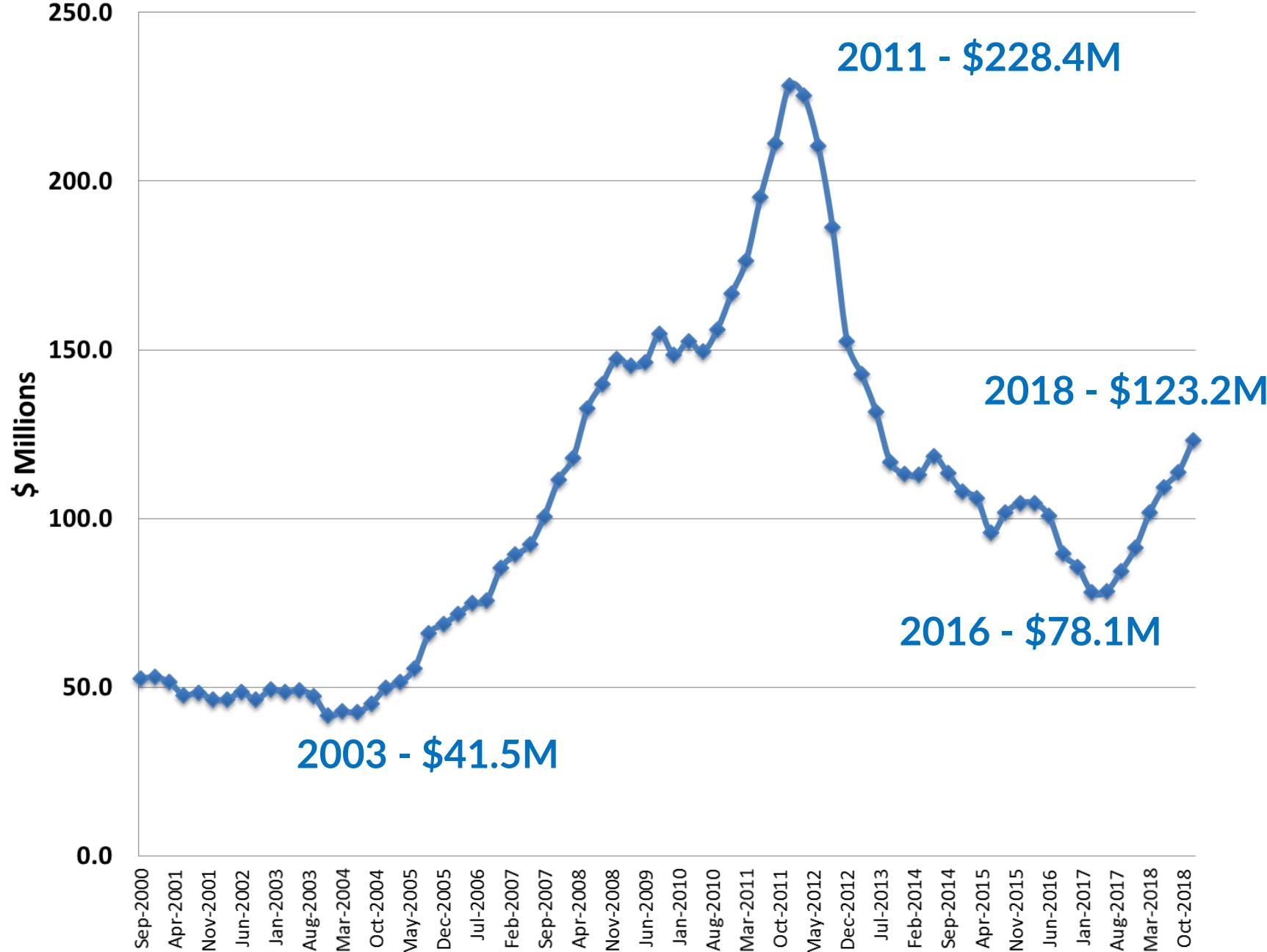


# Overview of mineral and petroleum exploration and production in 2018

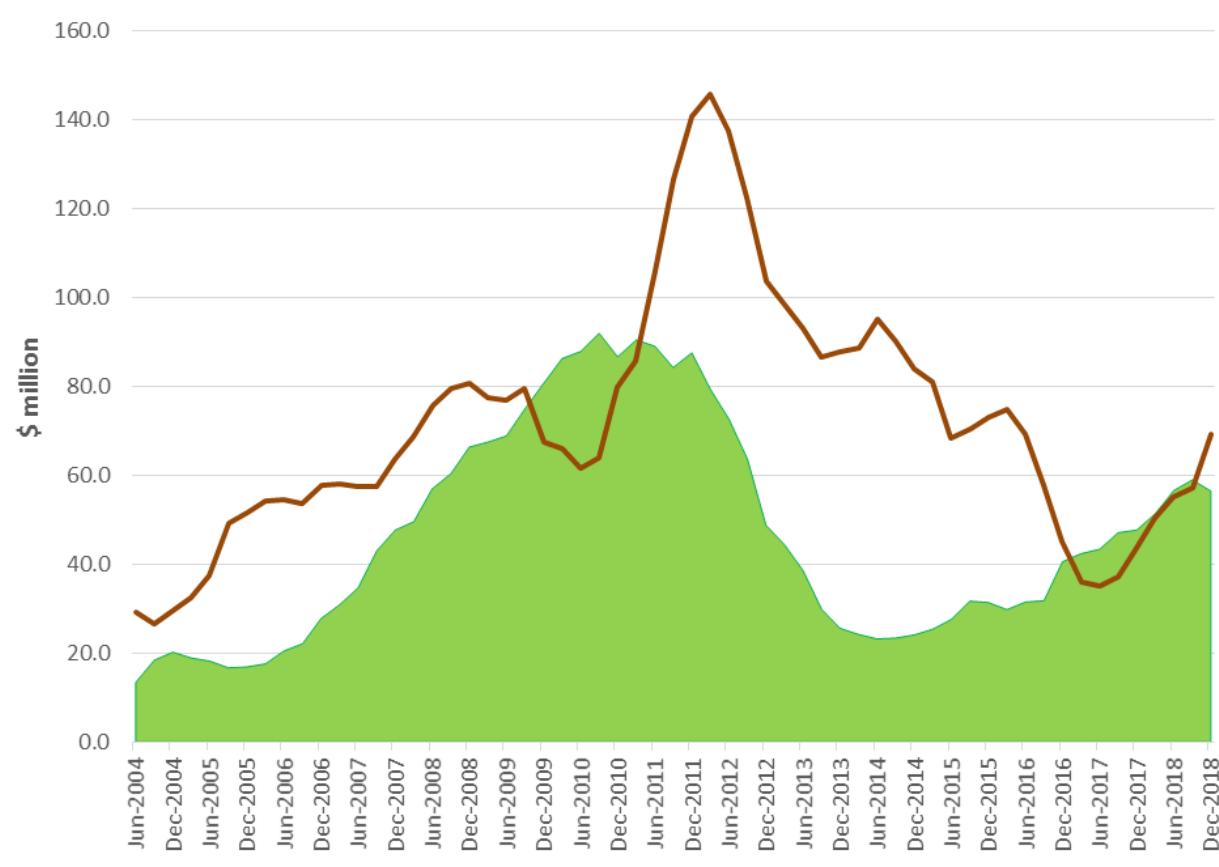


Ian Scrimgeour

**NT mineral exploration expenditure since 2000**  
Annual exploration calculated quarterly



