

Terms of Reference for Request for Proposals

Fleming Fund Country Grant to Sierra Leone

1. Overview of this grant

This is a Request for Proposals (RFP) for a Country Grant to commence surveillance of antibiotic-resistant bacteria in Sierra Leone. It has been created in response to a Request for Support from the Government of Sierra Leone (GoSL). The grant will be funded by the UK Department of Health and Social Care, under its Fleming Fund Grants Programme, which is managed by Mott MacDonald, the Management Agent.

This Fleming Fund Country Grant for Sierra Leone will focus on putting in place the foundations for antimicrobial resistance (AMR) and antimicrobial use (AMU) surveillance in the human and animal health sectors. It will facilitate a One Health approach to surveillance by Strengthening One Health governance structure for AMR and AMU surveillance. In the human health sector, the grant will support development of a national AMR Surveillance Strategy and capacitate the Central Public Health Reference Laboratory and other sites to implement that strategy. Clinicians at surveillance sites will be supported to improve their understanding of AMR and use of antibiotics. A national AMU and AMC Surveillance Strategy will also be designed and implemented.

In the animal health sector, the grant will support the development and implementation of a situation analysis of antibiotic use in food animals and capacitate the Central Veterinary Laboratory to operate as the national reference laboratory.

The Grantee will be responsible to Mott MacDonald for all aspects of the grant, including the management of any partners, their performance, technical delivery and financial accountability. The Grantee will be expected to sign the Grant Agreement and will be expected to enter into sub-granting arrangements with partners on the same back-to-back terms.

The Grantee will need to work in close coordination with the Antimicrobial Resistance Coordinating Committee (AMRCC), and other national stakeholders. The Grantee will also be required to harmonise efforts on this Country Grant with other types of grants under the Fleming Fund Grants Programme; namely, Regional Grants and the Fleming Fellowship Scheme (if offered in Sierra Leone).

This grant is expected to last 18 months, and an extension may be made available based on successful implementation of this grant. Grant applications are expected to be in the region of £2.0-£2.5 million, including all capital and recurrent costs, overheads and management costs.

2. Overview of the Fleming Fund

2.1 Introduction

The UK Government has established the Fleming Fund to respond to the global threat of drug-resistant infections due to bacterial Antimicrobial Resistance (AMR). The Fleming Fund will be a critical tool in achieving the resolution of the 68th World Health Assembly, 2015 (WHA A68/20), and in realising the ‘Political Declaration of the High-Level Meeting of the United Nations General Assembly (UNGA) on Antimicrobial Resistance, 2016’. These recognise that urgent cross-sectoral rationalisation of antimicrobial use, and prevention and control of infections in humans, animals, food, agriculture, and aquaculture sectors, are key to tackling AMR and call for: innovative research and development; affordable and accessible antimicrobial medicines and vaccines; improved surveillance and monitoring; increased governance on antimicrobial use; and increased international cooperation to control and prevent AMR.

The Fleming Fund aims to address critical gaps in surveillance of antimicrobial-resistant bacteria in low- and middle-income countries (LMICs) in Asia and Sub-Saharan Africa. Countries in these areas are set to bear the highest burden of drug resistant infections. A Global Action Plan on Antimicrobial Resistance (GAP-AMR) has been developed by the World Health Organization (WHO), which acts as the blueprint for a multi-stakeholder global response to averting a global health crisis caused by AMR.¹ The Fleming Fund comprises a number of workstreams (see www.flemingfund.org for more information). One workstream provides support to the Tripartite Alliance – the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE) and the World Health Organization (WHO) – as part of the OH approach. Through funding to the Tripartite Alliance, the Fleming Fund has contributed to the development of National Action Plans (NAPs) in Sub-Saharan Africa, South and South East Asia, and to the building of the evidence base and guidance for AMR surveillance. This work will be critical for the overall success of the Fleming Fund Grant Programme and underpins the delivery of the portfolio of Country and Regional Grants and the Fleming Fellowship Scheme, as these will target capacity gaps identified in NAPs. The Fleming Fund also funds initiatives in academic institutions to develop guidance on the development of AMR surveillance systems.

The Fleming Fund Grants Programme is the largest stream of financial support available through the wider Fleming Fund. The DHSC has appointed Mott MacDonald as the Fleming Fund Management Agent for the Fleming Fund Grants Programme. Mott MacDonald is a global company with expertise in multi-sectoral international development and fund management. On behalf of the UK Government, Mott MacDonald is responsible for funding allocation and oversight of all investments made across the whole portfolio of grants in different activities and in different countries.

The aim of the Fleming Fund Grants Programme is to improve the ability of recipient countries to diagnose drug-resistant infections, with an emphasis on bacterial infections, and to improve data and surveillance to inform policy and practice at national and international levels. The overall goal is to avert the human and economic burden of AMR.

The geographic focus of the Fleming Fund Grants Programme is 20-24 LMICs from Sub-Saharan Africa, and South and South East Asia, including Sri Lanka. It can provide financial support up to 2021 to participating countries via three funding channels:

- Country Grants
- Fleming Fellowship Scheme Grants
- Regional Grants

The Fleming Fund will be independently evaluated by Itad, a specialist evaluation firm appointed by the DHSC for this purpose.

¹ <http://www.who.int/antimicrobial-resistance/global-action-plan/en/>

2.2 Problem statement to be addressed by the Fleming Fund

The main issues to be addressed by Fleming Fund Country Grants are outlined below:

- There are too few trained microbiologists to undertake the volume of testing required for representative surveillance on AMR.
- There are few health facilities that routinely undertake bacterial culture; still fewer facilities that meet the requirements for accreditation, or which do routine antimicrobial susceptibility testing.
- There is no culture of surveillance for AMR in healthcare delivery and there are barriers to developing it.
- There is little perceived use of surveillance data on any level, including low demand for the data from policy makers.
- There is a lack of knowledge on the use and consumption of antimicrobial agents across One Health sectors.
- There is a lack of antimicrobial stewardship.
- Logistical challenges are significant: transporting samples in a safe and secure manner under challenging transport conditions; ensuring a quality assured and sustained supply chain for reagents and consumables; and ensuring appropriate servicing of equipment are a few examples
- Surveillance systems (national, regional and global) that do exist are often vertical in nature, are not linked, and are not integrated.
- There are weak One Health structures and there is poor inter-sectoral collaboration.
- There is a heterogeneous picture across countries and regions in terms of starting points, political will, capability, and donor interest and engagement.
- There are poorly defined and applied quality assurance standards in laboratory testing.
- There is lack of understanding on transmission patterns and drivers such as inappropriate use of antimicrobial drugs across all sectors.

2.3 Fleming Fund investment areas and outputs

To address the problems above, the Fleming Fund Grants Programme invests in:

- Laboratory infrastructure enhancement.
- Human resource strengthening and workforce reforms.
- Surveillance systems strengthening.
- Building foundations for AMR surveillance data use.
- Promoting rational use of antimicrobial medicines.

Investment in these areas is expected to achieve the following outputs:

- Improved laboratory skills and conditions for bacterial identification and Antimicrobial Susceptibility Testing (AST); and therefore, improved data quality.
- A strengthened One Health workforce with a range of relevant skills for AMR surveillance.
- Stronger AMR surveillance systems and processes at country and regional levels.
- Higher demand for AMR data at regional, country, subnational and facility levels.

- Better knowledge of country level patterns of prescribing practice and use of antimicrobials (particularly for bacterial infection) across sectors.

Fleming Fund outputs are expected to contribute to the following country outputs:

- Increase in quality and quantity of AMR data collected.
- AMR and AMU data shared in country to support evidence-based policy and practice.
- AMR and AMU data shared internationally to improve and inform the global response.

The RFPs for Country Grants have been designed to ensure that investments and activities contribute directly to outputs. Grantees are expected to adhere to and demonstrate this alignment and contribution to outputs in their applications.

2.4 Core principles within the Fleming Fund Grants Programme

The Fleming Fund is built on four core principles. Grantees are expected to demonstrate how they will align with these principles while implementing the grant.

