

# **Onshore and offshore exploration opportunities within South Africa**



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APPEX Global 2017**

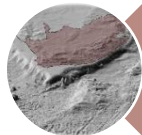
# OUTLINE



The role of PASA



History and current situation

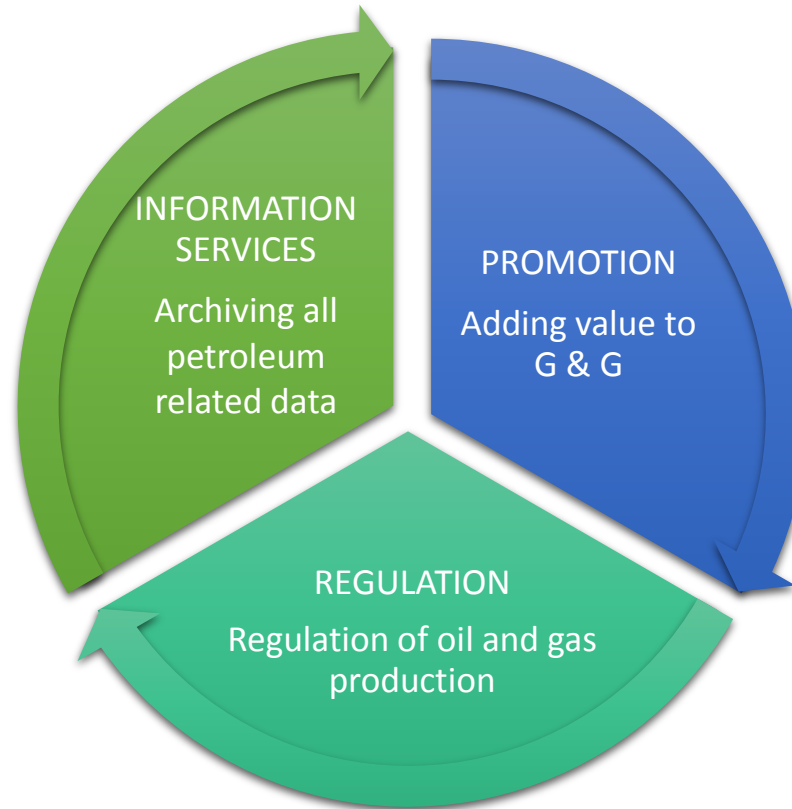


Onshore exploration activities

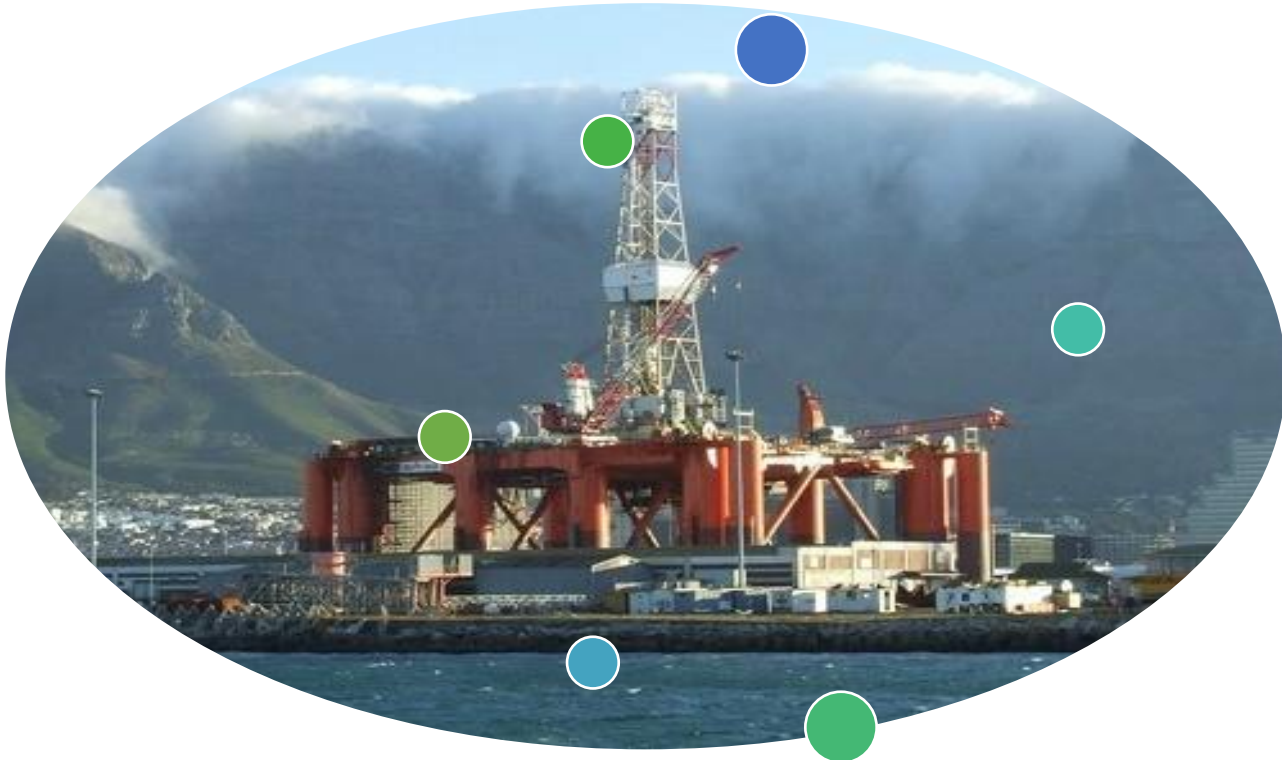


Way forward

# REGULATORY FRAMEWORK



# HISTORY OF OIL AND GAS EXPLORATION AND THE CURRENT STATUS



# HISTORY OF EXPLORATION AND PRODUCTION within SOUTH AFRICA

1940's

**First organized search for hydrocarbons - Geological Survey of South Africa**

1960's

