

Tailored Review of the Agri-Food and Biosciences Institute (AFBI)

Annexes to Review Report

September 2018

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Annex A – Terms of Reference for the Review

1. Background to AFBI

The Agri-Food and Biosciences Institute (AFBI) is an executive Non-Departmental Public Body, sponsored by the Department of Agriculture, Environment and Rural Affairs (DAERA).

AFBI was established in 2006 under The Agriculture (Northern Ireland) Order 2004 which provides AFBI with the power to undertake scientific work in the fields of agriculture, animal health and welfare, food, fisheries, forestry, the natural environment, and rural development and enterprise.

The Institute exists primarily to provide DAERA with a range of statutory, analytical and diagnostic scientific services, research and development and an emergency response capability. It also serves the agri-food industry and wider community in a local, national and international context by delivering high quality scientific services.

It is currently located on six specialised DAERA owned sites across Northern Ireland and one site leased by DAERA from a private landowner at Bushmills. In total the AFBI estate comprises of 421 hectares of land and 37,000m² of laboratory, office accommodation and outbuildings.

AFBI's income from DAERA in 2016/17 was £36.8m which accounted for approximately two-thirds of its total income. Funding amounting to £19.4 million was secured from a range of external non-DAERA sources including animal vaccine royalty income, grant funding from the EU, other public sector customers and the private sector. Thus AFBI's total income for 2016/17 was £56.2 million.

AFBI has downsized over recent years (21% reduction in staff numbers) via its Voluntary Exit Scheme and natural wastage. Currently AFBI has a staff complement of 593 FTE, of which 438 are scientific grade staff.

2. Need for review

All UK public bodies are subject to periodic review to ensure they remain efficient, effective and accountable. Previously, under Cabinet Office guidance issued in 2000, Government Departments were required to conduct regular and challenging reviews of the public bodies for which they were responsible every five years (*Quinquennial Reviews*). In 2016, the Cabinet Office published new guidance for Departments (*Tailored Reviews: guidance on reviews of public bodies*) on which to base reviews of all arm's length bodies at least once every Parliament.

The "Public Bodies: a Guide for NI Departments", published in 2008, advises that a NDPB should be reviewed regularly to consider whether it continues to be the best

way to deliver the services for which it is responsible, and if it is, how delivery of these services can be improved.

In this context and taking into account the fact that various reviews were undertaken on specific AFBI organisational issues in 2012-2013, DAERA has committed to undertaking a tailored review of AFBI in 2017.

It is important to highlight that DAERA sees that this review will be comprehensive, constructive and beneficial both to AFBI and to the Department. The review is one of four workstreams within DAERA's Science Transformation Programme which has a draft vision of delivering world class science that will enable the Department to meet its strategic outcomes effectively and efficiently. The Programme's workstreams focus on identifying science needs, evaluating commissioning arrangements, completing the tailored review of AFBI and creating investment plans for DAERA's science platforms.

3. Guidance followed

The most recent UK Government guidance available "Tailored reviews: Guidance on Reviews of Public Bodies" (Cabinet Office, November 2016) has been used to guide and direct the development of this Terms of Reference document.

4. Scope

The Review will consider the functions that AFBI undertakes. It will provide a view on the continuing need, efficiency and governance of AFBI at a strategic level. The Tailored Review guidance includes advice on how Public Sector Research Establishments – such as AFBI – should be reviewed and this will be followed. Recommendations from this review may signal the need for more in-depth investigation in areas of operation.

5. Aims

In line with the Cabinet Office guidance, DAERA's review of AFBI aims to provide a robust challenge to, and assurance on, the continuing need for AFBI – both its functions and form.

Where it is agreed that AFBI should be retained, the review will then examine:

- AFBI's capacity for delivering more effectively and efficiently, including identifying the potential for efficiency savings. This is reflective of the ongoing context of reducing public funding and fiscal restraint. AFBI's ability to contribute to economic growth will also be examined.
- The control and governance arrangements in place to ensure that AFBI and DAERA are complying with recognised principles of good corporate governance.

As AFBI falls within the Cabinet Office definition of a Public Sector Research Establishment (PSRE), DAERA will ensure that its review of AFBI's functions includes

those specifically outlined for a PSRE. The three key themes are:

- a) Policy and Regulation - the policy, regulatory and emergency response roles played by AFBI which are supported by its scientific and technical expertise/capabilities and resources. This will include services provided across Government, and in an international context.
- b) Science - the special scientific and technical capabilities, facilities and resources held or maintained by AFBI and the importance of these to national and international research capability.
- c) The economic / innovation system - the broader economic roles AFBI plays in local, regional, national or international systems, such as knowledge transfer, development of new innovations and commercialisation activity.

6. Key principles

DAERA's review of AFBI will be conducted in line with the following principles:

- **Proportionality** – including drawing on existing information on AFBI's functions, where already available.
- **Challenge** – a first principle approach will be taken to whether each of AFBI's functions are still needed, still being delivered, carried out effectively and contributes to the core business of AFBI, of DAERA and of Government as a whole. If the function is still required, then the review will consider whether the existing model of delivery is still appropriate and test it against the alternatives set out at Annex A of the Cabinet Office guidance (options include Executive Agency, merger with another organisation and a fully commercial model). Understanding how AFBI intends to respond to the UK leaving the EU will also be considered as part of the review, where appropriate.
- **Being Strategic** – the review will be required to align with other relevant policy and strategic reviews underway in DAERA, in particular the other workstreams being completed within the DAERA Science Transformation Programme.
- **Pace** – see section 11.
- **Inclusivity** – the review will be open and inclusive. AFBI will be engaged and consulted throughout. The Review Team will define and agree the form of engagement with AFBI and the review's other key stakeholders. Some initial proposals in this regard are provided at section 12.
- **Transparency** – the final report will set out recommendations, including any that address areas of non-compliance with corporate governance. An implementation plan for the recommendations will be agreed between AFBI and DAERA. The report will be cleared by the SRO and Project Board and will be sent to the DAERA Minister for approval, issue to AFBI and publication on the DAERA and AFBI websites.

7. Key stakeholders

A stakeholder analysis will be developed to determine the appropriate means and level of engagement with stakeholder groups. AFBI's stakeholders include:

- The DAERA Minister and senior officials, including those involved in sponsoring AFBI and in management of the Assigned Work Programme (AWP) commissioning processes.
- AFBI Chair, Deputy Chair and Board members.
- AFBI Chief Executive, Executive Management Team and other relevant staff.
- G5 and G6/7 DAERA customers AWP (R&D and non-R&D) and non-AWP (including Environment, Marine and Fisheries Group SLA customers).
- Other AFBI customers including farmer levy boards; commercial organisations and other public funders in UK and Ireland.
- Professional scientific bodies.
- Agri-food industry representative bodies.
- Non- Government Organisations.

Engagement will be through:

- A call for evidence advertised on the DAERA and AFBI websites, to include a questionnaire and an option to submit written responses. Known stakeholders will be notified by email of this call for evidence.
- Invitations to a range of stakeholders to interviews with members of the review team.

The AERA Committee will be notified of the review and invited to contribute views.

AFBI will be closely engaged in the review and will have the opportunity to comment and input from the planning phase onwards. AFBI will also be given the opportunity to comment on the evidence, conclusions and recommendations of the review as these emerge.

8. Review Team

DAERA is responsible for carrying out the review and for providing the resources for it. The Review Team will not be led by staff from the team sponsoring AFBI or by any Departmental official who could be deemed to have a conflict of interest.

The Review Team will be responsible for carrying out the review. This will include formulating the methodologies for engaging with stakeholders, carrying out that engagement (directly or via another team, Department or organisation), analysing the findings, drawing conclusions, making recommendations and producing a written report. Therefore the review team will need to comprise of members who will bring together the following knowledge, skills and expertise:

- Knowledge of AFBI and the relationship between AFBI and DAERA as its sponsor Department.
- Knowledge of the DAERA/AFBI customer/contractor relationship.
- Research / consultation / stakeholder engagement skills.
- Written communication i.e. drafting skills.

In addition, experience in reviewing other NDPBs would be beneficial within the team. Therefore DAERA will engage with the Department of Finance's Business Consultancy Service (BCS) to secure their services within the Review Team.

The members of the Review Team and their roles are as follows:

Name	Position	Grade	Review Team Role	Time allocation (FTE / days)
Pauline Rooney	AFBI Review Lead	6	Head of Review Team	Full-time
Alan McCartney	Agri-food Inspection Branch	7	Member	2 days / month
Seamus McErlean	Economics and Evaluation branch	7	Member	2 days / month
Lynda Lowe	Central Management Branch	7	Member	2 days / month
Keith Bradley	Environment, Marine and Fisheries Group	6	Member	2 days / month
Ian McKay	*Business Consultancy Service, Public Sector Reform Division, Department of Finance	7	Hands on role as part of review team carrying out some of the work as well as providing guidance, oversight and facilitation	1 day / month for approx 5-6 months
Shane McKinney	Rural Affairs Division, West Branch (Omagh)	DP	Member and Secretary	8 days / month

*In addition to their role on the Review Team, BCS will undertake two specific pieces of work: Review of DAERA's AFBI Funding Model and AFBI Board Effectiveness

9. Reporting

A Project Board will be established to oversee the review and to own its report. The Board will be chaired by Norman Fulton, Head of Food and Farming Group in DAERA, who will act as Senior Responsible Owner (SRO) for the review.

Members of the Project Board will be from within and outside DAERA, to provide a balance between internal knowledge and experience and independent, relevant expertise. Together, the Board will have the following:

- Knowledge of AFBI.
- Knowledge of similar organisational reviews.
- Responsibility for policy / delivery of comparable scientific functions in other jurisdictions.
- Knowledge of the agri-food industry in Northern Ireland and beyond.

In addition to the SRO, the Board's members are:

- Malcolm Beatty (Senior DAERA User of AFBI)
- Jackie Robinson (Senior DAERA User of AFBI)
- Dr Sinclair Mayne (AFBI CEO)
- Lisa-Jane Mcilveen (DAERA Science Transformation Programme)
- Richard Howell (External Senior Research Commissioner)
- Professor Ian Boyd (External Senior Science Expert)
- Professor Geoff Simm (External Senior Science Expert)
- Dr Mike Johnston (Senior Industry representative)
- David Russell (Independent Board Member)

The Review Team will report to the Project Board. The Project Board will review and give clearance of the Review Team's report for submission to the Minister. The Minister will consider and when approval has been granted will issue it to AFBI. The report will subsequently be published on the DAERA and AFBI websites.

10. Methodology

While it will be for the Review Team ultimately to consider and the SRO and Project Board to agree the methodology for the review, this terms of reference provides a number of initial suggestions, for further refinement and confirmation.

Aim	Methodology
<p>To provide a robust challenge to, and assurance on, the continuing need for AFBI – both its functions and form.</p>	<p>Part 1 AFBI functions and the need for them</p> <p>The review team should establish a clear understanding of AFBI's functions (including those of a Public Sector Research Establishment) and the services and support it provides to DAERA, other NICS Departments, the wider public sector, industry / private sector organisations in Northern Ireland and in a national, EU and international context. This should include an assessment of the value of AFBI's work to individuals, organisations and sectors.</p> <p>Does AFBI have systems for assuring the quality of its scientific activities?</p> <p>How does the quality of its research compare against the universities and other similar organisations?</p> <p>Do AFBI's diagnostic and associated advisory services meet the needs of users?</p> <p>Does AFBI have a science strategy? How does it address shortfalls and drive improvement?</p> <p>Is the AFBI model optimal for securing and supporting world-class scientific talent?</p> <p>The review should then consider whether AFBI's functions are still necessary and if so, whether the functions still require delivery at arm's length from government. The following tests should be used to determine this for each function:</p> <ol style="list-style-type: none"> 1. Is a technical function being performed? 2. Does the function require political impartiality? 3. For each function, does AFBI need to act independently to establish facts? 4. Does DAERA need this function? 5. Is it being carried out effectively by AFBI?

Part 2

Is a NDPB the most appropriate model?

If AFBI's functions are still required then the review should consider whether its existing NDPB model of delivery is still appropriate and test that against the alternatives set out in Annex A of the CO guidance. This takes the form of a checklist with a series of questions for consideration against each delivery option. Again, the views of key stakeholders should be sought to assist in this assessment.

Part 3

Relationship between AFBI and other organisations

What are the linkages between AFBI and CAFRE and between AFBI and the local universities which facilitate postgraduate education and knowledge transfer? Are these effective? Are the benefits of these relationships being maximised?

What linkages are there between AFBI and EMFG Are these effective? Is there potential for further synergies?

