Strategy for strengthening animal disease diagnostic capacity in Pacific Island countries and territories

SPC LRD-AHP/PRIPPP

Executive summary

The Pacific Regional Influenza Pandemic Preparedness Project (PRIPPP) has been designed to build the capacity of Pacific Island countries and territories to effectively and efficiently respond to emerging diseases, in particular highly pathogenic avian influenza (HPAI) and pandemic influenza. A proper and timely laboratory diagnosis and confirmation of the HPAI virus in animal hosts has been highlighted as very significant in reducing the risk of infection being transmitted to humans.[1] Hence, there is a vital need to strengthen animal health diagnostic capacity within the Pacific region.

In establishing this diagnostic capacity, PRIPPP needs to consider not only the development of suitable laboratory facilities but, more importantly, strengthening human resources and maintaining the developed skills within the Pacific. Pacific Island countries and territories (PICTs) have a vital role to play in the success of establishing and maintaining the animal health laboratory capacity being developed in the region under PRIPPP.

This document outlines the different levels of laboratory development that can be implemented in PICTs. Trainings, resources and contributions from collaborating organisations for the improvement of animal diagnostic capacity in the Pacific Island region are specified.

It is envisaged that the project will be able to assist most PICTs to improve or establish laboratory capacity in the animal health sector.

Key objective	Result areas
Scoping study of animal health laboratory capacity in the Pacific	Assessment report of animal diagnostic capacity in the Pacific
Establishment of sub-regional laboratories in identified PICTs (Fiji , PNG, Guam, NC)	Developed diagnostic capacity available for each sub-region
Establishment of linkages between PICTs and referral/reference laboratories	Active animal health laboratory network in the Pacific (PAHLNet)
Well-trained animal health laboratory staff in PICTs	Competent animal health staff capable of facilitating laboratory diagnosis

[1] WHO. 2002. Manual on Animal Influenza Diagnosis and Surveillance. World Health Organization, Geneva.

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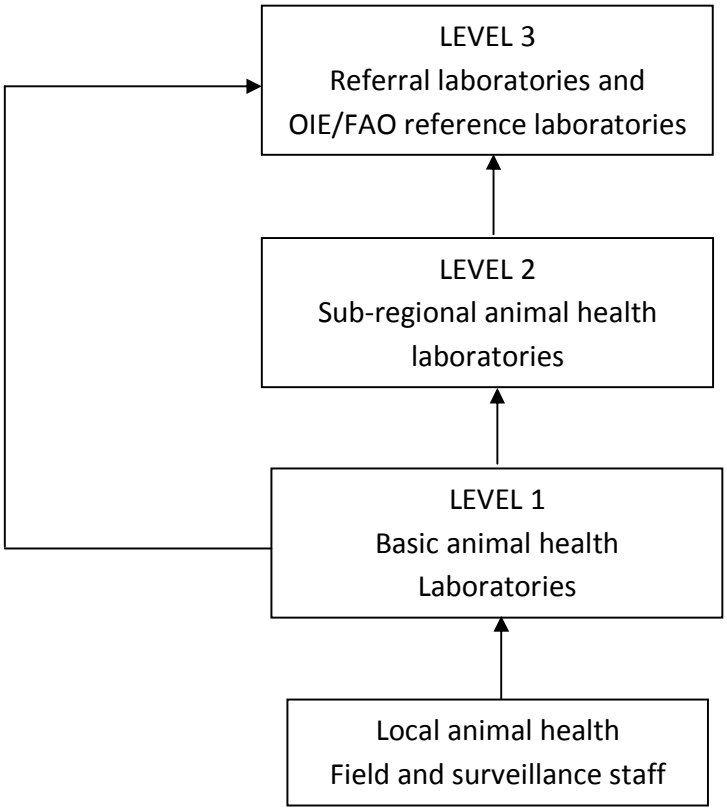
Introduction

The geographic location of some Pacific Island countries and territories (PICTs), which trade and share borders with South-East Asian countries, makes the Pacific region as a whole vulnerable to socioeconomically significant livestock animal diseases such as highly pathogenic avian influenza (HPAI). The shortage of veterinarians and the limited number of animal diagnostic facilities in the region adds to the risk that a disease outbreak may not be recognised or managed in a timely manner to prevent the spread and establishment of a serious pest or disease. Although the Pacific Island region remains free of most serious animal diseases, the introduction and establishment of diseases such as HPAI or rabies would have serious socioeconomic and public health impacts in this developing region. This document outlines a plan for the improvement of animal disease diagnostic capacity in the region.