**SOEKOR formed by government) in 1965**  
– onshore Karoo, Algoa and Zululand Basins

**Mining Acts Right, 1967** – Offshore concessions granted to number of international explorers

**First offshore well in Pletmos Basin, 1969** – by Superior (discovery of oil and gas)

1970-1980

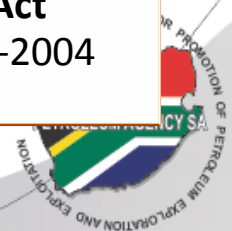
**SOEKOR (with Rand Mine) extend to offshore Sole explorer due to political sanctions**

1990 - 2000

**Licensing round held in 1994** - Offshore areas open to international investors

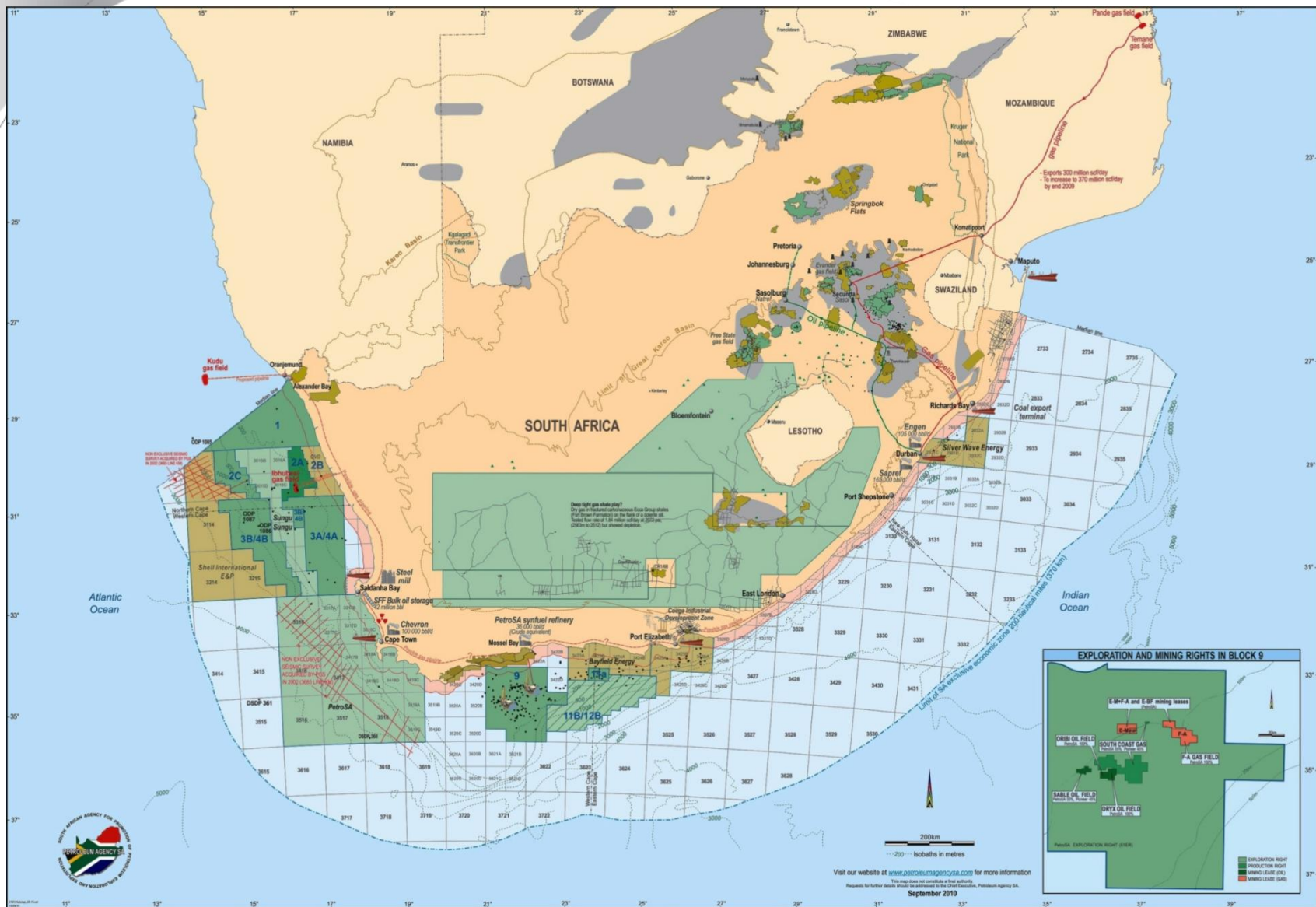
**Petroleum Agency SA 1999 and PetroSA 2001** (Merger of SOEKOR and Moss gas)

