The series of International Conferences on Mine Closure is a fixture on the calendars of many mining professionals, providing topical and high quality papers and presentations on a range of topics of immediate interest and relevance. A key feature of the conference series is the diversity of disciplines and expertise that come together to focus on the pressing issues facing the mine closure community globally.

KEYNOTE SPEAKERS INCLUDE:

Professor Angus Morrison-Saunders  
*Professor, Environmental Management*  
*Edith Cowan University*

Professor Laco Mucina  
*Iluka Chair in Vegetation Science and Biogeography, Harry Butler Institute, Murdoch University*

Laura Tyler  
*Asset President Olympic Dam and Chief Geoscientist, BHP*

Dr Benjamin Warr  
*Founder & Director, Betterworld Energy Ltd, Zambia*

Earlybird registration ends 22 July 2019!
**Keynote papers**

**KEYNOTE:** The action is where the social is! The ecosystem services concept and other ideas for enhancing stakeholder engagement in integrated mine closure planning  
A Morrison-Saunders, Edith Cowan University, Australia, and North-West University, South Africa

**KEYNOTE:** Ecology, biodiversity and mining: science solving the challenges  
L Muçina, Murdoch University, Australia; JL Tsakalos, PD Macintyre, The University of Western Australia, Australia

**KEYNOTE:** Why should we ‘think big’ on closure?  
L Tyler, J Heyes, BHP, Australia

**KEYNOTE:** Designing contextual, efficient and resilient land regeneration systems for mine closure under conditions of extreme uncertainty and resource constraints  
B War, BetterEnergy Ltd, Zambia

**Planning, relinquishment and legacy management**

Why mines should look at total life to achieve tailings facility closure  
SE Aitken, JP Burr, Baca Ltd, New Zealand

Exploring abandoned mines through a public lens  
AD Ashby, EJ van Etten, Edith Cowan University, Australia

Introducing the International Council on Mining and Metals’ Integrated Mine Closure: Good Practice Guide  
B Brock, International Council on Mining and Metals, UK; B Weeks, Golder Associates Pty Ltd, Australia; J Heyes, BHP, Australia

Mine closure plans: assumptions and optimism  
G Byrne, Niboi Consulting, Australia

Maximising post mining land use: Queensland Government reforms  
S Cooper, Queensland Government, Australia

New uses for old infrastructure: 101 things to do with the stuff next to the hole in the ground  
S Finucane, K Tarnow, Bioscope Environmental Consulting Pty Ltd, Australia

Does the integration of environmental impact assessment and mine closure planning deliver effective mine closure plans in Western Australia?  
R Getty, SRK Consulting (Australia) Pty Ltd, Australia; A Morrison-Saunders Edith Cowan University, Australia, and North-West University, South Africa

The Pardoo mine: closure planning, implementation and five years of performance-monitoring data  
S Gregory, S Mackenzie, Mine Earth Pty Ltd, Australia; B Bow, Atlas Iron Pty Ltd, Australia

Integrated life of mine waste characterisation, scheduling, and quality control for progressive closure at Martabe multi pit gold mine  
SK Grohs, PT Agincourt Resources, Indonesia; S Pearce, Mine Environment Management, Wales

Applying a regional land use approach to mine closure: opportunities for restoring and regenerating the mine-disturbed regional landscapes  
R Hattingh, DJ Williams, G Corder, The University of Queensland, Australia

Strengthening BHP’s closure framework: a strategy to realise enduring value  
J Heyes, T Cooper, BHP, Australia

Relinquishment criteria verification: quality accreditation and quality control using unmanned aerial vehicles  
P. Jones, Flinders Power, Australia; C Franklin, CLD Mining, Australia

Digitalisation of continuous mine closure planning and management: a European Institute of Innovation and Technology on Raw Materials initiative  
T Kauppiila, Geological Survey of Finland, Finland; G Bellenfant, French Geological Survey, France; L Solismaa, Geological Survey of Finland, Finland; P Mittelstädt, DMT GmbH, Germany

Spatial data-based closure costing integrated with life-of-mine planning: a key enabler facilitating value realisation  
P Kumari, Anglo American, South Africa; M Cooper, Deswik, South Africa

Systems thinking: embedding closure planning within the management operating system is the key to drive closure performance  
HWB Lacy, Stantec, Australia; M Slicht, M Slicht and Associates, Australia; A Watson, Stantec, USA

Mine rehabilitation in the Latrobe Valley, the start of a long journey: the Commissioner’s role  
R Mackay, R Hastie, H Lilley, M Mathew, Latrobe Valley Mine Rehabilitation Commissioner, Australia

Environmental regulatory oversight: transitioning from an operational to rehabilitation framework  
JP Miller, Department of Environment and Energy, Australia

A repurposing framework for alignment of regional development and mine closure  
DP Murphy, Golder Associates, Australia; J Fromm, R Bairstow, Pilbara Development Commission, Australia; D Meunier, Jacobs Australia, Australia

An update on the development of mine closure and reclamation standards by the International Organization for Standardization  
DP Murphy, Golder Associates, Australia; M Nahir, Crown-Indigenous Relations and Northern Affairs, Canada; C Didier, National Institute for Industrial Environment and Risks, France

Post-closure land uses – defined through a strategic land use planning approach  
DF Pershke, PE Elliott, Pershke Consulting Pty Ltd, Australia

Clarifying closure scenarios through integrated planning at Cerrejón mine in Colombia  
J Ricaurte, Cerrejon Coal Mine, Colombia; CD Grant, Anglo American, Australia; A Freitas, Golder Associates Brasil Consultoria e Projetos Ltda., Brazil; PR Botha, Anglo American, South Africa