- 1) Country Ownership:** The Fleming Fund Grants Programme will be implemented in line with national plans and aspirations, as laid out in the National Strategic Plan. Unless there are good reasons not to do so, Fleming Fund grants will chiefly invest in public sector laboratories and surveillance systems, thereby supporting national public health systems.
- 2) One Health:** The Fleming Fund recognises that the problem of AMR is a great danger to human health and cannot be controlled without a One Health approach. A specific set of One Health investment parameters has also been developed and is summarised below. This approach is aligned with key documents and guidelines from OIE² and FAO³ as well as the Global Action Plan.
 - a. Collaborative multi-sectoral governance of AMR:** Leadership and resourcing of AMR surveillance and mitigation measures in all sectors that contribute to the emergence of AMR.
 - b. Integrated AMR and antimicrobial use and consumption surveillance in all sectors:** Surveillance in humans, livestock, aquaculture, crops, food and the environment to produce information that is interpreted by multi-sectoral teams to help understand factors associated with AMR emergence within and between sectors.
 - c. AMR mitigation policies and programmes prioritised across multiple sectors:** Evidence-based policies and programmes for AMR mitigation measures that are prioritised across the relevant sectors, based on information generated through AMR and AMU/C surveillance in all sectors.
- 3) Alignment of Approach:** The Fleming Fund Grants Programme will seek to invest in areas which complement and build on work done to date, rather than create new systems. Grant applicants will need to demonstrate that they understand other actors' work in the field of improved laboratory capacity (both within and outside the sphere of AMR surveillance), improved disease surveillance, and the One Health approach. The Fleming Fund Grants Programme will assess grants for duplication of efforts and/or the development of parallel systems. To the extent possible, prospective Grantees will need to demonstrate how their proposals add value to existing and planned investments and systems.

² OIE Standards, Guideline and Resolution on Antimicrobial resistance and the use of antimicrobial agents;

³ The FAO Action Plan on Antimicrobial Resistance, 2016-2020.

- 4) **Sustainability:** The Fleming Fund Grants Programme will focus assistance on national systems with a view to long-term sustainability. Investment size and scope should, as far as possible, be aligned with national government spending so that systems created with Fleming Fund grants are sustainable within the public health system. We also recognise that the public good of conducting AMR surveillance means medium- to long-term support, and it is expected that countries that demonstrate good performance will have access to additional funds to provide ongoing support.

2.5 Fleming Fellowship Scheme

The Fleming Fellowship Scheme is part of the broader Fleming Fund Grants Programme and is also managed by Mott MacDonald. Rather than duplicate basic training, the Fellowships will focus on building advanced skills and leadership to promote the application of best practice in identified 'Beneficiary Institutions'. Beneficiary Institutions are organisations that add strategic value and complementarity to achieve the Fleming Fund's aims in the country and are likely to derive sustainable benefit from the Fellowship activities, such as AMR reference laboratories, national epidemiology units, hospitals and/or national drug administration agencies.

Fellowships will not be offered in Sierra Leone at this stage, but potentially at a later stage once the Grantee has been able to establish initial AMR surveillance systems. Grantees should consider where Fellowships would be appropriate and will work with the Management Agent to identify Fellowship opportunities at a later stage.

2.6 Fleming Fund activities in Sierra Leone to date

This is the first Fleming Fund Country Grant to be released in Sierra Leone. In preparation for this grant, Mott MacDonald carried out a Scoping Visit in August 2018 which was followed, in October, by Positioning Activities in a small sample of public health laboratories and the Central Veterinary Laboratory.

Key stakeholders in the animal and human health sectors have been consulted throughout the process, including UN agencies and other development partners. This is to assist in alignment of Fleming Fund grant investments with other proposed activities. Scoping and positioning confirmed the need to introduce AMR and AMU surveillance in humans and animals, identified key capacity gaps and challenges, mapped other stakeholders working in laboratory strengthening including UK aid, the US Centres for Disease Control, WHO and FAO, and informed discussion with the GoSL about grant objectives and outputs in line with the country's National Strategic Plan for Antimicrobial Resistance.

3. The current AMR situation in Sierra Leone

3.1 Policy and strategy environment/National Action Plan for AMR

Sierra Leone currently has no AMR policy.

An AMR and AMU situation analysis was produced in May 2017, by an informal AMR National Multi-Sectoral Coordinating Group (NMCG) with focal points for human, environment and animal health. The intention was to provide baseline information on the status of AMR in Sierra Leone and identify gaps and challenges in curbing AMR. It was based on a literature review, interviews and very limited unpublished data on AMR in Sierra Leone.

The AMR National Strategic Plan (NSP) for Sierra Leone (2018 – 2022) was subsequently developed in October 2017, by the NMCG with the help of partners including FAO and WHO. The goal of the NSP is to ensure successful treatment and prevention of infectious diseases with medicines that are quality-assured, prescribed and used responsibly, and accessible to all who need them at a price that they can afford.

At the time of writing the RFP, the NSP had been approved but not yet launched. The NSP has a broad workplan but no budget, and no activities have yet been undertaken.

Antimicrobial resistance is included in the interagency 5-year GHSA Roadmap for Sierra Leone (April 2016) for both human and animal health sectors.

The National Infection Prevention and Control Action Plan (2016 – 2019) states its intention to establish an HAI/AMR surveillance system in all hospitals in collaboration with Lab and Surveillance programmes by the end of January 2019.

3.2 One Health

Capacity to address One Health has had some limited improvement since the JEE report of 2016. This identified a lack of a One Health policy, no zoonotic disease surveillance systems, a shortage of data on the animal population and the absence of an animal health workforce capacity capable of conducting One Health activities.

There is now an MoU between the Ministry of Health and Sanitation, Ministry of Agriculture, Forestry and Food Security, and the Environmental Protection Agency to implement One Health in the country. The aim of the MoU is to respond jointly to public health threats using a One Health Approach, especially through health promotion, early detection, timely response and post-outbreak management.

The regular weekly emergency preparedness meeting led by the Emergency Operations Centre of MoH now includes One Health and there is an increased focus on bringing in the Ministry of Agriculture, Forestry and Food Security.

The challenge for the GoSL now is to take a wider view of One Health as it relates to the slower burning problem of AMR and to institutionalise integrated One Health AMR surveillance.

3.3 AMR Surveillance – human health

There is currently no surveillance of AMR in the human health sector even though it appears on various workplans, as described above. Small amounts of data on antibiotic resistance have been collected by non-governmental implementers at Connaught and Ola During Hospitals in Freetown, Mercy Hospital in Bo and the Mercy Ships. CDC intends to do a more comprehensive AMR survey in its supported laboratories at some point in the future, although the details have not been finalised. The CPHRL has been identified as the national reference laboratory for AMR surveillance with Connaught and Ola During Children's Hospitals as sentinel sites.

There has been considerable investment by government and development partners in the development of infectious disease surveillance since the influenza outbreak of 2009 and the Ebola outbreak of 2014/15. This experience and capacity perhaps could inform the development of surveillance of AMR. The MOHS Directorate of Disease Prevention and Control runs the programme out of a purpose built Emergency Operations Centre. There is a list of priority diseases, conditions and events. Some are notifiable immediately and others reportable weekly. Sierra Leone scored well in its assessment of real-time surveillance in the JEE of 2016.

3.4 AMR Surveillance – animal health

There is currently no surveillance of AMR in the animal health sector. This is partly due to the absence of a functioning animal health laboratory but is also a reflection of the very limited capacity in the Ministry of Agriculture, Forestry and Food Security (Veterinary Services Division) to carry out surveillance of animal health diseases.

