agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

# NATIONAL CONTINGENCY PLAN

# for the

# Control of an Outbreak of

# FOOT AND MOUTH DISEASE in the FMD Free Zone

Approved:
Director Animal Health

**TABLE OF CONTENTS**


1. Introduction ..... 2
2. General information about foot and mouth disease ..... 3
3. Control strategy legislative basis ..... 4

**PART A: IMMEDIATE MEASURES ON FMD SUSPECT/POSITIVE LOCATIONS**

4. Factors that indicate suspicion of fmd..... 4
5. Immediate on-farm/field actions on suspicion of fmd ..... 6
6. Sample collection on suspect locations ..... 7
7. Specimen dispatch ..... 7
8. Confirmation of diagnosis ..... 8
9 Quarantine of infected properties and surrounding areas ..... 9
10 Biosecurity on premises under quarantine..... 10
11 Consideration for safe movement of specific products..... 11

**PART B: OPTIONS FOR SPECIFIC CONTROL STRATEGIES**

12 Control strategy – important points for consideration..... 11
13 Immediate general movement restrictions on confirmation of an outbreak..... 12
14 Declaration of a disease management area ..... 13
15 Vaccination..... 14

**PART C: RESOLVING OUTBREAKS ON POSITIVE PREMISES**

16 Determination of clinical resolution on a property (day 0) ..... 15
17 Considerations for resolving outbreak on farm/premises: ..... 16
18 Controlled slaughter ..... 17
19 Destruction..... 19
20 Depopulation, disinfection and repopulation ..... 19
21 Disinfection of farm/premises ..... 20
22 Premises where cloven-hoofed animals are retained ..... 21
23 Requirements for lifting quarantine on fmd affected premises ..... 24

**PART D: COUNTRYWIDE SURVEILLANCE AND TERMINATON OF OUTBREAK**

24 Surveillance to determine extent of spread..... 25
25 Termination of outbreak..... 26


**ANNEXURES:**

A - Options for individual consideration
B - Disease outbreak investigation guideline
C - ARC Sampling SOP

## 1. INTRODUCTION

1.1 FMD is an international trade sensitive disease of cloven-hoofed animals such as cattle, goats and sheep, pigs, as well as game animals. Outbreaks of FMD have a direct effect on the health and production of animals and require additional human resource and operational budget requirements to control. The indirect effect of an FMD outbreak is that it results in the loss of the internationally accepted FMD free status and thus losing international market access for FMD market sensitive products of cloven-hoofed animals.

1.2 Routine FMD control in South Africa aims to ensure that most of the country is maintained as an FMD free zone or zones without vaccination, while the disease remains restricted to certain areas legislated as FMD controlled areas due to the presence of permanently FMD infected buffalo in the provinces of Limpopo, Mpumalanga and KwaZulu-Natal. FMD control measures are provided for in the Animal Diseases Act, 1984 (Act 35 of 1984).

1.3 The ability of the country to contain, control and eradicate an FMD outbreak in a previous free zone is used by trade partners to gauge the competence of a country's veterinary services. In the event of an outbreak of FMD, regaining of our FMD free zone status is thus of critical importance for Government priorities on agriculture and agro-processing value chains.

1.4 This Contingency Plan is intended to provide strategies to contain, control and eradicate an outbreak of FMD in the area legislated as the FMD free zone without vaccination in Table 1 of the Animal Disease Regulations R2026 of 1986. This document provides guidance on "best practice" regarding the implementation of prescribed disease control measures. Should there be a need for deviations from prescribed control measures, such needs to be approved by the appropriate authority.

1.5 **The objectives of FMD Outbreak Contingency Plan are:**

- to prescribe specific procedures to be implemented on farms or locations in the case of a suspected and/or confirmed outbreak of FMD;
- to guide decision makers in the selection and implementation of the most optimal control strategy for a specific outbreak;
- to outline the procedures to follow to resolve outbreaks on infected premises until the quarantine can be lifted;
- to serve as a tool for state veterinarians in discussing the control strategies for infected premises with the owners of animals and/or land;
- to aid management to identify particular manpower, material and equipment necessary to ensure a rapid response and effective and efficient execution of disease control measures.

1.6 **This document must be read in conjunction with:**

- Annexure A to this Regulation for industry-specific options,
- The General Contingency Plan for Controlled Animal Diseases,
- Disease Communication Protocol, February 2012,
- Veterinary Procedural Notice for the control of Foot and Mouth Disease November 2014

## 2. GENERAL INFORMATION ABOUT FOOT AND MOUTH DISEASE

2.1 FMD is one of the most contagious viral diseases of cloven-hoofed animals. The disease is characterized by the formation of vesicles on the mucous membranes of the mouth cavity and tongue and on the hooves' coronary bands. The severity of clinical signs varies with the strain of virus, the exposure dose, the age and breed of animal, the host species and the immunity of the animal. Morbidity is often high and may approach 100%. Mortality in general is low in adult animals (1–5%) but higher in young calves, lambs and piglets (20% or higher). Recovery in uncomplicated cases usually takes about 2 weeks.

2.2 The incubation period of the disease is typically 2- 14 days in clinical cases, and 14 days for the purposes of the World Organization for Animal Health (WOAH) Code. Asymptomatic animals incubating the virus will contribute to further spreading of the disease.

2.3 Although FMD virus (FMDV) may persist in the pharynx and associated lymph nodes of ruminants for a period of 28 or more days, the African buffalo is the only known persistently infected species from which transmission of FMDV has been proven.

2.4 FMD is not a zoonosis and there are no known health risks to humans. Meat from recovered and/or vaccinated animals is fit for human consumption. Humans have been known to harbour FMDV in their respiratory tract for 24–48 hours, leading to the practice of 3–5 days of personal quarantine for personnel exposed in research facilities, to limit spread to cloven-hoofed species.

2.5 The virus can be transmitted through all secretions and excretions from acutely infected animals, including expired air, saliva, milk, urine, faeces and semen, as well as in the fluid from FMD-associated vesicles, and in amniotic fluid and aborted foetuses. Peak virus production usually occurs around the time vesicles rupture and most clinical signs appear, although virus excretion can also happen from incubating and clinically healthy animals.