Mine closure residual risk management: identifying and managing credible failure modes for tailings and mine waste  
J Sanders, H McLeod, A Small, Kloon Crippen Berger Ltd., Canada; C Strachotta, Kloon Crippen Berger Ltd, Australia

An interjurisdictional approach to designing residual risk policy  
A Shrivathsa, S Cooper, Queensland Government, Australia

The multi-risk vulnerability of global coal regions in the context of mine closure  
K Svobodova, JR Owen, E Lebre, M Edraki, A Littleboy, The University of Queensland, Australia

Mine relinquishment policy in Australia  
CD Tiemann, Curtin University, and Independence Group NL, Australia; MC McDonald, Society for Ecological Restoration Australasia, Australia; G Middle, KW Dixon, Curtin University, Australia

A framework for identification and planning of environmental research needs to inform rehabilitation of Ranger uranium mine  
MA Welch, RE Bartolo, AJ Harford, Department of Environment and Energy, Australia

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*As of 26 June 2019. Accepted papers list is subject to change. Review process is ongoing. For updates, please visit www.mineclosure2019.com*
**Landform design and water management**

Will tree colonisation increase the risks of serious performance loss of engineered covers under climate change in Québec, Canada? YD Botula, M Guittotnny, B Bussière, Université du Québec en Abitibi-Témiscamingue, Canada; E Bresson, Polytechnique Montréal, Canada

Whole-of-landform erosion assessment using unmanned aerial vehicle data M Braimbridge, S Mackenzie, Mine Earth Pty Ltd, Australia; M Lyons, T Clarke, Regis Resources Ltd, Australia; B Bow, Atlas Iron Pty Ltd, Australia

The application of an agro-hydrological model for a data-limited closure study of a bauxite mine in Australia HH Bulcock, J Heaslop, Klohn Crippen Berger, Australia

Closure planning challenges associated with mining adjacent to large creek lines P Bussemaker, KL Pang, P Barnes, CL Latham, F McClennagh, Rio Tinto, Australia

Modelling the long-term water balance of a pit lake with recreational end uses AM Carlinno, Golder Associates Pty Ltd, Australia; CD McCullough, Mine Lakes Consulting, Australia

Using aerial drones to select sample depths in pit lakes DN Castendyk, BJ Straight, JC Voorhis, MK Somogyi, Golder Associates Inc., USA; WE Jepson, Montana Department of Environmental Quality, USA; BL Kucera, Thompson Creek Mining Company, USA

A case for consequence categories to guide the closure design of landforms P Chapman, A Kemp, Golder Associates Pty Ltd, Australia

Geotechnical considerations for the stability of open pit excavations at mine closure: some scenarios I de Bruyn, D Prado, J Mylvaganam, D Walker, SRK Consulting, Australia

Geotechnical risk management for open pit mine closure: a sub-arctic and semi-arid case study PijH de Graaf, The De Beers Group of Companies, South Africa; M Desjardins, De Beers Canada Inc., Canada; P Tsheko, Anglo American Coal, South Africa

Roy Hill waste landform design and construction process V de San Miguel, T Stone, Roy Hill Iron Ore, Australia; M Braimbridge, S Mackenzie, Mine Earth Pty Ltd, Australia

Six years of cover performance data for leading practice store-and-release cover trials at Century Mine PL Defferrard, New Century Resources, Australia; T Rohde, SGM Environmental, Australia

Overcoming adverse stakeholder perception affecting tenement relinquishment MKJ Finucane-woodman, SJ Finucane, Bioscope Environmental Consulting Pty Ltd, Australia

Using geomorphology and landscape evolution models to enhance landscape design G Hancock, The University of Newcastle, Australia; J Martin Duque, Complutense University, Spain; G Willgoose, The University of Newcastle, Australia

Acceptable erosion rates for mine waste landform rehabilitation modelling in the Pilbara, Western Australia EJ Howard, RJ Loch, Landloch Pty Ltd, Australia

Tailings storage facilities store-and-release cover design for the Cobar region NP Jamson, TK Rohde, SGM Environmental Pty Ltd, Australia

The analysis and validation of landfill stability using unmanned aerial vehicles J Kelcey, Astron Environmental Services, Australia; D Blaxland, Gold Fields, Australia; B Smith, A Gove, Astron Environmental Services, Australia

Mine landforms in Western Australia from dump to landform design: review, reflect, and a future direction HWH Lacy, Mine Closure Management Services Pty Ltd, Australia

Developing a rehabilitation standard for landform stability for a uranium mine in northern Australia JBC Lowry, MJ Saynor, Department of the Environment and Energy, Australia

Toward a common practice in the selection of earthquake ground motion criteria for the design of critical mining facilities at closure and post-closure M Martinez, Golder Associates S.A., Chile; A Hull, Golder Associates Inc., USA

A simplified method to predict final void water levels H Morgan, WRM Water & Environment, Australia; A Hocking, BHP, Australia; S Henderson, Henderson Geotech Pty Ltd, Australia

Stabilising an underground void: monolithic construction using self-consolidating concrete A Pakula, R Preston, D Kennedy, Golder Associates Ltd., Canada; C MacInnis, Crown-Indigenous Relations and Northern Affairs Canada, Canada

Analysis of dry cover systems composed of tropical soils for mining waste DA Perotti, Universidade de São Paulo, Brazil; GFN Gittirana Jr., Universidade Federal de Goiás, Brazil; MD Fredlund, SoilVision Systems Ltd., Canada

