provided advice to the FSA regarding the inference and impact of "GMO Free" status and labelling.

- Provided feedback to the FSA, regarding the user interface and the data represented in the "GB GMO register" (Register of regulated food and feed products for Great Britain - GMO authorisations).
- Discussions were held with Food Standards Scotland (FSS) on the importance of continued inclusion in European expert working groups (e.g. ENGL) associated with methods of detection for gene edited products.

- Discussions and communications with EU and international stakeholders:
  - Following discussions with the Head of the EURL-GMFF, a key member of the GMO NRL staff was invited to participate in a new ENGL Working Group on New Mutagenesis Techniques, as well as attending an ENGL plenary meeting. It was made explicit that the attendance was on the basis of being a recognised independent international scientific expert in GMO analysis.
  - Sharing of experiences and best measurement practice advice with an EU NRL on national sampling plans.
  - Discussions with an EU NRL regarding the reporting and expression of GM results in terms of single and stacked events, hemizygous calibrants, measurement uncertainty estimation and combining uncertainties, compliance against a legislative threshold, and recommendations on how best to present results.
  - Discussed with an EU NRL the likelihood of stacked vs. single events being present based on the results associated with a sample, and how best to report the results.
  - Contacted by BELAC (Belgian Accreditation Body) to ask to confirm approval of membership on their list of GMO analytical experts, to be called upon to act as auditor to ISO 17025 and ISO 17034 for GMO analysis and reference material production.

- Attendance at UK based meetings:
  - Invited to provide a presentation at Defra's Advisory Committee on Releases to the Environment (ACRE) meeting on the current/future analytical challenges for detecting products as a result of gene editing.
  - Attended the third UK GM technical meeting held between SASA, Fera and LGC.
  - Organised, held and chaired the fourth UK GM technical meeting between SASA, Fera and LGC.
  - Attended and presented at the (UK) National Reference Laboratory Symposium on the 5th October 2022, organised by the FSA and FSS. The purpose of the day was to foster collaborative relationships between NRLs, promote FSA/FSS colleagues engagement with NRLs and provide updates to NRLs on FSA/FSS strategies.

- Organisation of UK based meetings:
  - The joint Feed Additives NRL and GMO NRL network meeting was organised for Wednesday 8th March 2023. The purpose of the network meeting was to afford both NRL functions the opportunity to provide any relevant updates on

methods, enforcement, training and other applicable activities to OLs, as well as providing a suitable forum for exchanging information and for participants to raise any further training needs and support requirements. The FSA also provided an update on relevant scientific and policy areas.

- Attendance and input at the following European Network of GMO Laboratories (ENGL) Working Groups (WGs) as a recognised independent scientific expert:
    - Attended ENGL Working Group meetings on DNA extraction (DNAex).
    - Attended ENGL Working Group meetings on Genetically Modified Microorganisms (GMM).
    - Attended ENGL Working Group meetings on DNA sequencing (DNA seq).
    - Attended ENGL Working Group meetings on Definition of Minimum Performance Requirements for Analytical Methods of GMO Testing – Part 2 (MPR(2)).
    - Attended a newly established ENGL Working Group on detection of food and feed plant products obtained by New Mutagenesis Techniques (NMT).

- Attendance at the following other international meetings, seminars and working groups discussing best measurement practice guidance on GMO analysis:
    - The International Conference on GMO Analysis and New Genomic Techniques was a three day event held in Berlin (Germany) on the 14th to 16th March 2023. The conference provided a forum to promote broad technical and scientific exchange between scientists worldwide on the status and challenges for traceability, detection and identification of GMOs, with an emphasis on the fast evolving DNA-based detection methods. A focus was provided on detecting products as a result of New Genomic Techniques (gene editing), which are currently classified as GMOs in the EU. The conference was held to contribute to capacity building for experts and laboratories involved in the detection and identification of GMOs and served as platform of networking among regions as well as at global level. LGC (UK NRL) was invited to provide the first technical presentation on the opening day of the conference, outlining the current status and challenges associated with detecting both conventional GMOs and products as a result of New Genomic Techniques. LGC was also part of a panel discussion as well as co-chairing the final expert panel discussion session on the last day of the conference, the latter aimed at identifying common issues and potential solutions for GMO analysis on a global scale.
    - Attended event on New Genomic Techniques (Austria), organised by the Austrian Agency for Health and Food Safety (AGES). Discussions and activities focussed on the EU legislative proposal concerning certain New Genomic Techniques.
    - GMO NRL – PlantEd conference. Online participation in the 3rd PlantEd conference (COST Action 18111). PlantEd represents a network for plant genome editing research across Europe and beyond, providing a platform for disseminating information, discussion, and connections and updating the latest research and innovation.
    - Attended the 33rd ENGL plenary session as an invited independent international scientific expert in GMO analyses.

