

ATTACHMENT I

OVERVIEW OF VALUE-ADDING TO QUEENSLAND MINERALS

APRIL 1999

OVERVIEW OF VALUE ADDING TO **QUEENSLAND MINERALS**

**Prepared by Project Development & Facilitation Division
Department of State Development**

**In Conjunction with the
Department of Mines and Energy**

April 1999

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ALUMINIUM

| Current Status Mining | Extent of Processing | Manufacturing | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------------|--------------------|-------------------|------------------|--|------------------|------------------|--|------------------|--|------------------|-----------------|------------------|----------------|--|----------------|------------------|-----------------|------------------|------------------|--|------------------|----------------|---------------------------|----------------|----------------|--|----------------|--|---|
| <p>Global Outlook Aluminium: Source: ABARE 1999</p> <ul style="list-style-type: none"> World Bauxite Production <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">1997 - 125,863 kt</td> <td style="width: 50%;">Alumina Production</td> </tr> <tr> <td>2003 - 140,000 kt</td> <td>1997 - 46,739 kt</td> </tr> <tr> <td></td> <td>2004 - 55,215 kt</td> </tr> </table> Primary Aluminium Production <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">1997 - 21,803 kt</td> <td style="width: 50%;"></td> </tr> <tr> <td>2004 - 26,353 kt</td> <td></td> </tr> </table> <p>Australia:</p> <ul style="list-style-type: none"> Bauxite Production <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">1997 - 43,000 kt</td> <td style="width: 50%;">Bauxite Exports</td> </tr> <tr> <td>2004 - 55,000 kt</td> <td>1997 - 4737 kt</td> </tr> <tr> <td></td> <td>2004 - 6183 kt</td> </tr> </table> Alumina Production <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">1997 - 13,252 kt</td> <td style="width: 50%;">Alumina Exports</td> </tr> <tr> <td>2004 - 16,460 kt</td> <td>1997 - 11,011 kt</td> </tr> <tr> <td></td> <td>2004 - 13,126 kt</td> </tr> </table> Primary Aluminium Production <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">1997 - 1395 kt</td> <td style="width: 50%;">Primary Aluminium Exports</td> </tr> <tr> <td>2004 - 1710 kt</td> <td>1997 - 1060 kt</td> </tr> <tr> <td></td> <td>2004 - 1317 kt</td> </tr> </table> <p>Queensland:</p> <ul style="list-style-type: none"> Weipa bauxite <ul style="list-style-type: none"> Substantial reserves of Bauxite at Weipa being mined at the average rate of 9.5 Mtpa. 250,000 tpa of beneficiated Bauxite from Comalco's Weipa plant is exported to Korea 150,000 tpa calcined bauxite produced at Weipa by Comalco suitable for abrasives & refractories manufacture. Product is exported to North America & Europe. <p>Other Cape York bauxite are located at Ely (600 Mt bauxite contains about 75 Mt of recoverable bauxite) and Aurukun Ltd (contains mineable bauxite reserves after beneficiation estimated at 300 Mt).</p> | 1997 - 125,863 kt | Alumina Production | 2003 - 140,000 kt | 1997 - 46,739 kt | | 2004 - 55,215 kt | 1997 - 21,803 kt | | 2004 - 26,353 kt | | 1997 - 43,000 kt | Bauxite Exports | 2004 - 55,000 kt | 1997 - 4737 kt | | 2004 - 6183 kt | 1997 - 13,252 kt | Alumina Exports | 2004 - 16,460 kt | 1997 - 11,011 kt | | 2004 - 13,126 kt | 1997 - 1395 kt | Primary Aluminium Exports | 2004 - 1710 kt | 1997 - 1060 kt | | 2004 - 1317 kt | <p>QAL Gladstone: Comalco – 30.3% Alcan – 21.4% Pechiney Resources – 20% Kaiser Australia – 28.3%</p> <ul style="list-style-type: none"> World's largest alumina refinery with a capacity of 3.65 Mtpa. 10% of world's alumina from bauxite mined at Weipa. <p>Proposed Comalco Alumina Refinery under evaluation by Comalco</p> | <p>Boyne Island Aluminium Smelter (Boyne Smelters Limited) (Gladstone): Tolling operation with Comalco having approx 55% shareholding, rest being Japanese interests – Sumitomo, Marubeni, SLM, Kobe, YKK, Ryowa</p> <ul style="list-style-type: none"> Capacity 490,000 tpa 3 pot lines Largest in Australia 4th largest in world Employs approx 1200 <p>Manufacturing:</p> <ul style="list-style-type: none"> Architectural Al product manufacture (eg. Al doors, windows frames etc.) had a turnover of \$516 M. in Qld in 1996 and employment of approx. 3900. <p>Vertical Integration</p> <ul style="list-style-type: none"> Qld has the only fully integrated Aluminium industry in Aust with bauxite mined at Weipa, an alumina refinery at Gladstone and an aluminium smelter at Boyne Island near Gladstone. |
| 1997 - 125,863 kt | Alumina Production | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2003 - 140,000 kt | 1997 - 46,739 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2004 - 55,215 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 21,803 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 26,353 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 43,000 kt | Bauxite Exports | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 55,000 kt | 1997 - 4737 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2004 - 6183 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 13,252 kt | Alumina Exports | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 16,460 kt | 1997 - 11,011 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2004 - 13,126 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 1395 kt | Primary Aluminium Exports | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 1710 kt | 1997 - 1060 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2004 - 1317 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