Integration of field erosion measurements with erosion models and 3D civil design tools for development of erosion-resistant cover systems R Peroor, SRK Consulting (U.S.), Inc., USA; E Howard, Landloch Pty Ltd, Australia; T Braun, SRK Consulting (U.S.), Inc., USA; T Chesal, S Chatout, BHP Copper Inc., USA

Stress-testing tailings dam designs for closure using a landscape evolution model N Slingerland, NA Beier, GW Wilson, University of Alberta, Canada

How long is long enough? Adopting a risk-based approach to inform drainage management in closure designs E Smedley, S Mackenzie, S Gregory, Mine Earth Pty Ltd, Australia

Tailings storage facility landform evolution modelling H Thomson, SRK Consulting (Australia) Pty Ltd, Australia; L Chandler, Äthos Consulting, Australia

**Decommissioning and waste management**

Mine closure and management of abandoned mines in the state of Minas Gerais, Brazil PRM Fernandes, RJ Gomes, TG Silva, Secretary of State for Environment and Sustainable Development, Brazil; FRA Ribeiro, FUMEC University, Brazil

Coal ash waste categorisation to determine a regulatory capping profile for coal ash pond rehabilitation P Fridell, C Pearson, Environmental Resources Management Australia Pty Ltd, Australia; F Wsoikobenko, HRL Technology Group Pty Ltd, Australia; R Brooker, M Schenkel, ENGIE Australia Pty Ltd, Australia

A demonstration of the cessation of spontaneous combustion in a coal overburden spoil pile A Garvie, SRK Consulting (Australia) Pty Ltd, Australia; K Donaldson, B Williams, Flinders Power, Australia; J Chapman, SRK Consulting (Australia) Pty Ltd, Australia

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*As of 26 June 2019. Accepted papers list is subject to change. Review process is ongoing. For updates, please visit www.mineclosure2019.com*
 ACCEPTED PAPERS*

Río Tinto’s framework for evaluating risks from low-sulphur waste rock R Green, Río Tinto, Australia; C Linklater, SRK Consulting, Australia; S Lee, L Terrusi, K Glasson, Río Tinto, Australia

Selection of a representative dolerite waste sample using remote sensing techniques EJ Howard, Landtech Pty Ltd, Australia; MA Bettison, BHP, Australia

Biological manganese removal from mine drainage in a fixed-bed bioreactor at pilot scale J Jacob, Bureau de Recherches Géologiques et Minières, France; I Raignault, Río Tinto SA, France; F Battaglia-Bruneau, Bureau de Recherches Géologiques et Minières, France; C Mailham-Muxi, Río Tinto SA, France; J Engevin, M Djemil, Bureau de Recherches Géologiques et Minières, France

Harnessing risk to guide mine rock stockpile closure and long-term cost reduction SC Lamoureux, O’Kane Consultants Pty Ltd, Australia; MA O’Kane, O’Kane Consultants Inc., Canada

Optimising waste management assessment using fragmentation analysis technology S Pearce, Mine Environmental Management Consultants, UK; D Brookshaw, Caulmert Ltd, UK; S Muellers, Boliden Mines, Sweden; A Barnes, Geochemic Ltd, UK

Key outcomes of functional benchmarking for waste rock landform closure at a Western Australian iron ore mine SL Robinson, formerly Bioscape Environmental Consulting Pty Ltd, Australia; SJ Finucane, Bioscope Environmental Consulting Pty Ltd, Australia

Wind erosion design considerations for closure of tailings storage facilities in South Africa: a case study SJ van Wyk, J Hatting, ASH Haagmer, Agreenco Environmental Projects, South Africa

Mine waste characterisation: the benefits of applying practical geological knowledge G Wesley, S Mackenzie, Mine Earth, Australia; G Campbell, Graeme Campbell & Associates Pty Ltd, Australia

Informed mine closure by multi-dimensional modelling of tailings deposition and consolidation H Zhou, A Amodio, N Boylan, Norwegian Geotechnical Institute, Australia

Financing and cost estimation

Progressive release of security to incentivise and fund closure KA Bocking, Golder Associates Ltd., Canada; K Lewis, Lupin Mines Inc., Canada


Repurposing closure cost estimation tools: a Gold Fields case study of the benefit of integration R Getty, SRK Consulting (Australasia) Pty Ltd, Australia; D Caporn, Gold Fields Ltd, Australia; D Kyan, J Beltran, SRK Consulting (Australasia) Pty Ltd, Australia

Stakeholders and community

Interesting case studies of conscious uncoupling D Aheto-Tsegah, Golder Associates (Gh) Ltd, Ghana

Innovative community engagement for the quantitative risk assessment for a mine closure and reclamation plan L Christoffersen, SRK Consulting (Canada) Inc., Canada; S Reinecke, M Shoesmith, Stratos Inc., Canada; E McKennirey, Crown-Indigenous Relations and Northern Affairs Canada, Canada; L Pilgrim, D Rae, John Wood Group PLC, Canada

Social aspects of mine closure: the elephant in the room J Edwards, A Maritz, SRK Consulting (South Africa) (Pty) Ltd, South Africa

Discounting social mine closure planning M January, 3 Circle Consulting, South Africa

Social provisioning for mine closure T Laurencont, Coffey Ltd, Australia; T Garrood, Newcrest Mining Limited, Australia; P Vidler, M Fawcett, Coffey Ltd, Australia

A stakeholder advisory committee as a mechanism to guide the preparation of a regional mine rehabilitation strategy... two years in, what have we learnt? S Lloyd, Latrobe Valley Mine Rehabilitation Advisory Committee, Australia

