

REPORT OF THE DIRECTOR OF AUDIT

LIVESTOCK PRODUCTION AND DEVELOPMENT QUARANTINE SERVICES

Ministry of Agro Industry and Food Security

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ABBREVIATIONS AND ACRONYMS

APD	Animal Production Division
AREU	Agricultural Research and Extension Unit
CCPP	Contagious Caprine Pleuropneumonia
DVS	Division of Veterinary Services
OIE	Organisation Internationale des Epizooties
MMA	Mauritius Meat Authority
MAIFS	Ministry of Agro Industry and Food Security
NAO	National Audit Office
PAO	Principal Agricultural Officer
PBC	Poultry Breeding Centre
SM	Statistics Mauritius
TA	Technical Assistant
STA	Senior Technical Assistant

EXECUTIVE SUMMARY

For Mauritius, a net food importer, food price volatility and food security are always concerns. In response to the severity of the food crisis and the need for prompt action, the National Audit Office (NAO) felt the need to undertake a performance audit at the Ministry of Agro Industry and Food Security (the Ministry) to determine whether its quarantine services are efficient and effective in preventing the introduction and spread of animal diseases and infections from imported animals.

This performance audit report relates to the Ministry's provision of quarantine services which is an essential component in the livestock sector. The main aim of quarantine is to prevent the incursion and spread of animal diseases through imported animals. This is necessary to protect the health of the animal population of the importing country. On average, Mauritius imports about 15,550 (cattle, goats and sheep) live animals for their meat. Therefore, the provision of effective quarantine services is an important factor for the well-being of the farming community.

Quarantine services are provided through the Ministry's Division of Veterinary Services (DVS). The DVS is the national veterinary service for Mauritius and is an affiliated member of the **World Organisation for Animal Health** (or **OIE**¹). The DVS has the responsibility to give approval for the running of quarantines, both public and private, and to constantly monitor them to ensure that criteria it has set and practices recommended are strictly observed.

Government owns two livestock quarantine facilities, one for cattle, goats and sheep at Richelieu and the other for poultry chicks at Curepipe. The Richelieu station is operated by DVS while the poultry quarantine is managed by the Ministry's Animal Production Division. A few private quarantine facilities for slaughter and breeding animals are operated by importers and dairy farms.

Set out below are the main findings, conclusions and recommendations from our analysis of the Ministry's quarantine services.

¹ The World Organisation for Animal Health is more commonly referred to by its French acronym, OIE, standing for *Office Internationale des Epizooties*.

Findings

- The Richelieu quarantine came into operation in October 2003, following the closure of the government Roche Bois facility. This was considered as a temporary arrangement pending relocation to a permanent site. The search for a suitable plot of land for the permanent setting up of a quarantine station was not successful.
- With rehabilitation and upgrading, the Richelieu quarantine can now accommodate up to 1,200 cattle heads. Most of the animals kept there are imported for their meat. The market for fresh cattle meat derived from the slaughter of imported live animals is dominated by a sole importer who, also, owns a private quarantine. He uses both his facility and the Richelieu quarantine. The lack of competition in this field is unfavourable to consumers as they do not benefit from competitive products and prices. In recent years, DVS considered increasing capacity of the station, in the name of fair trading and competition, to serve more importers. These attempts failed due to unavailability of necessary funding.
- The cost for running the Richelieu quarantine greatly outweighs the revenue collected. A fee of Rs 10 per cattle head applied for the entire duration of the quarantine period (21 days) is derisory. Even if animals are kept for more than 21 days the same Rs 10 fee applies; no additional fee is claimed.

New regulations regarding revision of fees to Rs 10 per animal per day have already been prepared, but are yet to be applied. The new revised fees are insufficient for the station to be financially sustainable given the high costs of operations.

- Animals imported for slaughter are quarantined for up to 21 days. A major importer has been reported to house its animals at the Richelieu quarantine for excessive lengths of time, thereby, occupying important space and inflating costs for animal care, waste disposal and infrastructure maintenance.

A lack of diligence on the part of DVS to cause the importer to remove its animals on time is the main reason for animals being kept there for too long periods.

- The OIE has defined the activities and procedures to be followed in a quarantine facility. These should form part of quarantine programmes designed to safeguard and promote the health and welfare of quarantined animals and, also, protect the health of personnel working in the facility. As an OIE member, these programmes need to be developed and applied by DVS at all quarantines it has approved.

No adequate quarantine programmes were in place at quarantine stations, public or private.

- Site visits effected at the government quarantine stations as well as at the two largest private quarantine facilities revealed many shortcomings. Among others, basic biosafety and biosecurity measures such as vehicle and foot baths were missing; poor physical barriers around, and poor design of infrastructure at, government stations were noted; and not all animals were tagged or appropriately identified.

- Control over movements of animals in and out of quarantines was poor. The following were observed:
 - Animals are not identified through their tags or other identifier when they are disembarked at ports of entry or while entering the quarantine facilities. They are counted only. This is not enough as all animals entering the country need to be tracked until their final destination.
 - The non-availability of DVS officials during the periods animals are kept at the private sites to control their outgoing movements implies the risk that animals may leave the quarantine facility unchecked. Animals may be sold to farmers or to butchers. In the first case, there is the risk of incursion of infection or disease into the local herd and in the second scenario, allowing illegal slaughter of animals.
 - Trucks with animals, from the private quarantines, proceeding to the Mauritius Meat Authority (MMA), call at Richelieu for the issue of the “Cattle Release and Slaughter Permit” (needed by MMA for slaughtering). No check is carried out by the Technical Assistant at Richelieu on the number (quantity) and identity of animals on these trucks. Since 7th December 2010, this permit is no longer issued at Richelieu for private quarantines animals sent to MMA. Animals are being slaughtered at MMA without the necessary permits.
 - Duplicate of permits with certification that animals recorded thereon have been butchered are not sent back to DVS, by MMA.
 - No reconciliation is done by DVS between the number and identity of animals (for slaughter or breeding) disembarked at ports of entry and those sent to their respective destinations.
- The importation of live animals involves a degree of disease risk to the animal health status of an importing country. Through an import risk analysis, the importing country can establish whether its animal health status will be appropriately protected before trade in animals is allowed. According to the OIE, the import risk analysis carried out by DVS is incomplete and does not follow its (OIE’s) recommended process.
- The DVS allows the importation of female slaughter stocks. During site visits, kids born during the trip to Mauritius or after disembarkation were found at a private goat quarantine. As control over movements of quarantined animals is poor, the risk that the young animals are sold or given to other farmers for fattening and/or breeding purposes exists. This entails the risk of the spread of any infection/disease transmitted from their parents to them, to the local herd. The recent infiltration (in 2007) of *Contagious Caprine Pleuropneumonia* (CCPP), a disease that affects goats, into the local herd indicates that the risk is real.

Conclusions

- Presently, the Richelieu station is of sufficient capacity to house animals of the existing and prospective new importers. However, this capacity is not optimally used. Most animals imported are lodged at private sites.
- Space management at Richelieu quarantine is inadequate.
- Low quarantine fees and lack of rigid conditions in their application have been detrimental to the Richelieu quarantine station. Poor revenue and budgetary constraints have led to inadequate upkeep of infrastructures, grounds and the environment, fuelling public outcries.
- Certain pre-requirements (e.g. biosecurity measures) for a facility to earn approval of DVS to operate as a quarantine have been lacking.
- Adequate quarantine programmes that should be applied, for the well being of both animals and personnel, at government stations and private ones, have not been developed.
- The constant monitoring of quarantines (public and private) that should have been exercised by DVS, to see to it that criteria and recommended practices are strictly observed, has been lacking.
- Control over movements of animals in and out of quarantines is utterly poor. As things stand there is no possibility to track, and reconcile (both in terms of quantity and identity), all animals entering the country, from ports of entry to their final destination which is the central abattoir or breeding farms, after their stay at the quarantines.
- Import risk analysis carried by DVS is incomplete and does not meet OIE standards.
- Allowing the importation of female slaughter stock is risky for the animal health status of the country

Recommendations

- The Ministry should consider ceasing all quarantine activities at its Richelieu station. Private sites could be used as quarantines. The DVS should assume a role as regulator.
- Continuous monitoring of sites that have received the approval of DVS to be used as quarantines should be made. Conditions, recommended procedures and practices for the operation of a quarantine facility should be there, and applied, at all times. Appropriate quarantine programmes should be designed and used for the Mauritius sites in line with procedures and activities defined by the OIE.
- All quarantine stations should be regularly examined by DVS to assess their degree of compliance to OIE measures and necessary action taken to ensure full adherence to these measures.
- To enhance control over movements of animals to and out of quarantine facilities, this report makes a number of recommendations dealing with identification of animals at all

times, posting of DVS officials at private quarantines, preparation of “Cattle Release and Slaughter Permits” at releasing sites, and recovery of same at DVS from MMA for the update of records.

The MMA should adhere to its established procedure of slaughtering only animals accompanied with the relevant permits issued by DVS.

A reconciliation need to be made by DVS, both in terms of quantity and identity, to ensure that all animals brought into the country for slaughter end up at MMA, or are transferred to their respective farms when they are breeding animals, after their stay in a quarantine.