Assessment process

A laboratory assessment survey designed to collect information regarding the current status of animal disease diagnostics in the different PICTs was completed in 2008. Country visits and communications were pursued to collect further information, particularly from PICTs that did not respond to the initial survey. A complete assessment report has been documented and a brief summary can be found in Annex 1.

Pacific Animal Health Laboratory Network (PAHLNet) specimen referral flowchart



Regional laboratory capacity and network building

Level 1: Basic animal health laboratory (national)

Requirements:

1. A dedicated site in each PICT for a basic laboratory to conduct procedures for rapid diagnostic screening, handling, storage and packaging of specimens for transport.
2. Permanently employed staff to manage basic laboratory operations.

Terms of reference:

3. Efficiently perform post mortems, and sample collection, handling and processing.
4. Effectively store animal specimens appropriate for laboratory diagnosis.
5. Effectively package and dispatch appropriate diagnostic specimens to referral or reference laboratories.
6. Perform screening tests for animal disease diagnosis.

Available veterinary laboratory capacity in some PICTs with Level 1 facilities may be further improved through the introduction of more advanced diagnostic serological techniques, such as enzyme-linked immunosorbent assay (ELISA).

Level 2: Sub-regional animal health laboratories

Requirements:

1. Recipient PICTs must be easily accessible to other PICTs.
2. An appropriately established infrastructure to house serology equipment.
3. Permanently employed, well-trained laboratory veterinarians and technicians.
4. Duty-tax exemption for imported laboratory equipment.

Terms of reference:

1. Act as a focal point for sub-regional coordination for animal disease diagnostics.
2. Act as a referral laboratory for neighbouring Level 1 laboratories conducting disease investigation and surveillance, following appropriate biosecurity procedures.
3. Provide animal disease laboratory training to other PICTs, including conduct of the following serology procedures:
    a. Enzyme-linked immunosorbent assay (ELISA)
    b. Hemagglutination-inhibition test (HA-HI)
    c. Agar gel immunodiffusion assay (AGID)
    d. Immunofluorescence assay (IFA)
    e. Polymerase chain reaction (PCR)

A list of recommended laboratory equipment, reagents and consumables for Level 1 and 2 laboratories can be found in Annexes 2 and 3.

Level 3: Referral laboratories and OIE/FAO reference laboratories

Referral laboratories are established animal disease diagnostic laboratories in universities and agricultural agencies accessible to PICTs.

OIE/FAO reference laboratories are animal disease diagnostic laboratories identified by the World Organisation for Animal Health (OIE) and the United Nations Food and Agriculture Organization (FAO) to perform confirmatory diagnosis of different animal diseases.

Referral and reference laboratories can provide appropriate training and technical assistance to animal health laboratories to manage HPAI and other animal diseases. These laboratories can also facilitate regional programmes and international schemes for external quality assurance (EQA) and assessments for PICTs. A list of recommended referral and reference laboratories can be found in Annex 1.

The selection of methods and the development of standard operating procedures (SOPs) for Level 1 and sub-regional laboratories are essential to the laboratories' credibility. Each PICT animal health laboratory should aim to have its SOP document developed in accordance with the requirements of the OIE/FAO reference laboratories identified for the country.

The following laboratory standards and SOPs need to be documented by each animal health laboratory:

1. Specimen collection and processing
2. Laboratory diagnostic procedures
3. Shipping protocol (packaging and transport)
4. Laboratory biosafety guidelines
5. Laboratory forms (data management)

Specimen transport

Pre-arrangements should be made by PICTs with carriers to facilitate immediate dispatch and efficient transport of specimens to overseas laboratories. Recommended carriers are:

1. **TNT** – known to provide services for transport of Category A infectious substances and dry ice; and
2. **DHL** – highly recommended for countries that do not have access to TNT (Niue, Vanuatu, French Polynesia and Cook Islands).