Foresight in hindsight PJ Lombard, GHD Pty Ltd, Australia

Engaging stakeholders to achieve rehabilitation completion: a case study of the BHP Beenup project RM Norrish, B Lyon, W Russell, G Price, BHP, Australia

Site remediation and impact management

Environmental assessment and reclamation of abandoned marl-mining dumps in the Northwest Caucasus AV Alekseeenko, Saint Petersburg Mining University, Russia

Remediation objectives: the key to successful mine closure M Fawcett, T Laurencont, Coffey Ltd, Australia

Key considerations that can make or break a closure-focused groundwater monitoring program WJ Gimson, TR Weaver, BL Heemink, ERM Australia Pty Ltd, Australia

Hydrogeological modelling to inform closure planning for Hazelwood mine R Gresswell, G Foley, GHD Pty Ltd, Australia; J Faithful, ENGIE Australia Pty Ltd, Australia

Evaporation from coal mine pit lakes: measurements and modelling D McJannet, A Hawdon, B Baker, K Ahwong, J Gallant, Commonwealth Scientific and Industrial Research Organisation Australia; S Henderson, A Hocking, BHP, Australia

Hydrochemical evaluation after mine closure of the Angelica Rubio Chico mining project J Melgarejo, Compañía de Minas Buenaventura, Peru; P Quesada, M Samanez, Amphos 21, Peru

Global acid and metalliferous drainage management standard: BHP’s approach to reducing global acid and metalliferous drainage closure risk JP Pearce, Mine Waste Management, Australia; T Cooper, J Heyes, BHP, Australia

Application of a vulnerability assessment framework to evaluate potential effects of mine water discharges from Ranger Uranium Mine, Northern Territory DR Richardson, G Bourke, D Rissik, GW Fisk, BMT; Australia; M Iles, Energy Resources of Australia, Australia

Acid mine drainage mitigation and capture in mine waste: practical methods to assess the carbonation in mine waste storage facilities and opportunities for mine closure, the Kevitsa Nickel mine, Northern Finland RJ Savage, Cardiff University and Geochemic Ltd, UK; S Pearce, Mine Environmental Management Consultants, UK; S Mueller, Boliden Mines, Sweden; A Barnes, Geochemic Ltd, UK; P Renforth, D Sapsford, Cardiff University, UK