- Import risk analysis should be carried out as per the OIE recommended process and criteria.
- Only male and non-pregnant female slaughter stocks should be allowed to be imported by DVS.

INTRODUCTION

1.1 The role and importance of livestock quarantine

The role of the livestock quarantine service is to prevent entry into Mauritius and spread of exotic diseases of animals through imported animals. This is necessary to protect the health of the animal population of the country. Although, all animals imported into the country have to be certified as healthy and free from infections and contagious diseases by the Veterinary Authority in the exporting country, quarantine measures are still necessary. This is to ensure that any animal incubating a disease and, therefore, not showing any sign of illness is further examined during the quarantine period.

Quarantines are defined by their duration and by the activities and procedures practised to assess health status. The minimal duration of the quarantine period may be extended until any adverse events during the quarantine period are fully investigated and resolved, and no evidence of transmission of infectious agents within the quarantined group exists. Quarantine periods in Mauritius have been set at 21 days for cattle, goats and sheep and around eight weeks for chicks, by Government.

1.2 Livestock quarantine services in Mauritius

Government owns two livestock quarantine facilities, one for cattle at Richelieu and the other for poultry chicks in Curepipe. The Richelieu quarantine is wholly operated by the Division of Veterinary Services (DVS). The poultry quarantine is managed by the Animal Production Division (APD). All animal health matters are administered by the DVS. Over the years, the objective of the Ministry with regards to its quarantine services has been to enhance their level both in terms of capacity and quality. A few private quarantine facilities for slaughter and breeding animals are operated by importers and dairy farms. The DVS approves the running of both public and private quarantines. It is, also, required to constantly monitor them to ensure that criteria it has set and practices recommended are strictly observed.

1.3 Audit motivation

Mauritius has a high level of trade dependency for its food supplies. The Food Security Fund Strategic Plan (FSFSP) 2013-15 estimates that only nine percent of the total requirement of livestock products (excluding poultry and poultry products in which the country has already attained self sufficiency) is met through local production. Thus, a large number of live animals is imported for their meat. Since a few years, animals are, also, being imported for breeding purposes, to help boost local production of milk and meat, and this is likely to persist in the years ahead. Under these circumstances, the availability of reliable quarantine services is a *sine qua non* condition for the well being of farming and food security.

It is against this background that the NAO decided to carry out a performance audit on the Ministry's quarantine services to assess whether they are efficient and effective in preventing the introduction and spread of animal diseases and infections, from abroad, through imported live animals.

1.4 Objective and scope of the audit

1.4.1 Audit objective

This audit seeks to establish whether the Ministry's quarantine services are meeting its objective of preventing the introduction and spread of animal diseases and infections from imported animals.

1.4.2 Audit scope

Auditee

The Ministry of Agro Industry and Food Security (MAIFS), the Division of Veterinary Services (DVS) and the Animal Production Division (APD) are the key players involved in quarantine activities.

Audit object

The audit focused on activities, programmes, policies, resources allocated, regulatory framework and monitoring mechanism to prevent the introduction and spread of animal diseases.

Time coverage

The findings were developed using data and evidences collected during the period 2008 to end September 2013.

Geographical coverage

The audit covered animals imported to Mauritius and excludes Rodrigues & other islands.

1.4.3 Audit design

Three audit questions were developed and their answers helped to meet the audit objective. The audit questions were as follows:

- Should Government operate the quarantine station at Richelieu? If yes, is the infrastructure and capacity of the station adequate?
- Is the Ministry effective in ensuring that both public and private quarantine facilities are adequate?
- Is there sufficient control over the movements of animals to, and out of, the quarantine stations?

1.4.4 Assessment criteria

The sources of the assessment criteria are given below. The key parameters contained therein were used to assess the adequacy of quarantine services.

- Guidelines of the World Organisation for Animal Health (OIE) on provision of quarantine facilities
- Guidelines from DVS on quarantine facilities
- Animal Disease Act 1925
- Environment Protection Act 2002

1.5 Methodology

The audit was conducted in accordance with International Standards of Supreme Audit Institutions (ISSAI). Those standards require that performance audit should be planned, conducted and reported on in a manner, which ensures that an audit of high quality is carried out in an economic, efficient and effective way and in a timely manner. The following methodologies were used for the audit to understand the audit area along with obtaining sufficient, relevant and reliable audit evidence that support the conclusions and recommendations.

1.5.1 Documents reviewed

The team reviewed relevant documents to understand the auditee, its activities and regulatory framework. The information in the documents helped to understand the performance of the Ministry's quarantine services.

1.5.2 Interviews

Interviews were conducted during the audit. This method was used with the following aims:

- To confirm information obtained from documents review
- To compare different views and perspectives of different individuals on the topic
- To better understand the topic, issues, process or programmes and activities

The team interviewed senior management and staff members of the Ministry (Head-quarters, quarantine stations, DVS and APD) to ascertain the role each one is playing as well as to obtain relevant information.

1.5.3 Site visits

The team visited the Richelieu quarantine station, the poultry quarantine station in Curepipe and two large private quarantine facilities. This helped the team to better understand the audit area and assess the reliability of different quarantine stations.

1.5.4 Good practices and literature reviews

The team also carried out literature reviews to understand recommended and accepted practices in the operation of quarantine facilities.

1.6 Structure of the audit report

The remaining part of the report covers the following:

- Chapter Two describes the different roles and responsibilities of Government and other key stakeholders as well as gives a description of quarantine activities.
- Chapter Three presents the findings.
- Chapter Four contains the conclusion based on the findings.
- Chapter Five deals with recommendations to address shortcomings identified in this report.

CHAPTER TWO

LIVESTOCK QUARANTINE ACTIVITIES

This chapter describes the different roles and responsibilities of the key stakeholders involved in providing quarantine services. It, also, describes the activities and procedures involved in the proper running of a quarantine and control over the movements of animals.

2.1 Objective of the Ministry

The overall objective of the Ministry for the livestock sector is to increase the local livestock production with a view to improving the food security status of the country through support to local breeders to increase meat and milk production and effective control of animal health. To achieve these goals, the Ministry carries out a number of activities through its Agricultural Services and a few statutory bodies.

2.1.1 Agricultural services

The Agricultural Services consist of 13 divisions that serve both the livestock and food crop sectors. The following divisions of the Ministry's Agricultural Services are important for quarantine services for livestock animals;

➤ *Division of Veterinary Services (DVS).*

This is the national veterinary service for Mauritius. Its main activity is the provision of veterinary services which include:

- Treatment, laboratory diagnosis, surveillance and control of animal diseases.
- Sale of vaccines and distribution of drugs to all small livestock breeders.
- Artificial insemination service and pregnancy diagnosis for cows.
- Issue of import permits for animal and livestock products.

DVS provides for quarantine facilities at its head office in Réduit (for pets like dogs and cats) and at Richelieu for cattle, goats and sheep imported for their meat or for breeding. Currently there are no quarantine facilities for imported pigs. The last time pigs were imported they were quarantined, with the approval of DVS, at breeders' place since there were no other animals thereat. The DVS is responsible for the approval and continuous monitoring of all animal quarantine facilities operated by Government and private stakeholders.

Being the national veterinary service for Mauritius, DVS is an affiliated member of the World Organisation for Animal Health (commonly known as the *Office International des Epizooties* (OIE)) since 1987. The OIE is the intergovernmental organisation responsible for improving animal health worldwide. OIE has defined the activities to be carried out,

and procedures to be followed, in a quarantine facility. These need to be followed by its members.

➤ *Animal Production Division (APD)*

This Division strives to make livestock farming a worthwhile economic activity through the introduction of the best genetics and latest technologies as well as advising and sharing information with all stakeholders concerned with livestock development.

Among its other main activities, the Division operates poultry quarantine where imported parent stocks for its Poultry Breeding Centre (PBC) are kept.

➤ *Agricultural Engineering Division*

The Division provides support services to the Agricultural Services regarding engineering works and carries out, among other things, repairs, maintenance and upgrading of the Ministry's stations.

2.1.2 Statutory bodies

There are 20 statutory bodies falling under the aegis of the Ministry and none of them offer animal quarantine services. However, mention needs to be made of the *Mauritius Meat Authority* (MMA) which receives imported animals to be slaughtered from quarantine stations. The final destination of animals imported to be butchered for their meat is the MMA and so this body has an important role in the control of movement of animals out of a quarantine facility.

2.2 Importation of animals, quarantine capacity and infrastructure

On average, Mauritius imports about 15,550 (11,250 cattle and 4,300 goats/sheep) live animals through up to a dozen shipments every year for their meat. At the Richelieu quarantine station only a maximum of 1,200 cattle heads can be accommodated at a time. The remainder are housed in facilities owned by private operators. Some 6,000 heads of cattle can be lodged at a private quarantine station, at any one time, belonging to a major importer of livestock. Two other private facilities have room for some 1,500 goats and sheep, each, at any one time.