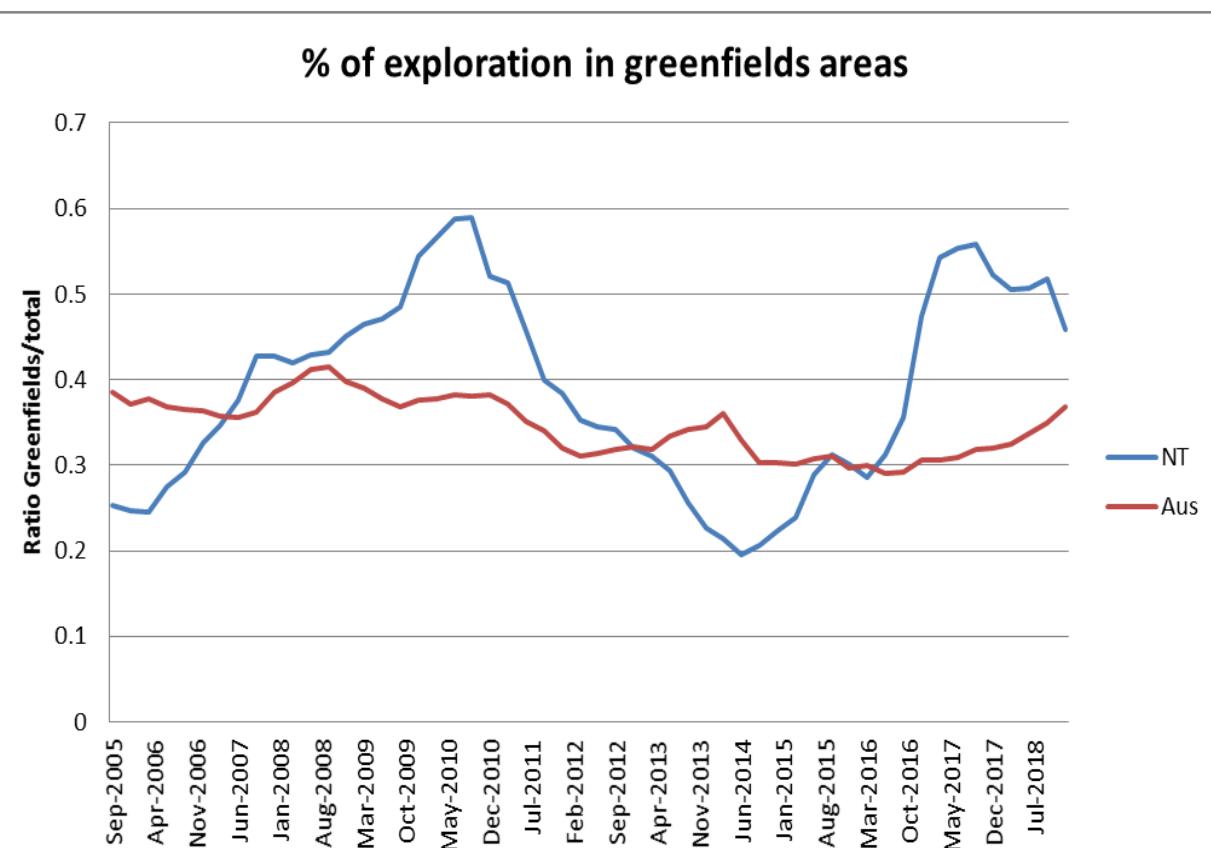
## Greenfields vs brownfields expenditure - ABS



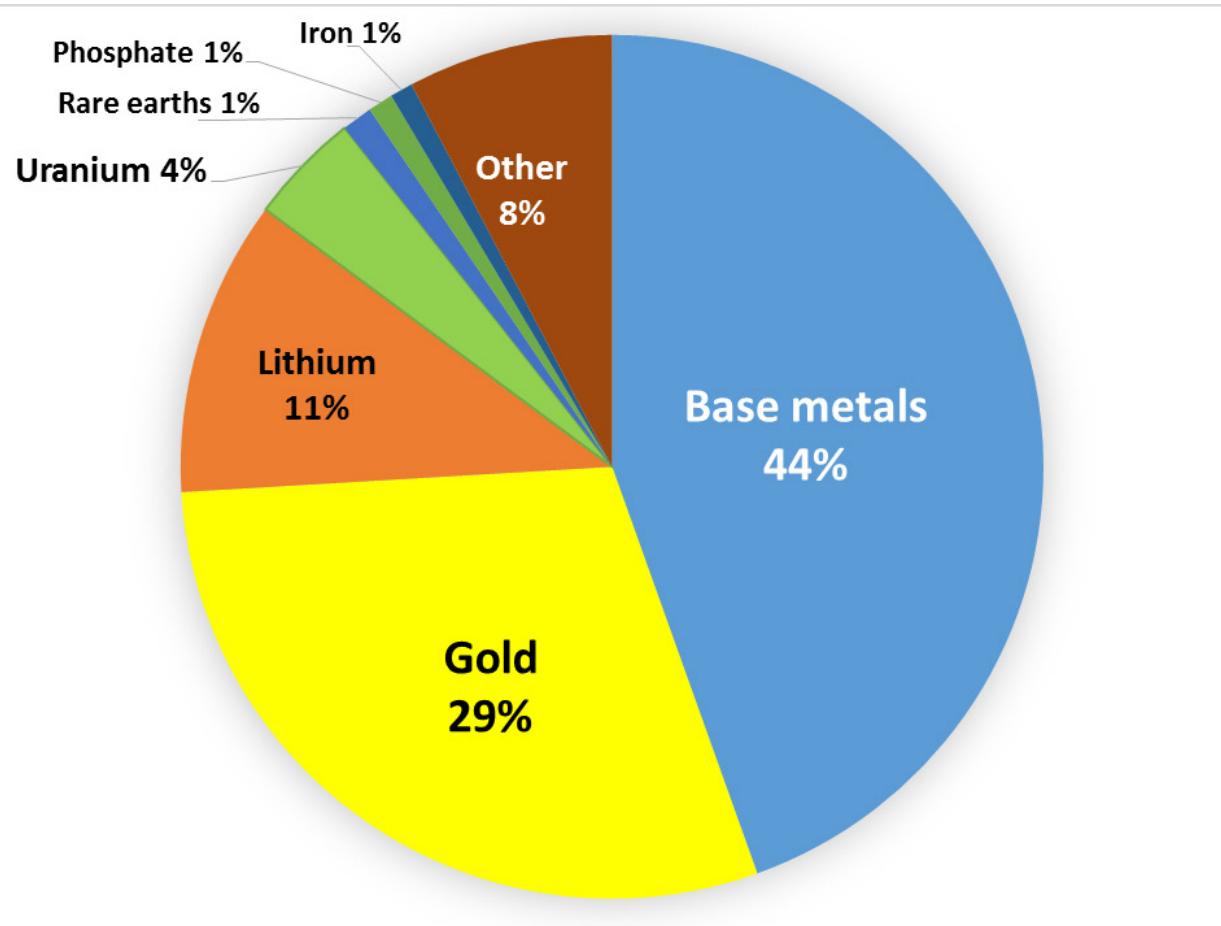
Proportion of exploration classified greenfields by ABS is well above Australian average

