

UKZN Center for Civil Society, October



safcei

SOUTHERN AFRICAN FAITH COMMUNITIES' ENVIRONMENT INSTITUTE

SIX REASONS WHY THE KAROO WILL NOT BE FRACKED...

...if reason prevails...

By

Dr Stefan Cramer, SAFCEI Science Advisor



... not, because it is a very special place of God's creation ...

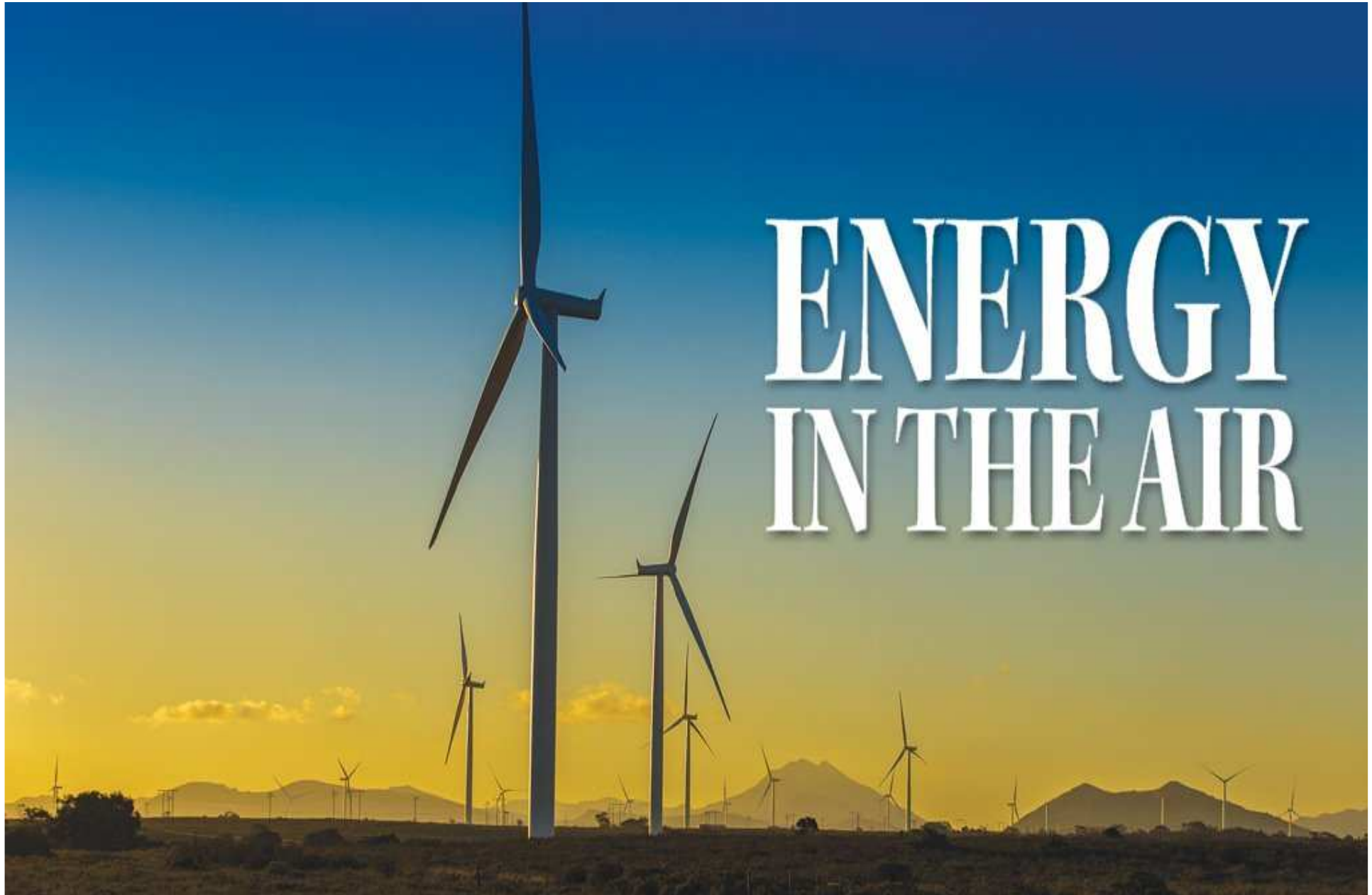


...or so breathtakingly beautiful...

...or economically relevant: half of all South African red meat and the excellent “Karoo Lamb” and wool come from the Karoo...



...not because it has such a huge clean energy potential





...ore the vast resources of solar energy already being tapped!

... or simply inspiring in spring time...



... with lots of „empty“ space...



Yet, this is how it could look like in a few years.

- A „fracked“ plain in the US



INTRODUCTION

Usually I talk about WHY the Karoo SHOULD not be fracked.
Today I will talk about WHY the Karoo WILL not be fracked.


Introduction

1. Geology of the Karoo
2. Water issues
3. Infrastructure
4. Business Culture
5. Political
6. Economic issues

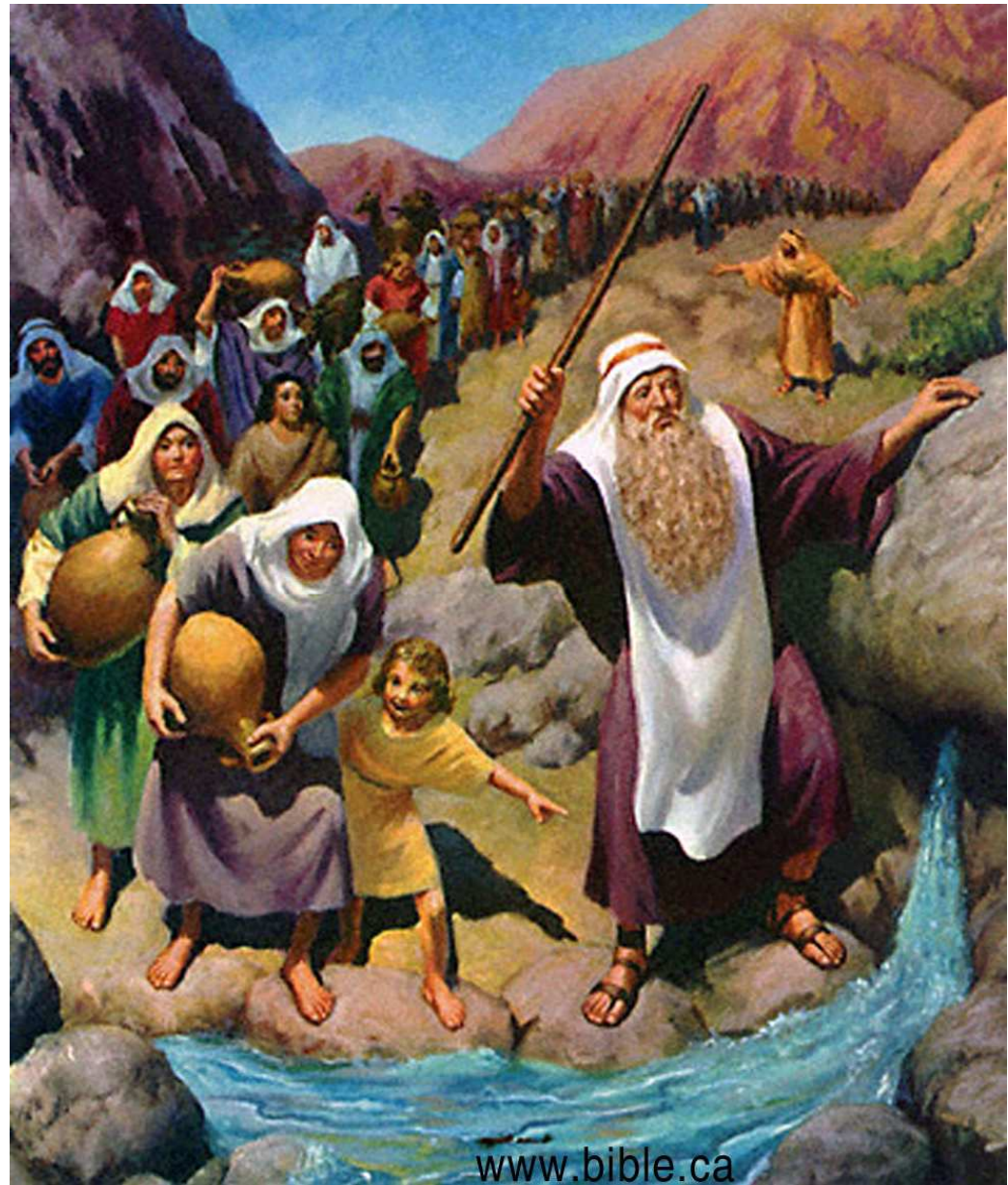


Fracking is...

...an industry slang for “fracturing”, i.e. “breaking”.

There is a famous biblical precedent many of us are aware of. 

Fracking for water can be very beneficial.



Fracking for what? the burning thorn bush

Remember:
the burning
thorn bush
was not
consumed
in
the fire.



This miracle might actually have a natural explanation:

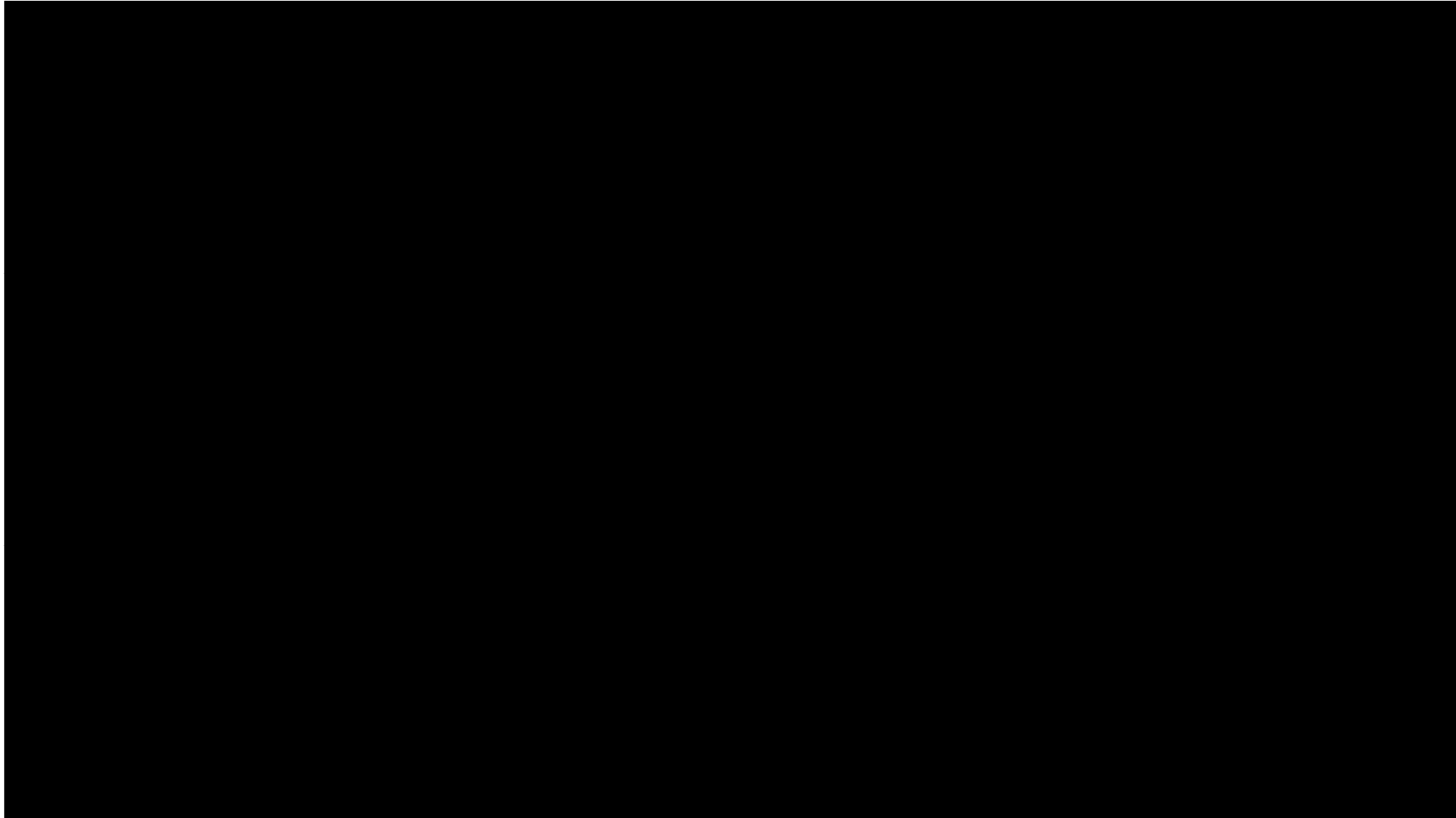


Saint Catherine's Monastery.

Probably methane was coming out of the ground in the Sinai



What is fracking: Here is a brief refresher...

