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# Glimpses of sunshine?

"We are in the foothills of a great

boom." — Mark Creasy, prospector

The pulse town is quicl

"Earnings from Australia's mineral resources exports are forecast to increase by 4.8% to \$58.7 billion in 2002-2003." - ABARE executive director Dr

Brian Fisher gives the latest industry outlook reading.

"Right

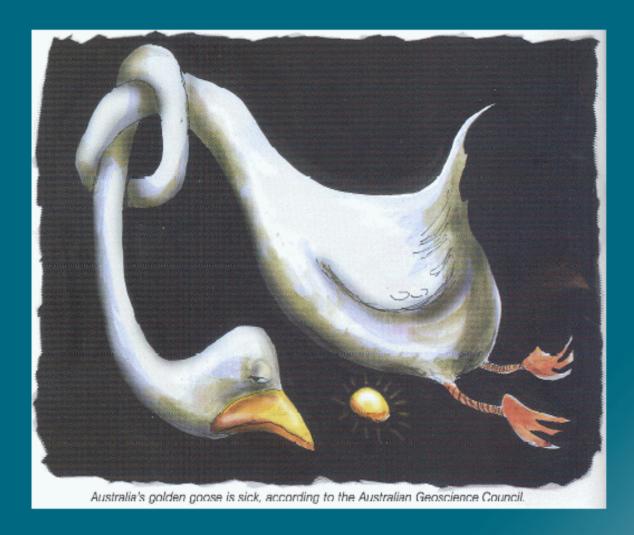
one step ahead of the mood in the field, but that will change as people realise that the capital formation process is underway and it will be translated into work on the ground." — David Reed,

executive chairman, Reed Resources





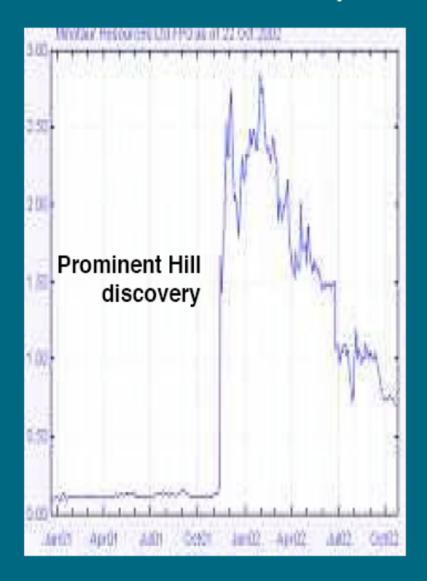
# But have the storm clouds gone?







### Minotaur Resources share price



# **New discoveries**

Mt Woods Joint Venture Minotaur Resources - BHP Billiton

### Prominent Hill, Gawler Craton

- 107m @ 1.94% Cu, 0.66 g/t Au,
  - 35m @ 3.86% Cu, 0.63 g/t Au, REE,
- Olympic Dam style Cu-Au mineralisation
- "Best Cu intersection in SA in 25 years"



