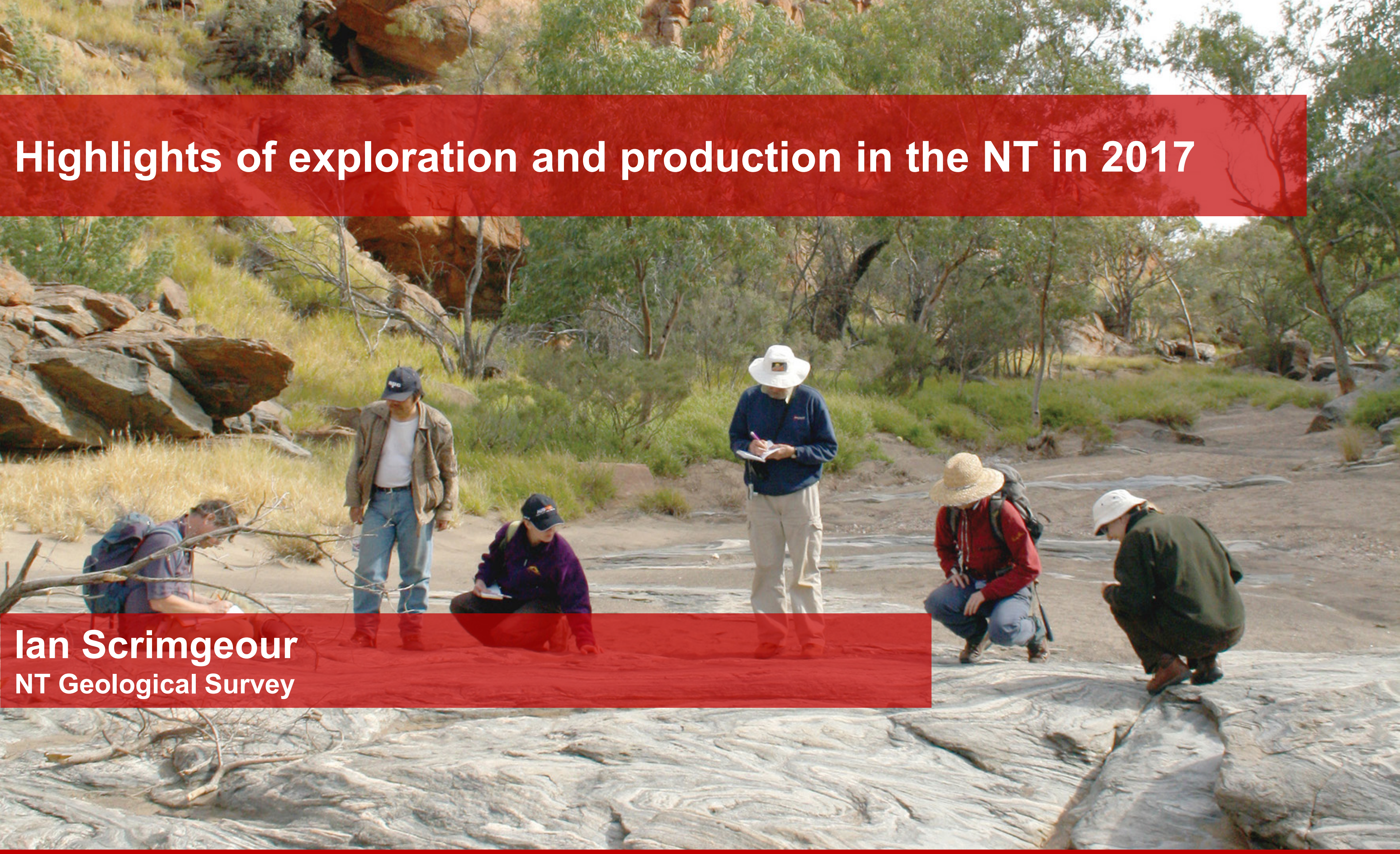


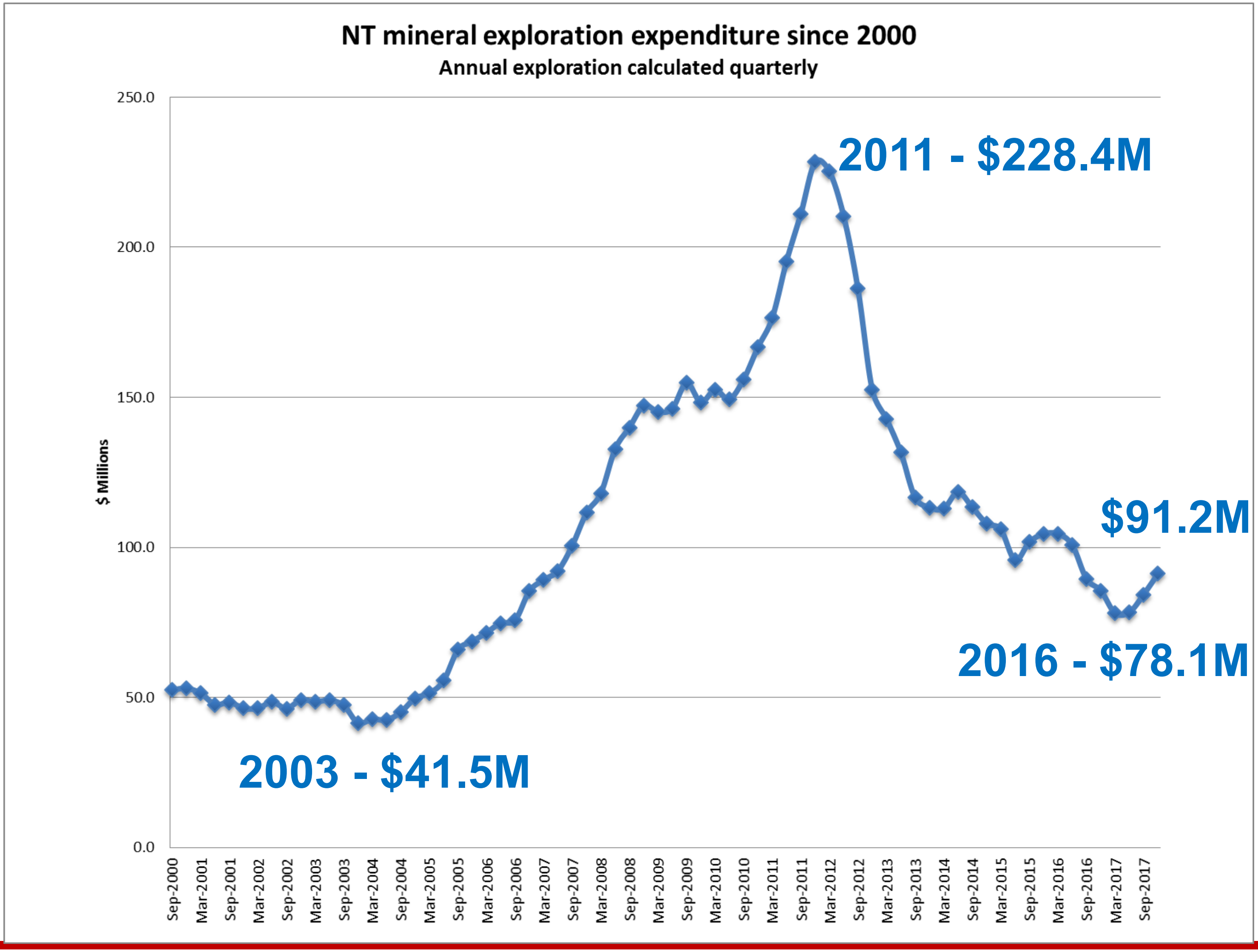
Highlights of exploration and production in the NT in 2017

