Mineralization Potential in the Northern Cape Province and New Investment Opportunities

NORTHERN CAPE PROVINCIAL MINING AND MINERALS INVESTMENT CONFERENCE

10-11 March 2022

Mittah Seperepere International Conference Centre

mineral resources & energy
Department:
Minerals Resources and Energy
REPUBLIC OF SOUTH AFRICA

A proud entity of the Department of Mineral Resources and Energy

Council for Geoscience

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ABOUT THE COUNCIL FOR GEOSCIENCE

- The Council for Geoscience (CGS) is one of the National Science Councils of South Africa.

- The CGS is the legal successor of the Geological Survey of South Africa, which was formed in 1912 by the amalgamation of 3 former Surveys, the oldest of which - the Geological Commission of the Cape of Good Hope - was founded in 1895.

- The **Geoscience Act, Act 100 of 1993**, as amended, established the CGS in its present form.

- The CGS is listed as a **Schedule 3A Public Entity** in terms of the Public Finance Management Act (**PFMA**) (Act No. 1 of 1999).

REPUBLIC OF SOUTH AFRICA

GEOSCIENCE
AMENDMENT ACT

REPUBLIEK VAN SUID-AFRIKA

WYSIGINGSWET OP
GEOWETENSKAP

No 16, 2010

CGS VISION, MISSION AND VALUES

Vision

- A prosperous and transformed society enabled by geoscience solutions

Mission

- Providing integrated, systematic and thematic maps and conducting research on the onshore and offshore geology of South Africa, as mandated, to:
- Facilitate mineral, energy and agricultural development;
- Contribute to the assessment and sustainable management of mineral, geohydrological and geoenvironmental resources;
- Support infrastructure development.
- Discharging the mandate in a manner that supports transformation and national developmental imperatives.

Values

- Innovation
- Diversity
- Excellence
- Accountability
- Learning
- Safety, Health, and Environment
- Transparency

GOVERNANCE STRUCTURE OF THE CGS

Executive Authority

Minister of Mineral Resources and Energy:
Mr Samson Gwede Mantashe

Chairperson of the Board: **Dr Humphrey Mathe**

Accounting Authority

Chief Executive Officer: **Mr Mosa Mabuza**

CGS Executive Team

Mr Tshepo Mokolobate

Ms Refilwe Shelembe

Dr David Khoza

Mr Leonard Matsepe

Dr Jonty Tshipa

CGS CONTRIBUTION TO THE ECONOMIC RECONSTRUCTION AND RECOVERY PLAN

The South African Economic Reconstruction and Recovery Plan has three phases:

1. **Engage and Preserve** - which includes a comprehensive health response to save lives and curb the spread of the pandemic

2. **Recovery and Reform** - which includes interventions to restore the economy while controlling the health risks;

3. **Reconstruct and Transform** - which entails building a sustainable, resilient and inclusive economy

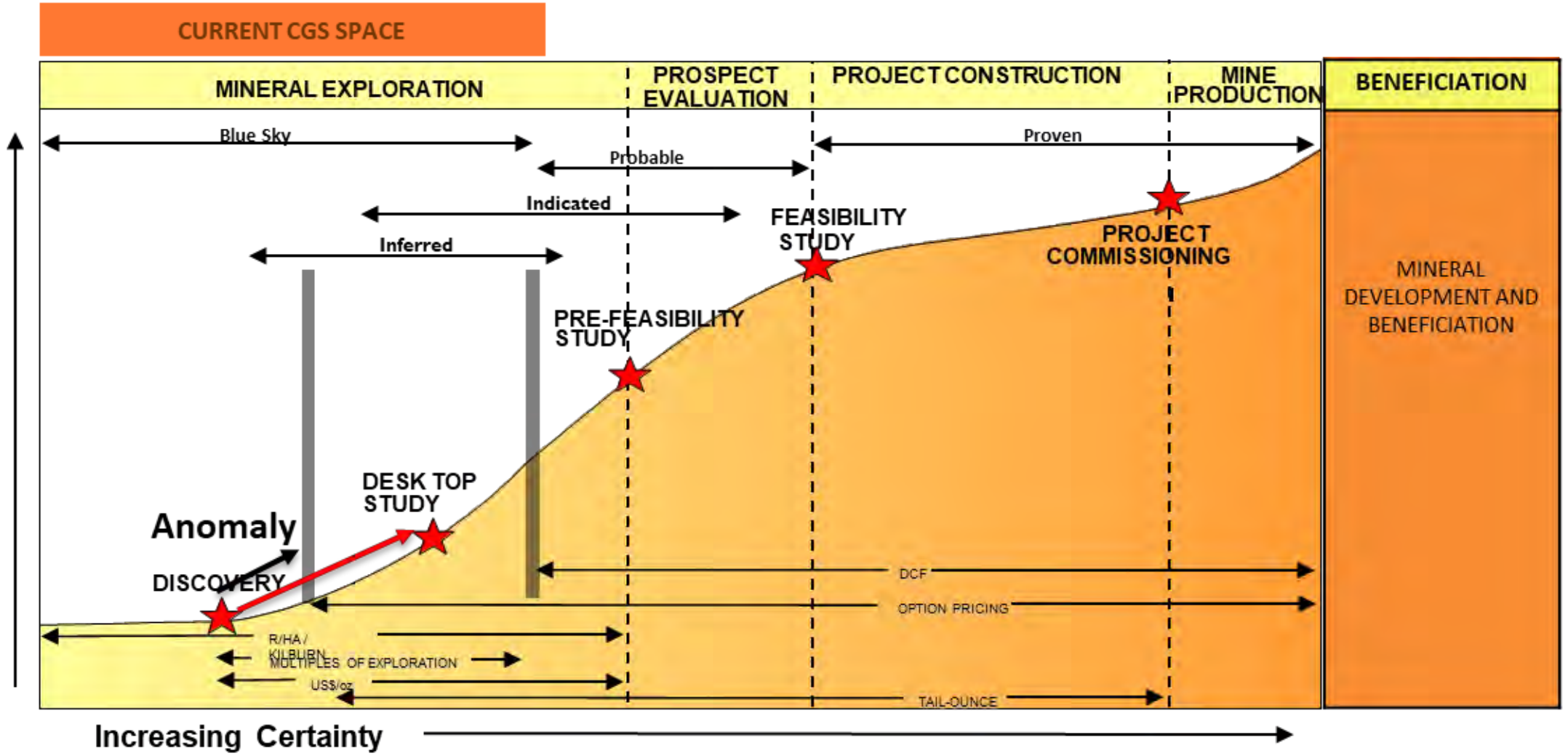
SOUTH AFRICAN ECONOMIC RECONSTRUCTION AND RECOVERY
BUILDING A NEW ECONOMY

CGS directly contributes to FIVE (5) of the Priority interventions

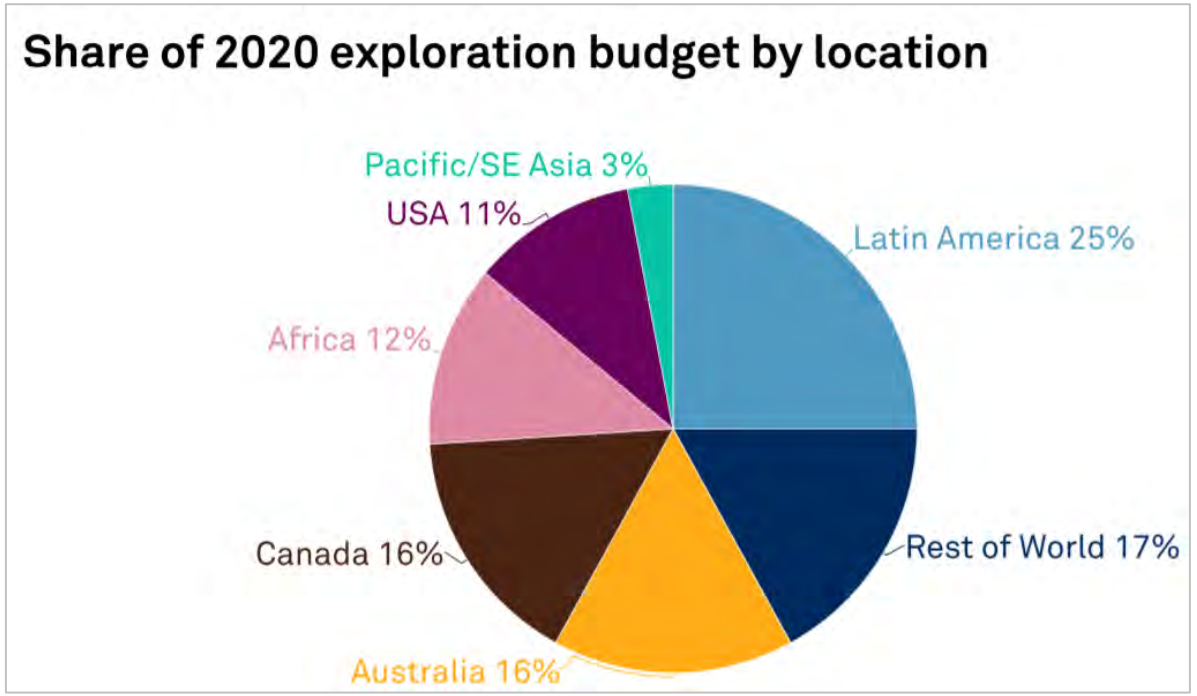
Priority interventions:

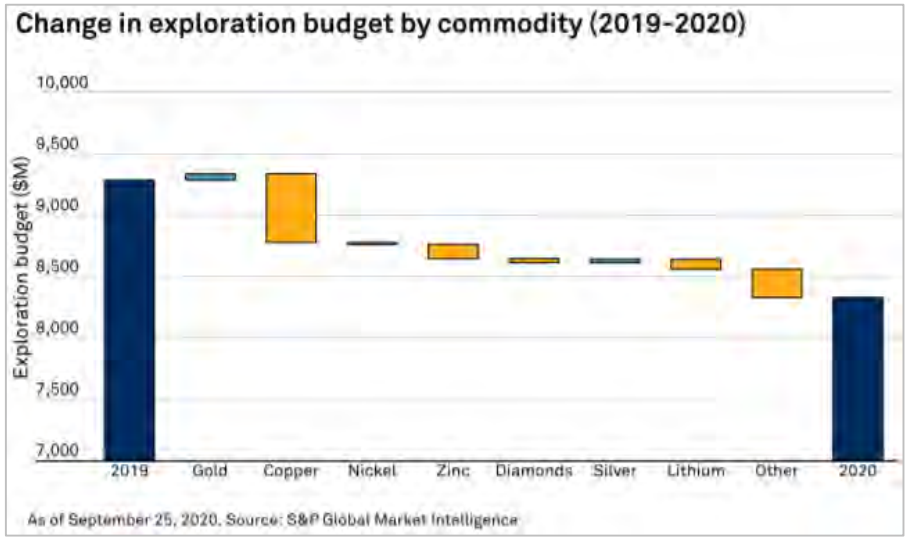
1. Aggressive infrastructure investment
2. Employment orientated strategic localization, reindustrialization and export promotion
3. Energy security
4. Support for tourism recovery and growth
5. Gender equality and economic inclusion of women and youth;
6. Green economy interventions
7. Mass public employment interventions
8. Strengthening food security
9. Macro-economic interventions

ROLE OF CGS IN THE MINING VALUE CHAIN



GLOBAL EXPLORATION BUDGET

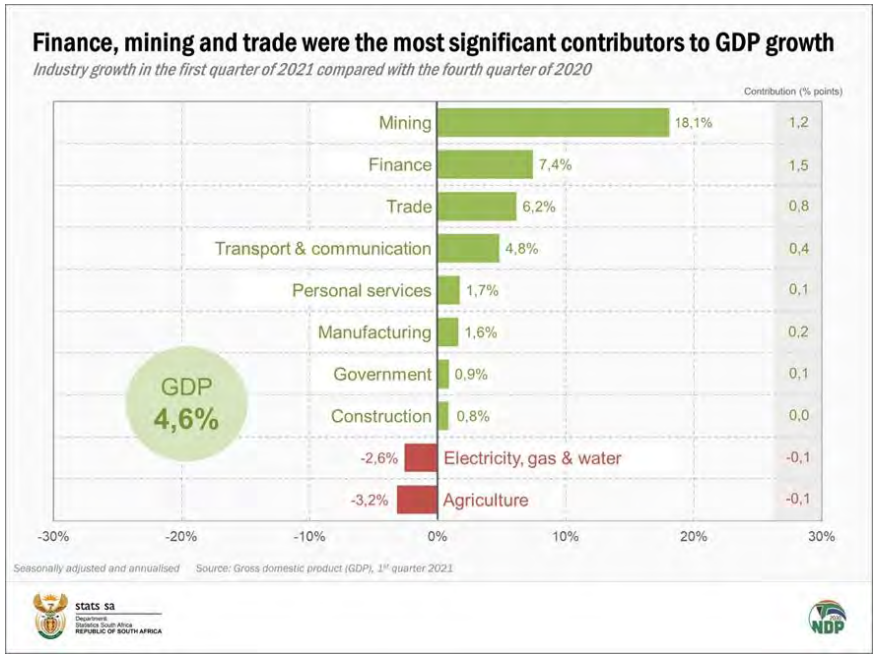


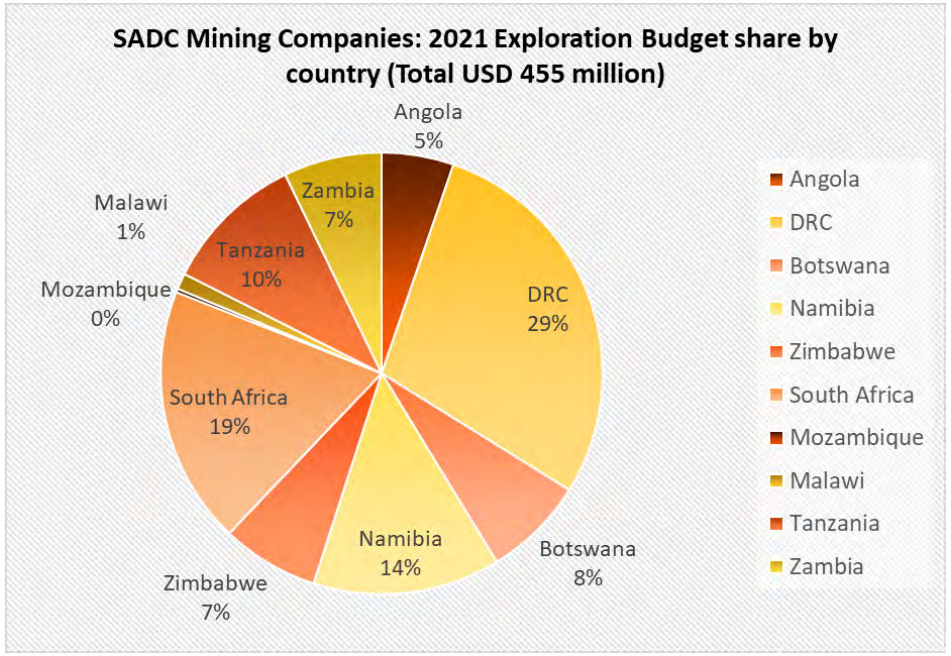


- Africa's share of the global exploration at 12% is $1.1 billion.
- The expected share of the junior exploration companies has increased by 62% year on year to a total of $4.1 billion.
- The majors account for marginally over half of global exploration budget at a total of $5.6 billion.

Data Sources: S&P Global Market Intelligence (2021)

THE RECOVERY OF THE EXPLORATION AND MINING SECTOR



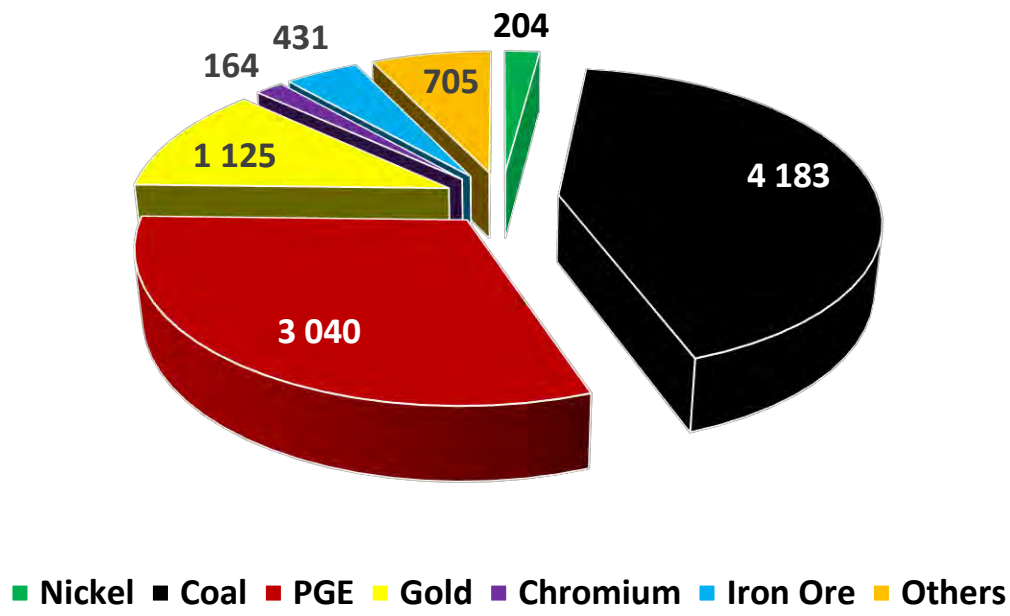


- In 2021, the annual global exploration budget increased by 35% year over year to $11.2 billion.
- A global increase ranging between 5% and 15% is anticipated for the 2022.
  - easing of lockdown restrictions allowed explorers to reactivate programs by mid-2020
  - higher metals prices
  - increased financing activities

