



**Proposal for Arthur River Deposit
Hydrogeological Evaluation - Phase 1**

Beacon Hill Resources

MINEHOBAA00297AA_PR01

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1 SUMMARY

Coffey Mining has been approached by Beacon Hill Resources PLC (BHR) to provide BHR with a Hydrogeological Evaluation of the Arthur River Deposit, Tasmania.

This proposal refers to the Phase 1 of the Hydrogeological Evaluation which in summary includes:

- (i) a desk study;
- (ii) site inspection;
- (iii) fatal flaws analysis
- (iv) identification of potential engineering solutions;
- (v) suggestions for a work program for Phase 2 works.

Coffey Mining believes that it can provide a specialist team with extensive experience in mine site water management and investigations, specific to the unique setting of the West Coast of Tasmania. The majority of the team are based in Tasmania providing relatively easy access to this remote location.

2 INTRODUCTION

Beacon Hill Resources PLC (BHR) holds two retention licences over magnesite deposits located in the Lyons River and Arthur River areas of North-West Tasmania. The Arthur River Deposit has a defined JORC compliant measured resource of 13 million tonnes ('Mt') of magnesite and an inferred resource of 10Mt. Coffey Mining has been approached to provide BHR with a Hydrogeological Evaluation of the Arthur River Deposit.

Coffey Mining recently completed Arthur-Lyons River Magnesite Project Competent Persons Report for BHR and Astaire Securities PLC. Coffey Mining wishes to continue this relationship by completing the Arthur River Deposit Hydrogeological Evaluation.

Based out of Hobart, Coffey Mining's key contact for the hydrogeological study is Dr Lee Evans. Lee has a PhD in mining related hydrogeological studies and over a decade of operational experience in mine water management, hydrogeology and environmental geology. In addition, Lee is supported by Coffey personnel locally, within Australia and abroad.

3 SCOPE OF WORKS

It is proposed that the hydrogeological study be divided into two phases. This proposal refers to the first stage and provides a scope of works and relevant costs for this phase, Phase 1 only. It is anticipated that as a result of the Phase 1 works a better understanding of the requirements for scoping Phase 2 works will be gained and as such these works are not included in the budget presented in this proposal.

3.1 Phase 1

It is proposed that Phase 1 involves:

1. Review of existing reports including those from Coffey, Golders, Pitt & Sherry, Crest Magnesium NL, and karst specific documents from Forestry Tasmania and the Tasmanian Government.
2. Specific review of the hydrogeological conceptual model and relevance of pumping figures from previous reports.
3. Conduct a preliminary site investigation and attempt to validate previous conceptual hydrogeological models.
4. Speculate on the aquifer connectivity to the major surface water features.
5. Identify hydrogeological fatal flaws related to potential pit location and geometries, environmental outcomes, dewatering requirements, and potential engineering solutions for water management.

6. Discuss the potential engineering solutions for groundwater control, such as grout curtains, bentonite plugs, gravity drainage systems.
7. Develop a work program to validate the feasibility of proposed water management and engineering solutions.
8. Develop a work program for a detailed hydrogeological investigation to develop baseline conditions.

3.2 Phase 2

Phase 2 is anticipated to involve:

1. Detailed hydrogeological investigation to develop baseline conditions.
2. Undertake a work program to validate the feasibility of the proposed water management and engineering solutions.
3. Produce a Water Management Plan for the Arthur River Deposit mining operation.

4 DATA REQUIREMENTS

It is a requirement that the Commissioning Entity provides a written declaration that full disclosure has been made of all Material Information and that, to the best of its knowledge and understanding, such information is complete, accurate and true. By accepting this proposal, the Client acknowledges this undertaking and agrees to provide all material information relevant to the project.

In order to complete the assignment information from the following sources will be required by Coffey Mining as a minimum:

- Golders, 1999 report and Golders separate commission on groundwater modelling;
- Pitt & Sherry;
- Hatch;
- Crest Magnesium NL;
- the geological database or borelogs displaying karst features;
- waste and ore whole rock geochemistry information; and
- any karst specific documents from Forestry Tasmania and the Tasmanian Government that BHR has obtained.

In addition to data, access to the site and existing infrastructure will also be required to meet the scope discussed above.

5 IMPLEMENTATION

Items 1 and 2 of the scope of work will be grouped into the task of 'Desk Study' and this will be undertaken primarily by Dr. Lee Evans. The preliminary site investigation, item three will be divided into three tasks 'Project Planning', 'Travel' and 'Field Work'. It is anticipated that two Coffey personnel will be required in this stage of Phase 1. In addition to Lee Evans, Sarah Joyce (having a background in Karst investigations, also out of the Hobart office) is proposed for this phase of the works. Coffey Mining anticipates 2 staff will be required to:

- (i) Address occupational health and safety concerns for work in remote locations;
- (ii) Provide a combined skill set very applicable to the local hydrogeology; and
- (iii) Provide scope for challenging conceptual hydrogeology models in the field.

It would be very advantageous to have access to site personnel who have a geological understanding of the deposit for at least part of the duration of the visit to site. It is envisaged that travel will consume two days from Hobart with an allowance for two days on site for the preliminary site inspection. It may be advantageous to conduct a second site visit under winter conditions in order to gain an insight into changes in the seasonal hydrogeological and hydrological regime, however, at present allowance has only been made for one (summer) site visit to be undertaken.

Field and laboratory based aqueous geochemistry may provide insight for the conceptual hydrogeological model validation by differentiating between water types. If during the initial field visit this it is deemed appropriate to collect such samples these will be taken to avoid multiple (summer) visits to site.

Items 4 to 8 of Phase 1 will be conducted out of the Hobart office and will involve the collaboration with other Coffey Mining personnel and the writing of a report on the Hydrogeological Evaluation for BHR. Clint Scott, Associate Geotechnical Engineer and Bryce Atkins, Principal Engineer will provide engineering input to the project and report. Both have an extensive history in ground and water control measures as well as mine site water management.

It is envisaged that prior to presenting the draft report to BHR a meeting with key BHR personnel to discuss the findings, potential issues, water management options and engineering solutions would be advantageous. This proposal allows for this project meeting to occur at Coffey's Hobart office or as a telephone and internet conference. Shortly after this discussion the draft report will be provided to BHR for specific comments before it is finalised and potentially Phase 2 is commenced.

6 WORK SCHEDULE

Based on previous similar work and the Scope of Work included in this proposal Coffey Mining has estimated consulting time of approximately 160 hours, based on a time frame of 3 months to complete the scope of work. This is itemised in Table 7

Throughout the assignment, the project team is dependant on the client and other consultants providing relevant information or agreeing to key issues or parameters in a timely manner.

It is envisaged that the desk study could be undertaken in December 2009 and January 2010 with the site visit in Mid-January 2010 and a preliminary date for the project meeting by Mid-February 2010 with delivery of the draft report at the end of February 2010.

7 DELIVERABLES

The deliverables include:

- Number of reports: 2
- Hard copy of all data
- Electronic files where applicable
- Separate plans / drawings where required

8 COFFEY CREDENTIALS

8.1 The Company

Coffey Mining has more than 50 years experience as specialist mining consultants, from the boardroom to the mineface. The Coffey Mining team features some of the best specialist mining and geotechnical engineering professionals from around the world. Operating in over 60 countries in regions including West Africa, South America, South East Asia, the Middle East and Australia, Coffey Mining's provides a full range of services to this sector, from engineering to environmental management, as well as business consulting such as feasibility studies.

As a subsidiary of Coffey International Ltd, Coffey Mining has the flexibility and client focus of a small, industry-specific company with the backing and support of a top 300 publicly-listed, multi-specialist consulting group. This arrangement allows Coffey Mining to draw on a range of specialist skills through related sister companies including environmental planning and auditing, contamination testing and workplace safety advice and auditing through Coffey Environments. Both Coffey Natural Systems and Coffey Environments have extensive experience in the mining sector. An organisation chart outlining the capabilities of the Coffey companies is provided in Appendix A.

Coffey Mining is independent with no commercial affiliations:- an attribute that has ensured wide acceptance of its reports and recommendations by the banking and investment community.

Further general details of the firm and general capabilities can be found on the company website: www.coffey.com

8.2 Relevant Experience

Coffey has an international reputation for excellence in hydrogeology. The company has been involved with projects in Tasmania, Australia and throughout the world.

Table 1 Recent projects in Tasmania

Client	Project/Location	Coffey Services
Cement Australia	Railton	Advanced dewatering project hydrogeological analysis Preliminary hydrogeological evaluation
Bass Metals	Que River	Mine water decommissioning study
Copper Mines of Tasmania	Queenstown	Mud Rush Assessment and Management Recommendations
Allstate Exploration	Beaconsfield	Conceptual Hydrogeological Model, Beaconsfield Tailings Storage Facility, Annual Environmental Report - aqueous geochemistry reporting,
Zeehan Zinc	Zeehan	Zeehan Zinc Ltd, Waste rock capping infiltration modelling -- Comstock Mine Central Waste Rock Dump.

Table 2 Additional examples of surface water and mine water projects throughout Australia

Client	Project/Location	Coffey Services
Northgate Australian Ventures	Stawell Gold Mine groundwater monitoring system, Victoria	Upgrade and extension of existing groundwater monitoring system including review of groundwater monitoring plan
Wolfram Camp Mining Pty Ltd	Wolfram Camp ground- and surface water monitoring system	Conduct design and installation of a surface and groundwater monitoring system comprising 6 groundwater and 16 surface water monitoring points to ensure operational compliance with Water Quality Objectives
Rio Tinto Coal and Allied	Carrington Coal Mine, Hunter Valley, VIC	Hydrogeological investigation, design and installation of Hunter river groundwater monitoring system.
Energy Resources of Australia	Ranger Uranium Mine, NT	Hydrogeological investigations and assessment of Pit #3 west wall depressurisation Hydrogeological assessment of accelerated mine schedule for Pit #3. Pre-feasibility hydrogeological assessment of proposed east wall cutback, Pit#3.
EWL Science	Ranger Uranium Mine, NT	Grout curtain investigation comprising drilling and testing of bores along a traverse between retention pond and pit
Mines Administration Pty Ltd	Honeymoon Uranium Mine, SA	3-dimensional finite element model of insitu leaching process in multi-layered aquifer system
Mines Administration Pty Ltd	Honeymoon Uranium Deposit	Hydrogeological investigations for proposed insitu leaching of uranium deposit.
Westland Illmenite	Groundwater Study, New Zealand	Groundwater study including assessment of effects of mining on sensitive natural system

Further details can be provided on any aspects of this information, if required.

Coffey Mining does not consider that it is in any way conflicted in relation to this assignment and is able to complete this work in a totally independent manner.

8.3 Client Relationships

Coffey Mining recognises that having a successful client relationship is just as important as strong technical credentials. Coffey Mining makes client relationships a priority, which is why we have achieved long term relationships with many clients. At the end of projects we actively pursue feedback to enable us to measure our performance against our clients' objectives.

9 THE TEAM

The Coffey Mining personnel nominated to carry out the assignment and their individual areas of responsibility are given below.

Table 3 The Team

Consultant	Position	Activity
Dr Lee Evans	Senior Hydrogeologist	Project Management and Liaison, Desk Study, Project Planning, Travel, Field Work, Engineering Solutions, Evaluation Reports
Sarah Joyce	Environmental Scientist	Desk Study, Project Planning, Travel, Field Work
Clint Scott	Associate Geotechnical Engineer	Engineering Solutions, Evaluation Reports
Bryce Atkinson	Principal Engineer	Engineering Solutions review, Evaluation Reports
Dr Detlef Bringemeier	Principal Hydrogeologist	Hydrogeological review
Ian Reeves	Mining Manager	Project review

Depending on when this work is awarded and the final work schedule Coffey Mining reserves the right to also use, or substitute those above, with equivalent (or more junior, if applicable) personnel. Client approval would be sought prior to actioning this.

10 COMMERCIAL

Coffey Mining usually accepts commissions on the basis of an initial scope of works and a schedule of rates, which allows an estimate to be made of total cost and duration. Coffey Mining proposes this billing arrangement for this project.

Coffey Mining's Standard Terms of engagement are provided in Appendix C, which apply for any terms or charge out rates not otherwise specified in this proposal.

10.1 Schedule of Rates

The following fees and charges apply:

Table 4 Schedule of personnel rates

Personnel	Rate (\$ / per hour)
Senior Principal	300
Principal	270
Associate	220
Senior	195
Experienced Project Professional	165
Project Professional	145
Graduate	120
Cartographic drafter	95
Personal Assistant	85
Administration	80

Table 5 Schedule of expense rates

Expenses	
Reimbursable expenses, such as travel, hire car, accommodation (unless provided by client), external printing, and other out of pocket, e.g. taxis, meals etc.	Cost + 15%
Computer services. The use of normal desktop and portable computers, internet and e-mail is included in professional fee rates.	
Specialist Software (geological modelling, mine design, Limit Equilibrium Stability Modelling, Stress analysis, Groundwater Modelling, etc)	\$40/hour
Special Printing (Internal) eg A0 colour laminates	Colour A4 \$2 p/p (<100pgs); \$1 p/p (>100pgs) B&W A3 75c p/p Colour A3 \$2.75 p/p
Communications, office consumables and expenses	5% of professional fees

GST – Rates quoted in response to specific requests do not include any provision for GST. GST will be shown separately on “Tax Invoices” where applicable.