**Mineral and Petroleum Resources Development Act** passed in 2002-2004





# EXPLORATION MAP 7 YEARS AGO



# EXPLORATION MAP CURRENTLY

## Offshore rights and permits:

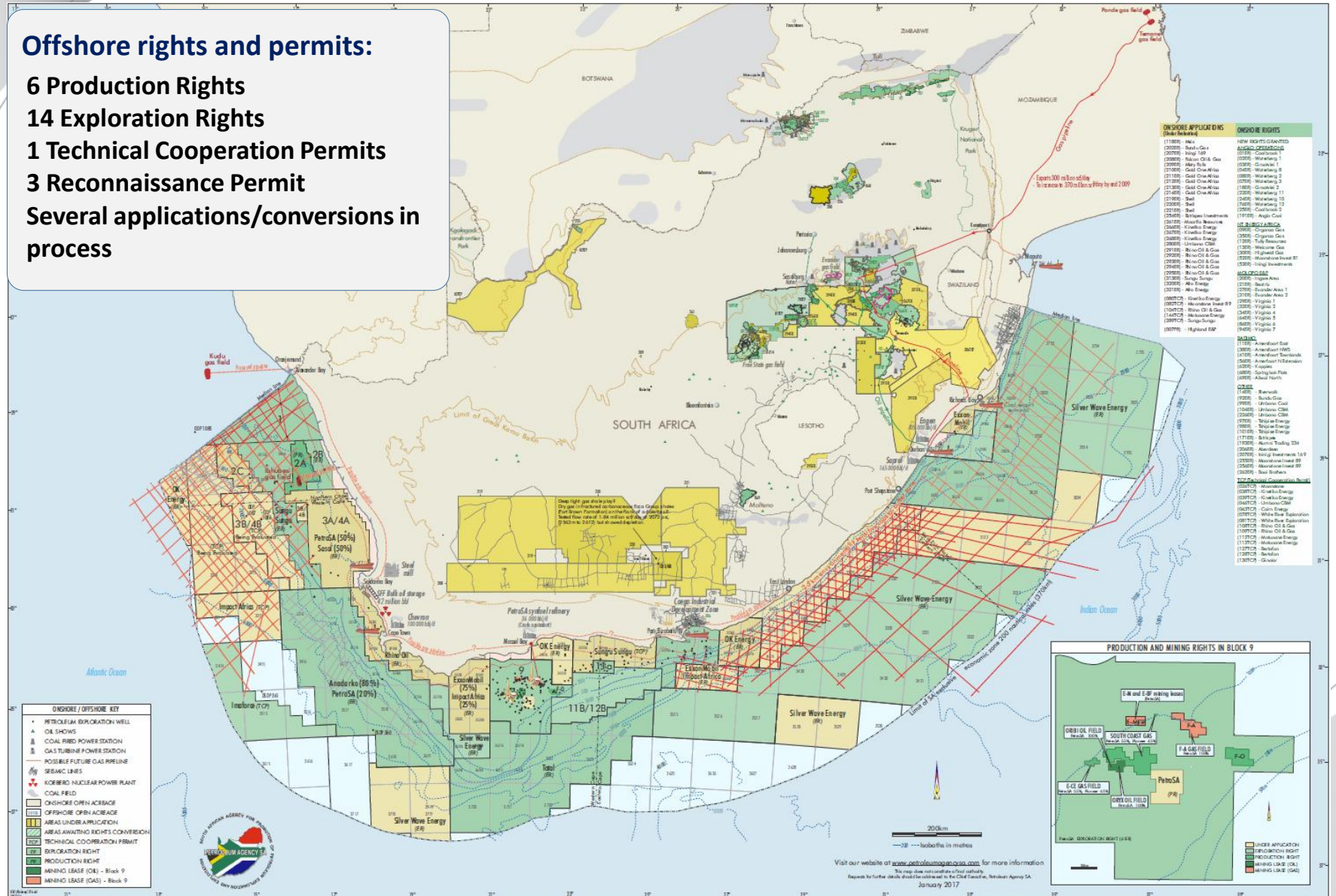
6 Production Rights

14 Exploration Rights

1 Technical Cooperation Permits

3 Reconnaissance Permit

Several applications/conversions in process





# UNCONVENTIONAL RESOURCES: ONSHORE

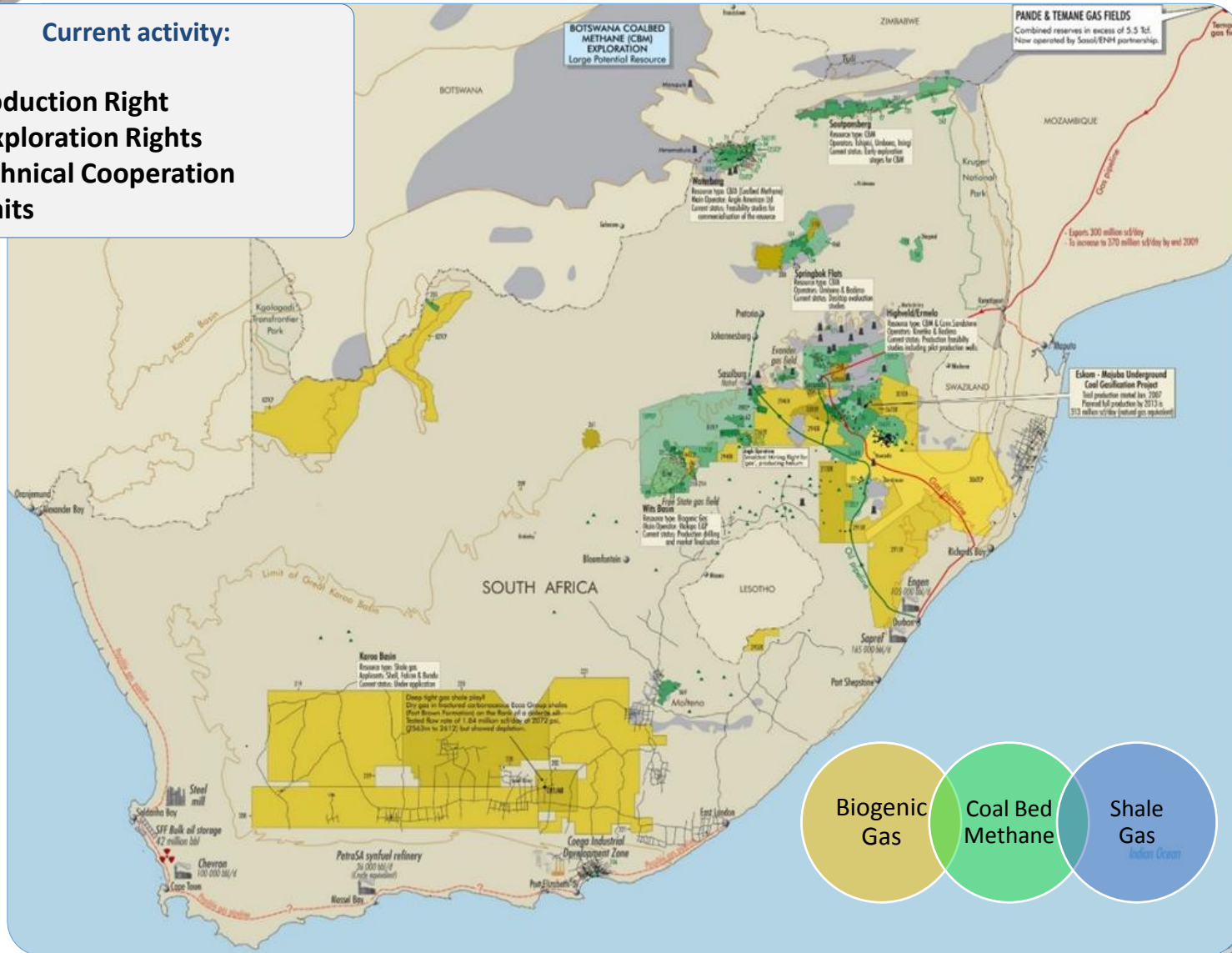




## CURRENT ONSHORE ACTIVITY

### Current activity:

- 1 Production Right**  
