Exploration and Development
Opportunities in South Australia

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South Australia’s Mineral Sector Highlights for 2007

Record levels of mineral and geothermal exploration expenditure and drilling in 2007 driven by:

- Copper-Gold; Uranium; Gold; Base Metals; Mineral Sands and hot Rocks (geothermal)
- New discoveries and encouraging intersections in all mineral provinces and across all commodities
- New geoscience and PACE collaborative drilling successes
- Major mining developments for Copper-Gold; Uranium; Gold; Base Metals; Iron Ore and Mineral Sands
South Australian Export Figures
Minerals contribution has almost doubled in 3 years

2003/04
- Agriculture and Food: 34%
- Wine: 18%
- Machinery: 5%
- Road vehicles: 17%
- Petroleum: 2%
- Other: 11%
- Minerals: 13%

2006/07
- Agriculture and Food: 23%
- Wine: 20%
- Machinery: 5%
- Road vehicles: 11%
- Petroleum: 3%
- Other: 14%
- Minerals: 24%
**South Australia – record levels of mineral exploration expenditure**

- **Exploration**
- **Share**

$\text{South Australia's share of exploration in Australia}$

**PACE startup**

- **1992-93**
- **1993-94**
- **1994-95**
- **1995-96**
- **1996-97**
- **1997-98**
- **1998-99**
- **2000-01**
- **2001-02**
- **2002-03**
- **2003-04**
- **2004-05**
- **2006-07**

- **0.00%**
- **2.00%**
- **4.00%**
- **6.00%**
- **8.00%**
- **10.00%**
- **12.00%**
- **14.00%**
- **16.00%**
- **18.00%**

- **$m**
- **100**
- **50**
- **0**

**Government of South Australia**
**Primary Industries and Resources SA**
PACE recognised through a prestigious Premier's Award

- **PACE** wins 2007 Premier's Award for the category Growing Prosperity during Public Sector Week
- The inaugural awards showcase excellence in the public sector and are an opportunity to recognise the best and brightest public sector initiatives from across the State
Total Exploration Drilling Metres* includes Olympic Dam

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<th>Year</th>
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Roxby Downs – delineation drilling  14 rigs
South Australia’s Expanding Minerals and Energy Sector
Mineral Projects 2007 and the list is growing!

New Mines:
- Honeymoon (U)
- Mindarie (HMS)
- Beltana/Reliance (Zn)
- Prominent Hill (Cu-Au)
- Angas (Zn-Pb)

Mine Expansion Projects:
- Olympic Dam (Cu-Au-U)
- Prominent Hill (Cu-Au-U)
- Project Magnet (Iron Ore)
- Challenger (Au)
- Leigh Creek (Coal)

Proposed Mining Developments:
- Kanmantoo (Cu)
- White Dam (Au)
- Portia (Au)
- Cairn Hill (Iron Ore)
- Beverley Extension (U)

Advanced Exploration:
- Arkaringa Basin (CSM)
- 4 Mile (U)
- Bird in the Hand (Au)
- Mount Gee (U)
- Punt Hill (Cu-Au-U)
- Carrapateena (Cu-Au-U)
- Crocker’s Well (U)
- Gullivers (HMS)
- Gould’s Dam (U)
- Mutooroo (Cu-Co)
- Oban (U)
- Peculiar Knob (Iron Ore)
- Menninnie Dam (Pb, Zn)
- Kalkaroo (Cu, Mo)
- Tripletaka (HMS)
- Tunkillia (Au, Ag)
- Wilgerup (Iron Ore)
- Wilcherry Hill (Iron Ore)

Projects to watch
- Major Mine
- Mining Development
- Geothermal Projects
New Mines 2008
Prominent Hill – Copper-Gold-Silver Oxiana

- Construction currently pre-stripping phase
- $775 million project with initial mine life of 10 years
- Mineral Resource 102.01 Mt @ 1.45% Cu, 0.51 g/t Au and 3.3 g/t Ag
  - Total contained metal 1.48 Mt Cu, 2.576 Moz Au and 11.68 Moz Ag
- Ore Reserve 68.2 Mt @ 1.31% Cu, 0.59 g/t Au and 3.25 g/t Ag
  - Total contained metal 0.892 Mt Cu, 1.297 Moz Au and 7.132 Moz Ag
- Annual production for first four years
  - 8 Mt of ore
  - 104 000 t Cu, 115 000 oz Au and 400 000 oz Ag
- High grade Cu and Au mineralisation up to 500 m below planned open pit
- Best results include:
  - D276 – 28m @ 2.1% Cu and 0.6 g/t Au, 135 m @ 1.5% Cu and 1.0 g/t Au
  - D277 – 62m @ 1.45% Cu and 0.8 g/t Au
Angas – Zinc-Lead-Silver
Terramin Australia

