ITS (Monash)

ITS (MONASH)
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INSTITUTE OF TRANSPORT STUDIES
The Australian Key Centre in Transport Management

The University of Sydney
and Monash University
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FROM THE DIRECTOR’S DESK – HIGHLIGHTS OF 2005

This has been another year of achievement for the Institute of Transport Studies at Monash. In short, our educational courses have continued to be popular, the scope of our research and consulting has again broadened, we have been more active in publishing journal and conference papers and we have hosted two successful workshops. A number of strategic initiatives undertaken in 2005 have laid important foundations for further strengthening of our education and research activities in 2006.

On the educational front, this past year has seen the 4101 Express option introduced in the Transport Management Course (TMC) in Bus and Coach Operations. That initiative reflects the TMC team’s ongoing commitment to respond to the needs of the Department of Infrastructure and to provide an up to date and relevant accreditation course for the Bus and Coach Industry in Victoria. Enrolments in postgraduate coursework program are steady at over 60 students making this the largest postgraduate transport and traffic program in Australia. Two new scholarships will add to the number of PhD students in January 2006. The group’s commitment to quality teaching and education programs remains vitally important because our teaching programs underpin our financial stability. I was fortunate to be awarded the Faculty of Engineering prize for excellence in teaching in civil engineering and one of the final year transport electives (Transport Planning) was evaluated so favourably by students that it was one of the best performing units in the University.

Research activity increased in the areas of contract research and consulting. Areas of investigation included a demand responsive bus pilot project, tram stop design, signal priority modelling, a review of Australian Bus Rapid Transit systems, development of new techniques for measuring the quality of coordination between bus and rail schedules at interchanges and evaluation of University-based TravelSmart initiatives. I spent the second half of the year on sabbatical leave based at The Technical University of Delft in the Netherlands. My work there resulted in plans for a number of projects in the areas of reliability of motorway performance, route choice decisions of cyclists and opportunities to use advanced technology to reduce vehicle fuel consumption and emissions. Majid Sarvi has continued his collaborative work on driving behaviour with Professor Masao Kuwahara at the University of Tokyo. This research will lay important foundations for improved understanding of driving behaviour in complex, real world environments such as when a driver is involved in a dynamic combination of lateral and longitudinal movements (e.g. lane changing and merging manoeuvres).

The PhD program continued to grow, with two new scholarships funded by Metlink and Volgren negotiated in the latter part of 2005. The new students will commence in January 2006. Merle Chan was awarded her PhD. Rita Seethaler, a current PhD student, was awarded the David Willis memorial prize for the best student paper by the Australasian Transport Research Forum at its meeting in September.

Visitors during the year included Dr Jan Garrard (School of Health Science, Deakin University) who presented a seminar entitled “Physical Activity and Transport” and Professor Darcy Bullock, Purdue University, Indiana, USA spoke to centre staff about his research on traffic detection schemes at signalized intersections. The centre hosted Associate Professor Arvid Aakre, a visitor from the Department of Civil and Transport Engineering, Norwegian University of Science and Technology, Trondheim, who is conducting research in the area of road safety.
The Annual Ogden Lecture was held in early August and continued the tradition of this event by stimulating debate about contemporary transport issues. The 2005 Ogden Lecture was given by Paul Amos, Transport Adviser to the World Bank. He spoke on ‘The Transport Challenge in Developing Countries’. This evening also provided an ideal opportunity to recognise outstanding achievements in our education programs with awards presented to students in the Postgraduate Program in Transport and Traffic and the Transport Management Course in Bus and Coach Operations.

This year also saw us undertake a number of important strategic initiatives. ITS (Monash) hosted a workshop entitled “Transport Research @ Monash” (TR@M). This initiative was supported by the Vice-Chancellor and showcased current transport research activities across all faculties. It was successful in stimulating several multidisciplinary transport research projects, and the concept of a multi-disciplinary transport research network has now been selected as one of the ventures to be funded within the Monash Sustainability Institute (MSI). The TR@M venture is clearly very important to ITS (Monash) in the wider context of the strategic directions being pursued by Monash University. Another of the initiatives following on from this combined approach to research was the initiation of planning for a conference on transport disadvantage and social wellbeing, to be held early in 2006, with ITS (Monash) and a number of social and professional bodies as co-sponsors. Thanks to the support of individuals from a number of public and private sector organisations we also reconvened our Advisory Committee in 2006. The input provided by the members of the Advisory Committee at the two meetings which were held during the year has provided us with a number of ideas which will strengthen our forward planning.

