SOMALILAND

PESTE DES PETITS RUMINANTS

CONTINGENCY PLAN

June 2009

Acronyms and Abbreviations

AGID	Agar gel immuno-diffusion
AU/IBAR	African Union/Inter-African Bureau of Animal Resources
CDC	Centres for Disease Control and Prevention
CP	Contingency Plan
CVFO	Chief Veterinary Field Officer
CVHO	Chief Veterinary Hygiene Officer
CVIO	Chief Veterinary Investigation Officer
CVL	Central Veterinary Laboratories
DVO	District Veterinary Officer
DAH	Director of Animal Health
EDTA	Ethylene-diamine-tetra-acetic acid
ELISA	Enzyme linked immuno-sorbent assay
FAO	Food and Agricultural Organization of United Nations
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GPS	Global Positioning System
HQ	Headquarters
IFAT	Indirect fluorescence antibody test
KARI	Kenya Agricultural Research Institute
LHA	Livestock Health Assistant
LO	Livestock Officer
MOL	Ministry of Livestock (Somaliland)
NGO	Non-Governmental Organization
OIE	Office Internationale des Epizooties/World Organization for Animal Health
PCR	Polymerase chain reaction
PDS	Participatory disease surveillance
PPR	Peste des Petit Ruminants
RAHC	Regional Animal Health Centre
RNA	Ribonucleic Acid
RRT	Rapid Response Team
SAHSP	Somali Animal Health Services Project
UNDP	United Nations Development Programme
USA	United States of America
VE	Veterinary Epidemiology

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1.0 Nature of the Disease

1.1. Aetiology

A Peste des petits ruminant (PPR), also known as goat plague, is caused by a paramyxovirus of the Morbillivirus genus. It was first described in 1942 in Cote d'Ivoire, West Africa (Dhar, 2002) and is closely related to PPR virus, canine distemper virus, and human measles virus. The virus has the following characteristics (OIE 2002):

- May survive at 600C for 60 minutes
- Stable from pH 4.0 to 10.0
- Killed by alcohol, ether, and detergents as well as by most disinfectants (e.g., phenol, sodium hydroxide)
- Long survival time in chilled and frozen tissues

1.2. Hosts

PPR is primarily a disease of sheep and goats. There have been several reports of PPR occurring in other species, particularly in captive wild ungulates from three families: Gazellinae (dorcas gazelle), Caprinae (Nubian ibex and laristan sheep) and Hippotraginae (gemsbok).
The American white-tailed deer (Odocoileus virginianus) has been infected experimentally (Saliki, 2002). Cattle, buffaloes, camels, and pigs are also susceptible to infection but do not exhibit clinical signs and are unable to transmit the disease to other animals (EMPRES, 1999).
PPR is not infectious to humans.

1.3. Epidemiology

1.3.2. Transmission

For PPR to spread, close contact between infected and susceptible animals is needed.
Inhalation of aerosols produced by sneezing and coughing of infected animals is the most common route of transmission. Outbreaks are more frequent during the rainy season or the dry, cold season (OIE 2002). The modes of transmission of the disease include: Direct contact with ocular, nasal, or oral secretions: Direct contact with faeces: Fomites such as bedding, water, and feed troughs

No carrier state is known to exist.

1.3.2. Occurrence

PPR has been found in parts of sub-Saharan Africa for several decades and in the Middle East and southern Asia since 1993. It has been reported in Sudan, Kenya, Uganda, Ethiopia and lately Tanzania. It was first reported in southern India in 1987. The Arabian Peninsula, the Middle East, and the rest of the Indian Subcontinent reported PPR incidents between 1993 and 1995. The disease has remained endemic in these areas. It has also occurred in Turkey (1996), Iraq (2000), Iran (1994), Bangladesh (1993 and 2000), and Nepal (1995) (Dhar 2002).

In India, PPR was first confirmed in March 1987 in sheep. It is now believed that many outbreaks in India previously attributed to RP were actually PPR. The virus was isolated four more times by 1992, and major epidemics occurred in the state of Andhra Pradesh in 1994-1995 and 1997-1998 (Taylor 2002). In Africa and Asia, the disease is particularly devastating, as these countries often use small ruminants as components of agricultural food production (EMPRES 1999).

1.4. PPR as a Biological Weapon

PPR virus is considered a potential biological weapon because its morbidity and mortality can be as high as 100% and 90%, respectively. When associated with other diseases such as capripox, mortality can be 100% (Dhar 2002). Also the aerosol transmission would enable the disease to spread rapidly in large groups of animals.

1.5. Clinical Features

Susceptibility to infection rises with age; however, the disease is rapidly fatal in the young animals (Ozkul 2002). The clinical signs imitate those of PPR, but changes can occur faster. Specific clinical signs are outlined in the table below:

Clinical Features of Petit des Pestis Ruminants	
Feature/Disease Form	**Characteristics**
Incubation period	2-10 days, most commonly 4-5
Acute	Most common form: Sudden high fever (400-410C), remaining high for 5-8 days; will return to normal before recovery or drop below normal before death. Serous nasal discharge, becoming mucopurulent; can crust over and occlude nostrils. Purulent ocular discharge with congested conjunctiva; can encrust, cementing eyelids together. Bronchopneumonia Necrosis and ulceration of mucous membrane and inflammation of gastrointestinal tract leading to severe, non-hemorrhagic diarrhoea, Respiratory distress, including dyspnoea and sneezing in an attempt to clear nose, Excessive salivation but not to point of drooling Anorexia Severe dehydration and emaciation followed by hypothermia Death usually occurs after 5-10 days Abortion Mortality rate can reach 100%. Secondary infections may be activated and complicate clinical signs
Peracute	Frequent in goats
Subacute and chronic	Pneumonia Develops over 10-15 days Inconsistent symptoms
Adapted from DEFRA, Dhar 2002, EMPRES 1999, Saliki 1998, OIE 2002R, Ozkul 2000	

The prognosis of acute PPR is usually poor, especially when lesions do not resolve within 2 to 3 days or when extensive necrosis and bacterial infection give the animal's breath an unpleasant, fetid odour. Young animals (4 to 8 months) often have more severe disease. Also, poor nutrition, stress of movement, and concurrent parasitic and bacterial infections worsen clinical signs (Saliki 1998).

1.6. Necropsy Lesions

In addition to the signs mentioned above, characteristic necropsy lesions often occur. These lesions are usually seen in the digestive and respiratory systems, but can be seen in other systems as well.

Necropsy Features of Peste des Petits Ruminants	
Digestive system	Inflammatory and necrotic lesions in mouth and gastrointestinal tract (DEFRA 2005) Erosive stomatitis in inside of lower lip and adjacent gum Lesions on hard palate, pharynx, and upper third of oesophagus in severe cases. Rumen, reticulum, and omasum rarely have lesions

	Erosions on pillars of rumen. Abomasum often oozes blood. Small intestine lesions usually moderate Extensive necrosis of Payers patches, resulting in severe ulceration [Saliki,1998]) Large intestine features congestion around iliocecal valve, at cecocolic junction, and in rectum (DEFRA 2005) "Zebra stripes" (discontinuous streaks of congestion) in posterior part of colon and rectum and on crests of mucosal folds
Respiratory system	Small erosions and petechiae visible on nasal mucosa, turbinates, larynx, and trachea pleuritis, resulting in hydrothorax
Other systems	Slightly enlarged and congested spleen enlarged, congested, and edematous lymph nodes throughout body erosive vulvovaginitis may exist
Adapted from Saliki 1998.	

1.7. Differential Diagnosis

In addition to PPR, other conditions that should be considered in differential diagnoses include: Pasteurellosis, Contagious caprine pleuropneumonia, Bluetongue, Heartwater, Contagious ecthyma (contagious pustular dermatitis), Foot-and-mouth disease, Nairobi sheep disease, Coccidiosis, Gastrointestinal helminth infestations, Plant or mineral poisoning.

1.8. Laboratory Diagnosis

The following samples should be submitted for evaluation, shipped fresh (not frozen) on ice within 12 hours after collection.

- Blood in EDTA anticoagulant
- Clotted blood or serum
- Mesenteric lymph nodes
- Spleen
- Lung
- Tonsils
- Sections of the ileum and large intestine
- Swabs of serous nasal and lachrymal discharges

The above samples should be collected in the acute phase of the disease, when clinical signs are readily apparent. Ideally, samples should be collected from several animals in an outbreak. Epidemiologic and clinical details should be provided with the samples, and each sample bottle should be marked carefully with an indelible pen. Details of each sample's origin should be recorded for submission to the laboratory.

The following tests may be used to detect antigens (OIE, 2000):

- Immunocapture enzyme-linked immunosorbent assay (ELISA)
- Counterimmunoelectrophoresis (CIEP): Most rapid test for detecting viral antigen
- Agar gel immunodiffusion (AGID): Very simple and inexpensive and gives results within 1 day, but not sensitive to mild forms of PPR
- Polymerase chain reaction (PCR)

- Culture and isolation in lamb kidney or African green monkey cell tissue cultures

Routine serological tests include (OIE, 2000): Competitive ELISA (Sensitivity 99.4%, Specificity 94.5%), Virus neutralization test.

