

# PETROLEUM EXPLORATION AND PRODUCTION SOUTH AFRICA



## AN OVERVIEW OF ONSHORE AND OFFSHORE E&P ACTIVITIES AND OPPORTUNITIES

Presented by  
**SELWYN ADAMS**

INTERNATIONAL MEETING FOR APPLIED GEOSCIENCE & ENERGY 28 – 31 AUGUST 2023  
GLOBAL ENERGY OPPORTUNITIES PAVILION

# Presentation Outline



- Who is Petroleum Agency South Africa?
- Offshore and Onshore E&P Status
- Offshore and Onshore Activities and Opportunities
- Legislative Framework Overview



# Who is Petroleum Agency South Africa ? ...



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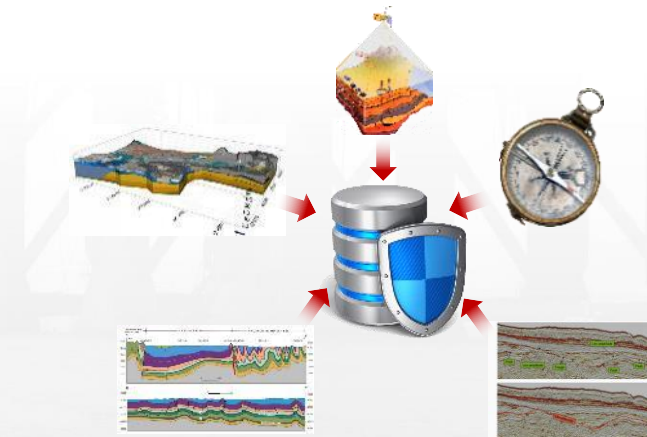
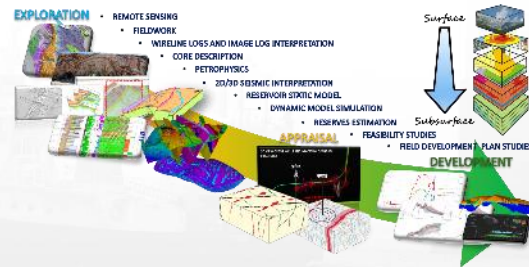
## NATIONAL OIL AND GAS REGULATORY AGENCY OF SOUTH AFRICA

Regulations and Licensing

Petroleum Resource Management

Information Management

Communication



# Who is Petroleum Agency South Africa ? ...

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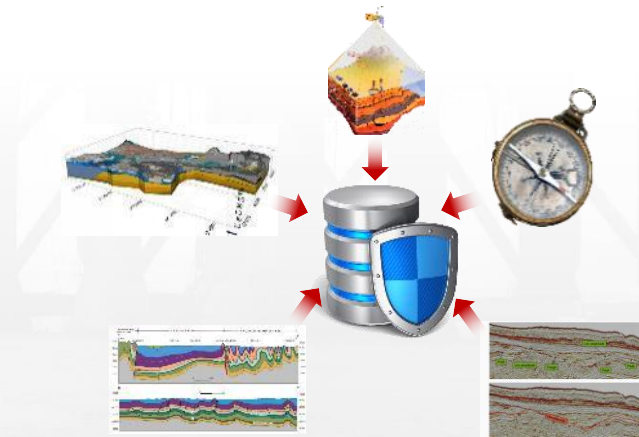
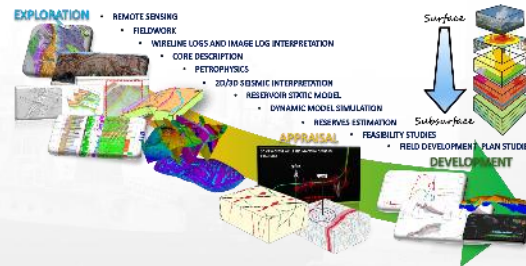
## NATIONAL OIL AND GAS REGULATORY AGENCY OF SOUTH AFRICA

Regulation and Licensing

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Communication



### Our Mission

**PROMOTE, FACILITATE AND REGULATE EXPLORATION AND SUSTAINABLE DEVELOPMENT OF OIL AND GAS**



# Who is Petroleum Agency South Africa ? ...

5



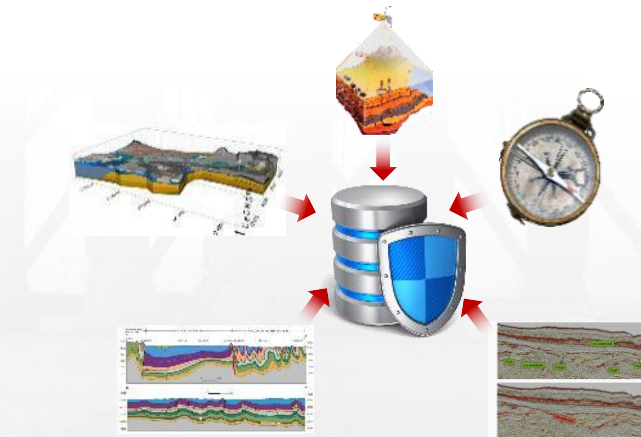
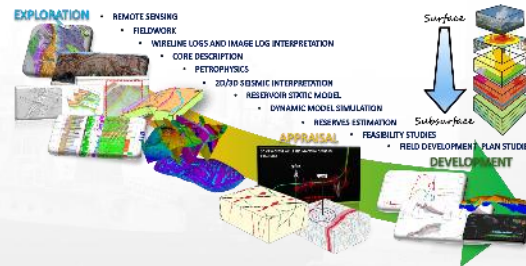
## NATIONAL OIL AND GAS REGULATORY AGENCY OF SOUTH AFRICA

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### Our Vision

**A DIVERSE UPSTREAM INDUSTRY CONTRIBUTING TO ENERGY SECURITY THROUGH SUSTAINABLE GROWTH IN EXPLORATION AND DEVELOPMENT OF OIL AND GAS**



## Offshore E&P Status

- ~1 Million km<sup>2</sup> in extent
- 4500 m Water Depths
- West Coast
  - Orange Basin
- South Coast
  - Greater Outeniqua Basin
- East Coast
  - Zululand Basin
  - Durban Basin