PRIPPP and PICT contributions

PRIPPP contributions

1. **Equipment.** PRIPPP has provisions to support laboratory equipment for:
   A. Sub-regional laboratories
   - Laboratory equipment to perform ELISA, HA-HI and AGID and possibly IFA and PCR (if resources permit and facilities can be sustained by the country)
   - Initial stockpile of laboratory consumables (see Annexes 2 and 3)
   - Initial stockpile of reagents to test-run equipment (see Annexes 2 and 3)

   B. Basic animal health laboratory (Level 1)
   - Specimen collection and processing
   - Packaging and transport of specimens
   - Provision for ELISA (if veterinary service available in-country and if facilities can be sustained)

Countries will be required to adhere to a laboratory upgrading agreement depending on the level of laboratory being improved. Laboratory equipment is listed in Annexes 2 and 3. Template agreements can be found in Annexes 5 and 6.

2. **Training and workshops.** Regular regional laboratory workshops and training will be organised for the duration of PRIPPP to give each PICT the opportunity to train appropriate laboratory staff in:
   - IATA Dangerous Goods Regulations (one training session per sub-region);
   - avian influenza diagnostic techniques and laboratory biosafety (one training session per sub-region); and
   - Sub-regional Animal Health Laboratory Network (schedules of workshop will depend on available funding).

3. **Laboratory technical support.** PRIPPP will ensure that laboratory technical support is made available to PICTs for preparing laboratory documents and to ensure the functionality of the diagnostic capacity being established.

PICT contributions

1. **Infrastructure.** An appropriate laboratory infrastructure is a prerequisite to any support for laboratory capacity building.
2. **Human resources.** Staff permanently employed by the government or recipient agency that will manage laboratory activities.
3. **Training.** PICTs should explore sources of laboratory training that may not be covered by PRIPPP. Recommended training to develop better appreciation of data collected in the laboratory:
   a. field epidemiology;
   b. data management and analysis;
   c. risk assessment; and
   d. data mapping (e.g. GIS introductory).
4. **Equipment maintenance.** PICTs will be responsible for maintenance and periodic calibration to preserve laboratory equipment in a functional state.
5. **Regional laboratory support.** Acceptance of the equipment signifies agreement by the recipient agency to take on the role of supporting surveillance and other animal disease diagnostic activities of the country and neighbouring PICTs. This will include making import permits available to neighbouring PICTs that may require diagnostic services.
6. **Legislation.** Recipient agencies, particularly sub-regional laboratories, should ensure that national legislation allows for neighbouring PICTs to send animal specimens for laboratory analysis.
7. **Linkages with reference laboratories.** PICTs must maintain linkages with reference laboratories, regularly ensuring the availability of necessary documents (e.g. import permits) to send specimens overseas.
8. **Documents and reports.** PICTs must complete laboratory SOPs and upgrading reports, and facilitate other significant laboratory documents.
9. **Dangerous Goods Regulations (DGR) certification.** PICTs must maintain DGR certification of trained personnel.
10. **Tax exemptions.** Recipient agencies are responsible for ensuring tax exemption for items purchased and supplied through PRIPPP.

In general, training/workshop participants are expected to:

- be permanently employed staff of PICTs who will facilitate animal health laboratory activities;
- learn, perform and contribute during workshops and training sessions;
- provide group or individual post-training reports;
- apply acquired skills and knowledge in local workplaces or in the Pacific region; and
- disseminate acquired skills and knowledge in the workplace or in the Pacific region through organised training sessions.

Nomination for Pacific Animal Health Laboratory Network (PAHLNet) representative

Two representatives from each government's animal health sector can be nominated to act as representatives of the PICT for PAHLNet. The laboratory focal persons will be included in the PAHLNet mailing list.