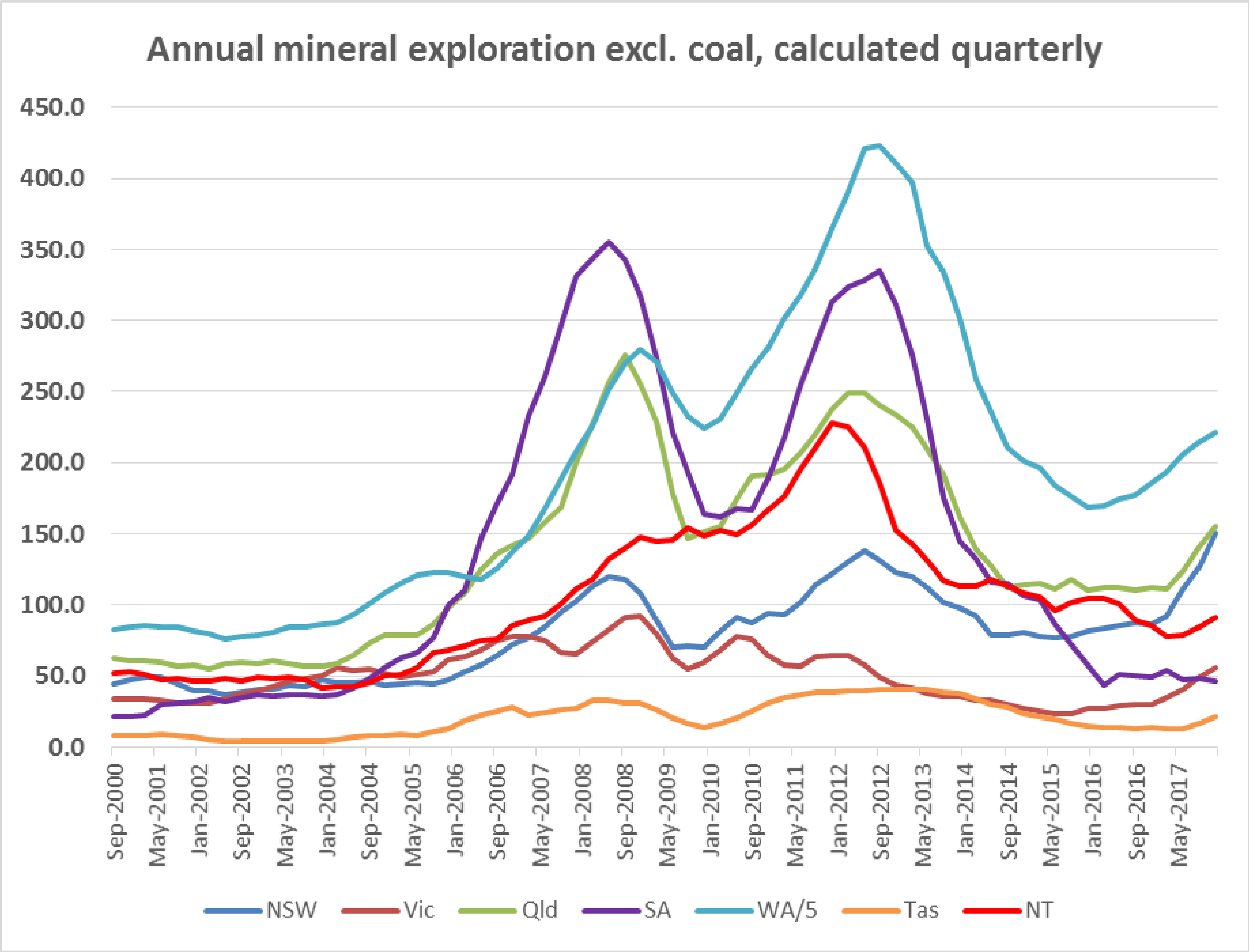
Ian Scrimgeour
NT Geological Survey

AUSTRALIA'S NORTHERN TERRITORY

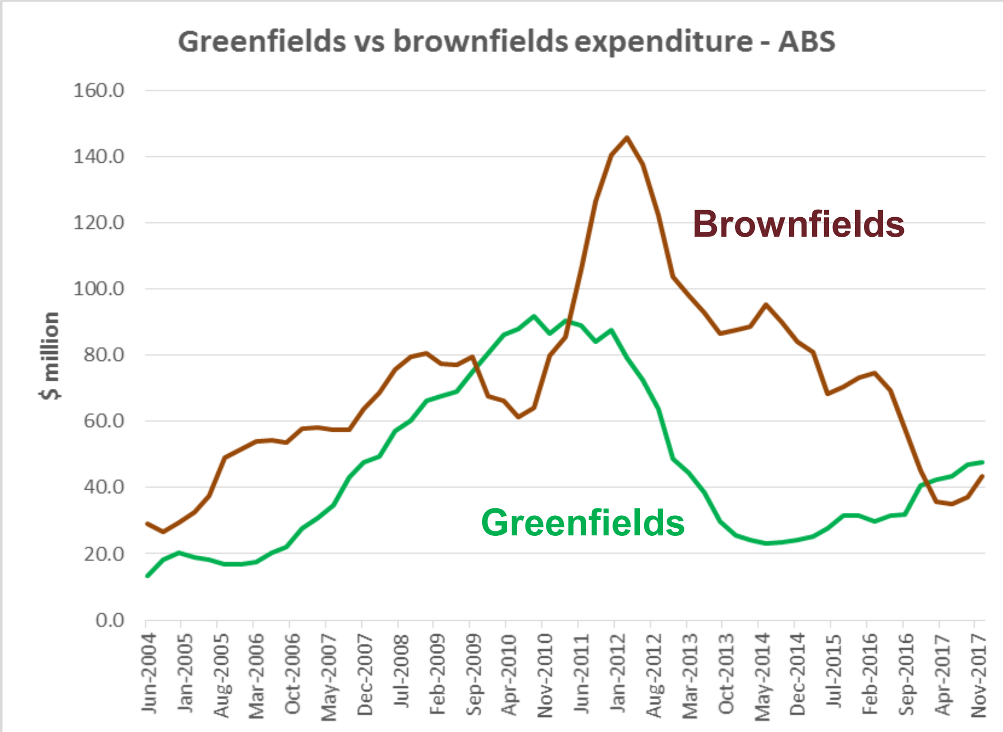
NORTHERN TERRITORY GEOLOGICAL SURVEY
AGES2018
ANNUAL GEOSCIENCE EXPLORATION SEMINAR
Alice Springs, 20–21 March 2018, Northern Territory

2017 – the year the industry turned around




Annual mineral exploration excl. coal, calculated quarterly
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Sep-2000
May-2001
Jan-2002
Sep-2002
May-2003
Jan-2004
Sep-2004
May-2005
Jan-2006
Sep-2006
May-2007
Jan-2008
Sep-2008
May-2009
Jan-2010
Sep-2010
May-2011
Jan-2012
Sep-2012
May-2013
Jan-2014
Sep-2014
May-2015
Jan-2016
Sep-2016
May-2017
NSW
Vic
Qld
SA
WA/5
Tas
NT

