



Minara Resources Limited

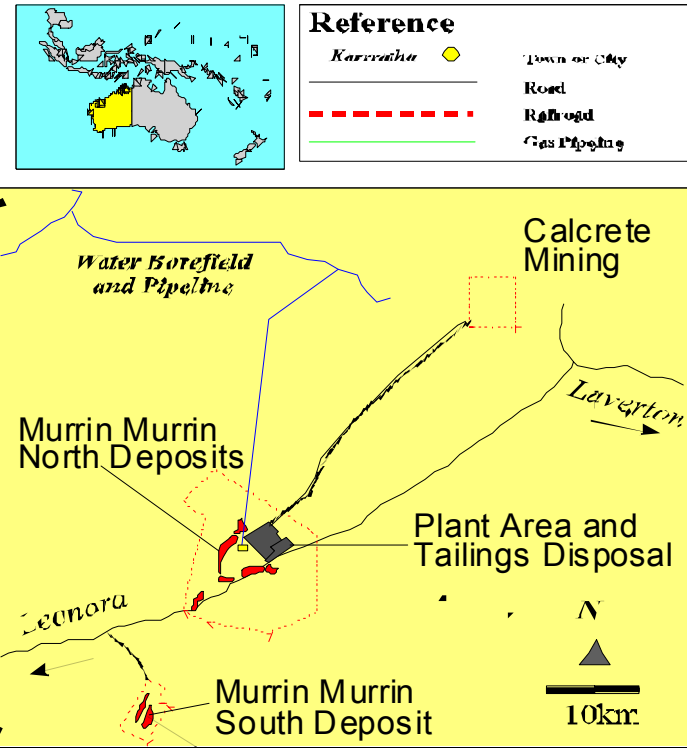
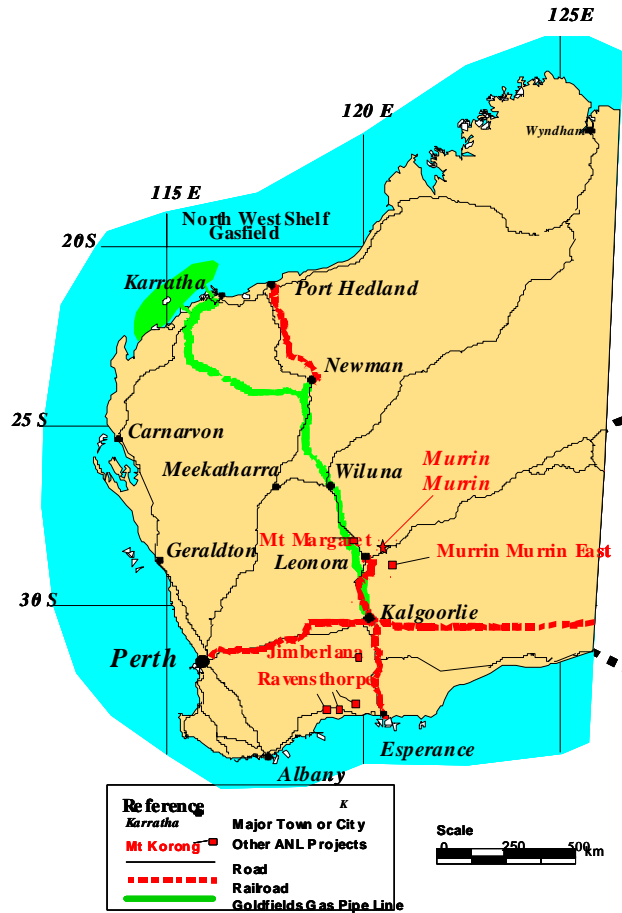
Heap Leach

Mr Michael Rodriguez

30 November 06



Murrin Murrin Operations - Location



What is Heap Leaching?

- ❖ A form of atmospheric leaching where scats or ore is stacked in a “heap” and irrigated with acidified solution.
- ❖ It is an agricultural low tech approach to the recovery of nickel and cobalt from laterite ores
- ❖ Heap leaching has been successfully applied commercially for the treatment of Au and Cu ores
- ❖ Not all laterite ores can be heap leached



Why Heap Leach?

- ❖ Low tech approach
- ❖ Low capex requirement
- ❖ Low opex requirement
- ❖ Improves overall economics for Murrin Murrin
 - ◆ Improves recovery
 - ◆ Utilises available acid
 - ◆ Improved asset utilisation
 - ◆ Treats existing stockpiled scats and ores
- ❖ A second processing stream
- ❖ Chloride tolerant



Nickel Heap Leach R&D

- ❖ Alternative leaching technology R&D progressed over the last 7 years
- ❖ Focussed on heap leaching technology over last 4 years
- ❖ R&D expenditure to date in excess of \$25M
- ❖ R&D development has been a logical staged approach to develop and demonstrate the technology
- ❖ Bench, semi continuous and continuous testwork has been progressed
- ❖ Downstream process demonstration plant commissioned at Murrin Murin

