



Trans-boundary Animal Diseases Programme

SAT TYPE FMD OUTBREAKS IN SOUTH AFRICA

Dwarka RM

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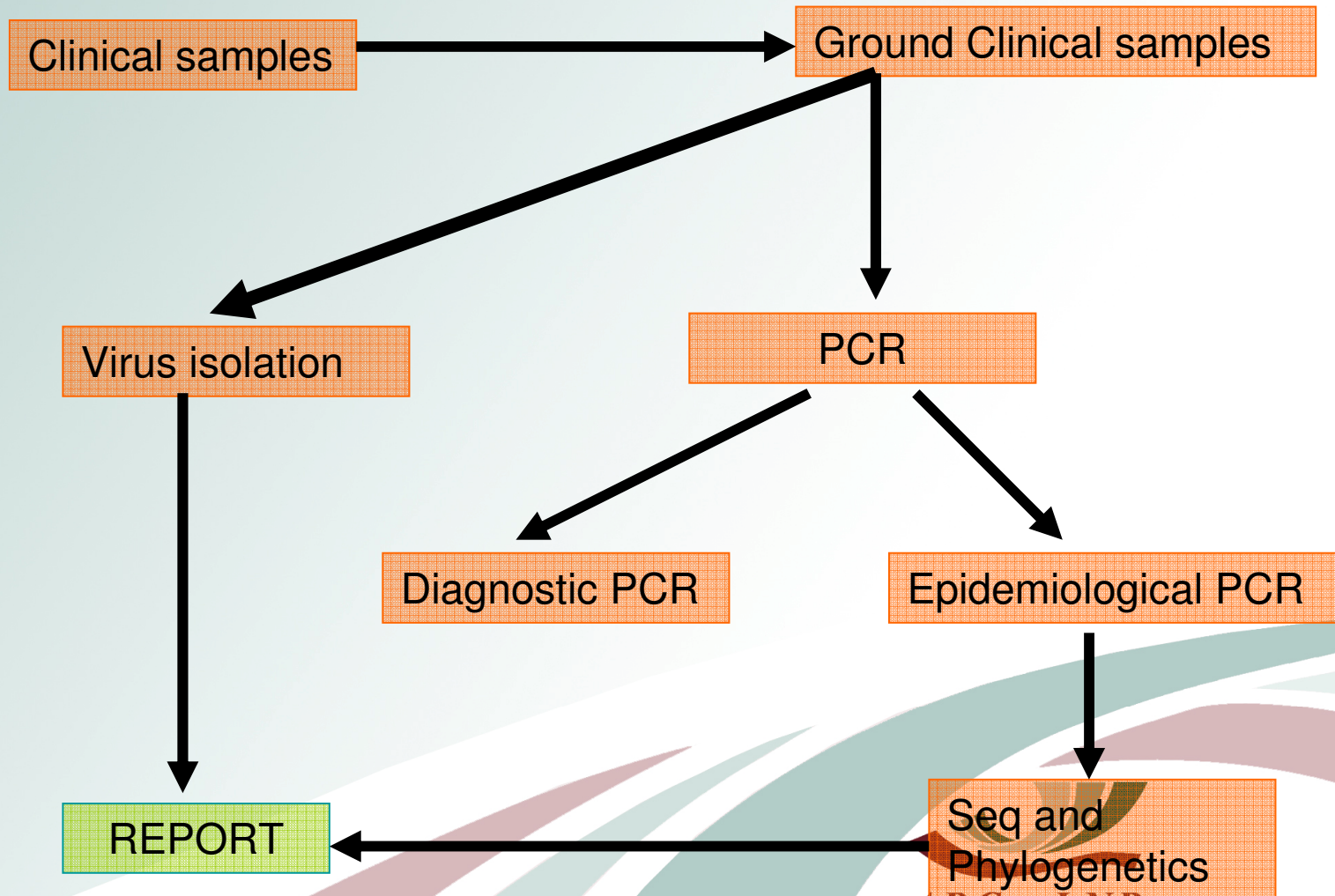


Range of tests for FMD

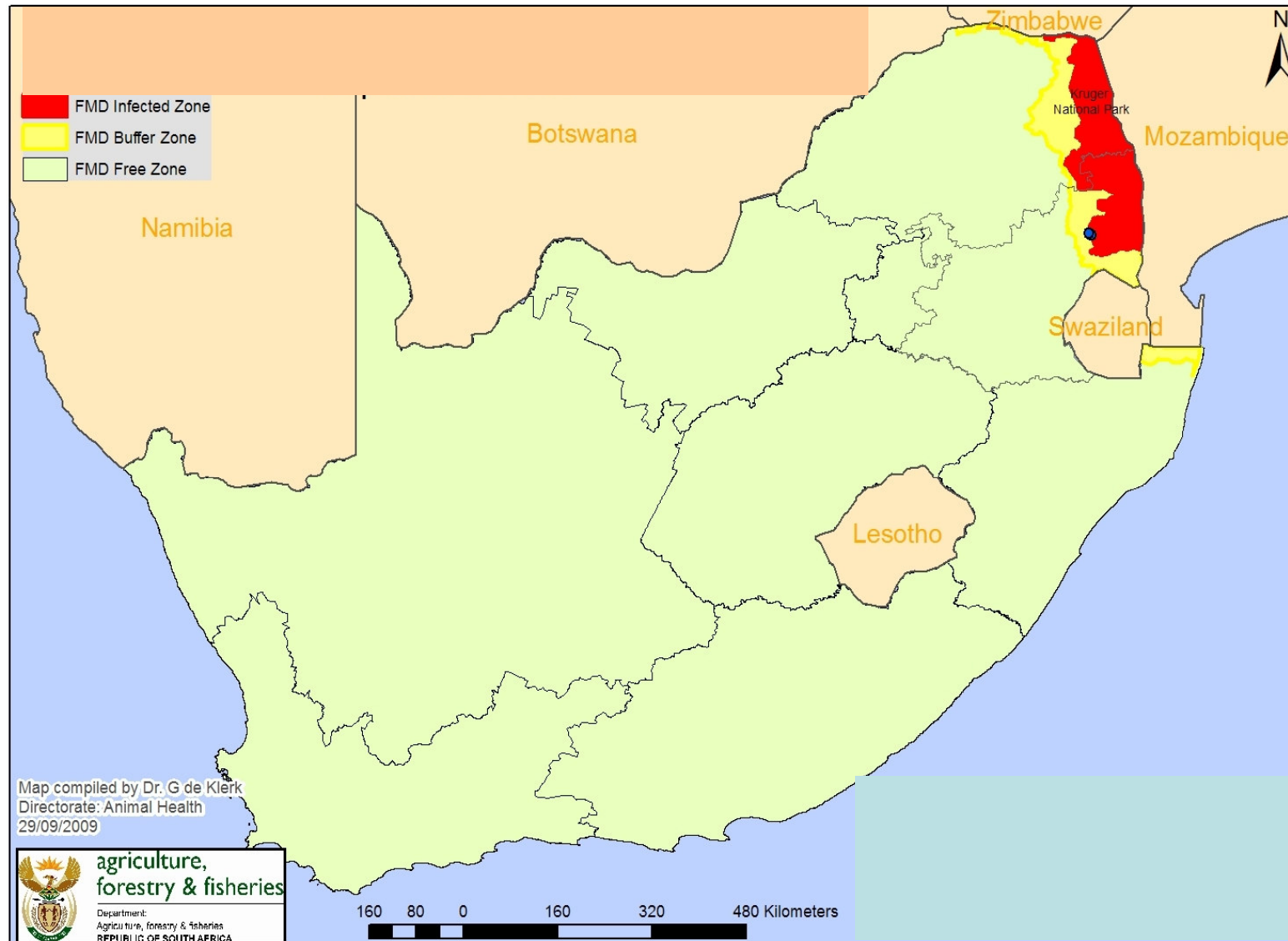
(OIE/FAO Reference laboratory status)

