TABLE OF CONTENTS

1. INTRODUCTION AND OBJECTIVES ........................................4
2. CURRENT DEPARTMENTAL STRUCTURE ...............................6
3. COURSES OFFERINGS ......................................................9
4. RESEARCH AND DEVELOPMENT .....................................10
5. STRATEGIC DIRECTIONS FOR THE FUTURE ...................30
6. PROFESSIONAL ACTIVITIES ............................................30
7. FUNDING POSITION .......................................................38

Civil Engineering Building – Clayton Campus
1. Introduction And Objectives

The Year 2001 saw the Department of Civil Engineering expand its activities in research, teaching and professional services. The Department continued to provide a high level of teaching and research output while positioning itself for future change. Its mission is "To provide high quality Civil Engineering education, research and professional services globally for the mutual benefit of the students, the staff, the University, industry, the profession and the wider community".

Undergraduate Teaching

The Department completed the development of its new undergraduate program. The Department commenced its new Level 2 subjects in 1999. The subjects are given in a problem-based learning mode and represent a learning experience for both students and academic staff. The subjects involve larger and more integrated projects and groupwork. New level 4 subjects were developed for presentation in 2001. The development of the associated courseware is allowing greater flexibility of learning and presentation of the course.

Postgraduate Education Programs

The Institute of Transport Studies distance education postgraduate program in transport studies continues to expand. The program involves industry courses, Graduate Certificates, Postgraduate Diplomas and Masters degrees (coursework only) in transport and traffic. It is possible to articulate from industry courses upward through to the Masters degree. All subjects will be offered by distance education.

The Department initiated a Master of Infrastructure Engineering and Management program in 2001. The program involves core subjects in Project Management, Evaluation and Asset Management. The first students into the program will be accepted in 2002.

Industry Education Programs

The Institute of Transport Studies still maintains its activities in the Bus and Coach and Parking industries. The programs have attracted considerable student support. Industry is involved in the ongoing development of the program.

The Water group continues to offer a series of technology transfer programs to industry. These are well received and have provided training to over 50 practitioners.

The Geomechanics group offers short courses in Environmental Geomechanics.
Research

Strong research activities have continued in the key departmental strengths of structural, water, geomechanics and transport engineering. One hundred and twenty research projects have provided the focus for staff during 2001. Research funding support of $1,634,720 has been attracted to support these projects. The Department has 40 PhD and 20 MEngSc students.

Staff members were involved in the preparation of 3 book chapters, 21 journal articles, 56 conference papers and 2 research reports. Ten PhD and one Master of Engineering Science theses and a Graduate Diploma in Structural Engineering were completed in 2001. Staff attended 38 conferences. Staff, research students and visitors presented 28 seminars on their research and activities during the Departmental seminar series.

Visitors and Visits

The Department hosted 8 visitors from all parts of the world. These visitors worked closely with departmental staff to develop research and teaching activities. The linkages developed between staff and these visitors ensure the maintenance of high standards of research and teaching as well as the strengthening of links between the department and other universities throughout the world. Departmental staff visited 16 institutions in 2001.

External Activities

Staff members were involved in the review of paper and journal editorial committees on 41 occasions and presented 15 seminars at other institutions. They were also involved in 27 professional associations.

Centres

CRCCH (Cooperative Research Centre for Catchment Hydrology)

The Cooperative Research Centre (CRC) for Catchment Hydrology is headquartered in the Department, with Professor Russell Mein as its full time Director. This CRC brings together, in a cooperative venture, four research and ten user organisations from Victoria, New South Wales and Queensland. All of the water-related staff in the Department are involved in the Centre, contributing to its Catchment Prediction, Sustainable Water Allocation, Urban Stormwater Quality and River Restoration Programs.

The CRC is now two and a half years into its second seven-year term of funding and performing well. A major independent review of the Centre has just been completed, with the Panel giving a highly favorable report to the quality of the research being done, the communication and adoption strategies and to general management of the Centre. Full details can be found on the Centre’s web site at www.catchment.crc.org.au
ITS (Institute of Transport Studies) Monash Node

The Institute of Transport Studies has developed its teaching activities rapidly in 2001. The introduction of a distance education program for the Bus and Coach industry has resulted in attracting over 400 students. The Parking Education program continues to attract students.

The Institute of Transport Studies has increased its research student base and has focused on research in Intelligent Transport Systems area.

Staff Profile Management

The Department of Civil Engineering has continued to increase its staffing through the centres it is associated with and external research funding. Staffing from traditional government funds have decreased during 2001.

2. Current Departmental Structure

In 2001, the Department operated through four sections: Geomechanics, Structures, Transport and Water, headed respectively by Dr M. Bouazza, A/Prof. R. Grzebieta, Dr G. Rose, Assoc. Prof. T. Wong.

The Management Committee consisted of Prof W. Young (Chair), A/Prof C. Haberfield (Deputy Head of Department and Director of Research, Semester 1), Prof X.L. Zhao (Director of Research, Semester 2), A/Prof G. Codner (Deputy Head of Department, Semester 2; Director of Teaching), Mr C.D. Powell (Director of Support Services).

Current Staff Numbers:

| Number of academic teaching staff: 22 | Number of technical staff: 13 |
| Associates of Department: 8 | Number of secretarial/admin/manag. Staff: 9 |
| | Number of research fellows/assistants*: 4/7 |
| | * appointment not necessarily for whole year |

Staff Changes:

New appointments:
Dr Stephen Greaves
Dr Jayantha Kodikara
Dr Fashliur Rahman
Dr Xu Fan Gu

Resignations:
A/Prof. C. Haberfield
Dr J. Seidel
Mr Roger Doulls
Mr Len Doddrell
Mr Carl Bakes

Promotions:
Dr XiaoLing Zhao (Professor, Chair of Structural Engineering)
Dr Geoff Rose (from Senior Lecturer to Associate Professor)

Retirements:
Professor Paul Grundy
Mr Keith McKenney
List of Staff:

Head of Department
Professor William Young BE (Hons) N.S.W. MSc PhD GradDipMgt Deakin MBA Deakin FIEAust FITE FCIT CPEng

Professors
Russell Gordon Mein BAgrE(Hons) MEngSc Melb. PhD Minn. FIEAust
William Young. BE (Hons) N.S.W. MSc PhD GradDipMgt Deakin MBA Deakin FIEAust FITE FCIT CPEng
Xiao-Ling Zhao PhD Syd. ME Shanghai Jiao-Tong MASCE MIEAust CPEng MCCES

Emeritus Professors
Eric Marwick Laurenson BE (Hons) PhD N.S.W., CPEng, FIEAust
Paul Grundy BCE(Hons) MEngSc Melb. PhD Cantab. FIEAust MISOPE CPEng

Adjunct Professors
Kenneth Wade Ogden BE (Hons) MEngSc Melb. DipCE Ballarat School of Mines PhD MITE FIEAust CPEng
Rahmi Akcelik MSc Istanbul Technology University PhD Leeds
Tony Richardson BE (Hons) MengSc UNSW PhD FIEAust MITE

Associate Professors
Gary Peter Codner DipCE Caulfield I.T. BE (Hons) MBA PhD FIEAust
Chris Michael Haberfield BSc BE (Hons) Syd. PhD MIEAust CPEng
Robert John Keller BE (Hons) PhD Cant. MASCE MIEAust MIPENZ
Henry Robert Milner BE MEngSc Qld. PhD Lond. FIEAust. CPEng NPER AIWSc
Tony Hoong Fatt Wong BE PhD CP Eng MIEAust MASCE
Raphael Hilary Grzebieta Mgrnz (Hons) T.U. Cracow PhD MIEAust CPEng NPER MSAEA, MSAE
Geoffrey Rose BE (Hons) Queensland I.T. MSc PhD Northwestern MIEAust

Senior Lecturers
Riadh Al-Mahaidi BSc (Civil Eng) (Hons) Baghdad MSc PhD C’nell MIEAust
MASCE CPEng
Abdelmalek Bouazza CivEng Algiers PhD Glas.
Roger George Hadgraft BE (Hons) MEngSc James Cook DipCompSc Qld PhD
Jayantha Kodikara BSc Peradeniya PhD MITE MARGS
Jay G Sanjayan BSc(Eng) (Hons) S. Lanka Ph.D MIEAust
Julian Peter Seidel BE (Hons) PhD MIEAust CPEng
Geoffrey Robert Taplin BE(Hons) Tas. MEngSc PhD CPEng NPR MICE MStructE MIEAust
Peter Erwin Weimann DiplIng ETH (Zurich) MEngSc MIEAust CPEng
Man-Biu (Bill) Wong BSc (Eng) Lond. PhD N.S.W. CEng MICE, MIEAust, CPEng

