

Power lines - a call for action!



Walter Nesor

Past: VulPro - South Africa

Present: Freelance – Nature and Parks Authority, Israel

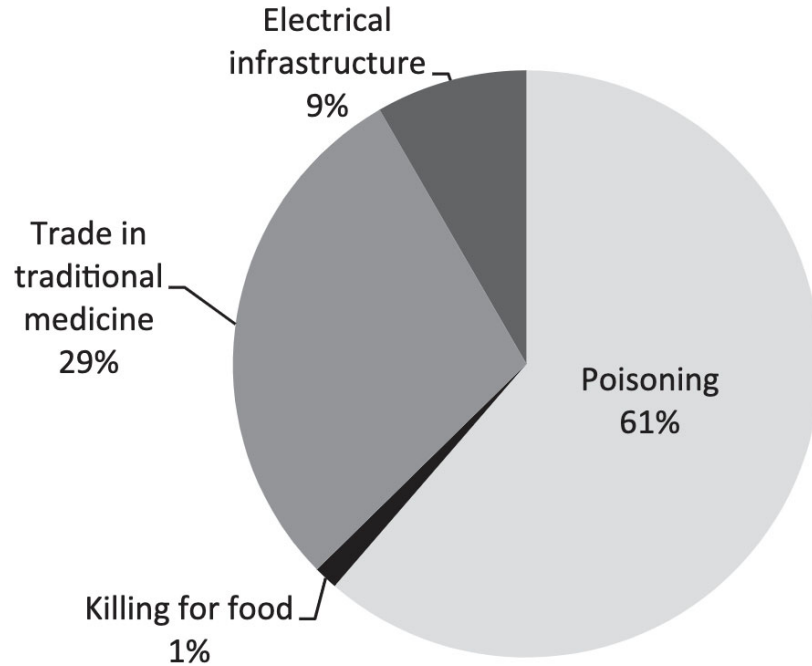




16 recently electrocuted Cape Vultures

# Are power line incidents underestimated?

African vultures collapsing toward extinction



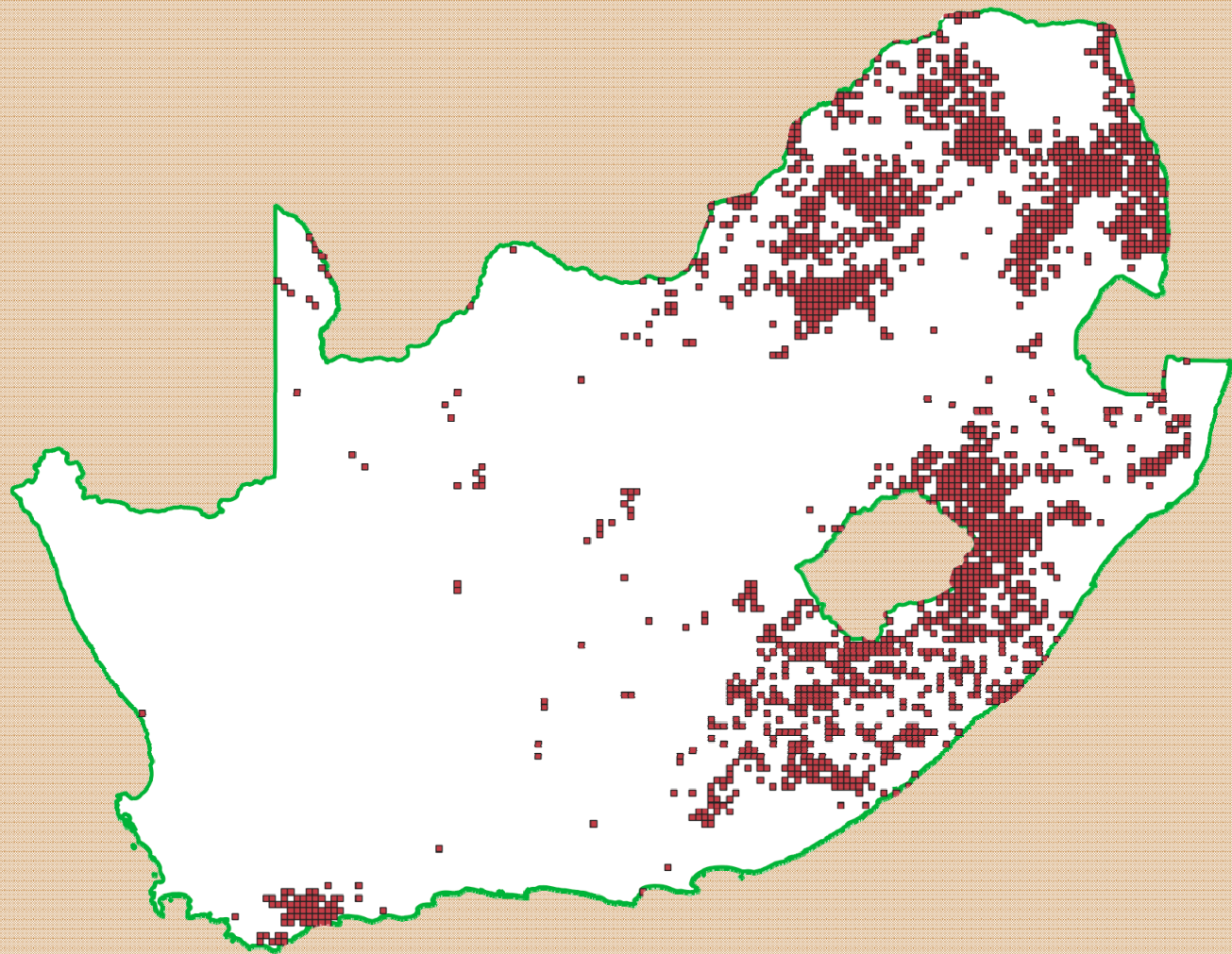
*Major threats to vulture populations in Africa.*  
Ogada et al, 2016