**33 Exploration Rights**  
**3 Technical Cooperation**  
**Permits**



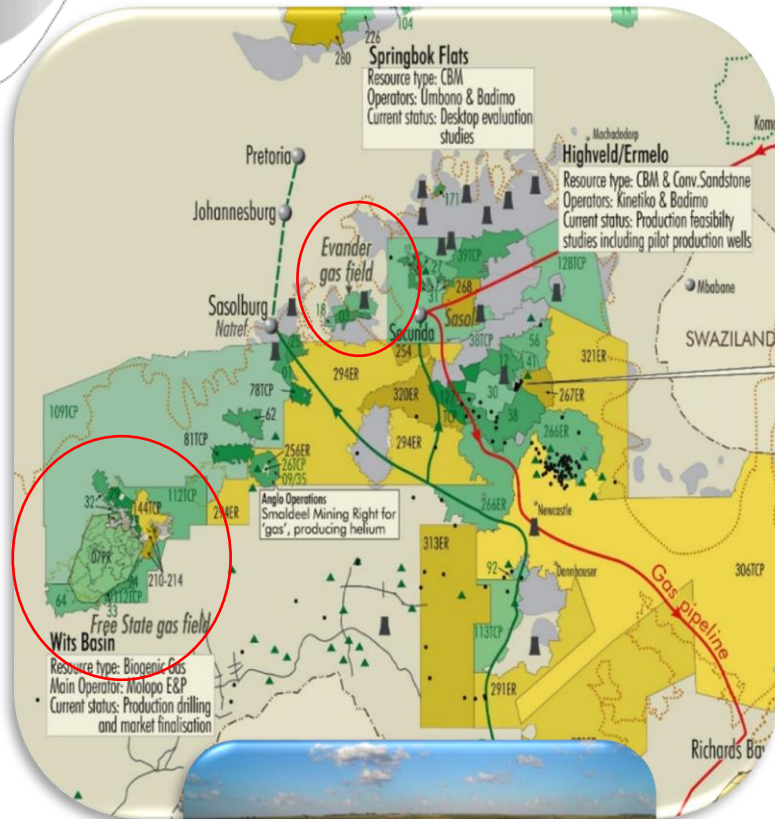
## Biogenic Gas

## Coal Bed Methane

## Shale Gas



# BIOGENIC GAS



- Gas shows were discovered in the **Free State** and **Evander goldfields** and are the most promising targets for biogenic gas at present
- Significant potential for biogenic gas exists within the Witwatersrand basin
- Renergen's **TETRA4** - Compressed natural gas used to power Megabus local service

First onshore natural gas **Production Right** awarded in September 2012

Assets in Virginia in the Free State and Evander, south east of JHB.