Lecturers
Keith Harry McKenney BE MEngSc Melb. CPEng MIEAust
Jagoda Williams BE MEngSc Warsaw PhD Polish Acad. Sci. MASCE
Richard Murray Wootton BE Melb. DipCE Caulfield I.T. MEngSc TTTT
Stephen Greaves BA Leeds MSc Wales PhD Louisiana MITE MITPC MICIT
Assistant Lecturer
Astrid de Alwis BA GDipT&DMgt RMIT MCIT

Research Staff
Wei Dong Guo BE (Hons) Hohai MengSc Xi’an PhD UWA
Xu Fan Gu PhD
Roger Zou PhD Tas.
Tim Fletcher B.For.Sc.(Hons) Melb Ph.D Melb
Sergei Schreider PhD ANU
Hugh Duncan B.E.(Hons) M.EngSc
Justin Lewis
Fashiru Rahman BScEngg(Civil) MS Melb PhD VUT

Associates of the Department
ian Boyd Donald BCE (Hons) MEngSc Melb. PhD DIC Lond. MIEAust
Stuart Martin Cannon BSc (Hons) Plymouth UK MSc Cranfield PhD Brun. CEng UK
MRINA MSNAME
Geoffrey William Smith DipCE R.M.I.T. BE MEngSc Melb. CPEng FIEAust AIWSc
Barbara Ozarska MWood Tech PhD Poznan
Zuyu Chen BE Tsinghua PhD Tsinghua
Frank Collins BE Syd MengSc Syd PhD

Administrative Staff
Chris Powell (Director, Support Services)
Dominique Thomson (Administrative Assistant to the Head of Department)
Jenny Manson (Postgraduate Studies Administration Officer)
Irene Sgouras (Undergraduate Studies Administration Officer)
Helen Parker (Administrative Assistant, Support Services)
Noi Souvandy (Administrative Assistant, Support Services)
Brenda O’Keefe (Manager, Administration, Institute of Transport Studies)
Julia Arnold (Administrative Assistant, Institute of Transport Studies)
John Molloy BE(Civil)Melb Dip HEDelfi, MBAMelb MIEAust (Business Manager,
CRC for Catchment Hydrology)
David Perry BSc (For.) Post.Grad. Land Rehab. (Communication and Adoption,
CRC for Catchment Hydrology)
Virginia Verrelli (Administrative Assistant, CRCCH, 80%)
Maevie O’Leary (Administrative Assistant, CRCCH, 20%)

Technical Staff
Graham Rundle
Wolfgang Richter
Carl Bakes
Rob Alexander
Andrew Haines
Roger Doulls
Peter Dunbar
Jeff Doddrell
Roy Goswell
Michael Leach
Don McCarthy
Anthony Nixon
Alan Taylor
Frank Winston
Len Doddrell
Godwin Vaz
### Visitors to the Department:

<table>
<thead>
<tr>
<th>Name</th>
<th>Contact Details</th>
<th>Staff Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Esmaeel Ayati</td>
<td>Engineering College, Ferdowsi University of Mashad, Mashad (Iran)</td>
<td>Professor William Young</td>
</tr>
<tr>
<td>Professor Le-Wei Tong</td>
<td>College of Civil Engineering, Tongji University, Shanghai (China)</td>
<td>Professor Xiao-Ling Zhao</td>
</tr>
<tr>
<td>Professor Masao Kuwahara</td>
<td>University of Tokyo, Traffic Engineering Laboratory, Tokyo (Japan)</td>
<td>Professor William Young</td>
</tr>
<tr>
<td>Dr. Eric Hildebrand</td>
<td>Department of Civil Engineering, University of New Brunswick Fredericton (Canada)</td>
<td>Assoc. Prof. Geoff Rose</td>
</tr>
<tr>
<td>Professor Zenon Waszczyszyn</td>
<td>Institute of Computer Methods in Civil Engineering, Cracow University of Technology (Poland)</td>
<td>Assoc. Prof. Raphael Grzebieta</td>
</tr>
<tr>
<td>Professor Tadeusz Burczynski</td>
<td>Department for Strength of Materials and Computational Mechanics, Silesian University of Technology (Poland)</td>
<td>Assoc. Prof. Raphael Grzebieta</td>
</tr>
<tr>
<td>Professor Leonard Ziemianski</td>
<td>Department of Structural Mechanics, Rzeszow University of Technology (Poland)</td>
<td>Assoc. Prof. Raphael Grzebieta</td>
</tr>
<tr>
<td>Professor Abhijit Mukherjee</td>
<td>Department of Civil Engineering, Indian Institute of Technology Bombay (India)</td>
<td>Assoc. Prof. Raphael Grzebieta</td>
</tr>
</tbody>
</table>

### 3. Course Offerings

#### Master of Transport and Traffic

The Master of Transport and Traffic began operation in 2000. It presented a distance education flexible learning approach to studying transport and traffic. The program attracted 40 students. Certificate and Graduate Diploma programs allow for articulation from various levels of entry.

**Industrial Education Program**

The Bus and Coach and Parking Industry programs continued to attract increased student numbers.

**Undergraduate Civil Engineering Program**

2001 represented the last year of the development of the new education program. Courseware has been developed through to Level 4. The CD Rom distributed to students and the Web page have found support from the students.
4. Research and Development

List of Research Projects Undertaken in 2001

Geotechnical Engineering

♦ Sonic echo methods for NDT testing of cast-in-situ piles (Seidel)
♦ The dynamic response of pile/soil interfaces (Seidel)
♦ The shear behaviour of rock joints (Haberfield/Seidel)
♦ The strength and deformation properties of rock masses (Haberfield/Kodikara)
♦ The performance of drilled pile shafts in rock (Seidel/Haberfield)
♦ The influence of construction procedures on pile capacity in rock (Seidel/Haberfield)
♦ Slope stability – computer analyses (Haberfield/Chen)
♦ Ground anchors (Haberfield)
♦ Use of bipolymer or biofilm barriers for waste containment (Bouazza)
♦ Containment of contaminants with vertical cutoff walls (Bouazza)
♦ Geotechnical properties of municipal solid wastes (MSW) (Bouazza)
♦ Gas permeability of GCLs
♦ Soil mixing
♦ The response of beams subjected to axial load and lateral soil movements - 2002-2004 (Guo)
♦ Design of piles for slope and bridge abutment using displacement-based beam analysis – 2001-2003 (Guo)
♦ Settlement prediction of pile groups (Guo)
♦ Pile capacity due to set-up, cyclic loading and soil strain softening (Guo)
♦ Development of innovative cover systems to mitigate rainwater infiltration into ash fills [linkage project] (Kodikara)
♦ In-situ stabilisation of degraded unbound road pavements [linkage project] (Kodikara)
♦ Modelling of shrinkage cracking of clay soils (Kodikara)
♦ Shrinkage behaviour of cementitious geo-materials (Kodikara)
♦ Laterally loaded piles in soft rocks (Kodikara)
Structures

- Cyclic pullout/pushout performance of concrete plugs in tubular piles (Al-Mahaidi/Grundy)
- Interface shear transfer across cracks in normal and high strength concrete (Al-Mahaidi)
- Strength determination of slender concrete wall panels with and without openings (Al-Mahaidi/Sanjayan)
- Shear strength of reinforced concrete bridges (Al-Mahaidi/Taplin)
- Flexural strength of reinforced concrete bridges (Taplin/Al-Mahaidi)
- Strength assessment of bridge decks (Al-Mahaidi/Taplin)
- Shear strengthening of concrete beams using fibre composites (Al-Mahaidi/Taplin)
- Reserve strength of offshore structures under repeated load (Grundy)
- Elastic behaviour, shakedown limit and ultimate strength of YT and KT tubular joints (Grundy)
- Prestressed grouted pile/sleeve connections (Grundy)
- Design criteria for bridge decks (Grundy)
- Incremental collapse of tension legs and catenary risers (Grundy)
- Interfacing of digital dial gauges to PCs’ development of complementary software for data collection (McKenny).
- Reliability assessment of ageing highway bridges (Grundy)
- Life cycle performance evaluation and concrete bridge deterioration due to steel corrosion (Sanjayan/Taplin/Grundy)
- Investigation of bridge barriers VicRoads (Grzebieta/Zhao)
- Cyclic load capacity and time dependent strength of pre-stressed grouted tubular joints (Zhao/Grundy)
- Acceptance Criteria for Lightweight Steel Floor System (Zhao)
- Fire resistance of tubular columns filled with high strength concrete (Zhao/Grundy/B. Wong)
- Fatigue of thin-walled welded tubular connections (Zhao/Grundy)
- High tensile tubular struts under large deformation cyclic tension and compression (Zhao/Grzebieta)
- High tensile tubular beams under large deformation cyclic bending (Zhao/Grzebieta)
- Investigation of tube in tube column structures (Grzebieta/Zhao)
- Stability and strength of Very High Strength (VHS) circular tubes (Zhao)
- Anchorage of plain bar reinforcement (Taplin)
Effect of corrosion on strength of reinforced concrete beams and slabs (Sanjayan/Taplin)

