

# “Money Mining”

## Whittle Consulting – Mining & Mineral Processing Optimisation

### ~ 2012 Short Courses ~

23rd & 24th February – Melbourne Vic Australia

16th & 17th April – Johannesburg South Africa

30th April & 1st May – Fremantle WA Australia

3rd & 4th May – Fremantle WA Australia

31st May & 1st June – Santiago Chile

4th & 5th June – Toronto Canada

26th & 27th July – Las Vegas USA

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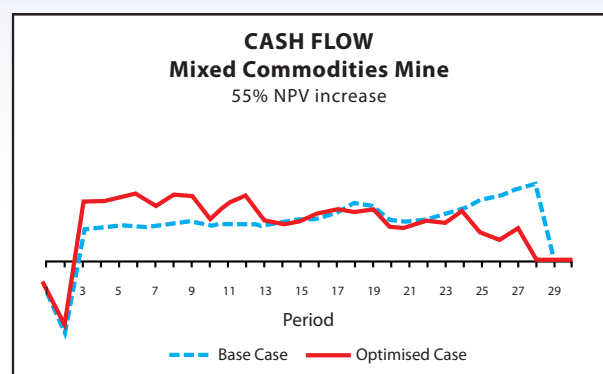
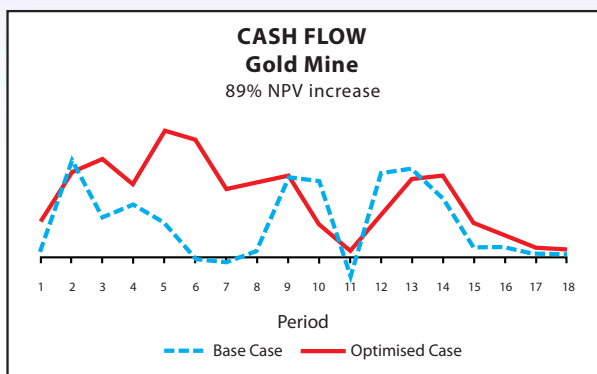
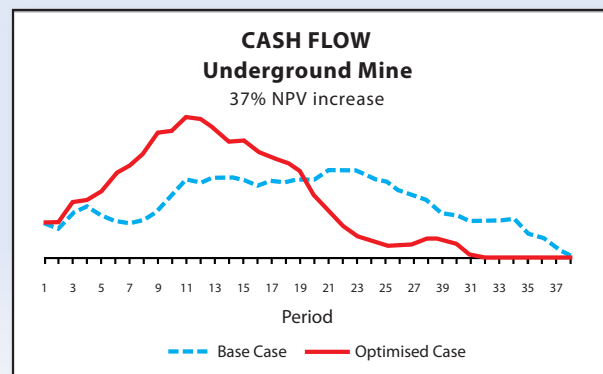
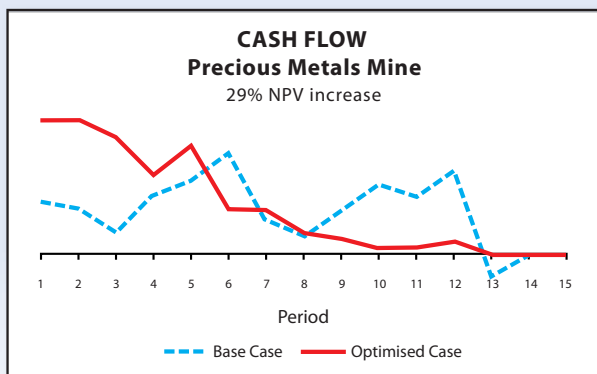
29th & 30th November – London United Kingdom

5th & 6th July – Gold Coast Qld Australia

Increase the  
value of your  
mining business  
by 5% to 35%  
or more

### Gain the Latest Insights in Business Planning

- Releasing value through better planning decisions better asset management
- Exploring the latest developments in optimisation for the mining industry
- Simultaneously optimising the whole value chain: mining, mineral processing, logistics, production and capital
- Planning and optimisation with geological uncertainty and volatile metal markets
- Operational and cost modelling techniques for optimisation
- “Bust the myths” that organisations pursue which limit their economic performance
- Implementing an effective planning process