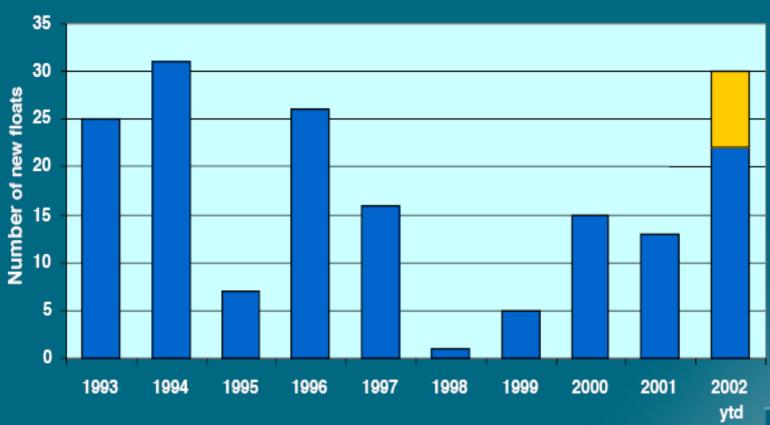
# Explorers index up







# Minerals IPOs up substantially in 2002



Source: Dept Industry, Tourism & Resources, Geoscience Australia

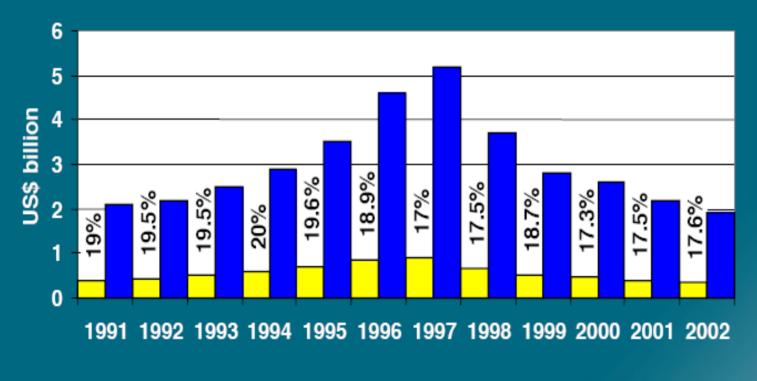


Possible floats

■ Floats



# But .. global exploration budgets still falling



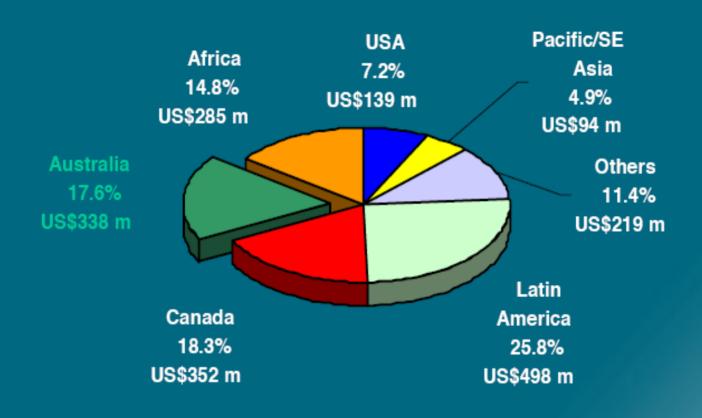
■ Australia
■ World

Source: Metals Economics Group





# Canada now No 1 country for exploration

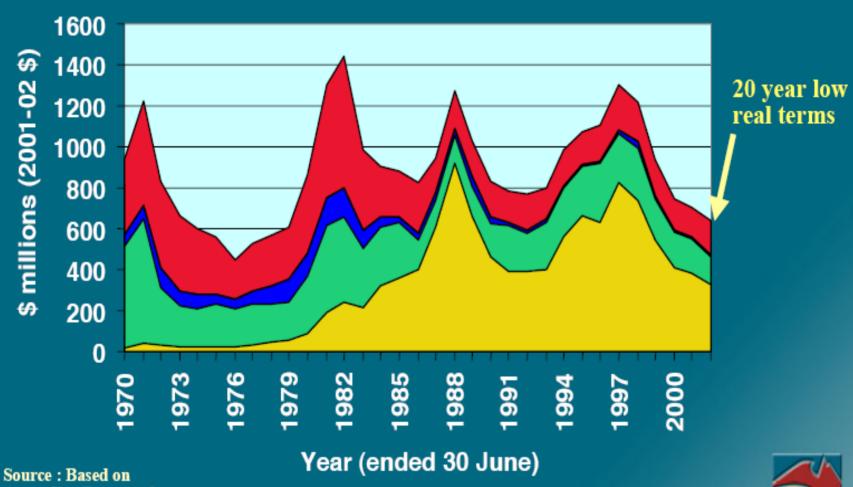








# Australian exploration at 20 year low



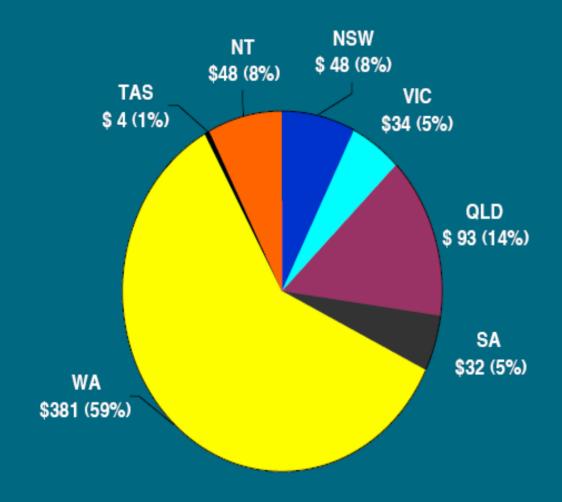
Source : Based on Australian Bureau of Statistics surveys