Incremental collapse of steel/concrete composite beams with stud shear connectors (Taplin/Grundy)

Civil engineering history of John Monash (Holgate/Taplin)

Temperature prediction of structural sections in fire (B. Wong/Ghojel)

Design and analysis of steel/concrete structures in fire (B. Wong)

**Timber Engineering**

- Stressed skin housing using reconstituted wood panels (Milner)
- Evaluation of the performance of structural glulam from lamination data (Milner)
- Long term performance of reconstituted panel produces (Milner)
- Withdrawal capacity of epoxy grouted steel bars in timber (Milner)
- The behaviour of plywood web box beams and portal frames (Milner)

**Transport**

- “Level of service” of roads (Young)
- Design of Field Service Systems (Rose)
- Travel Impacts of In-vehicle navigation systems (Rose)
- Freeway Travel Time Forecasting (Rose)
- Transport for the Disabled (Young)
- Modelling small area traffic model (Young)
- Environmental impacts of transport (Young)
- Electronic road pricing (Young)
- Environmental impacts of transport (Young)
- Modelling small area traffic networks (Young)
- Multistorey parking (Young)
- Modelling transport demand and parking management (Young)
- Level of service in residential streets (Liepe/Daly/Young)
- Performance-based standards for heavy vehicle (J. Stevenson/Young)
- Parking provision in inner city area (Young)
- Parking in multi-use facilities (Tan/Young)
- Equilibrium modelling of land use activities (Chandra/Young)
- Vehicle movement at intersections (Akcelik/Young)
- Sustainability and urban transport (Codner/Young)
Pavement Management Systems (YoUngh)
Review of educational requirements for bus and coach operators in Victoria (Clements)

Water

Hydrological modelling – data requirements (Hadgraft)
Holistic approaches to design flood estimation (Weinmann/Rahman)
Sustainable water allocation – development of integrated water balance, climatic and economic models (Codner/Weinmann)
Frequency of extreme rainfall and flood events (Laurenson/Weinmann/Kuczera)
Rock ramp fishways (Keller)
Vertical slot fishways (Keller)
The role of vegetation in flood plain roughness (Keller)
The hydraulics of pool/riffle formation in rivers (Keller)
Design of minimum energy structures (Keller)
Design guidelines for fish passage (Keller)
Design guidelines for minimum energy loss structures (Keller)
Impact of sand slugs on geomorphic variability (Rutherfur/Mein)
Model prediction uncertainty under uncertain parameter information (Connell/Nathan/Mein)
Evaluation of the Performances of Constructed Wetlands in Stormwater Pollution Control (T. Wong/Wootton)
Evaluation of the Performance of Gross Pollutant Traps (T. Wong/Wootton)
Integration of water balance, climatic and economic models (Schreider)

Environment

Sustainable development indicators (Codner)
Salinity management in the Murray Darling Basin (Codner/M. Kendall)
Sustainable development of water resources in developing countries (Codner/M. Verrochi)
Characterisation of Stormwater Pollutants in Urban Catchments (T. Wong/Wootton)
Hydrological, Geomorphological and Ecological Impacts of Urbanisation on Aquatic Ecosystems (T. Wong)
Engineering Education

- Environmental Engineering Education (Codner)
- Problem-Based Learning in Engineering (Hadgraft)
- Flexible Learning in Engineering (Hadgraft)
- Knowledge Management in Engineering (Hadgraft)
- Quality and its role in Engineering education (Hadgraft)
- Towards a new philosophy of Engineering (Hadgraft)

