Workshop & Lecture Series
On Dam Safety and Dam Engineering

Organised by: Centre for Infrastructure Engineering and Management and
Griffith School of Engineering,
Griffith University Gold Coast Campus

Module 1: Dam Safety, Dam Regulation (Tuesday, 25th March 2008)

Module 2: Dam Safety, Risk Management (Wednesday, 26th March 2008)

Module 3: Tailings Dams and Storages (Thursday, 27th March 2008)

Module 4: International Dams Experience (Friday, 28th March 2008)

Date: 25th to 28th March 2008

Venue: Griffith University Gold Coast Campus
Multimedia Building G23_2.07A

See "Registration form" for daily registration

For additional information please contact (preferably by e-mail)
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GRIFFITH UNIVERSITY QLD 4222
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http://qld.engineersaustralia.org.au/jetspeed/static/events/7420/GUWorkshopLectureSeriesOnDamSafetyDamEngineering2528.3.08.pdf

INTRODUCTION

In the recent years, the Griffith University has developed a very strong interaction with the industries through the organization of well structured Short courses, Workshops and lecture series. These activities are found to be very fruitful in constantly upgrading the geotechnical Civil and Mining Engineers, Engineering Geologists and Rock Mechanics specialists. The topics cover Foundations, Earth Structures, Tunnels, Pavements, Soil & Rock Behaviour, Ground Improvement, Site Investigation, Laboratory and In-situ tests and Numerical Analysis using PLAXIS, FLAC and other Softwares. Outstanding academicians and practitioners are carefully selected from Australia and abroad so that the participants could enjoy authoritative lectures being presented by highly experienced and most knowledgeable people in the various chosen field of interest.

In line with the above objective, the March 25-28 event is devoted to Dam Engineering and Dam Safety. Of the numerous excellent people invited to deliver lectures, the following has accepted to help us with this important activity: Mr. Peter Allen, Dr. Gamini Adikari, Mr. Malcolm Barker, Mr. Peter Burgess, Mr. Ranji Casinader, Prof. Pedro Pinto, Dr. Noppodol Phienwej, Dr. Neil Mattes, Mr. Sergie Terzaghi, Dr. Nihal Vitharana, and Prof. Bob Whiteley. All these experts have decades of experience in Dam Engineering and Dam Safety.

The lecture materials are divided into four Modules one per each day titled:

Module 1: Dam Safety, Dam Regulations

Module 2: Dam Safety, Risk Management

Module 3: Tailing Dams and Storages

Module 4: Embankment Dams, Rockfill Dams and Pump storage Plants

DAILY PROGRAMME

Day 1: Tuesday 25 March 2008

Dam Safety, Dam Regulation

9.00 – 9.10 am: Introduction and Welcome

9.10 – 10.15 am: **Safety Management of Dams – The Australian Practice – Dr Gamini Adikari**

10.15 – 10.30 am: **Coffee Break**

10.30 – 11.30 am: **Dam Safety Regulation – Peter Allen**

11.30 – 1.00 pm: **Lessons from Dam Incidents and Risks to Dams – Norm Himsley**

1.00 – 1.45 pm: **Lunch**

1.45 – 2.45 pm: **Challenges in Assessing and Upgrading Earthen Embankment Dams – Dr Nihal Vitharana and Sergie Terzaghi**

2.45 – 3.00 pm: **Coffee Break**

3.00 – 4.00 pm: **Seismic Design of Dams – Application of ANCOLD Guidelines – Dr Gamini Adikari**

4.00 – 5.00 pm: **Stability Assessment of Concrete Gravity Dams – Dr Nihal Vitharana**

Day 2: Wednesday 26 March 2008

Dam Safety, Risk Management

9.00 – 10.30 am: **Process of Risk Analysis and the Use of Workshops – Malcolm Barker**

10.30 – 10.45 am: **Coffee Break**

10.45 – 11.45 am: **Failure Modes Analysis – Malcolm Barker**

11.45 – 12.45 pm: **ALARP Principles and Application to Dam Upgrade design – Malcolm Barker**

