Total Risk Management in the Privatised Era



Proceedings of a conference held by the

Australian Earthquake Engineering Society

University of Adelaide, Adelaide, Australia

2002

	hed by the Australian Earthquake Engineering Society. The views expressed e of the author(s) and not necessarily those of the Society.
© Australian Earthq	uake Engineering Society
ISBN	0 7340 2910 1
Editors:	M.C. Griffith, D. Love, P. McBean, A. McDougall, B. Butler
Publisher:	Australian Earthquake Engineering Society, Victoria, Australia
Cover Illustration:	The figure of Britannia on the old Exchange Building in Pirie Street Adelaide. In the 1897 Beachport earthquake she sustained a broken arm, the severed section with the shield it held fell with a crash on to the roof. In the 1902 Warooka earthquake she lost the rest of her arm and head. She was dispatched forever in the 1954 earthquake
	Designed by B. Butler

FOREWORD

The Conference Organising Committee welcomes you to what promises to be a most rewarding, stimulating and enjoyable conference.

This volume of the Proceedings of the Australian Earthquake Engineering Society is the 10th in the series published by the Society from its annual technical seminar which have been held every year since 1992 (with the exception of 1995 when the society jointly hosted the Pacific Earthquake Engineering Conference). The theme for the 2002 seminar was "Total Risk Management in the Privatised Era" and was well supported with 33 papers presented including keynote papers by Bruce Esplin (Victoria's 1st Emergency Services Commissioner) and Jonathon Abrahams (Emergency Management Australia) and invited papers by David Brunsden (immediate past president of New Zealand National Society for Earthquake Engineering) and Bruce Bolt (Professor Emeritus, University of California at Berkeley).

Last but not least, the Conference Organising Committee gratefully acknowledges the financial support of the major sponsors (listed below). Without their support, this standard of conference would not have been possible.

Mike Griffith Chair, Conference Organising Committee

With thanks to our Major Sponsors:

TABLE OF CONTENTS

Foreword		iv
INVITED SPEAKER -	MR BRUCE ESPLIN	Paper No.
	EMERGENCY SERVICES COMMISSIONER, DEPARTMENT OF JUSTICE, VICTORIA	1
w w w		
INVITED SPEAKER -	MR JONATHON ABRAHAMS	
	EMERGENCY MANAGEMENT AUSTRALIA	
	Strategic partnerships for managing earthquake risk	2
ច ច ច		
	Pa reinforcement to AS/NZS 4671:2001 on the analysis and design cructures to AS1170.4 - the impacts and risks	of 3
Dynamic analysis of b	peam type structures using artificial response spectra * SINADINOVSKI	4
Some key emergency management issues relating to earthquakes * ALLAN MCDOUGALL		5
earthquake records *	tions of the component attenuation model with real Australian SON AND CVETAN SINADINOVSKI	6
Microtremor survey design optimised for application to site amplification and resonance modelling * MICHAEL ASTEN, NELSON LAM, GARY GIBSON AND JOHN WILSON		
Enhanced interpretation of microtremor spectral ratios using multimode Rayleigh-wave particle motion computations * MICHAEL ASTEN AND TREVOR DHU		
Field investigation on EMAD GAD AND JOHN W	the effect of blast vibrations on residential structures *	9
An innovative approach to the seismic assessment of non-structural components in buildings * NELSON LAM AND EMAD GAD		10
Earthquake risk analysis in Newcastle and Lake Macquarie * GLENN FULFORD, TREVOR JONES, MARK EDWARDS, DAVID ROBINSON AND JOHN SCHNEIDER		11
Eastern Australia *	requency dependant seismic quality factor Q(f) for South GIBSON, DAVID LOVE AND JIM CULL	12