Road safety and Crashworthiness Systems

- Maximising occupant protection in side impact accidents - analysis of the basic injury mechanisms relating to near-side and far-side crashes (Grzebieta/Fildes/Sparke/Zou)
- Assessing the structural crashworthiness of petrol road tankers in rollover accidents (Grzebieta/Rechnitzer)
- Maximising the strength of spot-welded plates (Grzebieta)
- Roll-over vehicle crashworthiness (Grzebieta/Rechnitzer)
- Investigation of lower limb injuries in side impact crashes (Grzebieta/Fildes/Sparke)
- Investigation into the physics governing whiplash injuries (Grzebieta/Tingval)
- Design of crashworthy trains (Grzebieta/Rechnitzer)
- Maximising crashworthiness of roadside infrastructure (Grzebieta/Zhao/Tingvall/Corben/Zou)
- Crashworthiness of trams (Grzebieta/Rechnitzer)
- Crashworthiness of concrete/steel road barriers in relation to small car impacts (Grzebieta/Corben/Tingval/Zou/Kulgven)
- Design of crashworthy timber light and power poles (Grzebieta/Milner/Zou)
- Crashworthiness of bridge barrier/truck impacts (Zou/Grzebieta)
- Investigation of seat back failure for a rear seating system (Zou/Grzebieta)
- Truck under run analysis and simulation (Zou/Rechnitzer/Grzebieta)
- Crashworthiness of water-filled plastic temporary barriers (Grzebieta/Zou)
- Investigation of army tractor/passenger car impact (Zou/Grzebieta)
- Study on effectiveness of seat belt configuration for the Australia Army Rear Seating System (Zou/Grzebieta)
<table>
<thead>
<tr>
<th>Investigators</th>
<th>Title</th>
<th>Grantor</th>
<th>Amount Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>R. Al-Mahaidi, G. Taplin, P. Grundy</td>
<td>Theoretical and experimental investigation into the ultimate strength of reinforced concrete T-beam bridges - two APA (I)'s</td>
<td>Australian Research Council Strategic Partnership with Industry – Research &amp; Training (SPIRT) – Vic Roads</td>
<td>$62,000</td>
</tr>
<tr>
<td>A. Bouazza</td>
<td>Gas advective and diffusive flux through geosynthetic clay liners and composite caps</td>
<td>Australian Research Council Large Grants Scheme</td>
<td>$52,651</td>
</tr>
<tr>
<td>A. Bouazza</td>
<td>Development of a new concept for waste containment: The stabilised sand mining tailings barrier – APA (I)</td>
<td>Australian Research Council Strategic Partnership with Industry – Research &amp; Training (SPIRT) – South Eastern Regional Waste Management Group and Pioneer Australia</td>
<td>$55,000</td>
</tr>
<tr>
<td>A. Bouazza</td>
<td>Attend 3rd BGA Geoenvironmental Engineering Conference, Edinburgh, Scotland, 1-19 September (presen: 1 paper)</td>
<td>Faculty of Engineering Research Fund Travel Grant (Round 2, 2001)</td>
<td>$2,500</td>
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<tr>
<td>S. Greaves</td>
<td>Incorporating driver behaviour into vehicle emissions estimates</td>
<td>New Staff Member Research Fund, 2001</td>
<td>$15,000</td>
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<tr>
<td>P. Grundy, X.L. Zhao, R.H. Grzebieta</td>
<td>Tubular steel members and connections under high amplitude dynamic loading</td>
<td>Australian Research Council Large Grant Scheme</td>
<td>$62,000</td>
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<tr>
<td>P. Grundy</td>
<td>Present 2 papers (9th International Symposium on tubular structures, Dusseldorf, Germany, 2-4 April 2001 and Int'l Conference on Safety, Risk and Reliability, Malta, 21-23 March 2001)</td>
<td>Faculty of Engineering Research Fund Travel Grants (Round 1, 2001)</td>
<td>$1,500</td>
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<tr>
<td>P. Grundy, G. Taplin</td>
<td>Continuous steel-concrete composite beams under repeated loading</td>
<td>Monash University Research Fund 2001 Project Grant</td>
<td>$30,000</td>
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<tr>
<td>R. Grzebieta</td>
<td>Present 3 papers (International Technical Conference on Enhanced Safety of Vehicles, Amsterdam, Netherlands, 4-7 June, 2001)</td>
<td>Faculty of Engineering (Research Fund Travel Grants, Round 1, 2001)</td>
<td>$2,500</td>
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<td>Investigators</td>
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<tr>
<td>R. Grzebieta</td>
<td>Crashworthiness behaviour of roadside furniture utilising thin-walled structures</td>
<td>Australian Research Council Large Grants Scheme</td>
<td>$81,955</td>
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<tr>
<td>X.L. Zhao</td>
<td></td>
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<tr>
<td>C. Tingvall</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>R Grzebieta</td>
<td>Crashworthiness of lightweight timber poles for power, lighting and telecommunication applications</td>
<td>Engineering Faculty Grant</td>
<td>$17,000</td>
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<tr>
<td>H Milner</td>
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<tr>
<td>W Guo</td>
<td>Design of piles for slope and bridge abutment using displacement-based beam analysis</td>
<td>ARC Postdoctoral Research Fellowship</td>
<td>$61,087</td>
</tr>
<tr>
<td>W Guo</td>
<td>Design of piles for slope and bridge abutment using displacement-based beam analysis</td>
<td>Monash University – Logan Research Fellowship</td>
<td>$71,521</td>
</tr>
<tr>
<td>W Guo</td>
<td>Present two papers at the 8th International Conference on Civil &amp; Structural Engineering Computing, Eisenstadt, Vienna, September, 2001</td>
<td>Faculty of Engineering, Research Fund Travel Grant (Round 2, 2001)</td>
<td>$2,500</td>
</tr>
<tr>
<td>C Haberfield</td>
<td>Determination of the stiffness of rock masses for engineering purposes</td>
<td>Engineering Faculty Grants Scheme</td>
<td>$15,000</td>
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<td>C Haberfield</td>
<td>Fundamental modelling of two dimensional jointed soft rock masses subjected to low confining stress</td>
<td>Australian Research Council Large Grants Scheme</td>
<td>$106,983</td>
</tr>
<tr>
<td>R Keller</td>
<td>Effectiveness of Australian Fishway Design</td>
<td>Agriculture Forestries and Fisheries Australia (AFFA)</td>
<td>$168,760</td>
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<tr>
<td>J Kodikara</td>
<td>Modelling of evaporation from geomaterial layers featuring solute and matric suction</td>
<td>New Staff Member Research Fund, 2001</td>
<td>$15,000</td>
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<tr>
<td>E Laurenson</td>
<td>Estimation of extreme rainfall risks</td>
<td>Australian Research Council Strategic Partnership with Industry – Research &amp; Training (SPIRT) - Commonwealth Bureau of Meteorology, Victorian Dept. of Natural Resources</td>
<td>$31,835</td>
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<tr>
<td>G Kuczera</td>
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<tr>
<td>P Weinmann</td>
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<td>H.R. Milner</td>
<td>Pull out capacity of epoxy grouted steel bars</td>
<td>Glued Laminated Timber Association of Australia</td>
<td>$15,000</td>
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<td>H.R. Milner</td>
<td>Design values for Australian Glulam</td>
<td>Forest and Wood Products Research and Development Corporation</td>
<td>$139,000</td>
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<tr>
<td>J Sanjayan</td>
<td>Corrosion induced bond loss under operating loads and its effects on safe service life of reinforced concrete – APA(I)</td>
<td>Australian Research Council Strategic Partnership with Industry – Research &amp; Training (SPIRT) – Cement &amp; Concrete Association of Victoria</td>
<td>$10,000</td>
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<tr>
<td>J Seidel</td>
<td>Collaborative Melbourne/Monash Teaching &amp; Learning Courseware Grants</td>
<td>A multimedia module closing the gap from theory to application in geotechnical engineering teaching &amp; learning</td>
<td>$29,500</td>
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<td>J Seidel</td>
<td>The response of pile-soil interfaces during pile driving and dynamic testing events</td>
<td>Australian Research Council Large Grant Scheme</td>
<td>$52,000</td>
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<tr>
<td>J Seidel</td>
<td>Deep in-situ ground improvement using high energy impact compaction</td>
<td>Engineering Faculty Grant</td>
<td>$12,000</td>
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<td>J Seidel G Chapman</td>
<td>Development of efficient and effective ground improvement techniques – APA(I)</td>
<td>Australian Research Council Strategic Partnership with Industry – Research &amp; Training (SPIRT) – Frankipile (Aust.) Pty. Ltd.</td>
<td>$37,292</td>
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<tr>
<td>M.B Wong</td>
<td>Deliver keynote presentation at the International Seminar on Steel Structures in Fire Shanghai, November, 2001; Present two papers at the 8th East Asia-Pacific Conference on Structural Engineering and Construction, Singapore December, 2001</td>
<td>Faculty of Engineering Research Fund Travel Grant (Round 2, 2001)</td>
<td>$1,000</td>
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<tr>
<td>M.B. Wong</td>
<td>Evaluating the long term durability of corrugated metal pipe in selected regions of Victoria</td>
<td>Industrial grant</td>
<td>$13,740</td>
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<td>T Wong</td>
<td>Monitoring protocols and selection guidance for non-structural measures</td>
<td>Environment Protection Authority</td>
<td>$100,000</td>
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<tr>
<td>Investigators</td>
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<tr>
<td>T Wong</td>
<td>Monitoring protocols and selection guidance for primary treatment measures</td>
<td>Environment Protection Authority</td>
<td>$200,000</td>
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<tr>
<td>X-L Zhao</td>
<td>Fire resistance of tubular steel columns filled with High Performance High Strength Concrete</td>
<td>Australian Research Council Large Grant Scheme</td>
<td>$72,991</td>
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<tr>
<td>B Rangan</td>
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<tr>
<td>L Han</td>
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<td>$19,905</td>
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<tr>
<td>X-L Zhao</td>
<td>Behaviour of very high strength (VHS) steel tubes under compression and bending</td>
<td>Engineering Faculty Grant</td>
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<tr>
<td>X-L Zhao</td>
<td>Thin-walled structures under dynamic loading</td>
<td>Strategic Monash University Research Fund (SMURF 2)</td>
<td>$60,000</td>
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<td>R Zou</td>
<td>Present 1 paper at the 17th International Technical Conference on Enhanced safety of vehicles, Amsterdam, 4-7 June, 2001</td>
<td>Faculty of Engineering Research Fund Travel Grants 2001, Round 1</td>
<td>$2,500</td>
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</table>

**TOTAL FUNDING AWARDED IN 2001** $1,634,720

**CRC and Key Centre Activity**

Projects of the **CRC for Catchment Hydrology** always involve more than one Party to the CRC. Core projects which were predominantly based at Monash in 2001 include:

- **Sustainable Water Allocation, Program 3**
  - Project 3.1: Integration of water balance, climatic and economic models (Gary Codner)
- **Urban Stormwater Quality, Program 4**
  - Project 4.1: Stormwater pollutant sources, pathways and impacts (Tony Wong)
  - Project 4.2: Stormwater Best Management Practices (Tony Wong)
- **River Restoration, Program 6**
  - Project 6.5: Hydraulics and performance of fishways in Australian Streams (Bob Keller)
  - Project 6.6: Developing tools to predict the scour of rehabilitation works. (Bob Keller)

Monash was also the base for the CRC supporting program:

- **Communication and Adoption, Program 7** (David Perry)