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## Accepted Papers

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<td>Implementation of offshore reclamation methods on an old tin-mined area in Bangka Island, Indonesia</td>
<td>IA Syari, University of Bangka Belitung, Indonesia; J Sudarjot, HA Octaviano, Ministry of Energy and Mineral Resources, Indonesia; B Hutahana, R Adnis, OA Taruk Allo, PT Timah Tbk, Indonesia</td>
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<tr>
<td>Risk profiling and control of spontaneous combustion for coal mine closure</td>
<td>B Williams, K Donaldson, Finders Power, Australia; B Beamish, B3 Mining Services Pty Ltd, Australia</td>
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<td>Contamination assessment of mine infrastructure areas for closure and relinquishment: Hazelwood Coal Mine, Victoria, Australia</td>
<td>TR Weaver, PS Fridell, MB Ospina, ERM Australia Pty Ltd, Australia; R Brooker, MK Schenkel, AM Sceale, ENGIE Australia Pty Ltd, Australia</td>
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<td>Land rehabilitation and ecosystem restoration</td>
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<td>Mine reclamation period to successfully meet criteria in Indonesia</td>
<td>F Amanah, T Yunanto, Ministry of Energy and Mineral Resources, Republic of Indonesia</td>
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<td>An approach to an ecosystem restoration standard for Ranger uranium mine</td>
<td>RE Bartolo, J Nicholson, Department of the Environment and Energy, Australia; M Rudge, The University of Queensland, Australia; D Loewensteiner, T Whiteside, M Barnes, CL Humphrey, Department of the Environment and Energy, Australia</td>
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<td>A ‘ground up’ approach to revegetation in the arid zone</td>
<td>G Christie, B Horner, A Scanlon, J Lemon, Succession Ecology, Australia; B Williams, Finders Power, Australia</td>
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<td>Applied phosphorus has long-term impacts on vegetation responses in restored jarrah forest</td>
<td>M J Daws, University of Reading, UK; AH Grigg, Alcoa of Australia Ltd, Australia; RJ Standish, Murdoch University, Australia; M Tibbett, University of Reading, UK</td>
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<td>Combining seed burial, land imprinting and an artificial soil crust dramatically increases the emergence of broadcast seed</td>
<td>MP Dobrowskis, Ilika Resources Ltd, and The University of Western Australia, Australia</td>
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<td>A case study of seed-use technology development for Pilbara mine site rehabilitation</td>
<td>TE Erickson, The University of Western Australia, Australia; M Muñoz-Rojas, UNSW Sydney, Australia; AL Guzzomi, M Masarei, E Ling, AM Bateman, OA Kildisheva, AL Ritchie, SR Turner, The University of Western Australia, Australia; B Parsons, Greenshine Australia, Australia; P Chester, Río Tinto, Australia; T Webster, S Wishart, BHP Western Australia Iron Ore Pty Ltd, Australia; JJ James, University of California, USA; MD Madsen, Brigham Young University, USA; SR Abella, University of Nevada, USA; DJ Merritt, Department of Biodiversity, Conservation and Attractions, Australia</td>
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<td>Understanding the Latrobe Valley regional rehabilitation strategy and why it is essential</td>
<td>A Feigl, B Davis, M Pratt, A Kirwan, B Millsom, M Mozina, E Rampal, State Government of Victoria, Australia</td>
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<td>Pre- and post-mine land use trends across the New South Wales and Queensland coal industry</td>
<td>K Fogarty, M Kragt, B White, The University of Western Australia, Australia</td>
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<td>Bang for your buck: revegetation arid sites using coloniser species</td>
<td>B Horner, G Christie, Succession Ecology, Australia; B Williams, Finders Power, Australia; AT Scanlon, J Lemon, Succession Ecology, Australia</td>
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<td>Ecological engineering to accelerate mineral weathering and transformation underpins sustainable tailings rehabilitation</td>
<td>L Huang, Y Frang, Y Liu, S Wu, The University of Queensland, Australia; D Parry, Río Tinto, and The University of Queensland, Australia</td>
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<td>Current practice and innovation in decommissioning, rehabilitation and monitoring on Barrow Island: applications for mine closure</td>
<td>DA Jasper, Stantec, Australia; P Hoffman, Chevron, Australia; NC Banning, Stantec, Australia; GS Wiseman, Stantec, Canada; KE Stanbury, SJ Anson, GR Henderson, Stantec, Australia</td>
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<tr>
<td>Mine site rehabilitation conditions in Western Australia</td>
<td>ME Kragt, The University of Western Australia, Australia; C Lison, ARC Centre for Mine Site Restoration, Australia; A Manero, J Hawkins, The University of Western Australia, Australia</td>
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<td>Flash flaming technology shows promise to improve seed-based restoration outcomes</td>
<td>E Ling, AL Guzzomi, TE Erickson, The University of Western Australia, Australia; DJ Merritt, Department of Biodiversity, Conservation and Attractions, Australia; M Renton, The University of Western Australia, Australia</td>
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<td>Target ecosystem assessment model: a process to develop target revegetation prescriptions in the mine closure landscape</td>
<td>B Logan, V Futorskys, S Dietrich, BH Fleming, W Wilson, L Waterman, Paragon Soil and Environmental Consulting Inc., Canada</td>
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<td>Harnessing ecological processes in Ranger uranium mine revegetation strategy</td>
<td>P Lu, I Meek, Energy Resources of Australia Pty Ltd, Australia</td>
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<td>Geomorphic rehabilitation in Europe: recognition as best available technology and its role in LIFE projects.</td>
<td>JF Martin Duque, Complutense University and IGEO Geosciences Institute (UCM-CSIC), Spain; M Tejedor, C Martin-Moreno, Complutense University, Spain; JM Nicolau, University of Zaragoza, Spain; I Zapico, Complutense University, Spain</td>
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<td>Improvements to mechanical direct seeder design guided by the optimal sowing depth of soft spinifex (Triodia pungens)</td>
<td>M Masarei, AL Guzzomi, The University of Western Australia, Australia; DJ Merritt, Department of Biodiversity, Conservation and Attractions, Australia; TE Erickson, The University of Western Australia, Australia</td>
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<td>Process-based erosion modelling for shoreline rehabilitation design of a coal mine pit lake</td>
<td>CD McCullough, Mine Lakes Consulting, Australia; A van Rooijen, Deltas, Australia; DS van Maren, Deltas, Netherlands</td>
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<td>Designing for success: applying ecological criteria to restoration at BHP Beenup, Australia</td>
<td>K Menev, L Pantelic, Syrinx Environmental Pty Ltd, Australia</td>
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<td>A framework to prioritise high-risk abandoned mine features for rehabilitation in Western Australia</td>
<td>I Mitchell, K Hryczyszyn, T Read, Department of Mines, Industry Regulation and Safety, Australia</td>
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<td>Applying ecosystem services assessment in closure planning to enhance post-mining land use outcomes: learning from bauxite mining in Brazil and Australia</td>
<td>A Morrison-Saunders, Edith Cowan University, Australia; M Hughes, Murdoch University, Australia; D Genelletti, University of Trento, Italy</td>
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<td>Growth of rye grass and clover in artificial topsoils: a case study</td>
<td>L Mundodi, M Yellishetty, V Wong, A Wolmsley, Monash University, Australia; J Missen, N Anderson, AGL, Loy Yang, Australia</td>
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<td>Achieving restoration targets and addressing completion criteria with remote sensing</td>
<td>C Richardson, A Grigg, Alcoa of Australia Ltd, Australia; T Robinson, G Wardell-Johnson, Curtin University, Australia</td>
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<td>Life post-closure: perception and use of rehabilitated mine sites by local communities</td>
<td>K Svobodova, The University of Queensland, Australia</td>
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ASSOCIATED EVENTS

Too much of a good thing: phosphorus over-fertilisation in rehabilitated landscapes of high biodiversity value M Tibbett, R O’Connor, MI Daws, University of Reading, UK

Challenges for the closure and natural rehabilitation of bauxite residue disposal sites O Torgersrud, Norwegian Geotechnical Institute, Norway; GD Breedveld, University of Oslo, and Norwegian Geotechnical Institute, Norway; G Okkenhaug, University of Life Sciences, and Norwegian Geotechnical Institute, Norway; B Malme, Norsk Hydro, Norway; P Cataldi, Norsk Hydro, Brazil

Uranium mining: post-closure land uses – a personal global review P Waggett, Independent Consultant, Australia

Land subsidence/rebound change after Hazelwood mine rehabilitation EP Waghorne, GHD Pty Ltd, Australia; MM Disfani, The University of Melbourne, Australia

Rehabilitation of the north end box cut dump at Tom Price mine operation: a legacy management case study T Worthington, R Green, C Latham, B Yaqub, Rio Tinto Iron Ore, Australia

Vegetation development and the condition of natural regeneration after coal mine reclamation in East Kalimantan, Indonesia T Yunanto, Ministry of Energy and Mineral Resources, Republic of Indonesia; R Mitlöhner, R Bürger-Arndt, Goettingen University, Germany

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Frasers Restaurant, Kings Park

Date: Wednesday 4 September 2019
Time: 7:00 (TBC)
Venue: Frasers Restaurant, Fraser Ave, Kings Park
Web: frasersrestaurant.com.au

Frasers is named after the avenue it sits on, the famous Fraser Avenue in beautiful Kings Park, which was named after Malcolm Fraser – the first Surveyor-General of Perth. The avenue is lined with lemon-scented gums, their interlocking branches forming a majestic canopy over the spectacular entrance to the park.