Earthquake Hazard Assessment of Newcastle and Lake Macquarie * DAVID ROBINSON, CVETAN SINADINOVSKI, TREVOR DHU, ANDRES NENDEZ, GLENN FULFORD, TREVOR JONES AND JOHN SCHNEIDER		
Site response analysis - a comparison of methods and scales * SRIKANTH VENKATESAN, TREVOR DHU, DAVID ROBINSON, NELSON LAM, JOHN WILSON AND ANDREW JONES	14	
Fault controlled strong ground motion and seismic hazard * BRUCE BOLT	15	
Earthquake insurance and total risk management * GEORGE WALKER	16	
Australian earthquake engineering: achievements, challenges and obstacles * MICHAEL GRIFFITH	17	
Site Response Analysis in Newcastle and Lake Macquarie TREVOR DHU, ANDREW JONES, STEPHEN FITYUS, TREVOR JONES, DAVID ROBINSON AND JOHN SCHNEIDER	18	
The Sutton earthquake swarm 2001-2002: an aftershock deployment case study MATTHEW LEVINSON AND MARK LEONARD	19	
Possible effects of earthquake on Adelaide's water and sewerage systems JAMES GIFFORD	20	
GPS-Geodetic monitoring of the South West seismic zone of Western Australia: Epoch One Mark Leonard, Dan Clark, Will Featherstone, Jon Kirby, Michael Kuhn, Mike Dentith, Desmond Darby, David Kennedy, Bob McCarthy, Lindsay Schuiling and Brian Hugessen	21	
The Burakin WA Earthquake Sequence Sept 2000 – June 2002 MARK LEONARD	22	
Earthquake and Engineering seismology for community and school audiences JOHN MIGNONE	23	
Understanding the media ADAM THOMSON	24	
Building Certifier's perspective on seismic upgrading of buildings IAN DODD	25	
Seismic upgrade of historic masonry structure: The State Library of South Australia, Jervois Wing PETER MCBEAN AND MARK GILBERT	26	
How the SA Government is managing earthquake risks in a cost-effective manner within the context of strategic asset management GEORGE IANNOS AND DAVID NESS	27	
Critical infrastructure and earthquakes: understanding the essential elements of disaster management DAVID BRUNSDON	28	
Investigation of lifeline interactions using a Geographic Information System JOHN PRABAHARAN AND BERT VEENENDAAL	29	

Some implications of earthquake impact for the Port Adelaide Enfield Council WALTER IASIELLO	30
Recovery from disaster: With particular reference to engineering responsibility BARRY GREAR	31
An introduction to seismic risk assessment of bridges in South Australia PHIL MOLLOY	32
Seismically upgraded structures – Two Adelaide case studies MARK BILLINGER, DAVID COCKBURN AND ADRIAN JONES	33
Index of Authors	viii

Papers marked * were, in accordance with DETYA requirements, subjected to an independent critical review process by two experts from the field in which the material was written.

AUTHOR INDEX

NAME	PAPER NO.
ABRAHAMS, JONATHON	2
ALLEN, TREVOR	12
ASTEN, MICHAEL	7, 8
BILLINGER, MARK	33
BOLT, BRUCE	15
BRUNSDON, DAVID	28
CLARK, DAN	21
COCKBURN, DAVID	33
CULL, JIM	12
DARBY, DESMOND	21
DENTITH, MIKE	21
DHU, TREVOR	8, 13, 14, 18
DODD, IAN	25
EDWARDS, MARK	11
ESPLIN, BRUCE	1
FEATHERSTONE, WILL	21
FITYUS, STEPHEN	18
FULFORD, GLENN	11, 13
GAD, EMAD	9, 10
GIBSON, GARY	7, 12
GIFFORD, JAMES	20
GILBERT, MARK	26
GREAR, BARRY	31
GRIFFITH, MICHAEL	17
HUGESSEN, BRIAN	21
IANNOS, GEORGE	27
IASIELLO, WALTER	30
JOHNSON, ANDREW	3
JONES, TREVOR	11, 13, 18
JONES, ANDREW	14, 18
JONES, ADRIAN	33
KENNEDY, DAVID	21
KIRBY, JON	21
KOT, RAY	4
KUHN, MICHAEL	21
LAM, NELSON	6, 7, 10, 14
LEONARD, MARK	19, 21, 22
LEVINSON, MATTHEW	19

AUTHOR INDEX

NAME	PAPER NO.
LOVE, DAVID	12
MCBEAN, PETER	26
MCCARTHY, BOB	21
MCDOUGALL, ALLAN	5
MIGNONE, JOHN	23
MOLLOY, PHIL	32
NENDEZ, ANDRES,	13
NESS, DAVID	27
PRABAHARAN, JOHN	29
ROBINSON, DAVID	11, 13, 14, 18
SCHNEIDER, JOHN	11, 13, 18
SCHUILING, LINDSAY	21
SINADINOVSKI, CVETAN	4, 6, 13
THOMSON, ADAM	24
VEENENDAAL, BERT	29
VENKATESAN, SRIKANTH	14
WALKER, GEORGE	16
WILSON, JOHN	6, 7, 9, 14