3.5 Workforce challenges

Sierra Leone's human health workforce is severely constrained by several factors. There is a shortage of staff and of those in post, nearly half are un-salaried workers. Salaries for paid workers are low and retention is an issue. Staff distribution across the country is highly uneven – in 2017 it was estimated that two thirds of

health workers were concentrated in four urban centres⁴. All these issues were exacerbated by Ebola. There is a general lack of skills, and training capacity in the country is very limited. This problem is particularly acute in bacteriology as very few sites are performing basic culture and sensitivity testing. Even at national level, laboratory specialists, other laboratory staff and epidemiologists are in very short supply, and in need of additional training. For example, in CHPRL there is one government funded member of staff who may have availability to do AMR testing.

A recently developed bachelor's degree in medical laboratory sciences is in progress at the University of Sierra Leone. There are currently two cohorts of 20-30 students each; one cohort is expected to graduate later this year. There is also diploma level training in Kenema, Bo and Freetown⁵.

The workforce problem is even more acute in the animal health sector. There are 5 veterinarians in the whole country, 2 of them near retirement, and prospective vets must go outside Sierra Leone to be trained. In 2016 there were 2 staff with a Bachelor of Science in senior positions in animal production, and no animal health epidemiologist. Technical capacity of the five staff at the proposed CVRL is very limited, with one qualified vet, a master's degree holder, three certificate and diploma holders, and a volunteer.

3.6 Laboratory capacity – human health

Investments in infectious disease surveillance have resulted in improvements to some aspects of laboratory capacity. However, whilst capacity has increased it remains highly dependent on a continued donor presence to fund staff and reagents and support basic running costs, making sustainability of donor interventions very challenging. There is currently no explicit support for AMR surveillance in the country.

Central Public Health Laboratory (CPHL) in Freetown (the proposed national reference laboratory for AMR) has benefited from support by the US Centres for Disease Control and Prevention (CDC). Additional staff have been funded, standard operating procedures have been introduced, and there has been workforce development and capacity building through training and mentorship. CDC has also provided equipment, renovations. However, the investment has been focused on virology surveillance, and at present the laboratory is not performing bacterial culture. CDC has also been supporting Ola During hospital laboratory, Freetown, which is now carrying out bacterial culture and AST in urine and stool samples.

Connaught hospital laboratory receives considerable support from Public Health England (PHE), the Kings Sierra Leone Partnership and the World Bank (REDISSE) in the areas of pathology and histopathology services. The Kings Sierra Leone Partnership currently has several British clinical and laboratory staff who support the hospital, both paid and through a volunteer programme. There is a full time clinical microbiologist on site, (non-national), who is employed on a specific programme which is due to end next year. The bacteriology laboratory was not formally assessed by the Management Agent, but a brief visit showed that it is adequately sized and performs urine, stool and wound/pus cultures and AST, but does not offer a blood culture service.

Some regional laboratories are also being supported by Public Health England (PHE), predominantly for technical assistance, and also by China Aid. China CDC has supported capacity building in the laboratory at the China-Sierra Leone Friendship Hospital in Jui, focusing on surveillance for viral infections⁶.

It has been reported that whilst some data from these laboratories is shared with the Ministry of Health and Sanitation for Sierra Leone, much remains with the sponsoring partner.

There is a laboratory technical working group in MOH which has recently been re-energised, involving a wider range of stakeholders, although there is little coordination of development partners. There is no mention of antimicrobial resistant pathogens in the National Health Laboratory Strategic Plan 2016–2020.

⁴ <https://reliefweb.int/report/sierra-leone/training-and-managing-health-workers-today-tomorrow-new-human-resources-health>

⁵ <https://assets.publishing.service.gov.uk/media/598af21840f0b619c913108f/country-situation-analysis-sierra-leone.pdf>

⁶ <http://sierraexpressmedia.com/?p=84573>

The WHO country office in Sierra Leone in collaboration with the MoHS has earmarked 18 laboratories across the country to enrol in GLASS and receive training in WHONET. These laboratories are currently limited to culture of urine and, in some cases, stool or swabs, and capacity for AST is minimal.

3.6 Laboratory capacity – animal health

The Veterinary Services Division of Sierra Leone is under the Ministry of Agriculture, Forestry and Food Security (MAFFS). The envisioned reference laboratory is the Central Veterinary Laboratory (CVRL) at Teko in Makeni town. This institution is in cattle rearing area and has a long history. In the past it was a regional training centre and it is co-located with laboratories belonging to Sierra Leone Agricultural Research Institute. The Teko site is being renovated and refurbished by the FAO at a cost of approximately USD 1m. Work is expected to be completed by the end of 2018. The renovations are extensive and include a new perimeter wall, roof, generator, water reservoir, etc. Much new equipment is being purchased including some for the performance of basic bacteriology tests (incubators, refrigerators etc). However, consumables and reagents to be used specifically for bacteriology may have to be sourced elsewhere, and government support for other running costs is not assured, making the sustainability of Fleming Fund interventions beyond the life of the grant very challenging. The laboratory has a complement of five staff, currently assigned to other duties. These include a veterinarian and four trained veterinary technicians, one at Masters level, and the others at diploma level.

There are currently no peripheral public veterinary laboratories in Sierra Leone. The Management Agent was informed of an unstaffed, non-functional laboratory post at Tower Hill, in central Freetown which is not currently functional.

The only functioning animal health laboratory in Sierra Leone belongs to University of Njala. This laboratory has the capacity to undertake serological zoonotic and transboundary animal diseases diagnosis. The laboratory at the University of Njala has been proposed as a surveillance laboratory by MAFFS. The University is a semiautonomous government institution: the government pays salaries and the University is otherwise expected to generate income and manage its own budget. It has recently been contracted by MAFFS to carry out disease surveillance in animal health and expects to start charging government for this service soon. FAO provides the University with support for fieldwork and reagents. The laboratory is not currently undertaking any bacterial culture. It is reported to be reasonably well equipped, but the electricity supply is intermittent. The laboratory staff at Njala are reported to be very experienced and have higher level qualifications (degree level). Recently staff assigned to CVRL received training for approximately 5 weeks at Njala, in routine laboratory operations, sponsored by FAO.

3.7 Responsible use of drugs

Inappropriate use of antimicrobial drugs is a widespread problem throughout all levels of Sierra Leone's health system. The NSP noted that there is no national guidance on appropriate antimicrobial use in human and animal health, there is weak capacity for improving antibiotic prescribing and consumption in humans because antibiotics are available without prescription. Some systems exist for recording hospital level AMU and AMC through dispensary records and an electronic treatment register into which line data for drugs dispensed to patients can be entered. However, this data is not collated or analysed at the national level. There is inadequate monitoring of antibiotic consumption and use in the community, and in environmental or animal health sectors.

Legislation to regulate access to human antibiotics does exist, but capacity to enforce those regulations is extremely limited. Moreover, there is widespread and extensive smuggling of human and animal drugs into Sierra Leone.

Although there is no national policy and regulation of antimicrobial stewardship, a few Drug and Therapeutics Committees have been set up with donor support and are carrying out initial AMR related activities. Essential treatment guidelines exist but the extent to which they are used in facilities is strongly determined by the

availability of drugs which is very erratic. Is it estimated that most patients have taken antibiotics before arriving in hospital.

4. Scope of this Country Grant

4.1 Grant Objectives and Outputs

Objectives and outputs for this Country Grant are summarised as follows. Section 7 provides more detail. It is expected that applicants will respond to this RFP by developing and proposing activities that are costed and by proposing appropriate indicators (see Section 9). All inputs must be permitted under the list of Eligible Funding Items, as outlined in Annex 1.