Exploration entering a new cycle

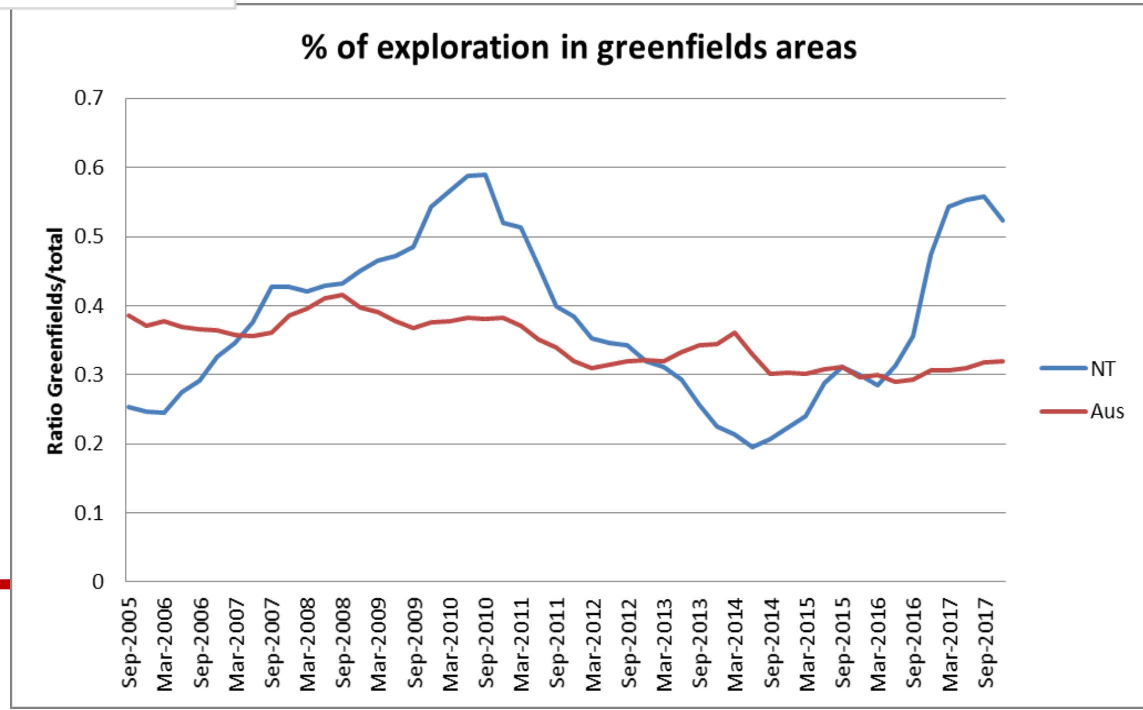


Greenfields exploration in the NT has doubled since 2014

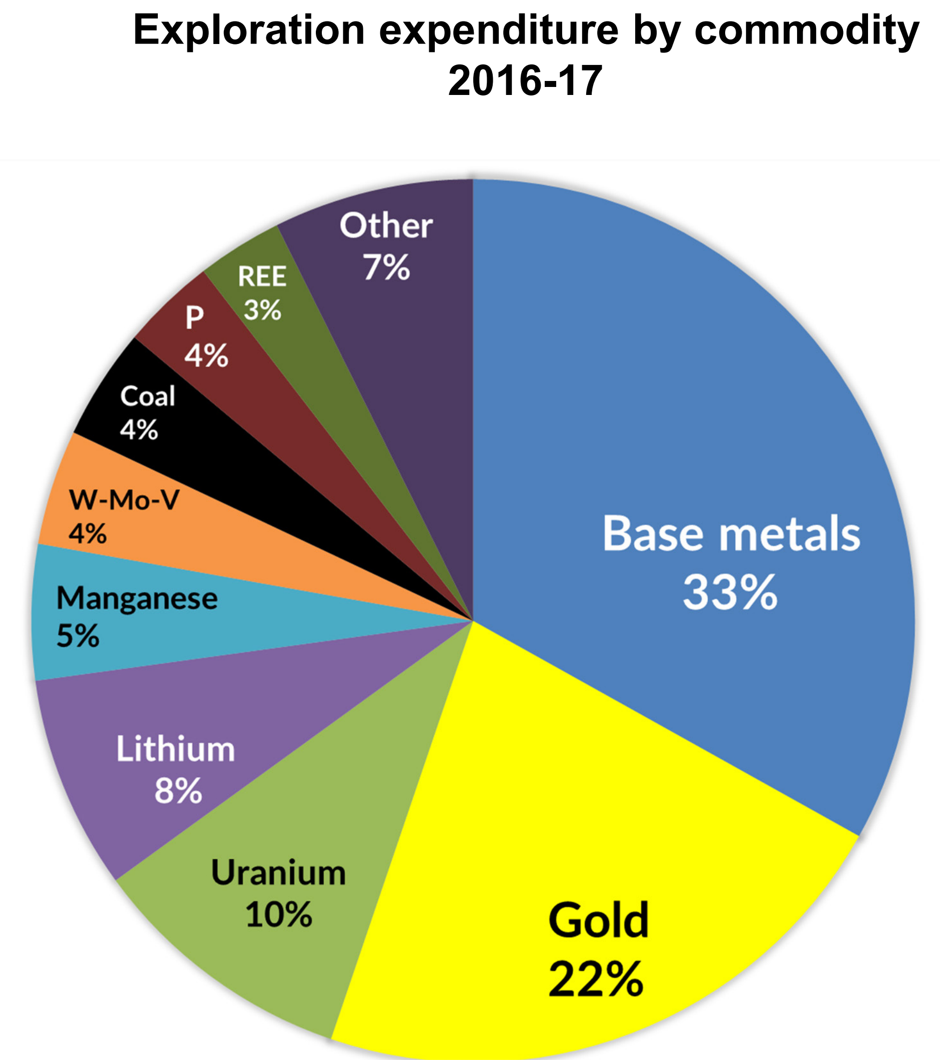
NT now has ~10% of Australian greenfields exploration