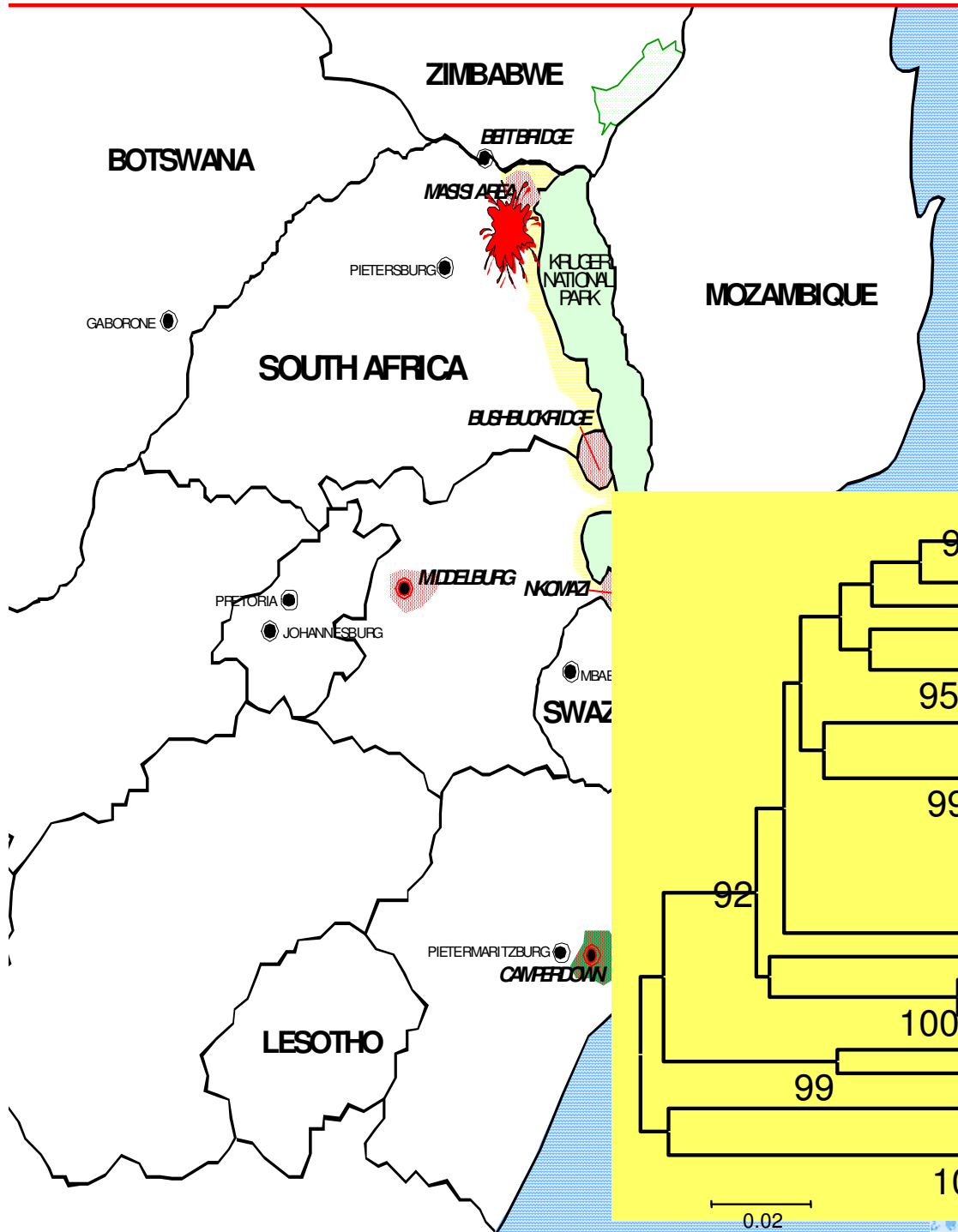
- Liquid phase blocking ELISA
- Solid phase competition ELISA
- Virus neutralisation
- Virus isolation
- Non-structural protein ELISA
- Typing (antigen) ELISA
- Molecular diagnostics: PCR, sequencing, phylogenetic analysis of outbreak strains
- Disinfectant testing