■ Gold ■ Base metals ■ Uranium ■ Other





# Australian mineral exploration 2001-02 (\$ m)



Total exploration down 6% on 2000-2001

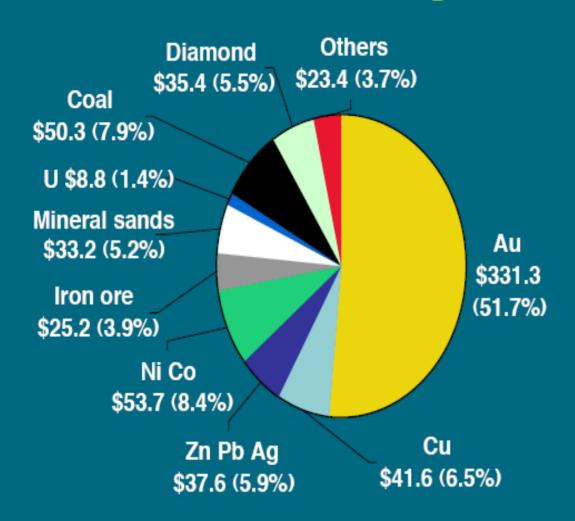
Up Qld (+11.6%) SA (8%) Down WA (-10%) NSW (-15.6%) Tas (-56%)







# Australian mineral exploration 2001-02 (\$ m)



Up

Mineral sands (+41%)

- record levels

Copper (+27%)

Coal (+22%)

**Diamond (+11%)** 

### **Down**

Base metals (-20%)

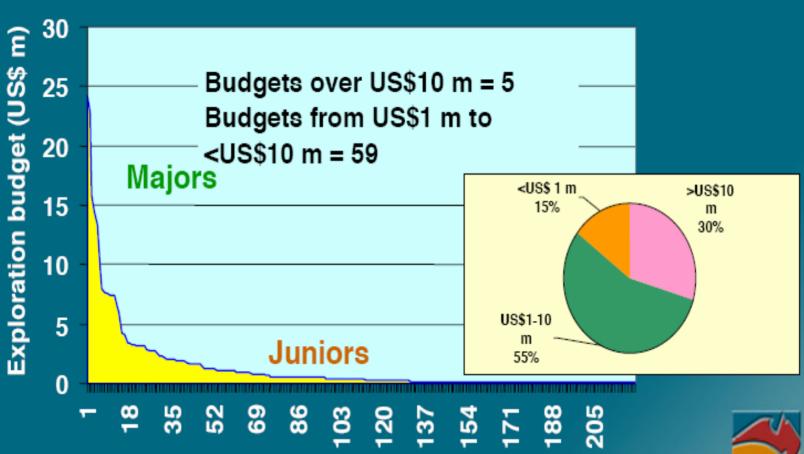
- Zn, Pb, Ag (-37%)

- Ni, Co (-26%)



