# Annual General Meeting 2005

24th November 2005

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# Building the future through ERMS SR

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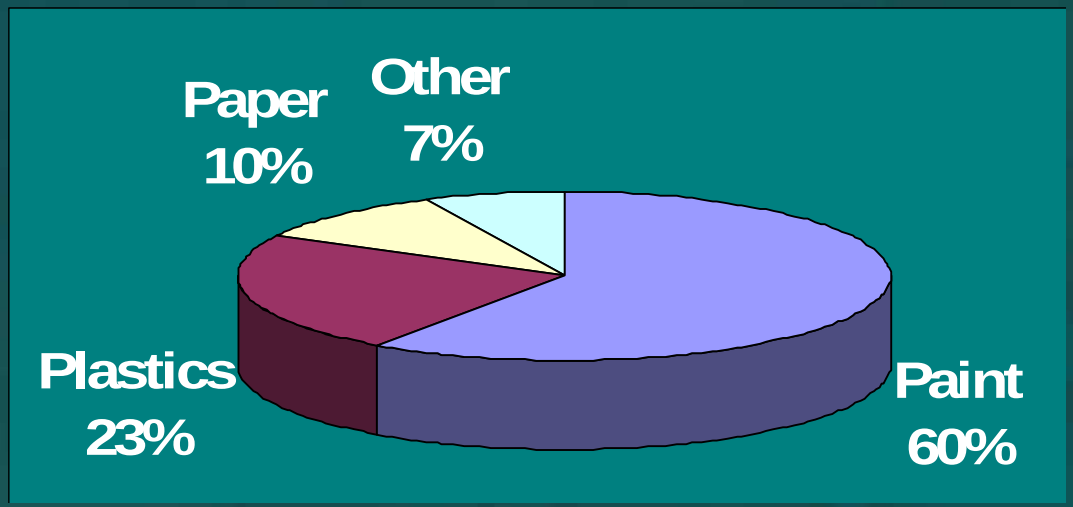
# Titanium Dioxide Industry

- 91% of titanium used as $TiO_2$ pigment
- US$8 billion industry; 4.8M tonnes $TiO_2$




- Two processes for pigment :
  - Sulfate (40%) – ilmenite, Ti slag
  - Chloride (60%) – high Ti feedstock

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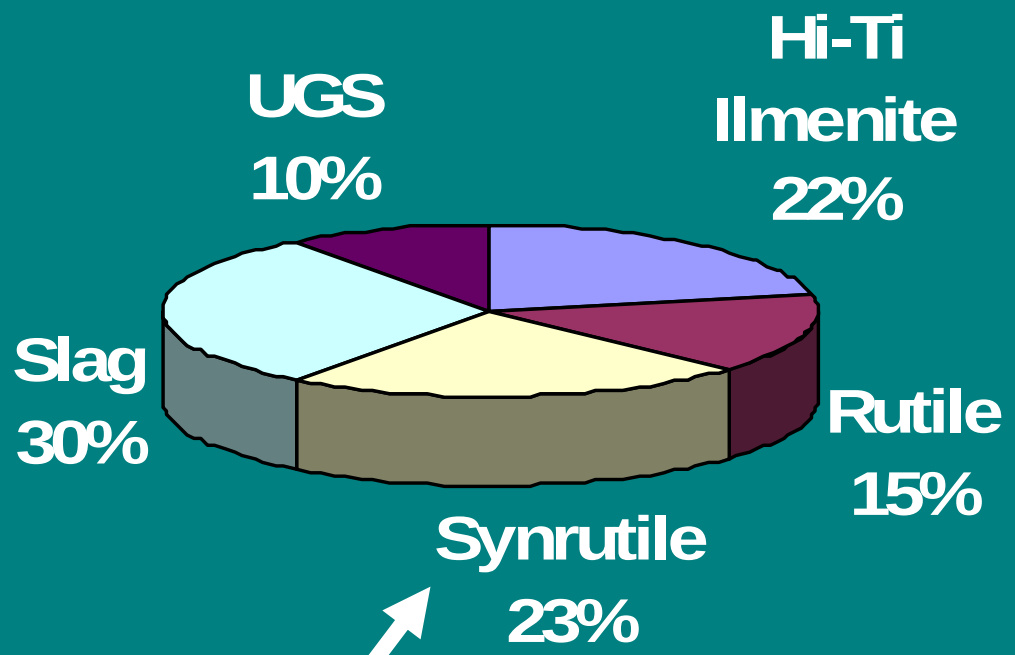
# Chloride Feedstock Consumption (2004) (2.9 million tonnes of TiO2 units )