12.45 – 1.45 pm: **Lunch**

1.45 – 3.00 pm: **Flood Overtopping Analysis and Failure Evaluation – Malcolm Barker and and James Willey**

3.00 – 3.15 pm: **Coffee Break**

3.15 – 5.00 pm: **Concrete Faced Rockfill Dams – Design, Construction and Operation – Ranji Casinader**

Day 3: Thursday 27 March 2008

Tailings Dams and Storages

9.00 - 10:30 am: **State of the Art in Tailing Storage Facilities - Peter Burgess**

10:30 - 10:45 am: **Coffee Break**

10:45 - 11.45 am: **Tailings Storages – Planning and Design –Dr. Neil Mattes**

11.45 - 12.45 pm: **Embankment Stability and Staged Construction in Design - Peter Burgess**

12:45 - 1:45 pm: **Lunch**

1.45 - 3.00 pm: **Technical Specifications and Construction Aspects - Peter Burgess**

3.00 – 3.15 pm: **Coffee Break**

3.15 – 4.00 pm: **Tailings Storages Construction & Operation – Dr. Neil Mattes**

4:00 - 5.00 pm: **Sustainable Tailings Management – Regulatory Aspects – Russ McConnell**

Day 4: Friday 28 March 2008

Recent Developments, Future Challenges

9.00 – 10.30 am: **New Developments in Embankment Dam Design - Professor Pedro Pinto**

10.30 – 10.45 am: **Coffee Break**

10.45 – 12.30 pm: **Quality Control and Monitoring of Embankment Dams - Professor Pedro Pinto**

12.30 – 1.30 pm: **Lunch**

1.30 – 3.00 pm: **Case Histories of Rockfill Dams and Pump Storage Plants – Part I - Dr Noppodol Phienwej**

3.00 – 3.15 pm: **Coffee Break**

3.15 – 4.00 pm: **Case Histories of Rockfill Dams and Pump Storage Plants – Part II - Dr Noppodol Phienwej**

4.00 – 5.30 pm: **Role of Engineering Geophysics in Dam Engineering - Professor Bob Whiteley**

5.30 – 5.45 pm: **Summary and Closure**

Griffith UNIVERSITY

Registration Form

Griffith University ABN 78 106 094 461

Workshop and Lectures for Dam Engineering

Griffith University, Gold Coast, 25th to 28th March, 2008

Email: a.bala@griffith.edu.au | **Fax**: +61(0)7 5552 8065 | **mail**: Prof. A. S. Balasubramaniam, Griffith School of Engineering, Gold Coast campus, GRIFFITH UNIVERSITY QLD 4222

DETAILS OF ATTENDEE

First Name:	**Last Name:**
Organisation:	
Email:	
Phone:	**Mobile:**
Fax:	
Postal Address:	
State:	**Postcode:**

WORKSHOP FEES (25th to 28th March 2008)

Please indicate day of participation and total amounts

- □ **AUD $ 390 - Tuesday, 25th March**
- □ **AUD $ 390 - Wednesday, 26th March**
- □ **AUD $ 390 - Thursday, 27th March**
- □ **AUD $ 390 - Friday, 28th March**

TOTAL AMOUNT: [AU$_____]

PAYMENT METHODS

□ **CHEQUE ENCLOSED**

All Cheques crossed and payable to Griffith University (Griffith University is GST registered, ABN 78 106 094 461) Mail cheques to Prof. A. S. Balasubramaniam, Griffith School of Engineering, Gold Coast Campus, GRIFFITH UNIVERSITY QLD 4222

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Please send your REGISTRATION FORM **by 20th March 2008.**
This will help us to operate this workshop more efficiently.