2.6 FMDV is preserved by refrigeration and freezing, but progressively inactivated by temperatures above 50°C. Inactivation of the virus can be achieved by heating meat to a minimum core temperature of 70°C for at least 30 minutes, pH above 9.0 or below 6, and exposure to effective disinfectants (see section 21). FMDV is resistant to iodophores, quaternary ammonium compounds, and phenol, especially in the presence of organic matter.

2.7 FMD is one of the diseases for which the WOAH evaluates country applications and confers an official status of country or zone freedom. South Africa had an official WOAH recognised Foot and Mouth Disease free without vaccination status until 2019. This status was lost following outbreaks of FMD in January 2019.

## 3. CONTROL STRATEGY LEGISLATIVE BASIS

3.1 In terms of Table 2 of the Animal Diseases Regulations as per the Animal Diseases Act, 1984 (Act No. 35 of 1984), animals which have had or are suspected to have had contact with the FMD virus shall be isolated and dealt with as determined by the Director and FMD infected animals shall be isolated and immunized or disposed of as determined by the Director.

3.2 In terms of Section 15. of the Act, the Director may, in order to achieve the controlled purpose of *"prevention or combating of or control over an outbreak or the spreading, or the eradication, of (the) animal disease", "serve an order in the prescribed manner on any owner of animals or things, or any owner or manager of land, wherein he is directed, in respect of*

*(a) any specified controlled animal or thing; or*
*(b) land defined therein; or*
*(c) any such animal or thing and such land,*
*(…) to perform, or abstain from performing, any other defined act.*"

3.3 This document details the disease control veterinary activities for the purpose of preventing, combatting, controlling or eradicating FMD. They may either be ordered by the Director at the suspicion of an outbreak of FMD or prescribed as control measures by the Minister in terms of Section 9 of the Act once an outbreak has been confirmed, with the latter being applicable to either the whole of the Republic or a certain place or region that will be declared as a controlled area.

# PART A:
# IMMEDIATE MEASURES ON FMD SUSPECT AND CONFIRMED LOCATIONS

**This section is applicable to all locations where FMD is suspected and/or confirmed. These measures must be implemented by the responsible state veterinarian.**

## 4. FACTORS THAT INDICATE SUSPICION OF FMD

The following indicators should raise suspicion of FMD and require further investigation:

### 4.1 Susceptible Animal Species:

- Cloven-hoofed livestock (cattle, pigs, sheep, goats)
- African buffalo are important maintenance hosts for the SAT serotypes
- Cloven-hoofed wildlife
- Bactrian camels and new world camelids
- Water buffalo (*Bubalus bubalis*)

**4.2 Clinical signs:**

- Signs can range from mild or inapparent to severe
- Vesicles and erosions on oral mucosa
- Vesicles and erosions between hooves and around coronary band
- Vesicles on teats in female animals
- Mortality from multifocal myocarditis in young animals
- Recovery generally occurs within 8–15 days.
- In cattle, severe cases will present with pyrexia, anorexia, shivering, reduction in milk production for 2–3 days, smacking of the lips, grinding of the teeth, salivation, lameness, stamping or kicking of the feet, teat blisters/lesions and mastitis.
- In sheep and goats, infected animals may appear to be asymptomatic or have lesions only on the feet, in the coronary band and interdigital spaces.
- Pigs may show pyrexia, severe foot lesions, lameness with detachment of the claw horn, vesicles on the snout and lesions on the tongue.

**4.3 History and background information:**

- Recent introduction of cloven-hoofed animals from unknown sources or known high risk areas (high risk areas can be FMD controlled areas, infected and protection zones, Disease Management Areas, properties under quarantine for FMD outbreaks)
- Properties adjacent to or epidemiologically linked to known infected premises.

**4.4 Differential diagnosis (DD):**

- Vesicular stomatitis
- Bovine viral diarrhoea and Mucosal disease
- Infectious bovine rhinotracheitis
- Bluetongue
- Lumpy Skin Disease
- Malignant catarrhal fever
- Swine vesicular disease
- Orf (Contagious pustular dermatitis)
- Peste des petits ruminants
- Non-infectious causes, such as trauma or chemical burns

While an owner or veterinarian may suspect that animals may be infected with one of the DDs, it is very important that diagnostic steps, according to the guidelines in this document, are taken to definitively rule out FMD. All suspect cases of FMD must be notified to the SV without delay. Conducting additional investigations with negative results strengthens the confidence in the passive surveillance system and should not be viewed as an unwarranted overreaction. On the other hand, missing or even delaying the diagnosis of FMD even by a few days may make the difference between a localized, easy-to-control outbreak versus regional or country-wide spread of the disease.

Furthermore, we strongly recommend that, if FMD is ruled out according to the principles in this document, further investigation to confirm the cause(s) of the illness on the farm must still be conducted.

**4.5 Transmission and spread**

- FMD virus may occur in all the secretions and excretions of acutely infected animals.
- Direct contact between infected and susceptible animals
- Indirect exposure of susceptible animals to the excretions and secretions of acutely infected animals via fomites (hands, footwear, clothing, vehicles, etc.) or uncooked meat products

## 5. IMMEDIATE ON-FARM/FIELD ACTIONS ON SUSPICION OF FMD

5.1 Any suspicion of FMD must, immediately (within the same day), be reported to State Veterinary Services by any person who suspects the incidence of the disease. This is a legal requirement according to Section 11 and Regulation 12 of the Animal Disease Act 35 (Act 35 of 1984). Given the seriousness of an FMD outbreak, personal contact should be made with the state veterinarian and, in case the responsible state veterinarian is not available, the provincial director or the office of the national Director Animal Health must be notified directly.

5.2 Producers, land owners, managers and animal owners must immediately isolate the whole herd or herds in which suspicious animals were identified. Such suspect herds must be kept under strict isolation until the diagnoses is confirmed or ruled out. If confirmed, the herds will remain under quarantine until quarantine is officially lifted in writing by the responsible state veterinarian.

5.3 The property must be verbally placed under precautionary quarantine with immediate effect. The client must be verbally informed of his obligations in terms of Section 11 of the Animal Diseases Act, 1984 (Act no 35 of 1984), and that no animals, animal products or potentially contaminated equipment or material (e.g. clothing, disposables, feed) may be removed from the properties on which these animals are found, access of vehicles and visitors must be minimized and subject to disinfection upon leaving the infected premises, and persons in contact with suspect animals must refrain from contact with any cloven-hoofed species. The precautionary quarantine must be followed up by a written quarantine notice issued by the State Veterinarian.

