

# “Money Mining”

## Whittle Consulting – Mining & Mineral Processing Optimisation

### ~ Short Course ~

“Increase enterprise value by enhancing planning effectiveness through a complete framework of optimisation principles and methods”

LONDON – 1st & 2nd December 2011

Radisson Edwardian Grafton Hotel – 130 Tottenham Court Road, London

#### 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

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

#### 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 12 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, FCPA, MAusIMM  
Managing Director,  
Whittle Consulting Pty Ltd, Australia

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### Previous attendees' comments:

*“I have been putting what I learnt at the course into practice and as a result we have added a significant amount to the NPV in our recent business plan”*

*“There were lots of new insights and ideas presented which can change the way we have done our planning in the past.”*

*“Every serious mining professional should attend Gerald's Mining and mineral processing optimisation seminar. In 2 days he changed 25 years of traditional mining thinking and principles. Beware, this dynamic and inventive thinking will change everything ever believed to be the norm in optimisation and mine planning. No feasibility study should be done without these principles.”*

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

*“Certainly opened my mind to new and different approaches to business optimisation.”*

*“Very useful, opens my eyes on the potential that exists in my current operations.”*

## 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 counter intuitive 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 it applied to a minerals business, advanced cost modelling, and implementation/change-management. The result is a comprehensive approach to asset management.



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

### WHO SHOULD ATTEND:

This course is designed for decision makers including:

- senior executives
- directors
- department, divisional or project managers
- professionals who are currently, or will be, involved in the technical aspects of optimisation analysis
- investors and their advisors

### IT IS RELEVANT TO:

- geologists
- mining engineers
- process engineers and metallurgists
- logistics managers
- marketing managers
- finance and HR managers

(This is not a software course.)



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. Pit, underground and complex portfolios of assets are covered.

**COURSE CERTIFICATE:** A Certificate of Completion will be awarded to all participants completing 90% of the total course hours.

**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!**

**Zimi Meka**, CEO of Ausenco Limited – “Whittle Consulting is recognised as the world leader in the field of optimisation for mining companies – this seminar is of relevance to all decision makers in the industry”

**Cindy Tonkin**, Technical Product Manager, Gemcom Software – “This seminar introduces the concepts of simultaneous optimisation – of significant value for mining and mineral process business planning”

### COURSE OUTLINE DAY ONE

8.00	Registration and Coffee
8.25	Opening Remarks
8.30	<b>1. INTRODUCTION</b>
	<ul style="list-style-type: none"> <li>• Introductions/Objectives/Agenda</li> <li>• The “Money Mining” concept</li> <li>• Why is it important?</li> <li>• Group discussion: pros and cons of NPV</li> <li>• Open Pit Case Study: Introduction</li> </ul>
10:00	Coffee Break
10.15	<b>2. OPTIMISATION MECHANISMS Steps 1 – 6</b>
	0. Base Case life of mine plan 1. Pit optimisation: Lerchs-Grossman 2. Phase/pushback selection 3. Mine schedule 4. Cut-off grade 5. Stockpiles 6. Simultaneous optimisation
12:00	Lunch
12:45	<b>3. OPTIMISATION MECHANISMS Steps 7 - 10</b>
	7. Process plant calibration 8. Product specification 9. Logistics 10. Capital scaling <ul style="list-style-type: none"> <li>• Summary of NPV “Waterfall” graph</li> <li>• Implications</li> </ul>
14:30	Coffee Break
14.45	<b>4. ASSET PORTFOLIO OPTIMISATION</b>
	<ul style="list-style-type: none"> <li>• Multiple pit operations</li> <li>• Mixed pit and underground mines</li> <li>• Multiple/alternative processing streams</li> <li>• Multiple/alternative products</li> <li>• A complex mine logistics example</li> <li>• Lessons learnt from optimising these cases</li> <li>• Managing the optimisation process</li> </ul>
15:30	<b>5. RISK AND UNCERTAINTY Step 11</b>
	<ul style="list-style-type: none"> <li>• Sources of uncertainty</li> <li>• Modelling and measuring the impact of uncertainty</li> <li>• Managing in changing circumstances</li> <li>• Optimising with uncertainty</li> <li>• Managing the Monte Carlo process</li> <li>• Implications for the planning process</li> </ul>
16:15	DISCUSSION/QUESTIONS
16.30	End of Day 1