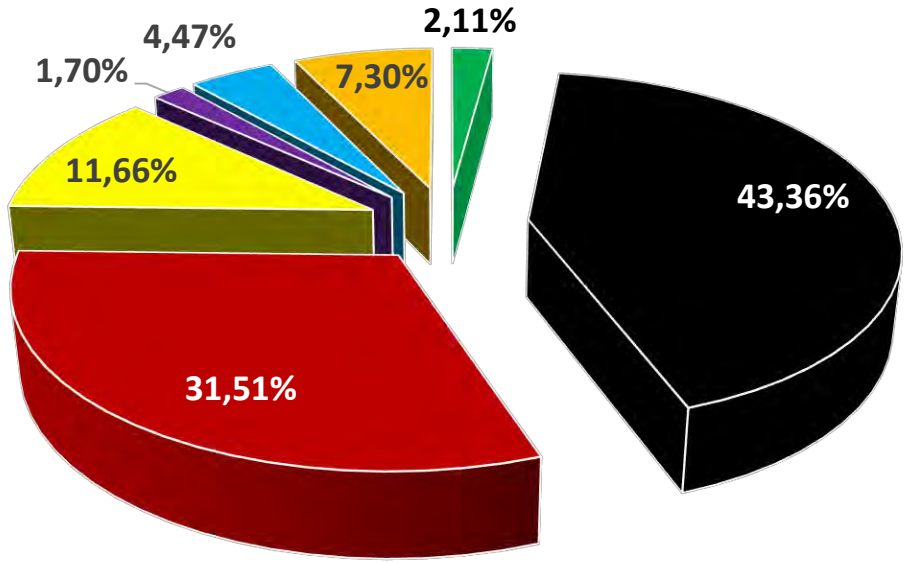
Source: StatsSA (2021); S&P Global Market Intelligence (2021)

PRELIMINARY GROSS IN-SITU MINERAL VALUE OF SOUTH AFRICA

Gross In-Situ Value of Minerals in SA in Billion USD



Proportions of Gross In-Situ Value of Minerals in SA



The gross in-situ value of ~9.6 trillion USD

(Estimates are based on mining companies reports, Resources)

THE IMPORTANCE OF GEOSCIENTIFIC DATA IN DRAWING NEW INVESTMENT

Priority investment criteria	Investment attractiveness criteria	2019 Fraser Institute scores for SA (%)	2020 Fraser Institute scores for SA (%)
Geological potential of target minerals	Geological database	38	66.5
Consistency and constancy of mineral policies	Policy Perception Index	59.7	60.81
	Uncertainty Concerning the Administration, Interpretation and Enforcement of Existing Regulations	32	24
	Regulatory duplication and inconsistency	38	26
Company has management control	Socioeconomic Agreements/ Community Development Conditions	47	20
Mineral ownership	Uncertainty Concerning Disputed Land Claims	39	26
Stability of exploration and mining terms	Best practices mineral potential Index	68.18	53.33
	Legal System	48	41
Ability to predetermine tax-reliability	Tax regimes	37	45
Ability to predetermine environmental obligations	Uncertainty concerning environmental regulations	61	59
	Uncertainty Concerning Protected Areas	79	80.5
Stability of fiscal regime	Trade Barriers	37	40

Geological data ranked 1st

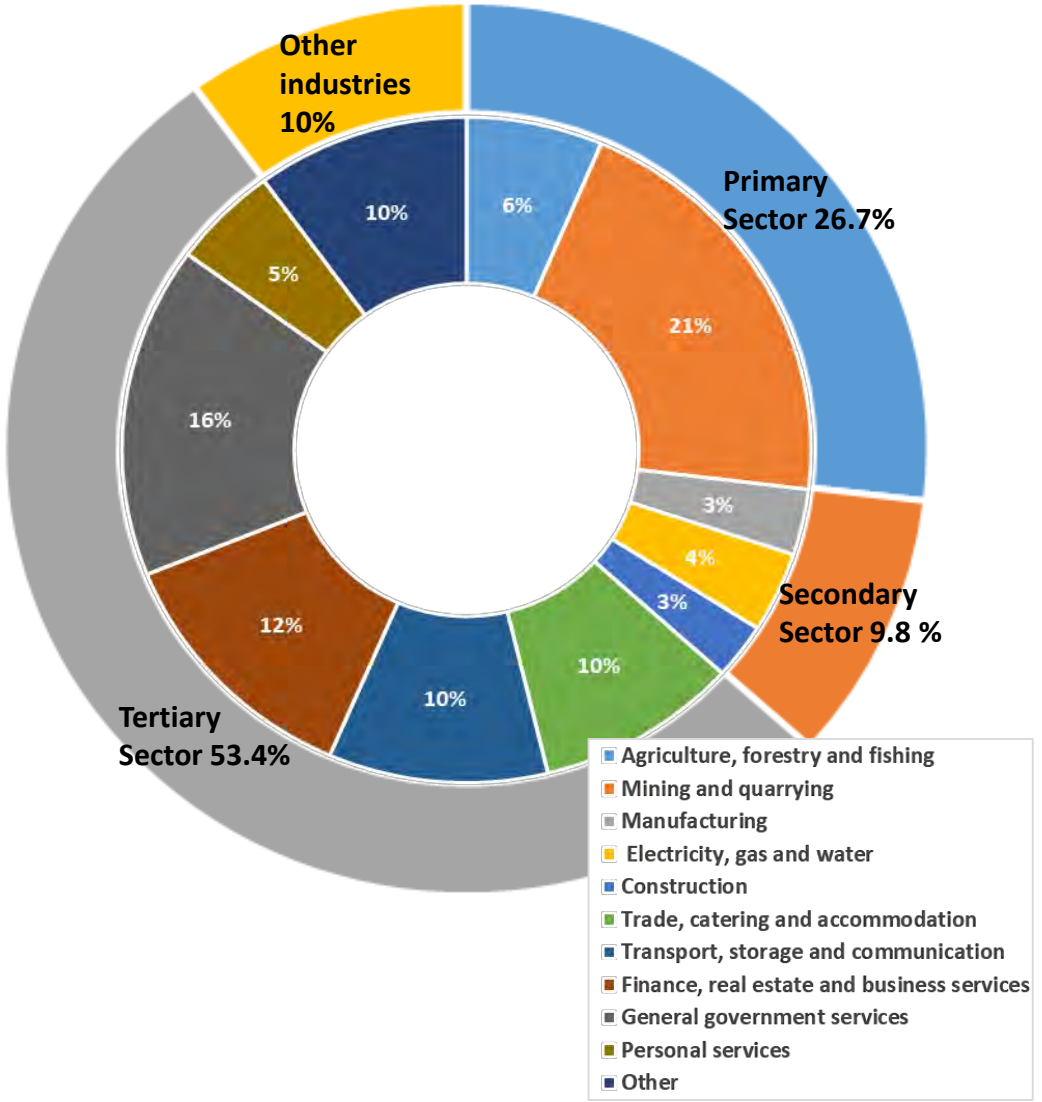
The role of the CGS in the Exploration Implementation Strategy

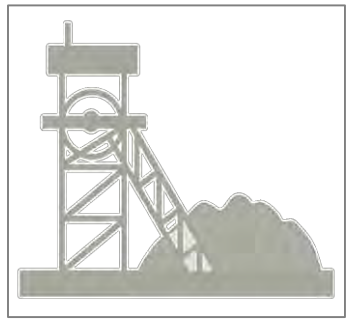
- Availability of geoscience data is a fundamental contributor to revitalising exploration in South Africa.
- Additional allocation of funds in de-risking of exploration projects and gathering the required datasets.
- The development of the Geoscience data portal in improving accessibility to geoscientific datasets: https://maps.geoscience.org.za/portal/apps/sites/#/interactivewebmap

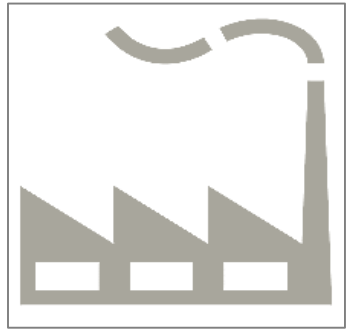
Source: Fraser Institute Annual Survey(2019; 2020)

CONTRIBUTION OF MINING IN THE NORTHERN CAPE PROVINCE

- The province is considered the largest locally found resource hub for new tech minerals in the current mining boom:
  - zinc, nickel, lead, copper and cobalt feature prominently.
- These key elements are pivotal in the manufacturing of smartphones, electric vehicles and renewable power systems.