Bio-data of Speakers in Dams (not in any order)

(1) Professor Pedro Sêco e Pinto :ISSMGE President (2005-2009) --

Pedro S. Sêco e Pinto is Licenciated in Civil Engineer (6 years course) (with honours) in 1971, maintained a link with the industry between 1971-1975, received Master of Engineering (with honours) in 1977. He was awarded two academic degrees Specialist in Geotechnique (Ph.D. Degree), with honours, in 1983 and Principal Research Engineer (Full Professor degree), with high honours, in 1992 at LNEC. He was elected Vice-President for Europe 2001-2005.

He is Full Professor of Geotechnical Engineering of University of Coimbra (since 1994) and Invited Professor of University New of Lisbon (since 1983). He was Invited Lecturer in University of California (1992-1994). He served as Chairman of TC4 "Earthquake Geotechnical Engineering"(ISSMGE) (1994-1999) and President of Portuguese Geotechnical Society (1996-2000). He was Head of Division at LNEC from 1986- 2004.

He has acted as United Nations Consulting for Design, Instrumentation and Surveillance Technology for Dams and other Hydraulic Structures. He is a member of Portuguese Commission on Dams, Portuguese Commission on Dams Codes and Seismic Aspects of Dams Committee of ICOLD. He has been an active consultant working on major projects throughout Europe, Asia, Africa and South America. He is author or co-author of 300 technical reports and more than 100 papers for journals, national and international conferences. He is editor of proceedings for 4 international conferences on Earthquake Geotechnical Engineering and Environmental Geotechnics and contributed for four books. He has presented special lectures and state-of-the art reports and selected contributions in more than 60 countries in the 6 Regions.

His principal areas of interest include soil dynamics, earthquake engineering, embankment dams, special foundations, tunnelling and environmental geotechnics. He is a member of several national and international Societies, Technical Committees and Editorial Boards and has participated in several European Community Projects. He has been organizer and co-organizer of more than 15 national and international conferences, symposia and seminars. He has received many awards and honours.

(2) Malcolm Barker

Malcolm has 33 years experience in the design, construction and safety of dams and canals and their associated works. This work has included Feasibility, Design, Construction, Safety Review and risk analysis of dams in Zimbabwe, South Africa, Canada and Australia.

While working for the Department of Water Affairs in South Africa, he built up six years of experience in the field of dam safety and risk analysis, carrying out inspections and producing reports for 18 dams varying from 12 m to 108 m in height. Risk analysis was carried out for each dam requiring the evaluation of the initiating events, likely failure modes, probabilities and consequences of failure resulting from the dam break to determine the total risk of dam failure. He developed a method of prioritization for remedial works on State dams which relied on ranking obtained from the risk analysis results.

In Canada he was involved in the detailed risk analysis of the B.C. Hydro Seven Mile Dam which is an 80 m high concrete gravity dam located in British Columbia. The risk assessment was to determine whether the dam would meet the current B.C. Hydro risk criteria for financial, societal and individual risk and evaluate remedial options if necessary required for the dam to meet the risk criteria. The risk analysis was for all initiating events and modes of dam failure and required particular attention to the equipment reliability and seismic considerations.

Since arriving in Australia in January, 1998, Malcolm has served on the working group for the preparation of the ANCOLD guidelines for Hazard Assessment and Risk Assessment and the ANCOLD Consequence Guidelines.

He has carried out a number of detailed risk assessments for dams including the following more significant projects:

- Thomson Dam (Melbourne Water) an extreme hazard category dam with a central core rockfill main embankment of 166 m high and 590 m long and a central core rockfill saddle dam of 34 m high and 570 m long, a concrete ogee chute spillway of 30 m long and a twin intake tower leading to a tunnel on the right bank.

- Cairn Curran Dam (Goulburn Murray Water), which is a High A hazard category dam and comprises a zoned earthfill main embankment of height 44m and 660m in length, a secondary homogeneous earthfill embankment of 14m height and 850m in length, a primary spillway with three radial gates of 8m high, an auxiliary uncontrolled saddle spillway and a wet tower intake leading to a tunnel below the embankment.