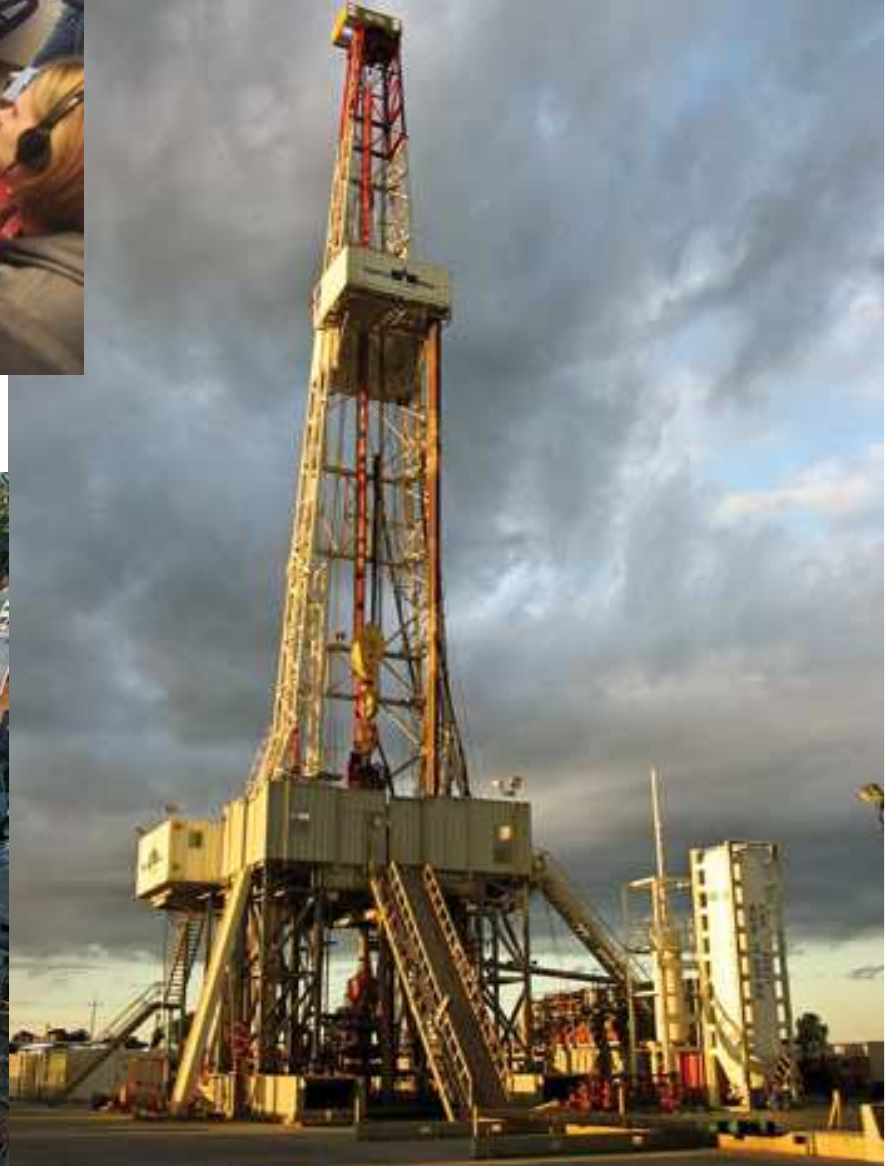


Fracking has come a long way from the first frack in 1947 by George Mitchell in Kansas...





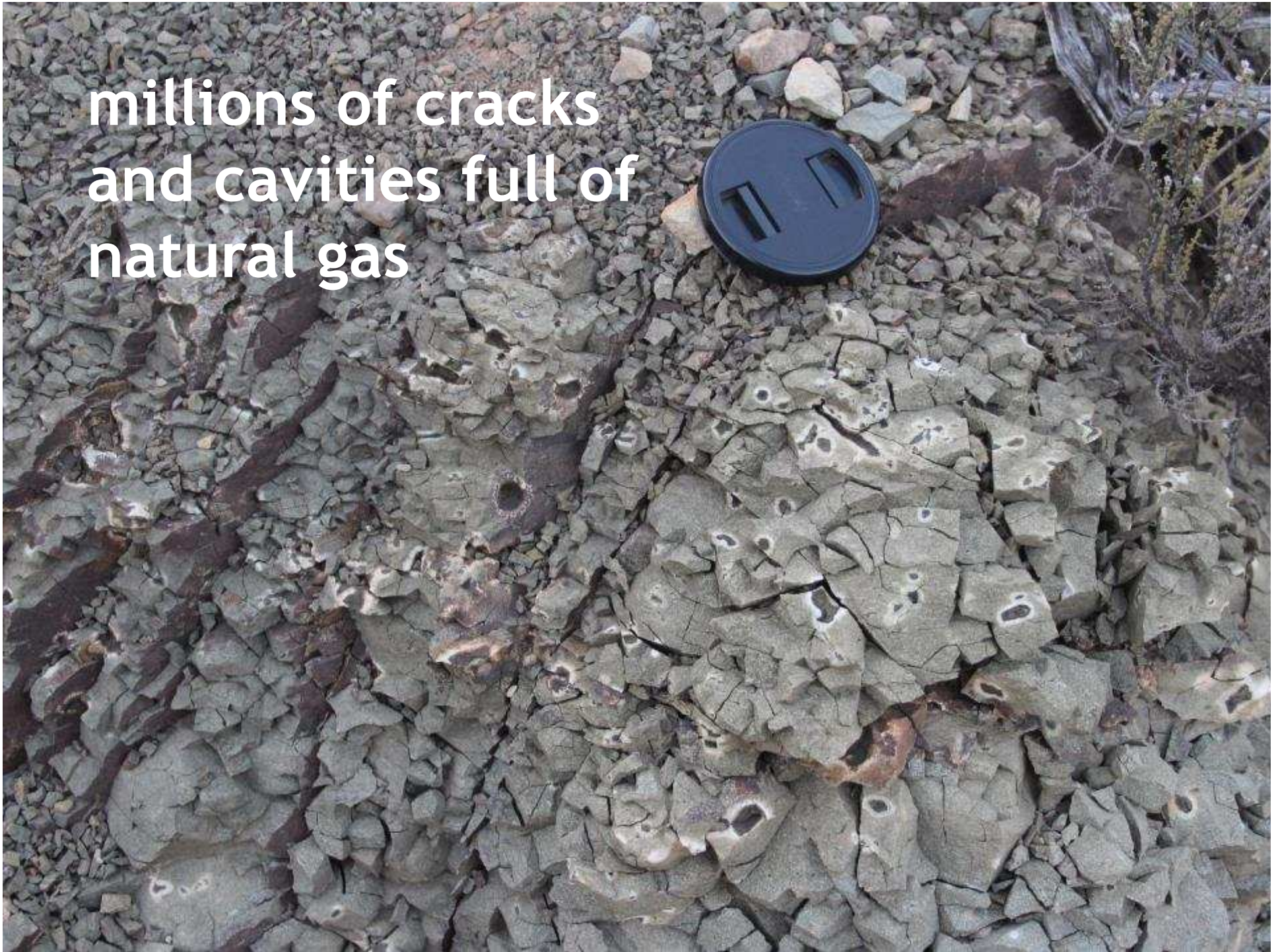
... to a massive industrial high-tech operation...



How does shale gas really look like?



millions of cracks
and cavities full of
natural gas





The Karoo does have endless shale deposits.

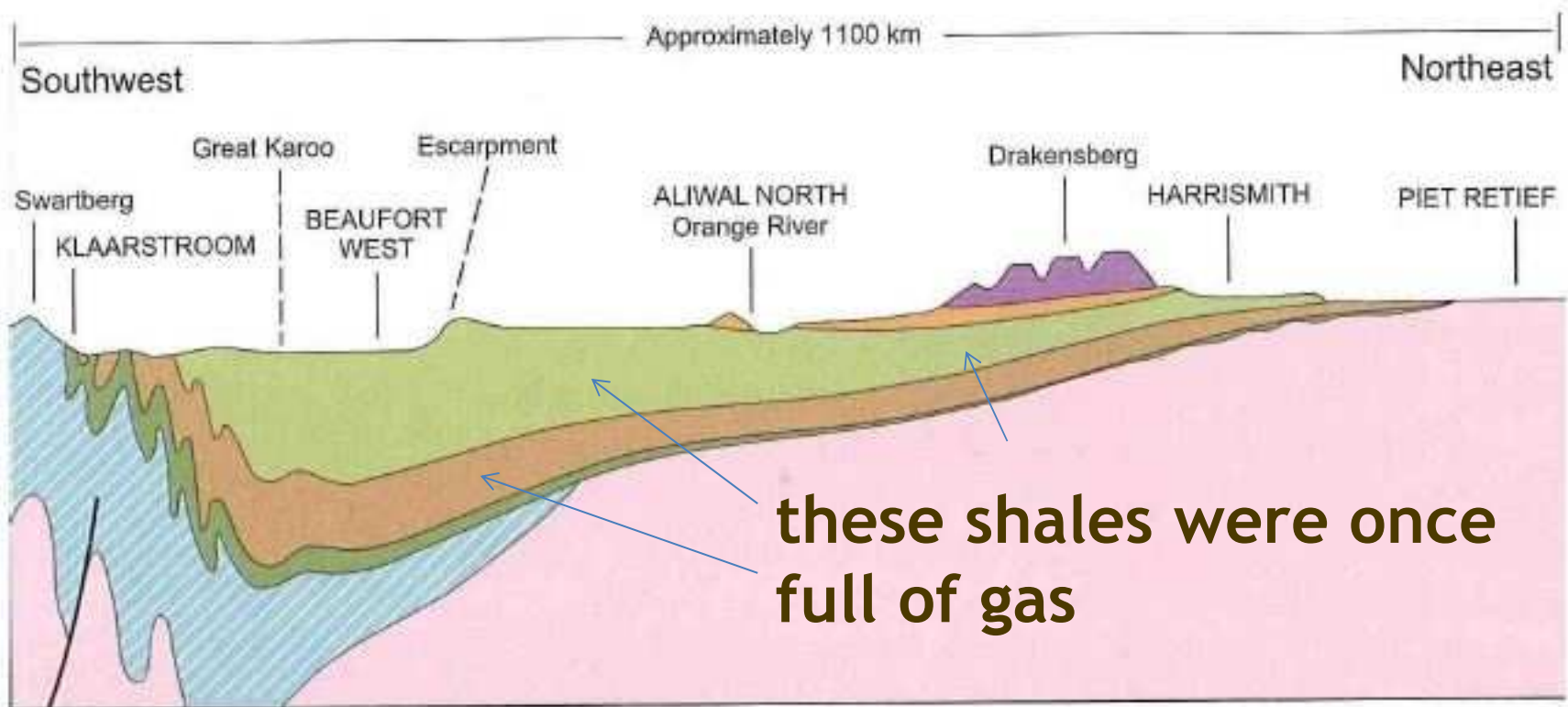
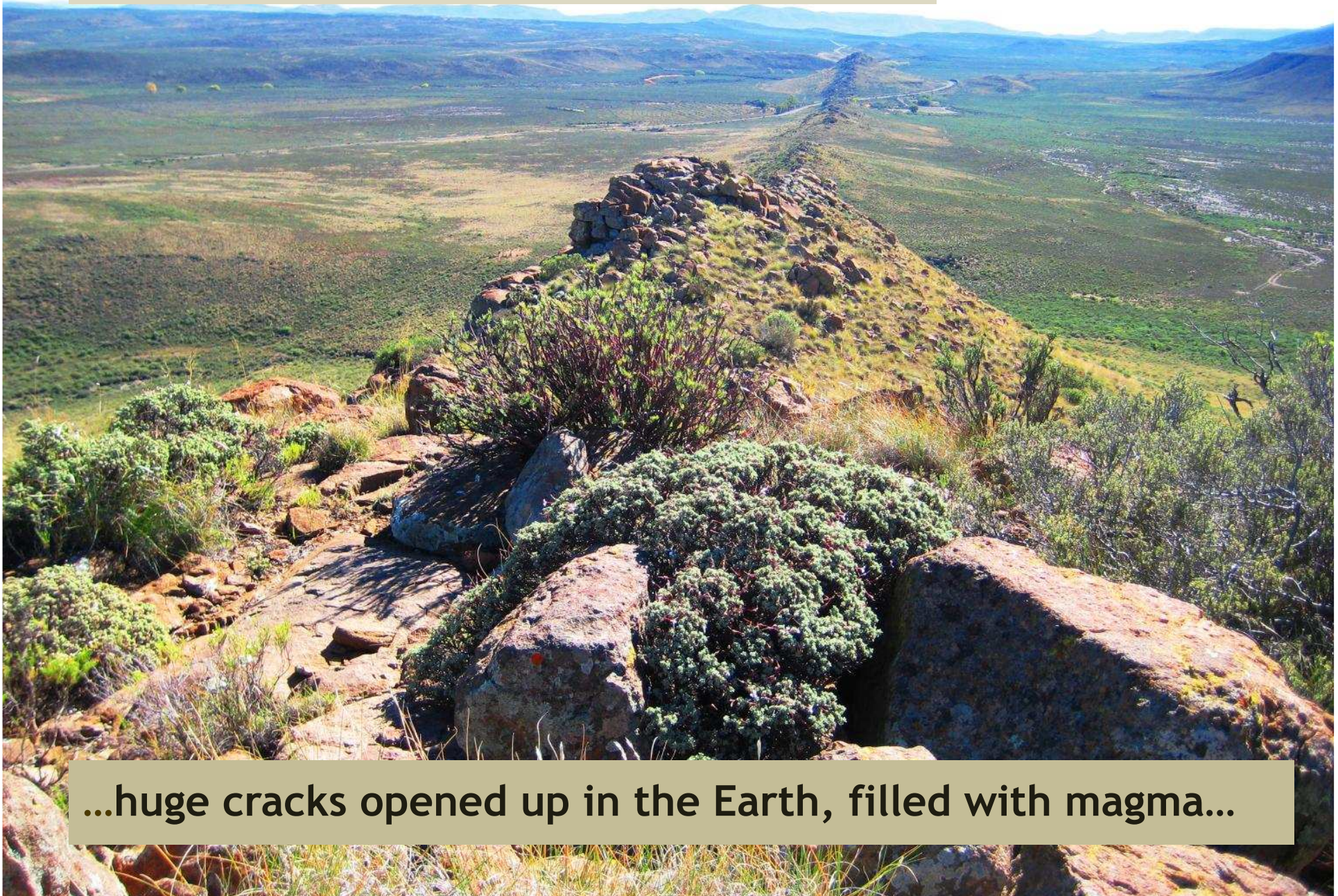


Figure 8: Generalised Cross-Section Across the Main Karoo Basin from Mpumalanga to the Swartberg (Norman, N. and Whitfield, G. 2006).

...but then, 140 millions years ago...



...huge cracks opened up in the Earth, filled with magma...

a bit of dolerite geology...