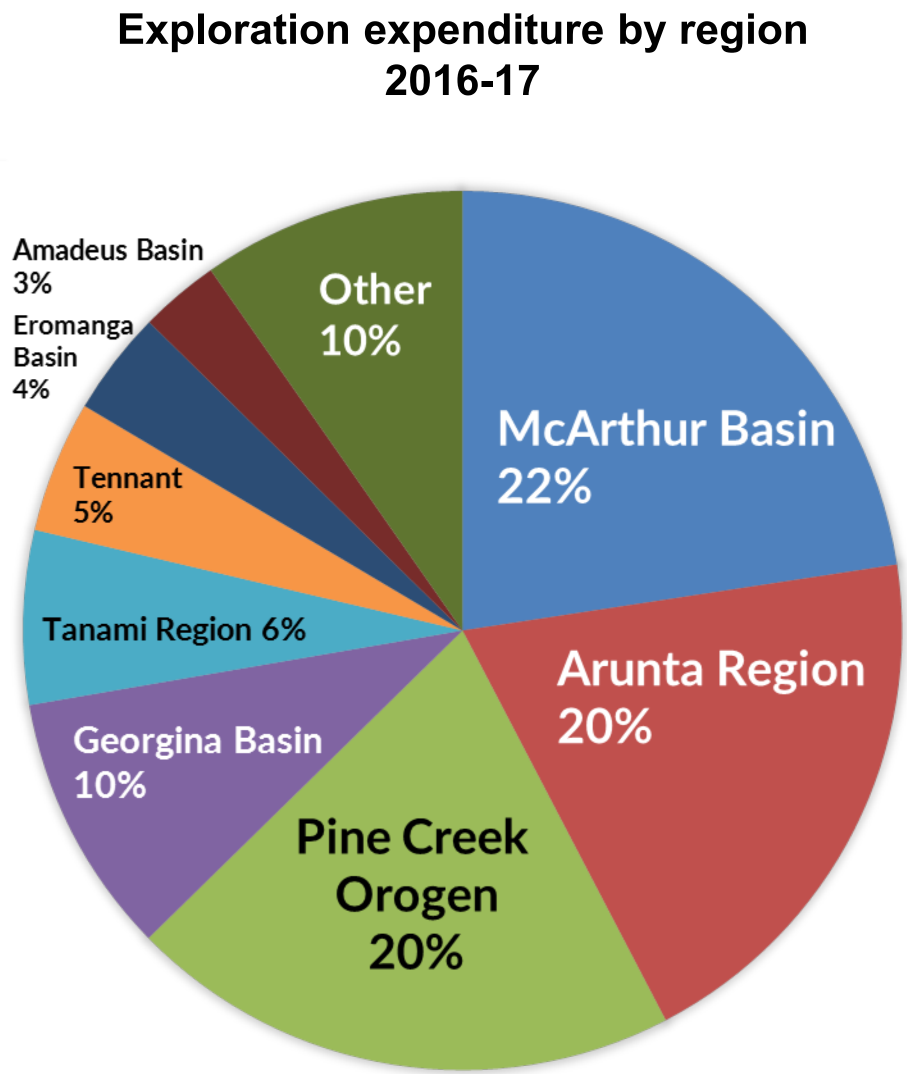
Proportion of exploration classified greenfields by ABS is well above Australian average

'Brownfields' – exploration delineating or proving up an existing deposit (Inferred Resource or higher)



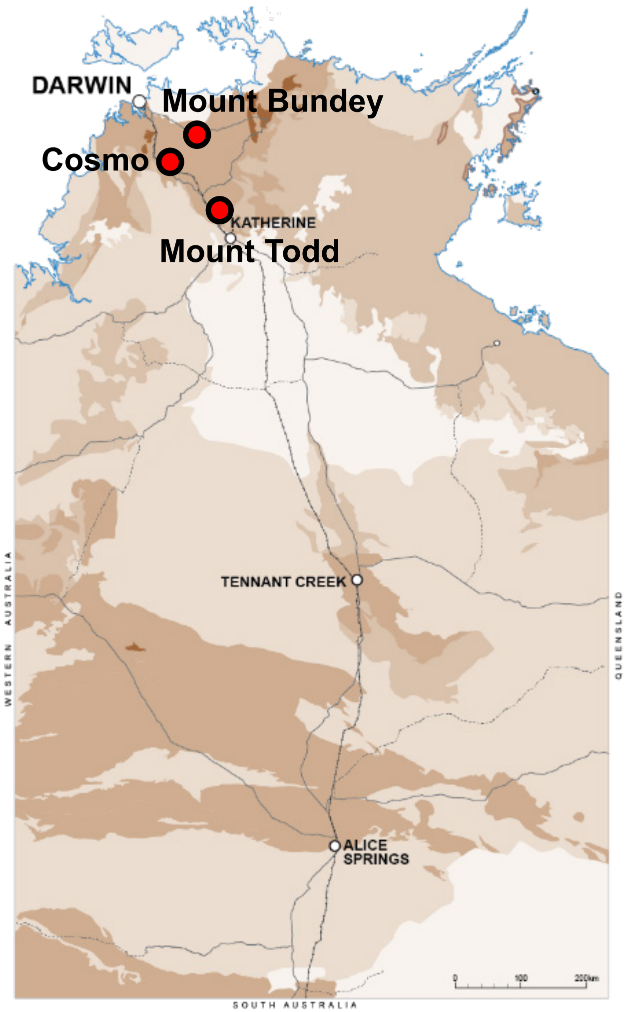
AUSTRALIA'S NORTHERN TERRITORY


Exploration expenditure by commodity
2016-17
Base metals 33%
Gold 22%
Uranium 10%
Lithium 8%
Manganese 5%
W-Mo-V 4%
Coal 4%
P 4%
REE 3%
Other 7%

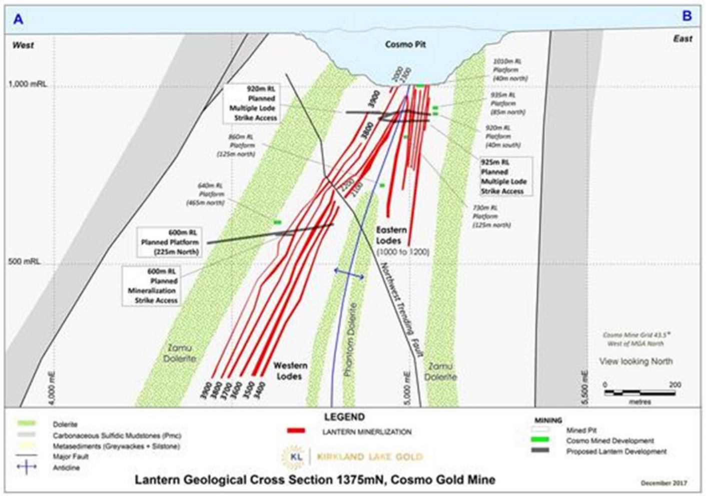

Exploration expenditure by region
2016-17
McArthur Basin 22%
Arunta Region 20%
Pine Creek Orogen 20%
Georgina Basin 10%
Tanami Region 6%
Tennant 5%
Eromanga Basin 4%
Amadeus Basin 3%
Other 10%

Gold (Pine Creek)

Au



Kirkland Lake Gold - *Cosmo*
Suspension of mining at Cosmo Deeps
High-grade results at *Lantern:*
0.3m @ 4750 g/t Au
4.5m @ 119 g/t Au
18.7m @ 40.8 g/t Au



Primary Gold – *Mount Bundey*
Substantial increase in resource: 54.1 Mt at 1.03g/t Au

Ark Mines
Plans for 450 ktpa gold plant at ***Union Extended***

Vista Gold – *Mount Todd*
Revised PFS released; environmental assement complete

Gold (Tanami-Arunta)

Au

Newmont Tanami Operations:
- Now a 14 million ounce deposit
- $150 million expansion opened in 2017
- Approvals commenced for 439 km gas pipeline from Amadeus pipeline to Dead Bullock Soak

Northern Star Resources:
- Continuing to expand footprint in the Tanami
- Major mag-rad geophysical survey in 2017
- Drilling programs planned for 2018

ABM Resources: Aggressive exploration at ***Suplejack*** project and at ***Bluebush***
Upgraded resource for Suplejack
Regional aircore drilling at Bluebush in 2017 to be followed up in 2019