5.4 The State Veterinarian must visit the property, without delay, within 24 hours of notification, to among others:

a. issue a written quarantine notice
b. do an epidemiological investigation (see point 5.6 hereunder)
c. trace-back and trace-forward to determine if any related properties should be quarantined as a precaution

d. collect samples, package appropriately and send them for laboratory testing
e. provide guidance on implementation of biosecurity measures
f. advise the animal owner or farm manager to move animals away from the property borders, especially where borders are shared with other properties that keep susceptible animals, or public roads
g. provide guidance on removal of any products from the property
h. determine the epidemiological unit involved that will be subject to quarantine measures
i. issue an instruction to local Chiefs within traditional areas to stop issuing movement permits once a quarantine notice has been issued

5.5 The state veterinarian will notify the Provincial Director and DALRRD and submit an SR1 indicating suspicion of FMD together with the sample submission forms, to Epidemiology@dalrrd.gov.za.

5.6 The disease outbreak investigation guideline, attached as Annexure B, should be used to ensure that all the necessary information is collected for the epidemiological investigation.

## 6. SAMPLE COLLECTION ON SUSPECT LOCATIONS

6.1 State Veterinary Services will investigate and collect or supervise the collection of samples for diagnostic confirmation in accordance with the ARC Sampling SOP, included as Annexure C.

6.2 At all stages of the disease, serum must be collected for serology. A representative number of animals on the farm must be tested serologically for FMD from 30 animals per epidemiological group up to 1000 animals, and 60 samples per epidemiological unit for groups of more than 1000 animals.

6.3 In the acute phase of the disease, when clinical signs are present, take swabs or tissue samples of any blisters or erosions in the mouth or on the feet. The preferred tissue for diagnosis is epithelium from unruptured or freshly ruptured vesicles or vesicular fluid.

## 7. SPECIMEN DISPATCH

7.1 Samples may only go to Onderstepoort Veterinary Research – Transboundary Animal Diseases (OVR – TAD) for FMD testing. Copies of samples submission forms must be submitted to Epidemiology@dalrrd.gov.za for approval of payment for testing at OVR-TAD.

7.2 Samples collected for virus isolation and PCR (swabs, tissue samples) must be kept chilled on ice in transit to the laboratory. Ideally these samples should be placed in 5ml of buffered saline (pH7.4) if the samples are to be

submitted within 24 hours, or in 50% glycerol-saline buffer (pH7.4) if delivery will exceed 24 hours.

7.3 Serum collected for serology (SPCE-ELISA) must be spun down and kept cool, but not frozen.

7.4 All samples must be treated as a high biosecurity risk, securely triple packaged in leak proof material and dispatched directly to the laboratory without delay by the responsible state veterinary services.

7.5 No samples may be removed from the property without written permission (red cross permit) from the state veterinarian, unless the samples are transported to the laboratory by the state veterinary services.

## 8. CONFIRMATION OF DIAGNOSIS

8.1 For the purposes of reporting to the WOAH, infection with FMD virus (FMDV) is confirmed when:

a. FMD virus has been isolated from a sample from a susceptible animal, or
b. viral antigen or RNA specific to FMDV has been identified in a sample from a susceptible animal, showing clinical signs consistent with FMD, or epidemiologically linked to a suspected or confirmed outbreak of FMD, or giving cause for suspicion of previous association or contact with FMDV, or
c. antibodies to structural or non-structural proteins of FMDV, that are not a consequence of vaccination, have been detected in a sample from a susceptible animal, showing clinical signs consistent with FMD, or epidemiologically linked to a suspected or confirmed outbreak of FMD, or giving cause for suspicion of previous association or contact with FMDV.

8.2 On confirmation of the diagnosis, the State Veterinarian must perform the following functions:

a. submit an updated SR1 to the National office Epidemiology@dalrrd.gov.za.
b. inform the owner of the affected property and issue an updated written quarantine notice (if applicable).
c. continue with trace-back trace-forward exercises.

8.3 The state veterinarian will request and gather all relevant information to identify all possible in-contact animals including those that may be present on other land (epidemiologically linked premises) and must without delay inform the state veterinarian(s) responsible for the area(s) where the other possible in-contact animals may reside, to initiate arrangements to visit the identified premises for epidemiological investigation, clinical inspection and sample collection.

8.4 DALRRD Animal Health will report the outbreak to the WOAH and prepare a

report to inform the Minister, Provincial Veterinary Services, stake holders and trade partners.

## 9 QUARANTINE OF INFECTED PROPERTIES AND SURROUNDING AREAS

9.1 Infected property:

a. The infected property must be placed under quarantine with immediate effect.

b. The quarantined area may or may not coincide with property boundaries, depending on the epidemiological situation on the ground. It may be that there is a wider area in addition to the infected property which should be placed under quarantine.

c. If the disease is detected on a farm or premises that is well fenced, where movement control and contact with other animals can be effectively controlled or prevented, and where there is good cooperation with the owners of the animals and the owners of the land on which the animals are found, then quarantine can be maintained on individual premises.

9.2 Quarantined area around infected property:

a. Precautionary quarantine must be imposed on direct neighbouring farms to the infected property, as well as all epidemiologically linked locations. Such properties must remain under quarantine pending the results of clinical investigation and serological testing.

b. Precautionary quarantine of a second layer of neighbouring properties must be considered, depending on the epidemiological situation on the ground, the numbers and sizes of properties involved, geospatial conditions, the presence or absence of livestock activities on the properties and the length of time since the introduction of the disease into the area.

9.3 Surveillance area:

a. Clinical surveillance must be performed on all properties with cloven-hoofed livestock in a wider surveillance area around the quarantined area, for example in a 10 km radius (depending on the same factors as noted in 9.2b above).

9.4 Live cloven-hoofed animals may only move from FMD quarantined premises with written permission from the state veterinarian, and accompanied by a Veterinary Red Cross Permit issued in terms of the Animal Diseases Act, 1984, (Act No 35 of 1984). This red cross permit must indicate conditions as per below under which movements are allowed and the individual identification numbers of all the animals being transported. Stock removal certificates with the registered brand mark of the owner must also accompany each consignment (Section 6 and Section 8 certificates issued in terms of the Stock Theft Act, 1959 (Act No 57 of 1959).

9.5 The most important consideration on suspicion or confirmation of FMD is to prevent its spread from the known infected locations as far as humanly possible. If there is a dispute about control methods or a shortage of resources, this prevention of spread must take precedence over the implementation of any control strategy.