Coffey Mining will submit an invoice for itself and its sub-consultants at a minimum of monthly intervals for each stage of the work. The invoice is payable in full within 14 days of the date submitted. Late payment of invoices will attract an interest charge as outlined in our Terms of Agreement.

10.2 Cost Estimate

Amendments to the Scope of Work during progress of the project may lead to changes in the estimates. This is discussed and agreed with the client as the occasions arise. Similarly, Coffey Mining will advise the client where variations to the estimates are likely to arise due to unforeseen circumstances.

Table 6 Cost Estimate

Field Vehicle	4 days	\$400
Fuel	Estimate	\$200
Accommodation	Estimate 3 nights x 2 rooms	\$800
Field Meals	Estimate	\$200
Geochemical Analyses	Estimated 10 samples	\$1000
Reports	Estimate	\$100
Cost plus 15%	15%	\$405
Professional fees		\$30330
Administration fees	5% time charged	\$1516.50
Estimated Total		\$34,951.50

The total cost estimate for the Phase 1 Hydrogeological Evaluation is approximately \$35,000. A breakdown of the time estimate for professional fees is provided in the following table. Coffey Mining is also prepared to discuss alternative arrangements that may be preferred by the client. If this is the case, please feel free to discuss your preferences with us.

Table 7 Time and Item Estimate

Review of existing reports and data	Desk Study	Lee Evans	8	\$195	\$1,560
Conceptual model and pumping figures review	Desk Study	Lee Evans	8	\$195	\$1,560
Conceptual model and pumping figures review	Desk Study	Detlef Bringemeier	1	\$270	\$270
Preliminary site investigation	Project Planning	Lee Evans	2	\$195	\$390
Preliminary site investigation	Travel	Lee Evans	16	\$195	\$3,120
Preliminary site investigation	Field Work	Lee Evans	16	\$195	\$3,120
Preliminary site investigation	Project Planning	Sarah Joyce	2	\$145	\$290
Preliminary site investigation	Travel	Sarah Joyce	16	\$145	\$2,320
Preliminary site investigation	Field Work	Sarah Joyce	16	\$145	\$2,320
Fatal flaws and engineering solution workshop	Meetings	Lee Evans	2	\$195	\$390
Fatal flaws and engineering solution workshop	Meetings	Bryce Atkinson	2	\$270	\$540
Fatal flaws and engineering solution workshop	Meetings	Clint Scott	2	\$220	\$440
Draft Reporting	Evaluation Reports	Clint Scott	4	\$220	\$880
Draft Reporting	Evaluation Reports	Bryce Atkinson	2	\$270	\$540
Draft Reporting	Evaluation Reports	Lee Evans	24	\$195	\$4,680
Work program (Engineering solutions validation)	Evaluation Reports	Clint Scott	4	\$220	\$880
Work program (Engineering solutions validation)	Evaluation Reports	Lee Evans	2	\$195	\$390
Work program for Phase 2 (Hydrogeological Investigation)	Evaluation Reports	Lee Evans	8	\$195	\$1,560
Report Review	Evaluation Reports	Detlef Bringemeier	2	\$270	\$540
Report Review	Evaluation Reports	Ian Reeves	2	\$270	\$540
Client workshop	Meetings	Sarah Joyce	2	\$145	\$290
Client workshop	Meetings	Bryce Atkinson	2	\$270	\$540
Client workshop	Meetings	Lee Evans	2	\$195	\$390
Client workshop	Meetings	Clint Scott	2	\$220	\$440
Final Reporting	Evaluation Reports	Lee Evans	4	\$195	\$780
Project Management and Liason	Project Management	Lee Evans	8	\$195	\$1,560
				Total	\$30,330

11 CLOSURE

We look forward to discussing this proposal with you and hope that you will proceed and engage Coffey Mining. In order to do this, we request you sign and return the Authorisation in Appendix D. Your accounts department may require that a purchase order be issued to formalise our engagement. While the purchase order formalises invoicing arrangements, we can commence work without delay upon receipt of the completed Authorisation.

This proposal is valid for 60 days.

For and on behalf of Coffey Mining Pty Ltd

Ian Reeves
State Manager (Tas)

Proposal Review and Sign Off

Name	Position	Signature	Date Issued

This document has been prepared for the exclusive use of Beacon Hill Resources ("Client") on the basis of instructions, information and data supplied by them. No warranty or guarantee, whether express or implied, is made by Coffey Mining with respect to the completeness or accuracy of any aspect of this document and no party, other than the Client, is authorised to or should place any reliance whatsoever on the whole or any part or parts of the document. Coffey Mining does not undertake or accept any responsibility or liability in any way whatsoever to any person or entity in respect of the whole or any part or parts of this document, or any errors in or omissions from it, whether arising from negligence or any other basis in law whatsoever.

Appendix A

A-1 Company Business Information

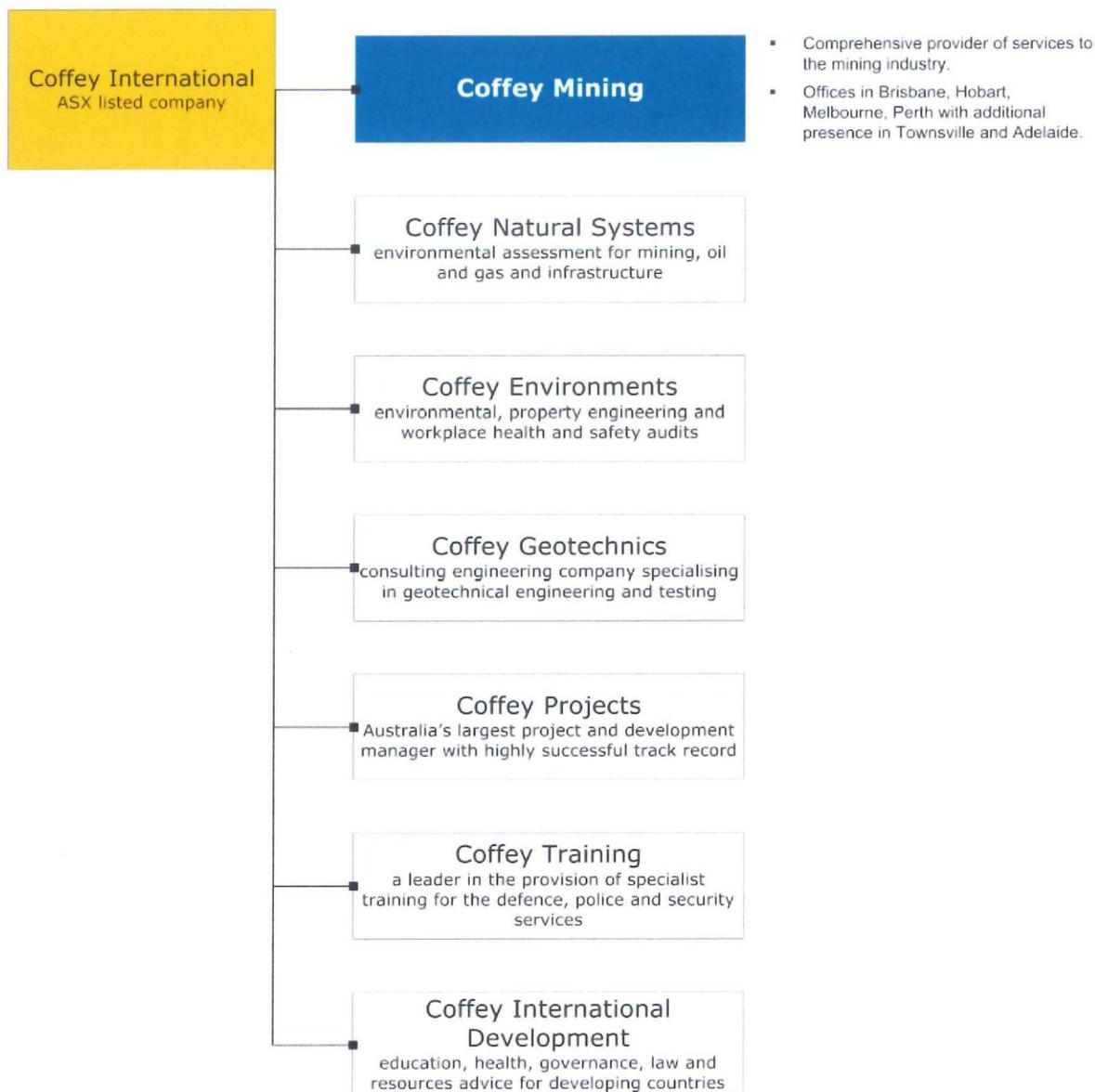
A-2 Coffey Companies - Organisation Chart



Appendix A-1 – Company Business Information

Name of Company	Coffey Mining Pty Ltd		
Australian Company No.	065 481 209		
Registered Address	8/12 Mars Road Lane Cove West, NSW, 2066		
Postal Address	2 Melville Street, Hobart TAS 7000 Australia		
Street Address	2 Melville Street, Hobart TAS 7000 Australia		
Telephone Number	+ 61 (3) 6108 0100		
Facsimile Number	+ 61 (3) 6108 0199		
Email Address Format	firstname_lastname@coffey.com		
Web Site Address	www.coffey.com		
Type of Business	Mine technical and business consulting services		
Representatives	Name	Contact Number	
Project Manager	Lee Evans	(03) 6108 0100	
Insurance Details	Insurance Company	Policy Number	Expiry Date
Workers Compensation - Employees - Directors	Allianz Australia Insurance Ltd	WWHO53634	30 June 2009
Public Liability	Zurich Australian Insurance Ltd	42 2981 655 GLR	30 June 2009
Professional Indemnity	Lloyds of London	QD0602251	30 June 2009
Vehicle – Nil	N/A	N/A	N/A

Appendix A-2 - Coffey Companies - Organisation Chart



Appendix B

CVs





DR LEE R. EVANS

Senior Hydrogeologist

Coffey Mining

Coffey Business Centre, 2 Melville Street
Hobart Tasmania 7000 Australia
T (+61) (3) 6108 0100 F (+61) (3) 61080199
www.coffey.com.au

EDUCATION

- B.App.Sci.
Applied Geology with distinction, Department of Civil and Geological Engineering, Royal Melbourne University
- B.App.Sci.(Hons)
Exploration and Environmental Geology, Department of Science, University of Ballarat
- Doctor of Philosophy (PhD)
Department of Earth Sciences/CODES, University of Tasmania
- Certificate IV in Business (Frontline Management)

SKILLSET

Mine dewatering investigations and mine water management
Investigation and management of water resources
Aquifer testing and monitoring program design
Groundwater modelling
Groundwater exploration, resource assessment, development and management
Borefield design, installation, maintenance and refurbishment
Aquifer storage and recovery schemes
Subsurface - surface water interaction investigation
Groundwater and aquifer dependent ecosystem research
Mine closure water management
Salinity assessment and management

PUBLICATIONS

Conference Papers

Evans, L.R., and Youngs, J., 2007, *Conservation of trial dewatering discharge through re-injection in the Pilbara region, Western Australia*, 35th IAH Congress on Groundwater and Ecosystems, International Association of Hydrogeology, Lisbon, Portugal, pp 9

Refereed Papers

Evans L.R., Davidson, G. Cooke, D. and Willis R., 2003, *Optimising Mining Data, With Emphasis on Rock Quality Designation, to Improve Groundwater Modelling of Fractured Rock Aquifers (Pasminco Rosebery Mine, Tasmania)*, Proceedings Water In Mining 2003, The Role of Water in a Sustainable Minerals Industry, Brisbane, Australia. pp 349 to 354

Evans L.R., Davidson, G., Cooke, D.R., and Doherty, G., 2004, *Regional and mine based hydrogeochemistry at the Pasminco Rosebery mine, Tasmania*, Proceedings of the Eleventh International Symposium on Water-Rock Interaction WRI-11, 27 June-2 July 2004, Saratoga Springs, New York USA, pp 1489 to 1482

Published Conference Abstracts

Evans L.R., Davidson, G. Cooke, D., 2004, *Hydrogeochemistry at the Pasminco Rosebery mine, Tasmania*, Abstracts 73 Dynamic Earth: Past Present and Future, 17th Australian Geological Convention, Hobart, Australia. pp 13

Successful grant applications

Grierson P.F., Adams M.A., Madden S., White S., van Leeuwen S., Smith B., Evans L.R., (2007) Dynamics of water and woody vegetation in central Pilbara – understanding and managing for environmental change. Australian Research Council Linkage Projects, Application for funding, 88 pp.

Theses

Evans, Lee R., *Assessment of Acid Mine Drainage (AMD) at the Cannington Ag-Pb-Zn mine, NW Queensland.*, Honours Thesis, University of Ballarat.

Evans, Lee R., *Groundwaters in wet, temperate, sulphide mining districts: delineation of modern fluid flow and predictive modelling to improve management after mine closure (Rosebery, Tasmania)*, PhD Thesis, University of Tasmania, Hobart.