MAGNESIUM

| Current Status Mining | Extent of Processing | Manufacturing |
|--|--|---|
| <p>Magnesium Australian Resources Include:</p> <ul style="list-style-type: none"> • Golden Triangle Resources NL aims to prove up its inferred resource of 47Mt of high grade magnesite ore in Tasmania. • Semag Ltd SA have possible project based on deposits in Willouran Ranges • Crest Magnesium Tasmania have \$1 Bn magnesium project based on Lyon/Arthur River deposit • Mt Grace Resources NL magnesium metal project near Batchelor in the NT. Feasibility study to prove up resources. <p>Queensland Resources:</p> <ul style="list-style-type: none"> • QMC Magnesite at Kunwarara. This resource - 1.2 Bnt contains 500 Mt of nodular magnesite, is considered to be one of the world's largest magnesite deposits. Production in 1997/98 was 344,076 t of beneficiated high-grade magnesite. Other substantial deposits include Yamba, Marlborough, and Herbert Creek. | <p>Queensland Metals Corporation Magnesia Processing Plant:</p> <ul style="list-style-type: none"> • (QMAG) Rockhampton \$180 M plant producing magnesia for refractory bricks & furnace lining. <p>Magnesia Products:</p> <ul style="list-style-type: none"> - Calcined - Electrofused: capacity 30,000 tpa - Deadburned: capacity 120,000 tpa | <p>Magnesium Metal demonstration plant:</p> <ul style="list-style-type: none"> • \$45 M plant at Gladstone (1500 tpa) to prove up the commercial process for the full scale plant. • Magnesite from Kunwarara deposit <p>Magnesium Metal Commercial Plant :</p> <ul style="list-style-type: none"> • Est. Cost A\$800 M; Stanwell Site of 200 ha; operational by 2002. • Initial capacity 90 000 tpa with potential to expand to 360 000 tpa. • Committed to sell 45,000 t of magnesium annually to Ford Motor Co for up to 10 years. • Employment: 1000 construction + 300 operational |

COPPER

| Current Status Mining | Extent of Processing | Manufacturing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|----------------------------|------------------|------------------|-----------------|-----------------|-----------------|----------------|-----------------------|--------------|--------------------|----------------|--------------------|--------------------|-------------------|--------------|--------------|--------------|--------------|-----------|----------------|---------------------------|----------------|----------------|----------------|----------------|--|--------------------------|-----------|-----------------|--------------|-----------------|--|---------|----------|------------------|----------|--------|----------|--------------|----------|-----------------|---------|----------|---------|---|--|
| <p>Global Outlook Copper: Source: ABARE 1999</p> <table border="0"> <tr> <td>• World Copper Consumption</td> <td>Metal Production</td> </tr> <tr> <td>1997 – 13,094 kt</td> <td>1997 – 13,640kt</td> </tr> <tr> <td>2004 – 15,250kt</td> <td>2004 – 15,750kt</td> </tr> <tr> <td>• World Stocks</td> <td>Price (LME) (Nominal)</td> </tr> <tr> <td>1997 - 897kt</td> <td>1997 - US\$2,277/t</td> </tr> <tr> <td>2004 – 1,260kt</td> <td>2004 - US\$2,070/t</td> </tr> </table> <p>Australia:</p> <table border="0"> <tr> <td>• Mined Production</td> <td>Refined (Primary)</td> </tr> <tr> <td>1997 - 560kt</td> <td>1997 - 305kt</td> </tr> <tr> <td>2004 - 790kt</td> <td>2004 - 660kt</td> </tr> <tr> <td>• Exports</td> <td>Copper Refined</td> </tr> <tr> <td>Copper Ore & Concentrates</td> <td>1996/7 - 128kt</td> </tr> <tr> <td>1996/7 - 890kt</td> <td>2003/4 - 465kt</td> </tr> <tr> <td>2003/4 - 403kt</td> <td></td> </tr> </table> <p>• While not dominant in the world copper market, Australia’s copper industry is nevertheless a significant supplier, accounting for 5% of world mine production and around 3% of world primary refined production in 1998.</p> <p>Queensland:</p> <table border="0"> <tr> <td>Total Production 1997-98</td> <td>270,723 t</td> </tr> <tr> <td>Mount Isa Mines</td> <td>55% of total</td> </tr> <tr> <td>Others include:</td> <td></td> </tr> <tr> <td>Osborne</td> <td>36,615 t</td> </tr> <tr> <td>Selwyn-Mt Elliot</td> <td>23,087 t</td> </tr> <tr> <td>Eloise</td> <td>20,500 t</td> </tr> <tr> <td>Ernest Henry</td> <td>20,934 t</td> </tr> <tr> <td>Great Australia</td> <td>3,896 t</td> </tr> <tr> <td>Thalanga</td> <td>4,723 t</td> </tr> </table> <p>• Mount Isa Mine - largest copper producer in Australia. • Mount Isa, Cloncurry & Olympic Dam (SA) are main centres for copper in Aust. • Est 45% of world copper production by year 2000 will be processed by SX-EW technology at a cash cost of less than US\$0.50/lb</p> | • World Copper Consumption | Metal Production | 1997 – 13,094 kt | 1997 – 13,640kt | 2004 – 15,250kt | 2004 – 15,750kt | • World Stocks | Price (LME) (Nominal) | 1997 - 897kt | 1997 - US\$2,277/t | 2004 – 1,260kt | 2004 - US\$2,070/t | • Mined Production | Refined (Primary) | 1997 - 560kt | 1997 - 305kt | 2004 - 790kt | 2004 - 660kt | • Exports | Copper Refined | Copper Ore & Concentrates | 1996/7 - 128kt | 1996/7 - 890kt | 2003/4 - 465kt | 2003/4 - 403kt | | Total Production 1997-98 | 270,723 t | Mount Isa Mines | 55% of total | Others include: | | Osborne | 36,615 t | Selwyn-Mt Elliot | 23,087 t | Eloise | 20,500 t | Ernest Henry | 20,934 t | Great Australia | 3,896 t | Thalanga | 4,723 t | <p>Copper Refinery Limited Townsville (CRL):</p> <ul style="list-style-type: none"> • Qld’s major processor of Cu, refining anode Cu to high grade Cu sheet for export through Port of Townsville. • World leader in electrolytic Cu refining technology. • Expansion of refinery will take capacity to 270,000 t in 1999. <p>Mount Isa Copper Smelter Upgrade:</p> <ul style="list-style-type: none"> • Completed 1998. Capacity 250,000 tpa (Can now treat ore from other mines) <p>Proposed QSMELT Copper Smelter Project:</p> <ul style="list-style-type: none"> • Located at Phosphate Hill and dependent on WMC contracts. Commissioning by end 2000 possible. • Propose to process concentrates from Trekelano, Selwyn (care & maintenance), Osborne, Eloise for production of Cu Matte (63% Cu) & Sulphuric Acid by product. • Process 250,000 tpa of copper concentrate to produce 150,000 tpa copper matte & 170,000 tpa Sulphuric Acid <p>Cathode Copper is produced on site at Gunpowder, Australia and Mt Cuthbert mines and is sent by road to Port Kembla and Sydney for manufacture into copper wire</p> | <p>Value adding Comment</p> <ul style="list-style-type: none"> • Manufacture of copper castings and alloys occurs in Qld on a domestic scale. • CRL copper wire plant was closed in 1997 • Copper Sulphate plant |
| • World Copper Consumption | Metal Production | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 – 13,094 kt | 1997 – 13,640kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 – 15,250kt | 2004 – 15,750kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • World Stocks | Price (LME) (Nominal) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 897kt | 1997 - US\$2,277/t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 – 1,260kt | 2004 - US\$2,070/t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • Mined Production | Refined (Primary) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 560kt | 1997 - 305kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 790kt | 2004 - 660kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • Exports | Copper Refined | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Copper Ore & Concentrates | 1996/7 - 128kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1996/7 - 890kt | 2003/4 - 465kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2003/4 - 403kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Production 1997-98 | 270,723 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mount Isa Mines | 55% of total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others include: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Osborne | 36,615 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Selwyn-Mt Elliot | 23,087 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eloise | 20,500 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ernest Henry | 20,934 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Great Australia | 3,896 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Thalanga | 4,723 t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

