

More Australian nickel

Preston Resources NL, based in Perth, Australia, has secured a financing commitment for its Marlborough nickel-cobalt project in Queensland. Barclays Capital, the investment banking division of Barclays Bank plc of the UK, will provide US\$450 million on commercial conditions and terms. It has also entered into a ten-year agreement with Preston to purchase all nickel and cobalt production from the project, and will provide risk management services.

The Marlborough deposit is located some 50 km north-northwest of the town of Rockhampton. It is associated with a discontinuous belt of serpentinised ultramafics, and is a remnant of what is believed to have been a far more extensive laterite cover. There is an inferred resource amounting to 210 Mt at a grade of 1.02% Ni and 0.8% Co, based on a cut-off grade of 0.8% Ni. A feasibility study being carried out by Bateman Kinhill, based on acid leach and SX-EW technology, is nearing completion and is expected to recom-

mend development of a project to treat 1.8 Mt/y of ore yielding 28,000 t/y of nickel and 2,000 t/y of cobalt.

Preston's executive chairman, Colin Ikin, says the financing package secured through Barclays will enable the construction to go ahead of a more elaborate processing plant than originally planned, resulting in increased cobalt production and lower operating costs. Items such as autoclaves will be ordered immediately, with initial metal production from the project possible early in the year 2000. The company estimates that average operating costs before cobalt credits could be of the order of US\$1.58/lb of nickel initially, rising to US\$1.77/lb over ten years.

Marlborough was one of several lateritic nickel-cobalt prospects within a 300 km² property area first explored in the 1960s by BHP. Lagoon Hill Nickel NL was the most recent owner and Preston acquired its interest last May when it exercised its option to acquire the project by buying all the shares in Lagoon Hill for A\$6.4 million.

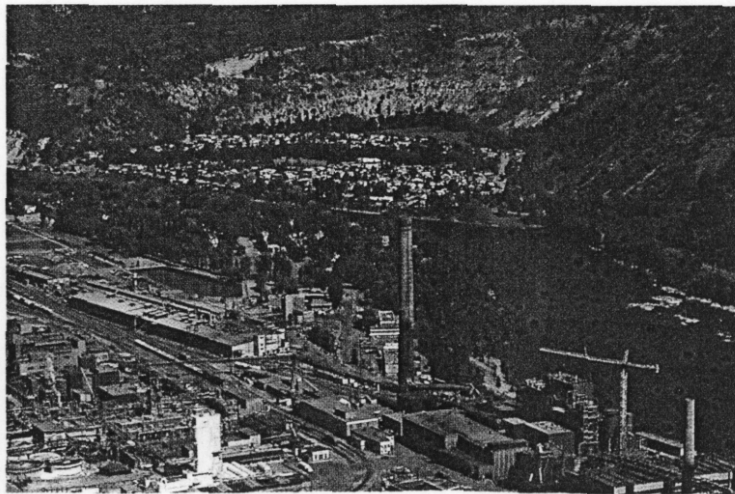
Marlborough is the latest of several Australian lateritic nickel projects scheduled for development. The largest is Anaconda's Murrin Murrin project in Western Australia where stage-one commissioning is due in September this year. Initial output is projected at 45,000 t/y of nickel and 3,000 t/y of cobalt. Elsewhere in WA, Resolute anticipates initial output at Bulong in October at the rate of 9,000 t/y and 700 t/y respectively. □

Kivcet hitch

The Canadian base metals producer, Cominco, has announced an unplanned six-day shutdown of its Kivcet lead smelter and the partial shutdown of the zinc refinery at its Trail operations in British Columbia. The disruption is a result of a mechanical failure, on May 1, in the air-supply system of the oxygen plant run by BOC Gases. It is expected that the smelter and refinery will begin an "orderly restart" on May 10, by which time the oxygen plant is expected to be back on line. The company anticipates that the shutdown will result in some 4,500 t of lost metal production and will lead to an operating loss at Trail for the month of May. However, a spokesman has said that the shutdown will not prevent Cominco from meeting its short-term delivery commitments.