ORGANISATIONS

IAH, International Association of Hydrogeologists

IWMA, International Mine Water Association

FELLOWSHIPS AND SCHOLARSHIPS

Rio Tinto - CAT Fellow 2006 Indigenous Centre for Appropriate Technology

ARC SPIRIT PhD Scholarship 2002

RELEVANT COURSES

Shaft Design and Construction, Underground Construction Association of SME, 2009, 2 days

Rio Tinto CAT, Cultural awareness, 2006, 2 days

Intersafe Essential Factors Incident Investigation & Introduction to Energy Concepts, 2005, 2 days

Wanu Wanu, Cultural awareness, 2005, 2 days

Waterloo 3D Groundwater Flow and Transport Modeling, 2003, 4 days

AMIRA Acid Mine Drainage A fresh approach, 1999, 5 days

PROJECT EXPERIENCE

Railton, Tasmania

Cement Australia, Advanced dewatering project hydrogeological analysis, Railton mine, 2009

Cement Australia, Preliminary hydrogeological evaluation, Railton mine, 2008

Huntly, New Zealand

Solid Energy, review of the Geotechnical baseline report and hydrogeology for the Huntly North Project area shaft construction, 2009

Brisbane, Queensland

Port of Brisbane, Reclamation. Horizontal drain spacing analysis for dewatering reclamation paddocks using linear flow modelling, 2009

Lihir Island, Papua New Guinea

Lihir Gold Limited, Lihir Gold Mine, Kapit Coffe Dam. Conceptual Hydrothermal Model and technical advice on the geochemistry of embankment dam filter materials in a geothermal/marine/acidic environment, and the suffosion potential of dam materials, 2009

Melba - Burnie, Tasmania

Pacific National, Preliminary Inspection, Melba Line and Argent Tunnel, West Coast, Tasmania, 2009

Rhyndaston, Tasmania

Department of Infrastructure, Energy and Resources, Tasmania, Geotechnical Assessment of the Rhyndaston Rail Tunnel, Tasmania, 2009

Tunnel, Tasmania

Department of Primary Industry Energy and Resources, Rail Management Branch, Preliminary Tunnel Inspection, Tunnel (Lilydale), Tasmania, 2009

UTAS Hobart, Tasmania

University of Tasmania, Lecturer, KNE 272 – Introduction to Mining, Introduction to Field Hydrogeology 2009; Mine Hydrology and Hydrogeology, 2008 and 2009

University of Tasmania, Lecturer, KNE 313 – Geotechnical Engineering, Introduction to Flow Nets, 2009

University of Tasmania, Lecturer, KNE 474 - Mining Geomechanics, Slope Stability Case Studies, 2009

Narrabri, New South Wales

Narrabri Coal Shaft Assessment, Packer Testing analysis. Palaris Mining, 2009

Kencana, Halmahera, Indonesia

Assessment of grouting options for the K2 raisebore shafts; RB#1 Grouting and Shaft Stability Report 2009 PT Nusa Halmahera Minerals, Newcrest, Kencana, Gosowong, 2008 and 2009

Bell Bay, Tasmania

Geotechnical and Operational Inspection of the Bell Bay Dolerite Quarry, TasPorts, 2009

Carlton, Tasmania

Hydrogeological Evaluation, Sugarloaf Ridge Vineyard, 2009

Mount Bischoff, Tasmania

Bluestone Tin, Metals X, Geotechnical Inspections, Mount Bischoff, Tasmania, 2009

Flagstaff Gully, Tasmania

Johnstone, McGee and Gandy Pty Ltd., Geotechnical and Environmental Desk Top Assessments for Flagstaff Gully Link Road Options, Tasmania, 2009

Beaconsfield, Tasmania

Allstate Exploration, Conceptual Hydrogeological Model, Beaconsfield Tailings Storage Facility, Beaconsfield Gold Mine, 2008

Allstate Exploration, Annual Environmental Report - aqueous geochemistry exceedence reporting, geochemical interpretation and GIS, Beaconsfield Gold Mine, 2008 and 2009

Que River Mine, Tasmania

Mancala mining and Bass Metals, Mine water decommissioning study, 2008

Cornwall, Tasmania

Cornwall Coal, Slope stability analysis, assessment of the Blackwood Colliery Travel Road Portal failure and ongoing assessment of New Travel Road portal excavation. 2008, 2009.

Fingal, Tasmania

Cornwall Coal, Underground geological mapping of the Duncan Colliery, 2008, 2009.

Kimbolton Coal, Tasmania

Kimbolton Coal, Assessment of failure, 2008 and ongoing geotechnical advice at the Kimbolton Open Pit, Hamilton 2008

Griffith, New South Wales

Casella Wines, Rainfall Recurrence Intervals, water balance and rainfall event scenarios, 2009

Tharbogang, New South Wales

Griffith City Council, Tharbogang Quarry and Landfill Expansion Environmental Approvals - GIS and hydrogeology advice, 2009

Ranelagh, Tasmania

Tassal, Rainfall Recurrence Intervals, water balance and spillway calculations, 2008

Ulan, New South Wales

Ulan Coal Mines Limited, Mine shaft inflow estimations, 2008

Rosebery, Tasmania

Zinifex, Acid mine drainage sampling assessment, Rosebery Mine, 2004

Pasminco, Groundwaters in wet, temperate, mountainous, sulphide-mining districts: delineation of modern fluid flow and predictive modelling to improve management after mine closure (Rosebery, Tasmania), 2008

Hercules Mine, Tasmania

Zinifex, Acid mine drainage sampling assessment, the abandoned Hercules mine, 2004

Pilbara, Western Australia

Rio Tinto Iron Ore, Hydrogeological database design, training, and implementation, 2006

Marandoo, Western Australia

Pilbara Iron, Marandoo project hydrogeology, 2005 and 2007

Pilbara Iron, Marra Mamba below water table trial operation, 2005 and 2006

Pilbara Iron, Conservation of trial dewatering discharge through re-injection in the Pilbara region, Western Australia, 2007

Tom Price, Western Australia

Rio Tinto Iron Ore, Marra Mamba hydrogeological drilling program, 2007

Nammuldi, Western Australia

Rio Tinto Iron Ore, Nammuldi project hydrogeology, 2005

Rio Tinto Iron Ore, Nammuldi hydrogeological investigation, 2007

Southern Fortescue Borefield, Western Australia

Rio Tinto Iron Ore, Sinkhole management, Southern Fortescue borefield, 2007

West Angelas, Western Australia

Rio Tinto Iron Ore, West Angelas hydrogeological report, 2006

Brockman, Western Australia

Pilbara Iron, Brockman project hydrogeology, 2005

Pilbara Iron, Brockman BS2 Lower, hydrogeological report, 2005

Pilbara Iron, Brockman mine dewatering infrastructure design, installation and implementation, 2005.

Yilgarn Goldfields, Western Australia

Resource Service Group, gold exploration, field work, chip logging and rig supervision, 2001

Wimmera, Victoria

Basin Minerals, Mineral sand field based exploration, drill rig supervision, logging and interpretation, 1999

Cannington Mine, Queensland

BHP Minerals, Underground grade control, development ground support monitoring, design and contract management, 1998

BHP minerals, Assessment of Acid Mine Drainage (AMD) at the Cannington Ag-Pb-Zn mine, NW Queensland, 1999

BHP minerals, mine geology, 2001

PREVIOUS EMPLOYMENT

Title: **Acting Senior Project Hydrogeologist**

Mar – Aug 2007

Project Hydrogeologist

Jan 2005 – Dec 2007

Employer: Rio Tinto Iron Ore; Expansion Projects, Pilbara Iron

Location: Marandoo, Brockman and Nammuldi, Tom Price, Western Australia

Role: Hydrogeological research, project management, contractor management, dewatering design and implementation, depressurisation design and geotechnical investigation. Managing hydrogeological monitoring, data management, database design, database training, hydrogeological modelling and mine site hydrogeological issues.

Title: **Environmental Geologist**

Jan – Feb 2004

Employer: UniTAS Consulting

Location: Hercules, Rosebery, Tasmania

Role: Mine site hydrology, acid base accounting, GIS, and geochemistry

Title: **Academic Staff, Demonstrator**

Jul 2002 - Nov 2003

Employer: Department of Earth Sciences

Location: University of Tasmania, Hobart, Tasmania

Role: 3rd year Environmental Geology and 3rd year Geotechnical Engineering

Title: **Mine Geologist**

Jul - Dec 2001

Employer: Gnomonic Exploration

Location: BHP Cannington, NW Queensland

Role: Mine geology, core logging, drilling planning and supervision

Title: **Contract Geologist** May – Jun 2001

Employer: Resource Service Group

Location: Yilgarn Goldfields, Western Australia

Role: Gold Exploration, chip logging and rig supervision

Title: **NGO Volunteer** Nov - Dec 2000

Employer: Environmental and Development Agency Trust

Location: EDA Matatiele, KwaZulu Natal, South Africa

Role: Environmental reporting, GIS establishment and training

Title: **Game Ranger**

Oct - Nov 2000

Employer: Garden Route Game Lodge

Location: Albertinia, Western Cape, South Africa

Role: Environmental education, game drives, farming and exotic species control

Title: **Junior Geologist**

Nov - Dec 1999

Employer: Craton Resources NL.

Location: Basin Minerals NL., Western Victoria, Australia

Role: Field based exploration, drill rig supervision, logging and interpretation

Title: **Environmental Geologist**

Feb – Nov 1999

Employer: BHP Minerals Pty. Ltd.

Location: BHP Cannington, NW Queensland, Australia

Role: AMD research, waste management, environmental and hydrogeological monitoring and reporting

Title: **Geological Geotechnical Assistant**

Jan 1998 – Feb 1999

Employer: BHP Minerals Pty. Ltd.

Location: BHP Cannington, NW Queensland, Australia

Role: UG grade control, development ground support monitoring, design and contract management

Title: **Geologist (Vacation Student)**

Dec 1996 – Feb 1997

Employer: BHP Iron Ore

Location: Mt Whaleback, Jimblebar, O.B. 23/25, Western Australia.

Role: Open pit production geology, exploration, geotechnical and geological core logging and field mapping

Sarah Joyce

Environmental Scientist



QUALIFICATIONS

- Mobil Approved Safe Work Procedures, November 2008.
- AIP Work Clearance for Contractors, September 2008.
- First Aid Level 2 Certificate, September 2008.
- 40 Hour OSHA Training, July 2008.
- Fire extinguisher training, July 2008.
- Certificate II in Public Safety, with SES, 2008.
- Components of the Forest and Forest Products Training Package with Forestry Tasmania, 2007.
- Remote Area First Aid, May 2006.
- 4WD Training, February 2006.
- Bachelor of Science (Hons), University of Tasmania, 2003. Titled "Hydrological Investigation of the Hastings Caves State Reserve"
- RACT Defensive Driving Course, 2002.
- Bachelor of Science, Double Major in Geology and Geography & Environmental Studies, University of Tasmania, 2002.
- Australian Land Conservation and Restoration Traineeship with TAFE Tasmania, 1997.
- Occupational Health and Safety, TAFE Tasmania, 1997.
- Sail Training Course, Young Endeavour, 1996.

CAREER SUMMARY

- | | |
|---------------------------|--|
| June 2008-present | Environmental Scientist, Coffey Environments Pty Ltd, Tasmania |
| May 2007-June 2008 | Consultant, Coffey Mining Pty Ltd, Tasmania |
| September 2004 - May 2007 | Geomorphic Consultant who contracted to Forestry Tasmania. |

2006 - May 2007	Field Assistant, Department of Primary Industries and Water; TASVEG.
October 2006 – December 2006	Consultant, SFM Environmental Solutions
2003 - 2005	Bushwalking guide, Cradle Mountain Huts
2003 – February 2009	Volunteer, State Emergency Service – Remote Area Search and Rescue.
1999 – 2003	University Student, University of Tasmania.
December 1997 – May 1998	Trainee; Green Corps Australia.

PROFESSIONAL PROFILE

Sarah is an Environmental Scientist with Coffey Environments, Tasmania.

Sarah's duties include:

- Project Management including job setup, proposal and cost estimate generation and client invoicing for Phase 1 and Phase 2 Environmental Site Assessments, Groundwater and Soil Remediation Systems, Site Validations, Health Risk Assessments and Contaminant Management Plans.
- Management of project deliverances.
- On-site investigations, compilation of laboratory analysis and report writing for Environmental Site Assessments, Groundwater Monitoring Events and Site Validations.
- Management of site operations, including soil and groundwater sampling, site quality assurance, site health and safety, supervision of excavation, cable locating, surveyors and drilling contractors and liaison with clients.
- Report writing, figure compilation and office administration (use of E4SE financial system and purchase orders/invoicing).
- Extensive use of Microsoft Word and Excel.

PROFESSIONAL EXPERIENCE

June 2008 – Present: Environmental Scientist for Coffey Environments Hobart, Australia.

Position described above.

May 2007 – June 2008: Consultant for Balance (A Division of Coffey Mining, Hobart Australia.