Table 1: Country Grant Objectives and Outputs for Sierra Leone

Objective/Output	Inception	Implementation
Objective 1: Strengthened One Health governance structure for AMR and AMU surveillance		
Output 1.1: AMR national multi-sectoral coordinating group (NMCG) functional	x	x
Output 1.2: A multi-sectoral One Health technical working group is established	x	x
Output 1.3: Sharing and multi-sectoral review of results from AMR surveillance in the different sectors		x
Objective 2: Strengthened AMR and AMU surveillance system in the human health sector		
Output 2.1: National AMR Surveillance Strategy developed for Human Health	x	x
Output 2.2: CPHRL functioning as a reference laboratory for AMR in human health		x
Output 2.3: Surveillance site laboratories provide culture services in a stepwise approach as agreed in the surveillance strategy		x
Output 2.4: Improved use of clinical microbiology laboratories by clinicians and other relevant staff		x
Output 2.5: Good quality samples for AMR testing are collected from surveillance sites	x	x
Output 2.6: Biosafety and biosecurity strengthened at all supported laboratories	x	x
Output 2.7: Biosecure transport system between surveillance sites is developed	x	x
Output 2.8: National AMU and AMC Surveillance Strategy designed and implemented.	x	x
Objective 3: Strengthened AMR and AMU surveillance system in the animal health sector		
Output 3.1: Situation analysis of antimicrobial use in food animals.	x	
Output 3.2 National AMR Surveillance Strategy developed for Animal Health	x	x
Output 3.3: CVRL functioning as a reference laboratory for AMR in animal health	x	x
Output 3.4: Biosafety and biosecurity at CVRL strengthened	x	x

4.2 Selected laboratories

Table 2: List of selected laboratories for the Sierra Leone Country Grant*

Legend: Sites assessed by the Management Agent Sites to be assessed by the grantee

	Laboratory	Location, Region	Human or Animal Health Site (HH/AH)
1	Central Public Health Reference Laboratory (NRL)	Freetown	HH
2	Connaught Hospital	Freetown	HH
3	Ola Doring Children's Hospital	Freetown	HH
4	Makeni Regional Hospital	Makeni	HH
5	CVRL – Proposed AMR National Reference Laboratory (NRL)	Teko, Makeni	AH

*Additional sites could be added at a later stage based on the ability of the grantee to achieve within the above indicated sites. This would be at the discretion of the Management Agent.

The laboratory in Makeni was assessed by the management agent. This laboratory is included as it serves the same district as CVRL. The site currently has extremely limited capacity, and restricted space in which to develop. However, the site is earmarked to receive support from the CHAMPS project⁷ and from PHE, which may be in the form of building a new laboratory suite. The Grantee should therefore reassess the site during the inception phase to determine the scope of investment of these projects, and work, via the Management Agent, with CHAMPS and PHE to ensure alignment and to avoid duplication of effort. In the absence of infrastructure, alternative solutions, for example container laboratories, may also be considered and this should be discussed with the Management Agent.

The Central Public Health Reference Laboratory is not currently performing any bacteriology culture or AST and will require significant input to develop this capability. In the interim, the laboratory at Connaught could serve as an AMR supporting laboratory to provide confirmatory testing and support for the other sites. In the long term, we would anticipate the CPHRL provide an AMR bacteriology reference service to all laboratories, not just those in the table above.

4.3 Duration and phasing of the grant

This country grant to Sierra Leone is expected to last no more than 18 months. Any grant activities (costed/no-cost extension) beyond this duration will be based on the success of the implementation of this grant. The grantee can anticipate a 3-6-month inception period.

4.4 Funding envelope

Grant applications are expected to be in the region of £2.0-£2.5 million, including all capital and recurrent costs, overheads and management costs.

Mott MacDonald is responsible for driving Value for Money (VfM) on behalf of the UK Department of Health throughout the Grant programme and will carefully consider how the proposal addresses efficiency, effectiveness, economy and equity in delivering the Request for Proposal (RFP) outputs in relation to the proposed costs. The Guidance Notes for the Grant Application Form provides different dimensions that could be considered as part of a VfM approach and an indication of how we may assess VfM.

4.5 Procurement

For those sites assessed in October 2018, the Management Agent compiled an indicative procurement list of laboratory equipment, reagents and consumables. The grantee is expected to further conduct assessments,

⁷ <https://champshealth.org/>

as indicated in Table 2, and develop a procurement plan for the reference laboratories and surveillance sites during the inception phase. The assessments will utilise the tools provided by the management agent and will include assessment of infrastructure to determine what renovations are required. For human health laboratory sites, applicants should include a placeholder budget of £200,000 per sites. For the animal health laboratory site, the applicants should include a placeholder budget of £100,000. Investment in any laboratory site will be at the discretion of the Management Agent, and the list in Table 2 does not infer automatic investment.

During the inception phase, the grantee will work in consultation with the Management Agent, the Management Agent's procurement supplier (International Procurement Agency) and the UK Department of Health and Social Care, to determine the most suitable method of procurement for laboratory equipment, and to develop reliable stock management and supply systems for consumable and reagents.

The lead grantee will also be expected to:

1. assist with the importation and delivery of equipment and consumables to recipient sites;
2. work closely with the procurement partner (whether IPA or an alternative organisation) to ensure the appropriate delivery sequence of items;
3. maintain an asset register of all items defined as assets by the programme;
4. regularly monitor the items that have been procured by Fleming Fund Grants Programme to ensure:
 - (i) items are being used for intended purpose;
 - (ii) items are being maintained appropriately; and
 - (iii) to report any misuse or misappropriation of assets to the Management Agent.

5. Key partnerships, alignment and coordination

The Country Grant must be delivered in alignment with and support delivery of the National Strategic Plan for Combating Antimicrobial Resistance in Sierra Leone.

The grant must also align with other AMR related initiatives including those undertaken by bilateral and multilateral agencies such as US Centre for Disease Control and Prevention, FAO and WHO. The laboratory landscape in Sierra Leone is a complicated one because of the extensive vertical support provided by several different donors. Despite the existence of the Laboratory Technical Working Group in MOHS, coordination between the donors is very limited and there is a high risk of duplication and inefficiency. It is therefore important that the grantee makes every effort to coordinate, align and interact with other development partners.

In addition, the Grantee will need to build strong collaboration and coordination with local academic and research institutions at different levels for technical and other support.

6. Complementing other grants from the Fleming Fund Grants Programme

The first Country Grant is expected to work effectively and synergistically with other grants under the Fleming Fund Grants Programme at the regional level. This relates to both the Fleming Fellowship Scheme (if offered in Sierra Leone) and the Regional Grants.

In addition, Regional Grants will focus on strengthening networking and data sharing on AMR at the regional level. The grantee is expected to liaise, through Mott MacDonald, with such grants for maximising the sharing of AMR data and learning at the regional and global levels.

7. Detailed Objectives and Outputs

7.1 Objective 1: Strengthened One Health governance structure for AMR and AMU surveillance

Output 1.1: AMR national multi-sectoral coordinating group (NMCG) functional

Although the NMCG had been established in 2017 to carry out the situation analysis and then oversee preparation of the NSP, since then its establishment has not been formalised and it has not been active. The first objective of the NSP is to 'Establish an AMR governance structure at national level' initially by making the NMCG operational. The grantee should work closely with the Chairman and key stakeholders in the NSP to agree and establish functions and responsibilities, ensuring active representation across ministries. An important element of this will be to provide secretariat support to the NMCG and its working groups, as capacity in GoSL to carry out this function is very limited. Quarterly meetings should then be held, supported by the secretariat, to review progress of implementation of the NSP in line with its monitoring framework, review data generated by surveillance activities and address policy implications.

Technical working groups (TWGs) will need to be set up in animal health, human health and the environment, again supported by the secretariat. Those in animal health and human health should have oversight of activities in the grant, including design, review and implementation of the surveillance strategies. They should also be capacitated to be key users of data generated by surveillance. Although AMR surveillance by the Environmental Protection Agency (EPA) cannot be supported under this grant, the grantee should encourage its continued engagement and commitment to AMR. A technical working group should also be set up for One Health to review data combined from all sources and feed findings and recommendations into the NMCG for policy decisions.

By the end of the inception period we expect that the following will have been achieved:

- Secretariat for the NMCG established and functional.
- Membership of the NMCG defined, and agreed people appointed to positions.
- Terms of reference for the NMCG and TWGs developed and approved.
- National focal persons for AMR in the health, animal and environmental sectors appointed/confirmed.
- First quarterly meeting convened to review progress towards implementation of the NSP.
- Regular, functional and effective quarterly meetings convened to review progress towards implementation of the NSP.
- Regular, functional and effective meetings of each of the TWGs.