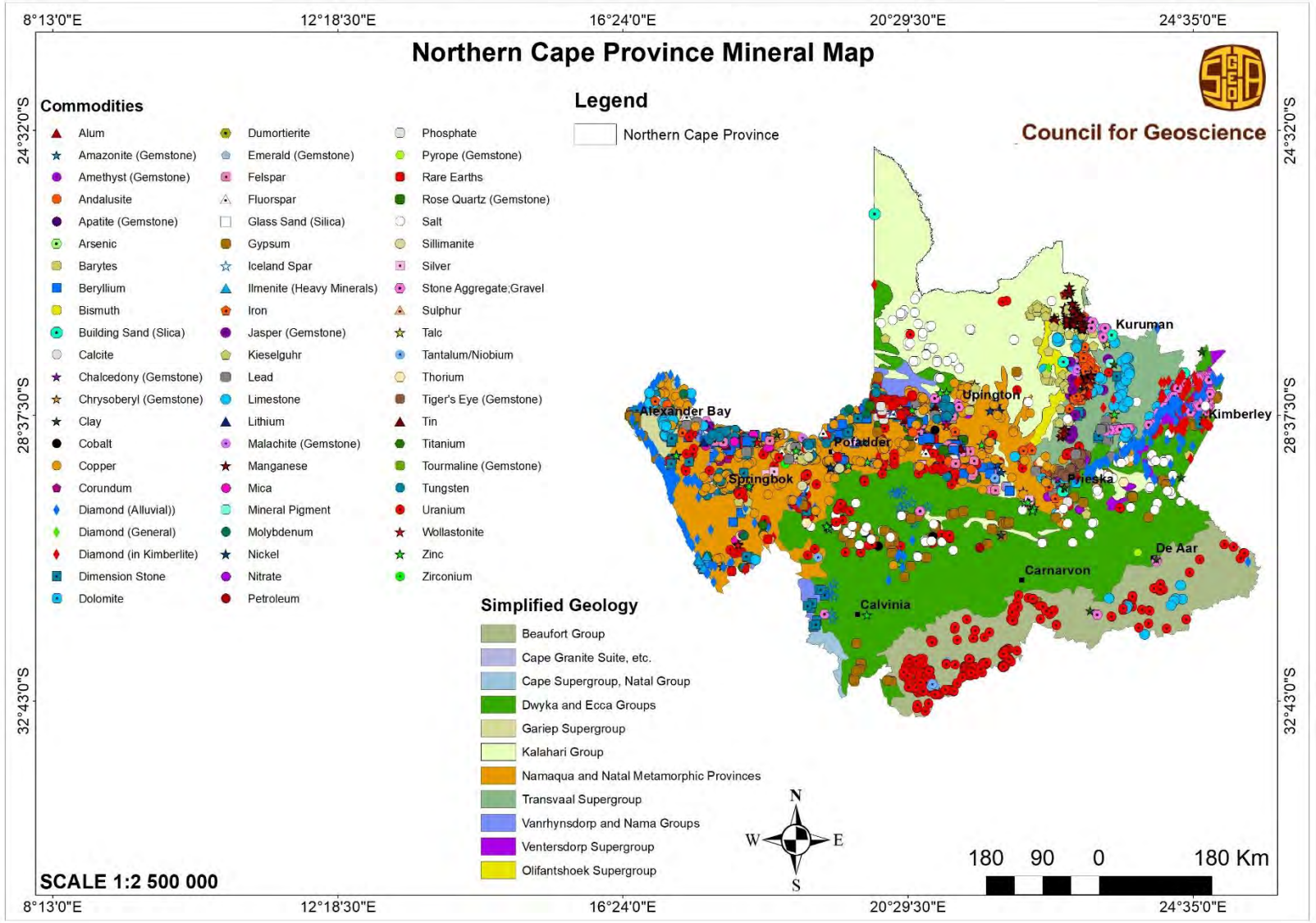
Source: Northern Cape Socio Economic Review and Outlook 2021

OVERVIEW OF NORTHERN CAPE MINERAL POTENTIAL

GEOLOGICAL OVERVIEW AND KNOWN MINERALS IN THE NC

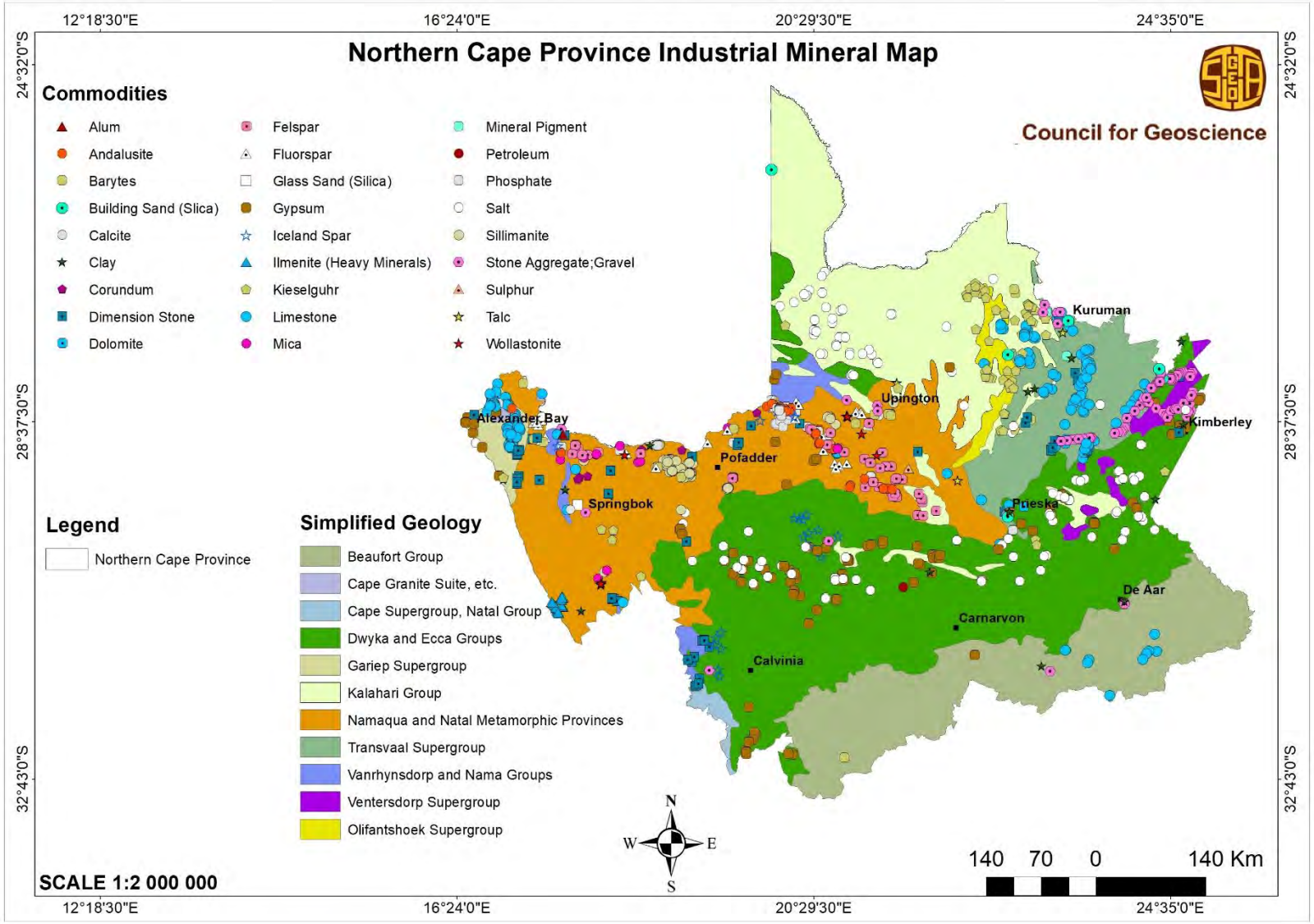
- The NC province is covered by wide range of rocks with varying ages and complex geological history.

- The rock sequences in the province have proven to host diverse economically viable minerals.