At present, very few animals are imported for breeding purposes. Since 2008 to date, 2,678 breeding heifers, bulls and goats have been imported by two large private dairy companies, the Agricultural Research and Extension Unit (AREU²) and a company specialising in frozen semen production. The import of breeding stock is likely to rise in the near future as small and medium scale farmers take advantage of the FSF financing schemes for the purchase of animals for rearing.

² AREU is a statutory body under the aegis of the Ministry. Its main responsibilities are to provide training and extension services to all farmers in Mauritius and to conduct research. It has a research station where cattle are reared.

As regards the Government quarantine facility for poultry chicks, it has a capacity to house up to 2,500 birds. Every year, the Ministry imports several batches, comprising of 1,000 to 2,500 day-old chicks each for the APD's Poultry Breeding Centre.

2.2.1 Richelieu quarantine station

The only Government quarantine station for cattle, goats and sheep³ is located at Richelieu and is in operation since October 2003. Prior to that, this quarantine facility was situated at Roche Bois. In June 2000, the site was closed down following repeated complaints from inhabitants of the locality. At that time, Government declared sites belonging to private operators as quarantine facilities which were operated under the supervision of DVS. Following an outbreak of *Lumpy Skin Disease* in September/October 2000, resulting from imported livestock, that affected cattle in the country, a decision was taken by Government in December 2000 to re-open a new official quarantine for imported livestock. After considering several sites, it was finally decided, in October 2003, that the Government quarantine station be made operational at Richelieu as a *temporary measure* pending the long term relocation of the facility to a more suitable location.

Actions were taken to renovate the station into a quarantine facility, in 2003. Further rehabilitation of old pens in subsequent years has allowed accommodation of up to 1,200 animals.

Several times, during the years 2004 through early 2006, the Ministry attempted to look for an alternative site for the permanent setting of its quarantine station, but met with no success. Not finding the required land, the Ministry decided, in February 2006, to maintain the official quarantine station at Richelieu which according to DVS, apart from land area (land at the site is of an extent of some 33 acres only), satisfied the other criteria⁴ it had set for the proposed station. Necessary infrastructures were there, but needed upgrading. The waste disposal systems needed improvements and measures were necessary to reduce the odour and flies problems.

³ In past years, only cattle has been housed at the Richelieu quarantine. Goats and sheep can, also, be accommodated if they come from the same source.

⁴ According to the specifications, the quarantine station should have the following properties: (i) situated nearest to seaport/harbour and central slaughter house for easy transportation, (ii) area between 35 to 40 acres, (iii) located in a zone with the lowest density of domestic human habitations/activities, (iv) no animal farming activities within an area of at least 500 metres wide all along the perimeter of the site, (v) negligible risks of contamination of underground water by waste effluents; and (vi) accessible to water and electricity supplies.

2.3 Reliability of quarantines

A quarantine station is said to be reliable when it is appropriately located, have proper physical infrastructures and facilities and comply with a set of established criteria in its day to day activities. Equally important is the application of a sound quarantine programme that safeguards and promotes the health and welfare of quarantined animals and protects the health of personnel working in the quarantine facility.

2.3.1 Approval of quarantines

The Ministry, through DVS, has the responsibility to approve all quarantines stations both public and private. Approval is only granted if the facility meets the established criteria listed below:

- Site should be in a place of low animal population density and relatively far from human habitation;
- No animal farming activities within an area of at least 500 metres wide all along the perimeter of the site;
- Basic amenities for feeding and watering of animals;
- Adequate space for each animal to ensure minimum comfort;
- Waste can be safely disposed of on the site;
- Securely fenced and provision of security guards;
- Basic bio-safety and bio-security measures such as foot dips and facilities for disinfection of vehicles.

Furthermore, all animals kept in quarantine should be tagged or appropriately identified so that their movements can be followed. An animal movement book should be maintained and free access should be given to DVS officers to inspect animals and records. It is only upon satisfactory compliance with the above criteria and practices that applications for quarantine sites are approved. Thereafter, DVS is required to constantly monitor the quarantine facility both public and private to ensure that criteria and practices are strictly observed.

2.3.2 Quarantine programmes

These programmes are designed to both facilitate the detection of communicable diseases and to make accurate assessments of the overall health status of individuals and/or groups entering a new population. *Prudence dictates that for public health and safety the infectious disease status of all incoming animals is considered at best uncertain.* These programmes, when followed, make a quarantine station reliable. They contain measures and practices that safeguard and promote the health and welfare of quarantined animals and protect the health of personnel working in the quarantine facility.

The OIE *Terrestrial Animal Health Code* (the *Terrestrial Code*) sets out standards for the improvement of animal health and welfare, and veterinary public health worldwide. The health measures in the *Terrestrial Code* could be used by the veterinary authorities of importing and exporting countries to provide for early detection, reporting and control agents pathogenic to animals or humans, and to prevent their transfer via international trade in animals and animal products.

Mauritius, being a member country of the World Organisation for Animal Health, should apply these health measures in its quarantine practices. All quarantine practices of both private and public should:

- encompass measures which effectively isolate animals or groups of animals thereby preventing the spread of communicable diseases;
- protect the health of personnel working in the quarantine;
- encompass measures to promote the health and welfare of quarantined animals.

The OIE *Terrestrial Animal Health Code*⁵ has a full chapter that defines the activities and procedures to be followed in quarantine. The DVS agreed that at a minimum, quarantine programmes should have the following key components:

➤ *Management policies*

These policies cover the granting of access to a facility and instructions to personnel so that activities thereat are carried in the right way.

➤ *Quarantine facility infrastructure design and equipment.*

The quarantine station should be so designed and constructed that it allows proper segregation, isolation and holding of animals, and, also, its efficient cleaning and decontamination. Necessary equipment must, also, be made available.

➤ *Personnel protection practices*

These are aimed to protect personnel from animal diseases/infections that may be transmitted from animals.

⁵ The *Terrestrial Animal Health Code* is an annual publication by the OIE which aims to assure the sanitary safety of international trade in terrestrial animals and their products. It contains detailed health measures (in the form of standards and recommendations) to be used by the veterinary authorities of importing and exporting countries to avoid the transfer of agents pathogenic to animals or humans, while avoiding unjustified sanitary barriers.

➤ *Husbandry and animal care practices*

This component covers the handling of animals and offering of medical treatment to sick ones, disinfection/decontamination of working areas and the keeping of tools and equipment.

More details on these components can be read at Appendix I.

2.4 Control over movement of animals

Control over movements of animals is important so as to track their movements from ports of entry to quarantine stations to the slaughter house or breeding farms

Upon arrival in Mauritius, disembarkation of animals is effected under the supervision of DVS. Documents available with DVS, then, are the import permit and an “International Animal Health Certificate” from the Veterinary Services of the exporting country attesting that conditions imposed by DVS for exporting animals to Mauritius have been complied with. This document, also, contains a list of numbered tags that are ‘worn’ by the animals, for their identification. A “Declaration by the Master of Ship”⁶ is, also, available for animals that have been brought in by sea. Tagging applies to cattle, goats and sheep which are transported by sea; poultry chicks are not tagged and are carried by air. According to DVS, only animals free from infection and disease are allowed entry into the country. This is certified by DVS after inspections at the ports of entry. The Animal Disease Act 1925 provides for how other animals (i.e. infected and sick) should be disposed of.

At ports of entry, animals are counted and channelled to quarantine stations. On receipt of animals at the quarantines, they are again counted to tally with numbers sent from the ports of entry. These counting exercises, at both ports of entry and quarantines, are done by technical assistants (TAs) of DVS for cattle, goats and sheep, and TAs of the APD for PBC’s poultry chicks. TAs are permanently posted at Government quarantines⁷ and for the sake of these exercises one is temporarily sent to each receipting private quarantine.

A “Cattle Release and Slaughter Permit” is issued for quarantine animals that are sent to MMA for slaughtering. No animals can be slaughtered by MMA if this permit is not produced. The permit is prepared and signed by the TA posted at Richelieu for animals leaving the quarantine there and, also, for animals that leave other private quarantines. The permit has a section where quantity and country of origin of animals sent to MMA are noted. Entries for incoming and outgoing cattle, goats and sheep at Richelieu and private quarantines are entered in records kept at Richelieu.

Permits are issued in two copies. The original is retained by MMA while the duplicate needs to be returned to DVS as the verso of it holds a “Meat Inspection Report”. The latter is prepared by the Veterinary Officer who has to certify that animals listed on the recto have

⁶ The captain of the vessel declares how many animals and their categories (slaughter cattle, goats, sheep, weaners, breeding stock, etc.) he has transported from the port of embarkation, how many died during the trip and how the dead bodies were disposed of.

⁷ Officers of the PBC are posted at the poultry quarantine only for the duration of quarantine for each batch of chicks imported.

been inspected (ante and post mortems) and that they are free from infection/disease and that the meat is fit for human consumption.

A monthly return showing statistics for slaughtering carried out by MMA is submitted to DVS. The document lists the number of animals slaughtered, stating their origin (local or imported) sent by individuals, companies and institutions, and their respective carcass weight.

2.5 Importation of animals

Only animals that are imported need to be quarantined, to protect the health of the local animal population.