What linkages are there between AFBI and other providers of surveillance, R&D and contingency response functions in the UK and ROI? Are these effective? Is there potential for further synergies?

What are the wider science networks AFBI engages with to inform its delivery of scientific services in Northern Ireland?

Part 4

AFBI strategic management

	<p>AFBI 2020 Strategy – how is this operationalised? How does AFBI establish its priorities?</p> <p>Is the AFBI organisational structure fit for purpose? Does it have the capability of delivering the organisation’s objectives effectively and efficiently?</p> <p>Does AFBI have a Stakeholder Engagement Strategy? Is it effective in its engagement with stakeholders and responsive to evaluation of stakeholder engagement?</p> <p>Part 5 The UK’s exit from the EU What impact on AFBI functions is likely from the UK’s exit from the EU? How does it intend to respond?</p>
<p>AFBI’s capacity for delivering more effectively and efficiently, including identifying the potential for efficiency savings and, where appropriate, its ability to contribute to economic growth.</p>	<p>Part 1 Review of recent audits</p> <p>In line with the principle of proportionality, the review team should, in the first instance, consider recent audits of and other sources of information on AFBI’s efficiency and performance.</p> <p>Examples of relevant recent audits / other sources of information include:</p> <ul style="list-style-type: none"> • the NIAO’s Value for Money report of 2012; • the subsequent PAC report and both sets of recommendations; • AFBI’s internal auditors’ consideration of AFBI’s annual performance against its KPIs; • DAERA’s assessment of AFBI’s performance in its delivery of the Assigned Work Programme annually, at mid-year and end-year; • AFBI’s internal auditors’ consideration of AFBI’s efficiency measurement and DAERA internal audit’s planned follow-up reviews; • AFBI’s unit costing and benchmarking report of January 2016; • DAERA business areas’ benchmarking information from providers of services comparable to AFBI’s.

Part 2

Procurement

Does AFBI have a Procurement Strategy? How does it ensure procurement is managed in line with relevant guidelines

Part 3

Managing Income

Does AFBI have an Income Generating Strategy? How does it manage income generation effectively and optimise the potential for generating income?

Part 4

Estate Management

Does AFBI have an Estate Management Strategy? How does it take action to deliver value for money, sustainability and a healthy workplace which supports business delivery through the effective use of the facilities and estate it utilises?

Part 5

Data Management (addressing scientific and corporate data)

Does AFBI have a Data Management Strategy? How does it comply with all relevant regulation? What systems does it have in place which facilitate the storage and timely retrieval of data? How effective are they? What systems does it have in place which facilitate the accurate, timely and secure communication of data both internally and externally? How effective are they? What systems does it have in place which facilitate access of data for scientific services and research purposes such as easier connection of data sets? How effective are they?

	<p>Part 6</p> <p>Contribution to Economic Growth</p> <p>How does AFBI measure its work contributes to the economic growth of the agri-food and environmental sectors in NI?</p> <p>Part 7</p> <p>People Management</p> <p>Does AFBI have a People Strategy? How does it take action to deliver effective leadership, high performance, an enabled workforce, succession planning and improved skills and resourcing through its people?</p>
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The control and governance arrangements in place to ensure that AFBI and DAERA are complying with recognised principles of good corporate governance.

**Part 1
Good Corporate Governance**

A guide for assessing good corporate governance is included at Annex C of the CO guidance. The review team should use this guide to assess the control and governance arrangements in place and determine whether AFBI and DAERA are complying with recognised principles of good corporate governance. It is envisaged that there is sufficient information already documented and available in AFBI and DAERA to enable the review team to adopt a primarily desk-based approach to this assessment.

**Part 2
Management of the Sponsor Relationship**

What are the mechanisms / processes which manage the sponsorship relationship between AFBI and DAERA?

Are roles and responsibilities of both parties clear?

Is the contracting mechanism effective? Does it deliver value for money?

Is the funding model used fit for purpose? (BCS will undertake)

**Part 3
AFBI Board**

Does the AFBI Board provide effective challenge and strategic direction for the organisation? (BCS will undertake)

11. Timescales

The AFBI review will be completed quickly to minimise the disruption to AFBI's business. The guidance recommends that reviews should normally take no more than six months. Therefore, DAERA is aiming to begin its review of AFBI in June 2017 and complete it by December 2017. It is estimated that the clearance process could take

up to three months, therefore it is envisaged that the report and recommendations will issue to AFBI by March 2018.

12. Next Steps

Month	Key Tasks / Milestones
January to May	<ul style="list-style-type: none"> • Development of draft terms of reference, informed by discussions with Department for Communities, The Executive Office and the Department of Health (GB). • Engagement with AFBI CEO to discuss review scope. • Agree the Review's Senior Responsible Owner. • Approach people to become members of the Project Board and Review Team. • DAERA Top Management Team (TMT) to note terms of reference. • DAERA and AFBI Boards to consider terms of reference. • SRO writes to AFBI Chair to confirm terms of reference, timescales etc.
June	<ul style="list-style-type: none"> • Innovation Lab to refine and agree vision for DAERA science. • First meeting of Project Board. • AFBI Review starts.
June	<ul style="list-style-type: none"> • Review Team begins its work by identifying the key stakeholders, information requirements and engagement methodologies. • These should be presented to the Project Board for sign-off.
July - October	<ul style="list-style-type: none"> • Engagement with key stakeholders.
November	<ul style="list-style-type: none"> • Analysis of findings, formulation of views, drafting of report and recommendations.
December	<ul style="list-style-type: none"> • Review Team presents draft report to Project Board for feedback.
January	<ul style="list-style-type: none"> • Review Team prepares final report, incorporating Project Board feedback.
February	<ul style="list-style-type: none"> • Project Board signs-off on Report. • Report is submitted to Minister for approval.
February - March	<ul style="list-style-type: none"> • Minister considers Report.
March	<ul style="list-style-type: none"> • Minister issues report and recommendations to AFBI and published on the DAERA website.

Annex B – Membership of the Review Team and Project Board

Review Team

Review Lead

Pauline Rooney	AFBI Review Lead	Grade 6
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Members

- | | | |
|----------------------|---|---------|
| • Keith Bradley | Environment, Marine and Fisheries Group | Grade 6 |
| • Lynda Lowe | Central Services and Rural Affairs Group | Grade 7 |
| • Alan McCartney | Veterinary Services and Animal Health Group | Grade 7 |
| • Dr Seamus McErlean | Food and Farming Group | Grade 5 |
| • Ian McKay | Business Consultancy Service, DoF | Grade 7 |
| • Shane McKinney | Review Support | DP |
| • Dr Alex McGarel | Review Support | Grade 7 |

Project Board

Chairperson

Norman Fulton	Head of DEARA Food and Farming Group
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Members

- | | |
|------------------------|--|
| • Malcolm Beatty | Senior DAERA User of AFBI (until April 2018) |
| • Professor Ian Boyd | External Senior Science Expert |
| • Richard Howell | External Senior Research Commissioner |
| • Dr Mike Johnston | Senior Industry representative |
| • Dr Sinclair Mayne | AFBI CEO |
| • Lisa-Jane Mcilveen | DAERA Science Transformation Programme |
| • Jackie Robinson | Senior DAERA User of AFBI |
| • David Russell | Independent Board Member (until December 2017) |
| • Professor Geoff Simm | External Senior Science Expert |

Annex C – Stakeholder Engagement

Questionnaire Responses

Response type	Number of responses	%
DAERA	49	53.3
Public sector other (central or local government)	5	5.4
Individual	6	6.5
Agri-food body	8	8.7
Farm business	4	4.3
Feed manufacturer	3	3.3
Food manufacturer	2	2.2
Research organisation	2	2.2
Academic institution (university, college etc)	2	2.2
Other	11	12.0

One-to-one Interviews

DAERA

Top Management Team – Permanent Secretary (Noel Lavery)

Top Management Team – Chief Veterinary Officer

Top Management Team – Director of Finance and Estates

Top Management Team – Director of Science Evidence & Innovation Policy Division

Senior User – Marine and Fisheries

Senior User – Trade, Contingency, Compliance and Public Health Division

Senior User – CAFRE

Senior User – Food and Farming Policy Division

Senior User – Animal Health & Welfare Policy Division

Senior User – Agriculturist Economist

Senior User – Enzootic Disease and Animal Welfare

Senior User – Countryside Management Division

Senior User – Natural Environment Division

Senior User – Regulatory & Natural Resources Policy Division

Senior User – Resource Efficiency Division

Senior User – Rural Affairs Division / Sustainable Rural Communities Branch

AFBI

Executive Management Team – Chief Executive Officer

Executive Management Team – Director of Finance and Corporate Affairs

Executive Management Team – Director of Veterinary Science Division

Executive Management Team – Director Sustainable Agri-Food Science Division

Staff – Agriculture Branch

Staff – Immunodiagnosics

Staff – Grassland Dairy Systems

Staff – Bacteriology Branch

Staff – Agriculture and Food Economics Branch

Staff – Finance and Business Support

Staff – Fisheries and Aquatic Ecosystems

Staff – Agri-Environment Branch

Staff – Veterinary Epidemiology

AFBI Board – Chairperson

AFBI Board – Deputy Chair

AFBI Board – Board Member

External Stakeholders

Agri-food / Environmental Representative – FSA

Agri-food / Environmental Representative – NIFDA / AgriSearch

Agri-food / Environmental Representative – RCN

Agri-food / Environmental Representative – RSPB

Agri-food / Environmental Representative – Seafish

Agri-food / Environmental Representative – UFU

Education – QUB

Education – SRUC

Education – Teagasc

Education – UU

Industry – Dale Farm

Industry – Devenish Nutrition

Industry – Farmer / Board of Harper Adams University

Industry – Farmer / Land Management Strategy

Industry – Moy Park

Annex D – Summary of the Online Questionnaire Findings

Introduction

As part of the AFBI Review, an online questionnaire was completed in October 2017. The questionnaire included questions relating to AFBI's role, including as a public sector research establishment and its use by customers. The responses to the questionnaire will add to the information collated and considered through written evidence provided by both AFBI and DAERA. This information has informed the final evidence-gathering stage of the review, which is a series of interviews with staff from DAERA and AFBI and external stakeholders. These will provide the opportunity to explore the emerging issues identified in the earlier phases of the review.

The science services AFBI provides can be categorised as:

- Research and Development,
- Diagnostic and Analytical services,
- Specialist Advice; and
- Emergency Response Capability (this service is provided only to DAERA)

How was it conducted?

The survey was conducted through Citizen Space. It opened online on 29 September and closed on 31 October 2017. Hard copies were available on request.

A link to the survey was sent to a list of stakeholders provided by AFBI and DAERA. It was also available on the DAERA intranet. Weekly emails were issued to DAERA departmental heads and stakeholders to encourage participation. The questionnaire was available to the public on the DAERA website and a press release was issued to coincide with the opening of the questionnaire, to raise awareness of the questionnaire with the general public and to encourage completion.

Who Responded?

92 respondents completed the survey. This included staff from within DAERA, other government departments, non-governmental organisations and private sector businesses categorising themselves as follows:

- DAERA (49)
- An individual (6)
- Agri-food body (8)
- Farm business (4)
- Feed manufacturer (3)
- Food manufacturer (2)
- Public sector (central or local government) (5)

- Research organisation (2)
- University / college / academic institution (2)
- Other (11)

In general the summary provided below relates to all respondents and all services except where explicitly stated.

AFBI's Functions

A range of questions relating to the current and future science services needs of users were asked.

Current needs

Responses indicated that in general current needs were being met well and almost all respondents thought it important or very important that research and development, diagnostic and analytical and specialist advice services continue to be delivered. The question was not applied to the emergency response capability service.

Responses suggested that AFBI provided some or all of the majority of respondents' science services in the last three years with most of the remaining services being delivered by providers outside Northern Ireland. The main reason given for this across all services was that AFBI did not have the required expertise. Other reasons included that other providers offered better value for money or were more convenient; that they were participating in collaborative work; that they wanted wider scope, e.g. for data to be applicable to a range of markets; or that they required the input of another provider.

Future needs (over the next 5 years)

Many respondents were uncertain about what their future science service needs might be or the resources available to them and were therefore unable to say whether they would be using AFBI in 5 years' time. Nonetheless, a number of respondents indicated that their confidence in AFBI's ability to meet their future needs had been lessened by loss of expertise and several would want to see improvements in AFBI's diagnostic and analytical services.

Where respondents indicated that they would be using service providers other than AFBI this was, in the main, to access specialist expertise not available in AFBI. Additional reasons for using alternative providers in the future included that they were involved in collaborative work using a range of providers; that they wanted a wider scope of work; or that other services were more convenient, including their own in-house provision. Value for money was also identified as a consideration, particularly for diagnostic and analytical services. A requirement to use other

providers for reference purposes was also identified in relation to diagnostic and analytical services.