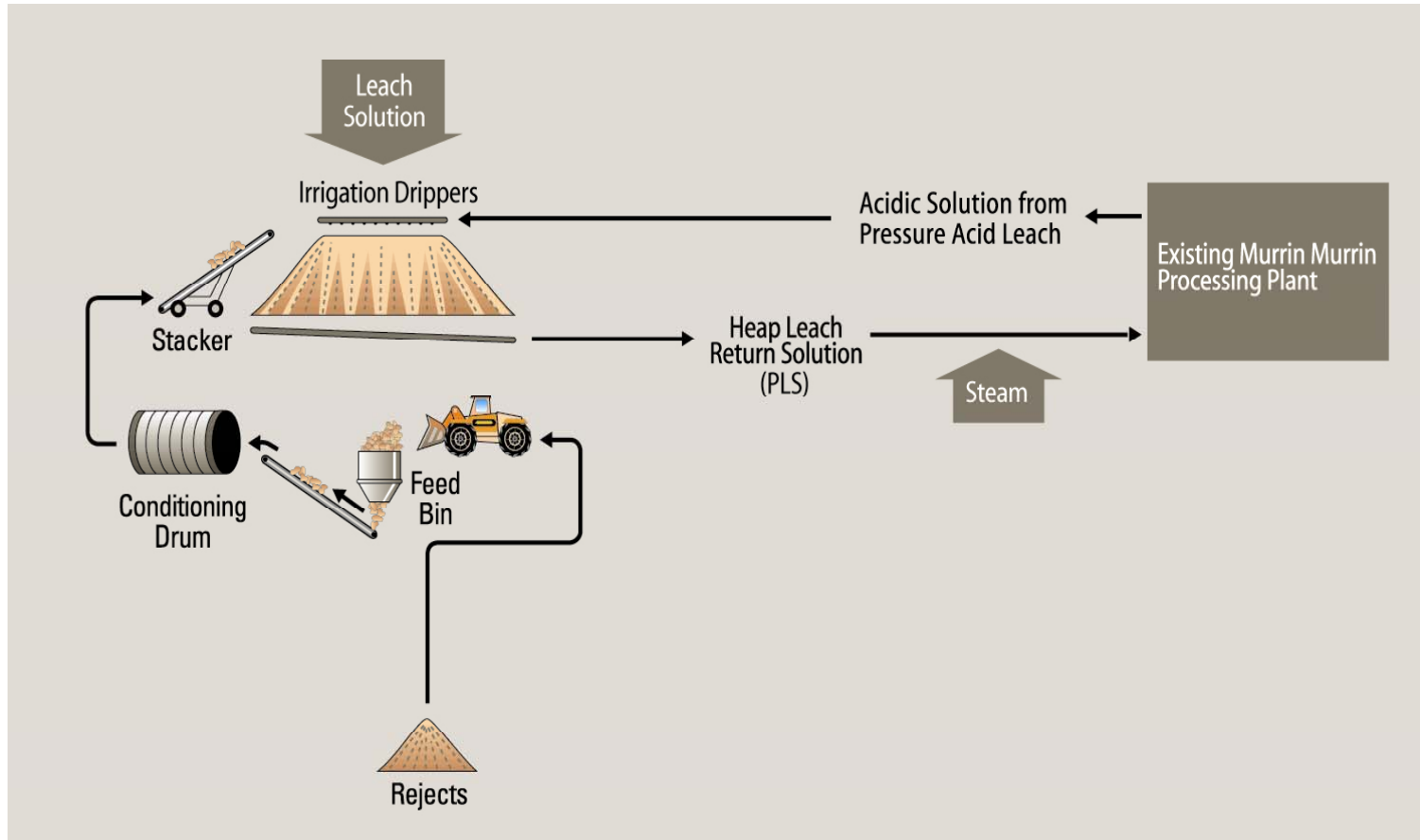


Heap Leach Demonstration Plant

- ❖ Heap leach demonstration plant approaching completion
- ❖ Capital cost \$25M (<US\$6 /lb)
- ❖ Stacking in December 06
- ❖ First Ni and Co from scats March 07
- ❖ First Ni and Co from ore July 07
- ❖ Plant commissioned to “demonstrate the technology”



Murrin Murrin Operations - HL



Murrin Murrin Operations - HL



Heap Leach Projects

- ❖ No Existing Commercial Operations
- ❖ Committed Projects
 - ◆ Çaldağ - Turkey (European Nickel)
- ❖ Well Advanced Projects
 - ◆ CVRD – Brazil
 - ◆ China – various project
- ❖ Early Development Projects
 - ◆ Nornico - Queensland (Metallica Minerals)
 - ◆ Ravensthorpe – WA (BHP Billiton)



Capital Costs – Laterite Projects

“Significant shift in capital cost for laterite projects is forcing a re-think of alternative approach”

- ❖ Previous basis was US\$12/lb Ni with US\$3.00/lb
- ❖ Current HPAL Projects
 - ◆ Ravensthorpe US\$1.8bn = ~\$17US/lb Ni
 - ◆ Goro US\$3.0bn = ~\$22US/lb Ni
 - ◆ Ambatovy US\$2.5bn = ~\$19US/lb Ni