**ORANGE BASIN**

**ZULULAND BASIN**

**DURBAN BASIN**

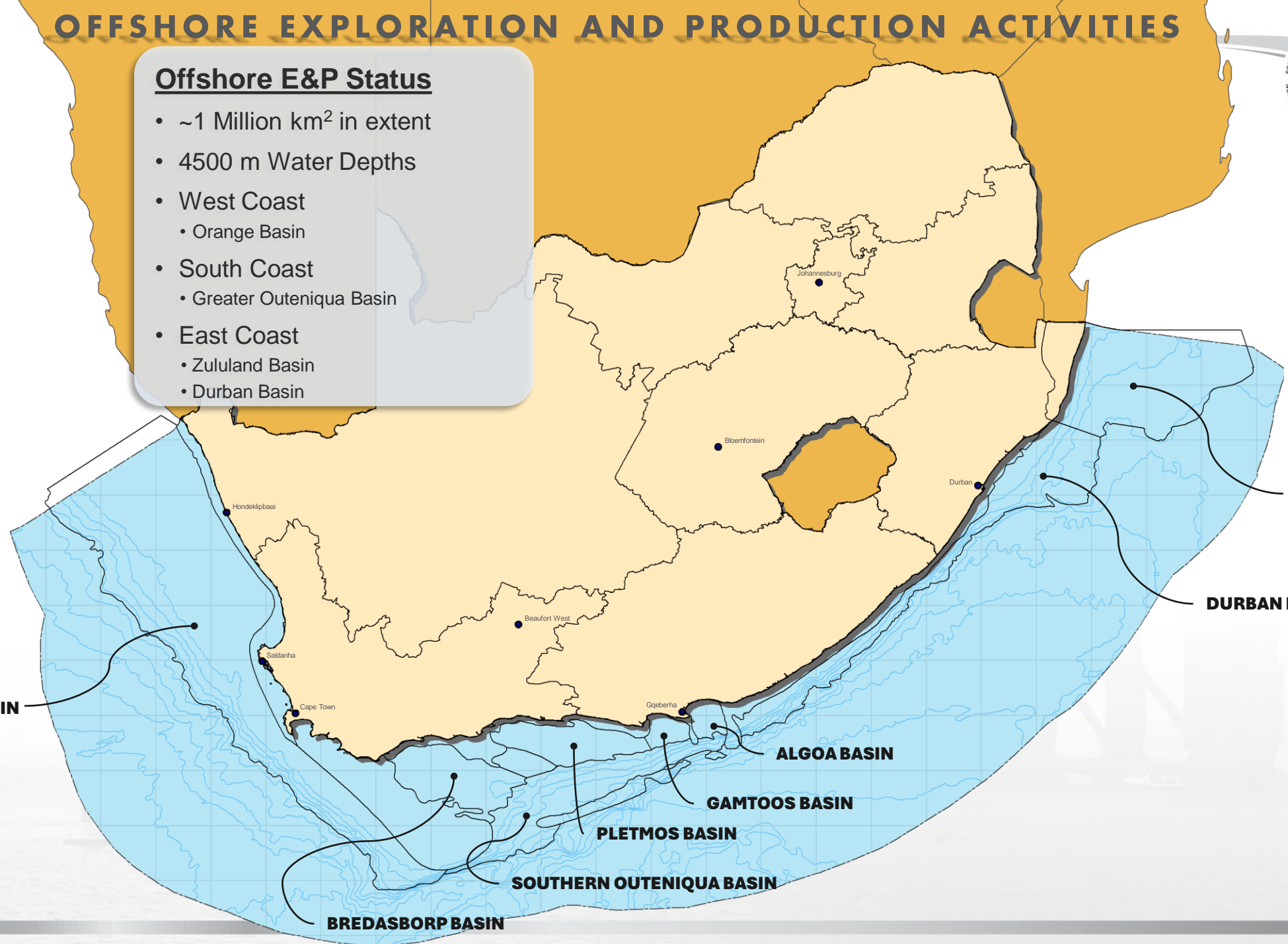
**ALGOA BASIN**

**GAMTOOS BASIN**

**PLETMOS BASIN**

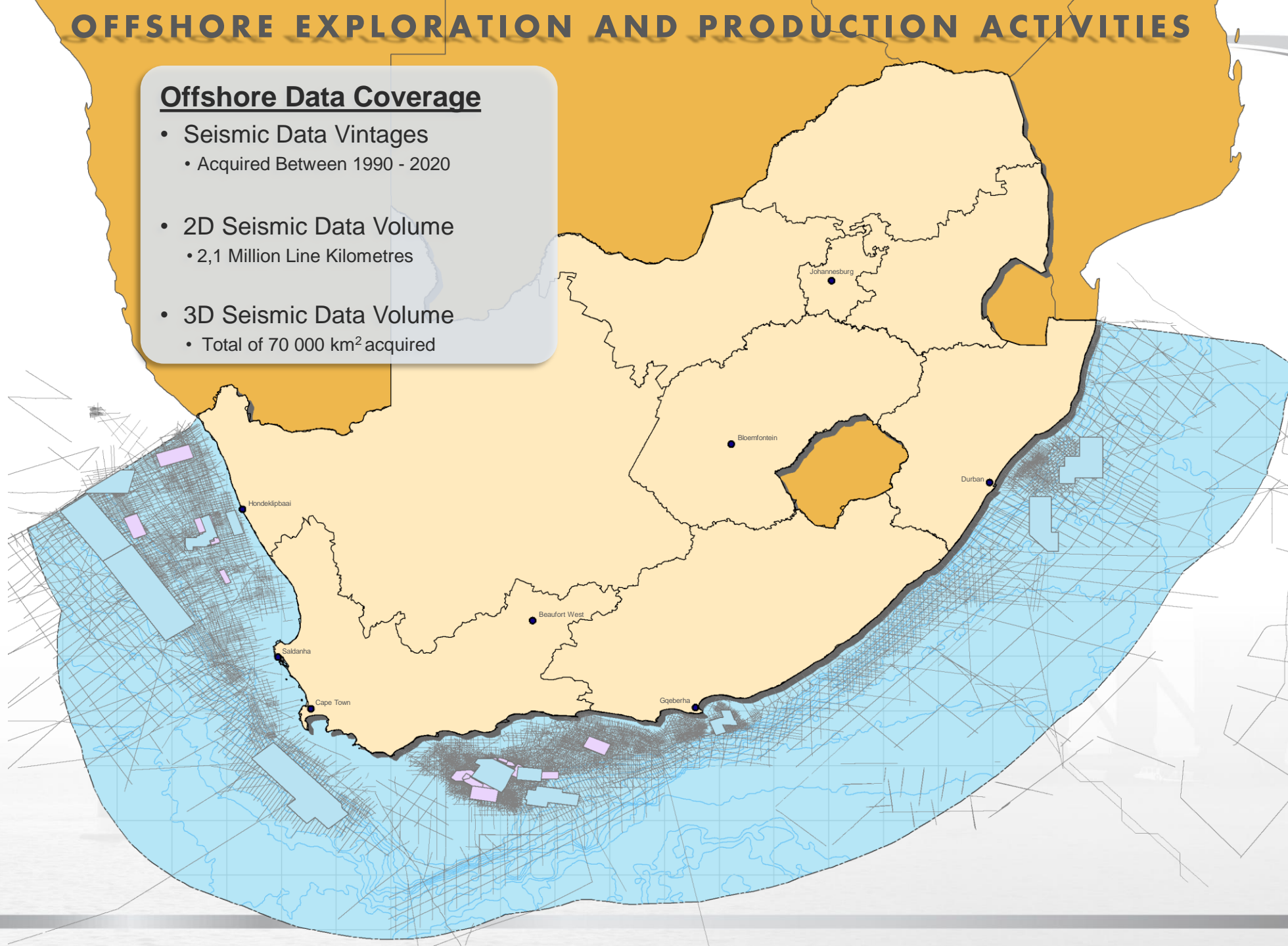
**SOUTHERN OUTENIQUA BASIN**

**BREDASBORG BASIN**



## Offshore Data Coverage

- Seismic Data Vintages
  - Acquired Between 1990 - 2020
- 2D Seismic Data Volume
  - 2,1 Million Line Kilometres
- 3D Seismic Data Volume
  - Total of 70 000 km<sup>2</sup> acquired

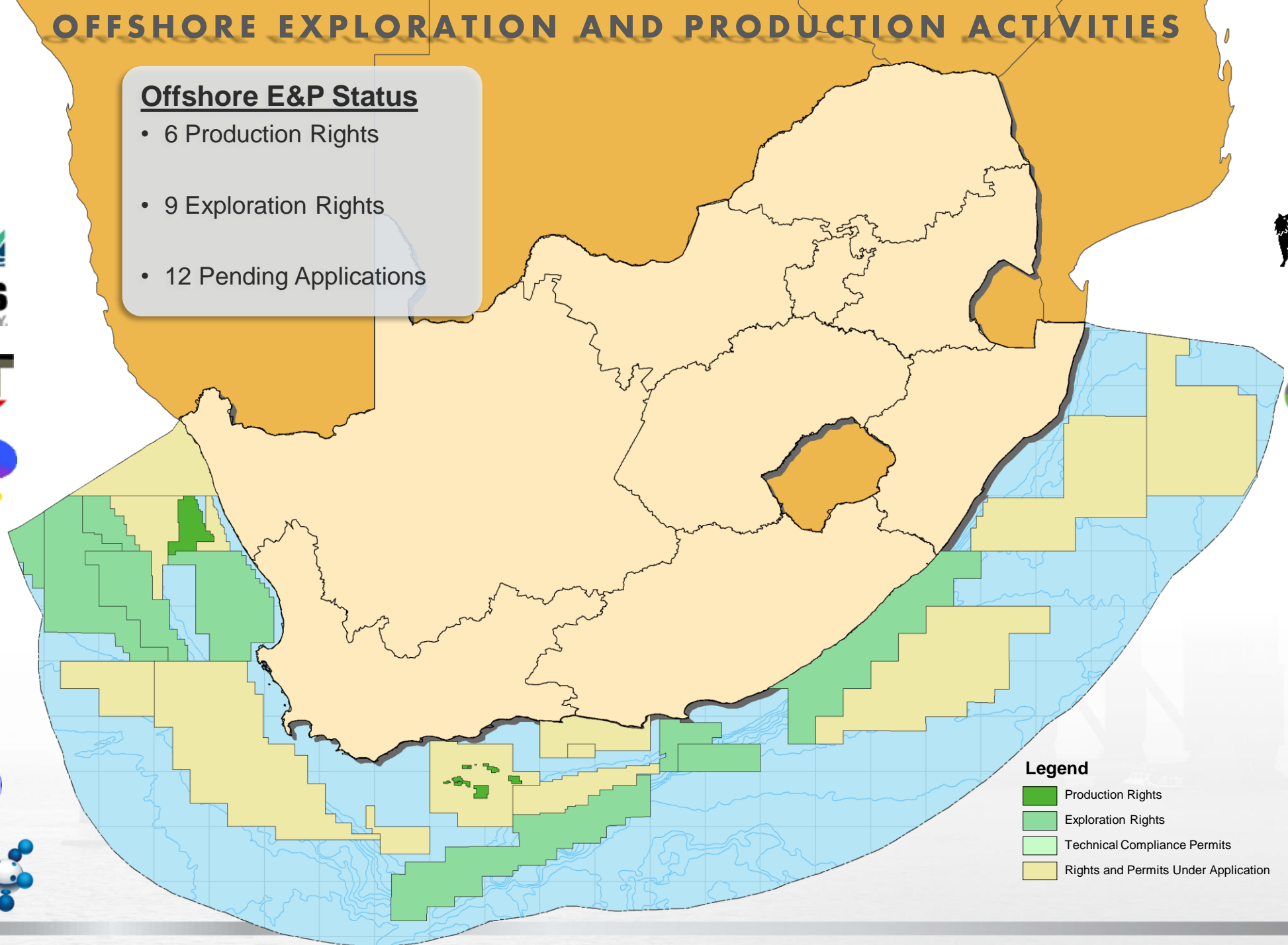




# OFFSHORE EXPLORATION AND PRODUCTION ACTIVITIES

## Offshore E&P Status

- 6 Production Rights
- 9 Exploration Rights
- 12 Pending Applications



### Legend

- Production Rights
- Exploration Rights
- Technical Compliance Permits
- Rights and Permits Under Application



PetroSA



SASOL  
reaching new frontiers









# SUNBIRD ENERGY

JOINT VENTURE PARTNERS

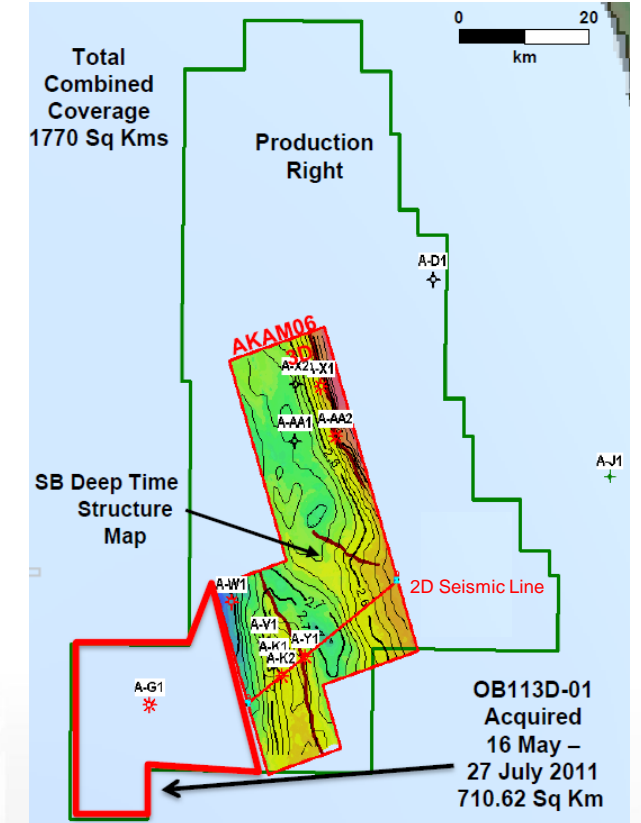
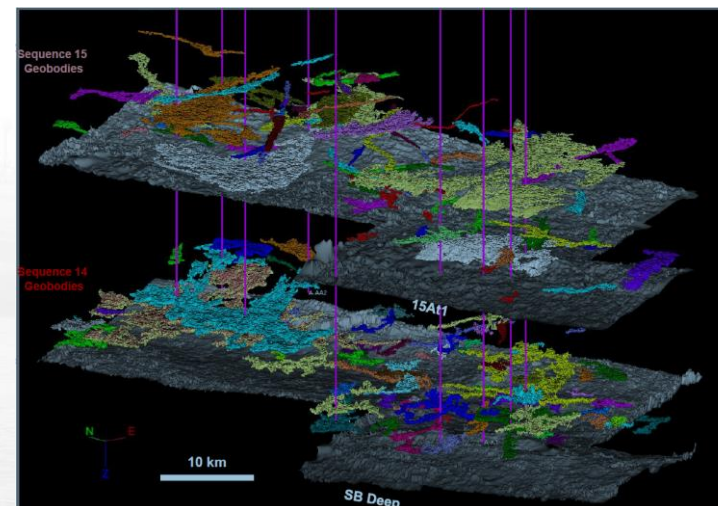
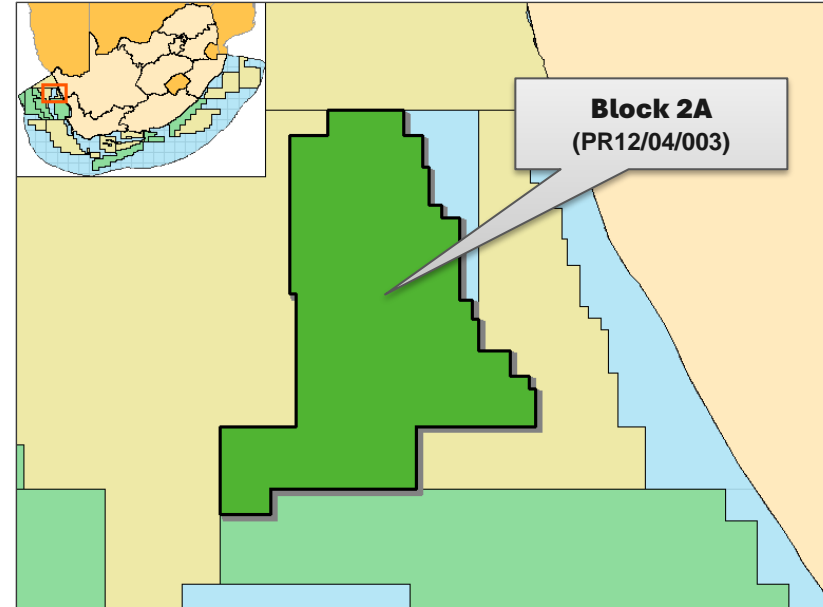
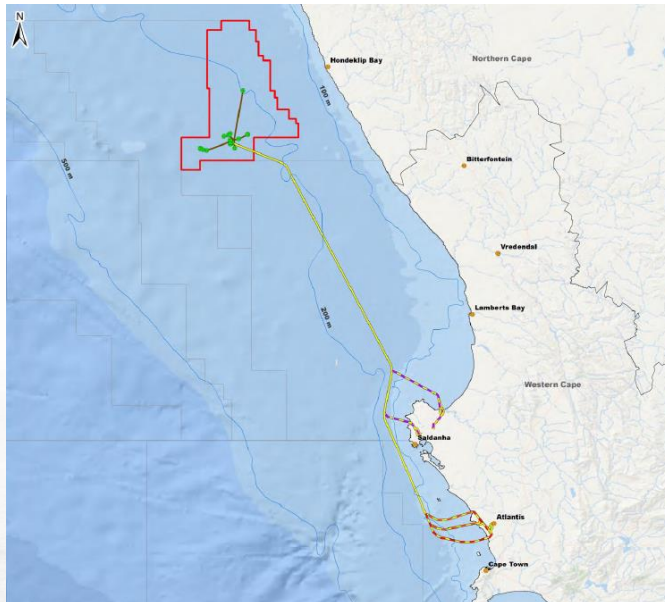
 SUNBIRD ENERGY	 PetroSA
76%	24%