- HORIZON-CL6-2023-FARM2FORK: New detection methods on products derived from new genomic techniques to enable safe innovation in the food system. Following a series of meetings, the manager to the NRL function has been asked to consider joining the official Scientific Advisory Board, for a consortium proposal in response to the above tender invitation.
- A key member of the NRL team accepted the invitation to renew membership of the FSA Register of Specialists, with expertise in food authenticity testing, GMO analysis, method validation and measurement uncertainty estimation.

- Miscellaneous (advisory) activities:
  - Networked and shared expertise with Science & Advice for Scottish Agriculture (SASA) with respect to measurement uncertainty estimation associated with GMO analyses.
  - Provided advice into the Defra Impact Assessment of the Genetic Technology (Precision Breeding) Bill.
  - A new Government Chemist referee case for testing for GMOs in rice/rice products originating from China, was accepted and successfully resolved during the reported contractual period.
  - As part of synergistic activities provided through the critical mass of GC and NML projects, the NRL successfully provided data to the JRC to support the validation of a new set of MIR162 maize European Reference Materials.

Objective 03 - Production of standard operating procedures, codes of practice, guidance documents and databases

Task:

a) Contribute to the development of standardised operating procedures, relevant codes of practice and guidance documents for use by OLs and other relevant laboratories, as requested by the CA.

b) Where required, develop a database to store relevant information in relation to GMO official control testing, e.g. GMO methods, SOPs, codes and guidance

Activities in relation to these Tasks:

- Input into discussions and writing of draft guidance documents for the following European Network of GMO Laboratories (ENGL) Woking Groups, as an invited independent international scientific expert:
    - DNA extraction (DNAex) – aimed at providing advice and guidance associated with all aspects of practical DNA extractions from simple/complex matrices for GMO analysis. Publication of the resultant guidance document is anticipated during summer 2023.
    - Genetically Modified Microorganisms (GMM) – aimed at describing a practical workflow for the detection and identification of GMM. The WG is awaiting a steer from DG SANTE regarding interpretation of some of the legal aspects associated with the current EU regulations.
    - DNA sequencing (DNA seq) – aimed at providing advice on sequencing strategies for the traceability of GMOs (inclusive of Next Generation Sequencing), with a focus on methods and related quality aspects. Publication of the resultant guidance document is anticipated during 2023.
    - Definition of Minimum Performance Requirements for Analytical Methods of GMO Testing – Part 2 (MPR(2)) – aimed at providing guidance and acceptance criteria for methods for the detection of GM animals and products from New Genomic Techniques, and performance requirements for application of dPCR for GMO analysis. Publication of the resultant guidance document is anticipated during 2023.
    - New ENGL Working Group on “Detection of food and feed plant products obtained by new mutagenesis techniques” - aimed at providing an update on approaches for the detection of products of new mutagenesis techniques, in lieu of the ENGL 2019 report and in line with current knowledge and evolution of technologies. Publication of the resultant guidance document is anticipated during spring/summer 2023.
- As part of a variation to the original FS616029 contract, provided a review of analytical methods for the detection of precision bred products.

Objective 04 - Compliance assessment via audits, ring trials and provision of reference materials

Tasks:

a) Ensure consistency and quality of testing approaches applied by UK OLs and other relevant laboratories, including advising on corrective action following adverse reports on OLs from UKAS;
b) Source and provide suitable reference materials and testing kits to OLs;
c) Plan and coordinate GMO proficiency testing for UK OLs and other relevant laboratories as appropriate (taking into account the number of relevant laboratories), analysing and evaluating the outcome, informing the CA and OLs of the results and advising on appropriate follow-up action;
d) Co-ordinate the participation of UK OLs and other relevant laboratories in international method validation studies and other initiatives, informing the CA and OLs of the results and advising on further action;
e) Where relevant, participate in proficiency tests and method validation studies organised by international organisations, informing the CA of the results and implementing any corrective measures required;
f) Co-ordinate training exercises for OLs and other relevant laboratories to promote best laboratory practice in respect of GMO analysis;
g) Provide OLs with advanced notification of proficiency testing rounds to enable OLs to implement such activities in a timely manner.