We value our continued collaboration with the other node of the Key Centre, now known as the Institute of Transport and Logistics Studies (ITLS), located at the University of Sydney. Professor Currie presented a seminar at ITLS in 2005 and he and I are engaged in collaborative research projects with staff at ITLS. The strength of the two nodes, along with the growing collaboration between them, will ensure that the National Key Centre in Transport Management continues to make a contribution to the prosperity and sustainability of industry and the wider community.

We hope that you will find this report of our 2005 activities to be of value. Please do not hesitate to contact me if you would like further details on any of the items covered in this report.

G. Rose
Associate Professor Geoff Rose
Director, ITS (Monash)
ABOUT ITS (MONASH)

The Institute of Transport Studies was established in 1995 as a Commonwealth Key Centre of Teaching and Research in Transport Management. While transport education and research programs had been offered at the Monash University Clayton campus for over 35 years, the formation of the Institute of Transport Studies heralded an expansion of those activities and in particular the development of a number of off-campus learning (distance education) programs. The Institute of Transport Studies (Monash) now operates as a self-funded entity. ITS (Monash) is located within the Department of Civil Engineering, the original home of the transport education and research programs at Monash University.

Our Mission

- To progress transport knowledge and practice

Our Vision

- To be regarded as a provider of international standard transport education and research which contributes to the prosperity and sustainability of industry and the wider community

Our Values

In following our mission, we:

- Lead through innovation
- Provide quality education and research services
- Build a supportive team
- Develop effective partnerships
- Practise self-sustaining financial management

Our Core Activity Areas

The activities of ITS (Monash) are concentrated in the following areas:

**Education:**

Education activities contribute to building professional capacity in the transport and traffic industry and focus on transport and traffic engineering, transport policy, planning and operations management. Education programs are offered at the following levels:

- Undergraduate
- Postgraduate
- Continuing education: seminars, short courses and workshops
- Industry programs

**Research:**

ITS (Monash) conducts research which contributes to the prosperity and sustainability of industry and the wider community through understanding, predicting and evaluating travel demand, transport operations, transport and traffic management and public transport planning and management. ITS (Monash) research is focused in four program areas:

- Travel demand
• Transport operations
• Transport and traffic planning and management
• Public transport planning and management

Professional and community service:
ITS (Monash) staff engage in a range of professional and community service activities including:
• Arranging public lectures on contemporary transport issues
• Serving as committee members of national and international bodies
• Contributing to the organization of state, national and international conferences
• Providing editorial services to professional journals and publications
• Reviewing papers submitted for publication at conferences and in journals

Our Team
In 2005, The ITS (Monash) team included:
• Professor Bill Young, Head of the Department of Civil Engineering
• Professor Graham Currie, Professor of Public Transport
• Professor Rahmi Akcelik, Adjunct Professor
• Professor Tony Richardson, Adjunct Professor
• Associate Professor Geoff Rose, Director of ITS (Monash)
• Mr John Clements, Program Director, Transport Management Course
• Dr Majid Sarvi, Lecturer, Department of Civil Engineering
• Ms Astrid de Alwis, Assistant Program Director, Transport Management Course
• Ms Brenda O’Keefe, Administration Manager
• Ms Julia Arnold, Administration Officer (Finance)
• Ms Merle Chan, research student
• Ms Rita Seethaler, research student
• Mr Tim Martin, research student
• Mr Tan Yan Weng, research student
• Ms Ruimin Li, research student
• Mr Mark Karpovitch, research student
• Mr Richard Yeo, research student
• Mr Ikbal Kabir, research student
EDUCATION ACTIVITIES

The educational activities and programs at ITS (Monash) include:

- Undergraduate teaching
- Postgraduate degrees by research
  - PhD program
  - Master of Engineering Science by research
- Postgraduate degrees by coursework
  - Graduate Certificate in Transport and Traffic
  - Postgraduate Diploma in Transport and Traffic
  - Master of Transport
  - Master of Traffic
  - Master of Infrastructure Engineering and Management (course management responsibility)
- Transport industry education programs
  - Transport Management Course in Bus and Coach Operations
  - Education Program in Parking Management
- Professional development, workshops/short courses

Undergraduate Teaching

Staff associated with ITS (Monash) continue to play a key role in the delivery of the undergraduate transport units in the civil and environmental engineering programs. Figure 1 illustrates the trends in undergraduate student numbers. While level 2 enrolments have stabilised, enrolments in level 3 have increased over the past 2 years, reflecting a flow on from stronger enrolments in level 2 in previous years.

As a result of a minor course review in 2005, the level 2 unit (Transport and Traffic Engineering) will expand from 4 to 6 credit points and will now account for one quarter of a full time semester of study. The expansion of that unit will strengthen the transport content and also enable greater time to be devoted to development of professional communications skills. The level 3 Road Engineering subject (CIV3283) will also be revised in 2006 with the material on pavements which was formerly offered in this unit moving to a geomechanics unit and new material on surveying, which will be related to the geometric design of roads, being incorporated into this unit.