Other serologic tests have been described, but not widely adopted:

- CIEP
- AGID
- Precipitinogen inhibition test
- Indirect fluorescent antibody test

1.9. Treatment

There is no treatment for PPR. However, mortality rates may be decreased by the use of drugs that control the bacterial and parasitic complications. Specifically, oxytetracycline and chlortetracycline are recommended to prevent secondary pulmonary infections (OIE, 2000).

1.10. Prevention

In the past, the PPR vaccine has been used. However, this practice is being phased out to avoid confusion during retrospective serologic studies. A homologous PPR vaccine is now available and gives strong immunity. There are also genetically engineered recombinant vaccines undergoing limited field trials (OIE 2002).

1.11. Outbreak Control

Methods applied for PPR eradication may be appropriate for PPR. These include the following (Saliki 1998): Quarantine, Slaughter, Proper disposal of carcasses and contact Fomites, Decontamination of facilities and equipment and restrictions on importation of sheep and goats from infected areas

1.12. Public Health Issues

PPR does not cause infection in humans; therefore, there are no public health issues to be considered.

2.0 Geographical location of Somaliland

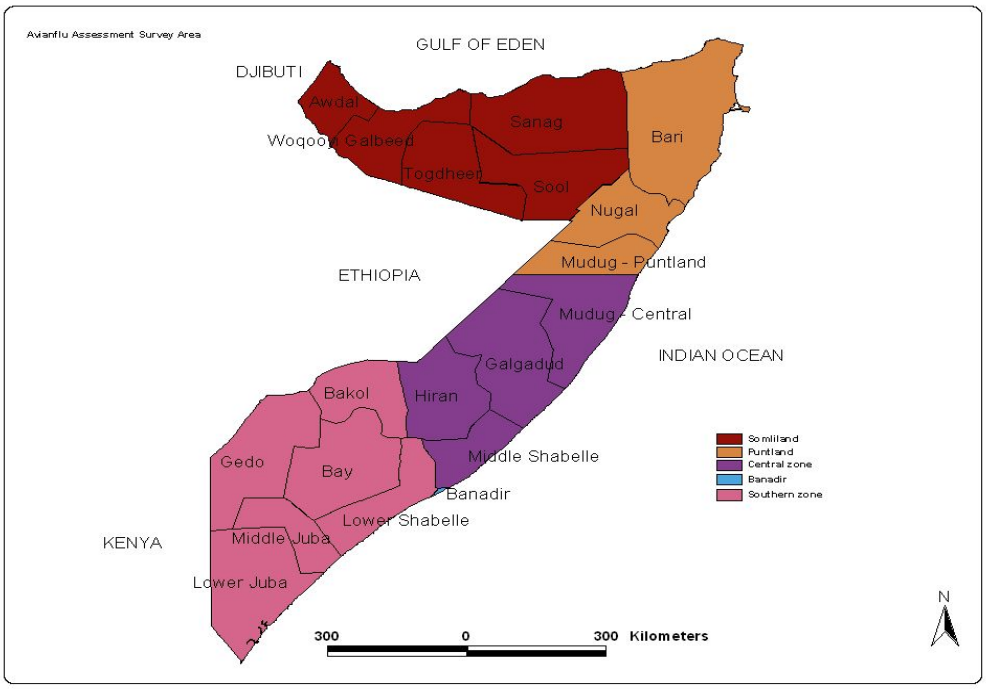


Figure 3: Map of Somalia showing position of Somaliland

3.0 Livestock Sector in Somaliland

3.1 Socio-economic importance

Livestock production is the mainstay for the people of Somaliland employing over 70% of the population. It contributes 60% of the GNP and about 85% of foreign export earnings. It is the source of livelihood for about 250.000 pastoral, agro pastoral and peri-urban families. Livestock production contributes to government revenues and provides employment to a wide range of veterinary professionals and other service providers.

3.2 Production Systems

The livestock production systems practiced in Somaliland depends upon the region, availability of labour, herd sizes and types of livestock kept. The two main production systems are nomadic pastoralism and agro-pastoralism. Other systems practiced are settled mixed farming and urban farming.

3.2.1 Nomadic pastoralism

Nomadic pastoralism is the system practiced by most of the rural population and involves the movement of people with their animals in search of pasture and water. The movement of these Pastoralists often organize and follow a regular pattern in which each group has their traditional grazing area, watering points and temporary camps. In some parts of the country pastoralists maintain agreements with farmers allowing them access to crop residues and fallow grazing land. Nomadic pastoralism is mainly confined to the drier areas of the coastal plains and mountain valleys and the plateaux which covers most of the country. In some places the pastoralists take advantage of heavy rains and floods to plant crops in cleared areas for the production of grains. These are then used as forage once the crops have been harvested.

The types of animals kept by nomadic families depend on several factors including the area inhabited and the labour available to them. Rearing of cattle is predominant in the western parts of

the country that receive relatively more rainfall, while goats and camels are bred mainly in the drier central and northern parts of the country. Most pastoralists prefer to keep mixed species of animals; a practice which has benefits which include the ability to exploit different range lands, produce different products and have different survival and recovery rates during droughts.

When the need arises, pastoralists practice a split herding system in which camels and sometimes goats are herded separately away from the main camps where cattle, some milking camels and sheep are kept. There is also a distinct division of lab our among family members in which young men herd camels while cattle and small ruminants are taken care of by women children and the elderly.

3.2.2 Agro-pastoralism

Agro-pastoralism is a production system, which is characterized by the maintenance by a family of a permanent home base in a farming area. There is medium to high integration with crops and even very high integration in the flood plains where fodder can be grown. Some fodder is also grown under irrigation in the river valleys and is based on flooding supplemented with mechanical pumps in some river valleys. There is some small scale irrigation in peri-urban areas based on groundwater extraction, as there is in some coastal areas and in some dry river beds. The sizes of herds kept by the farmers vary from large herds (60 to 100 animals) to only a few animals permanently residing on the farm.

This production system was initially practiced in the southern and western farming regions, but it is now becoming more common even in the drier regions of the country as the pasture-land gradually deteriorates. In this system split herding based on division of labor is also a common practice, as part of the family moves with most of the herd, while the other part is left in the farm land to cultivate crops; few milking animals are also left behind as well.

3.2.3 Settled mixed farming

In settled mixed farming systems, there is medium to high integration with crops, particularly in the flood plain areas where fodder can be grown. Some land in these areas is enclosed (illegally in the traditional context) in order to grow fodder.

3.2.4 Urban stall feeding

The urban stall-feeding system is practiced around the main towns. The livestock owners buy fodder and crop by-products as feed for their livestock.

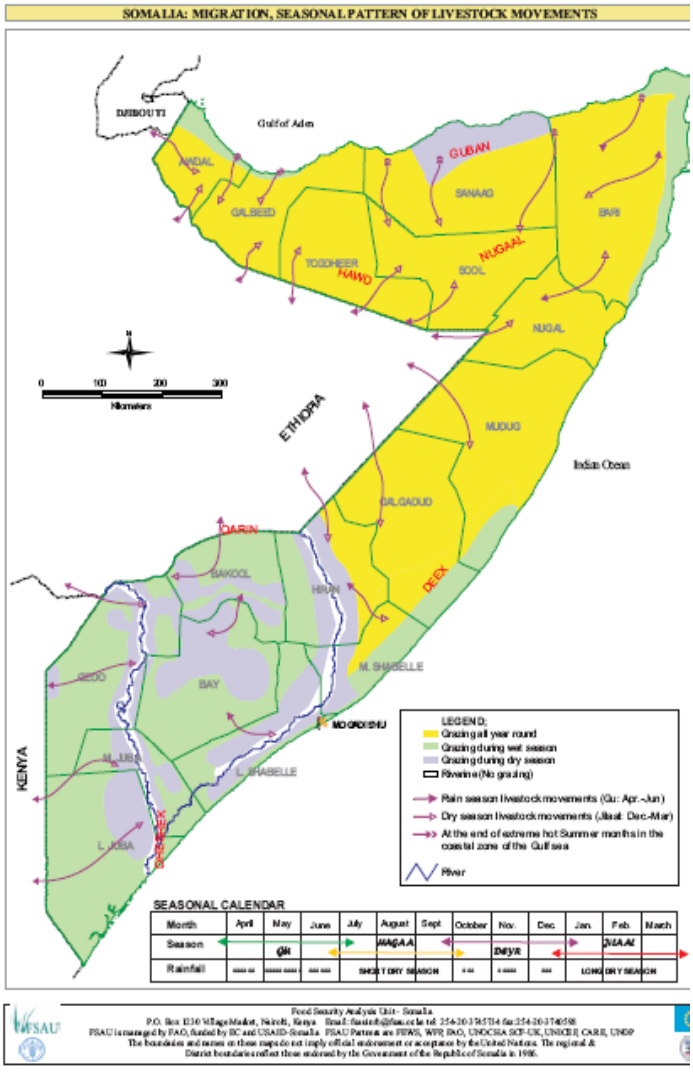
Herd and flock sizes vary among the different production systems. They are large to very large in the nomadic pastoral system, medium in the mainly transhumant agro pastoral system and small to very small in the settled mixed crop/livestock farming and urban stall-feeding situations. Flock sizes are smaller for sheep than for goats in the central areas and average 31 head in the range 6-53 head. Flock structures are related mostly to meat production and comprise 76.1% females (of which those of breeding age are 55.9% of the total flock) and 23.9% males (of which rams of breeding age are 9.8% mature castrates 9.7% and young males either entire or castrated 4.5%.

