



NZSOLD ANCOLD Conference 2019 – Draft Programme (As of 15 August 2019)

Pre-Conference Workshop Wednesday 9 October 2019 (Please see the separate sheet for Pre-Conference Workshop)	
07:30	Registration opens
08:30	Workshop begins
16:30	Workshop ends
17:30	Welcome Function at the Harbourside Ocean Bar Grill (Please make your own way to the venue)

Conference Day 1 – Thursday 10 October			
07:30	Registration opens		
08:50	Welcome Introduction Trevor Matuschka		
09:00	Opening Speaker Jenny Salesa		
09:30	NZ Keynote Speaker Kelvin Berryman – GNS		
10:00	International Keynote Speaker Mike Rogers – Stantec/ICOLD		
10:30	Morning Tea Break & Exhibition		
11:00 to 12:00	Session 1 Resilient dam design	Session 2 Resilience of reservoir outlets and spillways	
12:00	Lunch & Exhibition Poster Session between 12:45 – 13:30		
13:30 to 14:30	Session 3 Seismic issues in the design for resilient structures	Session 4 Design modelling for resilience	Session 5 Resilient performance of dams
14:30	Afternoon Tea Break & Exhibition		
15:00 to 16:00	Session 6 Resilience in Tailings Dams	Session 7 Emergency preparedness to ensure resilient communities	Session 8 Lightning Presentation Session 1
16:00	Short Break		
16:10 – 17:10	Session 9 Operation for Resilience	Session 10 Geology and geotechnics in resilience	Session 11 Lightning Presentation Session 2
16:58	Instructions and information for evening events Closing of Day 1		
17:50	Assembly at the Pullman Hotel Lobby for the conference dinner (The buses will leave at 18:05))		
18:30	Conference Dinner Pre-Dinner drinks at the Auckland Museum Foyer		
19:30	Conference Dinner at the Auckland Museum Event Centre		

22:30	Transfer back to the Pullman Hotel	
Conference Day 2 - Friday11 October 2019		
07:30	Registration opens	
08:20	Welcome Introduction	
08:30	International Keynote speaker Elena Sossenkina (HDR)	
09:00	NZ Keynote speaker ENZ Chief Exec	
09:25 – 10:10	Session 1 Dam breach and consequence assessment	Session 2 Flood hydrology issues for resilience
10:15	Morning Tea Break & Exhibition	
10:45 – 12:00	Session 3 Design and safety issues for resilience	Session 4 Management of risk
12:00	Lunch & Exhibition Poster Session between 12:45 – 13:30	
13:30 – 14:30	Session 5 Resilience of flood storage and levees	Session 6 Remote monitoring and emergency preparedness
14:30	Afternoon Tea Break & Exhibition Exhibition - Closes after break	
15:00	Closing Session Trevor Matuschka Prizes Promotion for 2020 conference Post conference tour information Closing remarks - Trevor Matuschka	
16:30	ANCOLD AGM	NZSOLD discussion on NZ Dam Safety Regulations
17:00 – 18:00	Farewell Drinks	

<p align="center">Saturday Post Conference Tour 12 October 2019 (Please see the separate sheet for Post conference tour)</p>		
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List of Papers and presenters and authors

Day 1

Session 1 - Resilient dam design

D1/1 – 1 ‘Where to for Reservoirs’ – Global ‘Emerging Trends’ and ‘Essential Elements’ for Multipurpose Reservoirs Craig Scott
¹Stantec

D1/1 – 2 The Role of a Review Board in Creating Resilient Design Richard Davidson¹ ¹Aecom

D1/1 – 3 Preparing for Climate Change – Design and Construction of Resilient Dams Rambod Amigh¹ ¹Engineering Geology Ltd

D1/1 – 4 Towards consistency in unit cost rates for economic consequences David Stephens¹, Simon Hone² ¹HARC, ²Aither

Session 2 - Resilience of reservoir outlets and spillways

D1/2 – 1 Paloona Dam Trashrack Failures – Revisiting Design Guidelines David Law¹ ¹Entura

D1/2 – 2 Vertical Gate Design; Considerations for Resilience Dean Hassall¹, Simon Sam, Kristen Koo¹ ¹Norconsult NZ Ltd

D1/2 – 3 Dams, siltation and low-level outlets Bryan Leyland¹, Roger Fulton² ¹Leyland Consultants, ²GHD