Staff also supervise final year research project students who are enrolled in CIV4210 Project A and CIV4211 Project B (Professors Bill Young and Graham Currie, Associate Professor Geoff Rose and Dr Majid Sarvi). A total of 19 undergraduate final year research projects were undertaken in 2005. Details of those projects are provided in the section of this report which deals with research activities.
Apart from these dedicated transport units, the staff also contribute to other units in the civil engineering program. Dr Majid Sarvi is responsible for the transport component of the major group design subject (CIV4212 Civil engineering practice 4), which is a core unit in the final year of the civil engineering degree. Staff are also responsible for two other units in the civil and environmental engineering programs: CIV3204 Engineering investigations which is taught by Dr Majid Sarvi and CIV3205 Project management for civil engineers which is taught by Professor Bill Young.

![Graph showing trends in undergraduate transport unit enrolments](image)

**KEY TO UNIT CODES:**
- CIV2281 - Transport and traffic
- CIV3283 – Road engineering
- CIV4283 – Transport planning
- CIV4284 – Transport systems

**Figure 1 : Trends in undergraduate transport unit enrolments**

**Undergraduate student prizes**
The following prizes were awarded in 2005:

- **The GHD Highway Design Prize** – awarded to the group of BE students who submitted the best highway design – Evie Annetta, Leah Ferrari, Ben Matters, Jason Williams

- **The Richardson Prize in Transport** – awarded to the BE student showing the greatest proficiency in one transport elective and project – Tiew Kai Ting

- **The Traffix Group Prize** – awarded to the BE student showing the greatest proficiency in level 4 transport engineering elective subjects – Tiew Kai Ting

**Undergraduate student scholarships**

- **The Traffix Group** (formerly Turnbull Fenner Pty Ltd) generously offers two scholarships to students who have an interest in and intend to pursue careers in transport engineering. The students must be in levels 2 and 3 of the Bachelor of Engineering (Civil Engineering) degree at the time of application, and are awarded $1,000 and $1,500 respectively, as well as six to twelve weeks’ work experience with the company. In 2005, the level 2 scholarship was awarded to Erin Murrihy and the level 3 scholarship to Rick Williams.
Staff awards for undergraduate teaching
Associate Professor Geoff Rose was awarded the Faculty of Engineering prize for excellence in teaching in civil engineering. One of the final year transport electives taught by Geoff (CIV4283 Transport Planning) was evaluated so favourably by students that it was one of the best performing units in the University.

![Figure 2: Associate Professor Geoff Rose receiving his teaching award from Professor Tam Sridhar, Dean of the Faculty of Engineering](image)

Postgraduate Teaching
Enrolments in the postgraduate coursework program, as well as higher degree by research enrolments [MEngSci (Research) and PhD], have remained firm over the last five years as shown in Figures 3 and 4.

![Figure 3: Trends in postgraduate coursework student enrolments](image)
Postgraduate research enrolments

![Postgraduate research enrolments](image)

_Figure 4: Trends in postgraduate research student enrolments_

**PhD program**

Students engaged in PhD research at ITS Monash during 2005 were:

- *Tim Martin*: Predicting pavement performance at a road network and road program level.
- *Rita Seethaler*: Investigation into the use of persuasion techniques in transport policy.
- *Ruimin Li*: Improving travel time estimation models.
- Merle Chan, who submitted her thesis on “The impacts of in-vehicle navigation systems on travel behaviour” in September 2004, was awarded her PhD in May 2005. Professor Bill Young and Associate Professor Geoff Rose attended her graduation (see Figure 5.).

**Master of Engineering Science by research**

Students engaged in Masters research at ITS Monash during 2005 were:

- *Mark Karpovitch*: Transferred technology based transport, infrastructure and engineering projects financed and undertaken in China and Asia
Postgraduate degrees by coursework
The course continues to attract strong interest from throughout Australia and overseas. A preliminary review undertaken during 2003 laid foundations for more detailed development to be undertaken in 2004/5 on additional units and specialisations for the program. A new unit covering public transport planning and management was under development in 2005. This new unit will be offered for the first time in semester 2, 2006.