Join us for an evening of relaxation, fine dining and networking at this stunning location. To register, tick the Mine Closure 2019 Conference Dinner option when registering online at www.mineclosure2019.com or on the form at the back of this brochure.

A presentation will be delivered by guest speaker Alan Barrett, Executive Director, Botanic Gardens and Parks Authority (BGPA). The BGPA operates as part of the Department of Biodiversity, Conservation and Attractions. The Department was formed on 1 July 2017 to promote biodiversity and conservation to enrich people’s lives through sustainable management of Western Australia’s species, ecosystems, lands and the attractions in the Department’s care.

www.mineclosure2019.com/associated-events
ASSOCIATED EVENTS

Pit Lakes Closure Planning Workshop
1 September 2019 | Wisteria Room, The Westin
Perth, Western Australia

Workshop Overview
The objective of this workshop is to introduce attendees to key issues that should be addressed in the mine planning process to increase the likelihood of successful rehabilitation and closure of mine operations with pit lakes. Examples of issues and potential management strategies to address them are given with reference to presenter’s experiences in Australia and overseas.

Target Audience
Mine closure planning practitioners, mining industry engineers, researchers, mining project stakeholders, mining industry regulators and allied professionals, as well as:

- Hydrogeologists
- Environmental scientists
- Geologists
- Stakeholder engagement specialists
- Mine planners
- Mine managers
- Mine law practitioners

Workshop Facilitators
Dr Cherie McCullough
Director and Principal Scientist
Mine Lakes Consulting

Dr Devin Castendyk
Senior Geochemist
Golder Associates Inc., USA

Preliminary Programme*

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<tr>
<td>08:30</td>
<td>Introduction to pit lakes Dr Cherie McCullough, Mine Lakes Consulting</td>
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<tr>
<td>09:00</td>
<td>Key issues with pit lakes: Dr Cherie McCullough</td>
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<td>• Australia and international examples</td>
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<td>10:00</td>
<td>Morning break</td>
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<td>10:30</td>
<td>Key opportunities with pit lakes: Dr Cherie McCullough</td>
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<td>• Australia and international examples</td>
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<td>11:00</td>
<td>Water balance strategies Dr Cherie McCullough</td>
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<td>12:00</td>
<td>Lunch</td>
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<tr>
<td>13:00</td>
<td>Interactive break-out session Dr Cherie McCullough</td>
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<tr>
<td>14:00</td>
<td>Pit lakes water balance and water quality modelling: Theory Dr Devin Castendyk, Golder Associates Inc., USA</td>
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<tr>
<td>15:00</td>
<td>Pit lake water balance and water quality modelling: Case studies Dr Devin Castendyk</td>
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<td>15:30</td>
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<tr>
<td>16:00</td>
<td>Lessons learned Dr Devin Castendyk</td>
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<tr>
<td>16:45</td>
<td>Synthesis and closing Dr Cherie McCullough</td>
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<tr>
<td>17:00</td>
<td>Workshop close</td>
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For more information on these associated events, visit
mineclosure2019.com/associated-events

Workshop
1 September 2019 | Cassia & Karri Rooms, The Westin | Perth, Western Australia

Topics and Schedule
In planning for closure, a mining company puts forth a vision of what the coming years will hold for its site. Otherwise known as the post-mining land use, this vision captures what condition and what use(s) the company visualises for the land. The company then works steadily towards achieving that vision. However, even when a company has met all of its rehabilitation and closure obligations, regulators and/or other stakeholders may still be reluctant to allow a mine to be relinquished, particularly where this requires custodial transfer of risk. Consequently, it encounters barriers, frustrations and costly delays.

This one day workshop includes presentations and interactive sessions. In the morning, the programme will discuss the challenges, barriers and opportunities associated with relinquishment, and discuss current policy and practical issues associated with custodial transfer of risk. During the afternoon, we will reimage the closure planning process to repurpose this for relinquishment planning.

Workshop Facilitator
Sonia Finucane
Director and Principal Consultant
Bioscope Environmental Consulting Pty Ltd

The Workshop Will:
- Explore how mine closure and relinquishment can be positioned to achieve appropriate environmental outcomes and net community benefit,
- Delve into the factors that shape stakeholder perception of relinquishment risks and liabilities,
- Determine how to transform processes to allow proper planning for relinquishment,
- Define a risk framework for determining and managing residual risk and liability,
- Identify enablers for relinquishment at policy and practical levels,
- Discuss how to measure relinquishment success.

Presentations during this workshop will include case studies from Asia, Africa, Australia and Europe.

www.mineclosure2019.com/associated-workshops
ASSOCIATED EVENTS

Landform Design and Modelling for Mine Rehabilitation and Closure Workshop
2 September 2019 | Cassia & Karri Rooms, The Westin | Perth, Western Australia

About the Workshop
The post-mining landform is the canvass for all other aspects of ecological rehabilitation. Traditionally, the design approach to these landforms has been linear using empirical methods or generic designs. With the development of computer aided construction equipment, designers are no longer confined to straight lines, benches, contour banks and drop structures.