- Indicated resource estimated at 3.04 Mt grading 8.0% Zn, 3.1% Pb, 33 g/t Ag, 0.5 g/t Au and 0.3% Cu with mineralisation averaging around 7 m in thickness in the main Rankine orebody
- Annual ore throughput when fully operational is expected to ramp up to 400,000 t, producing at peak 65,000 t of Zn and 16,000 t of Ag-Pb concentrate respectively
- Construction of portal complete, tunnelling of decline to access orebody in progress
- Plant construction commenced in October 2007 with commissioning in July 2008
- First concentrates scheduled for August 2008
- Sempra Metals and Concentrate Corp have signed off take agreements for the life of the mine
Mindarie Mine – **Heavy Mineral Sands**

**Australian Zircon**

- Construction phase, first product dispatched from Mindarie rail export facility October 2007
- Measured and Indicated Resources of 171 Mt containing 3.2% HMS (Mine Resource 44.7 Mt @ 3.6%)
- Current planned mine life in excess of 14 years
- Mining Operation to treat 3–4 Mt ore pa producing 150 000 t of HM concentrate containing:
  - 30 000 t zircon
  - 6 000 t rutile
  - 4 000 t leucoxene
  - 60 000 t ilmenite
Honeymoon – *Uranium*
Uranium One

- Current mineral resource ~ 1.2 Mt at an average grade of 0.24% containing 2 900t (6.5 Mlb) U₃O₈ for annual production of 400t (880 000 lb) U₃O₈
- Project now with final approvals
- Construction of in situ leach uranium mine (est. capital cost $53 m) progressing with a new design using pulse columns being finalised
- Production scheduled for 2nd quarter 2008
Mine Expansions
Olympic Dam – Copper-Gold-Uranium-Silver
BHP Billiton

- 7 738 Mt at 0.87% Cu, 0.029% U₃O₈, 0.3 g/t Au and 1.61 g/t Ag
- Gold only (non-sulfide) resource 117 Mt at 1.19 g/t Au
- Expansion Pre-Feasibility study continuing
- Full Feasibility study proposed completion 2008
- Full production is set down for 2014
- New 40 Mt pa Olympic Dam will have an approximate annual production of:
  - 500 000 t Cu
  - 15 000 t U₃O₈
  - 500 000 oz Au
  - 2 091 000 oz Ag
Project Magnet – *Iron (Magnetite)*
OneSteel

- Construction phase conversion of the Whyalla Steelworks from haematite to magnetite feed, and exporting haematite
- Cost $390m
- Capital works program completed in 2007
- Extend operations from 2020 to at least 2027
- 60 Mt haematite/magnetite proven ore reserves
- Sell over the next 10 years:
  - 30 Mt of haematite ore
  - 3.2 Mt of iron pellets
  - approximately 1 Mt of steel slab
- Revenues in excess of $1b over 10 years
Beverley Mine – *Uranium*
Heathgate Resources

- Largest *in-situ* leach (ISL) mine in the world
- 2006 U$_3$O$_8$ production 976 t
- Exploration continued in the east and south of mineral lease included:
  - Extensive drilling program coupled with induced polarisation/resistivity survey
  - High definition seismic survey south of the lease
Proposed Mining Developments
Kalkaroo – Copper-Gold-Molybdenum
Havilah Resources

- Copper-Gold-Molybdenum deposit
- Mineable resource of 85 Mt of 0.51 g/t Au and 0.45% Cu
- $14m feasibility study (funded by Glencore International) to be completed by end 2008
- Current objectives – resource definition and extension, metallurgical studies
- A deposit containing the equivalent of more than 100 Mt of 2g/t Au or over 6 Moz of gold equivalent is envisaged
- Deposit remains open in both directions and down dip
Kanmantoo – Copper-Gold
Hillgrove Resources

- Significant new high grade Cu–Au zones intersected:
  - Main Zone 84m @ 1.34% Cu (inc. 17m @ 2.11% Cu)
  - North East Zone 16m @ 4.34% Cu (inc. 4m @ 6.49% Cu)
  - O’Neil Zone 11m @ 2.05% Cu and 6.47 g/t Au (inc. 7m @ 2.3% Cu and 10.15 g/t Au)
  - South East Zone 22m @ 1.51% Cu (inc. 13m @ 2.09% Cu)
  - Eastern Zone 20m @ 1.13% Cu (inc. 6m @ 2.16% Cu)