**> $US 300M**

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# ERMS SR and the $TiO_2$ Industry

- Growth in high grade feedstock market
- Market shortfall – UGS expansion but no new SR plants planned
- Attractive economics (>20k tpa plant)
  - Highest grade SR
  - Iron co-product
- Opportunities in Australia……
  - Ilmenite supply agreements?
  - SR sales agreements?

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# Vision for ERMS SR (2004)

1. **Build a fully integrated ERMS SR Demonstration Plant (“DP”)**
   - **to demonstrate the technology**
   - **to complete the Feasibility Study**
2. **Construct the first commercial ERMS SR plant – 30,000 tpa**

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# Eastern Australia Project

- Cons. Rutile producing ~100k tpa hi-Cr ilmenite
- Late 2003 – MOUs with CRL (ilmenite) & Iluka (SR)
- Early 2004 – fundraising for Bankable Feas. Study
- 2004 – SSPP + placements; started DP upgrade
- 2005 – we recognised that the Qld project had:
  - Limited expansion potential (< 50,000 tpa SR)
  - Limited project life (15 years?)
- New opportunities – Murray Basin

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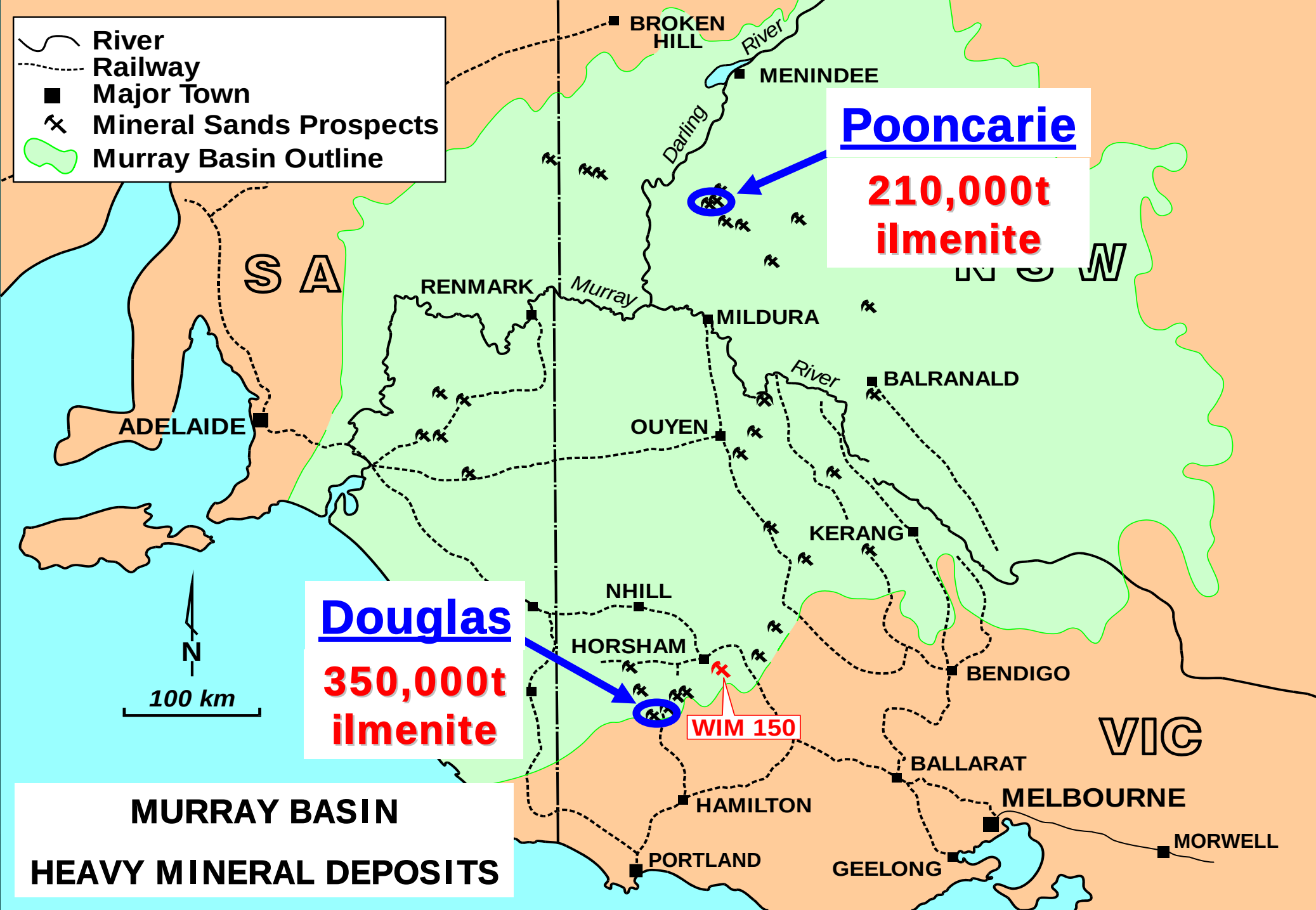
River
Railway
Major Town
Mineral Sands Prospects
Murray Basin Outline
BROKEN HILL
River
MENINDEE
Darling
Pooncarie
210,000t ilmenite
S A
RENMARK
Murray
MILDURA
River
BALRANALD
ADELAIDE
OUYEN
KERANG
NHILL
Douglas
350,000t ilmenite
HORSHAM
WIM 150
BENDIGO
VIC
BALLARAT
HAMILTON
MELBOURNE
MORWELL
PORTLAND
GEELONG
N
100 km
MURRAY BASIN
HEAVY MINERAL DEPOSITS