**Virginia 2P 101 Bcf**



# BIOGENIC GAS

- Proven natural gas reserves, with 100 billion cubic feet (“BCF”) of Proven and Probable
- Independent reserve valuation\* of ZAR 6.6bn, or ZAR 77/share
- Origin of gas unique, being combination of biogenic (produced by bacteria) and thermogenic (from the earth’s mantle)
- The bacterial action renewing the gas has resulted in field being classified as renewable



**RENERGEN**



*\*Updated reserve statement released prepared by Deloitte as of 30<sup>th</sup> September 2016, announced 5<sup>th</sup> October 2016*



# BIOGENIC GAS

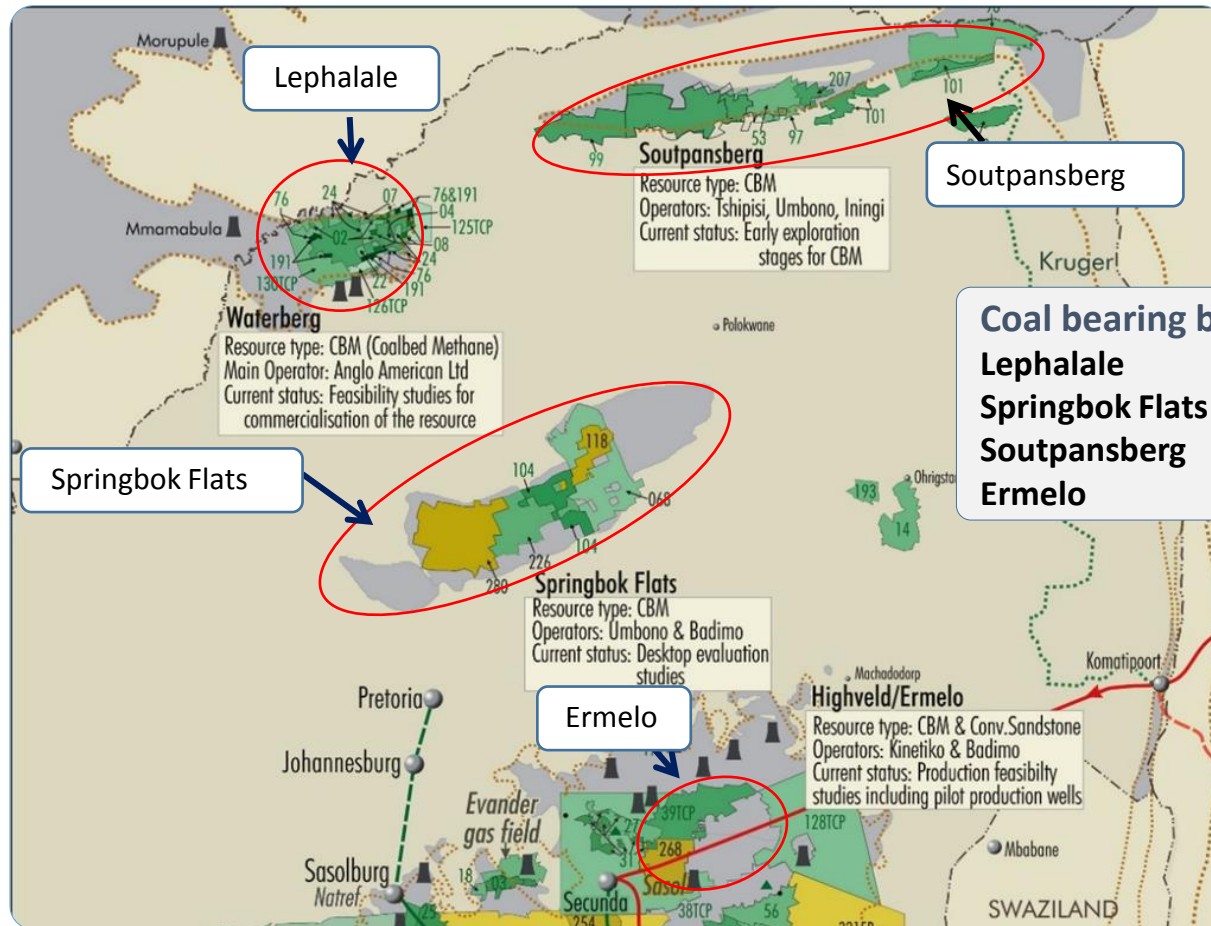
- **First phase** completed
  - First phase consisted of constructing the pilot plant at the first well and supplying CNG to first customer, Megabus
- **Second phase** underway
  - Completion of Environmental Impact Assessment to construct a pipeline to join all 12 wells  
Estimated Q1 2017
  - Construction and commissioning of pipeline  
Estimated Q3 2017
  - Bringing power generation online  
Estimated Q4 2017
- **Third phase** to commence following completion of pipeline
  - Construction and delivery of helium liquefier  
Estimated 2019
- Continued drilling throughout all phases to increase production