Terms of reference for the animal health laboratory focal persons are:

1. Participate in the PAHLNet mailing list;
2. Represent the country in regional, sub-regional and national meetings or workshops organised for PAHLNet;
3. Ensure that appropriate animal health laboratory staff are nominated to participate in local or overseas laboratory training;
4. In consultation with other laboratory specialists, facilitate completion of laboratory SOPs, laboratory biosafety/biosecurity guidelines and shipping protocols;
5. Maintain direct linkages with reference and referral laboratories;
6. Facilitate implementation of laboratory capacity-building activities in the PICT; and
7. Disseminate information on regional activities for animal disease diagnostic capacity building to local executives.

Nomination forms (Annex 4) for animal health laboratory representatives should be forwarded to:

SPC-LRD Animal Health and Production Team
Secretariat of the Pacific Community
3 Luke Street, Nabua
Private Mail Bag
Suva, Fiji
Tel: +679 337 0733 ext. 284
Fax: +679 337 0021 or +679 338 6326
Email: elvab@spc.int

Maintenance and sustainability

Establishing animal health laboratories is valuable for animal production, but maintenance of the laboratories will have significant budgetary implications for PICT agriculture/animal health sectors. It is crucial that agriculture/animal health sectors in PICTs maintain well-trained laboratory personnel and obtain local government support for continuous improvement projects in the field of animal disease diagnostics. In particular, it is vital that regular maintenance/calibration of equipment, refresher courses on laboratory biosafety and DGR training be maintained by the countries beyond the end of PRIPPP. This will require specific allocations in the annual budget of PICT agriculture/animal health agencies.

Continuous collaboration with local public health laboratories and agencies will also greatly contribute to the sustainability of animal disease diagnostic capacity in PICTs.

Annex 1. Summary of Laboratory Assessment Survey

Assessment duration: November 2007 to February 2008

Tools and process:

1. Laboratory assessment survey
2. Online discussions
3. Country visits

Existing capacities

A. PICTs with existing laboratories for animal health:

1. Fiji – Koronivia Veterinary Pathology Laboratory
2. New Caledonia – LNC Paita
3. Papua New Guinea – National Veterinary Laboratory, Kila Kila, Port Moresby
4. Palau – Koror Animal Shelter
5. Samoa – Animal Health Laboratory, Avele
6. Solomon Islands – Agriculture Laboratory, Honiara
7. Tonga – Mataliku Station Laboratory

B. PICTs with laboratories that can be improved for animal health use:

1. French Polynesia
2. Federated States of Micronesia – College of Micronesia Laboratory
3. Guam – Agriculture and Natural Resources Laboratory, University of Guam
4. Wallis and Futuna – Laboratory of Environmental Department
5. Vanuatu – Animal Health Laboratory
6. Kiribati – Animal Health Laboratory, Tarawa

C. PICTs with an identified venue to set up a Level 1 laboratory:

1. American Samoa
2. Commonwealth of Northern Mariana Islands – Agriculture Office, Saipan
3. Cook Islands
4. Republic of Marshall Islands
5. Tuvalu
6. Niue
7. Nauru

Recommended levels of laboratory capacity building

A. Sub-regional animal health laboratories (Level 2)

1. Papua New Guinea
2. Guam
3. Fiji
4. New Caledonia

B. Basic animal health laboratories (Level 1)

1. American Samoa
2. Cook Islands
3. Commonwealth of Northern Mariana Islands
4. Federated States of Micronesia
5. Kiribati
6. Niue

7. Nauru
8. Republic of Marshall Islands
9. Tonga
10. Tuvalu
11. Vanuatu

C. Basic animal health laboratories with capacity to perform ELISA (Level 1)

1. French Polynesia
2. Palau
3. Samoa
4. Solomon Islands
5. Wallis and Futuna

D. Referral and reference laboratories

Australia

- CSIRO Australian Animal Health Laboratory
  (reference lab)
  5 Portarlington Road
  East Geelong Victoria 3219
- James Cook University (to be confirmed)
- Queensland Department of Primary Industries and Fisheries (referral lab)
  180–202 River Boulevard
  Oonoonba Queensland 4811
  PO Box 1085
  Townsville Queensland 4810

New Zealand

- NZ Biosecurity Animal Health Laboratory (to be confirmed)