Gold-copper (Tennant Ck) Au Cu

Emmerson Resources
Small-scale gold mining commenced at **Edna Beryl**
Further small-scale developments being progressed at **Black Snake** and **Chariot**

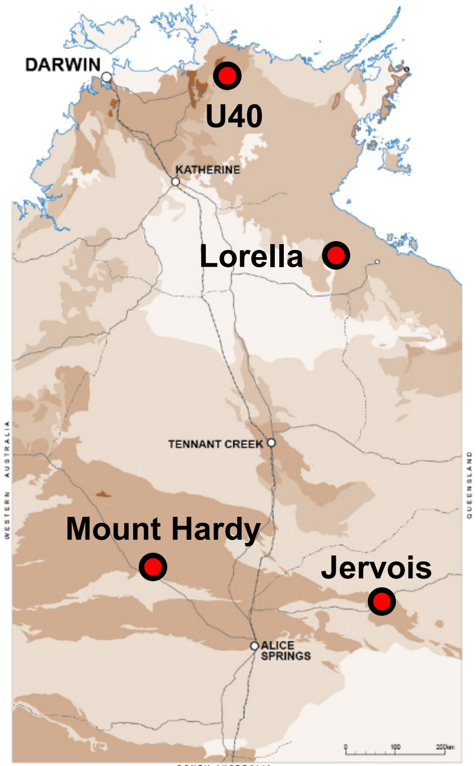
Emmerson-Evolution JV restructured:
- Evolution 100% owners of Cu-rich deposits in ***Gecko-Goanna*** corridor (drilling in 2017: 6m @ 4.0% Cu)
- Emmerson regain 100% of remaining 94% of area containing gold-dominant deposits

Chalice Gold Mines – ***Parakeet*** (West Warrego)
- 8m @ 1.74% Cu, 0.42 g/t Au

Opening of Edna Beryl mine, July 2017

Copper (± Au, Ag, Zn)

Cu



Pacifico Minerals – *Lorella*
Exploration Target of 5-10 Mt @ 0.8-1.1% Cu

Todd River Resources – *Mount Hardy*
7m @ 1.77% Cu, 0.43% Zn, 17.7 g/t Ag
10.5m @ 1.10% Cu, 4.15% Zn, 0.65% Pb

KGL Resources – *Jervois*
High grade copper orebodies in magnetite-garnet host
Reward:

- 8.16m @ 5.03% Cu, 3.35 g/t Au, 35.9 g/t Ag
- 11.63m @ 4.2% Cu, 0.81% Pb, 1.07% Zn, 86 g/t Ag, 0.65 g/t Au

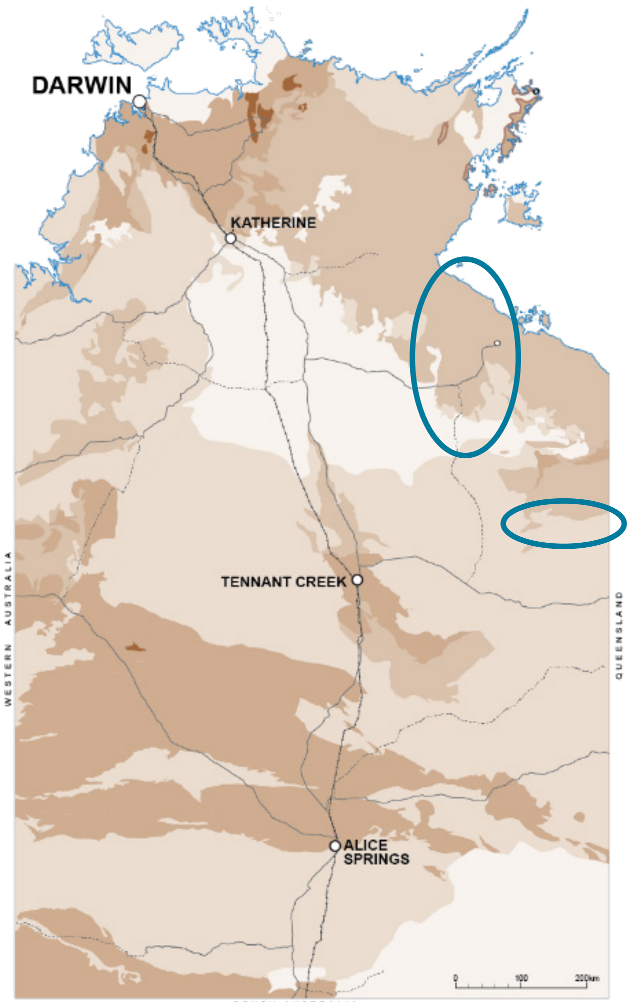
Rockface:

- 8.24m @ 9.21% Cu, 38.1 g/t Ag, 0.29 g/t Au

DevEx Resources – new focus on copper, gold and base metals in western Arnhem land (eg ***U40***)

Zinc (McArthur Basin-Lawn Hill)