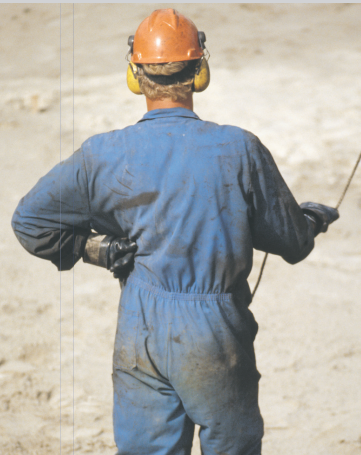
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## Previous attendees' comments:

*“This is the future of mining”*

*“Every serious mining professional should attend”*

*“The best mining training course I have been to”*

*“Well organised, relevant and challenging existing paradigms”*

*“In 2 days Gerald changed 25 years of traditional mining thinking and principles”*

*“No feasibility study should be done without these principles”*

## Increasing the value of your mining business by 5% - 35% or more!

**OVERVIEW:** Effective long-term planning can enhance the value of a minerals business by 5% - 35% or significantly more. This course details an optimisation methodology that involves 10 distinct mechanisms, which when applied simultaneously can produce counterintuitive results that challenge conventional thinking on how to run a mining and mineral processing business. Covering the latest developments in optimisation methods, the subjects span mine design and scheduling, cut-off grades and stockpiling, plant configuration, product specification, logistics and capital scaling, a comprehensive approach to managing risk and uncertainty, strategic optimisation and modelling techniques, theory of constraints as is applied to a minerals business, advanced cost modelling, and implementation/change management. The result is a comprehensive approach to asset management.



It shows how these disciplines can take the economic view of the business and coordinate their activities to extract value that is currently concealed between the organisational silos that the management structure creates.

It is also relevant to equity analysts, venture capitalists, fund managers and investment bankers who want to better understand the drivers of value in a minerals business, and *to be able to recognise where the full potential of a business has not yet been realised.*

The principles examined are applicable to Copper, Gold, Lead, Zinc, Iron ore, Coal, Diamonds, Bauxite, Manganese, Platinum and other commodities. Open pit, underground and complex portfolios of assets are covered.

## This course will change forever the way you look at your mining business!

### WHO SHOULD ATTEND:

- Senior Executives
- Directors
- Department, divisional or project managers
- Professionals who are currently, or will be, involved in the technical aspects of optimisation analysis
- Institutional investors in mining funds
- Financial analysts
- Project financiers
- Geologists
- Mining engineers
- Process engineers
- Metallurgists
- Logistics managers
- Marketing managers
- Finance & HR management

**COURSE CERTIFICATE:** A Certificate of Completion will be awarded to all participants completing 90% of the total course hours. This course usually counts 14 hours towards Continuing Professional Development.

**OUTCOMES OF THE WORKSHOP:** By the end of this intensive two day programme, you will take back to your organisation fresh views of how economic value can be generated. You will be able to recognise the real drivers of value, and how flexibility in all parts of the value chain can be harmonised and exploited to increase value and robustness of the business in the face of uncertain resources, technical challenges and volatile metal markets.

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## Attention Business Leaders – Don’t make another business decision until you have considered these perspectives!

*John Meyer, Fairfax – “A unique approach to optimising project value & cash flow returns... this is well worth attendance & highly recommended”*

### COURSE OUTLINE DAY ONE

- 8.00 Registration and Coffee  
8.25 Opening Remarks  
8.30 **1. INTRODUCTION**
- Introductions/Objectives/Agenda
  - The “Money Mining” concept
  - Why is it important?
  - Group discussion: pros and cons of NPV
- 10:00 Coffee Break  
10.15 **2. OPTIMISATION MECHANISMS Steps 1 – 6**
- Open Pit Case Study: Introduction
  - 0. Base Case life of mine plan
  - 1. Pit optimisation: Lerchs-Grossman 1965
  - 2. Phase/pushback selection
  - 3. Mine schedule
  - 4. Cut-off grade: Ken Lane 1988
  - 5. Stockpiles
  - 6. Simultaneous optimisation
- 12:00 Lunch  
12:45 **3. OPTIMISATION MECHANISMS Steps 7 – 10**
- 7. Process plant calibration
  - 8. Product specification
  - 9. Logistics
  - 10. Capital scaling
  - Summary of NPV “Waterfall” graph
  - Implications
  - Effect on stakeholders
- 14:30 Coffee Break  
14.45 **4. UNDERGROUND CASE STUDY**
- Grade tonnage curves
  - Stope design criteria
  - Mine scheduling
  - Cut-off grade strategies
  - Maximizing value
  - Implications
- 15.30 **5. ASSET PORTFOLIO OPTIMISATION**
- Multiple pit operations
  - Mixed pit and underground mines
  - Multiple/alternative processing streams
  - Multiple/alternative products
  - A complex mine logistics example
  - Lessons learnt from optimising these cases
  - Managing the optimisation process
- 16:15 **DISCUSSION/QUESTIONS**  
16.30 End of Day 1