**RENERGEN**





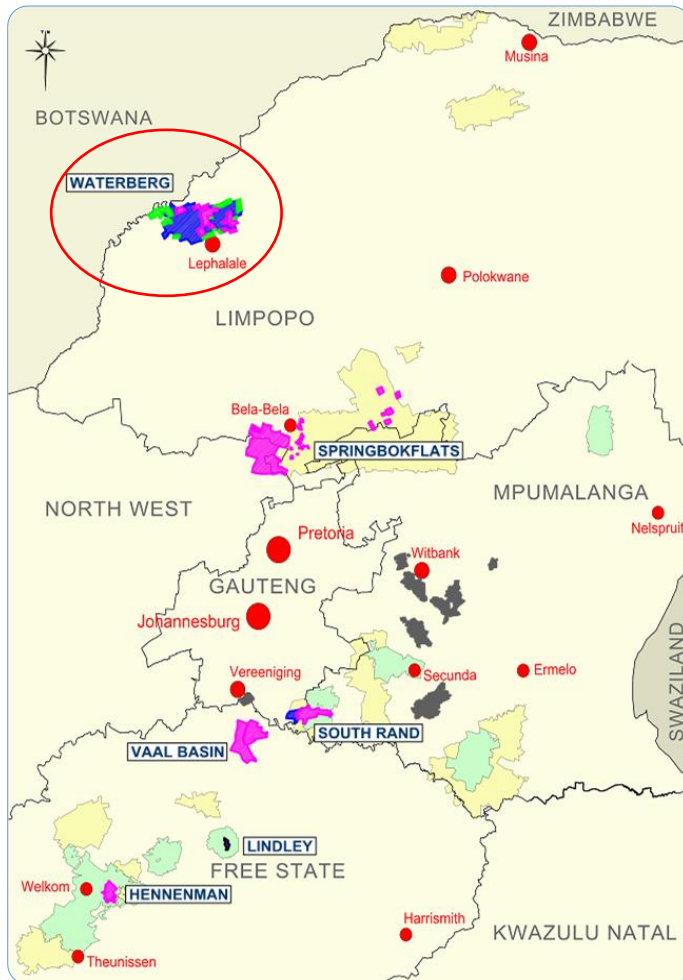
# COALBED METHANE



UMBONO CAPITAL



# COALBED METHANE



## Lephalale CBM Project

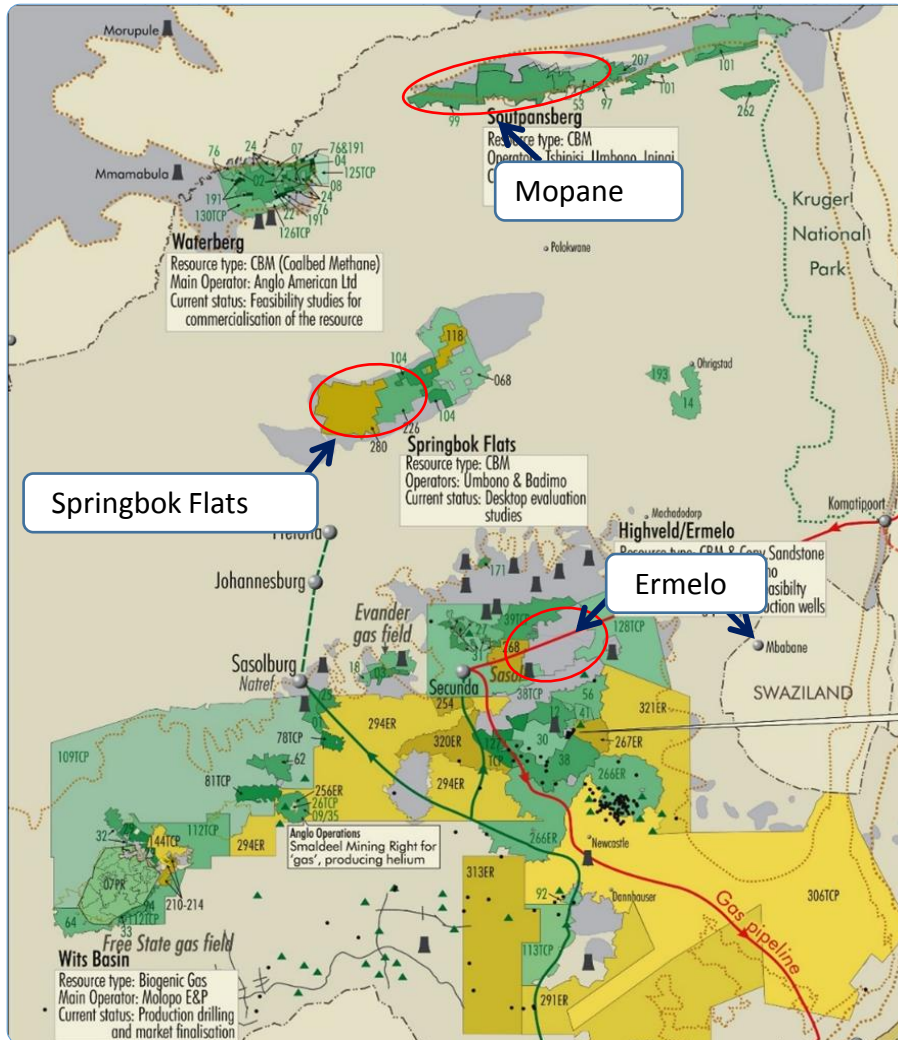
- Waterberg Coalfield - Grootvlei
- More than 80 core holes drilled
- Single 5-spot production test
- Testing initiated in 2004, gas was flowing but this has been shut-in.