3.2.4 Livestock Movement Patterns

Livestock movement occurs mainly in search of grazing pastures and water and also for trade. From April to October the animals graze on both sides of the border with Ethiopia on the Highland Plateau. They move freely across the border since the communities living in this region are the same. During the dry season (November to March) the pastoralists move the animals northwards to the coastal areas. They then move inland at the start of the rains in April.

Movement from the eastern part of the country to the western part is rare.

Figure 1: Map showing movement patterns of livestock in the greater Somalia



Courtesy: SAHSP Headquarters

3.4 Livestock Diseases

The most common diseases of livestock which have been confirmed in the past include anthrax, Babesiosis, Brucellosis, Blackquarter, Foot and Mouth disease, Heartwater, trypanosomosis and Rift Valley Fever. Rinderpest was a major problem in the past but control strategies have been successful to a point whereby the country is now able to apply for certification of freedom from disease.

Outbreaks of CBPP occur sporadically in neighbouring Southern Somalia especially in the middle and lower Shebelle regions where the disease is considered endemic. Epidemic outbreaks of CCPP with mortality of 25-60% are of particular importance in the Somaliland. In addition to death in the acute form of the disease the chronic form causes debility and emaciation of infected animals. RVF is at the forefront of many problems that the livestock export trade suffered after a suspected presence in 1998.. RVF is otherwise enzootic throughout Sub-Saharan Africa and Madagascar and reached the Arabian Peninsula in 2000.

3.5 Livestock Markets and Marketing Systems

Somaliland exports sheep, goats, cattle and camels to the Arabian Peninsula. Saudi Arabia banned Somali livestock in 2000 and this ban exists to date. However Somali traders have developed new market channels for both live animals and chilled carcases in Yemen, Oman and the UAE albeit at lower prices. Barbera is the main export port and is equipped with personnel who carry out inspection and certification of livestock before export.

4.0. Risk Analysis of PPR

4.1. Risk Assessment

The epidemiological situation of PPR is not well understood and more data needs to be collected to predict the disease occurrence and the possibility of the infection re-establishing itself in Somali. Risk based Surveillance system should be put in place would be able to establish disease spread and patterns in the country. Risk analysis would be used to improve on the epidemiological knowledge in

reference to the entry, transmission and the consequences of the disease.

Desk top risk analysis can lead to the qualitative descriptions of risks in different biological systems in different parts of the country. This prior ranking of identified risks provides a solid platform for contingency planning.

4.2. Risk factors that influence the outbreaks of PPR into Somaliland

4.2.1. Trade (legal/illegal/imports)

Trade is a potential risk factor that facilitates the occurrence of outbreaks of PPR. The virus can be disseminated from areas where disease is active through movement of sick animals. To mitigate the potential risks, emphasis should be put on enforcement of appropriate control measures at the ports of entry and within the country. This would ensure the disease is contained at its index case site. Lack of movement control and porous borders increase the chances of disease outbreaks.

4.2.2. Mechanical transmission

As is the case with other new and emerging diseases there is a significant likelihood of mechanical transfer after visiting areas where outbreaks have occurred. To mitigate this it would be necessary for the country to have regular updates of the disease situation in other parts of the world and sharing information with neighbouring countries.

4.2.3. Wild ruminants' role

The role of both migratory and resident wild ruminants in the transmission of the disease to domestic ruminants in Somaliland is still not very clear but there is a chance of outbreaks can occur through this mode. Somaliland has some wild ruminant especially to the South and West and more epidemiological work is necessary to rule out the possibility of entry of the disease through this route.

There is no institution providing wild life expertise and there is therefore a need to establish one so that joint surveillance and outbreak investigation missions in wild ruminants are carried out.

4.2.4. Animal demographics and trade

This is represented by the huge indigenous and commercial sheep and goat production systems that are highly susceptible to the virus and widely distributed in the country. These areas trade among each other with the highest number of animals moving from one area to another in search of water and pastures according to the prevailing seasons. To mitigate this it would be necessary for community policing to be undertaken where sick flocks are quarantined away from the clean flocks. Enhanced movement controls through the establishment of road blocks would serve to ensure that animals that are being moved for trade purposes are compliant with regulations.

The contact of animals from different clans and families especially during the watering exercise and

as they migrate in search of pastures increases the consequence risk of rate of disease spread if it were to occur. The veterinary department has been working through the CBAHWs to detect any changes in the health of the sheep and goats in these areas. The capacity to mitigate these risks will be strengthened through continuous training, enhancement of the district disease control committees and deployment of more veterinary staff to these areas.

4.2.5. Geographical and environmental factors

Harsh climatic factors with high temperatures and low humidity which is characteristic of most of the country act to reduce the virus survival for long periods in most parts of the country and hence reduce the risk of infection.

The risk of contamination is medium especially during the transportation of live sheep and goats from one part of the country to the other.

4.2.6 Veterinary Services

The existing surveillance system which is meant to protect the country from incursion by the disease during importation of high risk animals needs strengthening. The border entry points are poorly manned. Moreover, the borders with neighbouring countries are long and highly porous with the nomadic communities living alongside them crossing them regularly in search of pasture and water for their animals. This is likely to increase the probability of entry of infected animals and other animal products.

4.2.7 Risk factors for the transmission of PPR in Somalia

The following are factors that could potentially contribute to the spread of infection following introduction into the country:

- Unsatisfactory levels of bio-security along the sheep/goats value chain (production to consumption).
- Production system.
- Complex marketing chains (involves exchange of sheep/goats from the farms through middle men and finally sold at the live markets).
- Transport mode
- Quality of inspection of sheep/goat processing (monitoring and surveillance).
- Interactions between domestic and wild ruminants
- Cultural factors (Livestock rustling, dowry payment in form of live sheep/goat)

4.2.8. Risk factors and consequences

Small stock population census in Somaliland has not been done for many years.

Livestock management systems in Somaliland are nomadic/transhumance pastoralism (80 %), agro-

pastoralism (10%) and mixed farming under sedentary conditions (10%).
The livestock sector is a major contributor to the overall economy of Somaliland. With its vast rangeland grazing area and large animal population, the sector contributes approximately 40% of the country's GDP and provides over 70% of the country's foreign exchange earnings in the normal years. The ecological diversity dictates the distribution of livestock in the country. Camels and small ruminants (sheep and goats) are raised in all ecological zones of the country and constitute more than 98% of the livestock population, while cattle are usually considered as less dominate specie (<1%).

Where it has occurred, PPR has been associated with severe socio-economic consequences that go beyond the immediate effects on producers. The most direct impacts of PPR are the livestock production and productivity losses which include mortality and morbidity. Besides causing livestock, the disease has major negative implications for trade (local, regional and international) in livestock and livestock products.

PPR is one of the diseases that affect trade where non-affected countries use technical regulations under animal health and sanitary control to stop imports from affected countries. This non -tariff barrier, does hinder the abilities of infected countries to take advantage of the more liberal trade environment in the regional and international trade. In addition to these are increased costs of controlling the disease at the household and national levels. At the national level affected countries divert resources from other development projects in efforts to contain the outbreaks. In summary the disease impacts on livestock production, market access, income, jobs and foreign exchange for all stakeholders in the value chain.

A trade ban imposed on the Horn of Africa due to RVF outbreaks was under review and the countries including Somaliland anticipate resumption of trade in livestock and their products to Gulf States. However, following the 2006/2007 outbreak, there are fears that the bans could be tightened.

Surveillance systems in Somaliland are weak due to several factors which include inadequate resources particularly staff, funds and transport. Poor roads and terrain make large areas inaccessible. The main clinical signs which lead to early recognition of the disease are mortalities especially in the young. The mortality level is so low initially, particularly among the indigenous breeds. Therefore, the disease may not be quickly recognized in many parts of the country. This would exacerbate the consequences for PPR.

Considering that the whole country is at high risk of re-emergence of the disease, putting in place an effective control program is difficult and expensive. However, targeted control strategies need to be considered. Vaccinations, quarantines and controlled livestock movement are the major disease control methods.

4.2.9. Risk Management

New outbreaks of PPR can be prevented by utilizing enhanced surveillance systems and early detection. When the reports of unusual mortalities in sheep/goat are received, relevant activities to manage the disease should be instituted. The action plan to mitigate the disease at various phases is discussed elsewhere in this CP.

Early detection of the disease is crucial to enable immediate response. This would ensure that the disease is efficiently controlled and minimize losses in livestock. Surveillance will be conducted in areas which have had infection using Participatory Disease Search (PDS) methods targeting watering points and livestock markets.

The areas at greatest risk in Somaliland are watering points and markets.

5.0 Veterinary Services in Somaliland

5.1 Public Sector

Veterinary services in Somaliland are provided by the Department of Animal Health Services within the Ministry of Livestock. The country is divided into 6 administrative regions, each headed by a Regional Veterinary Coordinator. These are further divided into districts, which are headed by District Veterinary Officers.