Rating of AFBI's services

All four of AFBI's services were rated highly for quality with over three-quarters of all respondents rating them as good or very good.

In addition to quality, respondents were also asked to rate the innovation, forward thinking and value for money aspects of AFBI's research and development, diagnostic and analytical and specialist advice services. Relevance to current issues was also asked in relation to research and development and specialist advice services.

In general the innovation, forward thinking and relevance to current issues aspects of AFBI's services rated well. Responses covered a range of ratings but most respondents considered them to be good or very good and very few rated them as below average or poor.

There were indications that the value for money aspect was not rated as highly and this opinion seemed most apparent among DAERA respondents in relation to research and development, where most rated AFBI's value for money as below average or poor. However, compared to the other aspects of AFBI's services, many respondents were unable to rate value for money.

All respondents were asked to indicate the purpose(s) for which they used AFBI's research and development, diagnostic and analytical and specialist advice services. Six suggestions were provided; policy development, business improvement, industry systems, product development, technology transfer and compliance. Respondents could also add in other purposes.

All six purposes were relevant to those using AFBI's research and development services with additional uses including the provision of advice to senior officials and site visits and learning opportunities for students. Policy development, product development and technology transfer were the main reasons given for using diagnostic and analytical and specialist advice services. Across all categories, policy development was the most predominant use identified.

Role and Delivery as a Public Sector Research Establishment (PSRE)

An element of the review considers whether a public sector research establishment (which AFBI is) is needed to deliver the science services needs of DAERA. A range of questions relating to the nature and location of the organisation used to deliver these services were posed in the questionnaire.

Delivered by an organisation outside central government

There appeared to be no consensus on whether science services should be provided by an organisation outside of central government. Only among non-DAERA respondents was there a clear preference for specialist advice services to come from an organisation within central government.

Delivered by an organisation within Northern Ireland

There was a clear preference among respondents on the importance of services being provided by an organisation within Northern Ireland, with most considering it as important or very important. Nonetheless, for a significant minority of DAERA respondents it would seem that local delivery is not important in meeting their research and development needs.

Delivered by an organisation within the public service

Respondents were divided on whether their science services should be delivered by an organisation within the public service, however support for this proposition was strongest within DAERA where respondents considered it to be an important factor for delivery of emergency response capability services.

Delivered by a non-profit making organisation

Respondents were divided on whether or not it is important for their science services to be delivered by a non-profit making organisation.

Delivered by an organisation that is a world-class provider

Almost all respondents were consistent in considering it important or very important for their science services to be delivered by an organisation that is a world-class provider.

Rationale

A range of reasons were provided in support of the answers given to the above PSRE issues. Most respondents wanted the provider to be scientifically credible and operating at a high standard. Many also wanted their services to be provided locally although some accepted this was not necessary, and that specific consideration of Northern Ireland needs would meet their needs. Impartiality was another frequently mentioned consideration with respondents wanting their provider to be free from commercial pressure as well as political influence although several would appear to want their research and development services linked to government so that they would be consistent with policy.

Value for money was also seen as important for research and development and the specialist advice service, but the emphasis appeared to be more on competitive

pricing for diagnostic and analytical services. Speed of delivery was one of the most frequently mentioned requirements for emergency response capability services.

A number of respondents stressed that the model of delivery was not an important consideration provided the services met required criteria.

Changes that could improve AFBI's services

Respondents were invited to identify any changes that could improve AFBI's services and a range of suggestions were given. Across all services respondents wanted to see more investment in AFBI's resources, particularly IT and new technology, and the employment of more staff or measures adopted to retain staff. Becoming more competitive was also frequently cited and this was mostly linked to the need to reduce AFBI's overheads and bureaucracy but also to results being produced faster. The need for better communication was identified by many respondents as was the need for greater collaboration with other organisations such as CAFRE, local universities and the private sector. Several respondents also suggested there was a need for AFBI to streamline services and adopt a more strategic approach.

Linkages with other Organisations

Respondents noted AFBI's current involvement in international collaboration with universities and other organisations to enhance the agri-food, rural and marine sectors, improve the environment and respond to emergency situations. However, respondents also remarked on the potential for enhanced levels of collaboration with local and international organisations, including CAFRE and local universities. It was considered that this would allow AFBI staff to widen their expertise in terms of techniques and scientific knowledge. Closer links to universities would also underpin postgraduate student research and help to create a succession pathway for skilled scientists.

Strategic Management

The need for AFBI to prioritise its strategic functions and develop a strategic approach was raised by respondents when asked to identify weaknesses in AFBI's current approach. Longer term planning and consideration by both AFBI and DAERA as to how science and evidence needs will be met was proposed. Respondents commented on the need for strategic leadership and the need to deal effectively with longer term succession issues.

Stakeholder Engagement

When asked about how well AFBI communicates and engages with stakeholders, over three quarters of respondents rated this as effective or effective in some areas. Consideration of the comments provided by respondents suggests that communication between customer and contractor at operational level is particularly effective. However, there were reports of confusing and unclear roles and responsibilities. Associated with this is a difficulty in identifying appropriate contacts within AFBI to take forward work. Respondents suggested that more could be done to raise awareness of the services that AFBI can provide. The relatively new newsletter has been well received as are open / field days.

Other points arising from the Survey

Delivery by a single organisation

When asked about how important it is that the range of services currently provided by AFBI are delivered by a single organisation, over half of all respondents considered this to be important or very important. Less than a quarter of respondents considered this as not important.

Rating how useful AFBI work has been

Almost three quarters of respondents indicated that work undertaken by AFBI during the past three years had been useful or very useful for their business and sector. AFBI's ability to provide evidence-based advice, the organisation's region-specific support and its role in research and diagnostics were notable contributing factors.

AFBI's public profile

Respondents were asked to select a descriptor that in their opinion best described their view of AFBI's public profile. The descriptors available were 'World-leading', 'Internationally-recognised', 'Nationally-recognised', 'Organisation with regional relevance' or 'None of these'. One-third of respondents considered AFBI to be an Internationally-recognised organisation however this was very closely followed by Nationally-recognised and Regionally-relevant. The opinions of DAERA and non-DAERA respondents were split with non-DAERA respondents ranking AFBI's profile higher than DAERA respondents.

Annex E – BCS Report – Funding model options



DAERA Review of
AFBI Funding Mech:

Annex F – BCS Report – Effectiveness of the AFBI Board



DAERA Review of
Agri-Food and Biosc

Annex G – Sub-functions currently delivered by AFBI

Introduction

A list of sub-functions currently carried out by AFBI for DAERA was circulated to all DAERA directors for confirmation that there was an ongoing need for each sub-function. Directors were also asked to identify any essential science needs that were not currently being met.

Purpose

The purpose of this part of the Review was to provide assurance on DAERA's continuing need for AFBI functions.

Background

AFBI

The Agri-Food and Biosciences Institute (AFBI) is an executive Non-Departmental Public Body, sponsored by the Department of Agriculture, Environment and Rural Affairs (DAERA). AFBI was established in 2006 under The Agriculture (Northern Ireland) Order 2004 which provides it with the power to undertake scientific work in the fields of agriculture, animal health and welfare, food, fisheries, forestry, the natural environment, and rural development and enterprise.

The Institute exists primarily to provide DAERA with a range of statutory, analytical and diagnostic scientific services, research and development and an emergency response capability. It also serves the agri-food industry and wider community in a local, national and international context by delivering scientific services.

AFBI's income from DAERA in 2016/17 was £36.8m which accounted for approximately two-thirds of its total income. Funding amounting to £19.4 million was secured from a range of external non-DAERA sources including animal vaccine royalty income, grant funding from the EU, other public sector customers and the private sector. Thus AFBI's total income for 2016/17 was £56.2 million.

Currently AFBI has a staff complement of 593 FTE, of which 438 occupy scientific grades.

Tailored Review

All UK public bodies are subject to periodic review to ensure that they remain efficient, effective and accountable. DAERA is undertaking a tailored review of AFBI that will be comprehensive, constructive and beneficial both to AFBI and to the Department.

The Review is being guided by the most recent UK Government guidance available "*Tailored reviews: Guidance on Reviews of Public Bodies*" (Cabinet Office, November 2016) and is considering the functions that AFBI undertakes. It will provide a view on the continuing need, efficiency and governance of AFBI at a strategic level.

A Project Board and Review Team has been established to undertake the Review and it is expected to complete by June 2018.

Aims of the Review

The Review has three primary aims:

- To provide a robust challenge to, and assurance on, the continuing need for AFBI – both its functions and form.
- To consider AFBI's capacity for delivering more effectively and efficiently, including identifying the potential for efficiency savings and, where appropriate, its ability to contribute to economic growth.
- To assess the control and governance arrangements in place to ensure that AFBI and DAERA are complying with recognised principles of good corporate governance.

The Review Team will consult with a wide range of AFBI stakeholders and gather evidence through requests for written evidence (reports, strategies, minutes of meetings etc.), a public call for evidence (using a questionnaire), interviews with selected stakeholders and focus group meetings.

Role and process of assessment of sub-functions

The methodology of the AFBI Review requires the review team to establish whether AFBI's functions are still necessary.

At the start of the Review, AFBI provided a list of the sub-functions it carries out for DAERA within each of its main functions defined in the Agriculture (Northern Ireland) Order 2004 (AE1/17/656688).

Directors of DAERA divisions that use AFBI services were then asked to identify which branches still use the sub-functions listed and provide their rationale for needing them. If the rationale was other than departmental policy, a legislative requirement or statutory driver they were asked to provide a more detailed explanation. Where a division used part of one of the sub-functions listed they were asked to identify the elements used.

They were also asked to identify any essential science service needs that were not currently being met.

Results

A table of the 177 sub-functions identified by AFBI are provided in Annexes 1-2. They are collated into the fields within which AFBI is required by the Agriculture (Northern Ireland) Order 2004 to undertake scientific work as follows:

- a) Agriculture - 47
- b) Animal Health & Welfare - 34
- c) Food - 24
- d) Fisheries and Aquatic Environment - 37
- e) Forestry - 7
- f) The Natural Environment - 22
- g) Rural Development & Enterprise 6

DAERA staff indicated that 169 sub-functions are still needed, subject to policy priorities and requirements. Many sub-functions are relevant to more than one branch or division but not all branches indicated trend of need. **(Annex 1)**

Current trend of need was difficult to summarise because many branches used more than one sub-function and the trend sometimes differed between branches for the same sub-function. However, it was clear that the predominant trend of need was static (139) and where a change was indicated it was towards an increase (67). There was very little indication of the need for sub-functions decreasing (6) but the trend of need for a number of sub-functions, other than emergency response capability, remained unspecified (22).

Rationale for need of the sub-functions (not shown in the table) was predominantly policy, with 86 branches stating this as their rationale for a sub-function. 67 branches stated that the sub-function had a statutory driver while a legislative requirement applied to around 20% (34 branches) of the sub-functions listed. For many sub-functions, however, the rationale of one branch was not the same as another branch for the same sub-function resulting in many more reasons for sub-functions (229) than sub-functions (161). The explanations for 'other' (42 responses), included compelling business need, industry development and Brexit as well as support for court cases, providing technical advice and contingency planning.

Directors provided considerable detail on the implications of sub-functions no longer being available. In general these can be summarised as lack of scientific evidence to underpin policy decisions, an inability to meet national and international statutory requirement and legislative needs, reduced support for industry and diminished technical efficiency. An inability to respond to emergencies quickly and efficiently was another key concern. Many indicated that they would be required to seek the support of other providers if the sub-function was stopped.

Directors indicated that six of the sub-functions listed by AFBI separately are components of sub-functions detailed in Annex 1. Two sub-functions were identified by DAERA directors as no longer needed by DAERA **(Annex 2)**.