# Murray Basin Potential

- Ilmenite production > 500,000 tpa by 2008
- Brown coal – Latrobe Valley
- Black coal – Illawarra & Hunter Valley
- Road and broad gauge rail network
- Supportive State Governments
- Possible ERMS SR plant sites:
  - Broken Hill / Adelaide / Port Kembla (Pooncarie)
  - Hamilton / Portland (Douglas)
  - Morwell (all deposits, abundant coal)

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# New Vision for ERMS SR

1. **Build the integrated ERMS SR DP**
   - **to demonstrate the technology**
   - **to complete final feasibility study**
2. **Construct the first commercial ERMS SR plant – 60,000 tpa**
3. **Expand to World Class synrutile facility – 250,000 tpa ERMS SR**

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# The Demonstration Plant will:

- Be fully integrated (3,000 tpa ERMS SR)
  - Roasting & mag separation; continuous leaching; EARS acid regeneration & iron metallisation
- Minimise scale-up risk (20:1 for 60,000 tpa SR)
- Confirm continuous process reliability
- Provide data to obtain performance guarantees from equipment suppliers
- Provide parameters for engineering design / sign-off for feasibility study & financing

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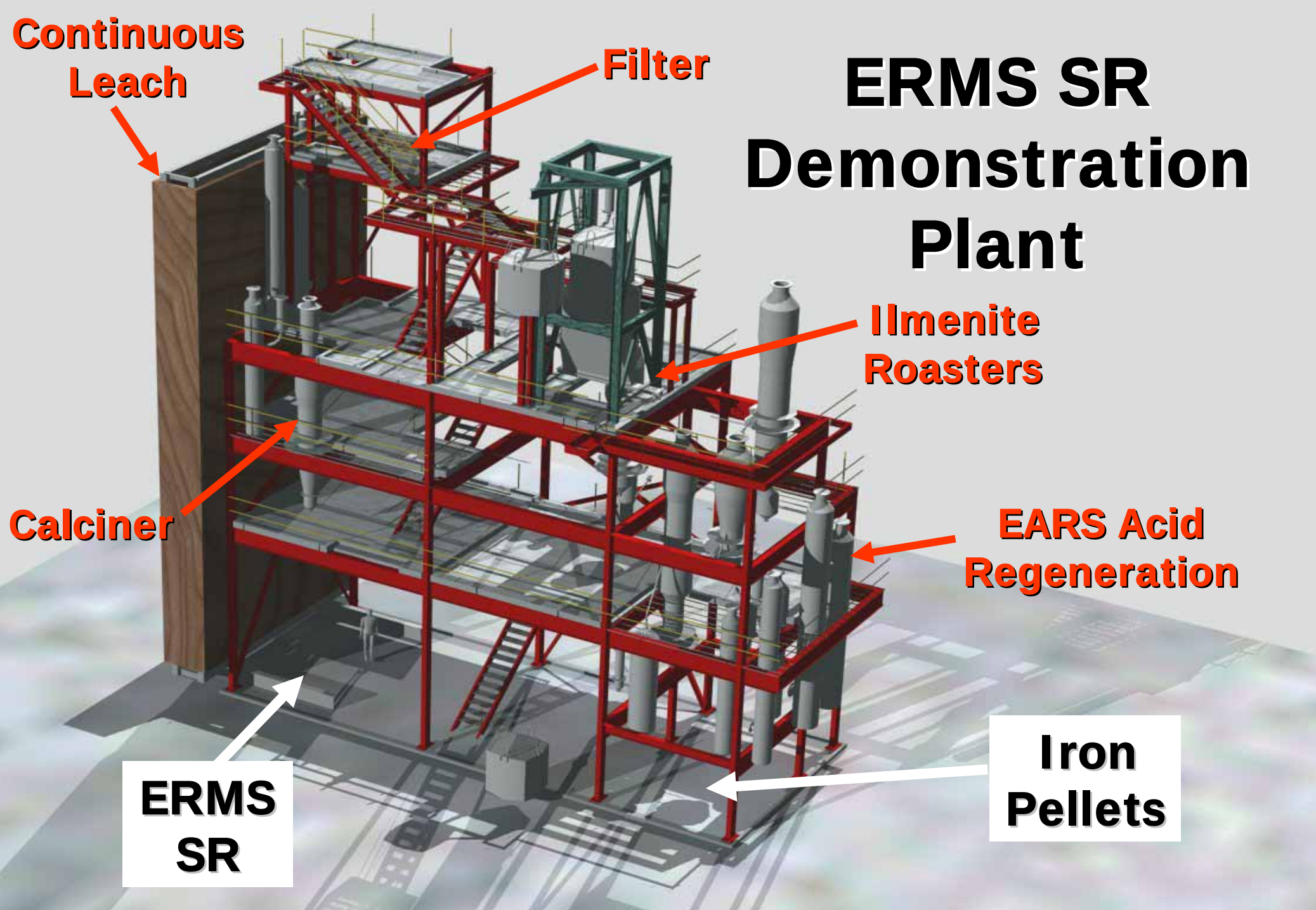
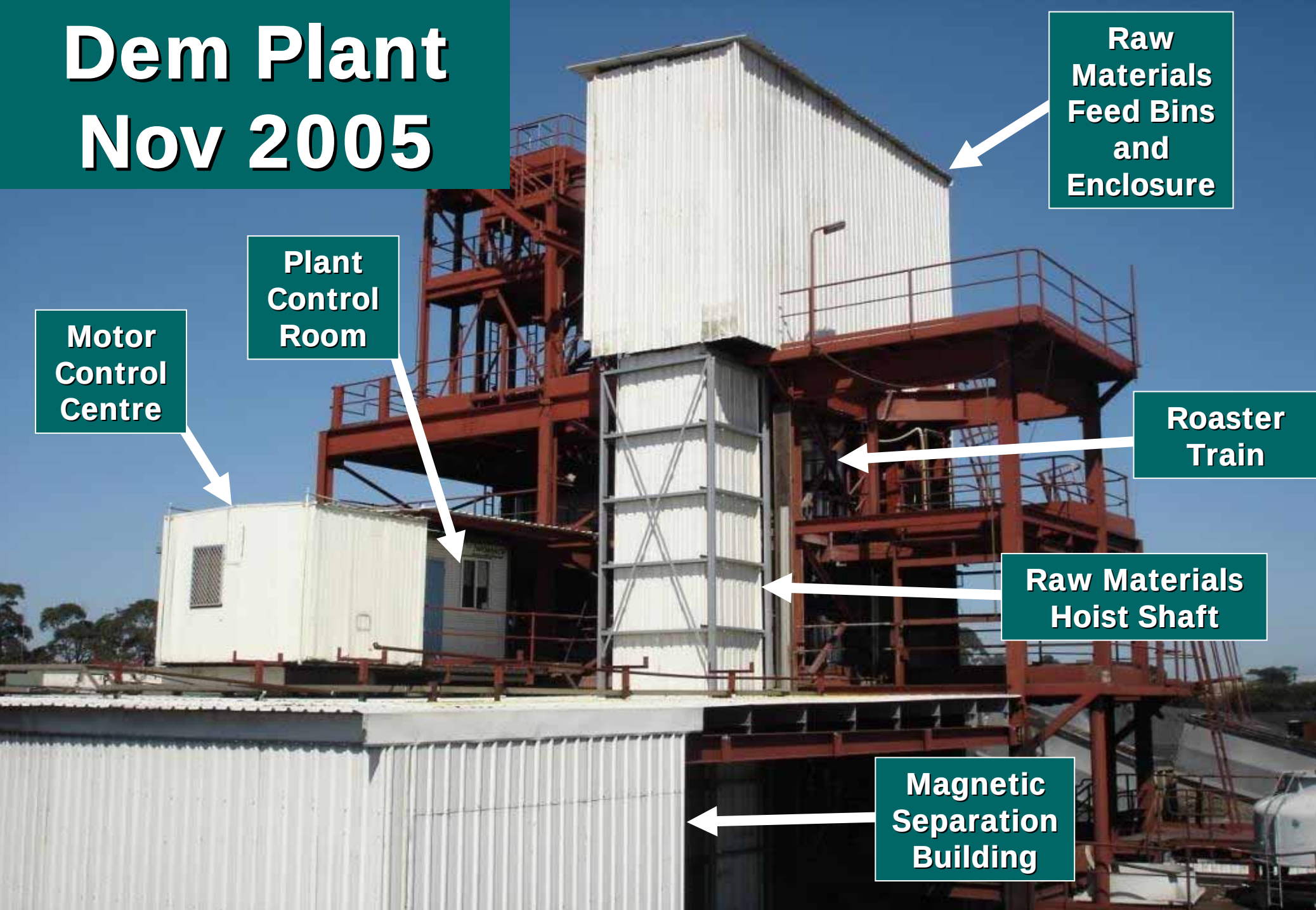

