DEPARTMENT OF CIVIL ENGINEERING

2004 ANNUAL REPORT

Table of Contents

1. Overview of department ................................................................. 2
2. Current Departmental Structure .................................................... 5
3. Course Offerings ........................................................................ 11
4. Research and Development .......................................................... 12
5. Undergraduate Students & Prizes .................................................. 32
6. Professional Activities ................................................................. 34
1. OVERVIEW OF DEPARTMENT

In 2004 the Department of Civil Engineering continued to provide a high level of teaching and research output.

Staff

The Department has 76 staff (13 holding honorary positions). New academic staff joining the Department include: Dr Grace Michail, Dr Michael Bombach, Dr James Grosse. Mrs Manuela Dragomir has recently joined the administrative staff. The Department is led by Professor Richard Thomas and is divided into five main areas of study: Fluid and Geotechnical Engineering, Geomatics, Hydrology and Water Resources, Structural Engineering, and Transportation Engineering.

Undergraduate teaching

The Department continued to present the Bachelor of Engineering program. Some statistics in the program concern their degree with Arts, Science, Law or Commerce degrees. The Bachelor of Technology (Engineering) continues to attract students. Sixty-four students graduated from the undergraduate programs. This number of students was shown with 13 positions being given to students at various instigated in their studies. The Department of Civil Engineering in teaching within the Group of Eight universities the year.

Postgraduate Education Programs

The Master of Engineering and Master of Transport administered increased interest with over 70 students enrolled in the program. The Master of Infrastructure Engineering and Management also continue to attract significant interest with over 25 students enrolled. Several new subjects have been added to these programs in 2004. Seventy students graduated from these programs.

Industry Education Programs

The Institute of Transport Studies still maintains its activities in the Bus and Railcar and Parking education programs for these industries. This program has attracted continuing support. Industry is involved in the ongoing development of the program. The Water group continues to offer technology transfer programs to industry. The Geomatics group offers short courses in Environmental Geomatics.

Research

Strong research activities continue to exist in the key environmental strengths of structural, water, geotechnics and transport engineering. The Water group initiated an Institute of Sustainability Water Resources which has produced the research projects have focused the focus for work and students in 2004. Research funding support of $240,000 has been provided to support these projects. The Department has 38 PhD and 17 MEngSc students. Nineteen students completed PhD studies and four completed their Master studies.

Staff members were involved in the preparation of 3 book chapters, 43 journal articles, 8 conference papers and 8 research reports. Staff attended 57 conferences. Staff research and students presented 28 seminars at other institutions. Staff in the Department conducted and contract research for 28 government and private organisations.

Visitors and Visits

The Department hosted twelve visitors from all parts of the world. These visitors worked closely with departmental staff to develop research and teaching activities. The links 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 25 institutions in 2004.

External Activities

Staff members were involved in the review of paper and journal editorial committees on 62 occasions and presented 19 papers at national and international conferences. They were also involved in 62 professional associations and their activities.

Furthe details about the department can be found on its web site at: http://civeng.unimelb.edu.au

Civil Engineering – 2004 Annual Report
OVERVIEW OF DEPARTMENT

The institute's objectives are to:
- Conduct research which is of both national and international importance (as judged by number of publications in high-quality journals).
- Attract both competitive and industry funding.
- Attract staff and collaborators with demonstrated excellence in research and/or teaching related to sustainable water resource management.
- Attract high quality postgraduate scholars, and produce early career researchers of international standing.
- Be substantial contributors to related research entities, such as Cooperative Research Centres, and any relevant multi-disciplinary centres within Monash University.

Further details about the institute can be found on its web site at: http://iawr.etm2.monash.edu.au

CURRENT DEPARTMENTAL STRUCTURE

2. CURRENT DEPARTMENTAL STRUCTURE

2.1. Management Committee

In 2004, the Management Committee of the Department consisted of:
- Professor William Young, Head of Department
- Professor Xiao-Ling Zhao, Deputy Head and Director of Research
- Associate Professor Gary Codrington, Director of Teaching (January to June 2004)
- Mr Richard Wooton, Director of Teaching (July to December 2004)
- Mr Christopher Powell, Director of Resources

Clockwise: G. Codrington, D. Thomson (Committee Secretary), W. Young (Head), C. Powell, R. Wooton, X.L. Zhao

2.2. Research/Teaching groups

The department operates through the following four groups:

2.2.1. The Geomechanics Group

The group is led by Associate Professor Mike Bouazza and includes:
- Dr Jayantha Kodikara
- Dr Asad Haque
- Dr Ronysh Parthegama
- Dr Xue-Fan Ouy

Back row (left to right): J. Kodikara, M. Leaiah, A. Bouazza (Head of Group)
Front row (left to right): A. Haque, R. Pathegama, X.F. Ouy

Research Strengths: Environmental Geotechnics, unsaturated soils, soil and rock stabilisation
2.2.2. The Structures Group

The group is led by Dr Riad Al-Mahdadi and includes:

Professor Xiao-Ling Zhao, Enirobus Professor Paul Grundy, Associate Professor Raphaël Grzebieta, Associate Professor Jay Sanjayan, Associate Professor Bob Miller, Dr Bill Wong, Dr Michael Barbach, Dr Roger Zou, Dr Fidelis Masihi.

Research Strengths: Advanced Thin-Walled Structures and Crashworthiness, Lifetime Integrity of Structures, Timber structures.

2.2.3. The Water Group

The group is led by Dr Tony Ladesen and includes:

Associate Professor Gary Codr, Associate Professor Bob Keller, Mr Rick Woodton, Dr Ana Dalik, Dr Tim Fletcher, Dr Grace Mitchell, Dr James Grout, Dr Gavin Mudd, Mr Erwin Waikmann, Dr Tony Wong, Mr Frank Wison.

Standing (left to right): R. Keller, T. Fletcher, A. Dobos, R. Woodton, F. Winston, G. Mudd, E. Waikmann

Seated (left to right): M. Ong, M. Mitchell, T. Ladesen (Head of group).


Civil Engineering – 2004 Annual Report  Page 6 of 44
2.8. Visitors to the Department

The following visitors came to Monash University in 2004:

Professor Jim Rhodes of the Department of Mechanical Engineering, University of Strathclyde, Glasgow, Scotland (UK) visited Professor Xiao-Ling Zhao and Assoc. Professor Ngiap Hwee Goh between December 2003 and January 2004 to conduct joint research on thin-wall structures.

Assoc. Professor Kunio Nogami of Tokyo (Japan) visited Professor Xiao-Ling Zhao between April and May.

Professor Pascal Netherton of Imperial College, London (UK) and President of the Institution of Structural Engineers visited Professors Zhao and Grundy in July.

Mr. Pascal Norton, Postgraduate student from the EPFL, Lausanne, Switzerland, visited Dr. Tony Ladson as an occupational trainer between October 2003 and February 2004.

Mr. Daniel Aragon, President, Engineers Without Borders Australia, visited the department in April and gave a seminar on "Construction of municipal waste island to a new city" in September.

Professor Ian Toshahara of the Department of Civil Engineering, University of Tokyo, visited the department and gave a seminar on "Current Research on Tabular Structures at the University of Tokyo" in October.

Mr. Martin Aveling, Postgraduate student of the School of Civil Engineering at the University of Twente (Netherlands) visited Assoc. Professor Geof Talbot as an occupational trainer between September and November 2004.

Mr. Benjamin Baudin, postgraduate student of INSA (Institut National des Sciences Appliquées), Lyon (France) visited 2004.

Mr. Berend Martens, postgraduate student of the Department of Civil Engineering, University of Essen, Germany, visited Dr. Ana Delbi and Dr. Tim Fletcher as an occupational trainer to undertake 6 months of his research on modelling bitumen between October and April 2004.

Mr. Atilla Ozturk, postgraduate student of the Department of Civil Engineering, Istanbul Technical University (Turkey), visited Assoc. Professor Makis Rousaz as an occupational trainer to undertake 6 months of his research on modelling bitumen between October and April 2004.

Mr. Mario Trieste, postgraduate student of the École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, visited Professors Xiao-Ling Zhao and Dr. Geoff Talbot of Monash University as an occupational trainer to undertake 6 months of his research at Monash from October 2004.

Dr. Raad Al-Mahdi coordinated a visit by a high level high education and research delegation from Iraq. This visit resulted in a Memorandum of Understanding (MOU) between the University of Baghdad and Monash University and President of the Iraq National Academy of Sciences. Dr. Raad Al-Mahdi, the President of the Baghdad University, Dr. Mohammad Al-Mousawi and the Dean of the Baghdad College of Engineering, Dr. Ali Al-Khalid visited Monash between 22nd September and 4th October 2004.

Professor John Dracup of the Department of Civil Engineering, University of California Berkeley, USA, visited Dr. Tony Ladson in June.

Dr. Graeme Smart of NIWA, New Zealand visited Dr. Tony Ladson in March.

Professor Adolf Hobbscher of the University of Applied Science, Wiesbaden, Germany, visited Professor Xiao-Ling Zhao.

Professor Richard Ashley of the University of Sheffield, Penner Water Group, UK, visited Dr. Ana Delbi and Dr. Tim Fletcher (SWP).