Soon after the collapse of the military regime in Somalia, Somaliland separated from the rest of Somalia based on the original colonial boundaries and restored a democratic mode of governance on 18th May 1991. This was as a result of a series of negotiations between representatives of different clans who held a congress of elders from 27th April - 18th May 1991 in Burao, one of the towns of Somaliland. Constitutionally, Somaliland has a multi-party system of legislature with an elected local council and an elected President. Since 1991, the country has held 5 democratic elections, and has already established monetary as well as national policies to guide its operations.

Table 1: Technical Personnel in **the Department of Animal Health Services**

Station	**Veterinarians**	**Vet. Assistants**	**Technicians**
Hargeisa	13	15	**5**
Sanag	1	7	**2**
Togdheer	3	9	**2**
Awdal	2	4	**--**
Sahil	2	5	**5**
Sool	2	3	**--**
Total	**23**	**43**	**14**

Source: Government of Somaliland

5.2 Private Sector

Somaliland has a vibrant private sector, which has grown as a result of the upheavals that the country has experienced since 1969 when the first government was ousted. During this period the national development continued to deteriorate and, together with occurrence of many civil conflicts, this led to the collapse of the military Government in early 1991, followed by destruction of all vital infrastructures.

5.3 Professional Livestock Associations
The private sector has continued to operate under two main professional groups or associations, which are:

- Somaliland National Veterinary Association (SolNAVA); it has a membership of 15 veterinarians, 20 veterinary assistants and 4 Technicians:
- United Livestock Professional Association (ULPA); it has a membership of 10 veterinarians, 51 veterinary assistants and 2 Technicians

Most of their members are found around Hargeissa. Some, mainly the veterinary assistants are based in the districts; they have strong linkages with CAHWs and livestock owners. The existing professionals (degrees and diploma holders) were trained more than 16 years ago and have not been exposed to current trends and new technologies in livestock development, thus they require refresher and advanced training in their respective disciplines. On the other hand, Community-based Animal Health Workers (CBAHWs) have had limited level of training for long-term sustainability of their services.

5.4 Community Based Animal Health Service Providers
There are 295 Community Animal Health Workers and Nomadic Health Auxiliaries trained by different NGOs/International organizations and are registered and operating in the country.

5.5 Non-Governmental Organizations
The following NGOs are operating in the country:
1. Terra Nuova Consortium
2. COOPI
3. VSF-Swiss
4. VSF-Germany
5. FAO
6. UNDP
7. OCHA

They have 13 veterinarians and 2 veterinary assistants working under them.

5.6 Drug Outlets and Drug Distributors
Drugs and vaccines are usually imported by private companies in conjunction with veterinarians. They have stores from which they distribute drugs to veterinarians who own pharmacies. Majority of the drugs and vaccines dispensed target the large stock with minimal transaction involving the poultry sector. At present, the Department of Animal Health does not regulate this enterprise.

6.0 Legal Framework
The Department of Animal Health Services is charged with overseeing all the animal health issues in the country. Due to the instability that the country underwent in the past years, there previously have been no effective regulations in place to support the department's activities. The following policy and legal documents have now been approved by Parliament and provide a legal framework under which the department operates:

- The Veterinary Code
- Livestock Policy Document
- Master Plan Document for Ministry of Livestock
- Human Resources Assessment Report

7.0 Detection of an Incursion of PPR

In order to be able to detect new cases of PPR in the country, the following will be implemented:

- Disease reporting from the level of the livestock owner to the animal health service provider will be strengthened. good farmer and public awareness programmes for PPR and other high-threat epidemic livestock diseases will be carried out to improve the veterinary-farmer interface;
- training of field veterinary officers, veterinary auxiliary staff, local authorities and sheep/goat owners in the clinical and gross pathological recognition of PPR and other serious epidemic livestock diseases will be carried out; the training will include collection and transportation of diagnostic specimens; while stressing on the need for prompt action;
- sustained active disease surveillance, to supplement passive monitoring, based on close coordination between cattle owners, field, laboratory and epidemiology veterinary services, and use of techniques such as participatory questionnaires, serological surveys and abattoir monitoring to supplement field searching for clinical disease;
- Participatory epidemiology techniques have been used successfully in the eradication of PPR disease in the three countries of Somalia, Ethiopia and Kenya. These methods will be used to assess the relative incidences of diseases including PPR within the community. At the same time it is expected that they will provide useful information on the importance of these diseases to the owners in terms of lost production and real wealth in the absence of validated numerical data. These techniques are able to provide comparative impact assessments and therefore will be standardized for valid comparisons with other populations and results could always be checked by conventional methods. Unlike conventional epidemiology that is commodity based and thus is an outsider's view, participatory epidemiology provides us with an insider's view that includes private and sensitive information from livestock owners not accessible otherwise.
- Emergency disease reporting mechanisms will be strengthened to speed up the reporting by the livestock owners to the appropriate animal health service providers and to regional and national veterinary headquarters as appropriate;
- enhancement of laboratory diagnostic capabilities for PPR at Hargeissa and Berbera; Mobile field testing units will be set up within regional and national veterinary laboratories;
- Strong linkages between national laboratories and regional laboratories e.g. KARI Muguga, CVL Kabete and other world reference laboratories will be developed.
- The national epidemiological capabilities will be strengthened to support emergency preparedness and disease management strategies; and

7.1 Case definition of PPR

A herd having several heads of Sheep/goats showing some or all of the following signs should be treated as highly suspicious for PPR: unusual mortalities in goats and sheep accompanied by fever, ocular and nasal discharges, oral erosions and diarrhoea

The presence of a sufficient number of concurrent symptoms will lead to establishment of the suspicion and subsequent sampling and use of the Immunocapture enzyme-linked immunosorbent assay (ELISA)

The following sequence of activities will be followed in carrying out surveillance of a possible PPR outbreak:

- Suspicion
- Confirmation of a suspicion
- Pre-diagnosis

- Confirmed diagnosis

Confirmation of suspicion will be done on clinical diagnosis using the case definition. To confirm new outbreaks isolation and identification of the infectious agent must be performed. None of the serological tests on its own is sufficient as a single diagnostic test but better results can be obtained if serum samples from several animals are collected and tested with the Immunocapture enzyme-linked immunosorbent assay (ELISA

7.2 Specific surveillance procedures for PPR

The Department of Animal Health Services and key NGOs operating in Somaliland have been developing the capacity to carry out active surveillance against priority diseases such as PPR, RVF and PPR.

7.2.1 Market monitoring

Markets monitoring is a cheap and highly effective method of surveillance for PPR. The coverage that can be provided depends on the number of Sheep/goat markets in the country. Market inspectors will be trained in clinical signs and making reports to the DVO. They will be provided with forms on which they may make reports to the DVO.

Key Indicators of PPR

- Emaciation
- Stomatitis
- Enteritis accompanied with diarrhoea
- Reports of unusual mortalities in Kids

Diagnostic samples will be collected from suspect animals and CBAHWs and market inspectors will be trained in how to do this. They will also be provided with collection kits. Trace back will be carried out whenever suspect cases are encountered to identify the origins of the suspect animals. Once the origins are identified herds at these points will be sampled for further laboratory tests.

7.2.2 Clinical surveillance and PDS

Both active and passive clinical surveillance are also valuable for the early detection of PPR. Passive clinical surveillance will be encouraged through a comprehensive national programmes to the extent that everyone who comes into contact with Sheep/goat from field veterinarians, to animal health assistants, farmers, traders and down to animal attendants will be encouraged to look out for the key clinical signs of PPR and to report any suspect cases
Simple pictorial booklets on PPR, in appropriate languages, should be widely distributed.

Key signs to look out for in clinical surveillance for PPR

- Unusual mortalities
- discharges from the nose and nostrils
- Diarrhoea and enteritis
- debility, weakness and loss of weight

Surveillance will follow OIE surveillance standards for PPR.

7.3 Appropriate samples for diagnosis of PPR

The samples should be packaged in accordance with the guidelines for packaging infectious

materials and submitted to the international reference laboratory of choice using the fastest means available. Aliquots will be stored at the existing laboratories situated at Hargeissa and Barbera.

8.0 National policy and rationale

The national policy is to control new outbreaks of PPR in the country and restore disease free status. The strategy for dealing with any outbreak of PPR disease in the Somali is quarantine and emergency vaccination.

8.1 Strategies for PPR control and elimination
PPR is an OIE List A disease that has the potential for rapid spread within and between herds, with serious production losses which have a direct impact on food security and trade in livestock and their products. The strategy of elimination of an outbreak by quarantine and emergency vaccination will be used.
The following actions will be in the event of an outbreak:

8.2 Definition of zones

Infected zone
This will be a clearly defined area, containing all the infected sheep and goats herds, premises, villages, or settlements where clinical disease has been detected or where a high risk of contamination is known to have occurred. Herds, which are known to have received sheep/goat from an infected herd in the 21 days before PPR appeared in the herd of origin, will be considered to be high risk. The infected zone will encompass whole-related communities and will take into account natural barriers to livestock/ disease movement, community barriers and identifiable topographical features. All sheep/goat in this zone will be vaccinated and branded or earmarked.