Output 1.2: AMR included in the existing 'One Health' structure

An initial step towards achieving this will be assisting the NMCG to expand the terms of reference of the National One Health committee to include AMR. Other opportunities to include AMR on the existing One Health agenda should also be explored, for example the weekly emergency preparedness at MOHS which now includes One Health. Grant activities should be aligned with the GHSA 5-year roadmap for the advancement in country antimicrobial resistance laboratory capacity. A technical working group should be set up for a multi-sectoral One Health review of AMR and AMU data and/or information generated from all sources and feed findings and recommendations into the NMCG for policy decisions.

By the end of the inception period we expect that the following will have been achieved:

- Terms of reference of the National One Health committee will be expanded to include AMR.
- Terms of reference and membership agreed for a One Health technical working group.
- National One Health committee regularly engaging with AMR issues.
- One Health technical working group regularly combines and reviews data from all sources and feeds findings and recommendations to the NMCG.

Output 1.2 A multi-sectoral One Health technical working group is established

A multi-sectoral One Health technical working group should be set up to review AMR and AMU data and/or information generated from all sources and feed findings and recommendations into the NMCG for policy decisions.

This may be achieved by expanding the terms of reference of the National One Health Committee to include AMR to provide technical support on AMR to the NMCG. Other opportunities to include AMR on the existing One Health agenda should also be explored, for example the weekly emergency preparedness at MOHS which now includes One Health. Grant activities should be aligned with the GHSA 5-year roadmap for the advancement in country antimicrobial resistance laboratory capacity.

By the end of the inception period we expect that the following will have been achieved:

- Terms of reference and membership agreed for a One Health technical working group on AMR.
- A One Health technical working group regularly combines and reviews data from all sources and feeds findings and recommendations to the NMCG.

Output 1.3: Sharing and multi-sectoral review of results from AMR surveillance in the different sectors

The infrastructure needed to collect and analyse the data and/or information generated from AMR surveillance will need to be built. Its design will form part of the development of the surveillance system. The grantee will need to ensure that data is being produced and collected, and that appropriate internal and external QC is performed. The grantee should also ensure that data can be aggregated, and data quality checked, and that this is sustained by the institutions beyond the duration of the grant. Training and other assistance could be given to laboratory sites and Technical Working Groups (TWGs) so that it can analyse the resulting data and report it to the AMRCC.

The grantee will need to build capacity of members of the NMCG and TWGs to understand and interpret the results of AMR and AMU surveillance. TWGs will need to review data combined from all sources and feed findings and recommendations into the NMCG for policy decisions. The grantee will also need to support the groups to present evidence-based recommendations regarding policies and actions to facilitate responsible antibiotic use and reduction in AMR.

The NSP indicates that GoSL has an interest in improving sustainability of AMR interventions by strengthening partnership and governance to support and enhance AMR containment efforts and strengthening advocacy for funding and support for AMR containment. The grantee should work closely with GoSL to ensure that AMR data is contributing towards these aims.

By the end of the grant we expect that the following will have been achieved:

- WHONET or other suitable software is installed, and training given at the reference laboratory and surveillance sites.
- The identified data collection site supported to collect and check the quality of data.
- Both national and sentinel surveillance sites trained and mentored on analysis of AMR surveillance data.
- Results of surveillance delivered in a clinically usable form as products such as updated prescribing guidelines.
- Greater capacity within the TWGs and NMCG to understand and interpret AMR and AMU data.
- Sharing of surveillance results with the NMCG, together with recommendations for future surveillance priorities, programming and policies.
- AMR data is used for advocacy to improve sustainability of AMR interventions.

7.2 Objective 2: Strengthened AMR and AMU surveillance system in the human health sector

Output 2.1: National AMR Surveillance Strategy developed for Human Health.

The role of the Grantee is to develop a national AMR surveillance strategy in human health, in close cooperation with the NMCG and MOHS. As outlined above (see Section 3.3), and as proposed in the NSP, the GoSL has not yet started on the process of setting up a surveillance system for AMR. Surveillance should be aligned to WHO Global Antimicrobial Resistance Surveillance System (GLASS). The Fleming Fund supported, LSHTM-GLASS roadmap⁸ document provides further information. The strategy should also take account of existing surveillance structures to promote alignment and sustainability. An indication of the capacity and timeframe of Sierra Leone to contribute to GLASS should be included within the Surveillance Strategy.

The Grantee is expected to deliver the strategy by providing technical assistance, training and other support as appropriate, aligned with the needs of government and recognising the limited absorptive capacity. The surveillance strategy in AMR should also consider the design, capacity and reporting of animal health AMR surveillance to ensure combined human and animal data is being presented to the NMCG.

Several sentinel sites have been identified as indicated in Table 2. Results of laboratory assessments conducted by the Management Agent will be made available to the grantee. The remaining laboratory at Connaught should be assessed using the Fleming Fund needs assessment tool, which will be supplied by the Management Agent. The results should be used to agree upon the priorities for development of the sites and procurement for surveillance functions.

By the end of the inception period, under the leadership of the NMCG, the Grantee should have developed and agreed with Government a 5-year AMR surveillance strategy which includes a detailed short-term component, achievable within the life of the grant. This should include a plan for a phased approach to capacitating selected labs to carry out identified surveillance. The short-term component should be planned in detail and costed.

By the end of the inception period we expect that the following will have been achieved:

- Human Health Laboratories indicated in Table 2 should be assessed using the laboratory assessment tool provided by the Management Agent.
- A situational analysis of existing surveillance capacity, national systems should be conducted to understand how the AMR Surveillance Strategy will align to ensure sustainability.
- A five-year National AMR Surveillance Strategy drafted.
- A detailed costed operational plan for the short-term component, achievable within the life of the grant.
- The roles and responsibilities of all organisations contributing to the surveillance system are clearly outlined.

By the end of the grant we expect that the following will have been achieved:

- Completion of the short-term component of the National AMR Surveillance Strategy.
- Evidenced uptake of the longer-term surveillance strategy by the NMCG.
- Demonstration of data use at a national level.
- Clear indication of progress towards GLASS reporting.
- A sustainability plan put in place to continue the implementation of the surveillance strategy beyond the life of the grant.

Output 2.2: CPHRL functioning as a reference laboratory for AMR in human health.

CPHRL has been identified as the AMR national reference laboratory, and formal ToRs for the laboratory will need to be defined as part of the surveillance strategy. The laboratory is not currently performing bacterial culture or AST and will need support to develop this role. In the interim, the laboratory at Connaught Hospital could be used to provide QC for the other surveillance sites, and this should be considered by the Grantee

⁸ <https://amr.lshtm.ac.uk/wp-content/uploads/sites/12/2016/11/AMR-Surveillance-Protocol.pdf>

depending on the expected timeframes for developing CPHRL so that roll-out of the surveillance system is not delayed. The Grantee should identify strategies to ensure sustainability of CPHRL's role beyond the life of the grant.

Given the limited human resources available at CPHRL, training should be delivered at CPHRL and at an agreed activity level for example by using a mentoring approach. Pre-and post-training assessment and evaluation should be used to identify a measurable output on training/mentorship interventions.

Funding to CPHRL is currently very limited with the result that it is highly dependent on donor support for most of its operations, including core operating costs. The grantee will be expected to work with MOHS to identify and agree long-term support to CPHRL for AMR surveillance beyond the life of the grant.