Greenfields exploration in the NT has doubled since 2014

Brownfields exploration has rebounded since mid-2017

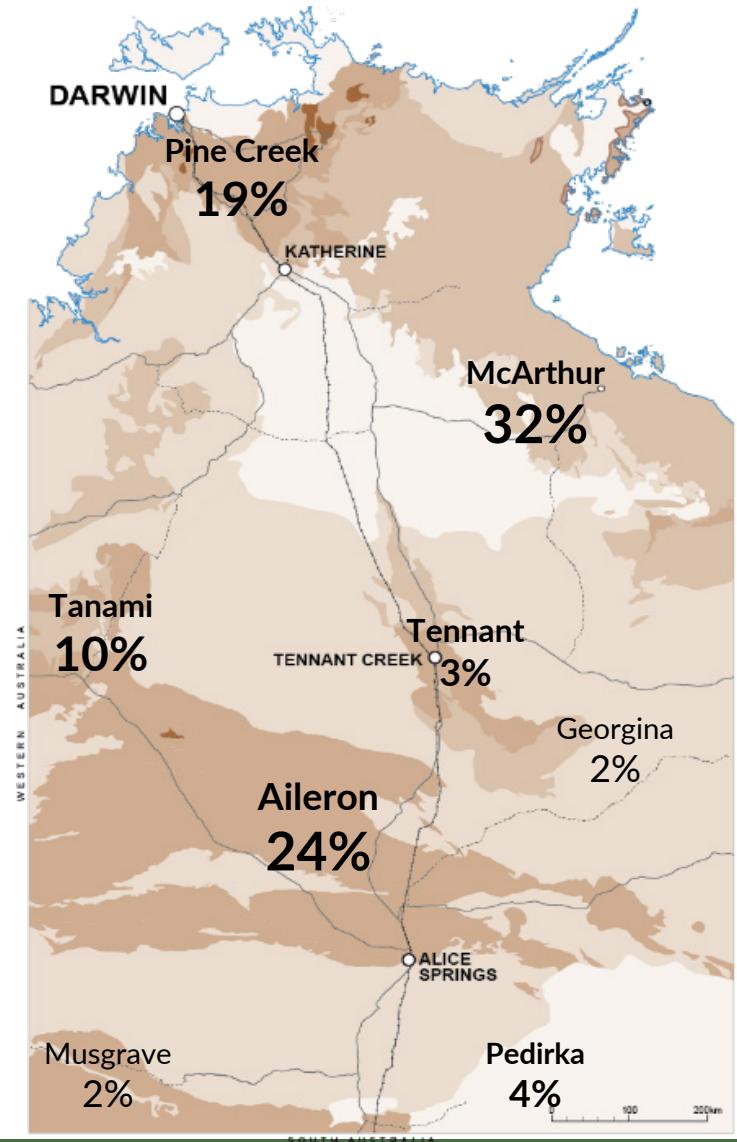


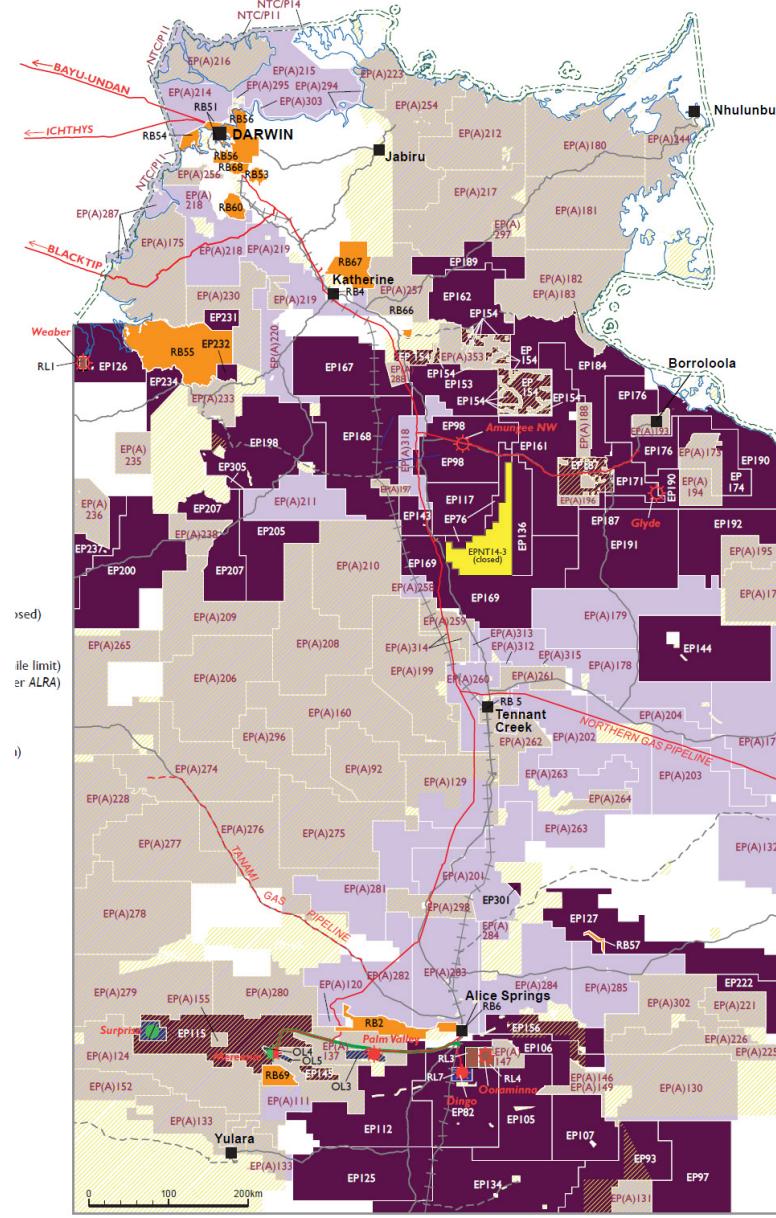
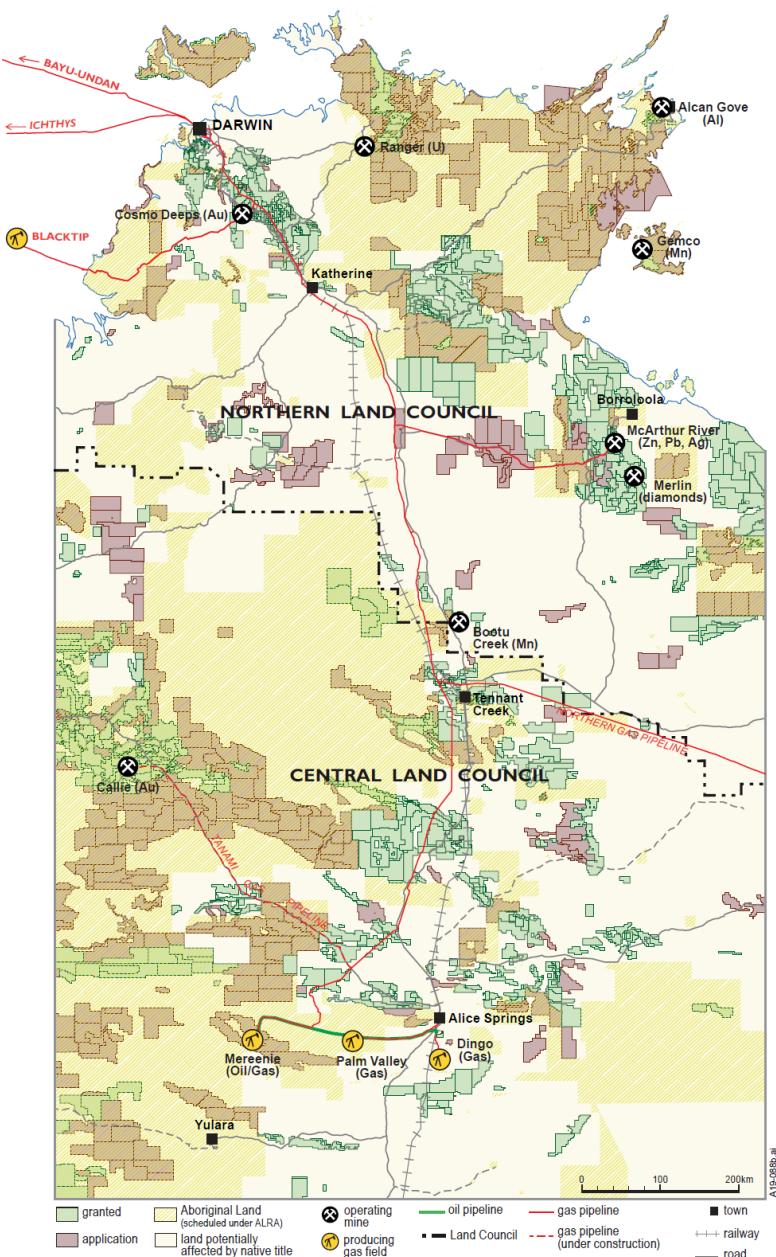
## Mineral exploration expenditure by commodity reported to DPIR in 2018