9




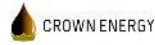
## BLOCK 2A

Right Type	: PR 003
Basin	: Orange Basin (West Coast)
Water Depth	: Between 200-300 meters
Extent	: 5000 km <sup>2</sup>
Play Type	: Deltaic Sandstones
Trap Type	: Combined Structural-Stratigraphic
Resource Type	: Wet Gas and Gas Condensate
Potential Reserves	: 0,5 TCF (P50)



# Azinam AZINAM PETROLEUM

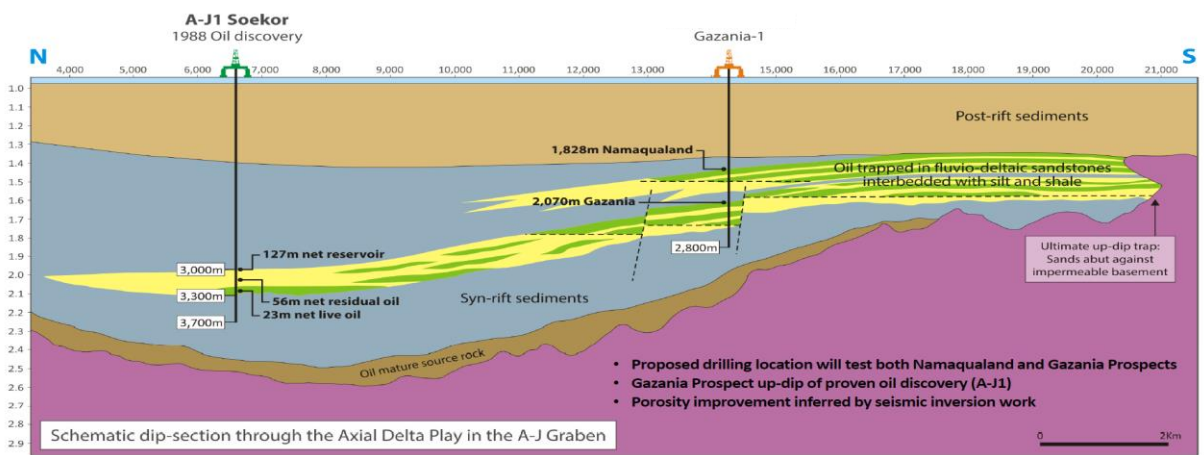
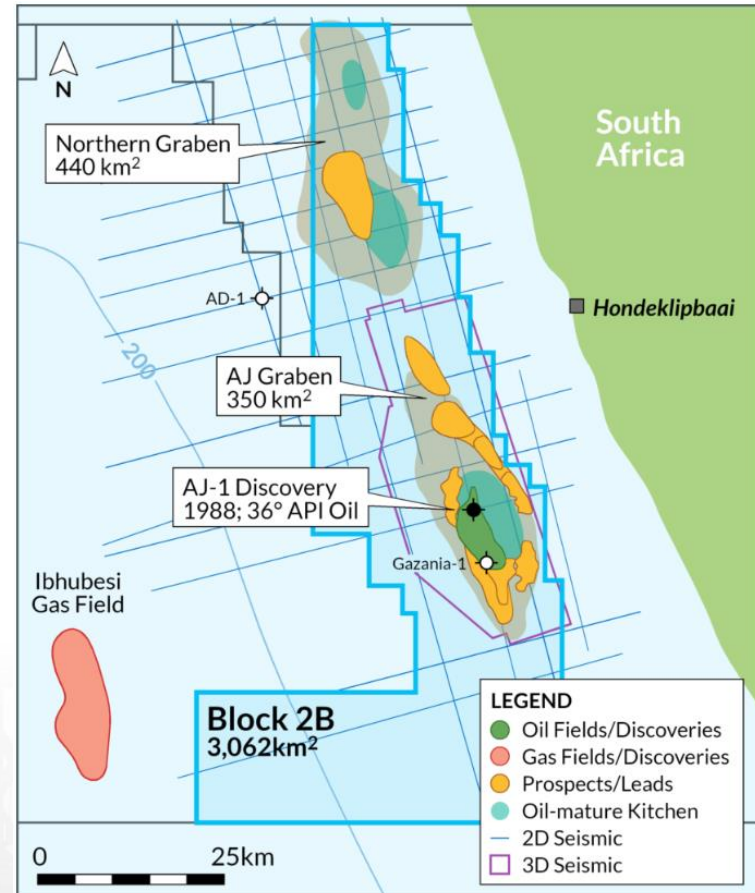
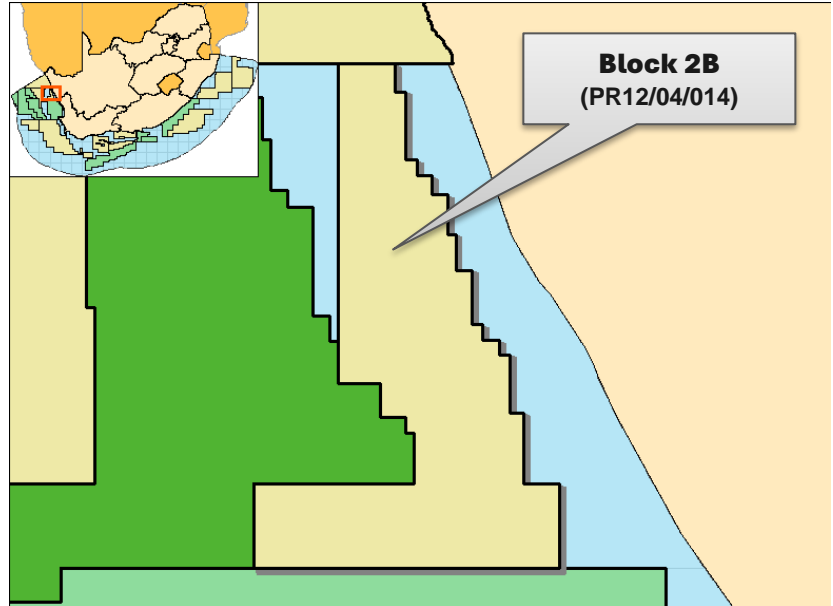
JOINT VENTURE PARTNERS

			
50%	27,5%	12,5%	10%



## BLOCK 2B

- Right Type : PR 014
- Basin : Orange Basin (West Coast)
- Water Depth : Between 50-200 meters
- Extent : 3062 km<sup>2</sup>
- Play Type : Syn-rift Sediments/Rift Basin
- Trap Type : Stratigraphic Pinch-out
- Resource Type : Medium to Light Oil (36 API)  
Possible Shallow Gas
- Resource Potential : Not Disclosed  
(AJ-1: flow 191 bpd (36 API oil))



Ref: <https://images-global.nhst.tech/image/VXdrR0xyODdxTG4SUh5cDdWOWXk2JBUEdCdmh4b15dU4cDZKYmRyZz0=/nhstbinary/85610f16a684a7ce5a8ea1b2fc23694>





# TOTAL ENERGY SA

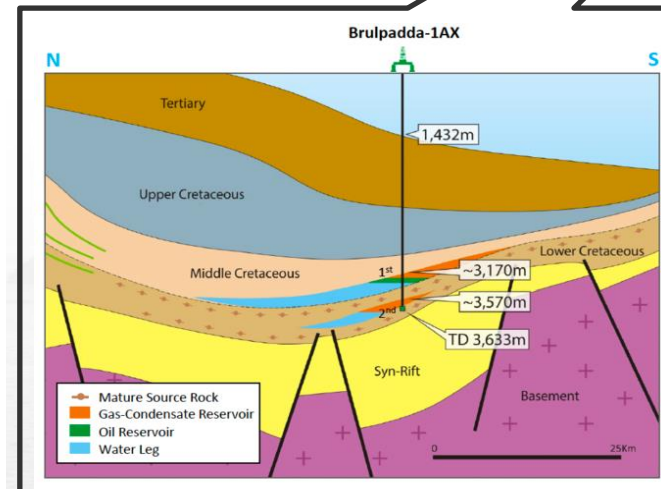
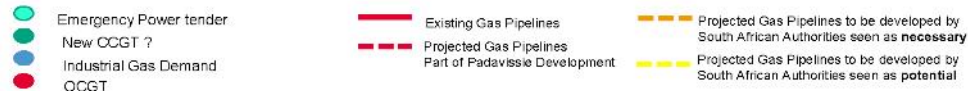
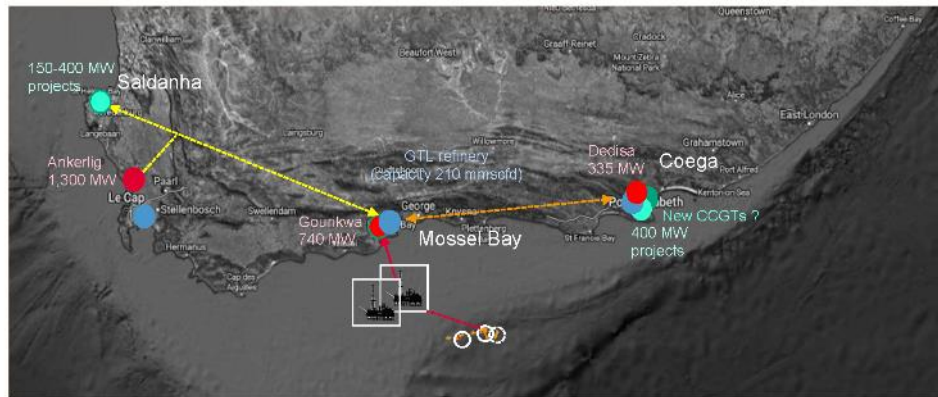
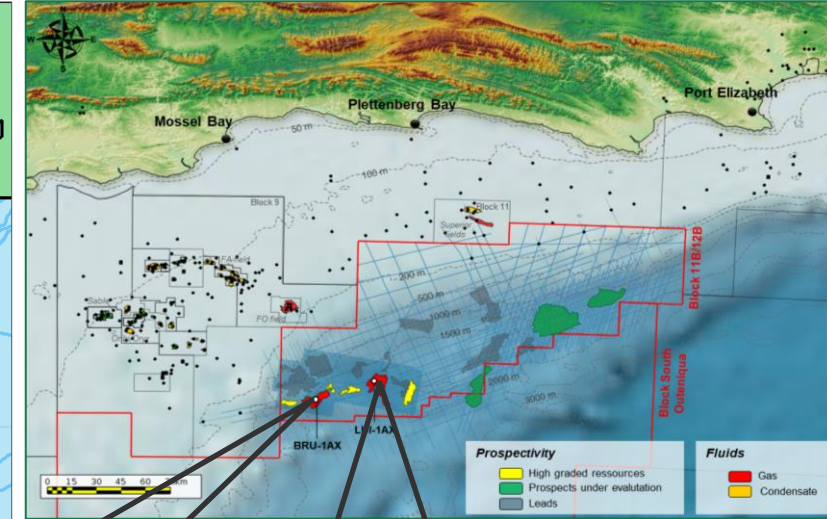
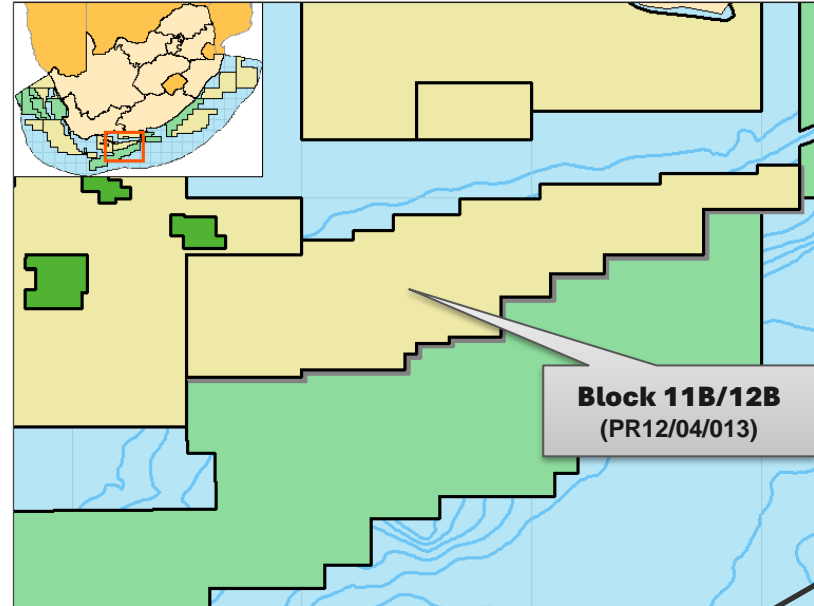
## JOINT VENTURE PARTNERS