9.6 It must be remembered that the prevention of spread of any animal disease is the responsibility of the owner or manager of the animals or land according to Section 11 of the Act. Thus, even before receiving any advice from government veterinary services, allowing the spread of FMD off any land would constitute a contravention of the Act.

9.7 It is also possible that a very large property or large section of land may have epidemiologically separate areas. This must be evaluated by the state veterinarian and a motivated proposal must be submitted to the Provincial Director for consideration and approval, if only a portion of the property is proven to be infected. The rest of the property will then be placed under precautionary quarantine until the clear separation and negative status have been confirmed.

9.8 If any properties in the quarantined area or surveillance area are found to be positive, that property will change status to an infected property and the area to be placed under precautionary quarantine and the surveillance area must be adjusted accordingly.

## 10 BIOSECURITY ON PREMISES UNDER QUARANTINE

10.1 No live animals may be removed from premises under quarantine or precautionary quarantine without written permission from the state veterinarian. A state veterinarian may only issue such permission for specific circumstances where further risk mitigation and quarantine will be applied.

10.2 All material that is deemed infectious must be disposed of in a safe manner on the premises under state supervision, unless there is a request for safe removal as outlined in “CONSIDERATION FOR SAFE MOVEMENT OF SPECIFIC PRODUCTS” hereunder. Potentially infective material include manure, left-over feed, milk, meat, wool, semen, embryos, bedding, carcasses, etc.

10.3 Safe disposal of risk material is the responsibility of the responsible person (i.e. the manager of the land, the owner of the land or the owner of the animals). The responsible person must keep proof of safe disposal or safe removal of infectious material.

10.4 General biosecurity measures must be put in place by the manager of the farm, including but not limited to access registers and limiting entry of visitors and vehicles, washing and disinfecting visitors’ and workers’ clothes on the premises, visitors and workers to refrain from contact with other cloven-hoofed animals within 5 days, etc. Equipment amenable to disinfection and vehicles must be

cleaned and disinfected with a registered disinfectant upon entry and exit of the infected property. No objects that have not been disinfected may leave the property. The responsible person must retain the name, registration number, batch number and expiry date of the disinfectants used as proof.

10.5 Options that can be considered for safe disposal of risk material include rendering, composting, burying, burning, and disposal at approved high hazardous landfills. The relevant Provincial Department of Environmental Affairs must give written permission for any of these options considering the environmental impact.

### 11 CONSIDERATION FOR SAFE MOVEMENT OF SPECIFIC PRODUCTS

11.1 Consideration can be given for safe removal of specific products from quarantined premises and/or Disease Management Areas after processing to ensure inactivation of the FMD virus.

11.2 Such applications will be evaluated on individual merit, based on risk assessment, and written application must be submitted by the client, and supported by the local state veterinarian, to the Director Animal Health at DALRRD.

11.3 All such movements must be on red cross permit if there is still further processing at destination, or on normal movement permit if the processing to inactivate the virus was done on the affected farm.

11.4 The WOAH Code provides details of processing requirements for different commodities to inactivate FMDV.

## PART B
## OPTIONS FOR SPECIFIC CONTROL STRATEGIES

**This section is intended to guide decision makers in choosing the most appropriate control measures for a particular outbreak situation. The specific control measures will only be implemented on written instruction from the Director Animal Health.**

### 12 CONTROL STRATEGY – IMPORTANT POINTS FOR CONSIDERATION

12.1 Once a location has been confirmed positive for FMD, all cloven-hoofed animals on the premises will be regarded as potentially infected until proven otherwise and quarantine of the premises will include all cloven-hoofed animals and their products.

12.2 Movement restrictions on sero-positive animals will remain in place indefinitely, whether due to natural infection or vaccination. Sero-positive animals in the FMD free zone must be traceable and accounted for to allow for future application to declare the zone free again. Any consideration of movement permits for sero-positive animals will thus include not only demonstrated absence of virus circulation but will also involve informed consent of the owner at destination as well as strict enforcement of traceability.

12.3 Live cloven-hoofed animals will only be considered for movement off the premises if the herd is clinically healthy and if there is no serological evidence of virus circulation for at least 14 days. No animals with clinically apparent disease or clear serological evidence of virus circulation may be moved.

12.4 Options for the control measures to implement during an outbreak of FMD are decided upon depending on the situation on the ground, including the purpose for which the animals are kept, the manner in which they can be contained to prevent mingling with other cloven-hoofed animals, and the cooperation of the animal owners.

12.5 Depending on the number and sizes of affected locations, the number and species of infected and in-contact susceptible animals as well as the resources available, a suitable official control and eradication strategy will be adopted for each outbreak situation. While consultation with affected role players and stake holders will be part of the process, the urgency of timeous action cannot be compromised, especially during the initial stages of a suspected or confirmed outbreak.

## 13 IMMEDIATE GENERAL MOVEMENT RESTRICTIONS ON CONFIRMATION OF AN OUTBREAK

13.1 As a precautionary measure, all cloven-hoofed livestock movements, or a specific subset of such movements, may be suspended nationally (i.e. complete standstill) or locally, until the extent of the outbreak has been established at the discretion of the National Director Animal Health. These may be declared by the Minister nationally or for specific controlled areas or Disease Management Areas (DMAs) or enforced as part of individually applied quarantine notes on all farms / epidemiological units in a certain radius from the infected focus.

13.2 Once the extent of the outbreak is determined, movement control measures for a wider area may be eased or modified by the Director Animal Health to allow for movement of animals from properties not under quarantine or suspicion, according to risk mitigation measures and with the permits or permissions as determined by the Director Animal Health.

13.3 Care should be taken to limit movement and to avoid gatherings of cloven-hoofed animals in general once an FMD outbreak has occurred. Movement of sick animals is prohibited to prevent spread of diseases and only healthy animals may be moved. Records of movements must be retained by the responsible persons at destination and origin in order to facilitate traceability if needed.

13.4 Given the large area of the country and the propensity of animals to move on foot, visible veterinary patrols together with the relevant security and traffic authorities are the preferred option to enforce movement control. Government controlled fencing for disease control purposes, cordons and roadblocks are very resource intensive, time consuming and of variable effectiveness and should only be considered in specific situations.