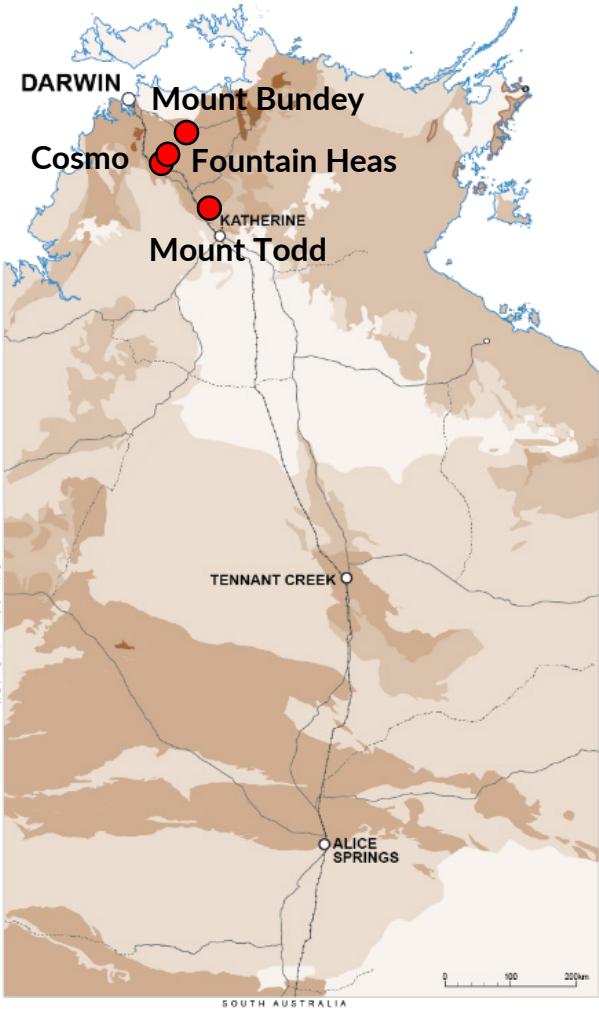


Tangible on-ground expenditure only (excludes overheads, desktop and feasibility studies)

## Mineral exploration expenditure by region reported to DPIR in 2018







# Gold (Pine Creek)

Au

## Kirkland Lake Gold - Cosmo

- Underground development and exploration at *Lantern*
- High grade gold intersected at depth at *Union Reefs* (1.1m @ 95.0 g/t Au)

## Bacchus Resources – Woolwonga

Substantial drilling during 2018

## Primary Gold – Mount Bundey

Acquisition by Hanking Australia Pty Ltd

## PNX Metals –

*Fountain Head*: Banner – 6m @ 39.5 g/t Au; Tally Ho – 6.67m @ 11.35 g/t Au

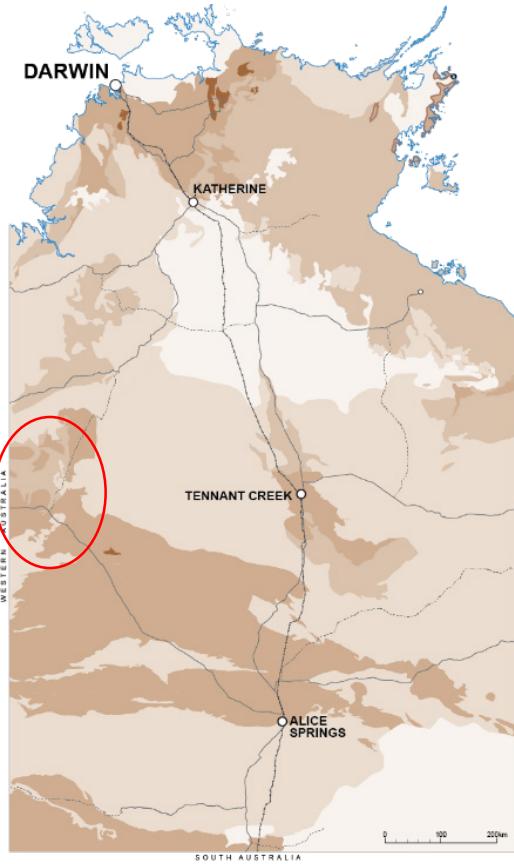
## Vista Gold – Mount Todd

DFS well advanced, environmental assessment process complete



# Gold (Tanami)

Au



## Newmont Tanami Operations:

- Pre-mining endowment now 14.2 Moz, 4.1 Moz resources added from 2012-2017
- 439 km gas pipeline from Amadeus pipeline to Dead Bullock Soak completed



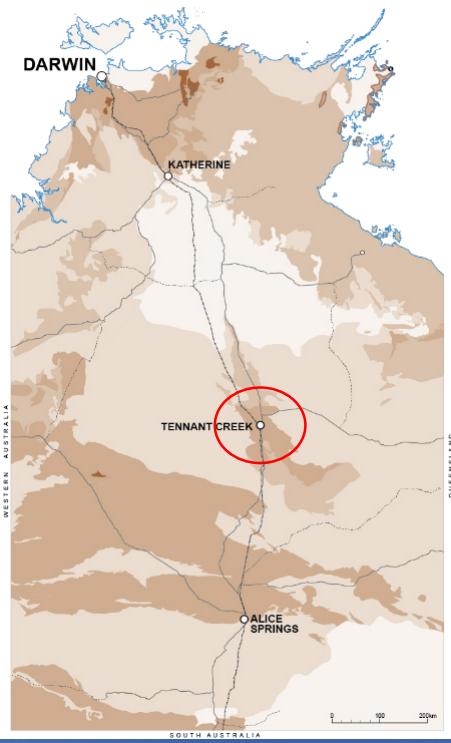
**Newcrest Mining:** Major new entrant into Tanami in 2018, through *Euro JV* with Prodigy Gold and 100% tenure