			
45%	10%	25%	20%

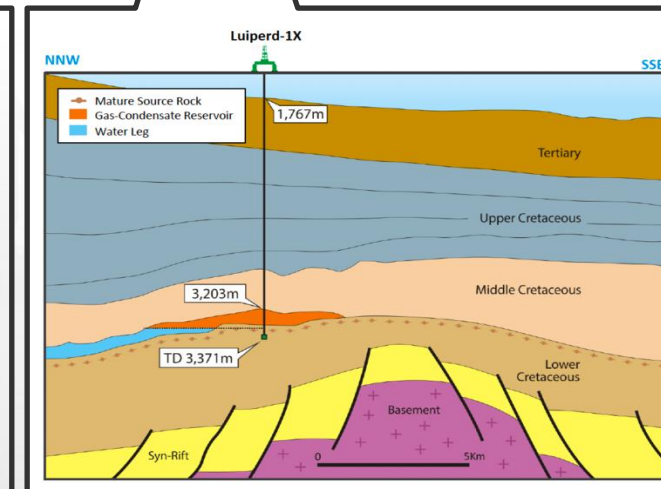


## BLOCK 11B/12B

Right Type	: PR 013
Basin	: Southern Outeniqua Basin (South Coast)
Water Depth	: Between 500-2000 meters
Extend	: 18 734 km <sup>2</sup>
Play Type	: Submarine Fan Complex
Trap Type	: Stratigraphic and Basement Drape
Resource Type	: Gas Condensate Medium to Light Oil
Estimated Reserves	: 1 Billion Barrel Oil Equivalent



Ref: [https://africaenergycorp.com/site/assets/files/144768/block\\_11b-12b\\_5.480x0.png](https://africaenergycorp.com/site/assets/files/144768/block_11b-12b_5.480x0.png)



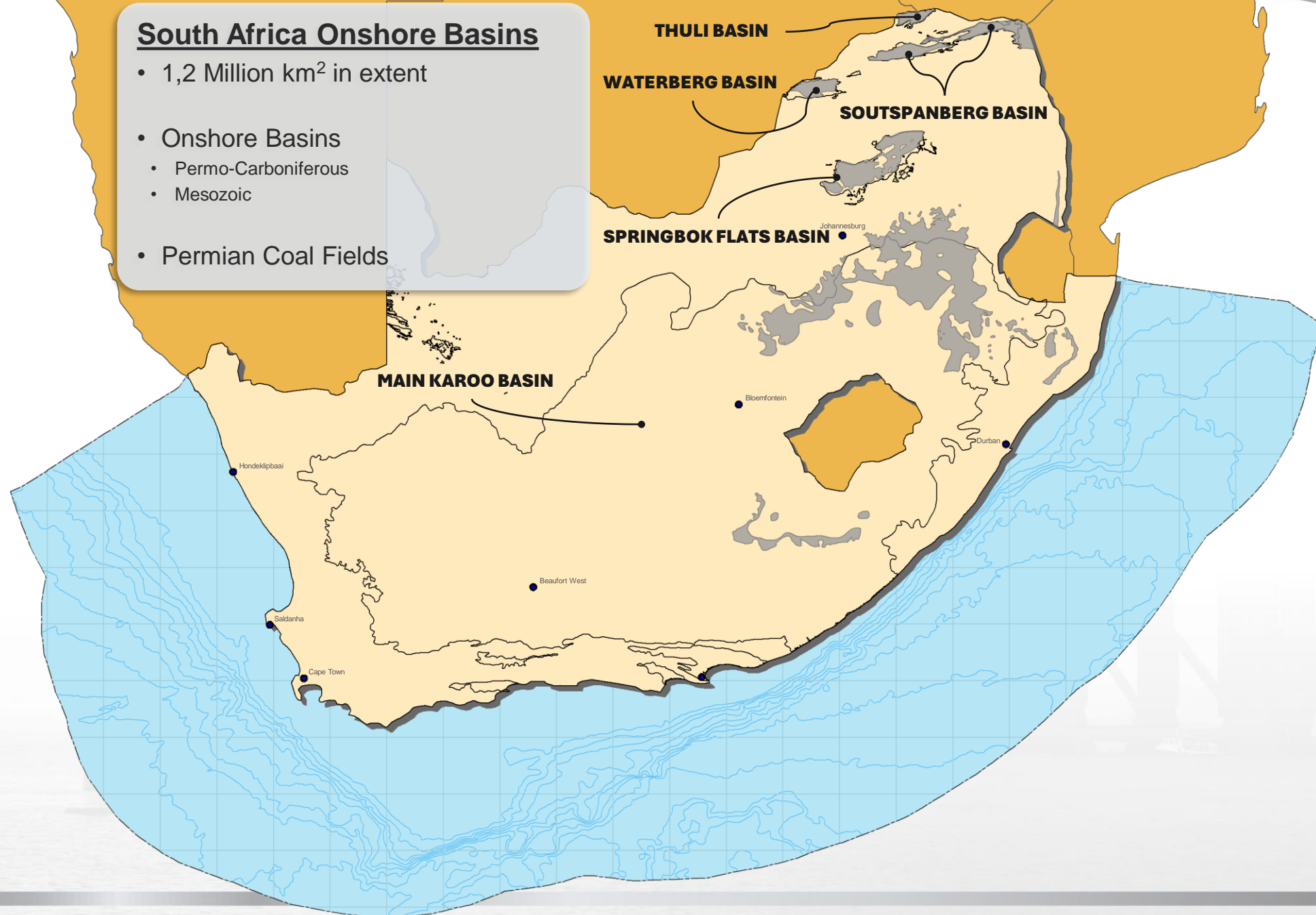
Ref: [https://africaenergycorp.com/site/assets/files/144768/block\\_11b-12b\\_4.png](https://africaenergycorp.com/site/assets/files/144768/block_11b-12b_4.png)





## South Africa Onshore Basins

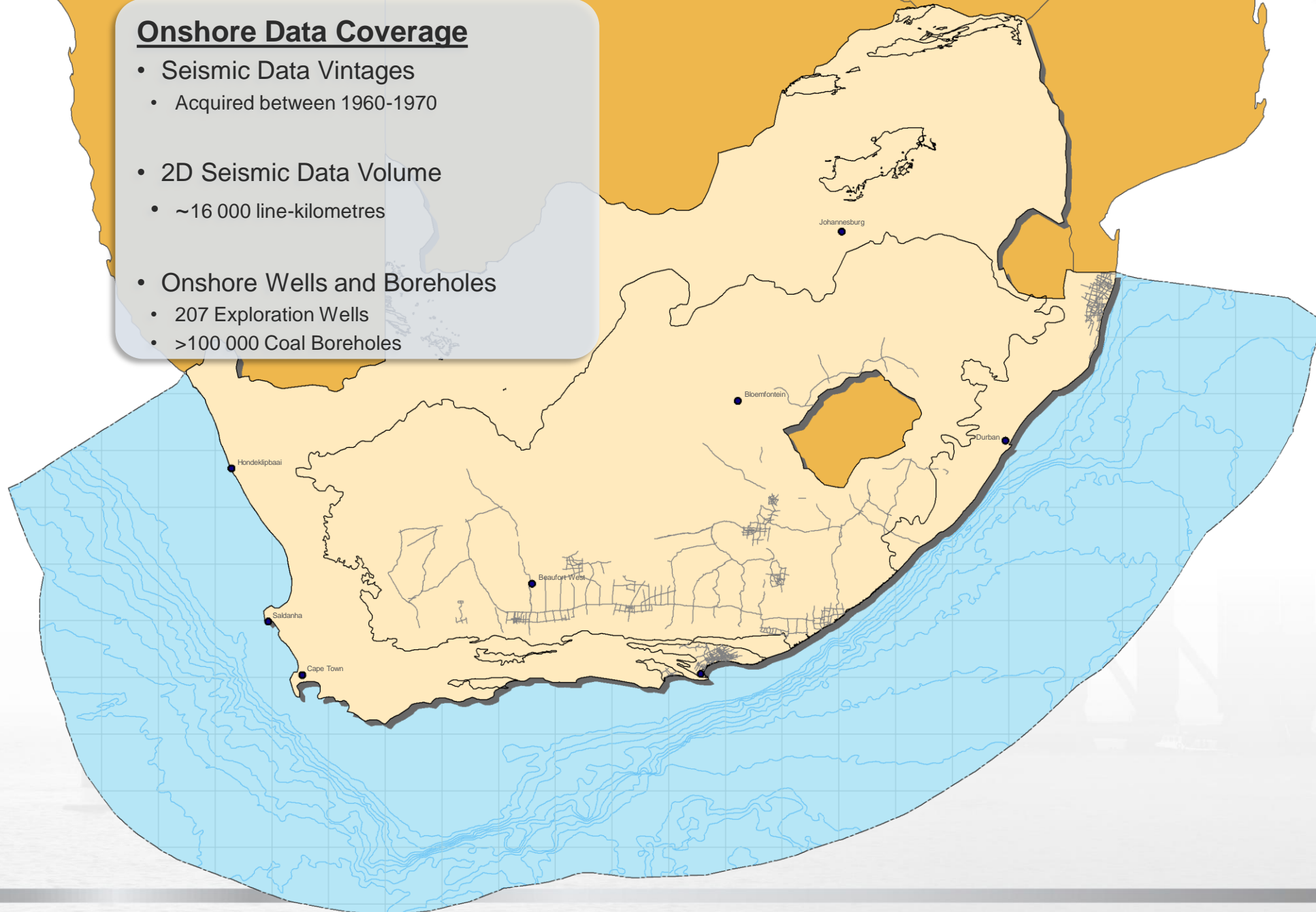
- 1,2 Million km<sup>2</sup> in extent
- Onshore Basins
  - Permo-Carboniferous
  - Mesozoic
- Permian Coal Fields