13.5 Any stray cloven-hoofed livestock or buffalo in the area of an FMD outbreak must be viewed as a high risk for spreading of disease and the local state veterinary services must be informed immediately. Such animals should be detained at suitable locations until they can be dealt with at the discretion of the Director Animal Health. Should an animal be destroyed, samples for FMD testing must be taken. Serum samples must be collected for serological testing and tissue samples must be collected if any suspect lesions are seen, prior to destruction and safe disposal of the animal.

## 14 DECLARATION OF A DISEASE MANAGEMENT AREA

14.1 If the outbreak is detected in animals that are not fenced in to prevent contact with other animals, where movement control cannot be effectively applied, or where there is not good cooperation with the owners of the animals or the land on which the animals are found, then the declaration of a disease management area (DMA) must be considered.

14.2 A DMA is an area that is considered as one epidemiological “unit”, where premises are potentially epidemiologically linked. The principles of infected, quarantined and surveillance zones should be echoed in the DMA to determine the level (clinical vs serological) and frequency of surveillance. However, all properties in the area will be subjected to the same movement control conditions.

14.3 The area including and surrounding the location of the outbreak should be declared a Disease Management Area in terms of Section 9 of the Act, where disease control measures are intensified. The DMA must include at least all the premises that have been confirmed positive, as well as any other areas deemed to be at high risk due to contiguous animal populations where disease spread is highly likely. This area should be of significant size and could include at least the magisterial district of the infected location, as well as all adjacent districts and any other districts identified through forward and

backward tracing. Consideration must be given to natural boundaries to promote effective movement control.

## 15 VACCINATION

15.1 Vaccination against FMD is strictly government controlled in South Africa and may only be performed by state veterinary services on instruction by the Director Animal Health. The procurement, distribution and handling of the vaccine will be controlled by the Director Animal Health who will ensure the maintenance of adequate supplies of suitable vaccine.

15.2 The use of vaccination as a suitable way to control an outbreak of FMD will be carefully considered, taking into account the size of the affected area, the farming practises involved, speed of spread and effectiveness of control measures already implemented.

15.3 The presence of vaccinated animals in a possible free zone may compromise future surveillance efforts and all vaccinated animals must be clearly identifiable if internationally recognized freedom is to be considered after the outbreak has been eradicated.

15.4 The following factors can be considered when taking the decision whether or not to use vaccination as a control strategy:

a. Vaccination is indicated if the disease spreads faster than it can be curtailed by movement control, and especially if this spread is contiguous.
b. If there is mingling of animals or lack of facilities, leading to the inability to enforce proper control measures, then vaccination will be advocated in the area where separation and control of animals cannot be properly applied.
c. Vaccination could also be considered when there is a need to reduce the viral load, in order to decrease the risk of spread to adjacent properties.
d. Vaccination can be done with the intention of eventual slaughter of vaccinated animals (“vaccinate to kill”), or with the intention of allowing the vaccinated animals to be released from quarantine once the risk of infection has passed (“vaccinate to live”).
e. If animals are well contained on a farm or premises which is properly fenced and where open camps or areas can prevent direct contact with animals on adjacent land, then vaccination may not be indicated.
f. Vaccination is not a guarantee of the absence of disease risk, but will aid in reduction of the viral load and reducing the rate of spread.

15.5 If vaccination is used as a control strategy, the maintenance of the cold chain must be strictly adhered to. A procedure to do this must be documented, with checks in place to ensure that this can be audited.

15.6 Vaccination will be done once only for cattle intended to be slaughtered, while two initial vaccinations will be considered for cattle intended to be kept.

15.7 Day 0 (please refer to section 16) is the last day on which animals on the property were vaccinated for the first time. In the case of two vaccinations, day 0 remains the last day on which animals on the property were vaccinated for the first time.

15.8 No calves born after day 0 will be vaccinated and no further booster or annual vaccinations will be done, unless required in certain cases where infections persist.

15.9 Vaccinated animals intended for slaughter can be F-branded and/or ear tagged to show their FMD infection /vaccination status. In animals intended for slaughter, this can be temporary marking with paint, but must be clearly visible and water-resistant for as long as the animals remain alive.

15.10 Animals not intended for slaughter, which will remain on the farms, must be permanently individually identified and traceable for life, and it is strongly recommended that such animals should also be F-branded to make it easier to visually identify them as previously vaccinated.

# PART C
# RESOLVING OUTBREAKS ON POSITIVE PREMISES

**This section is applicable to FMD positive premises and provides guidance for resolving the outbreak on individual premises. The selected measure may differ for different premises in the same outbreak event, as it will depend on the specific circumstances on each outbreak location. The preferred options should be discussed with the animal owners and the Action Plan communicated to the DAH.**

## 16 DETERMINATION OF CLINICAL RESOLUTION ON A PROPERTY (DAY 0)

16.1 The date of clinical resolution (Day 0) for the premises will be proposed by the supervising state veterinarian in writing after conducting clinical examination on all cloven-hoofed animals on the property and has to be confirmed by the DAH.

16.2 If the outbreak presented with clinical signs of FMD, the clinical end point (D0) will be when there has been an absence of fresh clinical signs of disease for at least 14 days, as determined by the State Veterinarian. Once there are no obvious fresh signs of clinical disease, the state veterinarian must be informed and arrangements made for clinical examination, including mouthing. If no fresh signs of clinical disease are observed by the state veterinarian, the date must be noted. The clinical examination by the state

veterinarian must be repeated after 14 days to prove the absence of circulating virus. If there is no evidence of circulating virus, the date of first "clean" examination will be taken as Day 0.

16.3 If the outbreak presented with seroconversion in the absence of clinical signs of disease, day 0 will be two months from the date of the first seropositive result. (This is determined by going back 2 incubation periods (28 days) from the date of first seropositive result for the possible date of first infection, and then waiting 3 months). The premises must remain under quarantine during this time and the animals must remain free from clinical signs, as confirmed by regular examinations performed and documented by the responsible owner and/or private veterinarian and state veterinary officials.

**OR**

16.4 Alternatively, if no clinical signs of disease were seen, the owner has the option to request for serological testing of the animals (at the owners cost) to prove that there is no evidence of further seroconversion for a period of at least 14 days. Sampling to determine day 0 must be performed on a representative number of the animals in each epidemiological group. The date of first sample collection must be noted and the state veterinarian must collect samples for serological testing to determine serological prevalence. The collection of samples by the state veterinarian for serology must be repeated after 14 days to prove the absence of seroconversion and circulating virus. If there is no evidence of circulating virus, the date of first sample collection will be taken as Day 0.