Source: Australian Bureau of Statistics

# Australian 2002 exploration budgets



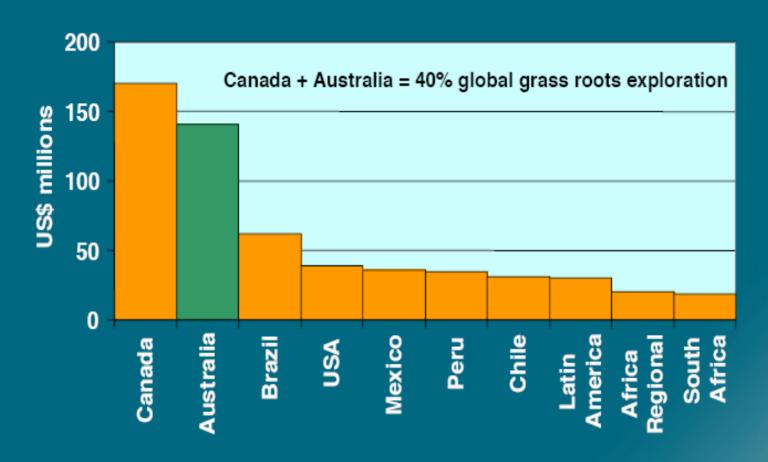
Source: Metals Economics Group

Company





# Global grass roots exploration budgets 2002

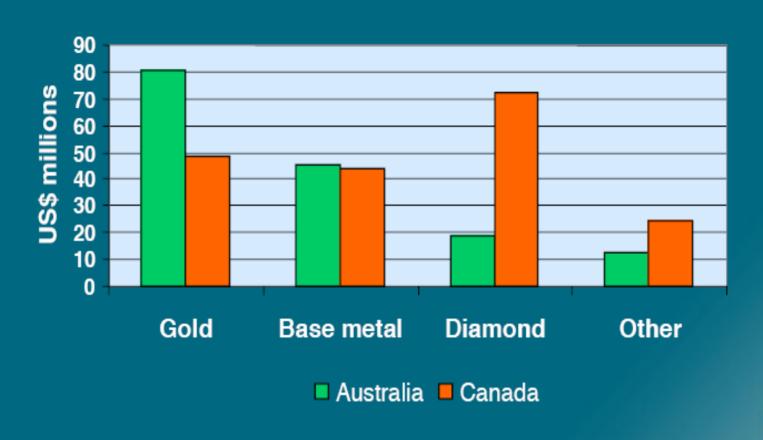




Source: Metals Economics Group

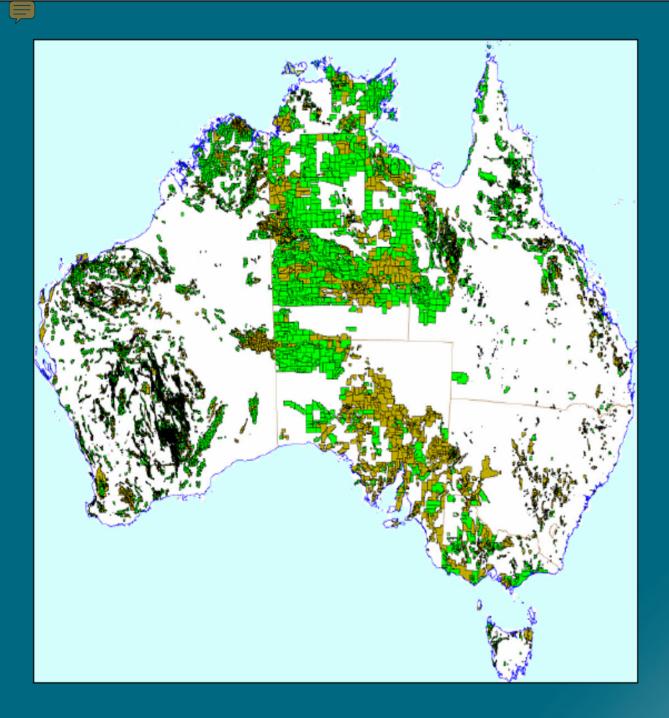


# Grass roots exploration budgets 2002









# Minerals Tenements

October 2002 WA-DMPR, Encom

Application



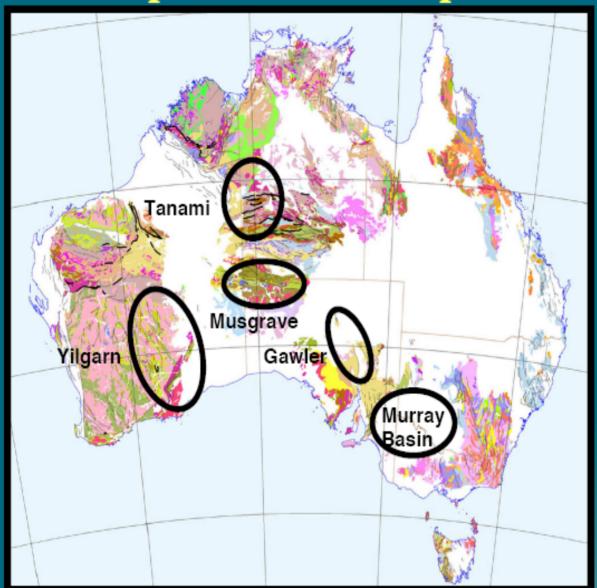


# **Exploration highlights**

- Most of prospective terranes under tenement or application
- Continuing discoveries across Australia
  - encouraging intersections as well as additions to resources (e.g. Telfer in situ resource 27 Moz)
- Exploration focussed on proven mineral provinces - endowment
  - Yilgarn Craton, Mt Isa Inlier, Lachlan Orogen, Curnamona Craton
- Diversity of commodities
  - gold, nickel, copper, zinc, mineral sands, tantalum,
     PGE, manganese, silver



# Exploration 'hotspots'







- Yilgarn Craton
  - Attracts ~7% of global exploration, ~ 40%
     Australian exploration (>\$250 million pa), ~250 companies
  - Gold
    - · New discoveries (e.g. Airport, Eureka) Gladstone
    - Deep extensions of existing deposits (e.g. Bronzewing, Jundee)
  - Nickel
    - e.g. Waterloo