Total funding for these other projects and for the CRC Office activities at Monash was **$1,346,202** in 2001.
<table>
<thead>
<tr>
<th>Student Name</th>
<th>PhD or Master</th>
<th>Project Title</th>
<th>Main Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali-Khalil, Masood</td>
<td>PhD</td>
<td>Dynamic Performance of light weight steel floor systems (LSFS)</td>
<td>Prof X-L. Zhao</td>
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<tr>
<td>Arndt, Naomi</td>
<td>PhD</td>
<td>Biomechanical Analysis of Leg in Side Impact Automobile Crashes</td>
<td>A/Prof. R. Grzebieta</td>
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<td>Bailey, Mark</td>
<td>PhD</td>
<td>Improved Techniques for Treatment of Uncertainty in Physically-Based Models</td>
<td>Prof. R. Mein</td>
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<tr>
<td>Bartley, Rebecca</td>
<td>PhD</td>
<td>The recovery of Geomorphic complexity in streams</td>
<td>Prof R. Mein</td>
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<tr>
<td>Chan, Merle</td>
<td>PhD</td>
<td>The impact of in-vehicle navigation systems on drivers’ travel behaviour</td>
<td>A/Prof. G. Rose</td>
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<tr>
<td>Chakrabarti, Srijib</td>
<td>PhD</td>
<td>Application of stabilising additives in the In-Situ rehabilitation of road</td>
<td>Dr. J. Kodikara</td>
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<tr>
<td>Chin, Victor</td>
<td>PhD</td>
<td>The dynamic response of pile-soil interfaces during pile driving and dynamic</td>
<td>Dr. J. Seidel</td>
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<tr>
<td>Elchalakani, Mohamed</td>
<td>PhD</td>
<td>Cyclic behaviour of tubular members</td>
<td>Prof X-L. Zhao/A/Prof. R.</td>
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<tr>
<td>Eley, Rachel</td>
<td>PhD</td>
<td>A parametric study of stream rating curves</td>
<td>A/Prof. R. Keller</td>
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<tr>
<td>Giaccio, Craig</td>
<td>PhD</td>
<td>Theoretical and Experimental Investigation into contribution of the flange</td>
<td>Dr. R. Al-Mahaidi</td>
</tr>
<tr>
<td>Green, Janice</td>
<td>PhD</td>
<td>Estimating the probability of extreme rainfalls: a joint probability approach</td>
<td>Mr P.E. Weinmann</td>
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<tr>
<td>Hammond, Lloyd</td>
<td>PhD</td>
<td>Structural Response of Air-backed to Far-Field Underwater Explosions</td>
<td>A/Prof. R. Grzebieta</td>
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<tr>
<td>Hewitt, Martin</td>
<td>PhD</td>
<td>Incremental collapse of tension legs and catenary risers in offshore platforms</td>
<td>Prof. P. Grundy</td>
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<tr>
<td>Hon, Alan</td>
<td>PhD</td>
<td>Investigating the behaviour of T-beam bridge decks in flexure</td>
<td>Dr. G. Taplin</td>
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<td>Hui, Jiao</td>
<td>PhD</td>
<td>Strength of VHS members and welded connections</td>
<td>Prof X.L. Zhao</td>
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<tr>
<td>Kabbara, Saf</td>
<td>PhD</td>
<td>Real time forecasting of freeway travel time using modular neural networks</td>
<td>A/Prof. G. Zhao</td>
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<tr>
<td>Khalaf, Husseine</td>
<td>PhD</td>
<td>Reliability-based Assessment of Load Capacity of Existing concrete</td>
<td>Dr. G. Taplin</td>
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<tr>
<td>La Motta, Joseph</td>
<td>PhD</td>
<td>Engineered moisture and oxygen barriers for coal ash and overburden waste</td>
<td>Dr. J. Kodikara</td>
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<tr>
<td>Lee, Tuan Kuan</td>
<td>PhD</td>
<td>Shear strength of concrete t-beams repaired using CFRP</td>
<td>Dr. R. Al-Mahaidi</td>
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<tr>
<td>Lloyd, Sara</td>
<td>PhD</td>
<td>Exploring the opportunities and impediments of sustainable stormwater</td>
<td>A/Prof. T. Wong</td>
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<tr>
<td>Lokuge, Weena</td>
<td>PhD</td>
<td>Constitutive behaviour of high strength concrete under cyclic loading</td>
<td>Dr. Jay Sanjayan</td>
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<td>Martin, Timothy</td>
<td>PhD</td>
<td>Predicting pavement performance at a road network and road project level</td>
<td>Prof. W. Young</td>
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<tr>
<td>Mashiri, Fidelis</td>
<td>PhD</td>
<td>Thin-walled tubular connections under fatigue loading</td>
<td>Prof X.L. Zhao/Prof. P.</td>
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<td>Patterson, Natalie</td>
<td>PhD</td>
<td>Design of steel frames and composite columns for fire conditions</td>
<td>Dr. M.B. Wong</td>
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<tr>
<td>Pearce, Helen</td>
<td>PhD</td>
<td>A Micro-Mechanical Approach to the Shear Behaviour of Rock Joints</td>
<td>A/Prof. C. Haberfield</td>
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<tr>
<td>Richards, Sarah</td>
<td>PhD</td>
<td>Contaminant attention in natural and organically modified clays</td>
<td>Dr. A.M. Bouazza</td>
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<tr>
<td>Richardson, Shane</td>
<td>PhD</td>
<td>Rollover protective structures for (military) 4x4 vehicles</td>
<td>A/Prof. R. Grzebieta</td>
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<tr>
<td>Student Name</td>
<td>PhD or Master</td>
<td>Project Title</td>
<td>Main Supervisor</td>
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<tr>
<td>Shiraziad, Amir (Mr)</td>
<td>PhD</td>
<td>Real time cargo load measurement of dry bulk carriers through structural response</td>
<td>Dr. J. Sanjayan</td>
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<tr>
<td>Sironic, Elizabeth (Ms)</td>
<td>PhD</td>
<td>A Study of Void-Filled Thin-Walled Rectangular Steel Sections</td>
<td>A/Prof. R. Grzebieta</td>
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<tr>
<td>Sonnenberg, Andrew (Mr)</td>
<td>PhD</td>
<td>Shear strength assessment of RC T-beam bridges</td>
<td>Dr. R. Al-Mahaidi</td>
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<tr>
<td>Stolinski, Richard (Mr)</td>
<td>PhD</td>
<td>Side Impact Protection - occupants in the far-side seat</td>
<td>A/Prof. R. Grzebieta</td>
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<td>Szymakowski, Jerry (Mr)</td>
<td>PhD</td>
<td>Rational approach to the behaviour of jointed soft rock masses under very low confining pressures</td>
<td>A/Prof. C. Haberfield</td>
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<tr>
<td>Tan, Yan Weng (Mr)</td>
<td>PhD</td>
<td>A Study of Parking Movement in Multi-Storey Parking Systems</td>
<td>Prof. W. Young</td>
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<tr>
<td>Taylor, Jack (Mr)</td>
<td>PhD</td>
<td>The Structural Use of Particle Board Liners as a Gas Barrier</td>
<td>A/Prof. H.R. Milner</td>
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<tr>
<td>Vangpaisal, Pok (Mr)</td>
<td>PhD</td>
<td>Performance of Geosynthetic Clay Liners as a Waste containment</td>
<td>Dr. A. Bouazza</td>
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<tr>
<td>Wang, Dong Mei (Ms)</td>
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<td>Development of a new concept for waste management</td>
<td>A/Prof. C. M. Haberfield</td>
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<tr>
<td>White, Lindsay (Mr)</td>
<td>PhD</td>
<td>An investigation of hydraulic issues associated with fishways</td>
<td>A/Prof. R. Keller/ Dr. I. Rutherford</td>
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<td>Wilkinson, Scott (Mr)</td>
<td>PhD</td>
<td>The Development of Depth Variation in Rivers</td>
<td>A/Prof. R.J. Keller</td>
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<td>Yang, Yanan (Mr)</td>
<td>PhD</td>
<td>Life cycle performance evaluation of concrete bridges deteriorating</td>
<td>Dr. J. Sanjayan</td>
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<td>Youngman, James (Mr)</td>
<td>PhD</td>
<td>The modelling and intelligent optimisation of field service territories</td>
<td>Dr. G. Rose</td>
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<tr>
<td>Avsar, Sina (Mr)</td>
<td>MEngSc</td>
<td>Using continuous surface wave method for near surface site characterisation</td>
<td>Dr. A. Bouazza</td>
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<td>Barton, Andrew (Mr)</td>
<td>MEngSc</td>
<td>Effectiveness of Australian fishway design</td>
<td>A/Prof. R.J. Keller</td>
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<td>Chandra, Ed (Mr)</td>
<td>MEngSc</td>
<td>Modelling land-use and transport interaction: an activity location model based on critical accessibility</td>
<td>Prof. W. Young</td>
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<td>Fletcher, Peter (Mr)</td>
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<td>Research into improvement of Goode Island Silt by deep soil mixing</td>
<td>Dr. A. Bouazza</td>
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<tr>
<td>Francis, Bernard (Mr)</td>
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<td>Laterally loaded piles in a weak rock mass</td>
<td>A/Prof. C. Haberfield</td>
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<td>Jiang, Tony (Mr)</td>
<td>MEngSc</td>
<td>The fundamental mechanics of the crashworthiness behaviour of roadside safety barrier made from thin-walled structures</td>
<td>Prof. X.L. Zhao/A/Prof. R.H. Grzebieta</td>
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<tr>
<td>Kalra, Rojiv (Mr)</td>
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<td>Life Cycle Performance Evaluation of Concrete Bridges Deteriorating through Steel Corrosion</td>
<td>Dr. G. Taplin</td>
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<tr>
<td>Kwan, Pek Soon (Mr)</td>
<td>MEngSc</td>
<td>Development of Efficient and Effective Ground Improvement Technique</td>
<td>Dr. M. Bouazza</td>
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<td>Lee, Chen (Mr)</td>
<td>MEngSc</td>
<td>Cyclic bending of beams made from cold-formed square hollow section SHS C450 tubes</td>
<td>A/Prof. R. Grzebieta/ Prof. X.L. Zhao</td>
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<td>Lee, Yee Teck (Mr)</td>
<td>MEngSc</td>
<td>Grouted Joints under Cyclic Loading</td>
<td>Prof. X.L. Zhao/</td>
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<td>Ling, Tong Wei (Mr)</td>
<td>MEngSc</td>
<td>Longitudinal fillet welds in Very High Strength (VHS) circular tubes</td>
<td>Dr. R. Al-Mahaidi/Prof. X.L. Zhao</td>
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<td>Maheswaran, Tharma (Mr)</td>
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<td>Corrosion-induced deterioration and its effect on service life of concrete structures</td>
<td>Dr. J.G. Sanjayan</td>
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<td>Nahlawi, Hani (Mr)</td>
<td>MEngSc</td>
<td>Densification cracking of clay layers</td>
<td>Dr. J. Kodikara</td>
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<td>Nezamian, Abe (Mr)</td>
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<td>Bond strength of concrete plugs in steel pipes</td>
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<td>Ramchurn, Avijeet (Mr)</td>
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<td>Improvement to water resource management models</td>
<td>Mr. P.E. Weinmann</td>
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<tr>
<td>Sabaratnam, Renuka (Ms)</td>
<td>MEngSc</td>
<td>Stream Bank Undercutting: Distribution And Processes</td>
<td>Prof. R. Keller/Dr I. Rutherford</td>
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<tr>
<td>Tan, Han Hong (Mr)</td>
<td>MengSc</td>
<td>The behaviour of plywood web box beam portal frame</td>
<td>Prof. H.R. Milner</td>
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<tr>
<td>Tan, Su Kwong (Mr)</td>
<td>MEngSc</td>
<td>Improvement in the reliability of low strain integrity testing</td>
<td>Dr. J. Seidel</td>
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<tr>
<td>Taylor, Geoffrey (Mr)</td>
<td>MEngSc</td>
<td>To quantify the fate of nitrogen and phosphorus entering constructed wetland and to identify the dominant nitrogen and phosphorus removal mechanisms within constructed wetland ecosystems</td>
<td>Prof. T. Wong</td>
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<tr>
<td>Wong, Foo Hin (Mr)</td>
<td>MEngSc</td>
<td>Behaviour of slender high strength concrete wall panels with opening</td>
<td>Dr. R. Al-Mahaidi</td>
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List of Research Seminars given by staff and postgraduate students of the Department