Route of possible outbreak samples



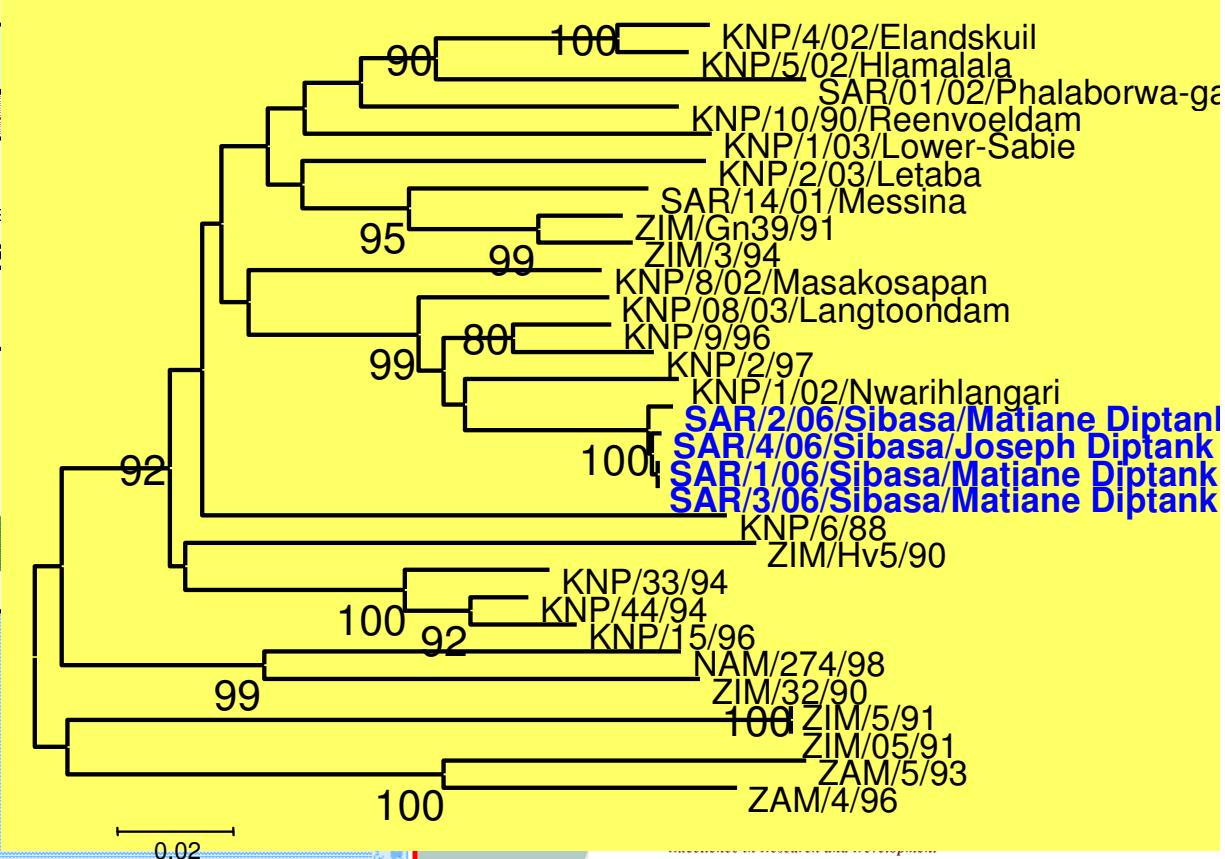
FMD CONTROL ZONES



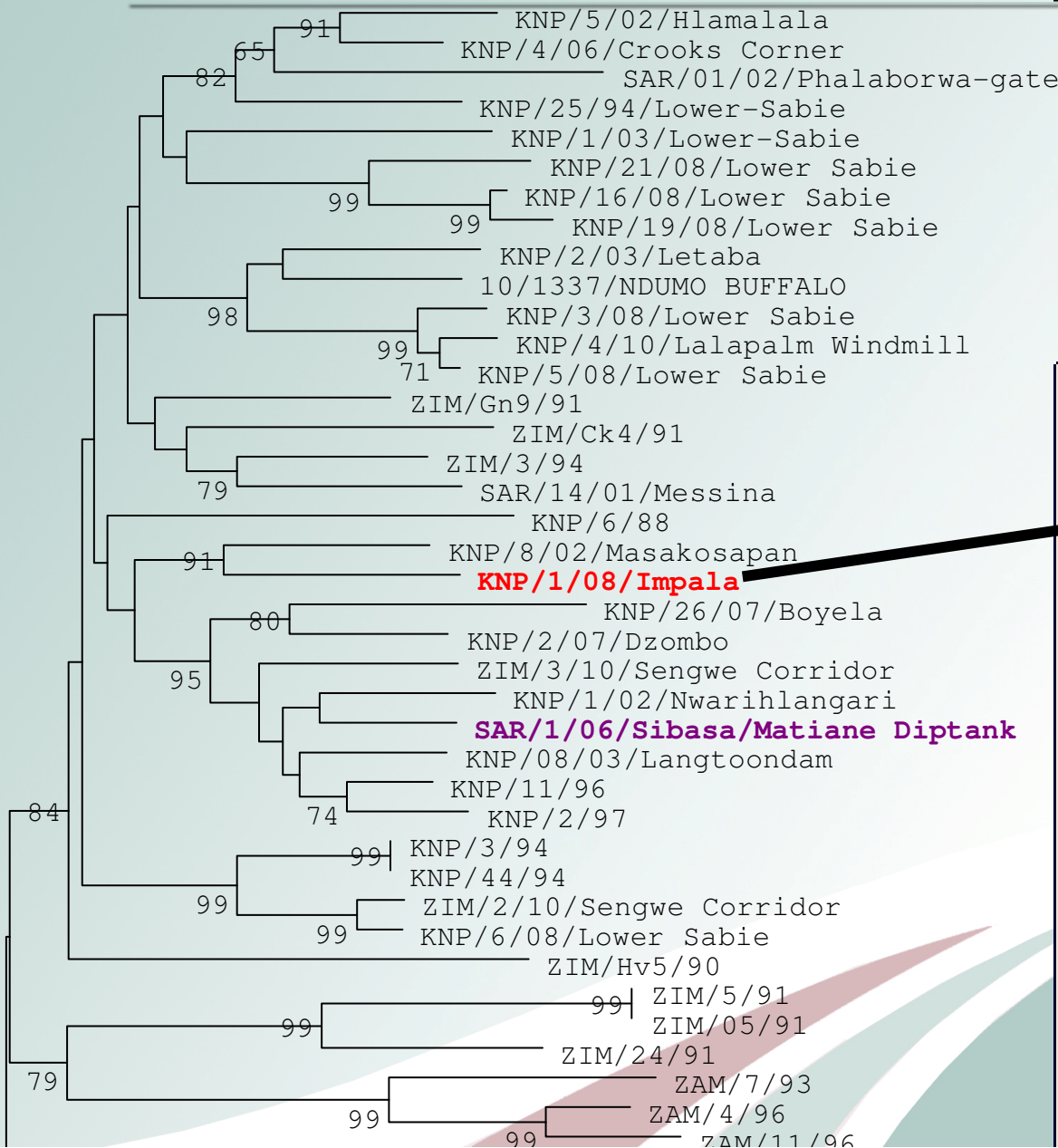


SAT 3: Sept 2006: Sibasa

This outbreak occurred well within the OIE recognised buffer zone of the FMD control zone of SA adjacent to the KNP. The status of South Africa's "FMD free zone without vaccination" has not been affected by this outbreak, and therefore South Africa's FMD status has not changed and the export of animals and animal products from South Africa is not affected (OIE report).



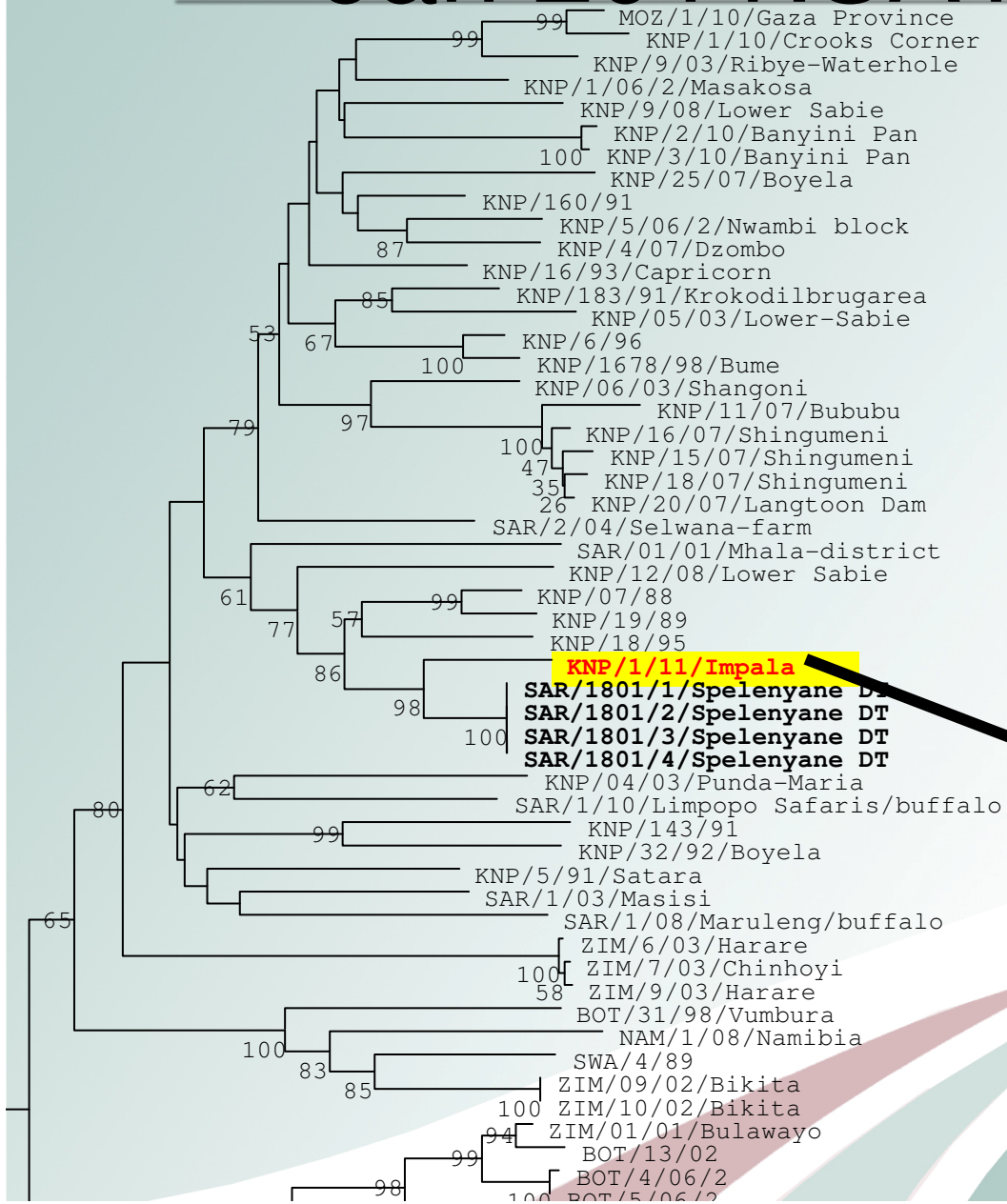
June 2008: SAT 3 Impala: Pafuri



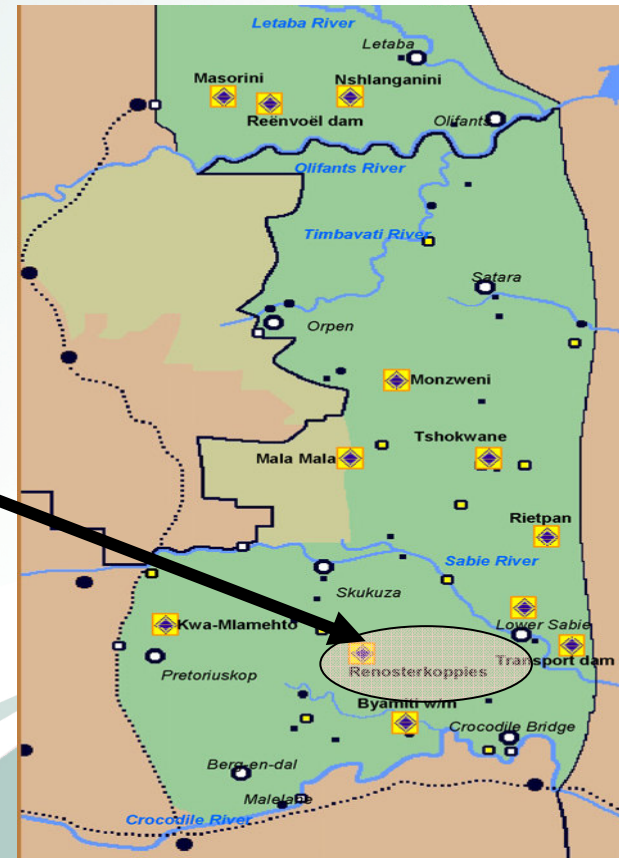
SAT 3 isolate clustered as part of the southern toptype of viruses, but differed by 16% from the SAT 3 outbreak strain characterised from the Sibasa area in 2006