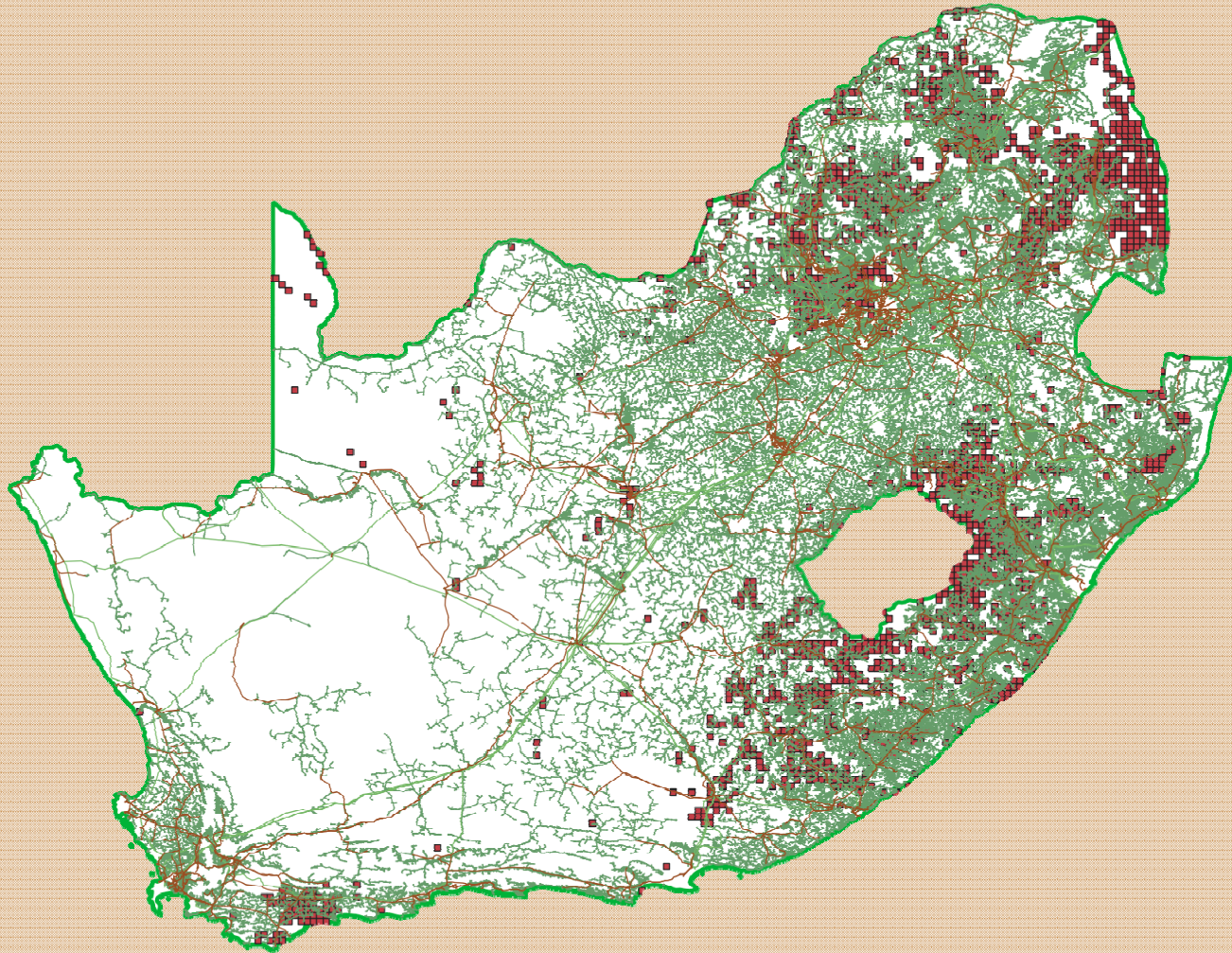
*Remains of 15 Cape Vultures collected under one pole, there were 30 more within 2km on this line, the line was erected in 1984 - Neser 2016*