Example activities in relation to these Tasks:

<u>GMO analytical Capability Building Exercise</u>

- As part of building a resilient and sustainable OL system, the FSA have provided Targeted Capability Building Grants to develop analytical capability in specific targeted areas. Following a targeted questionnaire circulated to Official Laboratories in November 2021 to assess the current situation with respect to GMO testing, the NRL and FSA were aware of several requirements and potential gaps which needed to be addressed in order to help promote acquisition of, and equally importantly, maintenance of, GMO analytical capability. As a result of this, the FSA and NRL have been working actively together to support analytical capability building for GMO testing within the UK.
- As part of this activity, the FSA are providing active financial assistance to help laboratories acquire the necessary equipment, resources and quality assurance to undertake official GMO testing for enforcement purposes. The NRL is currently actively working with several OLs in terms of technical, scientific and practical laboratory support.
- Immediate practical support packages (consisting of primers, probes, CRMs and validated detection protocols) were successfully supplied by the NRL to two OLs as part of a practical training exercise in support of GMO analytical capability building.
- Organised and attended a series of meetings between the FSA and two OLs to discuss the scope, feasibility, timeframe, key deliverables, effort and funding required by the OLs as part of the additional GMO analytical capability building initiative.
- The FSA have provided additional support and funds to the NRL to continue their assistance for support, training, consultancy and advice to the OLs as part of the GMO analytical capability building exercise.
- The NRL has been working actively with four OL's to provide further support, assistance and advice has been provided on samples, reagents, training, technical assistance,

practical capability, PCR instrumentation, commercial GMO testing kits, selection of validated detection protocols, DNA extraction approaches, DNA extraction performance metrics (quantity, quality and integrity), DNA quantitation, setting up PCR experiments, calibration curves, inhibition testing, trouble shooting, screening approaches, scopes and types of accreditation, UKAS audits, Quality Management Systems, validated methods, reference materials, data analysis, results interpretation and Proficiency Test Schemes. Regular meetings were held with OLs as part of the GMO analytical capability building exercise.

- As part of the GMO analytical capability building exercise, the NRL has been actively supporting two OL's for the development of an appropriate infrastructure to underpin inclusion in a current GeMMA (FAPAS) GMO proficiency test round. Provided advice on applying a modified DNA extraction approach and guidance on calibration curve construction. On a separate occasion, provided immediate assistance to one of the OLs on the submission day for the PT round regarding the experimental plan and interpretation of results.
- In total throughout the performance year, 17 meetings were held and consultancy/advice provided on 40 separate occasions.

ISO 17025 flexible scope of accreditation for GMO analysis

- LGC's ISO 17025 flexible scope of accreditation, which contributes towards the NRL function, was subject to a full audit by UKAS. Feedback received was very positive regarding the traceability and the quality of the records and results. No findings or recommendations for improvements were made.

Proficiency test rounds

- GeMMA U97: the NRL participates in this as part of a mandatory requirement for ISO 17025 flexible scope of accreditation, and to demonstrate continued competency in this area. Two results were submitted to provide evidence of capability, one for manual/overnight CTAB DNA extraction, and one for automated Maxwell RSC DNA extraction. Z-scores of -0.3 and -0.1 respectively provide evidence of the NRL's continued fitness for purpose in this area.
- GeMMA "Challenge round" C09: This GMO proficiency test round included qualitative/quantitative determination of two GM soya events in two challenging sample matrices (mixed flours and a processed matrix). The NRL successfully detected, identified and quantified the two GMO events (soya MON89788 and 40-3-2) in the two test materials, receiving Z-scores of -0.2 and -0.6.
- GeMMA U105: Results for this GeMMA round have been submitted and the final report by the scheme organisers will be published in due course.

Annual survey of UK Official Laboratory capability and capacity

- The Government Chemist is working with the Food Standards Agency to conduct an annual survey to assess UK OL capability and capacity to undertake the analysis of food and feed to support official controls. This will replace individual targeted NRL questionnaires going forward, with the aim to reduce the administrative burden of OL's filling out multiple forms. The GMO NRL function was asked to contribute to this by supplying relevant information from the GMO NRL 2021 questionnaire distributed to OLs.

Objective 05 - Co-ordination within the UK of international initiatives

Task:

a) Where appropriate, co-ordinate the recommendations of international organisations related to the standardisation of testing methods.

Example activities in relation to these Tasks:

- The NRL continues to maintain a dedicated physical and electronic register for control materials received prior to EU exit on the 1st January 2021, held in a secure cold room.
- The full list of the registered ENGL plasmid control materials is provided in Annex 2.

Objective 06 - Liaison and support work on GMO food/feed authorisation

Tasks:

a) Liaise with the FSA appointed laboratory on GMO food/feed authorisation process and applications.

b) Where necessary, provide support/advice to the FSA appointed laboratory for GMO authorisation on the validation of methods of analyses, reference materials.