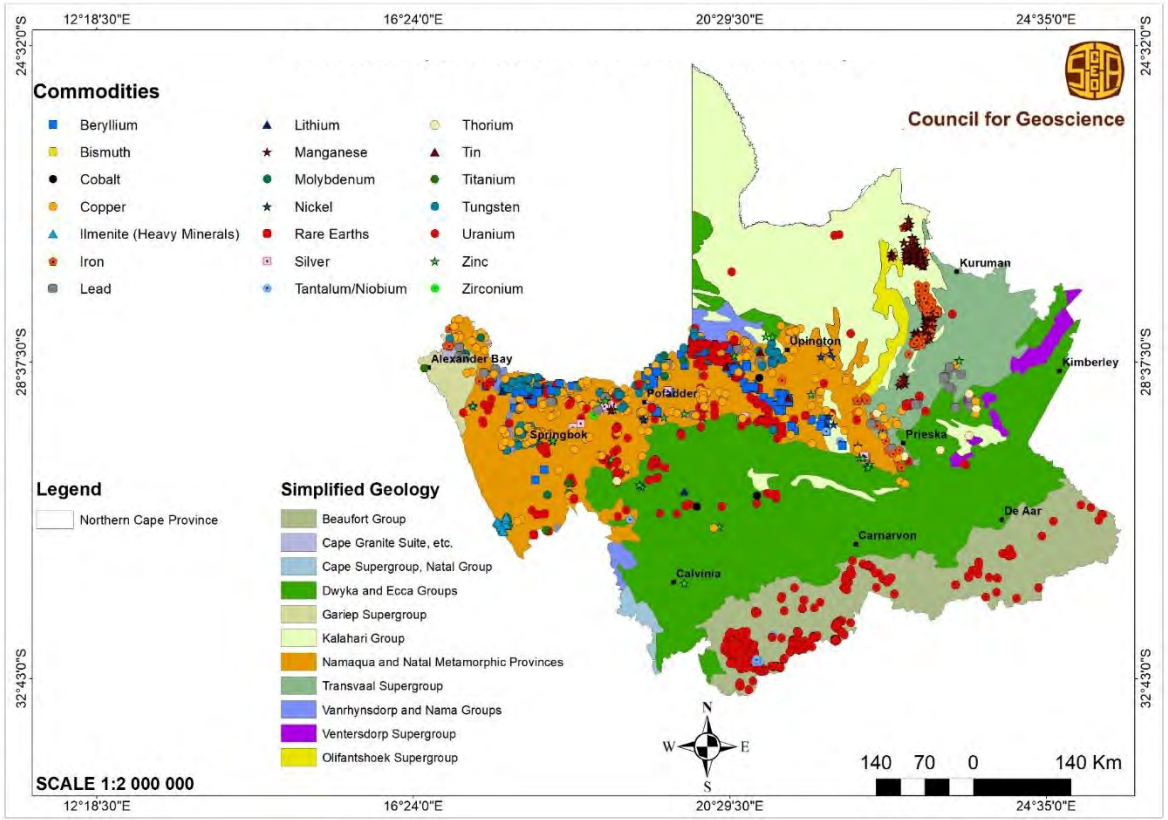


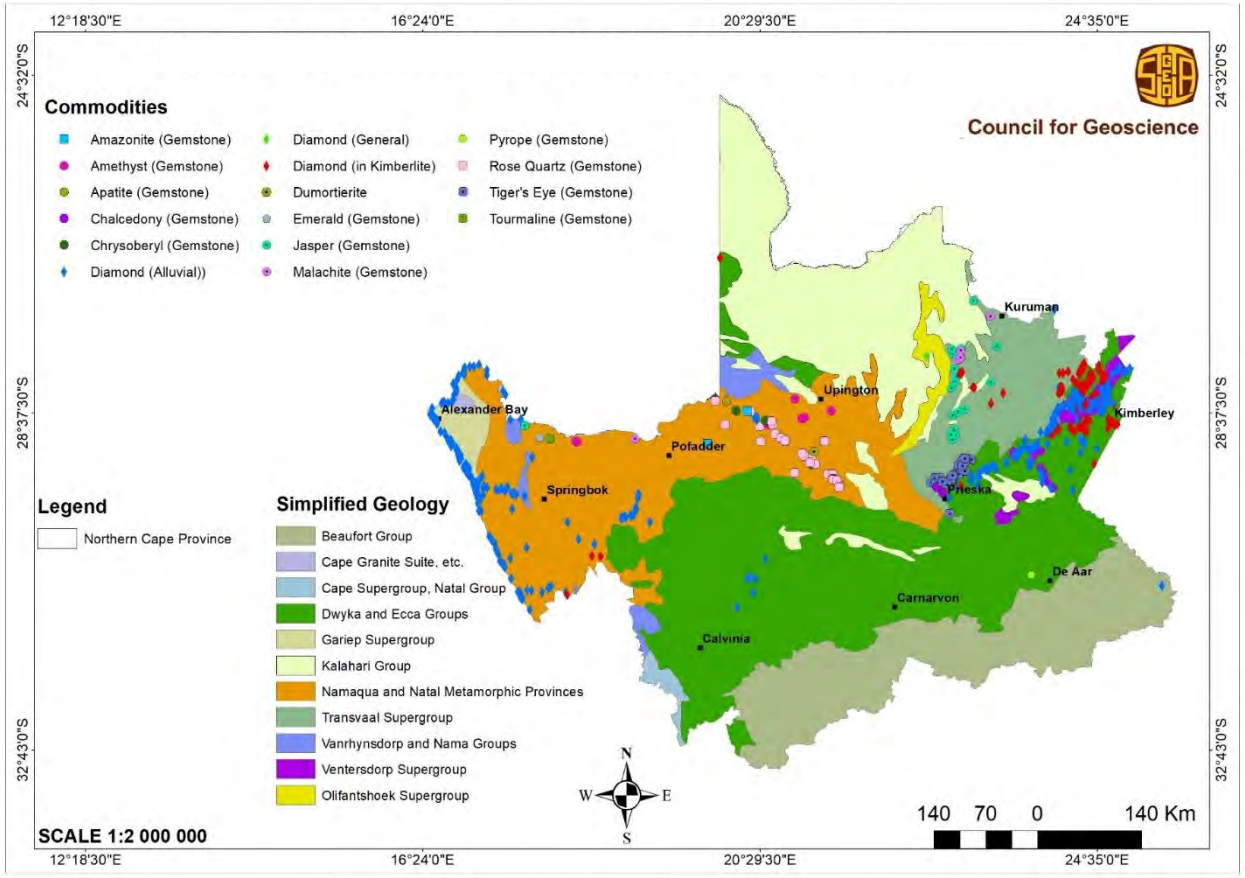
KNOWN INDUSTRIAL MINERAL OCCURRENCES

- Several industrial mineral occurrences are found in the NC province which can be classified into multiple groups based on lithologies as well as deposit types.



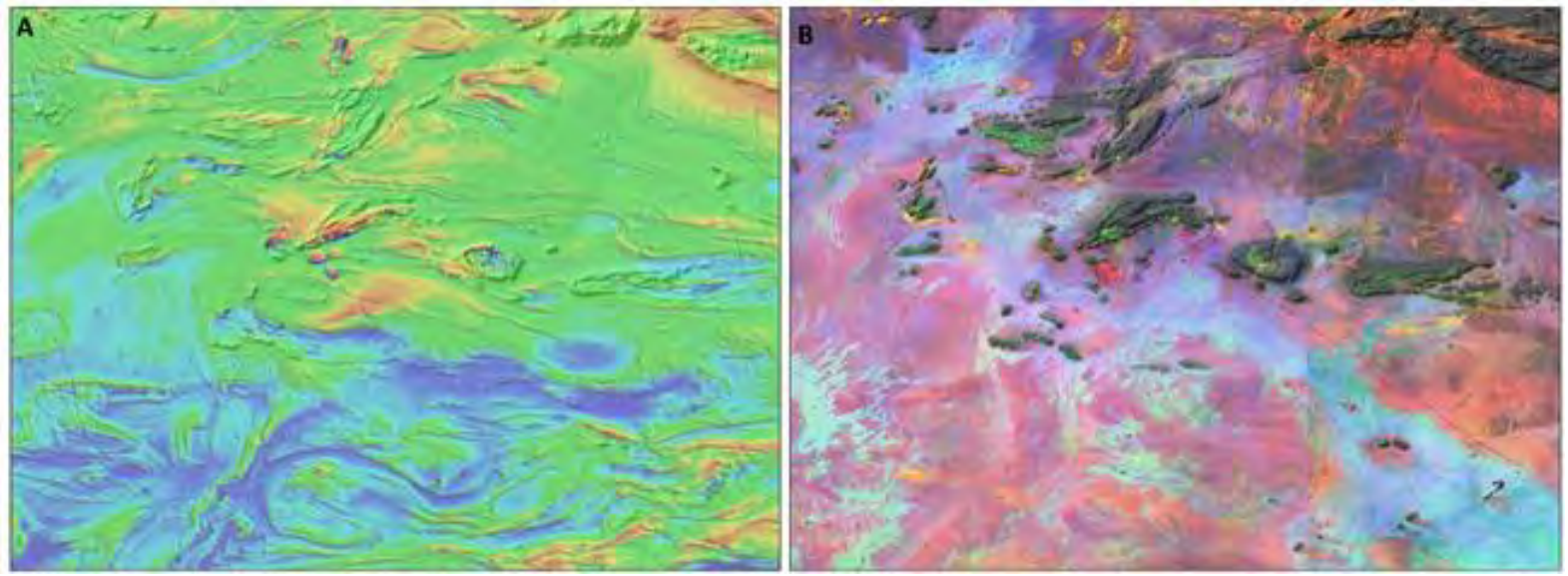
KNOWN BASE, METALLIC MINERALS AND PRECIOUS STONES OF THE NC





CGS ACTIVITIES IN THE NORTHERN CAPE (COPPER-LEAD-ZINC)