Branches identified 19 sub-functions that are needed but not currently being fulfilled by AFBI. Six have a statutory driver, three are driven by policy and two by legislative requirements. Of the 11 being driven by other requirements, climate change risk assessment accounted for three. Improving production systems, encouraging uptake of new technologies and the provision of direction for rural development programmes post Brexit were also mentioned. **(Annex 3)**

SUB-FUNCTIONS THAT ARE NEEDED AND CURRENTLY BEING DELIVERED BY AFBI

Function	Sub-Function	DAERA Owner(s) & Trend of Need
Agriculture	DAIRY R&D - Dairy production research including fundamental and applied research designed to improve efficiency and competitiveness of production systems, including; optimising grazing management strategies; winter feeding strategies; nutrition for cattle; identification of optimum livestock genotypes; quantification of energy requirements and energetic efficiency. Research also includes strategies to abatement the environmental impact of diary systems. Research to manage the health, welfare and productivity of young stock is also a key feature.	AELB - Static AFPB2 - Static DPPDB - Increasing EFB - Static
	DAIRY ADVICE - Scientific guidance on Dairy production issues from AFBI research studies.	AFPB2 - Static EFB DPPDB - Increasing
	DAIRY DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports. Press releases, farm walks, open days, hosting visits to Hillsborough, speaking at farmer/trade discussion groups relating to Dairy research.	AFPB2 - Static DPPDB - Increasing EFB VPH
	DAIRY EMERGENCY RESPONSE CAPABILITY - Staff resource (with animal handling skills/livestock expertise)	SEIPD
	BEEF R & D -Fundamental and applied research to improve the overall competitiveness of production systems including: improving energy feeding systems; improvement of beef product quality; sustainable livestock production for uplands and the welfare of animals in housed beef production systems.	AFPB2 - Static BSDB - Increasing VPH
	BEEF ADVICE - Scientific guidance on Beef production issues from AFBI research studies.	AFPB2 - Static BSDB - Increasing VPH
	BEEF DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports. Bovine Information System (BovIS) facilitates accurate monitoring of animal performance at farm and industry level enabling the impact of policies, market changes and adoption of new technologies to be assessed (ISB).	AFPB2 - Static BSDB - Increasing VPH
	BEEF EMERGENCY RESPONSE CAPABILITY - Staff resource (with animal handling skills/livestock expertise)	VPH
	SHEEP R & D - Research to improve the efficiency and competitiveness of sheep production systems including: quantification of energy requirements and energetic efficiency of growing lambs and ewes; the role of sheep genetics in low labour systems; development of grazing strategies; evaluation of quality of pasture in terms of digestibility and utilization. Also the development of health protocols for sheep flocks	AFPB2 - Static VPH
	SHEEP ADVICE - Scientific guidance on Sheep production issues from AFBI research studies.	AFPB2 - Static BSDB - Increasing

SHEEP DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports. Press releases, farm walks, open days, hosting visits to Hillsborough, speaking at farmer/trade discussion groups relating to Sheep research.	AFPB2 - Static BSDB - Increasing
SHEEP EMERGENCY RESPONSE CAPABILITY - Staff resource (with animal handling skills/livestock expertise),	SEIPD
PIG R & D - Research to improve the competitiveness of pig production systems focussing on feed use efficiency whilst reducing environmental impact and improving animal welfare and product quality. Research include: assessing nutritive values of alternative protein sources; nutrition and pig performance; practical ways to improve feed use efficiency.	AELB - Static AFPB1 - Static DPPDB - Increasing
PIG ADVICE - Scientific guidance on Pig production issues from AFBI research studies.	AFPB1 - Static DPPDB - Increasing
PIG DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports. Pig Grading Information System (PiGIS) enables producers and processors to assess and benchmark pig carcass quality and identify areas for improvement (ISB). Press releases and speaking at farmer/trade discussion groups relating to pig production	AFPB1 - Static DPPDB - Increasing
PIG EMERGENCY RESPONSE CAPABILITY - Staff resource (with animal handling skills/livestock expertise)	DPPDB - Increasing
POULTRY R & D - Research to improve the competitiveness of the poultry industry including: a whole systems approach to improve feed efficiency and reduce ecological footprint; development of prediction models to links feed sources with performance. Increasing linking poultry nutrition with health and welfare of production systems	AELB - Static AFPB1 - Static EFB - Static
POULTRY ADVICE - Scientific guidance on Poultry production issues from AFBI research studies.	AFPB1 - Static EFB - Static VPHP
POULTRY DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports. Press releases and speaking at farmer/trade discussion groups relating to Poultry research.	AFPB1 - Static EFB - Static VPHP
POULTRY EMERGENCY RESPONSE CAPABILITY - Staff resource (with animal handling skills/livestock expertise)	CAFRE
HILLSBOROUGH FEED INFO SYSTEM TESTING/ANALYSIS- Feed & forage laboratory analysis available to the industry which incorporates both normal analytical parameters of protein, fibre, dry matter etc. and performance prediction tables. Use of new techniques to reduce costs and speed up analysis time.	CAFRE
HILLSBOROUGH FEED INFO SYSTEM ADVICE - Laboratory feed and forage analytical services to support farmers to precision manage silage quality, winter feeding budgets, and grass based summer feeding strategies.	BSDB - Increasing
HILLSBOROUGH FEED INFO SYSTEM DISSEMINATION - Analytical support for Branch research studies. Press releases, farm walks and speaking at farmer/trade discussion groups and meetings.	BSDB - Increasing
HILLSBOROUGH FEED INFO SYSTEM EMERGENCY REPOSENSE CAPABILITY - Staff resource (with laboratory analytical skills)	AFPB VPHP
ECONOMICS R & D - Micro Modelling research to provide robust economic evidence for the development of farm production systems that maximise farm profitability over a range of market and policy conditions. Sectoral Modelling research via the widely respected FAPPRI-UK economic modelling system on the impacts on UK	AFPB - Static CPESD - Increasing BSDB - Increasing

agriculture sectors of key changes in EU or national agricultural policies. Systems modelling research to provide Economic analysis of the likely severity of the impacts of proposed regional GHG mitigation targets on NI agricultural sectors; Micro Modelling research to provide systematic socio-economic evaluations of the levels of education and management skills in the farm and food processing sectors with recommendations for training needs and approaches. Micro Modelling to enrich the understanding of the attitudes and behaviours around Farm Biosecurity	
ECONOMICS ADVICE - Optimal Farm Production Systems. Impacts of EU and National Policies on UK Agriculture; Impacts of Regional GHG Mitigation Policy on NI Agriculture; Farm Household Education and Skills Levels; Attitudes and Behaviours to Farm Biosecurity	AFPB1 - Static CPESD - Static BSDB
ECONOMICS DISSEMINATION - via Stakeholder Presentations Policy Briefs; Technical Reports; Seminars; Peer reviewed Journal Articles, industry workshops	AFPB1 - Static CPESD - Increasing
PLANT HEALTH R & D - Plant health research covering the study and control of disease, pest and weed problems with emphasis on integrated pest and disease management and the use of reduced rates of agrochemicals.	EFB - Static PHPB - Increasing VPHP
PLANT HEALTH TESTING/ANALYSIS - Provide advice and testing on new and emergent plant diseases which can pose a serious threat to plant-based industries including grass, crops, trees and forests. Assessment of the level of risk and advise DAERA and industry accordingly.	CSDB - Static PHP&IB - Increasing
PLANT HEALTH ADVICE -Provide expert opinion on pests and diseases which have to be notified and controlled by law. Build the NI Plant Risk Register and protect NI plant systems. Use expert opinion, analysis of disease threats in other countries, consultation with other experts on diseases which might pose a threat on plants in Northern Ireland in the future.	CSDB - Static PHPB - Increasing VPHP
PLANT HEALTH DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports	PHP&IB - Increasing
PLANT HEALTH EMERGENCY RESPONSE CAPABILITY - If a new plant disease is found in NI, a rapid response can help prevent spread and constrain the impact. AFBI can sample diagnose and recommend control	PHIB - Increasing
ARABLE CROPS R & D - Arable research covering the evaluation of grain varieties, the efficient use of fertilisers; the agronomy on the quality of crops; potential of varieties to contribute to sustainability; pathogens in arable crops.	AFPB1 - Static CSDB - Static VPHP
ARABLE CROPS TESTING/ANALYSIS - Seed testing for purity of seed (ie presence of weeds) and certification for eventual sale	CSDB - Static EFB - Static
ARABLE CROPS ADVICE - Statistical advice on National list testing & DUS testing of herbage varieties. This is testing of herbage varieties in field trials conducted at Crossnacreevy to test relative to existing varieties, whether newly bred varieties are Distinct, Uniform and Stable (DUS) and to assess their Value for Cultivation and Use (VCU).	AFPB1 - Static EFB - Static
ARABLE CROPS DISSEMINATION - Recommended list for cereals; Training/informing advisors, press releases and technical reports	AFPB1 - Static CSDB/AEB - Static EFB

	GRASS R & D - Grass breeding and research to provide a research base for the breeding of new varieties to advance NI's ability with regard to competitiveness in the livestock sector. Established links with leading plant based organisations on national and international levels	AFPB1 - Static EFB
	GRASS TESTING/ANALYSIS - National list testing to see how new varieties perform against older ones to enable growers to base selection on independent testing. DUS testing-grass breeders submit proposed new varieties and AFBI determines if they are distinct from all other varieties available on the market and if they retain their characteristics	AFPB1 - Static BSDB - Increasing EFB - Static
	GRASS ADVICE - Carry out scientific, independent trials which fully exploit the range of genetic material available and how it interacts with the local soil and climatic environment	AFPB1 - Static BSDB - Increasing
	GRASS DISSEMINATION - Provide expert advice to farmers and the seed industry on new varieties of crops and grass to use across a range of scenarios. Farm walks and press articles and technical reports are also delivered	AFPB1 - Static EFB
	HORTICULTURE R & D - Horticulture research in mushrooms and top fruit including: maximising compost utilisation, sustainability of casing materials; integrated pest management; utilisation of spent substrate; enhancing nutritional health status of mushrooms; tree management systems; storage research.	AFPB - Static EFB - Static HB
	HORTICULTURE TESTING/ANALYSIS - Laboratory analysis of fresh produce requiring rapid diagnostics to detect disease issues and storage problems	HB
	HORTICULTURE ADVICE - Advice to Mushroom industry-individual growers and Producer Organisations. Advice to Fruit producer levy payers	AFPB1 - Static HB
	HORTICULTURE DISSEMINATION - technical report and producer/industry meetings as well as scientific publications	AFPB1 - Static
	STATISTICS R & D - Statistical support to inform experimental design and analysis of any research conducted by AFBI	CPSED
	STATISTICS ADVICE - Statistical consultancy (advice and analysis support) provided on request to external clients in various work areas (occasional)	CSDB - Increasing NIEA - Decreasing EMFG
Animal Health & Welfare	STATISTICS R & D -Statistical support to inform experimental design and analysis of any research conducted by AFBI	ADCTP - Static VPH
	STATISTICS TESTING/ANALYSIS - Serology Testing, Histopathology Testing, PCR Testing, TSE Testing , statistical consultancy provided on request to DAERA Veterinary Service	ADCTP - Static VPH - Static EPI
	STATISTICS ADVICE - Advice on notifiable diseases	ADCTP - Static VPH EPI
	STATISTICS EMERGENCY RESPONSE CAPACITY - Epizootic emergency response training	ADCTP - Static VPH - Static EPI

TESTING/ANALYSIS - Passive Disease Surveillance is undertaken in behalf of DAERA to protect animal and public health by the detection of new and emerging diseases, monitoring patterns of endemic diseases, detection and monitoring of zoonotic diseases and facilitation of international trade: post mortem examinations, histopathology, biochemistry, bacteriology, virology & serology parasitology, lepto (DSIB). Serology testing (CISB). Animal disease surveillance, AMR monitoring (Bact)	ADCTP - Static Marine - Static VPHP - Increasing EPI
ADVICE - Advice on animal disease surveillance & epidemiology, advice on notifiable diseases including epizootics, participation in UK expert groups on poultry, cattle, small ruminants and pigs, AMR Committee DARC (DSIB, CISB, Bact, Virol)	ADCTP - Static BSDB - Increasing VPHP - Static
DISSEMINATION - Disease reports: quarterly disease surveillance reports, all-island reports, OIE reports, FSA reports, UK Zoonosis report, Equine quarterly report, Veterinary antimicrobial resistance and sales surveillance (VARSS), non-notifiable reports, EU Commission IBR report, Avian influenza report, One Health report, technology transfer publications: press releases, articles in NIVeterinary Today, Newsletter, technology transfer events: YVN day at AFBI, AVSPNI open day at AFBI Omagh, farm walks, talks at vet conferences. Epidemiology and disease modelling	ADCTP - Static VPHP - Static
EMERGENCY RESPONSE CAPABILITY - Lab response to epizootic disease suspects, epizootic disease testing (serology & PCR), contingency planning, epizootic training and preparedness, accreditation of new test methods (flexible scope) scientific advice and testing for new and emerging diseases, scientific advice on epizootic diseases	ADCTP - Increasing EPI VPHP - Static
R & D - bovine TB research, epidemiology and disease modelling (Bact); scientific and laboratory support to DAERA's TVR R&D Project	TB - Static
TESTING/ANALYSIS - bTB Control Programme: TB culture, molecular confirmation and strain typing, gamma interferon testing. Histopathology in support of TB testing, deer, post mortem of TB reactors, Badger RTAs (DSIB)	TB - Increasing
ADVICE - Advice on TB control and policy (Bact & DSIB); Membership of TVR Steering Group	TB - Static
DISSEMINATION - Bovine TB R&D. Epidemiology and disease modelling	TB - Static
R & D - Brucella research, epidemiology and disease modelling (Bact)	EPI TB
TESTING/ANALYSIS - Brucella surveillance (CISB). Brucella culture (Bact): AFBI testing programme supports EU and National disease control legislation and trade guarantees. It underpins the previous DAERA eradication programme and current ongoing surveillance following EU granting Official Brucellosis Freedom status for NI.	EPI TB - Decreasing
ADVICE - DAERA programme group representation (CISB & Bact). Advice to DAERA and industry regarding testing and disease epidemiology.	EPI VPHP
DISSEMINATION -National and EU reference laboratory representation. Peer reviewed publications (CISB). Brucella R&D representation	EPI
EMERGENCY RESPONSE CAPABILITY - Lab response and advice to a disease breakdown incident. AFBI currently have capacity and capability essential to quickly deal with disease breakdowns.	ADCTP - Static VPHP - Static EPI