## Northern Star Resources:

- Substantial footprint in the Tanami
- Aircore and RC drilling at numerous prospects in CTP and 100% owned tenure in 2018
- High-grade intersections at *Hurricane-Repulse* (3m @ 20.47 g/t Au, 19m @ 4.64 g/t Au) and *Jims* (26m @ 3.88 g/t Au)

## Prodigy Gold:

- Aggressive greenfields exploration at *Capstan* and *Galaxy*
- Upgraded resource for *Suplejack*



# Gold-copper (Tennant Ck)

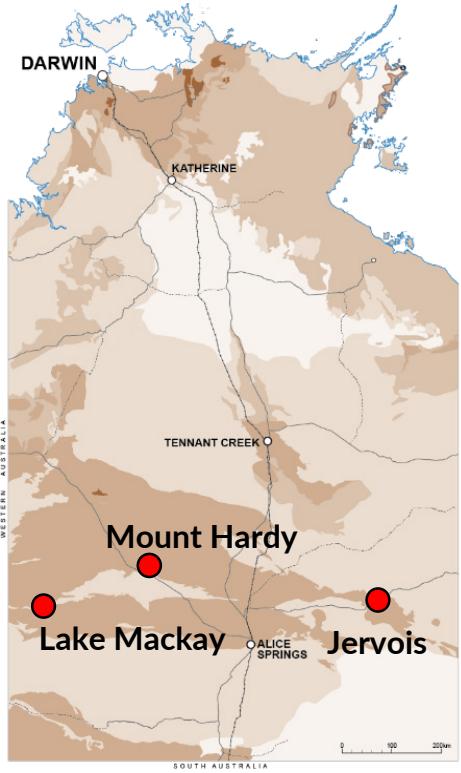
Au Cu

- High-grade cobalt confirmed at Jasper Hills in Northern Corridor  
**19m @ 0.47% Co, 11.4% Cu, 0.56 g/t Au**
- Emmerson-Evolution JV restructured in early 2018:
  - Evolution taking 100% ownership of copper-rich Gecko mine corridor
  - Emmerson regained 100% of remainder
- Strategic alliance between Emmerson and Territory Resources:
  - JV and farm-in over ERM's Southern Leases, plus Nobles Nob and Juno
  - Central Processing Facility at Warrego
- Territory Resources purchased Edna Beryl mine to recommence mining
- High grade gold-copper results from Emmerson at Mauretania and The Susan
  - Mauretania: **22m @ 36 g/t Au incl. 6m @ 122 g/t Au;**  
**26m @ 2.06% Cu, 0.11% Co**
  - The Susan: **11m @ 48 g/t Au**



# Aileron province polymetallic mineralisation

Cu Zn Au Ag



## Todd River Resources – *Mount Hardy*

New zinc-rich discovery at EM1

35.54m @ 14.7% Zn, 2.92% Pb and 0.91% Cu and 59 g/t Ag, incl:  
11.29m @ 22.9% Zn, 3.35% Pb, 1.00% Cu, 58g/t Ag

## KGL Resources – *Jervois*

25.8 Mt @ 1.49% Cu, 27.1 g/t Ag

Commencement of construction targeted for late 2019

Further high-grade resource growth at Reward Deeps and Rockface

- Reward Deeps: 4.52 m @ 5.73% Cu, 109.20 g/t Ag and 1.21 g/t Au
- Rockface: 6.16m @ 7.84% Cu, 37.7 g/t Ag, 0.66 g/t Au

## Independence Group/Prodigy Gold – *Lake Mackay*

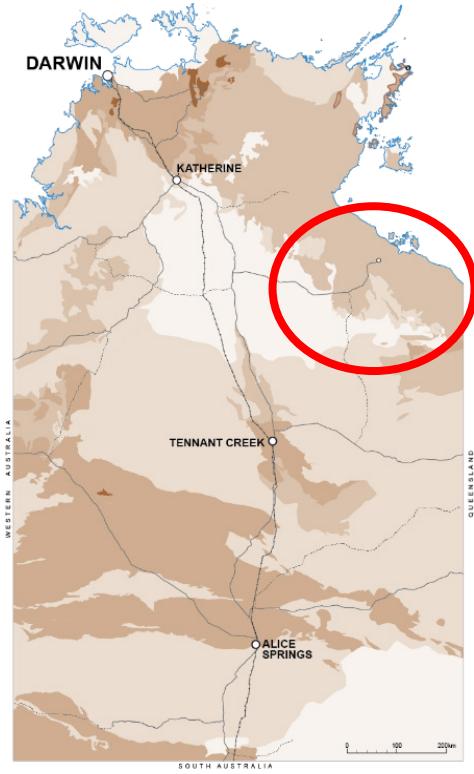
Regional SPECTREM surveys and soil sampling across large greenfields area

9600m of RC drilling planned in first half of 2019



# McArthur Basin base metals and cobalt

Zn Co Cu



## Northern Cobalt - Wollogorang project

- Sediment hosted siegenite in McArthur Basin
- **Stanton:** 942,000t @ 0.13% Co, 0.06% Ni, 0.12% Cu
- **Running Creek:** 55m @ 0.78% Cu incl. 13m @ 2.01% Cu
- Newly identified copper mineralisation at **GregJo**

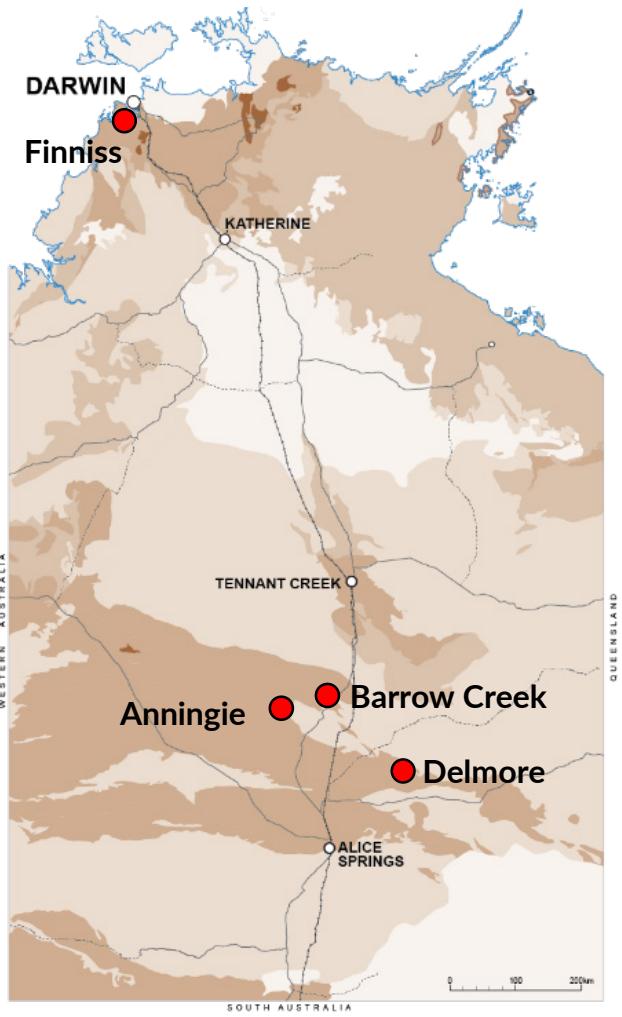
Drilling programs by **Pacifico Minerals (Lorella)**, **Todd River Resources (McArthur)**, **Marindi Metals/JOGMEC (Carinbirini)**, **MMG** (incl. Cow Lagoon)