Dr. Hassan Jardani of the National Association for the Salvation of the Iraq Maritime in Baghdad, Iraq visited Dr. Raad Al-Mahdi in July and gave a seminar on "Restoring the Marshes of Mesopotamia: Present and future plans and challenges to restore and revitalise the marshes of Southern Iraq".

Undergraduate programs

The Department offers undergraduate programs in Civil Engineering and Infrastructure Engineering and Management. The Civil program is combined with Arts, Law, Commerce and Science to offer double degrees. The Department also teaches into the Bachelor of Environmental Engineering.

Transport programs

The undergraduate program continues to attract interest from students both within and outside Victoria. A new unit in Transport Planning and Policy was first offered in Semester 2, 2004. The Irkutsk programs in Bus & Coach and Parking continue to attract students, although in the case of the former at a predictably reduced rate. The number of work/study offered by ITS (Monash) increased in 2004, thanks to visits from a number of overseas academics.

Bus and Coach Program

The Transport Management Course is a distance education program required for operator accreditation in Victoria. Since its inception in 1997, over 1,200 operators have successfully completed the course. The course consists of four units, each requiring 12 weeks of study and written examination: Introduction to Legislation and Operations; Financial Management; Human Resource Management; Marketing, Planning and Operations. Unit selection is based on accreditation category requirements. In 2004 there were 223 unit enrolments and approximately 100 course completions are anticipated. Close liaison maintained with Victoria's Department of Infrastructure (DII) and the Bus Association of Victoria (BAV). Subject performance awards were sponsored in 2004 by DII, BAV, Flomfl, Pitcher Partners, Genus Group, and Expressional Truck and Bus Service Centre (Ventrus Bus Lines).

Infrastructure Engineering and Management

The Master of Infrastructure Engineering and Management focuses on the issues related to the planning, design, construction and maintenance of civil engineering structures. Most of the applicants attracted to this program are from local governments, roads and water departments within and outside of Australia. In 2004, an additional ten new applicants commenced this program totalling 28 students. Two new units in Water Engineering have been included in the list of Engineering Electives bringing a total of eleven elective. It is expected that this will attract even more new applicants in the coming years. Dr. Ranjala Rajaq manages the program.
4. RESEARCH AND DEVELOPMENT

4.1. List of research projects undertaken in 2004

Geotechnical Engineering
- Monitoring of CO2 water interactions using experimental results and numerical work [Pathajaya]
- Experimental and numerical investigations of carbon dioxide sequestration in closed oil reservoirs [Kajima]
- Laboratory investigation of the effects of gas adsorption on the fluid transport and geomechanical properties of coal reservoirs [Kajima]
- Hydro-mechanical testing facility for sequestration of supercritical carbon dioxide in local sedimentary basins [Puchong/Ministry of Energy/Ministry of Environment]
- Hydrophobic additives with Blue Core Cement [Linkage Project]
- Development of testing equipment for geomaterials used in water recycling applications [SU]
- Analysis of piles in moving ground [Komatsugawa Kajima]
- In-situ stabilization of undrained clay layers [Komatsugawa Kajima]
- Innovative cover systems for coal ash and overburden materials at Loy Yang Power Station Suits [Komatsugawa Kajima]
- Study of dispersion coating of clay [Kajima]
- Modeling of large-scale pile sections in various ground models including soft rocks [Kajima]
- Testing of soil columns using laboratory equipment and materials [Komatsugawa Kajima]
- Characterization of geotechnical properties of coal waste [Kajima]
- Effects of salt on road and building infrastructure [Komatsugawa Kajima]
- Pipe failure under reactive ground [Komatsugawa Kajima]
- Unsaturated soil behaviour [Komatsugawa Kajima]
- Tapered piles [Kajima]
- Rock joints [Komatsugawa Kajima]
- Geoenvironmental engineering [Kajima/Bouzaa]
- Improvement of reactivation substrate soils by lime-fly ash slurry injection [Hagge/Kodaira]
- Dynamic filter test apparatus under modifications to suit train loading [Hague]
- Filtration behaviour of cohesive soils under dynamic loading conditions [Hagge/Kodaira]
- Railway geotechnics [Hagge/Bouzaa]
- Field testing of saturated reinforced rock joints using Universal Diameter Element Codes [Hope]
- Building and reinforced maintenance works with the Hunter Valley Rail Corridor [Hague]
- Railway engineering improvements [Hagge]
- Effect of water flow on the deformation behaviour of tunnel floor under dynamic loading [Hague]
- Steel behaviour of inclined rock joints under confined stress conditions [Hague]
- Innovative support systems for coal ash and overburden materials at Loy Yang Power Station Suits [Bouzaa]
- Gas adsorption and diffusion migration through GCLs [Bouzaa]
- Hydraulic conductivity of GCLs [Bouzaa]
- Unstabilized flow behaviour of geoslopes [Bouzaa]
- Contaminant transport through organomodified clays [Bouzaa]
- Deep and shallow soil mixing [Bouzaa]
- Modeling of MSW landfill settlement using geostatistics [Bouzaa]
- Surface wave analysis of new textbook materials [Bouzaa]
- Hydraulic and diffusive performance of airlites [Bouzaa]
- Performance of geosynthetic clay liners (GCL) under various soil conditions [Bouzaa]
- Active containment barrier walls [Bouzaa]
- Background of mineralization around the Melbourne ores [Bouzaa]
- Geotechnical piers for soil improvement [Bouzaa]
- Chemical grouting of sands [Bouzaa]
- Geometric control using geostatic cushions [Bouzaa]
- Soil vapour extraction using constant surface water systems and DMT [Bouzaa/Kodaira]

Structural Engineering
- Performance of FRP reinforced concrete structures under fire [Wong]
- Temperature prediction of structural sections in fire [Wong]
- Structural behaviour of steel structures in flames [Wong]
- Buckling strength of steel structures at elevated temperature [Wong]
- Innovative tubular connections at elevated temperature [Zheng/Grundy/Wong]
- Fire resistance of tubular columns filled with high strength concrete [Zheng/Grundy/Wong]
- Durability of geopolymer materials in aggressive environment [Bachian]
- Fire performance of high performance concrete [Bachian]
- Fire resistance of geopolymer materials [Bachian]

Safety and Crashworthiness Systems
- Performance standards for rail crashworthiness and rollover propensity [Greeley/Rachmaninoff/Beardon]
- Design of crashtest trains, trains and buses [Greeley/Technica]
- Impact loading of square hollow beam [Zhong/Zhang/Zhu]
- Maximizing crashworthiness of modern rail cars [Greer/Shaolin]
- Impact loading of circular beams [Zhong/Zhang/Zhu]
- Review of head impact injuries and headstand [Greeley/Shaolin/Koon]
- Animal test and full vehicle [Greer/Shaolin/Bearden]

Timber Engineering
- Public safety criteria of girders gusseted into timber [Miner]
- Fatigue composite repair of timber piles [Miner]
- Development of theory for partially composite in-tension box beams [Miner]
- Performance standards for wood adhesives [Miner]
- Assessment of fire resistance of timber beams [Miner]
- Behaviour of timber I-beams with web openings [Miner]
- Durability of woodbeams for pretreatment and medium density fiberboard [Miner]

Transportation Engineering
- Improving methodologies to assess on-road public transport priority [Currie/Smith/Young]
- Identification of green gaps in public transport provision in relation to transport needs in the community [Currie]
- The demand performance of bus rapid transit [Currie]
- A review of Australian bus rapid transit system developments [Currie]
- Innovative accessible train stop design [Currie/Smith]
- Feature of successful real time passenger information systems [Currie/Burke]
- A review of the performance of the Athens 2004 Olympic transport system [Currie]
- A review of the performance of the Atlanta 1996 and Sydney 2000 transport system [Currie]
- Knowledge management in Australian public transport [Currie]
- Transportation and social exclusion in metropolitan rural and regional Australia [Currie]
- Planning for metropolitan rail interchanges [Allen/Currie]
- Evaluation of the 2004 Melbourne University TrialSMART initiative [Rowe]
- Enhancing South Dandenong employment access [Rowe]
- Regulation of personal mobility devices [Rowe]
RESEARCH AND DEVELOPMENT

- Impacts of in-vehicle navigation systems on travel behaviour [Chau/Rose]
- Travel behaviour change opportunities of major events [Rose]
- Travel time prediction estimation [Rose/Li]
- Travel time prediction estimation [Rose/Li]
- Using the psychology of persuasion for effective implementation of transport policy [Seetharan/Rose/Alsop]
- The moving and intelligent optimisation of fuel service territories [Rose/Youngman]
- Predicting pavement performance at a real network and road project level [Youngman]
- Performance based standards for highways [Young]
- Transformed technology based transport infrastructure and engineering projects financed and undertaken in China and Asia [Youngman]
- Using salted Africa preference method to examine travel preferences in Indonesia [Young/Phurwad]
- Mobile phones as traffic probes [Pereira/Sandra/Pereira]
- Accuracy and traffic simulation modelling [Young]
- Modelling traffic on road networks [Young]
- Environmental impacts of transport [Young]
- Modelling transport demand and parking management [Young]
- Parking in multi-use facilities [Young]
- Equilibrium modelling of land use activities [Young]
- Vehicle movement at intersections [Akiwa/Young]
- Public transport stop design [Young/Saw]
- Network simulation program development [Young/Saw]
- Modelling air pollution dispersion and behaviour of merging and weaving vehicles [Young/Saw]
- Emission monitoring using intelligent probe vehicles [Young/Saw/Rose/Phurwad]
- The effects of changing large road traffic volumes on the performance of Australian road pavements [Young/Yeo]
- Road space allocation [Young/Reed/Shevlin/Savva]
- Impacts of the geometry design on road safety [Young/Saw]
- Modelling of weaving phenomena observed during traffic congestion [Young/Saw]
- Assessing driving behaviour in complex [Bowen]
- Assessing driving behaviour in complex [Bowen]
- Sustainability and urban transport [Cooper/Young]