2.5.1 Import risk analysis

The importation of live animals involves a degree of disease risk to the importing country. This risk may be represented by one or several diseases or infections. Prior to permitting imports, the importing country needs to carry an import risk analysis so that it is provided with an objective and defensible method of assessing the disease risks associated with the importation of animals. The risk analysis process recommended by the OIE and its components are shown in Figure 1⁸:

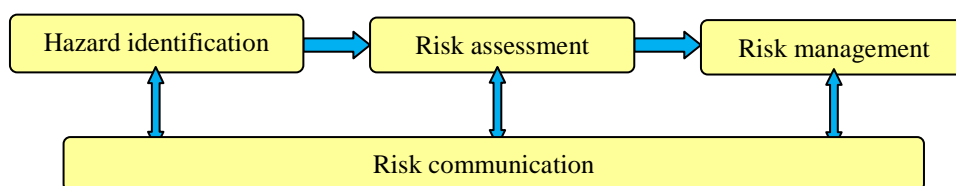


Figure 1: OIE import risk analysis process

The *hazard identification* involves identifying the pathogenic agents which could potentially produce adverse consequences associated with the importation of an animal. The potential hazards identified would be those appropriate to the species being imported and which may be present in the exporting country. It is then necessary to identify whether each potential hazard is already present in the importing country, and whether it is a notifiable disease or is subject to control or eradication in that country and to ensure that import measures are not more trade restrictive than those applied within the country.

The *risk assessment* is the component which estimates the risks associated with a hazard. Risk assessments may be qualitative or quantitative. For many diseases, particularly for those diseases listed in the Terrestrial Code where there are well developed internationally agreed standards, there is broad agreement concerning the likely risks. In such cases it is more likely that a qualitative assessment is all that is required. Qualitative assessment does not require elaborate modelling skills to be carried out and so is often the type of assessment used for routine decision making. No single method of import risk assessment has proven applicable in all situations, and different methods may be appropriate in different circumstances.

⁸ The figure and descriptions of its components are extracted from the OIE's Terrestrial Animal Health Code.

Risk management is the process of deciding upon and implementing measures to achieve the importing country's appropriate level of protection, whilst at the same time ensuring that negative effects on trade are minimised. The objective is to manage risk appropriately to ensure that a balance is achieved between a country's desire to minimise the likelihood or frequency of disease incursions and their consequences and its desire to import animals.

Risk communication is the process by which information and opinions regarding hazards and risks are gathered from potentially affected and interested parties during the risk analysis, and by which the results of the risk assessment and proposed risk management measures are communicated to the decision-makers and interested parties in the importing and exporting countries. This process should be present at all stages of the risk analysis.

Furthermore, an import risk analysis usually needs to take into consideration the results of an evaluation of Veterinary Services, zoning⁹, compartmentalisation¹⁰, surveillance¹¹ systems in place for monitoring of animal health, and epidemiological status in the exporting country. The evolution of diseases or infections at the international level has, also to be followed and considered.

2.5.2 Sanitary measures on import

It has already been said that the importation of animals involves a degree of risk to the animal health status of an importing country. The estimation of that risk is made more difficult by differences among the animal health and production systems in different countries. Systems operating in the exporting countries may differ from those in the importing country. Differences may be with respect to infrastructure, policies and/or operating procedures, laboratory systems, approaches to the pests and diseases present, border security and internal movement controls.

Although, it is now recognised that significantly different animal health and production systems can provide equivalent animal and human health protection for the purpose of international trade, still, an importing country must be satisfied that its animal health status will be appropriately protected before trade in animals is allowed. In most cases, the risk management measures drawn up will rely in part on judgements made about the animal health and production system(s) in the exporting country and the effectiveness of sanitary procedures undertaken there. Indeed, a judgement of equivalence of sanitary measures applied in exporting countries has to be made. One has to ascertain how the level of animal and human health protection in the exporting country is comparable to the one offered in the importing country. Based on this (risk) analysis, sanitary measures are sometimes imposed on importation of animals to obtain the necessary equivalence. Equivalence may be gained, for

⁹ A zone is a clearly defined part of a territory containing an animal sub-population 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 (OIE definition).

¹⁰ A compartment is an animal sub-population 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 purpose of international trade (OIE definition).

¹¹ Surveillance means the systematic ongoing collection, collation, and analysis of information related to animal health and the timely dissemination of information to those who need to know so that action can be taken (OIE definition).

example, by enhanced surveillance and monitoring, by the use of alternative test, treatment or isolation procedures, or by combinations of the above.

When importing animals, slaughter cattle, weaners, goats, sheep and breeding heifers, in Mauritius, a number of sanitary measures has to be complied with. These are stated on the import permit delivered by DVS¹² and include the following:

- Animals should originate from a feedlot/herd/farm situated in areas that are considered to be disease free as per relevant article of the OIE Terrestrial Animal Health Code;
- Animals selected should originate from a feedlot/herd/farm which is clinically free from notifiable contagious/infectious diseases and where certain specific diseases have not been recorded during past periods;
- Animals should be vaccinated against certain diseases using official approved vaccines within an appropriate time period prior to embarkation;
- Animals selected should be kept for at least a given number of days in an isolation facility approved by the official Veterinary Services of the exporting country. For slaughter cattle, animals should be evaluated during the isolation period for *Foot and Mouth Disease*;
- Animals should be moved in disinfected trucks to the port of embarkation;
- Animals should show no sign of disease on the day of shipment;
- Animals should be transported to Mauritius in ships that are fully approved, specialised and licensed Livestock Carriers by the relevant authorities (veterinary and maritime) of the exporting country.

Additionally, all animals selected should be individually tagged for identification purposes.

¹² Permits are delivered after consideration and approval of application from the importer by an Import Permit Committee under the aegis of the Ministry.

CHAPTER THREE

FINDINGS

This Chapter presents the findings which relate to the following aspects:

- *Infrastructure, capacity and financial sustainability of the Richelieu quarantine station;*
- *The Ministry's role and responsibilities in ensuring the reliability of both public and private quarantine facilities;*
- *The effectiveness of the control measures over the movements of animals to and out of the quarantine station.*

3.1 Infrastructure and capacity at Government quarantine stations

3.1.1 Richelieu Quarantine Station

Rehabilitation and maintenance of infrastructure

As mentioned earlier, the station was made operational as a temporary measure only. The Richelieu station was previously a Government Livestock Breeding Unit where, for almost half a century, farming activities and milk production were carried out. Actions were taken to renovate the station into a quarantine facility, in 2003. The number of animals first quarantined there was 200. With the closure of a private quarantine station, in 2005, demand for larger quarantine space at Richelieu was felt. Pens which previously housed pigs were rehabilitated. These have allowed accommodation of up to 1,200 animals.

Since quarantine activities started at the station, rehabilitation and maintenance works there have been ongoing. Necessary remedial actions have been taken regularly for blocked drains, broken slabs or metallic door and separations. Over the years, the increasing demand for quarantine space led to a need for constant maintenance works which are carried out by the Ministry's Agricultural Engineering Division (AED). However, budgetary constraints implied and still mean that only limited maintenance works could or can be done at the site leading to deterioration of infrastructures, poor sanitary conditions and environmental problems. At times these works were or are either delayed or interrupted due to shortage of labour or materials or because of tender procedures.

In recent times, the poor conditions of the infrastructures have been deprecated by importers. Criticisms were raised against the poor flooring, bad state of animals' feed/water troughs, improper loading/offloading facilities and inadequate supplies of water and electricity, among others. On animal welfare grounds, importers opted to house their animals at their own (DVS approved quarantine) sites rather than keeping them under the conditions that they disapproved at Richelieu.

Since 2012, removal of old drains, and re-flooring works, in pens are being undertaken to make conditions safer.

Upgrading and increasing capacity of facility

In the past years, several upgrading works have been undertaken at the station. These are summarised below:

Period	Upgrading works
2007	Fencing of part of the compound, construction of a waste treatment digester and rehabilitation of water network system and manure pit (costing Rs 3 million).
2011	Extension of an existing blockwall by 125 metres around the facility (costing some Rs 1.5 million).
2012/3	Removal of old drains, and re-flooring works, in pens, were started. (costing Rs 205,000) ¹³

Source: DVS

The scale of the works executed in 2007, however, was far from the scope that had been drawn and estimated at Rs 32.6 million, in mid-2006, by the AED. Indeed, the upgrading originally planned would have allowed the construction of more pens so that the facility would be big enough for some 4,000 cattle heads, at an estimated cost of Rs 26.5 million. Modification works to existing treatment plant was valued at some Rs 6.1 million. For lack of funds, these works could not be carried out. In February 2010, another cost estimate for Rs 29 million was worked out by DVS (with advice from AED) to upgrade the quarantine facility to cater for about 2,200 cattle heads. This upgrading was not approved by Government.