NICKEL

| Current Status Mining | Extent of Processing | Manufacturing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------------------|--------------------------------|-----------------|-----------------|--|-----------------|---------------|---------------|---------------|---------------------|--|---------------------|---------------|---------|--------------------------------|---------------|---------------|--|--|---------------|--|-------------------|---------------|-------------------|--------------------|--|--------------------|--|---------------|-------|--------|--------|--------|-------|-------|--------|-------|-------|-------|---|---|
| <p>Global Outlook Nickel: Source: ABARE 1999</p> <ul style="list-style-type: none"> World Production <table border="0"> <tr> <td>1997 - 1,013 kt</td> <td>Consumption</td> </tr> <tr> <td>2004 - 1,247 kt</td> <td>1997 - 1,005 kt</td> </tr> <tr> <td></td> <td>2004 - 1,236 kt</td> </tr> </table> Stocks <table border="0"> <tr> <td>1997 - 153 kt</td> <td>Price Nominal</td> </tr> <tr> <td>2004 - 234 kt</td> <td>1997 - US\$/t 6,926</td> </tr> <tr> <td></td> <td>2004 - US\$/t 4,450</td> </tr> </table> <p>Australia:</p> <ul style="list-style-type: none"> Mine (Nickel content of domestic mine production) <table border="0"> <tr> <td>1997 - 115 kt</td> <td>Refined</td> <td>(Class I, II and Intermediate)</td> </tr> <tr> <td>2004 - 269 kt</td> <td>1997 - 146 kt</td> <td></td> </tr> <tr> <td></td> <td>2004 - 303 kt</td> <td></td> </tr> </table> Value of Exports Nominal <table border="0"> <tr> <td>1997 - A\$M 1,172</td> <td>Price Nominal</td> </tr> <tr> <td>2004 - A\$M 1,435</td> <td>1997 - A\$/t 9,261</td> </tr> <tr> <td></td> <td>2004 - A\$/t 6,389</td> </tr> </table> New projects coming on stream <table border="0"> <tr> <td></td> <td>Murrin Murrin</td> <td>Cawse</td> <td>Bulong</td> </tr> <tr> <td>Nickel</td> <td>45000t</td> <td>9000t</td> <td>9000t</td> </tr> <tr> <td>Cobalt</td> <td>3000t</td> <td>2000t</td> <td>1000t</td> </tr> </table> <p>Queensland:</p> <ul style="list-style-type: none"> No mining at present. Imports from Indonesia & New Caledonia. Resources at Marlborough (Marlborough Nickel Project – Preston Resources and other company tenures). Resources at Gunawarra, Minnamoolka, Greenvale, Lucknow, Valley of Lagoons, Brolga/Canouna, Verde/Tinto. | 1997 - 1,013 kt | Consumption | 2004 - 1,247 kt | 1997 - 1,005 kt | | 2004 - 1,236 kt | 1997 - 153 kt | Price Nominal | 2004 - 234 kt | 1997 - US\$/t 6,926 | | 2004 - US\$/t 4,450 | 1997 - 115 kt | Refined | (Class I, II and Intermediate) | 2004 - 269 kt | 1997 - 146 kt | | | 2004 - 303 kt | | 1997 - A\$M 1,172 | Price Nominal | 2004 - A\$M 1,435 | 1997 - A\$/t 9,261 | | 2004 - A\$/t 6,389 | | Murrin Murrin | Cawse | Bulong | Nickel | 45000t | 9000t | 9000t | Cobalt | 3000t | 2000t | 1000t | <p>QNI Nickel Cobalt Refinery:</p> <ul style="list-style-type: none"> Yabulu near Townsville. Capacity 30,000 tpa. Processing 3.3 Mt imported nickel ore. <p>Marlborough Nickel Project</p> <ul style="list-style-type: none"> Proposed mine and nickel cobalt processing plant; \$739 M investment; 19,100 tpa nickel; 1000 tpa cobalt. Proposes to be in lower half of cost curve for world producers. <p>Production</p> <ul style="list-style-type: none"> □acid leach technology for new projects represents a paradigm shift - halving in production costs from \$2 to \$1/lb. <p>Vertical Integration</p> <ul style="list-style-type: none"> No vertical integration at present (QNI) however Marlborough will introduce mining - processing. | <p>Queensland:</p> <ul style="list-style-type: none"> No stainless steel is manufactured in Qld at present. No alloy manufacture at present. |
| 1997 - 1,013 kt | Consumption | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 1,247 kt | 1997 - 1,005 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2004 - 1,236 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 153 kt | Price Nominal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 234 kt | 1997 - US\$/t 6,926 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2004 - US\$/t 4,450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 115 kt | Refined | (Class I, II and Intermediate) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 269 kt | 1997 - 146 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2004 - 303 kt | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1997 - A\$M 1,172 | Price Nominal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004 - A\$M 1,435 | 1997 - A\$/t 9,261 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2004 - A\$/t 6,389 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Murrin Murrin | Cawse | Bulong | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nickel | 45000t | 9000t | 9000t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cobalt | 3000t | 2000t | 1000t | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