D1/2 – 4 US Army Corps of Engineers Audit of Concrete Chute Spillways on Erodible Foundations Mike Phillips¹, Taylor Bradley¹, Justin Pearce¹, Steve Townsley¹, Sal Todaro¹ ¹USACE

Session 3 - Seismic issues in the design for resilient structures

D1/3 – 1 Probabilistic fault displacement hazard analysis for dams in Australia Dr Paul Somerville¹, Dr Hong Kie Thio¹, Don Macfarlane² ¹AECOM, ²AECOM

D1/3 – 2 Seismic performance modelling of Mahinerangi Dam Jason Lim¹, Bruce Walpole² ¹Tonkin + Taylor, ²Trustpower Ltd

D1/3 – 3 Fault investigation practice in Australia and New Zealand- why Australian dam owners/ operators should care about collecting active fault data Dr Dee Ninis¹, Dr Dan Clark² ¹Seismology Research Centre, ²Geoscience Australia

D1/3 – 4 Liquefaction-induced displacement of embankment dams, how good we are in predicting the post-earthquake displacements using numerical models? Dr Mojtaba Kan¹ ¹Principal Dams Engineer, SA Water, ²Honorary Research Fellow, University of Wollongong

Session 4 - Design modelling for resilience

D1/4 – 1 Modelling Reservoirs with a 2D Hydraulic Model Andrew Northfield¹, David Stephens¹, Tim Craig¹, Mitchell Smith²
¹HARC, ²BMT

D1/4 – 2 Nonlinear FE Analysis and Remedial Design of Cracked Dam Monoliths Subject to Large Post-tensioning, Flood and Earthquake Forces Francisco Lopez¹, Michael McKay¹, Jonathon Reid¹ ¹SMEC

D1/4 – 3 CFD Modelling in dam outlet pipework and ancillary pumpstation design Wageed Kamish¹, Clint Cantrell¹, Vicki-Ann Dimas¹ ¹Tonkin+Taylor

Session 5 - Resilient performance of dams

D1/5 – 1 Statistic-based research on potential failure modes of small and medium sized embankment in Vietnam Dr Tam Ho
Sy¹, Dr Thai Nguyen Canh¹, Nga Pham Hong¹ ¹Thuyloi University

D1/5 – 2 The long term performance of seepage improvement works at New Zealand earth dams and canals. Don Tate¹ ¹Riley Consultants

D1/5 – 3 Hydrophilic waterstops in dam engineering Sam Taubert¹, Peter Buchanan¹, Steve Fox² ¹GHD, ²GHD

D1/5 – 4 A Novel Solution for Ensuring Post-Earthquake Operability of Outlet Towers Cameron Purss¹, Francisco Lopez¹, Steve Gray² ¹SMEC, ²AverDyn

Session 6 - Resilience in Tailings Dams

D1/6 – 1 In Defence of Upstream Tailings Dam Construction [John Phillips¹](#), [Laila Burger¹](#)¹GHD

D1/6 – 2 Tailings Dam Guidelines – Adopting International Direction [David Brett¹](#)¹GHD Pty Ltd

D1/6 – 3 Tailings Storage Failures: Impact on the industry, design, operation and people [Jiri Herza¹](#), [Ryan Singh¹](#)¹GHD

Session 7 - Emergency preparedness to ensure resilient communities

D1/7 – 1 Estimating the individual risk from dam failure [Simon Lang¹](#), Mark Foster²¹HARC, ²AECOM

D1/7 – 2 Lessons learnt from evacuation modelling for dam failure consequence assessments [Hench Wang¹](#)¹HARC

D1/7 – 3 Quantitative assessment of dam safety emergency management using HEC-LifeSim – is it feasible? [Tyson Leong-Cuzack¹](#), [Chris Nielsen¹](#), Chriselyn Kavanagh², Samantha Watts³¹Department of Natural Resources, Mines and Energy, ²Jacobs, ³Jacobs

Session 8 - Lightning Presentation Session 1

D1/8 – 1 Remediation of a Historic Concrete Dam in New Zealand [Dr Mohammad Okhovat¹](#), Bronek Kazmierow², Ashley Ng³¹Damwatch Engineering Ltd, ²Greater Wellington Regional Council, ³The University of Auckland