Water / Environmental Engineering
- Modelling of human behaviour in an hydraulic context [Cooper]
- Evaluating environmental consequences of water allocation decisions [Cooper]
- Quantifying the hydraulic environment of squares [Cooper/Ladd]
- Modelling irrigated agriculture decision making under uncertainty [Cooper/Watson]
- Improving United States Stormwater Treatment Model [Deletic/Fletcher]
- Stormwater characterisation and load prediction [Deletic/Fletcher/Yeigh]
- Constructed wetland for stormwater management [Deletic/Fletcher]
- Preliminary analysis of using water treatment plant greywater [Deletic/Fletcher]
- Lifestyle costing of stormwater management [Fletcher]
- Evaluation of the performance of constructed wetlands in stormwater pollution control [Fletcher/Deletic/Wong/Wortmann/Ladd]
- Pollutant adsorption and uptake processes in vegetated swales and stormwater bioretention systems [Fletcher/With]
- Institutional and social impacts in urban water management [Fletcher]
- Computer tools for the design of urban water management systems [Rahal/Worthington]
- Design of minimum energy structures [Kallay]
- Interactions between streamflow and soils [Ladd]
- Indicators for stream health or condition [Ladd]
- Assessing the health of ephemeral rivers [Ladd]
- Roughness coefficients in Australian streams [Ladd]
- Integrated stormwater treatment and re-use [Mitchell]
- Linking urban waterways to stormwater re-use [Mitchell]
- Sustainable rainwater harvesting [Mitchell]
- Sustainable groundwater management [Mudd]
- Hydrologic and economic models for water allocation [Wehrens/Cooper]
- Frequency of extreme rainfall and flood events [Warrick/Francis]
- Improved design flood estimation methods [Wehrens]
- Probability of extreme storm rainfall and floods [Wehrens]
- A Decision Support System for Stormwater Quality Management [Smith/Fletcher]
- Hydrological, geomorphological and ecological impacts of urbanisation on aquatic ecosystems [Wong/Fletcher/Ladd]

Civil Engineering – 2004 Annual Report

4.2. List of research grants and income

Research Funding for 2004 was as follows:

<table>
<thead>
<tr>
<th>Investigators</th>
<th>Project Title</th>
<th>Amount awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bashir, T.</td>
<td>Attending 10th Annual Meeting &amp; Exhibition to the American Ceramic Society</td>
<td>$2,850</td>
</tr>
<tr>
<td>Dichter, A.</td>
<td>9th International Conference on Sustainable Technologies &amp; Strategies in Urban</td>
<td>$2,850</td>
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<tr>
<td></td>
<td>Water Management (NOVATECH)</td>
<td></td>
</tr>
<tr>
<td>Ge, X.F.</td>
<td>4th International Symposium on Rock Mechanics, Hubei Province (China)</td>
<td>$1,800</td>
</tr>
<tr>
<td>Maselli, F.</td>
<td>4th International Conference on Thin-Walled Structures, Loughborough, United</td>
<td>$2,850</td>
</tr>
<tr>
<td></td>
<td>Kingdom (UK) 21-22 June 2004</td>
<td></td>
</tr>
<tr>
<td>Sarmi, M.</td>
<td>World Conference on Transportation Research (WCTR 2004), Istanbul (Turkey)</td>
<td>$2,850</td>
</tr>
<tr>
<td>Maselli, F.</td>
<td>4th International Conference on Thin-Walled Structures, Loughborough (UK)</td>
<td>$2,850</td>
</tr>
<tr>
<td></td>
<td>21-22 June 2004</td>
<td></td>
</tr>
<tr>
<td>Sarmi, M.</td>
<td>4th International Conference on Transportation Research (WCTR 2004),</td>
<td>$2,850</td>
</tr>
<tr>
<td></td>
<td>Istanbul (Turkey), 4-8 July 2004</td>
<td></td>
</tr>
<tr>
<td>Al-Mahdli, R.</td>
<td>1st International Conference on Bridge Engineering &amp; Hydraulic Structures,</td>
<td>$2,850</td>
</tr>
<tr>
<td></td>
<td>Kuala Lumpur (Malaysia) 26-28 July 2004</td>
<td></td>
</tr>
<tr>
<td></td>
<td>American Concrete Institute Convention, San Francisco, USA, 21-28 October, 2004</td>
<td>$2,500</td>
</tr>
<tr>
<td>Curren, G.</td>
<td>European Transport Conference, Strasbourg (France), 4-6 October, 2004</td>
<td>$2,500</td>
</tr>
<tr>
<td>Goudie, A.</td>
<td>ICOSA 2004, International Craziness and Irritability Conference, San Francisco, USA</td>
<td>$2,500</td>
</tr>
<tr>
<td></td>
<td>14-16 July, 2004</td>
<td></td>
</tr>
<tr>
<td>Henawi, A.</td>
<td>3rd Asian Rock Mechanics Symposium (ARMK) Kyoto (Japan), 30th November -</td>
<td>$2,500</td>
</tr>
<tr>
<td></td>
<td>2nd December, 2004</td>
<td></td>
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<tr>
<td>Ibrahim, V.</td>
<td>2006 IEEE International Conference on Industrial Technology (ICIT'06), Turkey,</td>
<td>$2,500</td>
</tr>
<tr>
<td></td>
<td>6-10 December, 2004</td>
<td></td>
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<tr>
<td>Papatheo, R.</td>
<td>EU RoC 2004 Conference, Salzburg, Austria 8-9 October 2004</td>
<td>$2,500</td>
</tr>
<tr>
<td>Zhao, X.L.</td>
<td>4th International Conference on Thin-Walled Structures, Loughborough, UK,</td>
<td>$2,500</td>
</tr>
<tr>
<td></td>
<td>21-25 June 2004</td>
<td></td>
</tr>
</tbody>
</table>

Faculty of Engineering Small Grants Scheme – 2004

- Boczar, A.  | Chemical growth of salts | $16,050 |
- Deletic, A. | Novel bioliths for stormwater treatment and reuse | $10,000 |
- Gruber, A.H. | Square hollow beams subjected to impact loading | $12,090 |
- Kistlara, J.K. | Study of disconnection cracking of compacted clay | $12,090 |
- Samyan, R.G. | Characterisation of concrete microstructure using impulse spectroscopy (IS) | $14,000 |
- Young, W. | Modelling of wetting phenomena observed during traffic congestion | $10,000 |
- Zhao, X.L. | Bond characteristics between steel and FRP (Carbon Fibre Reinforced Polymer) | $14,000 |

New Staff Member Research Fund 2004

- Haque, A. | Filtration behaviour of capping formation interface under dynamic loading | $15,000 |
- Ladson, A. | Remote sensing of stream condition | $15,000 |
- Mudd, G. | Evaluating the impacts of urban stormwater on groundwater quality across Melbourne | $15,000 |
- Pattemage, R. | Modelling of CO2-rock-water interactions using experimental results and numerical work | $15,000 |
- Sarmi, M. | Assessing driving behaviour in complex environments | $15,000 |
|               | Department contributed $2,000 towards each individual New Staff Member Award | $15,000 |

ARC Discovery Funds Allocated in 2004

- Baskaran, T. | Developments of scientific and experimental basis for manufacture of building materials with special properties based on geopolymers | $79,000 |
- Deletic, A. | Predicting the clumping of storm water infiltration | $75,000 |