### COURSE OUTLINE DAY TWO

8:00	Coffee
8:30	Comments/observations from day 1
9:00	<b>6. UNDERGROUND CASE STUDY</b>
	<ul style="list-style-type: none"> <li>• Grade tonnage curves</li> <li>• Stope design criteria</li> <li>• Mine scheduling</li> <li>• Cut-off grade strategies</li> <li>• Maximising value</li> <li>• Implications</li> </ul>
10:00	Coffee Break
10.15	<b>7. COST MODELLING</b>
	<ul style="list-style-type: none"> <li>• Types of cost accounting</li> <li>• Fixed/variable/capital costs</li> <li>• Activity Based Costing</li> <li>• Attributable/period/capital costs</li> <li>• Identifying period/time/fixed costs</li> <li>• Frontline/support/backline activities</li> <li>• Identifying activity cost drivers</li> <li>• Sustaining capital</li> <li>• Group exercise</li> </ul>
11:15	<b>8. OPTIMISATION MODELLING TECHNIQUES</b>
	<ul style="list-style-type: none"> <li>• Block Models</li> <li>• Grade Bins</li> <li>• Grade Control</li> <li>• Blending</li> </ul>
12:00	Lunch
12:45	<b>9. CONSTRAINTS AND BOTTLENECKS</b>
	<ul style="list-style-type: none"> <li>• The production line</li> <li>• Impact of bottlenecks – Theory of Constraints</li> <li>• Mining case study</li> <li>• Implication 1: Defining limits</li> <li>• Implication 2: Treatment of period costs</li> <li>• Implication 3: Grade control methodology</li> <li>• Case Study</li> </ul>
14:30	Coffee Break
14.45	<b>10. CASE VARIATIONS</b>
	<ul style="list-style-type: none"> <li>• Other commodities</li> <li>• Pits versus underground</li> <li>• Effect of changes in metal prices</li> </ul>
15.15	<b>11. DEVELOPING A “MONEY MINING” CAPABILITY</b>
	<ul style="list-style-type: none"> <li>• Technical barriers – data, software</li> <li>• Organisational barriers</li> <li>• The ideal planning process</li> <li>• Implementation strategies</li> <li>• Change management</li> <li>• Personal action plan</li> </ul>
16.15	Closing
	<ul style="list-style-type: none"> <li>• Summary</li> <li>• Possible next steps</li> <li>• Feedback questionnaire</li> <li>• Certificates</li> </ul>
16:30	End of Course

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### REGISTRATION

**Online Registration** – <http://www.cvent.com/d/0ccqjpf>

**Fax or Email Registration** – complete the registration form below and fax or email to:

Stephanie Sweetman, Marketing Manager, Whittle Consulting Pty Ltd

Email: [stephanie@whittleconsulting.com.au](mailto:stephanie@whittleconsulting.com.au) Facsimile: +61 3 9898 1855 Telephone: +61 3 9898 1755

### Personal Details

Title: Given Name: Surname:

Name (as wanted on name badge, if different from above):

Position Title:

Organisation:

Address:

City: State/Province: Country: Zip/Postal Code:

Business Phone: Mobile Phone:

Fax: Email:

Dietary requirements:

Other special requirements (i.e. mobility):

### Registration Fees

Money Mining Course, London, 1st & 2nd December 2011 – Standard Registration

1200 GBP

☐ **Special Registration Discount:** When two or more participants register from the same company, any additional participants from that company will receive a 50% reduction in course fees. Please tick the box if the special registration discount applies to your registration.

☐ **Student Registration Offer:** Whittle Consulting will grant 2 complimentary student registrations per course. If you wish to apply for a student place, please complete this registration form, indicate your course of interest and mark the student offer tick box. A brief summary on why you are interested in attending the course is required along with your application. Applicants will be notified approximately 2 weeks prior to the course commencement date.

### Payment Details

Full payment must accompany your registration. This document is a TAX INVOICE once payment has been received.

Please indicate method of payment:

CREDIT: ☐ VISA ☐ MASTERCARD

Card Number:	Name on Card:
Expiry Date:	Total Payment Amount:
Signature	

All cancellations must be received in writing to Whittle Consulting. Cancellations will incur a \$200 administration fee. Registrants who are “no-shows”, or cancel registration less than two business days before the course, will not qualify for a refund. In lieu of cancelling a registration, a registrant may send a substitute in his or her place.

A final confirmation letter confirming your registration will be emailed to you approximately 10 days before the course. Your letter will include venue and parking details as well as a location map for reference.



WHITTLE CONSULTING  
BUSINESS OPTIMIZATION FOR  
THE MINING INDUSTRY