Example activities in relation to these Tasks:

- The GMO NRL and GMO Authorisations (method validation services) positions are both operated by LGC.
- Staff from both areas are kept fully abreast of developments within each position, augmenting both functions in terms of delivery priorities whilst also providing cost saving opportunities due to synergistic activities.

Objective 07- Communication of results and data use

Tasks:

a) The Contractor shall ensure that the CA receives regular updates of any developments related to the core functions of the NRL;
b) The Contractor shall notify the CA immediately by email of any deviations or significant unexpected situations which may affect the cost, specifications and timing of the annual work programme;
c) The Contractor shall notify the CA immediately by email of any unusual occurrences resulting from any of the core functions of the NRL;
d) The Contractor shall provide annual reports of work summarising all activities completed as part of their annual work programme, to the CA by 31st March each year. Annual reports will be approved by the CA prior to publication by NRLs on NRL dedicated websites. If requested by the CA, the Contractor may also need to provide interim reports during the annual work programme;
e) Any results or reports arising from the work of the NRL will not be communicated to any external parties without the written permission of the CA;
f) The use of the data for presentations and/or papers will not be permitted unless written permission has been sought and given by the CA;
g) The Contractor will maintain records. Retention periods will be agreed and defined in the contract and if necessary the contractor will assist with transfer of archived reference material; in other work related to the core functions of the NRL, the specified deadlines agreed between the CA and the Contractor should be met;
h) If necessary, at the end of the Contract all information and data gained from, and required for, NRL function over the course of the Contract will be handed over to the CA. This will include assisting with transfer of archived reference materials;
i) Provide an internal report of meetings with other organisations within 10 working days of the meeting.
j) The Contractor will engage in quarterly dialogues with the CA to review contract management requirements and update on progress against work programme. Informal monthly check-ins with the CA may also be organised to ensure any potential or evolving issues are flagged and work is kept on track;
k) The Contractor will organise regular network meetings, as appropriate and on at least an annual basis to update their official controls networks and CA on method updates, enforcement, training and other relevant information issues and to discuss PT programmes and results;
l) The Contractor will review NRL finances regularly and communicate spending, including a break-down of costs, with the CA on a monthly basis.

Example activities in relation to these Tasks:

- The GMO NRL 2021/2022 annual report and the GMO NRL Annual Workplan 2022-2023 were successfully published on the NRL webpages.
- Monthly logs, providing detailed descriptions of all activities engaged in as part of the GMO NRL function, are provided on a monthly basis to the FSA.
- Four GMO NRL Quarterly Review Meetings were successfully held with the FSA and FSS.
- The joint Feed Additives NRL and GMO NRL network meeting was successfully organised on Wednesday 8th March 2023.

- Project work associated with the GMO NRL and Authorisation roles have been successfully migrated onto SharePoint in Microsoft Office 365. This is in line with migration of all government projects/contracts and data security compliance.
- The UK NRL is in constant contact with the FSA by email, phone and Microsoft Teams in relation to queries, updates, developments and deliverables.
- Contract Change Notice (CCN) 1 FS900243 'Literature review on analytical methods for the detection of precision bred products' was signed on 24th November 2022. This variation to contract was to deliver a desk-based review of the current state-of-the-art associated with methods for the detection of Precision Bred Organisms (PBOs) in the food and feed supply chains. The project was completed in March 2023.
- Contract Change Notice (CCN) 2 FS616029 'Requirement for additional training to build official laboratory capability' was signed on 1st December 2022 and completed in March 2023.
- The UK NRL is available for provision of advice on GMO analysis to all UK OLs by email, phone, MS Teams and face-to-face meetings where appropriate.
- The Joint NRL (Feed Additives and GMOs) Network Meeting was held as a virtual event. The meeting provided both NRL functions the opportunity to communicate relevant updates on methods, enforcement, training and other applicable activities, as well as providing a suitable forum for exchanging information and for participants to raise any further training needs and support requirements. The FSA provided an update on relevant scientific and policy areas. Sixteen staff from eight Official Laboratories attended the event, as well as ten representatives from the FSA and FSS.

Annex 1: Additional links to NRL annual reports, work programmes and advisory notes

Copies of previous reports, work programmes and advisory notes can be found on the NRL webpages.