TESTING/ANALYSIS - : TSE: BSE and scrapie active surveillance, GTH Cat 1 & 2, insoluble substances from processing plants (CISB). Post mortem of suspect animals (DSIB). Incineration and disposal of infected carcasses. The testing is required by EU and National disease control legislation and trade guarantees. AFBI programmes have supported DAERA in disease eradication, supported protection of public health, provided evidence for successful DAERA application to OIE for recognition of NI as a region of negligible BSE risk, provided assurance for DAERA in opening recent trade opportunities in 3rd countries eg Philippines	ADCTP - Static VPHP - Increasing EPI
ADVICE - DAERA programme group representation (CISB). Advice to DAERA and industry regarding testing	ADCTP - Static
DISSEMINATION - CISB : National and EU reference laboratory representation (CISB)	ADCTP - Static
EMERGENCY RESPONSE CAPABILITY - Lab response and advice on a BSE outbreak incident. AFBI currently has capability to deal with disease recurrence. Expertise in analysis of atypical disease strains	ADCTP
R & D - Test kit evaluation E&I (CISB)	Aujeszkys - Static
TESTING/ANALYSIS - Other Statutory Disease Surveillance. Undertaken in support of EU and National animal health and welfare legislation and NI disease control. The testing programmes also provide support for ongoing and new trade in animals and animal products: Serology testing for AIV, BTV, EBL, ADV, import animals, sheep and goat health, commercial (CISB). PCR testing inc wild bird surveillance (Viro). PCR for AIV, BTV, commercial (Viro). EBL tumour survey, Echinococcus multilocularis (DSIB). Salmonella surveillance (Bact). Wildlife Incident Investigation Scheme (pesticide poisoning investigation in wildlife, pets and beneficial invertebrates) (DSIB).	ADCTP - Increasing VPHP - Static
ADVICE - Advice on notifiable diseases including epizootics, National Reference Lab representation / attendance, AHEaD group representation DAERA/AFBI, AIV stakeholders group DAERA/ AFBI/ DOH/ others, AMR Committee DARC (DSIB, CISB, Bact, Viro)	ADCTP - Static EPI
EMERGENCY RESPONSE CAPABILITY - Undertaken by AFBI to support DAERA and NI agrifood industry from serious animal disease incursions, many of which have a direct effect on trade. Lab response to epizootic disease suspects, epizootic disease testing (serology & PCR), contingency planning, epizootic training and preparedness, accreditation of new test methods (flexible scope) scientific advice and testing for new and emerging diseases, scientific advice on epizootic diseases	ADCTP - Static EPI
TESTING/ANALYSIS - Animal Welfare and Forensic : TB forensic examinations, PM examinations in support of DAERA enforcement branch, Wildlife Investigation Scheme (DSIB); DNA identity and parentage testing (Bact)	WAEB
ADVICE - on welfare and forensic issues. Appearance as witnesses in court cases	VPHP - Static WAEB
R & D - Endemic Animal disease R&D : BVD & pestiviruses, IBR, fasciola, leptospira, disease diagnosis, control and eradication (DSIB). Fasciola Hepatica, pig endemic diseases, poultry immune models, rotaviruses, bovine RSV genome biomarkers , immunocompetency and welfare indicators, proteomics/metabolomics, alternatives to antibiotics in poultry (Viro). Johnes disease R&D, epidemiology and disease modelling (Bact)	VSAHG - <i>Depending on policy priorities and requirements</i>
TESTING/ANALYSIS - Endemic Animal Diseases : BVD testing and cattle health scheme (DSIB), Salmonella testing (Bact), poultry virus diagnosis (Viro)	VPHP - Static
EMERGENCY RESPONSE CAPABILITY Laboratory response to zoonotic or food-borne pathogen (e.g. Salmonella, STEC)	ADCTP - Static VPHP - Increasing

Food	EATING QUALITY R & D - Food research to optimise the eating quality, especially in the meat and dairy fields, using a combination of sensory, consumer and instrumental techniques. E.g. Spectroscopic measurement and prediction of quality	BSDB - Static FTDB - Static
	EATING QUALITY TESTING/ANALYSIS - Testing as part of the National Surveillance Scheme	FTDB
	EATING QUALITY ADVICE - Residues (Member of Group)	FTDB
	EATING QUALITY DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports; Teaching of undergrads, press releases and industry workshops; Provision of short course and visiting day for QUB students	FTDB - Static
	NUTRITIONAL QUALITY R & D: Food Research to optimise the nutritional quality of food, especially meat and dairy through enhancement and or fortification of nutritional characteristics.	FTDB - Increasing
	NUTRITIONAL QUALITY TESTING/ANALYSIS -Testing for radionuclides	FTDB
	NUTRITIONAL QUALITY ADVICE - Advice on radionuclides	FTDB
	NUTRITIONAL QUALITY DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports. Teaching on undergraduate food courses and supervision of projects at CAFRE Loughry	FTDB - Increasing
	NUTRITIONAL QUALITY EMERGENCY RESPONSE CAPACITY - Maintenance of capacity for radionuclides analysis for emergency response	FTDB NIEA - Static
	NEW TECHNOLOGIES R & D - Advanced processing methods: research to both develop and evaluate novel processes to safeguard human health while extending shelf life and maintaining quality	FTDB - Increasing
	NEW TECHNOLOGIES ADVICE- Advice on new technologies e.g. to extend shelf life	FTDB - Increasing
	NEW TECHNOLOGIES DISSEMINATION - Presenting at scientific conferences and publishing peer reviewed papers and technical reports. Meetings with stakeholders and customers.	FTDB
	PATHOGENS R & D - Research on the properties and prevalence of food borne pathogens including campylobacter R&D, foodchain pathogens R&D, gut health and antibiotic alternatives R&D, AMR R&D (Bact). Small scale projects for industry and academia (CISB)	FTDB - Static VPHP - Static
	PATHOGENS TESTING/ANALYSIS -Microbiological Food Safety: pathogen testing, water testing, food hygiene, milk testing, NRL milk and milk products (Bact).	AFIB Marine - Increasing FTDB VPHP - Static
	PATHOGENS TESTING/ANALYSIS - Chemical Food Safety - to ensure compliance with EU food and feed controls legislation plus National legislation. Supports NI food exports and protection of public health regarding harmful contaminants: National Surveillance Plan, meat inspection scheme (vet medicines), RISK scheme (vet medicines), feed analysis (minerals, metals, amino acids, heavy metals, mycotoxins, antimicrobials), pesticides, marine biotoxins, commercial testing (CISB) . Trichinella testing (DSIB)	AFIB - Static Marine - Static FTDB VPHP - Static
PATHOGENS ADVICE - Pathogens in the food chain, food hygiene, milk testing, NRL milk functions	AFIB FTDB	

		VPHP - Static
	PROPER USE OF VETERINARY MEDICINES - consulting with VMD with regard to annual set up of the National Surveillance Scheme (NSS). Testing samples from the NSS and other schemes - Meat Inspection and RISK - for the presence of Veterinary drug residues, heavy metals and other chemical contaminants. Monitoring results as part of the Residues Action Group (RAG) and making recommendations to senior management and industry. Returning results of investigations to VMD and producing an annual report to VMD.	AFIB FTDB T&R - Increasing
	PATHOGENS DISSEMINATION - campylobacter R&D, foodchain pathogens R&D, gut health and antibiotic alternatives R&D, AMR R&D	FTDB VPHP - Static
	PATHOGENS DISSEMINATION - RAG/stakeholder group meetings. PRiF group. Non-scientific press articles. Peer reviewed publications. AFBI website. NIFAC. NISCFS group. Food authenticity network. Marine Biotoxin NRL group (CISB). Input into and assistance developing national and international policy.	FTDB
	PATHOGENS EMERGENCY RESPONSE CAPABILITY - Lab response and advice to a foodborne pathogen incident	AFIB FTDB
	PATHOGENS EMERGENCY RESPONSE CAPABILITY - AFBI plays a key role in protecting NI agrifood industry and food consumers from chemical contamination incidents which are potentially harmful to health and impacting on food product exports. Emergency response to a veterinary medicine, chemical contaminant incident, marine biotoxin incident, pesticide incidence, technical advice, development and accreditation of new methods (in response to specific incident and horizon scanning). Contingency planning	AFIB FTDB
	ECONOMICS R & D Micro Modelling research using Systematic socio-economic evaluations of the levels of education and management skills in the food processing sectors with recommendations for training needs and approaches. Systems Modelling research using Comparative economic analysis of the levels of productivity and innovation in the NI food processing sector in comparison with other competitor regions with recommendations on measures to improve performance.	FTDB
	ECONOMICS ADVICE - Food Processing Industry Skills Assessment; Competitiveness of NI Food Processing Sector	FTDB
	ECONOMICS DISSEMINATION - Dissemination via Policy and Industry Technical Reports and Briefs; Seminars; Peer Reviewed Journal Articles	FTDB
Fisheries and Aquatic Environment	FISHERIES STATISTICS - Statistical consultancy (advice and analysis support) provided on request to DAERA Marine	Marine - Increasing
	MARINE FISHERIES STOCK ASSESSMENT - R&D - Developing stock assessment methods for commercially exploited marine fish and shellfish stocks to advise sustainable harvest levels	Marine - Increasing
	MARINE FISHERIES STOCK ASSESSMENT TESTING/ANALYSIS - Data collection (including those under EU regulation), research vessel surveys, carrying capacity models	Marine - Static
	MARINE FISHERIES STOCK ASSESSMENT ADVICE - Providing advice on fishing opportunities and sustainable management or natural resources	Marine - Increasing
	MARINE FISHERIES STOCK ASSESSMENT DISSEMINATION - Technical policy reports, stakeholder briefs, national and international representation on science groups	Marine - Static

AQUACULTURE - R & D - Application of modelling and monitoring tools for sustainable management of shellfish aquaculture.	Marine - Static FCILC
AQUACULTURE - TESTING/ANALYSIS - Data collection, Production of Habitat Regulatory Assessments, carrying capacity models	Marine - Static FCILC
AQUACULTURE - ADVICE - Providing advice of environmental sustainability of Shellfish aquaculture and other fisheries, aquaculture	Marine - Static FCILC
AQUACULTURE - DISSEMINATION - Technical reports and briefs to DAERA	Marine - Static FCILC
MARINE SEA ECO SYSTEMS - R & D - Model development and data collection for long term environmental health assessment of Irish Sea ecosystems, Toxic marine phytoplankton screening	Marine - Increasing
MARINE SEA ECO-SYSTEMS TESTING/ANALYSIS - Data collection and collation, research vessel surveys, long term plankton and oceanography monitoring, habitat mapping, bioacoustics, taxonomic analysis and enumeration, QA	Marine - Static
MARINE SEA ECO-SYSTEMS ADVICE - Conduct assessment of ecosystem state, ecosystem management of fisheries, Assessing the impacts of environmental regulation on fisheries, conservation zones, marine spatial planning, specialist advice, Advice on sustainability and safety of shellfish aquaculture	Marine - Decreasing
MARINE SEA ECO-SYSTEMS DISSEMINATION - Technical reports and briefs to DAERA; Monthly and weekly Statutory Reporting. Annual report	Marine - Static
MARINE SEA ECO-SYSTEMS EMERGENCY RESPONSE CAPABILITY - Provides support in even of sustained algal toxin event	Marine and Fisheries
COASTAL ZONE R & D - Monitoring and modelling the provision of environmental services in the coastal zone	Marine and Fisheries
COASTAL ZONE TESTING/ANALYSIS -Data Analysis, physical environmental monitoring, Model development.	Marine - Static
COASTAL ZONE ADVICE - Providing advice of catchment drivers of coastal ecosystems, aquaculture, dredge monitoring	Marine and Fisheries
COASTAL ZONE DISSEMINATION - Technical report, seminars, peer reviewed journal articles. Statutory reporting for EU regulation	Marine - Static
COASTAL ZONE EMERGENCY RESPONSE CAPABILITY - Provides support for oil spill models	NIEA Marine - Static
FRESH WATER LAKE ECOLOGY R & D - Exploring nutrient impacts on lake ecology and users	EFB - Static NIEA - Increasing
FRESH WATER LAKE ECOLOGY ADVICE - Assessing lake system recovery times in nutrient management/reduction scenarios	EFB - Static NIEA - Increasing
FRESH WATER LAKE ECOLOGY DISSEMINATION - Technical Reports; Stakeholder Presentations and Seminars; Journal Article	EFB - Static NIEA - Increasing
FRESH WATER FISHERIES in Lakes & Rivers - R & D - Developing freshwater fisheries management in rivers and lakes population and community composition assessment	Marine - Increasing NIEA - Static