    - Copper, zinc
      - e.g. Jaguar, Teutonic Bore
    - Tantalum

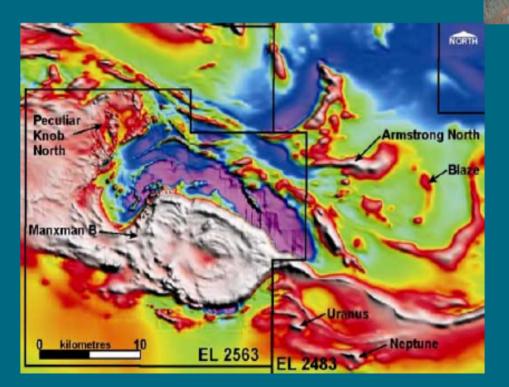




# Exploration hotspots

# Tanami-Arunta

- major gold province Callie
- global gold majors + juniors
- large land holdings



# **Gawler Craton**

- Fe-oxide (OD) Cu-Aue.g. Prominent Hill
- 3 majors plus juniors





Murray Basin

emerging world class mineral sand province

->200 cg (90-300  $\mu$ m) deposits @ 2-4% HM

- > 80 Mt cg ilmenite, rutile, zircon

Gingko, NSW DMR

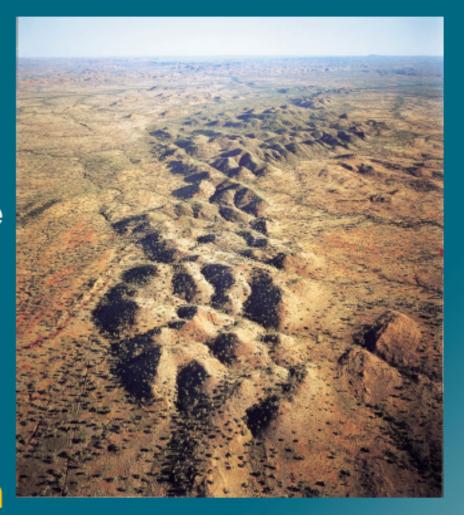
# Musgrave Ranges

- mafic-ultramafic Giles Complex, > 17 bodies
- Ni-Co (±PGE) sulphides (Voisey's Bay type)
- West Musgrave project Babel and Nebo





- Ashburton Province
  - epithermal gold province
  - Waugh, Paulsen's Au
  - majors + juniors
- Kimberley
  - Ni-Cu (PGE)
  - Au (North Kimberley)
- North Australian Craton
  - diamond tenements cover most of NT





# Australia's exploration potential

- · Australia has huge mineral endowment
- Most deposits have surface expression/ found by surface prospecting/exploration.
- Existing lerranes
  - only top-few 100s m explored
- Margin of mineral provinces under cover
  - large areas prospective ground with only thin cover
- Frontier te tranes
  - mineralisation in outcrop
  - areas under shallow cover unexplored