LEAD

| Current Status Mining | Extent of Processing | Manufacturing | | | | | | | | | | | | | | | | | | | | |
|---|------------------------------------|-----------------------------------|----------------|-----------------|--------------|------------------------------------|--------------|----------------|--------------|-----------------------------------|--------------|--------------|--------------|-----------------------------------|--------------|----------------|--------------------------------------|--------------------------------|----------------|----------------|--|--|
| <p>Global Outlook Lead: Source: ABARE 1999</p> <ul style="list-style-type: none"> World Consumption <table border="0"> <tr> <td>1997 – 6,011kt</td> <td>Mine Production 1997 – 3,033kt</td> </tr> <tr> <td>2004 – 6,600kt</td> <td>2004 – 3,3330kt</td> </tr> </table> Stocks <table border="0"> <tr> <td>1997 - 439kt</td> <td>Metal Production 1997 – 6,030kt</td> </tr> <tr> <td>2004 - 600kt</td> <td>2004 – 6,780kt</td> </tr> </table> <p>Australia:</p> <ul style="list-style-type: none"> Mined Production <table border="0"> <tr> <td>1997 - 516kt</td> <td>Refined (Primary) 1997 - 202kt</td> </tr> <tr> <td>2004 - 715kt</td> <td>2004 - 250kt</td> </tr> </table> Bullion Production <table border="0"> <tr> <td>1997 - 191kt</td> <td>Bullion Exports 1996/7 - 164kt</td> </tr> <tr> <td>2004 - 180kt</td> <td>2003/4 - 150kt</td> </tr> </table> Exports <table border="0"> <tr> <td>Ore & Concentrates 1996/7 – 178kt</td> <td>Refined Lead 1996/7 - 177kt</td> </tr> <tr> <td>2003/4 – 380kt</td> <td>2003/4 - 215kt</td> </tr> </table> <p>Australia with 19% of world mine production in 1998 was the world's 2nd largest producer of mined lead after China.</p> <p>Queensland</p> <ul style="list-style-type: none"> Australia's leading producer of lead. Production 1997/98 – 250,094 t of which Mount Isa & Hilton produce 159,039 t and Cannington 80,846 t. Century – 40 ktpa when commissioned end 1999 <ul style="list-style-type: none"> Other deposits not yet mined <ul style="list-style-type: none"> - Dugald River 38 Mt (2.1%Pb) - George Fisher - reserve 81 Mt (5%Pb) - Lady Loretta – 40 ktpa bullion Crude lead produced at Mount Isa is refined in the UK to produce high quality lead alloys & silver. | 1997 – 6,011kt | Mine Production 1997 – 3,033kt | 2004 – 6,600kt | 2004 – 3,3330kt | 1997 - 439kt | Metal Production 1997 – 6,030kt | 2004 - 600kt | 2004 – 6,780kt | 1997 - 516kt | Refined (Primary) 1997 - 202kt | 2004 - 715kt | 2004 - 250kt | 1997 - 191kt | Bullion Exports 1996/7 - 164kt | 2004 - 180kt | 2003/4 - 150kt | Ore & Concentrates 1996/7 – 178kt | Refined Lead 1996/7 - 177kt | 2003/4 – 380kt | 2003/4 - 215kt | <p>Queensland:</p> <ul style="list-style-type: none"> No refining in Qld at present MIM plant (Britannia Refined Metals Ltd) at Northfleet UK is the world's largest primary lead refinery (230,000 t primary lead; 35,000 t secondary lead & 500 t of by-product silver) | |
| 1997 – 6,011kt | Mine Production 1997 – 3,033kt | | | | | | | | | | | | | | | | | | | | | |
| 2004 – 6,600kt | 2004 – 3,3330kt | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 439kt | Metal Production 1997 – 6,030kt | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 600kt | 2004 – 6,780kt | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 516kt | Refined (Primary) 1997 - 202kt | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 715kt | 2004 - 250kt | | | | | | | | | | | | | | | | | | | | | |
| 1997 - 191kt | Bullion Exports 1996/7 - 164kt | | | | | | | | | | | | | | | | | | | | | |
| 2004 - 180kt | 2003/4 - 150kt | | | | | | | | | | | | | | | | | | | | | |
| Ore & Concentrates 1996/7 – 178kt | Refined Lead 1996/7 - 177kt | | | | | | | | | | | | | | | | | | | | | |
| 2003/4 – 380kt | 2003/4 - 215kt | | | | | | | | | | | | | | | | | | | | | |