D1/8 – 2 Emergency preparedness with unknown parameters – sensitivity of fluid properties in tailing dam failure flood estimates [Dr Nimal Gamage¹](#)¹GHD Pty Ltd

D1/8 – 3 What makes a dam? Temporary sand diversion structures on the Burdekin River [Nicholas Thomas-kinsella¹](#), Malcolm Barker¹, Rob Saunders¹, David Sartori²¹GHD, ²Lower Burdekin Water

D1/8 – 4 Queensland Dam Safety Regulation: Future focus [Chris Nielsen¹](#), Ron Guppy¹, Gary Hargraves¹¹Dnrme

D1/8 – 5 Emergency preparedness for underground mines – ways to estimate dam break flood risks [Dr Nimal Gamage¹](#)¹Ghd Pty Ltd

Session 9 – Operation for resilience

D1/9 – 1 Design embankments for resisting against overtopping flood [Meysam Safavian¹](#)¹Ghd

D1/9 – 2 Low Level Outlets: necessary evil or a nuisance? [Philip Winter^{1,2}](#), Thomas Fritz^{1,2}¹Trustpower, ²NZSOLD

D1/9 – 3 Ensuring Radial gate resilience against bearing friction [Ingeborg Bue¹](#), [Curt Davidson](#), Chris Lucas ¹Norconsult Nz Ltd

Session 10 – Geology and geotechnics in resilience

D1/10 – 1 Interpretation of internal erosion susceptibility in a New Zealand canal embankment [Dr Kaley Crawford-flett¹](#), [Jeremy Eldridge²](#), Dr Elisabeth Bowman³, Chris Wooding⁴, Cam Gordon⁵¹University Of Canterbury Quake Centre, ²Qi Solutions, ³University of Sheffield, ⁴Holmes Consulting, ⁵Genesis Energy

D1/10 – 2 In Situ Stress Determination: Recent experiences in acquisition and analysis [Deryk Forster¹](#)¹SMEC Australia

D1/10 – 3 North Pine Dam 3D Geological Modelling – Creating a Client Asset [Christopher Bennett¹](#), Helena Sutherland², Graham Irvine¹¹GHD, ²Seqwater

Session 11 – Lightning presentations Session 2

D1/11 – 1 Economic impacts of Flood Schemes and Local Flood Management [Dr Patrick Walsh¹](#)¹Manaaki Whenua-landcare Research

D1/11 – 2 Assessing the behaviour of the filter-core interface of embankment dams under dynamic loading [Katharine Vincent¹](#), [Petra Garratt¹](#), Dr Mark Stringer¹, Dr Kaley Crawford-Flett²¹University Of Canterbury, ²University of Canterbury Quake Centre

D1/11 – 3 Is the price right for dam safety? The social and environmental costs of risk reduction [Sean Cowan¹](#)¹Melbourne Water Corporation, ²Engeny Water Management

Day 2

Session 1 - Dam breach and consequence assessment

D2/1 – 1 One breach or more? - Assessment of potential multiple flood overtopping breaches and sequencing Lindsay Millard¹, Michel Raymond^{1,1}*Seqwater (Queensland Bulkwater)*, ²*GHD*

D2/1 – 2 Dam-Break Consequence Assessments – Framework for Estimation of Population at Risk William Veale^{1,1}*Damwatch Engineering Ltd*

D2/1 – 3 Evidence Based Procedure for Estimating Itinerant Loss of Life Tim Rhodes^{1,1}*Smec*

Session 2 – Flood hydrology for resilience

D2/2 – 2 Estimating extreme rainfall probabilities for large catchments in northern Australia Simon Lang¹, Dr Rory Nathan², Declan O'Shea², Matthew Scoriah¹, Jing (Ashley) Zhang¹, Dr George Kuczera³, Dr Mel Schaefer^{4,1}*HARC*, ²*University of Melbourne*, ³*University of Newcastle*, ⁴*MGS Engineering Consultants*

D2/2 – 2 Estimating Design Floods with a Specified Return Period Using Bayesian Analysis Hadén Smith^{1,1}*U.S. Army Corps Of Engineers, Risk Management Center*

D2/2 – 3 Rare Design Rainfalls for Durations Less Than One Day Janice Green¹, Catherine Jolly^{2,1}*Bureau Of Meteorology*, ²*Bureau of Meteorology*