The want to increase capacity, from 1,200 to 4,000 and, more recently, to 2,200 cattle heads, as stated in the foregoing paragraph, at the station cropped up from the concept of fair trading and competition. For more than a decade, the market for cattle meat obtained through slaughter of imported live animals has been dominated by a sole importer.¹⁴ The latter has its own private quarantine where some 6,000 animals can be kept at any one time. It uses both this facility and Government's Richelieu quarantine station. The lack of competition in any field is detrimental to consumers as they are more likely not to benefit from competitive products and prices. An importer of live animals for slaughter who has its own quarantine facility (and approved by DVS) has a definite advantage; for one who hasn't, room has to be made at the Richelieu station. Removal of, or refusal to house, animals of an existing importer so that space is created for new ones or, conversely, denial of import permission to

¹³ Since May 2013, about 80 percent of the works was completed.

¹⁴ During the period 2006 to September 2013, 189 import permits have been issued to the existing importer and only eight to three newcomers. Of the eight permits issued (one in 2009, two in 2011, four in 2012 and one in 2013), the first three could not be applied as services of a livestock freighter could not be secured. Those issued in 2012, to a single importer for about 2,000 animals, in the wake of *Eid Ul Adha* (an Islamic religious festival during which *Qurbani* – a ritual sacrifice of a livestock animal – is performed), were more successfully employed with the help of the long-time established importer. The one issued in 2013 related to import of breeding goats which were successfully air-freighted to Mauritius.

new importers, simply, because the Richelieu facility is occupied by an existing importer would have been viewed as a lack of impartiality on the part of Government towards the parties. In the name of fair trading and competition, DVS decided to increase capacity so that reasonable sufficient space is available at its station to satisfy existing and prospective new importers. Attempts to increase capacity have so far failed for lack of funds.

At this point the important factors that affect capacity of the Government station need to be analysed. They are:

- Available capacity at private sites. The major importer for livestock has a facility where some 6,000 heads of cattle can be lodged at any one time. At two other facilities some 3,000 goats and sheep can be accommodated at any one time.

Animals imported for breeding by private dairy companies or other corporate bodies are quarantined on sites belonging to them, with the approval of DVS. In addition, during peak season, DVS temporarily gives approval and monitors small farms to quarantine imported animals. Small farms at La Chaumière, Arsenal and Palmar have previously been declared quarantine sites. In Table 1 the numbers of animals quarantined at the private sites and at Richelieu are compared; the proportion (as a percentage) of the total animals imported is, also stated.

Table 1 Comparison of number of animals quarantined at private sites and Richelieu

Year	Animals quarantined at private sites		Animals quarantined at Richelieu		Total animals imported
	Quantity	Percentage	Quantity	Percentage	
2009	13,157	86	2,083	14	15,240
2010	11,560	83	2,416	17	13,976
2011	13,730	100	Nil	Nil	13,730
2012	18,380	98	453*	2	18,833

*Animals kept for 10 days only at Richelieu before being transferred to Palmar where the bulk of a consignment for an importer was quarantined.

It can be observed that almost all animals (as in 2009 and 2010) are kept, or all animals (as in 2011 and 2012) can be kept, at private sites. The latter are large enough to receive imported animals that need to be quarantined.

- Demand for cattle meat. One of the motivating factors to do business in this field is, obviously, demand for cattle meat. A higher demand or higher cattle meat consumption will attract new importers in the trade and, thereby, create demand for quarantine space. In recent years, cattle meat consumption has been wavering, taking a general downward trend, since 2004, as shown in Figure 2.

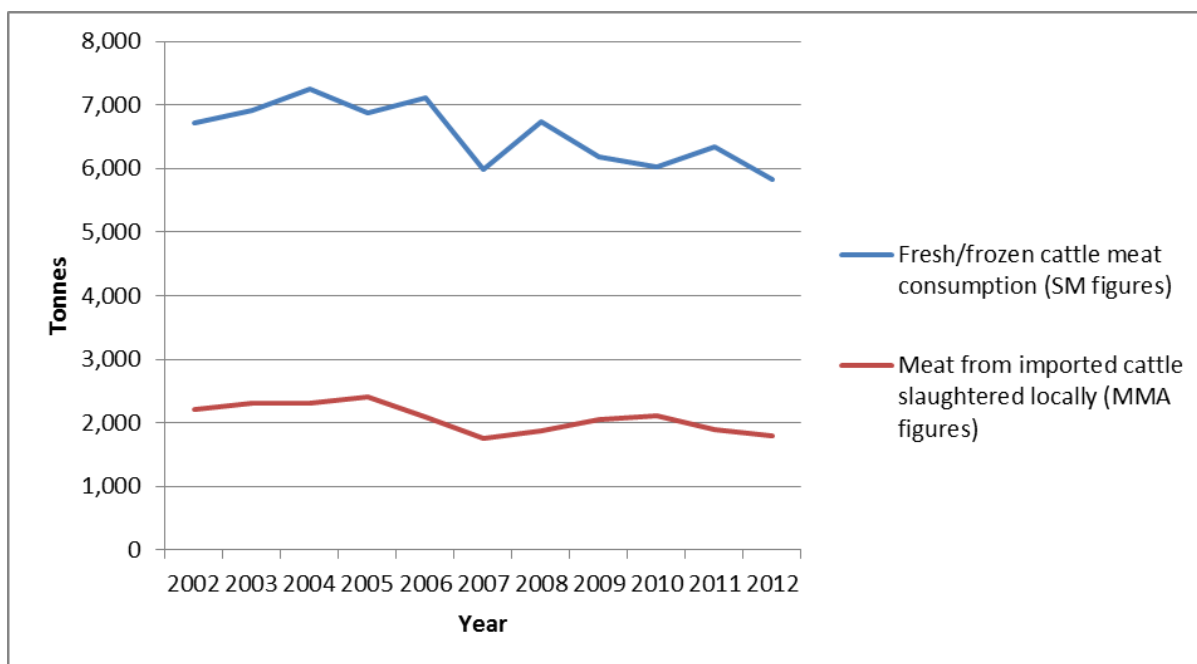


Figure 2: Cattle meat consumption and production from imported live animals

Source: Statistic Mauritius (SM) and Mauritius Meat Authority (MMA)
(Tonnage for fresh/frozen cattle meat consumption for 2012 was not available from SM)

An increasingly health conscious population and soaring cattle meat prices on the world market in recent years are the main reasons that have contributed to lower demand for cattle meat. About a third of this demand is met from the slaughter of imported live animals which in the last five years (2008-2012) oscillated between 9,400 and 15,570 heads. The supply of these latter is fully satisfied by the long-time established importer who has an approved quarantine facility.

- Import of breeding animals. Demand for quarantine services is likely to increase in the near future as breeding animals are imported for farmers who take advantage of the FSF financing schemes for the purchase of exotic breeds' animals for rearing. As at June 2013, 8 applications for 345 animals (heifers, weaners, goats and sheep) have already been approved for import by the FSF. However, it has been noted that almost all breeding animals imported, so far, have been lodged at facilities, approved by DVS as quarantine sites, belonging to private operators and not at Richelieu.
- Management of quarantine space. Animals imported for slaughter can be quarantined for a maximum period of 21 days. Proper management of the available space would allow the keeping of an optimum number of animals; keeping same beyond the normal quarantine period implies the occupying of important and lesser animals accommodated at the station.

The long time established importer has been reported to house its animals at the Richelieu quarantine for excessive lengths of time. During the years 2008 through 2010, more and more animals have been found to stay at the quarantine for more than the recommended

period¹⁵. Several times, DVS has had to request him to remove/transfer his animals which were imported from previous consignments.

A lack of diligence on the part of DVS to cause the importer to remove its animals from the station on completion of the quarantine period is the main reason for animals being kept there for excessive lengths of time. Timely and firm instructions, that are seen to be strictly followed, to importer(s) to remove its (their) animals which have passed the quarantine period should help create space for other animals of the existing and prospective new importers at the station.

Persisting problems

Since the relocation of the Government quarantine to Richelieu, several protests by inhabitants of locality against the station have been made. The causes for the outcries included the following:

- Neighbouring farm animals may be contaminated;
- Discomfort caused by flies;
- Odour nuisance and foul smell resulting from large quantities of animal wastes, urine, manure and dry grasses stacked near sheds, instead, of being properly disposed of;
- Filthy water discharged onto vacant land and canal.

The Richelieu station was previously a dairy farm and the above annoyances were minimal as all wastes were timely disposed of in the form of manure to the farming community. With the conversion into quarantine, the solid and liquid wastes have to be contained within the station and disposed of according to quarantine regulations.

Actions have been and are still being taken by the Ministry to mitigate the causes of public irritations. These include: frequent and thorough cleaning of pens with machines (“bobcats”, tractor and trailer) and additional labour, regular use of quicklime around waste disposal pits and spraying of same on manure and spraying of insecticides at regular intervals to control flies and mosquitoes. In spite of the measures taken, odour nuisances and proliferation of flies remain persistent problems. This is mainly because of:

- Irregular distribution of water;
- Poor waste management.

During peak periods the station accommodates about 1,200 heads of cattle and generates around 5½ tonnes of solid/liquid waste every day. Rapid accumulation of waste in the manure basins results in environmental nuisance of odours and flies;

- Leakages from waste water canals.

¹⁵ In 2008, 152 animals stayed for more than 21 days at the station. In 2009, this amount more than doubled to reach 342. In 2010, 443 cattle passed the 21 days quarantine period. During the years 2011 to 2013 (as of September), no animals of this importer were kept at Richelieu.