<table>
<thead>
<tr>
<th>Presenter</th>
<th>Seminar Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grundy, Paul (Professor)</td>
<td>Are we teaching the right stuff?</td>
</tr>
<tr>
<td>Grzebieta, Raphael (A/Professor)</td>
<td>Roadside hazards and barriers</td>
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<tr>
<td>Hadgraft, Roger (Dr)</td>
<td>Overview of secondment to HEDU</td>
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<tr>
<td>Haines, Andrew (Mr)</td>
<td>A computer survival kit for postgrads (and staff)</td>
</tr>
<tr>
<td>Hui, Jo (Mr)</td>
<td>Strength of VHS members and welded connections</td>
</tr>
<tr>
<td>Kabbara, Saf (Mr)</td>
<td>Real time forecasting of freeway travel time using modular neural networks</td>
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<tr>
<td>Kalra, Rajiv (Mr)</td>
<td>Life cycle performance evaluation of concrete structures deteriorating through steel corrosion</td>
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<tr>
<td>Kwan, Pek Soon (Mr)</td>
<td>Pilot studies on using soil mixing in treating Coode Island Silt</td>
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<tr>
<td>Lee, Chen (Mr)</td>
<td>Cyclic behaviour of cold-formed RHS and SHS sections</td>
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<td>Lee, Yee Teck (Mr)</td>
<td>Grouted connection under cyclic loading</td>
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<tr>
<td>Lokuge, Weena (Ms)</td>
<td>Constitutive behaviour of High-Strength Concrete under cyclic loading</td>
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<tr>
<td>Maheswaran, T. (Mr)</td>
<td>Corrosion induced deterioration and its effect on safe service life of concrete structures</td>
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<tr>
<td>Mein, Russell (Professor)</td>
<td>The CRC for Catchment Hydrology – Linking researchers and users</td>
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<tr>
<td>Ramchurn, Avijeet (Mr)</td>
<td>Factors affecting farmers’ decision making process in the Murray Darling Basin</td>
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<tr>
<td>Tan, Han Hong (Mr)</td>
<td>Design of plywood web box beam portal frame</td>
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<td>Presenter</td>
<td>Seminar Topic</td>
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<tr>
<td>Tan, Su Kwong (Mr)</td>
<td>Improvement of the interpretation of low strain integrity testing</td>
</tr>
<tr>
<td>Taplin, Geoff (Dr) &amp;</td>
<td>What is Multi-Media to us?</td>
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<tr>
<td>Wong, M.B. (Dr)</td>
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<tr>
<td>Wang, Mei (Mrs)</td>
<td>Development of new concept for waste containment</td>
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<tr>
<td>White, Lindsay (Mr)</td>
<td>The tail end of a fishy PhD: some design issues associated with fishways in the</td>
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<td>Murray-Darling Basin</td>
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<tr>
<td>Wilkinson, Scott (Mr)</td>
<td>Rehabilitating stream habitat and pool-riffle sequences</td>
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<tr>
<td>Yang, Yanan (Mr)</td>
<td>Life cycle performance evaluation of concrete bridges deteriorating</td>
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<tr>
<td>Young, William (Professor)</td>
<td>Mobility for people with disabilities</td>
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<tr>
<td>Zhao, Xiao-Ling (Professor)</td>
<td>Dean’s Seminar Series</td>
</tr>
<tr>
<td></td>
<td>Title: Research Activities in the Department of Civil Engineering</td>
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**List of Research Seminars presented by visitors to the Department**

<table>
<thead>
<tr>
<th>Presenter</th>
<th>Seminar Topic</th>
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<tbody>
<tr>
<td>Professor Le-Wei Tong (Visiting Professor), College</td>
<td>“Fatigue behaviour of orthotropic steel bridge decks”</td>
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<tr>
<td>of Civil Engineering, Tongji University, Shanghai,</td>
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<td>China</td>
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<tr>
<td>Professor Zenon Waszczyszyn, (Institute of Computer</td>
<td>“Neurocomputing in Structural Engineering: Some Recent Results and Prospects</td>
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<tr>
<td>Methods in Civil Engineering, Cracow University of</td>
<td>for Applications”</td>
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<td>Technology, Poland)</td>
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<tr>
<td>Professor Tadeusz Burczynsk, (Department for Strength</td>
<td>“Evolutionary Shape and Topology Optimization in Structural Mechanics”</td>
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<tr>
<td>of Materials and Computational Mechanics, Silesian</td>
<td></td>
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<tr>
<td>University of Technology, Poland)</td>
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<tr>
<td>Professor Leonard Ziemianski, (Department of Structural</td>
<td>“Neural Networks in the Dynamic Analysis of Structures”.</td>
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<tr>
<td>Mechanics, Rzeszow University of Technology, Poland)</td>
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<tr>
<td>Professor Abhijit Mukherjee, (Department of Civil</td>
<td>“Layered Sacrificial Claddings Under Blast and Impact Loads”</td>
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<tr>
<td>Engineering), Indian Institute of Technology Bombay,</td>
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<td>India</td>
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</table>
Publications

**Patents**

**Books**

**Book chapters**


**Journal papers**


Elchalakani, M, Zhao, X.L, and Grzebieta, R.H. (2001), Plate Slenderness Limits for Concrete Filled Tubes under Purc Bending, *J. Constructional Steel Research*, 57(11), 1141-1168


Jiao, H. and Zhao, X.L. (2001), Material Ductility of Very High Strength (VHS) Circular Steel Tubes in Tension, Thin-Walled Structures, 39 (11), 887-906


Norojono, O. and Young W. (2001) “The application of an ordered probit model to investigate shippers’ perceptions of rail freight services in Indonesia.”. Road and Transport Research 10 (2)


Conference Publications


Mashiri, F.R., Zhao, X.L. and Grundy, P. (2001). Fatigue Behaviour of Thin-Walled Tube-to-Tube T-joints under In-Plane Bending, 9\textsuperscript{th} International Symposium on Tubular Structures, Germany, April, 259-268.

Mashiri, F.R., Zhao, X.L. and Grundy, P. (2001), Fatigue of Welded T-joints in Cold-Formed Square Hollow Sections with Thickness less than 4 mm, The First International Conference on Steel and Composite Structures, Pusan, Korea, June.