# Understanding Power-Lines in South Africa

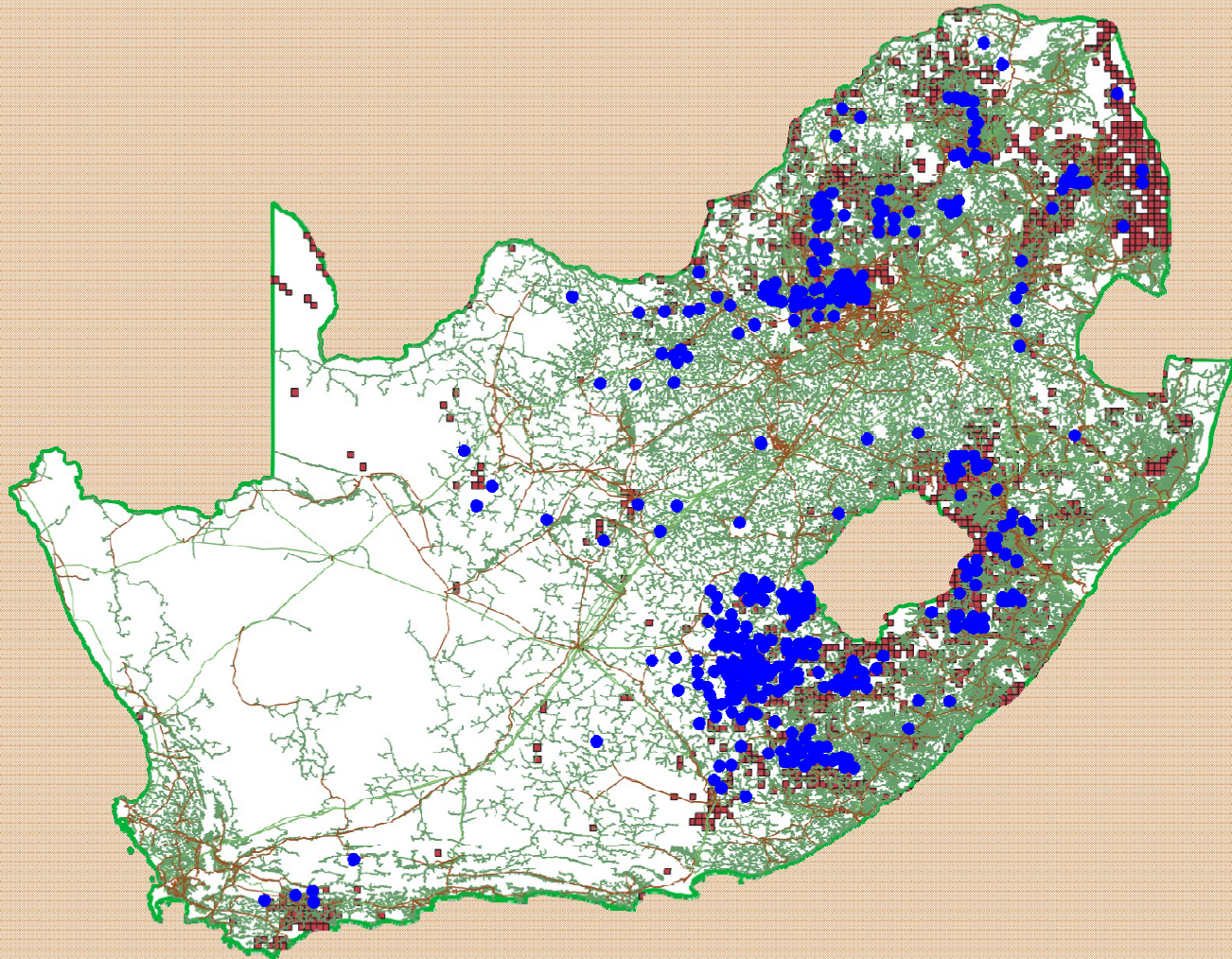




Cape Vulture observations in SA – SABAP II



Electricity Infrastructure - Eskom



504 Cape Vulture Electrocutions Reported - Eskom





VULPRO

  
**CELLULAR TRACKING**  
TECHNOLOGIES

## Legend

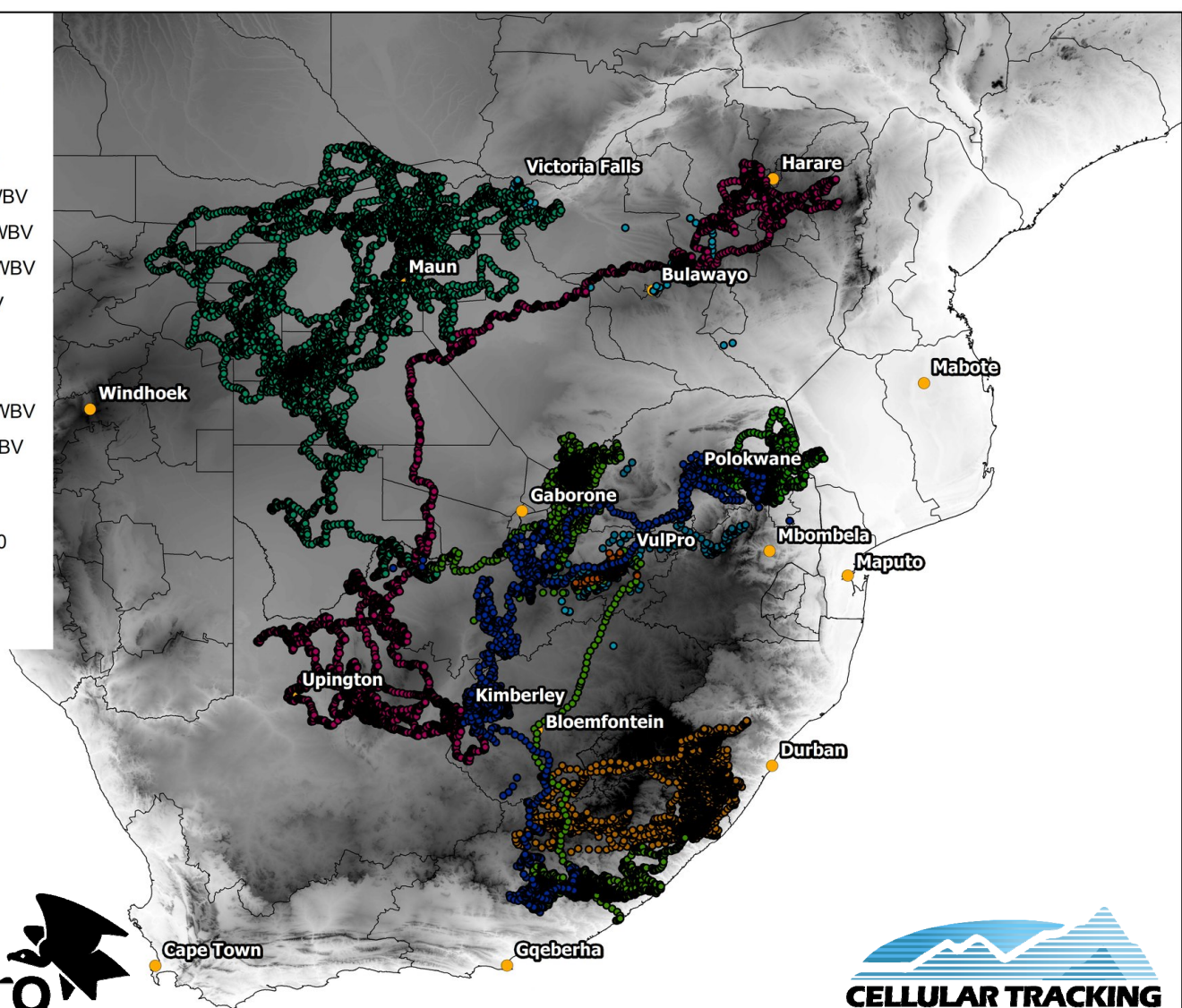
- TB34 - CV
- 6118 - CV
- TB64 - CV
- PB31 - AWBV
- PB 42 - AWBV
- GW70 - AWBV
- 5987 - LfV
- 133 - CV
- 350 - CV
- GW73 - AWBV
- 3793 - AWBV