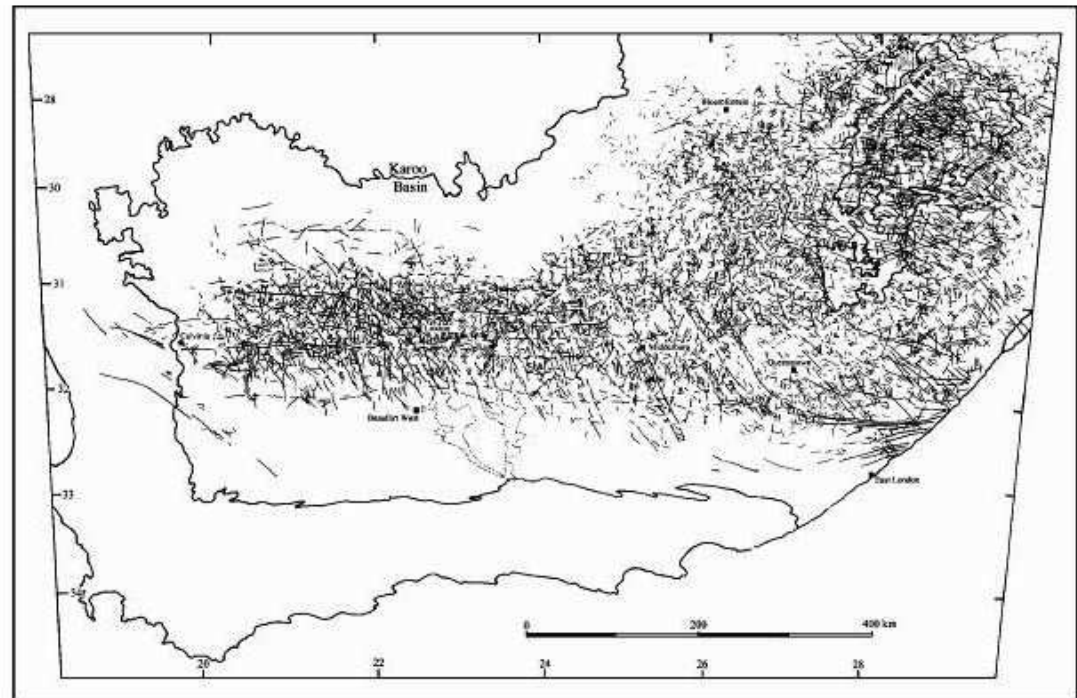
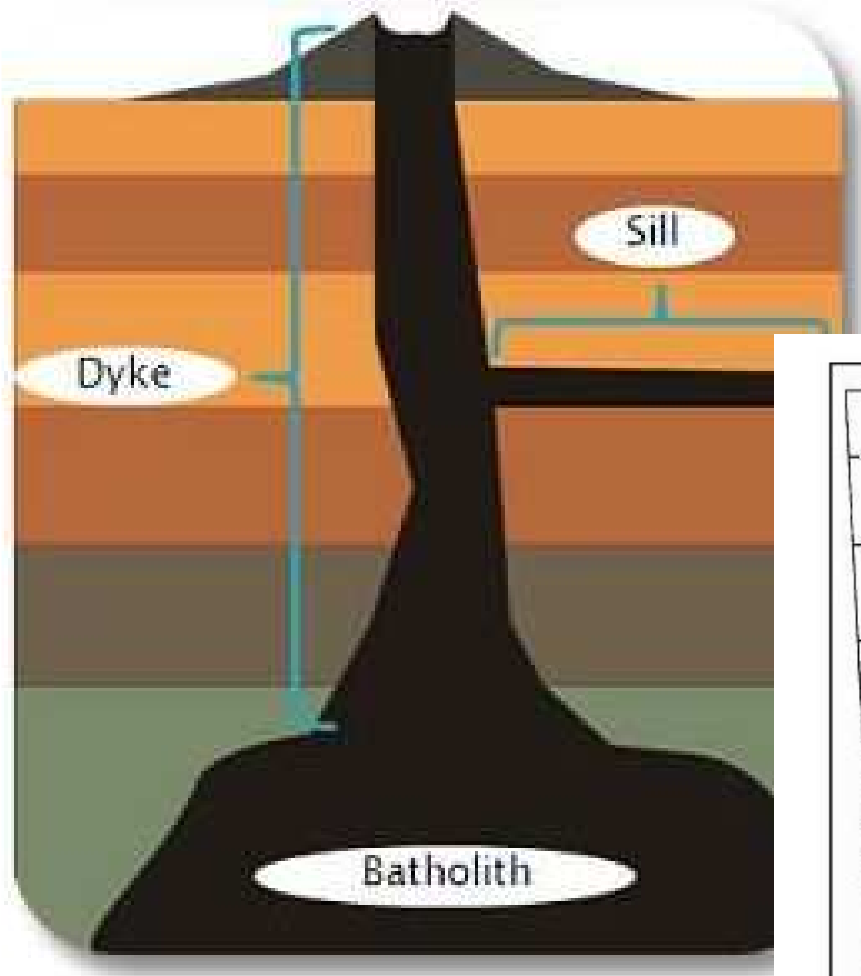


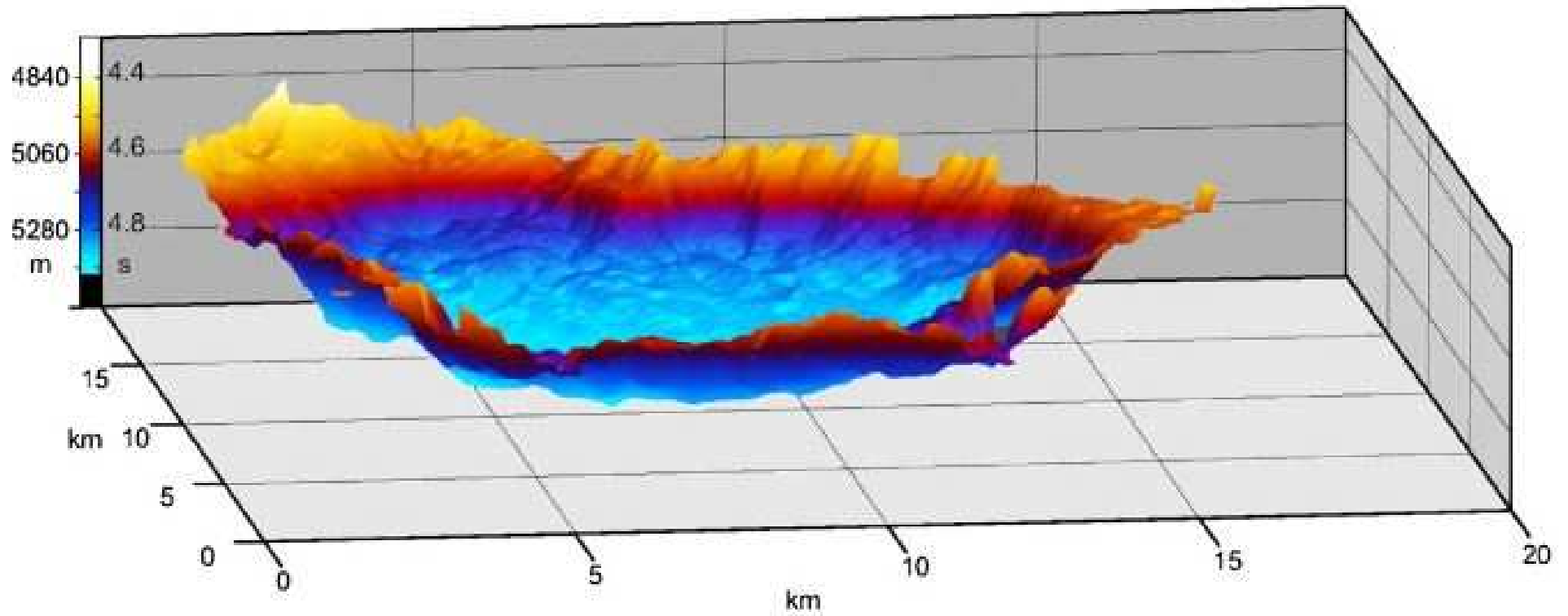
Figure 2.14: Dolerite Dykes of the Karoo Basin (from Woodford and Chevallier, 2001)

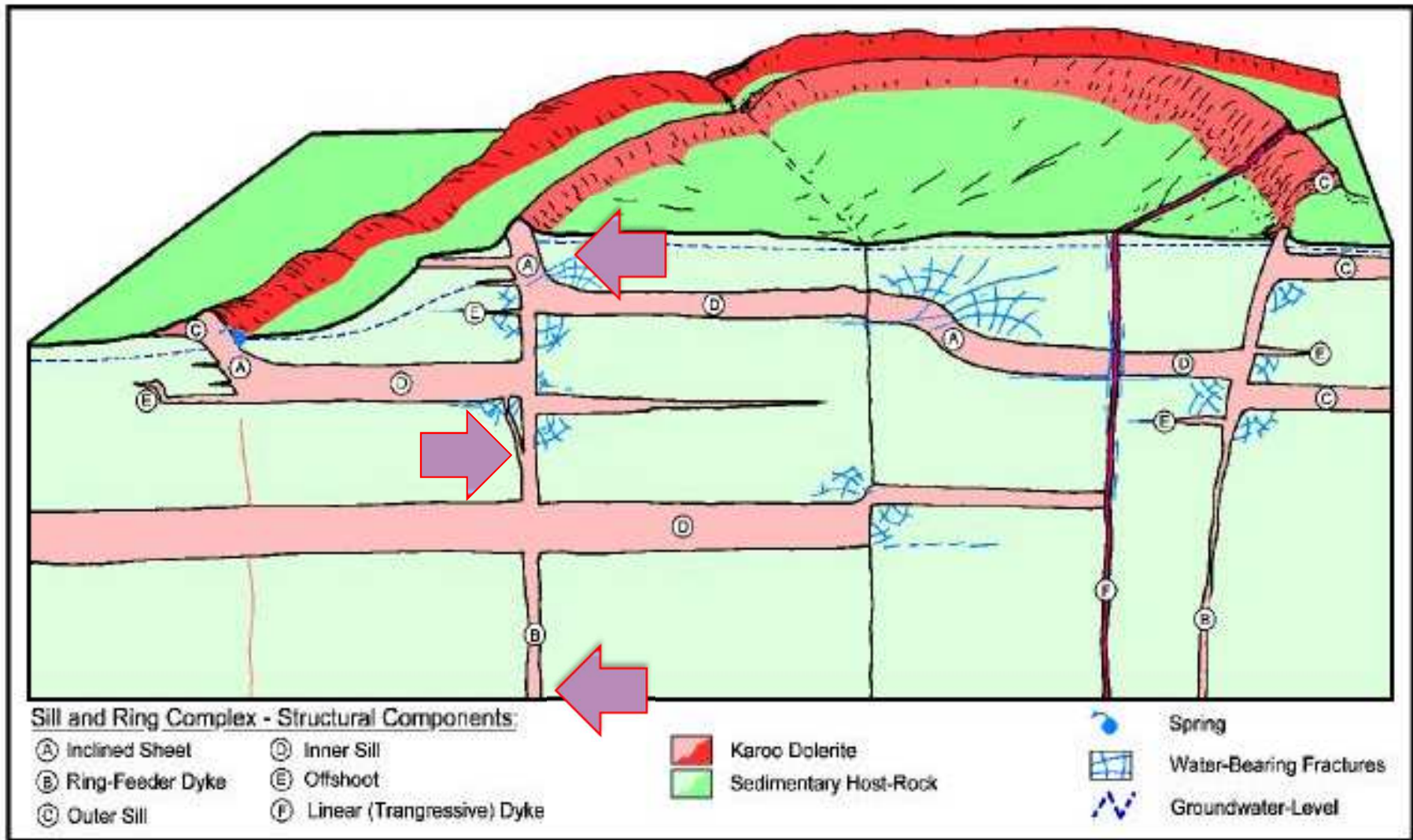
Saucer-shaped dolerite intrusions near Queenstown





In a seismic 3D survey, they look like impact craters...





These deep cracks can be “preferential pathways” for deep groundwater to rise up to the surface.

... in fact , it is even much more complex...

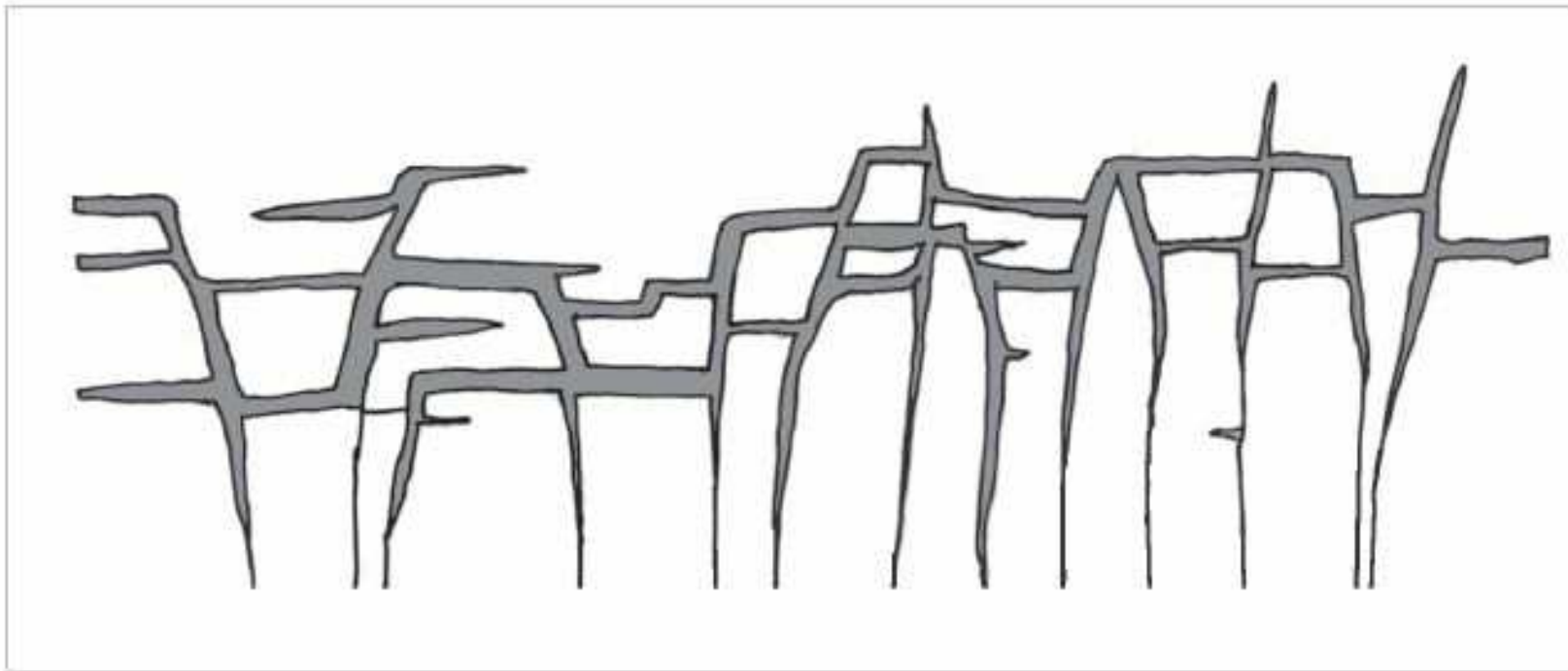


Figure 6: Morpho-tectonic model of the dolerite sill and ring complex of the Queenstown area, showing the stacking and box-like intrusion of the dolerite (Chevallier et al., 2001).