- Current resource 33.44 Mt @ 0.9% Cu and 0.2 g/t Au containing 290 000 t of Cu and 216 900 oz Au

- Estimated annual production: 2 Mtpa of ore for 19 000t Cu, 6 000oz Au and 113 000 oz Ag

- Economically enhanced by high garnet grades in host rock
Jacinth / Ambrosia – *Heavy Mineral Sands*
Iluka Resources

- Jacinth/Ambrosia – Total resource ~9.2 Mt, average HM grade 4.3%, average zircon content 48%, over 4.4 Mt zircon
- Definitive feasibility study due for completion mid 2008
- Indicative timeframe for production is mid 2010
- Additional resource - Tripitaka
  - straddles ELs - Iluka(100%) and Colona JV (Iluka and Adelaide Resources)
  - 1 Mt HM grade 2.4% average zircon assemblage 65%, ~650 000t zircon
  - pre-feasibility study commenced
- Native Title agreement that will deliver employment, training and business development benefits for the Aboriginal community together with programs to protect Aboriginal heritage
- Other rich prospects in the region include Typhoon, Dromedary and Gullivers
Peculiar Knob – Iron Ore (haematite)  
Western Plains Resources

- Total resource estimate of 19.4 Mt averaging 63.7% Fe
- High grade specular haematite low levels of impurities
- Feasibility study commenced December 2006
- Additional resource - Buzzard deposit at nearby Hawks Nest project, 6.7Mt 60%Fe
- Anticipated 2 Mtpa from Peculiar Knob alone, or 3Mtpa combined project for a mine life of up to 10 years
- Ore would be direct shipped via the nearby Adelaide-Darwin railway
Cairn Hill – Iron(magnetite)-Copper-Gold
Goldstream Mining

- Coarse grained magnetite/copper-gold orebody
- Total resource for initial pit area and eastern pit extension (diluted)
  - 15.2 Mt at 48.1% Fe, 0.28% Cu, 0.09 g/t Au
- Feasibility study underway to evaluate two options:
  - On-site production of 1.4 Mtpa magnetite concentrate, 4500 t Cu and 5500 oz of Au (metallurgical testwork completed for processing options)
  - Direct shipment of 2.5 Mt pa for processing in China
- First shipment aimed for 2008
- Initial pit area to cover western most 800m of a well defined 18km magnetic anomaly to be drill tested later in 2007
Advanced Exploration Activity
• **PACE funded discovery hole CAR002**
• Aggressive drilling program for 2007 approx. $11.6 m
• Over 75 000m drilled including spectacular results:
  - Drillhole 50: 905m grading 2.1% Cu and 1.0 g/t Au
    - **incl. 191m grading 3.0% Cu and 0.9 g/t Au**
    - **95m grading 3.3% Cu and 0.6 g/t Au**
• Presence of bornite and chalcopyrite indicate a potentially large Cu-Au system
• IP resistivity surveys are ongoing as part of exploration program
• Metallurgical test work, resource modelling and environmental baseline studies continue

September 2007
PACE CAR002
167 m @ 1.9%
Cu, 0.7 g/t Au
(incl. 68 m @ 3.0% Cu, 0.4 g/t Au)

CAR050
905 m @ 2.1% Cu, 1.0 g/t Au
(incl. 191 m @ 3.0% Cu, 0.9 g/t Au)

CAR032
836 m @ 0.9% Cu, 0.5 g/t Au
(incl. 303 m @ 1.0% Cu, 0.6 g/t Au)
New SA Palaeodrainage Map
Four Mile – *Uranium*
Quasar Resources (Heathgate) / Alliance Resources

- Discovered 2005, west of the Beverley Uranium Mine
- Initial resource @ Four Mile West – 3.9 Mt @ 0.37% U$_3$O$_8$ (15 000 t or 32 Mlbs)
- Mineralisation extends over 1.2km strike length and is typically high grade, 1% or greater U$_3$O$_8$
- Preliminary results from 32 holes, July 2007 (PFN logging, pU$_3$O$_8$):
  - 5.4 m grading 0.85% eU$_3$O$_8$
  - 4.5 m grading 0.47% eU$_3$O$_8$
  - 1.2 m grading 1.1% eU$_3$O$_8$
- Pre-feasibility for Four Mile East with exploration target of 30 million to 47 million pounds at Four Mile East.
Warrior – Uranium
Toro Energy / Stellar Resources