Session 3 – Design and safety issues for resilience

D2/3 – 1 Understanding reservoir sedimentation in South East Queensland Dr Deb Gale¹, Michel Raymond¹, Nathaniel Deering², Dr Alistair Grinham^{2,1}*Seqwater*, ²*School of Civil Engineering, University of Queensland*

D2/3 – 2 Lessons Learned and Construction Challenges for the Leslie Harrison Dam Upgrade Ryan Cantrill¹, Peyman Andaroodi², Colin Thompson^{2,1}*GHD*, ²*Seqwater*

D2/3 – 3 Waimea Community Dam – Design of a resilient CFRD in a highly seismic environment Dominic Fletcher¹, John Grimston², Mark Taylor², Dan Andrews³, Hayden Bowen¹, Eric Guilleminot⁴, Philippe Cazalis de Fondouce⁴, Ian Walsh^{5,1}*Tonkin & Taylor Ltd*, ²*Tonkin & Taylor Ltd*, ³*Tonkin & Taylor Ltd*, ⁴*Mott MacDonald*, ⁵*WSP Opus*

D2/3 – 4 A resilient dam for a resilient community in East Africa - challenges in designing small hydropower for a wild river Andrew NOBLE^{1,1}*WSP Australia*

D2/3 – 5 TSF Design and the Inclusion of Recovery Controls for the Event of a Tailings Dam Failure. John Plunkett¹, Dr Jarrad Coffey^{1,1}*Rio Tinto*

Session 4 – Management of risk

D2/4 – 1 Responding to new operational challenges for flood risk at Hume Dam Andrew Bishop¹, Tom Zouch^{1,1}*Murray-Darling Basin Authority*

D2/4 -2 Performance and management of the Cromwell Gorge landslides, Clyde Dam reservoir Don Macfarlane¹, Peter Silvester^{2,1}*Aecom New Zealand Ltd*, ²*Contact Energy Ltd*

D2/4 – 3 Rationale behind the U.S. Army Corps of Engineers Tolerable Risk Guidelines Nathan Snorteland^{1,1}*U.S. Army Corps Of Engineers*

D2/4 – 4 Using maturity matrices to evaluate a dam safety program and improve practices Dan Forster¹, Lizzie Smith^{2,1}*Dam Safety Intelligence*, ²*CEATI International*

D2/4 – 5 Dam Safety Maturity Matrix to Evaluate Health of USACE Dam Safety Program Jacob Davis^{1,1}*U.S. Army Corps Of Engineers*

Session 5 - Resilience of flood storage and levees

D2/5 – 1 Natural hazard exposure assessments of New Zealand's stopbank (levee) network: integrating a new stopbank inventory and recent seismic hazard models Dr Daniel Blake¹, Dr Liam Wotherspoon², Dr Kaley Crawford-Flett³, Eduardo Pascoal⁴, Dr Matthew Wilson^{4,1}*University Of Canterbury*, ²*University of Auckland*, ³*Quake Centre*, ⁴*Geospatial Research Institute*

D2/5 – 2 Auckland Council's Dam Safety Management System John O. Grimston¹, Mohammed S. Razak², Dewi M. Knappstein¹, Paul D. McCallum¹ ¹Tonkin & Taylor Limited, ²Auckland Council

D2/5 – 3 Designing flood storage reservoirs for resilience John Gosden¹, Alan Brown¹, Andy Courtin¹ ¹Jacobs

D2/5 – 4 Systematic condition and structural assessment of extensive flood protection levee infrastructure to support resilient community infrastructure in Otago Tim Morris¹, Scott Sutherland¹, Scott Forster¹ ¹Tonkin & Taylor

Session 6 - Remote monitoring and emergency preparedness

D2/6 – 1 The role of InSAR for tailings dam safety assessments Jessica Morgan¹, Giacomo Falorni², Davide Colombo³ ¹TRE Altamira Inc., ²TRE Altamira Inc., ³TRE Altamira Inc.