Civil Engineering – 2004 Annual Report
### RESEARCH AND DEVELOPMENT

<table>
<thead>
<tr>
<th>Investigators</th>
<th>Project Title</th>
<th>Amount Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groebert, R.H.</td>
<td>Thirteenth Charred structures subjected to impact and blast testing</td>
<td>$15,000</td>
</tr>
<tr>
<td>Zhao, X.L.</td>
<td>Industry Partner: Australian Waste Management Pty Ltd [One APA(P)]</td>
<td>$47,545</td>
</tr>
<tr>
<td>Chirco, C.</td>
<td>High strength steel production bolting</td>
<td>$143,568</td>
</tr>
<tr>
<td>Burno, A.</td>
<td>Stabilization of railway subgrade by lime-fly-ash slurry injection</td>
<td>$44,033</td>
</tr>
<tr>
<td>Arc Linkage Funds Allocated in 2004</td>
<td>Improvement of the performance of water-sensitive geomembranes using geocomposites and geosynthetics</td>
<td>$25,578</td>
</tr>
<tr>
<td>Brouza, A.</td>
<td>Arc Linkage International</td>
<td>$42,612</td>
</tr>
<tr>
<td>Groebert,</td>
<td>Indicators of river condition: are they useful for environmental management</td>
<td>$43,033</td>
</tr>
<tr>
<td>Zhao, X.L.</td>
<td>Fatigue behaviour of double tubular structures</td>
<td>$225,007</td>
</tr>
<tr>
<td>Kokska, A.</td>
<td>Industry Partner: Department of Natural Resources and Environment [One APA(P)]</td>
<td></td>
</tr>
<tr>
<td>Zhao, X.L.</td>
<td>Industry Partner: BHP Billiton, Mitsubishi Alliance Coal Operations Pty Ltd and Bucyrus (Australia) Pty Ltd [Two APA(P)]</td>
<td></td>
</tr>
<tr>
<td>Dayawansa, P.</td>
<td>Design of welded steel tubular connections</td>
<td>$1,700</td>
</tr>
<tr>
<td>Fakry, J.</td>
<td>Institute for Sustainable Water Resources</td>
<td>$237,000</td>
</tr>
<tr>
<td>Laidon, A.</td>
<td>Industry Based Research Fund</td>
<td></td>
</tr>
<tr>
<td>Detto, A.</td>
<td>Victorian stormwater quality assessment (predicting pollutant concentration from catchment characteristics and climate)</td>
<td>$214,430</td>
</tr>
<tr>
<td>Duncan, H.</td>
<td>EPA, NSW - Integrated Stormwater Treatment</td>
<td>$17,181</td>
</tr>
<tr>
<td>Dufko, J.</td>
<td>Tools for evaluating the social and economic performance of stormwater management (Melbourne Water)</td>
<td>$10,909</td>
</tr>
<tr>
<td>Fletchler, T.</td>
<td>Tools for evaluating the social and economic performance of stormwater management (Melbourne Water)</td>
<td>$17,500</td>
</tr>
<tr>
<td>Fletchler, T.</td>
<td>Identifying and overcoming barriers to sustainable urban design (Melbourne Water)</td>
<td>$23,000</td>
</tr>
<tr>
<td>Taylor, A.</td>
<td>Victorian stormwater quality assessment: development reliable models of pollutant loads for stormwater managers</td>
<td>$59,500</td>
</tr>
<tr>
<td>Taylor, A.</td>
<td>Melbourne Water – Ruffers Wetland</td>
<td>$7,250</td>
</tr>
<tr>
<td>Kellar, R.J.</td>
<td>Showy River Physical Model Study [Sinclair Knight Merz Pty Ltd and Department of Sustainability and Environment]</td>
<td>$149,030</td>
</tr>
<tr>
<td>Kellar, R.J.</td>
<td>Hobson’s Bay Sewer Pumping Model Study (HGP Pty Ltd and Melbourne Water Corporation)</td>
<td>$133,000</td>
</tr>
<tr>
<td>Kellar, R.J.</td>
<td>Laboratory Testing of Cleverfoot Lift Trap (Cleverfoot Pty Ltd)</td>
<td>$29,000</td>
</tr>
<tr>
<td>Row, G.</td>
<td>Development of a National Training Resource on Intelligent Transport Systems Architecture (Intelligent Systems Australia)</td>
<td>$7,539</td>
</tr>
<tr>
<td>Rose, G.</td>
<td>Triple bottom line evaluation (Ministry of Transport)</td>
<td>$22,000</td>
</tr>
<tr>
<td>Rose, G.</td>
<td>Role to work and beyond, development and evaluation of travel behaviour (Department of Infrastructure)</td>
<td>$10,000</td>
</tr>
<tr>
<td>Curtis, Q.</td>
<td>Integrating public transport and general traffic on arterial roads (VicRoads)</td>
<td>$90,000</td>
</tr>
<tr>
<td>Sanvito, M.</td>
<td>Commonwealth Competitive Grants</td>
<td></td>
</tr>
<tr>
<td>Yach, W.</td>
<td>Full-out capacity of steel and fibre composite rods groused into timber (Australian Government, Forest and Wood Products Research and Development Corporation)</td>
<td>$68,000*</td>
</tr>
</tbody>
</table>

**RESEARCH AND DEVELOPMENT**

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Project Title</th>
<th>Amount Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minar, H.R.</td>
<td>Commonwealth Competitive Grants</td>
<td>$30,000</td>
</tr>
<tr>
<td>Minar, H.R.</td>
<td>- Industry Partner: Gland Laminated Timber Association of Australia - Includes Faculty of Engineering contribution of 10% of the FPMRDC component; i.e. $4,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total Funding Awarded in 2004</strong></td>
<td></td>
<td>$2,127,765</td>
</tr>
</tbody>
</table>

*includes in-kind and cash contributions from Industry partners

### 4.3 Research activity at Centres (CRCCH, ITS, MTEC, ISWR)

Cooperative Research Centre in Catchment Hydrology (CRCCH)

The second round three year projects, which commenced in January 2003, continue to produce important research outputs.

The Centre substantially advanced the development and implementation of its web-based Catchment Modelling Toolbox. Through the toolbox, practical tools - developed from research outputs - are made available to assist the land water industry in better resource management.

Some research projects in 2004 with major Monash involvement include:

- **Sustainable Water Allocation – Program 3**
  - Project 3.08 (EA) – Hydrologic and economic modeling for water allocation [Weinstein/Cotter]
  - Urban Stormwater Quality – Program 4
    - Project 4.09 (MA) – Development of integrated stormwater models [Fletcher/Waig/Woolcock]
    - Project 4.09 (EB) – Stormwater Best Management Practices [Fletcher/Geedel/Linde/Subi]
    - Project 6.11 (EB) – Poreforming geely and temporal variations in channel form [Laidon]

Total funding for these and other projects and for the CRCCH Office activities at Monash was $1,694,435 in 2004.

### Institute of Transport Studies, Monash Node (ITS)

ITS (Monash) focused increasing attention on expanding its research activities during 2004. These management initiatives resulted in:

- First, the external advisory committee was reconstituted, with the first meeting scheduled in early 2005.
- Second, an internal Transport Research Management Committee was formed to consider the overall progress of the Institute.

Recently, the frequency of Transport Research Workshops was increased to fortnightly, giving students and staff a more regular forum for presenting work and discussing grant opportunities.

New research projects in 2004 included performance of bus rapid transit, public transport provision in relation to transport needs, modeling weaving phenomena, road space allocation, transport and social exclusion, vehicle-to-vehicle safety, public transport inter-change design, and lean passenger information systems, performance reviews of the last three Olympic Games, freeway ramp merging processes, public transport training in higher education, evaluation of the Monash University Travelincentives initiative, and examination of opportunities to enhance pedestrian access to an industrial area in metropolitan Melbourne. Research work was presented at a range of international conferences in the USA, France, Japan, Spain and Turkey. The number of joint initiatives with overseas researchers are being estimated for 2004. The year ended on a high note with two PhD students, Rumen Li and Ritsa Seethaler, being jointly awarded the Rodney Vaughan Prize for the first postgraduate paper presented at the 26th Annual Conference of the Australian Institute of Transport Research (AITS).

PhD enrolments reached seven during 2004, more than double the number enrolled four years ago. Jim Youngman was awarded his PhD and Merle Chen submitted her thesis. Rumen Li converted from Masters by research to PhD candidature, and Mark Kepkovich and Richard Yoo joined the Masters and PhD programs.

Professor Graham Currie, Australia’s first Professor of Public Transport, has continued to strengthen public transport research activities, supported by the Department of Infrastructure, VicRoads and the Bus Association of Victoria. His ongoing work has continued to promote greater collaboration with and contribution to both industry and governmental transport initiatives across a wide range of areas. They include VicRoads, the Bus Industry Confederation, RTA Sydney transit ways, DGII Tasmania and Victoria, City of Port Phillips, Yarra Trams, the National Passenger Transport Research Board and the Victorian Local Government Association, Transport Research Board technical committees, the University of Queensland, the Victorian Planning and Environmental Law Association and the Victorian auditor general’s office.

**Civil Engineering – 2004 Annual Report**

Page 16 of 44

Page 17 of 17
Monash Timber Engineering Centre (MTEC)

MTEC undertook a number of projects in 2004 for 20 different clients. A major project on epoxy grouted bars embedded in timber was commenced funded by the Gland Lumber Mill Timber Association of Australia and the Forest and Wood Products R & D Corporation - FWPRDC with a view to developing a set of design rules for the Australian timber design code. Other work involved around product development for Austpine, suitable QA systems for the glulam and I-beam industry, particleboard design properties for the Australian Wood Panels Association industry and work for a variety of other clients involving a range of products. A major grant dealing with adhesive bonding of wood using kieselguhr-based adhesives, mentioned in the 2003 report as under negotiation, has been successfully achieved and has commenced. In 2003 a PhD student started work on timber bridges; this work is continuing and currently being boosted with assistance from two student trainees from the University of Kiel, Germany. The work on timber bridges is now progressing rapidly with the first timber bridge deck due to be tested shortly and expected to attract considerable industry attention. Work continued on standards at both a national and international level.

Institute for Sustainable Water Resources (ISWR)

For its first year of operation, the Institute has exceeded its targets in all areas:

- 29 journal papers and 37 conference papers were submitted or accepted
- External funding of $376,000 was obtained with $7.74M pending
- Fifteen postgraduate students are enrolled in 2004
- Successful links have been established with:
  - CRC in Catchment Hydrology and the CRC for Freshwater Ecology
  - UNESCO Urban Water Program (Chair IHQ VI Committee)
  - Pennline Water Group in UK
  - European Community Day Water Program (hosted student, staff collaborator)
  - Partnership in bid for EU funds is pending (Dec 2003)
- Contribution and participation in any future Monash Centre for Natural Resources Management is pending (Dec 2005)

The Institute has researchers working across a wide range of sustainable water resource issues, including:

- Integrated urban water management and water sensitive urban design
- Functioning, protection and rehabilitation of waterways (waterway management)
- Sustainable systems
- Flood management

In 2004, the largest area of research activity was in integrated urban water management and water sensitive urban design.