- Ross River Dam Design validation model (NQ Water) used to ensure compliance with the Queensland dam safety regulator requirements, which are based on the ANCOLD Risk guidelines. Ross River Dam is an Extreme hazard dam and comprises an embankment dam of maximum height about 20m and length of 7700m with a concrete gravity spillway section of 40m width.

- Rocklands dam risk assessment (Grampians Wimmera Mallee Water Authority) for safety evaluation and identification of potential remedial options. The dam is a concrete gravity structure with central concrete corewall rockfill embankments on both abutments. The spillway is an ogee of 154.5m long and 25m height with adjacent non overflow sections of 117m long and the embankment of about 210m long with height up to 10m.

- Eildon Dam (Eildon Alliance) risk assessment for the embankment design options including spillway gate reliability and the effect on reservoir level and failure probability. Eildon dam is an earth and rockfill embankment of about 940m in length with a maximum height of 80m and a gate concrete gravity spillway with vertical lift gates. Also completed a detailed evaluation of construction risks and appropriate methodology to minimize the risk due to flood failure during the construction.

- Blue Rock Dam (Southern Rural Water) risk assessment for a 74m high central core rockfill dam. Failure modes effects and criticality analysis and initiating event screening was used to focus attention on the most likely failure initiating events and failure modes for event tree calculation of failure frequencies and risk data.

(3) Peter Allen graduated in Civil Engineering from the University of Queensland in 1974 and completed his Master of Engineering Science in 1985.
He has worked for the Queensland Department of Natural Resources and Water and its predecessors since graduation. He has been in a number of roles in NRW ranging from design engineer for such dams as Wivenhoe, Burdekin Falls, Kroombit and Peter Faust through to a role as the Senior Flood Operations Engineer for flood operations at Wivenhoe Dam, Somerset Dam and North Pine Dam.

Peter is currently the Director Dam Safety (Water Supply) and, as such, is the Dam Safety Regulator for Queensland. The regulatory role includes ensuring dam owners establish and maintain appropriate dam safety management programs for their dams.
He was instrumental in establishing Queensland's Spillway Adequacy Guideline and was also a member for the ANCOLD Risk Assessment and Dam Safety Management Guideline committees and was convenor of the ANCOLD 2000 conference in Cairns. Peter was the ANCOLD Secretary between 2003 and 2005.

(4) Dr Neil Mattes is a specialist civil/geotechnical engineer with more than 35 years professional experience, including 25 years in senior geotechnical management roles in the power generation and consulting fields. He is a Senior Principal of URS Australia, based in their Sydney office.
His special areas of expertise are the geotechnical aspects of the development of thermal power stations, large mineral processing plants and surface infrastructure for mines, and the investigation, design, construction, surveillance and rehabilitation of embankment dams for tailings storage and mine water management, and in recent years his tailings dam work has occupied the vast majority of his time.
His current tailings storage projects include investigation, design and construction review responsibility for tailings storages at Cadia, Cracow, Telfer and Gosowong (all Newcrest Mining sites) and Cowal Gold Mine (for Barrick Australia Limited). He is also preparing the conceptual design for tailings storage for the Balla Balla Titanomagnetite project in Western Australia, and was responsible for the tailings aspects of the Bankable Feasibility Studies for the Cibaliung project and for Perseverance Gold Mine in Victoria.

(5) Dr. Noppadol Phienwej holds a doctoral degree in Civil Engineering from University of Illinois at Urbana-Champaign, U.S.A. He has 25 years of experience in geotechnical engineering as an academician and consultant; with ample experiences in the various aspects of dam engineering. He has been involved with investigation, design, construction supervision and rehabilitation of more than 20 dams in Thailand as well as a number of trans-basin water diversion projects. Major dam projects that he worked on are for instances, the world longest RCC Tha Dam , Lam Ta Khong Pumped storage project, Kwaenoi dams, Madua dam, Lam Moon Bon dam, Lam Sae dam, Lam Pao dam, etc. Currently, he is participating as geotechnical advisors in the design and construction of a number of major hydropower projects in Indochina and Myanmar, i.e. Nam Ngum 2 project, Nam Ngum 3 project, Nam Bak project, Xaiyaburi project and Hutgyi project. In 2000, he served as one of the four expert members of the panel appointed by Food and Agriculture Organization of the United Nations to conduct dam safety review of major dams in the Chao Phrya River Basin. Currently, he is leading a team in the development of a guideline of dam safety assessment for the greater Mekong countries under the Asian Infrastructure Review Center established at the Asian Institute of Technology.