USA

- USGS-National Wildlife Health Center
  Honolulu Field Station
  PO Box 50167
  Honolulu, HI 96850

JAPAN

- OIE reference laboratory (to be confirmed)

Annex 2. Recommended minimum laboratory materials for basic animal health laboratory (Level 1) set-up

Laboratory materials	PRIPPP contribution
A. Laboratory furniture	
1. Working table	Maximum total amount of AUD 7,000
2. Cabinets (for keeping consumables)	
3. Sink and tap water facilities	
B. Laboratory equipment	
1. Digital timer	2 units
2. Refrigerator with freezer	1 unit 16 cubic feet
3. Centrifuge – 3000 rpm	1 compact unit
4. Autoclave (clean)	1 compact unit
5. Light microscope	1 unit
6. Exhaust fan	not applicable
7. Computer unit	n/a
8. Air conditioning (if appropriate)	n/a
C. Laboratory consumables	
1. Anigen avian influenza rapid test kits	PRIPPP General Procurement
2. Transport medium (for bacteria and viruses)	AHP Investigation Kit
3. Swabs	AHP Investigation Kit
4. Syringes – 2–5 ml G23	AHP Investigation Kit
5. Needles – for syringes G23, G21 1 inch	AHP Investigation Kit
6. Tubes – snaplock 2 ml, autoclavable	1 pack/500 pcs
7. Tubes – vacutainer with and without EDTA	AHP Investigation Kit
8. Tubes – 2 sizes appropriate for centrifuge	1 pack/25 pcs per size
9. Needles – for vacutainers G23, G21 1 inch	AHP Investigation Kit
10. Specimen containers	AHP Investigation Kit
11. Disposable aspirators	AHP Investigation Kit
12. Bio boxes	PRIPPP General Procurement
13. Biohazard specimen bags	AHP Investigation Kit
14. Biohazard bags	AHP Investigation Kit
15. Garbage disposal bag	n/a
16. Rubbish bin	n/a
17. Sharps container	n/a

Annex 3. Recommended minimum laboratory materials for sub-regional animal health laboratory (Level 2) set-up

General

Laboratory materials	PRIPPP contribution
A. Laboratory furniture	
1. Working table	Maximum total amount of AUD 10,000
2. Cabinets (for keeping consumables)	
3. Sink and tap water facilities	
B. Laboratory equipment	
1. Class II biosafety cabinet	1 unit
2. pH meter	1 unit
3. Digital timer	2 units
4. Tube stand (for 2–5ml tubes)	4 units
5. Refrigerator with freezer	1 unit 16 cubic feet
6. Ultra-low freezer -80^{o}C	1 unit
7. Centrifuge with accessories – 14000 rpm	1 unit
8. Autoclave (2 units – clean and dirty)	1 unit
9. Water distilling unit with de-ioniser	1 unit
10. Exhaust fan	1 unit
11. Computer unit (networked to laboratory office)	1 unit
12. Air-conditioning unit	1 unit
C. Laboratory consumables	
1. Anigen avian influenza rapid test kits	PRIPPP General Procurement
2. Transport medium (for bacteria and viruses)	AHP Investigation Kit
3. Swabs	AHP Investigation Kit
4. Syringes – 2–5 ml G23	AHP Investigation Kit
5. Needles – for syringes G23, G21 1 inch	AHP Investigation Kit
6. Tubes – snaplock 2 ml, autoclavable	1 pack/500 pcs
7. Tubes – vacutainer with and without EDTA	AHP Investigation Kit
8. Needles – for vacutainers G23, G21 1 inch	AHP Investigation Kit
9. Specimen containers	AHP Investigation Kit
10. Disposable aspirators	AHP Investigation Kit
11. Bio boxes	PRIPPP General Procurement
12. Biohazard specimen bags	AHP Investigation Kit
13. Biohazard bags	AHP Investigation Kit
14. Garbage disposal bag	not applicable
15. Rubbish bin	n/a
16. Sharps container	n/a
17. pH buffer 4, 7, 10	1 litre per buffer