It is not the first time that the 15-year-old oxygen plant has caused problems for Kivcet. Late last year, oxygen delivery problems forced Kivcet to go off line for five weeks. The 120,000 t/y capacity smelter, itself, has not been without its problems. Since it came into operation in April 1997, the furnace has demonstrated its ability to produce lead bullion and to handle residues generated by the zinc operations but the company says that for much of 1997 on-line time was seriously affected by mechanical problems. *Continued on p.354*

Cominco's metallurgical complex at Trail, B.C., one of the world's largest integrated refined zinc and lead facilities. (Photograph courtesy of Cominco Ltd.)



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Mining education – European action

The dearth of secondary-school leavers in the UK seeking to embark on mining careers has been recognised for at least a decade. Attention was drawn to the problem as long ago as 1985 by Dr Peter Hackett, the former principal of the Camborne School of Mines (CSM), in his presidential address to the Institution of Mining and Metallurgy. Since that time, the number of courses in mining engineering offered by UK universities has continued to dwindle, and by 1995 there were less than 100 students country-wide enrolled on mining engineering courses. The shrinking numbers have led to much rationalisation, some of it painful (*MJ*, August 29, 1997, p.177).

The problem is not confined to Britain, however. At a seminar arranged in London a fortnight ago by the Association of Mining Analysts, speakers from universities and mining schools in Italy, the Netherlands and Scandinavia told similar stories. Dr Margaret Armstrong, Head of Mining Geostatistics at the prestigious Ecole des Mines in Paris, described a rather different situation but the message was the same. Although the annual intake of students at the Ecole des Mines had risen towards the 120 level during the 1990s – double the number in the 1960s, '70s and '80s – those who went on to a career in mining had reduced from about 15 per year in the 1950s, to two or three per year in the 1980s, to virtually none in the 1990s. She recalled just one graduate within the past three years who had joined a mining company as a mining engineer. The vast majority of students at the Ecole des Mines went on to enjoy successful, well-paid careers but not in the mining sector.

Examining the decline in mining engineering students in the UK, Professor Keith Atkinson, the current director of CSM, noted that mining engineering is now regarded by the UK Funding Council as a 'minority subject'. He asked why this should be so – why should there be a focus on the vocational aspect? Nobody queries the numbers of classicists being produced each year, for example. As appears to be borne out by the experience at the Ecole des Mines in France, mining provides a good general education.

Professor Atkinson suggested that despite the gloom there are practical steps that can be taken to tackle the problem of falling student numbers. CSM took action in 1995, a year in which only eight undergraduates enrolled for the mining engineering course. Every staff member was dispatched to several schools to promote the course, and letters were sent out to some 5,000 schools with sixth forms (17-18-year-

olds). The intention was to dispel the pick-and-shovel image of mining, to emphasise that mining has become a sophisticated high technology industry and, most importantly, to convince potential students that, although the UK mining industry may be moribund, there are good career prospects, with abundant, well-paid opportunities for mining engineers overseas. It was pointed out that all the previous year's final year students had been offered jobs prior to graduation. According to Prof. Atkinson, the campaign resulted in a 400% increase in enrolments in the following year.

From Scandinavia, Professor Pekka Sarkka of Helsinki University of Technology said that in Finland student numbers had held steady since the 1960s. However, he noted that there has been a trend towards grooming students to be 'generalists' rather than 'specialists' and that mining engineering could now be taken as a higher degree with an 18-month course on offer. By contrast, in Sweden, mining schools are still offering specialist courses and the numbers enrolling are dwindling because the courses are longer and the costs consequently higher.

One of the most interesting developments in Europe, the European Mining Course (EMC), was outlined by Hans de Ruiter of Delft University of Technology in the Netherlands. The rationale for an EMC has been built on the recognition that, although mining activity in Europe is decreasing, European-based companies still account for some 20% of global mineral production, hence there is still a definite need for a mining education in Europe. However, there is a real danger that the quality of mining courses will decrease as student numbers reduce and funding decreases.