Continuous Leach
Filter
ERMS SR Demonstration Plant
Ilmenite Roasters
Calciner
EARS Acid Regeneration
ERMS SR
Iron Pellets

# Dem Plant Nov 2005



# ERMS SR - Stage One

- **Demonstration Plant**
  - Expenditure on the DP to date — $2.0 M
  - Additional capital for the DP — $2.7 M
  - Commission/operate the DP — $1.5 M
  - Ongoing engineering — $0.6 M

  Sub-total current requirement — $4.8 M
- **Feasibility Study**
  - Eng. design/cost, site, FS report — $1.0 M

  TOTAL — $5.8 M

# ERMS SR - Stage Two: 60,000 tpa Commercial Plant

- **Raw material inputs:**
  - Ilmenite (55% $TiO_2$) — 112,000 tpa
  - Brown coal (21 GJ/t) — 45, 000 tpa
  - Total energy requirement — 17.1 GJ/t SR
  - Make-up acid — 2,200 tpa
  - Water — 264,000 tpa
- **Production outputs:**
  - ERMS SR — 60,000 tpa
  - Iron co-product (DRI pellets) — 29,000 tpa

# ERMS SR - Stage Two: 60,000 tpa Commercial Plant Project Analysis

| | |
|---|---|
| Capital Cost | $ 77.4 M |
| Annual Revenue (SR & iron) | $ 43.4 M |
| Annual Operating Cost | $ 12.0 M |
| EBITDA | $ 31.4 M |
| IRR (project) | 31% |
| NPV (10%) | $126 M |
| Payback | < 3 years |