Tao, Z., Han, L.H. and Zhao, X.L. (2001): Hysteretic Behaviour of Concrete Filled Steel Tubular Beam-Columns with Square Sections, The First International Conference on Steel and Composite Structures, Pusan, Korea, June


Reports


Theses Accepted for a Higher Degree

PhD

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Supervisor</th>
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<tr>
<td>Ali Khail</td>
<td>Masood</td>
<td>Prof X-L Zhao</td>
<td>Dynamic performance of lightweight steel floor systems (LSFS)</td>
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<td>Bakharev</td>
<td>Tatiana</td>
<td>Dr J. Sanjayan</td>
<td>Alkali activated slag concrete: chemistry, microstructure and durability</td>
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<td>Candappa</td>
<td>Dishan</td>
<td>Dr J. Sanjayan</td>
<td>The constitutive behaviour of high strength concrete under lateral confinement</td>
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<td>Collingwood</td>
<td>Benjamin</td>
<td>Dr J. Seidel</td>
<td>The effects of construction practices on the performance of rock socketed bored piles</td>
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<td>Dale</td>
<td>Kenneth</td>
<td>Prof X.L. Zhao</td>
<td>The behaviour of tubular connections under variable repeated loads</td>
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<td>Hoang</td>
<td>Tam</td>
<td>Mr P.E. Weinmann</td>
<td>A joint probability model for rainfall-based design flood estimation</td>
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<td>Mashiri</td>
<td>Fidelis</td>
<td>Prof X.L. Zhao</td>
<td>Thin-walled tubular connections under fatigue loading</td>
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<tr>
<td>Paterson</td>
<td>Darryn</td>
<td>A/Prof G. Rose</td>
<td>The real time prediction of freeway travel times</td>
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<tr>
<td>Slatter</td>
<td>James</td>
<td>Dr J. Seidel</td>
<td>The fundamental behaviour of displacement screw piling augers</td>
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<tr>
<td>Gu</td>
<td>Xue Fan</td>
<td>A/Prof. C. Haberfield</td>
<td>Shear behaviour of sandstone-concrete joints and pile shafts in sandstone</td>
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**MEngSc (Research)**

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<tr>
<td>Wong</td>
<td>Foo Hin</td>
<td>Dr Riadh Al-Mahaidi</td>
<td>Behaviour of slender high strength concrete wall panels with opening</td>
</tr>
</tbody>
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5. **Strategic Directions For The Future**

The Department's Mission, Teaching and Research Strategies have been put in place.

Its mission is "To provide high quality Civil Engineering education, research and professional services globally for the mutual benefit of the students, the staff, the University, industry, the profession and the wider community".

The development of business plans for the Department and Sections are under way. These plans will be developed within the context of the Mission, Teaching and Research Strategies.

6. **Professional Activities**

**Conference Attendance**

Clements, J.  
Bus Maintenance Conference, Melbourne, July  
Australian Freight Congress, Melbourne, September  
23rd Conference of the Australian Institutes of Transport Research, Melbourne, December

Greaves, S.  
CAITRE Conference (organiser), Monash Clayton, December

Hadhraft, R.G.  
HERDSA, Newcastle, July  
Australian Association for Engineering Education Conference, Queensland University of Technology, Brisbane, September  
Australian Conference on Knowledge Management and Intelligent Decision Support Systems, Melbourne, December
Keller, R.J.  
Third Australian Stream Management Conference, Brisbane, Queensland, 27–29 August  
Third Australian Technical Workshop on Fishways, Sunshine Coast, Queensland, 30 August-1 September.  
6th Conference on Hydraulics in Civil Engineering, Hobart, Tasmania, 28-30 November.

Kodikara, J.K.  
20th ARRB Conference, Melbourne, February  
Geoenvironment 2001, Newcastle, Australia, November

Mein, R.G.  
CRC Association Conference, Perth, 15-17 May  
Stream Management Conference, Brisbane, 27-29 August  
2nd Victorian Floodplain Management Conference, Traralgon, 10-12 October

Rose, G.  
National Conference of the Australian Institute of Traffic Planning and Management, Melbourne  
World Congress on Intelligent Transport Systems, Sydney, November  
SETRI Workshop on Travel Time Estimation, Avignon, France, November

Schreider, S.Yu.  
International Congress on Modelling and Simulation MODSIM01, Canberra, Australia, December

Taplin, G.  
ASEC 2001, Gold Coast, April  
CIAC, Perth (Western Australia), September  
IEAust Heritage Conference, Canberra, October

Weinmann, P.E.  
13th Queensland Hydrology Symposium, University of Queensland, November

Wong, M.B.  
International Seminar on Steel Structures in Fire, Shanghai, China, November  
Eighth East Asia-Pacific Conference on Structural Engineering & Construction, Singapore, December

Wong, T.F.  

Young, W.  
20th ARRB Conference, Melbourne, March  
Monash Environment Week, August  
CAITRE Conference, Monash Clayton, December

Zhao, X.L.  
First International Conference on Steel and Composite Structures, Korea, June  
International Seminar on the Advancement and Trend in Soil – Structural Engineering in the Third Millennium, Jakarta, Indonesia, March  
9th International Symposium on Tubular Structures, Germany, April  
First Chinese Symposium on Tubular Structures, Xian, P.R. China, November
Official Contribution to Professional Organisations

Al-Mahaidi  
Member in ASCE/ACI committee 447 “Finite Element Analysis of RC Structures”  
Founding Member, Polymer Composites in Construction Steering Committee, Composites Institute of Australia  
Founding Member, FRP Rehabilitation Subcommittee, Composites Institute of Australia  

Clements, J.  
Member, General Committee Committee  
Committee member, Passenger Transport Special interest Group, of The Chartered Institute of Transport in Australia (Victorian Section)  

Greaves, S.  
Member, Institute of Transportation Engineers  

Guo, W.D.  
Member, Victoria and Overseas Chapter Committee, Australian Geomechanics Society  

Haberfield, C.M.  
Chair, National Committee, Australian Geomechanics Society  
Australasian Vice President, International Society for Rock Mechanics  

Hadgraft, R.G.  
Member of the Executive, Australasian Association for Engineering Education  

Mein, R.G.  
Corresponding Member, Water Engineering Committee, Institution of Engineers, Australia  

Rose, G.R.  
Corresponding Member, National Committee on Transport, Institution of Engineers Australia  

Taplin, G.  
Member, Standards Committee BD/32/2 – Composite Beams  
Scientific Committee Secretary, IABSE 2002 Symposium  

Weinmann, P.E.  
Member, Revision Committee for Book III, Section 3 of “Australian Rainfall and Run-off”  

Wong, M.B.  
Member, Australian Institute of Steel Construction, Victorian Committee  
Member, Institution of Engineers Australia, Structural Branch, Victorian Committee  

Wong, T.F.  
Member, Institution of Engineers Australia, National Committee on Water Engineering  

Young, W.  
Member, Standards Association of Australia Parking Committee  
Member, Institute of Transportation Engineers  

Zhao, X-L.  
Member, International Institute of Welding, Subcommission XV-E Tubular Structures  
Member, CIDECT Working Group - Joints Behaviour and Fatigue  
Member, CIDECT Working Group - Stability and Fire Resistance
Member, Standards Australia Committee CS/23 - Security Screen Doors
Member, AISC/WTIA Panel 6 - Structures
Australian Delegate to IWI Commission XV – Fundamentals of Design and Fabrication for Welding
Member, International Advisory Committee, First International Conference on Steel and Composite Structures, Korea

Visits to Other Institutions

Al-Mahaidi, R.  University of Wollongong
               University of Colorado, Boulder, Colorado, USA
               University of Toronto, Toronto, Canada
               University of North Carolina, Raleigh, North Carolina, USA

Guo, W.D.     Vienna Technical University, Austria, September

Haberfield, C.M. Curtin University, Kargoofie School of Mines, January

Hadgraft, R.G. Central Queensland University, March
               University of Queensland, November

Rose, G.       University of New Brunswick, Canada
               University of Michigan, Ann Arbor, USA
               University College London

Weinmann, P.E. Queensland University of Technology, School of Civil Engineering, October-November
               University of Newcastle, Department of Civil, Surveying and Environmental Engineering, November

Young, W.     Tarumanagara University, Jakarta (Indonesia), March
               Monash University Sunway (Malaysia), November

Zhao, X.L.    Xian University of Science and Technology, Xian, China, November 2001

Editorial Services

Al-Mahaidi, R. Reviewer, Australian Civil Engineering Transactions
               Reviewer, International Journal of Engineering Structures
               Reviewer, Australian Journal of Structural Engineering

Bouazza, M. Member, Editorial Board, Int. Jnl. of Geomembrane & Geotextile
               Reviewer, Int. Jnl. of Geomembrane & Geotextiles
               Reviewer, J. of Geotechnical and Geoenv. Eng. (ASCE)

Grundy, P.   Member, Editorial Board, Jnl. of Marine Structures
               Member, Editorial Board, Jnl. of Strain Analysis
               Reviewer, Australian Journal of Structural Engineering
               Reviewer, Journal ISOPE
               Reviewer, Marine Structures
Grzebieta, R.H.  Member, Editorial Board, Int. Jnl. of Crashworthiness 
Reviewer, Australian Journal of Structural Engineering 
Reviewer, Int. Journal of Impact Engineering