4.4. Research seminars given by visitors to the Department

**Presenter**

- Prof Richard Ashley, Pennline Water Group, University of Sheffield, UK
- Professor Maurice D. Darzewski, Earth Sciences Department, University of Waterloo, Waterloo, Ontario, Canada
- Professor Ivan Tohej, Department of Civil Engineering, University of Tokyo, Japan
- Professor Hussain Al Shahrani, University of Baghdad, Iraq
- Professor Jeffrey Parker, Department of Civil Engineering, University of Toronto, Canada
- Professor Erem Radwan, Executive Director, Centre for Advanced Transportation Systems Simulation, University of Central Florida (UCF), USA
- Dr Steve Milner, Department of Civil Engineering, University of Liverpool, UK
- Dr Graham Smelt, NIVA NZ

**Seminar Topic**

- Integrated Urban Water Management in Europe: Towards or Away from Sustainability
- Deep Biosolids Injection
- Conversion of Municipal Waste Island to a New City
- Moral Responsibility of Scientists and Engineers in the Age of WMD
- Current Research on Tubular Structures at the University of Toronto
- Driving Simulator Applications for Traffic Engineering Research
- Experiences with the Use of Ground Penetrating Radar (GPR) in Corrosion Assessment
- Estimating roughness in course bad rivers

4.5. Formal seminars given by staff and postgraduate students

**Presenter**

- Mr Darrel Almagor, President, Engineers Without Borders, Australia
- Ms Lilli Kotake, LCS Pty Ltd
- Dr Ahmad Shayan, Chief Scientist and Concrete Project Leader, ARRB Transport Research Ltd
- Dr Hassen Jawali, Chairman of the newly established National Association for the Salvation of the Iraqi Marshes, Iraq

**Seminar Topic**

- Engineers Without Borders
- Spatial Information and GIS
- Alkal-Alkali Aggregate Reaction (AAR) in Australia and Recent Developments
- Restoring the Marshes of Mesoopotamia: Present and Future - Plans and Challenges to Restore and Revitalise the Marshes of Southern Iraq
- Civil Engineering - 2004 Annual Report
4.6. Publications

Book chapters


Journal papers


Civil Engineering – 2004 Annual Report
RESEARCH AND DEVELOPMENT


Conference papers


Civil Engineering – 2004 Annual Report Page 22 of 44

RESEARCH AND DEVELOPMENT


Civil Engineering – 2004 Annual Report Page 23 of 44
### 4.7. List of postgraduate students and research topics

<table>
<thead>
<tr>
<th>Student Name</th>
<th>MEthesis (Research) or PhD</th>
<th>Project Title</th>
<th>Main Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam, Con Y (Mr)</td>
<td>MEngSc</td>
<td>Remote monitoring of timber structures</td>
<td>A/Prof I. Bressler</td>
</tr>
<tr>
<td>Al-Shawaf, Ahmed (Mr)</td>
<td>MEngSc</td>
<td>Bond characteristics of CFRP strengthened steel members under extreme temperatures</td>
<td>A/Prof R. Al-Mahadi</td>
</tr>
<tr>
<td>Byrne, Matthew (Mr)</td>
<td>MEngSc</td>
<td>Road Asset Management</td>
<td>A/Prof J. Sanjayan</td>
</tr>
<tr>
<td>Carpenter, Lisa (Ms)</td>
<td>MEngSc</td>
<td>Indicators of river condition: are they useful for environmental management</td>
<td>Dr. T. Fitchen</td>
</tr>
<tr>
<td>Chan, Derek (Mr)</td>
<td>MEngSc</td>
<td>Mechanics prediction and prevention of pipe bursts in buried water and gas/pipe systems due to soil movement</td>
<td>Dr. J. Kodikara</td>
</tr>
<tr>
<td>Hall, Belinda (Ms)</td>
<td>MEngSc</td>
<td>Developing novel stormwater treatment technologies for safe across</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Kabir, Ehsanullah (Mr)</td>
<td>MEngSc</td>
<td>Fertilisation behaviour of granular soils under repeated load</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Kabir, Mabshwara (Mrs)</td>
<td>MEngSc</td>
<td>Modelling long-term groundwater rebound and recharge (Ranger Uranium Mine, Kuarka National Park)</td>
<td>Dr. G. Muddell</td>
</tr>
<tr>
<td>Karpov, Mark (Mr)</td>
<td>MEngSc</td>
<td>Transformed technology based transport, infrastructure and engineering projects financed and undertaken in China and Asia</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Gomage, Kumari (Mr)</td>
<td>MEngSc</td>
<td>Root resistance of FRP plated concrete members</td>
<td>Dr. R. Al-Mahadi</td>
</tr>
<tr>
<td>Kong, Daniel (Mr)</td>
<td>MEngSc</td>
<td>Development of an alkali-activated slag based concrete construction material for high fire risk structures</td>
<td>A/Prof J. Sanjayan</td>
</tr>
<tr>
<td>Kong, Koa Ho (Mr)</td>
<td>MEngSc</td>
<td>Numerical analysis of tapered piles</td>
<td>Dr. J. Kodikara</td>
</tr>
<tr>
<td>Lee, Kay Ying (Ms)</td>
<td>MEngSc</td>
<td>Numerical analysis of model pile failure due to soil movement using FLAC3D</td>
<td>Dr. J. Kodikara</td>
</tr>
<tr>
<td>Li, Yong (Ms)</td>
<td>MEngSc</td>
<td>Developing an improved unified equation for prediction of stormwater treatment</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Magyar, Mirela (Mrs)</td>
<td>MEngSc</td>
<td>Water recycling</td>
<td>Dr. T. Fitchen</td>
</tr>
<tr>
<td>Purwa, Dauding (Mr)</td>
<td>MEngSc</td>
<td>Public transport planning in Indonesia</td>
<td>Dr. G. Mitchell</td>
</tr>
<tr>
<td>Sinawandik, Nihim (Mrs)</td>
<td>MEngSc</td>
<td>Development of an experimentally-derived clogging prediction method for stormwater infiltration and filtration systems</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Ali, Terek (Mr)</td>
<td>PhD</td>
<td>Investigation of the mechanism causing shrinkage in concretes made with metakaolin cement</td>
<td>A/Prof J. Sanjayan</td>
</tr>
<tr>
<td>Avsar, Sina (Ms)</td>
<td>PhD</td>
<td>Settlements in urban model solid waste landfills with rheological and geo-statistical considerations</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Browne, Dale (Mr)</td>
<td>PhD</td>
<td>Predicting and modelling the clogging of stormwater infiltration systems</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Chan, Merle (Ms)</td>
<td>PhD</td>
<td>Evaluation of effectiveness of road safety audit (Thesis under examination)</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Fawaz, Sabrina (Ms)</td>
<td>PhD</td>
<td>Strengthening of steel structures using high modulus CFRP laminates</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Hii, Adrian (Mr)</td>
<td>PhD</td>
<td>Structural health monitoring of bridges using fibre optic sensors</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Fletcher, Peter (Mr)</td>
<td>PhD</td>
<td>Research into the effectiveness of deep soil mixing techniques in improving the engineering properties of Oxide based Sin-in-Situ Model of stormwater quality</td>
<td>Dr. A. Deolali</td>
</tr>
<tr>
<td>Francy, Matthew (Mr)</td>
<td>PhD</td>
<td>Estimating the probability of extreme rainfall – a joint probability approach</td>
<td>Mr. P.E. Wandel</td>
</tr>
<tr>
<td>Green, Janice (Ms)</td>
<td>PhD</td>
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<td></td>
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</tbody>
</table>

Civil Engineering – 2004 Annual Report
4.8. Theses accepted for Higher Degree

**PhD**

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Supervisor(s)</th>
<th>Thesis Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chakrabarti</td>
<td>Srijit</td>
<td>Dr J. Kodika</td>
<td>Shrinkage behaviour of continuously stabilised crushed benficiatic rocks suitable for pavement rehabilitation</td>
</tr>
<tr>
<td>Chin</td>
<td>Victor</td>
<td>AProf. M. Bouza</td>
<td>The dynamic response of pre-stressed concrete in reinforced concrete beam-end slab bridge decks</td>
</tr>
<tr>
<td>Hon</td>
<td>Alan</td>
<td>Dr R. Al-Mahaidi</td>
<td>Compressive membrane action in reinforced concrete beam-end slab bridge decks</td>
</tr>
<tr>
<td>Lloyd</td>
<td>Sara</td>
<td>AProf. T. Wang</td>
<td>Exploring the opportunities and barriers to sustainable stormwater management practices in residential catchments</td>
</tr>
<tr>
<td>Lokego</td>
<td>Weena</td>
<td>AProf. J. Serajuddin</td>
<td>Stress-driven behaviour of confined high strength concrete under nonhomogeneous loading and cyclic loadings</td>
</tr>
<tr>
<td>Richards</td>
<td>Sarah</td>
<td>AProf. M. Bouza</td>
<td>Production and assessment of modified clay for organic contaminant containment</td>
</tr>
<tr>
<td>Slocnic</td>
<td>Elizabeth</td>
<td>AProf. R. Grzebieta</td>
<td>The elastic buckling of solid-filled thin-walled box sections</td>
</tr>
<tr>
<td>Youngman</td>
<td>James</td>
<td>AProf. G. Rasa</td>
<td>Territories for dynamic field repair services and their optimisation under high utilisation</td>
</tr>
<tr>
<td>Weng</td>
<td>Mei Dong</td>
<td>AProf. M. Bouza</td>
<td>Diffusion and leaching of heavy metals in slimes and stabilized slimes</td>
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</tbody>
</table>