## Elevation

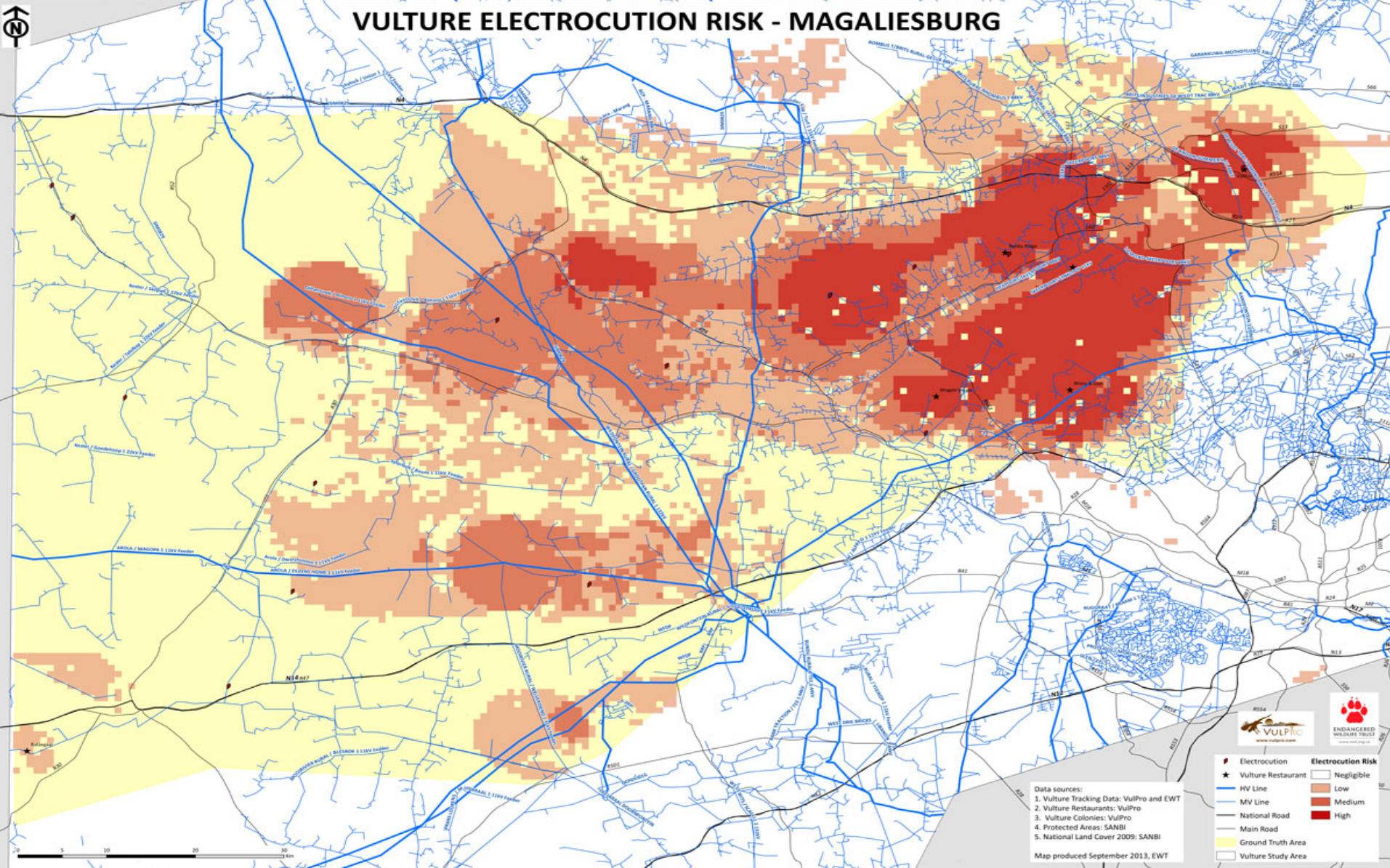
### Value

High : 3420

Low : 0



# VULTURE ELECTROCUTION RISK - MAGALIESBURG



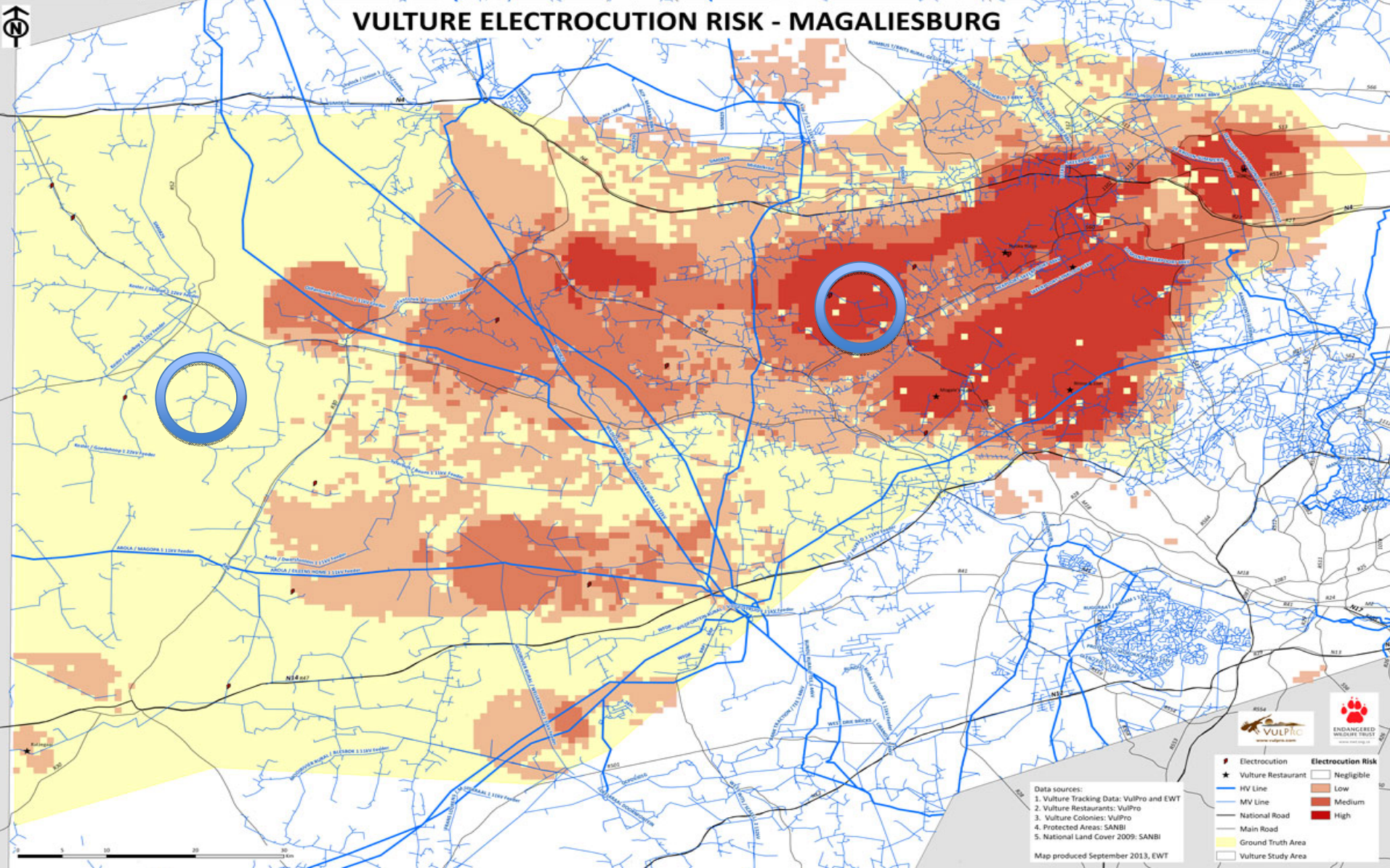
Data sources:  
 1. Vulture Tracking Data: VulPro and EWT  
 2. Vulture Restaurants: VulPro  
 3. Vulture Colonies: VulPro  
 4. Protected Areas: SANBI  
 5. National Land Cover 2009: SANBI

Map produced September 2013, EWT



Electrocution		Electrocution Risk	
★	Vulture Restaurant	Yellow	Negligible
★	Vulture Colony	Orange	Low
★	Protected Area	Red-Orange	Medium
★	National Land Cover 2009	Red	High
Blue line	HV Line		
Light blue line	MV Line		
Black line	National Road		
Grey line	Main Road		
Yellow area	Ground Truth Area		
White area	Vulture Study Area		

# VULTURE ELECTROCUTION RISK - MAGALIESBURG



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# Most Dangerous Structures, and why?





# T-Offs, Transformers, Fuses, Breakers & Termination Poles



# Dangerous Features

“Live” Earthed Perch (no BILL Gap)



# Dangerous Features

Jumpers above perch / not insulated



# Dangerous Features

## Arc Horns



# Dangerous Features

Small Phase spacing



## Pole Characteristics from 200 Cape Vulture Electrocutions in NW Province, SA

Design Features	No of incidents	Percentage
3 x Pin insulators	148	74%
no BILL Gap	122	66%
Earthed Perch via bonding of insulators	70	35%
Small phase spacing	50	25%