### COURSE OUTLINE DAY TWO

- 8:00 Coffee  
8:30 Comments/observations from day 1  
8:45 **6. CASE VARIATIONS**
- Other commodities
  - Specific issue for coal mining
  - Effect of changes in metal prices

- 9.15 **7. RISK AND UNCERTAINTY Step 11**
- Sources of uncertainty
  - Modeling and measuring the impact of uncertainty
  - Managing in changing circumstances
  - Optimising with uncertainty
  - Managing the Monte Carlo process
  - The role of hedging
  - Implications for the planning process
- 10:00 Coffee Break  
10.15 **8. COST MODELLING**
- Types of cost accounting
  - Fixed/variable/capital costs
  - Activity Based Costing
  - Attributable/period/capital costs
  - Identifying period/time/fixed costs
  - Frontline/support/backline activities
  - Identifying activity cost drivers
  - Sustaining capital
  - Group exercise
- 11:30 **9. OPTIMISATION MODELLING TECHNIQUES**
- Block Models
  - Grade Bins/Grade Control
  - Blending Optimisation
- 12:00 Lunch  
12:45 **10. CONSTRAINTS AND BOTTLENECKS**
- The production line
  - Impact of bottlenecks
  - Theory of Constraints: Goldratt 1984
  - Mining case study
  - Implication 1: Defining constraints
  - Implication 2: Treatment of period costs
  - Implication 3: Grade control methodology
- 14:30 Coffee Break  
14.45 **11. “MONEY MINING” IMPLEMENTATION**
- Technical barriers – data, software
  - Organisational/human barriers – “It’s a Minefield”
  - The ideal planning process
  - Timing
  - Implementation Strategies
  - Change Management
  - Market perceptions
  - Strategic to Tactical – Mine designs
  - Strategic to Tactical – Variable Cut-off grades
  - Management Reporting – KPI’s
- 16.15 Closing
- Summary
  - Possible next steps
  - Feedback questionnaire
  - Certificates
- 16:30 End of Course

# “Money Mining”

## Mining & Mineral Processing Optimisation

### About your expert trainer:

Gerald has more than 30 years of experience in business planning, analysis and change management in a range of industries in Australia and internationally. As Managing Director of Whittle Consulting (specialists in business optimisation for the mining industry) for the last 13 years, Gerald handles optimisation project management, optimisation strategies and model design, business analysis and management reporting/presentations. Some major clients include Xstrata, Vale/Inco, BHP Billiton, Minara, Lihir, Newcrest, AngloGold Ashanti and Goldfields, covering a range of commodities including Nickel, Copper, Gold, Lead, Zinc, Coal, Iron Ore and Bauxite.

Bringing together important lessons learnt in other industries, including activity based costing and the theory of constraints, Gerald brings new light to the peculiar challenges of business planning and optimisation for the minerals industry.



**Gerald Whittle**  
BEcon, GradDipFin, MAusIMM  
Managing Director,  
Whittle Consulting Pty Ltd, Australia

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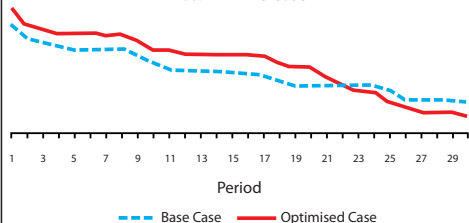
For any course related enquiries please contact:

**Stephanie Jones, Marketing Manager**

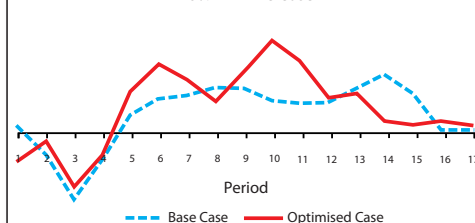
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**Phone: +61 3 9898 1755**

**CASH FLOW**  
Bauxite Mine  
20% NPV increase



**CASH FLOW**  
Gold & Silver Mine  
48% NPV increase



**CASH FLOW**  
Mixed Commodities Mine  
55% NPV increase