3.1.2 Poultry quarantine

As regards the quarantine facility for poultry chicks, with a capacity to house up to 2,500 birds, it is sufficient for the several batches, comprising of 1,000 to 2,500 day-old chicks¹⁶ each, imported for the APD's Poultry Breeding Centre.

Certain shortcomings were observed with regard to the infrastructure at this station. These are discussed at paragraph 3.3.

3.2 Financial sustainability of the Richelieu station

The estimated cost of running the Richelieu quarantine and actual fees collected during recent years are shown in Table 2. Numbers of animals kept there are, also, stated.

Table 2 Operating cost and revenue for Richelieu quarantine 2009 – 2012

	2009	2010	2011	2012	Total
Cost (Rs)*	6,082,063	5,279,077	3,804,351	4,510,133	19,675,624
Revenue					
– Quarantine fees (Rs)	20,830	24,160	Nil	4,530	49,520
Number of animals accommodated	2,083	2,416	Nil	453	4,952
Cost per animal (Rs)	2,920	2,185	N/A	9,956	N/A

* Main components of cost include salaries (74%), protective clothing and uniform allowance (1.5%), security services (21%), utilities (1.1%) and repairs and maintenance (2.2%).

N/A – Not Applicable.

Source: DVS

The above figures are on a purely cash basis. It can be seen that cost massively outweighs revenue collected. During the period animals were kept there (in 2009/10 and 2012), some Rs 15.88 m have been incurred to run the station while revenue collected for services rendered over the same time was a meagre Rs 49,520. These imply that the average cost for provision of quarantine service for any one animal (Rs 3,205) has been some 320 times the revenue collected (Rs 10) per animal. This is extremely expensive.

The derisory quarantine fees that are charged on importers and the light conditions for their levy have been the principal cause for this state of affairs. The Animal Disease Act 1925 caters for the payment of quarantine fees. For cattle, a fee of Rs 10 per animal over the entire duration of the quarantine period which is currently 21 days is charged. Even if animals are kept for more than 21 days the same Rs 10 fee applies; no additional fee is claimed.

For years, it has been the policy of Government to keep fees for quarantining animals at a minimum. This has been gainful for importers. Indeed, for a mere Rs 10 per cattle head for

¹⁶ Every year, the APD imports three batches of broilers; each batch consists of 1,700 to 2,500 birds. Two batches, each having up to 1,000 layers are, also, imported annually.

the entire duration of the quarantine period, importers could benefit from distribution of feed (brought in by owners of animals) by quarantine personnel to, and, watering of, their animals. Other benefits obtained cheaply include cleaning, treatment of waste and security services, which are costly components in the running of a quarantine facility. As no additional fee or 'penalty', e.g. a higher daily rate, for keeping animals beyond the 21 days period was applied, importers exploited this bounty and kept their animals for more than 21 days, availing themselves of benefits mentioned above for a mean Rs 10 per animal.

Conversely, low quarantine fees and lack of rigid conditions in their application have been detrimental to the quarantine station. Poor revenue and budgetary constraints have led to inadequate upkeep of infrastructures, grounds and the environment, at the station. The housing of animals for more than the required period creates additional demand for maintenance and waste disposal. As mentioned in the previous section, DVS has had to request importers several times to remove their animals which were imported from previous consignments with a view to keeping running costs low.

Poor sanitary conditions prevailing at the quarantine, resulting from insufficient maintenance and poor waste management, have led to countless protests from neighbours. Higher revenues (coupled with funds from other sources) should be helpful for the better running of the station. The financial approval obtained in February 2011 to revise quarantine fees to Rs 10 per animal *per day* is definitely forthcoming in this endeavour. As at time of writing in September 2013, new regulations to enforce revision of fees had already been prepared, but were still being examined at the State Law Office. Therefore, the pittance that has been and is still being collected is of little assistance to cover running costs.

The new fee, however, may prove insufficient. On the assumption that a fee of Rs 210 per head (as approved) could have been levied during the years mentioned in the table above, it would have helped bring down the cost to revenue ratio to 15:1. This is still considered as excessive. Given that costs are likely to rise as time goes by, running the quarantine facility will become prohibitive.

It was, also, observed that little effort has been or is being made by DVS to recoup a maximum of running costs. Each permit issued to importers explicitly states to which quarantine station the animals should be directed after disembarkation. In recent times, few requests have been made to accommodate animals at Richelieu as detailed in Table 3.

Table 3 Requests to accommodate animals at Richelieu

	2011	2012	2013 (up to September)
No of permits issued	31	36	9
No of times animals requested to be lodged at Richelieu	5	6	Nil
No of times animals requested to be housed at private sites	27	32	9
No of animals imported	13,730	18,833	4,070*

* As per the permits, a total of 10,370 have been approved for import. As at time of writing in September 2013, only 4,070 animals had been received.

According to importers, conditions of infrastructures were not satisfactory at the station during the period 2011 to 2012, and they preferred to house their animals at their own facilities. However, no fitting reason could be given as to why no animals were *requested* to be lodged at Richelieu in 2013; 80 percent of infrastructures and space were ready to accommodate animals there, since May 2013.

It is, also, noted that no action was taken against importers who did not house their imports (or part thereof) at the Government facility when requested to do so, as per permits issued, in 2011 and 2012.

3.3 Reliability of Quarantines

To maintain the reliability of quarantine stations, DVS is required to constantly monitor both public and private quarantine stations to ensure that criteria and practices mentioned in the previous chapter are strictly observed.

The audit team conducted site visits to the Government Richelieu and Curepipe quarantine stations and at the two largest private quarantine facilities – one for cattle and the other for goats and sheep – with the objective of measuring actual situation with criteria prescribed in the OIE code. At the outset, it should be mentioned that DVS is mainly concerned with animal health matters and not with quarantine practices relevant for personnel health protection at the private stations. Thus, the scope of our examinations and assessments during visits at these sites was similarly limited.

The team observed that the quarantine stations did not comply with the basic requirements recommended by the OIE. This attributed to:

- Absence of any regulation governing quarantine activities. Currently, there is no mandatory requirement to ensure compliance to OIE requirements.
- The measures in the code were not disseminated to the personnel of the quarantine stations.
- There is not enough monitoring of quarantine stations by DVS to ascertain compliance to the code.
- Inadequate infrastructure.
- Limited rehabilitation and maintenance works done to ensure compliance

My observations made during visits effected are detailed at Appendix II. Included therein are remarks that pertain to personnel health protection that were too apparent at the private stations.

Non-compliance with basic requirements may not minimise the risk for the spread or introduction of diseases or pathogens to animals and humans.

3.4 Control over movement of animals

3.4.1 Control at ports

At ports of entry, animals are counted and channelled to quarantine stations. For animals wearing tags, they are not identified and cross checked with available list of numbered tags on disembarkation at the ports of entry. The main reason for this is the absence of cattle-walks both at the seaport and at quarantine stations. Animals therefore cannot be made to walk in a single line that would allow a reading of their tag numbers.

3.4.2 Control at quarantine stations

No TA is available for controlling the outgoing movements of animals at the private sites. Truck(s) loaded with animals, from private quarantine stations stop at Richelieu to be issued with the relevant permit. As the owner of a private quarantine may, also, have animals housed at Richelieu, a single permit is issued to him for both the private and Richelieu sites' animals bound for MMA. The permit has a section where quantity and country of origin of animals sent to MMA are noted.

The non-availability of a TA at the private sites, during periods when animals are kept there, to control their outgoing movements implies that animals may leave the quarantine facility unchecked. On 1st March 2013, DVS effected a site visit at a goat quarantine where 110 goats were found. These animals were received on 6 December 2012, from Kenya, in a consignment of 1,780 goats. For some time, before the receipt of this stock no animals were kept at the quarantine. Returns from MMA as at the date of visit related that only 555 goats

from the consignment had been slaughtered. From these figures, it is evident that 1,115 (1,780 – 555 – 110) goats were missing. As at time of writing no explanation was available for this discrepancy; no investigation had been carried out on same.

Animals may be sold to farmers for breeding before the lapse of the quarantine period, thereby, representing a risk of incursion of disease or infection into the local herd. One may argue that this is only hypothetical, but the recent infiltration (in 2007) of *Contagious Caprine Pleuropneumonia* (CCPP), a disease that affects goats, into the local herd points that it may not be. It is widely believed, (starting within DVS itself), that inadequate control on the movements of imported goats infected with the disease is the most likely cause for the spread of the malady. CCPP did not exist in Mauritius until 2007. The disease is present among goats in certain African countries from where they were used to be imported at that time.

Efforts are currently being made by DVS to eradicate or contain the disease which is a costly affair. Vaccines (21,400 doses) costing Rs 830,000 have been purchased (between August 2010 and April 2013) and a large proportion has already been used on the local herd. Taking into consideration personnel cost (S/TAs, stockmen and drivers), transportation cost and cost of consumables (like syringes and gloves), one can reasonably assume that this treatment must have passed the Rs 1 million mark.