Guo, W.D.  Reviewer, Journal of Geotechnical and Geoenvironmental 
Engineering, ASCE

Haberfield, C.M.  Reviewer, Int. Jnl. of Rock Mechanics 
Reviewer, ASCE, Geotechnical Engineering Division 
Reviewer, International Conference for Physical Modelling in Geomechanics (St Johns, Canada, July 2002)

Hadgraft, R.G.  Reviewer, Australasian Journal for Engineering Education

Keller, R.J.  Associate Editor, International Journal of Hydraulic Research

Rose, G.  Editorial Panel, Transport Engineering in Australia

Sanjayan, J.G.  Reviewer, Cement and Concrete Composites 
Reviewer, Cement and Concrete Research

Seidel, J.P.  Technical Editor, Fulcrum, Deep Foundations Institute 
Reviewer, Australian Civil Engineering Transactions 
Reviewer, ASCE Jnl Geotechnical Engineering Division 
Reviewer, ATSM, Jnl of Geotechnical Engineering 
Reviewer, Canadian Geotechnical Journal

Weinmann, P.E.  Reviewer, Australian Journal of Water Resources

Wong, M.B.  Reviewer, Australian J. of Structural Engineering 
Reviewer, International J. of the Steel & Composite Structures 
Reviewer, ACMSM17

Wong, Tony  Reviewer, Urban Water

Young, W.  Associate Editor and member, Editorial Advisory Board, Int. Jnl Transportation 
Member, Scientific Committee, International Association for Travel Behaviour Conference

Zhao, X.L.  Member, Editorial Board, Thin-Walled Structures 
Guest Editor, Progress in Steel Building Structures 
Reviewer, Journal of Structural Engineering, ASCE 
Reviewer, Advances in Structural Engineering Int. Journal 
Reviewer, International Journal of Mechanical Science 
Reviewer, International Journal of Impact Engineering

Services to Expert Bodies

Clements, J.  Examination moderator for Transport Economics in the B. Bus. 
Transport and Logistics Management, RMIT University

Hadgraft, R.G.  Member, Medical Faculty's Five-Year Curriculum Committee, 
Evaluation Sub-Committee, Semester 1 Management Group
Mein, R.G. Reviewer, Panel for "CRC Program Qualitative and Quantitative Outcomes Study, Department of Industry Science and Resources, Canberra.

Seidel, J.P. Member, IEAust Accreditation Panel for Engineering Associates

Young, W. NRTC Performance Based Standards Review

**External Seminars, Courses & Workshops**

Clements, J. Competency Assessment Workshop: Lessons for the UK Workshop, Assessment Research Centre, Melbourne University

Hadgraft, R.G. Introduction to University Teaching, February
Planning to teach – defining objectives
Project-based and case-based learning
Supervising postgraduates for beginners
(All in the Higher Education Development Unit, Centre for Learning and Teaching Support at Monash University)

Kodikara, J.K. Liners and covers for waste containment facilities, Monash University, September

Mein, R.G. Design Flood Flow Estimation for Floodplain Management, Brisbane, September (Weinmann/Mein)

Rose, G. ITS Tools or Toys, a One-Day Seminar, Co-Chair in conjunction with Professor Masao from Japan

Weinmann, P.E. Dams and Hydrologic Risk Assessment Seminar, Institution of Engineers, Melbourne, August
Design Flood Flow estimation for Floodplain Management 2-day workshop presented at Griffith University, QLD, September

Wong, M.B. Speaker of a two-day short course on "Design of Fire Resistance of Structures to BS and EC Codes" held at the Centre of Advanced Construction Studies, Nanyang Technological University Singapore, and December

Wong, T.F. Short course on Planning and Design of Stormwater Management Measure, Brisbane, July-August

Young, W. Transport Engineering Management (TEM) Workshop, Malaysia, November
TEM Workshop, Melbourne, July
Transport Policy Lecture Series, April to June

Zhao, X.L. Recent Development and Design of Tubular Structures, Christchurch, Auckland and Wellington in New Zealand, February
Special Presentations

Clements, J.  

Haberfield, C.M.  
Workshop on Geological Engineering at Kalgoorlie School of Mines, January (5 days)

Hadgraft, R.G.  
Flexible Learning in the Faculty of Engineering for the Electronically Supported Teaching and Learning Committee

Kodikara, J.K.  
Theme Lecture on Design of compacted clayey liners at Geoenvironment 2001 Conference.

Mein, R.G.  
‘Catchment Hydrology, with the emphasis on CATCHMENT’, Melbourne Water Employees Forum, Sunbury, March  
‘CRC Research Program’, North East Catchment Management Authority Research Forum, Albury, March  
Conference Summary, Victorian Floodplain Management Conference, Traralgon, October

Young, W.  
Global TV2 interview on Transport Engineering Management, Kuala Lumpur, Malaysia, November  
Seminar at Malaysian Police Academy, Kuala Lumpur, Malaysia, November

Wong, M.B.  
Invited speaker at the international seminar on “Steel Structures in Fire”, Shanghai, China  
Invited speaker of Departmental Seminar “What is Multimedia to us?”  
Speaker of Seminar “Recent changes to Migration Act” to Final Year Civil Engineering Students.

Wong, T.F.  
Seminar on the research activities of Program 4 to a meeting of US-EPA officers, USGS officers, consultants and engineering staff at Prince George’s County, Maryland.  
Seminar presented to members of the Victorian Stormwater Action Committee (State Government Committee responsible for allocating $22.5M of stormwater management grants) on Water Sensitive Urban Design, Melbourne  
Invited paper on Stormwater Treatment Train at the Stormwater Industry Association seminar on Stormwater Quality in the Urban Environment, Melbourne.  
Briefing on Water Sensitive Urban Design and Institutional Framework to a meeting of project officers and ministerial advisors in Environment Australia, Canberra.

Invited paper on Urban Stormwater Management at the Queensland seminar on Urban Stormwater Management, Brisbane


Keynote speech, First Chinese Symposium on Tubular Structures, Xian, P.R. China, November

Consulting

Al-Mahaidi, R. VicRoads, research project on strength assessment of concrete T-beam bridges

VicRoads, research project on strengthening of a concrete bridge using CFRP composites

Stramit Industries, research project on Long-Form Slabs

ARRB, strength assessment of two concrete bridges

Southern Rural Water, investigation of defects in precast concrete U flumes

Guo, W.D. Estimation of velocity for a car accident for Monash Accident Centre (with C.M. Haberfield)

Haberfield, C.M. Estimation of velocity for a car accident for Monash Accident Centre (with W.D. Guo)

Shear tests for Pells & Sullivan, triaxial tests for Golder Associates (with J. Seidel and X.F. Gu)

Hadgraft, R.G. Higher Education Development Unit

Medical Faculty 5 Year Curriculum Project

Maunsell Australia

University of Queensland

Keller, R.J. Physical model studies of litter traps and tunnel rock traps

Mein, R. Yield assessment review (Melbourne Water)

Water Resources Development (GHD for Barwon Water)

Taplin, G. Research project for Stramit Industries

Research project on strength assessment of concrete T-beam bridges

Research project on strengthening of a concrete bridge using CFRP composites

Work for VicRoads, Stramit and Connell Wagner

Weinmann, P.E. Audit of Melton and Merrimu Dam Design Reviews (Flood Capacity Evaluation) for Southern Rural Water


Farm Dams Impact Assessment (Steels, Dixons and Pauls Creeks) for Egis Consulting
Contract work for spillway flood studies, SKM Consultants
Review of Approach to Seasonality for Extreme Flood Studies in Western Australia for Water and Rivers Commission of WA

Zhao, X.L. Testing of crimped angies for Andrew Australia

Professional Development

R. Al-Mahaidi OSP at the University of Colorado, Boulder, Colorado USA
Hadgraft, R.G. WebCT workshop, November
Guo, W.D. Joined ASCE, IEAust, ICSGE, AGS as a member
Taplin, G. OSP with VicRoads Design
Masters of Multimedia

Schreider, S. Yu. Tarsier Developers Workshop, Workshop organised by Cooperative Centre for Catchment Hydrology, at CSRIO Land & Water, Canberra, May
Resource Allocation Modelling (REALM), workshop organised by the Victoria University of Technology, Melbourne, June
Intergrated Catchment Management System (ICMS), workshop organised by CSIRO Land & Water, Canberra, December

Wong, M.B. Use of multimedia software “Author”
Attending seminars on WebCT

Leadership and Management Development Core Program (Level 2) – CHED Monash
Managing Diversities – CHED Monash
Counselling Skills – CHED Monash
Staff Selection – CHED Monash
Facilitation Skills (University of Melbourne)
Empowering People in a Changing Environment (University of Melbourne)

7. Funding Position

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