ZINC

| Current Status Mining | Extent of Processing | Manufacturing | | | | | | | | | | | | | | | | | | |
|---|----------------------|-----------------|----------------|----------------|--|----------------|-----------------|--------|-----------------|--------------|--|--------------|----------------|---------|-----------------|--------------|--|--------------|--|--|
| <p>Global Outlook Zinc: Source: ABARE 1999</p> <ul style="list-style-type: none"> • World consumption <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">1997 – 7,758kt</td> <td>Mine Production</td> </tr> <tr> <td style="padding-right: 20px;">2004 – 8,590kt</td> <td>1997 – 7,335kt</td> </tr> <tr> <td></td> <td>2004 – 8,420kt</td> </tr> </table> • Metal Production <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">1997 – 7,733 kt</td> <td>Stocks</td> </tr> <tr> <td style="padding-right: 20px;">2004 – 8,760 kt</td> <td>1997 - 900kt</td> </tr> <tr> <td></td> <td>2004 - 920kt</td> </tr> </table> <p>Australia:</p> <ul style="list-style-type: none"> • Mined Production <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">1997 – 1,060kt</td> <td>Refined</td> </tr> <tr> <td style="padding-right: 20px;">2004 – 11,550kt</td> <td>1997 - 319kt</td> </tr> <tr> <td></td> <td>2004 - 500kt</td> </tr> </table> • Australia produced 14% of zinc mine production in 1998 making it the third largest producer of mined zinc after China and Canada. • World's largest exporter of zinc ores & concentrates • New low cost producers coming on stream. <p>Queensland:</p> <ul style="list-style-type: none"> • 1997/98 production – 200,255 t. • Australia's leading producer of zinc <ul style="list-style-type: none"> – Century – 450 ktpa - mostly export. Commissioning end 1999. • Pasminco Century Mine: <ul style="list-style-type: none"> – Will produce annually 7% of world output – Slurried to Karumba for export for further processing. Half to Budel smelter in Holland • Other deposits not yet mined : <ul style="list-style-type: none"> – Dugald River - Pasminco now investigating options – George Fisher (Hilton Nth) - capacity 170 ktpa - mid 2000 and will largely replace Mount Isa and Hilton in 5 years – Lady Loretta – 83 ktpa | 1997 – 7,758kt | Mine Production | 2004 – 8,590kt | 1997 – 7,335kt | | 2004 – 8,420kt | 1997 – 7,733 kt | Stocks | 2004 – 8,760 kt | 1997 - 900kt | | 2004 - 920kt | 1997 – 1,060kt | Refined | 2004 – 11,550kt | 1997 - 319kt | | 2004 - 500kt | <p>Sun Metals Zinc Refinery:</p> <ul style="list-style-type: none"> • Stage 1 - 170 ktpa Commissioning end 1999 • Eventual capacity 350 ktpa • World's most technically advanced zinc smelting & electrolytic zinc refinery • Custom smelter drawing concentrates from Qld and international sources. | |
| 1997 – 7,758kt | Mine Production | | | | | | | | | | | | | | | | | | | |
| 2004 – 8,590kt | 1997 – 7,335kt | | | | | | | | | | | | | | | | | | | |
| | 2004 – 8,420kt | | | | | | | | | | | | | | | | | | | |
| 1997 – 7,733 kt | Stocks | | | | | | | | | | | | | | | | | | | |
| 2004 – 8,760 kt | 1997 - 900kt | | | | | | | | | | | | | | | | | | | |
| | 2004 - 920kt | | | | | | | | | | | | | | | | | | | |
| 1997 – 1,060kt | Refined | | | | | | | | | | | | | | | | | | | |
| 2004 – 11,550kt | 1997 - 319kt | | | | | | | | | | | | | | | | | | | |
| | 2004 - 500kt | | | | | | | | | | | | | | | | | | | |

SILVER

| Current Status Mining | Extent of Processing | Manufacturing |
|---|----------------------|------------------------------------|
| <p>Queensland Silver:</p> <ul style="list-style-type: none"> • 1997/98 production total – 810,196 kg • Significant Suppliers <ul style="list-style-type: none"> – Mount Isa & Hilton Mines – 415,937 kg – Cannington – 380,548 kg • Other Sources <ul style="list-style-type: none"> - Century Zinc when operational (Production 780 kt zinc & silver concentrate therefore will become a significant producer) - Highway/Reward <p>By-Product of Gold Industry</p> <ul style="list-style-type: none"> • Silver is also a by-product of gold production • 1996/97 production total >18,000 kg • Significant suppliers <p>Mount Leyshon, Kidstone, Eloise, Ravenswood, Pajingo/Vera/Nancy, Thalanga (closing), Red Dome (closed).</p> <p>Comments:</p> <ul style="list-style-type: none"> • All silver occurrences in Qld are with base metals. • All Mount Isa silver exported to UK in lead ingots. | | <p>Queensland Jewellery</p> |