Dr. Noppodol is the Associate Dean of School of Engineering and Technology of Asian Institute of Technology: He is also the Head of the Geotechnical and Geoenvironmental Engineering Programs at AIT, within the Civil Engineering School. Dr. Noppodol is heavily involved with professional society and community service activities for instances, twice as advisor to the Minister of Transport of Thailand, and an advisor to a number of state enterprises responsible for infrastructure and utitilities development. He serves as a liaison person of Thailand National Group of the International Tunneling and Underground Space Association and was the past chairman of that group. He is also the editor of the Geotechnical Engineering Journal of the Southeast Asian Geotechnical Society and serve on editorial board members of two leading international journals, i.e. Tunneling and Underground Space Technology and Felsbau. He was also the past chairman of the Geotechnical Committee of the Engineering Institute of Thailand and was also a member of its

Executive Committee. He has been involved with a number of major infrastructure development projects in Thailand and Southeast Asian countries (hydropower dams, irrigation dams, power plants, tunnels, airport, and mines). Recently, he served on two important committees for development of the new Bangkok International Airport project (Suvarnabhumi Airport).

(6) Dr Gamini Adikari is the Principal Engineer Dams of SMEC Australia and is based in Melbourne. He has over 30 years experience in dam engineering in the water resources industry in Australia, Asia, Africa and Europe. His areas of expertise include safety management, technical assessment, design, investigation and numerical modelling of dams associated with water supply, irrigation, hydropower, mining and recreation projects.

Gamini holds a Bachelor of Engineering degree in civil engineering, a Masters Degree in geotechnical engineering and Ph D in dams engineering. His specialist experience in geotechnical engineering of embankment dams has enabled him to be involved directly in over 100 dam projects across 4 continents. He has managed over 300 different projects involving dams and geotechnical aspects during his professional career to date, most of which in Australia. More recently, he has completed World Bank funded projects to develop a dam safety regulatory framework for Uganda and a dam safety implementation program for Sri Lanka. He is also the Team Leader of the Dam Safety Management Group of SMEC Australia and is directly involved with all aspects of safety review, condition assessment, dam safety inspections and reporting of behaviour of many large and referable dams in Australia and overseas. He has published widely in the field of dam engineering and has conducted numerous seminars, courses and workshops in the fields of numerical modelling, dam safety and rehabilitation, and behaviour of dams.

Gamini is a Fellow of the Institution of Engineers Australia, the Institution of Civil Engineers United Kingdom and a member of five other national and international professional societies. He was the Honorary Secretary of the Australian National Committee on Large Dams (ANCOLD) from 2000 to 2003 and in addition, has served as a member of the ANCOLD Technical Committees that developed the Guidelines on Design of Dams for Earthquake and the Guidelines on Dam Safety Management.

(7) Dr. Nihal Vitharana is the Principal Dam Engineer of Sinclair Knight Merz (SKM) and received his PhD from University of Canterbury in New Zealand. His earl education was in University of Moratuwa, Sri Lanka and University of Sydney and Deakin University. Nihal has in excess of twenty-four years' professional experience in dams, geotechnical, earthquake, water resources and infrastructure engineering. Nihal is our Practice Leader for Dam Engineering and as such is responsible for the technical quality of dam related engineering services. Nihal is also a specialist in the design of water-retaining, hydraulic and desalination structures with respect to structural, seismic and durability aspects.