# Status of ERMS SR Project

- **Funding for Stage One:**
  - **Discussions well advanced with international group**
  - **Additional Australian funding sources**
  - **Confident of finalising DP funding by Q1 2006**

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# Status of ERMS SR Project

- **Stage One activities:**
  - Construction of Demonstration Plant
  - Ilmenite supply agreements – Murray Basin
  - SR off-take agreements for pigment [and metal]
  - Energy and other raw material sources
  - Evaluation of potential plant sites
  - Discussions with State Governments

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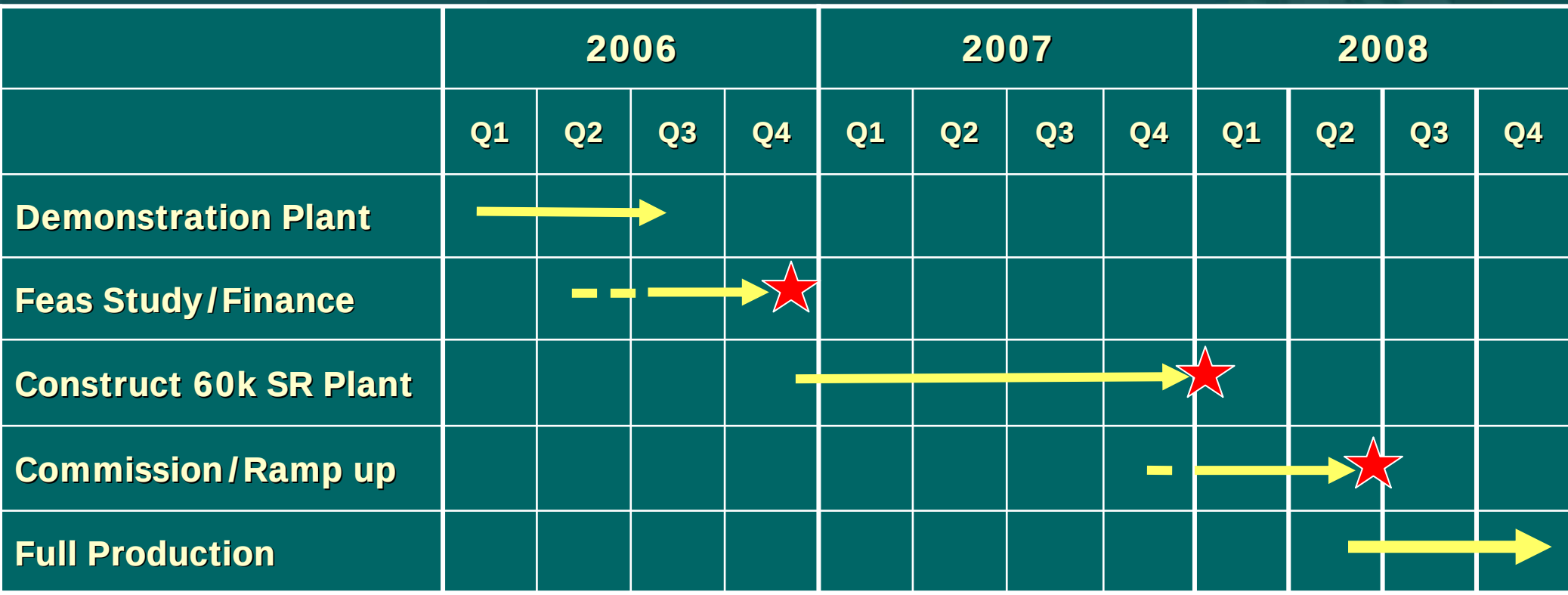
# Timetable – Stages 1 & 2




Project milestones

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# The Future for Austpac and ERMS SR

- Finalise DP and Feasibility Study based on Murray Basin ilmenite – 2006
- Use DP to generate income / licences
- Fund, construct and commission first commercial ERMS SR plant – 2007
- World Class synrutile facility based on Murray Basin ilmenite – 2010 onward
- International opportunities

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# Austpac has a bright future as a premium feedstock producer for both $TiO_2$ pigments and Ti metal

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