The problem was addressed in the late 1980s when co-operation was initiated between Hans de Ruiter at Delft and

Professor Tim Shaw at the Royal School of Mines in London. Mining schools at Aachen in Germany and Helsinki have subsequently become involved. The EMC is a five-year course, with students spending their fourth years at the other mining schools. Students are able to benefit from specialist fields of expertise offered at each school and the pooling of industry contacts which the co-operation affords. The pilot scheme initiated in 1996 provided for two students from each school to enrol on the course but the initial findings suggest that there should be a minimum number of 24. The working language is English, and future aims are for co-operation with mining schools and industry in Australia, Canada, Chile and South Africa. □

Chinese alumina boost delayed

The restructuring of the Chinese Government's ownership of its non-ferrous metals industries has delayed an expansion of the alumina purchase deal between state-owned Sino Mining Alumina Ltd, a wholly-owned subsidiary of China National Non-ferrous Metals Corp. (CNNC), and Alcoa World Alumina and Chemicals (AWAC) made in 1996. AWAC is owned 60% by Aluminum Co. of America (Alcoa) and 40% by WMC Ltd of Australia.

The first alumina was delivered last year, following an advance payment by the Chinese of US\$240 million (*MJ*, August 15, 1997, p.144). The initial deal was for 400,000 t/y over 30 years, with an option on the part of the Chinese to increase the quantity, up to a maximum of 1 Mt/y, in future. However, plans to increase the level of sales to 600,000 t/y this year have been deferred pending completion of the restructuring. CNNC's assets have been taken over by CNNC Trading Group, but the final structure of the industry is still under discussion (this issue, p.358). □

LEADING INDICATORS

	May 6	Change on week (%)	High/Low (%)	Year's Max/Min
Share Indices				
FT Ordinary	3,883	3.5	100	3,883-2,898
US Dow Jones	9,055	1.2	94	9,177-7,009
FT Gold Mines	1,252	-3.6	30	2,075-891
Australian All Mining	679	-0.9	32	951-551
South African Gold	1,019	-0.2	58	1,270-673
Toronto Met/Min	4,148	-0.8	31	5,582-3,518
Nikkei Dow	15,244	-1.0	7	20,679-14,810
Hang Seng	10,109	-3.5	12	16,542-9,227
James Capel Indices	May 6			
(100 on 1/1/89 except*)				
Global Base Metal	137	-0.2	34	181-115
Global Diversified Mining	140	-1.8	38	181-116
Global Gold Ex S Africa	95	-4.4	46	121-73
Global Gold	84	-3.7	45	110-63
Global Mining	117	-1.3	40	150-96
Smaller Mining Companies	60	-1.0	23	96-49
North American Base Metal	170	-0.8	32	217-148
North American Gold	108	-5.1	43	140-84
Latin American Mining*	229	0.6	37	280-198
Latin American (Ex CVRD)*	167	1.0	15	222-158
Other Metals/Minerals	133	1.7	40	174-106
Global Coal Mining	142	0.5	20	217-123
*100 on 1.1.90				
Rebased by Mining Journal				
Commodity Prices	May 6			
Gold (London)	\$299.00	-3.8	22	\$362-281.10
Copper (LME)	\$1,823.00	-2.5	19	\$2,714-1,612.00
Aluminium (U.S. prod.)	67.50c	0.0	3	84-67.00
Brent Crude (dated)	\$14.11	0.4	22	\$20.83-12.24

Kivcet hitch

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These were in the associated feed, lead tapping, slag granulation and gas-handling systems. The problems also affected the new slag turning furnace which processes slag from Kivcet to recover zinc and other metals such as germanium, indium, bismuth, silver and gold. Operating profits at Trai dropped to C\$47 million in 1997 from C\$73 million in 1996. Lead output reduced from 108,100 t to 71,900 t, and zinc production was down from 271,900 t to 256,900 t.

System improvements at Kivcet were completed late last year and the smelter was reported to be operating at 70% of capacity at the end of January. A total strike of residues at Trai = 420,000 t.