Zn



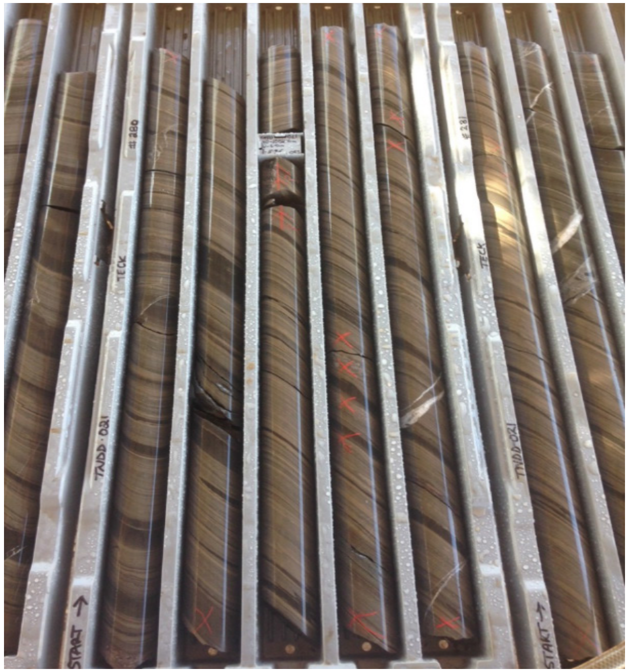
Teck

- Further drilling at ***Teena***
- Co-funded drilling at Yalco with NTGS

MMG

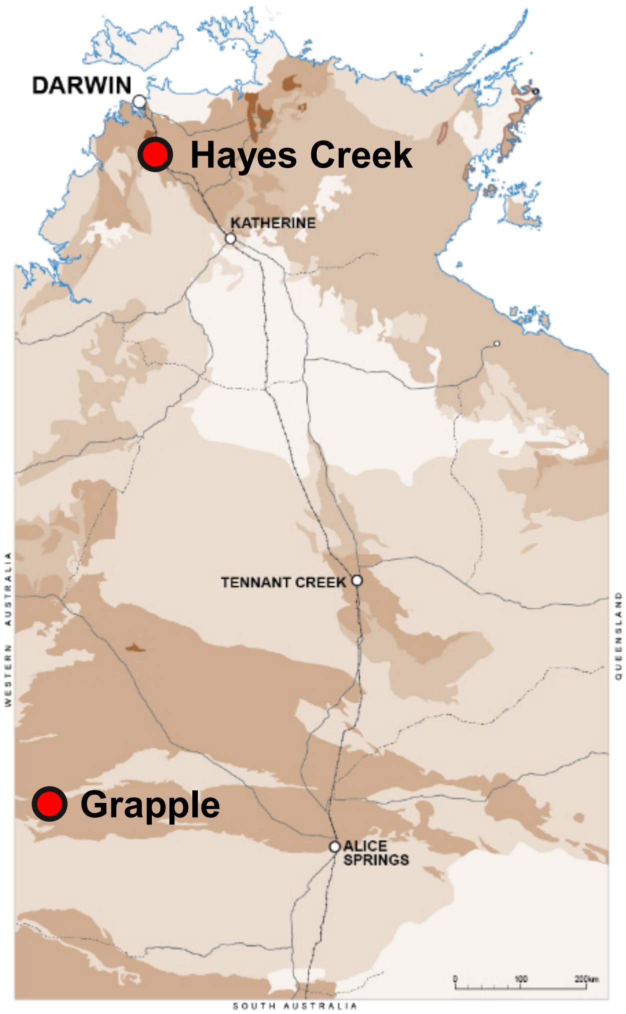
- Continued to expand footprint in greater McArthur Basin
- Significant drilling in 2017
- New JV with Red Metal at Mallapunyah

Teena
58 Mt at 11.1% Zn, 1.6% Pb



Polymetallic

Au-Ag-Zn-Cu



PNX Metals - *Hayes Creek project*

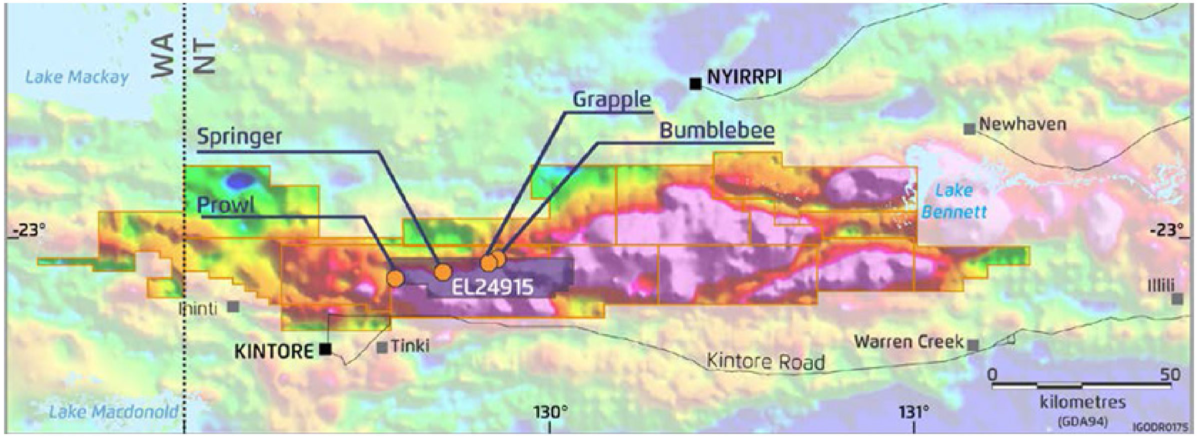
4.1 Mt @ 4.35% Zn, 1.81 g/t Au, 124 g/t Ag, 0.91% Pb, and 0.25% Cu

- Pre-feasibility study completed

Independence Group, ABM Resources - *Grapple*

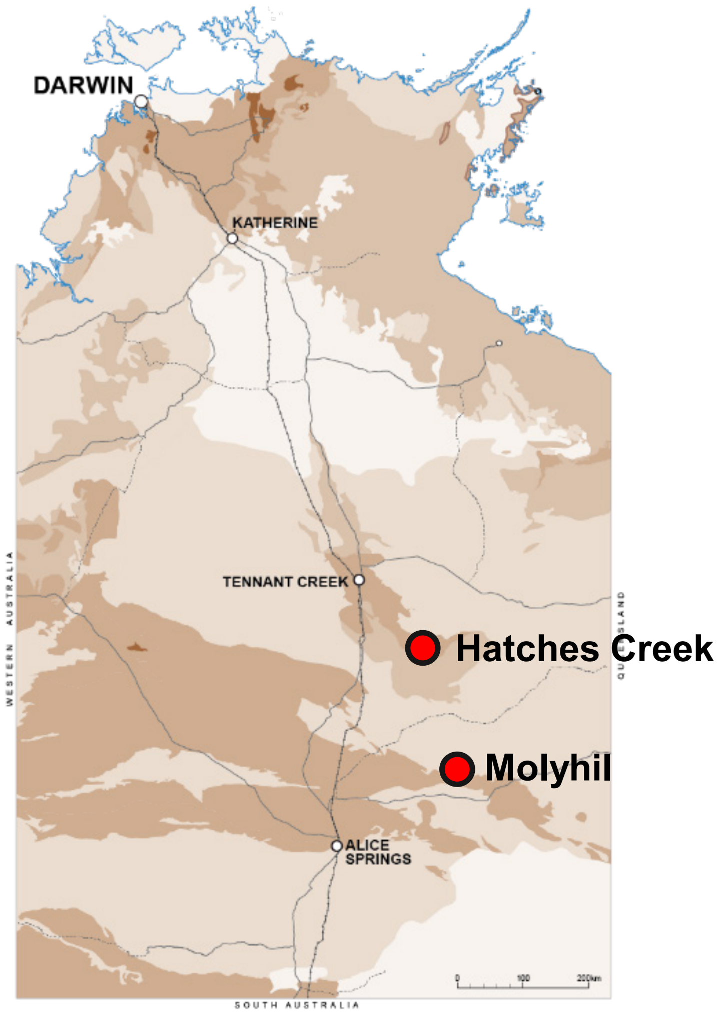
2016: 9 m @ 1.8g/t Au, 3.26% Cu, 49.1g/t Ag, 3.63% Zn, 1.09% Pb and 0.26% Co

2017 : 11.4m @ 7.9 g/t Au, 20.7 g/t Ag, 0.8% Cu, 1.1% Zn, 0.5% Pb and 0.1% Co



Tungsten

W



GWR Group – Hatches Creek W-Cu-Au

- Historic Hatches Creek tungsten field
- 33 holes drilled for 3,388m in September 2017
- Maiden Resource to be prepared early 2018