As a Consultant Sarah acted as Project Manager for the ongoing environmental compliance of Allstate Explorations, who currently operate the Beaconsfield Gold Mine. Main tasks associated with this position included the development of management documents, coordination of subcontractors and the implementation of management recommendation. Management documents included;

- A Waste Management Plan.
- An Annual Environmental Management Report.
- An environmental risk register.
- Environmental Management Plan.

The following onsite works were coordinated;

- Flora and Fauna Survey Work.
- Resistivity Testing of Groundwater.
- Wetlands Survey and Assessment.
- Noise Monitoring Surveys.
- Water Monitoring and Auditing.

September 2004 – May 2007: Geomorphic Assessor for Forestry Tasmania.

Sarah acted as a geomorphic assessor and advisor to Forestry Tasmania and her work constituted largely of karst assessment in the Florentine Valley. Field work was conducted to assess and map features including caves, sinkholes, dry gullies, limestone outcrops, streamsinks and springs. Map and scientific reports were produced and submitted to Forestry Tasmania. Skills gained through this work included;

- Working in remote locations.
- Developed skills in Karst Identification.
- Off track navigation.
- Radio Communications.

- Defensive Driving.
- 4WD Experience.
- Soil Sampling.
- Fire Fighting Training.

2006 – May 2007: Field Assistant for the Department of Primary Industries and Water - TASVEG

As a Field Assistant, Sarah supported the Senior Botanists. The main role was to assist the Senior Botanists on field excursions by driving for extended periods while vegetation mapping was conducted. While working with *TasVeg* Sarah undertook Four Wheeled Driving training course, a Defensive Driving course and Remote Area First Aid course.

Sarah also assisted with GIS component of the process where photographic images were rectified with greater detail was added to the *TasVeg* layer. Photofactory – Landscape Mapper was the program used for this process.

2006: Consultant for SFM Environmental Solutions.

Sarah assisted in the production of a series of Environmental Impact Statements for *Air Services Australia*. These reports considered environmental impacts of developing a communication tower in existing compounds, Australia wide. To complete these reports two tower sites in Western Australia were visited and the relevant scientific information was recorded.

2003 – 2005: Bushwalking Guide with Cradle Mountain Huts.

Responsibilities involved managing a group of ten individuals for six days in a remote area. During this employment Sarah gained extensive remote area walking experience in all climatic conditions, extensive team leadership and team management skills plus extensive knowledge of the Cradle Mountain – Lake St Claire National Park.

2003 – Present: Volunteer with the Remote Area Search and Rescue SES Team.

As a member of the State Emergency Services – Remote Area Search & Rescue team Sarah has

worked in a Volunteer Capacity since September 2003. As a team member she performs remote area rescue and train regularly in the following areas;

- Day and night navigation.
- Night stretcher carrying.
- Cave rescue.
- Line searching.
- Radio communications.
- Remote area survival techniques.

Throughout her time as a member of the State Emergency Service she has had training in;

- Land search techniques.
- Team leadership skills.
- First aid workplace level 2.
- Basic roping.
- Helicopter rescue.
- Tracking training.

2002 – 2004: Volunteer work and training with Department of Primary Industries and Water.

Stream flow monitoring, Water Catchment of Mt Anne, Tasmania: Sarah acted as a Field assistant to Katherine Jerrie conducting analysis of stream flow characteristics, prior and post a fire event.

Re-vegetation of alpine vegetation on the Central Plateau, Tasmania: Sarah acted as a Field Assistant to Rolan Eberhard and Ian Household and participated in stabilising ancient landforms by laying jut matting.

Cave monitoring and data collection, Exit Cave, Tasmania: Sarah acted as a Field Assistant to Ian Household, she participated in a caving expedition to assess impacts of caving activities on cave formations and invertebrates

1999 – 2003: University Student at the University of Tasmania.

Post Graduate Sarah's Thesis is titled "Hydrological Investigation and Karst Documentation of the Hastings Caves State Reserve" and it addresses the hydrological connections of the karst system in the Hastings Caves State Reserve. Skills developed through this work included independently planning

excursion to collect field data, maintenance of field equipment and comprehensive written communication skills.

Undergraduate Degree Sarah completed a Double Major in Geology and Geography & Environmental Studies. Units completed included third year Geology and Geography and Environmental Studies and second year Botany. Skills gained included a sound geological, geographical and botanical knowledge and many skills to assist in a professional environment. Computer programs used during her undergraduate degree include Microsoft Work, Powerpoint, Excel and Arc View.

1997 – 1998: Trainee with Green Corps.

Sarah worked in a small team to create an artificial wetland system. Native species of reeds and tea trees were planted, walking tracks were constructed, weeds were eradicated and OH&S training was undertaken.

KEY SKILLS

- Water Quality Assessment, Environmental Sampling and Sample Management.
- Contaminated Land Environmental Assessments.
- Sound knowledge of karst environments.
- Understanding of Tasmanian Government Environmental Legislation.

PROJECT EXPERIENCE

Water

June 2008 – Present (Coffey Environments Hobart, Australia)

- Groundwater gauging using interface probe. Recording water quality parameters using Hydrolab, Troll 9000 and water quality meter. Sampling using micropurge system, bailers and water tubing.
- Development of contour maps, groundwater analysis maps.
- Tabulation and commenting of laboratory results pertaining to contaminants in groundwater.
- Development of Site Safety Plans, data entry and report writing.

Environmental site assessment

June 2008 – Present (Coffey Environments Hobart, Australia)

- Project management, establishment, fieldwork, reporting and invoicing associated with environmental site assessments of numerous development sites.
- Establishment, fieldwork, reporting and invoicing associated with environmental site assessments.
- Water sampling using different equipment and methods including micro-purge, bailers, data loggers, and hydrolabs.

May 2007 – June 2008 (Coffey Mining, Hobart, Australia)

As a Consultant Sarah acted as Project Manager for the ongoing environmental compliance of Allstate Explorations, who currently operate the Beaconsfield Gold Mine. Main tasks associated with this position included the development of management documents, coordination of subcontractors and the implementation of management recommendation.

OUR PEOPLE



Clint Scott

Geotechnical Engineer

Date of Birth

- October 26, 1972

Nationality

- Australian

Qualifications

- Bachelor of Engineering (Honours) RMIT
- Master of Engineering Science (Research) University of Queensland

Summary

Mr Scott is skilled in the planning and supervision of geotechnical investigations, development of geotechnical models and design of various underground and surface excavations. His experience includes the assessment of tunnel stability, support and planning.

Mr Scott has experience in the assessment of various mining methods including benching, longwall, open stoping, block caving, sub-level caving and cut-and-fill methods. He has extensive experience as relief staff for mine site work that included day-to-day geotechnical/planning issues and the supervision and training of junior/graduate geotechnical staff.

Fields of Expertise

- Geotechnical Investigations for surface and underground mines, shafts and large tailings dams
- Geotechnical Model Development
- Geotechnical Assessment for Underground Excavations, Tunnels and Shafts
- Computerised Stress Analysis
- Slope Design and Optimisation

OUR PEOPLE

Appointments

- 2003 (Dec) – present: Coffey Geosciences Pty Ltd, Senior Geotechnical Engineer (Casual)
- 2003 (May-Aug): WBI GmbH (Germany), Contract Geotechnical engineer
- 2001 – 2002: Coffey Geosciences Pty Ltd, Experienced Project Professional,
- 2000 – 2001: Coffey Geosciences Pty Ltd; Project Geotechnical Engineer, Mining Geotechnics
- 1998 – 2000: Coffey Geosciences Pty Ltd; Geotechnical Engineer, Mining Geotechnics
- 1997 – 1998: Coffey Partners International Pty Ltd; Geotechnical Engineer, Mining Geotechnics
- 1995 – 1997: Julius Kruttschnitt Mineral Research Centre; Research Assistant
- 1995: Barrett, Fuller and Partners; Contract Geotechnical Engineer
- 1994 – 1995: Vacation work experience, Gordonstone Colliery

Project Experience

TUNNELLING

- **North Ltd, Jabiluka project (NT)**

Geotechnical assessment of exploration decline, including portal box-cut support, training of geological/geotechnical staff and training of ground support crew in installation procedures.

- **Greece Transport Corporation (Greece) Anglo Coal Australia Pty Ltd; Dartbrook Coal Mine (NSW)**

Stress modelling, translation of reports (German to English) and report preparation, displacement monitoring reporting.

Ground support recommendations for inter-seam drift, coal storage bin, portal entrances and initial section of access drift.

- **Montgomery Watson N.Z.; Tai Lam Tunnel (Hong Kong)**

Assessment of ground support requirements for proposed Tai Lam railway tunnels. Temporary and Permanent requirements.

- **Pasminco Mining, Rosebery (TAS)**

Surface decline alignment and support requirements. Including geotechnical assessment and support requirements for portal box-cut.

- **Nardell Coal Corporation Pty Ltd; Nardell Coal Mine (NSW)**

Support and excavation recommendations for portal entrance and initial drift development.

- **BHP, Cannington Mine (QLD)**

Relief of Geotechnical Geologist staff, carrying out day-to-day geotechnical duties including, development support, planning and rehabilitation.

- **Hazell Bros., Kelcey tier tunnel (TAS)**

Assessment of rehabilitation requirements for a 1.5m diameter water pipeline tunnel for the North-West water authority.

- **Pasminco Mining, Rosebery Mine (TAS)**

Assessment and rehabilitation/support recommendations of strain burst failure in development tunnel.

- **SMC, Hadley Castle Gold Mine (QLD)**

Review of ground support procedures, introduction and training in tunnel support requirement assessment and review of mining operations.

OUR PEOPLE

MINING

- **BHP, Cannington Mine (QLD)**

Relief of Geotechnical Geologist staff, carrying out day-to-day geotechnical duties including development support, stope design, shaft/vent raise design, mine design issues, supervision and training of junior/graduate geotechnical staff

- **Renison Limited, Renison Bell (TAS)**

Implementation of complete mining geotechnical procedures and cablebolt support assessment techniques

- **Gordonstone Colliery (QLD)**

Rib pillar design for the removal of secondary support (wooden cogs).

- **North Ltd., Jabiluka project (NT)**

Feasibility level geotechnical mining study on first mining block in detail and the entire deposit.

- **Mancala Pty Ltd, Zapopan project (NT)**

Mine geotechnical feasibility study including stope spans, ground support and mining issues.

- **Pasminco, Rosebery Mine (TAS)**

Ongoing geotechnical assessment of both development and production issues. Regular inspections made on a fortnightly basis of all geotechnical concerns

- **Tennant Isokangas (TIP), Mount Isa Mines (QLD)**

Scoping level investigation of a 90Mt lower grade 1100 orebody Halo. Included selection of mining method and detailed geotechnical assessment of sub-level cave operation.

- **Newcrest Mining Pty Ltd, Telfer Gold Mine**

Review of pre-feasibility level study for Telfer deeps sub-level cave mining option.

- **Newcrest Mining Pty Ltd, New Celebration (WA)**

Rock mass characterisation and application of stability assessment methods and monitoring of open pit blasting on underground workings.

- **Ulan coal mines Ltd, Ulan cola mine (NSW)**

Investigation into the geotechnical issues associated with the application of cut and flit development technique.

- **Mount Isa Mines, Mt Isa Mine (QLD)**

Assessment and refinement of localised stope stability method.

- **Pasminco Mining, Rosebery (TAS)**

Orebody extraction planning for a cut and fill operation including, mining block definition, access requirements, planned dilution estimates and geotechnical considerations.

- **Pasminco Mining, Rosebery (TAS)**

Orebody extraction planning for a bench stoping and open stoping operation. Included rock mass assessment, stability analysis, assessment of backfill requirements, developing planning guidelines, and access requirements.

- **Mount Isa Mines, Hilton Mine(QLD)**

Blast monitoring and production blasting design for the minimisation of blast damage and the reduction of hanging wall dilution.

- **North Limited, North Parkes (NSW)**

Assessment of development trim blasting and monitoring of initiation system efficiency. Blast vibration monitoring and fragmentation assessment from undercutting blasting.

- **Renison Limited, Renison Bell (TAS)**

Geotechnical feasibility study for open stoping of the Huon orebody. Assessment of stope/pillar dimensions, ground support and backfill requirements. Follow-up detailed study as excavated.

- **North Limited, North Parkes (NSW)**

Geotechnical assessment of ground conditions for cavability and insitu block size estimation.

- **Climax Mining, Didipio (Philippines)**

Geotechnical assessment of ground conditions for cavability from drill core information.

OUR PEOPLE

- **Copper Mines of Tasmania, Mt Lyell (TAS)**

Geotechnical assessment of ground conditions for cavability and insitu block size estimation.

- **Miitel Operations Ltd., Miitel Mine (WA)**

Design of cemented sill pillars in cut and fill operation.

- **Beaconsfield Joint Venture, Beaconsfield (TAS)**

Stress analysis of sill pillars using a cut and fill mining method, assessment of strength requirements for sill pillars.

- **Zinifex Pty Ltd, Rosebery mine (TAS)**

Short periods of geotechnical staff coverage.

- **Renison Limited, Renison Bell (TAS)**

Assessment of extraction technique and support requirements for poor/highly altered ground conditions.