ELISA

Laboratory materials	PRIPPP contribution
A. Laboratory equipment	
1. ELISA reader – with 650 nm filter	1 unit
2. Single-channel micropipette (0.5–10 ul)	2 units
3. 8-channel micropipette (20–200 ul)	2 units
4. Reagent reservoir	4 units
B. Laboratory consumables	
1. ELISA test kit	1 box
2. Laboratory absorbent mat	1 unit of 10 metres
3. Micropipette tips in racks (for 0.5–10 ul and 2–200 ul)	1 unit per size
4. 96 well microtitre plates (type depends on protocol used)	100 pcs

Hemagglutination test

Laboratory materials	PRIPPP contribution
A. Laboratory equipment	
1. Microhematocrit centrifuge	1 unit
2. Microhematocrit reader	1 unit
3. 8-channel micropipette (2 units 25–50 ul)	2 unit
4. Single-channel micropipette (1 unit 25–50 ul)	2 unit
B. Laboratory consumables	
1. Positive reference immune sera (depending on disease being tested)	1 vial
2. H-specific influenza A antigen (commercially manufactured)	1 vial
3. Tubes (10 and 50 ml, suitable for available centrifuge, autoclavable with cap)	1 pack/25 pcs per size
4. Micropipette tips in racks (for 25–50 ul)	1 unit
5. 96 well microtitre plates (round bottom)	n/a
6. Microtitre plate cover	I pack/100 pcs
7. Hematocrit tubes (non-heparinised)	1 pack
8. Alsever's solution	1 small bottle per reagent needed
9. Phosphate buffered saline (tablets)	1 bottle

Agar gel immunodiffusion assay

Laboratory materials	PRIPPP contribution
A. Laboratory equipment	
1. Single-channel micropipette (25 ul)	n/a
2. Gel punch	1 unit

3. Gel levelling table	1 unit
4. AGID viewer	1 unit
5. Microwave oven	1 unit
B. Laboratory consumables	
1. Reference serum	1 vial
2. Microscope slides	n/a
3. Petri dish	1 pack/24 pcs
4. Erlenmeyer flask	1 pack/6 pcs
5. Graduated cylinder	2 pcs
6. Glass pipette (10 ml)	1 pack/6 pcs
7. Rubber aspirator	2 pcs
8. Agarose	1 small bottle
9. PBS	n/a
10. Sodium chloride	1 small bottle

Immunofluorescence assay (IFA)

Laboratory materials	PRIPPP contribution
A. Laboratory equipment	
1. Immunofluorescence microscope with camera	1 unit
2. Single channel micropipette (0.5-10ul)	n/a
3. Incubator	1 unit
B. Laboratory consumables	
1. IFA test kit (depends on disease of interest)	1 unit
2. Cover slip	n/a
3. Micropipette with tips	n/a
4. Wash bottle	1 unit
5. Phosphate buffer saline	n/a
6. Distilled water	n/a

Regular PCR

Laboratory materials	PRIPPP contribution
A. Laboratory equipment	
1. Conventional thermocycler	1 unit
2. Microwave oven	n/a
3. Gel casting apparatus	1 unit
4. Single-channel micropipette (1000 ul, 2–20 ul)	1 unit
5. Vortex mixer	1 unit
6. Tube cooler	2 units
7. Computer unit (strictly for PCR use)	1 unit
B. Laboratory consumables	
1. Primer sets, 50 nm	1 unit
2. 100 bp DNA ladder	1 unit
3. RNA extraction kit (commercially available)	1 kit
4. Taq polymerase	250 ml
5. 70% ethanol	250 ml
6. RNAse-free water	250 ml
7. DEPC	250 ml
8. β – Mercaptoethanol	250 ml
9. RLT buffer	250 ml
10. Agarose	250 grams
11. Tris-acetate EDTA buffer	250 ml
12. Gel loading buffer	250 ml
13. Gel stain	1 vial
14. Parafilm	1 unit
15. Micropipette tips (2–20 ul)	1 pack/1000 tips
16. Micropipette tips aerosol resistant (for 1000 ul) with rack	1 pack/250 tips
17. PCR tubes (RNAse-free 1.5 ml, 0.5 ml)	1 pack/100 pcs
18. Erlenmeyer flask	n/a
19. Graduated cylinder	n/a
20. Laboratory absorbent mat	n/a

Annex 4. Official nomination form for PAHLNet representative

NOMINATION FORM

Pacific Animal Health Laboratory Network Official Country Representative(s)

Country/Organisation: _____

Part 1. Nominee information

Full name of delegate: .....