## Total Recoverable Reserves

~1 Tcf



# COALBED METHANE



- JV between **Umbono** and **Sunbird Energy**

## Gas project:

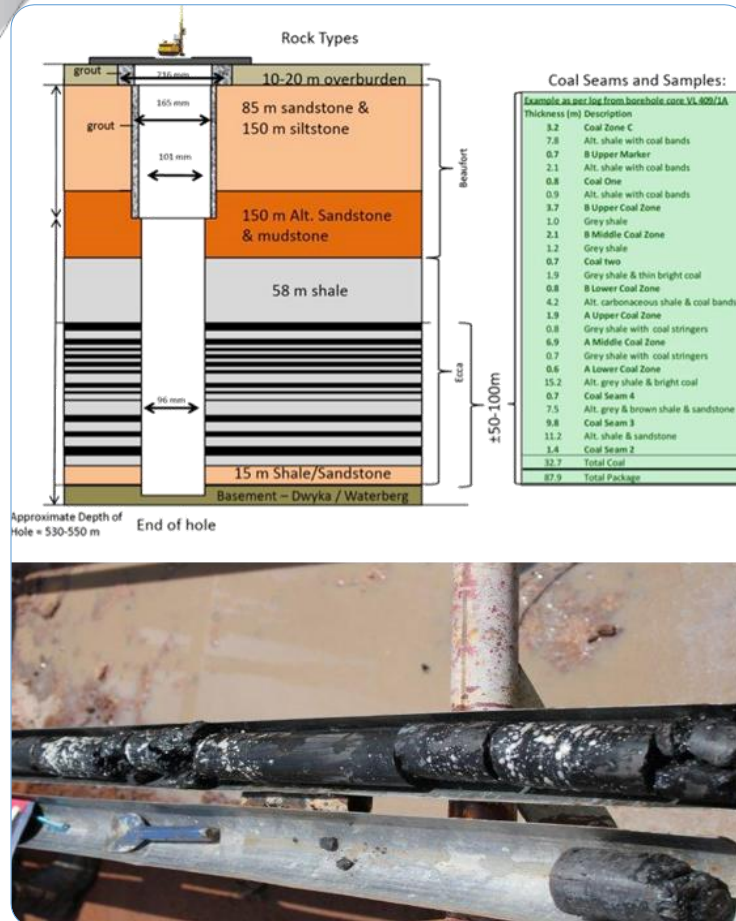
- Mopane



# COALBED METHANE

UMBONO CAPITAL

SUNBIRD ENERGY LTD



## The Mopane Project

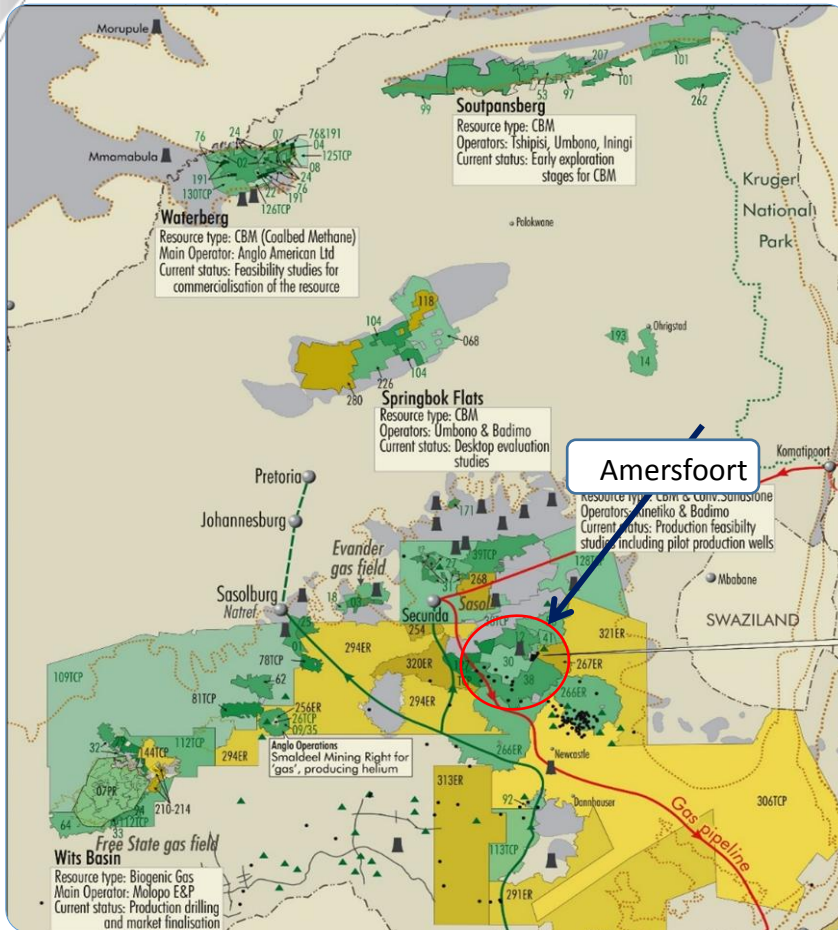
- 420km NE of Johannesburg covering an area of  $\pm 1577\text{km}^2$
- Expanded 8 core hole drilling program underway
- Drilling and logging of 2 core holes completed and now undergoing permeability testing
- 3 core holes piloted to 100+ metres
- 2 rigs operating on site to complete program
- **Best Estimate GIP of 1.9 Tcf**