**MEngSc (Research)**

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Supervisor(s)</th>
<th>Thesis Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barton</td>
<td>Andrew</td>
<td>AProf. R. Keller</td>
<td>A numerical model for the hydraulics of the vertical slot fishway</td>
</tr>
<tr>
<td>Francs</td>
<td>Bernard</td>
<td>AProf. C. Haberfeld</td>
<td>Lateral loaded piles in inclined soft rock masses</td>
</tr>
<tr>
<td>Lim</td>
<td>Kock Kien</td>
<td>Dr R. Al-Mahaidi</td>
<td>Finite element modelling of submarine pipeline installation and on-bottom behaviour on irregular seabed</td>
</tr>
<tr>
<td>Nahlawi</td>
<td>Hani</td>
<td>Dr J. Kodika</td>
<td>Behaviour of a reactive soil during desiccation</td>
</tr>
</tbody>
</table>

4.9. Graduating Class of 2004 (Postgraduates)

**Master of Engineering Science (Research)**

- Bernard Julian Francis BE(Civil) (Hons)
- Noree Frances Amdt BE(Hons) BSc MEngSc MEng
- Andrew Frederick Barton BE(Envir)(Hons) Deakin

- Haeri Nahwel BSc American U. Beirut
- Koki Lian Lim

**Master of Traffic**

- Keith Milson BE(Tas)
- Richard Luke Burk
- Penelope Jane Ford
- Melissa Louise Merick

- Johan Tay BE(Hons) BCom MEng
- Bryne Lawrence Neil
- Neville Gabriel Potos

**Master of Transport**

- Daniel James Hansey BE(Civil) (Hons) Qld
- Joseph Kell

- Christine Syn Faa Wong BE(Hons) BCom CANT

**Master of Transport and Traffic**

Graham McCabe

Civ Engineering – 2004 Annual Report
5. UNDERGRADUATE STUDENTS AND PRIZES

5.1. Graduating Class of 2004

Bachelor of Engineering (Civil)
Boris Zahariev-Louvec
Kar Man Kevin Chan
Stephen Charles Elmasri
Rohan Yearbury Mitchell

Franpos Domico Fivette
Shu Tong Cheng
Ki Li Fung
Thammakorn Nontwajiporn

Bachelor of Engineering in the field of Civil Engineering
Kar Man Kevin Chan
Stephen Charles Elmasri
Rohan Yearbury Mitchell
Gareth Peter Helmunn
Ian Jay Matheson
Ka Chi Gary So
Tina Pantos

Shu Tong Cheng
Ki Li Fung
Thammakorn Nontwajiporn
Matthew Wong-Fai So
Andrew Ying Chau Woo
Mohamed Shafie

Bachelor of Engineering (Civil) with Honours
Ya Li Hong Leong
Tza Ching Mok

Bachelor of Engineering (Civil) in the field of Civil Engineering
Ronald Allan Bairns
Matthew Byrne
Daniel Alexander Cialle
Peter Thomas Edwards
Duncan James Banks
Andrew Paul Ber
Andrew Steven Bishop
Timothy John Blackley
Zoe Elizabeth Buxton
Paul Nathan Carter
Philip Chisholm
Scott Stephen Concim
Andrew William Eichenaky
Catherine Lene Fazaline
Carron Easdrink Grant
Benjamin John Gray

Vladimir Myrskow
Peter Francis Ryse
Simone Ulrich Eikar
Robert Matthew James
Jonathan Wai Kit Lam
Matthew Stuart Leos
Wayne Stephen Mack
Ian Ronald McCormick
Christopher Pham
Catherine Patricia Rossignol
Mathew Robert Sutry
Hoon-Jae Seoening
Rebecca Jason Stilts
Matthew Morgan Telfer
Ben Matthew Wilson

Bachelor of Engineering (Civil and Computing)
Damien John Byrne

Stanimir Sethongnot

Bachelor of Art and Bachelor of Engineering (Hons) in the field of Civil Engineering
Laura Denise Powell

William Charles Robertson Ray

Bachelor of Science and Bachelor of Engineering (Hons) in the field of Civil Engineering
Alastair Mathew Garick

Adam Gerard Smith

Bachelor of Commerce and Bachelor of Engineering (Hons) in the field of Civil Engineering
Alastair McDonnell Paterson
Michel Freund
Laura Jane Brown

Adam Gerard Smith
Anne Christine Rodriguez
Peter James Ingorsan

5.2. Undergraduate Prizes and Awards

Scholarships
Leighton Contractors "Koel Re" Scholarship
Traffic Group Scholarship

Level 2
Level 3

Prizes
Level 1 Prize
Top Level 1 student entering Civil Engineering

Level 2 Prizes
Roland Prize for Water Engineering
Norfolk Smith Timber Industries Prize
SRA Prize for Concrete Structures

Level 3 Prizes
Australian Steel Institute Prize
Dickson Partners Prize for Geomechanics
GHD Highway Design Prize

Level 4 Prizes
GHD Prize in Water Engineering
Foundation Industry Prize for Soil Engineering
Richardson Prize in Transport
Thiess Prize for Civil Engineering Design

Traffic Group Traffic Engineering Prize
Civil Engineering Vacation Work Prize

Scott Michael Fraser
Andrew Buns Langworthy
Kenneth Beer
Cathryn Louise Verkan
Public Daniel Brailt
Tin Chok Tang
Shuk Ngai Wong

Scott Knight
Freyja Nils
Jeffrey Wright

Scott Duggan
Jordan Allan
Tistan Hocking
Judy Naja

Michael Brand
Daniel Aito
Joseph Bowden
Michael Powell
Jason Black
Duncan Stewart
Joan Ke

Scott Conklin
Changjewa Jaya Kody
Peter Ingorsan
Peter Gorin
Peter Goren
Peter Ingorsan
Jonathan Lain
Kath Rossignol
John Paint
Andrew Somers
Jonathan Lain

Civil Engineering – 2004 Annual Report
Page 32 of 44

Civil Engineering – 2004 Annual Report
Page 33 of 44
6. PROFESSIONAL ACTIVITIES

6.1. Conference attendance

Al-Mahaidi, R. (Dr)
Int. Conference on Higher Education in Iraq organised by the British Council and the University of Dohuk, London (UK), February
5th Austroads Bridge Conference, Hobart, Tasmania, May
ISOPE Conference, Toulon (France), May
Int. Conference on Bridge Engineering and Hydraulic Structures, Kuala Lumpur (Malaysia), July
ACI Fall Convention, San Francisco, California (USA), October
American Society of Civil Engineers Conference in Baltimore (USA), October

Bakharev, Tatiana (Dr)
19th Annual Meeting of the American Ceramic Society, Indianapolis, Indiana (USA), April
3rd Annual Conference on Advanced Materials Processing and AUSCERAM 2004, November-December

Bouazza, Malek (Assoc Prof)
9th ANZ Conf. in Geomechanics, Auckland (New Zealand), February
3rd European Conf. on Geocell, Munich (Germany), February-March
1st Int. Geoenvironmental Engineering Conference, Singapore, March
5th Asian Regional Conference on Geosynthetics, Seoul (Korea), June

Codner, Gary (Assoc Prof)
World Water Conference, Stockholm, Sweden, August

Currie, Graham (Prof)
Transportation Research Board Annual Conference, Washington D.C. (USA), January
8th Int. Conf. on the Application of Advanced Technologies & Transport Engineering, Beijing (China), May
2nd National Passenger Transport Summit, Coffs Harbour, NSW, May
European Transport Conference, Strasbourg (France), October

Deletic, Ana (Dr)
Novatech 2004 Conference, Lyon, France, June
Urban Drainage Modelling (UDM) 2004 Conference, Dresden, Germany, September
International WSUD conference, Adelaide, South Australia, November

Fletcher, Tim (Dr)
NOVATECH 2004 Conference, Lyon, France, June
International WSUD (Water Sensitive Urban Design) conference, Adelaide, South Australia, November

Grundy, Paul (Em. Prof)
2004 Pacific Structural Steel Conference, Long Beach, California (USA), March
5th Austroads Bridge Conference, Hobart, Tasmania, May
IAASBE Symposium and Annual Meetings, Shanghai (China), September
IAASBE Conference, Kyoto (Japan), October

Grzebieta, Raphael (Assoc Prof)
International Crashworthiness Conference, San Francisco, USA, July
Road Safety Researchers Conference, Perth, WA, November
Australian College of Road Safety Seminar