Jan 2011: SAT 2: Impala



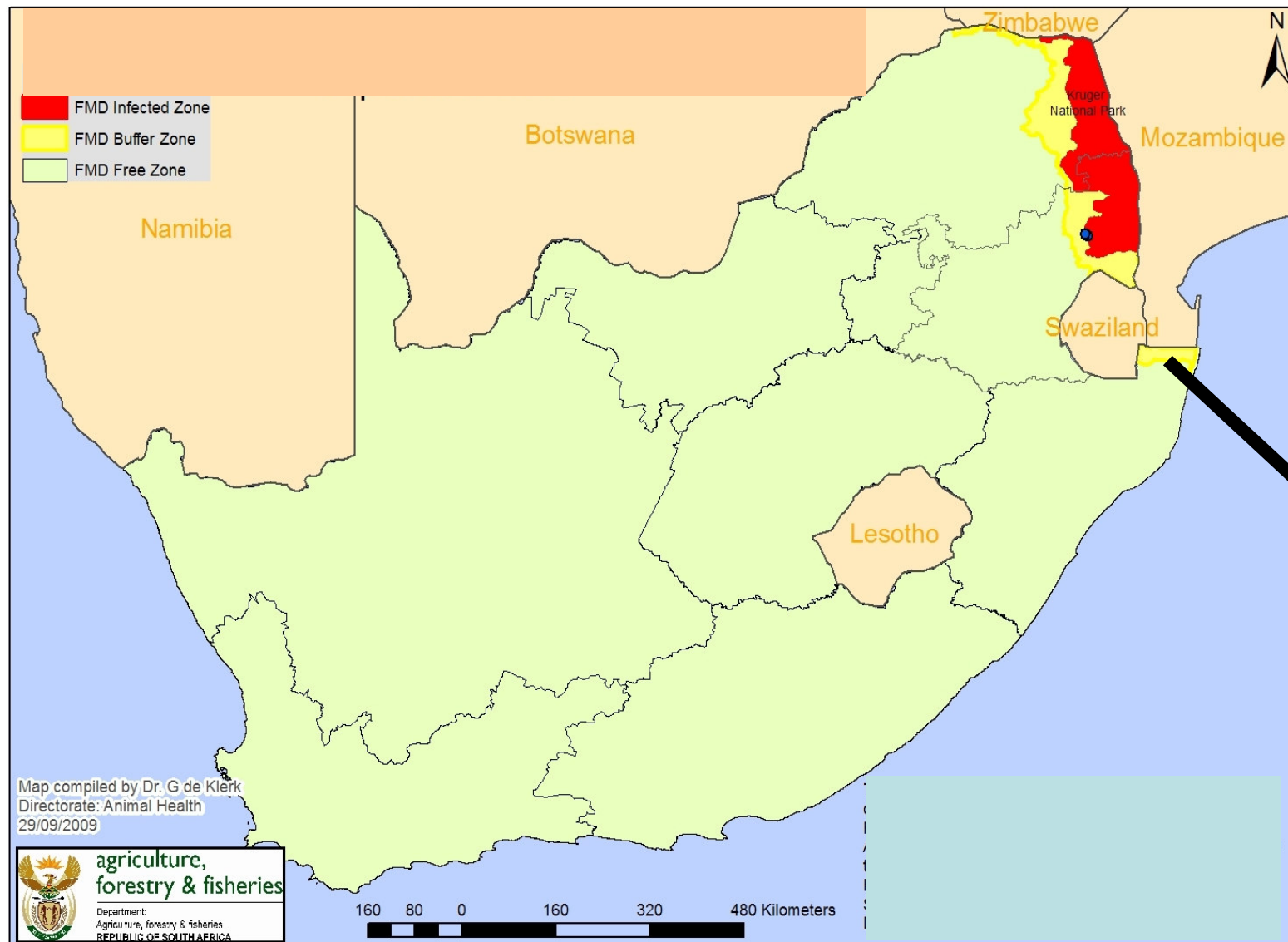
SAT 2 strain characterised from impala at Renosterkoppies, KNP differs by 6% from the SAT 2 outbreak strain



Outbreaks in MP Protection zone (Dr Ben du Plessis)

- SAT 1: 2009
- SAT 2: 2011/2012

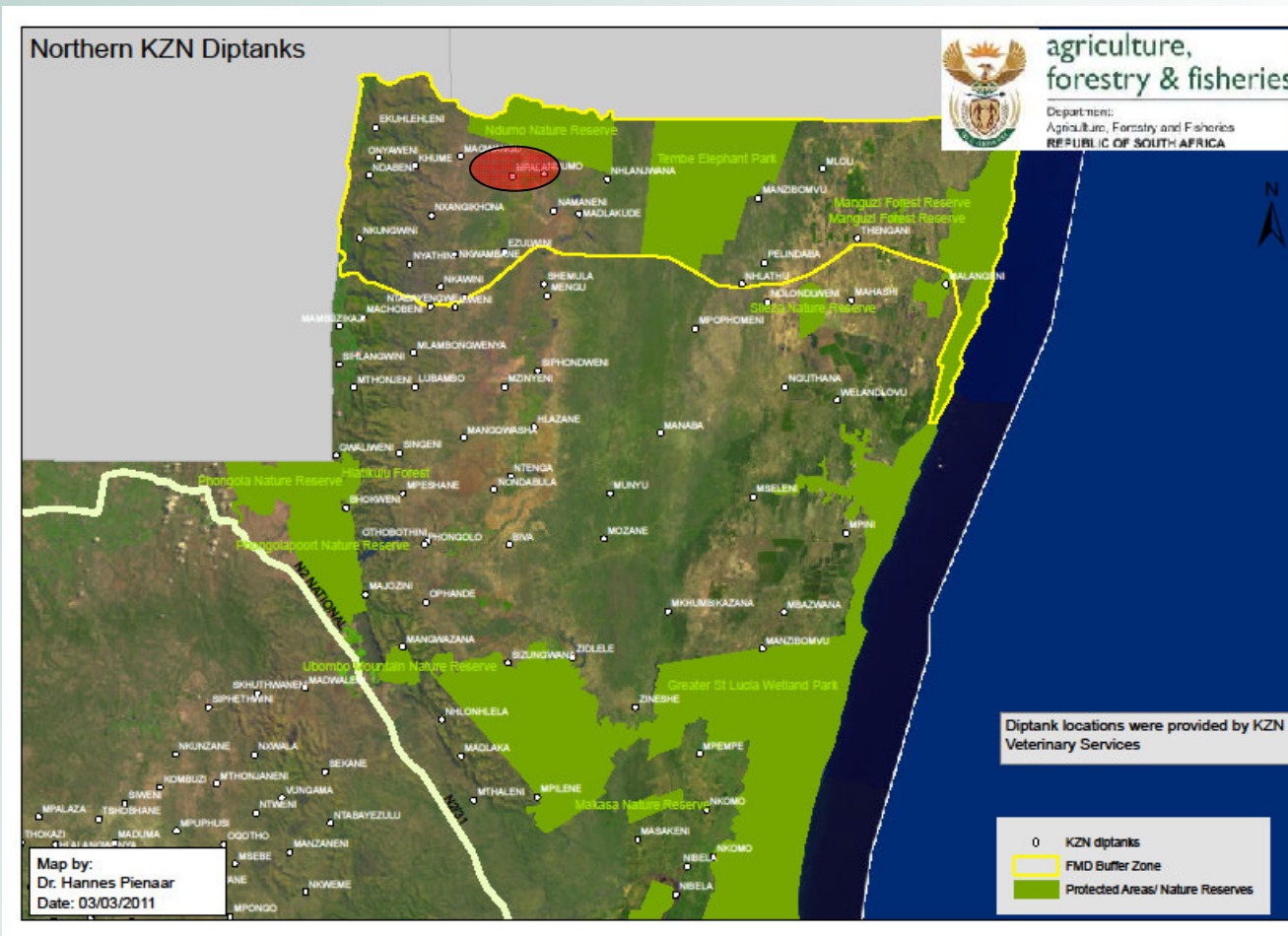
FMD: Kwa-Zulu Natal



FMD
outbreak



First serological positive sera (February 2011)