16.5 If animals were vaccinated to reduce the viral load, the day of first vaccination of the last animals on the property will be regarded as Day 0, provided that there are no fresh clinical signs of disease. Day 0 is the last day on which animals on the property were vaccinated for the first time. In the case of two vaccinations, day 0 remains the last day on which animals on the property were vaccinated for the first time.

16.6 If clinical signs of disease are still present in the herd at the time of vaccination, the provisions of 16.2 will apply and day 0 will move to a later date as determined by the state veterinarian in consultation with the Director Animal Health.

## 17 CONSIDERATIONS FOR RESOLVING OUTBREAK ON FARM/PREMISES:

17.1 Options to depopulate affected premises should be considered, as this allows for the quickest resolution of the outbreak on the property. Options for depopulation include moving animals to another FMD positive premises, or controlled slaughter of the animals at a designated abattoir (see point 18 of this document).

17.2 Once a property has been depopulated under state veterinary supervision, cleaning and disinfection must be performed to the satisfaction of the State Veterinarian, whereafter the property must be left free of cloven-hoofed species for at least 28 days, then application can be made to lift quarantine on the farm.

17.3 For premises where live cloven-hoofed animals remain, 12 months or more after day 0 (or clinical resolution), a representative number of animals on the farm can be tested serologically for FMD, on two samples collected 14 days apart, from 30 animals per epidemiological group up to 1000 animals, and 60 samples per epidemiological unit for groups of more than 1000 animals. Testing will be done at the cost of DALRRD but requires prior approval from the DAH who will advise on the specific animals and groups to be sampled. If all results are negative, quarantine on the farm can be lifted subject to approval from the DAH. However, movement control for traceability purposes will remain on previously vaccinated (and possibly previously infected) animals, and such movements may only take place with prior written permission from the state veterinarian at origin and destination.

## 18 CONTROLLED SLAUGHTER

18.1 In order to expedite the depopulation of affected premises, consideration can be given for controlled slaughter. This could be implemented on a voluntary basis to assist the animal owner to eradicate the disease from his/her land. It is considered the best option where affected animals were intended for slaughter, for example if the outbreak is detected in a feedlot, or in a commercial beef herd.

18.2 The affected land will remain under quarantine during controlled slaughter. Animal owners would have to apply in writing and slaughter of animals from quarantined farms will have to be restricted to pre- approved non-export abattoirs with the necessary facilities in place to ensure the safe handling of meat and by-products from premises or areas under quarantine.

18.3 Abattoir owners can apply for pre-approval to slaughter animals from FMD quarantined properties. Such application must be made to the Director Animal Health in the specific format required to be designated for this purpose.

18.4 If it is possible to keep groups of animals as separate epidemiological units, animals can be sorted according to slaughter-readiness and clinical picture. For example, animals that were clinically affected and that have recovered can be separated and considered for the next slaughter group.

18.5 Animals must be clinically healthy when they go for controlled slaughter and there must be no indication of obvious circulating virus for at least 14 days on the premises or in the group isolated for slaughter, if it is an epidemiologically separate group. Once Day 0 (see 16 above) has been confirmed, a request can be sent to DAH in the specific format required for permission to start controlled slaughter.

18.6 Table to illustrate the control measures and timelines for slaughter of animals:

| Time frame | Abattoir | Maturation of meat | Destroy or process heads (including tongues) and feet | Destroy or process offal | Debone | De-gland | Process meat to inactivate FMD virus |
|---|---|---|---|---|---|---|---|
| Day 0 to Day 14 | Pre-approved Non-export | Yes | Yes | Yes | Yes | Yes | Yes |
| 14 days to 6 weeks | Pre-approved Non-export | Yes | Yes | Yes | Yes | Yes | No |
| 6 weeks to 6 months | Pre-approved Non-export | Yes | Yes | No | No | No | No |
| More than 6 months | No prior approval needed Non-export | Yes | No | No | No | No | No |

18.7 Between Day 0 and Day 14, controlled slaughter will include maturation of meat, deboning, deglanding and processing of the meat, either through cooking or drying in accordance with the WOAH Code requirements. Bones, heads, feet and offal must be destroyed or processed to ensure inactivation of the FMD virus. The abattoir must be pre-approved to ensure safe disposal/ processing of the bones, heads, feet and offal, and the abattoir may not be export approved. A facility where the meat can be processed must also be specifically pre-approved for this purpose by the Director Animal Health. Any additional costs or financial losses related to the disposal and processing will be for the account of the owner of the animals. No new cloven-hoofed animals may be introduced onto the property at this stage.

18.8 Between Day 14 and 6 weeks after Day 0, controlled slaughter at pre-approved, non-export abattoirs must include maturation of meat, deboning, deglanding and destroying or processing of bones, heads, tongues, feet and

offal . Any additional costs or financial losses related to the disposal will be for the account of the owner of the animals. No new cloven-hoofed animals may be introduced onto the property at this stage.

18.9 Between 6 weeks to 6 months after Day 0, controlled slaughter can continue at pre-approved non-export abattoirs without deboning and de-glanding, but maturation of meat must still take place. Heads, tongues and feet must be destroyed or processed, but offal (excluding tongues) may be sold as normal. New cloven-hoofed animals may be introduced onto the property at own risk at this stage. New introductions must be kept epidemiologically separated and must be serologically tested after 28 days to confirm that there is no circulating virus in the group to be introduced onto the premises.

18.10 More than 6 months after Day 0, slaughter can proceed at any registered abattoir, except not at export approved abattoirs. Maturation of meat must still take place and the 5$^{th}$ quarter can be handled as normal. Movements to the abattoirs must be done with red cross permits. No animals that originate from properties under restriction for FMD may be slaughtered for the export market.

## 19 DESTRUCTION

19.1 The destruction of FMD infected and in-contact animals is not prescribed as a control measure in terms of the Animal Diseases Act, 1984, (Act no 35 of 1984). Destruction of infected or in-contact animals may however be ordered, if deemed necessary, by the Director; Animal Health to achieve a controlled purpose.

19.2 If the responsible person opts to destroy sick or in-contact animals for welfare reasons, they are advised to contact animal welfare organisations for guidance. The state veterinarian must be informed of any destruction operations in order to ensure the safe disposal of carcasses and infective material, as well as to ensure that the numbers of destroyed animals are recorded accurately for reporting purposes.