	FRESH WATER FISHERIES in Lakes & Rivers - TESTING/ANALYSIS - Stock assessment, genetic analysis, data collection and monitoring surveys	Marine - Increasing NIEA – Static FCILC
	FRESH WATER FISHERIES in Lakes & Rivers - ADVICE - Lough Neagh and Lough Erne commercial eel and finfish stock assessments	Marine - Increasing
	FRESH WATER FISHERIES in Lakes & Rivers - DISSEMINATION - Technical policy reports, stakeholder briefs, national and international representation on science groups	Marine - Static NIEA - Static
	FRESH WATER FISHERIES in Lakes & Rivers - EMERGENCY RESPONSE CAPACITY - Post Fish kill loss and recovery timescale assessments	Marine - Static
	FRESH WATER ENVIRONMENTAL HEALTH R & D - Developing lake and river ecosystem tools for the assessment environmental health.	NIEA - Static
	R & D - Development of vaccines for fish virus and Lough Neagh eel screening, SAV1 and SAV2 virus neutralisation	Marine and Fisheries
	FRESH WATER ENVIRONMENTAL HEALTH TESTING/ANALYSIS - Lake population surveys, real time monitoring, data collection	NIEA - Static
	TESTING/ANALYSIS - Fish & Shellfish Health : Data Collection, Whitespot Testing, Bonamia Testing, Marteilia Testing, OSHV1 Testing, SEM finfish testing, SEM shellfish testing, fish diagnostics (Viro). Shellfish histology for Marteilia and Bonamia (DSIB). In support of European Legislative requirements and to ensure retention of Northern Ireland's high fish health status the following tests are carried out.	Marine - Static FCILC
	TESTING/ANALYSIS - Marine wildlife post-mortem	Marine - Static
	FRESH WATER ENVIRONMENTAL HEALTH ADVICE - Lake population surveys, status assessments, real time monitoring, habitat restoration, impacts of development on rivers - Hydro, weirs, fish passage	Marine - Static NIEA - Static
	ADVICE - Providing advice on Fish Health Issues	Marine – Static FCILC
	FRESH WATER ENVIRONMENTAL HEALTH DISSEMINATION - Technical policy reports, specialist advice through technical advisory group (TAG)	Marine - Static NIEA - Static
	DISSEMINATION - Published scientific literature	NIEA - Static
	FRESH WATER ENVIRONMENTAL HEALTH EMERGENCY RESPONSE CAPABILITY - Lab response and advice to fish or shellfish disease incident, contingency planning, accreditation of new test methods, scientific advice and testing for new and emerging diseases	Marine - Static FCILC
Forestry	STATISTICS ADVICE - Support and statistical analysis for the "Forestry Production Application" used by DAERA Forestry Service to plan the management of NI forests. This management includes decisions such as which forests to fell in which years, and takes heed of different tree species' growth patterns, forest ages, and environmental conditions. Statistical consultancy (advice and analysis support) also provided on request to DAERA Forestry Service.	FS - Static
	ENVIRONMENTAL ECONOMICS R & D - analysis of the non-market values of the various ecosystem services provided by NI woodlands, to inform future woodland management and planting decisions.	FS - Static

	ENVIRONMENTAL ECONOMICS ADVICE - Advice on non-market benefits (those cannot be costed or charged for - mainly for the public good) of creation of Woodland Ecosystems	FS - Static
	ENVIRONMENTAL ECONOMICS DISSEMINATION - via Technical Reports; Stakeholder Presentations and Seminars; Peer Reviewed Journal Articles	FS - Decreasing
	AGRO-FORESTRY R & D - Research in agroforestry-the integration of trees and agricultural activity on the same land base including: use of high value trees; integration with livestock farming; wider policy development.	FS
	AGRO-FORESTRY ADVICE - establishment and policy matters	EFB - Static FS
	AGRO-FORESTRY DISSEMINATION - Provide advice based on agroforestry research at AFBI	EFB - Increasing FS
The Natural Environment	CATCHMENT SERVICES - R & D - conducting research on the fundamental relationship between agriculture land use practices and the quality of aquatic ecosystems and the development of practical solutions for the livestock industry.	EFB - Static AELB - Static NIEA - Increasing
	CATCHMENT SERVICES DISSEMINATION - Catchment Management Strategies, technical reports, peer review papers, press releases, farmer meeting and industry workshops and conferences	EFB NIEA - Increasing
	CATCHMENT SERVICES EMERGENCY RESPONSE CAPACITY - Flouride in grass tissue - in the aftermath of the Icelandic Volcanic Eruption	SEIPD
	SOIL BIO-GEOCHEMISTRY & TERRESTRIAL ECOLOGY - R & D -contributing to the reduction of greenhouse gas emissions by NI agriculture by researching and understanding the factors controlling GHGs and evaluating strategies for their reduction from fertilisers, manures and grazing returns. Includes C Sequestration, GHG and Ammonia abatement, and plant and animal biodiversity research	AELB - Static BSDB - Increasing EFB EFMG - Increasing
	SOIL BIO-GEOCHEMISTRY & TERRESTRIAL ECOLOGY - TESTING/ANALYSIS - Statutory Lime and Fertiliser Analysis	BSDB - Increasing
	SOIL BIO-GEOCHEMISTRY & TERRESTRIAL ECOLOGY - ADVICE - statistical consultancy (advice and analysis support) to external clients in various work areas (occasional)	EFB
	SOIL BIO-GEOCHEMISTRY & TERRESTRIAL ECOLOGY - DISSEMINATION - Technical reports, peer review papers, press releases, farmer meeting and industry workshops and conferences	BSDB - Increasing EFB
	SOIL MANAGEMENT & CROP PRODUCTION - R & D - research to improve the efficiency of the nutrient cycling within the soil-plant-animal system to enhance crop productivity and deliver of environmental quality.	AFPB - Static BSDB - Increasing CSDB - Increasing
	SOIL MANAGEMENT & CROP PRODUCTION TESTING/ANALYSIS - Soil and Plant Analysis	BSDB - Increasing CSDB - Increasing
	SOIL MANAGEMENT & CROP PRODUCTION ADVICE - Advice on the NI Nitrates Action Programme and Derogation and Catchment Management Plans	AFPB1 - Static BSDB - Increasing CSDB - Increasing EFB

	SOIL MANAGEMENT & CROP PRODUCTION DISSEMINATION - Technical reports, peer review papers, press releases, farmer meeting and industry workshops and conferences	AFPB1 - Static BSDB - Increasing CSDB - Increasing EFB - Static
	AGRI-ENVIRONMENT TECHNOLOGIES - R & D - supports the agri-food industry to maximise the potential of renewable energy through the use of agriculturally derived energy sources. Agri-Environmental Technologies include - AD, Renewable Energy and Biomass Production and Waste Water Remediation & Environmental Protection	AELB
	AGRI-ENVIRONMENT TECHNOLOGIES TESTING/ANALYSIS - Plant and animal biodiversity assessments and population monitoring. Materials (Energy Feedstocks) analysis.	BSDB - Increasing CSDB - Increasing
	AGRI-ENVIRONMENT TECHNOLOGIES ADVICE - Advice on the GHG implementation plan, ammonia abatement strategies, renewable energy, pollution management, the circular economy, and the AFSB SALMS	AELB - Decreasing CSDB - Increasing CMU - Static
	AGRI-ENVIRONMENT TECHNOLOGIES DISSEMINATION - Technical reports, peer review papers, press releases, farmer meeting and industry workshops and conferences	CMU – Static CSDB
	AGRI-ENVIRONMENT PESTICIDES USAGE - TESTING/ANALYSIS - Survey of industry practice on pesticide usage to better target use	EFB - Static
	AGR-ENVIRONMENT PESTICIDES USAGE - ADVICE - Advice on biodiversity management	CSDB - Static EFB
	ECONOMICS - R & D - Environmental Modelling using Economic analysis of alternative land use change strategies for NI to inform a multi-disciplinary Expert Working Group on land-use change options. Environmental Modelling using Environmental Economics analysis of public preferences for alternative rural landscapes to inform policies on land management options including patterns of tree planting. Environmental Modelling using Environmental Economics analysis of the non-market values of the ecosystem services provided by agricultural land	BSDB - Increasing CPESD - Static
	ECONOMICS - ADVICE - Delivering Land Use Change (Land Use Strategy); Public preferences for Rural Landscapes	AELB - Decreasing
Rural Development & Enterprise	ECONOMICS-SYSTEMS MODELLING - R & D - Systems Modelling using Economic systems modelling to quantify the economic linkages within the agri-food sector and with wider NI economy and between the rural and urban sectors of NI economy to establish their relative economic contributions	AFPB1 - Static CPESD - Static EFB - Static RA - Static
	ECONOMICS -SYSTEMS MODELLING - ADVICE - Agri-Food Linkages to Wider Economy; Linkages Between Rural and Urban Areas; Contribution of Rural Areas to NI Economy	AFPB1 - Static RA
	ECONOMICS-SYSTEMS MODELLING DISSEMINATION - via Technical Reports; Stakeholder Presentations and Seminars, Journal articles and industry conferences	AFPB1 - Static RA

	ECONOMICS-MICRO MODELLING - R & D - Using Socio-economic analysis to 1) establish levels of poverty in rural NI and the potential contribution of social enterprises to poverty alleviation. 2) of the adequacy of access for rural households of a range of key services including, health, education and transport and 3) of the wellbeing of rural households and how this is affected by access to services	CPESD - Static RA
	ECONOMICS-MICRO MODELLING - ADVICE - Rural Poverty Levels and Role of Social Enterprises in NI; Provision of Services in Rural Areas; Rural Wellbeing and Access to Services	RA
	ECONOMICS-MICRO MODELLING - DISSEMINATION - Dissemination via Technical Reports; Stakeholder Presentations and Seminars, Journal articles and industry conferences	RA

SUB-FUNCTIONS IDENTIFIED SEPARATELY BY AFBI THAT DAERA CONSIDERS ARE INCORPORATED INTO SUB-FUNCTIONS DETAILED IN ANNEX 1^A OR NO LONGER NEEDED BY DAERA^B

Function	Sub-Function
Agriculture	STATISTICS DISSEMINATION - Statistical advice and support in experimental and survey design and analysis provided to post graduate students working in conjunction with AFBI researchers. ^A
Animal Health & Welfare	Advice on endemic diseases diagnosis, control and eradication (DSIB). ^A
	DISSEMINATION - promotion of animal disease surveillance at Balmoral, Winter fair, pedigree calf fair etc (DSIB). Johnes disease R&D (Bact). ^A
	R & D - Vaccines R&D : vaccine testing, Fasciola Hepatica, Nipah virus rec vaccine, novel delivery systems, bovine RSV vaccines, (Viro). ^A
	DISSEMINATION - Scientific publications ^A ; Vaccine royalty receipts ^(AFBI Corporate function)
The Natural Environment	NATIONAL LIST TESTING OF SEEDS & WILD PLANT SPECIES - TESTING/ANALYSIS - Seeds - National List Testing and testing of seeds of wild plant species for more diverse planting options. ^B
	NATIONAL LIST TESTING OF SEEDS & WILD PLANT SPECIES - ADVICE - Increasingly pesticide usage is being restricted and AFBI is investigating alternative control practices which are more environmentally friendly. This enables informed advice to be given to the industry to deliver more sustainable systems. ^B
	ECONOMICS - DISSEMINATION - Economic analysis of alternative land use change strategies for NI to inform a multi-disciplinary Expert Working Group on land-use change options. Dissemination via Technical Report; Stakeholder Presentations and Seminars; Peer Reviewed Journal Articles. ^A