- **Beaconsfield Joint Venture, Beaconsfield (TAS)**

Assessment of cemented backfill requirements for a cut and fill operation including production of suitable tails, distribution and placement.

- **Bluestone mining, Renison Bell tin Mine (TAS)**

Audit of geotechnical procedures and development of mine geotechnical guidelines for operations.

- **Allegiance Nickel, Avebury mine (TAS)**

Development of geotechnical model for bankable feasibility study.

- **Minera Corona S.A., Cerro Corona (Peru)**

Site core logging, data reduction and development of geotechnical model for 300m deep open pit in altered porphyry deposit.

- **Mehdiabad Zinc Project (Iran)**

On site review, check logging and compilation of existing geotechnical data, development of geotechnical model and critical factors for further investigation and design consideration.

SHAFTS

- **North Ltd., Jabiluka project (NT)**

Geotechnical assessment of a 140m long, 2.4m diameter shaft. Including drilling supervision for pilot hole.

- **Pasminco Mining, Rosebery (TAS)**

Raisebore stability assessment of a 1100m long, 4.5m diameter ventilation shaft.

- **Rio Tinto Limited, Peak Gold Mine (NSW)**

Geotechnical and hydrogeological investigation, excavation method assessment and support design for twin 900m deep ventilation shafts of 3m and 4m diameter.

- **Goldfields Ltd, Henty Mine (TAS)**

Feasibility study for 3x650m deep 2.4m, 3.5m, and 4.5m diameter hoisting and ventilation shafts. Assessment of geotechnical conditions, hydrogeology, excavation methods and lining/support design.

- **Mancala Pty Ltd (NSW), Dartbrook Colliery**

Assessment of ground support for a 6.0m diameter horidiam stripped shaft.

- **BHP World Minerals, Cannington Mine (QLD)**

Geotechnical assessment of 2x3m diameter, 180m long ventilation shafts.

- **Nardell Coal Mine (NSW)**

Geotechnical investigations and raise bore stability assessment for 5m diameter upcast ventilation shaft.

- **WMC, Leinster Nickel Operations (WA)**

Geotechnical assessment and ground support requirements for a 800m long, initially 2.4m pilot shaft to be stripped to a final diameter of 6m ventilation shaft.

- **Australian RaiseDrilling, Moranbah North Coal Mine (NSW)**

Assessment of temporary pillar between raisebored and post-sink sectin of a 5.8m diameter shaft.

OUR PEOPLE

- **Newcrest Mining, Telfer Gold Mine (WA)**

Assessment of shaft surface infrastructure foundations, presink support and geotechnical assessment of a 1400m deep, initially 2.4m pilot shaft, hori-diam stripped to a final 6.5m shaft diameter.

- **BHP World Minerals, Cannington Mine (QLD)**

Geotechnical assessment, excavation technique and ground support for a 70m deep single 6m diameter ventilation shaft and 2x4.5m diameter shaft through soft surface sediments.

- **Byrncut-Ruc, Dendrobium Mine (WA)**

Geotechnical reassessment of 190m, 4m diameter ventilation shaft

- **Mancala Pty Ltd., Mandalong Coal Mine (NSW)**

Stability assessment and support requirements for 2x145m long shafts. Various diameters, 3.0m raisebored shaft and a 2.4m diameter raisebored shaft to be horidiam stripped to a final diameter of 6m

- **BHP World Minerals, Cannington (Qld)**

Geotechnical assessment and design 60m long, 2.4m diameter ventilation shaft excavation through highly weathered sedimentary rocks.

- **Mancala Pty Ltd, Ulan Coal Mine (NSW)**

Stability assessment and support recommendations for 180m long, 2.4m diameter raisebored shaft to be horidiam stripped to a final diameter of 5.5m.

- **Bendigo Gold, Bendigo gold mine (VIC)**

Stability assessment and support recommendations for 350m long, 3.5m diameter raisebored shaft.

DAMS, SURFACE WORKS, MISCELLANEOUS

- **Minera Corona S.A., Cerro Corona (Peru)**

Site drilling and earthworks supervision. Core logging, water pressure testing, construction and logging of test pits and costeans for dam design. Ground geochemical sampling, rock strength testing and general site mapping.

- **TEMCO Pty Ltd, Bell Bay processing plant (Tas)**

Supervision of drilling, sampling, piezometer installation, piezometer decommissioning, water quality testing program for tailings dam leachate plume definition. Geotechnical study to determine preferred location of new dam site and possible materials borrow areas. Site supervision during dam construction.

- **Justice Alan Blow, Hobart (TAS)**

Monitoring blast vibrations on a house caused by adjacent excavation blasting.

- **Richmond Shire Council, Richmond (TAS)**

Monitoring of traffic vibrations on historic buildings and constructions including Australia's oldest bridge still in use.

- **Hardware House Pty Ltd (Tas)**

Field supervision of drilling, SPT sampling for pavement foundation design.

- **John Holland Pty Ltd., Sorrell causeway bridge construction. (Tas.)**

Field supervision of washbore on land and vibracore drilling from barges for geotechnical conditions for bridge abutments and alignment. Included field environmental testing and sample collection.

- **SEMF Holdings Pty Ltd, Pasminco Hobart Smelter (Tas)**

Slope stability assessment for Gypsum handling facility.

- **Aurion Gold, Henty Gold Mine (TAS)**

Complete mine site water balance study and recommendations for water conservation and re-use.

- **Beaconsfield Joint Venture, Beaconsfield (TAS)**

Optimisation of cement usage for entire mine site, including suppliers to delivery to transport/reticulation around site.

- **WBI GmbH (Germany)**

Laboratory assistant, sample preparation and conducting of tests. e.g. UCS, liquid limit, plasticity.

OUR PEOPLE



Bryce Atkinson

Principal Engineer

Date of Birth

- 9 October 1948

Nationality

- Australian

Qualifications

- Bachelor of Science (Engineering) UNSW
- MAusIMM

Summary

Bryce Atkinson is a Principal Engineer with Coffey Geosciences and has over 35 years experience in hard rock underground and surface metalliferous mines. Bryce has Mine Manager's Certificates of Competency in Tasmania, NSW and Papua New Guinea. He has 25 years experience at mine manager and general manager level and has worked at operations in Western Australia, Tasmania, New South Wales, Papua New Guinea, China and South Africa and has solid practical experience across a broad range of mining related disciplines. He has

extensive experience with regulatory and statutory authorities in Australia and the third world, and has extensive contract management experience in mining, diamond drilling, raise drilling, and camp logistics.

Fields of Expertise

- Management: General, technical services, mine production, exploration, block modelling resource and reserve estimation, mine geology, and financial modelling
- Mine design, planning, budgeting, scheduling, cost analysis, financial analysis, and ventilation
- Mass mining, sublevel caving, mechanised mining, hand held mining, development, raiseboring, loader operations, trucking, shaft operations, underground crushing and conveying, fixed plant and mobile equipment maintenance
- Mine accounting, warehousing, and supply
- Industrial relations, community relations, and regulatory compliance and approvals
- General mine mechanical design, civil design, and mine

OUR PEOPLE

Appointments

- 2004 – Present: Coffey Geosciences Pty Ltd; Principal Engineer
- 2002: Tolukuma Gold Mine, PNG, General Manager
- 2001: South Deep JV, RSA, Consulting Engineer
- 2000 – 2001: Department of State Development, Tasmania, Project Manager Resource Industries
- 1999 – 2000: Copper Mines of Tasmania, General Manager
- 1997 – 1999: Copper Mines of Tasmania, Mine Manager
- 1996 – 1997:: Jian Cha Ling Project, China, Mine Manager
- 1993 – 1996: Porgera Joint Venture, PNG, Underground Manager and Geology Manager
- 1990 – 1992: Pasminco Broken Hill, NSW, Manager Operations Planning
- 1987 – 1990: Pasminco Broken Hill, NSW, Manager Mining ZC
- 1983 – 1987: Mount Lyell, Tasmania, Underground Manager
- 1977 – 1983: Mount Lyell, Tasmania, Planning Engineer
- 1975 – 1977: RUC Mining Contracting, Project Manager Mining
- 1973 – 1975: Windarra Nickel Mines, WA, Mining Engineer
- 1966 – 1973: Zinc Corporation/NBHC, NSW, Trainee Mining Engineer.

Project Experience

MINING PROJECTS

- **Allegiance Mining, Avebury Nickel Project (TAS)**

Coffey's feasibility study manager for Allegiance Metal's Avebury Project including mine design, production scheduling and total project financial analysis

- **Goldstar Resources, Walhalla Gold Project (VIC)**

Coffey's project manager for scoping level study of mine feasibility

- **Alliance Resources, Maldon Gold Project (VIC)**

Coffey's project manager for scoping level study of mine feasibility

- **Cala Resources, Mathinna Gold Project (VIC)**

Coffey's project manager for scoping level study of mine feasibility

- **Tolukuma Gold Mines (PNG)**

Managed operations of a 50,000 oz/annum gold mine with 450 PNG national employees, which was wholly serviced by helicopter

Renegotiated contracts for camp logistics, helicopter services, gold refining, and security services

Implemented underhand mining methods

Expanded exploration activities

Upgraded ventilation, pumping and ore handling systems

- **Dept of State Development, Tasmania**

Directed preparation of environmental baseline studies, proforma EMPs and marketing material for a government industrial estate

- **Copper Mines of Tasmania**

General manager of a 2.5 million tonne per annum underground copper mine utilising sublevel up-hole caving, contract mining, diesel trucking, and shaft hoisting

Renegotiated employee industrial agreements, mining contracts and supply contracts

Managed recovery from a period of voluntary administration Managed block caving study

Reduced operating costs by 20%

Increased production rate by 50%

Managed design and installation of upgraded pumping and ventilation facilities

OUR PEOPLE

• **Placer Dome - Western Areas South Deep Joint Venture, South Africa**

Audited annual business plan, including block modelling process and overall mechanised stoping design

Prepared life-of-mine financial analysis

Reviewed organisational structure.

• **Jian Cha Ling, Shaanxi China**

Managed establishment of mining operations on a green field site, including regulatory permitting, workforce recruitment and training, equipment procurement and mobilisation, and consumable supplies

• **Porgera Joint Venture, Papua New Guinea**

Directed mechanised mining operations at a production rate of 1.2 million tonnes per annum, including development, drilling, blasting, trucking, shaft operations, and cemented rock filling

Formalised block modelling and resource evaluation process

Expanded exploration activities

Re-evaluated net present value of underground and open pit reserves

Increased underground production rate by 30%

Implemented rigorous policies and operating procedures

Directed in-house repair of vertical conveying system after major mechanical failure

• **Pasminco, Broken Hill**

Directed mechanised mining operations at a production rate of 2.2 million tonnes per annum, including development, drilling, blasting, trucking, shaft operations, and tailings filling

Directed development of a total site planning process including budgeting, cost reporting, control of incentive payment systems, maintenance scheduling and long term mine design.

Analysed theoretical and empirical backfill slurry flow rates and pipeline wear rates

Conducted site-wide organisational review

• **Mount Lyell, Tasmania**

Directed mechanised mining operations at a production rate of 1.6 million tonnes per annum with 250 employees, including development, raise boring, drilling, blasting, trucking, and shaft operations

Refurbished shaft steel work and spillage bins

Designed and constructed major mine dewatering settlers, pump station and rising mains

Designed and implemented systems for mass blasting pillars of up to 750,000 tonnes, and up to 6,000 electric detonators

Achieved a net raise drilling rate of 3.5 metres per day over 2 years.

OUR PEOPLE



Detlef Bringemeier

Principal Hydrogeologist



EDUCATION & AFFILIATIONS

- Doctor of Philosophy, Technical University of Clausthal, Germany, 1997
- Master of Science (Geophysics), Technical University of Clausthal, Germany, 1992
- Master of Science (Geology), Technical University of Clausthal, Germany, 1990
- Bachelor of Science (Geophysics), Technical University of Clausthal, Germany, 1987
- Bachelor of Science (Geology), Friedrich-Wilhelms University of Bonn, Germany, 1985
- Member, German Geological Society
- Member, Natural Resources and Environmental Board, Sarawak

SUMMARY

Dr Detlef Bringemeier is a groundwater specialist based in Coffey's Brisbane office. Dr Bringemeier has Masters Degrees in geology and geophysics respectively and a PhD in hydrogeological studies. Over the past fourteen years he has worked extensively in integrated water resource management and groundwater engineering dealing with groundwater withdrawal, water quality, seepage problems and data management utilising a range of advanced techniques including cost-effective and time-proven methods as well as innovative computer technologies. He has conducted studies in Australia, Europe, Africa, the Middle East and the Asia-Pacific area.

Dr Bringemeier has experience in developing database management systems for environmental applications. He has specialised skills in the application of GIS technology and remote sensing to Groundwater and Environmental applications.

Detlef also has significant expertise in Environmental Impact Assessments gained throughout his involvement in more than 20 large studies.