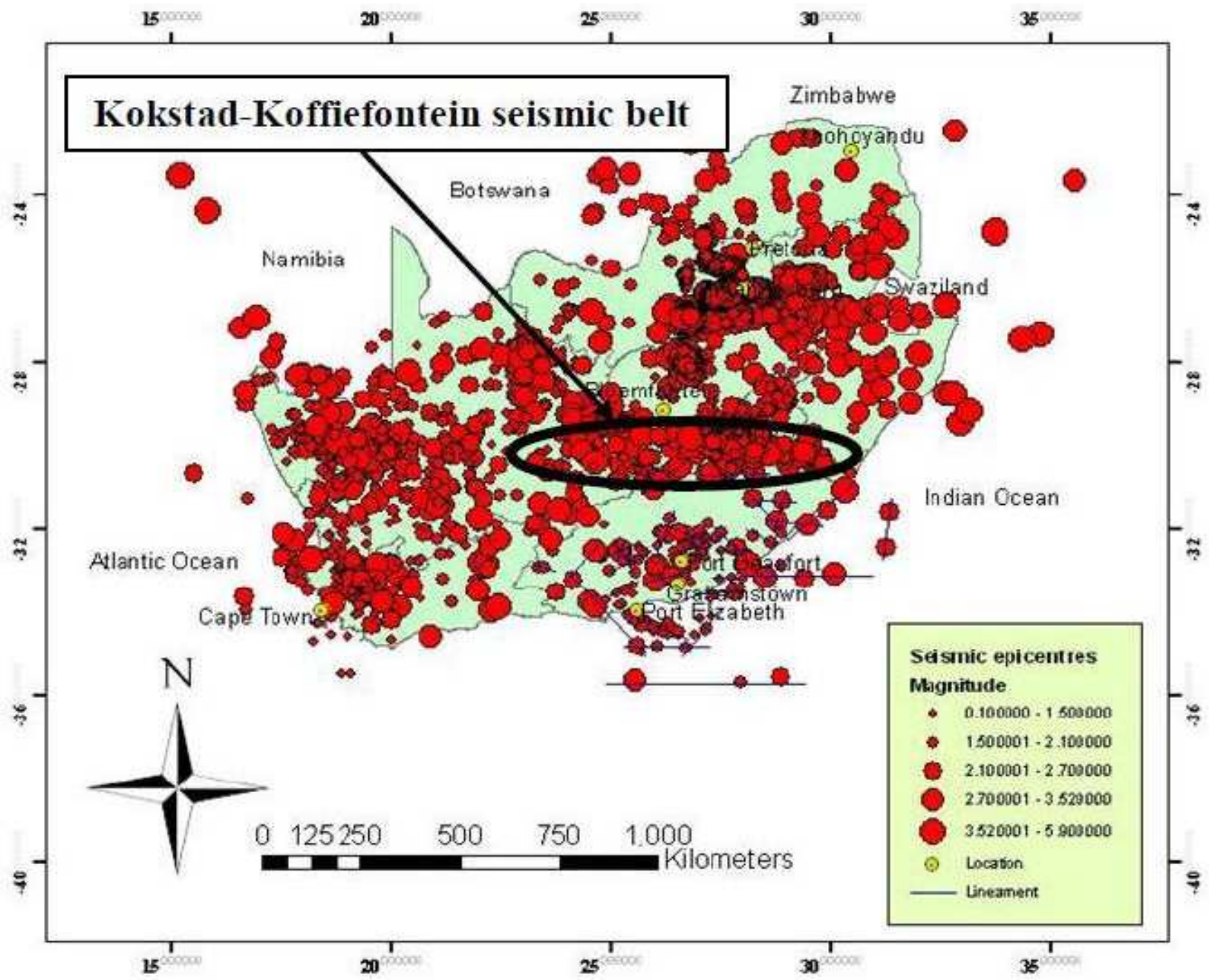


Figure 3. Seismic epicenters of new events in South Africa. Source of data: IRIS Earthquake Browser.



Climate change will aggravate the water-stressed Karoo

An aerial photograph of a vast, dry, and open landscape. The terrain is covered in sparse, brownish-yellow vegetation, indicating a semi-arid or arid environment. In the middle ground, a small farmstead is visible, consisting of several rectangular buildings and a tall, slender windmill structure. The landscape is flat and extends to the horizon under a clear sky. The overall scene conveys a sense of isolation and harsh environmental conditions.

Mainly extensive farming, in an unforgiving ecosystem.

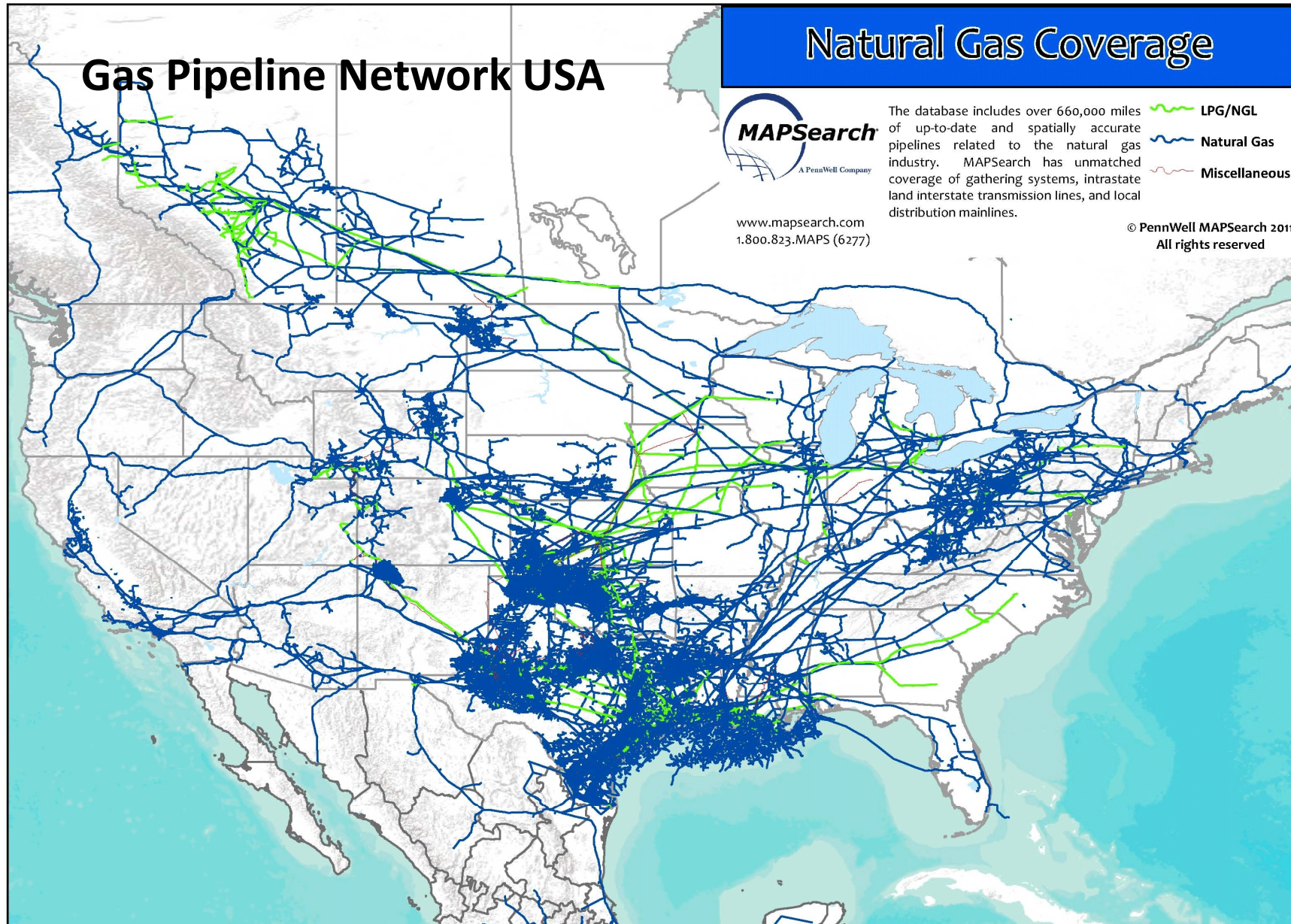
The sheer volume of fracking water requirements make this technology impractical in the Karoo.

Water must be trucked across large distances.

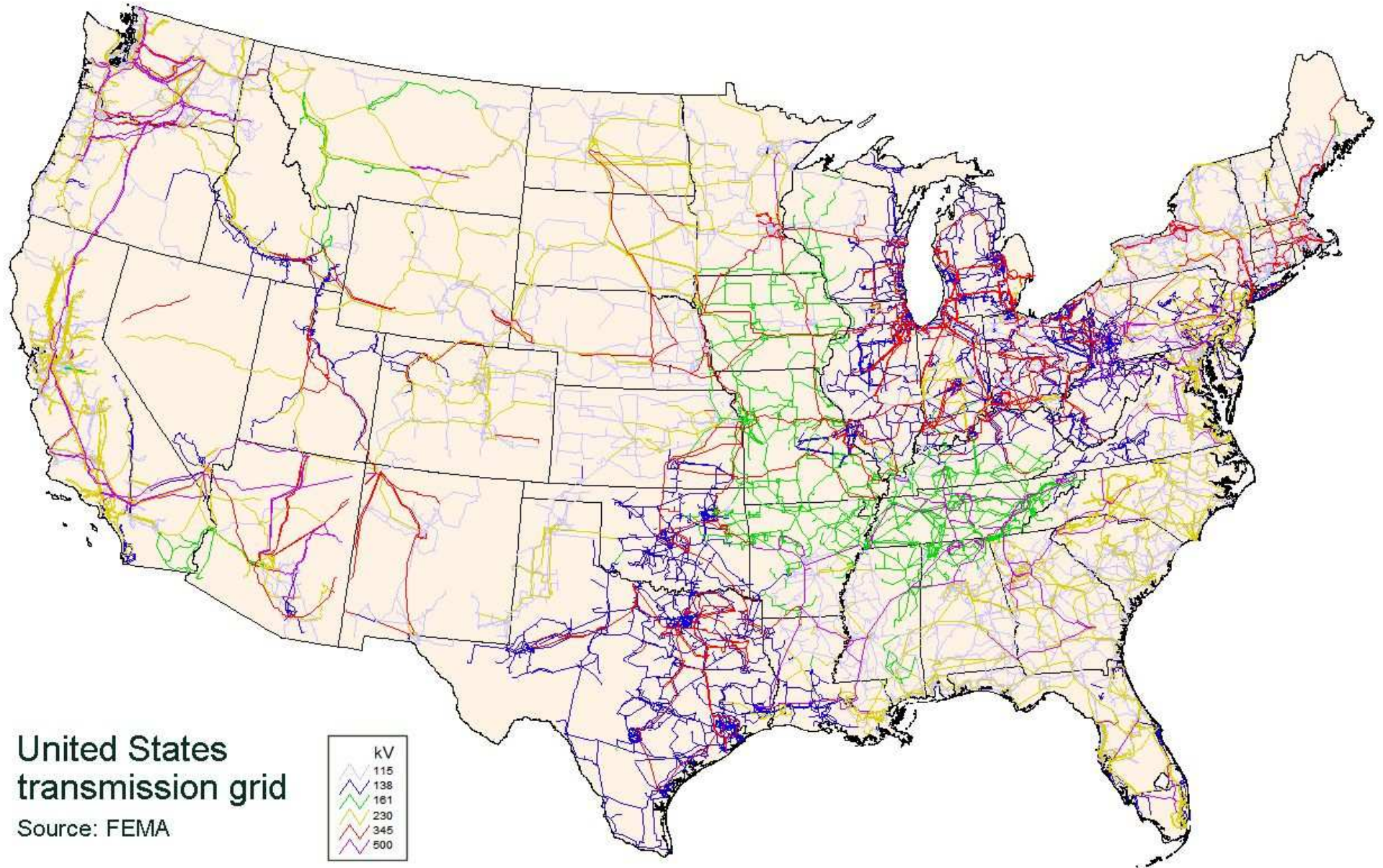
Fracking is in direct competition to agriculture and human consumption.