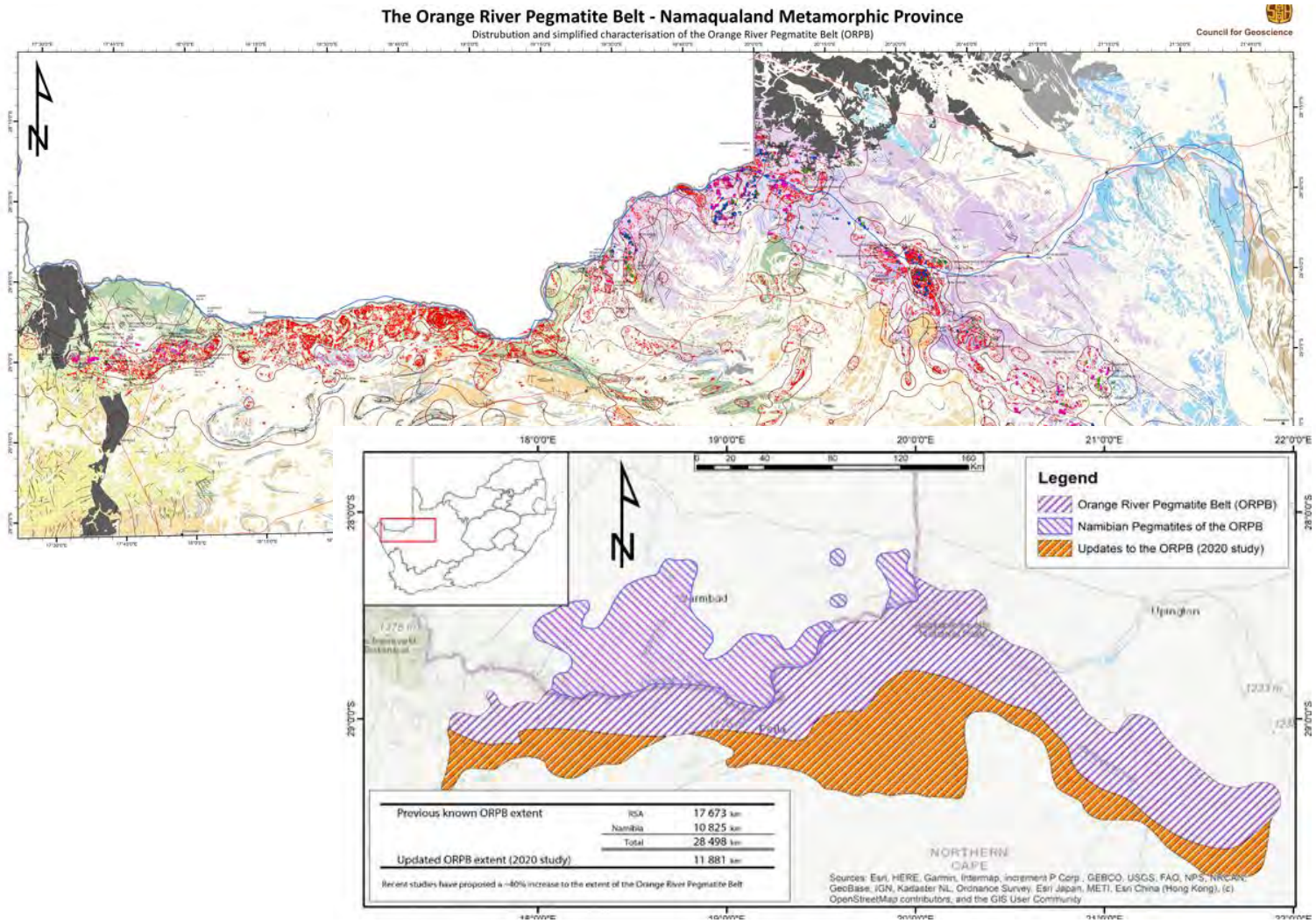
- The NC province has been a key focus area for the last five years of the CGS's integrated mapping programme.
- The region is covered by younger sedimentary sequences, which obscures a potentially large source of mineral potential.
- Integrated geoscience mapping is crucial to establishing the features and subsurface extent of these important sequences which can be modelled to identify prospective mineral targets, e.g., copper-lead-zinc
- This will be followed by a targeted drilling campaign.



A: High-resolution aerial geophysical data can see through the surficial cover sequences and importantly, delineates the key geological and structural features; Critically, these may form the key target regions for additional mineral exploration. B: Certain multispectral band combinations assist in delineating additional potential geological and geochemical signatures that may correlate with potential mineralised regions

CGS ACTIVITIES IN THE NORTHERN CAPE (PEGMATITE)

- Several 1:50,000 geoscience maps have been completed.
- An assessment of pegmatites provided valuable insights on the exploitability of the Orange River Pegmatite Belt.
- All this information is a great leap towards generating future exploration targets.



The Orange River pegmatite belt expanded by 67%

APPLICATION OF GEOSCIENCE IN ALLUVIAL DIAMONDS EXPLORATION

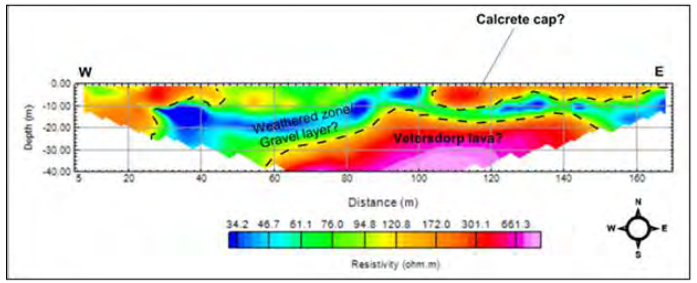


Figure 1. Model resistivity section along Winsorton Line 1 profile.

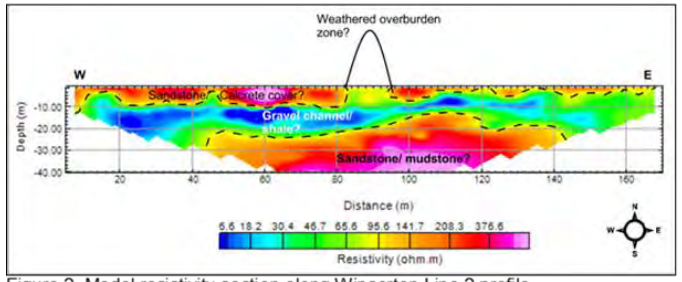


Figure 2. Model resistivity section along Winsorton Line 2 profile.