Surveillance zone
This will be the area surrounding the infected zone as defined above. Within the Agro-pastoral, intensive/ small scale farming areas and the where livestock keeping is normally a sedentary practice, ecological features will dictate the limits for the surveillance zone. Within the pastoral areas this zone will be determined by livestock movement patterns in search of pastures and water and also movement due to trade. This will obviously involve a much wider area as compared to that within a sedentary system and will even vary between pastoral systems. Continuous surveillance will be carried out in this zone. In the event that a field diagnosis shows a positive result for PPR, the DAH will issue instructions on measures to be instituted immediately to contain the outbreak. These powers are conferred upon him by Article 2.2.1 of the Veterinary Code as listed below:

The Veterinary Administration may, by decree, declare the following zones for disease control purposes along OIE guidelines:
A disease free zone:

- *A surveillance zone separating an infected area from the remainder of the country.*
- *A buffer zone where animals are systematically vaccinated for the protection of a disease free zone.*
- *An infected zone where the disease is present, when the remainder of the country is free from the diseases.*

2) *For an infected zone:*
   a. *The Veterinary Administration shall extend, diminish or otherwise alter the limit of the zone declared to be infected.*

b. *The zone shall be considered to be infected for a particular disease as such until a period exceeding the infective period specified in the OIE has elapsed after the last reported case, and when full prophylactic and appropriate animal health measures to be determined by the Veterinary Administration have been applied to prevent possible reappearance or spread of the disease.*
c. *Movement of susceptible livestock out of the infected zone into the disease free parts of the country shall be strictly controlled and any of the following measures may be considered:*

- *No live animal may leave the zone, or;*
- *Animals can be moved by mechanical transport to a special abattoir located in the surveillance zone for immediate slaughter, or;*
- *Exceptionally, live animals can enter the surveillance zone under suitable controls established by the Veterinary Administration; Freedom from infection of these animals must be confirmed by appropriate tests before entering the zone.*
- *Live animals can leave the infected zone if the epidemiological conditions are such that disease transmission cannot occur.*

8.3 Disease tracing and surveillance

Disease tracing will be carried out to determine the origin and extent of infection so that zoning can be declared for PPR control purposes and, subsequently, to assist in proving regained freedom from the disease. Investigation teams will be sent to the area of suspected outbreak within 48 hours of receiving a report to ascertain the cause and extent of the disease outbreak.
The relevant legislation is spelt out below.

The DVO may issue instructions, following approval by the Director General, to any veterinary authority, veterinary officer or inspector or any veterinarian (both public and private) on all or any of the following matters:

- *Requiring the concerned to furnish such information as the Director may think fit concerning any animal disease existing, or suspected to exist in the zone, and specially the manner in which such information shall be given.*
- *Ensuring effective compliance with any measures, which the director thinks necessary for the prevention and control of contagious diseases.*
- *Carrying out any other instructions within his/her competence and deemed necessary for the purpose of disease control and regulations issued by the Veterinary Administration.*
- *The task for surveillance will be carried out by the Epidemiologist and any other officers appointed by the director.*

8.4 Immunosterilisation

Vaccination will commence within 7 days of confirmation of the outbreak and the production of a report by the investigation teams mentioned above. Immunosterilisation will involve vaccination of all susceptible sheep/goat in infected and exposed herds in two rounds to achieve elimination of the virus. Sero-monitoring will be carried out after every vaccination to ensure that protective herd level immunity has been achieved. Independent teams (number to depend upon pastoral system and extent of infected zone) will carry out vaccination within the infected zone. The first group vaccinates the remaining “healthy” members of the infected herd or herds (of which a portion will be incubating the disease), while the second undertakes vaccination of surrounding herds in a ring around the infected herd or herds, starting from the periphery of the ring and working towards the center. The vaccinated animals will then be marked using ear notching.

When issuing instructions to carry out control measures the Director will be using the powers conferred upon him by *Article 4.2.2 of the Veterinary Code*.

8.5 Movement standstill

In the event of a suspicion/ report of a disease outbreak, the area DVO will immediately impose a provisional quarantine in the affected area while awaiting laboratory confirmation. This will constitute a movement standstill on animals and animal products in the infected zone to prevent the spread of infection. In case of positive confirmation of a disease outbreak, the District Veterinary Officer will impose a full quarantine in accordance with the Article 4.2.2 of the Veterinary Code and copies of the notice will be sent to the DAH, the concerned district administrative officer and the police officer in charge of the area, all permit issuers concerned and all neighboring districts / administrative units. The quarantine will be in place for at least 30 days after the last case and at the discretion of the DAH or his representative.
Enforcement of the quarantine shall involve:

- Notification of the public and other stakeholders of the quarantine and the need to comply, through mass media, public meetings mosques and madrassa;
- Suspension of the issuance of movement permits and no objection papers;
- Closure of all the livestock markets within the district- this may be extended to cover major markets in surrounding districts;
- Mounting of roadblocks by the security personnel and the departments' staff to prevent illegal movement;
- Equipment and resources to be used in the event of an outbreak are outlined in section 6.3

8.6 Awareness Campaigns
Awareness campaigns will be carried out to facilitate co-operation of the livestock owning community and the general public. As soon as the outbreak is confirmed, the DAH will notify OIE, AU/IBAR and all neighboring countries.

The DAH will put out a notice in the gazette as spelt out in Article 4.2.2 of the Veterinary Code. (See 3.1 above)

The Communications officer will issue regular notices to be broadcast in the media to inform the general public.

8.7 Special needs for dealing with Nomadism
Mapping of migration routes has been done, but will be updated continuously. Linkages have been developed with the meteorological department to get early warning of adverse weather systems. This will assist in predicting unusual livestock movements and the occurrence of conditions that can lead to disease outbreaks. There will also be increased use of CBAHWs as part of an early warning system.
Livestock inspection will be conducted along stock routes by the department's staff.
Discussions and consultations will be carried out before and during outbreaks with livestock owners to enrich the management of the outbreaks when they occur.

All activities undertaken in controlling an incursion of PPR will be implemented by the PPR Emergency task force and overseen by the National Animal Disease Emergency Committee.

9.0 Organizational Arrangements during PPR Emergency Campaign
In the event that a field diagnosis based on clinical signs occurs, the DAH will issue instructions on measures to be instituted immediately to contain the outbreak. These powers are conferred upon him by *Article 2.2.1* of the Veterinary Code as listed below:
The Veterinary Administration may, by decree, declare the following zones for disease control purposes along OIE guidelines:

a) A disease free zone
b) A surveillance zone separating an infected area from the remainder of the country.

c) A buffer zone where animals are systematically vaccinated for the protection of a disease free zone.
d) An infected zone where the disease is present, when the remainder of the country is free from the diseases.
2) For an infected zone:
a) The Veterinary Administration shall extend, diminish or otherwise alter the limit of the zone declared to be infected.
b) The zone shall be considered to be infected for a particular disease as such until a period exceeding the infective period specified in the OIE has elapsed after the last reported case, and when full prophylactic and appropriate animal health measures to be determined by the Veterinary Administration have been applied to prevent possible reappearance or spread of the disease.
c) Movement of susceptible livestock out of the infected zone into the disease free parts of the country shall be strictly controlled and any of the following measures may be considered:
- *No live animal may leave the zone, or;*
- *Animals can be moved by mechanical transport to a special abattoir located in the surveillance zone for immediate slaughter, or;*
- *Exceptionally, live animals can enter the surveillance zone under suitable controls established by the Veterinary Administration; Freedom from infection of these animals must be confirmed by appropriate tests before entering the zone.*
- *Live animals can leave the infected zone if the epidemiological conditions are such that disease transmission cannot occur.*

In order to ensure compliance, the village elders will play a vital role in educating the community on the need for compliance. Communication through the use of radio messages would also promote awareness in the population on recommended bio-security measures.

9.1 Chain of command

The Veterinary Code stipulates the chain of command with regard to the delivery of animal health services within the country. **Chapter 4.1, Article 4.1.1** states as follows:

a) The Veterinary Administration shall include the Minister, the Director General, the Director of Veterinary Services and field level veterinary authorities and veterinary professionals.
b) A statutory body, the National Veterinary Board, independent of the National Veterinary Service, shall collaborate with the Veterinary Administration to cater for the efficient, effective and smooth functioning of the veterinary profession.
c) The Minister is the highest authority of the Veterinary Administration and is responsible for the overall national veterinary service and related functions.
d) The Minister may, by decree, delegate any of the powers or functions assigned to him/her under this Code to the Director General, Director of Veterinary Services or Heads of Veterinary Authorities, or other autonomous agencies or institutions established to perform specific veterinary functions and roles.

In June 2008 a National Emergency Preparedness and Response Plan Committee made up of key players in the Animal Health Service delivery within the country was formed.

9.1.1 National Emergency Preparedness and Response Planning Committee

It is made up of:

- The Director of Veterinary Services,
- Officer in charge of the Epidemiology and Data Management Unit (EDMU),
- Representative of the Somaliland National Veterinary Association (SOLNAVA),
- Representative of the United Livestock Professional Association (ULPA),
- Representative of the National Environmental Research and Disaster Preparedness (NERAD),
- Representative of the Local Government,

- Ministry of Health,
- VetAid,
- Food and Agriculture Organization of the United Nations,
- Somali Animal Health Services Project (SAHSP),
- Pastoral Environment Network in the Horn of Africa (PENHA).