D2/6 – 2 Leveraging open-access remote sensing imagery to monitor dam infrastructure: Case study of the Cadia tailings dam collapse, Australia Dr Thomas Fuhrmann¹, Sean Chua¹, Dr Matthew Garthwaite¹ ¹Geoscience Australia

D2/6 – 3 Breaking through the breach: global perspectives on dam-failure flood estimation Samantha Watt¹, Alan Brown², Duane McClelland³, Chriselyn Kavanagh⁴, Peter Kinley⁵ ¹Jacobs Group (Australia) Pty Ltd, ²Jacobs UK Ltd, ³Jacobs US, ⁴Jacobs Group (Australia) Ltd, ⁵Jacobs NZ Ltd

D2/6 – 4 Using risk communication to address the dam safety knowledge gap in communities Sophie Walker¹, Amisha Mehta², Ellen Tyquin², Aimee Tuticci¹, Dr Clinton Weeks² ¹Seqwater, ²QUT Business School

Poster Presentation List

Day 1

Contract Strategies for Dam Projects - Reflecting on Melbourne Water's journey Robert Belcher¹, Bill Welsford ¹Melbourne Water

A System Approach for Managing and Communicating Risk for Levee-Protected Communities Sharyn Westlake¹, Rebecca Polvere¹, George Bowman¹, Colin Munn¹ ¹Greater Wellington Regional Council

Determining Flood Extent due to Undocumented Stopbanks Thomas Wallace¹ ¹University of Canterbury

New regulatory framework for NSW Dams Safety Chris Salkovic¹ ¹Dams Safety NSW

Adapting to extreme weather condition in Gobi Desert: Sustainable operation and construction for Mine Tailings Storage Facility Ninjin Tsolmon¹ ¹Oyu Tolgoi LLC

Evaluation of Seismic Response of Earth Dams Using A Finite Element-Boundary Element Formulation Maz Mahzari¹ ¹Stantec Co

Design of an Innovative Spillway Integrated Low Gradient Bypass Fishway Nigel Moon¹, Mr Donovan Rowe¹ ¹Golder Associates

Seismic analysis of embankment and tailings dams – Correctly using ground motions Alireza Mojami¹, Malcolm Barker¹ ¹GHD

Challenges in estimating earthquake hazard in a lower seismic hazard environment Elodie Borleis¹, Mr Gary Gibson¹ ¹Seismology Research Centre

Homogeneous Embankment with Static and Seismic safety for resilience community Behrouz Gordan¹ ¹Engineering Seismology and Earthquake Engineering Research Group (e-seer), Universiti Teknologi Malaysia 81310 Skudai, Johor, Malaysia

A standardised nationwide inventory of New Zealand's stopbank (levee) network Dr Daniel Blake¹, Dr Kaley Crawford-Flett², Eduardo Pascoal³, Dr Matthew Wilson³, Dr Liam Wotherspoon⁴ ¹University Of Canterbury, ²Quake Centre, ³Geospatial Research Institute, ⁴University of Auckland

Developing multipurpose dam assets to maximise value for the community – Providing flood mitigation at Mt Bold Darrell Hamlyn¹ ¹SA Water

Day 2

Stability of embankment dam on highly permeable rock foundations Iain Lonie¹, Jonathon Reid², Brendan Trebilco³ ¹SMEC, ²SMEC, ³SunWater

Mundaring Weir: Examination of potential instability in the stilling basin Soneli Reynolds¹, Bob Wark¹, Alex Gower² ¹GHD, ²Water Corporation

Recent developments considered in the ANCOLD Practice Notes on Design Criteria for Arch Dams Dr Radin Espandar¹, Marius Jonker¹ ¹Entura

Environmental and social challenges of developing small hydropower projects in Uganda, the issues, impacts and benefits Jon Roe¹ ¹WSP

Seqwater Dam Safety Policy Implementation for Management of Dam Safety Risks on Communities Neranjala Fernando¹, Barton Maher¹ ¹Queensland Bulk Water Supply Authority Trading As Seqwater

Valuable assets from defective dams: the role of pumped hydro Mike Westerman¹ ¹Ghd

Namuk Dam, more than 10 years after closure Tri Hartanto¹ ¹Ministry Of Public Works And Housing

Hydro-mechanical commissioning of a novel large-scale triaxial permeameter (TX-P) for testing of widely-graded embankment soils Dr Kaley Crawford-flett¹, Dr Mark Stringer², Dr Sean Rees² ¹University Of Canterbury Quake Centre, ²University of Canterbury

The Role of Agricultural Area Dams in the Development and Sustaining of Resilient Communities in Western Australia Josh Oliver¹, Robert Woods¹ ¹Jacobs

You don't know what you don't know. Tim Mills¹, Tim Logan² ¹Meridian Energy Limited, ²Dam Safety Intelligence