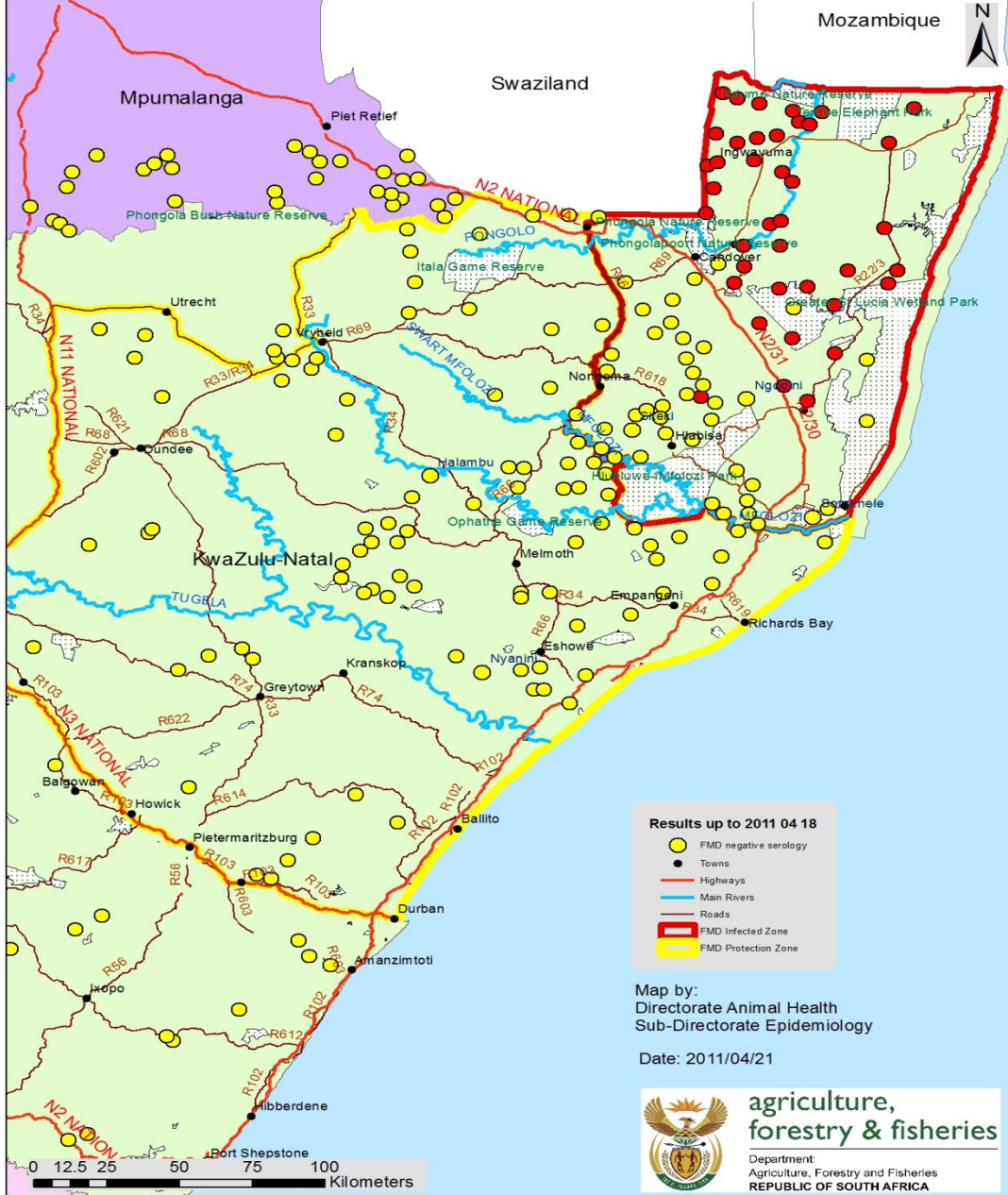


02 March 2011

SAT 1 SAT2 SAT3 NSP

					SAT 1	SAT2	SAT3	NSP	
29	Biess	Mangwazana	4Y	F	1.4	<1.3	1.6	POS	
30	Didle	Mangwazana	5Y	F	<1.3	<1.3	1.7	POS	
31	Didla	Mangwazana	5Y	F	<1.3	<1.3	1.7	neg	
32	Bontom	Mangwazana	5Y	F	1.8	<1.3	>2.2	neg	
33	Mdaka	Mangwazana	5Y	F	2.0	<1.3	>2.2	POS	
34	Malibau	Mangwazana	5Y	M	<1.3	<1.3	1.4	neg	
35	Mboovu	Mangwazana	4Y	F	1.7	<1.3	1.9	neg	
36	Mabavini	Mangwazana	5Y	F	<1.3	<1.3	1.5	neg	
37	Mbimekozi	Mangwazana	6Y	F	1.5	<1.3	1.7	neg	
38	Qhola	Mangwazana	4Y	F	<1.3	<1.3	<1.3	POS	
39	Mbovu	Mangwazana	4Y	F	<1.3	<1.3	<1.3	neg	
40	Blackswip	Mangwazana	3Y	F	<1.3	1.4	1.5	neg	
41	Ngangeguzi	Mangwazana	4Y	F	1.6	<1.3	1.8	POS	
42	Diamond	Mangwazana	5Y	M	1.7	1.4	1.7	neg	
43	Masundu	Mangwazana	7Y	F	1.4	<1.3	<1.3	neg	
44	Mpoflni	Mangwazana	6Y	F	<1.3	<1.3	<1.3	neg	
45	Monkon	Mangwazana	3Y	F	>2.2	<1.3	1.6	neg	
46	Malibou	Mangwazana	5Y	F	1.7	1.4	1.7	neg	
47	Jamlothi	Mangwazana	4Y	F	<1.3	1.4	1.7	POS	

FMD KZN: Results received up to 21 April



Red dots: positive LPBE
Yellow: negative LPBE

PCR on probangs/clinical samples from Ndumo, Ezulwini

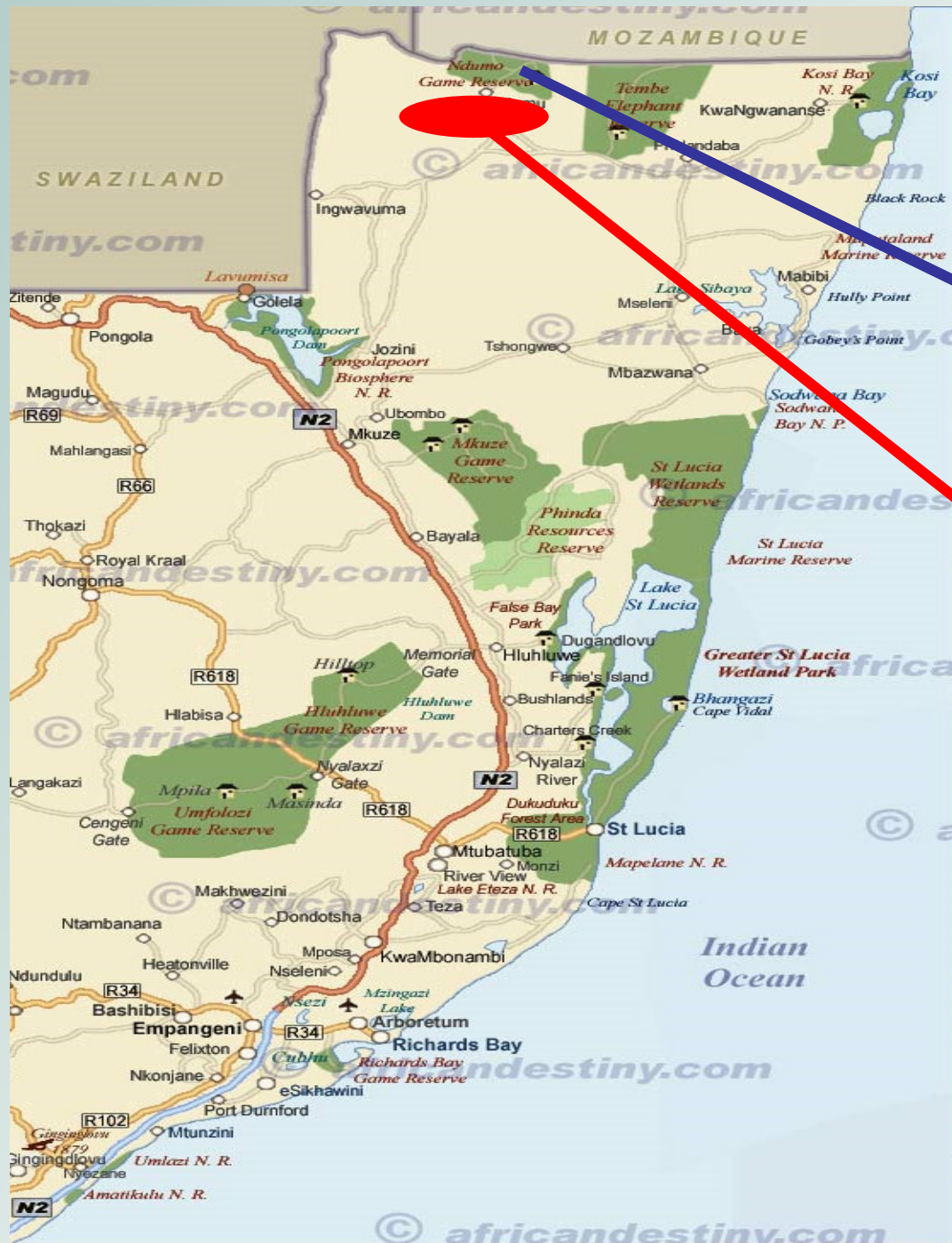
- 7/25 weak PCR positive
- No virus cultured in PK cells