Nihal has worked as Principal Engineer/Manager for major dam designs such as Churchman Brook, Hinze, Millbrook, Harvey, Serpentine, Waroona and Wolkalup where is work included task management, design and the supervision of drawings and specifications. His work experience includes assignments in Australia, China, New Zealand, and Sri Lanka, Papua New Guinea, Fiji and Japan.

Nihal has undertaken nearly 40 dam safety assessments covering the spectrum of dam engineering. He has published and presented 50 papers at national and international conferences and a range of journals focussed on dam, structural and geotechnical engineering. He holds post-graduate qualifications in structural, geotechnical, hydraulics and civil engineering. Nihal is familiar with the ANCOLD / ICOLD Guidelines and other dam-related standards such as United States Bureau of Reclamation (USBR), US Army Corps of Engineers (USACE), Canadian Dam Safety Association (CDSA).

(8) Peter Burgess is the Senior Principal, Coffey Geotechnics. Peter graduated from Sydney University in 1961 with 1st Class Honours in Geology, specialising in Engineering Geology. After graduation he worked for the Snowy Mountains Hydro-Electric Authority as a Scientific Officer where he carried out geological mapping along proposed tunnel routes, dam foundations, quarries and roads. The site investigations involved overseas work in Thailand, Laos, Malaysia and Cambodia. In these countries the projects involved a major dam site on the Mekong River, and Major Irrigation projects in Cambodia. In 1967 - 1968 he was awarded a Rotary Foundation Fellowship for International Understanding which allowed post graduate study at Grenoble University in France. In 1969 Mr Burgess was engaged as site engineering geological consultant for the construction of Ord River Dam in WA. From 1971 to 1978 Mr Burgess was Senior Engineering Geologist with Coffeys and was responsible for a large number of site investigations in Australia and Overseas including mining, commercial and Industrial Developments. Between 1978 and 1994 Mr Burgess ran his own geotechnical consultancy, specialising in dam engineering, tailings dam design and construction. Notable projects during this period were the Ranger Uranium Mine Tailings Dam in the NT and the Rum Jungle Mine Rehabilitation project. Both of these projects involved design specification and supervision of construction of environmentally sensitive works in areas of National Park and World Heritage values. A number of other mining and tailings projects were also taken into the Peter J. Burgess & Associates practice. Mr Burgess rejoined Coffeys in 1994 as Senior Principal Engineering Geologist. He is currently primarily engaged in Water Supply, Waste Storage and Tailings Dam design construction projects in Australia and overseas. Peter Burgess is a former chairman of the Sydney Geomechanics Society, and former mining company representative on OECD and IAEA committees on the Long Term Storage of Uranium Mill Tailings. He has worked as an engineering geologist for the Snowy Mountains Hydroelectric Authority and the Western Australian PWD, and subsequently Principal in the following firms of consulting engineers: Coffey Partners, McMahon Burgess and Yeates, and Peter J Burgess and Associates.

(9) Norm Himsley , a Fellow of Enineers, Australia, has over thirty five years experience in the planning, investigation, design, construction, operation and maintenance of major engineering structures and infrastructure including buildings, dams, roads, bridges, power stations and water and sewage distribution and treatment.
Norm is currently the Executive Engineer of the NSW Dams Safety Committee charged with setting and auditing the safety standards of the 327 prescribed dams in NSW to protect the community from dam failures. As part of this work for the last fifteen years he has set up in the TAFE System, and run, regular training programmes for dam operators and owners both in NSW and throughout Australia and New Zealand. He has also been involved in, or chaired, several working groups in the preparation of ANCOLD Guidelines on various dam management subjects.

Norm has been actively involved for over ten years with Engineers Australia, working in the education and assessment area, and has been Chair of Sydney Division's Education and Assessment Committee since 2000. In 2005, he was President of Sydney Division and represents Sydney Division on National Congress.