COAL

| Current Status Mining | Extent of Processing | Manufacturing | | | | | | | | | | | | | | | | | | |
|---|----------------------|---------------|--------------|--------------|--------------|--------------|---------------|---------|-------------|-------------|-------------|--------------|--|----------------------|--------------|-------------|--------------|-------------|---|--|
| <p>Global Outlook Coal: Source: ABARE 1999</p> <ul style="list-style-type: none"> World Total Coal Exports - Seaborne Coal Trade <table border="0" style="margin-left: 20px;"> <tr> <td>Metallurgical</td> <td>Thermal</td> </tr> <tr> <td>1997 – 197Mt</td> <td>1997 – 308Mt</td> </tr> <tr> <td>2004 – 212Mt</td> <td>2004 – 416Mt</td> </tr> </table> <p>Australia:</p> <ul style="list-style-type: none"> Australian Exports <table border="0" style="margin-left: 20px;"> <tr> <td>Metallurgical</td> <td>Thermal</td> </tr> <tr> <td>1997 – 83Mt</td> <td>1997 – 74Mt</td> </tr> <tr> <td>2004 – 93Mt</td> <td>2004 – 103Mt</td> </tr> </table> Aust Production <table border="0" style="margin-left: 20px;"> <tr> <td></td> <td>Domestic Consumption</td> </tr> <tr> <td>1997 – 208Mt</td> <td>1997 – 57Mt</td> </tr> <tr> <td>2004 – 251Mt</td> <td>2004 – 57Mt</td> </tr> </table> <p>Queensland:</p> <ul style="list-style-type: none"> Production 1997/98 – 106 Mt of which 19.4 Mt were consumed domestically and 86.3 Mt were exported. Largest single coal exporting province in the world Export of coking coal is mainstay of Qld coal industry - Japan, Korea & India being main export destinations, but exports to Europe increasing Thermal coal is one third of coal exports Employment 1997-98 – 10,732 World efficient mining techniques & technology | Metallurgical | Thermal | 1997 – 197Mt | 1997 – 308Mt | 2004 – 212Mt | 2004 – 416Mt | Metallurgical | Thermal | 1997 – 83Mt | 1997 – 74Mt | 2004 – 93Mt | 2004 – 103Mt | | Domestic Consumption | 1997 – 208Mt | 1997 – 57Mt | 2004 – 251Mt | 2004 – 57Mt | <p>Queensland:</p> <ul style="list-style-type: none"> Washing of coal occurs to maximise calorific value and produce specific market product. Value-adding to develop thermal coal market, including coal blending | <p>Bowen Coke Plant (MIM)</p> <ul style="list-style-type: none"> Coke produced from Collinsville coal – used in smelting as the carbon source. |
| Metallurgical | Thermal | | | | | | | | | | | | | | | | | | | |
| 1997 – 197Mt | 1997 – 308Mt | | | | | | | | | | | | | | | | | | | |
| 2004 – 212Mt | 2004 – 416Mt | | | | | | | | | | | | | | | | | | | |
| Metallurgical | Thermal | | | | | | | | | | | | | | | | | | | |
| 1997 – 83Mt | 1997 – 74Mt | | | | | | | | | | | | | | | | | | | |
| 2004 – 93Mt | 2004 – 103Mt | | | | | | | | | | | | | | | | | | | |
| | Domestic Consumption | | | | | | | | | | | | | | | | | | | |
| 1997 – 208Mt | 1997 – 57Mt | | | | | | | | | | | | | | | | | | | |
| 2004 – 251Mt | 2004 – 57Mt | | | | | | | | | | | | | | | | | | | |

ENERGY - GAS

| Current Status Mining | Extent of Processing | Manufacturing | | | | | | |
|--|-------------------------|-----------------------|-----|-------------------------|------------|-------------------------|--|--|
| <p>ENERGY – Gas Source: ABARE 1999</p> <p>Australia:</p> <ul style="list-style-type: none"> • Natural Gas Production 1997 – 29.8 Gm³ 2004 – 41.2 Gm³ • LNG Exports 1997 – 7.5 Mt 2004 – 7.8 Mt <p style="text-align: right;">LPG Production 1997 – 3,790 MI 2004 – 5,405 MI</p> <p style="text-align: right;">LPG Exports 1997 – 2,421 MI 2004 – 3,208 MI</p> <p>Queensland:</p> <ul style="list-style-type: none"> • Production <table border="0" style="margin-left: 20px;"> <tr> <td>Natural Gas</td> <td>2,600 Mm³</td> </tr> <tr> <td>LPG</td> <td>260 MI (1.63 M barrels)</td> </tr> <tr> <td>Condensate</td> <td>220 MI (1.38 M barrels)</td> </tr> </table> • Petroleum Reserves are in 4 main geological and geographical regions: <ul style="list-style-type: none"> • St George & Moonie Regions of the Bowen & Surat Basins in Sth Qld. • Injune – Emerald regions of the Denison Trough in East Qld. • Cooper & Eromanga Basin in SW Qld. • Adavale Basin, SW of Blackall in Central Qld. • Coal Seam Methane <ul style="list-style-type: none"> • Qld has extensive resources potentially one of Aust's greatest energy assets - 4000 Bn m³ • Further developments of coal seam methane production techniques may be needed to release the methane. | Natural Gas | 2,600 Mm ³ | LPG | 260 MI (1.63 M barrels) | Condensate | 220 MI (1.38 M barrels) | <p>Queensland: Coal Seam Methane</p> <ul style="list-style-type: none"> • Boral, BHP, Tristar are putting small quantities of coal seam methane into state gas pipeline on limited short-term contracts. • Transfield & Tristar are considering a \$1 Bn gas pipeline project based on their initial estimate of proven reserves of 200 Pj of Coal Seam Methane at Durham Downs. Pipelines proposed from Durham Downs to existing Wallumbilla pipeline and to Townsville to supply existing power stations. | <p>Value Adding Orica's 25,000 tpa sodium cyanide plant</p> <ul style="list-style-type: none"> • Orica also produces ammonium nitrate at Yarwun to make explosives. • WMC high analysis fertiliser plant Phosphate Hill under construction, 1 Mtpa high analysis ammonium phosphate fertilizer. • Dyno/Wesfarmers ammonium nitrate plant Moura under construction (180 000 tpa). • Incitec Ltd Brisbane - fertilizers. |
| Natural Gas | 2,600 Mm ³ | | | | | | | |
| LPG | 260 MI (1.63 M barrels) | | | | | | | |
| Condensate | 220 MI (1.38 M barrels) | | | | | | | |

ENERGY - OIL SHALE

| Current Status Mining | Extent of Processing | Manufacturing |
|---|---|---------------|
| <p>ENERGY – Oil Shale</p> <p>Queensland:</p> <ul style="list-style-type: none"> • Contains majority of currently identified oil shale deposits in Australia. • 4780 Gt in Qld = 30 Bn barrels of insitu shale oil. • Oil shale reserves are 10 times more than known /identified conventional oil and gas reserves in Australia • Qld’s reserves are soft, easy to mine, do not powder and have fewer impurities and are located close to established infrastructure. • Also found in thick seams and at shallow depths. | <p>Stuart Oil Shale Project (Gladstone)</p> <ul style="list-style-type: none"> • Stuart Resource - 3 Bn barrels • Stage I Demonstration Plant Production 4500 bpd To commence production June 1999 (equivalent to 30% Qld’s conventional production). • Stage II Production will increase to 15,000 bpd (doubles Qld’s oil production). Commitment expected by 2000 And is based on success of Stage I, Stage II is a single commercial scale processing module and associated oil recovery processing facility. • Stage III Production to 60,000 bpd Commercial scale plant which uses multiple commercial modules developed in Stage II Based on success of technical and economic criteria, community acceptance and environmental requirements. | |