Lesion material: Zidlele DT

- No Positives on PCR
- No virus isolated on PK cells

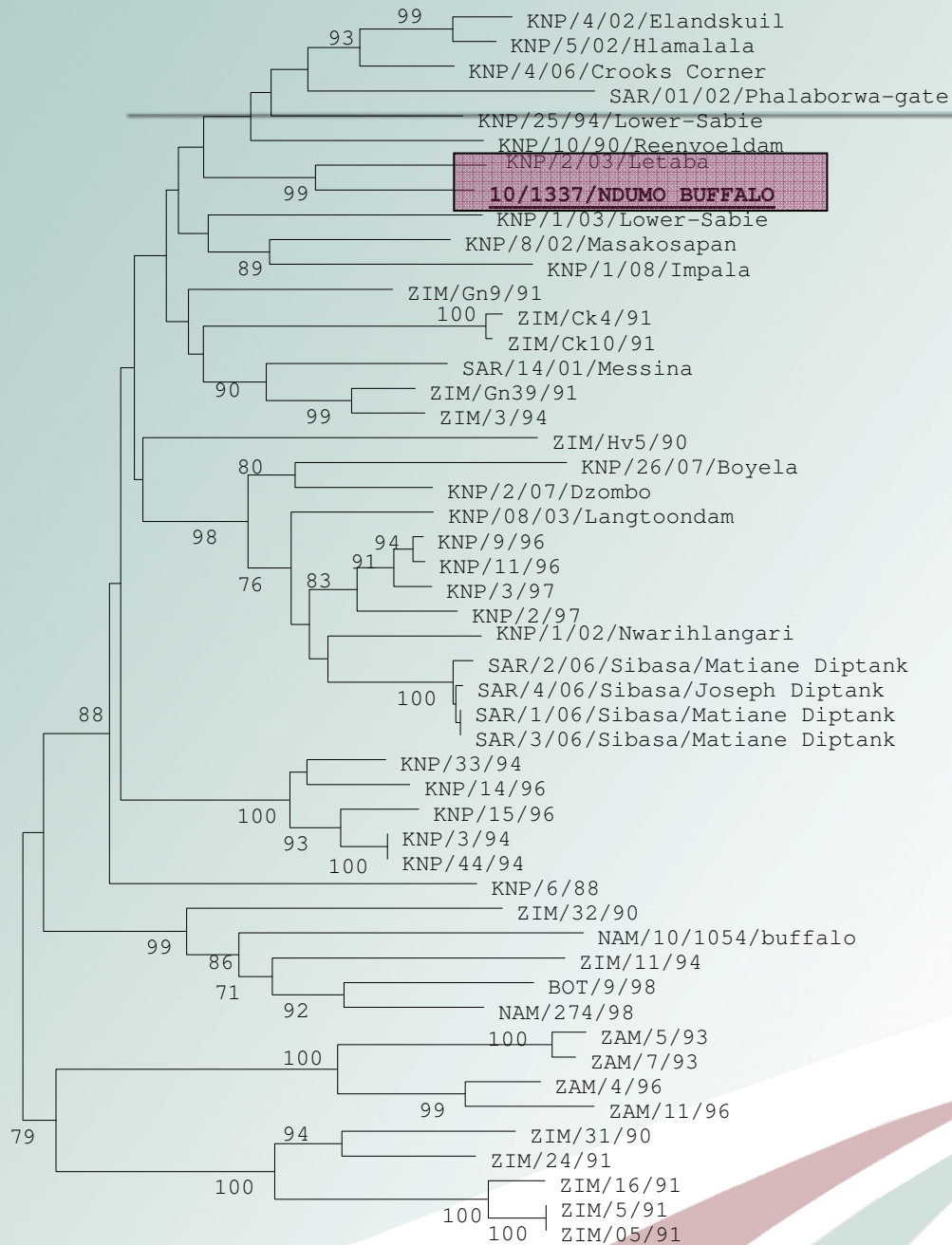
Buffalo sampling (Ndumo Game Reserve)