Teck Resources: Teena  
58 Mt at 11.1% Zn, 1.6% Pb

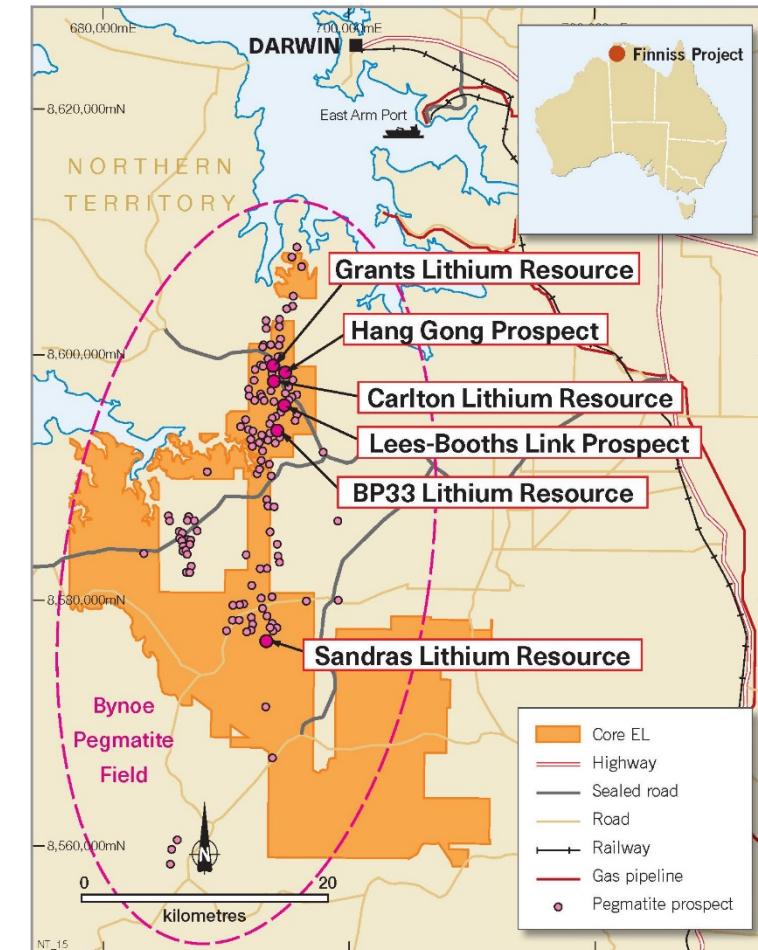


# Lithium

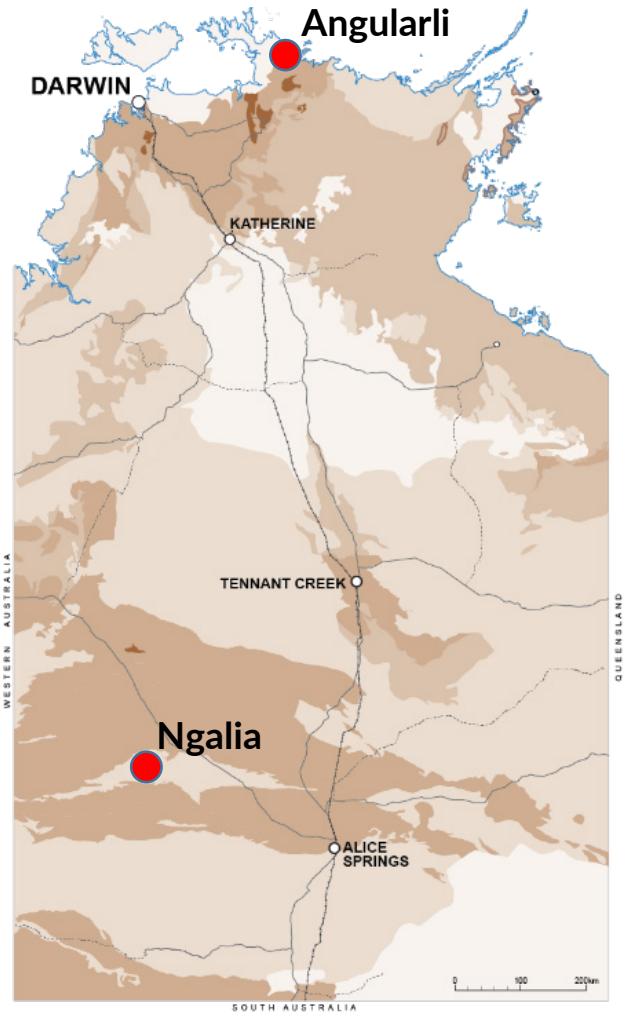


**Core Exploration – Finniss project**  
Combined resource: 8.85 Mt @ 1.3% Li<sub>2</sub>O

- Four resources now defined (Grants, BP33, Carlton, Sandras)
- Discovery and resource growth continuing at multiple prospects
- Grants resource passing through development approvals – investment decision planned for 2019



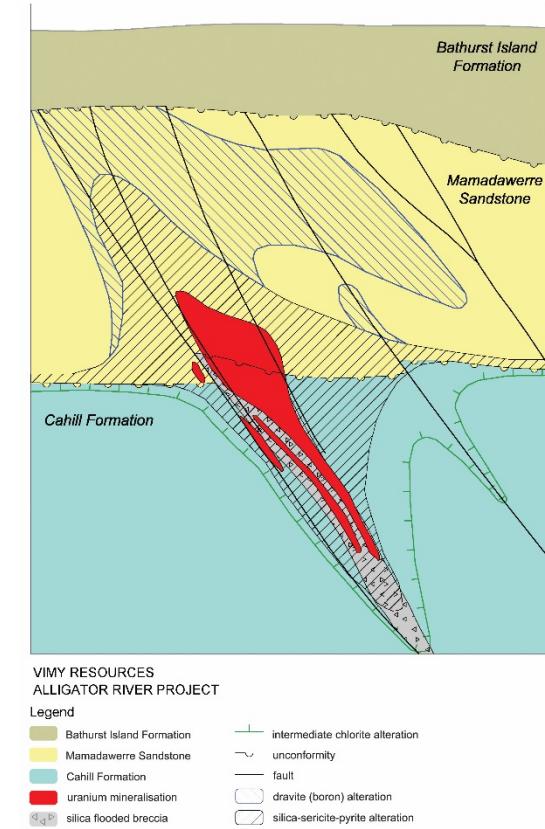
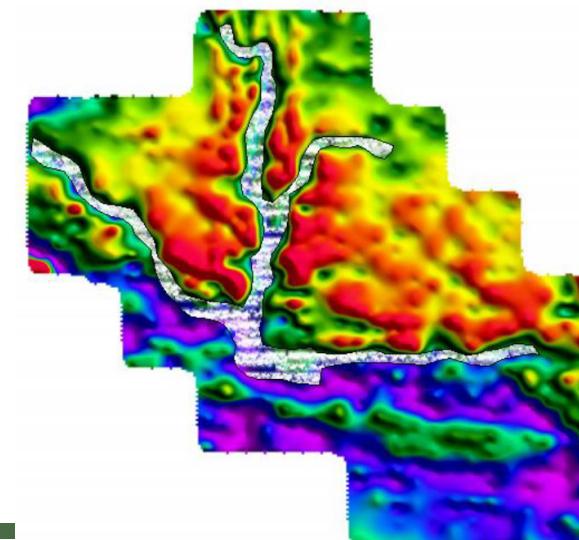
# Uranium