Title of position held: .....

Telephone number: ..... Fax number: .....

Email address: .....

Office address: .....

Date of birth: ..... Sex: .....

Signature: .....

Part 2. Organisation information and confirmation

The above delegate is an official nominee of:
(name and address of the nominating organisation, department/ministry, country/territory)

.....

.....

Number of official nominees for network: .....

Ministry/department mailing address: .....

.....

Phone number: ..... Fax number: .....

Ministry/department email address: .....

Director/supervisor's name .....

and title: .....

Signature: ..... Date: .....

Annex 5. Template of Laboratory Upgrading Agreement for Level 1 Basic Animal Health Laboratory

PRIPPP
(*Country name)* **BASIC ANIMAL HEALTH LABORATORY**
UPGRADING AGREEMENT

The Pacific Regional Influenza Pandemic Preparedness Project (PRIPPP) has been designed to build the capacity of Pacific Island countries and territories (PICTs) to effectively respond to emerging diseases such as highly pathogenic avian influenza (HPAI). It has been identified that a proper and timely laboratory diagnosis of the HPAI virus in animal hosts is very significant in reducing the risk of infection being transmitted to humans, hence the vital need to strengthen animal disease diagnostic capacity in the Pacific region.

PRIPPP is in a position to offer laboratory equipment, reagents and consumables to (*name of recipient agency)* to facilitate development of improved capacity for handling of animal diagnostic specimens.

A complete list of the recommended procurement from PRIPPP funding is attached. PRIPPP and the donors contributing to the project require custodians of the laboratory equipment to abide by a number of guiding principles in relation to management of the laboratory equipment as part of their offer:

- The laboratory equipment must be stored in an appropriate facility provided by (*name of recipient agency)* and operated in a safe and secure manner at all times, by appropriately trained laboratory personnel permanently employed by *(name of recipient agency).*
- After initial installation, funding and activities to ensure maintenance and periodic calibration of the equipment shall be the responsibility of *(name of recipient agency),* including during and after completion of PRIPPP.
- PRIPPP undertakes to provide an initial stockpile of related reagents and consumables to test-run the equipment and to ascertain functional diagnostic capacities. Thereafter, resupply is the responsibility of *(name of recipient agency),* subject to suitable arrangements with other PICTs that will require utilisation of the sub-regional referral capacity of *(name of recipient agency).*
- The equipment shall remain available for use in enhancing surveillance and diagnostic activities relating to avian influenza and emerging diseases for *(name of recipient country)* and other PICTs in the region, subject to appropriate biosecurity arrangements for submission of diagnostic specimens.
- Acceptance of the equipment signifies acceptance by *(name of recipient country)* of the role of *(name of recipient agency)* as part of the laboratory network in the Pacific. *(Name of recipient agency)* undertakes to institute appropriate biosecurity arrangements to facilitate transport of animal specimens (including poultry and livestock) dispatched to overseas referral laboratories.
- All imported laboratory equipment, reagents and consumables supplied under PRIPPP funding shall be exempt from import duties, excise, and goods and service taxes on the basis that the Secretariat of the Pacific Community (SPC) holds legislated exemption pursuant to the International Organizations (Privileges and Immunities) Act 1975 and related regulations. *(Name of recipient agency)* will be responsible for facilitating necessary tax exemption procedures.