- Sera and probangs from buffalo



Buffalo:
Serology: High SAT 3
Ab titres
NSP positive

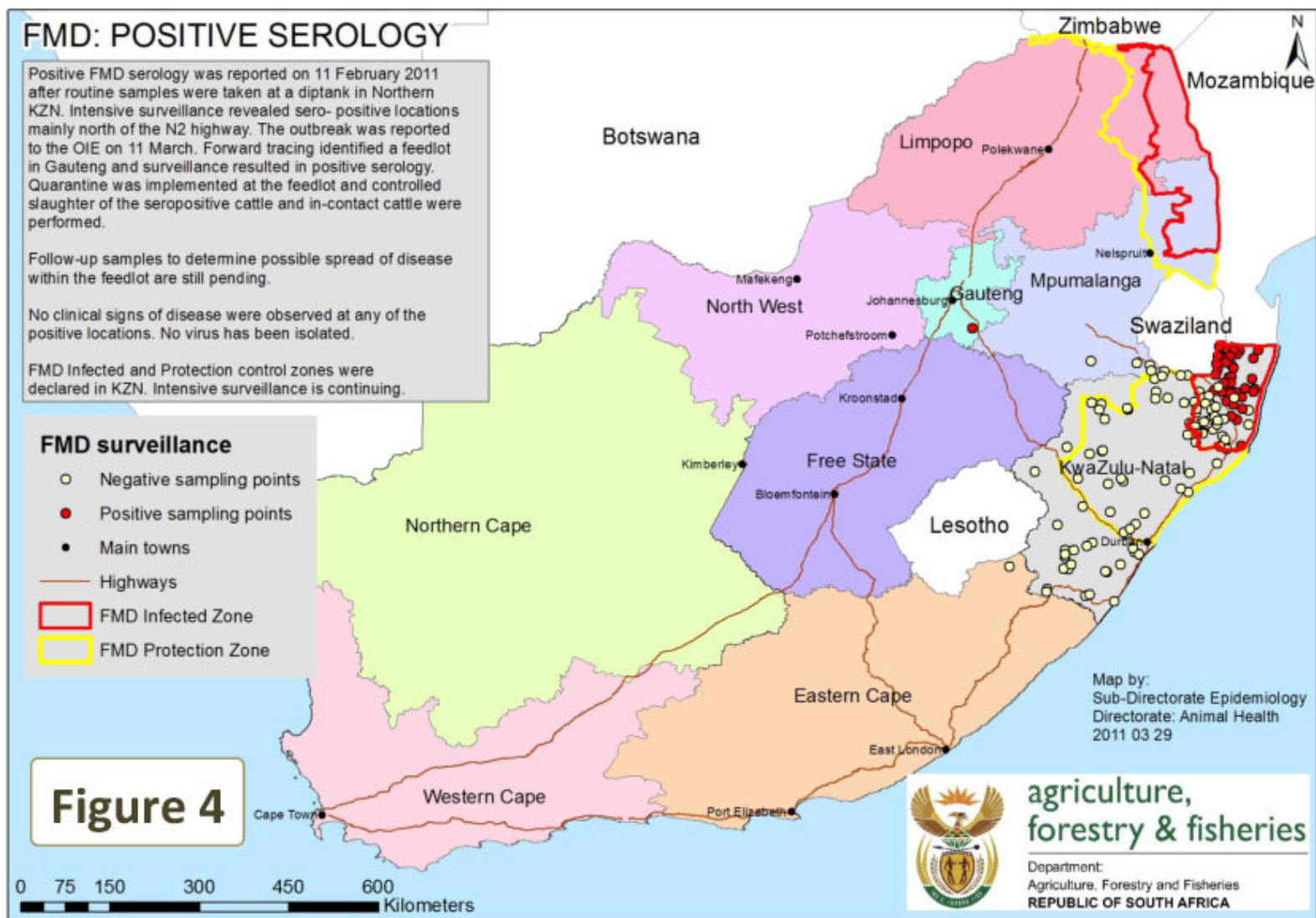
Initial Outbreak
area



KZN: Ndumo
Nature Reserve

SAT 3: buffalo

Positive Serological results in feedlot in Gauteng



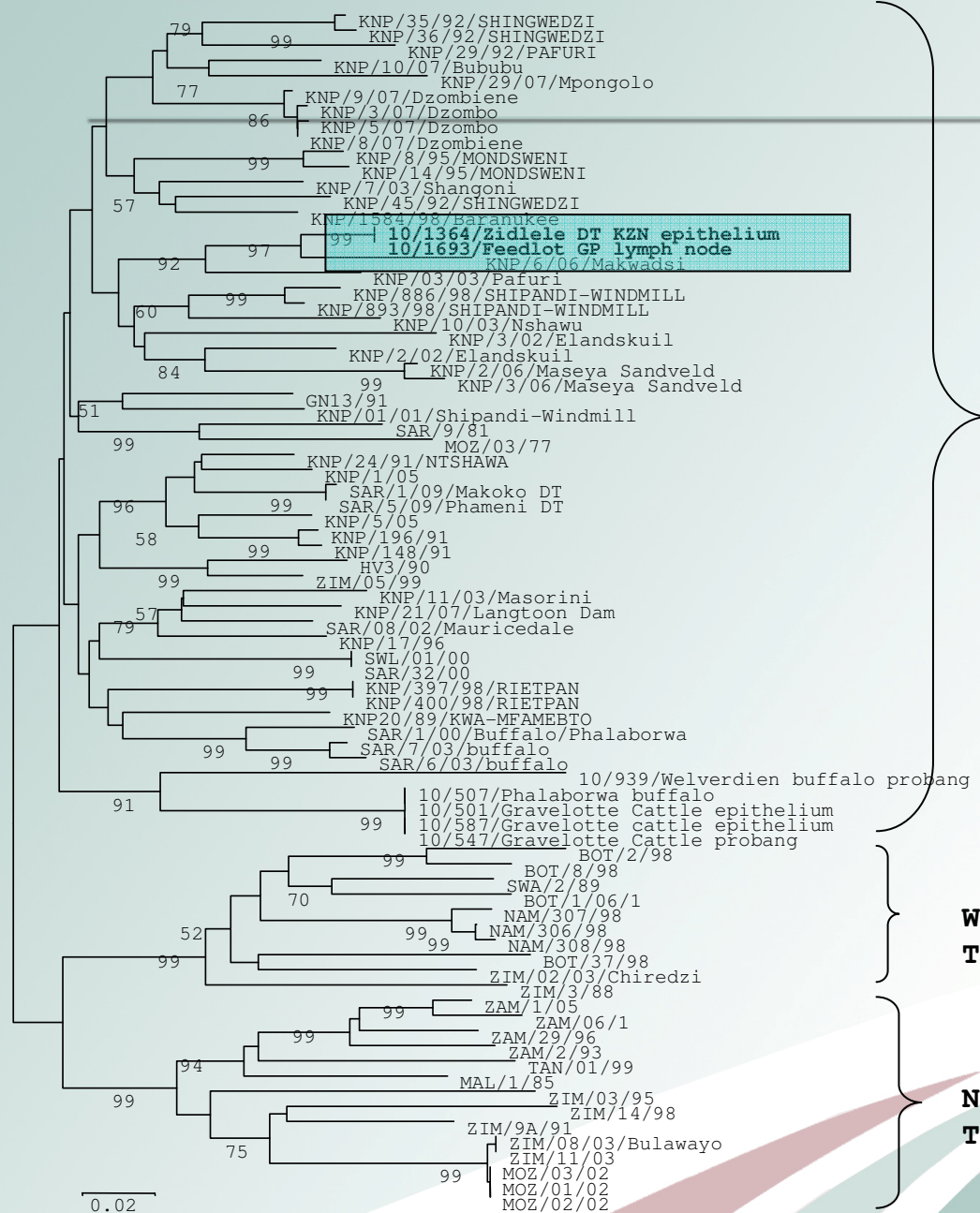
Virus isolation: KZN samples

- VI was a challenge using PK cells
- ZZR₂ goat cell lines and the BHK cells (Kerstin and Juanita)
- ZZR₂ → BHK₂ → cattle (caused lesions)
- Sequenced lesion material

Pictures of lesions observed in experimentally infected cattle (KZN SAT 1 strain)