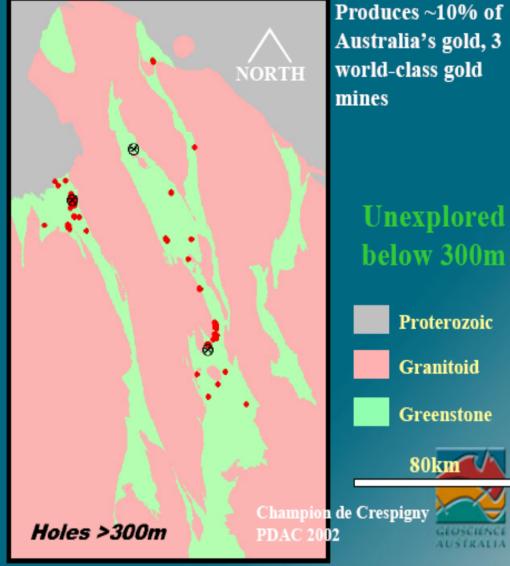
Endowment under cover = that already found?





# Yandal Belt (WA) Exploration Drilling





AUSTRALIA



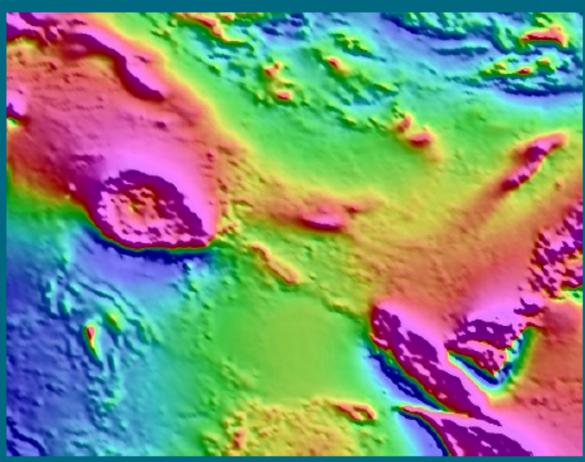
# Government programs

- New regional datasets
  - geophysics, geology, geochemistry geochronology, mineral deposits
- 3D geological models of mineral provinces
- Pre-competitive geoscience Information on-line
  - Geoscience portal
  - on-line GIS
  - Spatial data access and pricing policy





# New regional aeromagnetic surveys - opening up the frontiers



TMI image of part of Billiluna Sheet, West Tanami survey September 2002

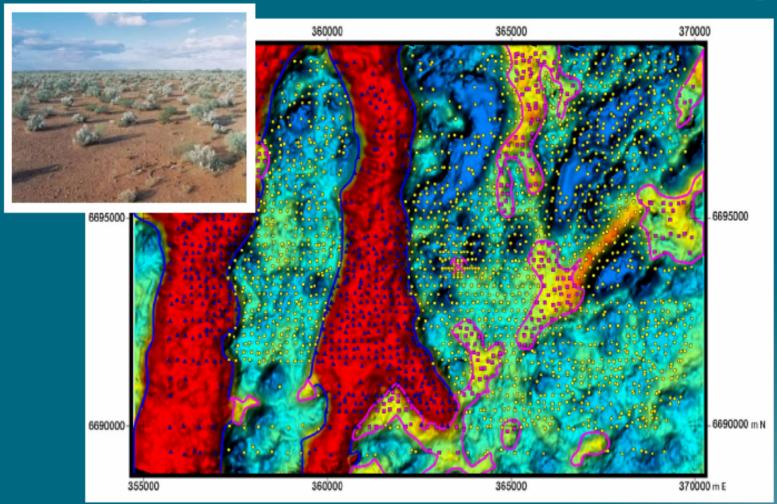
400 m line spacing, 60 m altitude

GSWA -Geoscience Australia



# AEM aids gold exploration in Gawler

Calcrete sample classification based on thickness of transported material derived from AEM (Challenger)