Popular with the community, geomorphic designs claim to ensure greater connectivity with the surrounding environment, visually and functionally by emulating fluvial geomorphic processes. But are these more complex designs cost effective? Are the outcomes more stable, and likely to function ecologically than traditional approaches? and how do we assess that? What of the role of Landscape Evolution Models (LEMs) and how significant are their limitations?

This workshop will provide a practical view of landform design both world-wide and in Australia. Presenters will discuss successes and failures, provide an integrated perspective of the different directions in which this field may develop, and interact with the attendees during question times, breaks and during the panel discussion.

Workshop Presenters:
- Associate Professor Jose F. Martín Duque
  Complutense University of Madrid and Geosciences Institute, Spain
- Associate Professor Gregory Hancock
  The University of Newcastle
- Harley Lacy
  Director-Advisor
  MCMS Pty Ltd
- Chris Waygood
  Principal Mine Closure Specialist
  Golder Associates Pty Ltd
- Professor David Williams
  Director, Geotechnical Engineering Centre
  The University of Queensland

Programme*

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Presenter(s)</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Welcome and introduction</td>
<td>Harley Lacy, MCMS Pty Ltd and Associate Professor Jose F. Martín Duque, Complutense University of Madrid and Geosciences Institute, Spain</td>
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<tr>
<td>08:45</td>
<td>Setting the scene: what have we done historically in landform design, how has it worked, what lessons can we learn</td>
<td>Harley Lacy</td>
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<tr>
<td>09:00</td>
<td>The importance of geotechnical stability in landform design – toward sustainability</td>
<td>Professor David Williams, The University of Queensland</td>
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<td>09:40</td>
<td>Understanding the tension between material movement optimisation, ensuring erosional stability and geomorphic/hydrological considerations</td>
<td>Chris Waygood, Golder Associates Pty Ltd</td>
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<td>10:00</td>
<td>Morning break</td>
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<td>10:20</td>
<td>Erosional stability: an overview on soil erosion modelling (RUSLE, WEPP) and landscape evolution modelling (SIBERIA, CAESAR, others)</td>
<td>Associate Professor Greg Hancock, The University of Newcastle</td>
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<tr>
<td>11:00</td>
<td>Geomorphic/hydrological considerations – landform design tools and software - GeoFluv-Natural Regrade, Talus Royal, River Morphology and the Canadian fluvial geomorphic approach</td>
<td>Associate Professor Jose F. Martín Duque</td>
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<tr>
<td>11:45</td>
<td>Integration of landform design and landscape evolution modelling</td>
<td>Associate Professors Greg Hancock and Jose F. Martín Duque</td>
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<td>12:00</td>
<td>Panel discussion – challenges and observations, practitioners’ experience with these tools</td>
<td>All</td>
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<tr>
<td>12:10</td>
<td>Lunch</td>
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<td>13:10</td>
<td>Case studies and lessons learnt:</td>
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<td>European example</td>
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<td>NSW alluvial analogue example</td>
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<td>NSW non-alluvial analogue example</td>
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<td>Arid environment example</td>
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<td>Long duration assessments for uranium mining</td>
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<td>14:30</td>
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<tr>
<td>15:00</td>
<td>River restoration and stream diversion approaches</td>
<td>Associate Professor Jose F. Martín Duque and Chris Waygood</td>
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<tr>
<td>15:40</td>
<td>Integrating ideas, developing new ideas, addressing ongoing challenges in implementation and philosophy</td>
<td>Panel discussion</td>
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<td>17:00</td>
<td>Workshop close</td>
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*Please note that the programme is subject to change. For updates, please visit www.mineclosure2019.com
ASSOCIATED EVENTS

BHP Beenup Rehabilitation Project Site Visit
6 September 2019 | Margaret River region, Western Australia

In 2018, 19 years after closure, rehabilitation of the former Beenup Titanium Minerals project has achieved regulatory sign-off against the 21 completion criteria, as agreed with stakeholders.

The Beenup Consultative Group, formed ten years prior to closure, played an integral part in the planning, design and oversight of rehabilitation, including independent peer review, and remains active.

The site is now transitioning, with stakeholder input, to a monitoring and relinquishment phase requiring only minimal resources to ensure that the project tenements continue to meet the remaining statutory obligations and that design features are not compromised while also considering the opportunities that could be realised for the site into the longer term post-relinquishment.

The ACG thanks BHP for freely donating their time and resources to host this visit.

Spaces are limited. More details coming soon. To register your interest, email info-acg@uwa.edu.au

Restoration Science and Botanic Garden Tour
6 September 2019 | Kings Park, Perth, Western Australia

Kings Park Science is the State’s premier restoration science and ex-situ conservation research provider, having developed a strong restoration science brand over the past 30 years in collaboration with the mining sector.

The laboratory and glasshouse tour will highlight leading technologies and concepts across these key areas as related to mine rehabilitation and closure. A guided walk will then allow guests to experience key features of the Kings Park’s Botanic Garden and adjacent bushland.

The ACG thanks the Department of Biodiversity, Conservation and Attractions, Kings Park Science for generously giving their time and resources in facilitating this activity.

Spaces will be limited to 40. Morning tea provided.