OUR PEOPLE

FIELDS OF EXPERTISE

Detlef has applied his skills in Hydrogeology to numerous sectors, including:

- Tunnelling
- Nuclear Waster Deposits
- Fuel Caverns
- Groundwater Exploration
- Mining & Mining Subsidence
- Dams
- Forest Plantations (soil erosion hazard assessment)
- Groundwater and surface water studies
- EIA's and EMP's for a variety of projects

CAREER SUMMARY

2006 to Present: Coffey Geotechnics Pty Ltd, Principal Hydrogeologist

2006: Coffey Geotechnics Pty Ltd, Associate Hydrogeologist

2001 to 2005: Water Resources & Geo-Hydraulic, International Consultant

1999 to 2001: Chemsain Information Technology Sdn Bhd - Malaysia, Director

1998 to 2001: Chemsain Consultant Sdn Bhd - Malaysia, Senior Hydrogeologist & Hydrologist

1992 to 1997: Dept. of Engineering Geology, Inst. of Geology & Palaeontology – Germany, Assistant

PROJECTS

Mining

Dewatering/Depressurisation

ERA Ranger Mine, Northern Territory, Australia, Ranger Mine Feasibility study. Hydrogeological investigation comprising drilling of inclined cored boreholes, packer testing, acoustic televiwer surveying and conceptual modelling. The objective of this study was to assess groundwater conditions and factors relating to the proposed extension of the pit wall and depressurisation requirements.

ERA Ranger Mine, Northern Territory, Australia, Ranger Mine Pit #3 extension, Pre-feasibility study. Development

of a geotechnical and hydrogeological model of the ERA Pit #3. Identification of critical failure mechanisms and undertaking slope stability analyses. Integral part of the slope stability assessment are 2D cross sectional seepage models. Transient finite element models has been employed to determine current groundwater pore pressures behind the existing pit walls, to predict pore pressures behind the walls of an extended pit shell and to assess estimates of rates of depressurisation required for stability.

EWL Sciences, Northern Territory Australia. A drilling programme was undertaken comprising four diamond cored holes and continuous Packer testing of the holes located on the North Wall of Retention Pond 2 at ERA Ranger Mine, N.T. Objective of the investigation was to collect information on the rock permeability as basis for design specification of a grout curtain.

Ladbrook Enterprises Pty Ltd, Queensland, Australia. Groundwater, Surface Water and Geotechnical Assessment for a proposed sand and gravel extraction at Harris Terrace Sand Deposit, 316 Harris Road, Fernvale, QLD. The main objectives of the studies were to provide geotechnical, geological and hydrological information for a groundwater and surface water impact assessment in support of the preparation of a Development Application for proposed sand and gravel extraction at Harris Terrace. A programme of geotechnical testing, water chemistry testing of groundwater and Brisbane River water samples has been completed as part of the study. Project impacts have been assessed and recommendations on site water management and pit design have been provided.

Compass Resources Pty Ltd, Northern Territory, Australia. A groundwater model was developed to simulate the groundwater inflow to a proposed open pit copper mine. Historical groundwater records have been reviewed, a MODFLOW model has been calibrated, dewatering inflows into the mine have been predicted and extend of drawdown impacts over the live of the proposed mine has been assessed. Recommendations were provided in relation to groundwater monitoring and assessment during mining operation.

Tailings/Waste Rock Water Management

Northgate Australian Ventures, Fosterville Gold Mine, VIC, Groundwater investigation for Victoria's first proposed in-pit tailings storage facility. A FEFLOW finite element model of the proposed in-pit tailings and waste rock storage at two pits was developed to assess seepage loss from the proposed in-pit tailings and waste rock storage during underground mine operation and after decommissioning of

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underground mining, compute changes to the local groundwater flow regimes due to filling of the pits with tailings and waste rock, evaluate design alternatives, assess model uncertainties and identify risks associated with these uncertainties.

Zeehan Zinc Ltd, TAS, Waste rock capping infiltration modelling -- Comstock Mine Central Waste Rock Dump. A finite element VADOSE/W model of the waste rock dump was developed to provide a management tool for performance assessment of the waste rock cap construction specifically to assess weather the overall dump shaping and capping material will perform in an acceptable manner and to define indicators for performance monitoring.

Xstrata Zinc, Mt. Isa Mines, QLD, Modelling of groundwater level of Blackstar Waste Dump, The objective of this modelling study was to assess the performance of horizontal drainage at the base of a waste dump in reducing acid rock drainage. A conceptual model of the waste dump was developed and mapped on a two-dimensional finite element SEEP/W model.

Stawell Gold Mine Pty Ltd, Victoria, Australia. Hydrogeological and geophysical investigation and review of groundwater monitoring network at a large gold mine tailings dam. A program is being designed and implemented for the extension of the monitoring network using the results of the investigations and the assessment of existing monitoring points. The results (water level and water quality) of the monitoring program are being reviewed at 6 month intervals.

Ernest Henry Mining Pty Ltd, QLD, Australia. A seepage analysis was undertaken using SEEP/2d finite element model for a trial cover area at the Ernest Henry tailings dam. Model parameter variations were employed to determine optimal design parameters and recommendations were given on extent and timing of any necessary remedial works to be retro fitted to the dam prior to commencement of any cover trials.

Water Supply

D'Aguilar Gold Ltd, Anduramba, Queensland Pre-Feasibility Study. A hydrogeological investigation comprising test pumping of exploration bores was conducted in order to assess the potential of groundwater sources at the proposed Anduramba mine. A mine water management study comprising an assessment of groundwater inflow and surface water excess management are part of the study.

PT Kaltim Prima Coal, East Kalimantan, Indonesia. Water supply investigation for Bengalon Camp. A staged investigation comprising a reconnaissance survey and test pumping was undertaken for assessing the long term supply potential of groundwater sources at Bengalon Base Camp, Sengatta, East Kalimantan. Based on the findings recommendations on the location and design of a production bore were provided.

Queensland Ore Ltd, New South Wales, Australia. Water supply study - Bankable feasibility study for a proposed tungsten, molybdenum and bismuth mine at Wolfram Camp, Northern Queensland. A range of water supply sources and project alternatives were evaluated with regard to how well they would meet the specific project objectives. Investigations were conducted on selected options comprising test pumping of flooded mine works, hydrologic modelling and geotechnical site assessments of potential dam sites. Cost estimates and a reliability assessment for selected water supply options were carried out.

First Quantum Minerals, Mauretania. A MODFLOW groundwater model has been developed to compute drawdowns of an extended freshwater borefield supplying water to the Gulb-Moghrein copper-gold mine located in western Mauritania. Recommendations on a pumping strategy were provided to reduce residual impacts of long term operations of the extended borefield. The model was calibrated with historical data and recent pumping test data.

BMA Coal Operations Pty Ltd, QLD, Australia. A performance review was undertaken of a borefield that provides portable and process water to Riverside Coal Mine, the South Walker Creek and Coppabella South Coal Mines, the town of Coppabella, and various rural properties in North Queensland. Recommendations were provided on the extension of the borefield to meet the increasing demand on groundwater.

Engineering

Dewatering/Depressurisation

Port of Brisbane Corporation Pty Ltd, Qld, Modelling of sand preloads dewatering for geotechnical design refinements of reclaimed land preloads at the Port of Brisbane. The modelling study was to estimate the extent of dewatering that can be achieved with horizontal drains constructed at the base of the sand preloads at various spacings.

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Logan-Bald Partnership, QLD, Australia. Technical advice was given on groundwater management issues in relation to the dewatering of the construction area of a hotel and apartment complex. A review of the preliminary groundwater monitoring program was provided. Furthermore, an acid sulphate management plan has been prepared for the development.

Meriton Apartments Pty Ltd, QLD, Australia. Groundwater chemistry investigation and seepage assessment of a high rising apartment complex at the Gold Coast. The scope of work comprised the interpretation of groundwater chemistry and the location of potential sources of inflow of groundwater into the basement of the building. Advice was given on means of groundwater management (groundwater treatment, infiltration, and discharge).

Sunway South Quay Sdn. Bhd. Malaysia. Groundwater Modelling and Settlement Analysis for a proposed mixed development at southern precinct, Bandar Sunway, Selangor D.E. Computation and analysis of soil strata-compaction and vertical settlement induced by water level decline in an ex-mining pond located at the center of a township development comprising hotels, high rising condominiums, shopping malls and a hospital complex.

Regal Style Sdn Bhd., Malaysia. EIA Study for a proposed development of commercial shop lots, Limbang Town District, Sarawak. In conjunction with an EIA study a geological investigation of a hill slope near proposed commercial shop lots was carried out to assess the effects of ongoing slope cuttings on the stability of the slope. The study included the analysis of the stability of the natural slope, the assessment of the effects of hill cuttings on the slope stability and recommendations on slope protection measures.

Landfill Investigations

Perunding Utama Sdn. Bhd., Malaysia. Detailed Environmental Impact Assessment of the proposed sanitary landfill at Bukit Tagar, Sg. Tinggi, Hulu Selangor, Selangor Darul Ehsan, Malaysia. A groundwater model is being developed utilising FEMWATER to determine existing groundwater regimes and the changes to the groundwater regimes and the groundwater quality due to potential seepage from the proposed solid waste sanitary landfill.

MAB Environmental Consultants Sdn. Bhd. / Groundwater Technology, Malaysia. Environmental Impact Assessment of the proposed sanitary landfill on lot 968 and lot 1000, Mukim Rawang, Daerah District, Selangor Darul Ehsan,

Malaysia. A three-dimensional finite element computer model was developed to determine existing groundwater regimes and the changes to the groundwater regimes and the groundwater quality due to potential seepage from the proposed solid waste sanitary landfill. Furthermore, the model was used to study different designs of liner systems (horizontal/vertical liner) and to optimize the overall effectiveness of the proposed liner system.

Nuclear Waste Deposits

Detailed environmental impact assessment of the nuclear waste deposit, Morsleben/Germany. Groundwater Resource Management. Petrological, mineralogical and geochemical investigations of cap rock samples of the nuclear waste deposit Morsleben, Germany have been carried out for the assessment of long-term changes in the permeability of the cap rock.

Water Supply Dams

Geological and hydrological investigations of dam foundation ground, Lichte Dam, Germany. Geo-Hydraulic of Dam Foundations. Geological, hydrogeological and structural mapping of the dam area. Conducted pumping and packer tests; estimated hydrogeological model parameter of the dam foundation ground, based on the test results.

Tunneling and Caverns

Brisbane City Council, Queensland, Australia, Airport Link Tender. Hydrogeological investigation and assessment to assist with the geotechnical design of two new tunnels in Brisbane, involving the analysis of packer testing, test pumping and groundwater monitoring as well as numerical modelling to determine groundwater impacts.

Kavernen Bau und Betriebsgesellschaft mbH, Germany. Detailed environmental impact assessment of storage caverns, Saudi Arabia. Formulation and elaboration of a standard for detailed environmental impact and risk assessment studies for three fuel storage caverns in Saudi Arabia.

HochTief AG, Germany. Three dimensional computer modelling of the railway tunnel "Hellenberg". Geological, hydrogeological and geotechnical three-dimensional modelling of the Hellenberg, Germany, using the 3D-geographic information system BAGIS.

Technical University of Clausthal, Germany. Finite Element simulation of soil and fractured hard rock deformation with different boundary conditions and material parameters. Two and three-dimensional simulation of soil and fractured

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hard rock deformations with the finite element software MARC/MENTAT. Different load case (lose and fixed plate) and parameter variations calculated to study their influence on the subsurface deformation.

Germany_Gesellschaft fuer Baugeology und Messtechnik mbH. Geotechnical and hydrogeological examinations of the "Ebersberg-Tunnel. Detection of flow paths of groundwater in fractured hard rock. Exploration wells along the tunnel axis of the "Ebersberg-Tunnel" were investigated using a borehole television probe.

Water Resource Management

Ecowater Solutions Pty Ltd, Queensland Australia. Hydrogeological Assessment on the quality of groundwater and local groundwater regimes in the near vicinity of the Rosser Park Lakes system. As part of an investigation program 19 bores were constructed by vibro-coring. Bore results were used to characterise the general groundwater conditions beneath the Lakes and surrounding terrain, and the hydraulic nature of permeable strata and its impact on the Lakes and groundwater.

Department of Environment, Malaysia / Groundwater Technology. Development of groundwater quality monitoring network in Sarawak/Malaysia. A three-dimensional finite difference computer model has been developed to determine the potential of agric- and aquaculture in affecting the water quality of a groundwater well field that is located in an unconfined coastal sand aquifer at the coast of Sarawak.

Genting Sanyen Paper Industries Sdn. Bh / Perunding Utama Sdn. Bhd. EIA Study for proposed groundwater abstraction for Genting Sanyen Paper Industries Sdn. Bhd., Mukim Tanjung Dua Belas, Daerah Kuala Langat, Selangor Darul Ehsan. Objective of the study is to determine long term changes of the piezometric height of the groundwater in a hard rock aquifer due to a proposed abstraction of groundwater from a well field. A three-dimensional finite element flow model was employed to simulate a predevelopment scenario and three different abstraction scenarios.

Innoprise Corporation Sdn Bhd., Malaysia. Special EIA Study for the Proposed Forest Plantation at Kalabakan, Tawau District, Sabah. The effect of a proposed forest plantation at Kalabakan, Tawau District in Sabah on the hydrology of the watersheds in and adjacent to the project area has been assessed. Furthermore mitigation measures to control flooding in the downstream settlements at Sg. Kalabakan, Sg. Brantian has been proposed.