SUB-FUNCTIONS THAT ARE NEEDED BUT NOT CURRENTLY BEING FULFILLED BY AFBI

Sub-Function	Rationale for Need	DAERA Branch
Risks and Opportunities from changes in agricultural & Forestry productivity & land suitability	Other	Climate Change Unit
Risks to freshwater species from higher water temperatures	Other	Climate Change Unit
Risks to & opportunities for marine species, fisheries & marine heritage from ocean acidification & higher water temperatures	Other	Climate Change Unit
STATISTICS ADVICE - Support and statistical analysis for trends in water quality indicators, such as nitrates and phosphorus used by EMFG for Nitrates Directive Reporting and PfG	Statutory Driver	EMFG RNRPD NIEA WMU
ENVIRONMENTAL ECONOMICS ADVICE - Advice on non-market benefits (those cannot be costed or charged for - mainly for the public good) of protection and improvement of freshwater ecosystems	Statutory Driver	EMFG RNRPD NIEA WMU
ENVIRONMENTAL ECONOMICS R & D - analysis of the non-market values of the various ecosystem services provided by NI aquatic environment to inform future river basin management plans	Statutory Driver	EMFG RNRPD NIEA WMU
FRESH WATER River ECOLOGY R&D Assessing river system recovery times in management/reduction scenarios and other mitigation measures (E&I FFP stage)	Statutory Driver	EMFG RNRPD NIEA WMU
Freshwater River real time monitoring R&D. Assessing the effectiveness of real-time monitoring of water quality on influencing farmer behaviour. (E&I FFP stage)	Statutory Driver	EMFG RNRPD NIEA WMU
Environment - research work to establish relevant/up-to-date NI emission factors (e.g. ammonia, odour, dust) for intensive poultry/pig farms. Also, assessment of the impacts of mitigation techniques on poultry/pig farms.	Legislative requirement	NIEA IPRI

Environment - better knowledge of pig odours e.g. composition, impacts, etc.	Legislative requirement	NIEA IPRI
Cetacean monitoring <i>This is now included in the Assigned Work Programme</i>	Statutory Driver	Marine
Improving Economic outcomes of rural development by strengthening the links between evidence, strategy and funding management	Other	RA
Access to expert scientific advice about forest science underpinning improvements in forest practice, productivity and policy development.	Other	FS
Development of fodder intake estimates for Beef & Sheep production systems	Other	BSDB
Biodiversity associated with beef and sheep production, especially in upland areas	Policy	BSDB
Greenhouse Gas Calculators	Other	BSDB
Social attitudinal research	Other	All
Development of Livestock Improvement monitoring systems	Policy	All
Equine Systems	Policy	Equine

Annex H – DAERA’s Vision and Strategic Outcomes

DAERA’s 2016/17 Business Plan identify the following Vision and strategic outcomes for the Department:

Vision: “A thriving and sustainable economy, environment and rural community”

Strategic Outcomes:

1. Sustainable agri-food, fisheries, forestry and industrial sectors.
2. A clean, healthy environment, benefiting people, nature and the economy.
3. A thriving rural economy, contributing to prosperity and wellbeing.

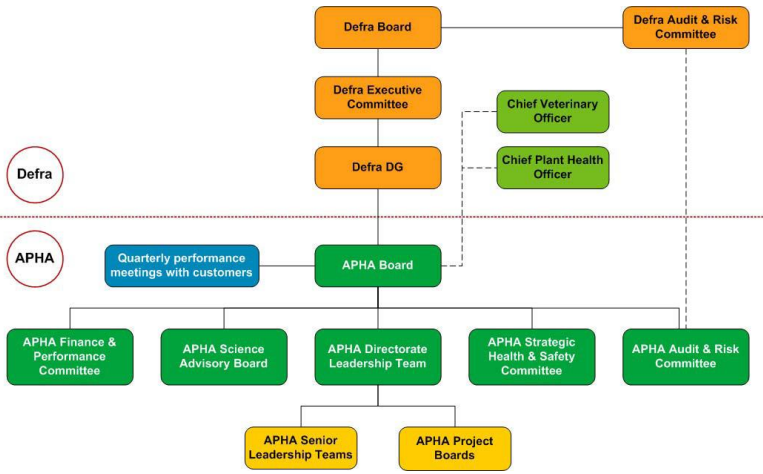
How we operate:

4. A well led, high performing organisation focused on outcomes.

Annex I – International Comparators

APHA (Animal and Plant Health Agency)

www.gov.uk/government/organisations/animal-and-plant-health-agency

Resources	Key Roles / Functions & Priorities	Structure, Governance & Accountability
<p>Income (2016/17):</p> <p>Parliamentary funding (core) = £154.7m</p> <p>Other Income = £62.6m</p> <p>Approximately 2,175 employees</p> <p>APHA locations are as follows:</p> <p>1 Headquarters</p> <p>26 Regional Plant Health Offices</p> <p>18 Field Services offices</p> <p>7 Veterinary Investigation Centres</p>	<p>Identifying and controlling endemic and exotic diseases and pests in animals, plants and bees, and surveillance of new and emerging pests and diseases.</p> <p>Scientific research in areas such as bacterial, viral, prion and parasitic diseases and vaccines, and food safety; and act as a national and international reference laboratory for many farm animal diseases.</p> <p>Facilitating international trade in animals, products of animal origin, and plants.</p> <p>Protecting endangered wildlife through licensing and registration.</p>	<p>The Animal and Plant Health Agency (APHA), executive agency of the Department for Environment, Food and Rural Affairs (DEFRA).</p> <p>APHA’s Board is chaired by the APHA Chief Executive as agreed with DEFRA. This is an exceptional arrangement whilst a Chair is being recruited. The Board has seven Executive Members and one Non-Executive Director.</p>  <p>*Note that the Finance and Performance Committee has been absorbed into the Audit and Risk Committee (Dec 2017).</p> <p>The APHA Science Advisory Board is chaired by a Non-Executive Director and formed principally of external scientists who advise the APHA Board on the suitability and quality of the Science.</p> <p>It was formed in its current state on 1 October 2014. The agency's main task is to protect the health and welfare of animals, as well as the general public, from disease. It conducts</p>

<p>4 Specialist Service Centres</p>	<p>Managing a programme of apiary (bee) inspections, diagnostics, research and development, and training and advice.</p> <p>Regulating the safe disposal of animal by-products to reduce the risk of potentially dangerous substances entering the food chain.</p>	<p>work across Great Britain on behalf of DEFRA, the Scottish Government and the Welsh Government.</p> <p>Total operating expenditure for 2016/17 was £217.3m with £62.6m Income generated by the provision of scientific and veterinary services to the Devolved Administrations (Welsh and Scottish Governments), the general public and commercial entities, as well as specific initiatives for Defra outside of Comprehensive Spending Review (CSR).</p> <p>APHA is predominantly funded by DEFRA in line with the Comprehensive Spending Review (CSR) and in 2016/17, Parliamentary funding accounted for £154.7m. Such funding is not treated as Income as per APHA's Annual Report (p12; 2017).</p> <p>The commercial services of the Agency are marketed as APHA Scientific which offers wildlife management, plant health, veterinary, scientific and advisory services. APHA Scientific is not registered with Companies House as a separate trading entity and it is not treated separately within the accounts of APHA.</p> <p>In GB, APHA is the first point of contact for alert on suspicion of disease.</p> <p>APHA complies with the BBSRC and DEFRA –led 'Joint Code of Practice for Research'. APHA maintains third party accreditation for its research and science activities (including ISO and UKAS accreditation). APHA also sets challenging peer reviewed publication targets for its science portfolios.</p>
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SRUC (Scotland's Rural College)

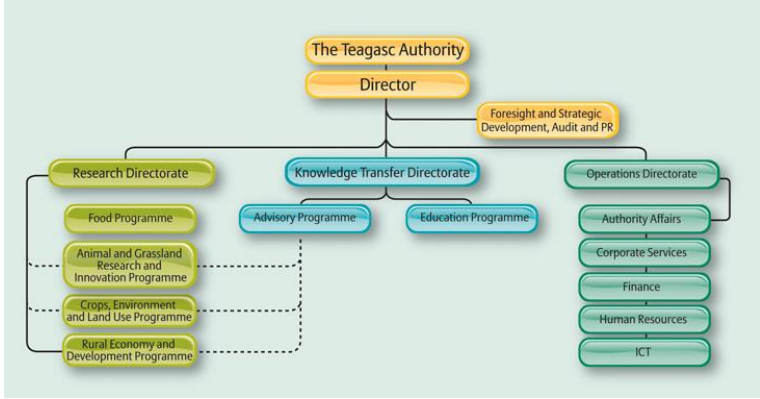
www.sruc.ac.uk

Resources	Key Roles / Functions & Priorities	Structure, Governance & Accountability
<p>Group Income (2016) - £79.5m</p> <p>Of which:</p> <p>50% (£40m) from Scottish Gov't.</p> <p>Approximately 1,100 staff</p> <p>Multiple sites across Scotland including farms, campuses, advisory and surveillance centres.</p>	<p>SRUC supports the development of the land-based industries and communities through specialist research and development resources, education and learning provision and advisory and consultancy services.</p> <p>There is particular emphasis on agriculture and related science; rural business development and management; food chain quality and safety; and rural resource and environmental management.</p> <p>The activities of SRUC are currently delivered through three operational divisions:</p> <ul style="list-style-type: none"> • Research, • Education • Consulting <p>supported by a Finance and Professional Services Division.</p>	<p>SRUC is a private company limited by guarantee, registered in Scotland and with charitable status. Academic and government funded not-for-profit business is conducted through SRUC, while commercial (for profit) activities are conducted through SAC Commercial Limited.</p> <p>The SRUC Board of Directors is responsible for the management and regulation of the financial affairs of the organisation, ensuring compliance with the Financial Memorandum and associated guidance of the Scottish Further and Higher Education Funding Council ("SFC"). SRUC has an Executive Management Team (EMT). The Principal and Chief Executive is appointed by the Board and is directly accountable to the Chief Executive of SFC for the institution's proper use of public funds.</p> <p>SRUC's educational activities are funded by SFC (£21.3m; 2016). SRUC receives a proportion of its funding for its research, veterinary and advisory activities directly from the Scottish Government (£19.2m; 2016).</p> <p>Education and research activities operate from six campuses.</p> <p>Consultancy services are delivered through a network of 25 Farm and Rural Business Services offices, 8 Veterinary Disease Surveillance Centres and the Central Diagnostic Laboratory.</p> <p>In addition, SRUC operated 7 farms, four of which are used mainly for research purposes and two for education.</p> <p>SRUC maintains expertise in animal disease surveillance. SAC Consulting operate animal disease surveillance centres on behalf</p>

		<p>of the Scottish Government. SRUC is part of a consortium of Scottish research institutes and universities created to undertake programmed research and emergency scientific advice and analyses in the event of a disease outbreak. This consortium is known as the Centre for Expertise on Animal Disease Outbreaks (EPIC).</p> <p>SRUC is fully committed to the principles of the UK ‘Research Integrity Concordat’. SRUC’s operating procedures for research are subject to periodic external audit by the British Standards Institute as part of SRUC’s certified ISO9001/2008 approved quality assurance system.</p>
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TEAGASC (Ireland)

www.teagasc.ie

Resources	Key Roles / Functions & Priorities	Structure, Governance & Accountability
<p>Total Revenue (2017) - €183m</p> <p>Of which:</p> <p>70% (€128m) from Irish Gov't. This includes a pension allocation of €43m in 2017.</p> <p>Grant-in-Aid accounts for 70% of Total Revenue.</p> <p>Approximately 1,223 staff, plus 180 contractors and Post Docs and 275 Walsh Fellows.</p> <p>63 locations across Ireland including Advisory Offices, Research</p>	<p>Established to provide education, training, and advisory services in agriculture and food, and to undertake and promote agricultural research and development.</p> <p>Teagasc is structured into three main Directorates:</p> <ul style="list-style-type: none"> • Research • Knowledge Transfer • Operations <p>It delivers across the specialisms of Animals, Crops, Environment, Food, Rural Economy and Education via the three key themes of:</p> <ul style="list-style-type: none"> • Research & Innovation • Advisory Services • Education <p>The residue laboratory at Teagasc Ashtown is a National Reference</p>	<p>Teagasc was established in September 1988 under the Agriculture (Research, Training and Advice) Act, 1988.</p> <p>The Authority has eleven non-executive members, each appointed by the Minister for Agriculture, Food and the Marine and drawn from the farming organisations, the food industry, universities, the Department of Agriculture, Food and the Marine and Teagasc staff. The Authority also has committees as follows: Remuneration, Audit and Risk nominations', Research, Advisory and Education and Operations.</p>  <p>Teagasc is a state-sponsored body in Ireland funded by State Grant-in-Aid (€128m; 2017); fees for research, advisory, education and training; income from national and EU competitive research programmes; and revenue from farming activities, commodity levies and licensed IP/plant varieties.</p> <p>Around 70% of Teagasc's annual budget comes from the Irish exchequer (€128m; 2017). Operational income, including competitive research projects, advisory fees, course fees and receipts for other activities accounted for €56m (2017).</p>