The terms of reference of the National Emergency Preparedness and Response Planning Committee include:

- Enhancement of the capabilities of field and laboratory veterinary services, especially for specific high priority livestock disease emergencies,
- Development of active disease surveillance and epidemiological analysis capabilities and of emergency reporting systems,
- Staff training and farmer awareness programmes,
- Assessment of resource needs and planning for their provision during animal health emergencies,
- Drafting of legislation and development of financial plans,
- Implementation of simulation exercises to test and modify animal health emergency plans and preparedness,
- Appointment of drafting teams for the preparation, monitoring and approval of contingency plans and other documents,
- Liaison with and involvement of relevant persons and organizations outside the government animal health services,
- Overall monitoring of the national state of preparedness for animal health emergencies.

Upon receiving confirmation of PPR incursion the Director of Animal Health Services shall immediately convene the Crisis Management Technical Team.

9.1.2 The Crisis Management Technical Team (CMTT)

The CMTT will comprise of the following:

- Director of Animal Health Services (Chairman),
- Epidemiologist/AI Expert- EDMU (Secretary),
- All Regional Coordinators,
- Representatives of Professional Associations,
- Representative of NGOs,
- Representatives of ministries of Interior, Transport and Local Government,
- Technical experts co-opted on an ad hoc basis,
- Ministry of Information representative.

The CMTT is charged with coordinating the emergency response and advising the National Emergency Preparedness and Response Planning Committee through the DAHS on the extent of the problem and the requirements of the response in terms of finance, personnel (non- departmental) and materials.

The CMTT shall mobilize the Rapid Response Teams to travel to the outbreak area. At the same time, the CMTT shall mobilize the local response team including the area DVO, local authority, local police boss and the animal service providers to travel to the outbreak area. The national and local rapid response teams will operate under the direction of the CMTT to implement disease control measures according to the standard operating guidelines of the RRT.

When issuing instructions to carry out control measures the Director will be using the powers conferred upon him by Article 4.2.2 of the Veterinary Code, which states as follows:

The Director of Veterinary Services may issue instructions, following approval by the Director General, to any veterinary authority, veterinary officer or inspector or any veterinarian (both public and private) on all or any of the following matters:

a) Requiring the concerned to furnish such information as the Director may think fit

concerning any animal disease existing, or suspected to exist in the zone, and specially the manner in which such information shall be given.

b) *Ensuring effective compliance with any measures, which the director thinks necessary for the prevention and control of contagious diseases.*

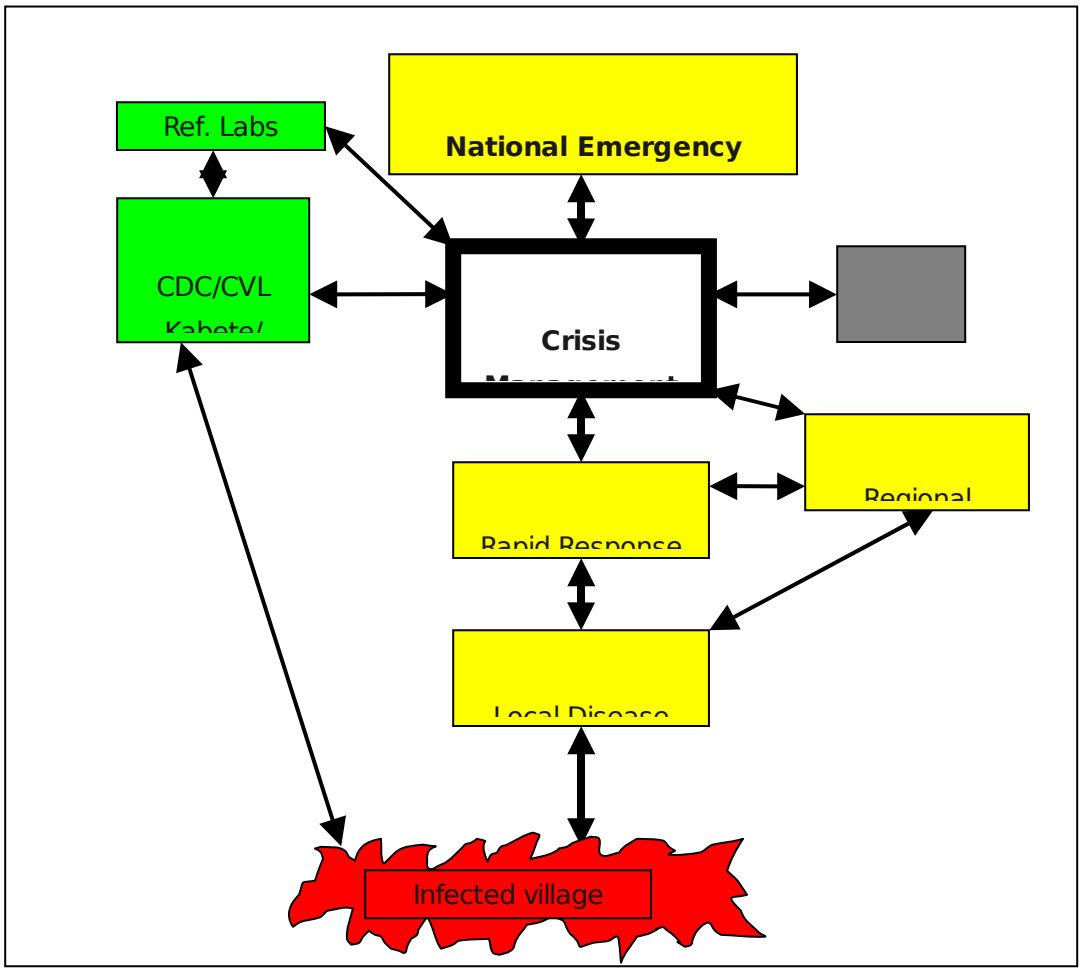
c) *Carrying out any other instructions within his/her competence and deemed necessary for the purpose of disease control and regulations issued by the Veterinary Administration.*

The CMTT shall also mobilize available resources from the various organizations making up its membership. This would include personnel previously identified as prospective members of RRTs and trained as well as vehicles and materials.

The Department of Animal Health of Somaliland has inadequate capacity to undertake disease surveillance, investigate and respond to widespread outbreaks of PPR. The DAHS will therefore seek assistance from other government bodies, NGOs and the international community in case of widespread outbreaks of PPR. The veterinary services will have overall leadership role of the disease control actions and responsibility. The DAHS will also work within the framework of the National Emergency Preparedness and Response Planning Committee. The emergency operations during a disease outbreak can only be carried out effectively when the following are in place:

- Adequate physical, financial and human resources be in place and where the department is deficient alternative support will be sourced from the private sector,
- The establishment of an Emergency Fund for the prevention and control of emerging zoonotic infectious diseases.

Command structure in the event of an outbreak



Composition of Rapid Response Teams (RRTs)
Animal health service delivery in Somaliland suffered greatly during the years of instability that the country underwent. As result, the Department of Animal Health Services lost most of its resources, both human and material, and its infrastructure was almost totally destroyed. However, it retains personnel at headquarter, regional and district levels. The government employs 22 veterinarians and 60 veterinary assistants. The private sector, including NGOs has had to move in to fill this void and in the process several professional bodies and organizations have been set up with a membership totalling 53 veterinarians and 158 veterinary assistants.
It is envisaged that Rapid Response Teams (RRTs) will be formed from this pool of animal health service providers, both public and private, and they will undergo training before being deployed at regional level. A total of eight (8) teams, two at headquarters and one per region will be formed.

Memoranda of understanding will be signed between the DAHS and the professional organizations on the operations of these teams. Training and simulation exercises will be carried out using consultancies.

Non-health technical expertise and manpower will be necessary for pertinent activities like quarantine enforcement and maintenance of public order. Through the National Emergency Preparedness and Response Planning Committee a framework of cooperation between the Ministries of Local Government, Interior and Transport will be developed. It will spell out the specific roles to be undertaken by each ministry in the event of an emergency and will form the background for simulation exercises to be carried out.

9.2.1 The PPR Expert Team
This is the frontline team with specialized expertise, which undertakes field investigation, assesses the evidence for a PPR disease emergency and advises the Director of Animal health services and Chief Veterinary Field Officer accordingly. It comprises of a:

- Veterinary Epidemiologist
- Veterinary Pathologist
- Veterinary Virologist

In the event of the officers being unavailable, their deputies should be capable of standing in for them.

The PPR expert team will be expected to:

- Conduct thorough clinical and epidemiological investigations into suspected PPPR outbreaks;
- Collect and dispatch specimens to national and/ or regional laboratories for PPR diagnosis;
- Present a detailed report to the head of the CVFO.

9.2.2 Central and Field Veterinary Services
The Department of Animal health Services is responsible for the control and eradication of emergency/ notifiable livestock diseases. It is headed by the Director of Animal Health (DAH) and has a central command structure with representatives at provincial, district, and field level (see annex 11).
Privatization has been done giving a greater role to private veterinarians and CBAHWs in the delivery of animal health services. The CBAHWs were trained mainly by the NGOs and are expected to report to the DVOs any disease outbreaks.
The DAH does not have funds under Emergency Disease Control. This needs to be within the normal budgetary allocations and be accessed within three (3) days of a request being placed.

9.3 Training
It is recommended that regular training of professional and para-professional staff who, in one way or the other are engaged in PPR eradication be carried out. Members of the PPR expert Team and

other experts on the subject will conduct training.