By the end of the grant, we expect that the following will have been achieved:

- Renovations and equipment identified, purchased, installed and in use.
- Sustainable maintenance / service contracts for relevant equipment are in place, and maintenance / servicing is conducted as scheduled.
- Sustainable QC systems are in place for relevant equipment, with training, monitoring and logging of corrective actions.
- A stock management system is in place, resulting in laboratory consumables and reagents being available as required.
- A plan is in place for ensuring sustained supply of laboratory consumables beyond the life of the grant.
- A sustainable quality management plan is in place and being implemented.
- CPHRL produces high quality bacteriology results for clinical use and surveillance.
- A secure, inventoried, biorepository system is developed. This should include policies for its operation (e.g. selection of isolates for saving, arrangement for accessing isolates, transfer of isolates in a bio-secured manner, etc.)
- CPHRL staff can demonstrate capacity in techniques that allow confirmation of pathogen and resistance phenotype. Wherever possible training should be practical rather than theoretical, based on samples that are collected by the surveillance itself.
- CPHRL is providing effective and sustainable support to its subordinate labs as detailed in the surveillance strategy by for example by providing confirmation of difficult to identify bacteria and resistance mechanisms, monitoring quality of results, organising training, etc.

Output 2.3: Surveillance site laboratories provide culture services in a stepwise approach as agreed in the surveillance strategy

Surveillance sites will need to be developed in a stepwise manner, building on existing strengths and avoiding overloading staff. Using the data collected from the laboratory assessments, grantees can determine the level of support each site identified in Table 2 would require.

The grantee should ensure that a quality assurance system is built into all procedures. As well as ensuring that SOPs are in place and being used, internal quality control should be monitored. External quality control by proficiency testing or retesting of positive isolates should also be built in. The LSHTM / GLASS roadmap provides a blue-print for establishing surveillance sites and has details of the expected capabilities.

Training and mentoring of laboratory staff will be required. Monitoring of the implementation of the surveillance system should also include the improvement of results and data reporting at laboratory site through reporting data quality improvement. Innovative and sustainable approaches to mentorship and technical assistance should be considered.

Funding to laboratories in Sierra Leone is currently very limited with the result that they are highly dependent on donor support for most or all their operations, including core operating costs. The grantee will be expected to work with MOHS to identify and agree long-term support to laboratories for AMR surveillance beyond the life of the grant.

By the end of the grant, we expect that the following will have been achieved:

- Automated blood culture and other identified equipment purchased and is use.
- Laboratory staff are starting to implement the surveillance protocol.
- Sustainable systems are in place to maintain and calibrate equipment.
- Stocks of reagents and consumables necessary for surveillance are ensured beyond the life of the grant.
- Quality assurance systems in place with internal quality control and external quality assessment. Evidenced demonstration of data quality improvement.
- Laboratory and associated clinical data is collected at the site and shared with the reference laboratory.
- An MOHS owned plan is in place to maintain support to laboratories for AMR surveillance after the end of the grant.

Output 2.4: Improved use of clinical microbiology laboratories by clinicians and other relevant staff

In Sierra Leone lack of bacteriology laboratories means that clinicians are not used to having information on antibiotic resistance for the care of individual patients or to inform prescribing policy. Clinicians will therefore need education and training on use of clinical microbiology and how to use AST data, both in the immediate management of patients and in understanding the impact of AMR at their site. It is important that clinical staff understand the processes in the laboratory and some training on this should be included. Similarly, pharmacists should be aware of the functions of the microbiology laboratory and the impact this may have on antimicrobial prescribing.

The Grantee should engage with clinicians in the process of setting up clinical surveillance, for example by developing and applying sampling guidelines and SOPs, as outlined in the LSHTM/GLASS roadmap. Other staff should also be engaged in this process as necessary e.g. pharmacists. These activities are not limited to only surveillance sites but should be wide-spread to ensure engagement with the broader clinical and pharmacy professionals throughout Sierra Leone have access to engage with AMR protocols, antimicrobial stewardship and AST data.

The Grantee should align with the national infection prevention and control programme as appropriate, making use of existing and developing structures being set up in some hospitals; this may include supporting the establishment of, and engagement with, hospital Drugs and Therapeutic Committees or similar stewardship forums.

The LSHTM/GLASS roadmap should be used as a guide to inform clinical surveillance. It is not expected that all functions would be developed during the life of this grant, but it is expected that significant steps would be taken towards standardised protocols used to guide patient sampling, laboratory tests undertaken, and use of the data in clinical practice.

By the end of the grant, we expect that the following will have been achieved within surveillance sites, but encourage evidence of larger reach where possible:

- Clinicians are identifying patients with suspected severe infection and are taking samples appropriately
- Clinicians and pharmacists are demonstrating an understanding of how to incorporate bacteriology results into their practice
- Clinicians and pharmacists demonstrate better understanding of the role of the microbiology laboratory
- Clinicians are receiving results in timeframes relevant for patient management
- Clinicians are analysing the results generated at their own site

- DTCs or similar fora engage effectively with the issue of AMR and put in place hospital wide control strategies.

Output 2.5: Good quality samples for AMR testing are collected from surveillance sites

Staff responsible for taking cultures (e.g. doctors, nurses, clinical officers) will need to be trained in the collection of good quality samples including when to send samples, sampling methods to minimise contamination, and appropriate completion of specimen forms.

The Grantee should ensure that financial barriers to testing are mitigated and perverse incentives for inappropriate testing are avoided. The Country Grant should cover all costs related to necessary equipment, reagents, and consumables and there should be no costs to the patients for accessing the test required under the surveillance protocol.

By the end of the grant we expect that the following will have been achieved:

- Staff take better quality blood cultures, CSF samples and clean-catch urine sampling.
- Specimen forms are completed appropriately.
- Criteria for sample rejection have been developed and are being used by staff.
- An audit system is in place and being used to provide monitoring and feedback for sample rejection and contamination rates

Output 2.6: Biosafety and biosecurity strengthened at all supported laboratories

Biosafety and biosecurity equipment and procedures will need to be in place before samples are tested, so work in this area in all identified labs should commence at the outset of the grant. The grantee will need to provide training and technical assistance to ensure a high level of biosafety and biosecurity and will also need to support the training of a Biosafety Officer to oversee implementation of a biosafety and biosecurity programme.

By the time the first samples are being tested in line with the surveillance strategy, we expect the following to be in place at each surveillance laboratory:

- There is a system being used for safe disposal of waste, with appropriate monitoring.
- The laboratory is equipped with appropriate safety equipment and staff are wearing personal protective equipment while conducting testing.
- All biosafety cabinets are being regularly maintained and calibrated, staff have been trained on their use and demonstrate correct practice.
- Monitoring systems for biosafety and biosecurity are established and in operation.
- A continuing professional development (CPD) programme is in place for laboratory staff which includes maintenance of basic laboratory competencies for biosafety and biosecurity (see also output 2.2).
- There is a plan for maintaining biosafety and bio security beyond the life of the grant.

Output 2.7: Biosecure transport system between surveillance sites is developed

There is currently no provision for government supported transport of samples between laboratories and funding from the government to support such an initiative is likely to be severely constrained or non-existent at least in the short term.

The grantee should assist the government to develop a secure mechanism for transport of samples, cultures, isolates and QC materials between the surveillance sites and reference labs. This system should be appropriate to the scale of the surveillance system and be sustainable at the end of the Fleming Fund grant. Care must be taken that all materials are transported in a secure manner.

Activity under this output can commence at the outset of the grant for those laboratories which have already been identified.

By the time the first samples are being tested in line with the surveillance strategy, we expect the following to be in place:

- A secure mechanism for transport of samples, cultures, isolates and QC materials between the surveillance sites and reference labs.
- A plan for how this system will be sustained post-grant.

Output 2.8: National AMU and AMC Surveillance Strategy designed and implemented.

The role of the Grantee is to develop a national AMU and AMC surveillance strategy in human health, in close cooperation with the NMCG, MOHS and Pharmacy Board of Sierra Leone. GOSL has a strong interest in obtaining more data on consumption and use, as a precursor to improving regulation.

By the end of the inception period, under the leadership of the NMCG, the Grantee should have developed and agreed with Government a 5-year AMU and AMC surveillance strategy which includes a detailed short-term component, achievable within the life of the grant. The short-term component should be planned in detail and costed.

The grantee will need to provide technical assistance and ensure close engagement with GOSL to design the strategy.