## 20 DEPOPULATION, DISINFECTION AND REPOPULATION

20.1 Depopulation of all cloven-hoofed livestock on FMD affected premises will expedite the lifting of quarantine. Depopulation can be achieved either through controlled slaughter, or by removing animals with prior permission of the Director Animal Health to another approved property, such as another property also under quarantine for FMD. No animals may be removed from the premises under quarantine without written permission from the state veterinarian.

20.2 Once the affected premises is no longer populated by any FMD susceptible livestock, cleaning and disinfection for the purpose of lifting quarantine can commence. If the premises can be effectively cleaned and disinfected, then application for lifting of quarantine can be made 28 days after cleaning and disinfection. In the case of extensive kraals/camps which cannot be effectively disinfected, such kraals/camps will be regarded as disinfected if there have been no FMD susceptible species in the kraal/camp for at least 42 days.

20.3 Depopulated premises can apply to repopulate at own risk 14 days after cleaning and disinfection. If repopulation is approved, the premises will be viewed as suspect and placed under quarantine for at least 28 days to monitor for any signs of FMD. If repopulation is considered by the owner of the land, it is advised that this should be limited to a small group of animals that are easy to handle and monitor, and that can be slaughtered and/or destroyed if required.

20.4 Should there be FMD susceptible species other than cattle, sheep, goats or pigs on the property that cannot be removed, an application would have to be made to the DAH before repopulation and will be dealt with on a case by case basis.

## 21 DISINFECTION OF FARM/PREMISES

21.1 Important factors that affect the effectiveness of disinfection are:

a. The target pathogen: Ensure the disinfectant used is effective against FMD virus.

b. Concentration of the active ingredient in the disinfectant solution: Ensure that the disinfectant solution is not too weak or it will not be effective.

c. Contact time: The virus must be exposed the disinfectant for a minimum period as prescribed by the manufacturer before it is killed. If the disinfectant dries before the contact time is achieved, reapply until the minimum time is achieved.

d, The presence of organic material or other dirt: Few disinfectants work optimally in the presence of organic material, so faeces and dirt should be physically removed or washed off with a detergent, if necessary, before disinfectant it applied.

e. Material to be disinfected: More porous or rough materials (e.g. wood, concrete) may provide “hiding places”. Nonporous surfaces such as metal, plastic, glass or sealed surfaces are more easily disinfected.

21.2 The following table represents ingredients cited in international standards as effective against FMDV:

| **Active ingredient** | **Trade/ common name example** | **Concentration for FMDV (%)** | **Contact time (minutes)** | **Important to note** |
|---|---|---|---|---|
| Sodium hydroxide | Caustic soda | 2 | 10 | Add powder to water and not water to powder Corrosive |
| Sodium carbonate | Soda ash | 4 | 10 | Mildly corrosive |
| Citric acid | | 3 | Porous surfaces: 30 min. Non-porous surfaces: 15 min. | Clean well before applying. Corrosive |
| Acetic acid | Household vinegar (4-8% acetic acid) | 2 | 10 | Clean well before applying. |
| Sodium hypochlorite (NaClO) | Household bleach | 0.3 | Porous surfaces: 30 min. Non-porous surfaces: 15 min. | Use immediately after mixing the solution. Add NaClO to water. Corrosive |
| Sodium chloride/ Potassium peroxymonosulphate/ | Virkon S | 1 | 10 | |

Please consult your supplier for more information. Only registered products must be used. Given the risk of FMD, the package insert of the product should indicate that it is registered specifically for inactivation FMD virus.

21.3 FMDV is <u>resistant</u> to the following disinfectants, especially in the presence of organic matter:

a. Iodophores (povidone-iodine)
b. Quaternary Ammonium Compounds (QACs) (chlorhexidine, dishwashing liquids, hand soaps
c. Phenols (carbolic acids)

## 22 PREMISES WHERE CLOVEN-HOOFED ANIMALS ARE RETAINED

22.1. <u>General conditions:</u>

a. For premises where the owner chooses not to depopulate, the farm will remain under quarantine for a longer period of time of more than 12 months.

b. In the case of export, most trade partners do not accept products from animals under quarantine for FMD, therefore no export will be allowed until quarantine on the farm has been lifted. Some trade partners extend this restriction to the export of grass/hay/animal feed from the area. Producers of products of animal origin, including but not limited to milk and meat, may also not supply ZA registered export facilities until the quarantine on the farm has been lifted unless the export facility has provided for effective separation of all processes by time and / or space to the satisfaction of the DAH.

c. All movements from quarantined premises will be considered on a case-by-case basis and will be subject to a risk assessment. This applies also to any proposal for the introduction of new animals onto any premises or into any locations that are under quarantine. Details of the required risk assessment will depend on the individual circumstances and purpose of the intended movement and the status and biosecurity of the premises at origin and destination of such movement. The proposed movement and risk assessment will require support from the provincial veterinary services at origin, will require approval from the Director Veterinary Services of the recipient province, and final approval from the National Director Animal Health. The outcome of the risk assessment, and whether or not the movement will be allowed, will be communicated to the applicants once an application has been received and evaluated. The outcomes of such assessments will be captured in the Annexure to this document, to ensure that similar requests are handled consistently.

d. Even after quarantine has been lifted, lifelong movement control for traceability purposes will apply to previously vaccinated (and possibly previously infected) animals, and such movements may only take place with prior written permission from the state veterinarians at origin and destination.

e. The keeping of cloven-hoofed animals on affected premises is not ideal, as it will prolong the period of quarantine on the affected farms. In addition, the number of seropositive animals outside of the FMD controlled zones must be limited as much as possible. However, retaining animals on affected premises can be considered for specific instances, i.e. for high value stud animals, or where it is likely that these animals were not affected by the outbreak, or vaccinated animals that did not go for slaughter.

f. Animals to be retained must be permanently and individually identified and thereafter they must be handled as little as possible until at least 3 months after Day 0. This is to prevent inadvertent spread of virus from these animals. All cloven-hoofed animals on the premises must be recorded in a register, a copy of which must be provided to the

local state veterinarian, the Provincial Veterinary Operations Committee and the National Directorate Animal Health. Any change in the animals in this register must immediately be notified in writing to the state veterinarian and the Directorate Animal Health.

g. Animals to be retained must be kept as far away as possible from any other FMD affected animals and if possible, they should not be moved to camps directly adjacent to neighbours. If handling of the animals is required during the 3 month period, this must be done in a separate handling facility so that the animals are not handled in the same handling facilities as affected animals.