Animal Health Laboratory capacity building

Estimated completion date:	
Report on laboratory upgrade due by:	

Implementing organisation that is to manage the upgrade:

Name of organisation:	
Contact details:	

Laboratory being upgraded under this agreement:

Level:	
Location:	

Support provided by PRIPPP under this agreement:

Laboratory materials	Description	Estimated cost
Equipment		
Reagents		
Consumables		

The undersigned agree to the laboratory upgrading conditions as outlined above:

Chief laboratory officer _____ Date: _____

Chief executive officer _____ Date: _____
or authorised representative

Affix official stamp/common seal here

Annex 6. Template of Laboratory Upgrading Agreement for Level 2 Sub-regional Animal Health Laboratory

PRIPPP
(*Country name)* **SUB-REGIONAL ANIMAL HEALTH LABORATORY**
UPGRADING AGREEMENT

The Pacific Regional Influenza Pandemic Preparedness Project (PRIPPP) has been designed to build the capacity of Pacific Island countries and territories (PICTs) to effectively respond to emerging diseases such as highly pathogenic avian influenza (HPAI). It has been identified that a proper and timely laboratory diagnosis of the HPAI virus in animal hosts is very significant in reducing the risk of infection being transmitted to humans; hence the vital need to strengthen animal disease diagnostic capacity in the Pacific region.

PRIPPP is in a position to offer laboratory equipment, reagents and consumables to (*name of recipient agency)* to facilitate development of more functional diagnostic capacities in:

1. Enzyme link immunosorbent assay (ELISA);
2. Hemagglutination-inhibition test (HA-HI);
3. Agar gel immunodiffusion assay (AGID);
4. Immunofluorescence assay (IFA); and
5. Polymerase chain reaction (PCR).

A complete list of the recommended procurement from PRIPPP funding is attached. PRIPPP and the donors contributing to the project require custodians of the laboratory equipment to abide by a number of guiding principles in relation to management of the laboratory equipment as part of their offer:

- The laboratory equipment must be stored in an appropriate facility provided by (*name of recipient agency)* and operated in a safe and secure manner at all times, by appropriately trained laboratory personnel permanently employed by *(name of recipient agency).*
- After initial installation, funding and activity to ensure maintenance and periodic calibration of the equipment shall be the responsibility of *(name of recipient agency),* including during and after completion of PRIPPP.
- PRIPPP undertakes to provide an initial stockpile of related reagents and consumables to test-run the equipment and to ascertain functional diagnostic capacities. Thereafter, resupply is the responsibility of *(name of recipient agency),* subject to suitable arrangements with other PICTs that will require utilisation of the sub-regional referral capacity of *(name of recipient agency).*
- The equipment shall remain available for use in enhancing surveillance and diagnostic activities related to avian influenza and emerging diseases for *(name of recipient country)* and other PICTs within the region, subject to appropriate biosecurity arrangements for submission of diagnostic specimens.
- Acceptance of the equipment signifies acceptance by *(name of recipient country)* of the role of *(name of recipient agency)* as a sub-regional referral laboratory. *(Name of recipient agency)* undertakes to institute appropriate biosecurity arrangements to facilitate entry of animal specimens (including poultry and livestock) from other PICTs for diagnostic purposes.
- *(Name of recipient agency)* undertakes to liaise with and advise relevant counterparts in other PICTs concerning biosecurity permissions related to submission of diagnostic specimens to *(name of laboratory),* where appropriate, including providing training and other relevant technical support to PICTs subject to agreed funding agreements.
- All imported laboratory equipment, reagents and consumables supplied under PRIPPP funding shall be exempt from import duties, excise, and goods and service taxes on the basis that the Secretariat of the Pacific Community (SPC) holds legislated exemption pursuant to the International

Organizations (Privileges and Immunities) Act 1975 and related regulations. *(Name of recipient agency)* will be responsible for facilitating the necessary tax exemption procedures.

Animal Health Laboratory capacity building

Estimated completion date:	
Report on laboratory upgrade due by:	

Implementing organisation that is to manage the upgrade:

Name of organisation:	
Contact details:	

Laboratory being upgraded under this agreement:

Level:	
Location:	

Support provided by PRIPPP under this agreement:

Laboratory materials	Description	Estimated cost
Equipment		
Reagents		
Consumables		

The undersigned agree to the laboratory upgrading conditions as outlined above:

Chief laboratory officer _____ Date: _____

Chief executive officer _____ Date: _____
or authorised representative

Affix official stamp/common seal here