<http://www.sunbirdenergy.com.au/South-Africa/mopane.html>





# COALBED METHANE



- JV between Badimo Gas and Kinetiko Energy - **AfroEnergy**
- The JV covers two exploration rights in Amersfoort Coalfield
- Considered highly prospective for CBM and also gassy sandstones overlying the coal horizons
- Initial drilling complete
- **Contingent resources at P50 level of 2.4Tcf GIIP**



# SHALE GAS



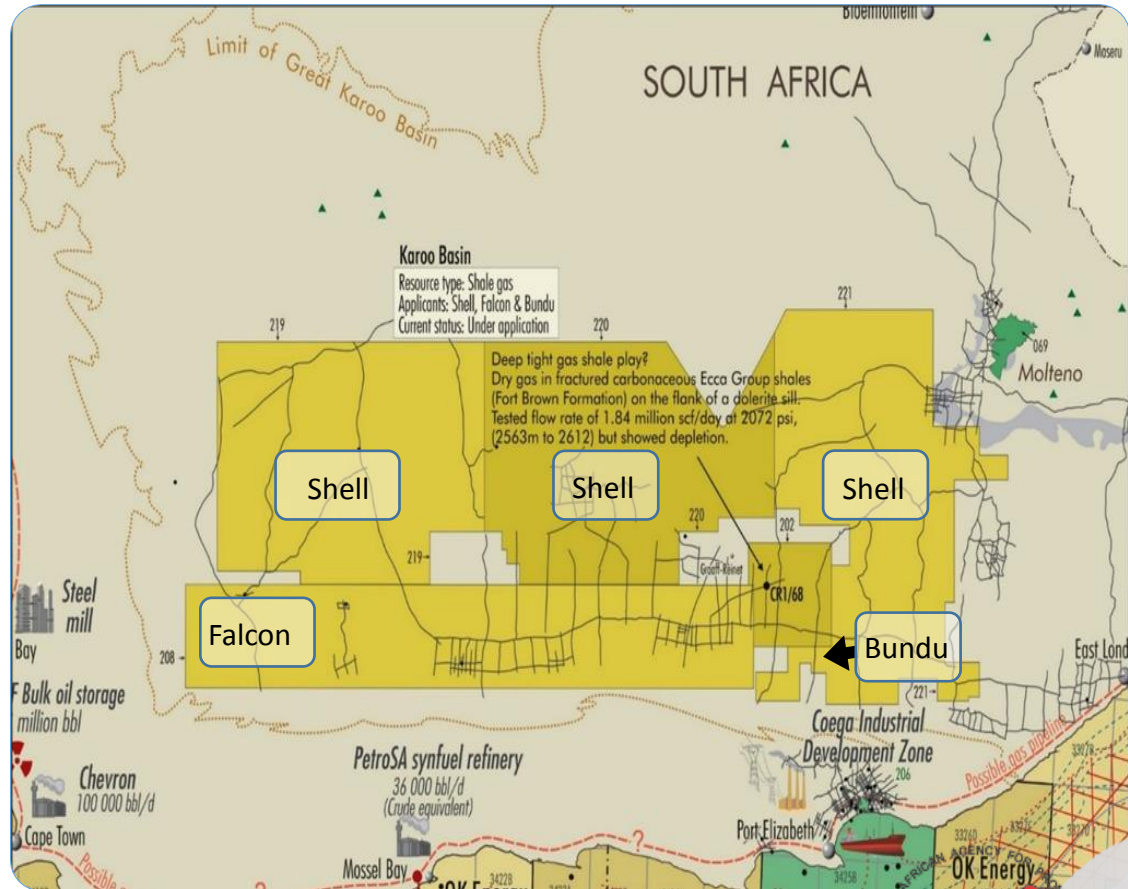
## Play fairway in southern part of basin

EIA: reporting 370 Tcf (2015)

Petroleum Agency SA's conservative  
Previous Best estimate 36 Tcf  
recoverable

## Recently revised to 183 Tcf recoverable

- Additional legacy data – prospective area increased 3 fold
- Estimates now include adsorbed as well as free gas



# GOING FORWARD

## Latest on shale gas Exploration

- Existing applications are now being processed – objections through REMDEC, nearing recommendation stage
- Work programmes for first 3 years do not include hydraulic fracturing
- Moratorium on new applications remains

## Latest on shale gas Regulations

- Regulations finalised



# MPRDA (Mineral and Petroleum Resources Development Act)

**Operations Phakisa** – DMR has relooked at clause **86A** of the Bill and proposed the following:

- **20% State** carried interest;
- A cost recovery mechanism of carried interest during **production stages**.
- Downward adjustment at production stage in **consultation with the Minister of Finance**
- **Certainty of project terms** for both exploration and production rights for the duration of the rights
- **Renegotiation of terms** with renewal of production right
- **Relinquishment of contiguous portions** of exploration rights at the renewal stage
- Minister given the power to develop a **Petroleum charter**
- Provide a **10% BEE shareholding**.
- These amendments will be included in the Bill which should be signed by Minister Zwane in June 2017. However, the proposals have been suggested to Parliament and there is no certainty that this will be cast in stone.





# Thank you



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