PVS Pathway

OIE PVS Evaluation Follow-Up Mission Report

Botswana

Human, Physical and Financial Resources | Technical Authority and Capability | Interaction with Interested Parties | Access to Markets




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OIE WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

OIE PVS EVALUATION FOLLOW-UP

MISSION REPORT OF THE

VETERINARY SERVICES OF

BOTSWANA

(6 - 17 May 2019)

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List of acronyms, abbreviations and/or special terms

AHS	African horse sickness
AI	Avian influenza
AM	Administrative Manager
AMR	Anti-microbial Resistance
AMU	Antimicrobial Use
ASF	African swine fever
ASO	Assistant Science Officer
AU-IBAR	African Union-InterAfrican Bureau for Animal Resources
AU-PANVAC	Pan African Veterinary Center of the African Union
BAITS	Botswana Animal Information and Traceability System
BAMB	Botswana Agricultural Marketing Board
BCA	Botswana College of Agriculture
BIP	Border Inspection Post
BMC	Botswana Meat Commission
BNVL	Botswana National Veterinary Laboratory
BOMRA	Botswana Medicines and Regulatory Authority
BOS ISO	Botswana International Organization for Standardization
BSE	Bovine Spongiform Encephalopathy
BSL-3	Biosafety Level 3
BSPCA	Botswana Society for the Prevention of Cruelty to Animals
BTSF	Better Training for Safer Food
BUAN	Botswana University of Natural Science
BVA	Botswana Veterinary Association
BVI	Botswana Vaccine Institute
BVSC	Botswana Veterinary Surgeons Council
CAO	Chief Administrative Officer
CBPP	Contagious bovine pleuro-pneumonia
CBT	Commodity based trade
CC	Critical Competency
CE	Continuing education
CICE	Centre for In-service and Continuing Education
CSF	Classical swine fever
CSO	Chief Science Officer
CTA	Chief Technical Assistant
CTO	Chief Technical Officer
CVO	Chief Veterinary Officer
DAC	District Agricultural Coordinator
DAP	Department of Animal Production
DDVS	Deputy Director of DVS
DMQRS	Data Management Query and Reporting System
DoAA	The Diseases of Animals (Stock Feed) Regulations
DRF	Disease Reporting Form
DSP	Disease Surveillance Plan
DVO	District Veterinary Office
DVS	Department of Veterinary Services
DWNP	Department of Wildlife and National Parks
EU	European Union
EUS	Epizootic ulcerative syndrome
FAO	Food and Agricultural Organisation
FERA	Food and Environment Research Agency
FMD	Foot-and-mouth disease
FMDV	FMD virus

GABS	Government Accounting System
GDP	Gross Domestic Product
GHP	Good Hygiene Practices
GIS	Geographical Information System
GM	General Manager
GMP	Good Management Practices
HACCP	Hazard Analysis and Critical Control Point
HDAH&P	Higher Diplomas in Animal Health and Production
HPAI	Highly Pathogenic Avian influenza
HR	Human Resources
HRDC	Human Resources Development Council
IAEA	International Atomic Energy Agency
ID	Identification number (BAITS)
ISO/IEC	International Organization for Standardization/ International Electrotechnical Commission
JEE	Joint External Evaluation
LAC	Livestock Advisory Center
LITS	Livestock Identification and Traceability System
LMIA	Livestock and Meat Industries Act
LSD	Lumpy skin disease
LTC	Livestock Technical Committee
MITI	Meat Inspection Training Institute
MoA	Ministry of Agriculture
MoF	Ministry of Fisheries
MoHW	Ministry of Health and Wellness
MRLs	Maximum residue levels
MRSA	Medicines and Related Substances Act
NAP	National Action Plan
NARDI	National Agriculture Research and Development Institute
NDP	National Development Plan
NGO	Non-Governmental Organization
OIE	World Organisation for Animal Health
OIE-PVS	OIE Performance of Veterinary Services Evaluation Tool
PA	Principal Administrator
PAO	Principal Administrative Officer
PBRS	Performance Based Rewards System
PDP	Performance Development Plans
PPP	Public Private Partnership
PPR	Peste des petits ruminants
PSO	Principal Science Officer
PT	Proficiency tests
PTO	Principal Technical Officer
PVM	Post vaccination monitoring
PVO	Principal Veterinary Officer
PVS	Performance of Veterinary Services
QA	Quality Assurance
QE	Quarter Evil
QMS	Quality Management System
RCA	Resident Competent Authority
RSA	Republic of South Africa
RVF	Rift Valley fever
SADC	Southern African Development Community
SADCAS	Southern African Development Community Accreditation System
SANAS	South African National Accreditation System
SAT 1	FMD South African Territory serotype 1

SAT 2	FMD South African Territory serotype 2
SAT 3	FMD South African Territory serotype 3
SAT	FMD South African Territory (FMD serotype)
SCO	Science Officer
SDVO	Sub-district Veterinary Office
SILAB	Laboratory Information System
SO	Science Officer
SOP	Standard Operating Procedure
SPANA	Society for the Protection of Animals Abroad
SPS	Sanitary and Phytosanitary
SSO	Senior Science Officer
STA	Senior Technical Assistant
SVO	Senior Veterinary Officer
SWIMS	Supply, Warehouse, Inventory Management System
TA	Technical Assistant
TAHC	Terrestrial Animal Health Code
TFCA	Transfrontier Conservation Areas
TSE	Transmissible spongiform encephalopathy
VEES	Veterinary Epidemiology and Economics Section
VLSP	Veterinary Legislation Support Programme
VMP	Veterinary Medicinal Products
VO	Veterinary Officer
VPH	Veterinary Public Health
VPP	Veterinary paraprofessionals
VS	Veterinary Services
VSA	Veterinary Surgeons Act
VSB	Veterinary Statutory Body
VSLP	Veterinary Legislative Support Programme
WAHIS	World Animal Health Information System
WHO	World Health Organization
WTO	World Trade Organisation

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We also extend our genuine thanks to the numerous DVS staff, both at headquarters and in the field, who always were forthcoming and accommodating to our mission needs though at times the process could be rather taxing of their patience. Similarly, we recognize the time extended to us by allied government agencies we interviewed during the mission and their interest in our objectives. A special thanks also to the OIE Sub-Regional Office who provided support and guidance during our mission. We also need to note the important contribution and great interest expressed by private veterinarians, NGOs and livestock keepers and farmers associations.

This report is the result of enormous cooperation by all these individuals and entities and their involvement and input was extremely valuable.

PART I: EXECUTIVE SUMMARY

I.1 Introduction

Following a request to the OIE from the Government of Republic of Botswana, an evaluation of the Veterinary Services based on the *OIE PVS (Performance of Veterinary Services)* methodology was conducted from 6th to 17th of May 2019 by a team of two independent OIE certified PVS evaluators and two Expert Trainees. They were: Dr. Peter J Fernandez (Team leader), Dr. Susanne Münstermann, Dr. Caesar Lubaba and Dr. Joseph Sserugga.

The evaluation began with meetings with the Director of the Department of Veterinary Services, Dr. Letlhogile Modisa at his offices followed by a meeting with the Deputy Permanent Secretary for Livestock and Agri-business in the Ministry of Agriculture, Dr John Moreki. The opening meeting was led by Dr. Modisa and attended by his Deputy Directors and their staff, officials of the OIE Sub-Regional Office and the OIE PVS Team.

The OIE PVS Team visited pertinent sites and institutions within the veterinary domain in urban and rural areas of Botswana and discussed relevant matters with government officials, public and private sector veterinarians, livestock producers, traders, consumers and other stakeholders.

The mission concluded in Gaborone with a closing meeting involving the same audience as the opening session during which overall findings of the evaluation were reviewed.

For those with less familiarity with Botswana, background information is provided in a summary Table 11 of Appendix 3 and a country map, geographical and climate information, human demographic data, livestock demographic data, animal and animal product trade data and general economic data in *II.2 Country information (geography, administration, agriculture and livestock)*.

I.2 Key findings of the evaluation

I.2.A Human, physical and financial resources

Botswana has access to highly qualified and competent veterinary professionals in both the public and private sectors despite not having its own veterinary school. Additionally, the DVS has made substantial post-graduate investments in personnel, though many trained staff are later often lured to other employment opportunities. Veterinary paraprofessionals (VPP) play a key role in the VS in rural areas and those encountered were also very well qualified; receiving dedicated education from Botswanan national entities with regional recognition. Veterinarians and VPPs in all sectors have clear legal authorities and the DVS has ensured effective technical oversight of VPPs by veterinarians. All DVS staff operate under a well-structured personnel management system supported by Performance Development Plans (PDP) and a Performance Based Rewards System (PBRS).

All Veterinarians working in Botswana are registered by the Botswana Veterinary Surgeons Council (BVSC) as per legal statutes and future plans aim to also register VPPs and address requirements for professional development. The DVS would greatly benefit from developing a cadre of specially trained professionals in key areas which support its technical mission and which would facilitate increased trade such as risk analysis, animal welfare and anti-microbial use. Various opportunities and sources

exist for continuing education (CE) for Veterinarians, other professionals and VPPs in Botswana with internal administrative mechanisms in the DVS to guide their administration. The legal foundation for requiring CE for maintaining licensure is administered by the BVSC. The primary building-block of any effective VS is its personnel and Botswana has enormous potential in this regard.

The increase of District Veterinary Office (DVO) and Sub-district Veterinary Office (SDVO) field staff has helped the DVS to carry out its national mandate but the challenges continually arising requires the consideration of recruiting additional key personnel. Despite this presently effective chain of command with qualified staff, the DVS must operate within a Ministry field administrative structure that may not always be conducive to all aspects of its technical mission. In addition, recent considerations for restructuring the Botswana National Veterinary Laboratory (BNVL) under the National Agriculture Research and Development Institute (NARDI) and regulatory oversight of Veterinary Medicinal Products (VMP) under the Medicines and Regulatory Authority (BOMRA) could compromise DVS' competent authority in key areas of its mandate.

The PVS Team could find no evidence that Botswana has taken any technical decision for animal health based on non-scientific evidence or which would conflict with its OIE obligations; also confirmed by external reviews. DVS salaries were not identified as a problem by those interviewed during the mission and DVS field veterinarians can supplement their salaries by providing private veterinary services after work hours but subject to specific conditions which eliminate misuse of government resources. In the future, the DVS may consider strategies to curtail public veterinary field staff from providing private veterinary service in order to allow the rural private veterinary sector to grow. The DVS is an active member in OIE activities with an OIE Sub-Regional Office on the DVS compound but should promote its participation in World Trade Organization (WTO) Sanitary and Phytosanitary (SPS) venues.

The DVS Performance Status report captures VS successes and allows the Director to share his vision of future goals (a 2019-2020 report is forthcoming) supported by his continuity at the helm of the VS. The DVS also tracks and communicates its progress on key animal health priorities of interest to national stakeholders and international trading partners; many subject to auditing and could provide evidence of continual improvement of policies and programmes. DVS has made important strides in advancing its Quality Management System (QMS) with the generation of standard operating procedures for key activities and these provide a means, not only, to improve management efficiencies but also support sound, science-based technical decisions. In its coordination with government partners, the DVS interacts regularly with the Department of Wildlife and National Parks (DWNP) and the Ministry of Health and Wellness (MoHW).

The DVS infrastructure, in terms of offices and assets, are in good to excellent state and regularly maintained, however, deficiencies have been cited in inventory and evaluation of assets. Although still in inception, the government has introduced a new management system, "Supply, Warehouse, Inventory Management System" (SWIMS) to better access and manage assets. New assets are regularly purchased and two new satellite laboratories in Jwaneng and Maun were constructed in 2018 with required equipment to increase diagnostic capacity and outreach. Vehicles at the District level

are now pooled with other departments under Ministry coordination and thus the overall number of vehicles for DVS have been reduced. Sustainable annual operating budgets for DVS are secured through transparent government mechanisms with additional funds made available for key animal disease priorities in the national Development Plan.

Although many DVS activities incur high recurring costs and allocation deficits were mentioned in interviews, budgets are managed through a government system which complicates the demonstration of specific shortfalls. Analysis of existing budgets supported by clear evidence of specific needs could be used to convince upper management and political leadership of financial needs. At present, government policy does not allow the collection of user fees as a means of costs recovery. DVS does have access to two sources of emergency funding, however, emerging animal disease threats and arising challenges warrant consideration of an increase to emergency funding under the National Development Plan.

I.2.B Technical authority and capability

The BNVL is the sole confirmatory DVS diagnostic laboratory with two recently established satellite laboratories in the field. The BNVL handles samples from passive surveillance, clinical cases, disease surveillance programmes, and for food safety; particularly the control of food hygiene samples from export abattoirs. National and regional Foot-and-mouth disease (FMD)-specific diagnostic and investigatory needs, including post vaccinal monitoring, are carried out jointly by the Botswana Vaccine Institute (BVI) and the BNVL. Both laboratories have a mandate as OIE Reference Laboratories; BVI for FMD and BNVL for contagious bovine pleuropneumonia (CBPP). A BNVL Strategic Plan (2016 to 2021) contains clearly defined goals and despite a level 5 designation in the 2010 PVS report, the laboratory has continued to improve its competencies with notable efficiencies in diagnostic turnaround time. The BNVL forms part of a regional diagnostic network which participates in proficiency tests as part of a 5-year plan and the laboratory is fully capable of addressing emerging diseases through its technical international interactions. Despite a favourable work environment, the BNVL must contend with the loss of well-trained staff to other employment opportunities.

Of some concern is the proposed formation of a parastatal which would merge the BNVL with the Department of Agriculture Research and the National Food Technology Research Centre to form the NARDI. Despite some benefits associated with administrative efficiencies and possible employee retention, the BNVL may find its present focus encumbered by research goals thus impacting the DVS' ability to meet its OIE obligations as the competent laboratory diagnostic and regulatory services authority. In this regard, food hygiene and the delivery of diagnostic service functions, should receive adequate funding and be specifically referenced as BNVL priorities in new animal health legislation.

At present, the BNVL and BVI meet the needs of a competent national animal health laboratory system. BNVL and BVI play a very important role for disease control in Botswana, especially for FMD to guarantee that the VS meets EU requirements to access its market. The joint laboratory diagnostic sections include parasitology, histopathology (including BSE testing), FMD, polymerase chain reaction (PCR),

virology and bacteriology and average a throughput of 50,000 samples per year. The BNVL comprises three sections: research, food safety and diagnostics and is the only national laboratory testing for quality and safety of dairy products. The food safety section of BNVL has 13 internationally accredited tests and carries out monthly validation tests for meat hygiene with BMC undertaking weekly testing. There is now a private accredited food hygiene laboratory that does testing of abattoirs other than those operated by the BMC. Meat hygiene testing should be expanded to nationally registered non-export abattoirs and other species like poultry. A laboratory information management system links pertinent laboratory data with the DVS Epidemiology Unit and the BVI could provide important technical expertise.

The BVI provides the region with Pan African Veterinary Center of the African Union (AU-PANVAC) approved, FMD vaccines (in particular SAT vaccines) and *peste des petits ruminant* (PPR) vaccines that have been incorporated into EU and OIE vaccine banks. In addition, the BVI, with support from Boehringer Ingelheim, has made improvements to its infrastructure and vaccine production with a laboratory to be completed in 2019. An FMD vaccine bank should be a priority for the region. The BNVL requires its own Biosafety Level 3 (BSL-3) space and, though included in the DVS Strategic Plan, no funding has yet been allocated. The BNVL area presently facing the greatest challenges is the FMD Unit, where a high volume of domestic and routine and targeted surveillance samples converge for processing. In an effort to address costs and workload, the BVI is looking for external funding and training opportunities of other Southern African Development Community (SADC) laboratories especially in undertaking tests for post-vaccinal monitoring. Budget and procurement procedures should be adapted to the volumes of expected sample submissions to improve processing efficiency.

The BNVL is fully accredited to International Organization for Standardization/ ISO/IEC 17025:2005 with 47 recognized tests; three of which are carried out at the BVI. A plan exists for ongoing application for accreditation of remaining tests. Relevant training for section managers and staff is on-going. The BNVL and the BVI both have Quality Assurance System programmes supported by internal management manuals. Internal controls are undertaken by the DVS Compliance, Policy and Development Department and external assessments, are performed by the Southern African Development Community Accreditation System (SADCAS). More involvement in regional proficiency testing is recommended. The Annual Performance Plan and Management Policy Statement set key QMS targets and commits the BNVL to maintain compliance. The BNVL is responsible for the national residue control programme performing 11 tests though some required tests are outsourced. Additional capacity building is advised for self-sufficiency for all required residue testing needs.

The DVS Disease Control Division and its Epidemiology Unit, in close collaboration with BNVL, develops disease surveillance plans which contain elements of risk analysis regarding high-risk targeted surveillance areas, risk-based sampling of live imported animals, and specific sampling after buffalo incursions. The FMD and PPR contingency plans identify external and internal risks in respective disease control sections, however, these are the only available emergency plans. Surveillance data collected and entered into Botswana Animal Information and Traceability System (BAITS) and Data Management Query and Reporting System (DMQRS), is analysed to a limited extent and occasionally reveals changes in disease trends or occurrences.

Despite occasional training of DVS staff in risk analysis, many of whom have since moved to other employment opportunities, no dedicated staff presently exists for this area. The Epidemiology Unit staff form part of the DVS Emergency Disease Alert Team and has developed disease surveillance plans for a number of priority diseases. Recently purchased data entry equipment should assist epidemiologic analysis and links to animal traceability software should also make this work more effective.

Botswana has 24 Border Inspection Posts (BIP) of which 6 are approved for live animal imports/export and 10 other BIPs are approved for small animals, horses and animal products. Four international airports have facilities for small animal import/export. BIPs visited in this mission are combined Immigration-Customs-Agriculture posts manned from 6 am to 10 pm. All vehicles are inspected, and passengers are questioned regarding food products they may have in their possession. BIPs appeared adequately staffed and equipped with regular visits by the DVO/SDVO veterinarian during audit/supervisory visits. Nonetheless, key information on the importance and risks of animal products was lacking at these border locations. Animal transporters would also benefit from easily accessible biosecurity information.

Required import permits are issued electronically, and internal movement permits are issued through the BAITS, allowing for traceability of imported live animals or animal products. Imported cattle are excluded from trade with the European Union (EU), and thus, these animals are offloaded and inspected, given a brand, a red ear tag and entered into the DMQRS. Personnel at BIPs have recently been increased and trained due to FMD outbreaks in neighbouring countries. Joint border committee meetings have been held between the respective Veterinary Services (VS).

Land borders are fenced along large high-risk sectors with the principal objective of keeping livestock and wildlife from entering FMD controlled or free areas. Unfortunately, these fencing efforts have been unable to exclude elephants entering from neighbouring countries, leading to a huge increase of the Botswana elephant population and presenting important challenges the FMD control programme. A Standard Operating Procedure (SOP) for cattle arriving at quarantine stations (also applicable to fenced farms, feedlots and AI stations) ensures that animals are registered, identifiable, traceable and meet a required 40/90 days residency providing guarantees that only eligible animals are slaughtered for export to the EU.

The Diseases of Animals (Stock Feed) Regulations (DoAA 2004) provides a legal framework for the prevention and control of diseases and includes the listing of notifiable diseases and corresponding surveillance activities. All national animal disease surveillance objectives and methodologies are captured in the Disease Surveillance Plan (DSP) (April 2016 to Mar 2019) and includes, all required documentation for disease control, meat hygiene and quality control as well as specific disease testing protocols/sample submissions and diseases of national importance. The DVS has revitalized field veterinary infrastructure, from veterinarians and other professionals through VPPs at the Extension Office level thereby greatly strengthening national passive surveillance. Nonetheless, the DVS would greatly benefit from securing an electronic reporting system with identification of priority areas of surveillance and provision of appropriate training to relevant staff.

Field officers use a Disease Reporting Form (DRF) to transmit information to the DVS Epidemiology Unit based at the BNVL which oversees disease surveillance systems

that divide submitted reports into those accompanied with or without samples. Data from these reports was entered in the DMQRS but now the BAITS serves as the animal health information management system for the country. Data received from the field generates reports for local and international trading partners as well as African Union – Inter-African Bureau for Animal Resources (AU-IBAR), OIE and SADC. The DVS has regularly provides the OIE with immediate notification for animal diseases, however, a review of the OIE World Animal Health Information System (WAHIS) database shows a discrepancy between the list of national notifiable diseases and the number reported as notifiable for Botswana. An OIE Focal Point in DVS ensures timely and accurate reporting that is consistent with OIE guidelines/standards. Recent EU audits for beef exports cited clinical surveillance for FMD as vital to maintaining market access.

The key to passive animal disease surveillance in Botswana is the interface of the DVS Extension Office with "livestock keepers" (producers). As mentioned above, the underpinning for passive disease surveillance is the DRF; incorporating laboratory actions and animal identification. The quality and timeliness of disease reporting appeared to be good and provided for reliable final reports. The FMD and PPR Contingency Plans include sections on passive surveillance. A 2017 Word Health Organization (WHO) Joint External Evaluation (JEE) mission recommended the establishment of an event-based (passive) surveillance as part of Disease Surveillance and Response (DSR) for One Health efforts, however, surveillance information sharing channels between key stakeholders like the MoHW, Environment and wildlife was not evident.

The DSP (2016-2019) is also thorough in outlining the main objectives/goals, responsibilities, methodologies and final products for active animal disease surveillance. A list of animal diseases of major interest for active surveillance efforts includes areas, frequency, time of year, testing method(s), species of interest and target points/activities. Active surveillance activities in Botswana are supported by qualified central and field level staff and an effective and well-equipped laboratory system. All surveillance test results are reported in the laboratory information system (SILAB) under a single BNVL and DRF number for each batch of district disease samples. The BNVL, under the auspices of the DVS Director, generates comprehensive and authorised national testing results as well as coordination of test results completed in foreign laboratories. Unfortunately, there was no evidence of the application of risk analysis precepts in prioritizing disease risks and targeting surveillance resources.

As noted above the DVS has an OIE Focal Point for reporting relevant surveillance information which regularly submits immediate animal disease notifications and annual reports to the OIE. Botswana has received OIE recognition of freedom for CBPP, PPR and Rinderpest and recognized FMD free zones where vaccination is not practised. The FMD active surveillance programme is the major priority of Botswana to ensure the continued export of beef to the EU market. EU export requirements for active surveillance form a major focus of the export programme and historic disease control zones have been incorporated in regular audits by the European Commission's (EC) Food and Veterinary Office (FVO). Active surveillance is also undertaken in the north of the country on African buffaloes to monitor their carrier status for FMD SAT serotypes. FMD and PPR Contingency Plans also provide various important

parameters for active surveillance of these diseases. Other key diseases might benefit from similar targeted programmes.

The DVS surveillance efforts in the field could be enhanced by a dedicated coordinator for these activities. There appeared to be no regular involvement in planning and executing surveillance objectives by local livestock keepers and stakeholders despite positive relations with DVS. There was also little evidence of routine analysis of surveillance results in guiding control activities nor a comprehensive audit and update system for DVS' surveillance activities.

The DVS has a professionally well qualified chain of command with sufficient legal authority to respond to emergency animal health events. Past experience has demonstrated that funding for such emergencies is always available. DVS emergency contingency plans for FMD and PPR have been updated. A recently updated regional SADC Highly Pathogenic Avian and Pandemic Human Influenza Preparedness and Response Plan has also been adopted. These emergency response strategies address issues of maintenance of a disease-free status for both endemic and exotic diseases, creation of awareness, DVS roles and responsibilities, prevention and control of disease protocols and proposed pathways to address varying risk scenarios.

Botswana's experience with FMD disease control with periodic external audits of its strategies has provided the DVS with a unique experience which enhances its efficiency and effectiveness in preparedness and response. Having noted this strength for FMD, it should be noted that there was little evidence of regular testing, auditing or updating of emergency management planning and response capacity for other priority diseases. In addition, although there was evidence of livestock keeper and stakeholder involvement during actual disease emergencies, there was little documented support of coordinated interaction with this sector in prior consultation and planning. A formal 'After Action Review' process led by the DVS as follow-up with interested parties should also be part of a continuous improvement effort. Linkages with One Health stakeholders like the MoHW appeared to only operate on an *ad hoc* basis.

Botswana has a sound legal foundation and long history of animal disease control and has received OIE recognition of freedom for CBPP, Rinderpest and PPR with annual reconfirmation. The DVS success in eradication and progress observed in prevention and control efforts is evidence of proficiency in: on-farm biosecurity measures, controls on movement of livestock, application of sound import requirements and border controls, animal identification and traceability system, surveillance strategies backed by a quality laboratory infrastructure, maintenance of containment zones and emergency response, including quarantine and/or culling/stamping out. Details of on-going prevention and control strategies and advancement are captured in the 2016-2019 DSP and the 2018 DVS Performance Status report.

DVS carries out annual official vaccination programmes for various diseases including FMD, anthrax, quarter evil (black leg) and rabies. FMD post vaccination monitoring for non-structural proteins in 2017-2018 demonstrated good coverage. Vaccination data for 2017 showed a 52% vaccine coverage rate was attained for both anthrax and quarter evil (QE) and coverage for rabies at 45% and 17% for dogs and cats, respectively. DVS has identified problem areas in this regard and is addressing these. The species focus of disease prevention, control and eradication remains on ruminants

and equid work animals. DVS should also look at other priority species and diseases and to prioritize animal diseases accordingly.

In the area of animal production and food safety, Botswana has a number of regulations under both the MoA and the MoHW and an on-going revision of these laws is attempting to clarify existing authorities in the food processing chain as well as audits and inspections. At present, DVS licenses all abattoirs and processing plants on an annual basis, providing guidelines on all aspects of approval and maintaining a register of abattoirs, slaughter-slabs and processing plants in the country in BAITS.

The DVS also licenses meat inspectors and provides meat inspection services to registered abattoirs. The DVS has developed standard operating procedures (SOPs) for the ante- and post-mortem meat inspection processes and meat inspectors are trained in animal welfare procedures and receive a training certificate. The BMC has also developed a feedback mechanism for ante and post-mortem findings to districts so that extension officers can inform producers or act where necessary. Procedures are available for implementation of local and international standards at abattoirs and processing plants in the country and there was clear evidence of specific attention for FMD, CBPP and beef measles (*Cysticercus bovis*). The EU also audits operational controls for meat production destined for export to its market.

The existing Diseases of Animals Act empowers the Director of DVS to authorise the manufacture and supply of veterinary medicines and biologicals, including vaccines. As the BVI is the only approved vaccine producer in Botswana, other veterinary medical pharmaceuticals (VMPs) are imported. At present, only VMPs approved in the EU, the Republic of South Africa (RSA), Namibia and Zimbabwe can be imported into Botswana through a DVS import permit as stipulated in an SOP. The migration of the sale of VMPs from the Livestock Advisory Centres (LAC) to the Botswana Agricultural Marketing Board (BAMB) occurred in April 2016 with 12 out of its 38 branches certified to ISO 9001.

The Medicines and Related Substances Act (MRSA), provides for the control of residues of VMPs in food of animal origin and empowers the DVS Director to determine substances prohibited for use in animals. VMP distributers must have a licence, which is renewed annually, and they must keep records of dispensing to livestock keepers. The sale of VMPs must be done by a registered Veterinarian or VPP. The BAMB has an economic advantage in being able to buy VMPs at wholesale price in large quantities and distribute these to their 38 countrywide outlets. This has also negatively affected the ability of private veterinarians to profitably sell VMPs.

In 2018, the BOMRA was created under an Act of Parliament (MRSA, 2013) as a Parastatal Board to regulate the supply chain of VMPs in the human and animal health sectors. The process of transitioning VMP authority from the DVS to the BOMRA is ongoing with the initial focus on registering products that have previously been authorised. The BOMRA plans to register new premises for the sale of VMPs as of May 1, 2019, and imports/exports as of July 1, 2019 with DVS continuing to inspect registered outlets until 2020. It is important that newly proposed legislation ensure continuation of DVS authority in this competency.

The DVS has been very rigorous in advocating the prudent use of antimicrobials through communication to livestock keepers and extension workers who are required

to maintain treatment records for their animals; which is reviewed in the farm inspections for traceability and VMP residue controls. The DVS has a designated OIE Focal Point for VMPs and since 2015 reports to the OIE on the quantities of antimicrobials imported and sold. A Draft Botswana National Action Plan (NAP) on antimicrobial resistance has been developed, in line with the WHO Global Action Plan. An antimicrobial resistance (AMR) working group was established in February 2017 with key stakeholders from 3 main sectors comprising human health, animal health and the environment. The DVS is an active member of the working group and fully participates in activities and programmes. Although regular surveillance for AMR has not yet been carried out in the country, a pilot study by the BNVL has been undertaken on some species.

The antimicrobial sales at the BAMB outlets are restricted to only sulphonamides and tetracyclines and any sale is recorded to include the buyers the BAITS identification number (ID). All livestock producers are required to have a keeper ID in order to buy VMP's at any BAMB outlet countrywide. While the BAMB has put a system in place for traceability of sale of antimicrobials, the MRSA does not make provisions for traceability of VMPs though this weakness is being addressed under on-going review of legislation.

Residue monitoring by the DVS has constantly improved and covers a wide range of samples, including feed, live animals, organs, water and meat. Residue testing is a requirement for export to the EU and has been an issue of contention in previous EU FVO reports. An annual residue surveillance and monitoring plan is developed by the BNVL and is subdivided into Districts for on-farm and export abattoir sampling. At present, the BNVL has 15 residue test methods ISO 17025 accredited, while 10 tests are outsourced. The BNVL also hopes to increase the scope of residue testing and to include other species.

The new Critical Competency (CC) for Animal feed safety finds that Botswana has national legislation addressing the manufacture, composition, safety and quality control of animal feeds, however, there is no legal provision yet for the recall of contaminated or infected animal feeds. Most existing laws on authorised feed additives and measures to monitor certain substances and residues is based on EU feed safety regulations. Clearer legislation is required to provide the DVS a strong mandate in the regulation of animal feed safety.

The DVS Compliance, Policy and Development Division is responsible for oversight of animal feed safety and manufacturer, importer and supplier requirements are available online or through contact with the DVS. Animal feeds may not contain specified hormones, thyrostatic compounds, beta agonists and meat and bone meal of animal origin. Antibiotics are not permitted as feed additives apart from coccidiostats and histomonostats. All feed manufacturing premises are subject to pre-licensing and spot inspections by the DVS District Principal Veterinary Officers (PVO) with licenses valid for 1 year. However, accessible records of applications for feed production, authorised feed production establishments (domestic and foreign) and retailers were not available. Animal feeds are marketed at either private agro-supply stores or at BAMB depots.

A transition period from bolus to the BAITS ear tags animal identification system started operating effectively in 2016 and is now supported by established law. Holdings, keepers and animals are registered in the BAITS database, with livestock owners being responsible for ear tagging their animals. Where livestock keepers are unable to

manage their responsibilities, local youth have been employed to run “BAITS cafes” where producers are assisted in the computer entry process. All the BAITS procedures are supported by established SOPs and new version, allowing off-line updating, is being released.

Ear tags are supplied by the LACs who have administrative access of BAITS to register sales and to monitor usage of ear tags issued to livestock owners. Livestock owners also use brands on animals, and these are linked to the keeper’s BAITS ID. As a means to encourage livestock producer registration in the BAITS, the BAMB requires a livestock keeper’s ID in order to purchase drugs. Registered holdings are audited every 6 months by DVS field staff based on an established auditing schedule. Eligibility of holdings/animals in the green zone for EU slaughter is also being tested in the BAITS for auditing purposes in regard to residue control, monitoring VMP use, and confirmation of 40-day residence requirements.

Food hygiene and traceability of meat products is under the authority of the DVS up to the level of the cutting and packaging plant with meat premises and meat inspectors registered and licensed by the Veterinary Public Health Division. Traceability of the final meat product, packed in boxes, can be done to the batch of animals that arrived under the same movement permit, but not to the individual livestock producer, as meat from different animals may be packed in one box. To test the capabilities of the abattoir to trace its products back to the producer(s), the abattoir’s resident component authority carries out regular simulation exercises in which a hypothetical scenario requires trace back and trace forward of product. A full report is issued and identified weaknesses are discussed with the food business operator. This capacity in traceback is only associated with beef.

Legal authority for animal welfare concerns are presently addressed by the Animal Cruelty Act (1936/2008) which recognizes the competent authority for its implementation as the Botswanan Police Services. The DVS staff directly involved in drafting upcoming legislative language on animal welfare, indicated that recommendations from the 2015 OIE Veterinary Legislative Support Programme (VLSP) report, formed a central consideration in the new law as well as input from stakeholders. New legislation under consideration for animal welfare should be thorough and comprehensive for all species under the DVS mandate. The DVS has designated a Focal Point for Animal Welfare under the Deputy Directorship of Veterinary Public Health, though no other staff exist.

Animal welfare issues associated with EU export abattoirs such as transport of animals, lairage, movement into abattoir and stunning, are regularly audited by the FVO. All DVS veterinarians assigned to work at EU abattoirs, must receive periodic animal welfare training certification. Although a DVS veterinarian is required to be present when animals are unloaded at any slaughter facility, it was not clear that animal welfare requirements were monitored and enforced at abattoirs serving national and local markets. Two animal welfare non-governmental organizations (NGO) operating in Botswana indicated they receive the full support of the DVS and has regular contact with them, including consultation for developing animal welfare legislation or to assist in treatment of injured work animals.

I.2.C Interaction with stakeholders

The MoA has a Division of Agriculture Information and Public Relations which has a communications strategy that was developed in 2017 and through which all communications from the DVS can be channelled. Although there is no communication unit within the VS, the Director of the DVS officially assumes the responsibility of communicating to all stakeholders including livestock producers, neighbouring countries, trading partners, and international and regional organisations. An OIE Communications Focal Point has been designated by DVS.

Livestock keepers are informed of the DVS programmes such as vaccinations through local staff visiting villages, notification of vaccination schedules, radio and television, phone and text messaging as well as using social media. Existing MoA websites would benefit from updating relevant DVS information. The village Kgotla meetings are used by the DVS as an important communication channel to local livestock keepers throughout the country. The DVS develops a broad range of communication material, often in the local language and also organises stakeholder workshops on specific animal health concerns.

The DVS has greatly enhanced its consultative processes both for public and private stakeholders since the last PVS review. Communication to relevant stakeholders is through the DVS network and reaches to crush-pen committees. Various meetings are held with livestock keepers and other stakeholders by all levels of DVS staff, central and field, including; promotion of use of vaccines and planning schedules, specific disease issues, FMD vaccination and post-vaccination monitoring updates, local community fencing committees, and prudent use of antimicrobials. Despite this interaction it was found that there was no formal DVS communication plan/strategy to proactively seek views of consulted parties.

Botswana regularly attends regional Livestock Technical Committee (LTC) meetings of SADC, continental AU-IBAR meetings, OIE Regional Commission for Africa meetings and the annual OIE General Session. The OIE Delegate regularly attends the annual preparatory meeting for African countries at the AU-IBAR prior to the OIE General Session. DVS also provides feedback or guidance on OIE international standards to local organisations such as the BAMB on OIE compliance with standards for antimicrobial use and the Botswana Meat Cooperation (BMC) on OIE Animal Welfare standards. The MoA has an SPS Inquiry Point and an SPS Committee which is chaired by the Deputy Permanent Secretary overseeing the DVS. However, the country has not recently participated in WTO SPS meetings. The DVS in consultation with livestock producer associations promotes varying approaches to assist farmers in FMD infected zones to market their beef under improved conditions, such as considering the Commodity Based Trade approach.

The current Animal Health Act has no provision to allow the DVS to delegate defined powers and functions to private sector veterinarians and VPPs. The issue of accreditation / authorisation / delegation is being considered in the current veterinary legislative review with the view of delegating specific powers to the DVS to authorise inspectors based on a prescribed level of training and to engage private veterinarians and VPPs to perform defined public functions with approval of the MoA. Previous attempts at delegating FMD vaccination to the veterinary private sector was

unsuccessful as tender offers far exceeded costs for public sector vaccine application. Conversations with private veterinarians did not elicit a strong need for accreditation/ authorisation/ delegation. Nonetheless, the private sector grows in Botswana and regulatory work of the DVS increases, consideration should be given to officially delegate some animal health activities to the private sector.

The BVSC was established in 2012 based on the Veterinary Surgeons Act of 2008 to protect the interest of the public in matters relating to animal and public health through regulation of the veterinary profession. The Council registers veterinarians and licenses veterinary private practices. The registration of veterinarians started in 2012 and a second phase will register VPPs with formal education as of 2020 and a third phase will address registration of VPPs without formal education. The BVSC has defined the standards for the profession though a “Code of Ethics” which is available in draft form and awaits approval by the Council. A draft regulation provides a detailed plan for CE including a point allocation system and requirements for the level of participation for retaining a veterinary license.

In CC III-6 (Participation of producers and other stakeholders in joint programmes), Botswana has made some progress in its advancement level. A government Cabinet memo mandates consultation with all principal government stakeholders and this was evident in recent review of the MRSA and the beef measles strategy by various interested parties. Communities in Ngamiland requested the establishment of an FMD unit for district control of FMD at a Northern District Councillor’s meeting and a resolution secured a dedicated budget in 2018. The head of this unit is a DVO and reports directly to the Director of the DVS. Private abattoirs (such as the Ngamiland abattoir) collaborate with the DVS by returning used ear-tags to BAITS staff to remove them from the system.

Veterinary clinical services in Botswana is evolving much as it is in many developing countries; rural livestock keepers receive much of their veterinary medical attention from the public veterinary sector and a growing urban middle-class drives demand for increased private veterinary pet care. Existing laws regulating veterinary clinical services are lacking and new laws, including the role of the BVSC, are being developed. As all practicing veterinarians, private and public, must be registered with the BVSC to work in their field, very up to date information is available. There appears to be an excellent working relation between private veterinarians and DVS veterinarians; again, with much collegial respect for each other’s work. The typical veterinary care provided by urban/suburban clinics centres around cats and dogs. Though some veterinary specialisation exists, the present pet market would likely not make this lucrative.

Rural veterinary care was principally provided by public veterinarians of the DVS during off-work hours often with the assistance of government VPPs. Initial contact with livestock keepers is usually through VPP extension officers who provides immediate attention under their authority and if more advanced veterinary care is required, this would be referred to a veterinary professional at the DVO/SDVO. It was made very clear that public veterinarians could not make use of public resources if attending clients in a private nature.

I.2.D Access to markets

As noted in the 2015 OIE VLSP report, various existing laws governing the veterinary domain are outdated, inadequate and/or redundant. The majority of the DVS' legal authority is invested by means of three Acts: the Diseases of Animals Act (DoAA) (1977), the Veterinary Surgeons Act (VSA) (2008) and the Livestock and Meat Industries Act (LMIA) (2007). Veterinary Public Health concerns are also addressed in the Livestock and Meat Industries (Poultry Abattoir) Regulations (2007) and the Meat Inspection and Control of Red Meat Abattoir Regulations (2007). Thus, Botswana does have a broad array of legislation which covers the veterinary domain of the country, however, with newer laws attempting to patch up evolving legal shortcomings.

Following the OIE VLSP mission of 2015, the DVS decided to prepare three overarching Acts under which the existing legislation will be revised and rearranged, namely: 1) Compilation and revision of the bulk of Acts into the "Animal Health and Welfare & Veterinary Public Health Act" (AHW&VPH Act); 2) Revision of the VSA and 3) Amendments to the MRSA and the FSA in collaboration with MoHW. The agreed upon legislative revision has a clear timeline and is supported by an OIE consultant. The DVS is making every effort to ensure that new animal health laws are comprehensive and consistent with international standards, including a mechanism for regular review and updating and involve consultations with stakeholders.

Enforcement of the DoAA (1992) and the LMIA (2007) by the DVS includes the application of administrative penalties and the Ministry of Home Affairs, through the Botswana Police Service, also assists with enforcement of all legislation in the veterinary domain. However, the 2015 OIE VLSP found that areas where enforcement is lacking was associate with the VSA (2008) and MRSA (2023). Compliance with various mandated animal health laws are a fundamental condition for Botswana's beef access to the EU market. It was for this reason that the MoA created a division within DVS with the title "Compliance" (i.e. the Compliance, Policy and Development Division). The ability of the DVS to document enforcement (i.e. records of non-compliance) forms an integral part of regular FVO audits; supported by existing SOPs. At all international borders and animal disease control gates, the DVS usually has Police in the vicinity that can be called upon to ensure compliance with movement laws are met. Customs also acts on behalf of MoA at certain ports where no DVS staff are assigned. Stakeholders appeared to understand the need for enforcement of legal requirements by the DVS and, although not always in agreement, felt it was their responsibility as livestock keepers to abide by these laws.

The legal foundation for animal-based imports and exports is found in the DoAA (Chapter 37:01) which regulates importation and exportation of animals, animal products and biologicals into the country. The Deputy Directorship for Disease Control Animal Health and Field Services oversees the Imports, Exports and Border Control staff which addresses all animal health trade-related issues for the DVS. Importation is only authorized through the acquisition of a corresponding veterinary import permit whose requirements are based on precepts of the WTO SPS Agreement in conjunction with the OIE Terrestrial Animal Health Code for technical specifics in the importation of live animals, animal products and biologics with other DVS staff ensuring certification and compliance.

Although Botswana is an active member of the OIE and Codex Alimentarius Commission, there was no evidence that it had made any notifications to the WTO regarding the adoption of SPS measures, nor of its participation in meetings of the WTO SPS Committee. Access to the EU market for beef is based on international standards and this has greatly influenced Botswana's approach to setting and enforcing animal health requirements. An Action Plan response by the DVS to an EU review resulted in the immediate establishment of an OIE Focal Point for animal disease notification; responsible for providing regular national updates to the OIE WAHIS. An AMR Focal Point also has been appointed. There were various examples of bilateral engagement with counterparts on SPS requirements.

As mentioned earlier, the EU market for beef from Botswana represents the most important agricultural outlet for the country and its potential loss would have important economic impacts. Audits conducted by the FVO for controls of FMD and controls for production of meat for export to the EU are thorough and strictly enforced. Action plans drafted by Botswana in response to audit findings have met with EU approval and allowed beef exports to continue to date. All EU reports and responding action plans by Botswana were available from 2011 with the most recent evidence of FVO audits conducted in 2013 (for bovine meat controls) and 2015 (for FMD controls). Since 2015, there has been regular contact between the FVO and the DVS as follow-up.

The DVS Imports, Exports and Border Control staff has SOPs for issuance of animal and animal product export permits and issuing animal movement permits including required application forms for the export of animals and animal products and for in-transit movement of live animal(s), animal product (s), animal feed (s), drugs, vaccines, and veterinary biologicals. Despite efforts to market donkey and ostrich products internationally, Botswana's only viable animal-based export at this time, is beef and this is the only animal agricultural sector sufficiently evolved to meet international sanitary requirements. It should be noted that when these other animal-based markets existed, the DVS had competently provided certification. Although new trading partners are being sought for international export of beef, other livestock industries in Botswana are less advanced and organized to seek international market access.

The DVS actively participates in regional efforts for standard setting and harmonization of sanitary trade requirements but there is scarce evidence that equivalence, as cited in Article 4 of the WTO SPS Agreement, was ever requested, required or implemented. However, the VS remains very transparent in its regulatory authority actions and all sanitary regulations and agreements are either available upon request or online.

Botswana is an active member of Southern African Customs Union (SACU), SADC and the OIE Regional Meetings and of the OIE General Session and Codex Alimentarius Commission and these venues provide opportunities for transparent discussion of sanitary trade issues. Although there was scant proof of regular DVS participation at relevant WTO SPS meetings, it was related that Botswana is present at these meetings, but delegation numbers are limited. Reporting of modifications to existing sanitary regulations to the WTO could not be verified. Nonetheless, there is ample evidence of DVS' interaction and communication with the OIE, including regular reports of disease status and sanitary measures employed through appointed focal points for surveillance, communication and diseases notifications. All OIE WAHIS information appears to be up to date (see II.3.C). Although not as inclusive of livestock stakeholders

in planning and execution of programmes, there is clear evidence of notification of all affected national counterparts of any control measures in the face of disease threats or actual disease detections.

Botswana's zoning system for FMD control has a long historic founding and functions well. The country is separated into "red zones" in the north (Ngamiland) and "green zones" in the south. Ngamiland is cordoned by approximately 10,000 km of fence into different disease control and protection zones that have evolved over time as they have served as boundaries in the control of FMD outbreaks and as required by the EU. In addition to the fences within Ngamiland and along the borders, there is buffalo fence surrounding the Okavango Delta along a its vast perimeter to prevent buffalo from coming into contact with cattle. The buffalo fence is a double cordon fence which has been improved and modified over time to maintain its effectiveness.

Maintenance of this expanse of fences is an enormous challenge to the DVS manpower and financial resources. The major challenge to the fencing system is the increased number of elephants present within and outside national parks in Ngamiland which increased from some 50,000 to 150,000 over in the last decade. Normal inter-sector fences cannot withstand elephant movements while buffalo fences provide more resistance, but also require daily repair.

The zoning system of Botswana is regularly audited by the EU since Botswana exports beef to the EU from the "green" zone. These audits aim to inspect with great scrutiny the fencing system in Ngamiland to ensure that cattle movement from north to south is strictly regulated and that buffalo-cattle contact is prevented. In view of offering livestock producers in Ngamiland better incentives for beef production and to build movement corridors for wildlife, particularly elephants, the DVS is rethinking the fencing system and is opting for a "reduce, restructure and realign" policy.

The DVS is considering the establishment of FMD free compartments without vaccination in the "red" zone in areas where no FMD outbreaks have been observed for many years. The DVS fulfils the conditions of the OIE Terrestrial Animal Health Code (TAHC) 8.8.4 , Art 1, as it has an officially recognized FMD control programme and surveillance system, it has sufficient surveillance data available to prove the absence of FMD for 12 months in line with Art 2, animals within the compartment will not be vaccinated for FMD and the BAITS guarantees traceability of animals within the compartment. The designated compartment premises will have to establish and apply required biosecurity measures and managed accordingly.

This compartment proposal is still work in progress and it was reported that one private producer is setting up a compartment. There is also a planned venture to breed and rear FMD-free buffaloes, using a compartment approach. This could be another lucrative alternative for livestock owners in Ngamiland, as FMD free buffalo may acquire very high prices. The DVS does recognise AI free compartments in RSA to import poultry and they intend to set up Newcastle disease (NCD) free compartments in the future.

Table 1: Summary of OIE PVS evaluation results

PVS summary results of Evaluation Follow-Up (Botswana)	PVS Evaluation 2010	PVS Gap Analysis 2011 (Projected)	Result PVS Follow-Up 2019
I. HUMAN, PHYSICAL AND FINANCIAL RESOURCES			
I.1.A. Staffing: Veterinarians and other professionals	2	3	**4**
I.1.B. Staffing: Veterinary paraprofessionals	3	4	**4**
I.2.A. Competency and education of veterinarians	4	4	**4**
I.2.B. Competency and education of veterinary paraprofessionals	4	4	**4**
I-3. Continuing education	3	4	**4**
I-4. Technical independence	4	4	**4**
I-5. Planning, sustainability and management of policies and programmes	4	5	**4**
I-6.A. Internal coordination (chain of command)	4	5	**4**
I-6.B. External coordination (including the One Health approach)	4	5	**4**
I-7. Physical resources and capital investment	3	4	**4**
I-8. Operational funding	4	4	**4**
I-9. Emergency funding	3	3	**4**
II. TECHNICAL AUTHORITY AND CAPABILITY			
II-1.A. Access to veterinary laboratory diagnosis	5	5	**5**
II-1.B. Suitability of the national laboratory infrastructures			**5**
II-1.C. Laboratory quality management systems	5	5	**5**
II-2. Risk analysis and epidemiology	2	5	**2**
II-3. Quarantine and border security	4	5	**5**
II-4.A. Passive surveillance, early detection and epidemiological outbreak investigation	2	3	**4**
II-4.B. Active surveillance and monitoring	4	5	**4**
II-5. Emergency preparedness and response	4	4	**4**
II-6. Disease prevention, control and eradication	3	4	**4**
II-7.A. Regulation, inspection, authorisation and supervision of establishments for production and processing of food of animal origin	2	4	**4**
II-7.B. Ante- and post mortem inspection at slaughter facilities and associated premises	2	3	**3**
II-8. Veterinary medicines and biologicals	3	4	**4**
II-9. Antimicrobial Resistance and Antimicrobial Use	NA	NA	**2**
II-10. Residue testing, monitoring and management	3	3	**3**
II-11. Animal feed safety	NA	NA	**3**
II-12.A. Premises, herd, batch and animal identification, tracing and movement control	3	5	**5**
II-12.B. Identification, traceability and control of products of animal origin	3	3	**3**
II-13. Animal welfare	2	4	**2**
III. INTERACTION WITH STAKEHOLDERS			
III-1. Communication	2	4	**3**
III-2. Consultation with stakeholders	2	4	**4**
III-3. Official representation and international collaboration	3	4	**4**
III-4. Accreditation/authorisation/delegation	3	4	**3**
III-5. Regulation of the profession by the Veterinary Statutory Body (VSB)	3/2	3/2	**3**
III-6. Participation of producers and other stakeholders in joint programmes	2	3	**3**
III-7. Veterinary clinical services	NA	NA	**3**

IV. ACCESS TO MARKETS			
IV-1.A. Integrity and coverage of legislation and regulations	4	5	**4**
IV-1.B. Implementation of and compliance with legislation and regulations	3	5	**4**
IV-2. International harmonisation	3	4	**4**
IV-3. International certification	3	5	**4**
IV-4. Equivalence and other types of sanitary agreements	3	5	**4**
IV-5. Transparency	4	5	**4**
IV-6. Zoning	5	5	**5**
IV-7. Compartmentalisation	2	2	**2**

NA: Not Applicable (Critical Competency did not exist at the time of the PVS mission)

I.3 Key recommendations

I.3.A Human, physical and financial resources

To improve their human, physical and financial resources, the Veterinary Services should consider the following recommendations:

- In order to reduce workload, the DVS should consider involving private sector veterinarians and VPPs (the latter particularly after the finalization of the legal framework of the BVSC) regarding its authority to register all VPPs and to regulate all veterinary practitioners in the country;
- There is a good formal performance assessment for government employed veterinary professional and para-professional staff in place, however, it is recommended to have an external review and quality control of these procedures;
- The DVS should support the BVSC in finalising its legal and functional mandate to develop and administer CE in the country. This could be done through strategic partnerships with key partners in education, through webinars and internet presentations to reach the widest audience. In the interim, the DVS should offer CE opportunities;
- The DVS has identified shortage of specific expertise, e.g. epidemiologists that are specialised in risk analysis. Priority should be given to training suitable candidates in these identified skills and at the same time incentives should be considered by DVS to retain such staff in the public service to prevent their loss to the private sector and newly evolving parastatal agencies;
- The MoA should ensure that the DVS technical mandate and chain of command is not encumbered by the administrative infrastructure of decentralised government and the autonomy of newly created institutions such as the BOMRA and the NARDI. This is particularly important in regards to the mandate of the DVS to regulate VMPs (BOMRA) and diagnostic services (merger of BNVL into NARDI);
- Internal and external coordination mechanism should be documented and regular updates through audits and external reviews be considered. External coordination would benefit from cooperation with other government entities in priority needs in animal health. This cooperation should be formalised (e.g. memoranda of cooperation). External and internal coordination should also be tested through a simulation exercise on a disease other than FMD. Findings, recommendations and actions taken on recommendations should be recorded and analysed in view of improving coordination;
- The management of the DVS budget is done in the government system (GABS) which does not allow clear demonstration of specific shortfalls of the DVS not met by the

recurrent budget. It is recommended that the MoA acquire professional external assistance in developing software management tools to specifically analyse the DVS budget and highlight any deficits. Idle assets should be identified rapidly to remove their funding from the recurrent budget. For some of them, e.g. quarantine stations, alternative uses should be identified;

- The requirements for and the regular adjustment of an emergency fund to meet emerging threats in the country and the region should be embedded in the animal health legislation. Farmers' Union/association should be encouraged to build their own emergency funds as a fall-back mechanism.