Under the emergency preparedness program, veterinary and auxiliary personnel need to be trained on:

- Diagnosis of PPR
- Disease surveillance and the need for prompt reporting:
- Collection and transportation of specimens;
- Preventive and control measures against PPR
- Record keeping including rumor register maintenance;
- Notification, public awareness and communication support;
- Emergency response during an outbreak.

Regular training workshops at national, regional and district levels will maintain competence of staff in these subjects. Technical staff will be given the opportunity to visit places where clinical cases of PPR have been confirmed as part of their training.

9.4 Publicity/ disease awareness

The Department of animal health Services in Somaliland relies on livestock owners, private veterinarians and paravets, to report the occurrence of animal diseases, in particular the OIE listed diseases. To this end, awareness of the disease will be maintained both within the veterinary profession and in the livestock industry as a whole.

The Veterinary profession within the country will be provided with information that will cover current notification and control procedures and the epidemiological situation within the country and elsewhere. Refresher courses for all veterinarians will be arranged to include new developments in the surveillance, prevention, and control of priority diseases in the country.
For the farming community, awareness creation will be targeted at livestock keepers and the non-professional personnel who are in constant contact with livestock. The communication unit of the department will prepare messages using brochures, radio spots, newsletters and posters, to educate farmers, livestock traders and the general public on the importance of prompt reporting of diseases, the need to obey livestock movement control regulations as well as symptoms and signs of PPR.

10.0 SUPPORT PLANS

10.1 Legal provisions

The Department of Animal Health Services is charged with overseeing all the animal health issues in the country. Due to the instability that the country underwent in the past years, there previously have been no effective regulations in place to support the department's activities. The following policy and legal documents have now been approved by Parliament and provide a legal framework under which the department operates:

- The Veterinary Code
- Livestock Policy Document
- Master Plan Document for Ministry of Livestock
- Human Resources Assessment Report

10.2 Funding provisions

The Department of Animal Health of Somaliland has inadequate capacity to undertake disease outbreak response to widespread outbreaks of PPR. The DAHS will therefore seek assistance from other government bodies, NGOs and the international community in case of widespread outbreaks of the disease.

In the event of an emergency, Somaliland will approach AU/IBAR and other donors for emergency

funding.
The financial resources made available will cover costs of dealing with all aspects of an outbreak of PPR in Somaliland. The main areas of expenditure will be:

- Cost of Emergency Ring Vaccination
- Capital equipment and consumable items
- Personnel, over and above the annual running costs

11.0 Early warning systems

11.1 Epidemio-Surveillance System (Surveillance and Reporting)

Currently there is a disease surveillance system in place but it needs strengthening so that it can detect and contain outbreak of PPR.

Passive Surveillance

PPR is one of the OIE listed diseases and reporting is prescribed under the Veterinary Code. Passive surveillance (monthly livestock passive disease reports) is currently being conducted by public and private focal points, livestock professionals' associations and SAHSP officers. District focal points collect all disease reports and submit these to the Director of Animal Health Services.

This Epidemio-surveillance System relies on a weak network of personnel who are positioned on the ground and therefore is likely to under-report on the disease situation as well as being subject to delays. To overcome this, emphasis will be placed on use of available telephone technology. There is a need to carry out sensitization and create awareness of priority diseases among all animal health service providers so that they can quickly pick up any disease outbreak at an early stage and report to the relevant officials.

GIS compatible formats for reporting OIE listed diseases will be developed and the personnel trained to use them. The Animal Health Service Providers will be expected to report on a monthly basis whenever they DO NOT encounter any events that are suspicious of PPR as a zero-report. Emergency reporting telephone lines will be established at regional and headquarter levels and communities will be encouraged to use these facilities.
Disease reporting is compulsory as stipulated by the Veterinary Code, Chapter 2.1, Notifications, *Article 2.1.1, part 3* which states as follows:

1. *Any veterinarian, animal health assistant or of other professional category (e.g. pharmacist, zoo technician, CBAHW) who has reason to believe or suspect the occurrence of a transmissible disease shall forthwith give information thereof to the nearest most senior veterinary authority or officer.*
2. *Reporting to the most senior veterinary authority or officer in the same district or in the adjoining district, whether or not such district is in the same regional jurisdiction or not, and reporting to the Director of Veterinary Services shall be at the intervals (e.g. daily, weekly, monthly, annually) and in the manner and format specified by the Veterinary Administration through Ministerial Decrees.*
3. *Notification and reporting at all levels should be within 24 hours.*

Active Surveillance

The only active surveys that have been carried out so far for TADs in the recent years have been organized and financed by NGOs working in the livestock sector within Somaliland. The NGOs have a pool of professionals who are highly trained in active surveillance for the major TADS including PPR. They will be used for structured targeted surveillance, Participatory Disease Search, clinical and serological surveys in high-risk areas. Training and updating of these personnel on PPR and risk analysis will be carried out to enhance early detection and reporting of the disease. Active targeted surveys in significant sheep/goat populations are planned for at an interval of not more than six

months and zero-reporting whenever no disease is encountered will be encouraged.

11.2 Continuous disease search

Districts within the high risk areas, especially high sheep/goat populations will carry out continuous disease search using participatory disease searching (PDS) method. Key field personnel will be trained in PDS in order to train others on the job. The districts are expected to file timely reports on all disease search missions undertaken, including zero reporting within 30 days from end of reporting month. All cases will be reported to the epidemiology unit for further investigation.

11.3 Investigate all reported SE cases

The epidemiology unit will investigate all reported SE in sheep and goats within 7 days of reporting and make results available to all interested parties both within and outside.

11.4 Stock route monitoring and zoo sanitary inspection

All the major stock routes will be mapped. District Disease Surveillance and Reporting Officers (DDSROs) in disease free zone will carry out zoo-sanitary inspection at strategic places on a regular basis throughout the year. Strategic locations include stock-routes, watering points and markets and other sites where animals are likely to congregate.

Movement over long distances within and across districts in search of pastures and/ or water will be monitored by respective DVOs and such information communicated to relevant neighbouring DVOs and the epidemiology unit. Disease surveillance will make use of these movement patterns, identifying contact points. Terminal points especially the abattoirs and markets will be used as centres for disease surveillance.

11.5 Carry out wildlife surveillance

There are no organizations dealing directly with wild life in the country. There is, therefore a need to train the existing animal health service providers on recognition, capture and sampling of diseased wild ruminants. There is need to source for the facilitators from recognized expert institutions including those from neighbouring countries. They will then form specialized teams to carry out surveys in wild animals and investigate reported deaths.

11.6 Carry out random survey in disease free zone

Random surveys will be carried out in the disease free zones throughout the country. The random survey will encompass serology, clinical inspection of selected flocks and use of questionnaire. Serology comes in handy to mitigate the difficulties in recognizing PPR. Above all, sero-surveillance will provide more confidence as regards the disease status.

12.0 Equipment/ facilities

Most districts will be supplied with equipment for carrying out vaccinations against major epizootics. Vaccination, sampling and cold chain equipment will be kept at the main stores within the headquarters. Districts will submit an inventory of what they have. The department will engage in the process of purchasing equipment for the headquarter stores and for eventual distribution to the field units.

13.0 Diagnostic laboratories

Until the laboratories at Hargeissa and Berbera are fully operational samples will be sent to laboratories in neighbouring countries such as the CVL Kabete, Kenya and KARI Muguga for definitive diagnosis.

It is expected that results for PPR and PPR differential diagnoses will be made available to the country within 14 days from the day of submission for tests done at Kabete and 60 days for tests performed in other laboratories, both locally and abroad.

All sera selected for banking will be banked within 30 days of submission to Kabete.

14.0 Vaccine bank and contingency plans for vaccination
The Department of Animal Health Services does not have a reserve of PPR vaccine.

15.0 Action plan

15.1 Responsibilities on suspicion of PPR
It is a legal requirement that everybody suspecting the presence of an OIE listed disease should report any such suspicion without delay to a member of the Department of Animal Health Services.

Normally the first contact will be with the Livestock Extension Personnel or Community Based Animal Health Workers who should report to the District Veterinary Officer immediately. The report, action taken and the outcome of the DVO's initial investigation will be recorded as PPR "rumour" in a register at the District Veterinary Office.

If there are grounds to support the suspicion of PPR, the local Veterinary Officer will immediately to report to the officer in charge of the nearest laboratory, the respective District Veterinary Officers who will alert the respective Regional Veterinary Coordinator, the Officer in charge of field services and the Director of Animal Health Services by the quickest possible means (telephone or radio call).

15.2 Responsibilities of the Director of Animal health (DAH)
Upon receiving information of a suspected PPR outbreak, the DAH will mobilize the PPR Emergency Action plan.

15.2.1 Alert phase.
The expert team will be fielded not later than 24 hours from the time the information is received by the Director of Animal health. The team will visit the area and collect diagnostic specimens within 48 hours. A PPR outbreak investigation report must be produced not later than 60 hours from the time the Director of Animal health was served with notice of the outbreak from the field.