Recent discussions with GOSL suggest that the AMU and AMC surveillance strategy should include the following:

- Development of a landscape analysis for antimicrobials sourced outside of hospital pharmacies. The analysis should include legislation regarding antimicrobial prescribing and dispensing, enforcement of legislation, availability of antimicrobials from non-government sources and types of antimicrobials available.
- Support to a selected number of hospitals to collect pharmacy data centrally and analyse it. This should include establishment of an electronic database for entering data from pharmacy requisition books, and support for utilisation of the electronic treatment register, both for ensuring accurate recording of data at surveillance sites, and for reporting centrally.
- Support to MoHS to develop an analysis plan for hospital pharmacy data, and to incorporate this with data from laboratory and clinical surveillance to inform policy and practice.

By the end of inception, we expect that the following will have been achieved:

- Surveillance strategy developed.
- Landscape analysis for AMC / AMU for antimicrobials sources outside of hospital pharmacies carried out.
- MoH analyses pharmacy data and relates it to other AMR-related data from human and animal surveillance and uses it to inform policy and practice.
- Hospitals analyse pharmacy data and report centrally.
- A sustainable plan is in place to continue AMC and AMU surveillance beyond the life of the grant.

7.3 Objective 3: Strengthened AMR and AMU surveillance system in the animal health sector

Output 3.1: Situation analysis of antimicrobial use in food animals.

Capacity in the Ministry to carry a situation analysis is limited but there is an interest that the work should be done and a recognition that the resulting data will be important to inform surveillance priorities in AMR and AMU.

Some census data exists on numbers and types of livestock but information on antibiotic use is lacking. It is thought that there is relatively little intensive rearing of livestock in Sierra Leone and that meat that is sold in larger towns and cities is often imported from neighbouring countries, either “on the hoof” or as prepared

meat products. There is relatively little intensive rearing of poultry and pigs, with cattle and small ruminants being the most important livestock groups. For cattle, though there are semi-intensive ranches, a large proportion of the population moves seasonally (transhumance) and will cross national boundaries. Issues of antibiotic use are therefore regional rather than purely confined to Sierra Leone. It is recognised that a wide variety of antibiotics is easily available to both commercial and domestic farmers and used extensively.

The grantee is expected to work closely with the Livestock Division of MAFFS and other stakeholders to carry out, during the first 6 months of the grant (inception phase), a situation analysis on (1) the use of antibiotics in livestock along their value chains (2) Value chains of antibiotics.

(1) Given the limited up-to-date information available on livestock value chains, this situation analysis will have to include a descriptive livestock value chain analysis, thus collecting information on (but not limited to): livestock species, production volumes, production systems, marketing systems, antibiotic use at each step of the chain, origins of antibiotics used, identification of stakeholders who are key, within the chain, in the use and distribution of antibiotics to farmers... Data thus collected will help inform data collection strategy for the descriptive analysis of antibiotics value chains (2).

(2) This descriptive analysis will aim at establishing where antibiotics are purchased from, and the distribution channels (and their relative importance) that lead to their use in farms, the efficacy of legislation and enforcement of access to antibiotics, how farming practices and cross-border traffic of animals affect antibiotic consumption and potential risks posed to the human population by antibiotic use in animals.

By the end of inception, we expect that the following will have been achieved:

- Government staff in the Livestock Division of MAFFS have a greater understanding of how to carry out a situation analysis and analyse and use the data.
- The situation analysis is complete.
- The analysis provides data that can inform the AMR and AMU surveillance strategy.

Output 3.2: National AMR Surveillance Strategy developed and implemented for Animal Health

The grantee should work closely with MAFFS to develop an achievable and sustainable AMR surveillance strategy.

The role of the Grantee is to develop a national AMR surveillance strategy, in close cooperation with MAFFS. This would include identifying prioritised objectives for AMR surveillance which address priority target livestock populations and/or food products, priority bacteria and AMR risks. The strategy would identify the roles and responsibilities of the laboratories and centres of expertise within the MAFFS for sample collection, diagnostic testing, AMR data storage, analysis and reporting. The strategy would also consider mechanisms and processes for sharing AMR surveillance data analysis results with the human health and other sectors to provide information on multi-sectoral patterns of AMR and appropriate advice to the NMCG. The strategy should also take into account existing surveillance structures to ensure alignment and sustainability. The strategy should have both a long-term element (e.g. 5 years) and a more detailed short-term component, achievable within the life of the grant. Provided poultry is identified as a potential source of AMR in Sierra Leone, the surveillance system should be piloted (i.e. detailed short-term component) in that production system.

The Grantee is expected to deliver the strategy by providing technical assistance, training and other support as appropriate, aligned with the needs of government and recognising the limited absorptive capacity.

NRL will be carrying out testing, as indicated in Table 2. Results of laboratory assessments conducted by the Management Agent will be made available to the grantee. No additional animal health sites will be included at this point as the sampling can be done from various sites and delivered to the NRL.

For the longer-term surveillance strategy, additional sites can be considered and assessed if required to determine a phased approach in the longer term. Both the long and short-term components should be planned in detail and costed.

By the end of the grant we expect that the following will have been achieved:

- A five-year National AMR Surveillance Strategy for Animal Health produced, included methods and costs.
- The roles and responsibilities of all organisations contributing to the surveillance system are clearly outlined.
- Completion of the short-term component of the National AMR Surveillance Strategy, including data collection and analysis.
- Evidenced uptake of the longer-term surveillance strategy by the NMCG.
- Demonstration of data analysis capacity and use at a national level.

Output 3.3: CVRL functioning as a reference laboratory for AMR in animal health.

CVRL is likely to need substantial support to set up systems and procedures for bacteriology. There is nobody with bacteriology experience at this site, and investment in skill development will be integral to establish CVRL for AMR. The approach will therefore need to be realistic and practical given the limitations. The University of Njala has supported CVRL with skills development, and a further technical relationship between CVRL and the University of Njala should be explored.

A quality control system for bacteriology will need to be designed and institutionalised. Relevant equipment needs to be properly maintained with training, monitoring and logging of corrective actions. A stock management system will be required, to ensure that laboratory consumables and reagents are available as required and that there are no stock-outs. The quality management plan should enable CVRL to produce high quality, timely bacteriology identification and susceptibility testing results for surveillance.

A biorepository should be set up. This needs to include policies for its operation (e.g. selection of isolates for saving, arrangement for accessing isolates, transfer of isolates in a bio-secured manner, etc.). The laboratory is expecting delivery of a large ultra-low temperature freezer that would be suitable for the task.

By the end of the grant, we expect that the following will have been achieved:

- The National Reference Laboratory for Animal Health in Table 2 should be assessed using the laboratory assessment tool provided by the Management Agent.
- CVRL operates as a functioning reference laboratory for AMR and animal health.
- CVRL has a functional secure inventory bio repository system.
- A sustainable quality management system is developed and implemented. This includes evidenced monitoring data that demonstrates data quality improvement.
- Sustainable maintenance / service contracts for relevant equipment are in place, and maintenance / servicing is conducted as scheduled.

Output 3.4: Biosafety and biosecurity at CVRL strengthened

Biosafety and biosecurity equipment and procedures will need to be in place before samples are tested, so work in this area in CVRL should commence at the outset of the grant.

The grantee will need to provide training and technical assistance to ensure a high level of biosafety and biosecurity and will also need to support training of a Biosafety Officer to oversee implementation of a biosafety and biosecurity programme.

By the time the first samples are being tested in line with the surveillance strategy, we expect the following to be in place at each surveillance laboratory:

- There is a system being used for safe disposal of waste, with appropriate monitoring.

- The laboratory is equipped with appropriate safety equipment and staff are wearing personal protective equipment while conducting testing.
- All biosafety cabinets are being regularly maintained and calibrated, staff have been trained on their use and demonstrate correct practice.
- Monitoring systems for biosafety and biosecurity are established and in operation.
- A continuing professional development (CPD) programme is in place for laboratory staff which includes maintenance of basic laboratory competencies for biosafety and biosecurity (see also output 2.2).
- There is a plan for maintaining biosafety and bio security beyond the life of the grant.