## Onshore Data Coverage

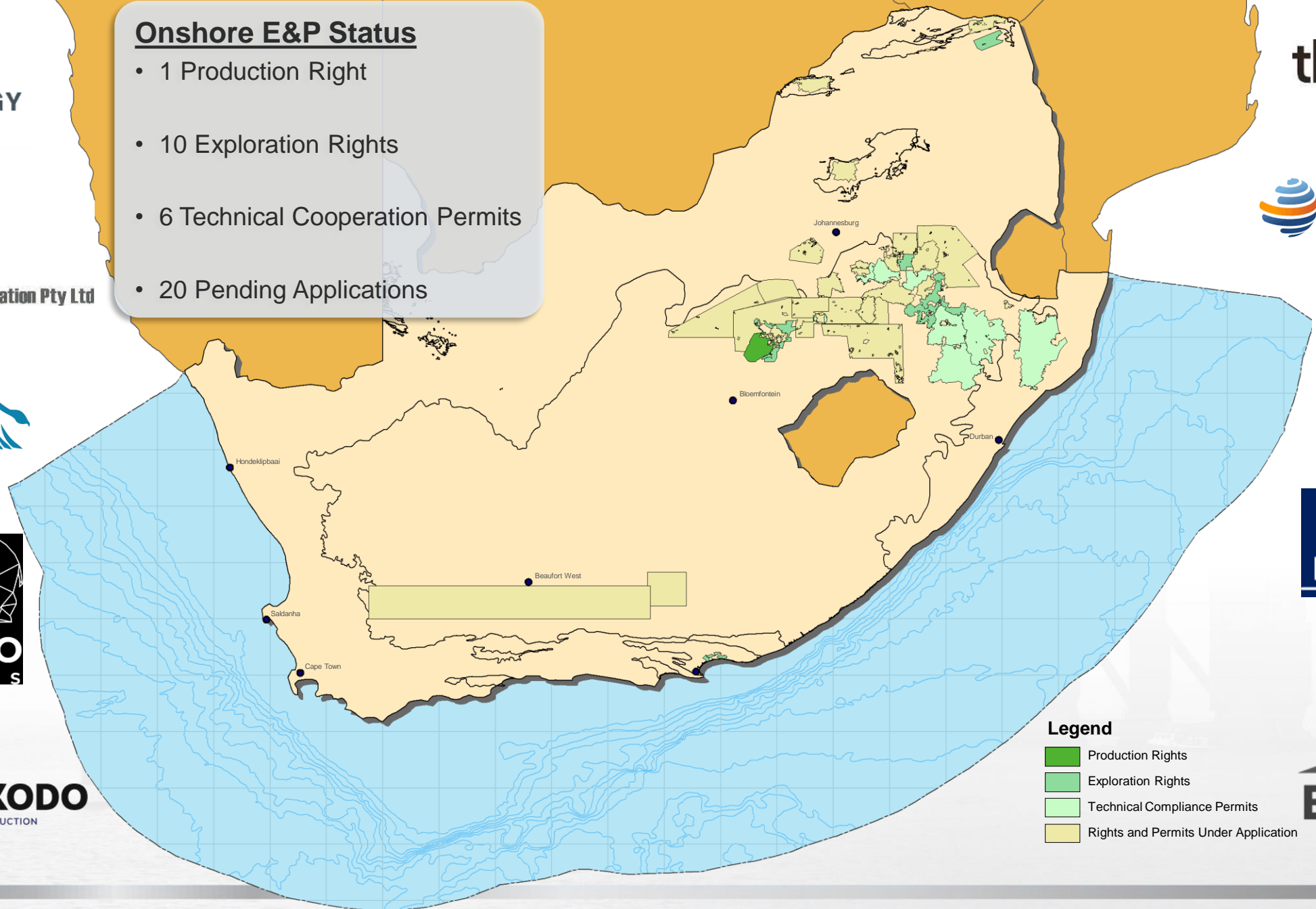
- Seismic Data Vintages
  - Acquired between 1960-1970
- 2D Seismic Data Volume
  - ~16 000 line-kilometres
- Onshore Wells and Boreholes
  - 207 Exploration Wells
  - >100 000 Coal Boreholes



# ONSHORE EXPLORATION AND PRODUCTION ACTIVITIES

## Onshore E&P Status

- 1 Production Right
- 10 Exploration Rights
- 6 Technical Cooperation Permits
- 20 Pending Applications



### Legend

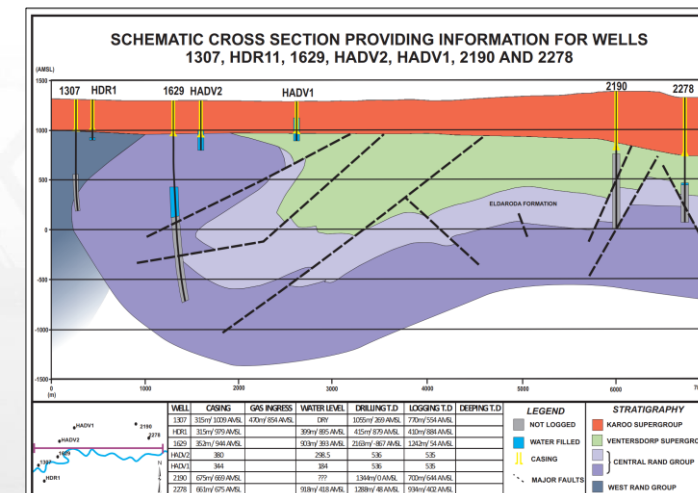
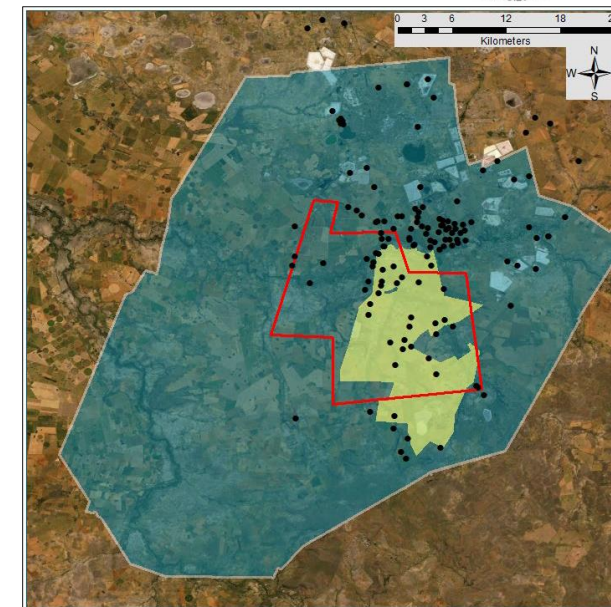
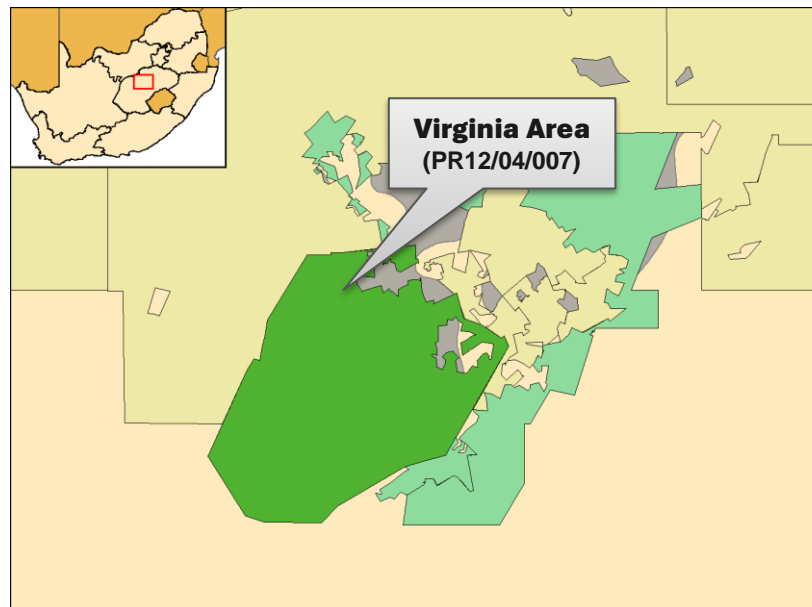
- Production Rights
- Exploration Rights
- Technical Compliance Permits
- Rights and Permits Under Application





## Virginia Area

Right Type	:	PR 007
Basin	:	Northern Karoo Basin
Extent	:	1513 km <sup>2</sup>
Play Type	:	Biogenic Gas
Trap Type	:	Fracture Basement/ Faults
Resource Type	:	Dry Gas and Helium (radiogenic)
Reserve Estimate	:	407 BCF (2P) – Methane 13 BCF (2P) - Helium