3. There is no infrastructure to support this industry.



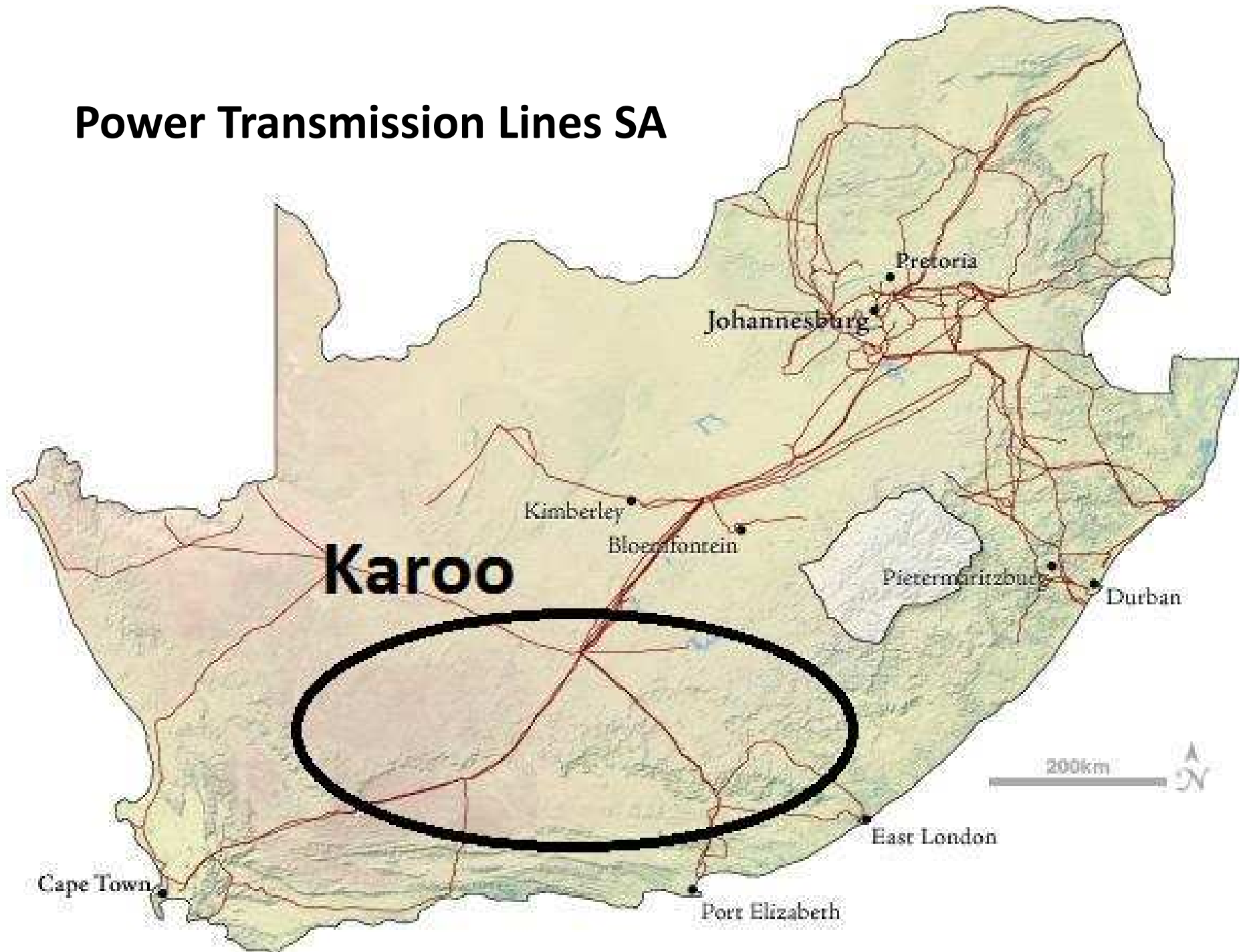
Power Transmission Lines USA



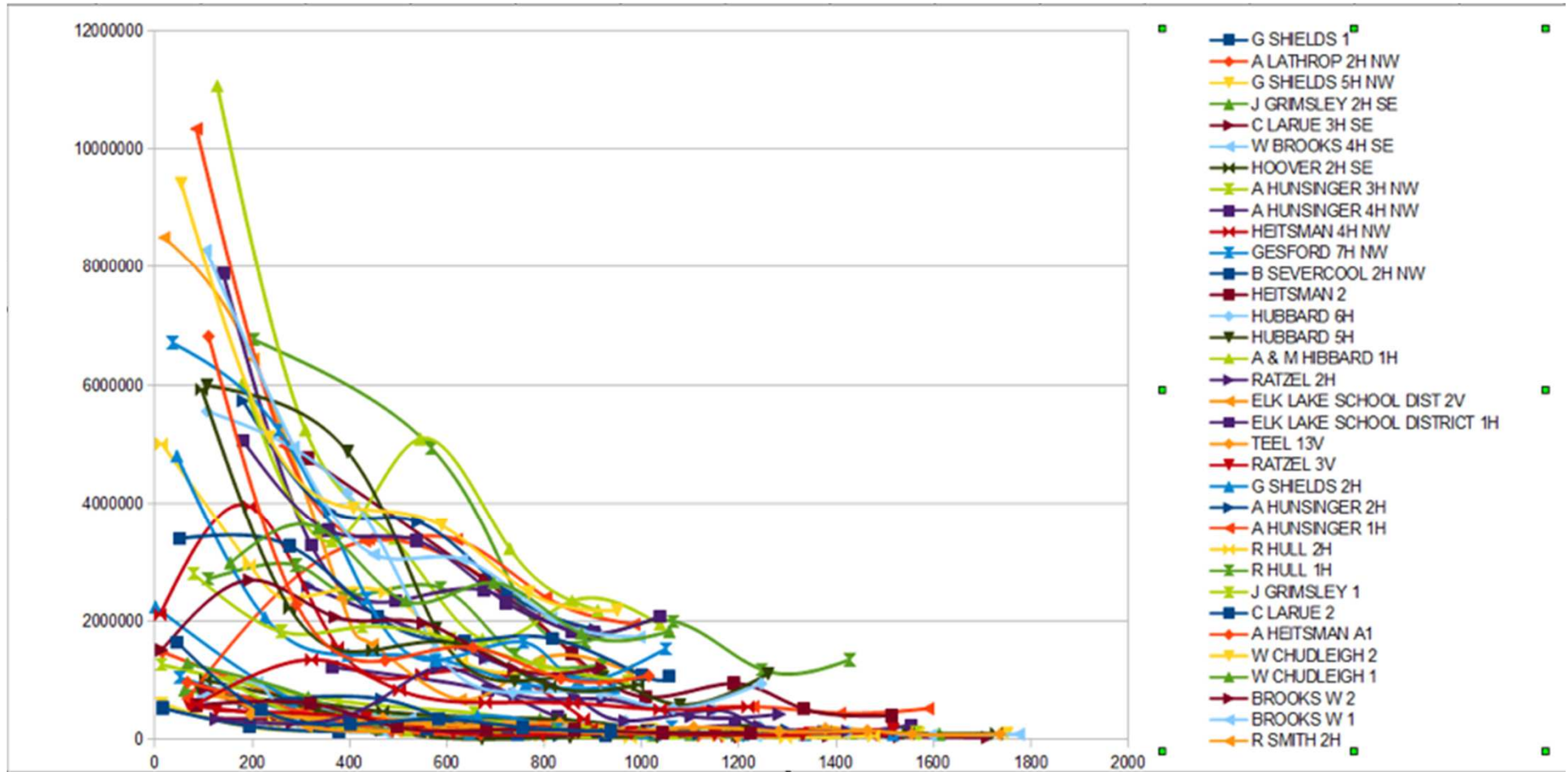
United States
transmission grid

Source: FEMA

Power Transmission Lines SA

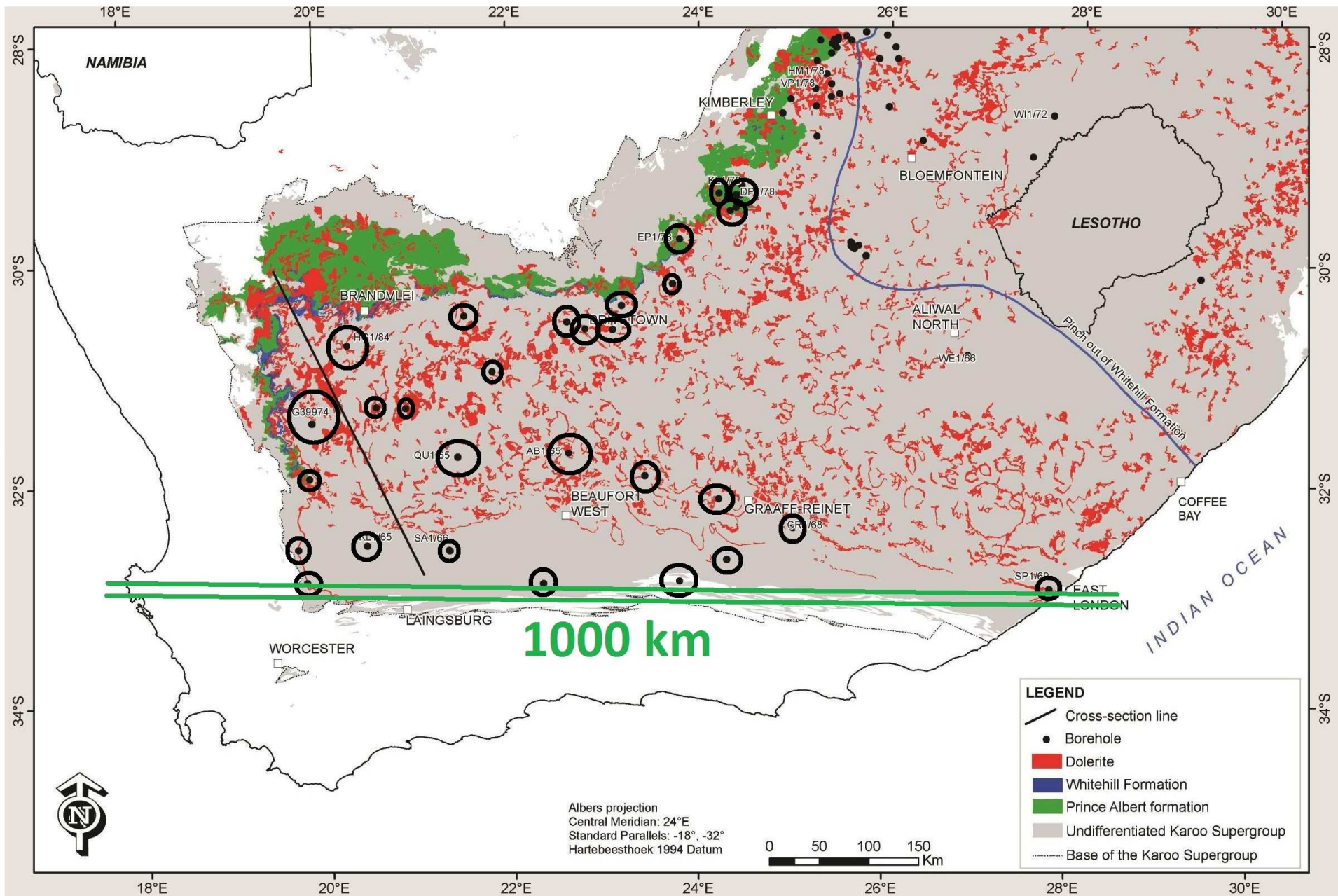


Shale gas production declines quickly from any borehole.

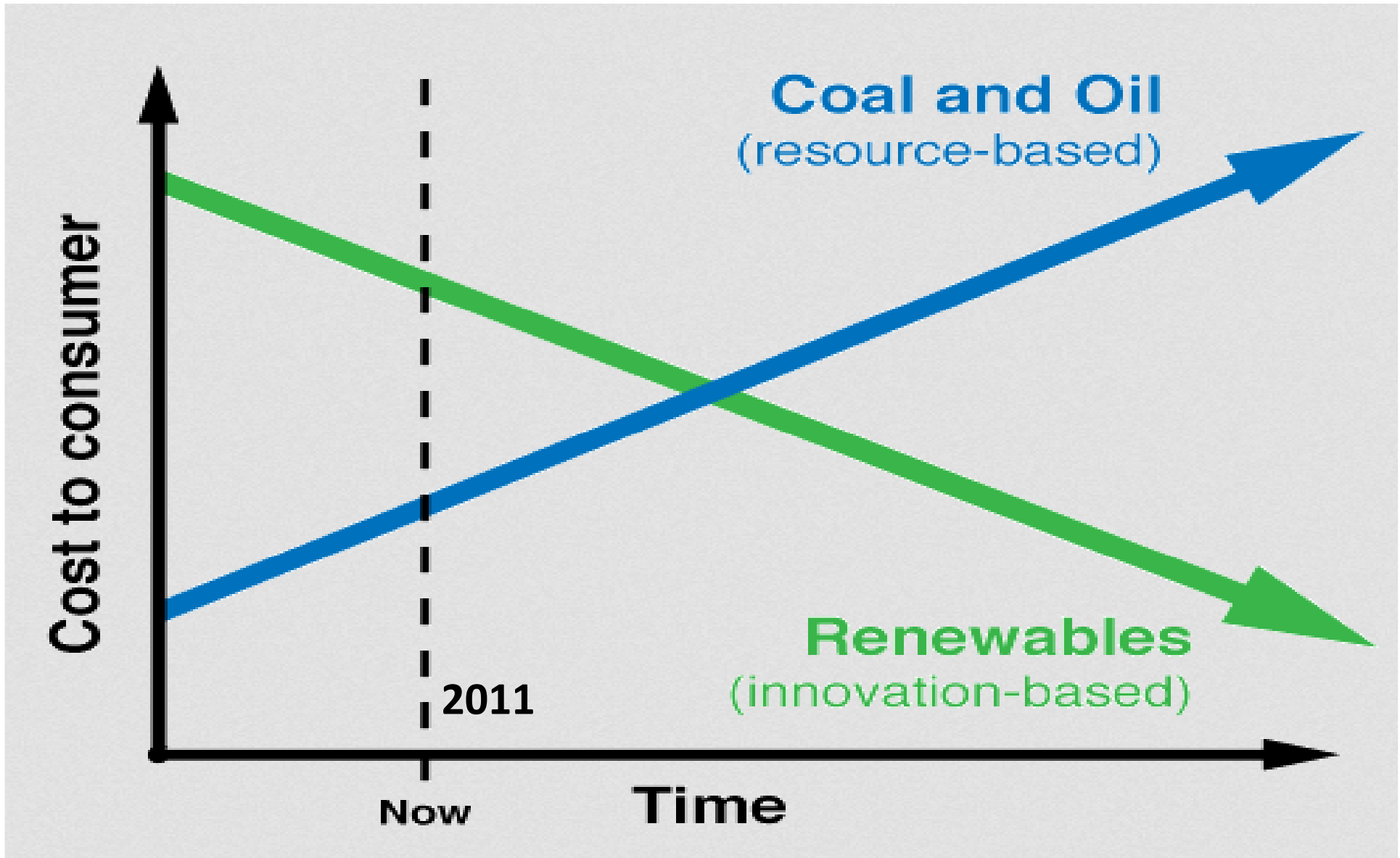


- Data for Cabot wells (dry gas) in northeast PA

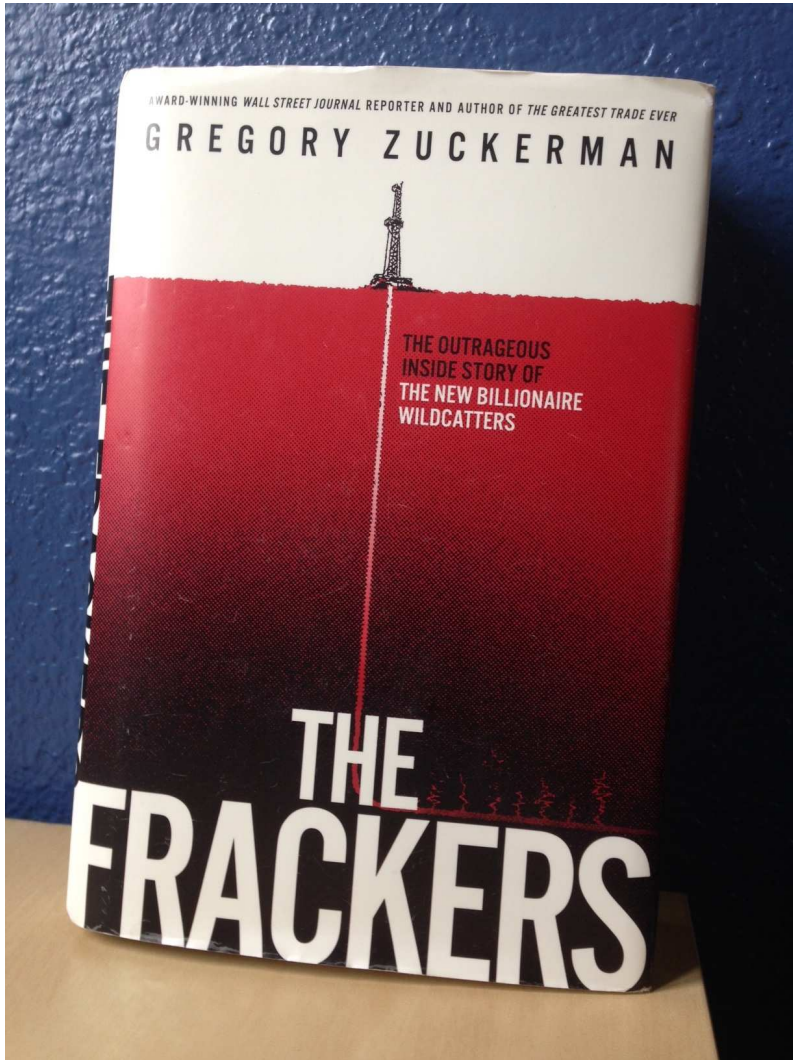




Would all this investment into an unknown resource be feasible?