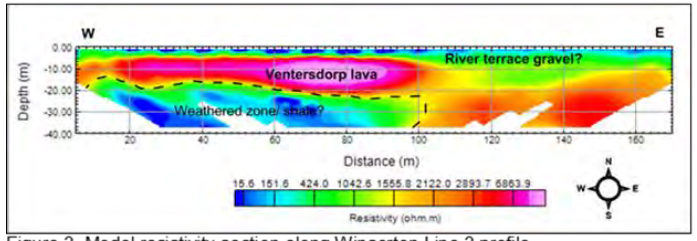
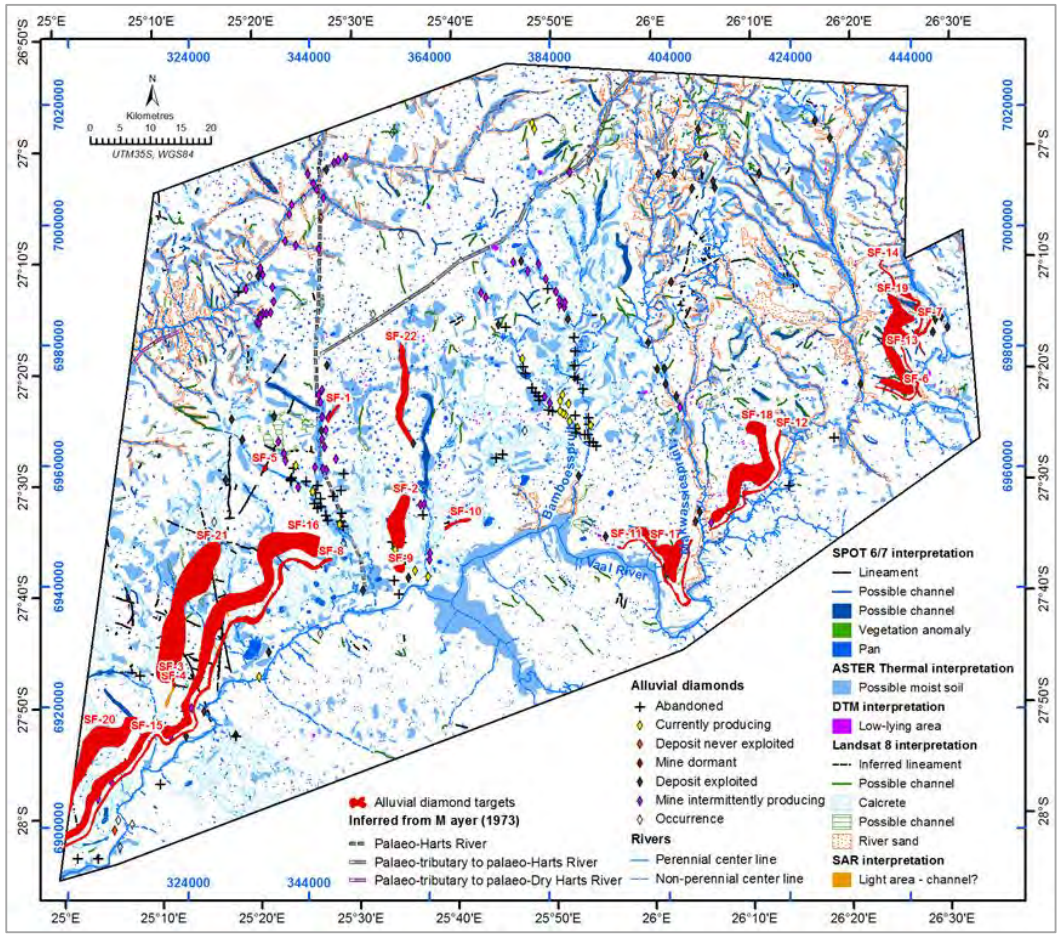


Figure 3. Model resistivity section along Winsorton Line 3 profile.



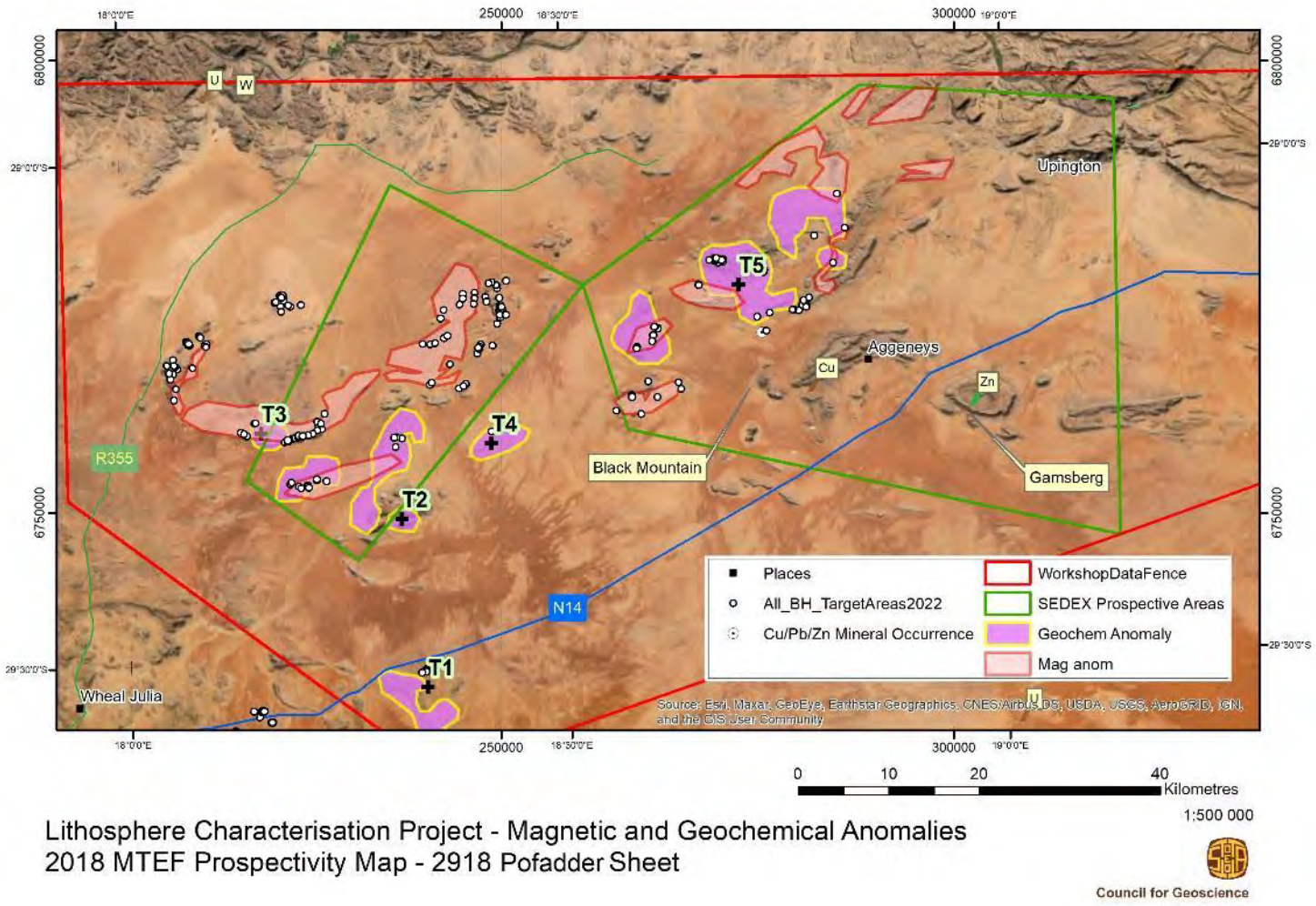
Snippet of the alluvial diamond target sites identified for further investigation. The map was generated through the integration of the different datasets further supported by field data and the presence several mining operations in the vicinity.

SEDEX-TYPE DEPOSIT TARGET GENERATION IN THE AGGENEYS TERRANE

DATASETS – REGIONAL MAGNETIC AND GEOCHEM ANOMALIES

Regional Geochemistry (1 km^2) and aeromagnetic survey data processing identified numerous anomalous areas

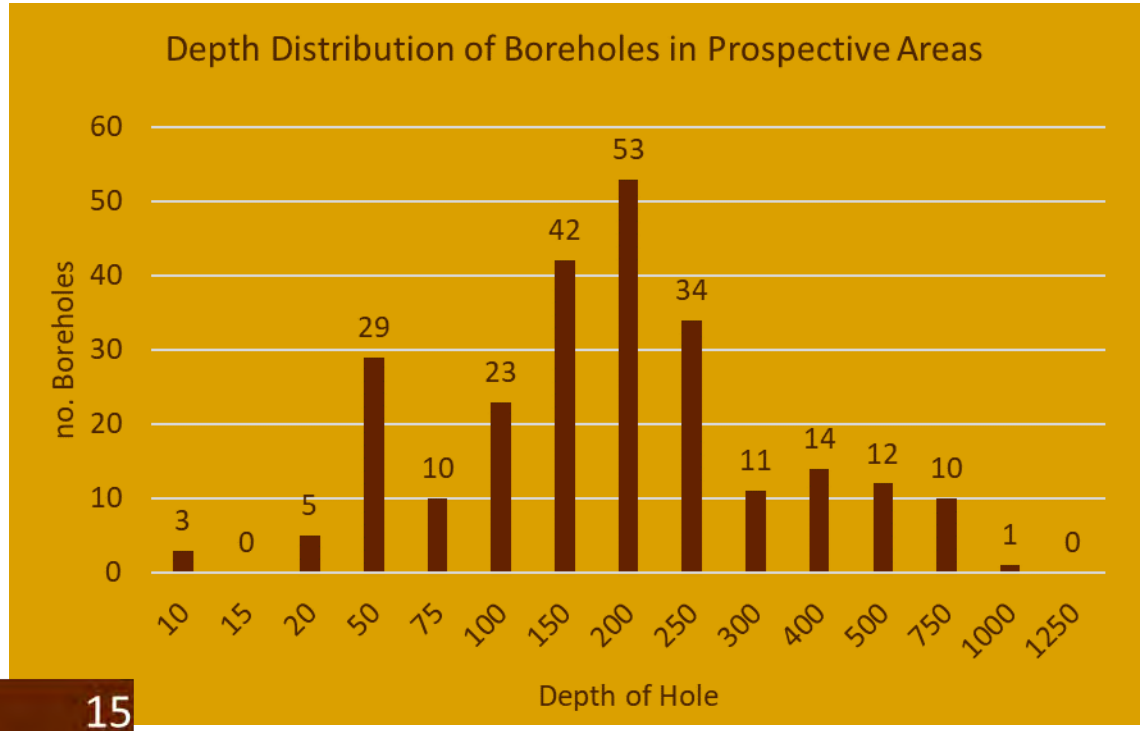
- These anomalies don't necessarily coincide with historical drilling campaigns; thus
- They represent new targets, without historical exploration context.