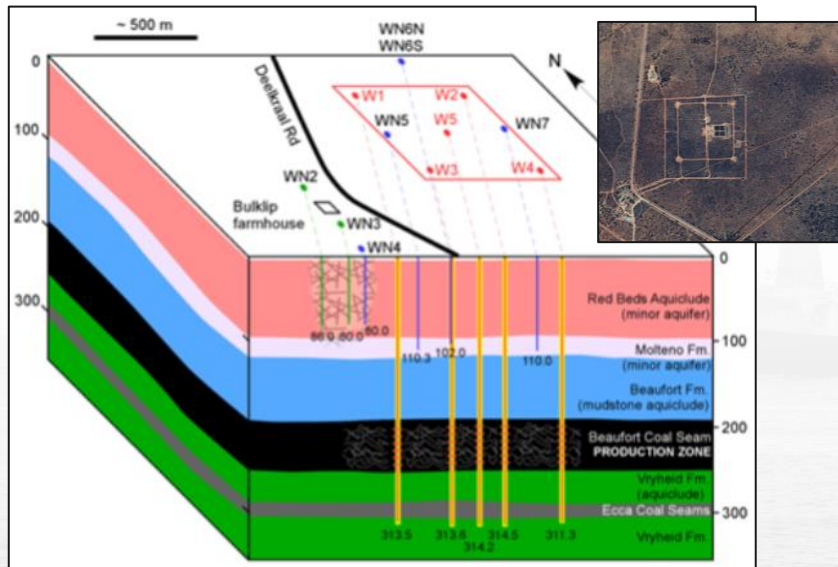
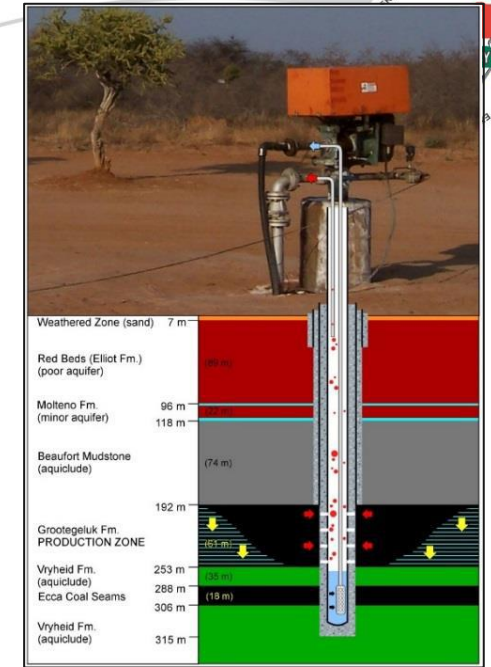
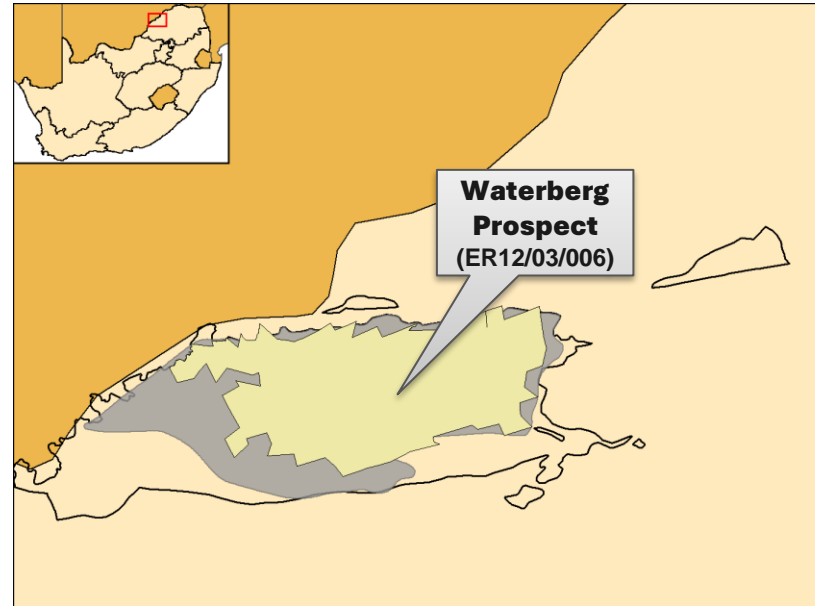




# THUNGELA RESOURCES

## Lephalale Basin

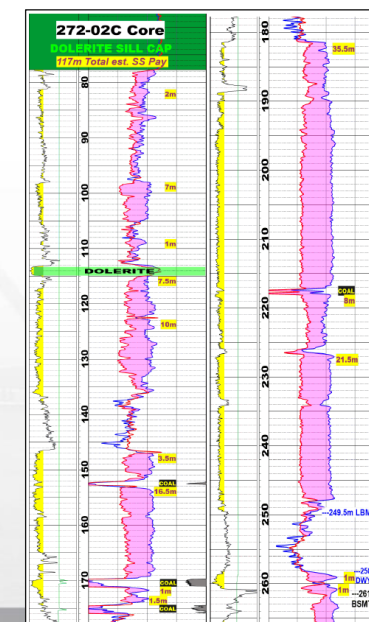
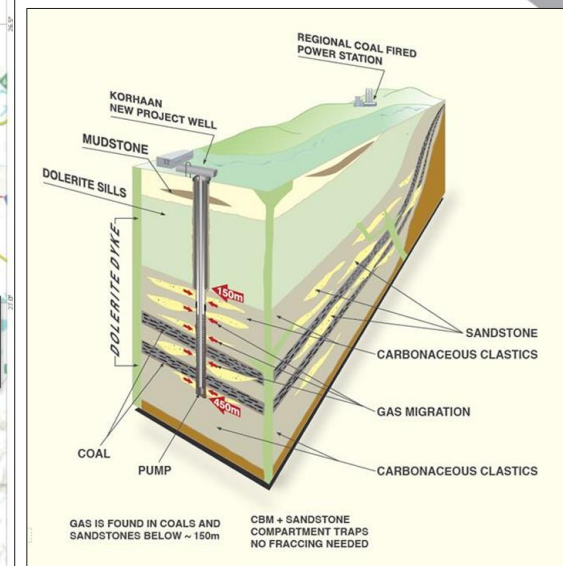
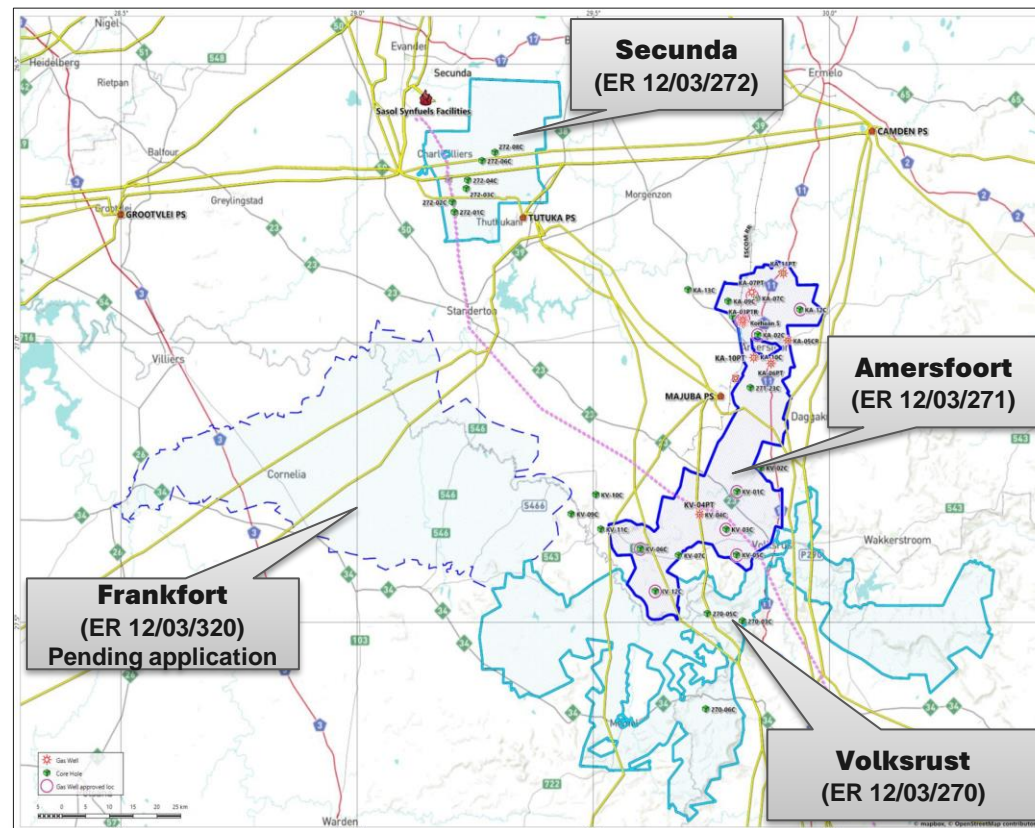
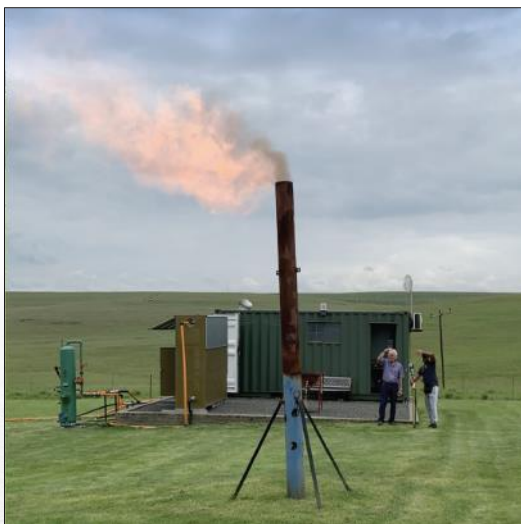
Right Type	: ER 006
Basin	: Northern Karoo Basin, Lephalale Basin
Extent	: 1338 km <sup>2</sup>
Play Type:	: Coal Bed Methane
Trap Type	: Adsorption and Hydrodynamic
Resource Type	: Dry Gas
Reserve Estimate	: 1 Tcf (2P)





## Ermelo and Secunda Region

Right Type	: ER 270 – 272
Basin	: Northern Karoo Basin
Extent	: 7000 km <sup>2</sup>
Play Type	: Coal Bed Methane/Tight Gas Sandstones
Trap Type	: Adsorption/Hydrodynamically/Stratigraphic
Resource Type	: Dry Gas
Resource Potential	: 6 BCF (1P) - ER 271 Only ~5,8 TCF (2U) - All ER's