Source: BHPB News release 25 July, 2006

National Post Date: November 25, 2006 Edition Name: All but Toronto Section: Financial Post Page: FP15

Dynatec Corporation April 05



Ni Laterite Process Options

\$US/lb Ni	HPAL	Atmos Leach	Heap Leach
Capex	\$17-22	\$13-16	\$8-12
Opex	\$2.50	\$2.50	\$2.50



Heap Leaching Challenges

- ❖ Bed permeability
- ❖ Iron and aluminium chemistry
- ❖ Inventory and cycle time
- ❖ Process Plant Integration
- ❖ Acid Supply



Intellectual Property

Minara Resources has been active in protecting its IP and has lodged a number of strategic patent applications.



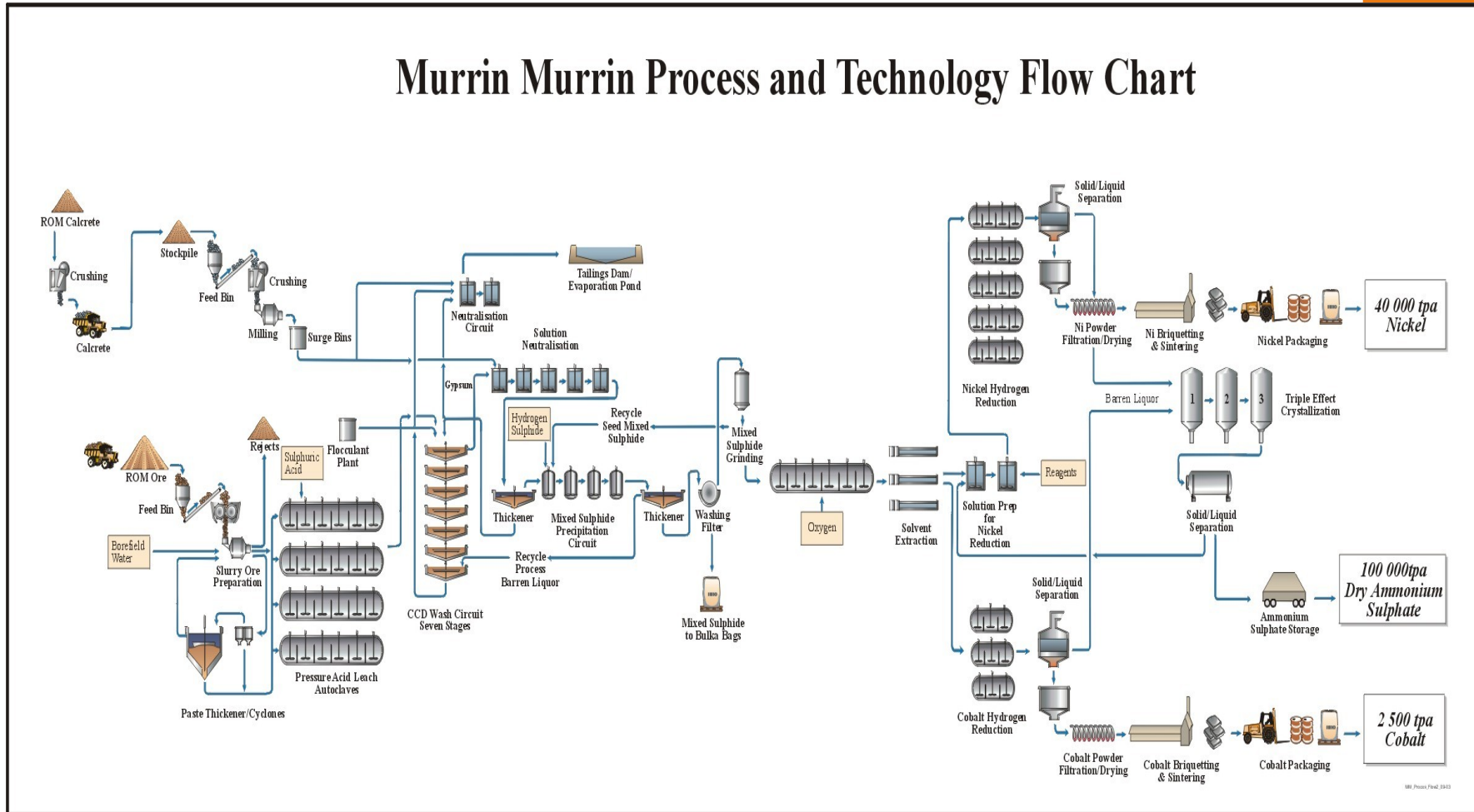
Summary

- ❖ Heap leach demonstration plant on schedule and cost
- ❖ Breakthrough expected
 - ◆ Scats March 07
 - ◆ Ore July 07
- ❖ The successful demonstration of heap leach technology will underpin a strong platform for future growth



Murrin Murrin HPAL Process

Murrin Murrin Process and Technology Flow Chart



Murrin Murrin Operations - HPAL



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