4. Business cultures are different



Three key ingredients:

- Greedy businessmen
- Greedy banks
- Greedy landowners

Developing a shale gas industry in the Karoo will dramatically industrialize a rural society.



5. POLITICAL CONDITIONS



INVESTMENT CLIMATE in SA is negative



6. BOTTOMLINE: Economic case for fracking: Game-changer or no-brainer?

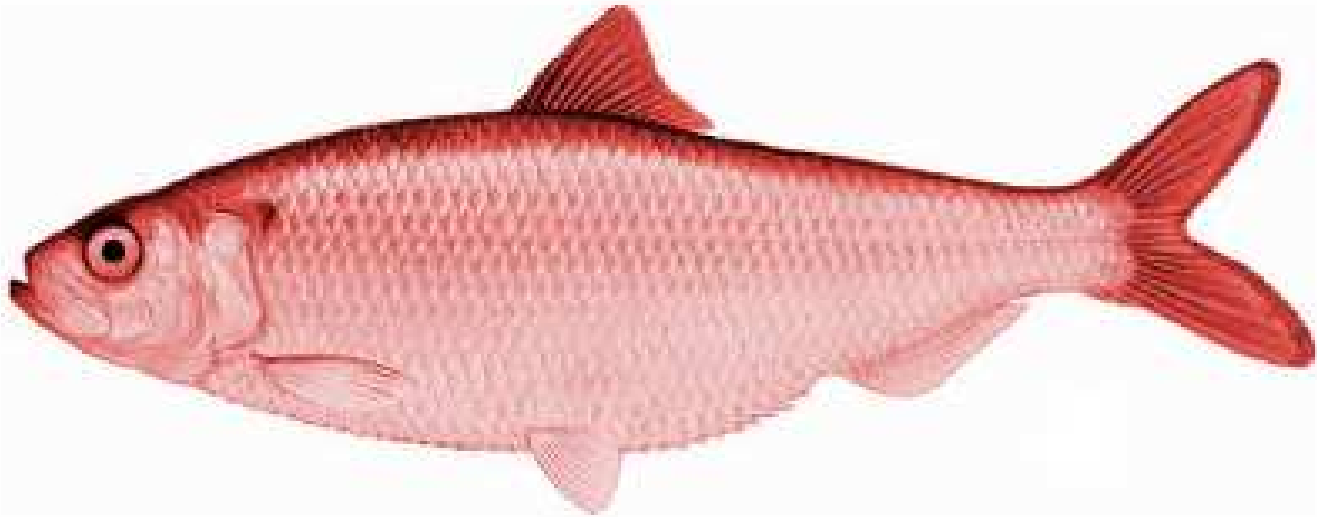
- SA Treasury questions the viability
- Shell says: we don't know.
- Fracking will take place where it is cheapest and easiest
- Cost of doing business in the Karoo is exorbitant



Bottom-line:

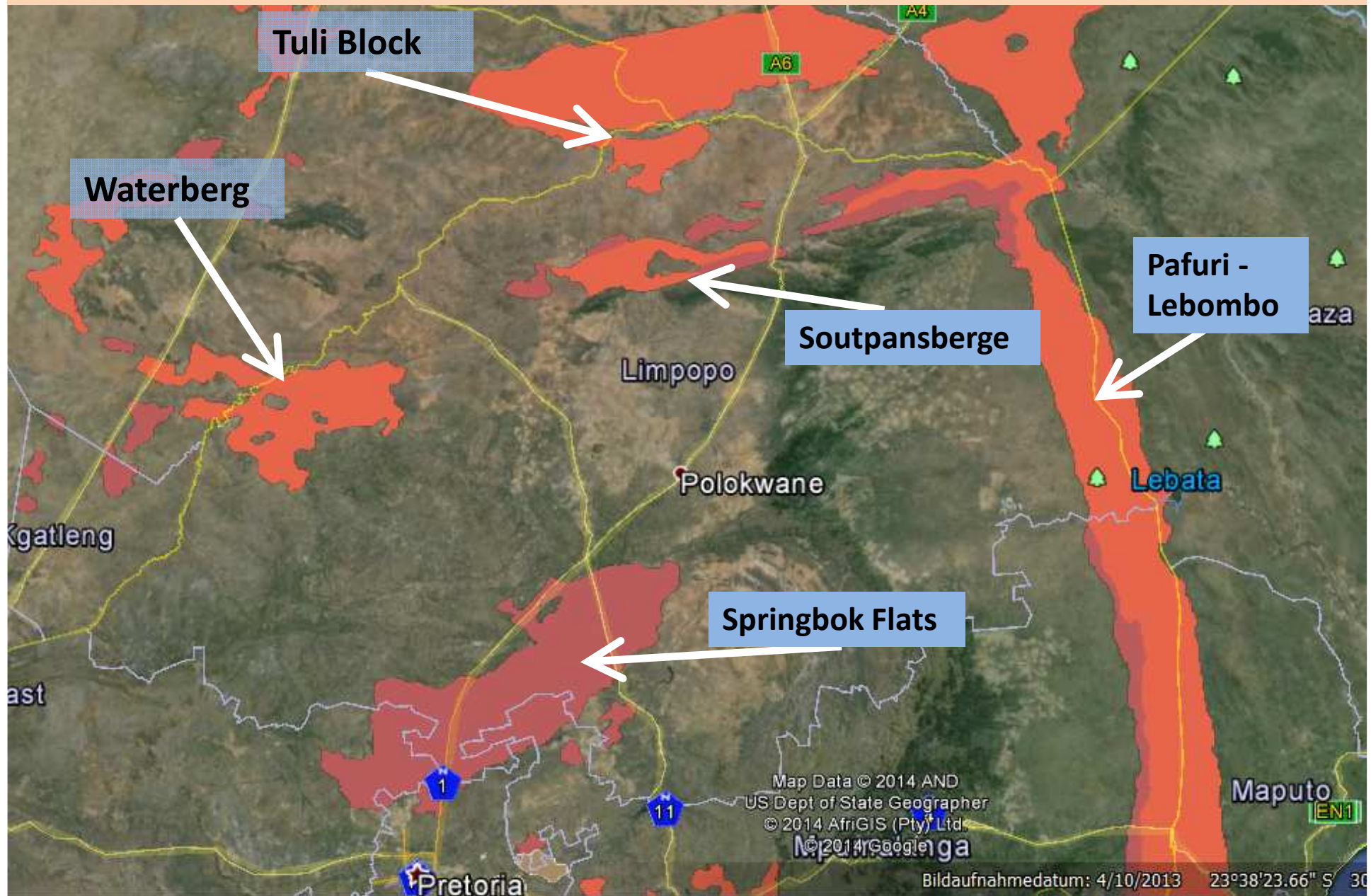
**the high cost of gas production in Karoo
makes the huge infrastructure investments,
both from public and private sources,
viable only
at hugely higher energy costs**

BUT SHALE GAS FROM THE KAROO MAY BE „RED HERRING“?



A “red herring” is a figurative expression referring to a piece of information that is intended to be distracting from the actual question.

Coals of Limpopo



It is already happen-ing!

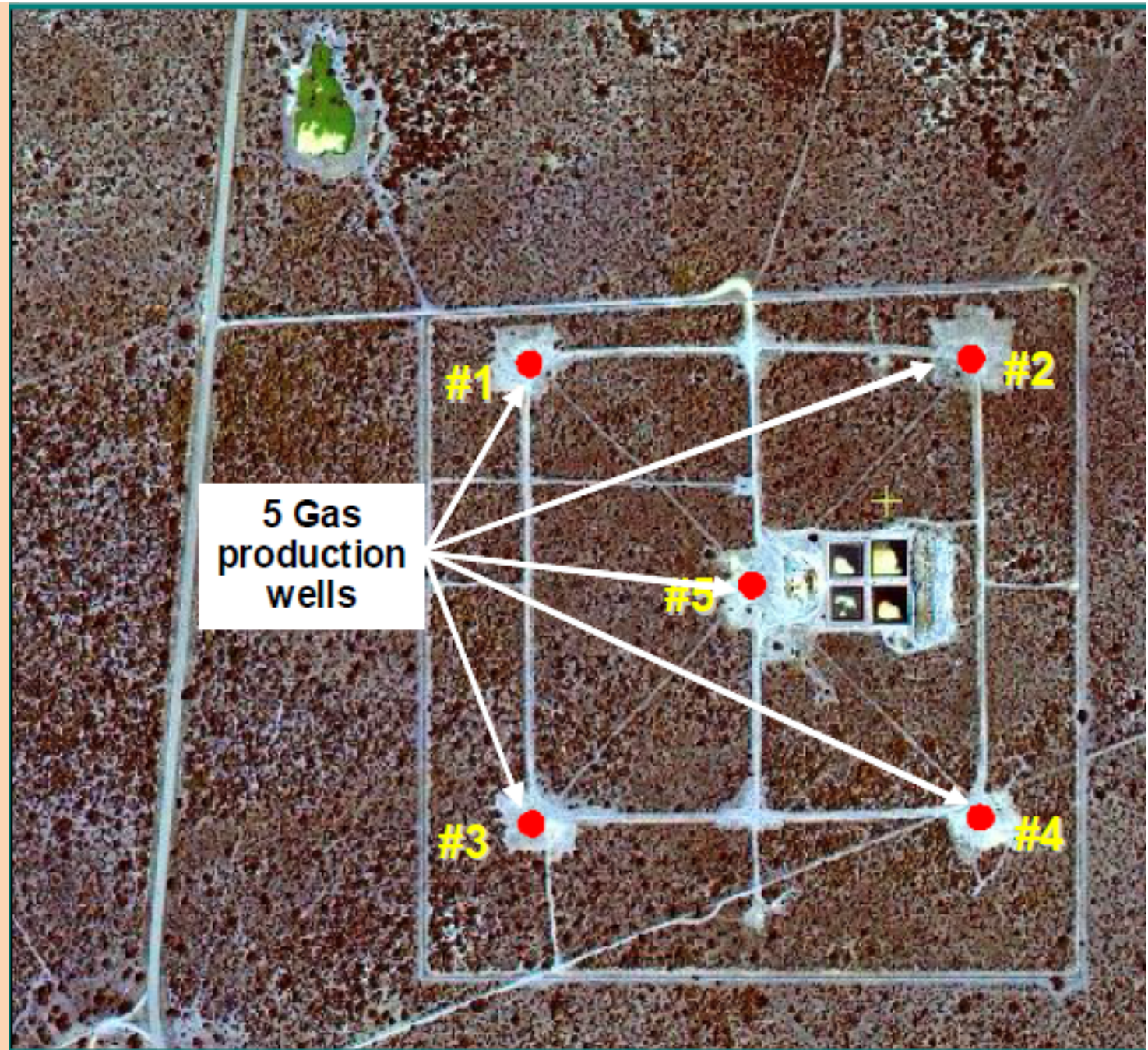
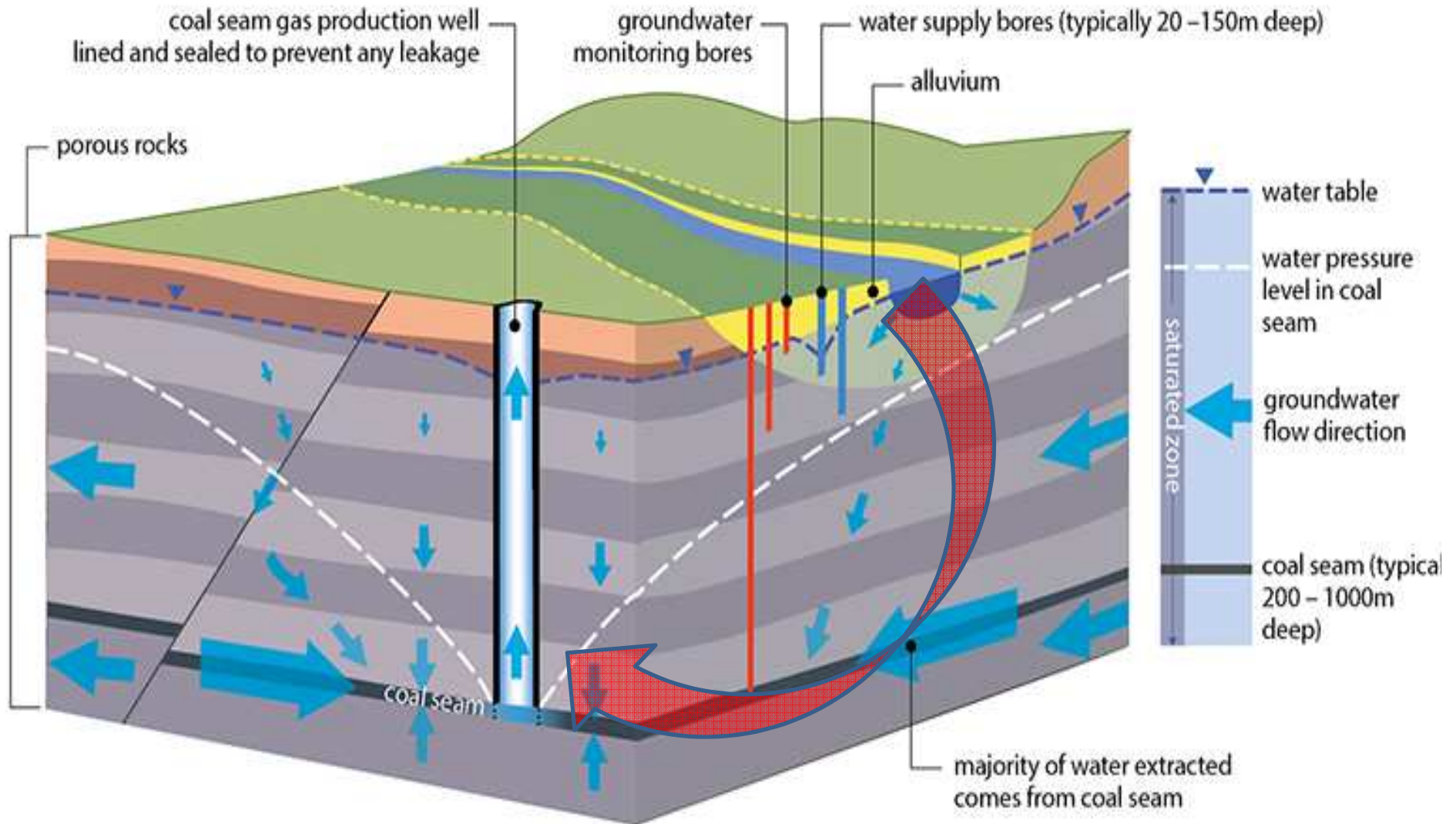
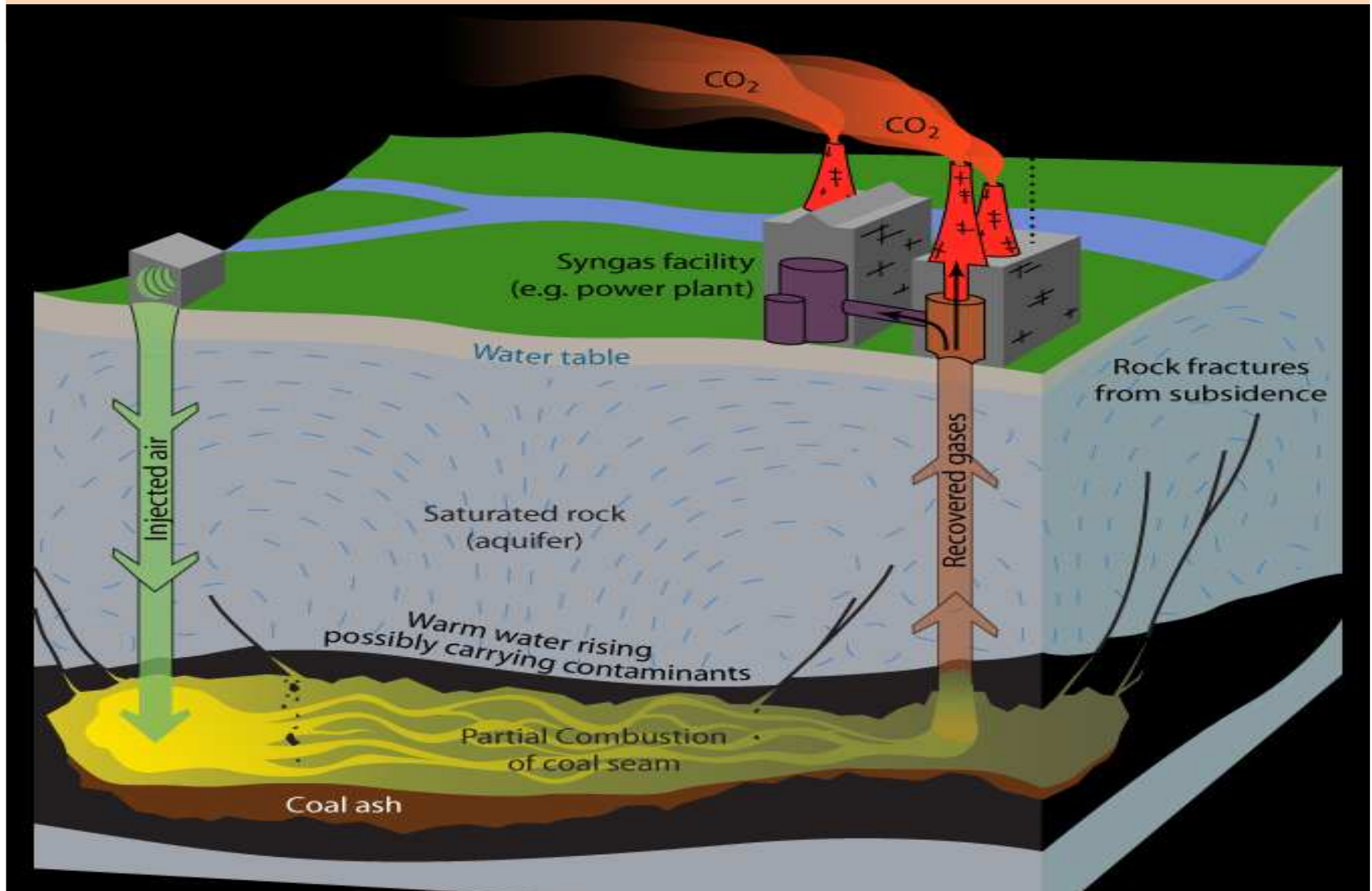