Jabatan Perancangan Bandar dan Desa, Malaysia. EIA Study for the proposed Federal Administration Centre at Rambungan, Kuching, Sarawak. A planar finite difference computer models has been developed to determine the effects of a proposed township development on the water budget and on the aquifers located inside and adjacent to the project area. Extensive hydrological field tests were employed to calibrate the models and to determine hydrological base data.

Sarawak. Gladioli Enterprise Sdn. Bhd., Malaysia. EIA for a proposed quarry at the approved 8.03-ha State Land Adjacent to the Existing QL No. KD/1/1993, Gunung Pangga, Buso, Bau District, Kuching Division. Hydrogeologic and hydrologic data of the proposed project site has been sourced and evaluated. Based on available data contaminant scenarios have been developed and potential effects of the development on groundwater and surface water quality have been assessed. Mitigation measures have been proposed to reduce the encountered effects of the proposed project on the ground and surface waters.

Comalco Aluminium Ltd., Malaysia. Detailed EIA for the proposed alumina refinery in Similajau, Bintulu, Sarawak. Groundwater and seepage modelling for a bauxite residue management area of a proposed Alumina Refinery in Similajau, Sarawak, Malaysia. A planar finite difference model has been developed for the bauxite residue management area of the proposed COMALCO Alumina Refinery in Similajau, Sarawak, Malaysia to determine existing groundwater regimes and the changes to the groundwater regimes and the groundwater quality due to potential seepage from the proposed bauxite residue management area. Furthermore, the model was used to predict and optimize the overall effectiveness of proposed mitigation measures to control groundwater levels and quality in areas surrounding the proposed residue management area.

Land Custody & Development Authority (LCDA), Malaysia. EIA for a proposed oil palm plantation in Block E Kanowit, NCR Land Development Area, Sibiu Division, Sarawak. The discharge of agrochemical from a proposed oil palm plantation into the Kanowit River / Sarawak has been estimated. Synthetic streamflows of tributaries of the Kanowit River has been developed. Geo-statistical methods have been employed to determine for different rainfall patterns the discharge of contaminants from the plantation. An agrochemical application management plan has been developed to reduce the discharge of

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agrochemical by using a discrete and distributed application pattern of agrochemical.

Jobenar Raya Sdn. Bhd., Malaysia. EIA for a proposed oil palm plantation at Tatau, Bintulu, Sarawak. The effects of a proposed oil palm plantation on the population of a protected fish species have been studied. A one-dimensional water quality model using Finite Difference Method has been employed to elaborate the expected impacts of the development and operation of the proposed oil palm plantation on the water quality of the Sadupai River System that has been identified as the breeding ground of the protected fish species. The effectiveness of mitigation measures has been elaborated using the developed computer model

Expert Evidence and Review

John T. Boyd Company (Australia) Pty Ltd, QLD, Australia. Independent peer-review of a groundwater impact assessment for a proposed extension of existing coal mine operations and development of a new longwall mining down-dip. The review comprised the verification of a regional MODFLOW groundwater model and a SEEP/W spoil infiltration model. The impacts of spoil leachate on groundwater quality and the potential for poor quality groundwater from spoil backfilled pits to discharge into a surface water system were evaluated.

Stubbs Barbeler Lawyers – Queensland, Australia. Expert witness on the affect of developments at a residential area on the local groundwater regime.

Soil Conservation

Kumpulan Ikram (Sarawak) Sdn. Bhd., Malaysia. Geological Survey for Proposed Immigration Border Post and Quarters, Pandaruan, Limbang Division, Sarawak.

Sarona Konsultant Sdn Bhd., Malaysia. Special Environmental Impact Assessment for the Proposed Forest Management Unit at Ulu Tungud Forest Reserve, Sabah, Malaysia.

Innoprise Corporation Sdn Bhd., Malaysia. Special Environmental Impact Assessment for the Proposed Forest Plantation at Kalabakan, Tawau District, Sabah, Malaysia. Acceleration of soil erosion is a key environmental impact associated with forest management activities such as harvesting, site preparation, and road construction. A detailed Soil Erosion Hazard Assessment was carried out that focused on identifying potential areas of erosion hazards by subsequently overlaying of bio-physical data

layers employing the GIS GRASS. A Digital Terrain model was developed and related to the river and road system to elaborate expected environmental impacts and the effectiveness of mitigation measures.

Rakyat Berjaya Sdn Bhd., Malaysia. EIA Study for the Proposed Forest Harvesting at Benta Wawasan Coupes Tawau District, Sabah. The analysis focused on identifying potential areas of erosion hazards by subsequently overlaying of bio-physical data layers employing the GIS GRASS. A Digital Terrain model was developed and related to the river and road system to elaborate expected environmental impacts and the effectiveness of mitigation measures. Catchment areas were determined and related to high risk erosion areas to identify suitable management procedures that minimize soil erosion and the increase of water yield due to the logging and forest clearance activities.

Syarikat Janjama Supplier & General Contractor Sdn Bhd., Malaysia. EIA Study for the Proposed Forest Logging Operation at Kota Belud, Sabah. Based on elevation data a Digital Terrain Model was developed and related to the river system of the project area. Furthermore, potential impacts of accelerated erosions due to the proposed logging operations were described and erosion control measures were recommend

Memang Utung Sdn. Bhd., Malaysia. EIA Study for the Proposed Forest Harvesting at Hutan Simpan Sampulut Ketas II, Bhg. Pendalaman, Sabah, Malaysia. Based on elevation data a Digital Terrain Model was developed and related to the river system of the project area. Furthermore, potential impacts of accelerated erosions due to the proposed logging operations were described and erosion control measures were recommended..

Lambaian Hebat Sdn Bhd., Malaysia. EIA Study for the Proposed Forest Logging Operation at Trusmadi, Sabah, Malaysia. Based on elevation data a Digital Terrain Model was developed and related to the river system of the project area. Furthermore, potential impacts of accelerated erosions due to the proposed logging operations were described and erosion control measures were recommended.

Sedang Hijau Sdn Bhd., Malaysia. EIA Study for the Proposed Forest Harvesting in Sapulut Forest Reserve Class II, Tibow District, Tawau Division, Sabah. Based on elevation data a Digital Terrain Model was developed and related to the river system of the project area. Furthermore, potential impacts of accelerated erosions due to the

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proposed logging operations were described and erosion control measures were recommended.

EIA Study for the Proposed Logging Operation at MUIS Concession Area at Hutan Simpan Sapulut, Sabah. Memang Untung Sdn Bhd. A Digital Elevation Model was created based on vectorized contour lines of national topographic maps. The DEM has been used to determine slopes and aspects and erosion risks were derived from the classified slope information. Furthermore, potential impacts of accelerated erosions due to the proposed logging operations were described and erosion control measures were recommended

Pioneer Glow Sdn Bhd., Malaysia. EIA Study for the Proposed Oil Palm Plantation at Sg. Milian, Kinabatangan, Sabah. Based on elevation data a Digital Terrain Model was developed and related to the river system of the project area. Furthermore, potential impacts of accelerated erosions due to the proposed logging operations were described and erosion control measures were recommended.

Sykt Ribusaga Sdn Bhd / Upasarjana Sdn Bhd / Demenhasil Sdn Bhd., Malaysia. EIA Study for the Proposed Forest Logging Operation at Pensiangan Forest Reserve, Sabah. Based on elevation data a Digital Terrain Model was developed and related to the river system of the project area. Furthermore, potential impacts of accelerated erosions due to the proposed logging operations were described and erosion control measures were recommended.

Environmental Information Management

Genesis Force Sdn. Bhd. , Malaysia. Customization and implementation of a Geographic Information System (GIS) for the application domain of coal mining. Customize and implement GIS in a large coal mining company. The main objective of the GIS development is to manage and visualize geological and engineering information, exploration and mine design data, together with planning and operational data in one spatial database system.

COWI, Malaysia. Development of an environmental database system for the Kuching Sustainable Urban Development (DANCED-SUD) project, Malaysia. Development of an ORACLE database system to contain, analyse and present existing and new environmental data (on river water quality and waste) compiled under the Kuching Sustainable Urban Development (SUD) project. The main objective of the database system is to improve the urban environmental management process through

effective use of environmental data. Advanced object-relational modelling techniques has been used to develop a database system with a natural and easily expandable structure.

Chemsain Konsultant Sdn Bhd., Malaysia. Development of a computer based information management system for a chemical laboratory. An information management system for one of the largest companies in East Malaysia dealing with environmental issues and chemical analysis has been developed.. The development is based on a system analysis and object-oriented data modelling and is implemented using MS Visual Basic and MSEXCEL spreadsheet program.

Technical University of Clausthal, Germany. Development of an engineering geology-geotechnical 3D-geographic information system. Development of a new 3D-geographic information system with special emphasis on engineering and geo-systems. The development constitutes a multi-disciplinary research project involving several institutes of the Technical University of Clausthal, Germany and covered extensive analysis of complex engineering and geo-systems, object oriented data modelling, software design and implementation in ObjectStore and C++.

Capacity Building

School of Urban Development, Queensland University of Technology, Australia. Masters course in Civil Engineering. Lecture on Process Modelling, CEP201. The lecture given considers the role of models in engineering design and investigation, and the principles of modelling techniques, their uses, limitations and relevant applications.

University Malaysia Sarawak UNIMAS, Malaysia. Lecture on Subsurface Water Flow and Groundwater Resources Management. Capacity building academic program for the promotion of sustainable land use and natural resource management in Malaysia (SLUSE-M). The program is modeled on and implemented parallel to a similar program initiated by a Danish consortium of universities.

University Malaysia Sarawak UNIMAS, Malaysia. Lecture on Remote Sensing and Geographic Information Systems in Environmental Monitoring. Capacity building academic program for the promotion of sustainable land use and natural resource management in Malaysia (SLUSE-M). The program is modeled on and implemented parallel to a similar program initiated by a Danish consortium of universities.

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University Malaysia Sarawak UNIMAS, Malaysia. Lecture on: Application of Remote Sensing and Geographic Information Systems in Environmental Monitoring. Capacity building academic program for the promotion of sustainable land use and natural resource management in Malaysia (SLUSE-M). The program is modeled on and implemented parallel to a similar program initiated by a Danish consortium of universities.

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- Pump Test Assessment, Final Report, Kaltim Prima Coal Pty Ltd, Bengalon, East Kalimantan, Indonesia, August 2007.
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- Watershed Analysis and Soil Erosion Hazard Assessment for the Proposed Forest Harvesting at Benta Wawasan Coupes Tawau District, Sabah, Malaysia, April 2001.
- Soil Erosion Hazard Assessment for the Proposed Forest Logging Operation at Kota Belud, Sabah, 2001.
- Soil Erosion Hazard Assessment for the Proposed Forest Harvesting at Hutan Simpan Sampulut Ketas II, Bhg. Pendalaman, Sabah, Malaysia, 2001.
- Soil Erosion Hazard Assessment for the Proposed Forest Logging Operation at Trusmadi, Sabah, Malaysia, 2001.
- Soil Erosion Hazard Assessment for the Proposed Forest Logging Operation at Pensiangan Forest Reserve, Sabah, Malaysia, February 2001.
- Soil Erosion Hazard Assessment for the Proposed Forest Harvesting in Sapulut Forest Reserve Class II, Tibow District, Tawau Division, Sabah, 2001.
- Soil Erosion Hazard Assessment for the Proposed Logging Operation at MUIS Concession Area at Hutan Simpan Sapulut, Sabah, 2001.
- Groundwater Study for a Proposed Limestone Quarry at Gunung Pangga, Buso, Bau District, Kuching Division, Sarawak. In: Environmental Impact Assessment for a Proposed Quarry at the approved 8.03-ha State Land Adjacent to the Existing QL No. KD/1/1993, Gunung Pangga, Buso, Bau District, Kuching Division, Sarawak, 2000.
- Soil Erosion Hazard Assessment for the Proposed Oil Palm Plantation at Sg. Milian, Kinabatangan, Sabah, 2000.
- Soil Erosion Hazard Assessment for the Proposed Forest Logging Operation at Pensiangan Forest Reserve, Sabah, 2000.
- Slope Stability Assessment; Proposed Development of Commercial Shop Lots 556 & 163, Limbang Town District, Sarawak, 2000.
- Groundwater and Seepage Modelling for the Proposed Alumina Refinery in Similajau, Bintulu, Sarawak, August 1999.
- Water Quality Modelling of the Kanowit River System/ Sarawak. In: Environmental Impact Assessment for a proposed oil palm plantation in Block E Kanowit, NCR Land Development Area, Sibiu Division, Sarawak, December 1998.
- Finite Difference Modelling of the Transport of Agrochemical in the Sadupai River System In: Environmental Impact Assessment for a proposed oil palm plantation at Tatau, Bintulu, Sarawak, November 1998).

Appendix C

**Standard Terms of Agreement for
Professional Services**



Terms of Agreement for Professional Services

1.0 INTRODUCTION

These Terms of Agreement and Scale of Fees apply to work carried out by the Company and are deemed to incorporate the Guideline Terms of Agreement for Professional Services (Oct 1983 and later amendments) prepared and published by the Association of Consulting Engineers, Australia. In the event of any inconsistency between these Terms of Agreement and the Guideline Terms of Agreement published by the ACEA, these Terms shall prevail. The "Company" shall mean Coffey Mining Pty Ltd and any other related body corporate as defined in the Corporations Act 2001, and the servants and agents thereof, which is providing the service(s). The "Client" shall mean and include the body or person with whom the Company contracts for or in relation to the performance of functions or the provision of goods or services and, in the event that the Client is an incorporated body, shall at the option of the Company include related corporations as defined in the Corporations Act 2001. "Subcontractor" shall mean and include:

- any person, firm or company with whom the Company may arrange for any work to be performed for the Client, and
- any person who is now or hereafter a servant, agent or subcontractor of any of the persons referred to in (a) above.

2.0 SCOPE OF RESPONSIBILITY

2.1 All goods or services provided by the Company are subject only to these Terms. Except where necessarily incorporated by statute, no other term, condition or warranty shall be incorporated herein unless specifically agreed in writing by the Company.

2.2 The Company undertakes to exercise reasonable care in accordance with standards ordinarily exercised by members of the profession generally who practice in the same locality and under similar conditions. There shall be no liability whatsoever in respect of any failure to exercise a degree or level of care beyond such reasonable care.

2.3 The Client will indemnify and hold the Company harmless against all claims, costs and demands (including in respect of negligence) by third parties in respect of the service(s) concerned.

2.4 The Client acknowledges that in the event of the Company having failed to exercise reasonable care, the Company's liability, if any, shall be absolutely extinguished after the expiration of twelve months from the date of the Company's invoice in respect of the service(s).

2.5 In the event that the Company is liable to the Client for failure to exercise reasonable care, such liability shall be limited to the greater of:

- the amount of the fee actually paid by the Client to the Company for the service(s) concerned (to a maximum of \$25,000) or,
- any other amount agreed in writing between the Client and the Company.

2.6 Despite any other Clause, where Section 74 of the Trade Practices Act applies in respect of the service concerned, the Company's liability, if any, is limited to:

- the supplying of the service again; or
- the payment of the cost of having the service supplied again.

2.7 If the Company is liable to the Client for any loss or damage arising in connection with any goods or services provided by the Company pursuant to this Agreement or otherwise, the Client's entitlement to recover damages from the Company shall be reduced by such amount as fairly reflects the extent to which any act, omission or negligence of the Client or any third party caused or contributed to such loss or damage.

2.8 Under no circumstances, whether as a result of any act, neglect or default or otherwise howsoever, shall the Company have any liability for or in relation to any work, reports, information, plans, designs, or specifications supplied or performed by any third party, including a third party engaged by or at the suggestion of the Company.

2.9 The Client acknowledges and agrees:

- that the Company does not supervise the work of others. In the case of work undertaken by others pursuant to directions from the Company, the Company is responsible for exercising reasonable care in giving the directions, but is not responsible for the manner in which the directions are carried out;
- that documents (including reports) provided by the Company's servants are signed by them, for and on behalf of the Company and not in any personal capacity

- that the copyright in all documents prepared by or at the request or direction of the Company shall be and remain the property of the Company (but the Client has a licence to use the documents for the purpose only of the project in question, subject to the Company's right to revoke that licence if the Client does not strictly comply with the Terms of Payment (time being of the essence), in which event the Client must upon demand forthwith return to the Company all such documents and copies thereof);

- and warrants that it will not supply or permit any report of the Company to be seen by or given to any third party unless that report has incorporated in or attached to it these Terms;

- and warrants that all information of any kind or description provided by the Client (or on behalf of the Client) to the Company will be complete and accurate in all respects, and may be relied on by the Company;

- that subject to the Client's prior approval, and at the Client's expense, the Company may engage specialist sub-consultants;

- that samples will be retained by the Company for at least 3 months after which they will be disposed of unless the Client has requested in writing that the Company retain samples for a longer period; and

- that contaminated soil collected by the Company during the conduct of the services shall remain the property of the Client until properly disposed of according to the Client's instructions.

2.10 For the purposes of this Clause and without limiting Clause 2.9 the Client acknowledges that the Company is contracting as principal for and on behalf of its servants, agents and Subcontractors.

The servants, agents and Subcontractors of the Company shall not be liable in respect of any loss or damage suffered by the Client as a result of goods or services provided by the Company, nor for any consequential loss or damage suffered by any third party. The loss or damage referred to shall mean and include loss or damage caused by the negligence or wilful act or default or the Company, its servants, agents and Subcontractors or others whether or not such loss or damage is foreseeable or contemplated by the Company.

2.11 Unless advised otherwise by the Client in writing, the Company can use information regarding the project which is the subject of this Agreement in any promotional material it may prepare to use.

3.0 EMPLOYMENT OPPORTUNITIES

3.1 For the purpose of this clause 3.0, the term:

- "Employment" includes any arrangement or understanding pursuant to which a person provides services;

- "Services Period" means the period commencing on the date on which the Company first provides goods or services of any kind or description to the Client and ending 6 calendar months after the Company last provided any goods or services to the Client.

3.2 If during the Services Period the Client (or any person acting with the express or implied authority of the Client) offers Employment to any employee of the Company (or to any other person who is or has been involved with the Company in providing services to the Client), and such employee or other person at any time within a further 6 months either leaves the Company's employment, or commences Employment with the Client (or a related corporation of the Client), the Client shall be indebted to the Company for a liquidated sum of (at the option of the Company) either an amount equivalent to 90 days multiplied by the full daily charge out rate for the employee or other person, or 720 hours of the employee's, or other person's, hourly charge out rate (in each case, being the charge out rate last known to the Company).

4.0 TERMS OF AGREEMENT PREVAIL

By instructing, authorizing or permitting the Company to commence any work relating to the provision of goods or services to the Client, the Client is deemed to have agreed to these Terms of Agreement and to have represented to the Company (on which representation the Company relies) that these are the only contractual terms which apply to the provision of goods or services by the Company, and the Client will not endeavour to obtain the Company's agreement to any additional or alternative terms. The Client warrants that it will not hereafter withhold any payment due to the Company, in respect of goods or services provided or to be provided by the Company to or at the request of the Client, by reason of the fact that the Company declines to amend these Terms of Agreement, or declines to enter into another, or a different, contractual relationship with the Client.

Terms of Agreement for Professional Services

5.0 GENERAL

5.1 Disputes. In the event that a dispute should arise relating to the performance of the services to be provided under these Terms and should that dispute result in litigation it is agreed where the Company prevails that it shall be entitled to recover all reasonable costs incurred in the defence of the claim, including staff time, court costs, legal fees assessed on a solicitor and client basis and other claim related expenses.

5.2 Termination. This Agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof.

Such termination shall not be effective if that failure has been remedied before expiration of the period specified in the written notice. In the event of termination the Company shall be paid for services performed to the termination notice date plus reasonable termination expenses. In the event of termination, or suspension for more than three (3) months prior to completion of all reports contemplated by this Agreement, the Company may complete such analyses and records as are necessary to complete their files and may also complete a report on the services performed to the date of notice of termination or suspension. The expenses of termination or suspension shall include all fees and costs of the Company in completing such analyses, records and reports. If the Company is prevented by circumstances beyond its direct control from performing the services the Agreement shall end without prejudice to the accrued rights of either party. The Agreement shall either survive the death or insolvency of the Client and his rights and obligations shall pass to his successors, receiver, administrator or liquidator or the Company may elect to immediately terminate the services and all fees and costs to the date of termination shall be due and payable as a secured creditor against the tangible assets of the Client.

6.0 SCHEDULE OF RATES

Our schedule of rates is subject to increases in CPI and to movements in wage levels. Our services for a particular project are on a schedule of rates, unless otherwise stated, so that invoices are for actual hours and expenses which reflect the quantity of work carried out. Where an estimate of cost is provided, it is based on available data in relation to the agreed scope of work. While endeavours are made to complete the work as proposed to the estimate, unexpected conditions may cause the scope of work to change. Where practical, the Company will advise you if it appears likely that the scope of work will be significantly changed.

7.0 CURRENCY OF SCHEDULE OF RATES

The fees and charges set out in the proposal apply to all work carried out from the date of the proposal. These are subject to review half yearly and rates may be changed in accordance with increases in the Consumer Price Index from the date of the CPI increase for all projects regardless of their status at that time. The Company reserves the right to vary these fees and charges without notice.

8.0 PROFESSIONAL & TECHNICAL STAFF

All time spent on an assignment, including, travelling, delays or interruptions caused by inclement weather, industrial unrest, bogging of equipment, site trafficability problems or other conditions beyond the direct control of the Company will be charged at the rates set out in the schedule of rates within the commercial proposal.

Time spent as an expert witness on legal matters, mediations, arbitrations, litigations and Commissions of Enquiry will be charged at not less than 50% in excess of the standard rates. This increased rate will apply to all aspects of work including investigation, analysis, reporting, briefing of legal advisors, appearance to give evidence, participation in mediation and other services as required.

9.0 SPECIALISED EQUIPMENT

Specialised equipment will be charged in accordance with the Schedule of Rates for Specialised Equipment (available on request).

Equipment not covered by this Schedule will be charged in accordance with 6.0 "Reimbursable Expenses".

10. REIMBURSABLE EXPENSES

Expenses incurred by the Company or its employees in the course of, or attributable to, a particular assignment will be charged for as set out below.

10.1 Motor Vehicle Use. Use of private, hired or Company motor vehicles in the course of an assignment will be charged at the following rates. These rates do not cover the travelling time of personnel.

- Motor car \$0.95/km
- One tonne utility \$1.00/km
- 4WD \$1.20/km
- Hired vehicles direct cost + 15%

10.2 Airfares. Airflights undertaken as part of a project will be charged at standard rates for the class of travel plus 15%.

10.3 Other Expenses. All other project related expenses are the responsibility of the Client. Where such expenses are processed and paid by the Company they will be charged at cost plus a service fee of 15%. Such expenses include:

- Services of other consultants, contractors, laboratories, computer bureaux, printing services and the like.
- Hire of plant and equipment such as drilling equipment, earthmoving equipment or other plant as required, including cost of travel, delays associated with access, inclement weather, bogging of vehicles and equipment, or any other delays not readily avoided.
- Transportation of personnel, equipment and samples. Living expenses of personnel involved in assignments away from the city in which the staff normally reside.
- Expendable items and/or instrumentation installed in the ground or works.
- Unusual equipment, miscellaneous items, and services specifically required for the assignment, e.g. maps, charts or aerial photographs, special stationery, printing, photography, permit fees.
- Restoration of any damage to property or services not readily avoided.
- Special insurance required for particular projects.

Communications office consumables and expenses are recovered by a standard additional charge calculated as 5% of fees.

Additional copies of reports to the 3 normally provided will be charged at commercial copying rates. Further storage or transfer of samples will be at the Client's expense.

11.0 TERMS OF PAYMENT

Progress invoices are normally issued at a minimum of monthly intervals and payment in full of each invoice is due within 14 days of issue. At the option of the Company, interest may be charged on the daily balance of overdue accounts at the same rate as the maximum overdraft rate fixed by the Westpac Bank, plus 2.5% without relieving the Client of his obligation to pay the account. The Company shall also be entitled to recover as a debt all costs, legal fees, and expenses on solicitor and client basis, court costs and fees, collection agency charges paid or due for payment by the Company and such further sums as will fully recompense the Company for all its costs, expenses and losses incurred in respect of failure, refusal or default of the Client to pay in full as aforesaid.

12.0 PROPOSALS

Where the Company has submitted a proposal for an assignment, circumstances may require departure from the method or personnel proposed. The Company shall be entitled to vary the method or personnel as required and shall have no liability in respect thereof.

13.0 GOODS & SERVICES TAX

The charges due and payable to Coffey will be increased, or a separate charge will be imposed, on account of the GST payable in connection with the sale or supply of our services or any other thing.

Appendix D

Authorisation to Proceed



Appendix D - Authorisation to Proceed

TO: Coffey Mining Pty Ltd
2 Melville Street
Hobart TAS 7000
Australia

Fax No: +61 (3) 6108 0199

Attention: Lee Evans

Re: Authorisation to Proceed

It is hereby agreed that I/we accept the scope of work, programme, cost, terms and conditions as described in Coffey Mining's proposal, reference "Hydrogeological Evaluation MINEHOBAA00297AA_PR01", dated 9 November 2009 (the proposal), and Coffey Mining is authorised to proceed.

Please note that the organisation that authorises the work is responsible for payment in accordance with the terms in the Proposal. Such payment is to be made regardless of any contracts that may be held with third parties. Commissioning of work by third party organisations that are not responsible for the payment will not be accepted.

Name: _____

Position: _____

Signature: _____ Date: _____

Company to Invoice: _____

ACN: _____ ABN: _____

Accounts Mailing Address: _____
Postcode: _____

Street Address: (must be provided) _____
Postcode: _____

Accounts Phone: _____ Accounts Fax: _____

**Please sign this acceptance and forward to Coffey Mining by mail or facsimile.
Upon receipt of this acceptance Coffey Mining will commence work on the project.**