Overview of mineral and petroleum exploration and production in 2016

Ian Scrimgeour
2016 – another tough year for exploration

ABS Mineral
Exploration stats
$85.6M, down 19%

Exploration on ELs reported to NTGS in 2016
$62.0M, down 24%

Reported petroleum expenditure
~$60M
2016 - the bottom of the cycle?

Titles Granted v Area Covered

- Granted at end 2016 (855)
- Ceased during 2016 (264)
- Applications (687)

AGES 2017
Expenditure on exploration, by commodity (2015-2016)

- **Base Metals**: 41%
- **Gold**: 19%
- **Uranium**: 13%
- **Tungsten-Molybdenum-Vanadium**: 4%
- **Manganese**: 5%
- **Rare Earth Elements**: 5%
- **Coal**: 3%
- **Other**: 10%

**Total**: 100%
Expenditure on ELs, by geological province (2015-2016)

- **McArthur Basin**: 27%
- **Arunta Region**: 21%
- **Pine Creek Orogen**: 19%
- **Tennant Region**: 6%
- **Tanami Region**: 6%
- **Georgina Basin**: 7%
- **Amadeus Basin**: 3%
- **Pedirka Basin**: 2%
- **Wiso Basin**: 2%
- **Ngalia Basin**: 2%
- **Other**: 5%

*AGES2017*
Lithium

Major new lithium pegmatite field at Bynoe (Core Exploration, Liolntown Resources, Kingston Resources)

Grants lithium prospect: 49m @ 1.78% LiO₂
Zinc

Teena: Australia’s largest zinc discovery since Century (Teck Australia)
Zinc

Teena:
58 Mt @ 11.1% Zn, 1.6% Pb

Upper lens (red)

Lower lens (blue)

Jabiru Fault
Zinc Lead

Walker Gossan
First modern drilling campaign for base metals in the Walker Fault Zone, east Arnhem Land (GPM Metals)
Copper Silver Gold

Rockface: new high grade copper discovery in Jervois mineral field (KGL Resources)

14m @ 8.89% Cu, 38.5g/t Ag, 0.38g/t Au
9.4m @ 11.53% Cu, 56.6g/t Ag, 0.87 g/t Au
Greenfields discoveries in western Arunta (Independence Group)

**Grapple (2016):**
6 m @ 8.98 g/t Au, 1.45% Cu, 23.5 g/t Ag, 1.40% Zn, 0.26% Pb, 0.15% Co
9 m @ 1.8 g/t Au, 3.26% Cu, 49.1 g/t Ag, 3.63% Zn, 1.09% Pb and 0.26% Co

**Bumblebee (2015):**
7 m @ 3.3 g/t Au, 3.2% Cu, 37.7 g/t Ag, 1.3% Zn, 0.9% Pb, and 0.08% Co
**Gold**

**Silver**

**Zinc**

**PNX Metals – Hayes Creek project**

- High grade **gold-silver-zinc** deposits
- Pre-feasibility study underway
- Strong greenfields prospects for polymetallic and gold prospects

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**Iron Blow**

2.6 Mt @ 2.4 g/t Au, 130 g/t Ag, 4.8% Zn, 0.9% Pb, 0.3% Cu

**Mount Bonnie**

1.55 Mt @ 1.34 g/t Au, 127 g/t Ag, 3.8% Zn, 1.1% Pb, 0.2% Cu
Lantern discovery – new high-grade deposit parallel to existing Cosmo Deeps development – remains open at depth and along strike (Kirkland Lake Gold)

4.5m @ 119 g/t Au
11.1m @ 15.27 g/t Au
22.7m @ 4.34 g/t Au
6m @ 9.64 g/t Au
Gold

Edna Beryl – high-grade results from within hematite ironstone (Emmerson Resources)

Emmerson JV into Rover field

8m @ 157 g/t Au, 34.5 g/t Ag and 0.5% Cu
5m @ 83.6 g/t Au
5m @ 35.6 g/t Au
**Gold**

**Legend**
- ABM Diamond Drillhole
- ABM RC Drillhole
- ABM AC/RAB Drillhole
- Historic Diamond Drillhole
- Historic RC Drillhole
- Historic AC/RAB Drillhole
- Significant Au Drillhole Intersection
- Fault
- Bottom of Complete Oxidation
- Top of Fresh Rock
- Granite
- Sediments
- High-Ti Dolerite
- Low-Ti Dolerite
- Mineralised Zone

**Suplejack**: new drilling extends Hyperion mineralisation and discovers new styles including aresonpyrite in qtz breccia at Seuss (ABM Resources)

**Tethys**: 17m @ 5.74 g/t Au

**Seuss**: 13m @ 5.36g/t Au

**Seuss**: 7m @ 13.17 g/t Au
Central Tanami project: resource definition at Groundrush and regional exploration underway (Northern Star Resources)
Other commodities

Substantial progress made on project optimisation and approvals at a number of developing projects - Nolans (REE), Chandler (salt), Mount Peake (V-Ti-Fe), Ammaroo (P)

Tungsten: GWR Group conduct maiden drilling program at Hatches Creek

44m @ 0.21% WO₃, 0.12% Cu
53m at 0.26% WO₃, 0.13% Cu
7m @ 0.73% WO₃
Origin Energy – Beetaloo Sub-basin

Amungee NW-1

Vertical depth: 2611m

- Completion of 11 hydraulic stimulation stages along the 1000 m horizontal section in the Middle Velkerri B shale
- Average flow rate of 1.1 mmscf per day
- Dry gas composition with less than 4% CO2
- 2C contingent resource of 6.6 Tcf
Gas

- Santos seismic survey underway in southern Amadeus Basin
- 1300 line km of seismic
- Targeting large sub-salt gas and helium plays
A genuine recovery in 2017?

An increase in commodity prices and improvement in market sentiment bodes well for 2017 and beyond.

Strong outlook for gold and base metals exploration.

A number of major projects should have most or all key approvals in place within the coming year.

NTGS and its partners are committed to highlighting and promoting the resource potential of central Australia, and providing key geoscience datasets to lower risk and support investment.