Figure 4: Layout of the Existing 5-Spot

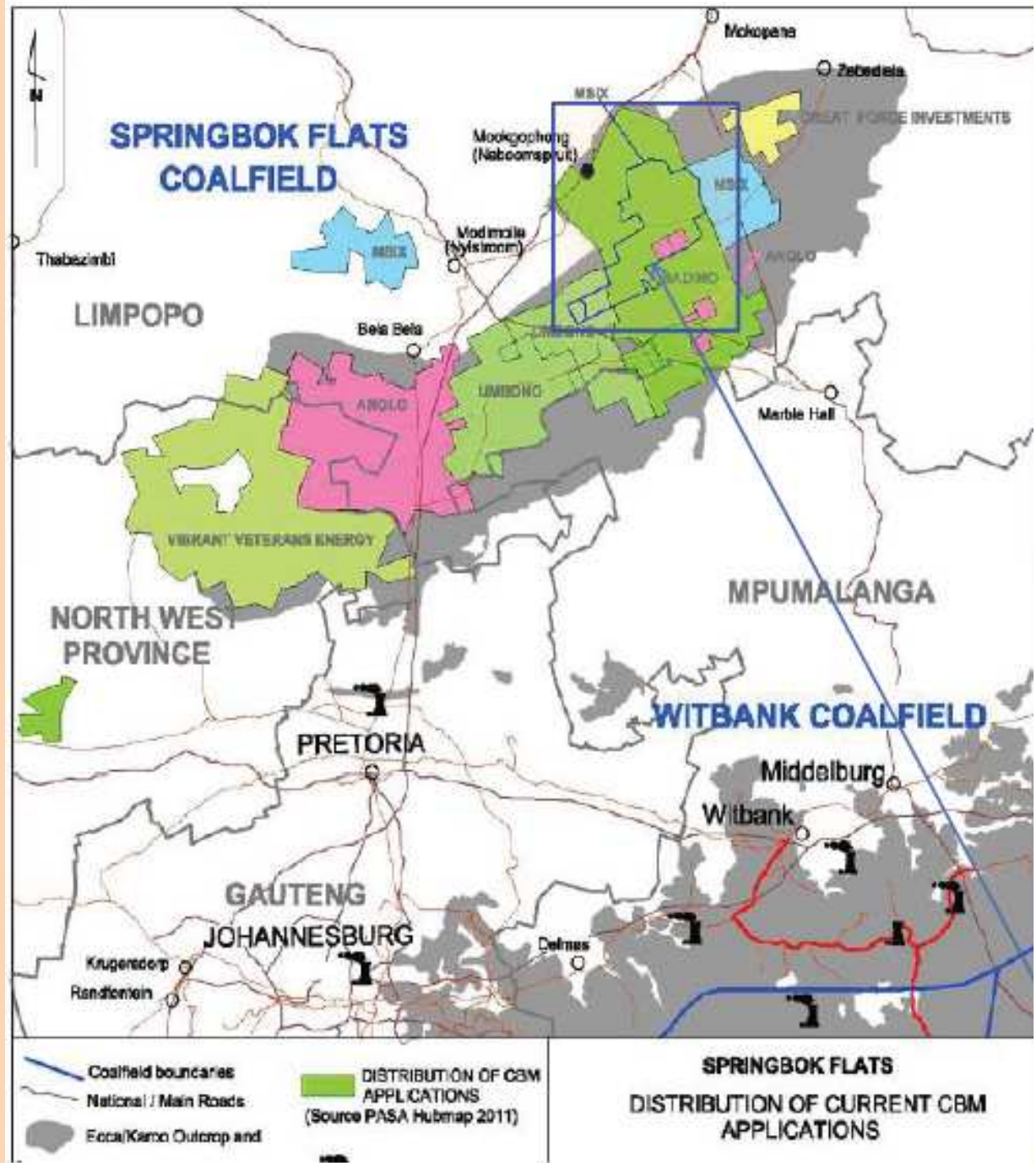
Too close to drinking water: The coal seams often are close to the local aquifer or even are the local aquifer.



Underground Coal Gasification (UCG)



Springbok Flats Coalfields

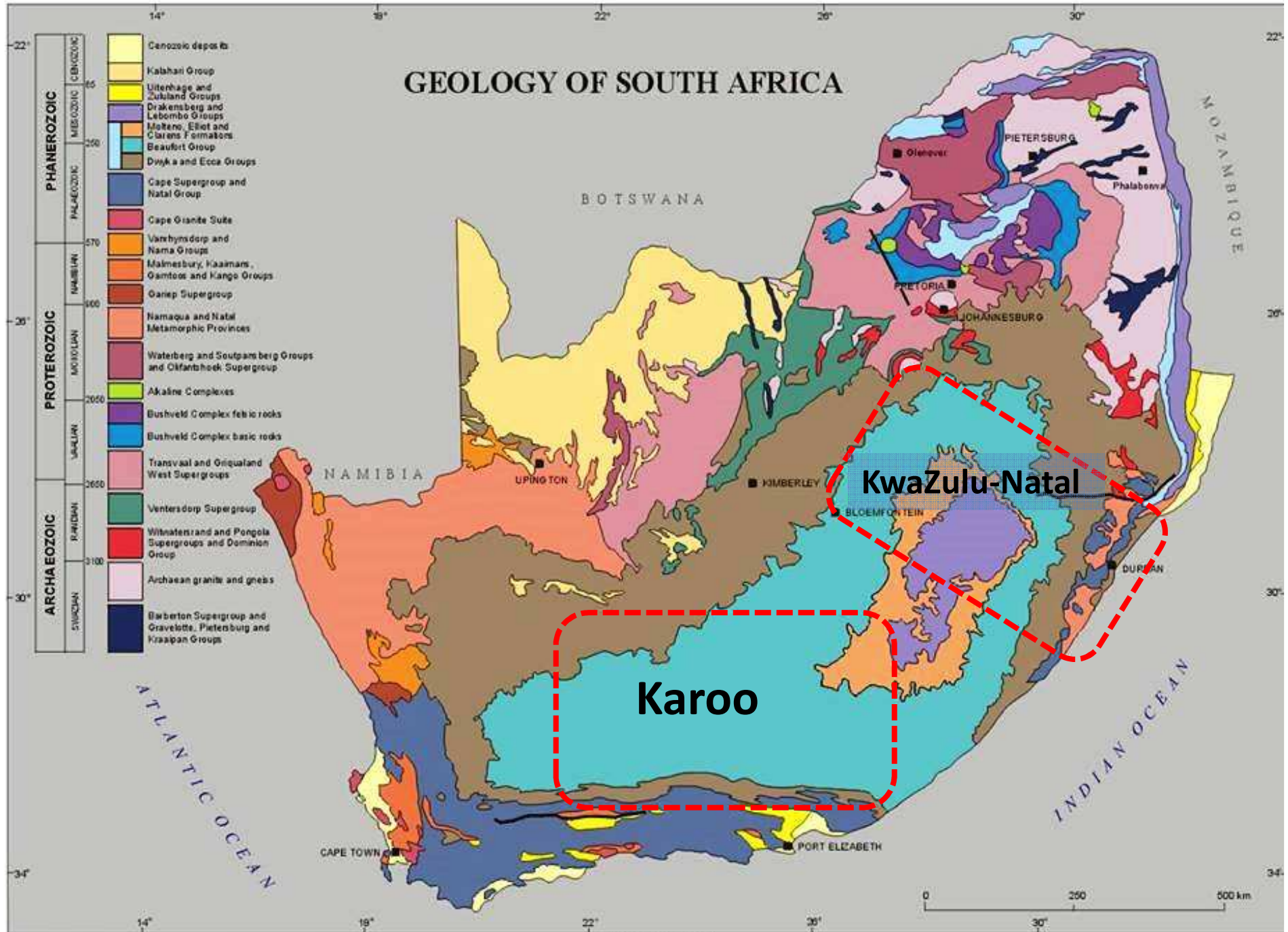


An aerial photograph of a vast, rolling landscape in KwaZulu-Natal, South Africa. The terrain is characterized by undulating hills and valleys, with patches of green grass and brownish-yellow soil. The sky is filled with soft, white clouds, suggesting a hazy or overcast day. In the foreground, large, dark rocks are visible, indicating the viewer's perspective is from an elevated position. A semi-transparent green banner with white text is overlaid across the middle of the image, and a white banner with red text is overlaid at the bottom.