Animals may, also, be sold to butchers. This is tantamount to fostering illegal slaughter and represents a loss of revenue to MMA (non-receipt of slaughter fees). Only meat that is fit for human consumption is authorised for sale to the public by DVS after it carries out inspections on animals and carcasses respectively at MMA. Importers, knowing that carcasses of unhealthy animals will not be released for sale to the public, may dispose of same to butchers and in that way salvage the meat value of the animals. It is needless to say that the consumption of unhealthy meat represents a serious human health hazard.

Since 7 December 2010, no “Cattle Release and Slaughter Permit” has been issued at Richelieu for animals conveyed to MMA from the private quarantines. Trucks loaded with animals bound for the slaughter house do not stop at the Richelieu station to collect the permit. Since then, animals have been slaughtered at the central abattoir without the required permit.

No reconciliation is done by DVS between the number and identity of slaughter animals disembarked at ports of entry and those sent to the Slaughter House. This reconciliation is difficult as proper control is not exercised on the movement of these animals – no identification at ports of entry, quarantines and MMA; no numeric verification for animals from private sites, and no identification for all animals, sent to MMA; and no return of slaughter permits from MMA to DVS, as none is issued, as observed above.

3.5 Importation of animals

3.5.1 Import risk analysis

The import risk analysis carried out by the DVS has the following steps:

- A selection of exporting countries is made based on sanitary information contained in the OIE's World Animal Health Information Database (WAHID).
- The OIE Terrestrial Animal Health Code (Terrestrial Code) is consulted for relevant diseases (qualitative assessment only).
- Sanitary conditions for import follow standards contained in the Terrestrial Code.

Contacts are, also, maintained with competent authorities of the exporting countries from which additional information are sometimes requested.

According to the OIE's report (January 2009) on the evaluation of the Mauritius national veterinary services, this analysis is incomplete and does not follow the OIE's recommended process. The DVS does not have trained personnel, and formal procedures, on import risk analysis. A lack of information (evaluation of VS, zoning, compartmentalisation, surveillance systems and epidemiological status in exporting countries) coupled with the aforesaid deficiencies prevent DVS from carrying a proper and complete import risk analysis. The OIE, also, highlighted that for the surveillance and control of animal diseases, the import risk analysis is not used. Measures taken are based following methodologies used in the past for similar cases.

3.5.2 Sanitary measures on import

Given that the import risk analysis carried out by DVS is only partial and that recommended OIE criteria and procedures are not followed, the OIE found that all sanitary conditions given on import permits do not always confer the equivalence required.

3.5.3 Importation of female slaughter stock.

The DVS allows the importation of female slaughter stocks – cattle, goats and sheep – from Australia and South Africa. The main reason for this, according to DVS, is that importers find it difficult to obtain their required quantity if male animals only are selected. Sometimes exporters, also, insist that a certain number of females should be purchased. Usually females that are exported to be slaughtered for their meat are those that are sterile, with fertility problems or have passed their reproductive years.

Certain conditions relevant for female animals imported from Australia only are stated on import permits. Female cattle should not be pregnant at the time of export and they should be segregated from males at the assembly depot and on board of ship. For goats and sheep, the permit provides that any kid born during quarantine (in Mauritius) will be euthanized. It has already been reported, for goats and sheep, that kids, born during the trip to Mauritius or

during the quarantine period, were observed at one private station (Appendix II refers). The DVS does not kill the newborns on animal welfare grounds.

It was explained that the young animals were allowed to be grown at the quarantine until they become physically mature enough to be sent to the slaughter house. At this stage, it is worth mentioning that important elements of a system that would allow to control these animals like identification marks (tagging) and records were found missing at the private goats and sheep quarantine. The rearing of these animals can be a costly business. In addition to the usual expenditures required to grow an animal (feed, watering, veterinary treatment and cleaning), over several months, one has to pay quarantine fees, also, to DVS¹⁷. They can, also, occupy important space at the quarantine. To avoid such costs, any owner will be tempted to dispose of these progenies.

Given that control over movements of quarantined animals is poor, the possibility that the young animals are sold or given to other farmers for fattening and, also, for breeding purposes exists. This entails the risk of the spread of any infection/disease transmitted from their parents to them, to the local herd. It has been argued that once the kids have passed the quarantine period, they may be sold/transferred safely to other farms for breeding ends. However, these animals were born from parents forming part of a slaughter stock consignment and as such should be treated as slaughter and not breeding animals.

¹⁷ Quarantine fees are payable for animals kept at private stations, also.

CHAPTER FOUR

CONCLUSIONS

4.1 Richelieu quarantine station

At the present time, the Richelieu station is of sufficient capacity to house animals of existing and prospective new importers. Capacity at private sites is large enough to receive all animals imported for slaughter or breeding. In the past few years, very few animals were lodged at Richelieu. Therefore, the station with room for 1,200 cattle heads was available for other importers. This capacity is not fully used.

In recent years, the Richelieu station had shoddy infrastructure that prompted importers to accommodate animals at their own facilities. Efforts are currently being made to improve conditions at the facility.

It is, also, not financially sustainable to operate the Richelieu station. The cost of running the quarantine facility is excessively higher than revenue collected. Fees have been revised since 2011, but are yet to be applied. Even the revised fees may not be sufficient to cover a reasonable proportion of operating expenditures there. Little effort is made by the DVS to cause a maximum of animals to be lodged at its station to recoup expenses.

4.2 Reliability of quarantines

The many shortcomings noted at both public and private sites suggest that quarantine stations are far from being reliable.

Quarantines are approved by, and operated under the supervision of, DVS. However, certain pre-requirements for a facility to earn approval of the DVS to operate as a quarantine have been lacking. Basic biosafety and biosecurity measures, so essential for the operation of a quarantine, were missing at practically all quarantine stations.

Furthermore, the constant monitoring and inspections of quarantines (public and private) that should have been exercised by the DVS, to see to it that criteria and recommended practices are strictly observed, have been lacking. At private sites the control of the DVS was centred principally on animal health matters. Health of personnel was not considered. Currently quarantine stations do not comply with the basic requirements as prescribed in the OIE code as there is no mandatory requirement to ensure compliance. Adequate quarantine programmes that embody requirements of OIE have not yet been developed. This would have facilitated the compliance to the code.

4.3 Control over movement of animals

Control over movement of animals into and out of quarantines is not well established. The tracking of animals from ports of entry to quarantine stations to the slaughter house or farms is not adequate. No reconciliation is done between the quantity and identity of animals disembarked at ports of entry and those sent to their final destination.

4.4 Importation of animals

Import risk analysis and sanitary measures on import are not properly followed by DVS.

The conditions set on import permits are not fully adhered to. Kids born of imported female slaughter stock are not euthanized, but allowed to be grown at the quarantine station. This is risky especially when their number, identity and movements are not controlled.

CHAPTER FIVE

RECOMMENDATIONS

In the light of the audit findings and conclusions, the following recommendations are formulated with a view to providing a reliable level of quarantine service and at a reasonable cost.

5.1 Richelieu quarantine station

Given that space at the facility is sparsely occupied and does not generate sufficient revenue to cover the high cost of operations, it will be wise for the Ministry to consider ceasing all quarantine activities thereat. Private sites that are approved by DVS should be used to provide quarantine services, but on the stringent condition that strict monitoring is exercised.

The cessation of quarantine activities at Richelieu would have the following benefits:

- Important cost savings for the Ministry as variables such as security services, repairs and maintenance, protective clothing and uniform allowance and utilities would be foregone. Salaries of personnel would still have to be borne when staff is redeployed elsewhere within the Agricultural Services.
- More time and resources (staff such as Veterinary Officers and Senior/Technical Assistants) for DVS to check quarantine procedures and activities at the private sites, and control over the movements of animals.
- No risk to rise in meat prices. The revision of quarantine fees mentioned in this report is meant to essentially better the financial condition of the Richelieu station. The application of the new fees will definitely push meat prices up for fees have to be paid by importers irrespective of where their animals are kept – at Richelieu or at their own private sites. When no quarantine service will be provided at Richelieu, increase in fees will become unnecessary.
- Quelling the irritations expressed by the neighbouring communities at Richelieu. No quarantining of animals thereat would imply no discomfort to the nearby inhabitants.
- Infrastructures at the station could be used for other projects. For instance, the facility which is fitting for livestock production could be rented to farmers/companies for milk and /or meat production. This would be in line with the objective of Government to boost up local livestock production and reduce costly imports. It has already been explained at section 3.1.1 (page 27) that annoyances to close inhabitants resulting from farming activities are minimal as compared from quarantine undertakings.

Both NAO and the Ministry agree that Richelieu quarantine has not been put to maximum use and the closure of Government quarantine facilities can be a cost effective measure. However, the ministry contends that closing of the Government quarantine facilities can leave far reaching implications which need to be assessed fully. Also, in case of a sudden outbreak of an epidemic, the availability of a Government-owned space is important. However, based on our risk assessment and followed by the recommendation provided above,

we are not convinced that an effective quarantine system does necessarily warrant government quarantine facilities to prevent any sudden outbreak of an epidemic.