Contact details for bookings: Lyndsey Osborne | scienceadmin@dbca.wa.gov.au | + 61 8 94803614

Iluka Resources’ Tutunup South Site Visit
6 September 2019 | Busselton region, Western Australia

Iluka Resources is currently rehabilitating its Tutunup South mine, located in the southwest of Western Australia, approximately 16 km southeast of Busselton. Tutunup South was mined between 2011 and 2018 for zircon and ilmenite for the production of synthetic rutile at Iluka’s Capel processing facilities. Rehabilitation commenced in 2018 and will be completed in 2021. The site is one of numerous mines that Iluka has closed or is progressively rehabilitating in Australia, the US and Sierra Leone.

Tutunup South is mainly agriculture land (192 ha) that will be returned to productive pasture. Native vegetation makes up the remaining 17 ha and include 2 ha of paluslope wetland. This wetland contained plant species that are difficult to propagate so Iluka used an innovative approach for its rehabilitation. The entire wetland vegetation, including its soil, was transplanted to an irrigated nursery area in 2010. The plants have survived and flourished in the nursery and will be transplanted into the reinstated wetland in 2019.

To register your interest, email info-acg@uwa.edu.au

Collie Mine Lake District Inspection
7 September 2019 | Collie River Catchment, Western Australia

Underground and open cut coal mining has taken place in the Collie basin since 1898 with a number of mining legacies resulting. Until the mid-1990s, coal mining was predominantly in the Cardiff sub-basin. In 1997 mining in the Cardiff sub-basin ceased and since then mining has taken place in the Premier sub-basin at the Muja, Ewington and Premier mines. As a result of a dispute with the government, six open cut pits were abandoned in the 1950s and 1960s, which went on to form Stockton Lake, Ewington Lake, Blue Waters, Black Diamond (A & B) and Wallsend (historically used for landfill).

Currently two mining companies, Yancoal Premier Coal Pty Ltd and Lanco Griffin Coal Pty Ltd, have active mines and a number of unrelinquished pit lakes in the Premier Sub-basin. Yancoal Premier Coal Pty Ltd is currently evaluating rehabilitation and development of end uses for finished pits in the Cardiff sub-basin. Premier also seeks to relinquish Lake Kepwari which completed mining in 1997. Griffin Coal is maintaining pit lakes in the Premier sub-basin in an operational capacity, but also seeking relinquishment options that might also entail beneficial end uses.

The ACG thanks Dr Cherie McCullough, principal environmental scientist/director at Mine Lakes Consulting for leading this inspection, and freely donating her time and resources.

More details coming soon. To register your interest, email info-acg@uwa.edu.au

www.mineclosure2019.com/site-tours
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CONTACT DETAILS
Please print. * mandatory fields.
*Title (Mr, Mrs, Miss, Ms, Dr, Prof., Other) ____________________________
*Family Name ____________________________
*First Name ____________________________
Preferred Name ____________________________
*Position ____________________________
*Organisation ____________________________
Mine/Dept ____________________________
*Address ____________________________
Phone ____________________________
Fax ____________________________
Mobile ____________________________
*Email ____________________________
*All confirmations/event updates will be sent via email.

Registrant contact details are intended to be published in the events authorised attendee list made available to event attendees, sponsors and exhibitors, who may contact you, including electronically, in the promotion of their products and services.

☐ I give permission for my details to be included in the Mine Closure 2019 and associated events attendee lists.

☐ I give permission for the ACG to forward me ACG research, training and/or education information advice, including electronic communications.

☐ I require an invitation letter for visa purposes (please forward a copy of your passport information page). For more information regarding Australian visas, please visit acg.uwa.edu.au/about-events-and-courses/

DELEGATE CANCELLATIONS
Up to 8 days before event commencement: an administration fee of AUD 150 will be charged. 7 or less days before: no refund. Non-attendance: no refund. Substitutions will be accepted at any time. The ACG reserves the right to cancel the conference and associated events if insufficient registrations are received.

Delegate Terms and Conditions are available at acg.uwa.edu.au/disclaimer/

† Visit acg/uwa.edu.au/corporate-affiliate/ to view the list of ACG Corporate Affiliates. ^ Students are required to provide proof of full-time enrolment.

PAYMENT OPTIONS

☐ Credit Card: Please register online at www.mineclosure2019.com/product/registrations/ or alternatively, return this completed form to info-acg@uwa.edu.au and contact us by phone to make payment. (Visa and Mastercard are the only cards we accept).

☐ Electronic Funds Transfer (EFT): Please return this completed form to info-acg@uwa.edu.au and the ACG will send you an invoice with EFT details included. PO# (if required)

PAYMENT
Total payment AUD ______________
Payment to be received by 30 August 2019. All bank fees are the responsibility of the registrant. All prices include GST.
ABN 37 882 817 280

How to register: Australian Centre for Geomechanics The University of Western Australia 35 Stirling Highway (M600) Crawley WA 6009
+61 8 6488 3300 info-acg@uwa.edu.au www.mineclosure2019.com

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Mine Closure 2019 Conference Dinner
4 September 2019
SOLD OUT

Please notify us below of any special dietary requirements.

All full registrations will receive luncheons and refreshments. Conference papers will be accessible at papers.acg.uwa.edu.au from 26 August 2019. If you would like a printed copy of the proceedings, please tick the box below.

Mine Closure 2019 Printed Proceedings
(2016) | 3–5 September 2019 | 198
(Softbound, colour) (Conference special)
Please note that a two-volume set of the Mine Closure 2019 printed proceedings will weigh roughly 4.5 kg.

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Pit Lakes Closure Planning Workshop (1912) | 1 September 2019
(Paid until 22 July 2019)
(Paid after 22 July 2019)

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<tr>
<td>Landform Design and Modelling for Mine Rehabilitation and Closure Workshop (1913)</td>
<td>2 September 2019</td>
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