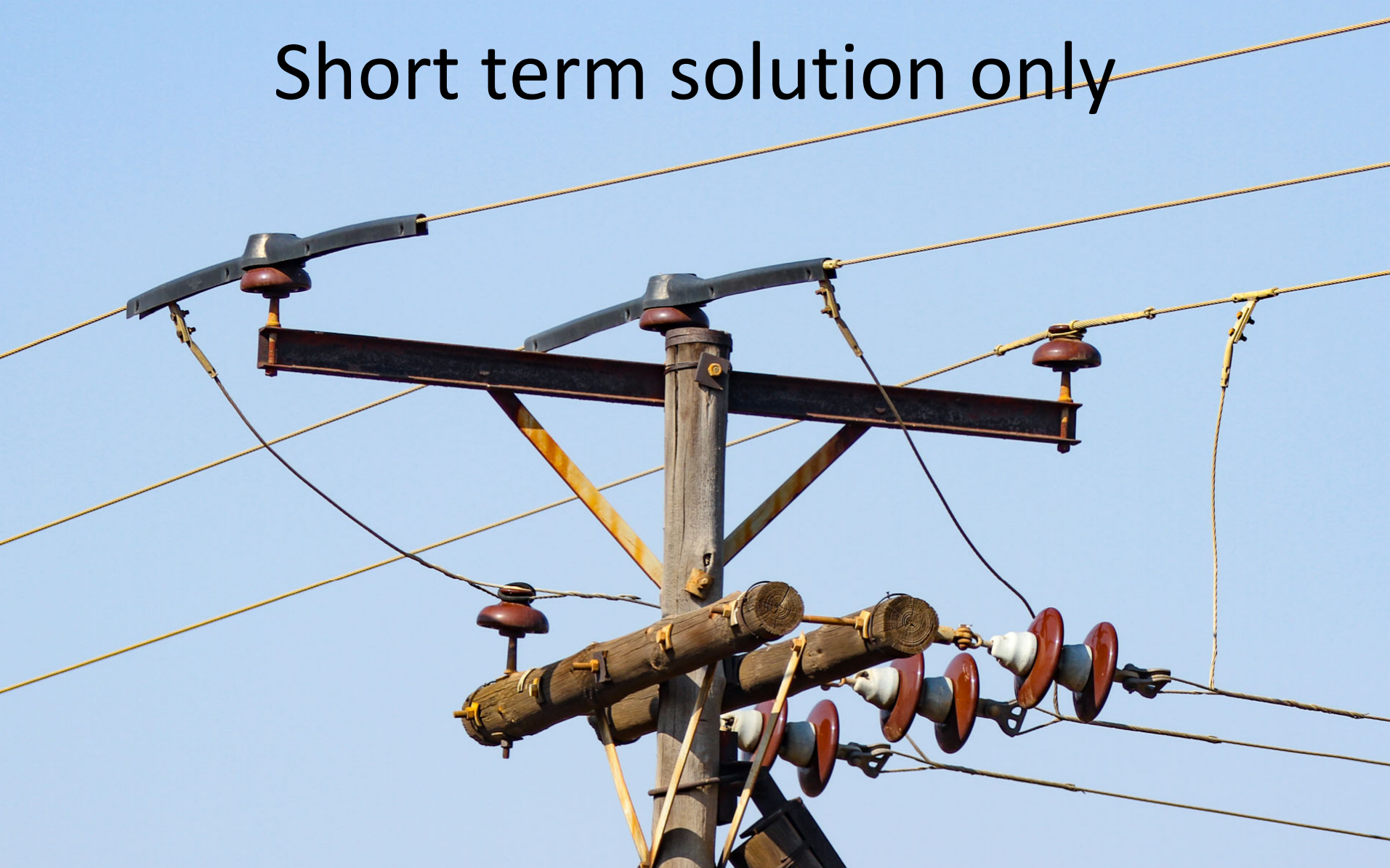
Structure type	No of incidents	Percentage
T-Structure	152	76%
Wishbone	32	16%
Staggered Vertical	15	7.5%
Inverted T	1	0.5%

Path of Electrocutation	No of incidents	Percentage
Phase to Earth	140	70%
Phase to Phase	42	21%
Phase to Post (wet)	18	9%

# Typical Reactive Mitigation



Short term solution only



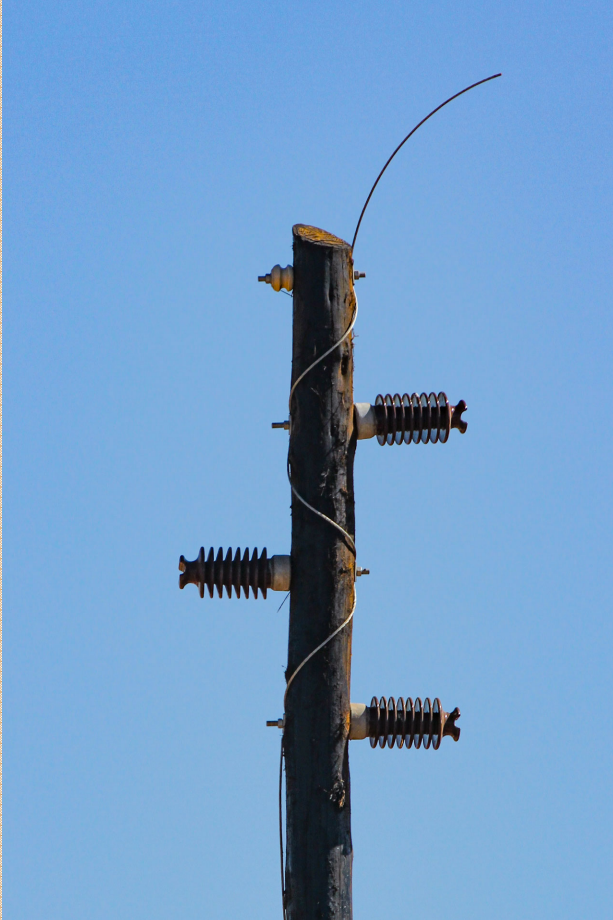


# Inadequate



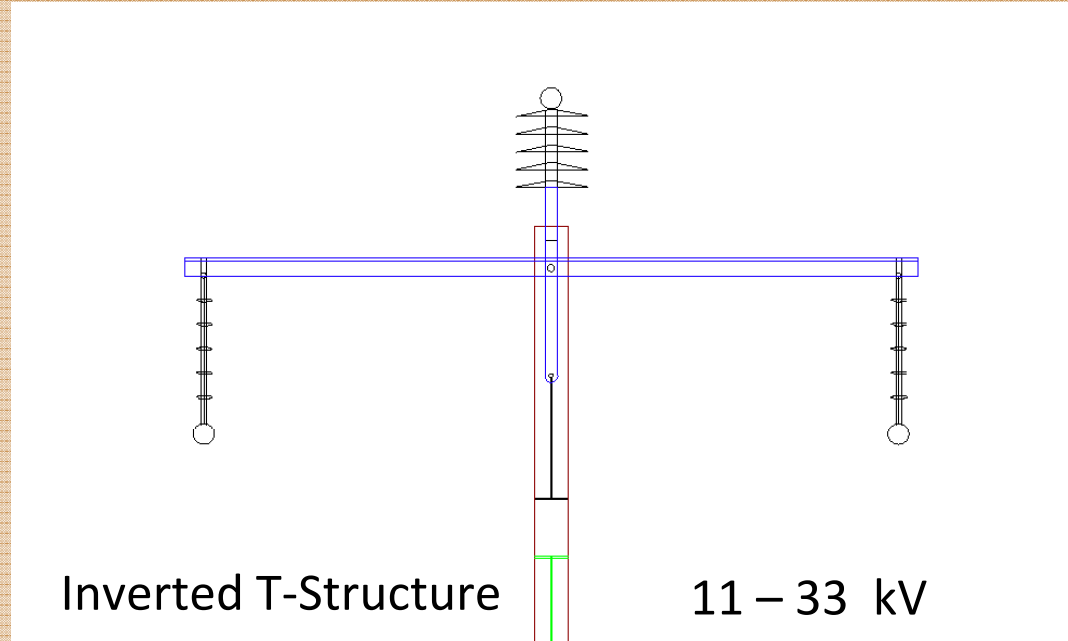
# Installation Errors

(old habits die hard)





# Power-Line evolution in South Africa



Inverted T-Structure

11 - 33 kV

# Safest Strain Poles and T-Offs



Opportunities presented by scheduled maintenance!  
Take advantage and convert to safer structures





Birds & electricity infrastructure: how you can help

With fuel & time many of us can't afford to do a full-scale survey of the area. But there are a few things you can do to help. First, check the area for any dead birds or signs of distress. If you find a dead bird, report it to the relevant authority. If you find a bird in distress, try to help it. If you find a bird in a dangerous situation, try to move it to a safe place. If you find a bird in a dangerous situation, try to move it to a safe place. If you find a bird in a dangerous situation, try to move it to a safe place.