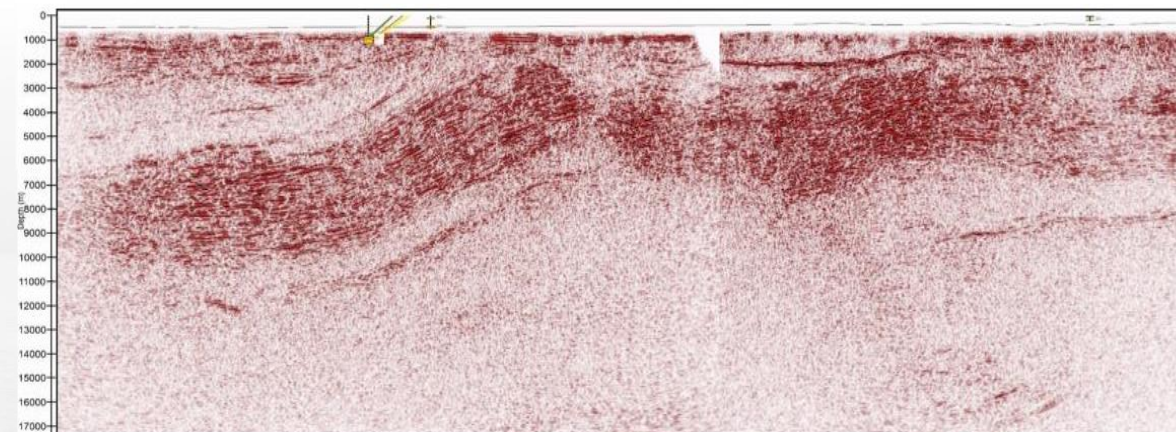
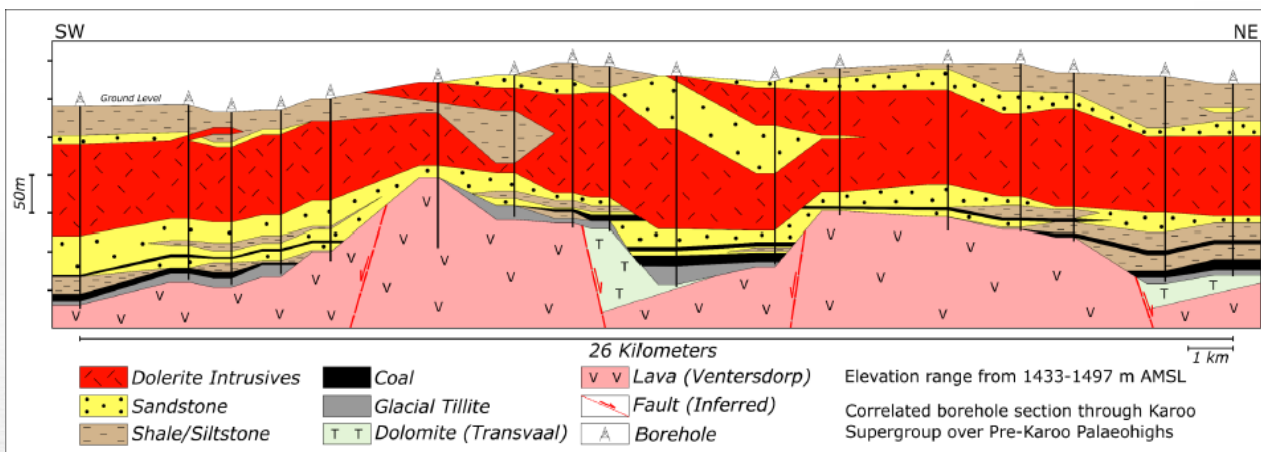
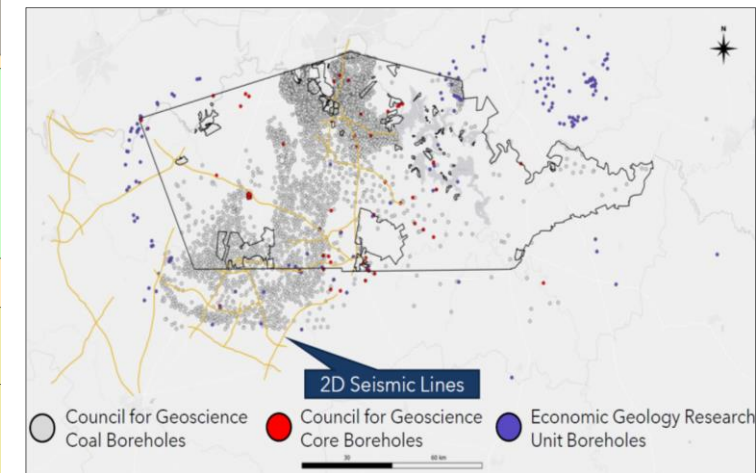
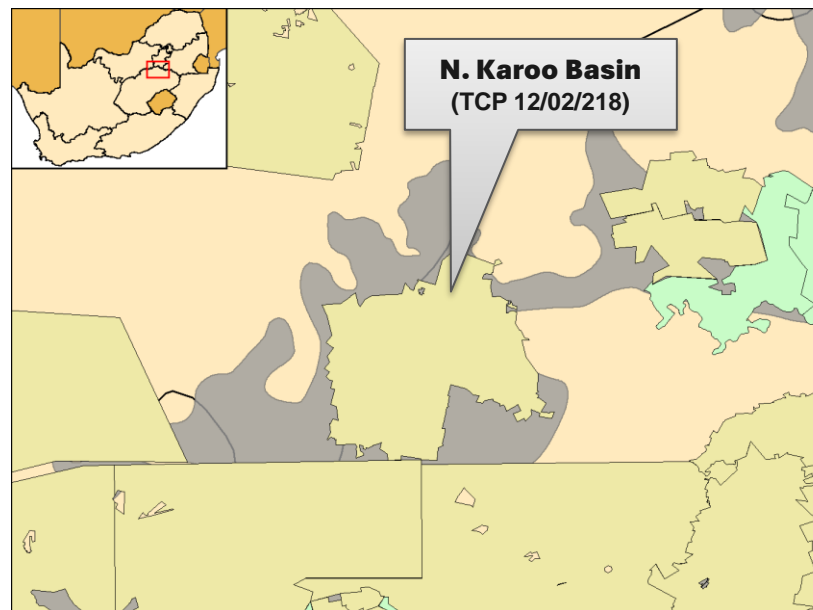






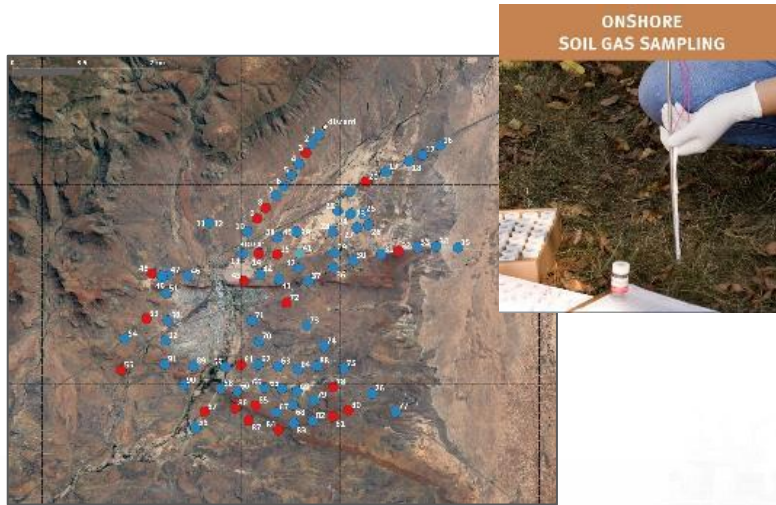
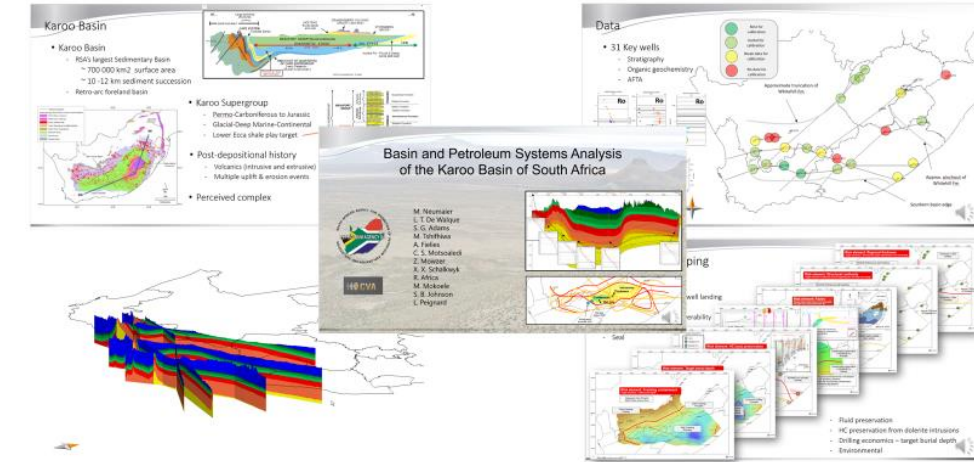
## Northern Karoo Basin

Right Type	: TCP218
Basin	: Northern Karoo Basin, Free State Province
Extent	: 6608 km <sup>2</sup>
Play Type	: Fracture Basement/Fault Network
Trap Type	: Adsorption/Structural Closure/Fracture Basement
Resource Type	: Biogenic Gas and Helium (radiogenic)
Resource Potential	: Unknown – Initial stages of exploration



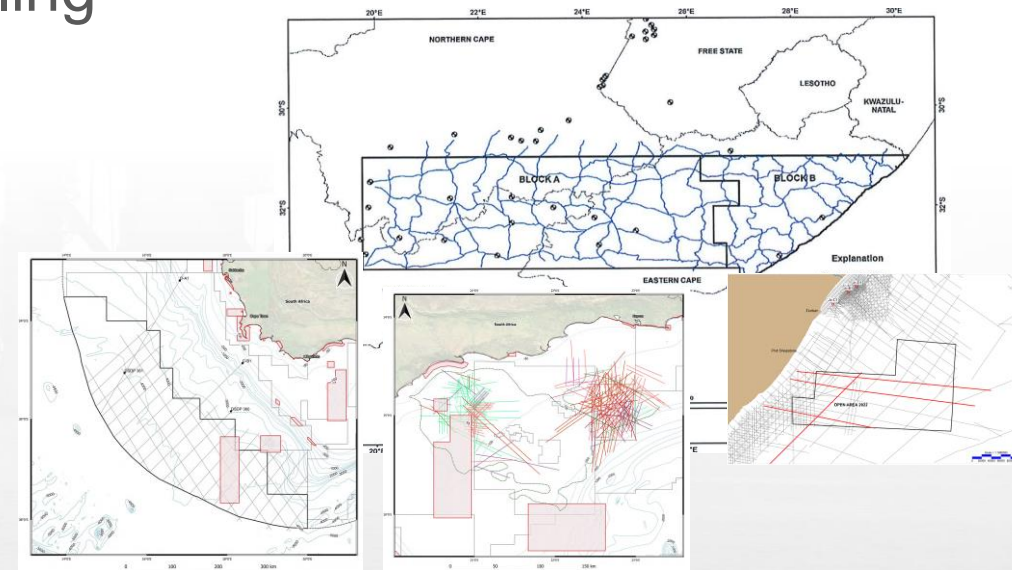
# OFFSHORE AND ONSHORE ACTIVITIES AND OPPORTUNITIES...

## Karoo Basin and Petroleum Systems Modelling



## Geochemical Soil Sampling

## Multi-client Geophysical or Geochemical Surveys

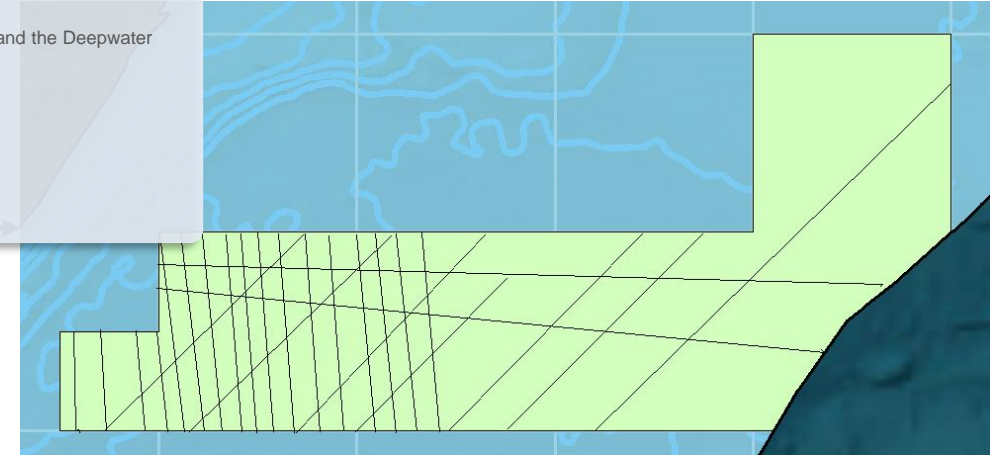




# Offshore and Onshore Activities and Opportunities...

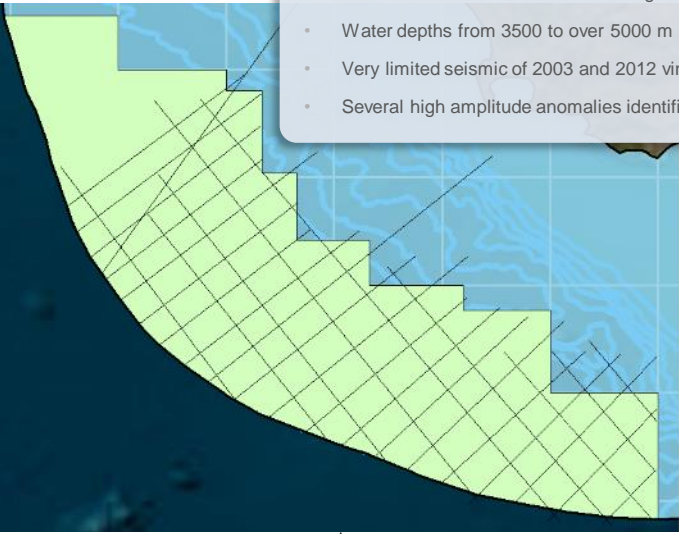
## Open Acreage: Durban –Natal Basin

- 50 000km<sup>2</sup> in extent covering part of the Durban basin, northern Transkei swell and the Deepwater Natal Valley
- Water depths between 4200 - 5500 m
- Four wells drilled on the shelf
- Several high-amplitude anomalies identified
- 4-way dip closures