ENERGY - PETROLEUM OIL

| Current Status Mining | Extent of Processing | Manufacturing |
|--|--|---------------|
| <p>ENERGY – Petroleum Oil</p> <p>Australia: Source: ABARE 1999</p> <ul style="list-style-type: none"> Crude oil & condensate Production 1997 – 31,049 MI 2004 – 31,200 MI Exports 1997 – 12,401 MI 2004 – 17,300 MI Imports 1997 – 24,768 MI 2004 – 30,294 MI <p>Queensland production – 1997/98 720 MI (4.52 M barrels)</p> | <p>Australia - Refinery Products: 1997 42,867 MI 2004 47,300 MI (ABARE Source)</p> <p>Queensland:</p> <p>BP Bulwer Island Refinery</p> <ul style="list-style-type: none"> Capacity 73,500 bpd expansion underway will increase capacity to 85,000 bpd and improve fuel quality (to be completed early 2001) <p>Caltex Lytton Refinery:</p> <ul style="list-style-type: none"> Capacity 100,000 bpd | |

MINERAL SANDS - TITANIUM

| Current Status Mining | Extent of Processing | Manufacturing | | | | | | | | | | | | | | | | | | | | | |
|---|---|----------------|----------------|----------------|-----------|-----|-----|-------------|-------|-------|-----------|-----|-----|---------------|-------|-------|----------------|---------|--------------|---------|--------------|---------|--|
| <p>Australia:</p> <ul style="list-style-type: none"> • Australia is the world's largest producer of heavy mineral sands and Qld is the second largest producer after WA. Almost 90% of production is exported as sand and associated value added products. • Aust. production 160,000 t. (1997) <p>Queensland:</p> <ul style="list-style-type: none"> • Most mineral sand deposits occur in coastal beach and dune systems skirting the Queensland coastline. • Beach and dune sands contain four heavy minerals of economic interest – rutile, zircon, ilmenite and monazite. Mining of mineral sands is currently restricted to high dune deposits on North Stradbroke Island. • CRL's mine on North Stradbroke Island is the only mineral sands mining operation in Queensland. Resources sufficient for more than 10 years. • Goondicum Crater & Upper Burnett River A large ilmenite resources with an indicated reserve of 10Mt. Potential feedstock for synthetic rutile plant & pigment production. Planned start-up 1999 producing 1.3 Mt ilmenite and 0.5 Mt titano-magnetite in the first 5 years. • Some dune and beach deposits of heavy mineral sand from Middle & Hummock Hill Islands & Agnes Waters. | <p>Processing includes:</p> <ul style="list-style-type: none"> • Separation into major components <ul style="list-style-type: none"> – Titanium minerals, mostly rutile (TiO₂) and ilmenite (Fe TiO₃) – Zircon • Upgrading ilmenite to form synthetic rutile (synrutile has >90% TiO₂) • TiO₂ white pigment from rutile, synrutile • Zircon micronising (extreme fine grinding). <p>Australian Production Concentrates: Source: ABARE 1998</p> <table border="1"> <thead> <tr> <th></th> <th><u>1997/98</u></th> <th><u>2001/02</u></th> </tr> </thead> <tbody> <tr> <td>Rutile kt</td> <td>242</td> <td>240</td> </tr> <tr> <td>Ilmenite kt</td> <td>2,352</td> <td>2,800</td> </tr> <tr> <td>Zircon kt</td> <td>427</td> <td>452</td> </tr> <tr> <td>Total Conc kt</td> <td>3,021</td> <td>3,492</td> </tr> </tbody> </table> <p>Aust. TiO₂ White Pigment Production 2 Plants (WA) with total capacity of 160,000 tpa now operating at near full capacity. Proposed expansions will bring Aust to 7% of world capacity by 2001 making it the largest TiO₂ producer in the Asia Pacific Region.</p> <p>Queensland Mineral Sands Processing:</p> <ul style="list-style-type: none"> • <u>1996/7</u> <table border="1"> <tbody> <tr> <td>Ilmenite Conc.</td> <td>70,000t</td> </tr> <tr> <td>Rutile Conc.</td> <td>51,000t</td> </tr> <tr> <td>Zircon Conc.</td> <td>37,000t</td> </tr> </tbody> </table> <p>Queensland has no TiO₂ white pigment production.</p> | | <u>1997/98</u> | <u>2001/02</u> | Rutile kt | 242 | 240 | Ilmenite kt | 2,352 | 2,800 | Zircon kt | 427 | 452 | Total Conc kt | 3,021 | 3,492 | Ilmenite Conc. | 70,000t | Rutile Conc. | 51,000t | Zircon Conc. | 37,000t | <p>Potential Titanium Projects</p> <ul style="list-style-type: none"> • RZM – feasibility studies into synthetic rutile/pigment production <p>Goondicum Ilmenite Project Proposal:</p> <ul style="list-style-type: none"> • May increase production levels significantly. (Monto Minerals \$40 M Investment; -100 Mt deposit; -Proposed to commence 2000 to produce Ilmenite and titanomagnetite; ultimately may lead to synrutile & TiO₂ pigment plant). |
| | <u>1997/98</u> | <u>2001/02</u> | | | | | | | | | | | | | | | | | | | | | |
| Rutile kt | 242 | 240 | | | | | | | | | | | | | | | | | | | | | |
| Ilmenite kt | 2,352 | 2,800 | | | | | | | | | | | | | | | | | | | | | |
| Zircon kt | 427 | 452 | | | | | | | | | | | | | | | | | | | | | |
| Total Conc kt | 3,021 | 3,492 | | | | | | | | | | | | | | | | | | | | | |
| Ilmenite Conc. | 70,000t | | | | | | | | | | | | | | | | | | | | | | |
| Rutile Conc. | 51,000t | | | | | | | | | | | | | | | | | | | | | | |
| Zircon Conc. | 37,000t | | | | | | | | | | | | | | | | | | | | | | |

