Inquiry into greenfields mineral exploration and project development in Victoria: an R&D perspective

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- Climate Adaptation
- Future Manufacturing
- Sustainable Agriculture
- Energy Transformed
- Minerals Down Under
- Water for a Healthy Country
- Food Futures
- Preventative Health
- Wealth from Oceans
Minerals Down Under is a partnership

Integrates CSIROs domain expertise for minerals

285 staff
$84 M/a budget (incl. co-investment from partners)
Some facts about Minerals Down Under

• Focus on minerals (including uranium)
  • Excludes C-energy, geothermal and sequestration
• Long term national benefit
• A national partnership with international links:
  • industry; government and academia
• Triple bottom line approach
  • Critical to business; critical to policy

3 focus areas across the minerals industry

Grow Resource Base
Grow Productivity
Reduce Footprint

Cu; Ni; Pb; Zn; Au; U; Fe; Al; Mg
Our exploration research

- Development of National Data Infrastructure and Data Integration
- New Detection Tools for Exploration
- Mineral Systems Research
- Education, technology transfer and collaboration

Delivered with AuScope
A global issue

- Declining discovery rates
- Declining greenfields share of exploration
  - 2000: ~50% of global exploration
  - 2010: ~33% of global exploration
- In 2011 MEG expect:
  - 50% of global exploration on gold
  - Nonferrous exploration budgets will exceed US$17 billion
  - An increase of about 50% from the 2010 total
  - A new all time high
  - Changing attitudes to risk
- Competitive investment climate
A) Victorian mineral endowment / prospectivity
## National Challenges for Australian Exploration

### ISSUE
- Perception of prospectivity
- Transported cover
- Depth
- Declining greenfields
- Global success rate

### STATUS
- Mature and challenging
- >60% of continent “hidden”
- 70% Au <50m (1950-2009)
- 50% in 1999; 33% in 2010
- Global performance slipping

Risk .... Declining exploration investment and production
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<td>• Declining greenfields</td>
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<td>• Competitive success rate</td>
<td>• Revival of interest – new $</td>
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International competition is as strong as commercial competition
Non technical challenges to greenfield exploration

• Perception is everything
  • Positive success stories
  • ‘elephant’ country

• Consolidated land packages
  • “option on the haystack”

• Public understanding of exploration risk-reward
  • Exploration success rates
  • Need certainty to proceed; but low probability of development!
Resource discovery partnership

National surveys / GA

Unlocking National Resource Value

Explorers

Innovation & education

Exploration: a knowledge business
Playing to our strengths

- **Commodity mix**
  - Antimony #1 global supply risk
  - Australian control:
    - Lithium (5.5 risk index)
    - Zirconium (4.5)
    - Aluminium (3.5)
    - Titanium (2.5)
- **State Survey: knowledge bank**
  - Global reputation
- **Scientific infrastructure**
  - Universities
  - CSIRO and MDU
  - Synchrotron…
Broader industry challenges

• Increased volatility; growing demand
• Declining grade; greater complexity
• Competing land use
• Skills shortage
• Water and energy
• Emissions and waste
• Automation
• Safety
• Regional sustainability
• Public opinion and the ‘two-speed’ economy

• All an opportunity to lead!
E) Success and failure of projects in Victoria’s mining development pipeline
Geology versus investment strategies

• Global trend to large low-grade deposits
  • High capital costs
  • Resource certainty critical
    • Nuggetty gold in many Victorian gold deposits
    • Depth and cost of drill-out for complex vein geometries
    • High profile failures
  • Victorian urbanisation reflects historical gold production centres
    • Leads to land use tension
F) Approaches in other jurisdictions to foster increased investment in Greenfields exploration
Focus on the unique potential of Victoria

• **Important State initiatives**
  - Rediscover Victoria (including drilling co-investment)
  - Gold undercover (ended 1999)

• **Endowment is fixed but unknown**
  - “Exploration technology packages”
  - Tools + data + knowledge focussed on specific terrane

• **Design state strategy to build on key strengths**
  - Geological differentiation
  - Human capital
  - Socio-political infrastructure
  - Natural partnerships (state; industry; innovation)
G) Roles of government
Open for business in minerals

• Use it or loose it
  • Hard to rebuild

• Geological survey
  • Strong track record
  • Precompetitive ‘data to knowledge’
  • The engine room to attract investment

• Invest for success
  • Exploration incentive schemes very successful in Australia

• Innovation links – some examples
  • Airborne mapping with PIRSA
  • Groundwater surveys with GSWA
  • Uranium minerals system studies with various state surveys
H) Opportunities to increase the net benefits from Victoria’s mineral resources
Sustainability is key

- Broad distribution of benefits
  - A sustainable vision
  - We should understand our states geology:
    - Minerals and energy resources
    - Geo-sequestration and geothermal resources
    - Geo-hazards
  - Integrate mining with the broader economy

How does Victoria fit?
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Thank you