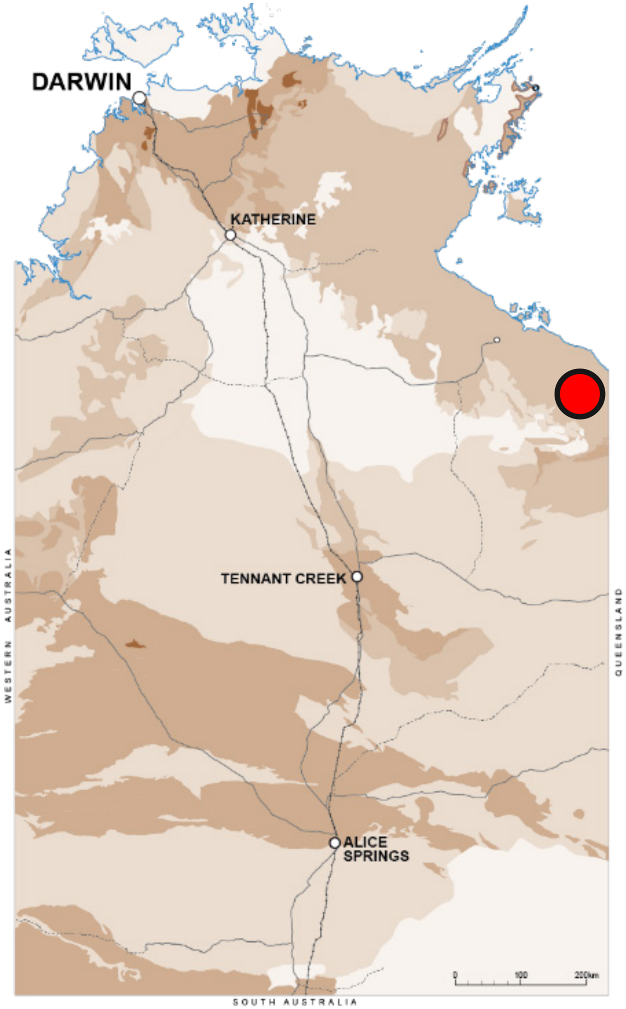
69 m at 0.23% WO_3, 0.34% Cu
9m at 2.03% WO_3, 0.18% Cu, 0.05% Mo

Thor Mining – Molyhil W-Mo

- Upgraded Ore Reserve
- Proposed mine life extended to 7 years

Cobalt

Co



Significant cobalt as a potential by-product at ***Browns***

Northern Cobalt – *Wollogorang project*

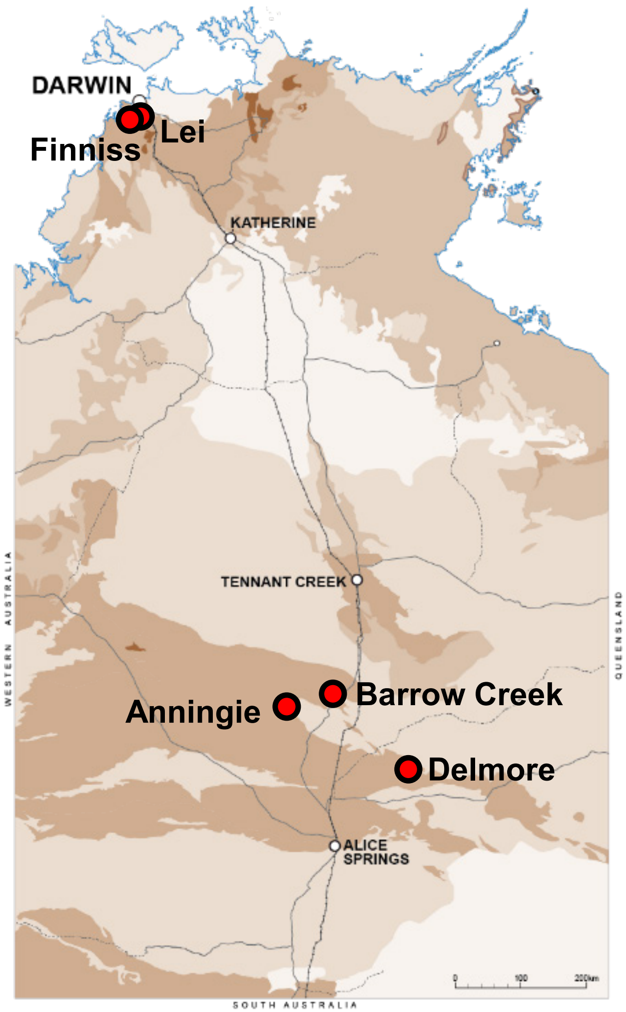
- Sediment hosted siegenite in McArthur Basin
- 137 holes drilled for 11,836m in late 2017
- Individual metre grades of >2% Co
- 20m @ 0.31% Co

Stanton resource (prior to drilling)

- 500,000t @ 0.17% Co, 0.09% Ni, 0.11% Cu

Lithium

Li



Core Exploration – *Finniss project*

Grants - Maiden Resource 1.8 Mt @ 1.5% Li_2O
Notice of Intent Submitted

BP33 - Resource drilling campaign
54m @ 1.42% Li_2O

Carlton - 10m @1.6% Li_2O

Hang Gong - 5.5m @ 2.13% Li_2O

Booths - 3m @ 1.6% Li_2O

Sandras - 7m @ 2.13% Li_2O

Kingston Resources – *Lei*
9m @ 1.69% Li2O

Lithium potential of Arunta Region:

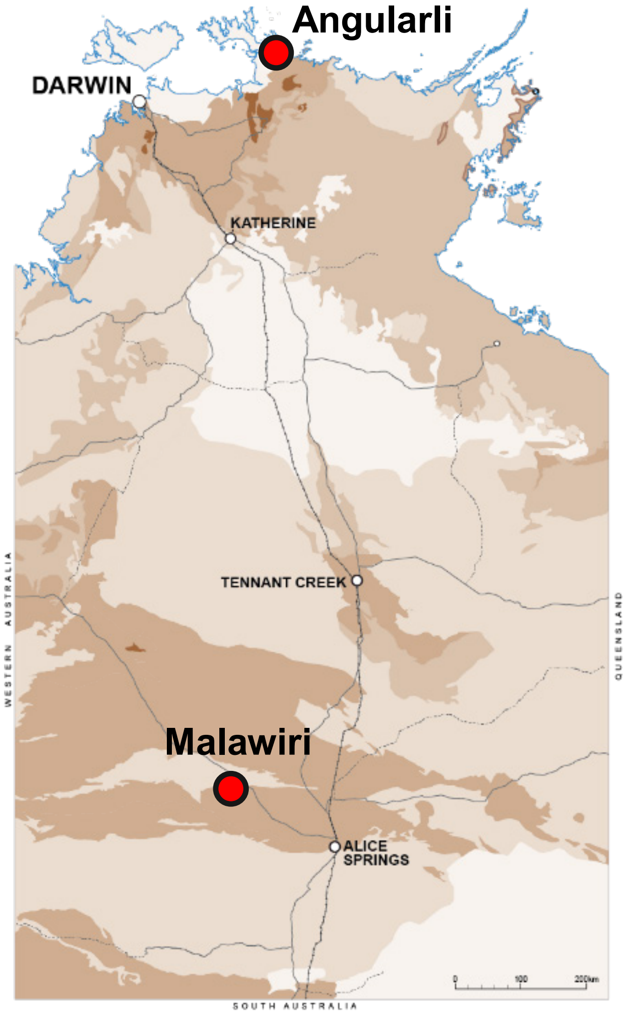
Kingston Resources – Delmore and Spotted Wonder

Todd River Resources – Bismark (Anningie Tin Field)

Core Exploration – Barrow Creek and Anningie fields

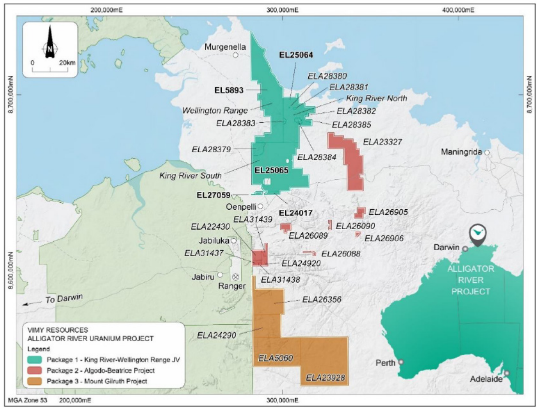
Uranium

U



Vimy Resources - purchase of Cameco's Alligator Rivers tenements

- Resource estimation to commence at ***Angularli***, plus further drilling
- Drilling planned at ***Such Wow*** prospect
- Rio Tinto retain 25% of JV
- Cameco retain conditional buyback option