GOLD

| Current Status Mining | Extent of Processing | Manufacturing |
|---|--|---------------|
| <p>Global Outlook Gold: Source: ABARE 1999</p> <ul style="list-style-type: none"> World Mine Production Price (nominal) <ul style="list-style-type: none"> 1997 – 2,472t 1997 - US\$/oz 331 2004 – 2,538t 2004 - US\$/oz 315 Fabrication Consumption Jewellery Consumption <ul style="list-style-type: none"> (incl. jewellery consumption) 1997 – 4,226t 1997 – 3,328t 2004 – 4,589t 2004 – 3,819t <p>Australia</p> <ul style="list-style-type: none"> Mine Production Exports <ul style="list-style-type: none"> 1997 – 299t 1996/7 - \$4.71Bn 2004 – 294t 2003/4 - \$4.70Bn Exports Overseas Origin <ul style="list-style-type: none"> Aust Origin 1996/7 – 35t 1996/7 – 292t 2003/4 - 40t 2003/4 – 294t Aust produced 312 t gold in 1998 - near record. <p>Queensland:</p> <ul style="list-style-type: none"> Qld gold industry is Australia’s 2nd largest producer after WA Significant industry for Qld with high levels of investment in exploration and mining projects. Qld gold production from all types of ore - 28.3 t in 1997/98. | <ul style="list-style-type: none"> Johnson Matthey Pty Ltd in Townsville does primary stage processing (sampling) only. | |

LIMESTONE

| Current Status Mining | Extent of Processing | Manufacturing |
|--|--|--|
| <p>Limestone</p> <p>Resources</p> <ul style="list-style-type: none"> • Large, high quality resources along east coastline and Mount Isa region. Many deposits in Gladstone, Rockhampton & Townsville regions. • 1997/98; 2 Mt production from Queensland. <p>Uses</p> <ul style="list-style-type: none"> • Most limestone mined in Qld is used for manufacture of cement and lime. • Other uses include: <ul style="list-style-type: none"> • Agriculture, aggregates; • filler in paint, paper, rubber & plastics; • stone dust in coal mines; • glass manufacture; • flux in steel; • environmental applications; • QAL alumina production <ul style="list-style-type: none"> – waste water, acid/water neutralising • Major Limestone mined at: <ul style="list-style-type: none"> – East End near Gladstone, Mount Etna, Rockhampton (QCL); – Gympie, Ootana west of Cairns, and Calcium south Townsville (David Mitchell); – Taragoola, near Gladstone (Frost Enterprises); – Bajool (Omya). | <p>The Processes:</p> <p>Lime (CaO) is manufactured by firing limestone to drive off CO₂, leaving quick lime (CaO), or further treated with water forming slaked lime [Ca(OH)₂].</p> <p>Queensland:</p> <ul style="list-style-type: none"> • QCL: Lime plant at Rockhampton (Pacific Lime) to produce lime products. • Lime products also produced at Gladstone, Townsville and other locations. • David Mitchell Ltd is a specialist lime manufacturer with plants around Australia <p>Omya Southern operates a mine of very high quality white limestone at Bajool NW of Gladstone. This is shipped to Geelong for re-processing for white pigments mainly in paper coating.</p> | <p>QCL Cement Manufacture, Gladstone (1998):</p> <ul style="list-style-type: none"> • Clinker plant capacity 1.6 Mtpa World class facility. (Holderbank subsidiary). <p>Aust Consolidated Industries:</p> <ul style="list-style-type: none"> • Glass bottle manufacture at West End • 7,000 tpa limestone • (Approx 15% crushed limestone is used in glass manufacture) <p>QAL</p> <ul style="list-style-type: none"> • Slaked lime used in production of alumina at Gladstone (140,000 tpa limestone) |

PHOSPHATE ROCK

| Current Status Mining | Extent of Processing | Manufacturing |
|---|--|--|
| <p>Australia Currently Australia imports all of its basic phosphate requirements for the production of phosphoric acid and phosphatic fertilisers.</p> <p>Phosphate rock processing on a significant scale is currently under development in Queensland.</p> <p>Queensland The Carpentaria Mount Isa Minerals Province contains some 2 800 Mt of phosphate rock reserves. The largest deposit is at Phosphate Hill 135 km south of Mount Isa. Other significant deposits are located in the region at Ardmore and Lady Annie-Lady Jane.</p> <p>WMC Fertilisers Ltd expects to begin producing high analysis fertiliser from phosphate rock at Phosphate Hill in 2000.</p> | <p>WMC High Analysis Fertiliser Project</p> <ul style="list-style-type: none"> • Approx. 2.5 Mtpa of phosphate rock will be mined in an open cut operation. • At Mount Isa 1.2 Mtpa of sulphuric acid will be required, produced mainly from Mount Isa smelter gas and supplemented by sulphuric acid from the Sun Metals zinc refinery in Townsville. • The acid will be railed to Phosphate Hill where the phosphoric acid, ammonia and fertiliser plant complex will produce 1 Mtpa of high analysis ammonium phosphate fertilisers. • Ammonia will be produced from natural gas piped to Mount Isa from the southwest Qld gas fields. • DAP/MAP fertiliser will be railed to Townsville for shipment to domestic and export markets. • This project is estimated to cost A\$ 650 M with completion scheduled for 2000 | <p>WMC High Analysis Fertiliser Project</p> <p>(see processing)</p> |

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