Courtesy of Dr Paidamwoyo Mutowembwa



KZN: SAT 1

Southern
Topotype

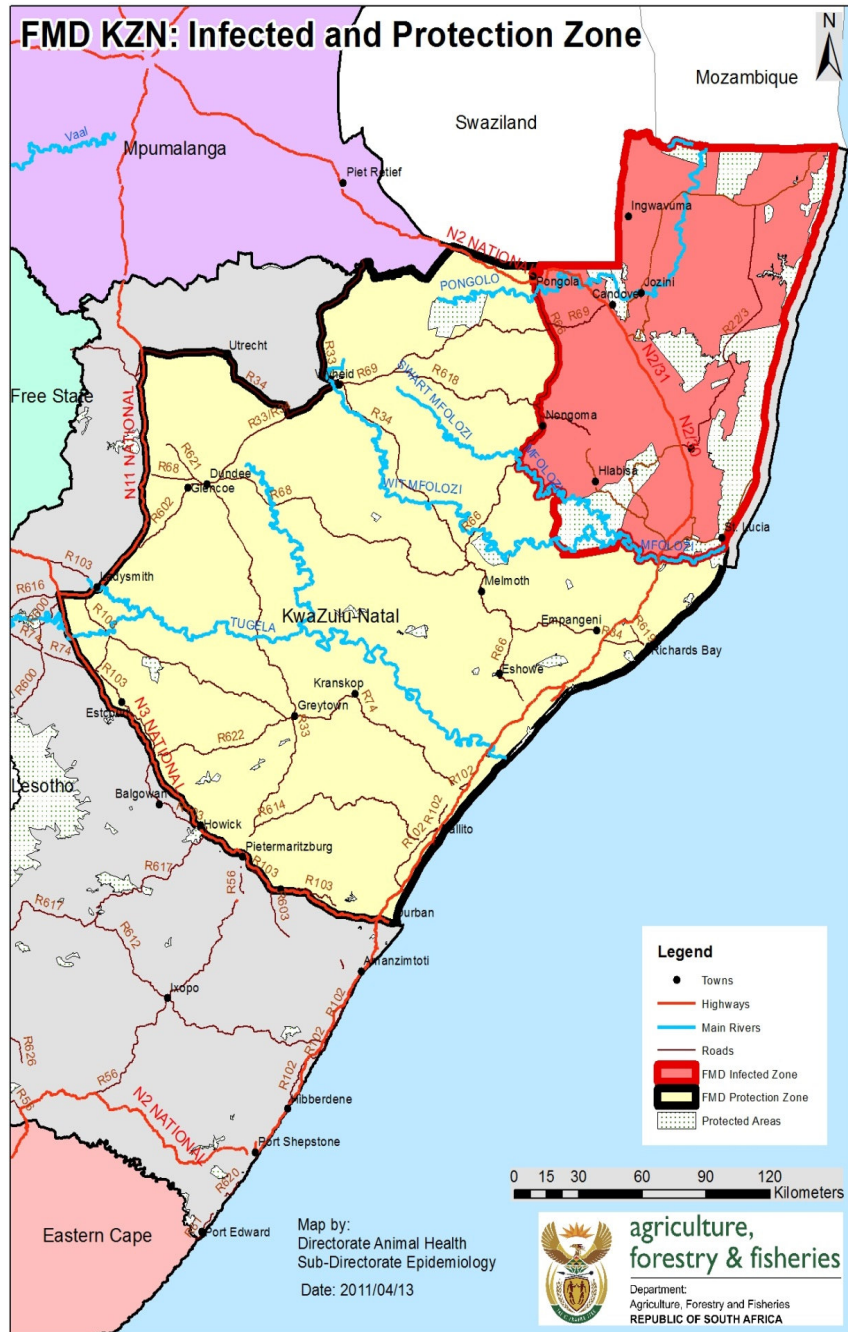
Western
Topotype

Northern
Topotype

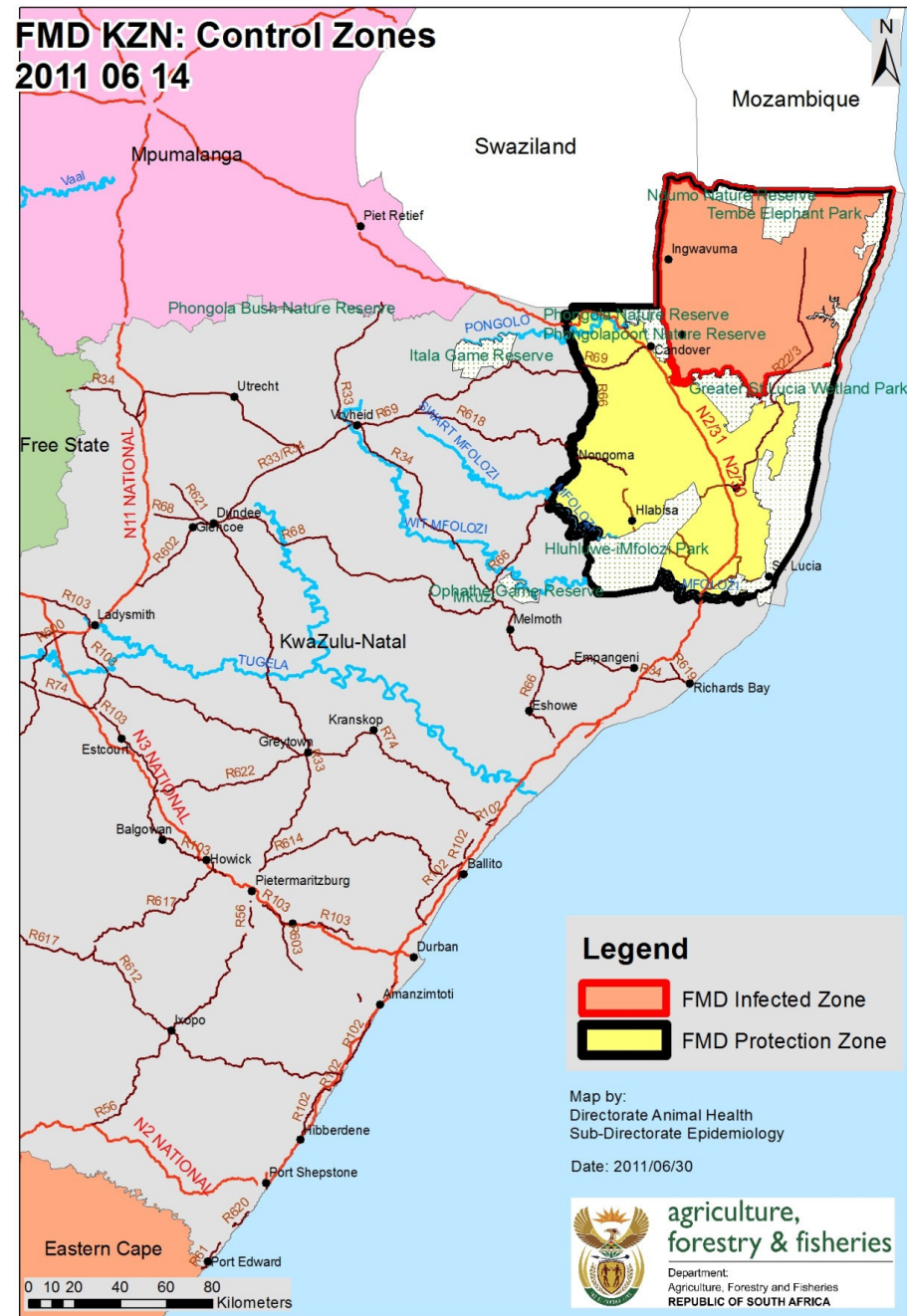


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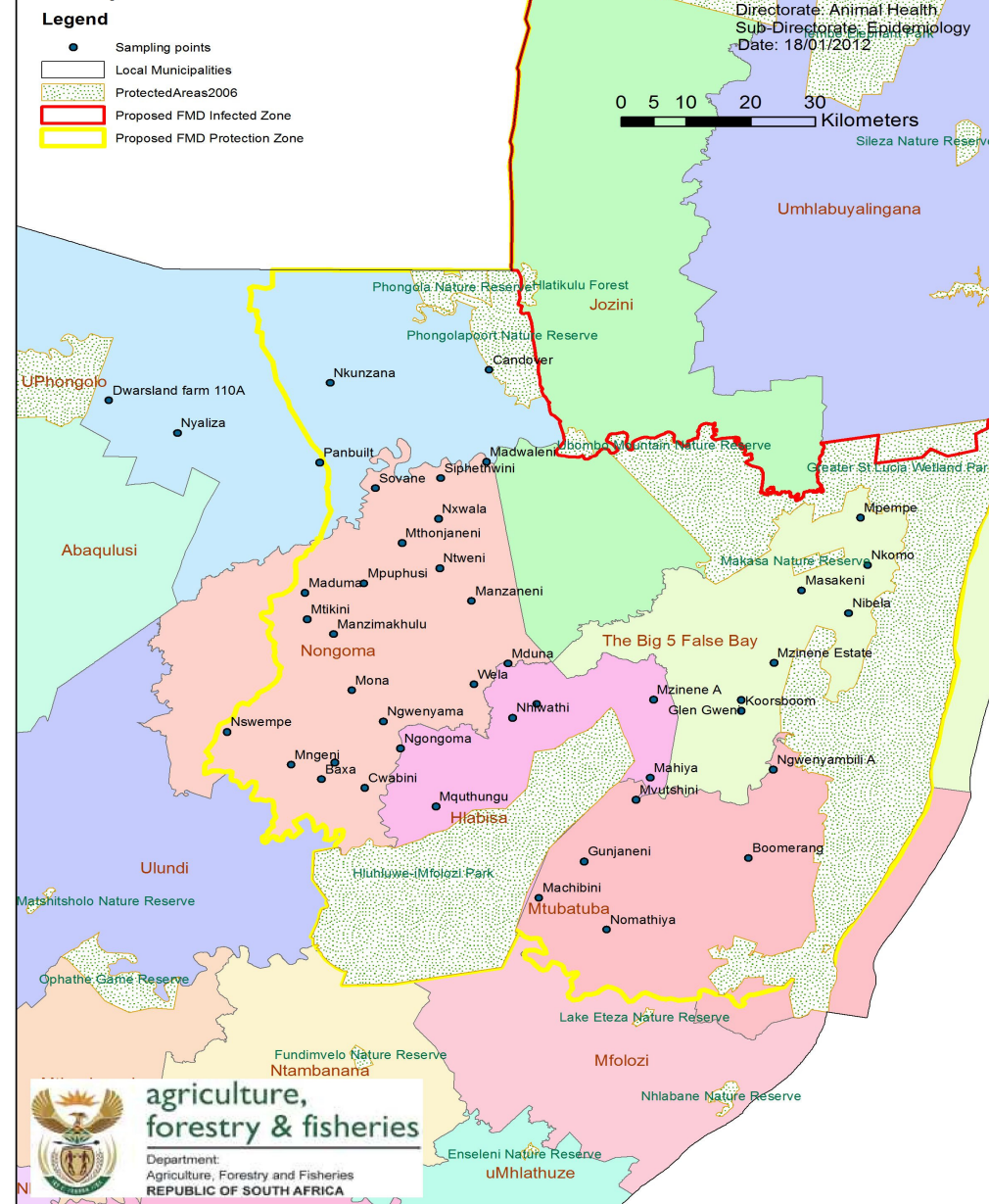
FMD KZN: Infected and Protection Zone



FMD KZN: Control Zones 2011 06 14



FMD prevalence surveillance in the Protection Zone



Surveillance: Jan 2012

- 800 sera randomly selected
- 50 diptanks: 16 sera per diptank

Acknowledgement

- Dr Grietjie De Klerk (DAFF) for maps

Thank You