I.3.B Technical authority and capability

To improve their technical authority and capability, the VS should consider the following recommendations:

- The BNVL should be specifically mentioned as the national reference laboratory in new animal health legislation with the DVS oversight and allocation of a regular and adequate budget remaining under the merged NARDI; guaranteeing the BNVLs core function for DVS of diagnostic and regulatory services;
- The BNVLs high throughput of samples from disease surveillance, diagnostics and the FMD control programme should be acknowledged by an adequate budget allocation, and financial investment should be provided to upgrade the BNVL to a BSL-3 level;
- The mandate of the BNVL to test for food safety should be expanded to registered non-export abattoirs and species other than cattle, particularly poultry; DVS should provide all support needed to accelerate the establishment of all necessary tests to end the current expensive outsourcing of residue testing to a laboratory abroad;
- The BVI's role in FMD control is important and should be strengthened through enabling outreach to laboratories in the region and beyond on ring trials for FMD serology and the establishment of a regional FMD antigen bank. The BVI's scientific expertise should be solicited by the DVS to support scientific decision making;
- Strengthening of passive surveillance systems through introduction of electronic reporting tools and stronger involvement of stakeholders should be fostered; training on specific priority areas for surveillance should be provided to staff and One Health surveillance by selected and trained staff, in close collaboration with the MoHW, should be strengthened;
- Suitable staff at the district level should be appointed to oversee and coordinate the implementation of surveillance activities in line with the Annual Surveillance Plan; an auditing and review mechanism of the active and passive surveillance system should be initiated to improve its efficiency and to adjust the Surveillance Plan when required;
- The DVS should prioritize animal diseases (other than FMD) for the development of prevention and control plans, with the involvement of livestock keepers and other stakeholders, and continue to update existing contingency plans;
- Expand the capture of pre-slaughter animal health data and meat inspection data into the BAITS to non-export abattoirs; partner with the private sector to provide meat inspectors to poultry abattoirs under the DVS supervision;
- The licensing and regulation of VMPs should remain under the control of the DVS even in the establishment of the BOMRA as the regulatory body; this concern should be addressed during the imminent revision of animal health legislation. Education of

livestock keepers on the prudent use of antimicrobials should be given priority by the DVS and the establishment of a specific unit for this purpose should be considered;

- Continue to leverage political support for the adoption and launch of the National Action Plan on antimicrobial resistance and initiate a national surveillance programme;
- The mandate and capacity of the DVS to regulate animal feed safety should be strengthened through the appropriate revision of relevant sectors in the animal health legislation; the compulsory registration of all domestic feed producers and feed importers and feed retailers; and regular inspection and control. The DVS should consider appointing dedicated feed inspection staff;
- Accelerate the full use of the BAITS through: installing and rollout of the Version 2 and its offline function; the linkage to the laboratory information management system (SILAB), the implementation of the BAITS' capacity to capture field animal health data (active and passive surveillance, disease reporting, ante- and post-mortem data). Accelerate the registration of remaining holdings and animals and create incentives for the return of ear tags from fallen animals;
- The DVS should ensure that the imminent revision of the animal health legislation regrading animal welfare be thorough and comprehensive for all species under its mandate and that its application be tested in the field through regular site sampling with emphasis on long distance transport.

I.3.C Interaction with stakeholders

To improve their interaction with stakeholders, the VS should consider the following recommendations:

- Develop a DVS communication strategy, employ a communication expert for its implementation and establish formal communication channels for sharing information through the collection information from stakeholders. Include the establishment of improved record keeping for stakeholder consultation in the process. Improve the DVS communication mechanisms, e.g. by upgrading website information in layout and richness of material. Continue to strengthen linkages with the MoHW in view of implementing joint programmes such as AMR and AMU;
- Improve communication with stakeholders on the outcome of regional and international meetings and develop protocols for those communication channels;
- Ensure that the review of animal health legislation embeds "delegation/authorisation" of tasks to private animal health providers; support the intention of the BAMB to engage unemployed VPPs as extension officers with "delegated" authority in support of the DVS staff;
- Support the BVSC in its efforts to establish a sound legal framework (see also I.3.A) for registration of veterinarians and VPPs, regulating the profession, harmonization of educational standards and finalization and application of the Code of Ethics.

I.3.D Access to markets

To improve their access to markets, the VS should consider the following recommendations:

- The imminent review of animal health legislation should include the establishment of a mechanism for regular review and updating of established regulations; especially as

this relates to effectiveness, changing international standards and evolving science. The review should ensure that the new legislation is in line with international standards;

- Similarly, as part of the DVS efforts in QMS, an external audit and an update system should be developed for regulatory compliance;
- The DVS should improve the recording of examples of international harmonization efforts; possibly through a database maintained by the Imports, Exports and Border control staff; the DVS should also assure their position is represented at WTO SPS meetings, either by direct participation or representation;
- The DVS's Imports, Exports and Border Control Unit should review all existing sanitary agreements, investigate possible new ones and provide easier access to those agreements online;
- Continue to maintain vigilance and transparency in reporting diseases to the OIE and ensure that key stakeholders and interested parties are involved and informed on the disease status, regulations and sanitary measures;
- Investigate different possibilities of creating access to markets for livestock keepers in the northern "red" zones, e.g. by implementing the "commodity based trade" approach; by subdividing "red" FMD infected zones to create FMD free zones or compartments in areas that have not had FMD for many years; consider use of quarantine stations for FMD free buffalo rearing; create FMD free zones in fenced ranches or consider free zones with vaccination. In all of these alternative approaches, the DVS should carefully manage expectations of livestock keepers.

PART II: CONDUCT OF THE EVALUATION

At the request of the Government of Republic of Botswana, the Director General of the OIE appointed an independent OIE PVS team consisting of Dr Peter J Fernandez (Team Leader), Dr Susanne Mūnstermann (Technical expert), Dr Caesar Lubaba (Trainee Expert) and Dr Joseph Sserugga (Trainee Expert) to undertake an evaluation of the Veterinary Services of Botswana. The evaluation was carried out on from 6 – 17 May 2019.

The evaluation was carried out with close reference to the OIE standards contained in Chapters 3.1., 3.2., 3.3. and 3.4., and in other chapters as relevant, of the OIE *Terrestrial Animal Health Code* (the Terrestrial Code), using the OIE *PVS Tool* (7th edition, 2019) to guide the process. Relevant Terrestrial Code references are referenced for each Critical Competency in Appendix 1.

This report identifies the strengths and weaknesses of the Veterinary Services of Botswana as referenced to the OIE standards. The report also makes some general recommendations for actions to improve performance.

II.1 OIE PVS Tool: method, objectives and scope of the evaluation

To assist countries to establish their current level of performance, form a shared vision, establish priorities and carry out strategic initiatives, the OIE provides an evaluation tool called the OIE Tool for the Evaluation of Performance of Veterinary Services (OIE PVS Tool[1]) which comprises four fundamental components:

- Human, physical and financial resources
- Technical authority and capability
- Interaction with stakeholders
- Access to markets

These four fundamental components encompass 45 Critical Competencies, for each of which five qualitative levels of advancement are described. For each Critical Competency, a list of suggested sources of verification was used by the OIE PVS Team to help determine the level of advancement.

A glossary of terms is provided in Appendix 2.

The report follows the structure of the OIE PVS Tool incorporating the descriptions and levels of advancement for each Critical Competency.

The objective and scope of the OIE PVS Evaluation includes all aspects of the veterinary domain relevant to the OIE Terrestrial Animal Health Code and the quality of Veterinary Services.

[1] Available at http://www.oie.int/solidarity/pvs-evaluations/oie-pvs-tool/

II.2 Country information (geography, administration, agriculture and livestock)

Botswana is a landlocked country in southern Africa bordering the Republic of South Africa to the south and southeast, Namibia to the west and north, and Zimbabwe to the northeast (a border with Zambia near Kazungula is a few hundred metres long). Botswana was a British protectorate, known as Bechuanaland, until its independence and name change in 1966. The country is recognized as one of the most stable and least corrupt economies in Africa having attracted significant foreign direct investment, due in large part to, an absence of political turmoil in its continual civilian government which has made important investments in the country's human resource and infrastructure.

At over 580,000 km2 (220,000 mi2) Botswana is comparable in size to Madagascar or France (Fig. 1). The climate is considered semiarid with cooler winters and hot summers. The majority of the country is flat with small hilly areas across tableland. Large expanses of grassland, free of tsetse fly, allowed for the pastoral raising of cattle when they were introduced some 2000 years ago. Various populations in and around present-day Botswana, especially in what is now the Central District, appear to have maintained very large herds of cattle until about 1300 AD.

Figure 1. Political map of Botswana
Source : https://www.nationsonline.org/oneworld/map/botswana-map.htm

Principal geographic features include; the Kalahari Desert, covering almost 70% of its land surface; the Okavango Delta, one of the world's largest inland deltas and home of a variety of wildlife and the Makgadikgadi Pan, a large salt pan, to the north. Botswana's agricultural potential is limited, in part, due to the Kalahari Desert that occupies a large area of the country. Botswana's major rivers flow from the Limpopo River Basin in southern Africa and the Chobe River in the north.

As described above, Botswana is well-known for its diverse ecological areas of wildlife habitat. In addition to the Okavango delta, large expanses of grasslands and savannas, contain a large assortment of wild ruminants and other exotic mammals as well as enormous numbers of migrating birds. Botswana presently has a ban on hunting wildlife in national game parks and the northern Chobe National Park (11,000 km2) has the world's largest concentration of African elephants; with these animals flooding in from neighbouring countries where they are at high risk of being shot. Other game reserves include; the Moremi Game Reserve (in the Okavango Delta), the Central Kalahari Game Reserve in Ghanzi District, and the Makgadikgadi Pans National Park and Nxai Pan National Park in Central District in the Makgadikgadi Pan. There are also several private game reserves.

Botswana is also signatory to three Transfrontier Conservation Areas (TFCA), large border crossing national parks, namely the Kavango-Zambesi, the Greater Mapungubwe and the Kgalagadi TFCA. In these TFCAs wildlife is meant to follow old migration patterns unrestrictedly. The TFCAs were created on the realization that natural resources that straddle international boundaries are a shared asset with the potential to meaningfully contribute to the conservation of biodiversity and the welfare and socio-economic development of rural communities. Also, TFCAs are practical means of demonstrating regional integration particularly in the SADC region.

The linked issues of drought, desertification and rangeland degradation are the most important environmental challenges confronting Botswana. It is estimated that human population increased from 574,000 in 1971 to 1.5 million in 1995, and today stands at about 2,250,000. Due to regular droughts, groundwater is the only source of water for some three quarters of the both the human and animal populations. With over 70% of Botswana's land used for communal grazing, rangeland degradation, desertification and soil erosion have accelerated. Various government and international projects are attempting to help address this evolving environmental problem.

Botswana is administratively divided into 9 Districts:

1. Southern District
2. South-East District
3. Kweneng District
4. Kgatleng District
5. Central District
6. North-East District
7. Ngamiland District
8. Kgalagadi District
9. Chobe District

These Districts are subdivided into 24 Sub-districts. The 7 national councils were formed from urban or town councils and are: Gaborone City, Francistown, Lobatse Town, Selebi-Phikwe Town, Jwaneng Town, Orapa Town and Sowa Township.

Estimates of Botswana's 2019 GDP come in at $44.3 billion USD with per capita income assessed at $19,886 USD. Agriculture accounts for about three percent of Botswana's Gross Domestic Product (GDP) with diamonds and tourism comprising the main contributors to economy. About 85 percent of Botswana's agricultural output is derived from livestock production (Fig. 2), mainly beef, with a cattle population of about 2.4 million. It is estimated that over half of all households in Botswana own cattle and this represents the largest single source of rural income.

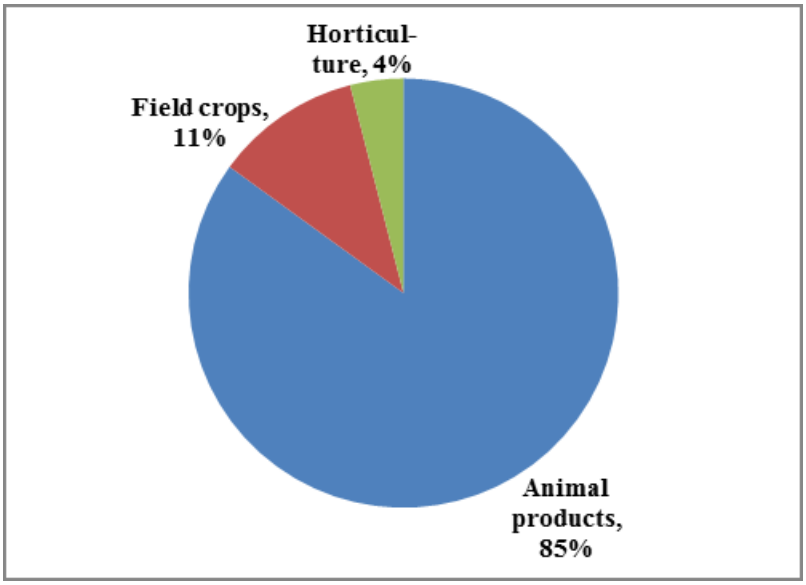

Figure 2. Sector Distribution of Agricultural Production.
Source: https://www.fas.usda.gov/data/botswana-agricultural-economic-fact-sheet

The peoples of Botswana have a very long history of raising livestock. In keeping with the semi-arid conditions of the country, cattle herds moved semi-nomadically according to availability of vegetation and seasonal watering. Prior to 1890s, cattle were raised for subsistence purposes providing draught power and milk, and in times of need, a source of immediate cash. It is estimated that only a few hundred thousand animals comprised the national cattle herd prior to 1950. Early foreign investment brought an increase in access to groundwater and better veterinary care, though more livestock productivity also had future negative implications for the environment.

The growth of the cattle population through the 1950s, brought a shift from regional live cattle exports to accessing the British and European meat markets. To provide quality products to these new export markets, modern processing facilities were specifically built. In this way, two slaughter systems evolved in Botswana; one through the new Lobatse abattoir for international markets and the traditional local slaughter for the domestic market. The use of cordon fences began in 1953 to facilitate the movement of cattle through designated corridors and quarantine stations to the export abattoir in Lobatse. To better organize the nascent cattle industry, the BMC was established in 1965 with the aim of promoting the development of the national livestock industry, representing the interests of producers and marketing beef and its by-products worldwide.

By the time of independence in 1966, it is estimated that the national cattle herd had reached well over 1 million animals and made cattle rearing the most lucrative component of the economy accounting for 40% of the gross domestic product (GDP). However, in 1967,

diamonds were discovered in Botswana and the focus of the entire national economy shifted to this much more globally demanded product. A very positive outcome was the government investment in its people with important increases in education opportunities allowing for a 10-year guaranteed basic education, leading to a Junior Certificate qualification. The diamond revenues also provide the government a financial means to promote wide-ranging development and support programmes. As the GDP continued to grow, stimulus in growth was also seen in the development in the trade, banking and real estate sectors and an important change occurred in national demographics and the domestic market; Botswana's middle-class population grew and became more urban.

This urban middle-class market demanded higher quality consumables especially meat and the domestic beef value chain evolved quickly to meet needs. The rise of municipal and private slaughtering facilities for domestic processing of beef rapidly grew though its sanitary requirements were likely not as strict as those under the BMC. In 1976, Botswana attained preferential trade access to the EU through the Lomé Convention with maintained access in 2003 under the Cotonou Agreement and, to date, as an Interim Economic Partnership Agreement since 2009. Access to this EU market requires strict abidance to sanitary requirements, including FMD disease freedom and procedures for processing beef. Most recently, the EU FVO has completed audits for fresh meat processing in 2011 and 2013 and for FMD controls in 2013 and 2015. The largest market for Botswana agriculture, including livestock and products, remains South Africa followed by the UK (Fig 3). The majority of agricultural products exported, by far, is beef (Fig. 4).

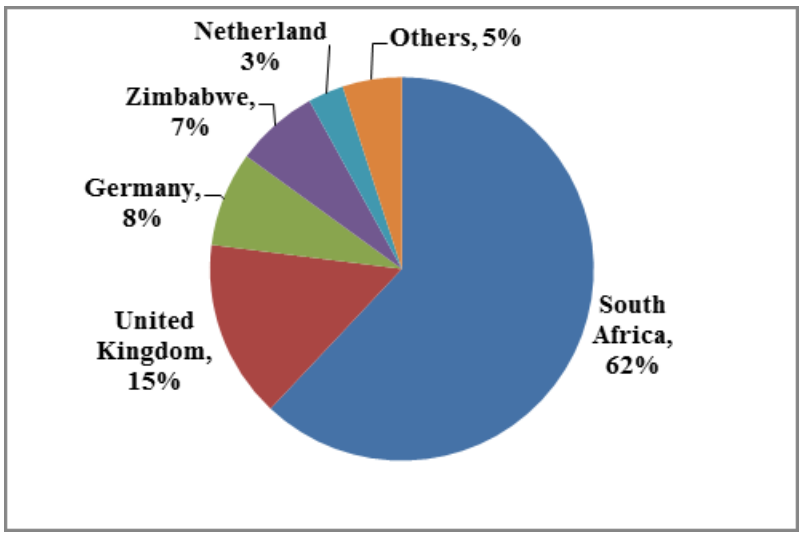

Figure 3. Agricultural Export Destinations.
Source: https://www.fas.usda.gov/data/botswana-agricultural-economic-fact-sheet

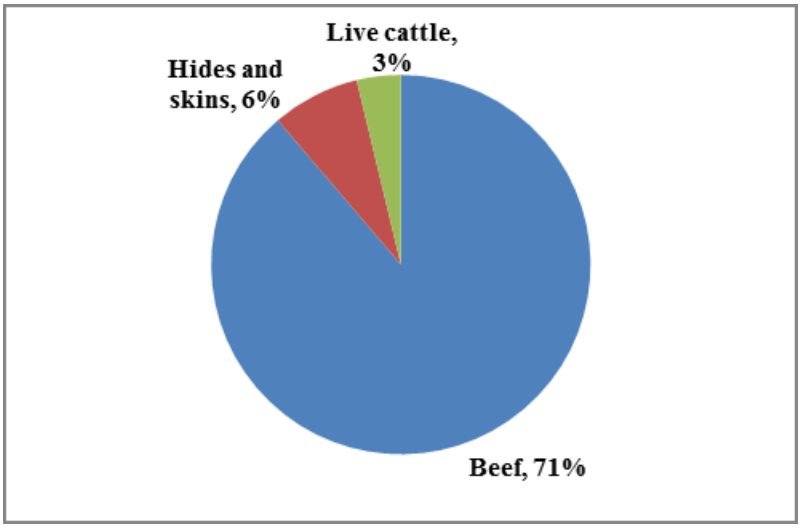

Figure 4. Agricultural Products Exported.
Source: https://www.fas.usda.gov/data/botswana-agricultural-economic-fact-sheet

II.3 Context of the evaluation

II.3.A Availability of data relevant to the evaluation

A list of documents received by the OIE PVS Team before and during the PVS Evaluation mission is provided in Appendix 6. All documents and pictures listed in Appendix 6 are referenced to relevant Critical Competencies and provide material evidence for the levels of advancement and related findings.

The following table provides an overview of the availability of the main categories of documents or data needed for the evaluation, taking into account the requirements set out in the OIE Terrestrial Code.

Table 2: Summary of data available for evaluation

Main document categories	Data available in the public domain	Data accessible only on site or on request	Data not available
→ **Animal census:**			
○ at 1st administrative level	x		
○ at 2nd administrative level	x		
○ at 3rd administrative level	x		
○ per animal species	x		
○ per production systems	x		
→ **Organisations charts**	x		
○ Central level of the VS	x		
○ 2nd level of the VS		x	
○ 3rd level of the VS		x	
→ **Job descriptions in the VS**			
○ Central levels of the VS	x		
○ 2nd level of the VS		x	
○ 3rd level of the VS		x	
→ **Legislations, regulations, decrees …**			
○ Animal health and public health	x		
○ Veterinary practice	x		
○ Veterinary statutory body	x		
○ Veterinary medicines and biologicals	x		
○ Official delegation		x	
→ **Veterinary census**			
○ Global (public, private, veterinary, para-professional)		x	
○ Per level		x	
○ Per function		x	
→ **Census of logistics and infrastructure**		x	
→ **Strategic plan(s)**		x	
→ **Operational plan(s)**		x	
→ **Activity reports**		x	
→ **Financial reports**		x	
→ **Animal health status reports**	x	x	
→ **Evaluation reports**	x	x	
→ **Procedures, registers, records, letters …**	x	x	

II.3.B General organisation of the Veterinary Services

There have been some changes in the organizational structure of the Department of Veterinary Services since the last PVS review in 2010. The Ministry of Agriculture is organized as seen below with three Deputy Permanent Secretariats; Crops and Extension, Corporate Services and Livestock and Agri-Business. The DVS is under the Deputy Permanent Secretariat of Livestock and Agri-Business along with Animal Production and Agri-Business Promotions (Fig 5).

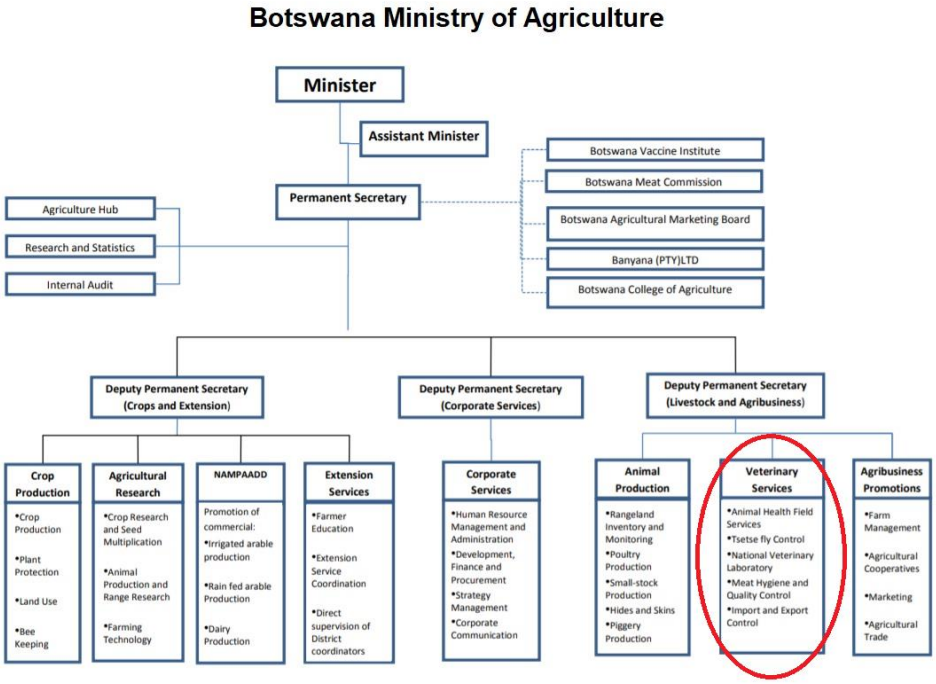

Figure 5. Ministry of Agriculture – Organisational chart.
Source: DVS

The DVS is headed by a Director who is always a Veterinarian. His authorities are outlined in various existing animal health laws. The DVS is composed of:

- FMD Unit
- BAITS Coordinator
- Botswana Veterinary Surgeons Council Registrar
- Assistant Manager for Human Resources
- 4 Deputy Directorates or Divisions
    - Disease Control, Animal Health and Field Services
    - Veterinary Public Health
    - National Veterinary Laboratory
    - Compliance, Policy and Development

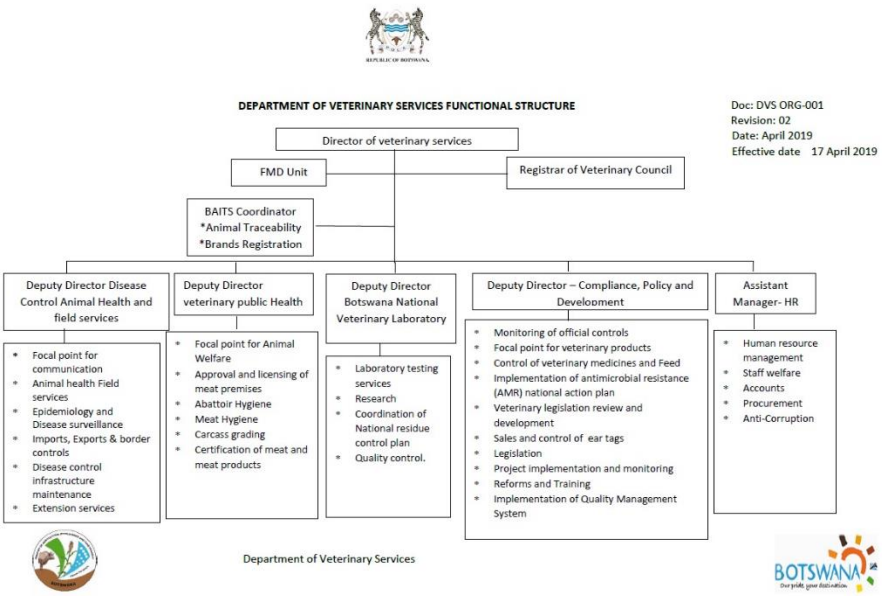

Figure 6. Department of Veterinary Services – Organisational chart.
Source: DVS

These Deputy Directorates or Divisions are organised by Units. During the course of the mission those interviewed used various terms to refer to levels within the DVS which were often confusing. Throughout this report we refer to the DVS as the competent veterinary authority for Botswana. The next technical level will use the name of the appropriate Division and within these the name of the Unit.

In the field, the DVS has 10 District Veterinary Offices with 28 Sub-district Veterinary Offices. DVO are headed by veterinarians, as per position description requirements. SDVOs are usually headed by veterinarians or non-veterinary scientific officers. Below the SDVO level is the Area Extension Office where a trained VPP oversees direct interaction with livestock keepers, local farmers associations and community leadership ("Kgotla"). In addition, there are animal health assistants/inoculators employed in the field. It should be noted that, apparently for management efficiencies of a decentralised government administrative structure, the DVS field staff operate within a MoA District Area Coordinator (DAC) structure. This could have an impact on the DVS technical chain of command as noted in the appropriate CC.

The Botswana National Veterinary Laboratory is one of the 4 Deputy Directorates of DVS and provides all official veterinary related testing for the country; including, animal disease diagnostics, food hygiene and residue testing. Two new satellite laboratories form part of the national veterinary services network. The BVI specifically addresses FMD diagnostics and investigation due to the priority of this disease and its direct implications for established trade. Recent proposals have advanced to restructure the BNVL under the NARDI and oversight of veterinary medical pharmaceuticals under the BOMRA. Both of these proposed modifications could encumber the DVS from fulfilling its competent authority obligations as a member of the OIE.

II.3.C Animal disease occurrence

Botswana has a designated OIE Focal Point responsible for ensuring its animal disease information is up to date. As of the writing of this report, national animal health information reported to the OIE World Animal Health Information System (WAHIS) was current through the second semester of 2018 (Figure 7). There have been no recorded submissions for a final annual report for 2018 and any reports for 2019.

OIE reporting history : Botswana

Year	Semester 1	Semester 2	Annual
2005	✓	✓	✓
2006	✓	✓	✓
2007	✓	✓	✓
2008	✓	✓	✓
2009	✓	✓	✓
2010	✓	✓	✓
2011	✓	✓	✓
2012	✓	✓	✓
2013	✓	✓	✓
2014	✓	✓	✓
2015	✓	✓	✓
2016	✓	✓	✓
2017	✓	✓	✓
2018	✓	✓	✗
2019	✗	✗	✗

Figure 7. OIE WAHIS – Botswana reporting history.
Source: http://www.oie.int/wahis_2/public/wahid.php/Countryinformation/Reporting

Specific information on animal disease occurrence for Botswana can be found on the OIE website (see Table 3) including; a) diseases present in the country, b) diseases never reported, and c) diseases absent in 2018.

Table 3: OIE WAHIS - Disease status of the country

Source: http://www.oie.int/wahis_2/public/wahid.php/Countryinformation/Reporting

Diseases present in the Country

	Domestic		Wild		
Disease	Notifiable	Status	Notifiable	Status	Note
Bluetongue	✓	Disease limited to one or more zones	✓	Absent (since Unknown)	
Dourine	✓	Disease limited to one or more zones	✗	No information	
Foot and mouth disease	✓	Disease limited to one or more zones	✗	Infection/infestation limited to one or more zones	
Heartwater	✗	Disease present	✗	No information	
Infec bursal disease (Gumboro)	✓	Disease present	✗	No information	
Lumpy skin disease	✓	Disease limited to one or more zones	✗	No information	
Mycoplasmosis (M. gallisepticum)	✓	Disease limited to one or more zones	✗	No information	
Newcastle disease	✗	Disease limited to one or more zones	✗		
Rabies	✓	Disease present	✓	Absent (since 10/2011)	

Diseases never reported

Disease	Notifiable	Type of surveillance	Note
Acarapisosis of honey bees	✗	General Surveillance	
Acute hepatopancreatic necrosis disease	✗		
American foulbrood of honey bees	✗	General Surveillance	
Bovine spongiform encephalopathy	✓	General and targeted surveillance	
Brucellosis (Brucella suis)	✓	General Surveillance	
Camelpox	✓	General Surveillance	
Classical swine fever	✓	General Surveillance	
Crayfish plague (Aphanomyces astaci)	✗		
Crimean Congo haemorrhagic fever	✓	General and targeted surveillance	
Encephalomyelitis (West.)	✗	General Surveillance	
Enzootic abortion (chlamydiosis)	✗	General Surveillance	
Enzootic bovine leukosis	✓	General Surveillance	
Epizootic haemorrhagic disease	✓	General Surveillance	
Equine encephalomyelitis (Eastern)	✗	General Surveillance	
Equine infectious anaemia	✗	General Surveillance	
European foulbrood of honey bees	✗	General Surveillance	
Glanders	✓	General and targeted surveillance	
Highly path. avian influenza	✓	General and targeted surveillance	
Highly pathogenic influenza A viruses (infection with) (non-poultry including wild birds)	✗	General and targeted surveillance	
Infection with abalone herpesvirus	✗		
Infection with Batrachochytrium salamandrivorans	✗		
Infection with Bonamia exitiosa	✗		
Infection with Bonamia ostreae	✗		
Infection with Marteilia refringens	✗		
Infection with Perkinsus marinus	✗		
Infection with Perkinsus olseni	✗		
Infection with salmonid alphavirus	✓	General Surveillance	
Infection with Xenohaliotis californiensis	✗		
Infectious hypodermal and haematopoietic necrosis	✗		
Infectious myonecrosis	✗		
Infectious salmon anaemia virus (HPR-deleted or HPR0 genotypes) (Infection with)	✓	General Surveillance	
Japanese encephalitis	✓	General Surveillance	
Leishmaniosis	✓	General Surveillance	
Low pathogenic avian influenza (poultry)	✓	General and targeted surveillance	
Myxomatosis	✗	General Surveillance	
N. w. screwworm (C. hominivorax)	✓	General Surveillance	
Necrotising hepatopancreatitis	✗		
Nipah virus encephalitis	✗	General Surveillance	
Peste des petits ruminants	✓	General Surveillance	
Rabbit haemorrhagic disease	✗	General Surveillance	
Sheep pox and goat pox	✓	General Surveillance	
Surra (Trypanosoma evansi)	✓	General Surveillance	
Taura syndrome	✗		
Transmissible gastroenteritis	✗	General Surveillance	
Tropilaelaps infestation of honey bees	✗	General Surveillance	
Tularemia	✓	General Surveillance	
Turkey rhinotracheitis	✗	General Surveillance	
Venezuelan equ.encephalomyelitis	✗	General Surveillance	
West Nile Fever	✓	General and targeted surveillance	
White spot disease	✗		
White tail disease	✗		
Yellow head disease	✗		

Diseases absent in 2018

	Domestic				Wild			
Disease	Notifiable	Last occurrence	Surveillance	Note	Notifiable	Last occurrence	Surveillance	Note
African horse sickness	✓	-	Targeted Surveillance		✗	Unknown		
African swine fever	✓	06/1999	General Surveillance		✗	Unknown		
Anthrax	✓	09/2014	General Surveillance		✓	08/2015	General Surveillance	
Aujeszky's disease	✓	-	General Surveillance		✗	Unknown		
Avian chlamydiosis	✗	-	General Surveillance		✗	Unknown		
Avian infect. laryngotracheitis	✗	06/2013	General Surveillance		✗	Unknown		
Avian infectious bronchitis	✗	1994	General Surveillance		✗	Unknown		
Avian mycoplasmosis (M.synoviae)	✓	12/2016	General Surveillance		✗	Unknown		
Bov. genital campylobacteriosis	✗	-	General Surveillance		✗	Unknown		
Bovine anaplasmosis	✓	06/2016	General Surveillance		✗	Unknown		
Bovine babesiosis	✗	06/2013	General Surveillance		✗	Unknown		
Bovine tuberculosis	✓	-	General and targeted surveillance		✗	Unknown		
Bovine viral diarrhoea	✗	2005	General Surveillance		✗	Unknown		
Brucellosis (Brucella abortus)	✓	06/2017	General and targeted surveillance		✗	Unknown		
Brucellosis (Brucella melitensis)	✓	2007	General and targeted surveillance		✗	Unknown		
Caprine arthritis/encephalitis	✗	-	General Surveillance		✗	Unknown		
Contagious agalactia	✗	-	General Surveillance		✗	Unknown		
Contagious bov. pleuropneumonia	✓	12/1995	Targeted Surveillance		✗	Unknown		
Contagious cap. pleuropneumonia	✓	-	General Surveillance		✗	Unknown		
Contagious equine metritis	✗	-	General Surveillance		✗	Unknown		
Duck virus hepatitis	✗	-	General Surveillance					
Epizootic ulcerative syndrome	✓	12/2007	General and targeted surveillance		✓	11/2010	General and targeted surveillance	
Equine influenza	✓	-	General Surveillance		✗	Unknown		
Equine piroplasmosis	✗	1995	General Surveillance		✗	Unknown		
Equine viral arteritis	✓	-	General Surveillance		✗	Unknown		
Fowl typhoid	✗	2002	General Surveillance		✗	Unknown		
Haemorrhagic septicaemia	✗	1995	General Surveillance		✗	Unknown		
Inf.bov.rhinotracheit. (IBR/IPV)	✓	06/2010	General and targeted surveillance		✗	Unknown		
Maedi-visna	✗	-	General Surveillance		✗	Unknown		
O. w. screwworm (C. bezziana)	✓	-			✗	Unknown		
Ovine epididymitis (B. ovis)	✗	-	Targeted Surveillance		✗	Unknown		
Paratuberculosis	✓	-	General and targeted surveillance		✗	Unknown		
Porcine cysticercosis	✗	-	General Surveillance		✗	Unknown		
Pullorum disease	✗	1995	General Surveillance		✗	Unknown		
Q fever	✓	-	General Surveillance		✗	Unknown		
Rift Valley fever	✓	12/2017	General and targeted surveillance		✗	Unknown		
Rinderpest	✓	1899	General Surveillance		✓	1899	General Surveillance	
Salmonellosis (S. abortusovis)	✗	-	General Surveillance		✗	Unknown		
Scrapie	✓	-	General Surveillance		✗	Unknown		
Theileriosis	✓	03/2017	General Surveillance		✗	Unknown		
Trichinellosis	✓	-	General Surveillance		✗	Unknown		
Trichomonosis	✗	1995	General Surveillance		✗	Unknown		
Trypanosomosis	✓	2001	Targeted Surveillance		✗	Unknown		
Varroosis of honey bees	✓	06/2011	General and targeted surveillance		✗	Unknown		

II.4 Organisation of the evaluation

II.4.A Timetable of the mission

Appendix 4 provides a list of key persons met; the timetable and a map of the mission and details of the facilities and locations visited by the OIE PVS Team and Appendix 5 provides the air travel itinerary of team members.

II.4.B Categories of sites and sampling for the evaluation

Table 5 lists the categories of site relevant to the evaluation and the number of each category of site in the country. It indicates how many of the sites were visited, in comparison with the suggested sampling framework ("ideal" sampling) recommended in OIE PVS Manual. Due to the size of the country and mission time limitations, the "ideal number" for sampling of sites was not reached for many entries in Table 5. Nonetheless, the PVS Team felt confident that the sites visited in this mission were representative of the larger population of sites due to standardization and conformity of many of these categories.

Some of the sites listed in the table were difficult to enumerate. In the case of administrative levels, by visiting any village or city, one is in essence visiting a ward, subdistrict and district at the same time. Thus, only administrative level information has been provided for Sub-district and District as these are also the common divisions recognized by the DVS.

Table 4: Site sampling

	Terminology or names used in the country	Number of sites	"Ideal" sampling	Actual sampling
GEOGRAPHICAL ZONES OF THE COUNTRY				
Climatic zone Topographical zone Agro-ecological zone	*Sandvelt, Hardvelt, Aluvial plains and Lacustrrine*	4	4	4
ADMINISTRATIVE ORGANISATION OF THE COUNTRY				
1st administrative level	*District*	9	9	8
2nd administrative level	*Sub-district*	28	10	6
3rd administrative level	*Villages*	~150	12	
4th administrative level	*Wards (hamlets)*			
Urban entities	*Cities and towns*			
VETERINARY SERVICES ORGANISATION AND STRUCTURE				
Central (Federal/National) VS	Department of Veterinary Services	1	1	1
Internal division of the central VS	Divisions	8	8	8
1st level of the VS	District Veterinary Office (DVO)	10	10	4
2nd level of the VS	Sub-district Veterinary Office (SDVO)	~ 28	10	5
3rd level of the VS	Clusters	55	10	6
Veterinary organisations	VSB & VSA	2	2	2
FIELD ANIMAL HEALTH NETWORK				
Field level of the VS (animal health)	Extension Area	355	17	4
Private veterinary sector	Private Veterinarian	46	10	2
Other sites (dip tanks, crush pens….)	Crush pens	4500	67	5
VETERINARY MEDICINES & BIOLOGICALS				
Production sector	Botswana Vaccine Institute	1	1	1
Import and wholesale sector	Medswana and Gaborony Vet Clinic	2	2	2
Retail sector	Livestock Advisory Centre (LAC)	35	10	3
Other partners involved	Pharmacies, private vets, drug shops (BAMB)	135	11	3
VETERINARY LABORATORIES				
National, Regional and local labs	Botswana National Veterinary Laboratory (BNVL)	1	1	1
Associated, accredited and other labs		0	0	0
ANIMAL AND ANIMAL PRODUCTS MOVEMENT CONTROL				
Bordering countries	Namibia, Zimbabwe, South Africa, and Zambia	4	4	2
Airports and seaports border posts	Seretse, Francistown, Maun, Kasane	4	4	2
Main terrestrial border posts	Authorised for animals & food	9	9	2
Minor terrestrial border posts	Not authorised for animals & food	15	10	1
Quarantine stations for import or export	Quarantine			3
Internal check points	Veterinary / disease control gates	56	10	6
Zones, compartments	Animal Disease Control Zones (1 Grey, 4 Pink and 1 Green)	6	6	4
PUBLIC HEALTH INSPECTION OF ANIMALS AND ANIMAL PRODUCTS				
Export slaughterhouses	BMC Francistown & Lobatse, Ostrich	2	2	2
National market slaughterhouses	Non export (municipal or private)	14	10	3
Local market slaughterhouses	Licensed slaughter slabs	64	10	2

Slaughter areas/slabs/points	Rural slaughter facilities			
On farm or butcher's slaughtering sites	Wildlife on site and mobile slaughter			
Processing sites (milk, meat, eggs, etc)	Milk processing plants and on farms	14	10	2
Retail outlets (butchers, shops, rest.)	Not under VS mandate			2
TRAINING AND RESEARCH ORGANISATIONS				
Veterinary university	None	0	0	0
Veterinary paraprofessional schools	Botswana College of Agriculture (BCA) and Meat Inspection Training Institute (MITI)	2	2	2
Veterinary research organisations	BNVL, BCA and BVI	3	3	3
STAKEHOLDERS' ORGANISATIONS				
Agricultural Chamber / organisation	Botswana Agricultural Union	1	1	1
National livestock farmers organisations	Cattle, Poultry, Ostrich, Pig, Dairy, Shoats	6	5	3
Local livestock farmers organisations				3
Other stakeholder/consumer organisations	Botswana Consumer Council	1	1	0

PART III: RESULTS OF THE EVALUATION & GENERAL RECOMMENDATIONS

This evaluation identifies the strengths and weaknesses of the veterinary services, and makes general recommendations, across the four main fundamental components of the PVS tool:

FUNDAMENTAL COMPONENTS	
1.	HUMAN PHYSICAL AND FINANCIAL RESOURCES
2.	TECHNICAL AUTHORITY AND CAPABILITY
3	INTERACTION WITH STAKEHOLDERS
4.	ACCESS TO MARKETS

The activities of the Veterinary Services are recognised by the international community and by OIE Members as a '**global public good**'. Accordingly, it is essential that each country acknowledges the importance of the role and responsibilities of its Veterinary Services and gives them the human and financial resources needed to fulfil their responsibilities.

This OIE PVS Evaluation examined each Critical Competency under the 4 fundamental components, listed strengths and weaknesses where applicable, and established a current level of advancement for each Critical Competency. Evidence supporting this level included interviews and field observations associated with the mission, and also documentary evidence, as listed in Appendix 6. General recommendations are provided where relevant.

The current level of advancement for each Critical Competency is shown in cells shadowed in grey (15%) in the table.

III.1 Fundamental component I: Human, physical and financial resources

This component of the evaluation concerns the institutional effectiveness and sustainability of the VS as demonstrated by the levels of human, physical and financial resources available and their efficient application. It comprises fourteen Critical Competencies:

Critical Competencies:

Terrestrial Code References:

Points 1-7, 9 and 14 of Article 3.1.2. on Fundamental principles of quality: Professional judgement/Independence/ Impartiality/Integrity/Objectivity/Veterinary legislation/General organisation/Procedures and standards/Human and financial resources.
Point 4 of Article 3.2.1. on General considerations.
Point 1 of Article 3.2.2. on Scope.
Points 1 and 2 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.
Point 2 of Article 3.2.4. on Evaluation criteria for quality system.
Article 3.2.5. on Evaluation criteria for human resources.
Points 1-3 of Article 3.2.6. on Evaluation criteria for material resources: Financial/Administrative/Technical.
Points 3 and Sub-point d) of Point 4 of Article 3.2.10. on Performance assessment and audit programmes: Compliance/In-Service training and development programme for staff.
Article 3.2.12. on Evaluation of the veterinary statutory body.
Points 1-5 and 10 of Article 3.2.14. on Organisation and structure of Veterinary Services/National information on human resources/Financial management information/Administration details/Laboratories engaged in diagnosis/Performance assessment and audit programmes.

I-1 Professional and technical staffing of the Veterinary Services (VS) *The appropriate level of staffing of the VS to allow for veterinary and technical functions to be undertaken efficiently and effectively.* **A. Veterinary and other professionals (university qualified)** *The appropriate level of staffing of the VS to allow for veterinary and other professional functions to be undertaken efficiently and effectively.*	**Levels of advancement**
	1. The majority of positions requiring veterinary or other professional skills are not occupied by appropriately qualified professionals.
	2. The majority of positions requiring veterinary or other professional skills are occupied by appropriately qualified professionals at central and state/provincial levels.
	3. The majority of positions requiring veterinary or other professional skills are occupied by appropriately qualified professionals at local (field) levels.
	4. There is a systematic approach to defining job descriptions and formal, merit-based appointment and promotion procedures for *veterinarians* and other professionals.
	5. There are effective procedures for formal performance assessment and performance management of *veterinarians* and other professionals.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	2. The majority of veterinary and other professional positions are occupied by appropriately qualified personnel at central and state / provincial levels.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	3. The majority of veterinary and other professional positions are occupied by appropriately qualified personnel at local (field) level.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The VS has made important investments in human capital at both the central and field levels; there was no evidence of shortages.
- Improved mechanisms are in place to manage Veterinary and other professionals including a formal assessment system.

Findings:

There has been a notable positive change in both the quality and quantity of veterinary personnel within the DVS. This is premised on the affirmative training programmes within the VS that include upgrading of different cadres of staff in the VS. A preponderance of evidence

exists of a well-structured personnel management system which includes job description definitions, position advertisements, a transparent, merit-based selection process, effective evaluation procedures and clear targets for awards and promotion. In addition, the evaluation system is linked to internal training such that any documented performance insufficiencies can be addressed with appropriate educational opportunities. The 2018 DVS Annual Report indicated that 92% of its entire staff have completed performance development plans (PDPs). The DVS' efforts in quality management should be involved in future reviews of the personnel management system.

A well-documented system to monitor staff performance, referred to as the Performance Based Rewards System (PBRS), has been established. This system implemented by the Departmental Performance Implementation Committee ensures that staff are motivated and meet set targets for key objectives. Unfortunately, the educational and experiential investment by the DVS in its veterinary and professional staff often leads to their being attracted to other more lucrative employment opportunities within the government or in the private sector. Also, competing budget priorities have negatively affected human resource development.

All veterinarians in Botswana, public, private or NGO, are registered by the BVSC. The numbers of needed veterinarians and other related professionals in the country is set by the Human Resources Development Council (HRDC) in consultation with the DVS and other sources though the basis for this calculation was unavailable. According to their current records, the public sector employs 78 veterinarians at various technical administrative levels and located at the central, district and sub-district levels. In addition, there are: 46 veterinarians registered as private practitioners; 15 veterinarians at academic institutions; 17 veterinarians associated with private pharmaceutical interests and 8 veterinarians employed by private veterinary public health and wildlife entities. At the helm of the DVS is the Director, a veterinarian who also represents Botswana at the OIE as its delegate. At the central office in Gaborone, the DVS is organized into 4 technical Deputy Directorships and all corresponding professional level positions requiring graduate veterinarians are occupied by qualified staff.

In the field, the highest level of the DVS is the DVO who are posted at all 10 districts and are responsible for the technical supervision of official veterinary activities in the respective districts with support from SDVO at the next level. The DVO position is categorized at an administrative public service rank of Principal Veterinary Officer 1 (PVO I) and SDVO is a Principal Veterinary Officer 2 (PVO II). Most vacancies at the administrative levels and agencies requiring veterinarians and /or other professional skills are occupied by the appropriate technical staff. Government Veterinary Officers indicated that they often do not have sufficient time to attend to field cases and that private veterinarians are lacking in rural areas. Unfortunately, the DVS does not presently have a mechanism to make official use of private veterinarians, though they are highly qualified to take on such functions if required.

Strengths:

- Well trained competent veterinarians are available at both national and district levels with a clear and robust chain of command in existence within the DVS.
- The DVS benefits from a comprehensive and effective personnel management system with internal links to ensure consistency and human resource improvement.

Weaknesses:

- Newly created parastatals and allied government agencies continue to deplete skilled staff from the VS.
- Funding for human resource development is decreasing due to arising budgetary challenges being faced by the VS.
- Although a high percentage of the DVS employees have completed PDPs, there is, as yet, no evidence of a thorough auditing system of the existing performance management system for veterinarians and other professionals.

Recommendations:

- Identify incentives for staff as a motivation to remain in the public service and prevent the increasing loss of professional expertise to the private sector and newly evolving agencies.
- Consider involving private sector veterinarians and other professionals to support selected areas within the VS in order to reduce workload.
- Consider a comprehensive review of procedures for formal performance assessment and performance management of veterinarians and other professionals by external expertise; the DVS quality management efforts should be involved as well.

Evidence *(as listed in Appendix 6)**:***

T1, T6, T7, T11, T42, T43, T74, T75, T76, T77, T78, T79, T82, T 89, T90, T126, T127, T128, T129, T130, T131, T132, T133, T134, T135, T136, T137 T138, T146, T148, P3.

B. Veterinary paraprofessionals	Levels of advancement
The appropriate level of staffing of the VS to allow for veterinary paraprofessional (according to the OIE definition) functions to be undertaken efficiently and effectively. *This covers OIE veterinary paraprofessional categories having trained at dedicated educational institutions with formal qualifications which are recognised by the government or the VSB.*	1. The majority of positions requiring veterinary paraprofessional skills are not occupied by personnel holding appropriate qualifications.
	2. Some positions requiring veterinary paraprofessional skills are occupied by personnel holding appropriate qualifications. There is little or no veterinary supervision.
	3. The majority of positions requiring veterinary paraprofessional skills are occupied by personnel holding appropriate qualifications. There is a variable level of veterinary supervision.
	4. The majority of veterinary paraprofessional positions are effectively supervised on a regular basis by veterinarians.
	5. There are effective management procedures for formal appointment and promotion, as well as performance assessment and performance management of veterinary paraprofessionals.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. The majority of technical positions at local (field) levels are occupied by personnel holding technical qualifications.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The majority of technical positions are effectively supervised on a regular basis.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- With the replenishment of qualified veterinarians at DVO and SDVO positions, a more robust and effective management of VPPs now exists.
- A clearer chain of command is now apparent at the field eliminating any past confusion regarding oversight and supervision of VPP Extension Officers and other field staff.
- According to officials at Botswana University of Natural Science (BUAN), the Botswana HRDC has provided guidance on the numbers of needed VPPs and they work within these parameters.

Findings:

In contrast to the situation observed by the previous PVS mission, Botswana has greatly improved the ratio of Veterinarians to VPPs in the field (veterinarians increasing from 55 to 74 and VPPs decreasing from 730 to 631 since 2010); thus, improving supervision and eliminating any confusion regarding the chain of command and thus abiding by the legal obligation of veterinarians to supervise VPPs. As seen with veterinarians and other professionals, the DVS has made significant efforts at improving administrative management and supervision of this sector. In interviews with VPPs, they were all very cognizant of their responsibilities, authority and who was assigned as their veterinary supervisor. DVOs/SDVOs we spoke with also confirmed they have regular supervisory contact with all their VPPs and that this is a requirement upon which they are also evaluated. Documentation of supervision for VPPs was readily available at all DVO/SDVO offices visited. The management system being implemented by DVS for hiring, evaluating and promoting VPPs is similar to that used for professional staff though maybe not as thorough. The 2018 DVS Annual Report indicated that 92% of its entire staff, including VPPs, have completed PDPs.

Currently, the Veterinary Surgeons Act (2008) has the provision for the Botswana Veterinary Surgeons Council (BVSCA) to register VPPs but this has not yet been embarked upon. The BVSC Strategic Plan foresees sensitization of VPPs for this process in 2019 and will initiate actual registration in 2020; procedures for registration are to be included in the updated Veterinary Surgeons Act. Also, under consideration for VPPs will be an organization to promote the interests of this sector while maintaining its professional reputation.

VPPs are employed in both the public and private sector and are critical in supporting veterinary services particularly in the rural areas. The category of extension staff possesses a diploma in Animal Health and Production conferred by the BUAN. A number of veterinary paraprofessionals are being employed by the various agencies like the BAMB. Newly drafted SOPs for DVS activities (e.g. Procedures for Verification of on farm Records) will include “Personnel Qualifications/Responsibilities” for VPPs where applicable.

VPP Extension Officers report to the SDVO who provide technical guidance. At the Serule Extension Office the team interacted with a veterinary paraprofessional at the rank of Senior Technical Officer who indicated that VPPs are engaged in offering extension services to livestock keepers, issuance of animal movement permits, participate in operationalisation of the BAITS programme and support routine animal disease investigations and disease reporting. In addition, VPP Extension Officers often represent the DVS at local meetings (“Kgotla”), workshops and training.

In order to promote private sector VPP and reduce the VS workload, the DVS has delegated some vaccination functions to private paraprofessionals. Some private veterinary clinics appear to have relinquished VPP support staff as animal owners were not accepting of having them provide animal health attention in lieu of the veterinary practitioner in charge, regardless of the simplicity of the intervention.

Strengths:

- The DVS has well-trained veterinary paraprofessionals distributed at different administrative levels of the VS throughout the country.

- Presence of a clear and well-structured chain of command in the VS capable of effectively supervising VPPs and supported by an efficient personnel management system.
- The DVS has an effective management system for its employees.

Weaknesses:

- Lack of a legal framework to regulate VPPs.
- Currently the BVSC does not have a register of available VPPs to facilitate regulation and supervision.
- Existing management system should be reviewed for their effectiveness and efficacy in administration needs of VPPs including an auditing and update component.

Recommendations:

- Expedite the plan of the BVSC to initiate registration of VPPs.
- Support the BVSC to regulate the practice of the VPPs.
- Strengthen existing management tools in oversight and career-development of all VPPs.

Evidence (as listed in Appendix 6):

T1, T11, T41, T43, T69, T79, T80, T82, T104, T146, T200, S9, P3,P5, P7, P21, S19g, S19a

I-2 Competency and education of veterinarians and veterinary paraprofessionals *The capability of the VS to effectively carry out their veterinary and technical functions, as indicated by the level and quality of the qualifications of their personnel in veterinary and veterinary paraprofessional positions.* **A. Veterinarians** *This references the OIE Day 1 and advanced competencies, and the OIE model core curricula for veterinarians*	**Levels of advancement**
	1. The veterinarians' knowledge, skills and practices, are of a variable standard that allow only for elementary clinical and administrative activities of the VS.
	2. The veterinarians' knowledge, skills and practices are of a uniform standard sufficient for accurate and appropriate clinical and administrative activities of the VS.
	3. The veterinarians' knowledge, skills and practices are sufficient for all professional/technical activities of the VS (e.g. surveillance, treatment and control of animal disease, including conditions of public health significance)
	4. The veterinarians' knowledge, skills and practices are sufficient for specialised technical activities (e.g. higher level epidemiological analysis, disease modelling, animal welfare science) as may be needed by the VS, supported by post-graduate level training.
	5. The veterinarians' knowledge, skills and practices are subject to regular updating, and are internationally recognised such as through formal evaluation and/or the granting of international equivalence with other recognised veterinary qualifications.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. The veterinarians' practices, knowledge and attitudes usually allow undertaking specialized activities as may be needed by the VS.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The veterinarians' practices, knowledge and attitudes usually allow undertaking specialized activities as may be needed by the VS.

Key Changes from 2010 to 2011 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Previous identified need for training in public veterinary administration seems to have been addressed by the acquisition of professional management expertise and the establishment of an effective organizational administrative system.
- Veterinarians continue to be train outside the country in internationally recognised universities though this has been reduced by budget limitations.

- A number of staff with specialized training in technical areas like risk analysis and modelling have since moved to newly created parastatals and agencies.

Findings:

As noted in the previous PVS, Botswana does not have an educational institution which confers a degree in veterinary medicine and so all its veterinarians are trained internationally. This has not hampered the country in securing qualified veterinary graduates to support the national veterinary domain. Discussions at the BUAN indicated that serious consideration was given to establish a veterinary school, but mission interviews revealed as much opposition to this venture as support. Graduate veterinarians and other allied professionals in the public and private sector continue to receive training from internationally recognised institutions/universities outside the country as well. In conversations with the DVS Reforms and Training Unit, opportunities for government-sponsored long-term international training in graduate and post graduate education in internationally accredited universities have been curtailed in recent years due to budgetary constraints. Nonetheless, evidence was available of employee contracts for government-sponsored education with corresponding service bond.