Active felines due to power line structures were present, indicating that the area is a high-risk area for feline predation. The presence of felines has been reported in other areas of the country, and it is likely that they are also present in this area. The presence of felines is a concern because they are a major predator of birds, and their presence near power lines increases the risk of bird mortality.

Work on wildlife cover line structures was completed by the Eskom/EWT Partnership. The work was completed in 2022, and it is hoped that this will help to reduce the risk of bird mortality. The work involved installing bird-friendly structures on power lines, which are designed to be more visible to birds and to provide a safe landing surface. This work is part of a larger effort to improve the safety of power lines for birds and other wildlife.

South African BirdLife International (SABIR) is a leading authority on bird conservation in South Africa. SABIR has been instrumental in the development of the Eskom/EWT Partnership, and it continues to work closely with Eskom and EWT to improve the safety of power lines for birds. SABIR has also been instrumental in the development of the National Bird Conservation Strategy, which is a key document for bird conservation in South Africa.

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Editor's choice Local news News

## Third Oribi vulture electrocuted

Researchers say 60 percent of their study birds have fallen victim to power lines within 18 months of fledging.

June 9, 2014

Jul Davis 2 minutes read

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It is the wrong place on a small structure that the Oribi vulture was electrocuted. The bird was found dead on the ground, and its body was severely charred. The incident occurred near a power line tower in a rural area. The Oribi vulture is a large bird of prey, and it is known for its ability to fly over long distances. The electrocution of this bird is a tragedy, and it highlights the need for better protection of birds near power lines.

South African Daily VULTURE SHOCK: POWERLINES FRY ONE RARE BIRD A DAY

NEWS

## Vulture shock: powerlines fry one rare bird a day

Despite plans to curb the death toll, experts fear it might be too late to reverse the trend

09 May 2018

Reading Time: 2 Minutes

Article Number: 6 / 22

Tony Carnie Journalist

The massive wingspans that allow vultures to fly to great heights and to soar effortlessly over great distances are proving to be the bird's fatal liability in a modern landscape. Experts say the wingspan of Cape vultures, which is about 2.5m, is wide enough to bridge the gap between the high-voltage electrical terminals on Eskom power pylons that now fry at least 10 of these birds every month. That might not sound like a big number, but it is a cause for alarm when there are believed to be only 4,200 breeding pairs left in Southern Africa. And now the monthly toll of vultures killed or maimed by powerline collisions and electrocution has shot up to at least 28 during April – one of these rare birds killed almost every day – according to the vulture conservation group Vulpro. Vulpro founder Kerri Wolter said most of the latest casualties were Cape vultures, electrocuted in the Eastern Cape and North West. "The tragedy of this latest unacceptably high toll is that it is possible to

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susceptible largely due to their size and relatively poor manoeuvrability... It indicated.

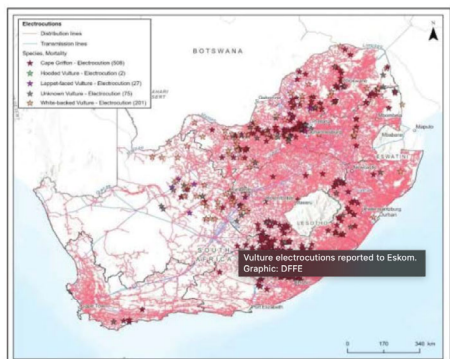


Figure 11: Fatal vulture electrocutions on powerlines across South Africa reported to the EWT/Eskom Central Incident Register from 1996-2022 (Eskom/EWT Strategic Partnership database unpublished, 2022). Numbers in legend indicate the count of fatalities for each species.

Vulture electrocutions reported to Eskom. Graphic: DFFE

Supplied DFFE

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## Big birds, big power lines, big problems

By John Pallat

27 November 2022

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Every time we use electricity from the national power grid, we are complicit in the death of thousands of birds. The power lines that criss-cross our country, and the rest of the world, are death traps for many bird species. Electrocution is one hazard, but a more vexing problem is collision when an unsuspecting bird decides to horizontal wire directly in its line of flight.

The deadly impact of these large, ubiquitous structures on birds has been recognised for many decades now, yet it remains a particularly difficult problem to solve. The demand for electricity is accelerating in our technological world, which will exact an increasingly heavy toll on the birds that share the airspace occupied by transmission lines. We cannot halt society's energy demands, but nor can we ignore the plight of so many birds. How do we resolve this terrible conundrum?

In a pair of short bastards line on a track below a powerline.

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SCIENCE 49 vultures electrocuted by power lines in South Africa

The Associated Press Published Wednesday, March 30, 2024 10:54 AM EDT

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Lameez Omarjee

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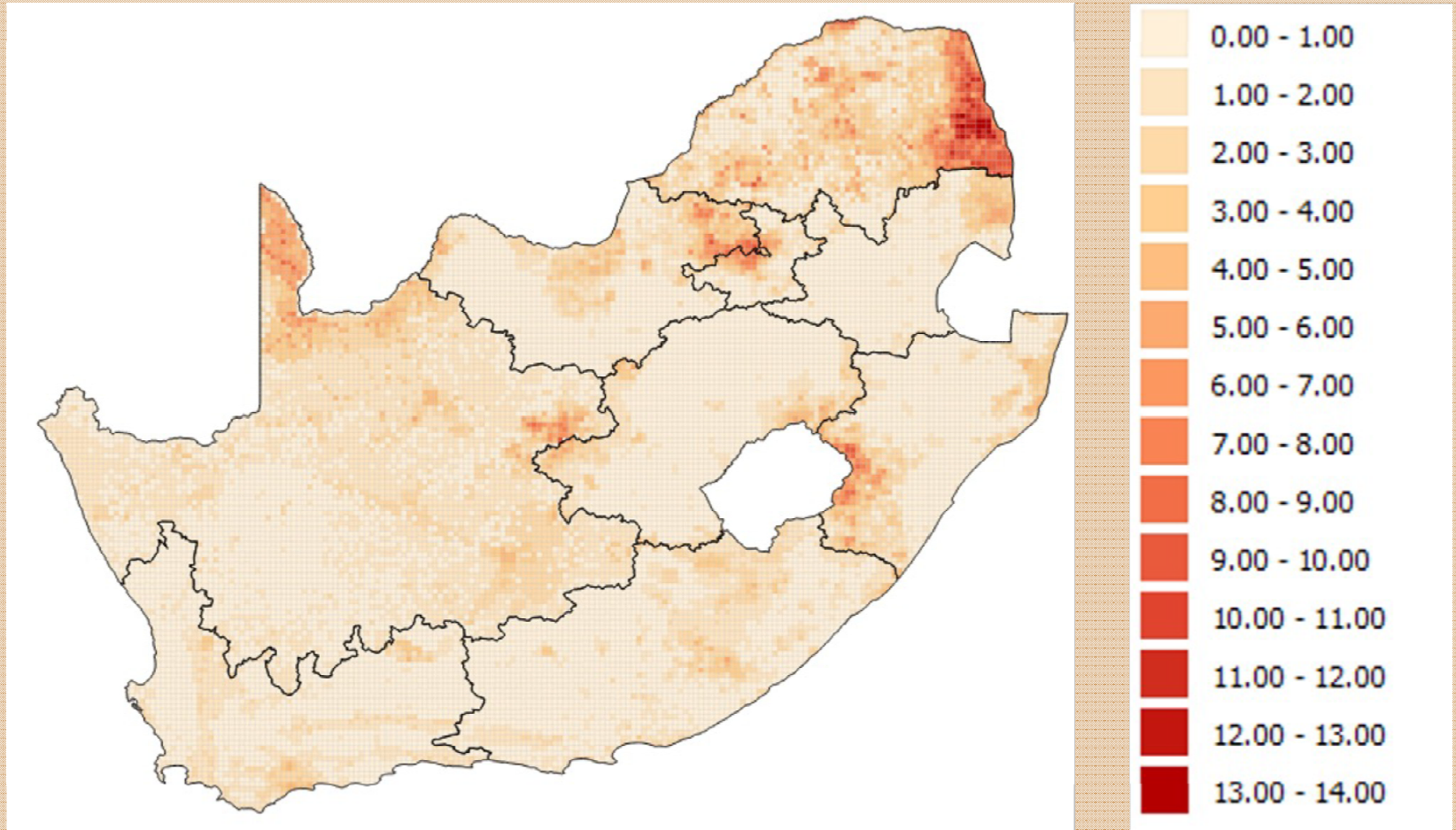
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# Proactive Mitigation Strategy Announced in 2016