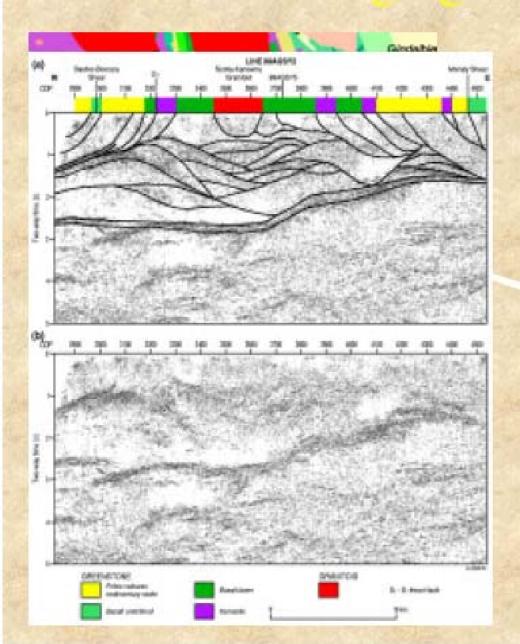
Gawler
Project,
Geoscience
Australia
PIRSA



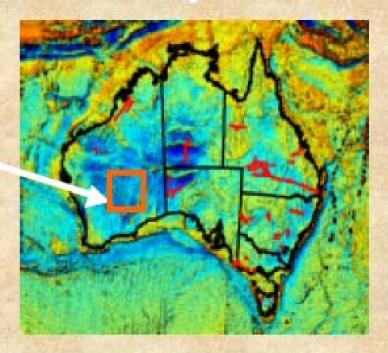
Source: Lane & Worall, 2002



# Seismie imaging of crustal structure



# Eastern Goldfields survey area





# Modern geoscience information delivery

# Australian Governments' Geoscience Portal

Access to geoscience information from Australian governments at state and federal levels.

### Enter the portal as:

- · general public
- inineral explorer
  - · petroleum explorer
  - coal explorer
  - geophysicist
  - legal
  - student

www.geoscience.gov.au





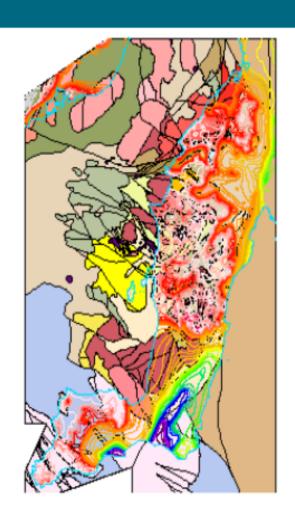
### **On-line GIS**

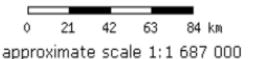
### Available layers

- ☑ Geological polygons
- ☐ Geological boundaries and
- faults
- □ Other structural lines
- ☑ Depth tổ basement contours
- □ 10km grid
- □ Towns
- □ Roads
- TMI (RTP) colour magnetics
- ☐ TMI (RTP) VD1 greyscale
- magnetics
- □ Gravity
- □ Depth to basement image

GO

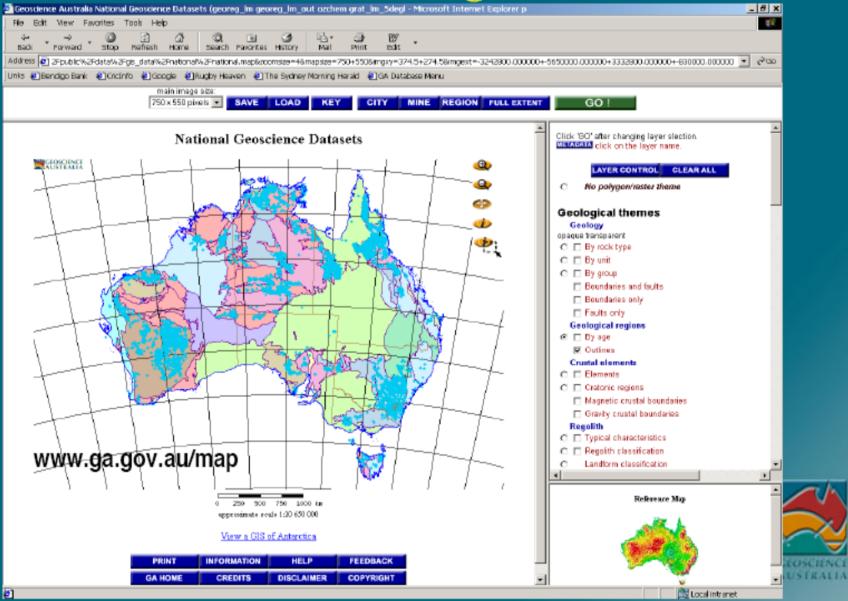
Gawler Project
Geoscience Australia-PIRSA