22.2 Details of testing:

a. Two rounds of serological testing, 14 days apart, may be performed on animals remaining on the premises. The first round of testing may only commence at least 3 months after Day 0. Individual animal identification must be included with sample and recorded on the result sheet.

b. If testing is performed between 3 to 12 months after Day 0, the cost of testing will be for the owner's account. Once a period of 12 months have passed since Day 0, the cost for testing will be borne by DALRRD.

c. Once a period of 12 month after Day 0 has passed with no clinical or serological signs of active virus circulation, a representative number of animals on the farm will be tested to confirm the absence of circulating virus. Sampling must include if possible young animals born after Day 0, as well as animals previously infected and/or vaccinated.

d. If serology on some animals is positive but shows stable or declining titres as determined by the DAH, application can be made for the partial lifting of quarantine on the premises. This means that livestock activities on the rest of the premises can partially resume, but the premises will remain under restrictions while there are seropositive animals on the premises.

e. If serology on some animals is positive and shows an increase in prevalence or titres as determined by the DAH, the premises will still be regarded as infected and will remain under full quarantine. The matter must be raised with the DAH for individual discussion on how to proceed, taking into account the history, the clinical picture, the numbers of animals, etc.

f. If serology is negative on both rounds on all animals remaining on the premises, application can be made to lift quarantine on the premises and the remaining animals, using the prescribed format.

22.3. Communal areas, Disease Management Areas and Protection Zones

a. For quarantine to be lifted, there must be no clinical signs of disease in animals or active virus circulation for at least 12 months.

b. Targeted serological surveillance must be performed on non-vaccinated cattle who were in contact with diseased animals, and calves born from infected animals after Day 0, in the cluster of affected diptanks.

c. The Provincial Director needs to provide detailed recommendation to lift quarantine on a DMA or outbreak in a communal area.

## 23 REQUIREMENTS FOR LIFTING QUARANTINE ON FMD AFFECTED PREMISES

23.1 In order to apply to the Director Animal Health to lift quarantine on the premises, one of the time frames hereunder must be complied with.

23.2 As guidance, note that the earliest possible options to lift quarantine on the premises are:

a. For depopulated premises, 28 days after cleaning and disinfection, once all FMD susceptible livestock have been removed from the premises, in accordance with point 20 DEPOPULATION, DISINFECTION AND REPOPULATION.

**OR**

b. For premises where animals were retained, at least 3 months after Day 0, but more likely more than 12 months after Day 0, and when it can be demonstrated that there is no longer circulating virus on the premises, and when there are only clinically healthy animals left on the property in accordance with point 22 OPTIONS FOR CLOVEN-HOOFED ANIMALS RETAINED ON AFFECTED PREMISES.

23.3 The owner of the animals and/or land must decide which option is preferable to his/her situation, also considering the different options to determine Day 0. Consideration must be given to the time frames involved. Unless indicated otherwise, all costs associated with the keeping of animals, testing, disposal of animals or products, etc will be for the account of the owner of the animals.

23.4 Once a decision is made, the owner must draw up an action plan, outlining the intention and providing estimated time frames, considering the numbers of animals involved. This plan must be endorsed by the state veterinarian and then submitted to the provincial Veterinary Operations Committee and DAH. Changes may be made to the proposed action plan, as long as the reasons

for and details of the changes are communicated in writing to the VOC and DAH.

23.5 All actions on the premises related to the action plan must be carried out under supervision of and confirmed by the state veterinarian. The owner of the animals and/or premises is responsible to maintain records of individual identification of all cloven-hoofed animals on the property, with any changes to the animal numbers updated on a daily basis.

23.6 Once the requirements for lifting of quarantine have been complied with, an application may be made to the Director Animal Health in the prescribed format to lift quarantine. This application must include the following:

a. List of individual identification of all cloven-hoofed animals that were known to be on the premises at the start of quarantine
b. For each animal, the date and details of the fate of the animal (i.e. either the slaughter date and abattoir, or the dates of two negative serological tests, together with copies of the tests)
c. A copy of the agreed action plan, with any subsequent amendments
d. Date when all requirements for lifting quarantine have been complied with.

# PART D
# COUNTRYWIDE SURVEILLANCE AND TERMINATION OF OUTBREAK

**This section is applicable to the country as a whole and will mainly be driven by the National Directorate Animal Health, with support from the Provincial Veterinary Services.**

## 24 SURVEILLANCE TO DETERMINE EXTENT OF SPREAD

24.1 Surveillance to determine the extent of spread will depend on the outbreak specifics (communal, commercial, auction, extensive, intensive etc.), therefore specific guidelines can only be given once an outbreak has occurred. Surveillance includes both clinical inspection of livestock as well as the collection of samples for sero-surveillance and agent identification. For sero-surveillance, serum samples are collected and are tested for all three serotypes (SAT 1, SAT 2 and SAT 3) of FMD by Solid Phase Competition ELISA (SPCE). For agent identification, where fresh clinical signs are seen, lesion samples and/or probang samples are collected for Polymerase Chain Reaction (PCR) tests.

24.2 Surveillance may include some or all of the following measures:

a. Clinical and/or serological surveillance at neighbouring properties.

b. Clinical and/or serological surveillance of animals sharing communal grazing/water.
c. Clinical and/or serological surveillance of animals linked by trace-back and trace-forward activities.
d. Clinical and/or serological surveillance of properties in the DMA or standstill area.

## 25 TERMINATION OF OUTBREAK

25.1 Closing of outbreaks:

Once the requirements for lifting quarantine on affected premises have been met, the responsible state veterinarian must submit a closing SR1 to the National Director Animal Health (Epidemiology@dalrrd.gov.za). The outbreak on the specific premises will then be closed with the WOAH by DALRRD. Once all outbreaks in an event have been closed, the event will be closed with the WOAH by DALRRD.

25.2 Regaining FMD free zone status with the WOAH:

In order to regain/recover or re-apply for the internationally recognized FMD free zone status with the WOAH, the country must comply with the requirements of the WOAH Terrestrial Animal Health Code. The FMD free status will only be reinstated if the WOAH accepts the information provided.