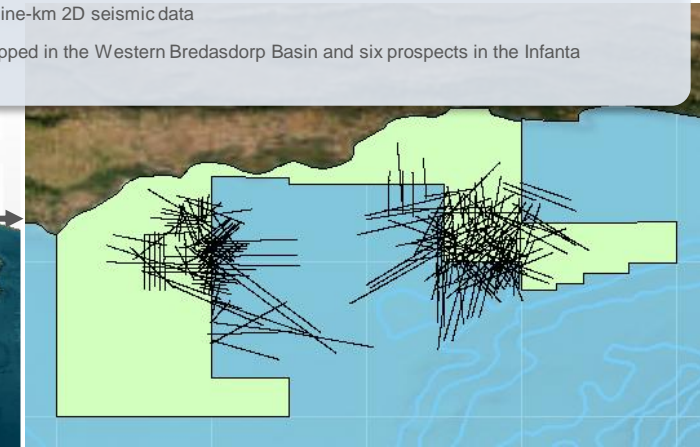
## West Coast Deep-water Southern Orange Basin

- About 113 000 km<sup>2</sup> in extent covering the Southern Deep Orange Basin
- Water depths from 3500 to over 5000 m
- Very limited seismic of 2003 and 2012 vintage with a total of ~1794 line-km
- Several high amplitude anomalies identified



## Open Acreage: Western Bredasdorp and Infanta Embayment

- Acreage consists of Western Bredasdorp Basin and Infanta Embayment and covers ~16 900 km<sup>2</sup>
- Water depths between 50 – 200 m
- The acreage area contain ~ 7 000 line-km 2D seismic data
- Four high-amplitude anomalies mapped in the Western Bredasdorp Basin and six prospects in the Infanta Embayment

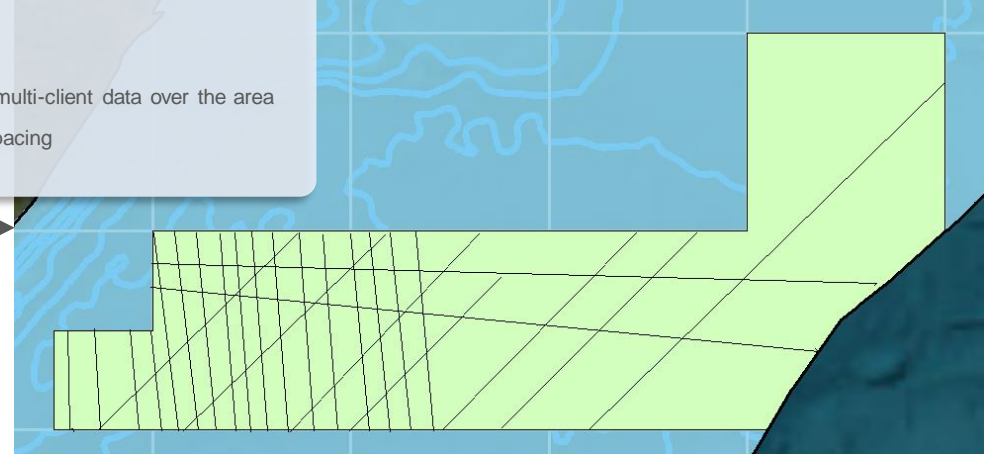




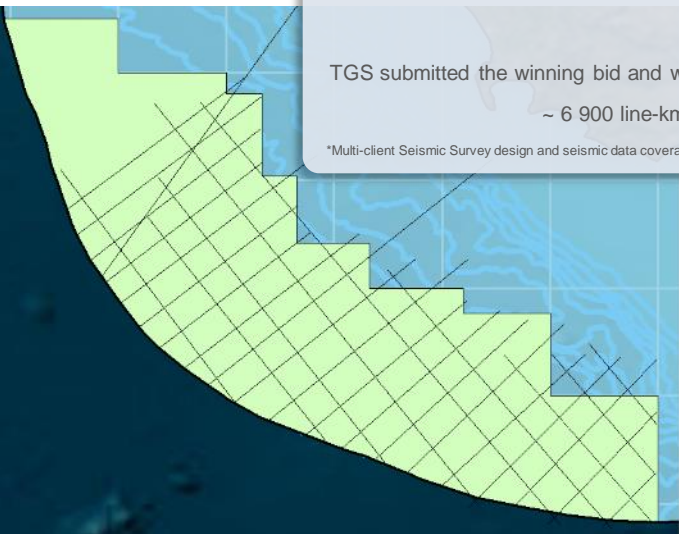
# Offshore and Onshore Activities and Opportunities



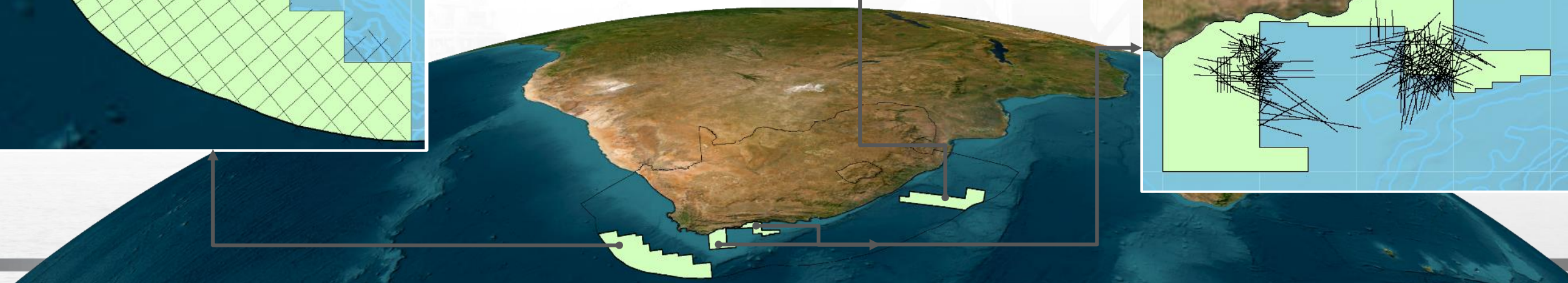
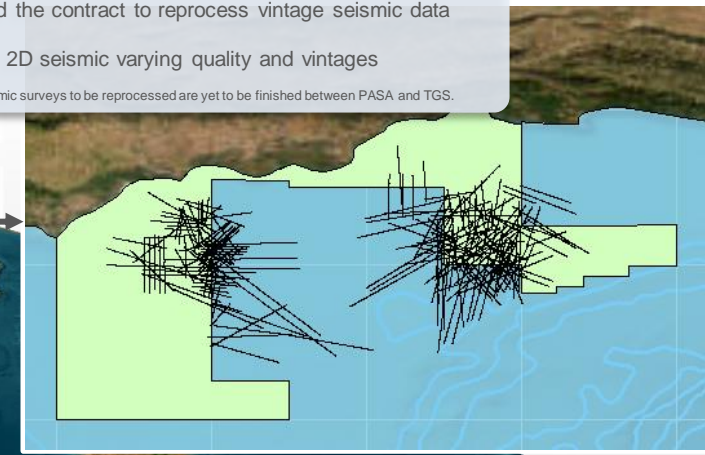
TGS submitted the winning bid and will apply for a permit to acquire multi-client data over the area  
~ 3 500 line-km 2D seismic data at 5-10 km spacing  
\* Multi-client Seismic Survey design and seismic data coverage are yet to be finalised between PASA and TGS.



TGS submitted the winning bid and will apply for a permit to acquire multi-client data over the area  
~ 6 900 line-km 2D seismic data at 25-35 km spacing  
\* Multi-client Seismic Survey design and seismic data coverage are yet to be finalised between PASA and TGS.



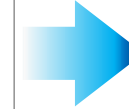
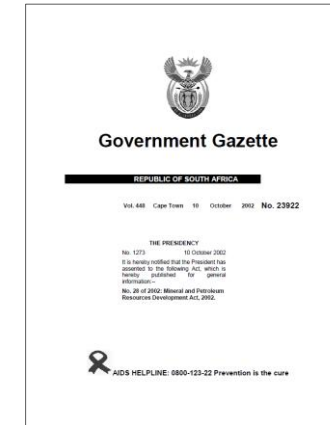
TGS has been awarded the contract to reprocess vintage seismic data  
~ 4 500 line-km 2D seismic varying quality and vintages  
\* The quantity and the selection of 2D seismic surveys to be reprocessed are yet to be finished between PASA and TGS.



# Legislative Framework Overview

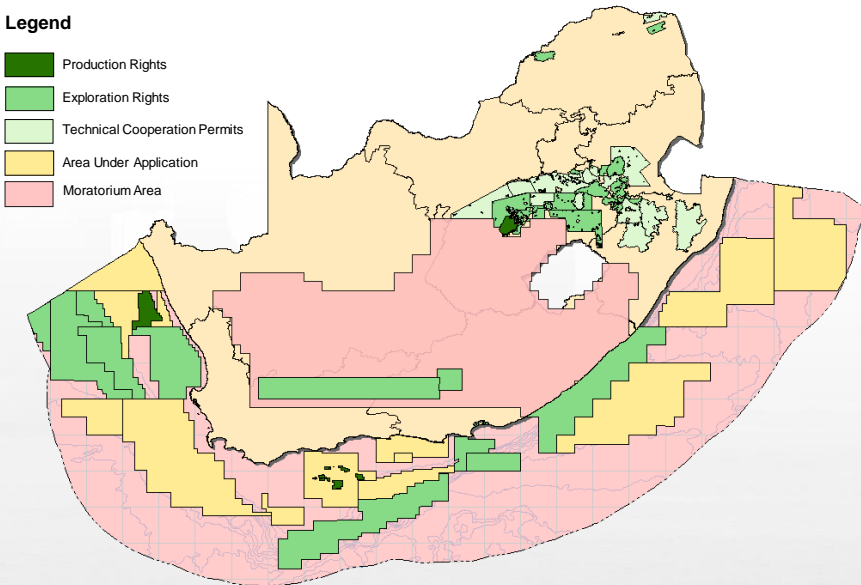


- Mineral and petroleum resources development act (MPRDA) of 2002 is still in effect
- Cabinet approved the submission of the draft Upstream Petroleum Resources Development Bill (UPRD) to parliament
  - Separate the Mineral and Petroleum industries
  - Application by bid round
  - Restructuring administration fees
- Moratorium applies to the entire offshore and parts of onshore
  - No new ER, PR or TCP applications accepted in moratorium areas, only new applications for Reconnaissance Permits.
  - Does not impact existing right and permits



## Legend

- Production Rights
- Exploration Rights
- Technical Cooperation Permits
- Area Under Application
- Moratorium Area





# Thank You!!!



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