Annex 2: List of ENGL Control materials housed by the NRL

GM	Species	ENGL plasmid no.
Event 558 (GMM)	*Bacillus subtilis*	pENGL-00-EM-01/18-01
281-24-236	Cotton	pENGL-00-14/05-01
3006-210-23	Cotton	pENGL-00-14/05-01-B
COT102	Cotton	pENGL-00-05/16-01
DAS 81910-7	Cotton	pENGL-00-06/16-01
GHB119	Cotton	pENGL-00-04/11-01
GHB614	Cotton	pENGL-00-14/07-01
GHB811	Cotton	pENGL-00-04/18-01
LL25	Cotton	pENGL-00-13/04-01
MON1445	Cotton	pENGL-00-15/04-01
MON15985	Cotton	pENGL-00-24/04-01
MON531	Cotton	pENGL-00-16/04-01
MON88701	Cotton	pENGL-00-01/13-01
MON88913	Cotton	pENGL-00-05/07-01
T304-40	Cotton	pENGL-00-05/11-01
GM Strain AG3139	*E. coli*	pENGL-00-04/08-01
GM Strain 19E	*E. coli* K-12	pENGL-00-06/08-01
3272	Maize	pENGL-00-03/06-01
5307	Maize	pENGL-00-07/11-01
59122	Maize	pENGL-00-03/05-01
Bt11	Maize	pENGL-00-10/07-01
Bt11	Maize	pENGL-00-12/05-01
BT176	Maize	pENGL-00-18/04-01
DAS-40278	Maize	pENGL-00-10/10-01
DP-4114	Maize	pENGL-00-02/14-01
GA21	Maize	pENGL-00-15/05-01
GA21	Maize	pENGL-00-29/04-01
LY038	Maize	pENGL-00-01/06-01
MIR162	Maize	pENGL-00-08/08-01
MIR604	Maize	pENGL-00-04/05-01
MON810	Maize	pENGL-00-25/04-01
MON863	Maize	pENGL-00-01/04-01
MON87403	Maize	pENGL-00-02/15-01
MON87411	Maize	pENGL-00-01/15-01
MON87419-8	Maize	pENGL-00-02/17-01
MON87427	Maize	pENGL-00-03/12-01 MON87427
MON88017	Maize	pENGL-00-16/05-01
MON89034	Maize	pENGL-00-06/06-01
MZHG0JG	Maize	pENGL-00-04/16-01
MZIR098	Maize	pENGL-00-04/17-01

GM	Species	ENGL plasmid no.
NK603	Maize	pENGL-00-27/04-01
T25	Maize	pENGL-00-08/04-01
T25	Maize	pENGL-00-08/04-01
TC1507	Maize	pENGL-00-02/04-01
VCO	Maize	pENGL-00-07/12-01
DP73496	Oilseed rape	pENGL-00-02/12-01
MON88302	Oilseed rape	pENGL-00-09/11-01
Ms1	Oilseed rape	pENGL-00-11/04-01
Ms11	Oilseed rape	pENGL-00-03/16-01
Ms8	Oilseed rape	pENGL-00-06/04-01
Oxy-235 genomic DNA	Oilseed rape	Oxy-235 oilseed rape
Rf1	Oilseed rape	pENGL-00-09/04-01
Rf2	Oilseed rape	pENGL-00-10/04-01
Rf3	Oilseed rape	pENGL-00-07/04-01
RT73	Oilseed rape	pENGL-00-26/04-01
T45	Oilseed rape	pENGL-00-14/04-01
Topas 19/2	Oilseed rape	pENGL-00-12/04-01
EH92-527-1	Potato	pENGL-00-09/05-01
Bt63	Rice	pENGL-00-EM02/06/01
40-3-2	Soybean	pENGL-00-08/05-01
A2704-12	Soybean	pENGL-00-13/05-01
A5547-127	Soybean	pENGL-00-01/08-01
CV127	Soybean	pENGL-00-01/09-01
DAS44406-6	Soybean	pENGL-00-01/12-01 DAS44406-6
DAS-68416-4	Soybean	pENGL-00-11/10-01
DAS81419-2	Soybean	pENGL-00-03/13-01 DAS81419-2
DP-305423-1	Soybean	pENGL-00-07/07-01
DP-356043-5	Soybean	pENGL-00-04/07-01
FG72	Soybean	pENGL-00-04/10-01
GMB151	Soybean	pENGL-00-01/18-01
MON87460	Soybean	pENGL-00-04/09-01
MON87701	Soybean	pENGL-00-05/09-01
MON87705	Soybean	pENGL-00-01/10-01
MON87708	Soybean	pENGL-00-02/11-01
MON87751	Soybean	pENGL-00-03/14-01
MON87769	Soybean	pENGL-00-07/09-01
MON89788	Soybean	pENGL-00-05/06-01
SYHT0H2	Soybean	pENGL-00-04/12-01
H7-1	Sugar beet	pENGL-00-28/04-01
MON71200	Wheat	pENGL-00-EM-02/18-01