Gu, Xue-Fan (Dr)
SINOCORE 2004 ISRM Regional Symposium on "Rock Mechanics: Rock Characterisation", China, May

Haque, Asadul (Dr)
3rd ARMS Conference, Kyoto (Japan), November

Keller, Robert (Assoc Prof)
5th Int. Symposium on Ecohydraulics, Madrid (Spain), September

Civil Engineering – 2004 Annual Report Page 34 of 44
6.2. Contribution to Professional Organisations

Al-Mahaidi, Rashid (Ur)
Member, ACI-ASCE Committee 447 “Finite Element Analysis of Reinforced Concrete Structures”
Member, American Concrete Institute ACI Committee 440 “Fire Reinforced Polymer Reinforcement”
Founding Member, Polymer Composites in Construction Seawater Committee, Composites Institute of Australia.
Founding Member, FRP Rehabilitation Subcommittee, Composites Institute of Australia.
Chairman, ACI-ASCE Sub-Committee 447 on “Finite element modeling for the repair and rehabilitation of RC and masonry structures”

Bouazza, Malek (Assoc Prof)
Member, Int. Committee, Int Conf. on Environmental Technology, Practice and Policy, held in London, Ontario (Canada) in August 2004
Member, Council of the International Geosynthetics Society
Core member and coordinator, Technical committee No. 5 (Environmental Geosynthetics) of the International Society of Soil Mechanics & Geotechnical Engineering
Corresponding member, Committee 14 on Waste Disposal, International Association of Engineering Geology and the Environment
Member, Australian Standard Committee on Geosynthetics
Member, ASCE, ASCE Geosynthetics Committee
Co-Chair, Organising Committee, International Geosynthetics Conf. held in Dresden (Germany), held in September 2004
Member, International Committee, International Conference on Geotextiles, Johannesburg, South Africa, held in October 2004
Member, International Review Committee, Asian Conference on Geosynthetics, Seoul, Korea, held in June 2004 (president, Australian chapter of the Int. Geosynthetics Society)

Clements, John (Mr)
Member, General Committee of the Chartered Institute of Transport and Logistics (Victorian Section)
Chair, Passenger Transport Group of the Chartered Institute of Transport and Logistics (Victorian Section)

Codner, Gary (Assoc Prof)
Chair, IE Aust College of Engineering

Currie, Graham (Prof)
Member, Academic Committee, Victorian Road-Based Public Transport Advisory Committee
Member, Victorian Local Government Association Committee on Sustainable Transport

De Alwis, Astrid (Mrs)
Member, Chartered Institute of Logistics and Transport

Deticic, Ana (Dr)
Chair, UNESCO HHP-VII Data for Urban Water Management
Australian Representative at the Committee of the Sewer Systems and Processes Working Group, which works as a joint specialist group of IWA and IHR (AD)
Member, Scientific Committee, 4th International SPH Conference held in Madeira, Portugal, November 2004
Member, Scientific Committee, 10th ISUQ Conference to be held in Copenhagen, Denmark, in 2005
Member, UDM 2006 Organising Committee to be held in Melbourne, 2006
Member, Scientific Committee, 4th International Sewer Processes and Networks (SNP) Conference
Member, Scientific Committee, NOVATECH 2004, Lyon, France

Fletcher, Tim (Dr)
Co-Chair, UNESCO HHP-VII Data for Urban Water Management
Member, Organising Committee, Research Workshop on Integrated Urban Water Management
Member, International Water Association
Co-Chair, Organising Committee, UDMWSUD Conference 2006
Chair, Melbourne Water WSUD (Water Sensitive Urban Design) Technical Committee
Member, Auckland Regional Council Stormwater Scientific Advisory Committee
PROFESSIONAL ACTIVITIES

Sarvi, Majid (Dr)
Member, Engineers Australia Transport Branch
Student Chapter Co-ordinator, Institute of Transportation Engineers (ITE), Australia and New Zealand Section
Member, ITE Australia and New Zealand

Weinmann, Erwin (Mr)
Corresponding Member, National Committee for Water Engineering of Engineers Australia
Member, Panel for Revision of Australian Rainfall and Runoff, Books IV and VI

Wong, M.B. (Dr)
Member, EAssE Structural Branch Committee, Victoria
Member, Int. Advisory Committee, Int. Conf. on Advances in Blast Structures to be held in June 2005
Member, EAssE Structural Branch Committee, Victoria

Young, William (Prof)
Fellow, Institute of Transportation Engineers (ITE), Australia and New Zealand
Member, Standards Association of Australia (Parking Committee)
Examiner, Master of Engineering Science, Nanyang Technological University, Singapore
Secretary, Australian Institute of Traffic Planning and Management (AITPM), Victoria

Zhao, Xiao-Ling (Prof)
Chairman, IWS Sub commission XV-E on Tubular Structures
Member, International Scientific Committee, 4th International Conference on Thin-Walled Structures, UK (held in June 2004)
Member, International Scientific Committee, First Int. Conf. on Experimental Structural Engineering, Nagoya, Japan (to be held in July 2005)
Member, International Scientific Committee, 4th International Conference on Advances in Steel Structures, Shanghai, PR China (to be held in June 2005)

6.3. Visits to Other Institutions

Bouazza, Malek (Assoc Prof)
Chonnam University, Kwangju (Korea)
FITI Testing & Research Institute, Seoul (Korea)

Codner, G. (Assoc Prof)
Chalmers University, Gothenburg (Sweden)
August University, Luena (Sweden)
August University, Bradford (UK)
October University of Sheffield, Sheffield (UK)
October University of Herfordshire, Hatfield (UK)
October Cambridge University, Cambridge (UK)
October

Currie, Graham (Prof)
Newcastle-Upon-Tyne University, Transport Operations Research Group, Newcastle-Upon-Tyne (UK)
September University of Ulster, Belfast (UK)
September

Fletcher, Tim (Dr)
RISA (Institut National des Sciences Appliquées), Unité de Recherche da Géocap Civil, Hydrologie Urbaine, University of Science and Technology, Lyon (France)

Gu, Xue-Fan (Dr)
Tong Ji University, Shanghai (China)
May

Haque, Asadul (Dr)
Tokyo University, Tokyo (Japan)
February

Keller, Robert (Assoc Prof)
Georgia Technical University, Atlanta, Georgia (USA)
September

Civil Engineering – 2004 Annual Report
PROFESSIONAL ACTIVITIES

Member, International Scientific Committee, International Crushworthiness Conference, San Francisco, Malaysia (July)

Reviewer, International Journal of Mechanical Sciences, UK

Member, Editorial Board for Int. J. of Crushworthiness

Member, Editorial Board for IJAcS Austen J. of Structural Engineering

Reviewer, Australian Journal of Structural Engineering

Editor (Peer review), Roadside – Australian Journal of Road Safety

Examiner, PhD thesis for Prof J. Tomov’s student at RMIT

Examiner, Master’s thesis for RMIT

Kodikara, Jayantha (Dr)

Member, Editorial Board, Int. Journal of Pavement Engineering

Member, Editorial board, Computers and Geotechnics Journal

Reviewer, Canadian Geotechnical Journal

Reviewer, Journal of Geotechnical & Geoenvironmental Engineering

Reviewer, ASCE

Reviewer, Geotextiles and Geomembranes

Ladson, Tony (Dr)

Examiner, PhD thesis for Charles Sturt University

Mudd, Gavin (Dr)

Reviewer, Science of the Total Environment

Reviewer, Australian Journal of Water Resources

Pathegama Gamage, Ranjith (Dr)

Reviewer, J2US-Chinese Journal

Rose, Geoff (Assoc Prof)


Reviewer, Transportation Research

Reviewer, 2005 Transportation Research Board Conference

Sanjayan, Jay (Assoc Prof)

Reviewer, Cement and Concrete Research Journal

Reviewer, American Concrete Institute Journal

Examiner, Thesis from Curtin University on “Study of ultimate strength of steel webs made with high strength concrete”

Sriv, Majid (Dr)

Reviewer, IETT 116 Conference

Reviewer, ARRB Journal

Weinmann, Erwin (Mhr)

Editor, Australian Journal of Water Resources, Engineers Australia

Reviewer, Water Resources Research

Reviewer, Hydrologic Sciences Journal, IAH

Reviewer, Australasian Journal of Water Resources

Examiner, MEngSc Thesis from University of Melbourne

Wong, Bill (Dr)

Reviewer, Int. Journal of Steel and Composite Structures

Reviewer, Few Codes for Steel Structures, Singapore

Reviewer, J. of Structural Engineering, ASCE

Reviewer, J. of Engineering Structures

Young, William (Prof)

Reviewer, Transportation

Zhao, Xiao-Ling (Prof)

Member, Editorial Board, Thin-Walled Structures

Member, Editorial Board, International Journal of Structural Stability and Dynamics

Reviewer, Engineering Structures

Reviewer, Journal of Structural Engineering, ASCE

6.5. Services to Expert Bodies and Expert Advice

Al-Mahalid, Riad (Dr)

Advisor to Department of Education, Science and Training for the recruitment and placement of six fellowships for Iraqi academics under the Endeavour Research Fellowships Scheme

Member, International Committee on Higher Education in Iraq

Codner, Gary (Assoc Prof)

Member, UNEP (United Nations Environment Program), Paris, France, November

Currie, Graham (Prof)