Free download of national geoscience datasets





### TABLE 1: AVAILABLE NATIONAL GEOSCIENCE DATASETS

(Please feel free to use the pictures in this table. We just request that you acknowledge Geoscience Australia as the source. (Click here to get the GA logo)

Geological Datasets (click on the dataset to view the metadata from GEOMET)	Picture of Dataset (printable)	Approx nominal scale of usage	Download (or view a resolution sample)
Geology	Image Legend	1:2 500 000	Go to Download View a sample
Individual Scanned 1:250 000 Geology Maps		1:250 000	Go to Download
Metamorphic Rocks	Image Legend	1:5 000 000	Go to Download View a sample
Crustal Elements	Image Legend	1:5 000 000	Go to Download View a sample
Geological Regions (based on AGSO Bulletin 181)	Image Legend	1:5 000 000	Go to Download View a sample
Regolith Terrains of Australia (LF=Landform types, REG=Regolith types)	Image (LF) Legend (LF) Image (REG) Legend (REG)	1:5 000 000	Go to Download View a sample
Drincipal Hydrogoological Divisions of	Imago	1.5 000 000	Go to



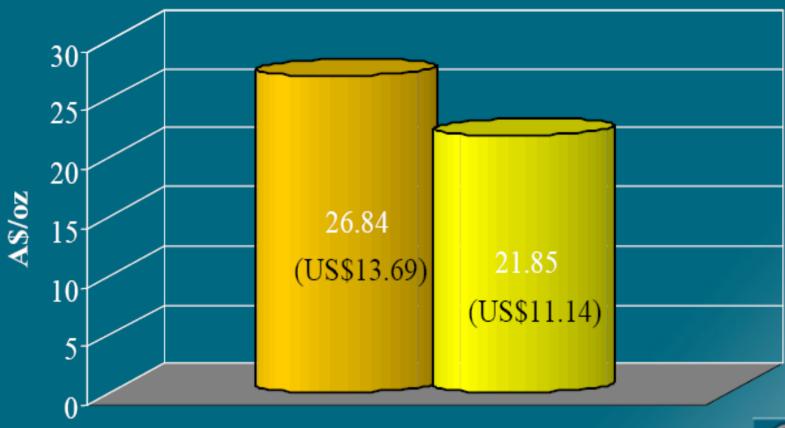
# **Exploration Outlook**

- Global economic recovery 2003 (?)
- Gold price ~ US\$300/oz (ABARE US\$295-325/oz)
- Prospect of higher base metal prices in 2003-06
  - demand growth mostly from China
- Improvement in market sentiment
  - increase in floats but no depth in market
- Promise of increased exploration by global gold majors
- Partnerships/alliances with majors





# Australia's competitive gold discovery costs



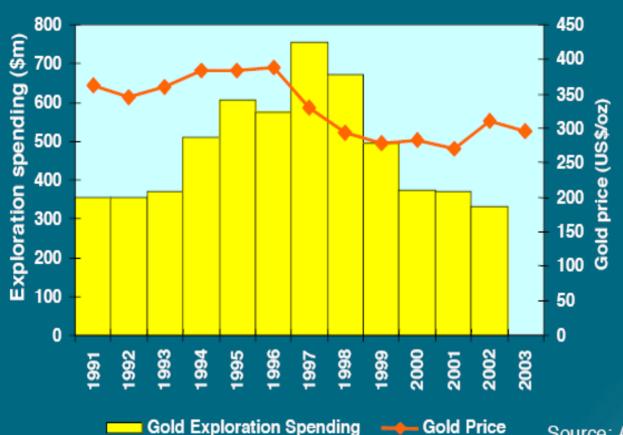
Source: Geoscience Australia

■ Economic Resources
■ All Resources





# Gold prices to lift exploration?



Exploration spending lags gold price by 12-18 months

Expect increase in spending in 2003

Source: ABS exploration data and ABARE gold prices





# **Conclusions**

- Mineral exploration languishing
- Improving outlook for metal prices (2003+)
- Australia remains highly prospective
  - discoveries in proven and greenfields areas
- Exploration in the last 10 years added significant resources at low cost
- Major potential under cover
- New pre-competitive geoscience information







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