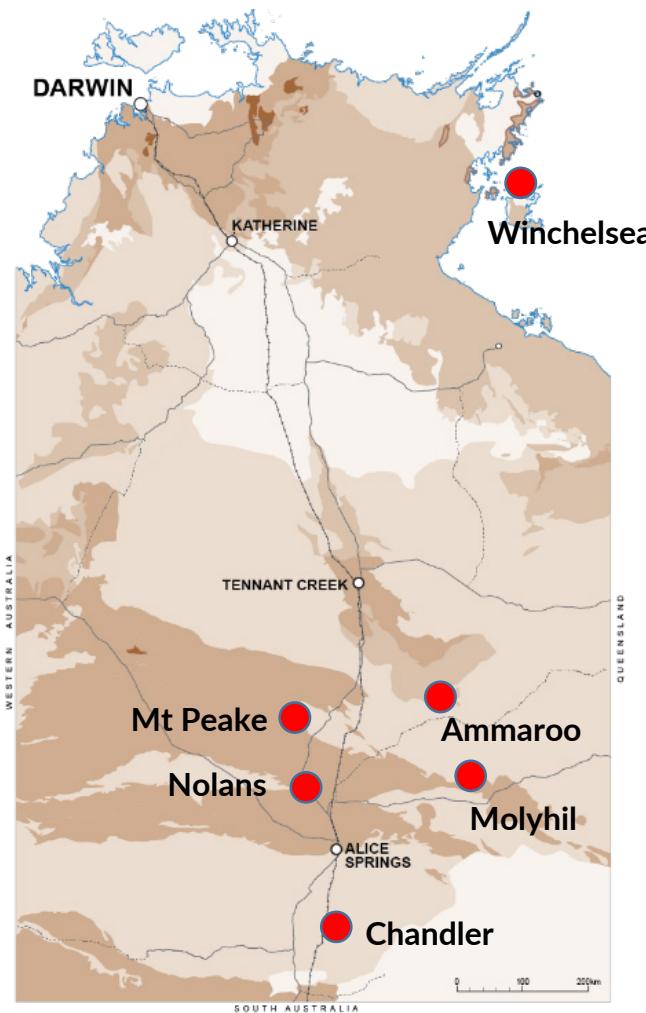
## Vimy Resources Ltd

- King River and Wellington Range projects acquired from Cameco in March 2018 (JV - Rio Tinto 25%)
- Angularli maiden resource: **0.91Mt @ 1.3% U<sub>3</sub>O<sub>8</sub>** for 26Mlbs U<sub>3</sub>O<sub>8</sub>; best drill intercept of 22.9m @ 4.63% U<sub>3</sub>O<sub>8</sub> from 244.6m
- Scoping study released on Angularli development
- RC drill program in 2018 at Angularli and Such Wow

**Eclipse Metals –**  
identification of  
paleochannels through  
detailed gravity in Ngalia  
Basin



# Other minerals



**Tungsten** – Updated DFS for Molyhil, acquisition of share of Bonya JV

**Rare earths** – Arafura to place final rare earths processing on site at Nolans

**Phosphate** – Verdant Minerals subject to takeover; Avenira produce super-phosphoric acid using IHP

**Manganese** – new EL granted on Winchelsea Island

Environmental assessment process complete for **Tellus** (Chandler salt), **TNG** (Mount Peake vanadium-titanium-iron) and **Arafura** (Nolans rare earths) and **Verdant** (Ammaroo P)

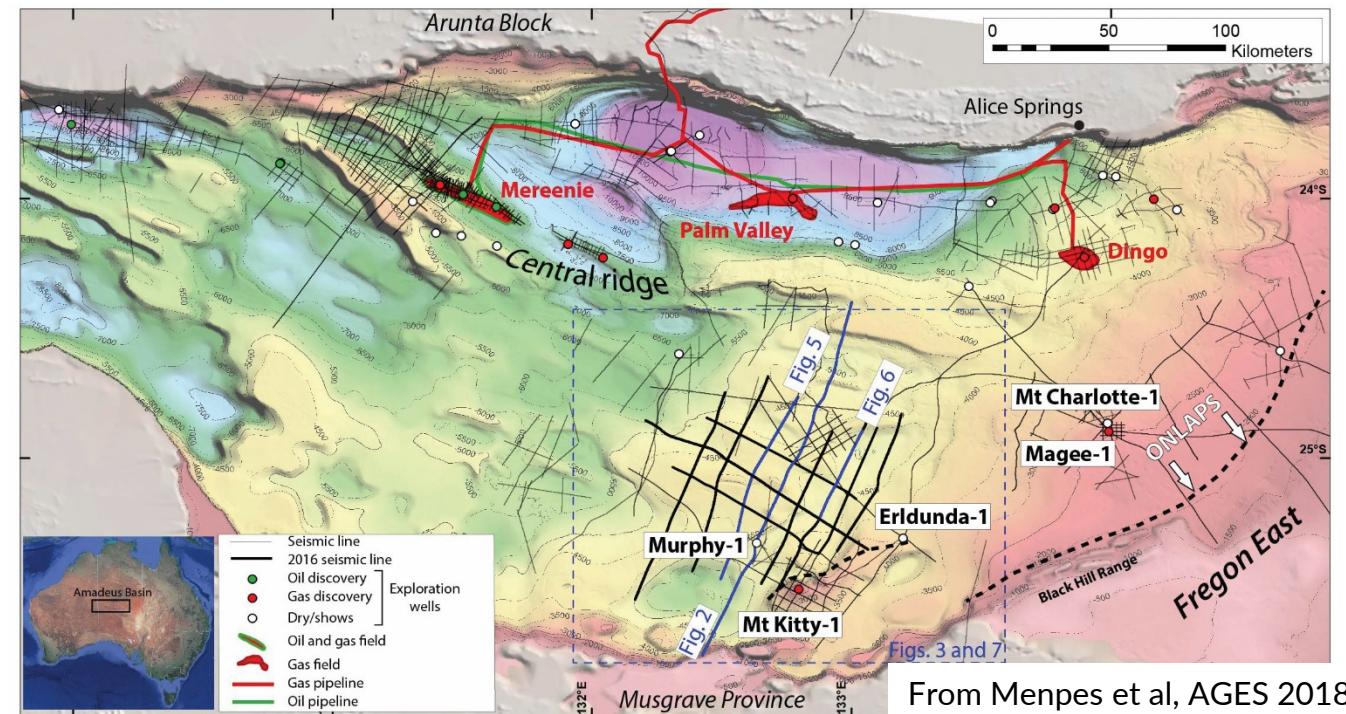
# Petroleum – Amadeus Basin

## Central Petroleum

- 23% increase in gas production to 6.15 billion cubic feet in 2018
- Production restarted at Palm Valley gas field
- Two appraisal wells drilled – West Mereenie 26 and Palm Valley 13
- Increase in gas reserves announced for 3 producing fields
- 154% increase in oil reserves announced at Mereenie