International Associate, US Transportation Research Board Technical Committees (Bus Transit Systems, Public Transport Planning and Development)

International Panel Member, US Transit Cooperative Research program Project H-32 “Determining the Elements Needed to Create High Rider-ship Transit Systems”

Steering Committee Member, Victorian Auditor General’s Inquiry into Rail Franchising in Victoria

Gu, Xue-Fan (Dr)

Reviewer, Technical Committee for Geo-Frontiers Conference to be held in USA in 2005

Young, William (Prof)

Reviewer, Performance-Based Standards Review for NTC (National Transport Commission)

6.6. External Seminars, Courses, Workshops and Conferences

Currie, Graham (Prof)

Short course – “Public Transport Route and Service Performance Measurement – An Introduction”, at Queensland University and Queensland University of Technology, June

Short Course – “Planning and Design of On Road Public Transport – Traffic Engineering and Management Short course”, March

‘Improving Methodologies To Assess On Road Public Transport Priority’ Vicroads Seminar Series, November

Deletic, Ana (Dr)

Research Workshop on Integrated Urban Water Management

Fletcher, Tim (Dr)

MUSIC Training Courses (Presentations at CRCCH Catchment Modeling School), University of Melbourne, February

Seminars on “Modeling tools for water resource management in urban areas” at CRCCH Catchment Modeling School Workshop on Water Sensitive Urban Design, AUSMand (NZ) October

Grzebieta, Raphael (Assoc Prof)

One-Day seminar on Roadsides Safety Barriers organized by the Australasian College of Road Safety, August

Hague, Asadul (Dr)

Short course on Liquidation and Landslide Prediction and Mitigation conducted by Prof Iku Towhata of Tokyo University, organized at Monash University, September

Technical seminar for AGS Victorian Chapter, August

Kodikara, Jayantha (Dr)

2-day course on Engineering Design of Waste Containment Facilities, organised jointly by the University of Moratuwa (Sri Lanka) and the Sri Lankan Geotechnical Society, held at the University of Moratuwa (Sri Lanka), January

Invited Aust. Geomechanical Society Seminar on “In situ stabilisation of degraded road pavements”, August
PROFESSIONAL ACTIVITIES

Invited Golders Seminar on “An approach to include shrinkage cracking into mix design of cemented layers”, August.

Ladson, Tony (Dr)
ROHR Program training course, June
Australian Runoff Quality workshop web-streaming trial

Pathemga Gamage, Ranjith (Dr)
Short course on Lepafication Landslide Prediction and Mitigation with Dr Iku Toshoko of University of Tokyo (Japan), September.

Rose, Geoff (Assoc Prof)
Invited seminars at Deakin University and University of Twente, the Netherlands, May

Sanjayan, Jay (Assoc Prof)
“The design of sustainable infrastructure”, keynote workshop on behalf of Victorian Institute of Australia, November
ARC Network meeting at USQ (presentation on structures group activities at Monash), Queensland, February

Sarvi, Majid (Dr)
Road Space Allocation R & D project presentation at the University of Sydney

Weinmann, Erwin (Mr)
ROHR Program training course, June

Young, William (Prof)
Traffic Engineering and Management, Short Course, March

6.7. Special presentations

Bouazza, A. (Assoc Prof)
Invited lecture on Geosynthetics for the Korean Geotechnical Society and the Korean Geosynthetics Society in Seoul (Korea), April
Invited seminar at Chonnam University, School of Engineering, Kwangju, (Korea), April

Currie, Graham (Prof)
Public Transport – Yarra Demands Better. Address at the City of Yarra Public Transport Forum in association with Prof Peter Newman of Murdoch University, November.
University of Queensland and Columbia University Seminar on Transit Oriented Development in Brisbane, February
Transport and Social Exclusion in Rural and Regional Victoria, Victorian Planning and Environmental Law Association Annual Conference, September
Sustainable Transport and Local Government – 3 lectures to the Victorian Local Government Associations members
The Knowledge Management Gap in Public Transport, 27th National Public Transport Summit, May
Public Transport: Network Planning - Australian Perspectives, Transport Operations Research Group, University of Newcastle upon Tyne, Seminar Program October
Australian Transport Needs Studies, Transport Planning and Policy Group Seminar, University of Ulster, October
Transport Planning for Athens 2004, Bus Association Victoria Annual Meeting, September

Fletcher, Tim (Dr)
Presentation to City of Manningham Council, November

Grzebieta, Raphael (Assoc Prof)
Keynote presentation on road safety at SAC one-day seminar, September
Television interviews for Today/Tonight program on Channel 7 News

Kodikara, J. (Dr)
Presentation to Meeting of Austroads (Pavement Stabilisation Reference Group), Nanango (WA), November
Technology Transfer Seminar to Austroads Canning Vale (WA), November

Ladson, Tony (Dr)
Presentation to Knox City Council on “Urban Stream retrofit project”

PROFESSIONAL ACTIVITIES

Presentation at Engineers Australia Seminar series on “urban stream restoration”

Pathemga Gamage, Ranjith (Dr)
Presentation to the Research Institute of Innovative Technology for the Earth (RITE) in Japan, on “Research activities on geomechanics of carbon dioxide at Monash University”

Rose, Geoff (Assoc Prof)
Presentation to the Victorian Bicycle Council on the regulation of motorised personal mobility devices, November
Presentation to the Monash University Sports and Physical Activity Research Network Workshop, September

Sanjayan, Jay (Assoc Prof)
Spelling of Concretes in Fire, - presentation to Concise Institute of Australia, Technical Workshop, November

6.8. Consulting and Contract Research

Al-Mahaidi, Riadh (Dr)
Supervision of construction of the Warrigal Street Bridge on the Monash Freeway
Investigation of severe cracking in cross heads of a major highway bridge in Malaysia
Structural health monitoring using fibre optic sensors of the Warrigal Street Bridge on the Monash Freeway
Validation of the FRP repair work of the Warrigal Street bridge on the Monash Freeway using fibre optic sensors

Bouazza, Malek (Assoc Prof)
Dynamic compaction of waste for R.B. Associates Pty Ltd
Direct shear test on rock samples from Queensland for Gold Associates and from Dubai for Foundation QA
Shear box tests for BFP

Currie, Graham (Prof)
Review of impacts of greenway removal, High Street, Preston, for VicRoads, North West Region
Review of demand forecasting of Sydney Bus Transways – RTA Transways, NSW
Transit Network Design Research – Department of Infrastructure, Energy and Resources, Tasmania
Advice for the Bus Industry Association Submission to the Federal Sustainable Cities Inquiry – Bus Industry Association
Sustainable Transport and Local Government in Victoria, VLSA

Grzebieta, Raphael (Assoc Prof)
Testing bus frames in laboratory for Valley
Crash test of water filled barriers using 2 tonne pick-up truck at Sandown, end of August 2004 – Adcock Barrier Systems
Crash Testing of Security Bollards - Leda

Gu, Xue Fan (Dr)
Direct shear testing of compacted soil samples for Thompson & Brett Pty Ltd
Direct shear testing on soil samples for AMCO
Direct shear testing on rock samples for Gold Associates Pty Ltd
Two projects of CSWFS field testing in Sydney for Brown Technical Engineering Pty Ltd

Ladson, Tony (Dr)
Flow Stress Ranking for SKM Pty Ltd
Advice to Victorian National Parks Association on water management in the Barmah Milawa Forest
Advice to Environment Victoria on water policy
Review of sampling issues for 2004 Index of Stream Condition for the Department of Sustainability and Environment

Millner, Robert (Assoc Prof)
Graded Assurance for Gusso Laminated Timber Association of Australia
Evaluation of strength of window framing systems for CHS project
Determination of the engineering design properties of particle board for Australian Wood Panels Association

Mudd, Gavin (Dr)
Review of the environmental management plan for the proposed Kaimangu Gold project in Papua New Guinea (for Mineral Policy Institute).

Civil Engineering – 2004 Annual Report
6.9. Professional Development

**Bouazza, Malek (Assoc Prof)**
Outside Study Program (University of Cardiff, UK; France; Italy; Austria; Portugal), August 2004-January 2005

**Codner, Gary (Assoc Prof)**
Outside Study Program (Chalmers University, Gothenburg, Sweden; University of Bradford, UK; France; Canada; USA), August 2004-February 2005

**Deletic, Ana (Dr)**
Graduate Certificate in Higher Education, Unit HED 5003

**Haque, Asadul (Dr)**
Occupational Health Safety and Environment seminar, Monash University

**Kodikara, Jayantha (Dr)**
Pavement Design Seminar at ARRB, September Development of two DVDs as part of multimedia development for geotechnical subjects in collaboration with University of Melbourne

**Mudd, Gavin (Dr)**
Graduate Certificate in Higher Education unit HED 5003 and unit HED5002.

**Sanjayan, Jay (Assoc Prof)**
Training sessions on Responsus and Veta with CeLTS, Higher Education Development Unit, November

**Wong, Bill (Dr)**
Training session on Responsus and Veta, at CeLTS, Higher Education Development Unit, Monash University, November. Interview by CeLTS for teaching feature to be included in Faculty of Engineering website

**Young, William (Prof)**
University Senior Leadership Program, Red Hill (Victoria), July/August

**Zhao, Hao-Ling (Prof)**
AVCC Academic Leadership Training, Griffith University, Queensland, September