15.2.2 Operational phase.
The Chief Veterinary Field Officer will be responsible for the day-to-day administration of the National PPR Emergency activities. A state of readiness will be kept on PPR including convening the National Animal Disease Emergency Planning Committee meetings and the Crisis Management Technical Team to direct and monitor operations.
The main activities in case of an incursion will include, but not necessarily be limited to:

- Definition of control measures as spelt out in section 3 above;
- Deployment of human and physical resources to the districts;
- Provide information to the OAU/IBAR, OIE, FAO, European Union Commission, and Unicef- other International Organizations, neighbouring countries and the mass media.
- Draw up a Quarantine notice and impose quarantine to the district administrative officer concerned with sufficient copies to the police officer in charge of the nearest police station of the district, customs and excise at border points and all permit issuers concerned.
- Releasing and issuing of vaccine for use to the field and undertake additional acquisition.
- Co-ordinate activities of Veterinary Laboratory – Hargeissa and the Epidemiology Data Management Unit (EDMU) to be able to identify the disease zones.

In order to implement a PPR Emergency Plan, especially in combating an outbreak, it will be necessary to mobilize local resources at the district level particularly in the control and surveillance zones. The District Veterinary Officer will assume the responsibility of making sure the appropriate

control measures are effective and managed.
The DVO will have the authority to:

- Designate affected areas/flocks.
- Deploy the necessary staff and equipment.
- Evaluate and arrange for slaughter and/or disposal of affected stock.
- Advise on the definition of zones based on geographical features and livestock movement patterns in consultation of respective Regional Veterinary Coordinators and imposition of embargo in the infected zone.
- Liaise with the police and other law enforcement organs on restriction of livestock movements.

Affected districts will be facilitated with physical and financial resources to carry out PPR emergency activities. They will also be equipped with transport and VHF radio sets to be able to communicate with the National Coordinator, Chief Veterinary Field Officer and the Director of Veterinary Services. The districts will be required to have a recording system preferably computerized to include chronological diary of the events of the outbreak and relevant maps.

Key persons and institutions in the district that will form the District Animal Health Emergency Committee, to be contacted in the event of an outbreak include:

1. Local administrators including members of parliament
2. Livestock traders' representatives
5. Private Veterinarians and Community Animal Health Workers
6. Livestock input suppliers
7. Mass media and press
8. Community based organization representatives.

15.3 Criteria for proof of elimination

Once the emergency has been dealt with, acceptance of freedom from disease and subsequently the infection in the disease free zone will be based on:

1. Intensive disease surveillance failing to detect clinical disease;
2. A structured random serological survey carried out annually to demonstrate that dissemination of PPR virus does not occur in the disease free areas.(See 5.3.2.4 above)

All actions taken during implementation of the PPR Emergency Plan will be documented and presented. The dossier of evidence presented will include documentation of:

- Analysis of reports and questionnaires used in disease surveillance together with evidence that laboratory samples were taken and investigated for evidence of PPR Written evidence of all suspected cases and rumors will be made available;
- Surveys carried out in the field will be supported by surveys carried out in slaughterhouses and on markets. These surveys will have to include other sentinel groups such as small ruminants and wildlife;
- Systematic serological surveillance at zonal and national level, where appropriate, to demonstrate the absence of PPR antibodies in susceptible populations. The serological surveillance will have clearly demonstrated, by a structured serological survey, the absence of antibodies thereby absence of viral activity throughout Somalia.
- Awareness campaigns carried out to inform the public that the disease has been eradicated but that all suspect cases should be reported;
- Incentive payment and well-publicized mechanisms to the public and the veterinary staff will be initiated to report suspect cases of PPR to the authorities. The National Animal Disease Emergency Planning Committee will decide on how the incentive payment will be effected.
- Follow-up of rumors through rapid and thorough investigation, written evidence, including rumor registers, that those suspicious disease events were followed up and appropriate actions taken.
- Reports of any sickness or deaths in wildlife will be sought. Where wildlife are relatively

numerous and have been implicated in previous PPR incidents, active surveillance will include efforts to detect any possible morbidity and mortality in these species. All suspect reports will be followed up, and wherever possible, specimens collected for virological/ serological analysis.

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ANNEX 1: Key non – government contacts

In an event of a PPR emergency some key Non-governmental livestock organizations will also be contacted. These are **listed below:**

ANNEX 1: Vaccine bank

Contact Addresses of Vaccine Source

1. Rhone-Poulenc Kenya Ltd, P.O. Box 30438, Nairobi, Kenya
   Tel.211755: Fax 211545

2. Kenya Veterinary Vaccine Production Institute, P.O. 832260, Nairobi, Kenya.
   Tel.558686: Fax 545846
   Email' kevevapi@africanonline.co.ke

3. Botswana Vaccine Institute – Private Bag 0031, Gaborone, Botswana
   Tel. (267) 312711: Fax (267) 356798

AU/IBAR Vaccine bank

Contact with international organisations

Here below is a list of international organizations to be notified and contacted for assistance in event of a PPR emergency.

A. OAU/IBAR/PACE

Director Tel (254) 020 3674000
Epidemiologist Tel. (254) 020 4452601/2/3
Chief Technical Advisor, Somali Animal Health Services Project- Tel. 254-20-4445958

B. FAO Empress – Rome

GREP secretary- Tel. +39 06 57054637
Senior officer, infectious diseases/ EMPRES- Tel. (+39) 0657056772
Fax (+39) 0657053023

C. Intergovernmental Authority on Development (IGAD) Djibouti.

Telephone 253 354050 Fax: 253 356994, 356284, 353195
E-mail: igad@intnet.dj Website.www.igad.org.

D. OIE – Paris – France

Director General OIE. Tel. (33-1) 44151888

ANNEX 2: List of equipment

LIST OF EQUIPMENT FOR EMERGENCY PREPAREDNESS		
	EQUIPMENT	NUMBER
1	Camping chairs	35
2	Camping beds	30
3	Camping mattresses	3
4	Kerosene lamps	8
5	Jerry cans 20 litres	6
6	Chimneys	20
7	Mosquito nets	4
8	Automatic syringes 50cc	50
9	Sufurias	6
10	Gas cylinders	4
11	Kerosene fridges	1
12	Polythene tubes	3
13	Drums	4
14	Kerosene stove	12
15	Camping tables	40
16	Basins	6
17	Needles 14 x 0.5	24 Dozen
18	Barrels 50ml	5
19	Barrels 20ml	15
20	Cool boxes (large)	7
21	Cool boxes (small)	15
SURVEILLANCE		
1	Bijou bottles	4,900
2	Vacutainer tubes	7,000
3	Vacutainer needles	6,000
4	Criovials 5 ml	4,000
4	Disposable needles 5ml	4,200
5	Disposable needles 18 gauge	1,000
6	Automatic syringes 10ml	15
7	Hypodermic needles 16.5	7 dozen
8	Automatic syringes 50ml	25
9	Cool boxes	6
10	Disposable syringes 20ml	640

ANNEX 3: Human Resource requirements

In order to achieve an effective disease control it is necessary that adequate physical, financial and human resources be in place. Mechanisms for up-scaling these resources should be in place to cater for wide spread disease outbreak. Within the framework of the resources for a National disease steering committee on PPR widespread disease outbreak should also be identified and mechanisms for mobilizing them be put in place.

The human resource requirements for responding to an outbreak of PPR are shown in the RRT.Each national RRT will be complemented by a local team including the DVO staff (veterinarian, animal health assistants, livestock officer, community animal health workers), Regional administration (Village chairmen,Elders) and community leaders and members.

Table 1. Resource requirements during different phases of disease

Disease phase	Activities	Requirements	Details
Pre-outbreak	epidemiosurveillance	Personnel (DAH cattle owners and traders)	
		Physical resources	RRP document
Outbreak	Disease control in IA, quarantine and movement control.	RRT, Local team, community members	RRP document
Post outbreak	epidemiosurveillance	Personnel (DAH), cattle owners and traders)	RRP document

Annex 4: Emergency Mobilization

The Department of Veterinary Service has inadequate capacity to undertake disease surveillance, investigate and respond to widespread outbreaks of PPR. The DVS will therefore seek assistance from other government bodies, NGOs and international community in case of widespread outbreaks of PPR. The veterinary services will have overall leadership role of the disease control actions and responsibility. The DVS will also work within the framework of the National disease steering committee on PPR.

The emergency operations during a disease outbreak can only be carried effectively when the following are in place:

A dependable chain of command structure in the DAH that ensures that information flows quickly and efficiently and also effective control mechanisms that functions efficiently between the field and the headquarters.
During an outbreak of PPR, the Crises Management Team (CMT) that is chaired by the Director of Animal health Services will meet and activate the Rapid Response and co-ordinate the disease prevention and control actions in the country. The CMT will provide communication to the National disease steering committee on PPR other organizations and the public.
National and local disease control centers will be activated by the CMT.

In order to achieve an effective disease control it is necessary that adequate physical, financial and human resources be in place. Mechanisms for up-scaling these resources should be in place to cater for

worsening disease epizootics and epidemics. Within the framework of the National disease steering committee on PPR the resources for a wide spread PPR outbreak should also be identified and mechanisms for mobilizing them be put in place.

Procedures for fast-tracking procurement for materials required for emergency disease control should be in place. The procedures should take into consideration widespread disease outbreak scenarios.

The implementation of this contingency plans for PPR require the establishment of an Emergency Fund for the control of widespread disease outbreak.

Annex 5: the structure of Ministry of Livestock in Somaliland