- Kingoonya Palaeochannel system
- Non-JORC Inferred Resource of 4000 t with an average U₃O₈ grade of 0.034% (1980’s)
- 251 drillhole program completed June quarter 2007, these results indicate significant area of continuous mineralisation in the northern Area A. New assay results up to 0.05%
- Mineralisation occurs at a depth of 26–30m below surface within carbonaceous sediments associated with a redox zone
- Further drilling to evaluate mineralisation underway
Oban – *Uranium*
Curnamona Energy

- Sand-hosted uranium mineralisation
- Like Beverley and Honeymoon, Oban is coarse-grained sandy aquifer amenable to *in-situ* leach (ISL) extraction
- 2006 drilling produced numerous economically significant uranium intersections, mineralisation up to 6.5 m thick and grades up to 0.44% eU₃O₈
- Following a successful field leach trial
  - Obtain Mineral Lease
  - Upgrade of trial treatment plant to full scale operation
Mutooroo – Copper-Cobalt
Havilah Resources / Heilongjiang Resources

• Current Resource 11.5 Mt @ 1.1% Cu and 0.1% Co
• Drilling results indicate wide sulphide zone within potential resource
  - Best results include 27m @ 1.75% Cu and 0.22% Co
• Feasibility study due for completion late 2007
  - Aiming for annual production of 20 000t Cu and 2 000t Co
• Application for mining lease submitted
• Potential to be Australia’s largest cobalt producer

September 2007
Mount Gee – Uranium
Marathon Resources

Hard-rock uranium deposit close to Paralana Mineral System
Resource of 42 Mt at 0.063% U₃O₈ for ~31,200 t U₃O₈ (300ppm cut-off)
Down-hole gamma logging results
- RC07MN041 – 36m – 43m for 7m @ 0.10% e U₃O₈
- RC07MN041 – 52m – 60m for 8m @ 0.10% e U₃O₈
Proposed mining method - underground
Crocker Well / Mt Victoria – Uranium
PepinNini Minerals/Sinosteel

- Hard rock uranium prospect
- February 2007 – Agreement finalised between PepinNini Minerals and Sinosteel Co.
  Crocker Well uranium field – six deposits containing a resource of 14.85 Mlbs of U₃O₈
  with an Inferred JORC compliant resource of 12.5 Mt @ 0.5 kg/t (0.05%) U₃O₈
- Mt Victoria – Inferred JORC compliant resource of 250 000 t @ 1.6 kg/t (0.16%) U₃O₈
- Feasibility Study commenced
Wilgerup – *Iron (Haematite)*
Centrex Metals

- Hematite rich banded iron formation
- JORC compliant Indicated Resource 8 Mt grading 59.8% Fe, 3.3% SiO$_2$, 2.3% Al$_2$O$_3$, 0.48% P (based on Iron cut-off of 55%)
- Additional resources
  - Inferred Resource of 1.1 Mt massive hematite
  - 3.2 Mt of hematite clay and hematite carbonate
- Mine design, economic modelling and ore scheduling studies in progress
- 12 300 m of drilling completed to February 2007
- Currently drilling additional 6 000 m targeting gravity anomalies

September 2007
Prospect Hill – Tin/Base metals
Havilah Resources

• Previously inferred resource 172 000 t of 1.15% tin (South Ridge Prospect)
• Tin mineralisation associated with anomalous Cu, Zn, Pb, U, and Ag
• 2007 Drilling program completed 19 drillholes (totalling 1195 m) Results include
  • PRC02 9 m at 0.52% Sn
  • PRC03 3 m at 4.85% Sn
  • PRC04 12 m at 0.98% Sn
  • PRC05 3 m at 1.35% Sn plus 1% Cu, 2.2% Pb, 1.76% Zn, 199ppm U, 6 oz/t Ag
New Geophysics

- NEW PACE GRAVITY SURVEY
- Northern Olympic Domain
- of the Gawler Craton

- 16 000 new stations
- 1.5km x 1.5km grid
- covering 45 000 sq kms

- Released Nov 2007
**New Gravity**

Reveals structural setting similar to Olympic Dam and Carrapateena (left-lateral faults resulting from regional transpression), as well as numerous potential empirical "point anomalies”

Suggests some potential shallower zones of basement

Provides better definition of the four key criteria for targeting IOCG mineralisation:

- presence of offset geophysical anomalies
- presence of syn-mineralisation structures
- presence of shallow basement and
- presence of possible Mesoproterozoic
**Centrex Metals Wilgerup Iron Project**

- Hematite rich banded iron formation
- 30km south east of Lock on Eyre Peninsula
- Recent high grade results
  - 62m @ 65.6% Fe
  - 100m @ 61.2% Fe
- New resource figure to be released in early 2007
South Australia

your best mineral investment destination