The country proposed maintaining the same level of advancement for this CC from the previous PVS evaluation and this is premised on the circumstance that there is no clear legal framework to guide the BVSC to monitor and evaluate international equivalence with other recognised veterinary qualifications. Having said that, it is clear that the post-graduate veterinary education received by veterinarians in the public and private sector is eligible for recognition by competent international entities. A specific area requiring higher-level education is risk analysis. Presently there is no evidence of personnel undertaking risk analysis-specific training and past trainees in this area have been drawn to employment opportunities outside DVS.

The BVSC started registration of veterinary surgeons in 2012. There is routine assessment of veterinary qualifications attained from international universities to ensure their conformity with the standards required to register and practice in the country. There was no evidence of structured examinations offered by the BVSC to test the competence of foreign trained veterinarians or for continuing education requirements for registered professionals. However, it was indicated by the BVSC that although the current VSA has provisions for CE, the actual regulations for such have not been implemented.

Strengths:

- Historic government-sponsored scholarships availability to competent universities and institutions within the region and overseas for veterinarians and other professionals.
- The DVS is committed to absorb graduate veterinarians trained from outside the country and approved by the BVSC.

Weaknesses:

- The absence of a national university to train existing veterinarians in the country was cited by some interviewees as a need, however, to date, Botswana has been able to secure qualified veterinary professionals.
- Lack of full implementation of VSA regulations as currently the BVSC does not regulate and monitor veterinarians practicing veterinary medicine in the country.

Recommendations:

- The DVS should accelerate the revision of the VSA (see IV-1A) and ensure implementation of its authority to regulate all veterinary practitioners in the country.

Evidence (as listed in Appendix 6):

T3, T79, T80, T82, T103, T104, T106, T116, T123, T190, T191, P3, S20, S19a

B. Veterinary paraprofessionals	Levels of advancement
This references the OIE Guidelines on Competencies for Veterinary Paraprofessionals, including categories of animal health (on farm, at markets or borders), veterinary public health (in slaughter establishments) and laboratory diagnostics who are recognised by the government or the VSB, having received formal training and qualifications from dedicated educational institutions.	1. Positions requiring veterinary paraprofessional skills are generally occupied by those having no formal training or qualifications from dedicated educational institutions.
	2. The training and qualifications of those in positions requiring veterinary paraprofessional skills is of a variable standard and allows for the development of only basic competencies.
	3. The training and qualifications of veterinary paraprofessionals is of a fairly uniform standard that allows the development of some specific competencies (e.g. vaccination on farms, meat hygiene control, basic laboratory tests).
	4. The training and qualifications of veterinary paraprofessionals is of a uniform standard that allows the development of more advanced competencies (e.g. blood and tissue sample collection on farms, supervised meat inspection, more complex laboratory testing).
	5. The training and qualifications of veterinary paraprofessionals is of a uniform standard and is subject to regular evaluation and/or updating.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. The training of veterinary para-professionals is of a uniform standard that allows the development of some specialist animal health competencies (e.g. meat inspection).
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The training of veterinary para-professionals is of a uniform standard that allows the development of some specialist animal health competencies (e.g. meat inspection).

Key Changes from 2010 to 2019 (*year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Botswana hosts and maintains the regionally recognized training institutions at the BUAN and the MITI, dedicated to providing specific training to VPPs.
- Botswana College of Agriculture (BCA) has since 2016 been transformed into the BUAN.
- The BUAN is basing its output of VPP graduates on targets set by the Botswana HRDC.

- The MITC has been absorbed by the BUAN and renamed Meat Industry Training Institute (MITI).
- A majority of meat inspectors previously at certificate level have upgraded through training to attain diplomas in animal health and production.

Findings:

Botswana has made important investment in the qualifications of its VPPs and explicitly cites this technical staff in its Annual Report. Although the number of VPPs has been reduced since the previous PVS mission in 2010, more attention has been given to quality of competencies of this sector. As an example, government efforts have been instituted to train and upgrade existing meat inspectors into extension officers with diploma qualifications thus fully incorporating veterinary paraprofessionals into the national veterinary services.

A vast majority of VPPs are trained by the BUAN. The University was established in 2016 under an Act of Parliament. The institution offers Higher Diplomas in Animal Health and Production (HDAH&P) and a Bachelor of Sciences degree in Animal Science as well as a Diploma in Extension Service and a Diploma in Laboratory Technology. The BUAN also offers post graduate degrees at a Master of Science and Doctorate level. In consideration of recommendations from the alignment with the Botswana Qualifications Authority Standards, the HDAH&P has been transformed into a Diploma in Animal Health and Production.

During the period 2011-2018 a total of 109 students have graduated from the BUAN with an HDAH&P; 228 students with a Bachelor of Science in Animal Science. The University has since 2011 held trainings for 217 meat inspectors from the DVS as a continuing education programme between the two institutions. The BUAN plans to introduce a Bachelor of Science degree in Veterinary Biomedical Sciences, a BVM and a Diploma Course in Meat Inspection and Hides and Skins. At present, there is no legal framework for the BVSC to regulate or monitor the training curriculum of VPPs in Botswana.

Strengths:

- Presence of competent Public University committed to training veterinary paraprofessionals in the country.
- The DVS is committed to collaborate with training institutions in a bid to improve the skills of all VPPs in the country.

Weaknesses:

- No legal framework to allow the BVSC to regulate and monitor the training curriculum of VPPs in the country.
- With the proliferation of graduates from the BUAN and other training institutions there is a risk of saturating the market with trained personnel who may not be readily absorbed by the job market.

Recommendations:

- The DVS should accelerate efforts in reviewing the legal framework which allow the oversight of VPPs and some mechanism for the regular review and upgrading of the existing VPP curricula.

Evidence (as listed in Appendix 6):

T11, T41, T79, T80, T82, T103, T104, T106, T116, T123, T146,T190, T191, P3, P5, P21.

I-3 Continuing education (CE) *The capability of the VS to maintain, update and improve the knowledge, attitudes and skills of their personnel, through an ongoing staff training and development programme assessed on a regular basis for relevance and targeted skills development.*	Levels of advancement
	1. The VS have no access to veterinary or paraprofessional CE.
	2. The VS have access to CE (internal and/or external training) on an irregular basis but it does not take into account needs, or new information or understanding.
	3. The VS have access to CE that is reviewed and sometimes updated, but it is implemented only for some categories of veterinary professionals and paraprofessionals.
	4. The VS have access to a CE programme that is reviewed annually and updated as necessary, and is implemented for all categories of veterinary professionals and paraprofessionals.
	5. The VS have up-to-date CE that is implemented or is a requirement for all relevant veterinary professionals and paraprofessionals and is subject to dedicated planning and regular evaluation of effectiveness.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. *The VS have access to CE that is reviewed annually and updated as necessary, but it is implemented only for some categories of the relevant personnel.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. *The VS have access to CE that is reviewed annually and updated as necessary, and it is implemented for all categories of the relevant personnel.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- DVS has made important investments in CE with oversight undertaken by its Reforms and Training Division within the Deputy Directorate for Compliance, Policy and Development.
- There was evidence of structured continuing education programmes with Universities, other institutions and NGOs, accessible to stakeholders/producers.
- The VS in collaboration with Universities has put in place positive measures to upgrade various cadres of staff through CE programmes

Findings:

The draft Veterinary Surgeons Regulations require CE points for renewal of licensure. The VS in collaboration with universities has put in place positive measures to advance various cadres of staff through CE programmes. The DVS' Reforms and Training Unit did provide evidence of CE offered to technical staff which forms part of an individual's PDPs; including immediate animal disease training needs as these emerge. Despite these CE efforts, the DVS did not have evidence of individual follow-up, outcomes of training programmes or post-course evaluation for CE.

The BUAN's Centre for In-service and Continuing Education (CICE) provides CE related to the veterinary domain under the headings of "Animal Production/Management and Feeding", "Agri-business", and "Information Technology and Research Methods". During the visit to the BUAN, a course was underway on "Fish Farming and Management". Access to CICE CE courses and calendars is online with all registration instructions included.

NGOs are actively implementing CE programmes with some giving certification at the end of the training. The Botswana Society for the Prevention of Cruelty to Animals (BSPCA) is offering in-service internships for veterinarians interested in advancing veterinary practice particularly small animal practice. The Society for the Protection of Animals Abroad (SPANA) is an NGO that is working very closely with the VS to offer well designed CE programmes. On average two CE training programmes are organised every year and these are mainly attended by veterinarians from the DVS. A one-day Donkey awareness campaign is held by SPANA in collaboration with the DVS as a way of creating awareness.

Strengths:

- Broad area of CE opportunities and collaboration available through government, educational institutions and NGOs.
- The BVSC is in the process to finalise regulations to provide guidance on the parameters for CE and continuing development programmes for professional and technical personnel.

Weaknesses:

- The regulatory framework for the BVSC to guide the implementation of continuous education is not yet finalised
- The DVS cannot provide evidence to support individual progress or to monitor outcomes of training efforts or post-course evaluation of internal CE.

Recommendations:

- The DVS should support the BVSC in finalising its legal and functional mandate to administer CE in the country and consider use of webinars to reach the broadest audience.
- The BVSC should enhance strategic partnerships with key stakeholders to sustainably support the development of CE in the country.
- DVS should document all pertinent parameters of CE efforts during the interim period until BSVC regulations are in place and management of CE by BVSC has started.

Evidence (as listed in Appendix 6):

T1, T27, T104, T123, T190, T191, P2, P5, S19a, S19b, S20

I-4 Technical independence *The capability of the VS to carry out their duties with autonomy and without undue commercial, financial, hierarchical and political influences that may affect technical decisions in a manner contrary to the provisions of the OIE (and of the WTO SPS Agreement where applicable).*	Levels of advancement
	1. The technical decisions made by the VS are generally not based on scientific considerations.
	2. The technical decisions consider scientific evidence, but are routinely modified based on non-scientific considerations.
	3. The technical decisions are based on scientific evidence but are subject to review and occasional modification based on non-scientific considerations.
	4. The technical decisions are made and generally implemented in accordance with scientific evidence and the country's OIE obligations (and with the country's WTO SPS Agreement obligations where applicable).
	5. The technical decisions are based on a high level of scientific evidence, which is both nationally relevant and internationally respected, and are not unduly changed to meet non-scientific considerations.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. The technical decisions are based only on scientific evidence and are not changed to meet non-scientific considerations.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The technical decisions are based only on scientific evidence and are not changed to meet non-scientific considerations.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Although additional veterinary field staff is needed, there are no detectable key staffing deficiencies which might hamper the delivery of the DVS mission.
- More professional staff have been added to DVO and SDVO field staff, many with advanced training.

Findings:

Botswana's DVS presently benefits from a qualified staff at both the central and field level with a strong and efficient chain of command despite the decentralisation of Ministry administrative infrastructure. The DVS is in a situation of having to strike a fine balance to maintain this chain of command within an administrative structure that may not always be conducive to all aspects of its technical mission. The staffing numbers for Veterinarians and VPPS has improved with

the former increasing. the latter decreasing. A robust oversight of VPP by Veterinarians was evident in field visits and when questioned, the all VPPs were aware of their authorized duties and the name of their Veterinary supervisor. The DVS carries out regular supervisory audits of its various district offices focusing on a wide range of VS responsibilities.

There is no evidence that Botswana has taken any technical decision for animal health based on non-scientific evidence or which would conflict with its OIE obligations. The PVS Team saw no indication of political pressure on the VS and government commitment was expressed at the highest levels to ensure that the DVS operates independently; as cited in EU reports.

DVS salaries were not identified as a problem by those interviewed during the mission though an increase would always be welcome. At present, DVS field Veterinarians can supplement their salaries by providing private veterinary services after work hours. There is a strict policy of not allowing the use of government resources to support these private endeavours by public employees and this will be codified in upcoming BVSC legislation. It was repeatedly mentioned that public medical doctors (like those at the Ministry of Health and Welfare) are allocated a financial supplementary allowance to make up for any potential losses in revenue they may experience by not being in the private sector and also as a retention incentive. In lieu of allowing public veterinary field staff to engage in private veterinary service, a similar scheme may be considered. This would also allow the private veterinary sector to grow in the future.

As is documented in the CC IV-5 on Transparency, the DVS is very much engaged with the OIE and has the benefit of having an OIE Sub-Regional Office on the DVS compound. The DVS regularly consults with OIE and its focal points provide updates as required. Initiatives in quality management, as described in the following CC, can also support transparent and sound technical decision-making.

Strengths:

- Effective technical chain of command with clear mandate of the VS; all associated documentation easily available (i.e. organisation charts, job descriptions, appointment procedures, evaluation and promotion process).
- No obvious major deficiencies in human, physical or financial resources for the VS structure and its operations.
- Well-developed human resources management system which comprises; hiring, performance evaluation, targeted training associated with evaluation, performance awards and other incentive.

Weaknesses:

- Insufficient specialized cadre of trained experts for the generation of high-level scientific evidence (e.g. risk analysis) to support technical decisions.
- Need for a system to document procedures and records of technical decisions based on high levels of scientific evidence, including, notifications under the WTO SPS Agreement.

Recommendations:

- As for CC II-2, the development of specific staff with expertise in generating quality scientific evidence and performing risk analyses to provide sound support to technical decisions.

- As DVS increases engagement with WTO SPS related issues, it should also maintain a method to document all technical decisions which is easily accessible.

Evidence (as listed in Appendix 6):

T33, T74, T75, T76, T77, T78, T79, T103, T108, T109, T110, T125, T126, T127, T128, T129, T130, T131, T132, T133, T134, T135, T136, T137, T138, T146, T147, T148/P3, P6, P7, P10, P13.

I-5 Planning, sustainability and management of policies and programmes *The capability of the VS leadership and organisation to develop, document and sustain strategic policies and programmes, and also to report on, review and evolve them, as appropriate over time.*	Levels of advancement
	1. Policies and programmes are insufficiently developed and documented. Substantial changes to the organisational structure and/or leadership of the VS frequently occur (e.g. annually) resulting in a lack of sustainability of policies and programmes.
	2. Some basic policy and programme development and documentation exists, with some reporting on implementation. Sustainability of policies and programmes is negatively impacted by changes in the political leadership or other changes affecting the structure and leadership of the VS.
	3. There is well developed and stable policy and programme documentation covering most relevant areas. Reports on programme implementation are available. Sustainability of policies and programmes is generally maintained during changes in the political leadership and/or changes to the structure and leadership of the VS.
	4. Policies or programmes are sustained, but also reviewed (using data collection and analysis) and updated appropriately over time through formal national strategic planning cycles to improve effectiveness and address emerging concerns. Planning cycles continue despite changes in the political leadership and/or changes to the structure and leadership of the VS.
	5. Effective policies and programmes are sustained over time and the structure and leadership of the VS is strong and stable. Modification to strategic and operational planning is based on a robust evaluation or audit process using evidence, to support the continual improvement of policies and programmes over time.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. Some changes occur in the organisational structure and/or leadership of the public sector of the VS following a change in the political leadership, but these have little or no negative effect on sustainability of policies.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. The organisational structure and leadership of the public sector of the VS are generally stable. Modifications are based on an

	evaluation process, with positive effect on the sustainability of policies.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Concerns regarding the structure and authority of the VS have not materialized; the VS avails itself of strong non-partisan political support and a relatively healthy budget.
- The chain of command of the DVS from the central to local levels is unencumbered by other organizational structures within the MoA.

Findings:

The 2008 separation of the DVS from the Department of Agricultural Production (DAP) has proceeded without major problems and the incorporation of slaughterhouse food safety functions since 2009 have been fully implemented. A 2017-2018 DVS Performance Status report captures VS successes as well as future goals (a 2019-2020 report is forthcoming). As a testament to VS stability and support, the present Director of the DVS has been at its helm for over 8 years despite changes in the political environment. During the mission, the Minister of Agriculture was changed with little concern expressed by the DVS staff regarding personnel or mission goals. Appointments and positions of central personnel and their qualifications over past years are documented and accessible and modification of the VS structure appears to be based on evaluated needs.

The BNVL continues to demonstrate excellent proficiency and has a number of planning and internal evaluation tools. Recent consideration of the restructuring of the BNVL under the NARDI and regulatory oversight of VMPs under the BOMRA could compromise DVS' authority if not closely scrutinized.

In 2011, the EU found that Botswana's existing animal identification system, Livestock Identification and Trace-back System (LITS), was inadequate to meet established requirements for export of beef and this important market was placed at risk. The DVS proposed a new traceability system, the BAITS, based on regulatory needs to maintain, and possibly open new, animal agricultural markets. Transition from the LITS to the BAITS (i.e. migration from bolus to ear tag-based system) was audited in 2015 and was deemed successful by the Food and Veterinary Office (FVO) in allowing beef exports to continue to the EU.

As part of the MoA's Strategic Plan 2017-2023, a national effort is set forth to improve food security through sustainable agricultural production and the DVS' Departmental Performance Improvement Committee (DPIC) produces a quarterly update report to monitor its contributions which are then compiled for an annual Performance Plan. The DVS regularly track its progress on: a) increasing agricultural production through vaccinations applied (FMD, anthrax, QE, and rabies), reduction of beef measles (*Cysticercus bovis*), level of implementation of the animal disease control plan, implementation of commodity based trade, promotion of bio-security and market compliance (residue, BSE and dairy herd sampling, the BAITS progress, animal traceability, and facilities oversight); b) improving service delivery through responsiveness to correspondence, payments of suppliers, payments of terminal benefits, reduction of vacancy rates, permit issuance, and attention to clinical cases); c) improving resource and service management by way of advancing research and development, promotion of product compliance, reduction of corruption in the workplace, improvement in staff competencies, and

improvement of staff welfare and wellness. As mentioned previously, the DVS regularly audits district offices and reports were easily available.

In keeping with a Ministry-wide initiative, the DVS is in the process of implementing a Government Reforms and QMS based on ISO 9001 certification. A series of SOPs has been drafted across a broad area of functions within the DVS; some are already operational and others soon to implemented. This QMS effort can provide the DVS, not only with a means to improve internal management efficiencies, but also support sound, science-based technical decisions.

Strengths:

- Effective technical chain of command with clear mandate of the VS; all associated documentation easily available (i.e. organisation charts, job descriptions, appointment procedures, evaluation and promotion process).
- The focus of the Botswana government to guard its access to the EU market for beef has resulted in improved investment and support of the DVS and is evident in the sophistication of this Department.

Weaknesses:

- As access to the EU and regional markets hinges on FMD freedom, this disease has consumed the full attention of the VS, to the possible detriment of other diseases.
- Restructuring of the BNVL under the NARDI and oversight of VMP under the BOMRA may hamper the DVS from fulfilling its competent authority as per its OIE obligations.
- Only initial evidence is available of evaluation of the DVS medium to long term programmes; QMS not fully implemented across VS.

Recommendations:

- It would be to the advantage of the DVS to evaluate its medium to long term animal disease programmes with an eye to broadening the scope of species and priority diseases.
- Careful consideration should be given to the autonomy of the NARDI and the BOMRA outside of the DVS to ensure this does not compromise the VS ability to fulfil its mission and OIE obligations as competent authority.
- Programme evaluation/auditing will require using compiled scientific evidence to support continual improvement of policies and programmes led by the DVS.

Evidence (as listed in Appendix 6):

T6, T7, T10, T11, T12, T27, T37, T39, T41, T50, T51, T52, T53, T54, T55, T56, T57, T58, T59, T60, T61, T62, T63, T64, T65, T66, T67, T68, T69, T70, T74, T75, T76, T77, T79, T95, T103, T108, T109, T110, T146, T147, T148/P3, P6, P7, P10, P13.

I-6 Coordination capability of the Veterinary Services **A. Internal coordination (chain of command)** *The capability of the Veterinary Authority to coordinate their mandated activities with a clear chain of command, from the central level (the Chief Veterinary Officer or equivalent), to the field level of the VS, as relevant to the OIE Codes (e.g. surveillance, disease control, food safety, emergency preparedness and response).*	**Levels of advancement**
	1. There is no formal internal coordination and the chain of command is not clear.
	2. There are internal coordination mechanisms for some activities but the chain of command is not clear.
	3. There are internal coordination mechanisms and a clear and effective chain of command for some activities, such as for export certification, border control and/or emergency response.
	4. There are formal, documented internal coordination mechanisms and a clear and effective chain of command for most activities, including surveillance (and reporting) and disease control programmes.
	5. There are formal and fully documented internal coordination mechanisms and a clear and effective chain of command for all activities, and these are periodically reviewed/audited and updated to re-define roles and optimise efficiency as necessary.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	4. There are internal coordination mechanisms and a clear and effective chain of command at the national level for most activities.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. There are internal coordination mechanisms and a clear and effective chain of command for all activities and these are periodically reviewed/audited and updated.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- There is no evidence of any political pressure limiting the DVS in fulfilling its authority or abiding by its OIE obligations.
- An internal Quality Assurance (QA) auditing system is being instituted but is yet to become fully functional.

Findings:

Botswana's DVS continues to benefit from a strong technical chain of command from central government to local extension levels with clear evidence of information flows in both directions. A variety of excellent documentation exists describing the administrative levels of the VS at

the central, field and local levels with clear definitions of roles and responsibilities. Human resource management is also addressed in the 2017-2018 DVS Performance Status report. Interviews with central and field level professionals were indicative of a well-educated, qualified staff with clear knowledge of their mission and authority. The DVS mandate is technically uninterrupted from central to local levels and is supported by existing legislative foundations presently under revision and with consideration of OIE VSLP recommendations. All DVO and SDVO Offices visited had specific records of central level DVS notifications for both technical livestock issues as well as administrative advisement. Despite this convincing chain of command, there was a dearth of documentation describing formal internal coordination mechanisms within the veterinary domain, supported by review and update reports.

The DAC, a Ministry of Agriculture administrative field coordination position, no longer appears to directly restrict the DVS in completing its technical activities as had been intimated in the 2011 PVS report. However, as noted previously, the DVS field force must operate in the Ministry's administrative DAC and this can affect access to resources which are essential in the VS ability to successfully deliver its mission. As an example, a DVO expressed concern about lack of prioritization of vehicles for the DVS by their corresponding DAC. Yet it should also be noted, that there was also a DVO interviewed who was very appreciative for the support of the DAC. These administrative constraints should be reviewed to ensure that the VS has every means of Ministry support in carrying out its technical mandate in the field.

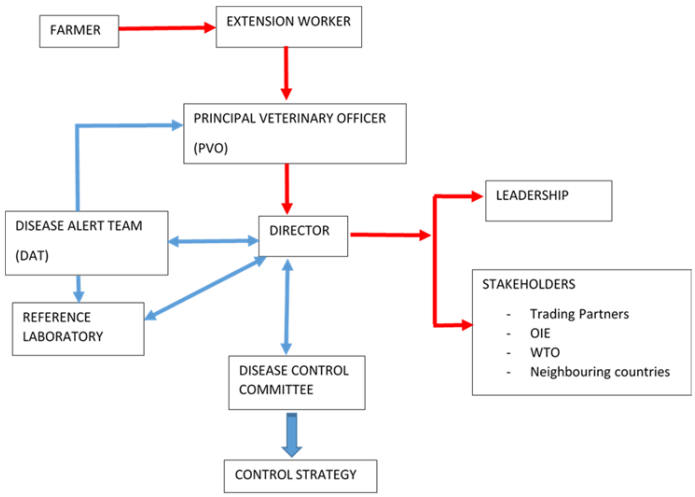

Figure 8. DVS Field Services - Disease Reporting.
Source: DVS

Multiple examples of clear and effective chain of command for national disease reporting and surveillance are represented in the evidence provided by the DVS. The use of the DRF are the first point of capturing information in a series of steps which flow from the producer level to the Area Extension Office through the DVO/SDVO to appropriate staffs at the central level including, if necessary, the Director of the DVS. Available disease contingency plans also address chain of command notification.

The DVS chain of command is most efficient and unquestioned in all aspects of controlling FMD in Botswana as is evident in its FMD Coordinators Report and national compilation. However, a need exists to exercise this well-developed authority for other diseases and animal health issues of national interest. In this regard, simulation exercises for other high-risk

transboundary animal diseases (not FMD) would be useful in possibly identifying internal infrastructural deficiencies or drawing upon yet untapped internal capabilities. Although internal audits are undertaken and an Annual Performance Plan is generated by the DVS' DPIC, the QMS effort underway in the DVS may prove more beneficial in developing SOPs to support auditing/updating processes for the chain of command.

As noted above, recent consideration of the restructuring of the BNVL under the NARDI and regulatory oversight of VMPs under the BOMRA could compromise DVS' chain of command in its existing legal authority if not closely monitored.

Strengths:

- Well organized technical chain of command with internal administrative levels of the VS well documented and easily available (i.e. organisation charts, job descriptions, appointment procedures, evaluation and promotion process).
- Noted deficiencies in human, physical and financial resources, as yet, do not impact negatively on the performance of the VS
- No serious deficiencies in human, physical or financial resources for the VS structure and its operations.
- Proven success in the chain of command's effective control of FMD; garnering access to important international beef markets.

Weaknesses:

- The VS finds itself operating in an administrative field structure which may not always be conducive to effectively delivering its technical mission.
- Restructuring of the BNVL under NARDI and oversight of VMP under BOMRA may hamper the DVS from fulfilling its competent authority as per its OIE obligations.
- Although there is a strong and clear chain of command, there was little evidence of fully documented internal coordination mechanisms.
- No evidence of periodic review/audit and update to re-define the DVS roles and optimise efficiency as necessary.

Recommendations:

- Botswana should ensure that the DVS technical mandate is not encumbered by administrative infrastructure or by the creation of new government entities.
- Develop documentation to support internal coordination mechanisms and a means to audit and update these systems.
- Identify a priority animal disease risk (not FMD) and organize a simulation exercise where the internal chain of command can be analysed; record findings, recommendations and actions taken with regard to recommendations.

Evidence (as listed in Appendix 6):

T6, T7, T11, T41, T71, T73, T74, T75, T76, T77, T78, T79, T82, T85, T86, T87, T108, T109, T110, T139, T140, T146, T147, T148, T153, T154, T155, T156, T157, T165, T166/P3, P6, P7, P10, P13.

B. External coordination (including the One Health approach) *The capability of the Veterinary Authority to coordinate its resources and activities at all levels with other government authorities with responsibilities within the veterinary domain, in order to implement all national activities relevant to the OIE Codes, especially those not under the direct line authority of the Chief Veterinary Officer (or equivalent).* *Relevant authorities include other ministries and Competent Authorities, such as government partners in public health (e.g. zoonoses, food safety, drug regulation and anti-microbial resistance), environment (e.g. wildlife health), customs and border police (e.g. border security), defence/intelligence (e.g. bio-threats), or municipalities/local councils (e.g. local slaughterhouses, dog control).*	Levels of advancement
	1. There is no external coordination with other government authorities.
	2. There are informal external coordination mechanisms for some activities at national level, but the procedures are not clear and/or external coordination occurs irregularly.
	3. There are formal external coordination mechanisms with clearly described procedures or agreements (e.g. Memoranda of Understanding) for some activities and/or sectors at the national level.
	4. There are formal external coordination mechanisms with clearly described procedures or agreements at the national level for most activities (such as for One Health), and these are uniformly implemented throughout the country, including at state/provincial level.
	5. There are external coordination mechanisms for all activities, from national to field, and these are periodically reviewed and updated to re-clarify roles and optimise efficiency.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. There are formal external coordination mechanisms with clearly described procedures or agreements at the national level for most activities, and these are uniformly implemented throughout the country.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. There are national external coordination mechanisms for all activities and these are periodically reviewed and updated.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The DVS has more interaction with the DWNP and MoHW; interacting regularly through various meetings like the DVS-sponsored Disease Control Committee (DCC).

Findings:

The MoA has developed an overarching "Communication Strategy 2018-2023" where it identifies the mission/vision for DVS to "… provide quality service to livestock farmers and other stakeholders through effective extension service" by contributing "… to the achievement of food security, poverty alleviation and socio economic growth in partnership with other stakeholders". This MoA strategy identifies Strategic Partners as "Media, the Ministry of Health and Wellness, Ministry of Environment, Natural Resource Conservation and Tourism; Ministry of Local Government and Rural Development; Ministry of Finance and Economic Development; Ministry of Basic Education; Ministry of Tertiary Education, Science and Technology; parastatals and research institutions".

As a result of a 2018 WHO Joint External Coordination mission, the MoHW led an effort to establish a Food Safety Emergency Preparedness and Response Committee which includes the DVS who actively participates in scheduled meetings. Past emerging zoonotic disease needs led to the creation of a National Technical Committee for highly pathogenic avian influenza (HPAI) which included representation from the DVS, the MoHW and the Wildlife Department.

The DVS appears to not only have solid interaction, but also great respect from other government entities with allied interests. Several government agencies are involved in zoonotic disease-related issues (e.g. rabies) on an ad-hoc basis including the MoHW's Public Health and Food Safety Department, the Ministry of Environment, Natural Resources Conservation and Tourism (Wildlife Department). However, there is no formal policy, strategy or plan for organizing multidisciplinary teams for responding to zoonotic outbreaks or formal channels between the public health and animal sectors to share information or work together.

The MoHW and the DWNP are routinely invited to pertinent DVS meetings at the central and field level. Regular meetings of the DVS-sponsored Disease Control Committee (DCC) have both MoHW and the DWNP invited and attending. The issue of elephant destruction of FMD control fencing and camp sites has required increased interaction with DWNP in the Ministry of Environment Wildlife and Tourism.

In addition, at the field level, there was excellent interaction with Police and Customs authorities at all internal gates and international border ports visited. There is also evidence of presentations made to the police during a consultative meeting on stock theft and animal traceability. DVOs, SDVOs and Extension Area Offices all make efforts at outreach to key government counterparts though various means.

The DVS has compiled a list of specific contacts for food safety and zoonotic/emerging diseases within the MoHW as well as for wildlife with the DWNP. In late 2017, HPAI was reported from Zimbabwe and South Africa and DVS organized a series of workshops with the Botswana Poultry Association for producers and key stakeholders (i.e. allied government agencies) to draw awareness to this disease threat.

Multiple examples of communication between public health and veterinary authorities are available. Many animal health cooperative needs of DVS are undertaken on an ad-hoc basis

with most other government entities, precluding the establishment for permanent agreements. The evolving DVS efforts in QA could be applied here to ensure maximum benefit from cooperative needs and interactions.

Strengths:

- Regular interaction with key government counterparts with excellent relations observable in the field.
- Veterinary public health and wildlife issues within DVS domain are routinely addressed with the corresponding government agencies.

Weaknesses:

- No evidence of a priority list of cooperative needs of DVS from other government authorities with responsibilities within the veterinary domain.
- No available review/audit and updating of efficacy/efficiency of existing external collaborative efforts.
- With the exception of on-going FMD activities, no evidence of simulation exercises to assess collaborative interactions.

Recommendations:

- DVS should generate a priority list of needs it may have in animal health in which other government entities could be of assistance and consider formalizing cooperation through agreements (e.g. memoranda of collaboration) with key government counterparts.
- Institute a mechanism for review/audit and updating of existing external collaborative efforts to measure efficacy/efficiency.
- Identify a priority animal disease risk (not FMD) and organize a simulation exercise with external counterparts; record findings, recommendations and actions taken to recommendations made.

Evidence (as listed in Appendix 6):

T5, T9, T32, T33, T89, T93, T94, T101, T111, T112, T124/ P3, P6, P7, P10, P13.

I-7 Physical resources and capital investment *The access of the VS to functional and well-kept physical resources including buildings, transportation, information technology (e.g. internet access), cold chain, and other necessary equipment or structures. This includes whether major capital investment is available.*	Levels of advancement
	1. The VS have no or unsuitable physical resources at almost all levels and maintenance of existing infrastructure is poor or non-existent.
	2. The VS have suitable physical resources at national (central) level and at some state/provincial levels, but maintenance, as well as replacement of obsolete items, occurs rarely.
	3. The VS have suitable physical resources at national, state/provincial and some local levels but maintenance, as well as replacement of obsolete items, occurs irregularly.
	4. The VS have suitable physical resources at all levels and these are regularly maintained. Major capital investments occur occasionally to improve the VS operational infrastructure over time.
	5. The VS have suitable physical resources at all levels (national, state/provincial and local levels) and these are regularly maintained and updated as more advanced items become available. Major capital investments occur regularly to improve the VS operational capability and infrastructure.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	For "Physical Resources": *3. The VS have suitable physical resources at national, regional and some local levels and maintenance and replacement of obsolete items occurs only occasionally.* For "Capital Investment": *3. The VS regularly secures funding for maintenance and improvements of operational infrastructure, through allocations from the national budget or from other sources, but there are constraints on the use of these allocations.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	For "Physical Resources": *4. The VS have suitable physical resources at all levels and these are regularly maintained.*

	For “Capital Investment”: 4. *The VS routinely secures adequate funding for the necessary maintenance and improvement in operational infrastructure.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- An administrative tool has been developed to identify, list and incorporate assets into budgets (SWIMS).
- Inter-departmental carpools have been formed at district level.
- Numbers of available vehicles has been reduced from 440 to 304.

Findings:

The DVS infrastructure, in terms of offices and assets, are in good to excellent order and regularly maintained. All offices visited were functional and in good state. Offices at District and Sub-district level are often housed in District Administration Centres where some facilities can also be shared. Personal computers (PCs) are available at all District offices, but officers must share the PCs; all LACs have PCs to access the BAITS.

At central level a dedicated division oversees infrastructure maintenance including fences, quarantine camps, and staff housing in rural areas. Weekly reports on maintenance activities and needs are sent to HQ, by the Districts for all assets; particularly for fences.

Vehicles at the District level are now pooled under the DAC with other departments, so overall number of vehicles for DVS have been reduced but access to vehicles from other departments and Ministries, e.g. Wildlife, is possible, as priority for transport allocation is given to fence patrols and repair. Of the 304 registered vehicles, 116 are currently not in operation and await repair.

The Ministry has observed deficiencies in inventorying and evaluating its assets, particularly those that are redundant such as some of the quarantine camps. Better management could help to rehabilitate these assets.

To identify, list and incorporate assets into budgets, the government has introduced a new management system, “Supply, Warehouse, Inventory Management System” (SWIMS) to better access and manage assets. Government is still at the stage of data collection of the DVS assets; therefore, the system has not yet been used. The rationale for implementing this management system is to address past complaints of Government assets lying idle (e.g. quarantine station in Zone 3b, which is now free, therefore obsolete).

New assets are regularly purchased, e.g., vehicles, under the Development Plan funding, some 80 vehicles were purchased between 2014 and 2018. Costs for new investments and running of vehicles are shown in Table 5.

Table 5: New investments in vehicles and their maintenance of pool

Item	Cost in Pula
Cost vehicles purchased under projects (2018/2019)	8,578,981.86
Replacement vehicles (2018/2019) (	6,000,000.00
Vehicles hire (2018/2019)	1,000,000.00
Fuel cost (2018/2019)	8,500,000.00
Total	**24,078,981.86**

Major investments were made in 2018 to construct two new satellite laboratories in Jwaneng and Maun to increase the BNVL's diagnostic capacity and outreach; the International Atomic Energy Agency (IAEA) has provided financial support to purchase important laboratory equipment.

Strengths:

- A good monitoring system of the physical infrastructure is established, capital investment is made regularly, particularly to guarantee fence maintenance.

Weaknesses:

- Obsolete infrastructure could be repurposed or declared surplus prior to full implementation of the SWIMS.
- Challenge of daily destruction of fences by elephants places a financial and human resource burden on infrastructure and requires ever more investment in stronger and alternative fencing material.

Recommendations:

- Push for the SWIMS to be rolled out in the DVS quickly to reduce recurrent funding for idle assets and consider identifying alternative usage to facilitate financial recuperation.

Evidence (as listed in Appendix 6):

S34, S13, S14, S15, S16, S18

I-8 Operational funding	Levels of advancement
The ability of the VS to access operational resources adequate for their planned and continued activities (e.g. salaries, contracts, fuel, vaccines, diagnostic reagents, personal protective equipment, per diem or allowances for field work).	1. Operational funding for the VS is neither stable nor clearly defined and depends on irregular allocation of resources.
	2. Operational funding for the VS is clearly defined and regular, but is inadequate for their required baseline operations (e.g. basic disease *surveillance*, disease control and/or veterinary public health).
	3. Operational funding for the VS is clearly defined and regular, and is adequate for their baseline operations, but there is no provision for new or expanded operations.
	4. Operational funding for new or expanded operations is on a case-by-case basis, and not always based on *risk analysis* and/or benefit-cost analysis.
	5. Operational funding for all aspects of VS activities is generally adequate; all funding, including for new or expanded operations, is provided via a transparent process that allows for technical independence, based on *risk analysis* and/or cost-benefit analysis.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. Funding for new or expanded operations is on a case-by-case basis, not always based on risk analysis and/or cost benefit analysis.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. Funding for new or expanded operations is on a case-by-case basis, not always based on risk analysis and/or cost benefit analysis.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- A special FMD control unit was set up in Maun in 2018 with a dedicated budget in response to a request by the communities in Ngamiland; this unit reports directly to the Director of DVS.

Findings:

The Government of Botswana provides a regular, sustainable and sizeable budget to the VS.

A proposed budget is requested by DVS and submitted to the Ministry of Finance (MoF) via the MoA. The ceiling of allocated funds is set by the MoF. The operational budget is structured into line items ("votes") and the expenditures run during the financial year from April through March of the following year.

In addition to the operational budget, a separate budget is made available under the Development Plan (which covers a period of 5-6 years with a fixed funding limit), mainly directed to projects such as FMD and beef measles control, electrification of veterinary gates and the BAITS.

Certain activities generate income and the revenue collected is returned to Government coffers but is not returned to the DVS; the exception being ear tag sales which operates as a revolving fund. Government policy does not presently allow for user-fee cost recovery, therefore the 2010 PVS recommendation to use cost recovery to alleviate strains on the budget was not an option, and the stated weakness that budget comes solely from national budget, remains.

The mission found it very difficult to substantiate the DVS's claim that they don't receive sufficient operational funding to operate effectively, particularly when it comes to fencing and its maintenance. Veterinary cordon fence control has become a major undertaking during the past years in view of increasing ecological, environmental and wildlife challenges. Many examples were provided where necessary activities could not be carried out due to lack of funds.

Table 6 below was generated upon the request of the mission and is not normally included in the accounts as presented in the GABS[2]. It shows the current budget over the period 2016 to 2020 and the decline of received funds over this period from 95% to 82%.

Table 6: DVS budget for 2016 – 2020 period

Year	Requested (BWP[3])	Received (BWP)	% received
2016/17	379.669.960	363.149.760	95%
2017/18	453.561.174	388.068.530	86%
2018/19	482.381.778	430.793.520	87%
2019/20	509.428.093	417.120.970	82%

Note: Budget in 2010 was 314 Mill BWP at an exchange rate of 8.5 BWP to the Euro

The introduction of software (other than the GABS) to carry out specific analyses of individual sector demands on the budget to demonstrate claimed shortfalls, was discussed. Such analyses could be used to leverage support with upper management and political leadership

[2] Government accounting system
[3] Exchange rate May 2019: 12 BWP = 1 Euro

by providing clear evidence of specific needs, in light of available funds and shortfalls; demonstrating increasing technical demands in the face of declining trends in funding.

Strengths:

- Funding for operations are drawn from two different budgets allowing for the implementation of all basic functions and authorized programmes.
- After the ceiling to the current budget has been provided by the MoF, the DVS can request additional funds for which they have to provide detailed justifications. They usually receive some of these additionally requested funds.
- There is a certain degree of flexibility in the transfer of allocated funds between line items of the approved budget.

  The Development Plan budget is fixed for a period of 5-6 Years (currently in the 11th Plan for 2017-2023) with annual funds set at 40 million BWP, hence it is a constant amount allowing for prior planning and flexibility in filling budget shortfalls of the current budget or used for specific projects or emerging issues.

Weaknesses:

- Cost-efficiency analysis can only be done in the overall GABS, but not at the DVS level.
- Very difficult to demonstrate where insufficient funds have been allocated when using the GABS accounting system.
- As funds are made available for similar actions, such as FMD control, in the current budget and Development Plan budget, shortfalls are even less obvious.

Recommendations:

- The management of the budget is done in the Government system GABS which does not allow to clearly demonstrate the specific shortfalls of the DVS not met by the recurrent budget. It is recommended that MoA acquire professional external assistance in developing software management tools to analyse the specific DVS budget to highlight any deficits.
- Increase efficiency through outsourcing of certain tasks, e.g. vaccination and FMD post vaccination monitoring to private VPPs.

Evidence (as listed in Appendix 6):

SC23, S35, S26, S36, S37, S38, T32.

I-9 Emergency funding	Levels of advancement
The capability of the VS to access extraordinary financial resources in order to respond to emergency situations or newly emerging issues, as measured by the ease with which contingency and related funding (i.e. arrangements for compensation of producers in emergency situations) can be made rapidly available when required.	1. No emergency funding arrangements exist.
	2. Emergency funding arrangements with limited resources have been established, but these are inadequate for likely emergency situations (including newly emerging issues).
	3. Emergency funding arrangements with limited resources have been established; additional resources may be approved but approval is through a political process.
	4. Emergency funding arrangements with adequate resources have been established; their provision must be agreed through a non-political process on a case-by-case basis.
	5. Emergency funding arrangements with adequate resources have been established and their rules of operation documented and agreed with interested parties.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. Contingency and compensatory funding arrangements with limited resources have been established; additional resources for emergencies may be approved but approval is through a political process.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	3. *Contingency and compensatory funding arrangements with limited resources have been established; additional resources for emergencies may be approved but approval is through a political process.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Two sources of emergency funding always available.

Findings:

A specific “emergency” fund of 10 Mill BWP is available for emergencies such as FMD outbreaks under the National Development Plan (currently NDP 11 up to 2023). This includes compensation to farmers.

In addition, under the recurrent budget in case of emergencies, certain line-items can be reallocated in support of emergency response activities, particularly in cases of an FMD outbreak.

Over and above these sources, the Director of the DVS can submit a request for additional funding to the Cabinet in the event of exceptional circumstances. This was the case in 2018 where funding was increased to 15 million for FMD. Concerns cited in the 2010 PVS Mission and below, regarding emergency funding being solely government sourced, was not necessarily seen as a weakness by the DVS. In the future, if government financial support to emergency funds becomes limited, external sources (i.e. producer groups, regional organizations and donors) may need to be considered.

Strengths:

- A budget line of 10 million Pula is permanently available. For additional funds an extraordinary request can be made to the Cabinet, based on an emergency need declared by the Director of the DVS.
- A recurrent budget line item specifically for compensation payments due to animal disease losses not declared emergencies.
- Emergency funding can be rapidly assessed and allocated.
- The OIE VLSP legislative review workplan has language to "… provide the DVS / Director with direct access to an emergency fund in the event of a declared sanitary emergency."

Weaknesses:

- Emergency funding is entirely government based.

Recommendations:

- Embed the requirement for annual budget provision of emergency funding in revised Animal Health legislation.
- Encourage Farmers Union/associations to also build their own emergency funds as a fall-back mechanism; particularly in areas prone to recurrent FMD outbreaks.
- Given the new threats in the region such as new FMD strains, PPR and CBPP outbreaks, an increase of the emergency fund under the National Development Plan should be considered.

Evidence (as listed in Appendix 6):

S39, S20, T198.

III.2 Fundamental component II: Technical authority and capability

This component of the evaluation concerns the authority and capability of the VS to develop and apply sanitary measures and science-based procedures supporting those measures. It comprises eighteen Critical Competencies.

For all sections of this chapter, the Critical Competency includes collaboration with relevant authorities, including other ministries and Competent Authorities, national agencies and decentralised institutions that share authority or have mutual interest in relevant areas.

Critical Competencies:

Terrestrial Code References:

Chapter 1.4. on Animal health surveillance.

Chapter 1.5. on Surveillance for arthropod vectors of animal diseases.

Chapter 2.1. on Import risk analysis.

Chapter 6.11. on Risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in animals

Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation/General Organisation/Procedures and standards.

Point 1 of Article 3.2.4. on Evaluation criteria for quality systems.

Point 3 of Article 3.2.6. on Evaluation criteria for material resources: Technical.

Points 1 and 2 of Article 3.2.7. on Legislation and functional capabilities: Animal health, animal welfare and veterinary public health/Export/import inspection.

Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status/Animal health control/National animal disease reporting systems.

Points 1-5 of Article 3.2.9. on Veterinary public health controls: Food hygiene/Zoonoses/Chemical residue testing programmes/Veterinary medicines/Integration between animal health controls and veterinary public health.

Sub-point f) of Point 4 of Article 3.2.10. on Veterinary Services administration: Formal linkages with sources of independent scientific expertise.

Points 2, 5, 7 and 8 of Article 3.2.14. on National information on human resources/Laboratories engaged in diagnosis/Veterinary legislation, regulations and functional capabilities/Animal health, animal welfare and veterinary public health controls.

Article 3.4.12. on Human food production chain.

Chapter 4.1. on General principles on identification and traceability of live animals.

Chapter 4.2. on Design and implementation of identification systems to achieve animal traceability.

Chapter 4.12. on Disposal of dead animals.

Chapter 6.3. on Control of biological hazards of animal health and public health importance through ante- and post-mortem meat inspection.

Chapter 6.4. on Control of hazards of animal health and public health importance in animal feed.

Chapters 6.7. to 6.11. on Antimicrobial resistance.

Chapter 7.1. on Introduction to the recommendations for animal welfare.

Chapter 7.2. on Transport of animals by sea.

Chapter 7.3. on Transport of animals by land.

Chapter 7.4. on Transport of animals by air.

Chapter 7.5. on Slaughter of animals.

Chapter 7.6. on Killing of animals for disease control purposes.

References to Codex Alimentarius Commission standards:

Code of Hygienic practice for meat (CAC/RCP 58-2005).

Code of Hygienic practice for milk and milk products (CAC/RCP/ 57-2004).

General Principles of Food Hygiene (CAC/RCP 1-1969; amended 1999. Revisions 1997 and 2003).

Guidelines for Risk Analysis of Foodborne Antimicrobial Resistance (CAC/GL 77-2011).

Code of Practice to Minimize and Contain Antimicrobial Resistance (CAC/RCP 61-2005).

II-1 Veterinary laboratory diagnosis *The authority and capability of the VS to effectively and efficiently use accurate laboratory diagnosis to support their animal health and veterinary public activities.* **A. Access to veterinary laboratory diagnosis** *The authority and capability of the VS to access laboratory diagnosis in order to identify and report pathogenic and other hazardous agents that can adversely affect animals and animal products, including those relevant to public health.*	**Levels of advancement**
	1. Disease diagnosis is almost always conducted by clinical means only, with no access to or little use of a *laboratory* to obtain a correct diagnosis.
	2. For major animal *diseases* and *zoonoses* of national importance, and for the food safety of animal products, the VS have access to and use a *laboratory* to obtain a correct diagnosis.
	3. For animal *diseases* and *zoonoses* present in the country, and for animal feed safety and veterinary AMR surveillance, the VS have access to and use a *laboratory* to obtain a correct diagnosis.
	4. For animal *diseases* of zoonotic or economic importance not present in the country, but that exist in the region and/or that could enter the country, the VS have access to and use a *laboratory* to obtain a correct diagnosis.
	5. In the case of new and *emerging diseases* in the region or worldwide, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE or FAO Reference Laboratory) to obtain a correct diagnosis.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	5. *In the case of new and emerging diseases in the region or world, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE Reference Laboratory) to obtain a correct diagnosis.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. *In the case of new and emerging diseases in the region or world, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE Reference Laboratory) to obtain a correct diagnosis.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Two satellite laboratories have been set up in Jwaneng (to start in 2019) and Maun (operational in 2018).
- Developed a Strategic Plan for 2016 to 2021 with clearly defined development goals.
- Diagnostic turnaround times have improved as compared to the 2010 PVS report.

Findings:

The BNVL is the main and only diagnostic laboratory to provide the VS with diagnostic services free of charge and it represents one of the five divisions of DVS. For FMD virus isolation diagnostics and investigation services the BVI carries out all required testing, while BNVL carries out routine serological surveillance testing. Both laboratories have a mandate as OIE Reference Laboratories; the BVI for FMD and the BNVL for CBPP. The BNVL is also the Reference Laboratory for HPAI in the SADC region. The Reference laboratories generate epidemiological information for the DVS and assist other countries in line with the OIE mandate for Reference laboratories.

The diagnostic services are utilised by the DVS throughout the country for samples from passive surveillance, clinical cases, disease surveillance programs, FMD control (surveillance and PVM) and for food safety; particularly the control of export abattoirs for their compliance with EU regulations.

The BNVL has a well-established network of collaborating international laboratories and participates in a great number of international and regional proficiency tests that are carried out through an established 5-year plan under which annual plans are developed, e.g. for the period of September 2018 to August 2019 a total of 55 PTs are planned (13 in Food hygiene, 4 in diary hygiene, 16 on residue testing, 6 in bacteriology, 1 in biochemistry, 6 in molecular biology, 1 in parasitology, 3 in serology, 2 in virology and 3 in virology with BVI). In the event of an emerging disease, the laboratory is well equipped and well connected to deal with such circumstances.

While the BNVL was already rated at level 5, it has constantly tried to increase its competence as well as diagnostic services and skills and has responded to the recommendations of the previous PVS mission in successfully acquiring capital investment from MoA to build two strategically located satellite laboratories.

Training is provided regularly to the BNVL staff, often with the support from international partners such as the IAEA and the Food and Agriculture Organisation (FAO). Despite a very conducive working environment, the BNVL also suffers from loss of well-trained staff to other institutions in the parastatal sector.

There is an imminent merger of the BNVL with the Department of Agriculture Research and the National Food Technology Research Centre to form the National Agriculture Research and Development Institute (NARDI), a new parastatal. While this move offers certain potential advantages such as higher salaries and possibilities for cost recovery, the mandate of BNVL may detrimentally change with priorities shifted to the research sector. The future of the two other sectors of diagnostics and food safety is yet undetermined as is the authority over the chain of command for the Director of the DVS over the BNVL.

Strengths:

- The BNVL has increased its accessibility by setting up two satellite laboratories.
- It has increased its international cooperation through proficiency testing and collaborative projects such as the CBPP Scientific Network with Namibia, Zambia, Angola.
- The BNVL has a mandate as an OIE Reference laboratory for CBPP since 2012.

- The BNVL benefits from international collaboration as a member in the IAEA “VETLAB” network.

Weaknesses:

- The loss of trained and qualified personnel due to financial enticement by other entities presents a challenge for the BNVL.

Recommendations:

- BNVL, with its mandate for food hygiene and provision of diagnostic services, should be specifically mentioned as the National Reference Laboratory in the new Animal health legislation, particularly in view of the merger into the NARDI.
- The merger into the NARDI should ensure that the BNVL maintains the mandate to carry out its core functions in diagnostic and regulatory services.
- The current chain of command should be respected with the Director of the DVS having authority over the BNVL diagnostic and regulatory services.
- A sufficient budget should be allocated to the BNVL to competently complete its mandate for diagnostic services; even if it is under the NARDI.

Evidence (as listed in Appendix 6):

T12, T16, T19, T25, T29, S41

B. Suitability of the national laboratory system *The sustainability, effectiveness, safety and efficiency of the national (public and private) laboratory system (or network), including infrastructure, equipment, maintenance, consumables, personnel and sample throughput, to service the needs of the VS.*	Levels of advancement
	1. The national laboratory system does not meet the needs of the VS.
	2. The national laboratory system partially meets the needs of the VS, but it is not sustainable, as the management and maintenance of resources and infrastructure is ineffective and/or inefficient. Laboratory biosafety and *biosecurity* measures do not exist or are very limited.
	3. The national laboratory system generally meets the needs of the VS. Resources and organisation are managed effectively and efficiently, but funding is insufficient for a sustainable system, and limits throughput. Some laboratory biosafety and *biosecurity* measures are in place.
	4. The national laboratory system generally meets the needs of the VS, including for laboratory biosafety and *biosecurity*. There is sufficient sample throughput across the range of laboratory testing requirements. Occasionally, it is limited by delayed investment in certain aspects (e.g. personnel, maintenance or consumables).
	5. The national laboratory system meets all the needs of the VS, has appropriate levels of laboratory biosafety and *biosecurity*, and is efficient and sustainable with a good throughput of samples. The laboratory system is regularly reviewed, audited and updated as necessary.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	5. *In the case of new and emerging diseases in the region or world, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE Reference Laboratory) to obtain a correct diagnosis.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. *In the case of new and emerging diseases in the region or world, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE Reference Laboratory) to obtain a correct diagnosis.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Since December 2018 there is a private accredited food hygiene laboratory that does testing of abattoirs other than those operated by the BMC.
- The Information System Supporting Veterinary African Laboratories was introduced as the laboratory information management system and is linked to the Epidemiology Unit.

Findings:

The BNVL and the BVI play a very important role for disease control in Botswana, especially for FMD to guarantee that the VS meets EU requirements to access its market. For this, the BNVL also controls food hygiene and residue testing for the export abattoir in Lobatse. It also carries out tests for dairy hygiene for the Department of Animal Production.

The BVI is instrumental in providing the region with appropriate, AU-PANVAC approved FMD vaccines, in particular SAT vaccines, but also PPR vaccines that have already been incorporated into vaccine banks (EU and OIE). Currently a new thermostable PPR vaccine is being validated by AU-PANVAC. The BVI's contribution to research and epidemiology of FMD in Botswana and the SADC region is of great value to the VS and promotes future international collaboration.

The BVI, with support from Merial (now Boehringer Ingelheim), has made continuous improvements to its infrastructure and production units with the creation of a new laboratory to be completed in 2019, which will be compliant with EU good management practices thus allowing the possible export of vaccines outside the continent.

The BNVL comprises three sections: research, food safety and diagnostics.

The food safety section of the BNVL has 13 accredited tests used by the BMC and other clients based on demand; the BNVL carries out monthly validation tests for meat hygiene while the BMC undertakes weekly testing (see CC II-12B).

The BNVL is the only national laboratory that tests for quality and safety of dairy products, including basic tests for somatic cell count, bacteriology, adulteration and antimicrobials. Four tests for milk hygiene have been internationally accredited. Dairies use the BNVL's test results to pay farmers based on milk quality (throughput of samples collected by the DAP averages between 70 to 80 samples per month). In the event of positive findings, the BNVL informs the DAP who then carry out investigations at the farm level.

The BNVL diagnostic sections include parasitology, histopathology (including BSE testing), FMD, PCR, virology and bacteriology units and averages a throughput of 50,000 samples per year (reaching up to 65.000 samples).

The BNVL has a published list of 127 tests of which 47 are accredited by SADCAS, with the documented turnaround time and capacity of tests per day indicated[4].

The FMD unit of the BNVL is faced with the most challenges due to the high sample submission volume (composed principally of routine surveillance samples tested for FMD NSP), PVM samples using LP-ELISA and, depending on the situation in the field, additional samples from targeted surveillance (for buffalo incursions or cattle from the red zone entering into a green

[4] https://www.sadcas.org/botswana-national-veterinary-laboratory

zone). Thus, baseline samples of approximately 14,000 from routine 6-month annual surveillance can easily supersede the capacity and budget of the BNVL.

The BVI assists in doing the 1128 PVM samples. They also receive a high demand for laboratory reagents from other countries resulting in an inability to always meet the biologics demand from the BNVL. The BVI has indicated an interest in training other SADC laboratories to do PVM testing and is proposing regional proficiency testing exercises. The BVI also tests FMD surveillance samples from red zones.

The PCR unit is very well equipped and has increased its ability to test for some 15 diseases and multiplex PCRs, however, it is limited by space and cannot do sequencing.

Although included in the DVS Strategic Plan, no funding has yet been dedicated for a BSL 3 laboratory; virus isolation is still done at the BVI.

Strengths:

- The BNVL and the BVI have the majority of their tests accredited by SADCAS and South African National Accreditation System (SANAS).
- There is close collaboration between the BNVL and the BVI with complementarity of their laboratory capacity.
- The BNVL has a fully automated laboratory information management system (SILAB) established with the support of the Istituto Zooprofilattico Sperimentale, Italy. SILAB was recently upgraded to Version 2 which also allows for offline work. Nonetheless, for safety reasons, a parallel paper-based system is being continued.
- In the event of foodborne emergencies, the BNVL has collaborated with the MoH in carrying out surveillance and testing of submitted samples.
- SOPs have been developed for various laboratory activities.

Weaknesses:

- The high throughput of surveillance samples puts a strain on human and financial resources.
- Consumables and test kits for FMD surveillance are not always sufficiently available to allow for expedient testing and quick result reporting of surveillance samples.
- Despite great efforts by the BNVL, the turn-around time of 14 days for samples is only successful for 85% of submissions.
- The BNVL has no BSL 3 facilities.
- The existing BNVL budget to process FMD samples is insufficient.

Recommendations:

- National surveillance requirements dictate a large part of samples being tested at the BNVL. Budget and procurement procedures should be adapted to the volumes of expected sample for quick turnaround time of these samples.
- The BNVL's biosecurity level should be upgraded to BSL 3 to allow for higher-risk diagnostic methods such as virus isolation (e.g. rabies).
- Abattoir and meat hygiene testing should be expanded to registered non-export abattoirs and other species (e.g. poultry).

- Increased funding should be provided to BVI to lead regional proficiency testing for PVM and thus assist regional needs in assessing vaccination efficiency.
- Consider the creation of a SADC FMD antigen bank with high-level regional support.
- Make better use of the technical expertise available at the BVI to support the DVS Epidemiology Unit.

Evidence (as listed in Appendix 6):

T11, T12, T21, T22, T25, T28, S41, C2

C. Laboratory quality management systems (QMS) *The quality and reliability of veterinary laboratory testing servicing the public sector VS as assessed by the use of formal QMS including, but not limited to, attainment of ISO 17025 accreditation and participation in proficiency testing programmes.*	Levels of advancement
	1. No laboratories servicing the public sector VS are using formal QMS.
	2. One or more laboratories servicing the public sector VS, including the major national animal health reference laboratory, are using formal QMS.
	3. Most major laboratories servicing the public sector VS are using formal QMS. There is occasional use of multi-laboratory proficiency testing programmes.
	4. All the laboratories servicing the public sector VS are using formal QMS, with regular use of multi-laboratory proficiency testing programmes.
	5. All the laboratories servicing the public sector VS are using formal QMS systems, which are regularly assessed via national, regional or international proficiency testing programmes.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	5. All the laboratories used by the public sector VS and most or all private laboratories are using formal QA programmes that meet OIE, ISO 17025, or equivalent QA standard guidelines.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. All the laboratories used by the public sector VS and most or all private laboratories are using formal QA programmes that meet OIE, ISO 17025, or equivalent QA standard guidelines.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The BNVL is fully accredited to ISO/IEC 17025:2005 by SADCAS.
- In 2010, nine tests were accredited at the BNVL while now 47 tests are accredited; three of which are carried out at the BVI.

Findings:

The BNVL and the BVI both operate a Quality Assurance System and have produced QA Manuals. The proficiency performance is regularly tested through a testing scheme (see II-1A). Internal controls are undertaken by the Compliance, Policy and Development Department at the BNVL with external assessments by SADCAS. A plan exists for continuous application for accreditation of tests, with a goal of four tests per year.

The Quality Management System is based on the BOS ISO/IEC 17025:2005 (E) standard. Trainings on ISO 17025, 9001, 18001 & 17043 standards have been carried out for section managers and staff in 2018. All aspects of work are analysed (service delivery, resource management, delivery compliance, research and development, reduction of corruption and workplace, staff competencies, staff welfare and wellness) with targets set in the Annual Performance Plan.

The Management Policy Statement confirms the BNVL's commitment to constantly meet and comply with ISO/IEC 17025 requirements to ensure quality testing services. The national residue control program is carried out by the BNVL and it has increased its capacity to do all necessary tests by accrediting 11 chemistry tests for residues. However, some tests still need to be subcontracted to the UK-based Food and Environment Research Agency (FERA). The BNVL plans to build the capacity for all residue testing by 2021. IAEA has provided substantial support to the BNVL by providing equipment and training.

Strengths:

- The BNVL has developed and implemented a quality system program with manual.

Weaknesses:

- Delay in residue testing results due to outsourcing some tests to UK-based FERA laboratory.

Recommendations:

- Facilitate more proficiency testing events in the SADC region.
- Pursue capacity building to enable all residue tests to be completed by the BNVL.

Evidence (as listed in Appendix 6):

S8, T10, T14, T18, S41, S42, T22, T25, S8, T17, T24

II-2 Risk analysis and epidemiology *The authority and capability of the VS to base its risk management and risk communication measures on risk assessment, incorporating sound epidemiological principles*	Levels of advancement
	1. Risk management and risk communication measures are not usually supported by risk assessment.
	2. The VS compile and maintain data but do not have the capability to carry out *risk analysis*. Some *risk management* and *risk communication* measures are based on *risk assessment* and some epidemiological principles.
	3. The VS compile and maintain data and have the policy and capability to carry out *risk analysis,* incorporating epidemiological principles. The majority of *risk management* and *risk communication* measures are based on *risk assessment*.
	4. The VS conduct *risk analysis* in compliance with relevant OIE standards and sound epidemiological principles, and base their *risk management* and *risk communication* measures on the outcomes of *risk assessment*. There is a legislative basis (e.g. legal instrument) that supports the use of *risk analysis*.
	5. The VS are consistent and transparent in basing animal health and sanitary measures on *risk assessment* and best practice epidemiology, and in communicating and/or publishing their scientific procedures and outcomes internationally.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	2. The VS compile and maintain data but do not have the capability to systematically assess risks. Some risk management decisions are based on scientific risk assessment.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. The VS are consistent in basing sanitary decisions on risk analysis, and in communicating their procedures and outcomes internationally, meeting all their OIE obligations (including WTO SPS Agreement obligations where applicable).

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Use of the BAITS animal diseases module to capture animal health data from around the country.

Findings:

The Disease Control Unit in close collaboration with the BNVL, develops disease surveillance plans (see CC 4.B), particularly for FMD, which has an element of risk analysis regarding high-risk targeted surveillance areas, risk-based sampling of live imported animals, and specific sampling after buffalo incursions. The FMD contingency plan has a chapter on risk analysis and external and internal risks are identified and addressed in the disease control plan accordingly. An analysis of the risk factors for disease introduction is also included in the PPR contingency plan.

Data collected through the surveillance system for the list of surveyed diseases and entered into the BAITS and DMQRS, is analysed to a limited extent and occasionally reveals changes in disease trends or occurrences. For example, Rift Valley fever (RVF) was reported in goats in the south of the country; there was an increase in ND and mange was reported in the country while there was a reduction of brucellosis. These observations are fed back to the Disease Control Division and surveillance plans are appropriately adjusted.

Risk analysis training for epidemiology staff was done in 2010 (APHIS) and in 2014/15 (Massy University) but all those that received the training went to other units or have since left the DVS. The Epidemiology Unit staff are all members of the DVS Emergency Disease Alert Team. The Epidemiology unit has developed a disease surveillance plans for FMD, brucellosis, bovine tuberculosis, Newcastle disease/Avian influenza, CBPP, PPR, lumpy skin disease (LSD), transmissible spongiform encephalopathies (TSE), RVF, epizootic ulcerative syndrome (EUS), African horse sickness (AHS), residues, mange, dourine, rabies, glanders and anthrax. In order to enhance disease reporting from the field, the DVS has acquired 150 rugged laptops for extension areas for purposes of animal health data entry. The laptops are yet to be distributed as they are waiting to be loaded with the new BAITS software upgrade that is currently being developed.

Strengths:

- The surveillance plan is reviewed based on risk levels identified during previous years. The plan was adjusted for 2 zones for FMD last year; based on reduced risk. It was adjusted for PPR when the country was applying for freedom and it was also adjusted for brucellosis.

Weaknesses:

- Risk Analysis recommendations from the 2010 PVS have not been addressed; risk assessment training has been done but officers have gone to other units or left the DVS.

Recommendations:

- Build capacity for Risk Analysis within the Epidemiology Unit and include this function into the job description(s). Qualified staff will enable the generation of quality scientific evidence to perform risk analyses and provide sound support to technical decisions.
- Develop Risk Analysis procedures that can be applied to priority diseases other than FMD.
- Consult the EU's BTSF initiative and benefit from this high-level training in areas that need capacity building for DVS staff.

Evidence (as listed in Appendix 6):

T28, T85, T86, T87, T98, T139, T140, T167

II-3 Quarantine and border security *The authority and capability of the VS to operate to prevent the entry of diseases and other hazards of animals and animal and veterinary products into their country.*	Levels of advancement
	1. The VS cannot apply any type of quarantine or border security procedures for the entry of animals, animal products and veterinary products with their neighbouring countries or trading partners.
	2. The VS can establish and apply minimal quarantine and border security procedures, or the VS only apply quarantine and border security procedures effectively at some official entry points via *border posts*.
	3. The VS can establish and apply quarantine and border security procedures based on import protocols and international standards at all official entry points via *border posts*, but the procedures do not systematically address illegal activities relating to the import of animals, animal products and veterinary products.
	4. The VS can establish and apply effective quarantine and border security procedures which systematically address legal pathways and illegal activities (e.g. through effective partnerships with national customs and border police).
	5. The VS can establish, apply and audit quarantine and border security procedures which systematically address all risks identified, including through collaboration with their neighbouring countries and trading partners.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. *The VS can establish and apply quarantine and border security procedures which systematically address legal pathways and illegal activities.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. *The VS work with their neighbouring countries and trading partners to establish, apply and audit quarantine and border security procedures which systematically address all risks identified.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Import permits are issued electronically, and internal movement permits are issued through the BAITS, now allowing full traceability of imported live animals or animal products.

- BIPs are regularly audited which was not the case during the 2010 PVS mission.

Findings:

Botswana has 24 border inspection posts (BIP) of which 6 are approved for live animal imports/export (see Table 5) while 10 other BIPs are approved for small animals, horses and animal products as they do not have facilities for FMD control (offloading and holding). There are four international airports with facilities for small animal import/export.

Table 7: Six border inspection posts approved for live animal import/export.

BIP	District	Sub-district	Country
Martins Drift	Central	Mahalapye	South Africa
Tlokweng	South East	Gaborone	South Africa
Ramatlabama	Southern	Good Hope	South Africa
Macarthy's	Kgalagadi	Tsabong	South Africa
Mamumo	Ghanzi	Charles Hill	Namibia
Pioneer Gate	Southern	Good Hope	South Africa

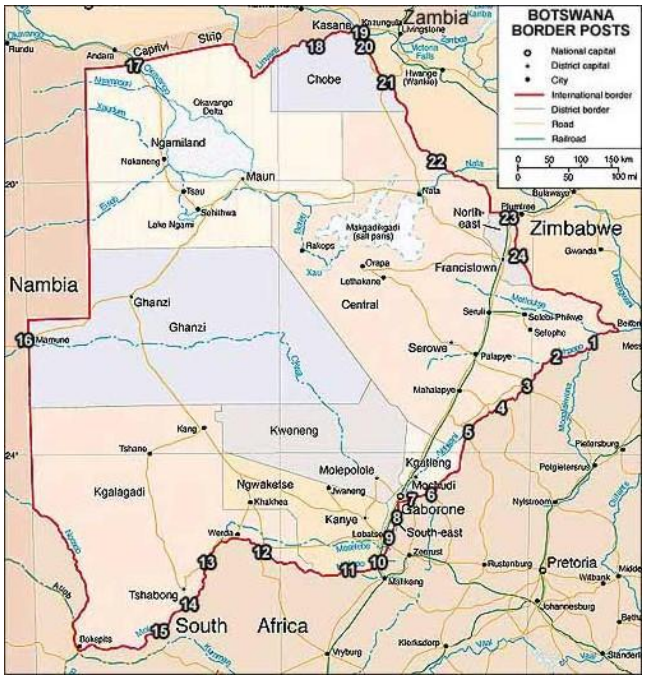

Figure 9. Botswanan border ports.
Source: DVS

The BIPs with Namibia and Zimbabwe visited by the team are combined Immigration-Customs-Agriculture posts. They are manned from 6 am to 10 pm. Vehicles are inspected, and passengers are questioned regarding food products they may have in their possession. At the BIP with Namibia, where importation of live animals is allowed, animals are offloaded and inspected for FMD and other obvious signs of disease. A Zimbabwean BIP, vehicles and buses must pass through a tire disinfection bath. The BIPs are adequately equipped and staffed with technical officers who are regularly visited by the DVO/SDVO veterinarian during

audit/supervisory visits. In the event of a specific need, BIP personnel can request for a District Veterinarian to come to the border and provide assistance. At the BIP with Namibia there was very little signage for the VS's services and no information material available. At the Northwest BIP at Ramokgwebana, between Zimbabwe and Botswana, the DVS signage was evident but in need of repair and posters with relevant agricultural restriction information were inside entry-processing buildings; a DVS animal health display was not functioning.

Land borders are fenced along large sectors e.g. along the border with Namibia, either a demarcation fence only or a double fence with a veterinary fence on the Botswana side in addition. This great effort in fencing in Botswana attempts to keep livestock and wildlife from entering FMD controlled or free areas. This has, however, not been effective in excluding elephants from neighbouring countries, leading to a tripling of the Botswana elephant populations over the past decade, with the ensuing challenges to the FMD control program.

Because of the recent FMD outbreak in two neighbouring countries, personnel at BIPs have been increased, to reinforce border controls. Personnel at BIPs have received additional training in searching for animal products and inspection of any imported animal.

There are joint border committees with neighbouring countries and regular cross-border meetings between the respective VS.

Import permits for live animals and animal products are issued by the DVO or the Disease Control Animal Health and Field Services division of the DVS free of charge. The BIPs must be notified 7 days in advance of any live animal import.

The import control officer is responsible for authorizing issuance of import permits based on potential risks as well as the generation of reports on imported commodities. While some BIPs don't have computers, the records of imported livestock and animal products are transferred regularly to the nearest DVO/SDVO for compilation into an electronic reporting format.

In the case of imported cattle, these are offloaded and inspected, given a brand and a red ear tag and this information is entered into the DVS database (DMQRS) under the respective BIP number; recorded import animals will by default be recognised as Non-EU destined animals. An internal movement permit is issued through the BAITS to the point of destination. After this procedure, animals can be reloaded, the truck is sealed and transit to authorized end destination can continue. An SOP for this process has been developed in 2019.

Several Government quarantine stations are strategically located to facilitate movement between red and green zones for slaughter. Due to recent changes in FMD status of some zones, currently only one Government quarantine station is operational, however, fenced farms can also be eligible for on-farm quarantine.

A SOP for arrival of cattle in quarantine stations, which is also applicable to fenced farms, feedlots and AI stations, has been issued in 2019. The purpose is to ensure that arriving animals are registered, identifiable, and traceable and meet the 40/90 days residency requirement. This process provides guarantees that only eligible animals are slaughtered for export to the EU in accordance with EU Regulations No 1760/2000.

Strengths:

- The VS proactively engage in joint border committees and joint border inspections in efforts to mitigate disease threats from neighbouring countries.
- BIPs are adequately equipped and progressively computerised.

- Regular audits of BIPs is included in the Quality Control System of the DVS.

Weaknesses:

- Redundant quarantine stations of considerable size are lying idle and a solution for their productive use should be investigated.

Recommendations:

- Use the BIP to distribute information material regarding Botswana's special health status for FMD and create awareness of the DVS' responsibilities and authority amongst all travellers crossing the border.
- Ensure that the DVS signage and import information material at all BIPs are updated and produce specific information material for truck drivers on necessary biosecurity precautionary measures.

Evidence (as listed in Appendix 6):

T8, T60, T52, S40, T111, T150, T152, P8, P9, P12, P13, P14, P15, P16, P18, P19.

II-4 Surveillance and early detection *The authority and capability of the VS to determine, verify and report on the sanitary status of their animal populations, including wildlife, in a timely manner.* **A. Passive surveillance, early detection and epidemiological *outbreak* investigation** *A surveillance system based on a field animal health network capable of reliably detecting (by clinical or post mortem signs), diagnosing, reporting and investigating legally notifiable diseases (and relevant emerging diseases) in a timely manner.*	**Levels of advancement**
	1. The VS have very limited passive surveillance capacity, with no formal disease list, little training/awareness and/or inadequate national coverage. Disease outbreaks are not reported or reporting is delayed.
	2. The VS have basic passive surveillance authority and capacity. There is a formal disease list with some training/awareness and some national coverage. The speed of detection and level of investigation is variable. Disease outbreak reports are available for some species and diseases.
	3. The VS have some passive surveillance capacity with some sample collection and laboratory testing. There is a list of notifiable diseases with trained field staff covering most areas. The speed of reporting and investigation is timely in most production systems. Disease outbreak investigation reports are available for most species and *diseases.*
	4. The VS have effective passive surveillance with routine laboratory confirmation and epidemiological disease investigation (including tracing and pathogen characterisation) in most animal sectors, and covering producers, markets and slaughterhouses. There are high levels of awareness and compliance with the need for prompt reporting from all animal owners/handlers and the field VS.
	5. The VS have comprehensive passive surveillance nationwide providing high confidence in the *notifiable disease* status in real time. The VS routinely report surveillance information to producers, industry and other stakeholders. Full epidemiological disease investigations are undertaken in all relevant cases with tracing and active follow up of at-risk *establishments*.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	2. The VS conduct passive surveillance for some relevant diseases and have the capacity to produce national reports on some diseases.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	3. The VS conduct passive surveillance in compliance with OIE standards for some relevant diseases at the national level through appropriate networks in the field, whereby samples from suspect

	cases are collected and sent for laboratory diagnosis with evidence of correct results obtained. The VS have a basic national disease reporting system.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- DVS has revitalized field veterinary infrastructure, from veterinarians and other professionals through VPPs at the Extension Office level and established reporting protocols have greatly strengthened passive surveillance in the country.
- The BAITS now in place, improved animal identification and traceability and has supported more efficient passive surveillance.

Findings:

The Diseases of Animals (Stock Feed) Regulations (DoAA 2004) provides the legal framework for the prevention and control of diseases which includes the listing of notifiable disease and corresponding surveillance activities.

The Epidemiology Unit of the DVS is based at the BNVL and oversees a disease surveillance system that divides submitted reports into those accompanied with or without samples. Data from the reports is entered into the BAITS which acts as an animal health information management system for the country. The BAITS system has an animal disease module which has been capturing animal health data for the past 5 years. Before the BAITS, the DMQRS was used to capture and store animal health data. The Epidemiology Unit staff are able to access historical data within the DMQRS. The SILAB used at the BNVL is fully functional but is yet to be merged with the existing Epidemiology Unit system.

Field officers use a DRF to transmit pertinent information to the Epidemiology Unit. A pink form is used for data entry into the BAITS if no sample has been tested by the BNVL or a yellow form, if a sample has been tested at the BNVL. All data received from the field is separately entered into Microsoft Excel as a backup. Data received from the field is used to generate reports for local and international trading partners. Botswana reports on a regular basis to international organisations such as AU-IBAR (Monthly), OIE (Six Monthly, Semi-Annual, Annual), and SADC (Monthly and Annual).

All national animal disease surveillance objectives and methodologies are captured in the most recent Disease Surveillance Plan (DSP) April 2016 to March 2019 (plans were also available from 2013). This DSP includes, all required documentation for the BNVL and field staff for disease control and meat hygiene and quality control as well as specific disease testing protocols/sample submissions and diseases of national focus (i.e. FMD, CBPP, glanders, Newcastle disease, avian influenza, rabies, TSE, tuberculosis, brucellosis, PPR, dourine, LSD, RVF, mange, anthrax, EUS, and African swine fever or ASF). Passive surveillance for these major diseases of interest was based on clinical methods with rigorous follow-up to any initial suspect reports. Excellent evidence is available for national notifiable animal diseases, dedicated surveillance staff at central level and surveillance requirements for field staff, disease record keeping by districts, data recording and management at the central offices, laboratory protocols for support of surveillance and animal identification and tracking. The DVS has regularly provided the OIE with immediate notification for animal diseases and the last year has seen 12 immediate reports principally for FMD but also NCD and anthrax. Upon

reviewing the OIE WAHIS database, there does appear to be a discrepancy between the list of national notifiable diseases and the number reported as notifiable for Botswana.

EU audits for beef exports noted that clinical surveillance for FMD is vital and regular suspect notifications, vaccination campaigns, inspections for movement permits, and verification of individual animal identification provide the DVS with important opportunities to check health status of animals; as seen with uncovering of 6 FMD episodes since 2013. Similar passive surveillance in Francistown and Selebi-Phikwe areas discovered FMD in 2002. An OIE Focal Point in DVS ensures timely and accurate reporting that is consistent with OIE guidelines/standards.

The crux of passive animal disease surveillance in Botswana is at the interface of the DVS Extension Office and "livestock keepers" (producers). There was ample evidence that livestock keepers viewed this first point of contact with the DVS very favourably, relying on them for most veterinary care and attention. All DVS offices visited, regardless of their level, had well-maintained records of interactions with producers and reports of any animal maladies reported and attended. Despite this routine interaction, involvement of stakeholders in development of surveillance plans was not evident. The underpinning for passive disease surveillance and unique identifier is the DRF and number, which incorporates laboratory actions and animal identification. The quality and timeliness of reporting appeared to be mixed but, in general, seemed to provide for reliable final reports.

As seen in 2010, passive surveillance for CBPP and beef measles (cysticercosis) is conducted at slaughter plants where clear reporting protocols exist and FMD physical inspection, including "mouthing", is conducted at quarantine stations and outbreak situations resulting in periodic reports. Both the FMD and PPR Contingency Plans include sections on passive surveillance for these diseases. Although surveillance may form part of existing degree curricula and CE, there was no evidence of specific training for surveillance or an existing auditing system to ensure improvements.

To improve Integrated Disease Surveillance and Response for One Health the JEE mission conducted in 2017 recommended establishment of an event-based (passive) surveillance at the national and district level to improve the timeliness and quality of reports from the districts. However, surveillance information sharing channels between key stakeholders like the MoHW, Environment and Wildlife was not evident in this regard.

Strengths:

- Botswana's DVS has produced surveillance plans since 2013 and its present version has incorporated its experience to improve these efforts.
- The DVS has a dedicated surveillance staff at the central level and its field force is very involved in investigating and reporting all suspect diseases.
- Access to the EU market and the need to sustain its viability have provided a key motivation to ensure good passive surveillance mechanisms for all the major animal diseases.

Weaknesses:

- Despite regular interaction between DVS and livestock owners, involvement of stakeholders in the surveillance system planning is minimal.

- The involvement of the livestock keepers and other stakeholders in the surveillance system is minimal.
- No dedicated staff designated oversight of surveillance activities at the field level.
- Information sharing between allied government institutions is not well documented.
- Little evidence of specific training for surveillance or a targeted auditing system of current methodologies.

Recommendations:

- Establishment of an electronic reporting system to enhance good quality and timely reports.
- Foster more involvement of stakeholders and interested parties in application of surveillance system and receiving results.
- Investigate priority areas of surveillance and provide appropriate training to relevant staff.
- An auditing and review mechanism should be initiated to improve ongoing passive surveillance efforts.
- Support one health diseases surveillance efforts by outreach efforts to allied government entities.

Evidence (as listed in Appendix 6):

T6, T11, T31, T35, T37, T71, T82, T85, T86, T87, T88, T89, T82, T91, T92, T95, T96, T97, T98, T99, T120, T122, T134, T139, T166, T140, T141, T142, T143, T158, T174, T188.

B. Active surveillance and *monitoring* *Surveillance targeting a specific disease, infection or hazard to determine its prevalence, measure progress in disease control or support the demonstration of disease freedom (with passive surveillance), most often in the form of pre-planned surveys with structured sampling and laboratory testing.*	Levels of advancement
	1. The VS have no active surveillance programme.
	2. The VS conduct active surveillance for one or a few *diseases, infections* or *hazard*s (of economic or zoonotic importance), but the surveillance is not representative of the population and the surveillance methodology is not revised regularly. The results are reported with limited analysis.
	3. The VS conduct active surveillance using scientific principles and OIE standards for some *diseases, infections* or *hazard*s, but it is not representative of the susceptible populations and/or is not updated regularly. The results are analysed and reported to stakeholders.
	4. The VS conduct active surveillance in compliance with scientific principles and OIE standards for some *diseases, infections* or *hazard*s which is representative of all susceptible populations and is updated regularly. Results are routinely analysed, reported and used to guide further surveillance activities, disease control priorities, etc.
	5. The VS conduct ongoing active surveillance for most significant *diseases, infections and hazards* and apply it to all susceptible populations. The results are routinely analysed and used to guide disease control and other activities. The active surveillance programmes are regularly reviewed and updated to ensure they meet country needs and OIE reporting obligations.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. The VS conduct active surveillance in compliance with scientific principles and OIE standards for some relevant diseases, apply it to all susceptible populations, update it regularly and report the results systematically.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. The VS conduct active surveillance for most or all relevant diseases and apply it to all susceptible populations. The surveillance programmes are evaluated and meet the country's OIE obligations.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- There has been a significant increase in the number of qualified staff, both central and field, available to participate in active surveillance programmes.
- Key staff with capacity to undertake advance epidemiological analysis like risk analysis and modelling have left the DVS to join new agencies and institutions.

Findings:

As indicated above, Botswana has a legally supported list of 26 notifiable diseases for surveillance and the DVS has developed a solid surveillance plan focused on 17 major diseases. The DVS has a dedicated "Epidemiology and Disease Surveillance Unit" with the "Deputy Directorate of Disease Control Animal Health and Field Services" and has identified an OIE Focal Point for reporting relevant surveillance information. As noted above the DVS regularly submits immediate animal disease notifications and annual reports to the OIE. Although there is at present no specific staff dedicated to overseeing zoonoses in the DVS, it does have outlined responsibilities for existing staffs in the Meat and Hygiene and Epidemiology Units.

The DSP 2016-2019 is very robust and thorough in outlining the main objectives/goals, responsibilities, methodologies and final products for national animal disease surveillance, both active and passive. Active surveillance activities are supported by an effective and well-equipped laboratory system for the country. The BNVL issues written comprehensive and authorised results for all the tests; with such recommendations as may be deemed necessary to the office of the Director; including test results completed in foreign laboratories. All surveillance test results are reported in the SILAB under a single BNVL and DRF number for each batch of samples of a particular disease for each district. The use of risk analysis precepts to prioritize disease risks and ensure targeted surveillance in high-risk areas, is not evident but may be due to the loss of staff originally acquired for this function.

Botswana has fulfilled OIE requirements, with review by the Scientific Commission for Animal Diseases and approval of the World Assembly of Delegates, for recognition of freedom from CBPP, PPR and Rinderpest and recognized FMD free zone where vaccination is not practised; all which require sound active surveillance over a period of time with annual renewal. DVS' OIE focal point for disease reporting, regularly reports relevant findings to WAHIS counterparts.

Below is a table of the animal diseases of major interest for active surveillance efforts and includes areas, frequency, time of year, testing method(s), species of interest and target points/activities.

Table 8: Diseases targeted for active surveillance and parameters

DISEASE	Zones	Frequency	Month	Active surveillance testing	Species	Target point/activities
FMD	ALL	As per plan	As per plan	Clinical & serology	Bovines, Ovines & Caprine. wildlife	Campaign, permits, Slaughter facilities, borders
CBPP	1, 2a, BMC	2, Continuous at Abattoirs	During FMD vaccination campaign	Clinical & serological	Bovines	Campaign, slaughter facilities
Glanders	All zones	1	August	Serological	Equines	Scheduled plan
NCD/AI	All	As per plan	Mar and Oct	Clinical & serological	Ostriches, chicken, wild birds	Scheduled plan
Rabies	All	Continuous	Continuous		Warm bloods	Cases
TSEs	All	Continuous	Continuous	Laboratory	Bovines/Ovine/ Caprine	Farm visits, abattoirs, border samples,
Tuberculosis	All	1	Oct/Nov	Skin test	Dairy Bovines	Scheduled plan, milk
Brucellosis	All	1	Oct/Nov	Serological	Young + adult Dairy Bovines. Look at rising titres.	Scheduled plan, abortion cases, milk
PPR	1,2	1	Concurrently with small stock FMD survey	Serological	Caprine/Ovine	Scheduled plan, farm visits, cattle posts
Dourine	All	1	Aug	Serological	Equines	Farm visits,
LSD	All	Continuous	Continuous		Bovines	Farm visits
RVF	Kgatleng, SE, S	Continuous	Continuous	Serology	Ruminants	Farm visits, permits
Mange	11, 13	Continuous	Continuous		Ovine/Caprine	Permits, Farm visits
Residues	Abattoirs, Field	As per plan	As per plan	Laboratory	Bovine, Caprine, ovine, swine, equine	Scheduled plan, Farm visits
Anthrax	1	Continuous	Continuous	Clinical, lab	Wildlife	Farm visits
EUS	1, 2, Dams	Continuous	Jun/Jul (winter)	Clinical, culture	Fish	Fisherman cases, planned surveys
AHS	All	1	Aug	Serology	Equines	Permits, Farm visits

The FMD active surveillance programme is considered a major priority by Botswana and allows for the continued export of beef to the EU market. EU export requirements in active surveillance form a major focus of the export programme and historic disease control zones have been incorporated in regular audits by the FVO. An existing FMD Contingency Plan conforms with these international conditions. Active surveillance for FMD also includes the differentiation of vaccinated animals from natural disease through the testing for structural and non-structural viral proteins; a new SOP for these procedures in being drafted. Locations for active surveillance activities often centre at the various crushes distributed throughout the country which are gathering points. All premises within a 10 km intensive surveillance zone bordering FMD infected zones are excluded from slaughter for the EU. An active surveillance programme is also applied to African buffaloes in the north of the country to confirm carrier status of these animals for FMD serotypes SAT1, SAT2, SAT 3; its corresponding updated SOP is in draft. Although elements of risk-based surveillance are used for FMD, this cannot be clearly stated for all priority diseases.

In addition to the DSP, various important parameters for active surveillance for PPR can be found in that disease's corresponding Contingency Plan. Active surveillance for NCD/AI is also undertaken at all ostrich farms registered for export to EU as well as of all susceptible species in a 10km radius around these exporting premises.

Despite the small swine population in Botswana, it is of interest to note that ASF and classical swine fever (CSF) are not mentioned in the DSP and only ASF is a recognized notifiable disease. Botswana has never reported CSF and its last case of ASF was in 1999. Nonetheless, the country has various neighbouring countries that do have these swine fevers and, as it has little control of garbage feeding of this species, these diseases pose a very real threat.

Although the DVS has very good relations with local livestock keepers and stakeholders, their regular involvement in planning and executing surveillance objectives was not supported by documentation provided. Although the FMD surveillance programme is audited regularly by the EU and the BNVL undertake internal reviews, there was a paucity of evidence of routine analysis of surveillance results to guide other disease control activities nor a comprehensive audit and update system for the DVS' surveillance activities. Internal auditing of active surveillance for meat hygiene, residues and AMR are under the auspices of the Compliance, Policy and Development Deputy Directorship of the DVS with new SOPs under review.

Strengths:

- Presence of a national surveillance plan that is regularly updated.
- Existence of a well-qualified central staff to oversee active surveillance programmes.

Weaknesses:

- At present, the DVS lacks capacity to undertake advanced epidemiological analysis and risk analysis to support its disease control efforts.
- Lack of designated staff to coordinate surveillance activities in the districts.

Recommendations:

- Appointment of designated professionals to oversee and coordinate surveillance activities at the district level.
- Consider the development of dedicated staff to the area of zoonoses and One Health.

- Increase participatory approaches including the involvement of communities in animal diseases surveillance planning and implementation.

Evidence (as listed in Appendix 6):

T6, T9, T11, T15, T31, T50, T58, T43, T105, T106, T107, T139, T140, T85, T87, T89, T90, T91, T92, T95, T96, T97, T99, T120, T141, T142, T143, T165, T188, S47.

II-5 Emergency preparedness and response *The authority and capability of the VS to be prepared and respond rapidly to a sanitary emergency threat (such as a significant disease outbreak or food safety emergency).*	Levels of advancement
	1. The VS have no field network or established procedure to determine whether a sanitary emergency threat exists or the authority to declare such an emergency and respond appropriately.
	2. The VS have a field network and an established procedure to determine whether a sanitary emergency threat exists, but lack the legal and financial support to respond effectively. The VS may have basic emergency management planning, but this usually targets one or a few diseases and may not reflect national capacity to respond.
	3. The VS have the legal framework and financial support to respond rapidly to sanitary emergency threats, but the response is not well coordinated through an effective chain of command. They have national emergency management plans for some exotic *diseases*, but they are not updated/tested.
	4. The VS have the legal framework and financial support to respond rapidly to sanitary emergencies through an effective chain of command (e.g. establishment of a *containment zone*). The VS have national emergency management plans for major exotic *diseases,* linked to broader national disaster management arrangements, and these are regularly updated/tested such as through simulation exercises.
	5. The VS have national emergency management plans for all diseases of concern (and possible emerging infectious diseases), incorporating coordination with national disaster agencies, relevant *Competent Authorities*, producers and other non-government stakeholders. Emergency management planning and response capacity is regularly tested, audited and updated, such as through simulation exercises that test response at all levels. Following emergency events the VS have a formal 'After Action Review' process as part of continuous improvement.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. *The VS have an established procedure to make timely decisions on whether or not a sanitary emergency exists. The VS have the legal framework and financial support to respond rapidly to sanitary emergencies through a chain of command. They have national contingency plans for some exotic diseases.*

Gap Analysis 2011	Expected level of advancement to be maintained / reached within the next 5 years
	4. *The VS have an established procedure to make timely decisions on whether or not a sanitary emergency exists. The VS have the legal framework and financial support to respond rapidly to sanitary emergencies through a chain of command. They have national contingency plans for some exotic diseases.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- DVS emergency contingency plans for FMD and PPR have been updated and a recently updated regional SADC Highly Pathogenic Avian and Pandemic Human Influenza Preparedness and Response Plan has been adopted by Botswana.

Findings:

As indicated in CC I-6A, Botswana has an effective and efficient technical chain of command from the central level to its field forces and as discussed in the previous CC, the surveillance system would rapidly determine emergency and emergent disease situations. The DVS has also invested with the legal authority to respond to animal disease control events. Past experience demonstrates that funding for these crises has always been made available. The issue of Emergency Funding is addressed in CC I-9. As an example, the 1995 outbreak of CBPP in Ngamiland received immediate government funding for all eradication needs including the culling of 300,000 cattle and construction of new fences along the border with northern Namibia and Angola. It was related that new legislation under review will continue to identify the DVS as the lead agency for this function, provide continued support to the existing emergency funding source as well as authorize compensation when required. Botswana's experience with FMD disease control with periodic external audits of its strategies has provided the DVS with a unique experiential situation in enhancing the efficiency and effectiveness of its preparedness and response capabilities.

Comprehensive and tested emergency plans exist for FMD, PPR and HPAI; with the FMD contingency plan having been subject to review by the EU with proposed modifications made by the DVS. The 2006 SADC Highly Pathogenic Avian and Pandemic Human Influenza Preparedness and Response Plan, employed by Botswana has recently been updated. Specific training of the DVS staff in the SADC HPAI Plan occurred in 2017/2018. These emergency response strategies address issues of maintenance of a disease-free status for both endemic and exotic diseases, creation of awareness, the DVS roles and responsibilities, prevention and control of disease protocols and proposed pathways to address varying risk scenarios.

Except for FMD, there was little evidence of regular testing, auditing or updating of emergency management planning and response capacity, including communication procedures, within all levels of DVS. There was ample evidence of livestock keeper and stakeholder involvement during actual disease emergencies (most recently with HPAI) but there was little documented support of coordinated interaction with this sector in consultation and planning. Likewise, though it was evident that the DVS actively reaches out to allied government entities during animal disease emergencies, there seemed to be little interaction prior to these events to work

out support roles. In addition, following emergency events there was no evidence of a formal 'After Action Review' process led by the DVS as part of a continuous improvement effort.

Although this review could not ascertain if any zoonotic diseases had been detected in humans without previous notification of outbreaks in animals, existing linkages with One Health stakeholders like the MoHW appeared to only operate on an *ad hoc* basis; although some initial efforts have been made to address recommendations of the 2018 WHO Joint External Evaluation report on food safety, there was no evidence of an institutional platform to coordinate preparedness and response.

Strengths:

- External market requirements of the DVS have resulted in the establishment of a vigilant detection and response infrastructure with a clear chain of command.
- Regularly updated preparedness and response plans exist for a variety of animal diseases with existing legal foundations and funding sources in the past have not been problematic.

Weaknesses:

- FMD continues to be the major focus for the VS preparedness and control activities to the possible detriment of other priority diseases.
- Apart from FMD, there is little evidence of regular testing, auditing or updating of emergency management planning and response capabilities, including communication procedures, at all levels of the DVS; including outreach to internal and external stakeholders and interested parties.
- Although the DVS has been historically inclusive in addressing animal disease emergencies, there was no evidence of 'After Action Review' to acquire input in improving response capabilities.

Recommendations:

- The DVS should continue to update existing contingency plans and identify priority disease plans which require development and clearly identify roles and responsibilities for internal and external stakeholders, as required.
- As part of emergency preparedness and response plans, a scenario testing mechanism should be established with review and updating of any identified deficiencies.
- All sanitary disease emergencies which have utilized internal or external stakeholders should incorporate an "After Action Review" with record keeping to capture possible improvements.
- The VS should consider specific preparedness and response to zoonotic diseases by establishing a One Health agreement with the MoHW; legal foundation may be important.

Evidence (as listed in Appendix 6):

T1, T6, T11, T35, T43, T85, T86, T87, T89, T91, T105, T106, T107, T111, T112, T118, T119, T104, T139, T140, T158, T168, T188, T193, T194, T195.

II-6 Disease prevention, control and eradication *The authority and capability of the VS to control or eradicate nationally important diseases present in the country, such as through a combination of vaccination, domestic movement control, establishing containment zones, biosecurity measures (including farm biosecurity), isolation and/or culling/stamping out.*	Levels of advancement
	1. The VS have no capability to implement animal disease prevention, control or eradication programmes.
	2. The VS implement prevention, control or eradication programmes for some diseases and/or in some areas or populations5, but with little or no epidemiological, risk-based planning or evaluation of their efficacy and efficiency.
	3. The VS implement prevention, control or eradication programmes for some priority *diseases* in some areas or populations. There is variable epidemiological, risk-based planning and evaluation of efficacy and efficiency, with limited progress towards programme goals.
	4. The VS implement nationwide prevention, control or eradication programmes for priority *diseases* with a high level of epidemiological, risk-based planning, and continual evaluation of efficacy and efficiency. They have or are progressing towards OIE official recognition of disease control programmes for relevant diseases. They can demonstrate some progress towards programme goals in reducing or eradicating disease.
	5. The VS implement national control or eradication programmes for all priority *diseases* with scientific evaluation of their efficacy and efficiency consistent with relevant OIE international standards. They can demonstrate clear progress towards programme goals in reducing or eradicating disease, including achieving or progressing towards official recognition of freedom from relevant diseases.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. The VS implement prevention, control and eradication programmes for some diseases and/or in some areas with scientific evaluation of their efficacy and efficiency.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The VS implement prevention, control and eradication programmes for all relevant diseases but with scientific evaluation of their efficacy and efficiency of only some programmes.

[5] One may need to cross-reference this CC with CCs on Zoning and Compartmentalisation as appropriate.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Botswana has made substantial progress in controlling FMD and acquiring EU and OIE recognition for its efforts.
- In May 2017, Botswana attained OIE-recognized free status for PPR.

Findings:

At the outset it should be noted that Botswana does have a long history of animal disease control with recognition of freedom by the OIE for CBPP, Rinderpest and PPR with annual reconfirmation. As indicated earlier, the legal authority for the prevention and control of diseases in the country is found in the Diseases of Animals (Stock Feed) Regulations (DoAA 2004). Discussions with the DVS personnel involved in drafting a new comprehensive animal health legislation (see CC IV-1A) indicated that the VS' role in animal disease prevention, control and eradication will be strengthened and specific funding for compensation due to industry losses would be included. The use of the private veterinary sector in these activities will also be addressed.

In order to secure access to the EU beef market, FMD has garnered the focus of diseases control efforts in Botswana. In addition to maintaining this market after numerous audits by the FVO, Botswana most recently attained official OIE recognition of FMD freedom without vaccination for its 2018 proposed areas. Botswana was recognised as being free from PPR by the OIE in May 2017 having abided by the SADC Control Strategy for PPR and completed OIE procedures for official recognition. Technical details of the successful campaign to eradicate CBPP are captured in the publication, "Contagious bovine pleuropneumonia in Botswana: experience with control, eradication, prevention and surveillance". Historic freedom since 1899 for Rinderpest was accepted by the OIE Scientific Commission for Animal Diseases. Botswana's success in eradication and progress observed in prevention and control efforts is evidence of proficiency in: on-farm biosecurity measures, controls on movement of livestock, application of sound import requirements and border controls, animal identification and traceability system, surveillance strategies backed by a quality laboratory infrastructure, maintenance of containment zones and emergency response, including quarantine and/or culling/stamping out.

Details of on-going prevention and control strategies and advancement are captured in various documents provided as evidence; most importantly in the 2016-2019 DSP and the 2018 DVS Performance Status report. To control FMD the VS has developed robust quarantine, zoning and border control procedures (see appropriate CC). Substantial investment has been made in construction and maintenance of fences at the livestock wildlife interface and at international borders. Other than FMD, the main diseases of prevention and control are; anthrax, ASF, brucellosis, tuberculosis, dourine, LSD, Newcastle disease, rabies and goat mange.

The DVS carries out official vaccination programmes for various diseases. As noted in the 2010 PVS, serological follow-up of vaccinations, except for FMD, is not routinely performed. Economic analysis of cost/benefits from vaccination was not available but as noted above, budgetary considerations did result in modification of application rounds (with lower percent coverages as a result). Annual official vaccination is carried out for anthrax, quarter evil (black leg) and rabies. FMD vaccination is conducted three times a year in the Ngamiland and Chobe districts with the third vaccination based on results from post vaccination sero-monitoring; maps of these areas are available (see Table 8 below for areas and periodicity).

TABLE 9 : 2017 vaccination schedule

Vaccination Programme	District	Dates
Anthrax	All	1st June to 31st August 2017
Quarter Evil	All	1st June to 31st August 2017
Rabies	All	1st June to 31st August 2017
Foot and Mouth Disease 1st Leg	Chobe	February 2017
	Ngamiland	April 2017
Foot and Mouth Disease 2nd Leg	Chobe	1st to 30th June 2017
	Ngamiland	1st August to 30th September 2017
Foot and Mouth Disease 3rd Leg	Chobe	1st to 30th October 2017
	Ngamiland	1st November to 22nd December 2017

Source: DVS 2017/2018 Performance Status

Data for 2017-2018 (Table 9) demonstrates good vaccination coverage for first phase and second application leg, though the later was affected by severe rain in these areas. The third leg of vaccination in Ngamiland was postponed due to the rain. FMD vaccination follow-up includes testing for non-structural proteins to differentiate vaccinated animals from natural infection and post vaccination sero-monitoring to identify vaccination coverage and effectiveness.

Table 10: FMD Vaccination returns for 2017-2018

	Ngamiland			Chobe		
	Expected	**Vaccinated**	**%**	**Expected**	**Vaccinated**	**%**
1st Leg	307426	253845	83	13322	12711	95
2nd Leg	168597	156644	93	12960	13173	100
3rd Leg	-	-	-	13000	13069	100

Source: DVS 2017/2018 Performance Status

In 2017, annual vaccination campaigns for anthrax and QE in cattle and rabies in dogs and cats were scheduled for June to August, respectively (Table 10). During the previous 3 years vaccinations for these diseases have been outsourced to “inoculators” (mostly retired animal health practitioners) but due to budgetary constraints the DVS provided vaccines to livestock keepers so they could vaccinate their own animals or hire assistance. As a result, only a 52% vaccine coverage rate was attained for both anthrax and QE vaccinations through 2018. Vaccination coverage for rabies was also poor at 45% and 17% for dogs and cats, respectively. Poor animal management and increasing number of stray dogs were identified as the main cause of poorer coverage, particularly for rabies. For anthrax and QE, low percent vaccination

coverage was attributed to poor animal husbandry practices. It was good to note that the DVS found these levels poor in their report and also recognized the risks of these zoonotic diseases.

Table 11: Anthrax, quarter evil and rabies vaccination returns 2017

Category	Anthrax	Quarter evil	Rabies (Dogs)	Rabies (Cats)
Expected	2563441	800000	114469	19039
Vaccinated	1345866	434008	51816	3161
% coverage	52	52	45	17

Source: DVS 2017/2018 Performance Status

Although the DVS has quickly and effectively responded to animal disease emergencies of all species, the focus remains on ruminants and equid work animals. The poultry industry is growing and becoming more organized based on discussion with this sector. Although the team was unable to meet with swine producers, based on census data provided this is a smaller sector but with real disease risks though the country remains free of CSF and ASF.

The PVS Team visited various internal and international quarantine and border facilities and was impressed with the level of advancement in this area (see CC II-3). Similarly, CCs related to zoning and compartmentalization also demonstrated a higher-level of progress (see CCs IV-6 and IV-7).

Strengths:

- Botswana has developed sound disease prevention and control protocols which have been internationally recognized.
- Experience with prevention and control of FMD has provided the DVS with successful prevention/control models to adapt and apply to other disease priorities.
- Existence of a well-established and maintained animal diseases control infrastructure, including competent and well-managed field personnel; quarantine stations, fencing and crushes countrywide; soundly enforced import requirements and border controls; and an evolving animal identification and traceability system.

Weaknesses:

- Disease prevention and control activities are principally focused on FMD to the possible detriment of other animal disease priorities.
- The VS does not appear to make substantive efforts to include stakeholders and interested parties in animal disease prevention and control programmes.
- Involvement of the private sector in disease prevention and control is not presently backed by a clear policy/law.
- A comprehensive review and update of prevention, control and eradication activities for priority diseases with development of performance measures and goals.

Recommendations:

- A concerted effort should be initiated by the DVS to prioritize animal disease (other than FMD) and develop a prevention and control plan for these with milestones to be met and internal checks.

- More involvement by livestock keepers and other stakeholders in planning and execution of disease prevention and control programmes.
- Ensure that policies and laws streamlining the private sector in disease prevention and control are in place.

Evidence (as listed in Appendix 6):

T1, T2, T8, T11, T32, T58, T85, T86, T92, T96, T99, T105, T106, T107, T121, T122, T139, T140, T141, T142, T166, T168, P12, P14, P168, T174, T188, T192, T199, P8, P8, P9, P12, P13, P14, P15, P16, P18, P19, S47.

II-7 Animal production food safety	Levels of advancement
The authority and capability of the VS to assure the safety of food of animal origin for domestic and export markets **A. Regulation, inspection (including audits), authorisation and supervision of establishments for production and processing of food of animal origin** *The authority and capability of the VS to establish and enforce sanitary and food hygiene standards for establishments that produce and process food of animal origin, including slaughter, rendering, dairy, egg, honey and other animal product processing establishments.* *Includes the regulation, initial authorisation of establishments, and the ongoing inspection of establishments and processes, including the identification of and response to non-compliance, based on HACCP principles. It includes external coordination between Competent Authorities as may be required.*	1. Regulation, authorisation, and inspection of relevant establishments and processes are generally not undertaken in conformity with international standards. 2. Regulation, authorisation and inspection of relevant establishments and processes are undertaken in conformity with international standards in some selected premises (e.g. export premises). 3. Regulation, authorisation and inspection of relevant establishments and processes are undertaken in conformity with international standards in large premises supplying major cities and/or the national market. 4. Regulation, authorisation and inspection of relevant establishments and processes are undertaken in conformity with international standards for premises supplying the national and local markets. There are some reports of dealing with non-compliance. 5. Regulation, authorisation, inspection and audit of relevant establishments and processes (and coordination, as required) are undertaken in conformity with international standards at all premises. There are documented cases of the identification and effective response to non-compliance.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	2. Implementation, management and coordination (as appropriate) are generally undertaken in conformity with international standards only for export purpose.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. Implementation, management and coordination (as appropriate) are generally undertaken in conformity with international standards

	for export purpose and for products that are distributed throughout the national and local markets.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The BAITS system is used to register all slaughter facilities.
- Non-export abattoirs, formerly under the authority of Municipalities, are now regulated by DVS.

Findings:

The legal basis for regulation, authorization and inspection for animal production food safety is laid down in the Food Control Act of 1993 and in the 2007 LMI). The former is under the control of the MoHW and the latter under the MoA. The ongoing revision of existing legal frameworks has identified overlapping responsibilities between the two Ministries as relates to the point in the food production chain where the MoHW takes responsibility for the safety and quality of animal products. In general terms, the DVS is responsible for meat hygiene and food safety up to product processing at the abattoir and for animal welfare at lairage and the point of slaughter.

Currently the LMIA does not outline requirements for audits and inspections implemented by the DVS nor does it place primary responsibility for compliance with food safety requirements on the food business operators. These deficiencies are expected to be addressed in legislation under review.

The DVS licenses all abattoirs and processing plants, including those for wildlife, on an annual basis. Guidelines for operators on lay-out of facilities, equipment, Good Management Practices (GMP) and Good Hygiene Practices (GHP) which are prerequisites for licensing have been issued by the DVS.

Between 2008 and 2010, food safety regulation of non-export abattoirs had moved from being under Municipal authority to that of the DVS with local slaughter facilities taking longer to integrate. The DVS, through its local competent authorities, oversees and audits the entire value chain, starting from registration of animals and holdings, treatment records at holdings, issuance of animal movement permits, animal welfare during transport and at slaughter, ante- and post mortem inspection, licensing of abattoirs and processing plants, audits on GMP and GHP and Hazard Analysis and Critical Control Point (HACCP) (for export only) and issuance of Veterinary Certificates for final products. SOPs for inspection and audits for these different steps along the value chain have been produced by the DVS and guide provincial officers in the execution of their tasks. Inspection and audit schedules are designed centrally by the Division of Meat Hygiene and Quality Control. Local competent authorities are routinely audited by the Compliance, Policy and Development Division of the DVS.

The DVS licenses meat inspectors and provides meat inspection services to all registered abattoirs. Meat Inspectors are trained at the MITI and undergo 6 months of supervised training on site at an abattoir before being deployed to the field.

The EU also audits operational controls for meat production destined for export to its market. Non-compliance issues observed by EU inspectors in the past, such as registration of holdings, respect of 90/40 days residency before slaughter and certification have largely been addressed by the introduction of the BAITS. Concerns about positive microbiological sampling results

have been addressed through increased and combined sampling by the BMC and the BNVL laboratories.

The DVS keeps a register of all abattoirs, slaughter-slabs and processing plants in the country. Currently the country has the following establishments:

- 90 red meat abattoirs (7 exports, 14 non-export, 69 slaughter slabs) Note: the BMC Francistown export abattoir was closed in 2018
- 18 private poultry abattoirs (2 of them with resident DVS veterinarians)
- 10 meat processing plants
- 8 Game slaughter slabs
- 1 mobile abattoir for wild game

All export establishments are registered in the BAITS system. Therefore, pre-slaughter animal health data is captured electronically at export abattoirs but not at non-export abattoirs.

Strengths:

- All abattoirs, slaughter-slabs and processing plants in the country are licensed by the DVS.
- Meat inspection is being carried out under the mandate of the DVS.
- Extension officers have received training in meat inspection at the MITI (to date 340 people trained) to strengthen the services and to expand their proficiency in poultry slaughter as well.
- All slaughter facilities are registered in the BAITS and the annual license renewal can be generated by the system.

Weaknesses:

- Results from meat inspection findings can only be uploaded onto the BAITS system at export abattoirs but not at non-export abattoirs.
- There are not enough meat inspectors to carry out daily work at poultry processing plants.

Recommendations:

- Consider a public private partnerships (PPP) with the private poultry industry for the supply of trained meat inspectors to carry out daily work with supervision from the DVS (to be considered in the revision of the legislation as a “delegation”).
- Expand the BAITS capture of meat inspection data to non-export abattoirs.

Evidence (as listed in Appendix 6):

T23, T34, T36, T40, T42, T64, T65, T66, T59, T62, T63, T70, T176, T177, T178, T179, P1, P21, S20.

B. *Ante-* and *post mortem* inspection at slaughter facilities and associated premises *The authority and capability of the VS to implement and manage the ante-mortem inspection of animals destined for slaughter and the post-mortem inspection of carcases and meat products at slaughter facilities and associated premises, including to ensure meat hygiene and safety, and for the collection of information relevant to livestock diseases and zoonoses.* *This includes standards relating to veterinary and veterinary paraprofessional supervision and inspection, and protocols applied for ante- and post-mortem inspection findings, based on HACCP principles. It includes external coordination between Competent Authorities as may be required.*	**Levels of advancement**
	1. *Ante-* and *post-mortem* inspection is generally not undertaken in conformity with international standards.
	2. *Ante-* and *post-mortem* inspection with collection of disease information is undertaken in conformity with international standards only in selected premises (e.g. export premises).
	3. *Ante-* and *post-mortem* inspection with collection of disease information is undertaken in conformity with international standards for export premises and the major abattoirs in the larger cities and/or producing *meat* for distribution throughout the national market.
	4. *Ante-* and *post-mortem* inspection with collection of disease information is undertaken in conformity with international standards for all slaughter facilities producing meat for export, national and local markets.
	5. *Ante-* and *post-mortem* inspection with collection of disease information is undertaken in conformity with international standards at all premises (including municipal, community, and on farm slaughtering and distribution) and are subject to periodic audits.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	2. *Ante- and post mortem inspection and collection of disease information (and coordination, as required) are undertaken in conformity with international standards only at export premises.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	3. *Ante- and post mortem inspection and collection of disease information (and coordination, as required) are undertaken in conformity with international standards for export premises and for major abattoirs producing meat for distribution throughout the national market.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Introduction of the BAITS system to electronically capture pre-slaughter animal health data and meat inspection findings at export abattoirs.

- Beef measles control strategy launched on the 16th August 2018.
- Meat inspection now implemented at poultry abattoirs by the DVS.

Findings:

The legal basis for official DVS controls for ante- and post-mortem inspections at slaughter facilities and associated premises is available in the LMIA. The DVS, and more specifically the Deputy Director for Public Health, licenses all meat inspectors and provides meat inspection services to all registered abattoirs. Abattoirs are required to be registered in the BAITS and the DVS has developed SOPs for the ante- and post-mortem meat inspection processes. Meat inspectors are also trained in ante-mortem and slaughter animal welfare procedures and receive a training certificate. The BMC has its own SOP for animal welfare officers.

At all abattoirs visited by the Team, there was evidence of effective supervision of meat inspectors by veterinarians. The BMC have a resident competent authority who is a DVS employed veterinarian in charge of all ante and post-mortem inspections and who carries out the DVS responsibilities including all supervisory and certification procedures. The BMC Lobatse abattoir has an identification system using a stamp (for stamping meat that has passed meat inspection in the abattoir) which includes an abattoir identification number.

Procedures are available for implementation of local and international standards at abattoirs and processing plants in the country. There was evidence that FMD ante mortem inspections are carried out in all export abattoirs in the country. CBPP surveillance was included in the Maun BMC abattoir as part of post-mortem inspections. In addition, there is a beef measles (*Cysticercus bovis*) control plan that is implemented by abattoirs.

The BMC has also developed a feedback mechanism for ante and post-mortem findings to districts so that extension officers can inform producers or take action where necessary. The pre-slaughter animal health data is captured electronically at all export abattoirs. At non-export abattoirs animal health data is captured manually in monthly reports by district.

Strengths:

- Meat inspection is carried out under the mandate of the DVS.
- Establishments are registered by the DVS in the BAITS program.
- Abattoir surveillance is carried out according to the DVS National Disease Surveillance Plan.
- Abattoir findings are linked to the place of origin and investigations can be carried out where necessary.

Weaknesses:

- Pre-slaughter animal health data and meat inspection findings are only captured electronically at export abattoirs; non-export abattoir data is captured manually.

Recommendations:

- Consider capturing pre-slaughter animal health data at non-export abattoirs electronically.

Evidence (as listed in Appendix 6):

T65, S19, S33, SC14, T6, T20, T23, T26, T34, T36, T53, T66, T89, T64, T200, P1, P21.

II-8 Veterinary medicines and biologicals	Levels of advancement
The authority and capability of the VS to regulate veterinary medicines, and biologicals, in order to ensure their quality and safety, as well as their responsible and prudent use, including as medicated feed. *This includes the marketing authorisation/registration, import, manufacture, quality control, export, labelling, advertising, distribution, sale (includes dispensing) and use (includes prescribing) of these products.*	1. The VS cannot regulate veterinary medicines and biologicals.
	2. The VS have some capability to exercise regulatory and administrative control over the import, manufacture and market authorisation (registration) of veterinary medicines and biologicals to ensure their safety and quality, but cannot ensure their responsible and prudent use in the field.
	3. The VS exercise effective regulatory and administrative control for the market authorisation of veterinary medicines and biologicals and have some capacity to regulate to ensure their responsible and prudent use in the field, including reducing the risk from illegal imports.
	4. The VS exercise comprehensive and effective regulatory and administrative control of all aspects of veterinary medicines and biologicals, including market authorisation, responsible and prudent use in the field, and reducing the risks of illegal distribution and use.
	5. The control systems for veterinary medicines and biologicals are regularly audited, tested and updated when necessary, including via an effective pharmacovigilance programme.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. The VS exercise effective administrative control and implement quality standards for most aspects of the regulation of veterinary medicines and veterinary biologicals.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The VS exercise comprehensive and effective regulatory control of veterinary medicines and veterinary biologicals.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Since 2016, the dispensing of VMP has been privatised and delegated to the BAMB.
- The Medicines and Related Substances Act (MRSA) was established in 2013 and complements EU legislative export requirements in regard to residues of VMPs in food of animal origin.
- MRSA and the Veterinary Surgeons Act will be included in the legislation review.

Findings:

The current Diseases of Animals Act (Chapter 37:01) empowers the Director of the DVS to authorise the manufacture and supply of VMPs, including vaccines. The BVI is the only approved vaccine producer in Botswana, hence all other VMPs are imported. Only VMPs approved in the EU, Republic of South Africa, Namibia and Zimbabwe may be imported into Botswana through an import permit issued by the DVS. A list of drugs for use in Botswana is available and its composition is guided by EU regulations, such as Council Directive 96/22/EC, 96/23/EC, Regulation 1831/2003 EC and 27/2010/EU and the national legislation.

The National Legislation, namely the MRSA, 2013, provides for control of residues of VMPs in food of animal origin and empowers the DVS Director to determine substances prohibited for use in animals.

The MRSA also limits the use of VMPs in food animals to antibiotics, dips, anthelmintic and anti-inflammatory drugs, while growth promoters such as beta agonists, thyrostats and some antibiotics are not permitted, except for use by veterinarians for therapeutic purposes or to control oestrus. The MRSA does not yet regulate the use of genetically modified organisms.

The procedure for authorisation of importation of VMPs is clearly stipulated in an SOP. The importer must submit an application which is compared with the list of permitted VMPs and an import permit is either granted or refused.

Distributers must have a licence, which must be renewed annually, and they must keep a record of dispensing of VMPs to livestock keepers. The sale of VMPs must be done by a registered Veterinarian or VPP. VMP distributers are subject to regular periodic and unscheduled audits by the Compliance Policy and Development division of the DVS with internal checks of records on distribution of VMPs.

Veterinary surgeons can keep, prescribe and dispense VMPs in their practices, but must also keep a record of the livestock keepers that receive VMPs.

Since 2015 the DVS reports to the OIE the quantities of antimicrobials imported and sold. During the period of transitioning sales of VMPs from the LAC to the BAMB in 2016, all imported VMPs were stopped, resulting in a drastic reduction of antimicrobial sales. However, VMP sales increased to previous levels after the import ban was lifted. The BAMB is also required to keep records of livestock keepers (using their BAITS ID) and the VMPs they have purchased. The BAMB has an economic advantage in being able to buy VMPs at wholesale price in large quantities and distribute these to their 38 countrywide outlets. This has also affected the ability of private veterinarians to profitably sell VMPs. The issue of destroying expired drugs in a biosecure manner has not yet been resolved by the BAMB.

The DVS has a designated an OIE Focal Point for VMPs.

The DVS has been very rigorous in advocating the prudent use of antimicrobials through communication to livestock keepers and extension workers.

At the premises level, livestock keepers are required to maintain treatment records for their animals and those are reviewed in the farm inspections for traceability and VMP residue controls. Maintenance of these premise records has been found to be a major challenge and requires intense education of livestock owners and extension officer's support.

In 2018, the Botswana Medicines and Regulatory Authority (BOMRA) was created under an Act of Parliament (MRSA, 2013) as a parastatal Board to regulate the supply chain of VMPs

in the human and animal health sectors. The BOMRA currently has 56 staff but aims to have about 100; it has its own laboratory and will do the assessment of dossiers for market authorisation, registration of outlets and inspections. The process of transition of VMP authority from the DVS to the BOMRA is ongoing. The Director of the DVS is an ex-officio member of the BOMRA Board. In an initial phase, the BOMRA will focus on registering VMPs that have previously been authorised by the DVS.

During the transition period, BOMRA will register new premises for the sale of VMPs as of May 1, 2019, and imports/exports as of July 1, 2019. The DVS will continue inspections of the registered VMP outlets, presently numbering around 300, until 2020 when the BOMRA will assume responsibility.

Strengths:

- The dispensing of VMPs to livestock keepers requires official registration and oversight, allowing for traceability of these products and measurement of quantities consumed.
- No evidence of illegal drug marketing due to the low pricing offered by the BAMB.
- The DVS provides the OIE with information on quantities of antimicrobials imported and sold.
- The DVS has a designated OIE Focal Point for VMPs.

Weaknesses:

- An uncertainty exists over who will control the list of registered VMPs after the transition to the BOMRA.
- Difficulties in compliance by livestock owners to maintain treatment records.
- The BAMB continues to face problems in ensuring destruction of expired drugs.

Recommendations:

- Make efforts to ensure that the DVS will remain in control of licensing and regulating VMPs after the BOMRA is operational. Appropriate legislative measures to address this concern should be considered while revising the legal framework, particularly the MRSA, 2013.
- The DVS should establish an internal body to provide advice and management on the proper use of VMPs and promote these principles.
- Augment education for livestock keepers on the necessity of maintaining required on-farm treatment records.

Evidence (as listed in Appendix 6):

S24, T30, T54, T69, T108, T109, S43, S25, S23, S6, T171, T183, T184, T185.

II-9 Antimicrobial Resistance (AMR) and Antimicrobial Use (AMU) *The authority and capability of the VS to manage AMU and AMR, and to undertake surveillance and control of the development and spread of AMR pathogens in animal production and animal origin food products, via a One Health approach.*	Levels of advancement
	1. The VS cannot regulate or control AMR and AMU, and have not developed or contributed to an AMR action plan covering the veterinary domain.
	2. The VS are contributing or have contributed to a national AMR action plan. The action plan has initiated some activities to collect AMU/AMR data or control AMR e.g. awareness campaigns targeting veterinarians or farmers on the prudent use of antimicrobials. The use of antimicrobials for growth promotion is discouraged.
	3. The VS have defined a national AMR action plan in coordination with the Public Health authorities and other stakeholders, and are implementing some AMU/AMR surveillance and regulations. The use of antimicrobials for growth promotion is prohibited.
	4. The VS are implementing a comprehensive AMR action plan based on risk, including AMR surveillance of the most important pathogens for animal health or food-borne diseases, the monitoring of AMU, and the prudent use of antimicrobials in animals (especially the use of critically important antimicrobials). The use of antimicrobials for growth promotion does not occur.
	5. An effective national AMR action plan covering the veterinary domain is regularly audited, reviewed and updated by the VS with the Public Health authorities and other stakeholders, using the results of AMR surveillance. The scale and type of antimicrobial usage in animals poses minimal risk of AMR and alternative solutions for the control of diseases in animals are being implemented.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	N/A
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	N/A

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- A Draft Botswana National Action Plan on antimicrobial resistance has been developed.

- Creation of the Botswana Agricultural Marketing Board (BAMB).
- Creation of the Botswana Medicines Regulatory Authority (BOMRA).

Findings:

A Draft Botswana National Action Plan (NAP) on antimicrobial resistance has been developed, in line with the WHO Global Action Plan. A Cabinet memorandum has not yet endorsed, but because Botswana is a signatory to the Global Action Plan, it is likely to be endorsed. Due to European Union's strict market access requirements for residues, the need for approval of the NAP is greater for the DVS than for the MoHW.

An antimicrobial resistance (AMR) working group was established in February 2017 with key stakeholders from 3 main sectors comprising human health, animal health and the environment. The DVS is an active member of the working group and fully participates in activities and programmes.

Regular surveillance for AMR has not yet been carried out in the country. However, a pilot study by the BNVL has been undertaken on some species. Growth promoters are prohibited for import or use in the country. The issuance of import and export permits by the DVS is in a phase of transition as this function is soon to be delegated to the newly created BOMRA.

The migration of the sale of VMPs from the Livestock Advisory Centres (LAC) to the Botswana Agricultural Marketing Board (BAMB) occurred in April 2016 with 12 out of 38 branches of the BAMB certified to ISO 9001. Prices for VMPs available at the BAMB are heavily subsidised by the government. As a result, private veterinarians and other suppliers cannot compete with the BAMB on the prices for basic VMP's. The BAMB intends to be a "one stop shop" for all Agricultural needs for livestock owners. The BAMB sales agents are trained in the use of veterinary agrochemicals and on the appropriate use of antimicrobials. All livestock producers are required to have a keeper ID in order to buy VMP's at any BAMB outlet countrywide. The antimicrobial sales at the BAMB outlets are restricted to only sulphonamides and tetracyclines and any sale is recorded to include the buyers BAITS ID.

While the BAMB has put a system in place for traceability of sale of antimicrobials, the MRSA does not make provisions for traceability of VMP. This weakness is being addressed under on-going review of legislation.

Since 2015, the DVS has been submitting information on quantities of antimicrobials imported and used in-country to the OIE, based on data received from BAMB. Similar data is not currently collected by the MoHW. Therefore, on the human side, there is no baseline data on antimicrobial use available.

Strengths:

- A national action plan for combating antimicrobial resistance has been drafted.
- The BAMB gives advice to livestock producers on the prudent use of antimicrobials when dispensing them, particularly to poultry farmers.
- The BAMB has 38 branches spread-out in Botswana and attempts to reach out to even the most rural areas where no private sector can be established.

- One feedlot supplying BMC has a computer system in place to automatically record withdrawal periods for all drugs given before slaughter.
- Due to easy access to VMPs and the reasonable prices through the BAMB, there is no incentive for livestock keepers to seek drugs illegally; suggesting a strong regulatory and control authority by the DVS.

Weaknesses:

- The BAMB buys veterinary drugs and biologicals in large quantities and might not always sell them before their expiry dates. There is a need therefore to develop and implement guidelines on environmentally friendly methods (backed by legislation) for the proper disposal of expired veterinary medicines and biologicals.
- The AMR working group created in 2017 has not been meeting regularly and this has led to absence or fragmented implementation of activities.
- MRSA does not make provisions for traceability of VMPs

Recommendations:

- Continue to leverage political support for the adoption and launch of the National Action Plan (NAP) on Antimicrobial Resistance.
- Develop and implement a national surveillance programme for antimicrobial resistance.

Evidence (as listed in Appendix 6):

S28, T30, C1p, C2p, C3p, C4p, C5p, C6p, C7p, S20, T184, T185.

II-10 Residue testing, monitoring and management *The capability of the VS to undertake residue testing and monitoring programmes for veterinary medicines (e.g. antimicrobials and hormones), chemicals, pesticides, radionuclides, heavy metals, etc. and respond appropriately to adverse findings.*	Levels of advancement
	1. No residue testing for animal products is being undertaken.
	2. Some residue testing is being undertaken, such as for research or pilot purposes and/or it is conducted only on specific animal products for export.
	3. A comprehensive residue *monitoring* programme is conducted for all animal products for export and some for domestic consumption based on limited risk analysis. Documented protocols exist for preventing residue risks (e.g. withholding periods for veterinary drugs) and for responding to breaches of Maximum Residue Limits.
	4. A comprehensive residue *monitoring* programme is conducted for all animal products for export and domestic consumption based on risk analysis. Effective protocols both reduce residue risks and respond to breaches of Maximum Residue Limits, including traceback and follow up.
	5. The residue *monitoring* and risk management programme is subject to routine quality assurance and regular evaluation/audit.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. A comprehensive residue testing programme is performed for all animal products for export and some for domestic use.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	3. A comprehensive residue testing programme is performed for all animal products for export and some for domestic use.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- 15 test methods are ISO 17025 accredited as compared to only one method in 2010.

Findings:

Residue testing is a requirement for export to the EU and has been an issue of contention in previous EU FVO reports, particularly the keeping of farm records on treatment of food producing animals[6].

[6] In line with Annex I, part A, III of Regulation (EC) No 852/2004

Residue monitoring by the DVS has constantly improved and covers a wide range of samples, including feed, live animals (cattle, horses, ostrich, donkey), organs, water and meat.

A residue surveillance and monitoring plan is updated annually by the BNVL on the basis of the production of commodity animals the previous year. The plan is subdivided into Districts and DVOs obtain their monthly plan for on-farm and export abattoir sampling.

Received samples are categorized into prohibited substances and anabolic steroids (Group A) and veterinary drugs and contaminants (Group B). Compliance is based on EU Regulations for maximum residue limits (MRL) (37/2020/EU; 1881/2006/EC; 396/2005) and no positive finding for prohibited substances. Transcribing appropriate legislation into the new AHW&VPHA law will be covered by the upcoming legislative review, with the responsibility of detection and control of residues falling under the DVS.

Since 2010, the BNVL has increased its capacity to carry out the residue testing programme. It received substantial support from the IAEA which assisted in training scientists, provided equipment and validated test methods for veterinary drugs. However, some 10 tests still need to be outsourced to the FERA Science Ltd laboratory in UK. This makes the turn-around time for samples somewhat unpredictable and can require more than the two weeks that the BNVL takes for their testing. The BNVL plans to acquire the capacity to do those 10 outsourced tests by 2021.

Hence, in the case of a non-compliance suspicion, the live animal or meat product destined for export has to be detained and an investigation of the farm of origin is initiated; including feed source. Further samples are taken, and final results are pending, including those from UK. An SOP has been developed for this purpose.

In the event of a positive confirmed result, already exported meat must be recalled, and intensified surveillance is carried out on the farm/feedlot of origin.

Strengths:

- Highly advanced diagnostic equipment (e.g. Liquid Chromatography with tandem mass spectrometry) was bought with the assistance of the IAEA which helped to reduce the number of tests to be outsourced to foreign laboratory.
- Test methods used at the BNVL are SADCAS accredited to ISO 17025.

Weaknesses:

- While the number of samples being tested by a UK laboratory has gone down drastically, this need is still expensive.

Recommendations:

- Continue to build in-house capacity at the BNVL to reduce costs of test outsourcing.
- Eventually increase the scope residue testing and include other species, particularly poultry products.

Evidence (as listed in Appendix 6):

S41, T15, T34, S21, S20, S22, S5, T184, T185

II-11 Animal feed safety	Levels of advancement
The authority and capability of the VS to regulate animal feed safety e.g. processing, handling, storage, distribution and use of both commercial and on-farm produced animal feed and feed ingredients. *This includes feed safety risks such as swill feeding, feeding by-products, ruminant feed bans, the use of antimicrobials in feed, as well as managing risks of microbial, physical and toxin contamination of feed.*	1. The VS cannot regulate animal feed safety.
	2. The VS have some capability to exercise regulatory and administrative control over animal feed safety.
	3. The VS exercise regulatory and administrative control for most aspects of animal feed safety.
	4. The VS exercise comprehensive and effective regulatory and administrative control of animal feed safety.
	5. The control systems are regularly audited, tested and updated when necessary.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	N/A
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	N/A

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

This is a new Critical Competence.

Findings:

National legislation addressing the manufacture, composition, safety and quality control of animal feeds are, to some extent, found in the DoAA 2004 and Section 48 & 49 of the 2013 MRSA for control of feed-mills, premix and residue limits. It should be noted that no legal provision yet exists for registration or approval of feed production establishments, the health requirements for relevant operations or for the recall of contaminated or infected animal feeds. In addition, Botswana has implemented the EU feed safety regulations: Regulation (EC) 1831/2003 regarding authorised feed additives, Council Directive 96/23/EC on measures to monitor certain substances and residues thereof and Regulation (EC) No 178/2002 of the European Parliament and of the Council laying down the general principles and requirements of food law.

The DVS staff responsible for oversight of animal feed safety is the Compliance, Policy and Development Division with field services in animal husbandry, animal feeding and nutrition provided by the DAP. Feed manufacturers, importers and suppliers must be registered by the Director of the DVS. The manufacture of animal feeds requires that an interested party submit an application to the DVS which states the type of feed, specifications or formulations for all

the feeds intended to be produced, and the source of raw materials and are required to have an on-site qualified nutritionist to supervise production. The application for manufacture and sale of animal feeds can be accessed online. All feed manufacturing premises are subject to pre-licensing and spot inspections by the DVS (District PVOs) with licenses valid for 1 year. However, easily accessible records of applications for feed production, authorized feed production establishments (domestic and foreign) and retailers were not available.

In addition, the DVS has stipulated that animal feeds may not contain specified hormones, thyrostatic compounds, beta agonists and meat and bone meal of animal origin. Antibiotics are not permitted as feed additives apart from coccidiostats and histomonostats. The quality assurance authority for animal feed content and labelling are regulated by the Botswana Bureau of Standards. Animal feeds are marketed at either private agro-supply stores or at BAMB depots.

Legislation for imported animal feed is found in Section 6 (1) of DoAA 1977 and these products can enter through designated border entry points under the supervision of customs officials. Prior to import of animal feed, a permit must be secured from the Compliance, Policy and Development Division of the DVS. Upon import of the product, the accompanying permit is then verified by Customs through the Import/Export staff of the DVS (who consults with Compliance, Policy and Development Division on the original permit specifications) and, if approved, allowed entry. A private agro-supply owner indicated that although this process is needed to ensure safe import, the time limits of the permit are very short to complete all the above and he has found himself at the border with product and expired permit. Consultation by Customs with the DVS had clarified this problem for the agro-supply owner, but he suggested that permit expirations should be lengthened.

To maintain beef access to the EU, audits include monitoring of official feed safety controls such as feed additives (Regulation EC No. 1831/2003) and control of feed (Regulation EC No. 767/2009). Amongst the list of routine activities performed by the DVS field staff is veterinary medical pharmaceutical and livestock feed audits. How these auditing requirements are enforced for all animal feeds in Botswana was not clear.

As per DoAA (SI 126,2004), inclusion of meat and bone-meal, poultry excreta or waste containing ruminant protein is not permitted in stock feed. Although the “Botswana Animal Health Plan for Foot-and-mouth Disease” does mention risks associated with swill feeding, its implementation is not clarified. Despite the small population of swine in Botswana, the DVS should be applying its authority to regulate garbage-feeding nation-wide. This lack of oversight may also be due to swill-feeding having a lower priority for existing limited staff, however, real risks of FMD, ASF and CSF exist regionally.

In interviews with the Compliance, Policy and Development Division staff of the DVS it was evident that it was still developing its approach to regulate animal feed safety and expected the ongoing revision of legislation to clarify their mandate in this area.

Animal feedstuffs are sampled as part of the national surveillance and monitoring programmes for environmental and chemical residues and contaminants (in accordance with Statutory Instrument 103, 1987 and EU council directive 96/23/EC). As part of the DVS effort in QMC an SOP for approval of importation of veterinary medicinal products (including animal feeds) and one for Procedure for Verification of on farm Records (including animal feed) has been drafted.

Strengths:

- The DVS has a nation-wide presence and could effectively regulate animal feed safety with support from the BAMB.
- The VS has implemented a ban on ruminant-to-ruminant feeding and use of poultry litter in bovine feed as prescribed by the OIE TAHC.
- No antimicrobials are authorized for use in animal feeds.
- Additional legal authority for feeds will be expanded in new laws under development.

Weaknesses:

- The DVS presently has no legal provision for registration/approval of feed production establishments, health requirements for manufactures or for recall of contaminated or infected animal feeds.
- No existing regulations on swill feeding of swine.
- Little available evidence of record keeping for animal feed applications, registrations and/or authorizations.

Recommendations:

- Clear legislation is required to provide the DVS with a strong mandate in the regulation of animal feed safety.
- Feed regulations and controls should be supported by epidemiological surveillance and risk analysis.
- The DVS should maintain a database of applications/registrations/authorizations of all domestically produced and foreign imports of feed as well as in-country retailers.
- New legislation should contemplate the establishment of dedicated feed inspection staff and the maintenance of inspection records and penalties to be applied.

Evidence (as listed in Appendix 6):

T15, T 43, T54, T69, T72, T81, T82, T84, T88, T134, T139, T149, T150, T151, T152, T160, T163, T174, T183, T185/P4, P10, P11, P21.

II-12 Identification, traceability and movement control **A. Premises, herd, batch and animal identification, tracing and movement control** *The authority and capability of the VS, in coordination with producers and other stakeholders, to regulate the identification of animals, to trace their history and location(s), and to control domestic movements for the purpose of animal disease control, food safety, trade or other legal requirements under the VS mandate.*	**Levels of advancement**
	1. The VS do not have the authority or the capability to regulate the identification of animals, either individually, by batch, or by premises, or to trace and control their movements.
	2. The VS can identify some animals by premises or location and control some movements, using traditional methods, and can demonstrate the ability to deal with a specific problem (e.g. to trace sampled or vaccinated animals for follow up, or to prevent theft).
	3. The VS implement a system for *animal identification, traceability* and movement control for specific animal sub-populations (e.g. for export, at borders, specified zones or markets) as required for traceability and/or disease control, in accordance with international standards.
	4. The VS implement appropriate and effective *animal identification, traceability* and movement control procedures for some animal species at national level, in accordance with international standards.
	5. The VS carry out periodic audits of the effectiveness of their identification, traceability and movement control systems. They have been demonstrated as effective in dealing with a problem (e.g. tracing a disease *outbreak*, residue or other food safety incident).

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	3. The VS implement procedures for animal identification and movement control for specific animal sub populations as required for disease control, in accordance with relevant international standards.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. The VS carry out periodic audits of the effectiveness of their identification and movement control systems.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The DVS has overseen the migration from the LITS (Livestock Identification and Trace-back System) using a bolus to the BAITS (Botswana Animal Identification System) using double ear tags (digital and analogue), covering the entire country.
- The LAC (Livestock Advisory Centres) provide ear tags to livestock keepers.

Findings:

After a transition period from bolus to ear tags, the animal identification system started operating effectively in 2016 and is now supported by a regulation under the Animal Health Act (2018). Holdings, keepers and animals are registered in the database, with livestock owners being responsible for ear tagging their animals (ear tags were supplied for free initially in the red zone) and to input relevant animal details into the BAITS. To date, over 2 million animals have been entered into the BAITS through the accounts of some 64,000 livestock keepers. along with the registration of 6221 holdings and 13454 crush pens. Where livestock keepers are unable to manage their responsibilities, local youth have been employed to run "BAITS cafes" where producers are assisted in the computer entry process. Each SDVO has a BAITS officer who trains extension officers. The BAITS programme supports required protocols for the movement of livestock between zones by issuing transit certificates in the system.

Guidelines and SOPs for various aspects of the BAITS implementation (e.g. guidelines for registration of holdings, SOP for registration of livestock keeper, SOP for ear tag replacement and SOP for issuing animal movement permits) were developed in 2018 and are available in all the DVS field offices through to the extension unit level.

Ear tags are supplied by the LAC who have administrative access to the BAITS to register sales and to monitor usage of ear tags issued to livestock owners. If the system shows more than 5 unused tags, the LAC will issue no new ones to that owner. Initially ear tags were distributed for free, however, they are now made available at a subsidised cost of 20 P per tag and 10 P for replacement tags.

Livestock owners also use brands on animals, and these are linked to the keeper ID. Animals which still carry a bolus are only assigned an analogue ear tag.

As a means to encourage livestock producers to register, the BAMB (see CC II.8) requires the BAITS livestock keeper's ID in order to purchase drugs thus allowing the tracking of VMP usage by individual owner.

Registered holdings are audited every 6 months by the DVO and SDVO on the basis of an established auditing schedule. However, the workload burden on staff has compelled the DVS to consider risk-based auditing. Future requirements will only allow the issuance of movement permits to livestock keepers who have successfully complied with the BAITS audit report requirements. The compliance of the DVO/SDVO in the correct use of the system is audited by the DVS' Compliance, Policy and Development division.

Eligibility of holdings/animals in the green zone for EU slaughter is also being tested in the BAITS for auditing purposes in regard to residue control, monitoring VMP use, and confirmation of 40-day residence requirements. In this manner, a movement permit is only issued if the audit report demonstrates successful compliance. To date, 12 feedlots, 1700 fenced farms and 682 communal holdings are compliant and eligible in the green zone. If audit results show non-compliance, then a movement permit is issued for the local markets.

Some 150 rugged laptops have recently been purchased by the DVS and are currently being loaded with the BAITS Version 2.0 for use by extension officers to enter registration

information, animal health data and to issue movement permits in the field. The new Version 2.0 will allow also off-line use of the BAITS.

Strengths:

- The existing legal framework provides the Director of the DVS with the authority to register all animals and keepers in line with OIE TAHC 4.1 and 4.2; however, currently the focus of identification and traceability is presently only on cattle.
- Regular audits of the system and livestock keeper compliance are done at two levels; first by the DVO staff and second by the Compliance, Policy and Development division of the DVS.
- Livestock owner needs in moving animals allow for" regulatory coercion" which ensures compliance with the BAITS requirements.
- Feedlot farmers appreciate the BAITS system as much better than the previous LITS.

Weaknesses:

- Livestock owners tend to buy large quantities of ear tags but take time to tag and register their animals; the LACs are monitoring ear tag use and will refuse additional sales of new tags if a registered keeper has too many unused tags.
- At present the transfer of livestock ownership in the BAITS is a challenging; attempts are underway to adjust the system so that an onward sale of animas is simplified.
- The BAITS already provides a module to capture passive animal health surveillance data, but it is not used sufficiently, and implementation appears to differ substantially between Districts; a new Version 2.0 will have offline capacity and it is hoped that this will improve usage.
- Lost ear tags and the non-return of ear tags from fallen or stolen animals are important challenges as it prevents timely updating of the BAITS.
- Ensuring compliance to the BAITS also places an additional workload burden on personnel and taxes transport resources.

Recommendations:

- The DVS should continue its efforts to register all remaining holdings and animals.
- Investigate a means to incentivise the return of ear tags from fallen animals.
- Speed up installation and rollout of Version 2.
- Link the BAITS to the SILAB and increase use of the BAITS animal health (disease incidence) module.
- Make use of the large amount of data for epidemiological analysis, risk assessments and surveillance sampling frames.

Evidence (as listed in Appendix 6):

T13, T27, T44, T45, T46, T47, T48, T49, T56., T55, T57, T61, T67, T69, T83, T95, T109, T108, T121, S8

B. Identification, traceability and control of products of animal origin *The capability of the Veterinary Authority, in coordination with Competent Authorities (such as food safety authorities) and other stakeholders as appropriate, to achieve whole-of-chain traceability, including the identification, tracing and control of products of animal origin for the purpose of food safety, animal health or trade.*	**Levels of advancement**
	1. The VS do not have the capability or access to information to identify or trace products of animal origin.
	2. The VS can identify and trace some products of animal origin, by coordination between Competent Authorities, to deal with a specific problem (e.g. high risk products traced back to premises of origin).
	3. The VS have implemented procedures to identify and trace some products of animal origin, in coordination with Competent Authorities, for food safety, animal health and trade purposes, in accordance with international standards.
	4. The VS have implemented national programmes enabling them to identify and trace all products of animal origin, and respond to threats, in coordination with Competent Authorities, in accordance with international standards.
	5. The VS periodically audit the effectiveness of their identification and traceability procedures, in coordination with Competent Authorities. The procedures have been demonstrated as being effective for traceback and response to a relevant food safety incident (e.g. foodborne zoonoses or residue incident).

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	3. The VS have implemented procedures to identify and trace some products of animal origin for food safety, animal health and trade purposes, in accordance with relevant international standards.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	3. The VS have implemented procedures to identify and trace some products of animal origin for food safety, animal health and trade purposes, in accordance with relevant international standards.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Transition to the BAITS system which allows for traceability of meat at least at batch level of animals on one movement certificate.

Findings:

Food hygiene for processed food falls under the authority of the MoHW, under the Food Control Act (1993). The Food control division of the MoHW carries out tests at their Food control laboratory in Gaborone. Environmental Health Officers undertake inspections of food establishments at the District level following a planned inspection schedule and also react to complains by the public. In the event of a positive finding, the DVS is informed.

Food hygiene and traceability of meat products is under the authority of the DVS up to the level of the cutting and packaging plant. Meat premises are registered and licensed by the DVS Veterinary Public Health Division, as are meat inspectors. The Resident Competent Authority (RCA) in export abattoirs implements official controls on: (1) ante- and post mortem inspection and health marking of carcasses, (2) auditing HACCP and good hygienic practices, (3) monitoring of carcass maturation, (4) biologic sampling, e.g. for residues, (5) surveillance, e.g. BSE, (6) animal welfare, (7) traceability, and (8) certification of products.

Animals originating from the FMD free zones must fulfil certain EU import eligibility criteria in line with established regulations, such as a 90-day residency in the free zone, 40-day residency in the establishment and maintenance of medical treatment records before being issued a movement certificate to the authorised export abattoir. The Botswana Meat Commission currently operates 2 export abattoirs; one in Lobatse and one in Maun; the former exporting to the EU, and the latter to regional markets such as the DRC and Mozambique. Another BMC abattoir in Francistown is currently closed.

The testing of water quality and environmental contamination of surfaces, carcasses and personal hygiene at export abattoirs are done by the BMC laboratory (accredited to ISO 17025) using a set of 18 tests[7] accredited by the SADCAS, performed 3-times weekly with monthly controls and accredited by the BNVL. Testing for chilled, frozen and fresh meat cuttings are done by BMC laboratory and the BNVL (see II-1.B) according to a set sampling schedule.

A SOP for process hygiene and food safety at abattoirs has recently been issued (April 2019) to guide all oversight and allow the RCA to control them.

Traceability of the final meat product, packed in boxes, can be done to the batch of animals that arrived under the same movement permit, but not to the individual livestock producer, as meat from different animals may be packed in one box. To test the capabilities of the abattoir to trace its products back to the producer(s), the RCA carries out regular simulation exercises in which a hypothetical scenario requires trace back and trace forward of the product. A full report is issued and identified weaknesses are discussed with the food business operator.

Strengths:

- Environmental contamination and food hygiene samples for meat destined for export to the EU and other regional markets are double tested by two ISO accredited laboratories.
- SOPs governing all food hygiene relevant processes have recently been developed.
- Traceability simulation exercises are carried out with food business operators.

[7] http://www.sadcas.org/botswana-meat-commission-lobatse

Weaknesses:

- Strictest food hygiene controls presently limited to export abattoirs (though the DVS oversight is indication of moving in the right direction).
- Turnaround time of results from the BNVL to the BMC laboratory are sometimes delayed, due to the long waiting period for residue control test results.

Recommendations:

- Replicate the excellent traceability system for meat to other products of other species.

Evidence (as listed in Appendix 6):

S29a, S29b, T42, S30, S31, S32, S33

II-13 Animal welfare	Levels of advancement
The authority and capability of the VS to legislate and implement the animal welfare standards of the OIE as published in the Terrestrial Code. *This requires consultation and coordination with Competent Authorities, non-governmental organisations and other stakeholders, as appropriate.*	1. There is no national legislation or regulations on *animal welfare*.
	2. There is limited national legislation or regulations on *animal welfare* covering some of the OIE standards, with limited stakeholder or public awareness.
	3. The national legislation and regulations on *animal welfare* cover most OIE standards, with some awareness programmes and implementation, but are in conformity with international standards in only some sectors (e.g. for the export sector).
	4. *Animal welfare* programmes, supported by suitable legislation and regulations, are being implemented in conformity with relevant international standards and are applied to most sectors and species with stakeholder and public awareness. Documented compliance programmes, including consequences for non-compliance are available.
	5. *Animal welfare* programmes, supported by suitable legislation and regulations, are being implemented in conformity with relevant international standards. Comprehensive national programmes are applied to all sectors and species with the active involvement of stakeholders. The animal welfare programmes, including non-compliance issues, are subject to regular audit and review, with documented cases of responding effectively to non-compliance.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	2. Some of the OIE standards are implemented, e.g. primarily for the export sector.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. All of the OIE standards are implemented, for the export and the domestic sector.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- A new compilation law for animal health will update the Animal Cruelty Act (1936/2008) and transfer animal welfare authority from the Police Services to the DVS.
- Several new animal welfare NGOs have been established in Botswana and they are collaboratively working with the DVS at the central (i.e. legislation review) and local (i.e. veterinary care) levels.

Findings:

Presently, legal authority for animal welfare concerns are addressed by the Animal Cruelty Act (1936/2008) which recognizes the competent authority for its implementation as the Botswanan Police Services. The law identifies offences in the cruel treatment of domestic animals including captive wild animals and provides for the destruction of mistreated animals on a court order and the slaughter of injured animals. New legislation being drafted will consolidate animal welfare authority under the DVS though no preliminary texts were available. The DVS staff directly involved in drafting upcoming legislative language on animal welfare indicated that recommendations from the 2015 OIE VLSP report formed a central consideration in the new law as well as input from stakeholders, including the BSPCA. The DVS has designated a Focal Point for Animal Welfare under the Deputy Directorship of Veterinary Public Health, though no other staff exist.

Animal welfare issues associated with EU export abattoirs such as transport of animals, lairage, movement into abattoir and stunning, are regularly audited by the EC's Food and Veterinary Office (FVO). General transport of livestock in Botswana is also based on EU regulations for livestock transport (Council Regulation (EC) No 1/2005 from 5 January 2007) and includes minimum space per animal, the number of hours animals can be transported non-stop and documentation for transport vehicles (i.e. disinfection records). All DVS Veterinarians assigned to work at EU abattoirs must receive periodic animal welfare training certification.

The MoA's Strategic Plan 2017-2023 focus on "Knowing the Sector" includes a bullet point on "Review legislation of health, public health, food safety and animal welfare." The DVS Departmental Performance Improvement Committee (DPIC) Annual Performance Plan includes the enforcement of compliance with animal welfare measures as an objective in implementation of commodity-based trade efforts.

The BMC and DVS have developed a "Procedure on Animal Welfare" which addressed identification of transgressions during transportation, handling before slaughter and at the time of slaughter and provides measures for key indicators of poor animal welfare during transportation. Although a DVS veterinarian is required to be present when animals are unloaded at any slaughter facility, it was not clear that animal welfare requirements were monitored and enforced at abattoirs serving national and local markets. The BUAN in Gaborone and its Meat Industry Training Institute (MITI) in Lobatse ensures that all curricula for VPP include animal welfare subject matter and also offers continuous education in this area to interested parties (i.e. private entities, farmers, etc.) through its Centre for In-service and Continuing Education (CICE).

The PVS mission had the opportunity to visit two NGOs involved in animal welfare; the BSPCA in Gaborone concentrating on stray cats and dogs and the SPANA in Maun focusing on draft donkeys. Both these organizations felt they received the full support of the DVS and had

regular contact with them, including consultation for developing animal welfare legislation or to assist in treatment of injured work animals. Some DVS staff also offered their veterinary services to free spay clinic events.

Strengths:

- Specific attention to animal welfare is included in newly developed animal health laws with competent authority imparted to the DVS.
- The DVS does have an Animal Welfare Focal Point.
- The development of new animal welfare laws has considered the 2015 OIE VLSP mission and included input from NGOs.
- In-country NGOs involved in animal welfare are in regular contact with the DVS and receive non-financial support from district staffs, as required.
- Animal welfare requirements at slaughterhouses as required for EU export, are enforced and now form part of the BUAN curricula for VPPs and meat inspection training.

Weaknesses:

- The only presently existing animal welfare legislation is the Animal Cruelty Act (1936/2008) which cites the Police and not the DVS as the competent authority.
- Animal welfare requirements associated to abattoirs should be implemented at export, national and local levels.
- Besides the Animal Welfare Focal Point and those in DVS certified in animal welfare for meat production, there does not appear to be a staff dedicated exclusively to this area at the central level.

Recommendations:

- All efforts should be expended in ensuring that new legislation under consideration for animal welfare be thorough and comprehensive for all species under the DVS mandate.
- In addition to the DVS Animal Welfare Focal Point, consideration should be given to additional staff that can assist in ensuring that this Critical Competency is applied at all abattoirs and for concerns outside meat production.
- In the future, the Compliance, Policy and Development Division through its QMS effort, should develop sampling strategies for field visit to sites of draft animal use, slaughter, export, and transport by road, air and sea with consideration of external independent audits.

Evidence (as listed in Appendix 6):

T5, T20, T26, T80, T116, T147, T148, T163, T172, T186, T187, T198/P1, P2, P20,

III.3 Fundamental component III: Interaction with stakeholders

This component of the evaluation concerns the capability of the VS to collaborate with and involve non-government stakeholders including the private sector, Non-Government Organisations (NGOs) and civil society organisations (including consumer organisations) in the implementation of programmes and activities. This also includes relevant state-owned enterprises, research institutions, universities and other training establishments.

Critical Competencies:

Terrestrial Code References:

Points 6, 7, 9 and 13 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation/General organisation/Procedures and standards/Communication.

Point 9 of Article 3.2.1. on General considerations.

Points 2 and 7 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.

Sub-point b) of Point 2 of Article 3.2.6. on Administrative resources: Communications.

Article 3.2.11. on Participation on OIE activities.

Article 3.2.12. on Evaluation of the veterinary statutory body.

Points 4, 8 and Sub-point g) of Point 10 of Article 3.2.14. on Administration details/Animal health, animal welfare and veterinary public health controls/Sources of independent scientific expertise.

Chapter 3.3. on Communication.

Point 4 of Article 3.4.3. on General principles: Consultation.

Article 3.4.5. on Competent Authorities.

Article 3.4.6. on Veterinarians and veterinary paraprofessionals.

III-1 Communication	Levels of advancement
The capability of the VS to keep non- government stakeholders aware and informed, in a transparent, effective and timely manner, of VS activities and programmes, and of developments in animal health, animal welfare and veterinary public health. *This competency includes communication with all non-government stakeholders, including livestock farmer, meat sector, dairy sector and trading groups, as well as relevant NGOs and the general public, such as via communication campaigns and the media, including social media.*	1. The VS do not inform stakeholders of VS activities and programmes.
	2. The VS have informal communication mechanisms with some stakeholders e.g. with the larger commercial livestock or related companies.
	3. The VS maintain a dedicated and specialist communications function which communicates with stakeholders occasionally, but it is not always up-to-date or pro-active in providing information.
	4. The VS contact point or unit for communication provides up-to-date information to most relevant stakeholders. This information is aligned with a well developed communications plan, and accessible via the Internet and other appropriate channels targeted to the audience, and covers relevant events, activities and programmes, including during crises.
	5. The VS have a well-developed communications plan, and regularly circulate information to all relevant stakeholders, well targeted to the audience via the full range of communications media, including social media. The VS regularly evaluate and revise their communications plan.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	2. The VS have informal communication mechanisms.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The VS contact point for communications provides up-to-date information, accessible via the internet and other appropriate channels, on activities and programmes.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- There is an OIE Communications Focal Point for the DVS.

Findings:

The Director of DVS officially assumes the responsibility of communicating to all stakeholders. For example, in cases of FMD outbreaks, the Director informs all stakeholders such as OIE, AU-IBAR, SADC, neighbouring countries, livestock producers and trading partners.

The village Kgotla meetings are used by the DVS as an important communication channel to local livestock keepers throughout the country. Kgotlas have local village development committees where the DVS staff at the Districts, Sub-districts and Extension Office level are able to attend and meet with the farmers.

Livestock keepers are informed of the DVS programmes such as vaccinations through; local staff visiting villages, notification of vaccination schedules, radio and television, phone and text messaging as well as using innovative social media communication channels such as WhatsApp with individual farmers (i.e. livestock producers) or farmers associations. However, some livestock keepers interviewed complained that the DVS sometimes provides short notice for some of their programmes such as FMD vaccinations.

The DVS develops a broad range of communication material, often in the local language, such as for rabies or HPAI awareness brochures, and also organises stakeholder workshops on these specific issues at which such brochures are distributed.

The MoA has a Division of Agriculture Information and Public Relations through which all communications from the DVS can be channelled. Under this division, there is also a Ministerial communications strategy that was developed in 2017 for the country.

Strengths:

- The MoA has a Communications Strategy.

Weaknesses:

- The DVS lacks a communications expert or its own communication plan.

Recommendations:

- Formalise communication channels and develop a DVS communication strategy to ensure regular and consistent information sharing with stakeholders.
- Acquire a communications expert for the DVS.
- Highlight the DVS mission and services on the Ministerial website providing more information and indicating the period of validity of documents and forms for downloading.

Evidence (as listed in Appendix 6):

T33, C20, T100, T101, T117, T118, T113

III-2 Consultation with stakeholders	Levels of advancement
The capability of the VS to consult effectively with non-government stakeholders on VS policies and programmes, and on developments in animal health and food safety. *This competency includes consultation with all non-government stakeholders, including livestock farmer, meat sector, dairy sector and trading groups or associations, as well as interested NGOs and members of the public.* *Unlike communication (CCIII-1), consultation is two way and should involve mechanisms that not only inform, but actively seek views of consulted parties, for consideration and response.*	1. The VS have no mechanisms for consultation with non-government stakeholders. 2. The VS maintain informal channels of consultation with some non-government stakeholders (e.g. only the larger commercial livestock or related companies) 3. The VS hold formal consultations with non-government stakeholders, usually represented by industry groups or associations. 4. The VS regularly hold workshops and meetings with non-government stakeholders, who are organised to have broad representation, such as through elected, self-financed industry groups or associations. Consultation outcomes are documented and the views of stakeholders considered and occasionally incorporated. 5. The VS actively consult with all non-government stakeholders, including representatives of smaller producers, regarding current and proposed policies and programmes, developments in animal health and food safety, and proposed interventions at the OIE, Codex Alimentarius Commission, WTO SPS Committee, etc. The consultation results in improved, better adapted activities and greater stakeholder support.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	2. The VS maintain informal channels of consultation with stakeholders.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The VS regularly hold workshops and meetings with stakeholders.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The DVS has greatly enhanced its consultative processes both for public and private stakeholders.

Findings:

There is a designated OIE Focal Point for communications in the DVS who provides up-to-date information. Communication to relevant stakeholders is through the DVS network and reaches to crush-pen committees.

There are various meetings held with livestock keepers and other stakeholders by all levels of the DVS staff. Examples include:

- Meetings to encourage livestock producers to use vaccines against diseases that are not of government responsibility such as anthrax and black quarter.
- Village Kgotla meetings where discussions on diseases such as beef measles and liver-flukes take place.
- DVS visits to livestock owners to inform them about vaccinations, often discussing the upcoming schedules
- DVS organized meetings with key stakeholders.
- Consultation with livestock producer associations
- After-action FMD vaccination meetings between the DVS and livestock keepers
- Meetings to discuss the post-vaccination monitoring sample collection between the DVS and livestock keepers
- Meetings among fencing committees, private fence maintenance service providers and representatives of communities engaged in fence maintenance
- The DVS has embarked on a prudent antimicrobial use campaign for livestock owners, extension workers and other stakeholders.

Three farmer associations (livestock producers) interviewed in Maun District indicated that there is a need to enhance and continue the consultations provided by the DVS; they expressed appreciation for the way the DVS can always be approached. The DVS also has bilateral agreements with neighbouring countries on cross-border animal health issues.

Strengths:

- The DVS actively participates in the majority of relevant meetings with stakeholders and provides feedback when required.

Weaknesses:

- While there are various forms of communication taking place, it is not structured and there is no communication plan for the different levels of the DVS staff.
- Stake holder consultation outcomes are not always well documented to capture views of stakeholders and their consideration or their incorporation into national programmes.

Recommendations:

- There is need to develop a DVS communication plan/strategy which will formalise communication with stakeholders which includes relevant VS events, activities and programmes.
- There is need to develop a communication plan to proactively seek views of consulted parties considered in the DVS decision-making process.

Evidence (as listed in Appendix 6):

T101, C1, T27, T33, P20.

III-3 Official representation and international collaboration *The capability of the VS to regularly and actively participate, coordinate and provide follow-up on relevant meetings and activities of regional and international organisations including the OIE, Codex Alimentarius Commission, WTO SPS Committee, WHO, FAO and Regional Economic Communities.*	Levels of advancement
	1. The VS do not participate in or follow up on relevant meetings or activities of regional or international organisations.
	2. The VS sporadically participate in relevant meetings or activities and/or make a limited contribution.
	3. The VS actively participate in the majority of relevant meetings and activities, and provide some feedback to national colleagues.
	4. The VS consult with non-government stakeholders and take into consideration their opinions in developing papers and making interventions in relevant meetings and in following up on meeting outcomes at national or regional level.
	5. The VS consult with non-government stakeholders to provide leadership, to ensure that strategic issues are identified, and to ensure coordination among national delegations as part of their participation in relevant meetings, and follow up on meeting outcomes at national and/or regional levels. The VS collaborate internationally by sharing information and assisting to build capacity where appropriate.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. The VS actively participate in the majority of relevant meetings.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The VS consult with stakeholders and take into consideration their opinions in providing papers and making interventions in relevant meetings.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The OIE Delegate regularly attends the annual preparatory meeting for African countries at AU-IBAR prior to the OIE General Session. This ensures that African countries have a united voice on animal health matters concerning the continent.

Findings:

Botswana regularly attends the regional the LTC meetings of SADC when they are held, the continental AU-IBAR meetings, the OIE Regional Commission for Africa meeting and the OIE General Session.

Though not formalised, the DVS does provide feedback or guidance on OIE international standards to local organisations such as the BAMB - on OIE compliance with standards for antimicrobial use and the BMC – on OIE Animal Welfare standards.

The MoA has an SPS Inquiry Point and an SPS Committee. The SPS Committee is chaired by the Deputy Permanent Secretary in the Ministry. In the recent past, the DVS has not participated in the WTO SPS meetings.

The DVS in consultation with livestock producer associations promotes varying approaches to assist farmers in FMD infected zones to market their beef under improved conditions, such as considering the Commodity Based Trade approach (see IV-6). In February 2018, the DVS held a workshop entitled, “Commodity-Based Trade of Beef and Enhanced Market Access” and included a wide range of stakeholders where OIE standards and their updating were highlighted. The DVS has also supported research and meetings at the international and regional level to explore various aspects of the Commodity Based Trade (CBT) approach.

Strengths:

- Botswana is a member of regional and international organisations such as SADC, AU-IBAR and OIE and actively participates in their animal health related meetings and programmes.
- The OIE Delegate and his delegation attend the meetings of the OIE Commission for Africa, the annual OIE General Session as well as the preparatory meeting for African Countries at AU-IBAR.

Weaknesses:

- The DVS does not have formal procedures for providing follow up reports and feedback from international meetings to national stakeholders.

Recommendations:

- Develop protocols for follow-up reports from international meetings to provide feedback to national stakeholders.
- Develop formal consultation and communication channels with stakeholders concerning representation at international meetings.

Evidence (as listed in Appendix 6):

T92, T99, T102, T188

III-4 Accreditation/ authorisation/ delegation *The authority and capability of the public sector of the VS to accredit/authorise/delegate to private sector or NGO expertise (e.g. private veterinarians and laboratories, animal welfare NGOs), to carry out official tasks on its behalf, usually via a formal agreement (i.e. public-private partnership).*	**Levels of advancement**
	1. The public sector of the VS has neither the authority nor the capability to accredit/authorise/delegate official tasks to the private sector or NGOs.
	2. The public sector of the VS has the authority and capability to accredit/authorise/delegate official tasks to the private sector or NGOs, but there are currently no accreditation/authorisation/delegation activities.
	3. The public sector of the VS develops accreditation/authorisation/delegation programmes for certain tasks using formal agreements, but these activities are not routinely reviewed.
	4. The public sector of the VS develops and implements accreditation/authorisation/delegation programmes using formal agreements, and these activities are routinely reviewed to maintain standards and manage performance.
	5. The public sector of the VS carries out audits of its accreditation/authorisation/delegation programmes, in order to maintain the trust of their trading partners and other stakeholders.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	3. The public sector of the VS develops accreditation / authorisation / delegation programmes for certain tasks, but these are not routinely reviewed.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The public sector of the VS develops and implements accreditation / authorisation / delegation programmes, and these are routinely reviewed.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Creation of the BAMB and the DVS delegating the sale on VMP's.
- Increased number of private veterinarians to whom DVS could delegate authority.

Findings:

In the current Animal Health Act there is no provision to allow the veterinary competent authority to delegate defined powers and functions to private sector veterinarians and VPPs. Delegation of powers by the DVS is currently limited to veterinary officers of the public sector only.

This issue is being considered in the current veterinary legislative review with the view of delegating specific powers to the DVS to authorise inspectors based on a prescribed level of training and to engage private veterinarians and VPPs to perform defined public functions with approval of the MoA.

However, even in the absence of the authorising legal framework the DVS has recently attempted to delegate FMD vaccination to the veterinary private sector through a tender process. The exercise was unsuccessful as offers by private veterinarians far exceeded costs for public sector vaccine application. The DVS will attempt to repeat this tender with clearer terms of reference.

It was also noted that it is currently not a legal requirement to officially authorise DVS personnel to perform export certification. This issue is also being addressed during the current revision of legislation with the view of establishing official authorisation based on completion of prescribed training and other conditions.

Conversations with private veterinarians did not elicit a strong need for accreditation/ authorisation/ delegation. Vaccinations against diseases such as anthrax, blackleg and rabies are subcontracted to technical staff by the DVS as a way of delegating some animal health services.

The BAMB has assumed the authority of Livestock Advisory Centres (LAC) in 2016 and with this the sale of a defined range of VMPs to pet owners, livestock producers and VPPs. The sales agents working at the BAMB are VPPs with a Diploma or Certificate in Animal Health plus a “bridging course” in Veterinary Pharmacy taught at the BUAN. They are authorised by the DVS Director to sell VMPs on behalf of VS. Their sales authorisation must be renewed annually.

The BNVL is delegating some of its residue control testing to a UK based laboratory (FERA) as it does not yet have the capacity to carry out these tests.

Strengths:

- The DVS has delegated the sales of VMPs to the BAMB.
- The DVS has in the recent past tried to outsource FMD vaccination campaigns to private veterinarians through tender process.

Weaknesses:

- There are very few animal health activities which are officially delegated to the private sector in the country.
- No existing laws address accreditation/ authorisation/ delegation of private sector veterinarians.

Recommendations:

- As the private sector grows in Botswana and regulatory work of DVS increases, consideration should be made to officially delegate some animal health activities to the private sector.
- Ensure that the issue of “delegation” is addressed appropriately in the revised legislation.
- Follow up with the BAMB suggestion to engage/employ unemployed VPPs to work as extension officers to relieve the DVS extension officers who should focus on regulatory work.

Evidence (as listed in Appendix 6):

S20, S6, S5

III-5 Regulation of the profession by the Veterinary Statutory Body (VSB) *The authority and capacity of the VSB to effectively and independently maintain educational and professional standards for veterinarians and veterinary paraprofessionals.* *Regulation includes licensing or registration of those veterinarians and veterinary paraprofessionals that meet educational standards, and the ongoing oversight of their professional competence and conduct.*	**Levels of advancement**
	1. There is no *VSB*.
	2. The *VSB* regulates *veterinarians* only within certain sectors of the veterinary profession and/or does not systematically apply educational standards or disciplinary measures.
	3. The *VSB* regulates *veterinarians* in all sectors of the veterinary profession setting educational standards and applying disciplinary measures.
	4. The *VSB* regulates *veterinarians* in all sectors and some *veterinary paraprofessionals* in a transparent manner. It has defined one or more specific categories of veterinary paraprofessional and their qualifications for initial and ongoing registration.
	5. The *VSB* regulates and applies disciplinary measures to *veterinarians* and *veterinary paraprofessionals* in all sectors throughout the country. *Veterinarians* and *veterinary paraprofessionals* are required to undertake continuing education to maintain their professional registration.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	For “VSB Authority”: 3. *The VSB regulates veterinarians in all relevant sectors of the veterinary profession and apply disciplinary measures.* For “VSB Capacity”: 2. *The VSB has the functional capacity to implement its main objectives.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	For “VSB Authority”: 3. *The VSB regulates veterinarians in all relevant sectors of the veterinary profession and apply disciplinary measures.* For “VSB Capacity”: 2. *The VSB has the functional capacity to implement its main objectives.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The new Veterinary Surgeons Act (2008) was enacted by Parliament.
- The BVSC was launched in 2012.

Findings:

The Botswana Veterinary Surgeons Council (BVSC) was established in 2012 based on the Veterinary Surgeons Act of 2008 to protect the interest of the public in matters relating to animal and public health through regulation of the veterinary profession. The Botswana Veterinary Association (aka as Botswana National Veterinary Association) promotes the interests of the veterinary and allied sciences and maintains the reputation and institutions of the profession. Thus, the BVA represents professional relation of the profession with the public while the BVSC represents the legal authority and responsibilities of veterinarians.

The regulations pertaining to Art 48 of the Act have been drafted and have recently been presented at stakeholder consultative workshops in Maun, Francistown and Gaborone (October 2018) for discussion. As the Act will be included in the revision of legislation later this year, the approval of the regulations has been postponed awaiting this revision; regulations may have to be adapted.

The Council Board is composed of 9 members: three members of the BVA, one non-veterinarian, BUAN, the Director of the DVS (ex officio), a veterinarian from Department of Wildlife, and a representative of the Attorney General's Office. It has a full-time registrar and an appointed Chair.

The Council registers veterinarians and licenses veterinary private practices. The registration of veterinarians started in 2012 and a second phase will register VPPs with formal education as of 2020 and a third phase will address registration of VPPs without formal education.

Veterinarians are registered either as "resident" or "non-resident" and receive either a permanent or temporary registration accordingly.

The BVSC has defined the standards for the profession though a "Code of Ethics" which is available in draft form and awaits approval by the Council.

SADC has launched a VSB harmonisation initiative to try to standardise regulations for the profession in line with OIE "Day 1" competencies; a sub-committee has been nominated of which BVSC is a member.

A 5-year Strategic Plan 2019 – 2024 was developed under the AU-IBAR "VET-GOV Project" and provides a clear outline of the objectives, long-term goals and highlights the strength and weaknesses of the veterinary profession. The Strategy includes a Business Plan for BVSC to garner financial sustainability and become independent from Government support.

The draft Regulations provide a detailed plan for CE (see also CC I.3) including a point allocation system and requirements for the level of participation in CE for retaining a veterinary license.

Strengths:

- The current BVSC is supported by the government through an annual subvention.
- On issues of non-compliance the BVSC engages the BVA and tries to settle disputes; otherwise these matters are referred to a Disciplinary Committee.

- A 5-year Strategic Plan including a Business Plan exists which addresses physical and human resource deficiencies of the BVSC.

Weaknesses:

- Only one person, the Registrar, undertakes all the work of the BVSC.
- No financial penalty is assessed if license renewal is not completed; a notification is issued in the local newspaper.
- To date, no oversight on registration or curriculum of VPPs.

Recommendations:

- Continue on-going efforts to establish a sound legal framework for the BVSC.
- Continue efforts to harmonise standards for the profession in the SADC region, including recognition of qualifications from other countries.
- Finalise the BVSC Code of Ethics.

Evidence (as listed in Appendix 6):

SC19a, b, c, d, e, f, g, T175, T189.

III-6 Participation of producers and other stakeholders in joint programmes *The capability of the VS to develop joint programmes (public-private partnerships) with producers and non-government stakeholders to deliver animal health, veterinary public health, food safety and/or animal welfare outcomes.*	Levels of advancement
	1. Producers and other non-government stakeholders do not participate in joint programmes.
	2. Producers and other non-government stakeholders are informed of programmes by the VS and informally assist the VS in programme delivery in the field (e.g. industry groups helping to communicate the programme with their membership).
	3. Producers and other non-government stakeholders formally participate with the VS in the delivery of joint programmes and advise of needed changes and improvements.
	4. Representatives of producers and other non-government stakeholders actively partner with the VS to plan, manage and implement joint programmes.
	5. Producers and other non-government stakeholders contribute resources and may lead the development and delivery of effective joint programmes with the VS. They also actively participate in their regular review, audit and revision.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	2. *Producers and other stakeholders are informed of programmes and assist the VS to deliver the programme in the field.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	3. *Producers and other stakeholders are trained to participate in programmes and advise of needed improvements, and participate in early detection of diseases.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Greater participation of stakeholders including producers in joint programmes such as the BAITS and buffalo fence damage reporting, repair and maintenance.

Findings:

Legislation such as the MRSA of 2013 was reviewed through stakeholder participation by the MoHW, the BVSC and the BVA. There is a prescribed official consultative process for legislation that goes through a Cabinet-Memo which ensure consultation with all principal government stakeholders.

In 2018, a beef measles strategy was launched with the aim of reducing the prevalence of the disease to 6% by 2019. In this collaborative effort, the DVS provided 2 Million Pula to the MoHW for implementation of the strategy. There is a similar collaborative effort for rabies control between the two government agencies.

The communities in Ngamiland requested that a special unit for FMD control be established in the District. This request was taken up by the Northern District Councillor's meeting as a resolution and a unit was set up with a dedicated budget in 2018. The head of the unit is a DVO and reports directly to the Director of the DVS. In order to open better beef marketing opportunities for farmers in Ngamiland, the DVS has engaged with farmers associations in setting up CBT arrangements.

Cattle owners participate in the BAITS by having an obligation to ear tag and to register their animals in the system. The DVS has encouraged the training of youth to run BAITS cafes around the country to help livestock owners in the registration of their cattle in the BAITS. In addition, the DVS carries out livestock keeper training on the use and functions of BAITS. Other stakeholders such as the police also have access to the BAITS for the execution of their official duties. Private abattoirs (such as Ngamiland Abattoir) collaborate with the DVS by returning used ear-tags to the BAITS staff to remove them from the system.

The Department of Wildlife in Maun has given the DVS 2 vehicles for buffalo fence maintenance. A Rhino Conservation NGO helps the DVS with fencing material while the local village committees are engaged in fence repairs under the supervision of the DVS. At the borders, there are joint border inspection patrols between the DVS and other government agencies such as customs, police and wildlife.

Strengths:

- Various stakeholders participate in DVS official programmes for FMD control, the BAITS and beef measles control.
- Stakeholders are also involved in reporting fence damage, repair and maintenance.

Weaknesses:

- Three farmer groups interviewed in Maun, while acknowledging the DVS efforts, indicated that there was a lot more the VS could do to increase participation of producers in joint animal health programmes.

Recommendations:

- Ensure participatory involvement of livestock keepers and other stakeholders in the DVS animal health programmes such as early detection of diseases with a clear feed-back mechanism.
- Strengthen the linkages between the DVS and other stakeholders such as the Ministry of Health and Ministry of Environment to ensure progress is made for shared programmes like AMR and AMU.

Evidence (as listed in Appendix 6):

T111, T169, T117, T116, T172, T188.

III-7 Veterinary clinical services	Levels of advancement
The availability and quality of veterinary clinical services to meet the needs of animal owners, including their access to animal disease or injury diagnosis and treatment.	1. There are no/few clinical services provided from either the public or private sector.
	2. Clinical services are available to animal owners in some areas but the quality and coverage (i.e. access to qualified veterinarians and/or veterinary paraprofessionals) is highly variable.
	3. Clinical services are available to most animal owners via the public and/or private sector. In rural areas this is delivered mostly by veterinary paraprofessionals with some formal training and some veterinary supervision – but providing only basic clinical diagnosis and treatment.
	4. Clinical services are available to all animal owners via an efficient network of veterinary clinics, including in rural areas, serviced by qualified veterinarians assisted by veterinary paraprofessionals. Diagnoses are generally made prior to treatment, including with supporting laboratory tests where appropriate and professional standards are maintained by a well-functioning VSB.
	5. Clinical services are available to all animal owners through qualified veterinarians, with appropriate facilities, diagnostic equipment and treatments, and the opportunity for specialist referral if required.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	N/A
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	N/A

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

This is a new Critical Competence.

Findings:

Veterinary clinical services in Botswana is evolving much as it is in many developing countries; rural livestock keepers receive much of their veterinary medical attention from the public veterinary sector and a growing urban middle-class drives demand for increased private veterinary pet care. Existing laws regulating veterinary clinical services are lacking and new

laws, including the role of the BVSC, are being developed. As Botswana does not have a veterinary school of its own, the veterinarians are educated overseas and then either work as private veterinarians near major cities or assume positions in government or NGOs. As all practicing veterinarians, private and public, must be registered with the BVSC to work in their field, very up to date information is available. The capital Gaborone is estimated to have 15 private veterinarians with Francistown, Maun and Lobatse each having 2 veterinarians. Palapye and Ghanzi each have one private veterinarian. Due to the small number of private veterinarians in the country, they were all familiar with each other and interviews of any of these professionals proved representative of the entire sector. There appeared to be an excellent working relation between private veterinarians and DVS veterinarians; again, with much collegial respect for each other's work.

The typical veterinary care provided by urban/suburban clinics centres around cats and dogs. The clinics visited in this mission were owned by veterinarians with advanced degrees and seemed modern, with up to date facilities and equipment. Though some veterinary specialisation exists, the existing pet market would likely not make this lucrative. These veterinarians were all aware of the newest technologies and recent advances in diagnostics and treatment. In addition to veterinary medical care, small animal veterinary practices provided pet owners with a wide array of pet care and food products. Interviews did reveal that with the creation of the BAMB, the dispensing of medical pharmaceuticals and biologics became unprofitable; these veterinarians would in fact guide interested parties to the BAMB locations with lower prices, though they did have limited supplies of certain medicines for sale. Use of modern computer systems were evident and employed for diagnostics and treatment as well as for administrative business needs like tracking inventories. These private veterinarians did occasionally see exotic or large animals in their vicinity but were always careful to remind potential clients of their higher costs in comparison to local public veterinary services. Interviews revealed that use of VPPs by private veterinarians is rare due to clients' reticence to receive animal health care from anyone but a licensed veterinarian. Private veterinarians we interviewed also indicated that they did not object to animal welfare groups like the BSPCA offering free spay clinic so long as this was directed to owners with limited economic means.

Rural veterinary care was principally provided by public veterinarians of the DVS during off-work hours often with the assistance of government VPPs. Initial contact with livestock keepers was usually through VPP Extension Officers who provided immediate attention under their authority and if more advanced veterinary care was required, this would be referred to a veterinary professional at the DVO/SDVO. Interviews with private veterinarians attempted to elicit concerns regarding public veterinarians providing clinical services but to no avail. On more than one occasion, private veterinarians indicated that work in rural areas is often complicated and remote and the DVS has qualified professionals who could better attend to these rural animal health needs. As noted in CC I-4, public medical doctors do benefit from a salary supplement to compensate for possible lost revenue that might have been attained in the private sector and thus act as a retention incentive. Such a scheme is being discussed for public veterinary field staff as a means to further grow the private veterinary sector.

It was repeated on numerous occasions that public veterinarians could not make use of public resources if attending clients in a private nature; though one private veterinarian indicated he could understand situations where returning home from the field to use a private vehicle was not reasonable.

The issues of BVSC oversight, requirements for maintenance of registration through CE and accreditation/authorisation/delegation are covered in other CCs of this report.

Strengths:

- Livestock owners have access to well-qualified public and private veterinary services.
- Graduate registered veterinarians can set up profitable practices to offer services; especially for pets in urban/suburban areas.
- The country has a VSB to register and regulate all veterinarians; new pending laws will strengthen this entity.

Weaknesses:

- At this time, some BVSC authority still under legislative revision.
- Lack of incentives for veterinarians to establish private clinics in rural areas.

Recommendations:

- Ensure that the revision of new legislation for the BVSC related authority is expedited.
- The VS should consider delegating some functions to the private veterinarians as an incentive.

Evidence (as listed in Appendix 6):

T90, T175, P2, P4, P21.

III.4 Fundamental component IV: Access to markets

This component of the evaluation concerns the authority and capability of the VS to provide support by demonstrating the overall integrity of its animal health and veterinary public health system in order to access, expand and retain regional and international markets for animals and animal products.

Critical Competencies:

Terrestrial Code References:

Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation/General organisation/Procedures and standards.

Points 1 and 2 of Article 3.2.7. on Legislation and functional capabilities: Animal health, animal welfare and veterinary public health/Export/import inspection.

Points 1 and 3 of Article 3.2.8. on Animal health controls: Animal health status/National animal disease reporting systems.

Sub-point g) of Point 4 of Article 3.2.10. on Veterinary Services administration: Trade performance history.

Article 3.2.11. on Participation in OIE activities.

Points 7 and 11 of Article 3.2.14. on Veterinary legislation, regulations and functional capabilities/Membership of the OIE.

Chapter 3.4. on Veterinary legislation.

Chapter 4.3. on Zoning and compartmentalisation.

Chapter 4.4. on Application of compartmentalisation.

Chapter 5.1. on General obligations related to certification.

Chapter 5.2. on Certification procedures.

Chapter 5.3. on OIE procedures relevant to the Agreement on the Application of Sanitary and Phytosanitary Measures of the World Trade Organization.

Chapters 5.10. to 5.13. on Model international veterinary certificates.

IV-1 Legislation and regulations *The effectiveness of veterinary legislation and regulations.* **A. Integrity and coverage of legislation and regulations** *The authority and capability of the VS to develop or update veterinary legislation to ensure its quality and coverage of the veterinary domain.* *This competency covers the quality of legislation considering the principles of legal drafting, its impact, and suitability for implementation.* *This competency includes formal collaboration with other legal drafting professionals, other relevant ministries and Competent Authorities, national agencies and decentralised institutions that share authority or have mutual interest in relevant areas of the veterinary domain. It also covers stakeholder consultation relevant to veterinary legislation.*	**Levels of advancement**
	1. National veterinary legislation is lacking, out-dated or of poor quality. The VS do not have the authority or capability to develop or update legislation and regulations.
	2. Veterinary legislation and regulations cover some fields of the veterinary domain. The VS, working with legal professionals, have some authority and capability to develop or update national legislation and regulations.
	3. Veterinary legislation and regulations cover most fields, including in collaboration with relevant Competent Authorities. The VS, working in formal partnership with legal professionals, have the authority and capability to develop or update national legislation and regulations, including via consultation with stakeholders, to ensure its legal quality and applicability.
	4. The VS have national (and sub-national where relevant) veterinary legislation and regulations covering the entire veterinary domain. The VS have the authority and the capability to develop or update national (and sub-national) legislation and regulations, using a formal methodology which considers consultation with stakeholders, regulatory impact, legal quality and applicability, and international standards.
	5. The VS have comprehensive and current national (and sub-national where relevant) veterinary legislation and regulations that covers the entire veterinary domain. The VS regularly evaluate and update their legislation and regulations with reference to ongoing effectiveness and changing international standards and science.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	4. The VS have the authority and the capability to participate in the preparation of national legislation and regulations, with a relevant formal methodology to ensure adequate internal and external quality, involving stakeholder participation in most fields of activity.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. The VS regularly evaluate and update their legislation and regulations to maintain relevance to evolving national and international contexts.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- A new comprehensive legislative review is being undertaken which will consolidate relevant VS authority for the veterinary domain within the DVS.

Findings:

As noted in the 2015 OIE VLSP report, various existing laws governing the veterinary domain are outdated, inadequate and/or redundant. The majority of the DVS' legal authority is invested by means of three Acts: the Diseases of Animals Act (DoAA) (1977), the Veterinary Surgeons Act (VSA) (2008) and the Livestock and Meat Industries Act (LMIA) (2007). Illegal importation of animal and animal products is an offence under the Diseases of Animal Act which is punishable by a fine or imprisonment. Conditions and deterrents of other laws are included in their respective texts.

In addition to the LMIA (2007), Veterinary Public Health concerns are also addressed in the Livestock and Meat Industries (Poultry Abattoir) Regulations (2007) and the Meat Inspection and Control of Red Meat Abattoir Regulations (2007). The Ministry of Health and Welfare (MoHW) is identified as the Competent Authority for implementation of the Food Control Act (FCA) (1993); defining "food" as including "animal products". Other existing VS legislation presently in force include: the Botswana Meat Commission Act (1979), the Control of Livestock Industry Act (1941), the Registration of Livestock Act (1921), the Agrochemicals Act (2000) and the Livestock Improvement Act (1921). The 2013 Medicines and Related Substances Act (MRSA) has replaced the Drugs and Related Substances Act (DRSA) (1992). The DoAA (CAP 37:01, Section 16) empowers the Director of DVS to authorize the manufacture and supply of veterinary pharmaceuticals, vaccines or biological products used for diagnosis or treatment of disease. In addition, MRSA provides for the control of residues of pharmaceutical substances in foodstuffs of animal origin.

At present, animal welfare is legislated by the Cruelty to Animals Act (1936) and enforced by the Botswana Police Service. Access of beef to the EU market requires regular audits of controls for maintenance of FMD disease-free areas and controls for production of fresh bovine meat and these requirements have been incorporated into law and are enforced by the Compliance, Policy and Development Division of DVS. A 2015 EU FMD audit did make comments on need for legislation to support animal identification system.

Thus, it can rightfully be stated that Botswana does have a broad array of legislation which covers the veterinary domain of the country. However, many of the laws are antiquated, with newer laws attempting to patch up evolving legal shortcomings; overlapping in jurisdiction, thus confusing competent authority designation and; in a few cases, leaving gaps in legal governance.

The Botswana government has been recommended by outside expertise to revise and consolidate its competent authority for the veterinary domain under the DVS. Following the OIE VLSP mission of 2015, the DVS decided to prepare three overarching Acts under which the existing legislation will be revised and rearranged, namely:

1. Compilation and revision of the bulk of Acts into the "Animal Health and Welfare & Veterinary Public Health Act" (AHW&VPH Act)
2. Revision of the VSA
3. Amendments to the MRSA and the FSA in collaboration with the MoHW

The agreed upon revision has a clear timeline and is supported by an OIE consultant.

This PVS mission interrupted scheduled meetings for this very effort but we were assured the work would resume immediately after our departure. Newly instituted efforts in quality management within the DVS have also included SOPs which identify underlying legal basis for animal health responsibilities and activities. Available animal disease contingency plans do cite legal foundations.

Strengths:

- Botswana does have functioning legal authority of the veterinary domain at the national and sub-national level.
- The DVS, through the MoA, is in the process of revising, realigning and amending existing laws based on identified needs such as given in the VLSP report
- Existing laws do not conflict with international standards.
- Interviews with relevant staff indicated that stakeholders would be consulted in new regulations being drafted.

Weaknesses:

- Many existing laws relevant to the veterinary domain are outdated, inadequate and/or redundant.
- Some existing laws fall short of international standards.
- While the legislation revision initiative is acknowledged, the DVS does not appear to have a means for regular evaluation and updating of legislation and regulations with specific consideration to effectiveness, changing international standards and evolving science.

Recommendations:

- The DVS should ensure that its new animal health laws are comprehensive and consistent with international standards; as recommended in the 2015 OIE VLSP report.
- The review of legislation should include the establishment of a mechanism for regular review and updating of established regulations; especially as this relates to effectiveness, changing international standards and evolving science.
- All consultations with stakeholders involved in the process of drafting new regulations should be documented.

Evidence (as listed in Appendix 6)

T30, T37, T39, T42, T43, T51, T53, T54, T55, T59, T61, T63, T65, T66, T67, T68, T69, T70, T71, T72, T123, T139, T140, T149, T159, T160, T163, T164, T165, T173, T174, T175, T176, T177, T178, T179, T180, T181, T182, T183, T184, T185, T186, S20

B. Implementation of and compliance with legislation and regulations *The authority and capability of the VS to ensure compliance with legislation and regulations across the veterinary domain through communications and compliance inspection activities.* *This competency includes formal collaboration with other relevant ministries and Competent Authorities, national agencies and decentralised institutions that share responsibility for implementation, or have mutual interest in relevant areas.*	Levels of advancement
	1. The VS have no or very limited programmes or activities to communicate or ensure compliance with legislation and regulations.
	2. The VS implement some programmes or activities comprising targeted communications and awareness raising on stakeholder legal obligations, but conduct few inspection and compliance verification activities.
	3. *Veterinary legislation* is implemented through a programme of communications and awareness raising, and through formal, documented inspection and compliance verification activities. The VS undertake some legal action/initiate prosecution in instances of non-compliance in most relevant fields of activity.
	4. *Veterinary legislation* is implemented across the entire veterinary domain and is consistently applied. The VS work to minimise instances of non-compliance through multiple means, including through targeted communications, incentives and appropriate legal processes. They have documented reports of dealing with non-compliance.
	5. Legislative or regulatory compliance programmes are regularly subjected to audit and review by the VS or external agencies.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. *Veterinary legislation is generally implemented. As required, the VS have a power to take legal action / to prosecute in instances of non –compliance in most relevant fields of activity.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. *The compliance programme is regularly subjected to audit by the VS or external agencies.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Greater means of communication with stakeholders are available to solicit input for developing legislation and ensure compliance with existing laws.

Findings:

Legal authority for the DVS to carry-out its mission are covered above; including legal action for non-compliance.

It should be noted at the outset, that the text for this CC has somewhat changed since 2010 and now is less focused on the VS working with stakeholders to minimise instances of non-compliance and more focused on achieving compliance through other means (e.g. targeted communications, incentives and appropriate legal processes). Thus, the only "weakness" identified for this modified sub-CC in the 2010 PVS may still exist; namely that the VS does not reach-out to persuade compliance. However, it should be noted that stakeholders are encouraged to provide input to developing regulations and are informed of upcoming or recently enacted animal health rules by various means (i.e. regular agricultural shows on radio and television and a call-in number provided by the Minister of Agriculture to lodge any relevant concern).

Enforcement of the DoAA (1992) and the LMIA (2007) by the DVS includes the application of administrative penalties and the Ministry of Home Affairs, through the Botswana Police Service, also assists with enforcement of all legislation in the veterinary domain. However, the 2015 OIE VLSP found that areas where enforcement is lacking was associate with the VSA (2008) and the MRSA (2013).

Compliance with various mandated animal health laws are a fundamental condition for Botswana's beef access to the EU market. It was for this reason that the MoA created a division within DVS with the title "Compliance" (i.e. the Compliance, Policy and Development Division). The ability of the DVS to document enforcement (i.e. records of non-compliance) forms an integral part of regular FVO audits; supported by existing SOPs. Throughout the mission numerous examples of compliance with existing laws were observed and DVOs and SDVOs always had folders where they tracked any cases of non-compliance. The Compliance, Policy and Development Division also completes bi-annual audits to monitor the implementation of official controls of the DVS and these are legally founded as: the BAITS regulations, SI No. 7, 2018; Medicines and Related Substances Act; the MRSA (2013); EU food law, Regulation 178/2002; Official Controls: Regulation (EC) No 882/2004/ Commission Regulation (EC) No. 2017/625 (OCR); Certification requirements for Commission Regulation (EC) 206/2010; Control of feed additives, Regulation EC No. 1831/2003; Control of feed, Regulation EC No. 767/2009; Control of maximum residue levels (MRLs), Commission regulation EC No. 37/2010 and Prohibited substances, Council Directive 96/22/EC/Council Directive 96/23/EC.

In conversation with stakeholders, they all understood the need for legal requirements enforced by the DVS and, although not always in agreement, felt it was their responsibility as livestock keepers to abide by these laws. Many indicated that at first, they were not clear as to the need for some requirements but later, with interaction with the DVS at local levels (usually Extension personnel), came to better understand the objective of these stipulations.

At all international borders and animal disease control gates, the DVS usually has Police in the vicinity that can be called upon to ensure compliance with movement laws are met. Customs also acts on behalf of the MoA at certain ports where no DVS staff are assigned as has been cited in CC II-11.

Botswana also has meetings with the VS of neighbouring countries to discuss animal health issues of common concern and amongst these are relevant legislation which could impact

regional trade. Examples are available of immediate notifications to countries based on a change in their animal disease status.

Strengths:

- The DVS has qualified personnel at both the central level (for generating and interpreting regulations) and district levels (for enforcement of laws).
- Standard procedures exist for inspection and control activities and reports on non-compliance are archived.
- A legislative framework provides authority for the DVS to take legal action / initiate prosecution in the event of non-compliance.
- Agreements and standard procedures exist in current law for support from other relevant authorities (i.e. Police Service and Customs).

Weaknesses:

- No easy access exists for documentation of interactions with stakeholders on compliance and regulatory actions taken and penalties assessed.
- The establishment of an internal auditing system for legislative or regulatory compliance programmes does not exist.

Recommendations:

- A better system for records management should be available to track evidence of VS working with stakeholders and other interested parties.
- As part of the DVS effort in quality control, an audit and update system should be developed for regulatory compliance.

Evidence (as listed in Appendix 6)

T5, T30, T37, T39, T42, T43, T51, T53, T54, T55, T59, T61, T63, T65, T66, T67, T68, T69, T70, T71, T72, T123, T139, T140, T149, T159, T160, T163, T164, T165, T173, T174, T175, T176, T177, T178, T179, T180, T181, T182, T183, T184, T185, T186, T198.

IV-2 International harmonisation *The authority and capability of the VS to be active in the harmonisation of national regulations and sanitary measures to ensure they take into account international standards, and/or related regional directives or guidelines.*	Levels of advancement
	1. National regulations and *sanitary measures* under the mandate of the VS do not take into account international standards.
	2. The VS are aware of gaps, inconsistencies or non-conformities in national regulations and *sanitary measures* as compared to international standards, but do not have the capability or authority to rectify the problems.
	3. The VS monitor the establishment of new and revised international standards, and periodically review national regulations and *sanitary measures* in response.
	4. The VS harmonise their regulations and *sanitary measures*, and can demonstrate a level of alignment with changing international standards. The VS also review and comment on the draft standards of relevant intergovernmental organisations, and work through regional organisations, where available, to ensure better harmonisation with international standards.
	5. The VS actively and regularly participate at the international level in the formulation, negotiation and adoption of international standards, and use the standards to regularly harmonise national legislation, regulations and *sanitary measures*.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. The VS monitor the establishment of new and revised international standards, and periodically review national legislation, regulations and sanitary measures with the aim of harmonising them, as appropriate, with international standards, but do not actively comment on the draft standards of relevant intergovernmental organisations.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	4. The VS are active in reviewing and commenting on the draft standards of relevant intergovernmental organisations.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The DVS more actively participates in regional and international venues for consideration of draft standards.

Findings:

The legal foundation for animal-based imports and exports is found in Diseases of Animal Act, 1977 (Chapter 37:01) which regulates importation and exportation of animals, animal products and biologicals into the country. Importation is only authorized through the acquisition of a corresponding veterinary import permit, which stipulates the conditions for entry. It was related that import requirements are based on the exporting country's situation (i.e. disease status) and are based on the OIE TAHC.

Botswana is an active member of the OIE and Codex Alimentarius Commission, attending and participating in OIE regional meetings as well as the annual OIE General Session in Paris in May. The OIE Regional Commission for Africa agenda includes a review and establishment of regional positions on draft standards to be adopted. There was no evidence that Botswana has made any notifications to the WTO regarding the adoption of SPS measures, nor of its participation in meetings of the WTO SPS Committee.

Botswana is also a member of the SACU along with South Africa, Lesotho, Namibia and Eswatini (formerly Swaziland). SACU is an African regional economic organization aimed at maintaining common external tariffs, sharing customs revenues, and coordinating policies and decision-making on a wide range of trade issues including sanitary-phytosanitary concerns. As an example, SACU-Mercosur Preferential Trade Agreement lays out an agenda for formal trade relations including sanitary and phytosanitary issues. SACU and the US signed the Trade, Investment, and Development Cooperative Agreement (TIDCA) in 2008 which establishes a venue for consultative discussions, cooperative work, and possible agreements on a wide range of trade issues, with a special focus on customs and trade facilitation, technical barriers to trade, sanitary and phytosanitary measures, and trade and investment promotion.

The Southern African Development Community (SADC) is an inter-governmental organization with headquarters in Gaborone, Botswana and composed of Botswana, Lesotho, Madagascar, Mauritius, Mozambique, Namibia, South Africa, eSwatini, Tanzania, Zambia and Zimbabwe, Angola, Democratic Republic of Congo, Seychelles and Malawi. Its main objectives centre on socio-economic cooperation by pursuing a common integration plan based on economic, political, and trade interests. SADC's Protocol on Trade outlines measures aimed at protection of the health and welfare of human, plant, and animal life in the region while eliminating non-tariff barriers to trade and thus complying with standards for agriculture, livestock, and food safety as expressed by the World Trade Organization Agreement on the Application of Sanitary and Phyto-sanitary Measures.

The Deputy Directorship for Disease Control Animal Health and Field Services oversees the Imports, Exports and Border Control staff which addresses all animal health trade-related issues for DVS. This staff relies on the overarching precepts of the WTO SPS Agreement in conjunction with the OIE Terrestrial Animal Health Code for technical specifics in the importation of live animals, animal products and biologics with other DVS staffs ensuring certification and compliance. The most recent changes to existing animal health laws based on international standards was for BSE. There are also instances of bilateral sanitary agreements with the most economically important being that with the EU for the export of beef. The Lomé Convention of 1976 provided Botswana with preferential access (duty free/quota free) for its beef to the EU and has been maintained to date through the Cotonou Agreement of 2003 and an Interim Economic Partnership Agreement. Regular sanitary audits by the Food and Veterinary Office of the EU are conducted to ensure that Botswana is complying with

animal health requirements. A 2015 study of beef export competitiveness showed that Botswana has historically been the highest ranked member country of SADC.

Access to the EU market for beef is based on international standards and this has greatly influenced Botswana's approach to setting and enforcing animal health requirements. An Action Plan response by the DVS to an EU review resulted in the immediate establishment of an OIE Focal Point for animal disease notification; responsible for providing national updates to the OIE WAHIS regularly. An AMR Focal Point has also been appointed.

DVS Standard Operating Procedures exist and are accessible for:

- Procedure for issuance of animal and animal product import permit
- Procedure for animal reception at border posts
- Procedure for monitoring imported animals
- Procedure for Ear-tagging
- Procedure for issuing animal movement permit

Appropriate forms must be secured and are available online for:

- Application for Importation of Animals and Animal products
- Request form for in-transit of live animal(s), animal product (s), animal feed (s), drugs, vaccines, and veterinary biologicals

Finally, various examples of bilateral engagement with counterparts were documented including a bilateral meeting between Botswana and Namibia which addressed; disease control matters, import/export issues, in transit movement of animals and products, vaccine concerns, animal slaughter and welfare issues, and issues of mutual interest. A meeting with South African counterparts was organized as a result of HPAI detections and this venue allowed direct updates on coordinated efforts to combat this disease of poultry. Agreements for animal agricultural trade and control of transboundary animal disease have been initiated with Algeria and Uganda, respectively.

Strengths:

- DVS make important efforts to harmonise their regulations and sanitary measures, and can demonstrate a level of alignment with changing international standards
- The DVS review and comment on the draft standards of the OIE at the Regional Commission for Africa and at AU-IBAR meetings
- Various regional organisations are attended by Botswana where opportunities exist for better harmonisation of national regulations with international standards

Weaknesses:

- DVS evidence for harmonisation with new or revised international standards, legislation or sanitary measures is not easily accessible.
- Although active in the OIE and Codex Alimentarius, there is little evidence that the DVS is involved with WTO SPS meetings.

Recommendations:

- The DVS should improve recording of examples of harmonization efforts; possibly through a database maintained by the Imports, Exports and Border Control staff.
- An SOP should be considered to formulate, negotiate and adopt international standards, and regularly harmonise national legislation, regulations and sanitary measures; results of such efforts should be recorded.
- The MoA and the DVS should either request direct participation at relevant WTO SPS meetings or find a means to ensure its positions are represented.

Evidence (as listed in Appendix 6):

T34, T35, T36, T37, T38, T39, T40, T71, T72, T 83, T102, T114, T115, T144, T 146, T159, T161, T162, T170, T196, T197.

IV-3 International certification	Levels of advancement
The authority and capability of the VS to reliably certify animals and animal products, and related services and processes under their mandate, for export, in accordance with national legislation and regulations, international standards and importing country requirements. *This refers to the country's veterinary export certification processes. Issues such as: the legislative basis, format and content of veterinary certificates; who signs certificates and the confidence they have in what they are certifying; and the outcome in terms of meeting international standards and/or importing country requirements to facilitate exportation should all be considered.*	1. The VS have neither the authority nor the capability to certify animals and animal products for export. 2. The VS have the authority to certify certain animals and animal products for export, but are not always in compliance with national legislation and regulations, and international standards. 3. The VS develop and carry out certification for certain animals, animal products, services and processes for export under their mandate in compliance with international standards. 4. The VS develop and carry out all relevant certification programmes for all animals, animal products, services and processes for export under their mandate in compliance with international standards. 5. The VS carry out audits of their certification programmes, in order to maintain national and international confidence in their system.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. *The VS develop and carry out certification programmes for certain animals, animal products, services and processes under their mandate in compliance with international standards.*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. *The VS carry out audits of their certification programmes, in order to maintain national and international confidence in their system.*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The DVS does not appear to be lacking in professional staffing at the central or field level to comply at higher levels of this CC.

Findings:

As mentioned earlier, the EU market for beef from Botswana represents the most important agricultural outlet for the country and its potential loss would have important economic impacts as seen during suspension of exports in 2011. Audits conducted by the FVO for controls of

FMD and controls for production of meat for export to the EU are thorough and strictly enforced. Action plans drafted by Botswana in response to audit findings have met with EU approval and allowed beef exports to continue to date. At present, of the SACU member countries only Botswana and Namibia continue to export beef to the EU as they can continually meet acceptable levels of sanitary controls. All EU reports and responding action plans by Botswana were available from 2011 with the most recent evidence of FVO audits conducted in 2013 (for bovine meat controls) and 2015 (for FMD controls). Since 2015, there has been regular contact between the FVO and the DVS as follow-up. In addition, progress in disease control advances can be demonstrated by the recognition of Zone 7 (Selebi-Phikwe) as (FMD) free without vaccination at the 2019 OIE General Session.

The Imports, Exports and Border Control staff has Standard Operating Procedures for issuance of animal and animal product export permits and issuing animal movement permits including required application forms for the export of animals and animal products and for in-transit movement of live animal(s), animal product (s), animal feed (s), drugs, vaccines, and veterinary biologicals. In its interactions with neighbouring and regional countries through various venues, the DVS has ensured it is aware of export certification requirements. A prohibition exists for the export of wild animals or their products (trophy or meat) unless an export permit is attained from the Department of Wildlife and National Parks. Various bilateral meetings with neighbouring countries have addressed import/export issues to ensure sanitary requirements are met.

Despite efforts to market donkey and ostrich products internationally, Botswana's only viable animal-based export at this time, is beef and this is the only animal agricultural sector sufficiently evolved to meet international sanitary requirements. It should be noted that when these other animal-based markets existed, the DVS had competently provided certification. Although new trading partners are being sought for international export of beef, other livestock industries in Botswana are less advanced and organized to seek international market access. Issues related to international certification are routinely addressed at various fora like SADC, SACU, the OIE Regional Commission for Africa, where the DVS is an active participant. Initial trade and control of transboundary animal disease have been initiated with Algeria and Uganda, which would contain elements of bilateral certification.

Strengths:

- A long-standing and sanitarily well-audited beef export market to the EU is in place.
- By meeting EU animal health requirements, Botswana has also benefited from access to regional markets; new international markets are also being sought.
- The DVS and Imports, Exports and Border Control staff have qualified personnel at the central and field levels to ensure the reliable export certification of animals and animal products in accordance with national legislation and regulations, international standards and importing country requirements.

Weaknesses:

- Botswana's historic focus on beef exports has hampered efforts to evolve other international animal agricultural markets, thus evidence of international certification competence presently only exists for this commodity.
- Although regular audits are undertaken by the EU for beef, evidence of review and update of any other certification programme is lacking.

Recommendations:

- The MoA and the DVS should continue to work with other livestock industries and share the successful experience and strategies it has attained from access to international beef markets with these sectors.
- The DVS should develop audit and updating protocols for all certification activities and document outcomes and actions taken.

Evidence (as listed in Appendix 6):

T34, T35, T36, T37, T38, T39, T40, T114, T115, T159, T161, T162, T196, T197.

IV-4 Equivalence and other types of sanitary agreements	Levels of advancement
The authority and capability of the VS to apply flexibility in negotiating, implementing and maintaining equivalence and other types of sanitary agreements with trading partners. *As a reference, Article 4 of the WTO SPS Agreement:* *Members shall accept the sanitary or phytosanitary measures of other Members as equivalent, even if these measures differ from their own or from those used by other Members trading in the same product, if the exporting Member objectively demonstrates to the importing Member that its measures achieve the importing Member's appropriate level of sanitary or phytosanitary protection. For this purpose, reasonable access shall be given, upon request, to the importing Member for inspection, testing and other relevant procedures.*	1. The VS have neither the authority nor the capability to negotiate or approve equivalence or other types of sanitary agreements with other countries. 2. The VS have the authority to negotiate and approve equivalence and other types of sanitary agreements with trading partners, but no such agreements have been implemented. 3. The VS have implemented equivalence and other types of sanitary agreements with trading partners on selected animals, animal products and processes. 4. The VS actively pursue the development, implementation and maintenance of equivalence and other types of sanitary agreements with trading partners on all matters relevant to animals, animal products and processes under their mandate. They publish their existing sanitary agreements in the public domain. 5. The VS actively work with stakeholders and take account of developments in international standards, in pursuing equivalence and other types of sanitary agreements with trading partners.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	3. The VS have implemented equivalence and other types of sanitary agreements with trading partners on selected animals, animal products and processes.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. The VS actively work with stakeholders and take account of developments in international standards, in pursuing equivalence and other types of sanitary agreements with trading partners.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The DVS has sought sanitary agreements with regional trading partners and actively participates in regional standard setting venues like SADC and the OIE Regional Commission for Africa.

Findings:

It should be noted at the outset, that although the VS has engaged with trading partners in various sanitary agreements, Botswana's focus on animal-based agriculture export remains within the beef sector (some efforts were made to promote markets for ostrich and donkey). The DVS actively participates in regional efforts for standard setting and harmonization of sanitary trade requirements but there is scarce evidence that equivalence, as cited in Article 4 of the WTO SPS Agreement, was ever requested, required or implemented. However, it is germane to this CC to note that the VS remains very transparent in its regulatory authority actions and all sanitary regulations and agreements are either available upon request or online. In interviews conducted with relevant central level authorities, it was evident that the DVS would seriously consider any science-based proposal for import access which would demonstrate that proposed sanitary measures, though different than those of Botswana, would effectively mitigate risk.

An example of this type of sanitary consideration is evidenced by communication between South Africa's Department of Agriculture Forestry and Fisheries (DAFF) and the DVS, informing them of an outbreak of FMD in Limpopo in late 2018, which resulted in the cessation of trade in cloven hoofed animals and their products into Botswana. The DAFF requested consideration for access of certain low-risk products and the DVS made concessions of entry, without a permit, for certain commodities. As a responsible trading partner and in completing its OIE obligations, the Botswana DVS also notified its European Commission Directorate-general for Health and Consumers Protection counterparts that all meat destined to the EU and transiting South Africa will be ensured as safe through use of seals on refrigerated trucks arriving in Cape Town for shipment. A bilateral meeting with Namibia and South Africa also included discussion on sanitary agreements.

As stated in previous CCs, Botswana is an active member of SACU, SADC and the OIE Regional Meetings and these venues provide opportunities for discussion of sanitary trade requirements including the use of equivalent mitigations. The 2016 UN Conference on Trade and Development published Trade Policy Framework for Botswana captures market access agreements and the 2015 WTO Trade Policy Review for SADC and Botswana also provide details of existing sanitary agreements and can be accessed through the public domain. By abiding with EU requirements for export of beef, Botswana is also accepting an international trade agreement which, though not implicitly an example of Article 4 of the WTO SPS Agreement, encourages consideration of these precepts.

Strengths:

- Clear evidence of participation by the DVS in sanitary trade-related issues with neighbouring countries, regional efforts and OIE regional initiatives.
- The DVS and Imports, Exports and Border Control staff have qualified personnel at the central and field levels to effectively negotiate and implement equivalence agreements.

Weaknesses:

- As the principal commodity of interest for export for Botswana is beef, most sanitary agreements tend to be focused on this one product.
- Little evidence of engagement with non-beef agricultural stakeholders to identify possible sanitary impediments in access to international markets which may be facilitated through an equivalence agreement.

Recommendations:

- The Imports, Exports and Border Control Unit of the DVS should review sanitary agreements for all animal commodity sectors in Botswana and investigate feasible proposals which could open access.
- New animal health laws being drafted, should make provisions for the consideration of Article 4 of the WTO SPS Agreement for all diseases based on the OIE TAHC.
- The DVS should provide easier access to all its sanitary agreements online.

Evidence (as listed in Appendix 6):

T34, T35, T36, T37, T38, T39, T40, T102, T114, T115, T144, T159, T162, T170.

IV-5 Transparency	Levels of advancement
The authority and capability of the VS to notify the OIE, WTO, trading partners and other relevant organisations of its disease status, regulations and sanitary measures and systems, in accordance with established procedures, as applicable to international trade.	1. The VS do not notify.
	2. The VS occasionally notify.
	3. The VS notify in compliance with the procedures established by these organisations.
	4. The VS regularly and actively inform stakeholders of changes in disease status, regulations and sanitary measures and systems, as applicable to international trade.
	5. The VS, in cooperation with their stakeholders, carries out reviews or audits of their notification procedures.

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	Wording of the level of advancement reached at the time
	4. The VS regularly inform stakeholders of changes in their regulations and decisions on the control of relevant diseases and of the country's sanitary status, and of changes in the regulations and sanitary status of other countries.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. The VS, in cooperation with their stakeholders, carry out audits of their transparency procedures.

Key Changes from 2010 to 2019 (*year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- Botswana has become a more active participant in regional animal health fora including the OIE Regional Commission for Africa and AU-IBAR.
- OIE has established a Sub-Regional Office in Gaborone which is located on the DVS compound.
- The DVS has appointed all OIE Focal Point personnel.
- More interaction with stakeholders and interested parties at various levels of the MoA and the DVS utilizing media outlets and internet.

Findings:

As noted in CC IV-2 on International harmonisation and IV-4 on Equivalence and other types of sanitary agreements, Botswana is an active member of SACU, SADC and the OIE Regional Meetings and of the OIE General Session and Codex Alimentarius Commission. As stated in previous CCs, these venues provide opportunities for transparent discussion of sanitary trade

issues. Although there was scant proof of regular DVS participation at relevant WTO SPS meetings, it was related that Botswana is present at these meetings, but delegation numbers are limited. Reporting of modifications to existing sanitary regulations to the WTO could not be verified. Nonetheless, there is ample evidence of the DVS' interaction and communication with the OIE, including regular reports of disease status and sanitary measures employed through appointed focal points for surveillance, communication and diseases notifications. All OIE WAHIS information appears to be up to date. Since the last PVS review, Botswana has also been selected as the site of the OIE Sub-Regional Office which provides more access and interaction with this standard-setting body.

As noted previously, the VS has held numerous bilateral meetings with neighbouring countries to enhance transparency and foster trade. In order to maintain access to beef exports to the EU, Botswana must meet specific sanitary requirements which are periodically audited, with results published online. As the focus of EU requirements is on FMD, this disease is meticulously controlled and monitored with findings made available to all trading partners. After the immediate notification of FMD serotype SAT 2 in Ngamiland to the OIE in June 2018, seven subsequent follow-reports were submitted concluding with a Final report in December of 2018. Most recent immediate notifications in 2019 include anthrax in May and Brucellosis in June. There was no evidence of any reluctance by the VS to report trade sensitive animal health information. The importance of animal agricultural trade and access to emerging markets requires that Botswana be transparent and its reputation in this regard is sound.

Although not as inclusive of livestock stakeholders in planning and execution of programmes, there is clear evidence of notification of all affected national counterparts of any control measures in the face of disease threats or actual disease detections. The MoA has initiated outreach to livestock keepers and other stakeholders through various media to provide information and also gather feedback on issues of concern. The Director of the DVS provides livestock keepers with relevant updates through notifications which are distributed through DVO, SDVO and Extension Offices. Internal inspections of the DVS operations can be found online from various sources.

Strengths:

- Botswana is fully dedicated to maintaining markets and accessing new markets for its animal-based commodities.
- The DVS experience with meeting requirements for the EU through lengthy published audits has inculcated a culture of transparency in its disease status and sanitary measures.
- Botswana is an active participant in all relevant regional and international standard-setting venues.
- The DVS has a history of regular reporting of disease to the OIE and now actively uses its appointed focal point persons.

Weaknesses:

- Stakeholders and interested parties are not involved in reviews or audits of the DVS notification procedures.
- Although active in the OIE and Codex Alimentarius, there is little evidence that the DVS is involved with WTO SPS meetings.

Recommendations:

- Ensure that key stakeholders and interested parties are involved in reviews and audits of the notification system employed by the DVS to provide information on disease status, regulations and sanitary measures and systems.
- The MoA and the DVS should either request direct participation at relevant WTO SPS meetings or find a means to ensure its positions are represented.
- Need for a system to document procedures and records on technical decisions, including, notifications under the WTO SPS Agreement.

Evidence (as listed in Appendix 6):

T6, T34, T35, T36, T37, T38, T39, T40, T71, T72, T 83, T92, T99, T102, T107, T114, T115, T118, T144, T119, T141, T142, T144, T146, T148, T159, T162, T166, T169, T170, S14, S47.

IV-6 Zoning	Levels of advancement
The authority and capability of the VS to establish and maintain disease free zones, as necessary and in accordance with the criteria established by the OIE (and by the WTO SPS Agreement where applicable). *Where a country has no need for or interest in developing disease free zones and has not initiated such a process, this Critical Competency should be assessed as "Non-Applicable" (N/A).*	1. The VS do not have the authority or capability to initiate the establishment of disease free *zones*.
	2. The VS have identified a geographical animal sub-population or sub-populations as candidates to target a specific health status suitable for zoning.
	3. The VS are implementing *biosecurity* and sanitary measures with the intention of establishing a disease free *zone* for selected animals and animal products.
	4. The VS have established at least one disease free zone of selected animals and animal products with collaboration from producers and other stakeholders in alignment with OIE standards.
	5. The VS can demonstrate the scientific basis for any disease free *zone* and have gained recognition by OIE and/or trading partners that they meet the criteria established by the OIE (and by the WTO SPS Agreement where applicable).

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	5. *The VS can demonstrate the scientific basis for any disease free zones and can gain recognition by trading partners that they meet the criteria established by the OIE (and by the WTO SPS Agreement where applicable).*
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	5. *The VS can demonstrate the scientific basis for any disease free zones and can gain recognition by trading partners that they meet the criteria established by the OIE (and by the WTO SPS Agreement where applicable).*

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The Maun FMD unit was established as a separate entity.
- The "fencing committee" was re-established with the "Chair" alternating between the DVS and Wildlife; a technical committee has also been established.
- Zone 3b (Nata) was officially declared free without vaccination by OIE in May 2017.

- Zone 7 (Selebi-Phikwe) was officially declared free without vaccination by OIE in May 2019.
- The DVS conducts regularly post-vaccination sero-surveillance to determine the effectiveness of vaccination.

Findings:

The Botswana zoning system for FMD control is well recognised and in place for more than 50 years. The country is separated into “red zones” in the north (Ngamiland) and “green zones” in the south. Ngamiland is cordoned by approximately 10,000 km of fence into different disease control and protection zones that have evolved over time as they have served as boundaries in the control of FMD outbreaks. In addition to the fences within Ngamiland and along the borders, there is buffalo fence surrounding the Okavango Delta along a its vast perimeter to prevent buffalo from coming into contact with cattle. The buffalo fence is a double cordon fence which has been improved and modified over time to maintain its effectiveness.

Maintenance of this expanse of fences is an enormous challenge to the DVS manpower and financial resources. Daily patrols and fence repair teams are coordinated and organised, now supported by the newly established FMD office in Maun. The major challenge to the fencing system is the increased number of elephants present within and outside national parks in Ngamiland which increased from some 50,000 to 150,000 over in the last decade. Normal inter-sector fences cannot withstand elephant movements while buffalo fences provide more resistance, but also requires daily repair. Repair of fences that are not under major challenge by wildlife has been successfully outsourced to communities or private companies. When patrols discover buffalo incursion across the buffalo fence, they apply a specific SOP and can also call for the assistance of a standby helicopter to drive the buffaloes back into the national park. Cattle which have crossed the buffalo fence into the national park, however, are destroyed.

Map 1 shows the current zoning into “red” and “green” zones. It is noteworthy that the only “red” areas (Selebi-Phikwe, Zone 7) remaining within the “green” zone have this year been officially declared free without vaccination by the OIE in May 2019; effectively closing the gap in the export zone.

The zoning system of Botswana is regularly audited by the EU since Botswana exports beef to the EU from the “green” zone. These audits inspect with great scrutiny the fencing system in Ngamiland to ensure that cattle movement from north to south is strictly regulated and that buffalo-cattle contact is prevented. However, occasionally a FMD outbreak has occurred near the border between Ngamiland and the “green” zone. Botswana has in these cases successfully applied provisions of TAHC chapter 8.8.6 and 8.8.7 by installing a Containment Zone and regaining free status within shortest possible time.

Within the “red” zone there are over 4000 crush pens where cattle can be gathered for FMD vaccinations which are carried out twice a year; in high-risk areas (around the national parks) three vaccinations are applied. Post-vaccination sero-monitoring is also carried out to evaluate the effectiveness of vaccination.

As already noted in the previous PVS report, farmers in Ngamiland have many challenges to face as compared to those in the “green” zone: regular vaccinations and PVM require gathering of animals, elephant incursion into grazing land, habitat destruction through overgrazing and

climate change with prolonged draughts. In spite of these challenges Ngamiland beef cannot benefit from access to the lucrative EU market as can that from the "green" zone.

Furthermore, Ngamiland is part of the Kavango-Zambezi Transfrontier Conservation Area (KAZA), Africa's largest conservation landscape. The KAZA envisages the eventual free movement of wildlife along a specific corridor. This corridor, however, has yet to be created by removing some of the FMD fences and communal farming land may need to be incorporated into the conservation area.

In view of offering livestock producers in Ngamiland better incentives for beef production and to build movement corridors for wildlife, particularly elephants, the DVS is rethinking the fencing system and is opting for a "reduce, restructure and realign" policy. Under this policy to allow for wildlife movement some fences will be completely removed, others will be replaced by deep trenches, and others will be realigned. The buffalo fences, however, will remain in place. This work was discussed at the recently revived "Fencing Committee", jointly chaired by the DVS and the DWNP.

These planned changes go hand in hand with embracing the CBT approach, which has been developed and tested for the past decade. For further reading see footnote[8]

Recent changes to the FMD chapter of the TAHC, namely articles 88.8.31; 8.8.4; 8.8.22, have provided a means for the implementation of CBT assuring the safety of beef produced in areas not officially declared free from FMD, but which are under strict control in terms of vaccination and surveillance by the DVS. The introduction of the BAITS programme has also greatly contributed to the possibility to apply CBT, as full traceability of carcasses back to the producer can be guaranteed.

Botswana has issued Guidelines to livestock keepers on how to apply the CBT approach and the two functioning abattoirs in Maun (BMC and Ngamiland Abattoir) have set aside specific slaughter days for CBT beef. The abattoirs are quarantined for 3 days, cleaned and disinfected, before each CBT slaughter day.

The DVS now allows CBT beef to be imported into the "green" zone. CBT beef is also exported to DRC, Angola and Mozambique; other countries are being investigated.

Strengths:

- Although the 2010 PVS 2010 had already designated a level 5 to this CC, the improvements made since then, such as introduction of the BAITS to assure full traceability, the promotion of a "reduce, restructure and realign" fence policy and the embracing of CBT in Ngamiland, is a clear demonstration that DVS has not been complacent but pro-active in facing the evolving challenges experienced by livestock owners in the FMD infected zones.

Weaknesses:

- While regular considerations on innovative approaches to FMD control are considered by the DVS, the day to day challenges in maintenance of the current fencing system are enormous in terms of personnel and budget requirements; often these cannot be met.

[8] Exploring market opportunities for commodity-based trade (CBT) of beef from Ngamiland, Botswana, 2017, Final report prepared for Cornell University's AHEAD program, Mark Bing et al.

- FMD virus surveys in buffalo are very rare (last one was done in 2010) and therefore updating knowledge on strains in buffalo may not be up to date.

Recommendations:

- Investigate possibilities of subdividing “red” infected zones to create free zone or compartment in areas that have not had FMD for many years (see first recommendation 2010).
- DVS should find solutions to new disease control challenges and respond to livestock producer requests to access more lucrative markets, (e.g. compartmentalisation); consider use of quarantine zones for FMD free buffalo rearing, creating more “green” zones in fenced ranches and zones officially free with vaccination.

Evidence (as listed in Appendix 6):

S13, S14, S15, S16, SC22, S36p, S37p, S38p, S7p, T36, T37, T41, T121, S47, T188, T121.

IV-7 Compartmentalisation	Levels of advancement
The authority and capability of the VS to establish and maintain disease free compartments in accordance with the criteria established by the OIE. *Where a country or its relevant animal industries have no need for or interest in developing disease free compartments and neither party has initiated or considered such a process or partnership, this Critical Competency should be assessed as "Non-Applicable" (N/A)*	1. The VS do not have the authority or capability to initiate the establishment of disease free *compartments*.[9]
	2. The VS can identify animal sub-populations as candidate establishments with a specific health status suitable for compartmentalisation, in partnership with interested stakeholders.
	3. The VS, working in close partnership with interested stakeholders, ensure that planned *biosecurity* measures to be implemented will enable the establishment and maintenance of disease free *compartments* for selected animals and animal products.
	4. The VS collaborate with producers and other stakeholders to define responsibilities and undertake actions that enable the establishment and maintenance of disease free *compartments* for selected animals and animal products, including a national government certification and accreditation system.
	5. The VS can demonstrate the scientific basis for disease free *compartments* and have gained recognition by other countries that they meet the criteria established by the OIE (and by the WTO SPS Agreement where applicable).

Terrestrial Code reference(s): Appendix 1

Results from Previous PVS Pathway Missions:

PVS Evaluation 2010	**Wording of the level of advancement reached at the time**
	2. As necessary, the VS can identify animal sub-populations with a distinct health status suitable for compartmentalisation.
Gap Analysis 2011	**Expected level of advancement to be maintained / reached within the next 5 years**
	2. As necessary, the VS can identify animal sub-populations with a distinct health status suitable for compartmentalisation.

Key Changes from 2010 to 2019 *(year of last PVS Evaluation/Follow-up mission) to (year of current mission):*

- The DVS has invested more thought into the FMD-free without vaccination compartment option and a pilot project is under way.

[9] If the VS has the authority and capability but chooses not to implement compartmentalization, this CC should be recorded as "not applicable at this stage"

Findings:

The VS recognises 28 quarantine facilities, either Government owned facilities (18) or on private, fenced farms in the FMD infected “red” zone. As noted in the 2010 PVS, these quarantine facilities have the potential to be considered as compartments in line with TAHC 8.8.4.

The DVS is considering the establishment of FMD free compartments without vaccination in the “red” zone in areas where no FMD outbreaks have been observed for many years. In this effort, the DVS could either use their own quarantine stations or assist fenced private premises in setting up a compartment. The DVS fulfils the conditions of TAHC 8.8.4 , Art 1, as it has an officially recognized FMD control programme and surveillance system, it has sufficient surveillance data available to prove the absence of FMD for 12 months in line with Art 2, animals within the compartment will not be vaccinated for FMD and the BAITS guarantees traceability of animals within the compartment. The designated compartment premises will need to establish required biosecurity measures and management of these.

This compartment proposal is still work in progress and it was reported that one private producer is setting up a compartment. There is also a planned venture to breed and rear FMD-free buffaloes, using a compartment approach. This could be another lucrative alternative for livestock owners in Ngamiland, as FMD free buffalo may acquire very high prices.

The DVS recognise AI free compartments in RSA to import poultry and they intend to set up Newcastle disease free compartments in the future.

Strengths:

- DVS fulfils the conditions of establishing compartments for FMD free without vaccination in the “red’ zone and is attempting to set up pilot projects.

Weaknesses:

- No cost benefit analysis has been done on using compartments.

Recommendations:

- DVS should manage livestock producer expectations in regard to compartmentalisation as a solution to accessing new markets.

Evidence (as listed in Appendix 6):

S45, T41

PART IV: APPENDICES

Appendix 1: Terrestrial Code references for Critical Competencies

Critical Competences	Terrestrial Code references
I-1.A **I-1.B** **I-2.A** **I-2.B**	➢ Points 1-5 of Article 3.1.2. on Fundamental principles of quality: Professional judgement/Independence/Impartiality/Integrity/Objectivity. ➢ Points 7 and 14 of Article 3.1.2. on Fundamental principles of quality: General organisation/Human and financial resources. ➢ Article 3.2.5. on Evaluation criteria for human resources. ➢ Article 3.2.12. on Evaluation of the veterinary statutory body. ➢ Points 1-2 and 5 of Article 3.2.14. on Organisation and structure of Veterinary Services/National information on human resources/Laboratory services.
I-3	➢ Points 1, 7 and 14 of Article 3.1.2. on Fundamental principles of quality: Professional judgement/General organisation/Human and financial resources. ➢ Article 3.2.5. on Evaluation criteria for human resources. ➢ Sub-point d) of Point 4 of Article 3.2.10. on Veterinary Services administration: In-service training and development programme for staff. ➢ Point 10 of Article 3.2.14. on Performance assessment and audit programmes.
I-4	➢ Point 2 of Article 3.1.2. on Fundamental principles of quality: Independence.
I-5	➢ Point 1 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services. ➢ Point 10 of Article 3.2.14. on Performance assessment and audit programmes.
I-6.A **I-6.B**	➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation/General organisation/Procedures and standards. ➢ Article 3.2.2. on Scope. ➢ Points 1 and 2 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services. ➢ Point 4 of Article 3.2.10. on Performance assessment and audit programmes: Veterinary Services administration.
I-7	➢ Point 2 of Article 3.2.4. on Evaluation criteria for quality system: “Where the Veterinary Services undergoing evaluation… than on the resource and infrastructural components of the services”. ➢ Points 2 and 3 of Article 3.2.6. on Evaluation criteria for material resources: Administrative / Technical. ➢ Point 3 of Article 3.2.10. on Performance assessment and audit programmes: Compliance. ➢ Point 4 of Article 3.2.14. on Administration details.
I-8 **I-9**	➢ Points 6 and 14 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation / Human and financial resources. ➢ Point 1 of Article 3.2.6. on Evaluation criteria for material resources: Financial. ➢ Point 3 of Article 3.2.14. on Financial management information.
I-11	➢ Points 7, 11 and 14 of Article 3.1.2. on Fundamental principles of quality: General organisation / Documentation / Human and financial resources. ➢ Point 4 of Article 3.2.1. on General considerations. ➢ Point 1 of Article 3.2.2. on Scope. ➢ Article 3.2.6. on Evaluation criteria for material resources. ➢ Article 3.2.10. on Performance assessment and audit programmes.
II-1.A **II-1.B** **II-1.C**	➢ Point 9 of Article 3.1.2. on Fundamental principles of quality: Procedures and standards. ➢ Point 1 of Article 3.2.4. on Evaluation criteria for quality systems.

	➢ Point 3 of Article 3.2.6. on Evaluation criteria for material resources: Technical. ➢ Point 5 of Article 3.2.14. on Laboratory services.
II-2	➢ Chapter 2.1. on Import risk analysis ➢ Chapter 6.11. on Risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in animals
II-3	➢ Points 6 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation / Procedures and standards. ➢ Point 2 of Article 3.2.7. on Legislation and functional capabilities: Export/import inspection. ➢ Points 7 and 8 of Article 3.2.14. on Veterinary legislation, regulations and functional capabilities / Animal health and veterinary public health controls.
II-4.A **II-4.B**	➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation / General organisation / Procedures and standards. ➢ Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status / Animal health control / National animal disease reporting systems. ➢ Sub-points a) i), ii) and iii) of Point 8 of Article 3.2.14. on Animal health: Description of and sample data from any national animal disease reporting system controlled and operated or coordinated by the Veterinary Services / Description of and sample reference data from other national animal disease reporting systems controlled and operated by other organisations which make data and results available to Veterinary Services / Description and relevant data of current official control programmes including:… or eradication programmes for specific diseases. ➢ Chapter 1.4. on Animal health surveillance. ➢ Chapter 1.5. on Surveillance for arthropod vectors of animal diseases.
II-5	➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation / General organisation / Procedures and standards. ➢ Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status / Animal health control / National animal disease reporting systems. ➢ Sub-point a) of Point 8 of Article 3.2.14. on Animal health, animal welfare and veterinary public health controls: Animal health.
II-6	➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation / General organisation / Procedures and standards. ➢ Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status / Animal health control / National animal disease reporting systems. ➢ Sub-point a) of Point 8 of Article 3.2.14. on Animal health, animal welfare and veterinary public health controls: Animal health. ➢ Chapter 4.12. on Disposal of dead animal.
II-7.A **II-7.B**	➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation / General organisation / Procedures and standards. ➢ Article 3.4.12. on Human food production chain. ➢ Points 1-5 of Article 3.2.9. on Veterinary public health controls: Food hygiene / Zoonoses / Chemical residue testing programmes / Veterinary medicines/ Integration between animal health controls and veterinary public health. ➢ Points 2, 7 and 8 of Article 3.2.14. on National information on human resources / Veterinary legislation, regulations and functional capabilities / Animal health and veterinary public health controls. ➢ Chapter 6.2. on Control of biological hazards of animal health and public health importance through ante- and post-mortem meat inspection. ➢ Chapter 6.3. on Control of biological hazards of animal health and public health importance through ante- and post-mortem meat inspection. References to Codex Alimentarius Commission standards: ➢ Code of Hygienic practice for meat (CAC/RCP 58-2005). ➢ Code of Hygienic practice for milk and milk products (CAC/RCP/ 57-2004). ➢ General Principles of Food Hygiene (CAC/RCP 1-1969; amended 1999. Revisions 1997 and 2003).

II-8	➢ Points 6 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation/Procedures and standards. ➢ Points 3 and 4 of Article 3.2.9. on Veterinary public health controls: Chemical residue testing programmes/Veterinary medicines. ➢ Sub-point a) ii) of Point 7 of Article 3.2.14. on Animal health and animal welfare and veterinary public health: Assessment of ability of Veterinary Services to enforce legislation.
II-9	➢ Chapter 6.7. on Introduction to the recommendations for controlling antimicrobial resistance ➢ Chapter 6.8. on Harmonisation of national antimicrobial resistance surveillance and monitoring programmes ➢ Chapter 6.9. on Monitoring of the quantities and usage patterns of antimicrobial agents used in food-producing animals ➢ Chapter 6.10. on Responsible and prudent use of antimicrobial agents in veterinary medicine ➢ Chapter 6.11. on Risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in animals References to Codex Alimentarius Commission standards: ➢ Guidelines for Risk Analysis of Foodborne Antimicrobial Resistance (CAC/GL 77-2011) ➢ Code of Practice to Minimize and Contain Antimicrobial Resistance (CAC/RCP 61-2005).
II-10	➢ Points 3 and 4 of Article 3.2.9. on Veterinary public health controls: Chemical residue testing programmes / Veterinary medicines. ➢ Sub-points b) iii) and iv) of Point 8 of Article 3.2.14. on Veterinary public health: Chemical residue testing programmes / Veterinary medicines. ➢ Chapter 2.2 – Criteria applied by the OIE for assessing the safety of commodities. References to Codex Alimentarius Commission standards: ➢ Guidelines for the Design and Implementation of National Regulatory Food Safety Assurance Programmes Associated with the Use of Veterinary Drugs in Food Producing Animals (CAC/GL 71-2009) ➢ Glossary of Terms and Definitions (Residues of Veterinary Drugs in Foods) (CAC/MISC 5-1993) ➢ Maximum Residue Limits (MRLs) and Risk Management Recommendations (RMRs) for Residues of Veterinary Drugs in Foods (CAC/MRL 2) ➢ Code of Practice to Minimize and Contain Antimicrobial Resistance (CAC/RCP 61-2005) ➢ General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995) ➢ Code of Practice Concerning Source Directed Measures to Reduce Contamination of Foods with Chemicals (CAC/RCP 49-2001) ➢ Guidelines for Risk Analysis of Foodborne Antimicrobial Resistance (CAC/GL 77-2011). ➢ Code of Practice to Minimize and Contain Antimicrobial Resistance (CAC/RCP 61-2005).
II-11	➢ Chapter 6.4. on Control of hazards of animal health and public health importance in animal feed. ➢ Chapter 6.10.8 – Responsibilities of animal feed manufacturers
II-12.A **II-12.B**	➢ Point 6 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation. ➢ Chapter 4.1. on General principles on identification and traceability of live animals. ➢ Chapter 4.2. on Design and implementation of identification systems to achieve animal traceability.

II-13	➢ Section 7 on Animal Welfare ➢ Chapters 7.2., 7.3., 7.4. 7.5., 7.6., 7.9., 7.10., 7.11 and 7.13. on farm animal welfare (including humane on farm, transport and slaughter conditions). ➢ Chapter 7.8. on Use of animals in research and education. ➢ Chapter 7.7. on Stray dog population control. ➢ Chapter 7.12. on Welfare of working equids.
III-1	➢ Point 13 of Article 3.1.2. on Fundamental principles of quality: Communication. ➢ Sub-point b) of Point 2 of Article 3.2.6. on Administrative resources: Communications. ➢ Point 4 of Article 3.2.14. on Administration details. ➢ Chapter 3.3. on Communication.
III-2	➢ Point 13 of Article 3.1.2. on Fundamental principles of quality: Communication. ➢ Point 2 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services. ➢ Point 4 and Sub-point g) of Point 10 of Article 3.2.14. on Administration details and on Sources of independent scientific expertise. ➢ Chapter 3.3. on Communication.
III-3	➢ Article 3.2.11. on Participation on OIE activities. ➢ Point 4 of Article 3.2.14. on Administration details.
III-4	➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation / General organisation / Procedures and standards. ➢ Point 7 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services. ➢ Article 3.4.5. on Competent Authorities.
III-5	➢ Point 6 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation. ➢ Point 9 of Article 3.2.1. on General considerations. ➢ Article 3.2.12. on Evaluation of the veterinary statutory body. ➢ Article 3.4.6. on Veterinarians and veterinary para-professionals.
III-6	➢ Points 6 and 13 of Article 3.1.2. Fundamental principles of quality: Veterinary legislation / Communication. ➢ Points 2 and 7 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services. ➢ Point 8 of Article 3.2.14. on Animal health, animal welfare and veterinary public health controls. ➢ Point 4 of Article 3.4.3. on General principles: Consultation.
III-7	➢ Chapter 1.4. on Animal health surveillance. ➢ Chapter 1.5. on Surveillance for arthropod vectors of animal diseases. ➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation/Procedures and standards. ➢ Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status/Animal health control/National animal disease reporting systems. ➢ Points 4 of Article 3.2.9. on Veterinary public health controls: Veterinary medicines.
IV-1.A **IV-1.B**	➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation / General organisation / Procedures and standards. ➢ Points 1 and 2 of Article 3.2.7. on Legislation and functional capabilities: Animal health, animal welfare and veterinary public health / Export/import inspection. ➢ Point 7 of Article 3.2.14. on Veterinary legislation, regulations and functional capabilities. ➢ Chapter 3.4. on Veterinary legislation, specifically articles 3.4.3 and 3.4.4
IV-2	➢ Point 6 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation. ➢ Article 3.2.11. on Participation in OIE activities.

	➢ Points 7 and 11 of Article 3.2.14. on Veterinary legislation, regulations and functional capabilities/Membership of the OIE.
IV-3	➢ Points 6, 7 and 9 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation/General organisation/Procedures and standards. ➢ Point 2 of Article 3.2.7. on Legislation and functional capabilities: Export/import inspection. ➢ Sub-point b) of Point 7 of Article 3.2.14. on Veterinary legislation, regulations and functional capabilities: Export/import inspection. ➢ Chapter 5.2. on Certification procedures. ➢ Chapters 5.10. to 5.13. on Model international veterinary certificates.
IV-4	➢ Points 6 and 7 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation/General organisation. ➢ Sub-point g) of Point 4 of Article 3.2.10. on Veterinary Services administration: Trade performance history. ➢ Chapter 5.3. on OIE procedures relevant to the Agreement on the Application of Sanitary and Phytosanitary Measures of the World Trade Organization.
IV-5	➢ Point 6 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation. ➢ Points 1 and 3 of Article 3.2.8. on Animal health controls: Animal health status/National animal disease reporting systems. ➢ Chapter 5.1. on General obligations related to certification.
IV-6	➢ Point 6 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation. ➢ Chapter 4.3. on Zoning and compartmentalisation.
IV-7	➢ Point 6 of Article 3.1.2. on Fundamental principles of quality: Veterinary legislation. ➢ Chapter 4.3. on Zoning and compartmentalisation. ➢ Chapter 4.4. on Application of compartmentalisation.

Appendix 2: Glossary of terms

Terms defined in the Terrestrial Code that are used in this publication are reprinted here for ease of reference.

Animal

means a mammal, reptile, bird or bee.

Animal identification

means the combination of the identification and *registration* of an *animal* individually, with a unique identifier, or collectively by its *epidemiological unit* or group, with a unique group identifier.

Animal identification system

means the inclusion and linking of components such as identification of *establishments* or owners, the person(s) responsible for the *animal(s),* movements and other records with *animal identification.*

Animal Traceability

means the ability to follow an *animal* or group of *animals* during all stages of its life.

Animal welfare

means the physical and mental state of an *animal* in relation to the conditions in which it lives and dies.

Antimicrobial agent

means a naturally occurring, semi-synthetic or synthetic substance that exhibits antimicrobial activity (kill or inhibit the growth of micro-organisms) at concentrations attainable in vivo. Anthelmintics and substances classed as disinfectants or antiseptics are excluded from this definition

Biosecurity

means a set of management and physical measures designed to reduce the risk of introduction, establishment and spread of animal diseases, infections or infestations to, from and within an animal population.

Border Post

means any airport, or any port, railway station or road check-point open to *international trade* of *commodities*, where import veterinary inspections can be performed.

Case

means an individual animal infected by a pathogenic agent, with or without clinical signs

Compartment

means an animal *subpopulation* contained in one or more *establishments* under a common *biosecurity* management system with a distinct health status with respect to a specific *disease* or specific *diseases* for which required *surveillance*, control and *biosecurity* measures have been applied for the purposes of *international trade.*

Competent Authority

means the *Veterinary Authority* or other Governmental Authority of a Member, having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in the *Terrestrial Code* and the OIE *Aquatic Animal Health Code* in the whole territory.

Containment Zone

means a defined *zone* around and including suspected or infected *establishments*, taking into account the epidemiological factors and results of investigations, where control measures to prevent the spread of the *infection* are applied.

Disease

means the clinical and/or pathological manifestation of *infection.*

Emerging disease

means a new occurrence in an animal of a disease, infection or infestation, causing a significant impact on animal or public health resulting from:

a. change of a known pathogenic agent or its spread to a new geographic area or species; or

b. previously unrecognised pathogenic agent or disease diagnosed for the first time.

Epidemiological Unit

means a group of *animals* with a defined epidemiological relationship that share approximately the same likelihood of exposure to a pathogenic agent. This may be because they share a common environment (e.g. *animals* in a pen), or because of common management practices. Usually, this is a *herd* or a *flock*. However, an *epidemiological unit* may also refer to groups such as *animals* belonging to residents of a village, or *animals* sharing a communal animal handling facility. The epidemiological relationship may differ from *disease* to *disease*, or even strain to strain of the pathogenic agent.

Establishment

means the premises in which *animals* are kept.

Feed

means any material (single or multiple), whether processed, semi-processed or raw, which is intended to be fed directly to terrestrial *animals* (except bees).

Hazard

means a biological, chemical or physical agent in, or condition of, an animal or animal product with the potential to cause an adverse health effect

International veterinary certificate

means a certificate, issued in conformity with the provisions of Chapter 5.2. of the *Terrestrial Animal Health Code* , describing the animal health and/or *public* health requirements which are fulfilled by the exported *commodities.*

Laboratory

means a properly equipped institution staffed by technically competent personnel under the control of a specialist in veterinary diagnostic methods, who is responsible for the validity of the results. The *Veterinary Authority* approves and monitors such laboratories with regard to the diagnostic tests required for *international trade.*

Meat

means all edible parts of an *animal*.

Monitoring

means the intermittent performance and analysis of routine measurements and observations, aimed at detecting changes in the environment or health status of a *population.*

Notifiable disease

means a *disease* listed by the *Veterinary Authority,* and that, as soon as detected or suspected, must be brought to the attention of this *Authority*, in accordance with national regulations.

Official Veterinarian

means a *veterinarian* authorised by the *Veterinary Authority* of the country to perform certain designated official tasks associated with animal health and/or public health and inspections of *commodities* and, when appropriate, to certify in conformity with the provisions of Chapters 5.1. and 5.2. of the *Terrestrial Code.*

Outbreak

means the occurrence of one or more cases in an epidemiological unit.

Risk analysis

means the process composed of *hazard identification*, *risk assessment*, *risk management* and *risk communication.*

Risk assessment

means the evaluation of the likelihood and the biological and economic consequences of entry, *establishment* and spread of a *hazard* within the territory of an *importing country*.

Risk communication

Means the interactive transmission and exchange of information and opinions throughout the risk anaylsis process concerning risk, risk-related factors and risk perceptions and risk assessors, risk managers, risk communicators, the general public and interested parties.

Risk management

means the process of identifying, selecting and implementing measures that can be applied to reduce the level of *risk*.

Sanitary measure

means a measure, such as those described in various Chapters of the *Terrestrial Code*, destined to protect animal or human health or life within the territory of the OIE Member from *risks* arising from the entry, *establishment* and/or spread of a *hazard*.

Surveillance

means the systematic ongoing collection, collation, and analysis of information related to animal health and the timely dissemination of information so that action can be taken.

Terrestrial Code

means the OIE *Terrestrial Animal Health Code.*

Veterinarian

means a person with appropriate education, registered or licensed by the relevant *veterinary statutory body* of a country to practice veterinary medicine/science in that country.

Veterinary Authority

means the Governmental Authority of a Member Country, comprising veterinarians, other professionals and paraprofessionals, having the responsibility and competence for ensuring or supervising the implementation of the animal health and welfare measures, international veterinary certification and other standards and recommendations in the Terrestrial Code in the whole territory.

(Veterinary) legislation

means laws, regulations and all associated legal instruments that pertain to the veterinary domain.

Veterinary paraprofessional

means a person who, for the purposes of the *Terrestrial Code,* is authorised by the *veterinary statutory body* to carry out certain designated tasks (dependent upon the category of *veterinary paraprofessional)* in a territory, and delegated to them under the responsibility and direction of a *veterinarian.* The tasks for each category of *veterinary paraprofessional* should be defined by the *veterinary statutory body* depending on qualifications and training, and according to need.

Veterinary Services

means the governmental and non-governmental organisations that implement animal health and welfare measures and other standards and recommendations in the Terrestrial Code and the OIE Aquatic Animal Health Code in the territory. The Veterinary Services are under the overall control and direction of the Veterinary Authority. Private sector organisations, veterinarians, veterinary paraprofessionals or aquatic animal health professionals are normally accredited or approved by the Veterinary Authority to deliver the delegated functions.

Veterinary statutory body

means an autonomous regulatory body for *veterinarians* and *veterinary paraprofessionals.*

Wildlife

means *feral animals*, *captive wild animals* and *wild animals*.

Zone

means a clearly defined part of a territory containing an animal subpopulation with a distinct health status with respect to a specific disease for which required surveillance, control and *biosecurity* measures have been applied for the purpose of international trade.

Appendix 3: Country information (geography, administration, agriculture and livestock)

Table 11: Data summary for geography, agriculture and livestock data

Geographic features

Climatic and/or agro-ecological zones	Rainfall (mm/year)
Sandveld	<350
Hardveld	400
Aluvial planes	450
Lacustrine	<600

Topography	Km2	%
Total area	582,000	
Pasture lands		60
Arable land		0.7
Forest		21
Wetlands/deserts		45
Highlands		0

Demographic data

Human population		Livestock households/farms	
Total number	2,250,260 (2016 est.)	Total number	
Average density / km2	3.7/km^2	% intensive	~ 15
% of urban	57.71 (2016 est.)	% agro-pastoral (mixed)	~ 5
% of rural	~ 42	% extensive	~ 80

Current livestock census data

Animals species	Total Number	Intensive production system (% or no.)	Mixed production system (% or no.)	Extensive production system (% or no.)
Cattle	2406265	< 0.2		100
Sheep	236764	0		100
Goat	1191820	0		100
Pig	9614	~ 10		~ 90
Poultry	5029301	~ 30		~ 70
Equidae	148267	0		100

Animal and animal product trade data

Animals and animal products	Average annual import		Average annual export	
	Quantity	Value	Quantity	Value
Bovine	3606,00	36060000,00	99	445500,00
Avian	473000,00	29799000,00	1022	51100,00
Porcine	953,00	1143600,00	0	0,00
Equine	638,00	9570000,00	97	970000,00
Caprine	5882,00	35292000,00	23	23000,00
Ovine	2817,00	19719000,00	44	44000,00
Beef (tonnes)	2700,00	81000000,00	15130,20	832 160 717,00
Milk (litres)	45675803,00	228379015,00	0,00	0,00
Pork (tonnes)	1473,00	58920000,00	0,00	0,00
Lamb/mutton (tonnes)	265.5	9310000,00	0,00	0,00
Chicken (tonnes)	5165.6	180810000,00	0,00	0,00
Fish (tonnes)	10.45	470250,00	0,00	0,00
Semen (straws)	11920,00	1788000,00	7000,00	1050000,00
Embryos (Count)	640,00	960000,00	0,00	0,00
TOTAL		693,220,865,00		834,744,317,00

Economic data

National GDP (2019 est.)	PPP = $44.3 billion ; Nominal = $19.268 billion[i]
National budget (Revenues and grants)	6,018,150,720.00
Livestock GDP	< 3%
Economic value of livestock population	10,000,000,000.00 (Pula)
Annual public sector contribution to agriculture	??
Annual budget of the Veterinary Services	420,793,520 (Pula)

Appendix 4: Timetable of the mission; sites/ facilities visited and list of persons met or interviewed

A) Outline of Agenda for PVS Follow-Up Mission to Botswana

Programme	Proposed Activities 2019	Location/Time
Day 0 (Sunday, May 5)	Expert Team convenes, reviews data, methodology, key findings from previous PVS Pathway Missions and finalise the preparation of the Mission.	GABORONE TBD/Sunday availability
Day 1 (Monday, May 6) [Recommended: Courtesy visit, opening meeting and HQ meetings]	**Courtesy visit** to Minister and/or other senior staff. **Opening meeting** with Headquarters staff and representatives of all interested parties. **Headquarters meeting**: (CVO/Delegate and staff) - Discussion about documents sent before the Mission; selection of sites and the logistic arrangements for the Mission. **Team 1 & 2:** - Meat Hygiene Unit (VPH Division)	GABORONE 0830 hrs. 0900 hrs. 1100 hrs 1400 hrs.
Day 2 (Tuesday, May 7) [Recommended: Central laboratories and reference laboratories]	**AM Sessions** **Team 1** (Münstermann/Lubaba) - Botswana National Veterinary Laboratory (BNVL) **Team 2** (Fernandez/Sserugga) - Compliance, Policy and Development Division (control of veterinary medicines, feeds) - Reforms and Training Unit **PM Sessions** **Team 1 & 2** - Disease Control Animal Health and Field Services Division	GABORONE 0830 hrs. 0830 hrs. 1030 hrs. 1400 hrs.

Day 3 (Wednesday, May 8) [Recommended: Meeting with the Veterinary Statutory Body and meeting with the main national stakeholders]	**AM Session** **Team 1** - Botswana Agricultural Marketing Board (BAMB) - Livestock Identification and Traceability System (BAITS) - Livestock Advisory Centre (LAC) - Botswana Veterinary Surgeons Council (BVSC) **Team 2** - Imports, Exports & Border Controls Unit - Human Resources - Reforms and Training Unit **PM Sessions** **Team 1** PM - Botswana Vaccine Institute (BVI) **Team 2** PM - Botswana Society for the Prevention of Cruelty to Animals (BSPCA) - Tsholofelo - Vet and Agric Consultants (Private veterinary clinic)	GABORONE 0830 hrs. 0930 hrs. 1030 hrs. 1100 hrs. 0830 hrs. 1030 hrs. 1130 hrs. 1400 hrs. 1400 hrs. 1530 hrs.
Day 4 (Thursday, May 9) [Recommended: National training facilities (initial and further training) including universities: - For veterinarians and aquatic animal health professionals (university qualification) - For veterinary para-professionals and aquatic animal health professionals and other technical personnel (non-university qualification)	**AM Session** **Team 1** - Accounts Unit of Human Resources Division - Compliance, Policy and Development Division - Epidemiology Unit **Team 2** - Botswana University of Agriculture and Natural Resources (BUAN) - Department of Agriculture Research (DAR) **PM Session** **Team 1** - Meeting with Ministry of Health & Wellness (MoHW) - Botswana Medicines Regulatory Authority (BOMRA)	GABORONE 0830 hrs. 1000 hrs. 1100 hrs. 0900 hrs. 1100 hrs. 1400 hrs. 1530 hrs.

	Team 2 Farmers associations and consumer union - Botswana Beef Producers Union - Botswana Poultry Producers Union	1400 hrs.
Day 5 (Friday, May 10)	**Team 1 Drive to SDVO Gantsi, (Via Letlhakeng)** - Review official controls at Letlhakeng PVO (disease surveillance, animal registration, holding registration) - Visit extension area at Maboane **Team 2 Drive Francistown (PVO NE)** - Visit with Central District DVO at SDVO office at Palapye - Jago Beef Abatoir (Palapye) - Visit Extension Area Office at Serule - Scarlo Slaughter slab and butcher (Serule) - Visit Sese quarantine (under Selibe-Phikwe SDVO) - Visit Veterinary Check point at Sese (under Selibe-Phikwe SDVO) - Observe the former containment zone fence along the highway (A1)	
Day 6 (May 11, Saturday)	**Team 1 (Lodge at Tautona lodge)** **Gantsi (District)** - Review official controls Gantsi PVO (disease surveillance, animal registration, holding registration, control of veterinary products) - Visit feedlot - Visit LAC (supply of ear tags) - Visit BAMB (supplier of feed, VMPs) **Team 2 (Lodge at Cresta Francistown)** - Visit to DVO Northeast District in Francistown - Visit supplier of veterinary medicines and feed (BAMB) - Agrichem Agricultural Supplies (Francistown) - Bisoli control gate and patrol route along fence 6b - Bisoli Farm (Private Livestock Keeper) - Visit Border Inspection Point from Zimbabwe (Ramokgwebana) - Bobsie's poultry abattoir at Tshesebe	
Day 7 (May 12, Sunday)	**Team 1 (Lodge at Tautona lodge)**	

	- Visit extension Sub-district (Charleshill) - Visit border point at Mamuno **Team 2 (Travel to Nata – Lodge at Pelican lodge)** - Dukwi Disease Control Gate - SVDO Office Nata - Area Extension office at Sepako - Along 3c Cordon Fence (Tshaathoka-Mawama) - Tshaathoka-Mawama Control Gate - Tour Disease control fence separating FMD free from non-free area (Zone 3c/Zimbabwe fence); international border with Zimababwe (double cordon fence and beacon markers) and Dzibana-Ngwasah Fence Team - Ngwasha Disease Control Gate and Fence Maintenance Camp	
Day 8 (May 13, Monday)	**Team 1: Travel to Maun (Lodge at Cresta Hotel in Maun)** - Visit Kuke Veterinary gate (separation of FMD-free area from non-free area - Observe protection zone fence at Mogapelwa gate - Visit a crush pen & observe vaccination teams (Toteng) **Team 2: Travel to Maun (Lodge at Cresta Hotel in Maun)** - Observe controls at Makalamabedi veterinary gate (separates free-area from non-free Area - NW District DVO Office (Maun) and BAITS ear tag sale point and BAITS Cafe - Botswana Meat Commission (BMC) Abattoir (Maun)	
Day 9 (May 14, Tuesday)	**Team 1: Overnight in Maun** - Review FMD controls in PVO (NW) - Visit Maun BMC - Visit Ngamiland private abattoir in Maun - Tour buffalo fence, visit veterinary gate at Mawana **Team 2: Overnight in Maun** - Visit to Makalamabedi Quarantine - Tour Cordon fence separating Non-Free area from Free Area and cattle entry point to Quarantine area - Visit to fence maintenance workers camp and equipment depot	

	- Exit out at Quarantine at Makalamabedi (decontamination point) - Makalamabedi Village Gate control point - Enter quarantine gate from zone 2 d and 2e at Xhanaxoo - View fence between Free Area (4a) and Non-free area (2e) - Makalamabedi crush pen - Shashe crush pen - Wagawaga dairy farm owner in Komana - Society for the Protection of Animals Abroad (SPANA) - Botswana	
Day 10 (May 15, Wednesday)	**Team 1:** - Meeting with three Farmers Associations <u>Both teams fly back to Gaborone</u>	1500 hrs.
Day 11 (May 16, Thursday)	**<u>AM Session</u>** **Team 1** - Botswana Meat Commission (BMC) - Epidemiology Unit **Team 2** - Meat Inspection Training Institute (MITI) - Botswana Veterinary Association (BVA) - VetPro Specialists (Private veterinary clinic) - Phakalane **<u>PM Session</u>** **Team 1 & 2** - Meet to prepare closing presentation	GABORONE 0730 hrs. 0830 hrs. 0730 hrs. 1100 hrs. 1400 hrs. 1500 hrs.
Day 12 (May 17)	Debriefing general meeting with CVO and divisions Closing meeting	GABORONE 1400 hrs.
Day 13 (May 18)	Report writing Departure	

B) Map of PVS Mission routes (Team 1 = Dr. Susanne Münstermann and Dr. Caesar Lubaba. Team 2 = Dr. Peter J Fernandez, and Dr. Joseph Sserugga)

C) List of persons met or interviewed

Opening meeting				
Location: DVS headquarters (HQ), Gaborone **Date(s): May 6, 2019 - 9:00 am**				
Location & Jurisdiction	**Institution – Agency – Group - Association**	**Person(s) met and interviewed**	**Position**	**Activities and CC Relevance**
DVS-HQ	Meat Hygiene	Lovie Ludo Chilisa	PVO I	Food safety
DVS-HQ	Meat Hygiene	Prudence Madiabaso	PVO II	Food safety
DVS-HQ	Records Management Unit	Dipononyana Ramatowane	Records Manager	Administration
DVS-HQ	Account Section	Marea Kazomdunge	PAO	Finances
Sub-Regional Office	OIE SRR	Olafur Valsson	Programme Officer	Observer
BVSC	BVSC	Kobedi Segale	Registrar	VSB
DVS-HQ	Accounts	Kehumisitswe Kgosidikae	CAO I	Finances
DVS-HQ	Disease Control	Kealeboga Borne	SO I	Disease control
DVS-HQ	Projects Coordination Office	John Kgosiemang	PSO I	Internal coordination
DVS-HQ	BAITS	Olorato Tshireletso	PVO	Animal identification
DWNP	DWNP	Mmolotsi Dikolobe	PVO	Wildlife
DVS-HQ	Quality Control	Gregory M. Ndlovu	Quality Manager	Quality control
Central District	DVS	Jaone J.M. Sebina		Disease control
BOMRA	BOMRA	Sinah M. Selelo	Chief Technical Advisor	VMP
DVS-HQ	DVS - VEES	Tshepo Yvonne Sereetsi	PVO I	Disease control
DVS-HQ	DVS-Training	Keebetile Segosebe	PSO I	Training
DVS-HQ	DVS-Compliance	Keamogetse K. Nkoane	SO I	Quality control
DVS-HQ	DVS HR	Kebofe Maseng	AM	Human resources
DVS-HQ	DVS-HQ Field Coordinator	Gareutlwane Gaopatwe	CSO	Internal coordination
DVS-HQ	DVS-Accounting Unit	Rebecca Melore	CAO	Finances
DVS-HQ	DVS-VEES	Emmanuel K.Adom	PVO I	Disease control

DVS-HQ	DVS - Meat Hygiene	Kabo Thema	PVO I	Food safety
DVS-HQ	DVS-HQ	Letlhogile Oarabile	DDVS	Disease control
BVI	BVI	George Matlho	GM	VMP
DVS-BNVL	BNVL	Chandapiwa Marobela - Raborokgwe	DDVS	Laboratory
DVS-HQ	DVS	Kefentse Motshegwa	DDVS	Quality control
DVS-HQ	DVS	Wigganson Matandiko	SVO	Disease control
DVS-HQ	BAMB	Benjamin Ditsele	Head, Veterinary Services	VMP
DVS-HQ	MOA-DVS	Lethogile Modisa	Director, DVS	

Central level meetings and interviews

Meeting with: Meat hygiene and Quality Control Unit
Location: DVS-HQ, Gaborone
Date(s): May 6, 2019
Assessors: Whole PVS Team

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS-HQ	DVS-HQ	Kabo C. Thema	Deputy Director	Food safety
DVS-HQ	DVS-HQ	Lovie Ludo Chilisa	PVO I	Food safety
DVS-HQ	DVS-HQ	Prudence Madiabaso	PVO II	Food safety

Meeting with: - Botswana National Veterinary Laboratory (BNVL)
Location: Gaborone, Botswana
Date(s): May 7, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS-HQ	BNVL	S. Letsholo	PVO I	Laboratory
DVS-HQ	BNVL	R. Mackenzie	CTO	Laboratory
DVS-HQ	BNVL	K.N. Macheng	PVO I	Laboratory
DVS-HQ	BNVL	D.P Moswetsi	Lab Services	Laboratory
DVS-HQ	BNVL	Johu F. Nyange	Pathology	Laboratory
DVS-HQ	BNVL	Lydia Khohliwe	OHS	Laboratory

DVS-HQ	BNVL	Amos H. Ramun	Quality Manager	Laboratory
DVS-HQ	BNVL	Phomolo Kgothi	SO I	Laboratory
DVS-HQ	BNVL	G. Binta-Mushi	PVO I	Laboratory
DVS-HQ	BNVL	Boitumelo Bogatsu	CTO	Laboratory
DVS-HQ	BNVL	Taolo Padile	SO I	Laboratory
DVS-HQ	BNVL	Carter Thanda	PVO II	Laboratory
DVS-HQ	BNVL	K. Monyame	PVO I	Laboratory
DVS-HQ	BNVL	Samatha Letsholo	PVO I	Laboratory
DVS-HQ	BNVL	Tebogo Kgotlele	SO I	Laboratory
DVS-HQ	BNVL	G. Hanse	PVO I	Laboratory

Meeting with: Compliance, Policy and Development Division and Reforms and Training Unit
Location: DVS-HQ, Gaborone
Date(s): May 7, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS-HQ	DVS, Compliance, Policy and Development Division	John Kgosiemang	PSO	Compliance, Policy and Training
DVS-HQ	DVS, Compliance, Policy and Development Division	Gregory M Ndlovu	Quality Manager	Compliance, Policy and Training
DVS-HQ	DVS, Compliance, Policy and Development Division	Tshenolo K Pebe	PVO	Compliance, Policy and Training
DVS-HQ	DVS, Compliance, Policy and Development Division	Keamogetse K. Nkoane	SO	Compliance, Policy and Training
DVS-HQ	DVS, Compliance, Policy and Development Division	Kefentse Motshegwa	DDVS	Compliance, Policy and Training
DVS-HQ	DVS, Compliance, Policy and Development Division	K Kgosidikae	CAO	Compliance, Policy and Training
DVS-HQ	DVS, Compliance, Policy and	Seaiga Rammidi	PAO	Compliance, Policy and Training

	Development Division			
DVS-HQ	DVS, Compliance, Policy and Development Division	Keolopile Ngadile	PAO	Compliance, Policy and Training
DVS-HQ	DVS, Compliance, Policy and Development Division	Keeletule Segosebe	PSO	Compliance, Policy and Training
DVS-HQ	DVS, Compliance, Policy and Development Division	Kebofe Masens	Assistant Manager HR	Compliance, Policy and Training

Meeting with: Disease Control Animal Health and Field Services
Location: DVS-HQ, Gaborone
Date(s): May 7, 2019
Assessors: All PVS Team

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS-HQ	DVS-VEES	Emmanuel Adom	PVO I	Disease control
DVS-HQ	DVS -WILDLIFE	Matandiko W	SVO	Disease control
DVS-HQ	DVS Field Extension	G Gaopatwe	SO	Disease control
DVS-HQ	DVS-VEES	A Bodilenyane	VO	Disease control
DVS-HQ	DVS-VEES	O Raboloko	SO	Disease control
DVS-HQ	DVS-Disease Control	Kealeboga Bome	SO	Disease control
DVS-HQ	DVS-VEES	Nomsa P Butale	SO I	Disease control
DVS-HQ	DVS-VEES	Mosarwa E Sechele	SO I	Disease control
DVS-HQ	DVS-HQ	Kefentse Motshegwa	DDVS	Disease control

Meeting with: Botswana Agricultural Marketing Board (BAMB)
Location: Gaborone, Botswana
Date(s): May 8, 2019
Assessors: Team 1 (Münstermann /Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS-HQ	BAMB	Mania Mantswe	Vet Tech	VMP
DVS-HQ	BAMB	Lentinah Jeremia	Branch Manager	VMP
DVS-HQ	BAMB	William Moelekatse	Sales Executive	VMP

DVS-HQ	BAMB	Lorato Modimowaitse		VMP
DVS-HQ	BAMB	Jerry Mooketsane	Regional Manager	VMP
DVS-HQ	BAMB	Benjamin Ditsele	Head Vet	VMP
DVS-HQ	BAMB	Boipuso Nyatshane	Manager	VMP

Meeting with: Animal Information and Traceability System (BAITS) and Livestock Advisory Centre (LAC)
Location: Gaborone, Botswana
Date(s): May 8, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS-HQ	BAITS	Tshwantsho D Seipobego		Animal identification
DVS-HQ	BAITS	Otsile R Maruping		Animal identification
DVS-HQ	BAITS	Olorato Tshireletso	PVO	Animal identification
DVS-HQ	BAITS	C Bodilenyane		Animal identification
DVS-HQ	BAITS	Ndubo Ndubo		Animal identification
DVS-HQ	BAITS	Chino Monyatsiwa		Animal identification
DVS-HQ	BAITS/LAC	Micah Israel		Animal identification

Meeting with: Botswana Veterinary Surgeons Council (BVSC)
Location: Gaborone, Botswana
Date(s): May 8, 2019
Assessors: Team 1 (Münstermann /Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Botswana	BVSC	Dr Ignatius Ndzinge	Chairperson	VSB
DVS-HQ	DVS, Registrar of Veterinary Council	Kobedi Segale	Registrar	VSB
Botswana	BVSC	Baraki Dikgang		VSB

Meeting with: Imports, Exports & Border Controls Unit, DVS Human Resources and Reforms and Training staff
Location: DVS HQ, Gaborone, Botswana
Date(s): May 8, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance

DVS-HQ	Import/Export/Border Control	Tshepo Yvonne Sereetsi	PVO	Imports, Exports & Border Controls
DVS-HQ	Import/Export/Border Control	Tiroyaone Serame	CTA	Imports, Exports & Border Controls
DVS-HQ	Import/Export/Border Control	Emmanual Adom	PVO	Imports, Exports & Border Controls
DVS-HQ	Import/Export/Border Control	Obuile O Raboloko	PVO	Imports, Exports & Border Controls
DVS-HQ	Import/Export/Border Control	Nomsa P Butale	SO	Imports, Exports & Border Controls
DVS-HQ	Import/Export/Border Control	Mosarwa E Sechele	SO	Imports, Exports & Border Controls
DVS-HQ	Import/Export/Border Control	Dr Tshenolo K Pebe	PVO	Imports, Exports & Border Controls
DVS-HQ	Import/Export/Border Control	Dr L Oarabile	DDVS	Imports, Exports & Border Controls

Meeting with: Botswana Vaccine Institute (BVI)
Location: Gaborone, Botswana
Date(s): May 8, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	BVI	Bruce K Obusitse		VMP
Gaborone, Botswana	BVI	Keikantseone Modise		VMP
Gaborone, Botswana	BVI	E Mpolokang Fana		VMP
Gaborone, Botswana	BVI	Joseph Hyera		VMP
Gaborone, Botswana	BVI	Keabetswe Moagabo		VMP

Meeting with: Botswana Society for the Prevention of Cruelty to Animals (BSPCA)
Location: Tsholofelo, Botswana
Date(s): May 8, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	BSPCA	Dr Amy Brown	Attending Veterinarian	Animal welfare
Gaborone, Botswana	BSPCA	Happiness Dube	Animal Welfare Inspector	Animal welfare

Meeting with: Vet and Agric Consultants (Private veterinary clinic)
Location: Gaborone, Botswana
Date(s): May 8, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	Private Practice	Gaseitsewe Michael Sento	Owner/Private Veterinary Practitioner	Veterinary clinical services

Meeting with: Budget Division
Location: DVS, Gaborone
Date(s): May 9, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS-HQ	DVS, Human Resources	Keeletile Segosebe	PSO	Finances
DVS-HQ	DVS, Human Resources	Goratamang Olatotse	CAO II	Finances
DVS-HQ	DVS, Human Resources	Gareutlwane Gaopatwe	CSO	Finances
DVS-HQ	DVS, Human Resources	Margaret Mdise	Procurement	Finances
DVS-HQ	DVS, Human Resources	K Kgosidikae	DVS Accounts	Finances
DVS-HQ	DVS, Human Resources	Kebofe Maseng	DVS HR	Finances
DVS-HQ	DVS, Human Resources	John Kgosiemang	DVS Projects	Finances

Meeting with: Compliance, Policy and Development Division and Epidemiology Unit
Location: DVS, Gaborone
Date(s): May 9, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS-HQ	DC	G Gaopatwe	SO	Epidemiology
DVS-HQ	VEES	O Raboloko	SO	Epidemiology
DVS-HQ	VEES	E Adom	PVO I	Epidemiology

DVS-HQ	VEES	W Matandiko	SVO	Epidemiology
DVS-HQ	Compliance	Kefentse Motshegwa	DDVS	Quality control
DVS-HQ	Compliance	T Y Sereetsi	PVO	Quality control
DVS-HQ	Compliance	KK Nkoane	SO	Quality control
DVS-HQ	VEES	M E Sechele	SO I	Epidemiology
DVS-HQ	VEES	N P Butale	SO I	Epidemiology

Meeting with: Botswana University of Agriculture and Natural Resources (BUAN)
Location: Sebele
Date(s): May 9, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	BUAN	Dr Ricks G Chabo	Dean, Animal & Vet Sciences	Competence and education of Veterinarians and VPP
Gaborone, Botswana	BUAN	Dr E Mochankana	Lecturer – Epidemiology	Competence and education of Veterinarians and VPP
Gaborone, Botswana	BUAN	Dr S S Ramabu	Senior Lecturer	Competence and education of Veterinarians and VPP
Gaborone, Botswana	BUAN	Dr K Tlotleng	Lecturer	Competence and education of Veterinarians and VPP

Meeting with: Department of Agriculture Research (DAR)
Location: Gaborone, Botswana
Date(s): May 9, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	DAR	Dr. N. Goitsemodimo	Ag. CAO Livestock	Laboratory
Gaborone, Botswana	DAR	U. Moreri	Agric. Research Officer	Laboratory
Gaborone, Botswana	DAR	D. Machale	Ag. Deputy Director	Laboratory
Gaborone, Botswana	DAR	P. Mosupi	Director	Laboratory
Gaborone, Botswana	DAR	L. A. Lekgari	Ag. CARO Crops	Laboratory

Meeting with: Meeting with Ministry of Health & Wellness (MoHW)
Location: Gaborone, Botswana
Date(s): May 9, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	MoHW	Dr Celda Tiroyakgosi	MoH- Essential & Medicine	One Health, AMR
Gaborone, Botswana	MoHW	Phenyo Sebonego	MoH – Public Health	One Health, AMR
Gaborone, Botswana	MoHW	Oduetse Ratshupa	MoH – Surveillance	One Health, AMR
Gaborone, Botswana	MoHW	Nedrelim Jame	MoH - Surveillance	One Health, AMR

Meeting with: Botswana Medicines Regulatory Authority (BOMRA)
Location: Gaborone, Botswana
Date(s): May 9, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	BOMRA	Sinah Selelo	Chief Technical Advisor	VMP
Gaborone, Botswana	BOMRA	Seima Dijeng	Deputy Director – Inspection and Licensing	VMP

Meeting with: Livestock Producers Associations and Consumer Union
- **Botswana Beef Producers Union**
- **Botswana Poultry Producers Union**

Location: DVS, Gaborone
Date(s): May 9, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	Kgatleng Poultry	Mochudi Mawela	Asst. Chairperson	Cooperation with producers
Gaborone, Botswana	Botswana Poultry	Nancy L Mawinja	Vice Chairperson	Cooperation with producers
Gaborone, Botswana	Botswana Poultry Association	Ishmael Mosinyi	Chairperson	Cooperation with producers
Gaborone, Botswana	Botswana National Beef Producers Union (BNBPU)	Kenneth Makubate	Caretaker Manager	Cooperation with producers
Gaborone, Botswana	Botswana Poultry Association	Isaac Mogotsi	Member	Cooperation with producers

Meeting with: Botswana Meat Commission (BMC)
Location: Lobatse, Botswana
Date(s): May 16, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Lobatse, Botswana	BMC	Pear Mokokanawa	PVO	Meat hygiene
Lobatse, Botswana	BMC	Charles N.E.Olupol	Chief Technical Admin	Meat hygiene
Lobatse, Botswana	BMC	Brian Dioka	Chief Strategy Officer	Meat hygiene
Lobatse, Botswana	BMC	Boggie Oduetse	Assistant Marketing Manager	Meat hygiene
Lobatse, Botswana	BMC	Olga Lepotlako	Ag. Executive Manager Compliance	Meat hygiene
Lobatse, Botswana	BMC	Mothobi Mothobi	General Manager Operations	Meat hygiene
Lobatse, Botswana	BMC	Ishmael Ramwana	Cattle Feeding Manager	Meat hygiene
Lobatse, Botswana	BMC	Athulang Ngwaun	Ag. Executive Manager Human Capital	Meat hygiene
Lobatse, Botswana	BMC	Laone Thake	Principal	Meat hygiene

			Veterinary Officer	
Lobatse, Botswana	BMC	Thatayaone Busang	VO	Meat hygiene
Lobatse, Botswana	BMC	Stephen K. Molaodi	Superintendent	Meat hygiene
Lobatse, Botswana	BMC	Godlive G. Maiko	Production Manager	Meat hygiene
Lobatse, Botswana	BMC	Cornelius Motsumi	Chief Technical Officer	Meat hygiene
Lobatse, Botswana	BMC	Kabo Tikelo Motsisi	SO I	Meat hygiene

Meeting with: Epidemiology Unit
Location: Gaborone, Botswana
Date(s): May 16, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone	DVS-VEES	Dr Mbeya	Head Animal Health Data Management	Epidemiology
Gaborone	DVS-VEES	Kealeboga Bome	SO	Epidemiology
Gaborone	DVS-VEES	A. Bodilenyane	VO	Epidemiology
Gaborone	DVS-VEES	O. Raboloko	SO	Epidemiology
Gaborone	DVS-VEES	W. Matandiko	SVO	Epidemiology
Gaborone	DVS-VEES	G. Gaopatwe	SO	Epidemiology
Gaborone	DVS-VEES	Emmanuel Adom	PVO I	Epidemiology
Gaborone	DVS-VEES	Nomsa P Butale	SO I	Epidemiology
Gaborone	DVS-VEES	Mosarwa E Sechele	SO I	Epidemiology

Meeting with: Meat Inspection Training Institute (MITI)
Location: Gaborone, Botswana
Date(s): May 16, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Lobatse, Botswana	MITI	Dr Elly Masitha	Ag Director	Competence and education of Veterinarians and VPP
Lobatse, Botswana	MITI	Dr Batatu Mazhani	Lecturer	Competence and education of Veterinarians and VPP

Lobatse, Botswana	MITI	Mrs Omphile Puku	Lecturer	Competence and education of Veterinarians and VPP
Lobatse, Botswana	MITI	Mr Mpho Ntwaetsile	Lecturer	Competence and education of Veterinarians and VPP

Meeting with: Botswana Veterinary Association (BVA)
Location: Gaborone, Botswana
Date(s): May 16, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	BVA	Dr Ditiro Coyne	President	VSB and Veterinary clinical services

Meeting with: Private Veterinary Clinic (VetPro Specialists - Phakalane)
Location: Gaborone, Botswana
Date(s): May 16, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Gaborone, Botswana	Private Practice	Dr Mbatshi Mazwiduma	Owner/Private Veterinary Practitioner	Veterinary clinical services

Field visits, meetings and interviews

Meeting with: Letlhakeng PVO
Location: Kweneng District
Date(s): May 10, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Kweneng District	DVS - Field	Keoratile Ranthune	CTO	Various CCs
Kweneng District	DVS - Field	Kgosietsile E Bimbo	SO	Various CCs
Kweneng District	DVS - Field	Keoratile M Kgomotso	VO	Various CCs
Kweneng District	DVS - Field	Mirriam Munamava	DAC	Various CCs
Kweneng District	DVS - Field	Sethunya E Mothobiso	SO	Various CCs

Kweneng District	DVS - Field	Terence T Cann	SO	Various CCs
Kweneng District	DVS - Field	O Dikolobe	SO	Various CCs
Kweneng District	DVS - Field	N Sithole	PVO	Various CCs

Meeting with: Staff of Central District DVO at SDVO at Palapye
Location: Palapye
Date(s): May 10, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Central District - Serule	DVS - Field	Dr Jaone Sebina	DVO	Various CCs
Central District - Palapaye	DVS - Field	Bothatelo Ontaetse	SO	Various CCs
Central District - Serule	DVS - Field	Amos A Mmapadi	PTA	Various CCs
Central District - Palapaye	DVS – BAITS (Palapye)	Mpaphi Dobi	SO I	Various CCs
Central District - Palapaye	DVS – Field	Wapapha Modala	SDVO	Various CCs
Central District - Palapaye	DVS – Meat Hygiene	Peter Peya Mpuchane	Superintendent	Various CCs
Central District - Palapaye	DVS – Filed Meat Hygiene	Mafika M Mafika	CTO	Various CCs
Central District - Serule	DVS – HRM	Thaloso L Moloi	PA	Various CCs
Central District - Serule	DVS - Field	Leonard Machola	SO	Various CCs

Meeting with: Sese Quarantine staff
Location: Sese, Northeast District
Date(s): May 10, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Sese Quarantine	DVS - Field	Mogorosi Kwapa	SO	Various CCs
Sese Quarantine	DVS - Field	Lucky Kumule	SO	Various CCs
Sese Quarantine	DVS - Field	Boithatelo Ontaetse	SSO	Various CCs
Sese Quarantine	DVS - Field	Dr Kebopetswe	PTO II	Various CCs

		Kenalemongwe		
Sese Quarantine	DVS - Field	D Thito Seomise	SVO	Various CCs
Sese Quarantine	DVS - Field	Dr Jaone Sebina	DVO	Various CCs

Meeting with: Feedlot in Ghanzi
Location: Ghanzi
Date(s): May 11, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Ghanzi	DVS - Field	Sithole Neverson	PVO	Various CCs
Ghanzi	DVS - Field	Terrassa T. Camm	SO	Various CCs
Ghanzi	DVS - Field	S. E. Mothobiso	SO	Various CCs
Ghanzi	DVS - Field	Gontlafetse I. Monekwe	ASO	Various CCs
Ghanzi	DVS - Field	O. Dikolobe	SO	Various CCs
Ghanzi	DVS - Field	Keoratile M. Kgomotso	VO	Various CCs
Ghanzi	DVS - Field	Kgosietsile E. Bimbo	SSO	Various CCs
Ghanzi	DVS - Field	Kefentse Motshegwa	DDVS	Various CCs
Ghanzi	Feedlot	Keri Anne Jonker	Kentrek Administrator	Various CCs
Ghanzi	Feedlot	Liza Henning	Director and Animal Scientist	Various CCs
Ghanzi	Feedlot	Nico Henning	Managing Director	Various CCs
Ghanzi		Mirrian Munawava	District Agricultural Coordinator	Various CCs

Meeting with: BAMB warehouse in Ghanzi
Location: Ghanzi
Date(s): May 11, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Ghanzi	DVS - Field	Kesatile M. Kgamotse	VO	VMP, AMR/AMR and Animal feed safety
Ghanzi	BAMB	R. M. Paledi	Customer Service Executive	VMP, AMR/AMR and Animal feed safety

Ghanzi	BAMB	Albert Kamboambi	Sales Assistant	VMP, AMR/AMR and Animal feed safety
Ghanzi	BAMB	Maikano Moadi	Sales Agent	VMP, AMR/AMR and Animal feed safety
Ghanzi	MoA	Mirriam Munamava	District Agricultural Coordinator	VMP, AMR/AMR and Animal feed safety
Ghanzi	DVS - Field	O. Dikotobe	SO	VMP, AMR/AMR and Animal feed safety

Meeting with: LAC Ghanzi
Location: Ghanzi
Date(s): May 11, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Ghanzi	LAC	O. Dikotobe	SO	Animal ID
Ghanzi	LAC	K. E. Bimbo	SSO	Animal ID
Ghanzi	LAC	K.U. Bachopi	PTA	Animal ID

Meeting with: PVO's Office in Ghanzi
Location: Ghanzi
Date(s): May 11, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Ghanzi	DVS - Field	Keoratile B.	CTO	Various CCs
Ghanzi	DVS - Field	Sithole Neverson	PVO	Various CCs
Ghanzi	DVS - Field	Terrassa T. Camm	SO	Various CCs
Ghanzi	DVS - Field	S. E. Mothobiso	SO	Various CCs
Ghanzi	DVS - Field	O. Dikolobe	SO	Various CCs
Ghanzi	DVS - Field	Keoratile M. Kgomotso	VO	Various CCs
Ghanzi	DVS - Field	Kgosietsile E. Bimbo	SSO	Various CCs
Ghanzi	DVS - Field	Kefentse Motshegwa	DDVS	Various CCs
Ghanzi	DVS - Field	Mirrian Munawava	DAC	Various CCs

Meeting with: DVO Northeast District
Location: Francistown
Date(s): May 11, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
DVS - Francistown	DVS - Field	Dr Kefilwe Makgetho	PTO	Various CCs
DVS - Francistown	DVS - Field	K Malumbela	CTO	Various CCs
DVS - Francistown	DVS - Field	K Mpugwa	CTO	Various CCs
DVS - Francistown	DVS - Field	B K Nehemiah	Superintendent	Various CCs
DVS - Francistown	DVS - Field	C Nthusang	CAO	Various CCs
DVS - Francistown	DVS - Field	M Gubungano	SO I	Various CCs
DVS - Francistown	DVS - Field	Dr Masego Matlhare	VO	Various CCs
DVS - Francistown	DVS - Field	M Ntwaetsile	TA	Various CCs
DVS - Francistown	DVS - Field	B B Tawele	PTO	Various CCs
DVS - Masunga	DVS - Field	P S K Nkhwa	PTO	Various CCs
DVS - Francistown	DVS - Field	G E Gaopatwe		Various CCs
DVS - Francistown	DVS - Field	K S Makgasana	PTO	Various CCs

Meeting with: Botswana Agricultural Marketing Board (BAMB), AgriChem NR Supply Store & Bisoli Farm (Private Livestock Keeper)
Location: Francistown
Date(s): May 11, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
BAMB-Francistown	BAMB	Unami Baeletsi	GM	VMP, AMR/AMR and Animal feed safety
Northern Region/Francistown	AgriChem Supply Store	Mike Paxton	Proprietor	VMP, AMR/AMR and Animal feed safety
Bisoli	Bisoli Farm	Jennifer Millman	Private Livestock Keeper	Various CCs

Meeting with: Charles Hill, Sub-district Veterinary Office
Location: Charles Hill
Date(s): May 12,2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Charles Hill	DVS - Field	Twilayanyo Malethe	ASO	Various CCs
Charles Hill	DVS - Field	T. Chier	SO	Various CCs

Charles Hill	DVS - Field	K. Balametse	SO	Various CCs
Charles Hill	DVS - Field	Neverson Sithole	PVO	Various CCs
Charles Hill	DVS - Field	Keeralile M. Kgamotse	VO	Various CCs
Charles Hill	DVS - Field	Mirrian Munawara	DAC	Various CCs
Charles Hill	DVS - Field	Sethore Mothobiso	SO I	Various CCs

Meeting with: Border Inspection Post Mamuno
Location: Mamuno, Ghanzi
Date(s): May 12, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Mamuno BIP	DVS - Field	Janny Letlhoagoje	Field Assistant	Quarantine and border control
Mamuno BIP	DVS - Field	Neverson Sithole	PVO	Quarantine and border control
Mamuno BIP	DVS - Field	K Balemetse	SO	Quarantine and border control
Mamuno BIP	DVS - Field	Mirriam Munamava	DAC	Quarantine and border control
Mamuno BIP	DVS - Field	Keoratile Kgomotso	VO	Quarantine and border control
Mamuno BIP	DVS - Field	Thuso M Chere	STA	Quarantine and border control
Mamuno BIP	DVS - Field	Kgakololo Obopilwe	CTA	Quarantine and border control

Meeting with: Kuke Fence gate personnel
Location: Ngamiland
Date(s): May 13, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Kuke gate	Gate control	Kefentse Molatlhegi	Gatekeeper	Disease control and Quarantine and border control
Kuke gate	Gate control	Festus Hange	Gatekeeper	Disease control and Quarantine and border control
Kuke gate	Gate control	Teressa Camm	PTO	Disease control and Quarantine and border control
Ghanzi office	District Vet Office	Neverson Sithole	PVO	Disease control and Quarantine and border control

Ghanzi office	District Vet Office	Keoratile M Kgomotso	VO	Disease control and Quarantine and border control
Matabologa gate	Gate control	Kobamelo Mmusi	Gatekeeper	Disease control and Quarantine and border control
Matabologa gate	Gate control	Obotsamang Molapo	Gatekeeper	Disease control and Quarantine and border control

Meeting with: FMD vaccination team in action
Location: Ghanzi
Date(s): May 13, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Ghanzi District	FMD vaccination team	Moagi B Mogomotsi	VO	Disease control
Ghanzi District	FMD vaccination team	Harry Richard	STA	Disease control
Ghanzi District	FMD vaccination team	Mr O Mosweu	Farmer	Disease control
Ghanzi District	FMD vaccination team	Tshwaelo Kebobone	STO	Disease control
Ghanzi District	FMD vaccination team	Tshenolo Mmileng	PTO	Disease control
Ghanzi District	FMD vaccination team	Edward Moots	Vaccinator	Disease control
Ghanzi District	FMD vaccination team	Kagiso Kalantle	Vaccinator	Disease control

Meeting with: Makalamabedi Veterinary Gate
Location: Makalamabedi, North-West District
Date(s): May 13, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
North-West District	DVS - Field	Dr O Thololwane	DVO	Disease control and Quarantine and border control
North-West District	DVS - Field	Mr Enock Gaseitsewe	PTO	Disease control and Quarantine and border control
Makalamabedi Veterinary Gate	DVS - Field	Mr Ditshupo Bakhai	Gatekeeper	Disease control and Quarantine and border control
North-West District	DVS - Field	Dr K Moncho	VO	Disease control

				and Quarantine and border control

Meeting with: NW District DVO Office, BAITS Ear Tag Sale point and BAITS Cafe
Location: Maun
Date(s): May 13, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
North-West District	DVS - Field	Rentin Bruce Mafonko	SVO	Various CCs

Meeting with: Botswana Meat Commission (BMC) Abattoir
Location: Maun
Date(s): May 13, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
BMC Abattoir - Maun	DVS – MH	Dr Ramosamo Rancheke	PVO I	Food safety
BMC Abattoir - Maun	DVS – VPH Maun	Dr Mokabedi Kaziye	SVO	Food safety

Meeting with: Veterinary Office Maun
Location: Maun
Date(s): May 14, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Maun	DVS - Field	Odireleng Thololwane	FMD Coordinator	Various CCs
Maun	DVS - Field	Katlego Moncho	VO	Various CCs

Meeting with: Maun BMC abattoir
Location: Maun
Date(s): May 14, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
BMC Abattoir - Maun	DVS – MH	Dr Ronald Rancheke	PVO I	Food safety
BMC Abattoir - Maun	DVS – VPH Maun	Dr Mokabedi Kaziye	SVO	Food safety

Meeting with: Ngamiland private abattoir
Location: Maun
Date(s): May 14, 2019
Assessors: Team 1 (Münstermann/Lubaba)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Maun	DVS	Wanani Malumbela	Superintendant	Food safety
Maun	DVS	Keiphuthe Bagwasi	Meat Inspector	Food safety
Maun	Ngamiland Abattoir	Goitseone Phiri	Meat Inspector	Food safety
Maun	Ngamiland Abattoir	Stephans Camphor	CEO Director	Food safety
Maun	Ngamiland Abattoir	Roelas Fredrick Camphor	Director	Food safety

Meeting with: Makalamabedi Quarantine Station
Location: Makalamabedi , North-West District
Date(s): May 14, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Makalamabedi Quarantine Station	DVS - Field	Dr O Thololwane	DVO	Quarantine and border control
Makalamabedi Quarantine Station	DVS - Field	Mr Enock Gaseitsewe	PTO	Quarantine and border control
Makalamabedi Quarantine Station	DVS - Field	Dr K Moncho	VO	Quarantine and border control

Meeting with: Livestock Keeper in Komana and Society for the Protection of Animals Abroad (SPANA), Maun
Location: Komana and Maun
Date(s): May 14, 2019
Assessors: Team 2 (Fernandez/Sserugga)

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Komana	Dairy Farm	K Dikobe	Private Livestock Keeper	Various CCs
Botswana	SPANA-Botswana	Phillipa Young	Director	Animal welfare

MAP OF THE COUNTRY INDICATING TRAVEL AND FIELD VISITS MADE DURING THE MISSION BY THE TEAM (I.E. INCLUDING SPLITTING OF THE TEAM FOR TRAVEL TO THE FIELD)

Closing meeting

Location: DVS, Gaborone, Botswana
Date(s): May 17, 2019

Location & Jurisdiction	Institution – Agency – Group - Association	Person(s) met and interviewed	Position	Activities and CC Relevance
Same as Opening Session				

Appendix 5: Air travel itinerary

Assessor	Date	From	To	Flight no.	Departure	Arrival
Peter Fernandez	03.5.19	New York	Johannesburg	SA 204	11.15	08.05
	04.5.19	Johannesburg	Gaborone	SA 8456	11.00	11.55
	18.5.19	Gaborone	Johannesburg	SA 8459	18.30	19.25
	18.5.19	Johannesburg	New York	SA 203	21.05	06.40
Susanne Mūnstermann	28.4.19	Cologne	Frankfurt	LH 3625	17.50	19.04
	28.4.19	Frankfurt	Johannesburg	SA 261	20.45	07.25
	29.4.19	Johannesburg	Gaborone	SA 8454	09.15	10.10
	18.5.19	Gaborone	Johannesburg	SA 1770	14.00	14.55
	18.5.19	Johannesburg	Frankfurt	SA 260	19.25	06.10
	19.5.19	Frankfurt	Cologne	LH 3602	08.09	09.05
Caesar Lubaba	04.5.19	Lusaka	Johannesburg	SA 8161	09:00	11:05
	04.5.19	Johannesburg	Gaborone	SA 1769	12:40	13:35
	18.5.19	Gaborone	Johannesburg	SA 1764	08:50	09:45
	18.5.19	Johannesburg	Lusaka	SA 64	13:25	15:20
Joseph Sserugga	4.5.19	Entebbe	Addis Ababa	ET 339	02.45	04.55
	4.5.19	Addis Ababa	Gaborone	ET 829	08.35	14.15
	19.5.19	Gaborone	Addis Ababa	ET 829	15.00	21.30
	20.5.19	Addis Ababa	Entebbe	ET 338	22.45	00.55

Appendix 6: List of documents used in the PVS evaluation

E = Electronic version H = Hard copy version P= Digital picture

Type	Ref	Title	Author / Date / ISBN / Web	Related critical competences
		PRE-MISSION DOCUMENTS		
E	T1	26.4.2019 ENG_2013_Template-BaselineDocuments-Terrestrial	DVS/28 Apr 2019	Multiple
E	T2	Annex Gen.data_BotsVetDC&protectionZones	DVS/1 May 2017	II-3, II-5, II-6
E	T3	Annex Gen.Data_BotsVetDistricts	DVS/8 May 2015	I-1, I-6A
E	T4	Annex Gen.data_BWpopulation	UNK/2011	Background
E	T5	Annex Hum.Phy.Fin.Res Bolus PPT_Police 20.8.2018	MOA/21 August 2018	II-12A
E	T6	Annex Hum.Phys.FinRes. DVS Functional Structure18.4.2019	DVS/April 2019	I-6A
E	T7	Annex Hum.Phys.FinRes_MoAorganogram	MOA/19 Apr 2019	I-6A
E	T8	Annex Tec Cap.Auth_quarantines	DVS/19 Apr 2019	II-3
E	T9	Annex Tech Cap Auth_zoonosis	DVS/25 Apr 2019	I-6B
E	T10	Annex Tech Cap.Auth. NVL Quality Manaual - Clause 5.9	BNVL/August 2018	II-1C
E	T11	Annex tech Cap.Auth_DVS Annual Report 2018_edited	DVS/2017	Multiple
E	T12	Annex Tech Cap.Auth_NVL 5 year Strategy Map - 2016 – 2021	BNLV/2016	II-1A, II-1B, II-1C
E	T13	Annex Tech Cap.Authority_Identification & Traceabilityf	DVS/25 Apr 2019	II-12A
E	T14	Annex Tech Cap_Auth_NVL APP 2018-2019	DVS/20 Apr 2019	II-1A, II-1B, II-1C, I-5
E	T15	Annex Tech Cap_Auth_residues	DVS/25 Apr 2019	II-10
E	T16	Annex Tech. Auth.Cap_NVL PT Annual Plan	BNLV/Sep 2018-Aug 2019	II-1B, II-1C
E	T17	Annex Tech. Auth_Cap_Test Accreditation Requirements	BNLV/July 2018	II-C
E	T18	Annex Tech. Cap. Auth NVL Management Policy Statement	BNLV/20 Apr 2019	II-C
E	T19	Annex Tech. Cap. Auth. NVL PT 5-year Plan	BNLV/Sep 2018	II-1B, II-1C
E	T20	Annex Tech. Cap.Auth An_welfare officers Certificates	DVS/20 Apr 2019	I-2, II-13
E	T21	Annex Tech. Cap_Auth. NVL test capabilities	BNLV/Apr 2018	II-1A, II-1B
E	T22	Annex Tech. Cap_Auth_NVL organogram	BNLV/Aug 2018	II-1B, I-6A
E	T23	Annex Tech.Cap. Auth. VPH Guideline for Registration_Licensing of meat premises	DVS/11 May 2016	II-7A, II-7B
E	T24	Annex Tech.Cap. Auth_NVL SADCAS Rpt_2018	SADCAS/12 Oct 2018	II-1C
E	T25	Annex Tech.Cap.Auth_ Labs rpt1	DVS/12 Mar 2019	II-1A, II-1C
E	T26	Annex Tech.Cap.Auth_AnWelfare_BMCSOP 2018	BMC/28 Jul 2018	II-13
E	T27	Annex Tech.Cap.Auth_DARSPD__BAITS Study	Monitoring & Evaluation Division/Feb 2019	II-12A, III-2
E	T28	Annex Tech.Cap.Auth_NVL Silab	BNLV/May 2018	II-1, II-4

		Work_instruction		
E	T29	Annex Tech.Cap.Auth_NVLCollaborations.Ext. Labs	BNLV/19 Apr 2019	II-1A
E	T30	Annex Tech.Cap.Auth_VMP control system	DVS/20 Apr 2019	II-8, II-9, II-10
E	T31	Annex.Gen.data BW EU territories codes.pdf 2	DVS/ 1 Apr 2018	II-6
E	T32	Annex.Gendata_DVS.Veterinary gates	DVS/Mar 2019	II-6
E	T33	Annex_MoA Communication Strategy 2018-2023 Final	MOA/ 15 Jun 2017	III-1, III-2
E	T34	2011-6119 FINAL REPORT_freshmeatprodn	DGSANCO-FVO/ 25 - 28 Jan 2011	II-7A, II-7B, II-12, II-1A, II-1B, II-10, II-8
E	T35	2013-6792 FINAL REPORT_fmdcontrol	DGSANCO-FVO/ 4 - 11 Mar 2013	II-6, II-12, II-4, II-1A, II-1B
E	T36	2013-6866 FINAL REPORT_freshmeatprodn	DGSANCO-FVO/ 4 - 11 Mar 2013	II-7A, II-7B, II-12, II-1A, II-1B, II-10, II-8
E	T37	2015-7561 FINAL REPORT_fmdcontrol	DGSANCO-FVO/13 -20 Oct 2015	II-6, II-12, II-4, II-1A, II-1B
E	T38	AP to recommendations bw 2013 6792	DGSANCO-FVO/29 May 2013	II-6, II-12, II-4, II-1A, II-1B
E	T39	ap_to recommendation bw 2015-7561 pdf	DGSANCO-FVO/22 Dec 2015	II-6, II-12, II-4, II-1A, II-1B
E	T40	ap_to recommendation bw_2011-6119	DGSANCO-FVO/7 Apr 2011	II-7A, II-7B, II-12, II-1A, II-1B, II-10, II-8
		MISSION DOCUMENTS		
E	S1	NVL PT 5yr plan	BNVL	II.1.C
E	S2	NVL 31st Mngt review mtg (Annual Report)	BNVL	II.1.A,B,C
E	S3	NVL 32nd Mngt review mtg (Annual Report)	BNVL	II.1.A,B,C
E	S4	NVL QMS Manual	BNVL	II.1.C
E	S5	NVL overview	BNVL	II.1.A,B,C; II-10
E	S6	BAMB overview	BAMB	II.8; III-4
E	S7	BVI on FMD outbreaks	BVI	II.6
E	S8	BVI overview	BVI	II.1.A; II.8; II-1C
E	S9	Veterinary Council	BVSC	III.5
E	S10	BAITS	DVS	II.12.A
E	S11	SWIMS roll out Project description	DVS-HR	I.7
E	S12	Veterinary Council	BVSC	III.5
E	S13	Weekly report on fence control	DVS	IV.6
E	S14	Inspection report on all fences	DVS	IV.6
E	S15	Fence maintenance workshop Feb 2019	DVS/2019	IV.6
E	S16	Inspection/audit schedule for fences 2019/20	DVS	IV.6
E	S17	Ghanzi district presentation	DVS	general
E	S18	SWIMS roll out schedule	DVS	I.7
E	S19	MOnthly report form meat hygiene and quality control	DVS	II.7.A
E	S20	Vet legislation revision AGreement J.Woodford	OIE/OIE	I-9; III-4;II-10; II-7A; II-9
E	S21	Residue control plan	DVS	II.10
E	S22	Residue control results 2018	DVS/2018	II.10
E	S23	Bomra presentation	BOMRA	II.8

E	S24	BW list of authorised VMPs	BOMRA	II.8
E	S25	Compliance division presentation	DVS	II-8
E	S26	Budget division presentation	DVS-Finance	I.7,8,9
E	S27	Project Memo for Develop Fund, FMD control	DVS	I.7,8
E	S28	AMR NAP	DVS/MoHW	II.9
E	S29	BW legislation	MoA 1993	
E	S29a	Food control act 1993	MoA, 2011	II-12.B
E	S29b	Regulations under Food control act	BMC, 2018	II-12B
E	S30	List of accredited tests done by BMC	BNVL/BMC, 2019	II-12B
E	S31	Sampling schedule for food hygiene, BMC and NVL	RA BMC, 2018	II-12B
E	S32	RCA traceability exercise with BMC	DVS, 2019	II-12B
E	S33	SOP for process hygiene and food safety at abattoirs	DVS, Feb.2017	II-12B
E	S34	DVS fleet	DVS, 2019	I-7
E	S35	Consolidated budget 2019/20	DVS, 2018	I-8
E	S36	Request to increase ceiling 2019/20	DVS, 2018	I-8
E	S37	Budget justification 2018/19	DVS, 2019	I-8
E	S38	Baseline budget 2019/20 and 2020/21	MoF, Sept.2016	I-8
E	S39	National Development Plan budget 2017/18	DVS, Apr.2019	I-9
E	S40	SOP for arrival at quarantine, feedlot and fenced farm	BNVL, May.2019	II-3
E	S41	BNVL ppt presentation	BNVL, Aug.2018	II-1A, B, C, II-10
E	S42	BNVL Quality system Manual	DVS	II-1C
E	S43	VMP Inspection and AuditForm	DVS, Apr.2019	II-8
E	S44	SOP Procedure for management of buffalo incursion	AHEAD, 2017	IV-6
E	S45	Guideline on the management of FMD CBT	DVS, Jul.2011	IV-7
E	S46	SOP on suspected residue finding	OIE, May 2019	II-10
E	S47	OIE map of BW FMD free zones	DVS/MoHW	IV-6
E	T41	Opening presentation to the PVS Follow-up Mission by Dr. Modisa_6 May 2019 pdf	DVS/May 2019	Multiple, Background
E	T42	Presentation by DVS Division of Meat Hyg and QC_VPH_6 May 2019 pdf	DVS/May 2019	II-7A, II-7B
E	T43	Compliance division presentation	DVS/May 2019	Multiple
E	T44	Holding Audit Checklist	DVS/May 2019	II-12A
E	T45	Holding Audit Report Form	DVS/May 2019	II-12A
E	T46	Holding Husbandry Management Record Card	DVS/May 2019	II-12A
E	T47	Holding Registration Application Checklist	DVS/May 2019	II-12A
E	T48	Holding Registration Application Form	DVS/May 2019	II-12A
E	T49	Holding Registration Guidelines	DVS/May 2019	II-12A
E	T50	SOP for management of buffalo incursion into livestock areas	DVS/May 2019 (in development)	II-6
E	T51	SOP for addressing suspicions of residues of veterinary medicines	DVS/May 2019 (in development)	II-10
E	T52	SOP for Animal reception at Border Post	DVS/May 2019 (in development)	II-3
E	T53	SOP for Ante-mortem Inspection	DVS/May 2019 (in development)	II-7B
E	T54	SOP for approval of importation of VMP	DVS/May 2019 (in development)	II-8
E	T55	SOP for arrival of cattle at Feedlots and	DVS/May 2019 (in	II-12A

		fenced farms	development)	
E	T56	SOP for Brands Management	DVS/May 2019 (in development)	II-12A
E	T57	SOP for ear tag replacement	DVS/May 2019 (in development)	II-12A
E	T58	SOP for follow-ups of NSP positive test Animals pdf	DVS/May 2019 (in development)	II-6, II-1
E	T59	SOP for Inspection and Auditing Meat Establishments	DVS/May 2019 (in development)	II-7A
E	T60	SOP for issuance of animal and animal product import permits	DVS/May 2019 (in development)	II-6, II-3
E	T61	SOP for issuing animal movement permit	DVS/May 2019 (in development)	II-12A
E	T62	SOP for Issuing Export Health Certificate at Abattoirs	DVS/May 2019 (in development)	IV-3, II-7A
E	T63	SOP for Licensing Meat Premises	DVS/May 2019 (in development)	II-7A
E	T64	SOP for monitoring carcass maturation	DVS/May 2019 (in development)	II-7A, II-7B
E	T65	SOP for Post -Mortem Inspection	DVS/May 2019 (in development)	II-7B
E	T66	SOP for process hygiene and food safety at abattoirs	DVS/May 2019 (in development)	II-7A, II-7B
E	T67	SOP for registration of Livestock Keepers	DVS/May 2019 (in development)	II-12A
E	T68	SOP for transport of cattle from non FMD - free to FMD - free zone	DVS/May 2019 (in development)	II-6
E	T69	SOP for Verification of on farm Records	DVS/May 2019 (in development)	II-8
E	T70	SOP for Applying a Health Mark Veterinary Carton and Truck Seals	DVS/May 2019 (in development)	II-7A
E	T71	Disease Control Division presentation	DVS/May 2019	Multiple
E	T75	Example of Perf & Develop Plan and Review_Perf based reward system_DVO	DVS/May 2019	I-1A, I-6A
E	T76	Example of Perf & Develop Plan and Review_Perf based reward system_PSO1	DVS/May 2019	I-1A, I-6A
E	T77	Example of various DVS Job description	DVS/May 2019	I-1A, I-6A
E	T78	Examples of promotions and awards list	DVS/May 2019	I-1, I-4, I-6
E	T79	HR_Staffing numbers_Org charts_Scheme of Svc_Pos descrip_Promotion	DVS/May 2019	I-1, I-5, I-6
E	T80	BUAN presentation	DVS/May 2019	I-2B
E	T81	DAR presentation	DVS/May 2019	Multiple
E	T82	Central District DVO presentation	DVS/May 2019	Multiple
E	T83	Example of cattle movement permit for local slaughter	DVS/May 2019	II-12A, II-7A
E	T84	Palapye SDVO 2018-2019 annual report for animal diseases	DVS/May 2019	Multiple
E	T85	Botswana Annual Disease Surveillance Plan for 2013	DVS/May 2019	II-4A, II-4B
E	T86	Botswana Disease Surveillance Plan 2016-2019 FINAL v4 final	DVS/May 2019	II-4A, II-4B
E	T87	Botswana Disease Surveillance Programme 2014-2016 FINAL	DVS/May 2019	II-4A, II-4B
E	T88	Northeast_Francistown_District DVO presentation	DVS/May 2019	Multiple
E	T89	WHO JEE Botswana 2018	World Health Organization/ 2018	I-6B, II-7A

E	T90	Permanent Registered Veterinarians - Botswana	BVC/ 2019	I-1A, III-5, III-7
E	T91	Southern Africa Wildlife Diseases of economic importance	DVS/May 2019	II-4, II-6
E	T92	OIE Reporting History for Botswana	OIE WAHIS/2019	II-4, III-3
E	T93	DCC Meeting minutes 2016 to 2018	DVS/2016 to 2018	I-6A, I-6B, II-4, II-6
E	T94	DCC Minutes _17Jan19	DVS/Jan 2019	I-6A, I-6B, II-4, II-6
E	T95	BAITS Regulations_2018	DVS/2018	II-12A, IV-1A
E	T96	PPR Surveillance and test validation report	DVS/2019	II-4
E	T97	Surveillance report_Bruc testing_30112018	DVS/2019	II-4
E	T98	Surveillance report_Routine FMD surv_2016 to 2018	DVS/2019	II-4
E	T99	OIE Disease Notification reports	OIE WAHIS/2018	II-4, III-3
E	T100	Botswana Poultry Assoc AI WS_DVS support	BPA/2017	III-1
E	T101	HPAI WS for Stakeholders	DVS/2017	III-1
E	T102	SADC_List of diseases reported by territory - Botswana	SADC/2018	II-4, III-3
E	T103	DVS Staffing information	DVS/2019	I-1A, I-1B, I-5
E	T104	DVS Q4 TRAINING REPORT 2018_2019	DVS/2019	I-2A, I-2B
E	T105	CBPP - Extension Staff Workshop	DVS/2018	I-2B, I-3
E	T106	CBPP - Training attendance list	DVS/2018	I-2B, I-3
E	T107	CBPP letter from Director to PVO Maun	DVS/2018	I-6A
E	T108	DVS Audit of Gantsi Dist_Eval of BAITS_FMD Surv_Cont of VMP_2018	DVS/2018	II-12A, 11-4A, II-8
E	T109	DVS Audit of Southern Dist_Eval of Anim Traceability and Cont of VMP and Residues_Sep 2016	DVS/2016	II-12A, II-8, II-10
E	T110	Ramatlambama Border Inspect Point_Audit	DVS/2018	II-3
E	T111	Ext Govt contacts for surveillance	DVS/2019	I-6B
E	T112	Estab of National Food Safety Emerg Prep & Resp Comm_JEE Recomm_2018	MoHW/DPH 2018	I-6B, II-7A
E	T113	Rabies Awareness brochure in Tswana	DVS & Various	III-1, II-6
E	T114	Namibia Botswana Bilateral VS Meeting_2017	DVS 2017	IV-2, IV-3, IV-4, IV-5
E	T115	Resolutions of The Bilateral Meeting Between Botswana and Namibia_2017	DVS 2017	IV-2, IV-3, IV-4, IV-5
E	T116	SPANA Maun_ Donkey Project	SPANA	II-13
E	T117	HPAI WS for Stakeholders advert	DVS/2017	III-1
E	T118	DVS AI Awareness brochures	DVS/2017	III-1
E	T119	DVS AI awareness outreach to external govt_Attendance list_2017	DVS/2017	I-6B
E	T120	AU-IBAR_Anim Res and Info Syst_Admin Manual	AU-IBAR	II-4, IV-5
E	T121	Botswana Veterinary crushpens map	DVS/2019	I-6A, II-6
E	T122	List of Notifiable diseases and supporting legal framework - Botswana	BNVL	II-4B
E	T123	Presentation by Meat Industry Training Institute - Lobatse	MITI/2019	I-2B
E	T124	Rabies Commemoration Minutes 2016 2017	DVS/2016	I-6B
E	T125	VEES Staff Meetings	DVS/2019	I-6A, II-2

E	T126	STAFF LIST CENTRAL DISTRICT	DVS/2019	I-1A&B, I-2A&B, I-5
E	T127	STAFF LIST CHARLESHILL	DVS/2019	I-1A&B, I-2A&B, I-5
E	T128	STAFF LIST GABORONE FIELD OFFICE	DVS/2019	I-1A&B, I-2A&B, I-5
E	T129	STAFF LIST GHANZI	DVS/2019	I-1A&B, I-2A&B, I-5
E	T130	STAFF LIST GOODHOPE	DVS/2019	I-1A&B, I-2A&B, I-5
E	T131	STAFF LIST JWANENG	DVS/2019	I-1A&B, I-2A&B, I-5
E	T132	STAFF LIST KANYE	DVS/2019	I-1A&B, I-2A&B, I-5
E	T133	STAFF LIST KGALAGADI DISTRICT	DVS/2019	I-1A&B, I-2A&B, I-5
E	T134	STAFF LIST KGATLENG	DVS/2019	I-1A&B, I-2A&B, I-5
E	T135	STAFF LIST KWENENG	DVS/2019	I-1A&B, I-2A&B, I-5
E	T136	STAFF LIST LOBATSE	DVS/2019	I-1A&B, I-2A&B, I-5
E	T137	STAFF LIST MAUN & SHAKAWE	DVS/2019	I-1A&B, I-2A&B, I-5
E	T138	STAFF LIST RAMOTSWA	DVS/2019	I-1A&B, I-2A&B, I-5
E	T139	FMD Contingency Plan	DVS/2019	II-5
E	T140	PPR Contingency Plan	DVS/2019	II-5
E	T141	WAHIS Country Info for Botswana 2018	OIE/2019	II-4
E	T142	OIE Reports to OIE from June 2018 to May 2019	OIE/2019	II-4
E	T143	Presentation_Disease Reporting using ARIS2	AU-IBAR	II-4, IV-5
E	T144	Resp to FMD Outbreak in RSA 2019	DVS/2019	II-5, IV-5
E	T146	Annex Hum.Phys.Fin.Res_MoA Strategic Plan 2017-2023	DVS/2017	Multiple
E	T147	Annex Hum.Phy.Fin.Res_DVS Q3 2018-19 DPIC REPORT	DVS/2018	Multiple
E	T148	Annex Hum.Phys.Fin.Res_DVS 2018.2019APP	DVS/2018	Multiple
E	T149	Annex Tech.Cap.Auth_Feed Safety	DVS/2019	II-11
E	T150	Republic of Botswana_Application for Importation of Live Animals_online	DVS/2019	IV-2, IV-4, IV-5
E	T151	Republic of Botswana_Application for the sale of veterinary drugs and feed_online	DVS/2019	II-8, IV-2
E	T152	Republic of Botswana_Application for Veterinary Import Permit_online	DVS/2019	IV-2, IV-4, IV-5
E	T153	Chobe East Supv FMD Report 2017	DVS/2017	II-4, II-6
E	T154	Chobe FMD Coordinators Report April-May 2018	DVS/2018	II-4, II-6
E	T155	Chobe FMD Coordinators Report November 2018	DVS/2018	II-4, II-6
E	T156	Chobe West Supv FMD Report 2018	DVS/2018	II-4, II-6
E	T157	National Compiled FMD Coordinators Report_March 2019	DVS/2019	II-4, II-6
E	T158	List of Southern Africa Livestock & Wildlife diseases of economic importance	DVS/2019	II-4, II-6

E	T159	WTO Trade Policy Review_SACU_2015	WTO 2015	IV-2, IV-3, IV-4, IV-5
E	T160	WTO Trade Policy Review_Annex 1 Botswana_2015	WTO 2015	IV-2, IV-3, IV-4, IV-5
E	T161	Southern African Development Community_SPS Measures_Website	SACU 2019	IV-2, IV-3, IV-4, IV-5
E	T162	SADC_Protocol on Trade_1996	SADC 1996	IV-2, IV-3, IV-4, IV-5
E	T163	Anal of the Econ and Soc Effects of Botswana's Loss of Pref Mark Access for Beef Exp to the EU_2007	Overseas Development Institute/2007	IV-1, IV-2, IV-3, IV-4, IV-5
E	T164	Balancing Livestock Prod and WL Conserv in and around SA Transfrontier Conservation Areas_2013	G. R. Thomson1, M. -L. Penrith, M. W. Atkinson, S. J. Atkinson, D. Cassidy and S. A. Osofsky/2013	IV-2, IV-3, IV-4
E	T165	The control of Foot and Mouth Disease in Botswana and Zimbabwe_2005	Derah, N. and Mokopasetso, M./2005	II-4, II-6, IV-2
E	T166	Recent outbreaks of Foot and Mouth Disease in Botswana and Zimababwe_2005	Mokopasetso, M. and Derah, N./2005	II-4, II-6, IV-2
E	T167	Modeling Foot and Mouth Disease risk factors in Botswana_2005	Mokopasetso, M./2005	II-2, II-6
E	T168	CBPP in Botswana_experience w control erad prev and surv_2011	Chandapiwa Marobela-Raborokgwe/ 2011	II-4, II-6, IV-2
E	T169	Stakeholders Update on AI outbreak_2017	DVS/2017	III-1, III-2, III-6
E	T170	Record of agenda meeting points between Botswana and Zimbabwe on HPAI_2017	DVS/2017	IV-2, IV-3, IV-4
E	T171	MoHW_Public Notice_Relocation of Reg Func to Botswana Medicines Reg Auth_BoMRA_2018	MoHW/2018	II-8
E	T172	Information about BSPCA Outreach and Animal Numbers 2017-2018	BSPCA/2019	II-13
E	T173	UNCTAD_Botswana Trade Policy Book_2016	UNCTAD/ 2016	IV-2, IV-3, IV-4
E	T174	Botswana DoAA 1977	Gov of Botswana/1977	IV-1 and multiple
E	T175	Botswana Veterinary Surgeons Act_2008	Gov of Botswana/2008	III-5, III-7, IV-1
E	T176	Botswana Livestock and Meat Industries Act_2007	Gov of Botswana/2007	II-7, IV1
E	T177	Botswana Livestock and Meat Industries_Poultry Abattoir_Regulations_2007	Gov of Botswana/2007	II-7, IV-1
E	T178	Botswana Meat Inspection and Control of Red Meat Abattoir Regulations_2007	Gov of Botswana/2007	II-7, IV-1
E	T179	Botswana Food Control Act_1993	Gov of Botswana/1993	II-7, IV-1
E	T180	Botswana Meat Commission Act_1979	Gov of Botswana/1979	IV-1
E	T181	Botswana Control of Livestock Industry Act _1941	Gov of Botswana/1941	IV-1
E	T182	Botswana Registration of Livestock Act_1921	Gov of Botswana/1921	IV-1

E	T183	Botswana Agrochemicals Act_2000	Gov of Botswana/2000	II-8, II-11, IV-1
E	T184	Botswana Medicines and Related Substances Act_2013	Gov of Botswana/2013	II-8, II-9, II-10, II-11, IV-1
E	T185	Botswana Drugs and Related Substances Act_1992	Gov of Botswana/1992	II-8, II-9, II-10, II-11, IV-1
E	T186	Botswana Cruelty to Animals Act_1936	Gov of Botswana/1936	II-13, IV-1
E	T187	Using physical and emotional parameters to assess donkey welfare in Botswana_2015	Martha Geiger,Alice J. Hovorka/2015	II-13
E	T188	2018 Workshop_Commodity Based Trade of Beef and Enhanced Market Access_The Vital Role of the DVS	DVS & AHEAD Programme/Feb 2018	III-6, IV-6
E	T188	Botswana_ FMD Cripples Ngamiland Beef Industry June 2018	The Patriot/2018	II-4, II-5, II-6
E	T189	Welcome to __ Botswana Veterinary Association (BVA)	BVA/2019	III-5
E	T190	BUAN CICE website	BUAN/2019	I-2, I-3
E	T191	BUAN 2019 CICE Calendar	BUAN/2019	I-2, I-3
E	T192	SADC Control Strategy for PPR	SADC	II-6
E	T193	SADC HPAI Preparedness and Response Plan_2006	SADC/2006	II-5
E	T194	SADC updates bird flu disaster response plan _ The Herald_2018	The Herald/2018	II-5
E	T195	Botswana Country Report_African Regional Consultations On Disaster Reduction Workshop_June 2004	Gov of Botswana/2004	II-5
E	T196	Algeria Agreement of Cooperation_Dec 2017	Joint Agreement/2017	IV-2, IV-3
E	T197	Uganda_Memorandum of Understanding 2017	Joint Agreement/2017	IV-2, IV-3
E	T198	OIE-VLSP Agreement Annexes_Botswana_Draft	OIE & DVS/2019	I-9, II-13, IV-1
E	T199	New official disease status will be recognised by the OIE_2019	OIE/2019	II-6
E	T200	MITI Presentation PVS Follow up Mission 2019	MITI/2019	I-2B, II-7
P	S1p	Organigram of NVL	BNVL, Aug. 2018	II-1A
P	S2p	VL QMS Manual	BNVL, 2018	II-1C
P	S3p	Registration ledger incoming samples NVL	BNVL, May 2019	II-1B
P	S4p	sample collection form from registry NVL	BNVL, May 2019	II-1B
P	S5p	Animal movement permit	DVS, May 2019	II-12A
P	S6p	BW Veterinary districts	DVS, May 2019	II-6
P	S7p	SOP for extension officers on buffalo incursion surveillance	DVS, Mar. 2019	II-6
P	S8p	Normal, replacement and imported animals tags	LAC, May 2019	II-12B
P	C1p	Baits Eartag Applicator	BAMB, May 2019	II-12B
P	C2p	Baits Owner Report on System	BAITS, May 2019	II-12B
P	C3p	BAMB Vaccination Calendar	BAMB, 2019	II-6
P	C4p	BAMB Veterinary Medicine Display	BAMB, May 2019	II-8
P	C5p	BAMB Veterinary Medicine Display2	BAMB, May 2019	II-8
P	C6p	BAMB Medicine Expiry Date Shop Display	BAMB, May 2019	II-8
P	C7p	BAMB_Storage Temperature Record	BAMB, May 2019	II-8

		Form		
P	C8p	Cattle Inter-Zonal Movement Permit on System	DVS, May 2019	II-12A
P	C9p	FMD Clinical Examination Form	BNVL, Aug. 2018	II-1A
P	C10p	LAC Farmer Eartag Registration Book	BNVL, 2018	II-1C
P	C11p	Memo BAITS upgrade disruptions	BNVL, May 2019	II-1B
P	C12p	Audit Report of Holding Charleshill	BNVL, May 2019	II-1B
P	C13p	BAITS Audit Report Kgaladagi	DVS, May 2019	II-12A
P	C14p	BAITS Instructions	DVS, May 2019	II-6
P	C15p	Buffalo Fence Maun	DVS, Mar. 2019	II-6
P	C16p	Buffalo Fence Maun 2	LAC, May 2019	II-12B
P	C17p	Caprine Imports Register Mamuno Border Post	BAMB, May 2019	II-12B
P	C18p	Cattle Holding Pens Mamuno Border	BAITS, May 2019	II-12B
P	C19p	Cattle Intransit Movement Permit	BAMB, 2019	II-6
P	C20p	Certificates MITC OIE_FMD PPR	BAMB, May 2019	II-8
P	C21p	DRF Letlhakeng Vet Office	BAMB, May 2019	II-8
P	C22p	DVS Quality Policy	BAMB, May 2019	II-8
P	C23p	Entrance to MoA Headquarters	BAMB, May 2019	II-8
P	C24p	Extension Areas Audit Report 2018 Charleshill	DVS, May 2019	II-12A
P	C25p	Feedlot Treatments	DVS, Apr.2019	II-4A
P	C26p	Feedlot Cattle	LAC, May 2019	II-12A
P	C27p	Intransit Register Mamuno Border Post	DVS, Apr.2019	II-12A
P	C28p	Map Botswana EU Territory Codes	DVS, Jan.2019	II-12A
P	C29p	Map Botswana Vet Districts	DVS, Mar.2019	II-12A
P	C30p	Organogram Sub District	DVS, May 2019	II-12A
P	C31p	Ovine Imports Register Mamuno Border Posts	DVS, May 2019	II-6
P	C32p	Procedure for Issuing Animal Movement Permits	DVS, May 2019	II-6
P	C33p	Vet Office at Mamuno Border Post	DVS. May 2019	II-3
P	C34p	Disease Surveillance Plan	DVS. May 2019	II-3
P	S35p	Zimbabwe Border post	DVS. May 2019	II-12A
P	S36p	Buffalo fence Maun	BOTA, 2009	I-2B
P	S37p	Buffalo fence damage	DVS, May 2019	II-4A
P	S38p	Buffalo fence repair team	DVS, Sept. 2018	I-6A
P	P1	Team 1 & 2_Meeting with Meat Hyg and QC Division_May 6	DVS/DMHQC/6 May 2019	II-7A, II-7B, II-13
P	P2	Team 2_BSPCA_May 8	OIE PVS Team 2	II-13, III-2
P	P3	Team 2_DVS Human Resources_May 8	OIE PVS Team 2	I-1, I-4, I-5, I-6
P	P4	Team 2_Private veterinary clinic_Vet and Agric consultants_May 8	OIE PVS Team 2	III-7
P	P5	Team 2_BUAN Visit_May 9	OIE PVS Team 2	I-2, I-3
P	P6	Team 2_Visit to DVO and SDVO in Palapye & Jago Abbatoir_May 10	OIE PVS Team 2	Multiple
P	P7	Team 2_Area Extension Office Serule and Scarlo slaughter slab Serule_May 10	OIE PVS Team 2	Multiple
P	P8	Team 2_Visit Sese Quarantine and Veterinary Check point_May 10	OIE PVS Team 2	II-3, II-6
P	P9	Team 2_Obs frmr containment zone fence along Highway A1 and fence team Foley_May 10	OIE PVS Team 2	II-3, II-6
P	P10	Team 2_Visit to DVO NE Dist Francistown & BAMB_May 11	OIE PVS Team 2	Multiple

P	P11	Team 2_Agrichem Supply Store_Bisoli control gate_Bisoli Farm_Bobsie's poultry abatoir at Tshesebe_May 11	OIE PVS Team 2	II-8, II-11
P	P12	Team 2_Border Inspection Point from Zimbabwe_Ramokgwebana_May 11	OIE PVS Team 2	II-3, II-6
P	P13	Team 2_Dukwi Control Gate_SVDO Office Nata_Sepako Area Ext Off_May 12	OIE PVS Team 2	Multiple, II-3, II-6
P	P14	Team 2_Disease cont fence Zone 3c and Zimb_intern border w Zimb_May 12	OIE PVS Team 2	II-3, II-6
P	P15	Team 2_Ngwasha Disease Control Gate and Fence Maintenance Team_May 12	OIE PVS Team 2	II-3, II-6
P	P16	Team2_Visit to Makalamabedi Control Gate_May 13	OIE PVS Team 2	II-3, II-6
P	P17	Team 2_DVO NW Maun & BAITS eart tag sale pt_Maun BMC Abbatoir_May 13	OIE PVS Team 2	Multiple
P	P18	Team 2_Makalamabedi Quarantine Station_May 14	OIE PVS Team 2	II-3, II-6
P	P19	Team 2_Tour fence_entry point to Q area_fence maint camp_Maka decon pt_Maka Cont Pt_Q Gate at Xhan_Crush pens_May 14	OIE PVS Team 2	II-3, II-6
P	P20	Team 2_Society for the Protection of Animals Abroad_SPANA_May 14	OIE PVS Team 2	II-13, III-2
P	P21	Team 2_MITI and ProVet_May 16	OIE PVS Team 2	II-7A, II-7B, III-7
H	SC1	SADC/LIMS Annual Report 2016	DVS, 2016	IV-5
H	SC2	Disease Surveillance Plan April 2016 to March 2019	DVS, 2016	II-4B
H	SC3	Recurrent budget 2017/18	MoF, 2016	I-8
H	SC4	Vehicle register 2014 to 2019	DVS, 2019	I-7
H	SC5	Inventory for disease control fences and camps 2017	DVS, 2017	I-7
H	SC6	Inventory for disease control fences and camps 2018	DVS, 2018	I-7
H	SC7	Circuit of communication regarding residue pos case	DVS	I-10
H	SC8	List of notifiable diseases in neighboring countries	DVS	II-6
H	SC9	BNVL testing capacity	BNVL, 2018	II-1B
H	SC10	NARDI report	MoA, 2018	II-1B
H	SC11	BNVL sample submission	BNVL	II-1B
H	SC12	33rd Mngt review meeting NVL 2019	BNVL, 2019	II-1A,B,C
H	SC13	30th Mngt review meeting NVL 2016	BNVL, 2016	II-1A,B,C
H	SC14	Animal welfare training on abattoir welfare (ToT) and training of abattoir workers	BMC, Jan.2019	II-7.B
H	SC15	Agrinews April 2018	MoA, 2008	III-5
H	SC16	Agrinews, May 2018	MoA	III-5
H	SC17	Agrinews, July 2018	BVSC, 2018	III-5
H	SC18	Agrinews, June 2018	BVSC	III-5
H	SC19	Docs from Veterinary Council	BVSC, 2017	III-5
H	SC19a	Veterinary Surgeons Act	BVSC, 2018	III-5
H	SC19b	Veterinary Surgeons Regulations	BVSC, 2018	III-5
H	SC19c	Draft Code of Ethics		IV-6,7
H	SC19d	Minimum standards for registration of vet premisses	DVS, 2019	I-8
H	SC19e	BVSC Strategic Plan 2019-2024	DVS, 2016	IV-5

H	SC19f	Strategy Business Plan	DVS, 2016	II-4B
H	SC19g	Stakeholder consultation Oct 2018	MoF, 2016	I-8
H	SC20	NVL12 form for disease reporting	DVS, 2019	I-7
H	SC21	BVI Corporate profile	DVS, 2017	I-7
H	SC22	GL on Mngt of FMD Risk through VC approaches for beef exporting enterprises in SADC	DVS, 2018	I-7
H	SC23	Budget allocations 2016 to 2020	DVS	I-10