<p>Centres and Colleges.</p>	<p>Laboratory for anti-parasitics, veterinary drugs and feed additives.</p> <p>The Teagasc National Farm Survey provides national statistics to</p> <p>The European FADN (Farm Accountancy Data Network), and is the most important national source of data on farm incomes.</p>	<p>Some 40% of Teagasc’s expenditure is devoted to Research (agriculture and food) 39% to Knowledge Transfer (advisory and education services) and the remainder 12% to Operations.</p> <p>Teagasc contributes to disease surveillance through the provision of research information, for example on production diseases. Teagasc also has laboratory capacity and embedded scientific expertise in animal health related disciplines for teaching and research purposes that contributes to contingency preparedness.</p> <p>Teagasc undertakes its research in compliance with the “National Policy Statement on Ensuring Research Integrity in Ireland” that has been developed by the Irish Universities Association in collaboration with the universities and main research organisations in Ireland. The policy commits Teagasc to the highest standards of integrity in carrying out its research.</p> <p>Teagasc undertake international peer review of their research services on a regular basis and promote the publication of research results in international peer reviewed journals.</p> <p>Teagasc also has an extensive training programme for post-graduates, mainly at PhD level, organised through its Walsh Fellowship Programme in collaboration with third-level institutions in Ireland and elsewhere.</p>
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WUR (Wageningen University & Research)

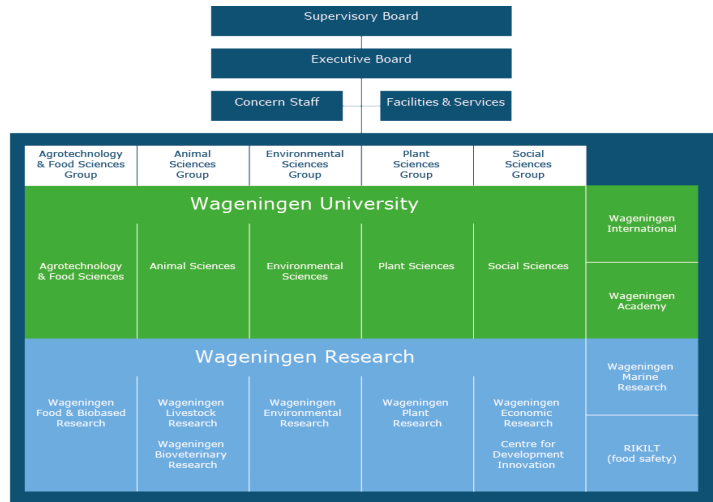
www.wur.nl/en.htm

Resources	Key Roles / Functions & Priorities	Structure, Governance & Accountability
<p>Wageningen Research (WR) Income (2016) = €299.2m</p> <p>Of which:</p> <p>40% (€121m) from Dutch Ministry for Economic Affairs (EZ)</p> <p>Approximately 2,200 employees @ WR</p>	<p>Wageningen UR is a university and research institution that focuses on the domain of 'healthy food and living conditions'.</p> <p>Three related, partly overlapping core areas are defined as:</p> <ul style="list-style-type: none"> • <i>Society and well-being</i> • <i>Food, feed and bio-based production</i> • <i>Natural resources and living environment.</i> <p>The boundaries of the core areas are not sharply delineated and are not intended to be so.</p> <p>WUR has five science groups. Every science group consists of a department of the university and one or more specialised research institutes:</p> <ul style="list-style-type: none"> • Agrotechnology & Food Sciences • Animal Sciences 	<p>Wageningen University & Research is a non-profit organisation. Positive returns are added to the organisation's reserves.</p> <p>Wageningen University (WU) and Wageningen Research (WR) operate as separate legal entities under the name Wageningen University & Research.</p> <p>In terms of administration, collaboration has been shaped by a governance union: the Executive Boards of Wageningen University and Wageningen Research consist of the same (three) members. This is intended to guarantee maximum administrative unity between the university and the research institutes.</p> <p>The Executive Boards and Supervisory Boards of Wageningen University and Wageningen Research together form the Executive Board and Supervisory Board of Wageningen University & Research.</p> <p>The Executive Board is responsible for the administration of the university and the research institutes and is accountable to the Supervisory Board (six members). The Supervisory Board is appointed by the Dutch Minister of Economic Affairs, and acts as the representative of the Minister. The Executive Board determines the vision and the resulting strategy and objectives and receives advice regarding this from the Board of Directors, in which the five sciences groups are represented by their managing directors.</p>

- Environmental Sciences
- Plant Sciences
- Social Sciences

Wageningen Research (WR) has nine Research Institutes (as shown in the adjacent chart).

RIKILT is the Dutch National Reference Laboratory (NRL) for monitoring residues and contaminants in food and feed. Additionally, RIKILT is a European Reference Laboratory for specific analytical domains.



An important part of the research conducted at WR institutes is commissioned by the Dutch government and EU institutions. WR carry out statutory research tasks in the areas of infectious animal diseases, food safety, economic information, fisheries management, genetic resources and nature. Policy-supporting and scientific research forms the basis for government policy, rules and regulations aimed at protecting the health of people and animals, promoting exports and preserving vibrant nature.

The Netherlands Food & Consumer Product Safety Authority is responsible for controlling animal diseases. This Authority works with several organisations, including WR to prevent and control animal disease. As a reference laboratory for animal diseases in the Netherlands, WUR is responsible for performing diagnostics and giving advice regarding suspected notifiable infectious diseases in animals.

Research carried out by WR is conducted in accordance with the Dutch 'Code of Conduct for Scientific Practice'. The Research institutes are commonly accredited to relevant ISO quality assurance standards and research is regularly published in international peer reviewed publications. RIKILT is also accredited for the organization of Proficiency Tests by the Dutch Accreditation Council.

Annex J – College of Agriculture, Food and Rural Enterprise (CAFRE) roles and responsibilities

The College of Agriculture, Food and Rural Enterprise (CAFRE) is a Division of the Department of Agriculture, Food and Rural Affairs (DAERA) within the Food and Farming Group.

CAFRE delivers programmes of education, training, knowledge and technology transfer across four disciplines within the agri-food sector. Each campus has a specific discipline focus with associated specialist facilities which provide a 'practical classroom'. Agriculture and Horticulture are based at Greenmount Campus, Antrim; Food and Agri-food business are based at Loughry Campus, Cookstown and Equine is based at Enniskillen Campus. CAFRE also has staff working in advisory roles at 11 DAERA Direct Offices across Northern Ireland.

CAFRE's programmes are delivered against the policy objectives in DAERA's Knowledge Framework and contribute to the achievement of the DAERA Vision of "a thriving and sustainable economy, environment and rural community" with a significant improvement in the competitiveness of the agri-food industry.

The DAERA Annual Business Plan for 2018/19 includes two targets against which CAFRE reports:

- *By 31 March 2019, have (i) 3,000 farmers developing their businesses through benchmarking, peer learning and knowledge and technology transfer (KTT) within Business Development Groups (BDGs); and (ii) 2,700 farmers receiving training in Farm Family Skills*
- *By 31 March 2019, deliver a suite of education and industry training programmes to 8,000 people with 2,200 people achieving nationally validated qualifications at Level II and above.*

CAFRE also contributes to a number of the outcomes in the draft Programme for Government 2016-2021, particularly those which are focused on the economy, employment and the environment.

Knowledge Advisory Service

The Department of Agriculture, Environment and Rural Affairs, on 16 April 2018, launched its new single advisory service aimed at supporting Northern Ireland's farm and food businesses. The Knowledge Advisory Service (KAS) brings together existing advisory functions provided by CAFRE along with agri-environment advisory functions formerly provided by the Department's Countryside Management Unit (CMU). This new service is managed within a single management structure and located across CAFRE's three campuses and the DAERA Direct office network.

The primary role of the Knowledge Advisory Service is the holistic development of farm and food businesses, where economic and environmental performance are inextricably linked. This will ensure that the productivity, environmental sustainability and resilience agendas will be the primary focus. From an environmental perspective, the new service represents an

opportunity for DAERA to better integrate environmental advice into its support to the agri-food sector.

The service has been enhanced by the formation of a new Sustainable Land Management Branch, based at Greenmount Campus. This environmental branch delivers Knowledge and Technology Transfer (KTT) across the key areas of air quality, biodiversity, land management and water quality. Central to this branch is the CAFRE Farm, which remains vital to the delivery of education, training and knowledge transfer to Northern Ireland's farming industry.

Following engagement with key stakeholders, the new service encourages a partnership approach with external bodies.

The Knowledge Advisory Service exists to develop and deliver Knowledge and Technology Transfer (KTT), Industry Training and Benchmarking, through the Business Development Groups (BDGs), Farm Family Key Skills (FFKS), Innovation Technology Demonstration Scheme (ITEDS), Farm Innovation Visit (FIV) and technical support to the agri-food Industry.

The Knowledge Advisory Service is made up of the following branches –

- Intensive Livestock and Crops Technology Branch
- Beef and Sheep Technology Branch
- Sustainable Land Management Technology Branch
- Food Technology Development Branch
- Agri-business Development Branch

Education Service

Education Service exists to develop and deliver Further and Higher Education programmes for new and existing customers within the agri-food industry.

Education Service is made of the following branches –

- Agriculture Branch
- Equine Branch
- Food Technology Branch
- Horticulture Branch

The current provision of Further and Higher education full-time and part-time programmes is targeted at new entrants and existing workers in the agri-food industry. All lead to nationally recognised qualifications and clear progression routes enable students to move easily through the various levels. Industry representatives are consulted regarding the development of programmes and assist with their delivery. All programmes are externally validated or moderated and are subject to regular review through course team meetings, verifier / moderator meetings and course review exercises.

Annex K – Glossary of Terms

AFBI	Agri-Food and Biosciences Institute
AHDB	Agriculture and Horticulture Development Board
ALB	Arm's-Length Body
APHA	Animal and Plant Health Agency
ASB	AFBI Sponsor Branch (DAERA)
AVSPNI	Association of Veterinary Surgeons Practising in Northern Ireland
AWP	Assigned Work Programme (AFBI)
CAFRE	College of Agriculture, Food and Rural Enterprise (DAERA)
D&A	Diagnostic and Analytics
DAFM	Department of Agriculture, Food and the Marine (RoI)
DARD	Department of Rural Development (up to 2016)
DAERA	Department of Agriculture, Environment and Rural Affairs
DCAL	Department of Culture, Arts and Learning (up to 2016)
DfE	Department for the Economy (from 2016)
DOE	Department of the Environment (up to 2016)
DoF	Department of Finance (from 2016)
DOH	Department of Health (from 2016)
DOI	Department for Infrastructure (from 2106)
DRF	Directed Research Fund
ERC	Emergency Response Capability
EU	European Union
EYF	End of Year Flexibility
Fera	Fera Science Ltd, formerly the Food & Environment Research Agency
GDPR	General Data Protection Regulations
IIP	Investors in People

IT	Information Technology
KAS	Knowledge Advisory Service (CAFRE)
KE	Knowledge Exchange
KF	Knowledge Framework (DAERA)
KT	Knowledge Transfer
LIMS	Laboratory Information Management System
MPMNI	Managing Public Money Northern Ireland
MS/FM	Management Statement / Financial Memorandum
NDPB	Non-Departmental Public Body
NIEL	Northern Ireland Environment Link
NIAO	Northern Ireland Audit Office
NICS	Northern Ireland Civil Service
NIGTA	Northern Ireland Grain Trade Association
NIFDA	Northern Ireland Food and Drink Association
OFMDFM	Office of the First Minister and Deputy First Minister (up to 2016)
PAC	Public Accounts Committee
PSRE	Public Sector Research Establishment
RCN	Rural Community Network
R&D	Research and Development
REF	Research Excellence Framework
RSPB	Royal Society for the Protection of Birds
SLA	Service Level Agreement
SRO	Senior Responsible Owner
SRUC	Scotland's Rural College
TT	Technology Transfer
UFU	Ulster Farmers' Union
UU	Ulster University

VSD Veterinary Science Division, AFBI

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