5.2 Reliability of quarantines

- *DVS should regularly monitor sites that it has approved to be used as quarantines.*

As a regulator only, DVS should apply rigorous and continual check on quarantine procedures and activities at the private sites, and strict control over the movements of animals.

- *Conditions, recommended procedures and practices for the operation of a quarantine facility should be there, and applied, at all times.*
- *Appropriate quarantine programmes should be designed and used in line with procedures and activities defined by the OIE.*

The roles, responsibilities and guidelines (in the form of quarantine programmes) for the proper running of a quarantine could form part of an agreement to be entered between DVS and each owner of a private quarantine.

- *Necessary regulations should be prepared that provide for sanctions for non-compliance to the recommended procedures and measures.*
- *All quarantine stations should be regularly examined by DVS to assess their degree of compliance to OIE measures and necessary action taken to ensure full adherence to these measures.*

The above measures should enhance the quality and reliability of quarantine services.

5.3 Control over movement of animals

- *All animals entering the country need to be tracked until their final destination which is the central abattoir or breeding farms, after their sojourn at the quarantines.*
- *The DVS should negotiate with owners of private quarantine facilities for the posting of a TA from the division at these sites for the whole of quarantine periods. Adequate office facilities should be provided. To reduce familiarity threat, TAs need to be rotated among quarantine stations on a regular basis. DVS could carry out surprise checks on the quarantine activities and the movements of animals.*
- *Permits should be prepared and issued at the site from where animals are released. Permits should be carefully drawn; quantity, as well as identification numbers should be clearly stated.*

The posting of a TA from DVS at each private quarantine facility as recommended above will definitely help in this task and the maintenance of animals' movement books, for the private sites' animals.

- *The Ministry should ensure that DVS and MMA comply with established procedures:*
 - *Only animals accompanied with the relevant permits issued by DVS should be slaughtered by MMA.*
 - *Duplicates of cattle release and slaughter permits receipted at MMA should be returned, say, every week, to DVS. The MMA should certify that animals listed thereon have been slaughtered by it. The DVS should forward the documents to their respective quarantines to confirm entries already made for outgoing animals in quarantine records at the time permits were issued.*
- *Regular reconciliation need to be made by DVS, both in terms of quantity and identity, to ensure that all animals brought into the country for slaughter end up at MMA or at their respective farm(s), if they are breeding stocks.*

5.4 Importation of animals

Import risk analysis should be carried out as per the OIE recommended process and criteria. This will allow Mauritius to obtain the necessary sanitary equivalence while importing animals and, thereby, minimise the degree of disease risk.

Only male and non-pregnant female slaughter stocks should be allowed to be imported by the DVS.

Key components in a quarantine programme

Management Policies

Management should restrict access to the quarantine facility to authorise and essential personnel, who do not pose a communicable disease risk to animals; instruct personnel on the need to conduct all activities in a safe manner and promote personnel health activities.

Quarantine facility infrastructure design and equipment

The construction or location, and the operation of the quarantine facility should provide for strict segregation and isolation of quarantined animals from other animals and from personnel not essential to the operation of the quarantine.

This isolation may be achieved through the use of physical barriers, procedural access control systems and hazard warning signs at the entrance. There should be the complete physical separation of groups of quarantined animals from other groups of quarantined animals to prevent exposure to and the introduction of infectious agents from one group to another.

The quarantine station should be designed to allow for the secure holding of quarantined animals and to allow for the safe, easy and efficient cleaning and decontamination of the animal holding areas and the access areas for personnel during and after use. Procedures should be in place to prevent the cross-contamination of clothes and footwear worn outside the quarantine facility from potentially contaminated protective clothing worn inside the animal holding areas.

Animal holding area walls and floor should be water resistant to facilitate cleaning and disinfecting. Doors to animal rooms should open inward, and should always be kept closed when animals are present.

Adequate equipment and space should be available in the quarantine facility for the adequate decontamination and the proper disposal or processing and storing of all supplies and equipment used.

Personnel protection practices

These include:

- Not allowing eating, drinking, smoking and storing of food for human use in the quarantine facility;
- Wearing of (preferably disposable) protective clothing and devices;

- Provision and use of foot or shoe baths at the exits of the animal holding area and of each animal holding area. They should be frequently changed so as to remain fresh and free of organic matter;
- Provision of showering facilities. Intermittent and frequent hand washing while working in the quarantine facility;
- Encouraging quarantine staff developing signs of illness to seek medical attention.

Husbandry and animal care practices

These include:

- Separate cleaning tools and other animal care equipment for each animal holding area so as to minimise the risk of transmission of diseases between areas;
- Safe transportation of waste and other potentially contaminated materials leaving the quarantine area to a site of physical or chemical decontamination, or incineration;
- Disinfection of work surfaces after use or whenever soiled. Equipment not kept on the floor;
- Avoidance of injuries from animals during handling;
- Use of single use disposable syringes and needles, scalpel blades, and other sharp items;
- Prevention of injury to personnel or the spread of infectious materials between animals through the use of potentially contaminated needles, scalpels, or other sharp instruments, particularly during the disposal of these items;
- Avoidance of contamination of multiple-dose vials of materials or medications and their contents between uses;
- Removal of dead animals from their holding room and taken to a dedicated room in a sealed, impervious, leak proof container or bag;
- Notification of Veterinary Services by quarantine officials of any severe and/or unusual illnesses and deaths occurring in quarantined animals;
- Decontamination of the animal holding room after animals are removed from quarantine (whether or not there is a history of communicable disease presence in the room).

Observations on site visits to public and private quarantine stations

Quarantine facility infrastructure design and equipment

- At all the sites, no hazard warning sign was seen. This sign is important to protect the health of personnel and animals in the quarantine and, also, that of visitors. It should be placed at the entrance of any quarantine station and should state, among other things:
 - exposure to infectious disease may occur in the quarantine;
 - names and telephone numbers of contact persons responsible for the quarantine area;
 - all special requirements for entering the quarantine area.
- At all the sites, bath for vehicles and shoe baths for individuals were not available at the entrance. Shoes and vehicles' tyres can represent potential sources of contamination; they can be carriers of infections inside the quarantine area and, also, from the facility to other locations. Baths at the entrance would allow their disinfection both while entering and leaving the quarantine station.
- During the visit at the Richelieu quarantine, it could be observed that animals were being fed by their owners who, also, own another private quarantine for cattle, from a lorry driving near the pens. The Richelieu station does not provide for feed for animals kept there. Feed are brought by the owners of animals. Animals are fed by the quarantine personnel and, at times, by the owners themselves. The absence of baths implies the possibility of spreading of disease between quarantine sites.
- At the Richelieu site, there was no effective rodent and pigeon control programme. Large numbers of pigeons, attracted by feed placed in troughs and falling on the grounds, were observed within the quarantine. A similar scene could be viewed at the private quarantine for cattle. Stray dogs were, also, seen on the premises of the Richelieu facility. These animals can act as vectors for infections and diseases and so may pose a health risk to quarantined animals (and, also, to personnel). An islandwide campaign by the DVS and the MSPCA against stray dogs was launched in mid June 2011.
- At the poultry quarantine station, doors to animal holding rooms were found to open outward whereas at the (private) goats and sheep quarantine they opened both ways. Doors to animal rooms in quarantine should open inward so that animals cannot leave their pens and move to other rooms when the doors are not locked.
- Goats at the private goats and sheep quarantine were found to be allowed to wander on a space adjacent and *outside* the station. The fact that this space was denuded of its vegetation indicated that animals had been allowed out of the station regularly, to graze on the land. No animals can leave a station as long they are quarantined.

Kids were, also, observed at this quarantine. It was explained that these were born during the trip to Mauritius or after disembarkation, at the quarantine.

- Not all animals at Richelieu were tagged. It was explained that animals which are allowed to freely mix together in their respective pens may lose their tags. No tags were seen on animals at the private quarantines (cattle, goats and sheep). Tagging is important for identification and control over their movements.
- Mess room for personnel was situated in the same compound of the two official quarantine stations, but, at respected distances from the animal holding areas. Normally, eating, drinking, smoking and storing of food for human use is not permitted in a quarantine facility. There is a risk that food may get contaminated leading to personnel health problem.
- Except for the poultry quarantine, at all other sites, there was no foot/shoe baths provided at the exits of the animal holding areas. Baths would have prevented the spread of any infection between areas.
- Showering facilities for personnel at Government quarantines were available at Richelieu only. Such facilities are planned for the near future at the Curepipe poultry quarantine. Showering after contact with animals, their body waste or secretions or at a minimum before leaving a quarantine facility is highly recommended.
- Drain traps of floor drains were not filled with water or a suitable disinfectant to prevent any disease causing agent travelling from disposal pits to the animal holding area.

Personnel protection practices

- Except for the private goats and sheep quarantine, protective clothing are provided to personnel at all other sites (during the visit, poultry quarantine personnel were not seen wearing uniform, however). Masks are not included except at the poultry quarantine facility. The wearing of masks by personnel becomes essential when animals suffer from disease/infection transmissible by air.
- Of the two Government quarantines, regular medical check-ups for personnel working in the poultry quarantine are done. Health status of personnel at Richelieu was not followed.