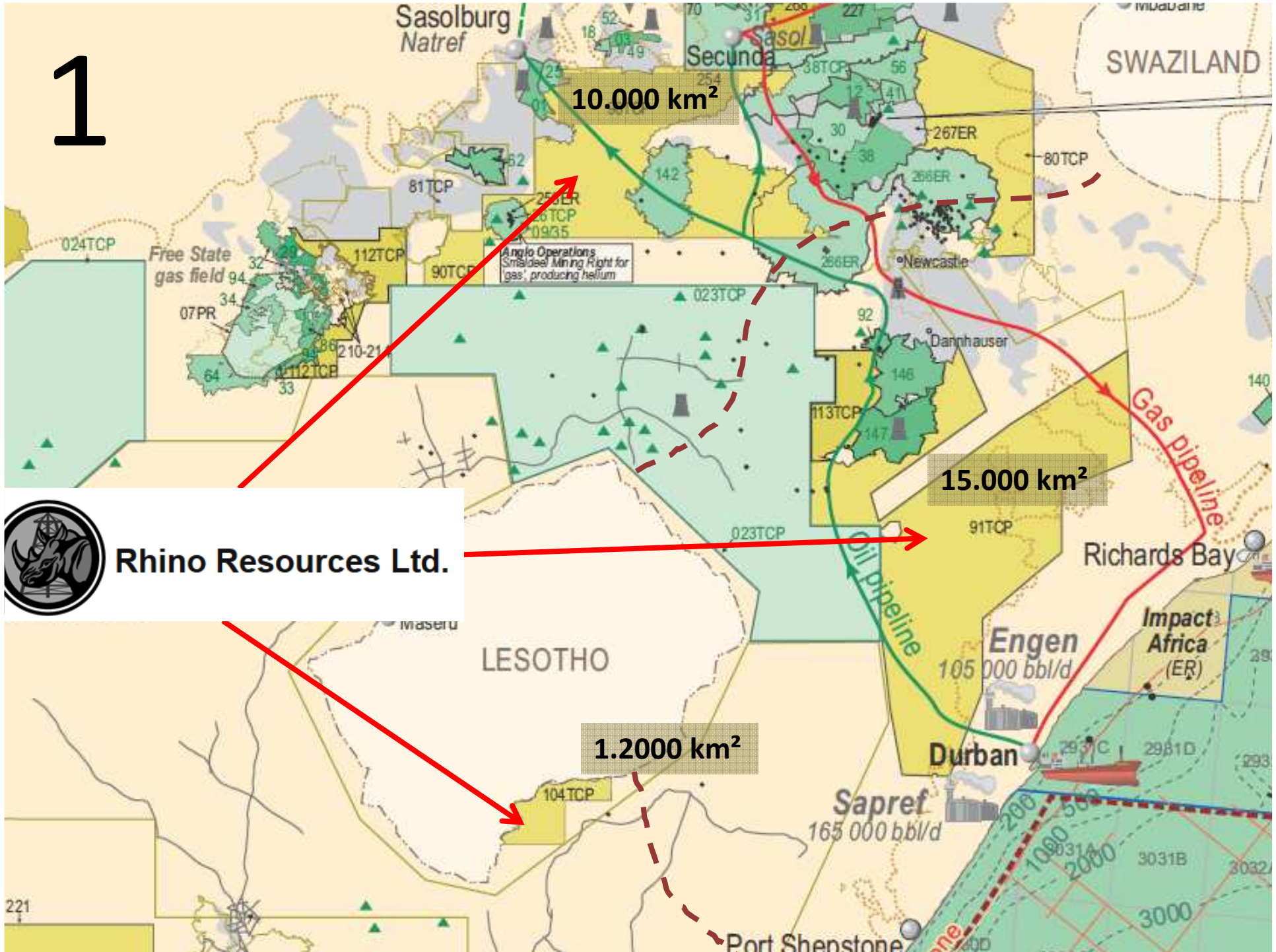
Fracking in KwaZulu-Natal?

4 companies, none really a serious enterprise

GEOLOGY OF SOUTH AFRICA

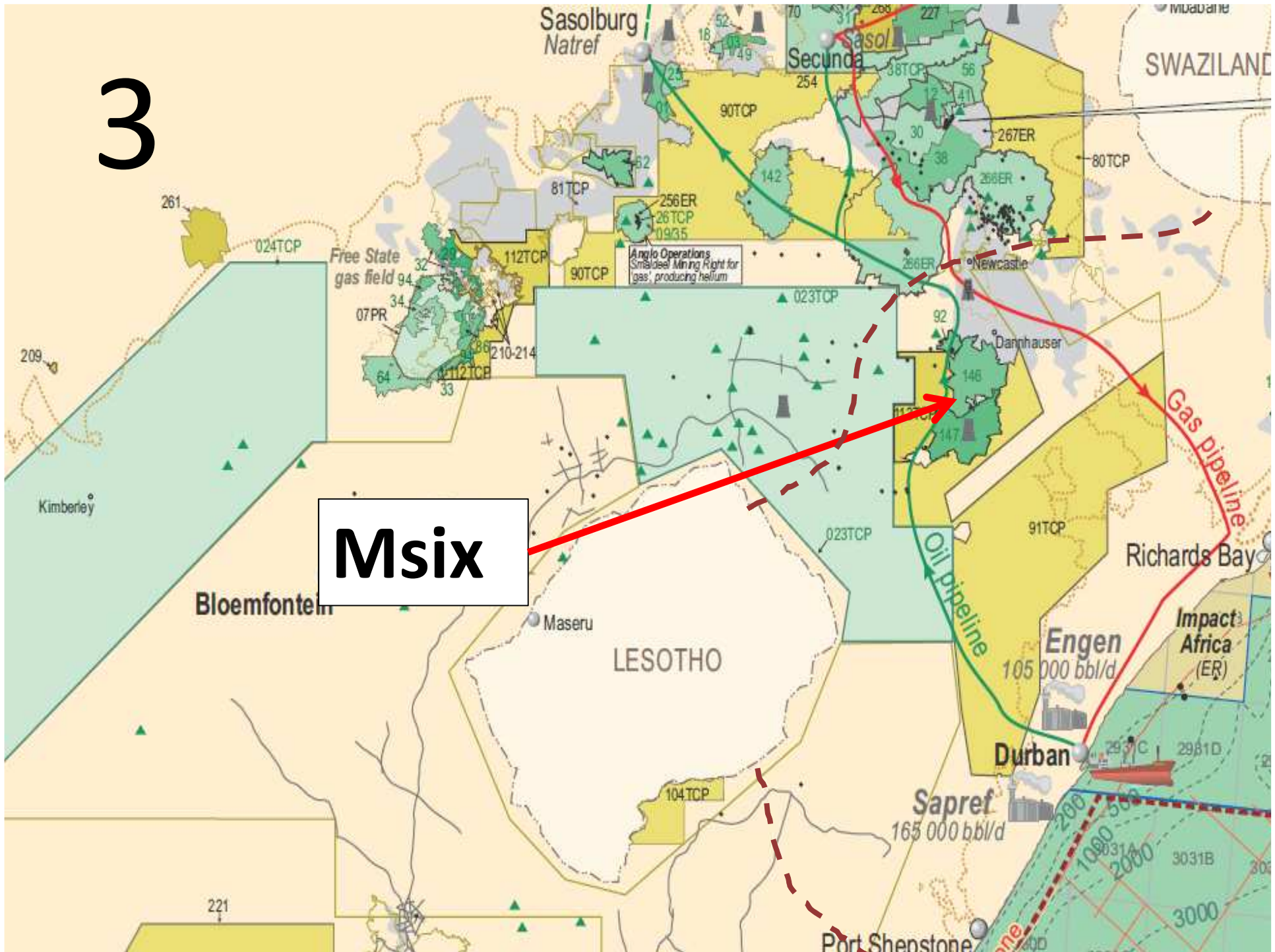


1



Rhino Resources Ltd.

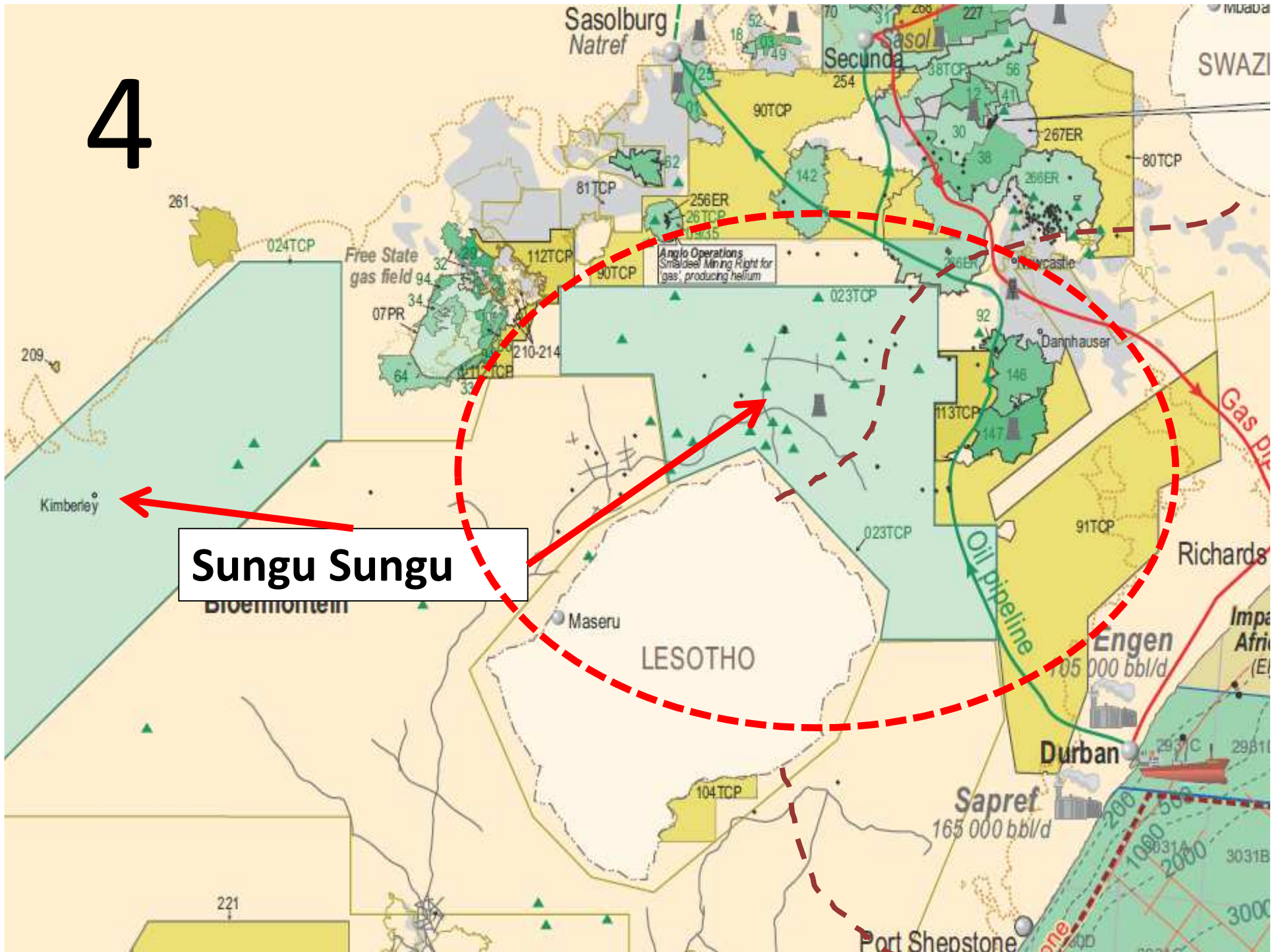
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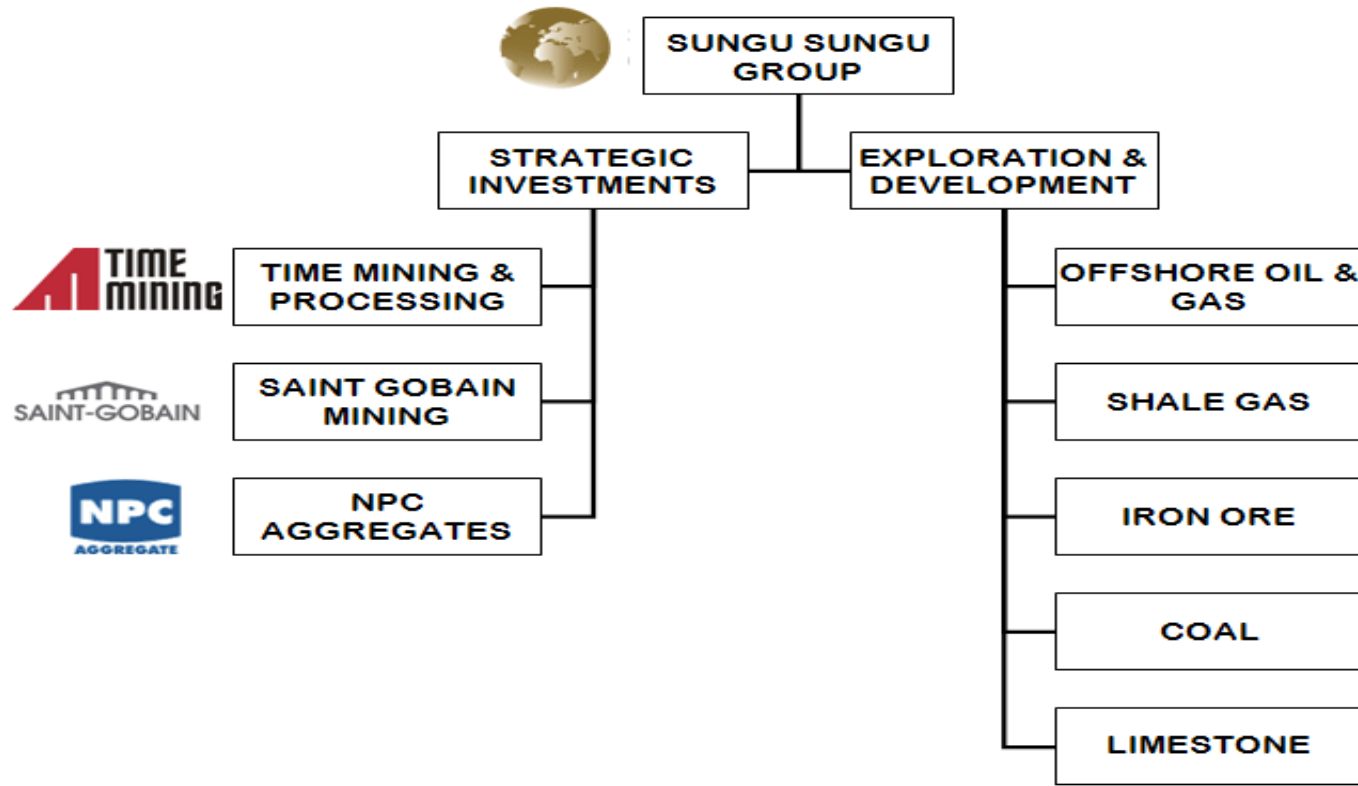
Msix



4



Sungu Sungu



But back to the Karoo - Seeking allies in the Karoo



Organised commercial farming

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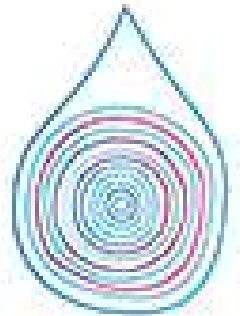
Emerging Farmers in the Karoo

the churches are perhaps the most important opinion makers





In Europe, the drinking water providers are among the most vocal opponents of fracking.



EurEau



European Federation
of National Associations of
Water Services



The largest breweries in Germany



Their lobby organisation is

Die deutschen Brauer

Deutscher Brauer-Bund e.V.



...and one of their campaign posters is this:

good clean beer is holy to Germans... ..so:



CONCLUSION





Cheers - and thanks for your attention

Have a safe way home:

