

Table of Contents

Australian Centre for Geomechanics	iii
Organising and Advisory Committees	v
Technical Reviewers	vii
Preface	ix
Sponsors	xi

Keynote Addresses

Geotechnical design verification and performance assessment of tailings storage facilities.....	3
<i>M. Shelbourn, Barrick Gold of North America Inc., United States of America</i>	
The real value to the mining industry of leading-practice waste management	15
<i>G.M. Bentel, Australia</i>	

Design and Analysis

Critical gradients for tailings dam design	23
<i>I. Jantzer and S. Knutsson, Luleå University of Technology, Sweden</i>	
Case studies — integrated approach to design, construction and operations for tailings storage facilities	35
<i>H. Li and P. Richter, Rio Tinto Alcan, Australia</i>	
Consolidation of in-pit tailings.....	49
<i>L. McDonald and J.C. Lane, Coffey Mining, Australia</i>	
Approaches to estimation of run-out distances for liquefied tailings	63
<i>K.D. Seddon, ATC Williams, Australia</i>	

Landforms and Decommissioning

Some geotechnical aspects of closure — case study of a thickened tailings valley storage in Western Australia	73
<i>C.S. Hogg, Coffey Mining, Australia</i>	
Evolution of landform design concepts	83
<i>E.J. Howard, R.J. Loch and C.A. Vacher, Landloch Pty Ltd, Australia</i>	
Tailings decommissioning options at Mount Nansen, Yukon, Canada.....	91
<i>Y.T.J. Kwong, CANMET Mining and Mineral Sciences Laboratories, Natural Resources Canada, Canada</i>	
Waste rock dump rehabilitation to a new level – Telfer WD13 constructed mesa landform	103
<i>J.A. Mifsud, Care of Our Environment, Australia; E. Ryan-Reid and M. Wealleans, Newcrest Mining Limited, Australia</i>	
Challenges affecting structural stability in the design and construction of waste rock dumps at Nkomati Mine, South Africa	119
<i>M. Thamae and M. Nxumalo, Nkomati Mine, South Africa</i>	
An environmentally and economically attractive integrated landform for the storage of tailings and waste at the Randalls Gold Project in Western Australia	129
<i>D.A. Williams, Golder Associates Pty Ltd, Australia; T.E. Minard, Golder Associates Inc., United States of America</i>	

Visualisation Tools and Technologies

Advances in 3D visualisation for mine waste engineering	147
<i>T. Pollock and D. Anstey, Golder Associates Pty Ltd, Australia</i>	
Computer aided earthmoving systems — mine reclamation in a digital age	159
<i>J.E. Thompson and M.H. Witler, MWH Americas, United States of America</i>	

Management and Operations

Setting a standard for tailings dam management.....	171
<i>D. Brett, GHD Pty Ltd, Australia; B. Brown, Rio Tinto Technology and Innovation, Australia</i>	
Case study — tailings dam construction in an arctic climate	181
<i>F. Esford and P. Bedell, Golder Associates Ltd., Canada; E. Lamontange, Agnico-Eagle Mines Limited, Canada</i>	
Incorporating operational flexibility into mine waste management	193
<i>S. Narendranathan, C. Johns and G. Ralls, Coffey Mining, Australia</i>	
Innovative expansion of a large centreline constructed tailings storage facility in a seismically-active area	205
<i>K.F. Morrison, J.M. Johnson and A.J. Augello, Golder Associates Inc., United States of America; B. Doughty, Thompson Creek Metals, United States of America</i>	
Effectiveness in risk assessment — a comparison of perceived and realised risk from project concept to construction and operation	217
<i>L. Murray, H. McLeod and G. Suter, Klohn Crippen Berger Ltd, Australia</i>	
Risk assessment of mine tailings/waste surface ponds.....	229
<i>W. Pytel, KGHM Cuprum CBR and Wroclaw University of Technology, Poland</i>	
Environmental and economical success through advanced tailing separation process	243
<i>R. Raberger, Andritz AG, Austria; D. Ziaja, McNally Bharat Engineering Company Limited, Germany; P. Godwin, Andritz Pty Ltd, Australia</i>	
In situ foundation improvement for upstream raising of embankments using dried tailings	251
<i>D.D. Smirk and S. Jackson, Red Earth Engineering Pty Ltd, Australia</i>	

Geosynthetics in Mining

Geosynthetic capping of a large tailings storage facility.....	263
<i>T.G. Fitton and K.D. Seddon, ATC Williams, Australia; M.G. Alexander, Peabody Energy Australia, Australia</i>	
Lined storage facilities for mine waste – considerations and benefits	275
<i>F.W. Gassner and B.P. Wrench, Golder Associates Pty Ltd, Australia</i>	
Geocomposite faced rockfill — an innovative means of water-proofing tailings storages.....	283
<i>C. Noske, ATC Williams, Australia</i>	

Planning, Legal and Environment

The importance of selecting appropriate compliance and completion criteria during the initial stages of tailings storage facility design	297
<i>P.J. Chapman and D.A. Williams, Golder Associates Pty Ltd, Australia</i>	
Environmental compliance.....	309
<i>H. Jones, Golder Associates Pty Ltd, Australia</i>	

Geochemistry

Geochemistry of thallium in lead-zinc tailings	321
<i>D.G. Allen, MBS Environmental Pty Ltd, Australia</i>	
Providing context to acid metalliferous drainage assessments	333
<i>P.D.S. Rousseau, Golder Associates Pty Ltd, Australia</i>	

Material Characterisation

Strength and liquefaction assessment of tailings	347
<i>M.J. Dillon and H.J. Wardlaw, ATC Williams, Australia</i>	
Selection of parameters for semi-arid tailings storage facility design	361
<i>C.A.G. Mundle and P.J. Chapman, Golder Associates Pty Ltd, Australia</i>	
Rapid on-site screening for historic contamination at mine sites	375
<i>S.R. Pearce, GHD Pty Ltd, Australia; K. McKay, Newcrest Mining Limited, Australia</i>	

Co-disposal

Co-disposal techniques that may mitigate risks associated with storage and management of potentially acid generating wastes	389
<i>M. Gowan and M. Lee, Golder Associates Pty Ltd, Australia; D.J. Williams, The University of Queensland, Australia</i>	
Rockfill embankment construction on tailings — realistic, cost-effective and reliable application at Xstrata, Mount Isa, Australia	405
<i>G. Reinke, Xstrata Copper, Australia; A. Soliman, Xstrata Zinc, Australia; A. Purkis, Xstrata Copper, Australia</i>	
Environmental risk mitigation through concurrent disposal of tailings and mine waste rock at the Minago project in north-central Manitoba, Canada	417
<i>A. Zivkovic, Wardrop, A Tetra Tech Company, Canada; D. Mchaina, Victory Nickel Inc., Canada; M. Henderson, Tetra Tech, USA; M.A.J. Matich, MAJM Corporation Ltd, Canada</i>	

Thickened Tailings

A model of formulation of blended binders for use in cemented mine backfills	433
<i>T. Belem, O. Peyronnard and M. Benzazoua, Université du Québec en Abitibi-Temiscamingue, Canada</i>	
Measurement of volume change in cemented mine backfills at early ages	449
<i>T. Belem, Université du Québec en Abitibi-Temiscamingue, Canada; A.B. Fourie and M. Fahey, The University of Western Australia, Australia</i>	
Filtered tailings in Western Australian iron ore projects — comparison of filtered tailings with other tailings disposal methods	463
<i>C.S. Hogg, Coffey Mining, Australia</i>	
Predicting void ratio for surface paste tailings deposition	473
<i>E.R. Salfate, G.W. Wilson and D. Wijewickreme, University of British Columbia, Canada; P. Simms, Carleton University, Canada</i>	
The development and design of thickened tailings discharge methods – a review	487
<i>K.D. Seddon and M.P.A. Williams, ATC Williams, Australia</i>	
A comparison of alternative tailings disposal methods — the promises and realities	499
<i>A.H. Watson, MWH Peru S.A., Peru; P.G. Corser, MWH Americas, United States of America; E.E. Garces Pardo and T.E. Lopez Christian, MWH Chile Ltda., Chile; J. Vandekeybus, MWH s.a., Belgium</i>	
Author Index	515