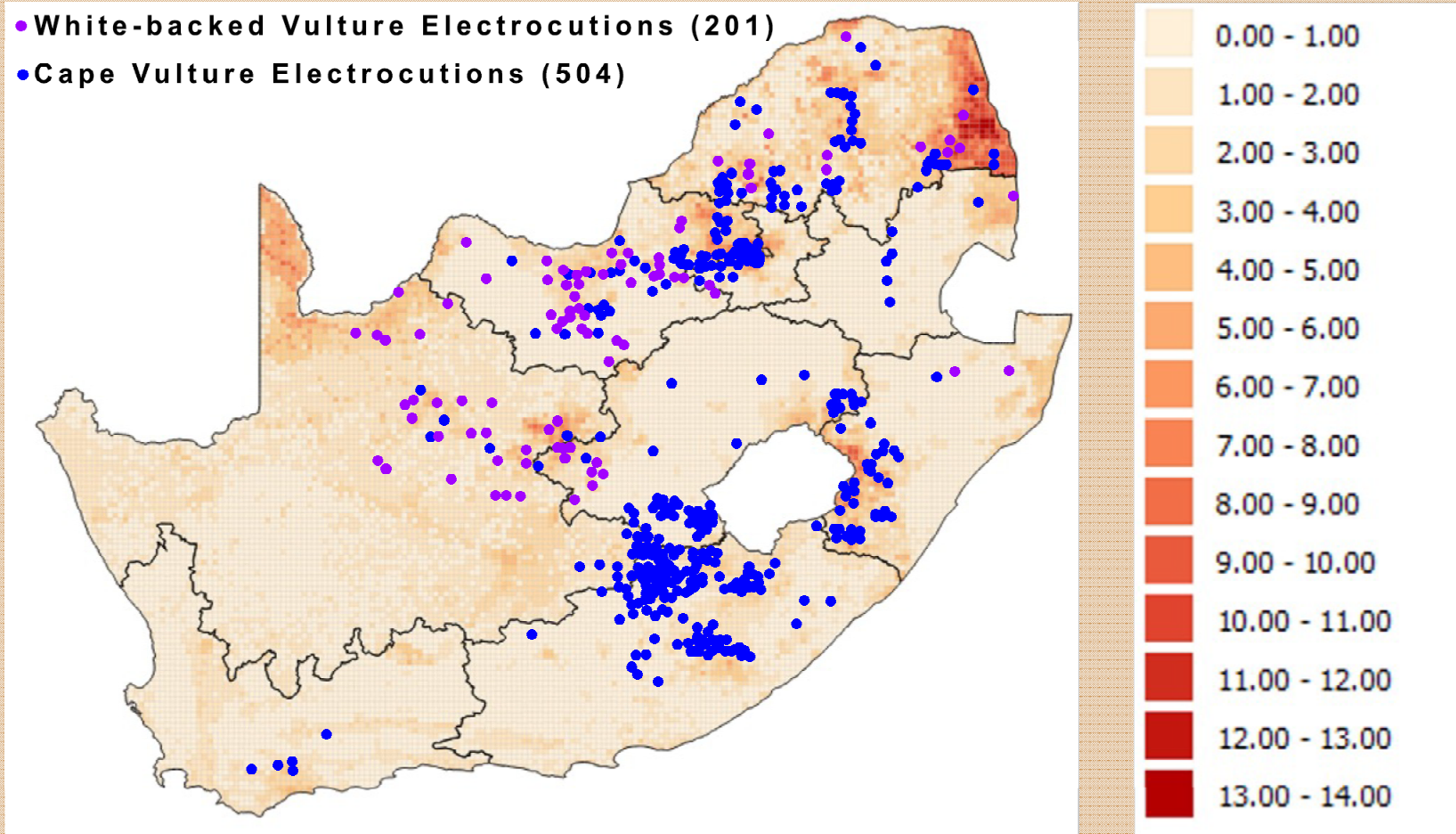


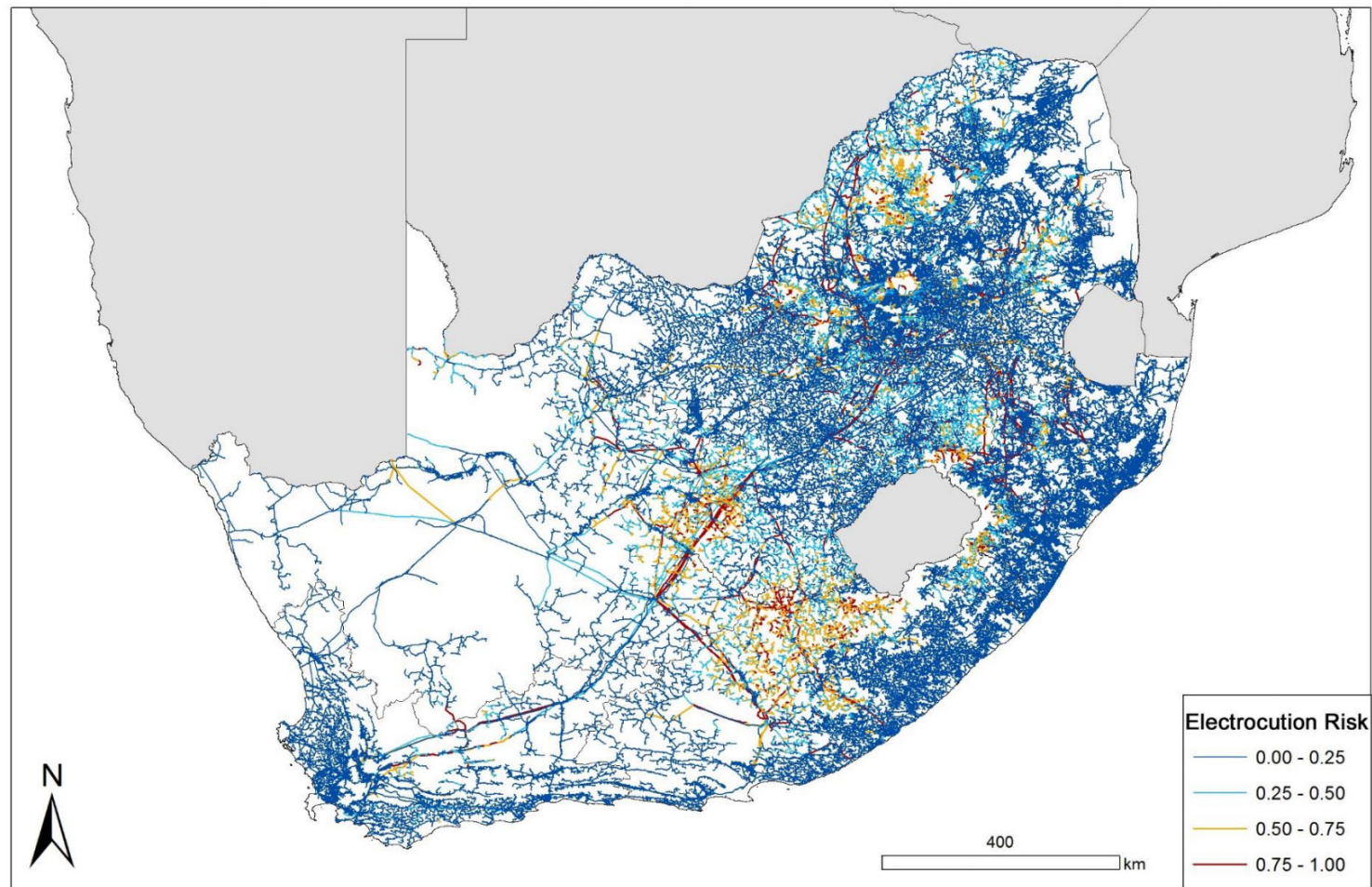
Bird electrocution sensitivity map using data compiled by the South African Bird Atlas Project (SABAP2)  
© ESKOM/EWT Partnership, ADU, Birdlife SA

# Proactive Mitigation Strategy Announced

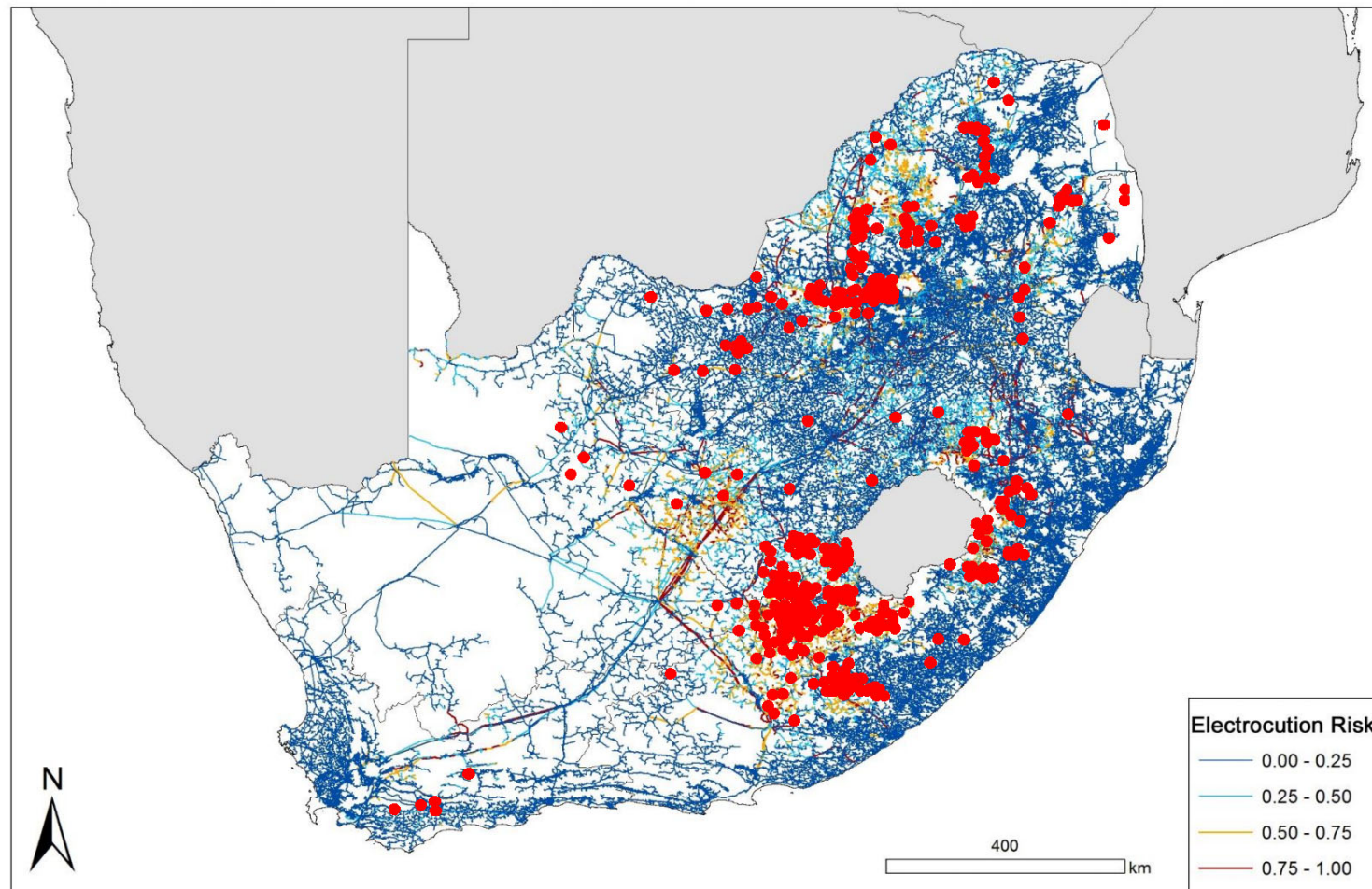
• White-backed Vulture Electrocutions (201)

• Cape Vulture Electrocutions (504)





**Model of power line electrocution risk in South Africa for Cape vultures.**  
Warm colours (red and orange) represent high risk lines while cool colours (blues) represent lower risk lines. C.Howes 2016



**Cape Vulture electrocutions reported over the model of power line electrocution risk in South Africa for Cape vultures. Warm colours (red and orange) represent high risk lines while cool colours (blues) represent lower risk lines. C.Howes 2016**

# IN CONCLUSION

WE KNOW WHAT NEEDS TO BE DONE

- New infrastructure must be legislated to be “safe” structures
- Existing structures must be converted during routine maintenance
- The biggest cost of mitigation is the crew, not the materials, if a crew is on site, convert the pole, its cheaper than raptor protectors in the long run.

HOW?

- We need a collaborative strategy
- Pooled resources of tracking and incident data
- Draw high resolution risk maps for entire regions
- Look for ways to get countries like Turkey etc to sign the Raptor MOU
- Solicit funds for action, not research, you can do both on a action budget...
- Act now!

THANKS TO NABU FOR THE INVITATION