PROSPECTIVE AREAS DRILL HOLE SUMMARY

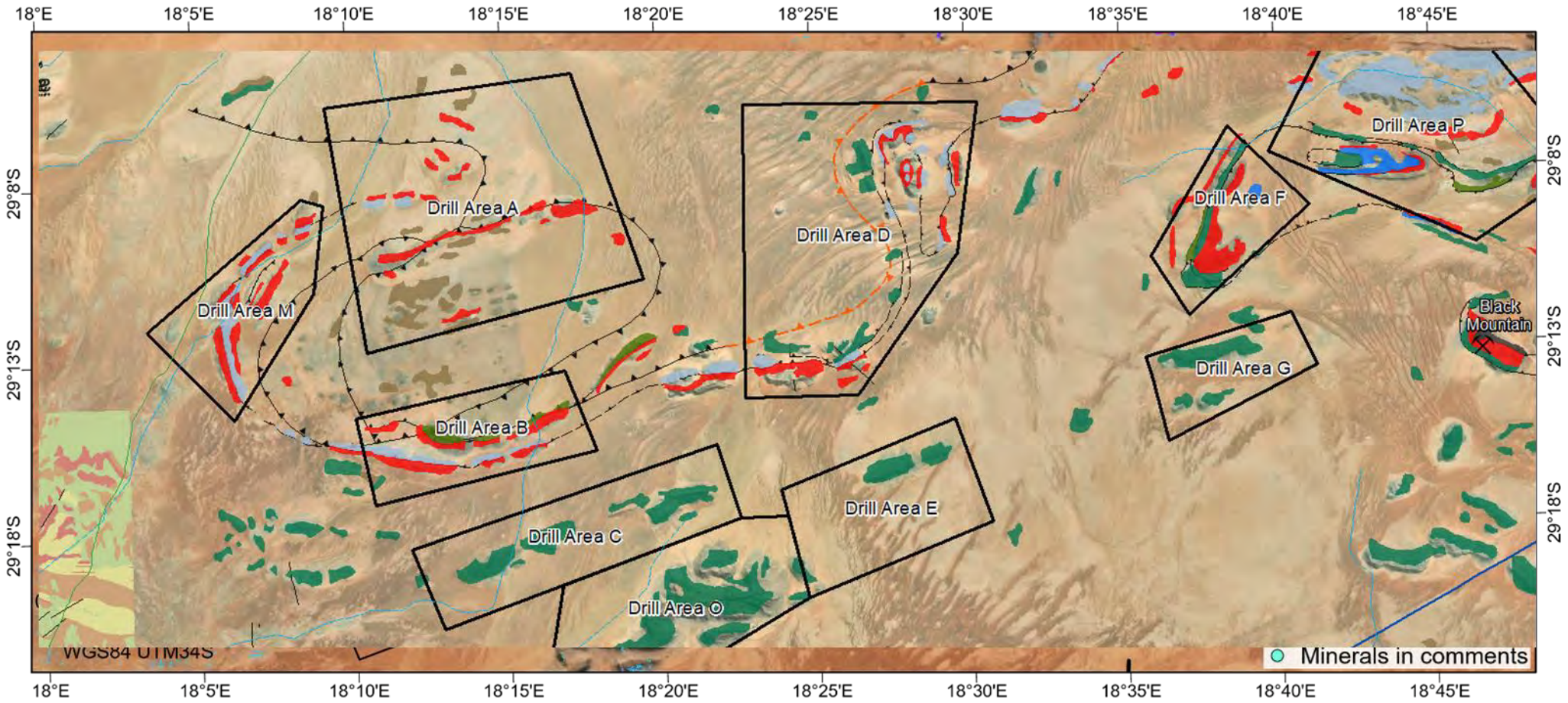
There are 247 Historical Boreholes in the Prospective areas identified in the 2021 Study

- 210 of these are >50 m depth, and not likely uranium holes
- 60 % of the holes are within 150 m – 250 m depth
- Just 11 holes are >500 m deep (4 %)
- 18 contain assay data for Cu-Pb-Zn
- A further 15 contain mineralisation mentions in the log
- Cu up to 4,3 %
- Pb up to 2,8 %
- Zn up to 1,4 %
- Ag up to 16 g/t

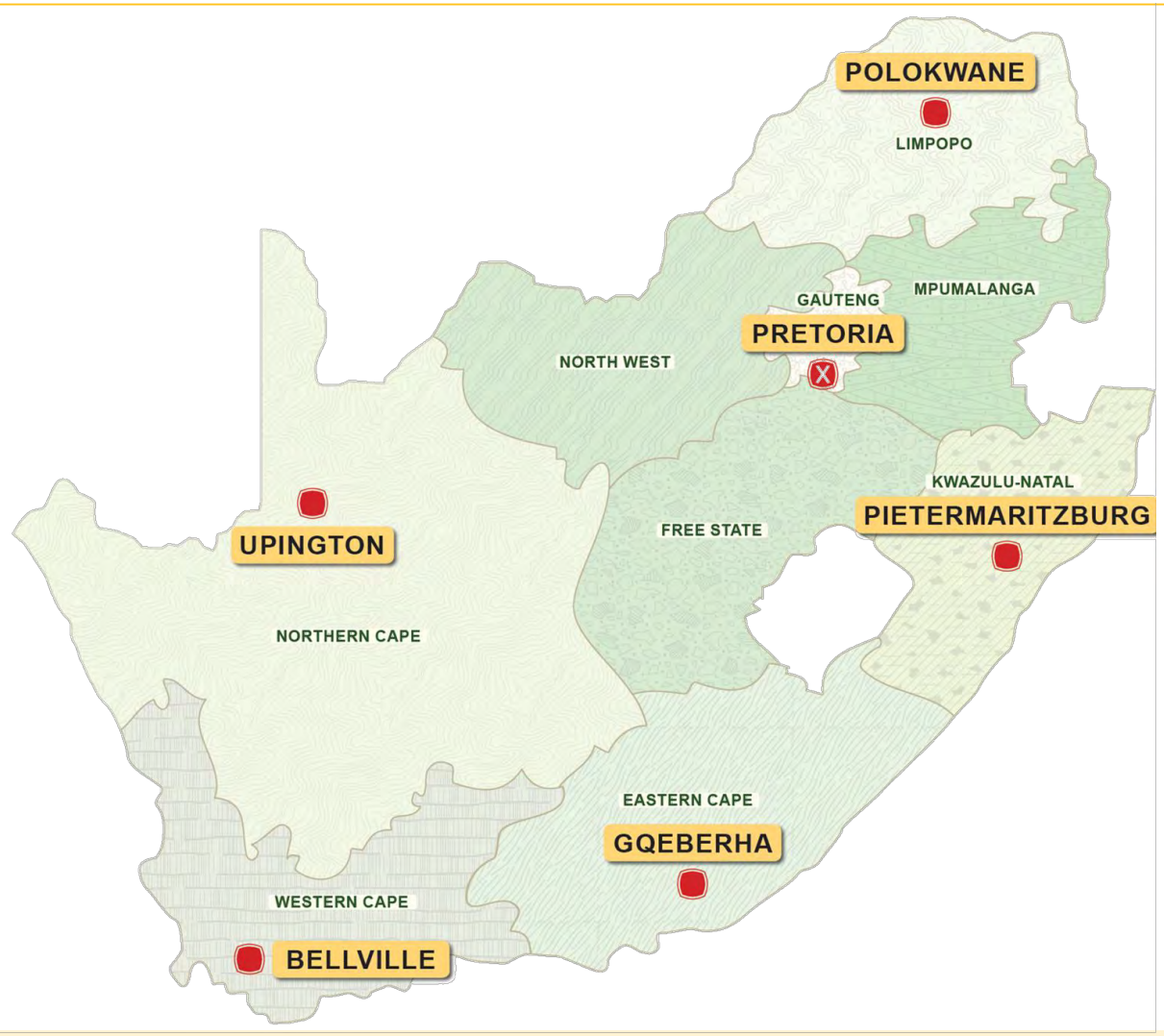


Mineralisation in Logs	15
Assay depth range (m)	16 m – 769 m
Average assay depth (m)	219 m
Cu	0 - 8 %
Pb	0 - 15 %
Zn	0 - 16,5 %
Ag (g/t)	0 - 129 g/t

TARGETS – A CLOSER LOOK



Thank you



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