(10) Dr Robert J Whiteley is the Senior Principal Geophysicist, Coffey Geotechnics. Bob has been a geophysical consultant to Coffey Partners International Pty. Ltd (now Coffey Geotechnics) since 1974. In 1991 he joined the company as Principal Geophysicist and Manager of Coffey Geophysics and is now Senior Principal Geophysicist. Dr. Whiteley commenced his career in Engineering Geophysics with the Bureau of Mineral Resources (now the Australian Geological Survey Organisation). He then worked in the mineral industry as a general manager and senior

exploration geophysicist/geologist. In 1972 he joined the academic staff of School of Applied Geology, University of New South Wales. While at UNSW Dr. Whiteley established and directed two consulting and contracting companies specialising in engineering, marine and groundwater geophysics. From 1984 to 1986 he was Associate Professor in the Division of Geotechnical Engineering, Asian Institute of Technology, Bangkok and Senior Lecturer at the University of New South Wales until 1988. Dr. Whiteley has an extensive consulting and research background in engineering, groundwater and environmental geophysics with over 100 published scientific papers and one book.

He is recognised as one of Australia's leading Engineering and Environmental Geophysicist. In 1990 he gave the Keynote address on Remote Sensing and Geophysical Techniques to the 6th Congress of the International Association of Engineering Geology in Amsterdam. In 1991 he received a best paper award at the 8th International Conference of the Australian Society of Exploration Geophysicists in Sydney. In 1994, 1997 and 2004 he presented the Keynote addresses on Engineering and Environmental Geophysics at the 10th, 13th and 17th International Conferences of this Society. He was second vice president of the ASEG from 1974 to 1976 and from 1995-2005 he was a core member of Technical Committee TC10 (Geophysical Site Characterisation) of the International Society of Soil Mechanics and Foundation Engineering. Dr. Whiteley has worked on and managed projects throughout Australia and in Bangladesh, China, Hong Kong, India, Indonesia, Malaysia, The Netherlands, New Caledonia, New Zealand, Pakistan, Philippines, PNG, Singapore, Solomon Islands, Thailand, Vietnam, United Emirates and USA. He has been a consultant to Ausaid, the United Nations and the Asian Development Bank in the Natural Resources Sector.

(11) Ranji Casinader is a water resources engineer of 0ver 50 years experience, for the first 31 years of which period he worked with public utilities and consulting engineering firms, being directly responsible for the design and management of projects for about 12 years. Between 1983 and 2003 he was an Independent Consultant providing review and advisory services particularly on dam projects to owners, consulting engineering firms, contractors and international aid agencies. Since retiring from full-time work in 2003, he has acted when invited on as a review and advisory consultant on dams and water resources.

The dams he has been engaged on have ranged in height from 6 m to 130 m, and include concrete gravity, concrete arch, earthfill and rockfill embankment dams (including a number of concrete faced rockfill dams). His expertise also includes the appurtenant structures to dam projects, including intake and outlet works, spillways, pumping stations, tunnels and pipelines. He also has substantial experience in the monitoring, safety review and rehabilitation of dams.

Ranji was educated at Cambridge University and he is a Fellow of ICE London and EA. He has worked on all types of dams over the last 45 years.

With earth core rockfill dams he has been involved with Llyn Brianne in Wales; Kossou & Taabo in Ivory Coast; Mamak , Sermo, Wadaslintang & Wonorejo in Indonesia; and Bago in Philippines. With concrete faced rockfill dams he has worked on Sugarloaf main dam, Split Rock in Australia; Kotmale in Sri lanka; Tuapeka in new Zealand; Shanxi, Zhejiang Province in China; and Pnre Ponre dam in Indonesia. He was also involved with several earth dams in Sabah, Malaysia and Pengga Indonesia. On the concrete gravity dams, his experiences are in Cluanie, Loyne and Beannachran, Scotland; Ok Menga in Papua New Guyinea and Kali Gandaki in Nepal. Also on a concrete arch dam in Monar Scotland and several tailking storages in the copper mines of Iran.