## Santos (-Central)

- 1335 km of seismic completed in 2016-2018
- Drilling of Dukkas gas-helium prospect in 2019



From Menpes et al, AGES 2018

# Petroleum – Beetaloo Sub-basin

Exploration scheduled to recommence in 2019 with drilling planned by Origin and Santos

Origin Energy (2018)  
identified multiple stacked  
potential plays

Velkerri Shale dry gas



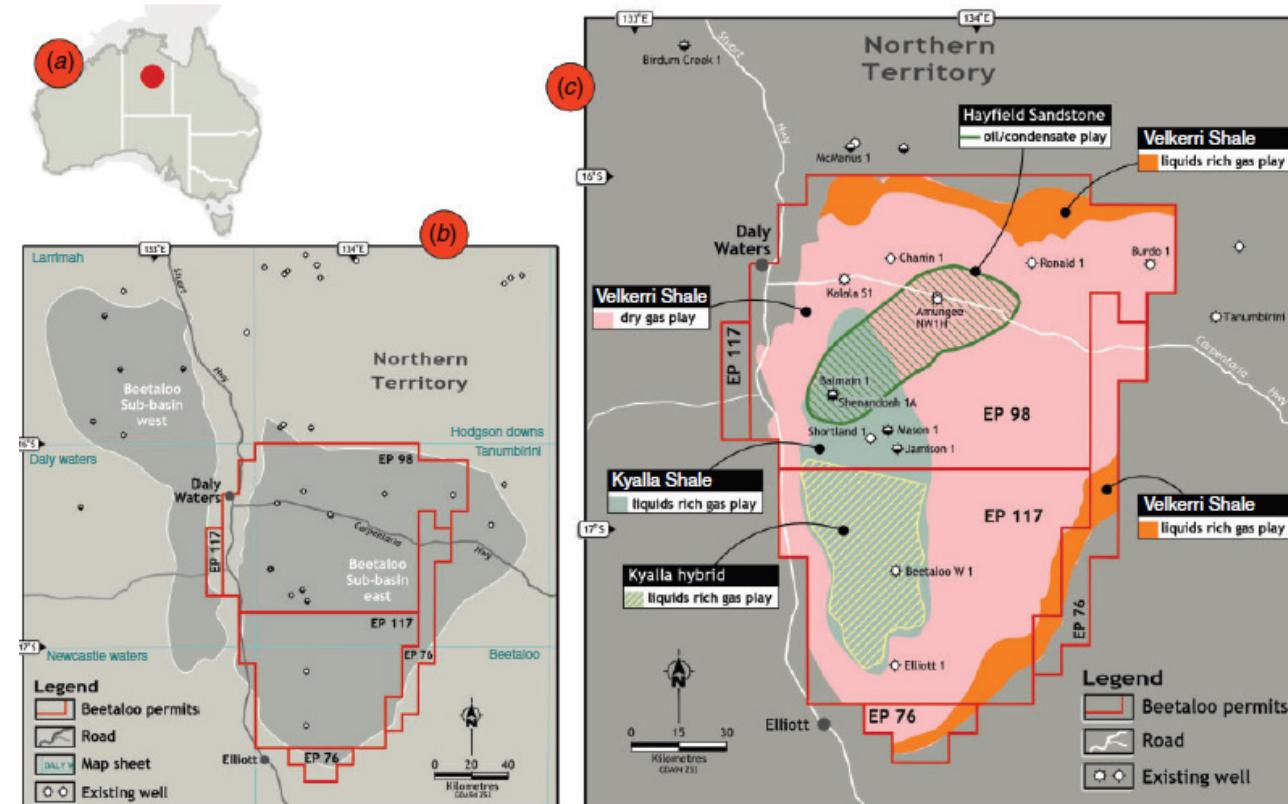
Velkerri Shale liquids rich  
gas



Kyalla Shale & hybrid  
lithology liquids rich gas



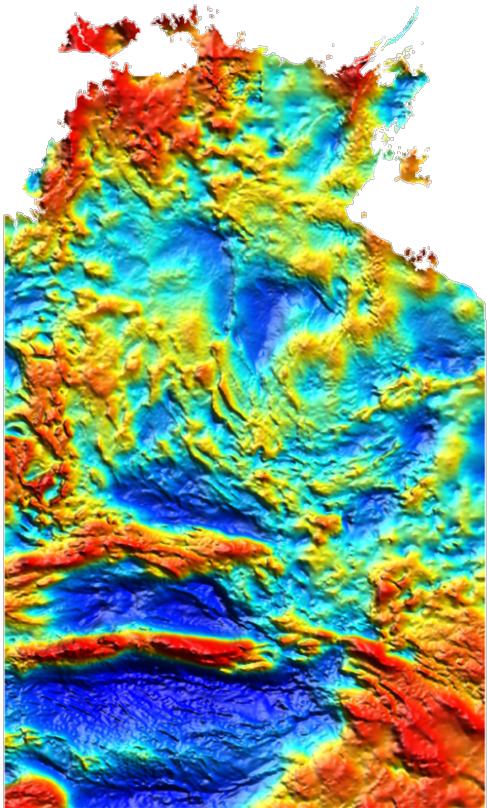
Hayfield Sandstone  
oil/condensate



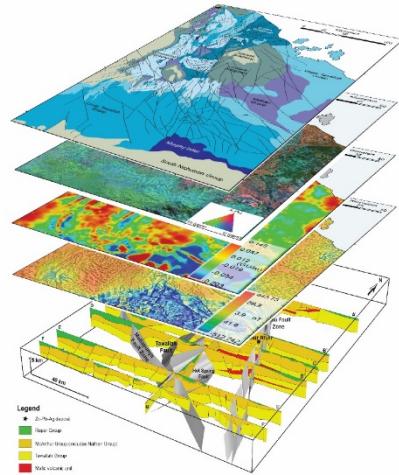
Côté et al, 2018. The APPEA Journal 2018, 58, 799-804  
<https://doi.org/10.1071/AJ17040>

# *Resourcing the Territory* initiative

4 year (2018-2022), \$26 million NT Government initiative to grow the exploration sector



Supporting industry innovation through grants for greenfields exploration  
Upgrading the Territory's coverage of geophysical data  
Unlocking the resource potential of the Barkly and Gulf regions.  
Stimulating greenfields exploration in central Australia  
Promoting the Territory's resource potential and investment opportunities; and  
Making exploration and geoscience data more accessible



# Investment Attraction

Dedicated program under Resourcing the Territory to assist companies attract investment or JV partners from international markets

Focus on east Asia and North America

- web-based multi-lingual promotion of opportunities on *Resourcing the Territory* website
- domestic events to global investors
- Ministerial-led delegations to China, Japan and South Korea
- Promotion at PDAC and NAPE

If you are interested, talk to us or email  
[resources.investment@nt.gov.au](mailto:resources.investment@nt.gov.au)



Company presenting in NT investment seminar, Chongqing, 2018

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