8. Lead Grantee Roles and Responsibilities

The main role of the grantee will be to plan and execute outputs and deliver the objectives listed above. The Grant is designed as an AMR laboratory capacity building and systems strengthening intervention. The grantee is responsible for providing, either through in-house resources alone, or through a partnership or consortium, the expert technical assistance and high-quality support needed to strengthen the selected reference and surveillance sites' capability and capacity to generate and share AMR surveillance data on both a national and international basis.

9. Measuring success

Country Grants will eventually be expected to generate results that can be tracked using a standard set of indicators that will monitor progress and achievements within and across Country Grants. A copy of the full list of indicators will be shared in the Application Pack.

However, for this Country Grant, it is important to note that:

- (i) Applicants are not expected to select from and use these indicators for this first Country Grant. While it is possible that some of the formal indicators may trigger towards later stages of the grant award, the likelihood of this will be reviewed and discussed by Mott MacDonald with the successful applicant.
- (ii) For the purposes of this grant, process level indicators will be used to track progress against the work plan. The grantee is expected to utilise the indicators proposed above or to propose alternative SMART indicators in line with the outputs summarised above. These will then be negotiated and agreed with Mott MacDonald as the Management Agent.
- (iii) No Country Grant will be expected to use all the Fleming Fund indicators. Instead a relevant sub-set of indicators will be proposed by the grantee for joint agreement with Mott MacDonald.
- (iv) The Fleming Fund will be independently evaluated by ITAD, a specialist evaluation firm, who have been appointed by the UK Department of Health and Social Care for this purpose. In addition to measuring grant performance against the objectives and outputs stated above, the grant will also be monitored on the implementation of, and adherence to, the Fleming Fund grant principles described above. All grants are subject to review and evaluation by the evaluators, and full co-operation with the evaluators by all grantees is expected.

10. Application requirements

10.1 Grant Eligibility Criteria

Potential grant applicants must satisfy the following eligibility criteria before applications will be assessed in detail. Applicants:

- Must demonstrate that they are competent organisations responding to this call for proposals;
- Must have an appropriate track-record in supporting lab capacity development, surveillance, capacity building, and One Health.
- Must have experience of programme implementation in Sierra Leone.
- Must demonstrate that they are registered to work within the country, including the provision of essential documents such as articles of incorporation.
- Must be prepared to accept the Grant Agreement terms.
- Must be able to provide the same information and assurances for all sub-grantees, where the application is from a consortium.
- Should be able to provide all information required for due diligence checks, including clear evidence of financial standing and systems of financial management and control.
- Should be able to provide evidence of suitability in the form of references from clients and donors for previous work undertaken within the last three years.
- Can be a single organisation or consortia, though the latter must clearly identify a Lead Grantee with the appropriate governance and coordination mechanisms to manage sub-grantees.
- Can be:
 - National institutes – such as a university or research institutes;
 - Non-governmental organisations (NGOs);
 - UN Agencies;
 - Private companies;
 - Government-owned enterprises or institutions, provided they can establish that they are (i) legally and financially autonomous, (ii) operate under commercial law, and (iii) are not dependent agencies of national governments

10.2 How to apply

Prospective lead grantees must register their interest to apply by emailing flemingfundWA@mottmac.com to receive an invitation to **the Applicant Information Session**, and an example of the Application Pack.

The Applicant Information Session (AIS) will be organised **in Freetown, Sierra Leone on Tuesday, 05 February 2019**. The details of the venue will be shared with applicants registering their interest.

Ahead of the AIS, an example Application Pack will be shared and will include the application form, budget and milestones template and Guidance Notes. Following the AIS, the **official Application Pack** will be sent out to prospective Grantees who have registered their interest to apply for the grant.

To apply, please complete the application form and budget and monitoring template provided, in line with the Guidance Notes, by the deadline indicated in Section 10.5.

Note the key requirements set out at the beginning of the Country Grant Application Form:

- When submitting the application document, press “Reply All” from the **official Application Pack** automated email that you received with the application documents attached. Do not send it to us from a new email, and do not modify the Subject-line. Only “Reply All” emails will register the documents in our system.
- Keep file sizes as low as possible - there is a 9MB size limit to each individual email that can be received by the grant submission software. You can submit documents by sending multiple emails attaching submission documents to each one. Please follow the instruction (above) using “Reply All” to the original email.
- The submission deadline is: **17:00 SL Time (GMT+0) Monday, 04 March 2019**
- Applicants should observe the word limit. Additional words outside the limit will be disregarded.

- All documents included as part of the proposal must be submitted by separate e-mail in Word, Excel, and PDF format (body font: Calibri 11pt). Do not send through as zipped files. You should include a covering letter, signed by the person authorised to represent your organisation for the submission of this proposal.
- Your application is conditional upon your acceptance of the grant agreement (format will be shared in the application pack).

Proposals that do not satisfy these criteria may not be accepted.

10.3 Evaluation criteria

The Application Pack will include the application form, indicating the scoring and weighting for each section of the application. The Application Pack will also contain Guidance Notes explaining what we are looking for in terms of a good quality response for each question, including approach to Value for Money (VfM).

We would be assessing the application on the following key areas:

- Technical capacity to address the different aspects of AMR covered by this Country Grant.
- Ability and preparedness to bring stakeholders together in an effective and productive working arrangement, promoting a One Health approach.

10.4 Restrictions/limitations

Any conflict of interest, or potential conflict of interest, should be declared to Mott MacDonald when applicants are registering their interest to apply for the grant. If a conflict of interest, or potential conflict of interest, arises after that point the prospective grantee must clearly declare this in their proposal.

10.5 Key dates

Publication of RFP: **Friday, 18 January 2019**

Deadline for registering interest to receive the Application Pack: **Thursday, 31 January 2019**

Applicant Information Session: **Wednesday, 06 February 2019**

Deadline for registering to apply for the Grant: **Friday, 08 February 2019**

Application deadline: **Monday, 04 March 2019 17:00 SL Time (GMT)**

Anticipated start date of grant: **Monday, 15 April 2019**

10.6 Contact details and support information

Any questions on the Request for Proposals should be sent to flemingfundWA@mottmac.com The Management Agent will endeavour to respond to queries within 72 hours.

Annex 1: Eligible funding items

Laboratory Infrastructure Enhancement

- Infrastructure: renovation, redecoration, electricity and water supply, environmental controls, waste and waste disposal.
- Equipment: appropriate equipment for the level of capability; biosafety and biosecurity equipment; automated culture and identification platforms; IT equipment.
- Reagents, durables & consumables: appropriate media, reagents, culture plates, etc; glassware; sample collection consumables.
- Transport and logistics: vehicles or contracted services for transport of goods, and people; safe and secure transport of specimens and samples; logistical support for surveys.

Human Resource Strengthening and Workforce Reforms

- Training: clinical, veterinary, agricultural and One Health surveillance protocols; biosafety and biosecurity; microbiology, laboratory science and laboratory management; epidemiology and surveillance; genomics; IT training.
- Long-term support: ongoing and refresher training according to the competency and capabilities framework; Fleming Fellowship Scheme.

Surveillance System Strengthening

- Governance: support for AMR Coordination Committees & working groups; operational planning; cross-sectorial meetings and strategy reviews; evaluation(s).
- Quality assurance and control: site visits and audits, laboratory twinning / mentoring.
- Data: transfer and storage; safety and security; analysis software and training.
- Recurrent costs: utilities, maintenance of equipment, upkeep of laboratory space, small maintenance, personnel costs.

Building Foundations for Surveillance Data Use

- Support to build demand for AMR data: general awareness among prescribers, dispensers and agricultural consumers (i.e. farm workers, agribusiness); publication charges; workforce training.
- Evidence based strategy, policy and practice change: data / information sharing conferences, meetings and initiatives; conference attendance; IT platforms for data sharing and awareness / transparency.

Rational use of Antimicrobial Medicines

- AMU/C surveillance: development of strategies for AMU/C surveillance; use of AMU data for appropriate prescribing / informing stewardship programmes.