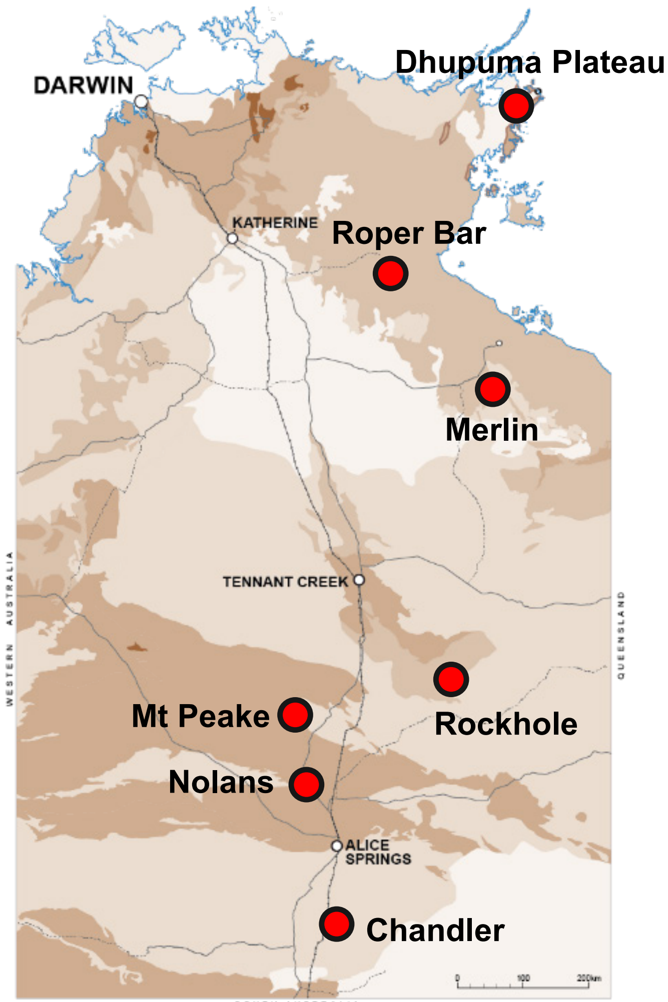


Energy Metals – maiden resource for ***Malawiri***

421,000t @ 0.13% U_3O_8

Sandstone-hosted mineralisation similar to Bigrlyi

Other minerals



Bauxite – Gulkula Mining Co. mine and training centre opened at Dhupuma Plateau near Gove – ramping up to 500ktpa

Iron ore – Britmar authorised to recommence activities at Roper Bar, including shipping of stockpiles

Diamonds – small scale production underway at Merlin

Phosphate – Verdant Minerals drilling at Rockhole prospect: 6m @ 35.6% P2O5

Progress through environmental approvals process for **Tellus** (Chandler salt), **TNG** (Mount Peake vanadium-titanium-iron) and **Arafura** (Nolans rare earths)

Petroleum

Exploration in **Beetaloo Sub-basin** on hold while moratorium is in place

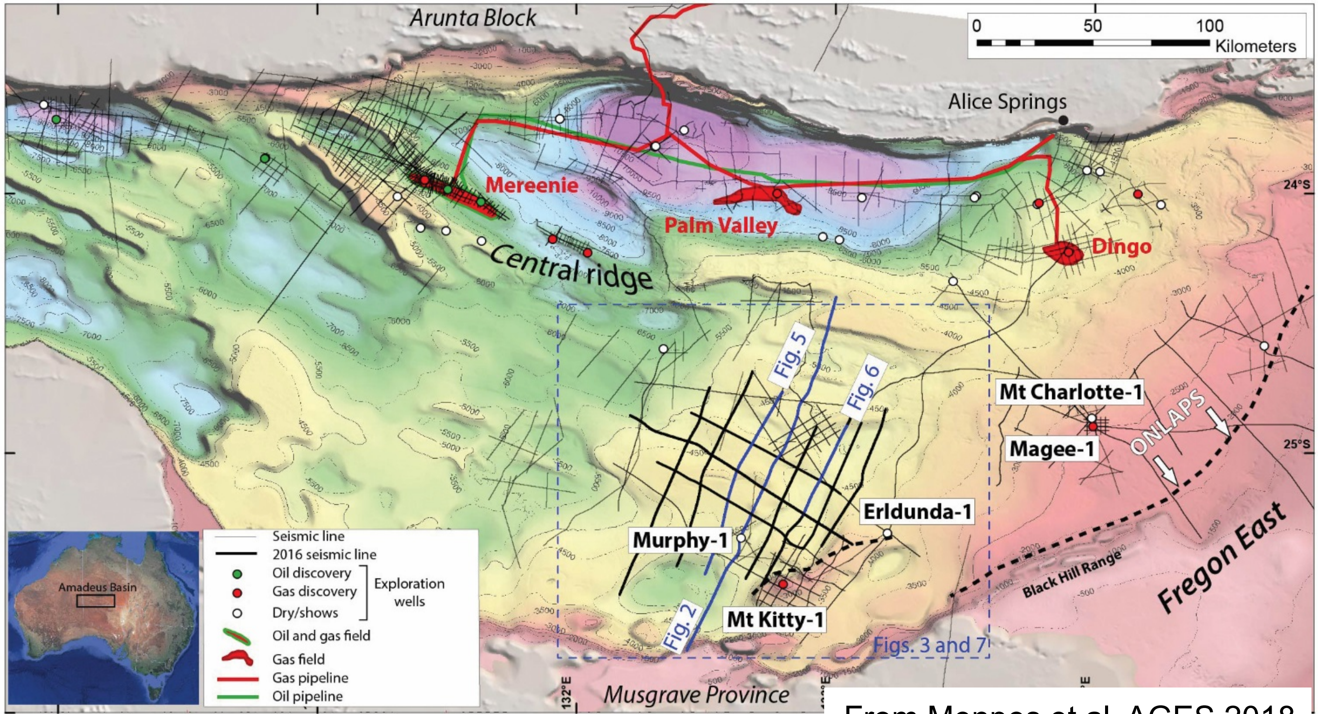
Northern Gas Pipeline opening up new markets for central Australian gas

Central Petroleum

- $12M upgrade of Mereenie gas processing plant
- Increase gas sales from 15TJ/d to 58TJ/d
- Drilling planned at tripling reserves
- Drilling at Ooraminna, restart of production at Palm Valley in 2018

Santos (-Central)

- 932 km of 2D seismic completed
- Follow-up seismic in 2018
- Drill testing in 2019



From Menpes et al, AGES 2018

AUSTRALIA'S NORTHERN TERRITORY

Looking ahead

Every reason to expect a strong year for exploration in 2018

Outlook is very positive for gold, base metals and battery metals in the NT

A number of large projects approaching FID

Release of Draft Report of Hydraulic Fracturing Inquiry in late March

Unprecedented levels of new geoscience being released – we have only scratched the surface of the Territory's potential

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