Transport and traffic related units offered in 2005 as part of the distance education postgraduate coursework degree programs are listed below, along with details of the unit co-ordinator:

- CIV5301 Traffic engineering fundamentals (Rose)
- CIV5302 Road traffic: engineering and management (Young)
- CIV5303 Quantitative methods (Sarvi)
- CIV5304 Intelligent transport systems (Rose)
- CIV5305 Transport network models (Sarvi)
- CIV5306 Road safety engineering (Daly/Rose)
- CIV5307 Parking policy and design (Young)
- CIV5308 Case studies in transport (Rose/Currie)
- CIV5310 Infrastructure project management (Seethaler)
- CIV5311 Infrastructure project and policy evaluation (Richardson)
- CIV5314 Transport economics (Clements)
- CIV5315 Transport planning and policy (Rose)
Master of Infrastructure Engineering and Management
Using the same format and operational methods as the ITS (Monash) postgraduate programs in transport and traffic, the Department of Civil Engineering developed a distance education masters program in infrastructure engineering and management in 2001. The course consists of eight units dealing with asset management, project management and project and policy evaluation, with specialisations in traffic, transport and water engineering. As a result of the experience gained in running the Bus and Coach and Transport Masters courses, it is managed by the Administration Manager of ITS (Monash), Brenda O’Keefe, on a contract basis for the Department. The course was offered for the first time in 2002 had 24 students enrolled in 2005.

Postgraduate student awards
The VicRoads prize in Transport Engineering is awarded to the postgraduate student who has achieved the highest average mark in their coursework units. The 2005 award was won by John Storrie, Manager, Regional Transport Planning, Department of Infrastructure. John only recently started in this new role, and he has previously worked as a transport planner and traffic engineer with local government and consultancies. John completed his Bachelor of Engineering (Civil) with First Class Honours at Monash University in 2000.

Figure 6 : John Storrie congratulated by Ted Vincent from Vic Roads on being awarded the Vic Roads Prize in Transport Engineering
Transport Industry Education Programs
The transport industry education programs remain core activities of ITS (Monash). Following the launch of the Bus and Coach accreditation course in 1999, enrolments have stabilised (see Figure 7) as new operators join the industry or existing operators employ new staff or seek to upgrade their qualifications. Enrolments in the course in Parking Management also remain steady but are much smaller than the Transport Management Course in Bus and Coach Operations.

![Bus and Coach enrolments](image)

**Figure 7 : Enrolments in the Transport Management Course in Bus and Coach Operations**

Transport Management Course in Bus and Coach Operations
The Transport Management Course in Bus and Coach Operations, which forms part of the industry accreditation system, was launched in March 1999. The distance education delivery is supplemented by a half day introductory ‘face-to-face’ session at the beginning of each semester, for students who are new to the course. Since the course was introduced in 1999, nearly 1400 operators have successfully completed this educational component towards their accreditation.

**Course structure**
The full course consists of four units, each of which requires one semester (12 weeks) of study. Unit selection is determined by the category of accreditation being sought. The four units are:

- Unit 4101 Introduction to legislation and operations
- Unit 4102 Financial management
- Unit 4103 Human resource management
- Unit 4104 Marketing, planning and operations

Operators of scheduled services that operate five or less vehicles (normally school bus operators only) need to complete unit 4101 only. Operators of scheduled services that operate five or less vehicles who wish to upgrade from small operator accreditation to offer tour or charter services need to complete units 4102, 4103 and 4104. All other operators (including tour and charter) need to complete all four units.
Course developments
Early in 2005, ITS (Monash) staff met with the Department of Infrastructure Bus Accreditation Group to consider possible enhancements to the course to ensure that it continued to meet the needs of all stakeholders. These discussions resulted in the introduction of a “fast track” enrolment in unit 4101 called “4101 Express” which is offered in addition to the three regular semester entry options for 4101. This option enables students to enrol in the unit at any time and receive a tailored introduction to the course, a tutorial to assist in preparing responses to the exam and rapid turn around on distribution of course materials and marking of the exam. This initiative reflects the TMC team’s ongoing commitment to respond to the needs of the Department of Infrastructure and to provide an up to date and relevant accreditation course for the Bus and Coach Industry in Victoria.

Education program in parking management
The Education Program in Parking Management was initiated by ITS (Monash) in February 1998. It is a national course offered by distance education. The program was developed by ITS (Monash) and the Parking Association of Australia Inc., in consultation with parking operators, equipment manufacturers, consultants and local government engineers. The course is aimed at operators, managers, engineers, analysts and planners working in the parking area. The education program aims to develop knowledge and understanding of parking specialisations which will assist participants to advance their careers in the parking industry by providing knowledge of management, policy, design, technology and information systems. The program enables participants to bring together knowledge from the many disciplines involved in the parking industry and to communicate effectively with other people in the industry and the wider community. It also addresses issues related to local government, regional and state authorities, consultancies and others in the parking profession.

The four units each comprised 12 topics, and there are self-assessment review questions for each topic and an assignment for each unit. There were 6 enrolments in the course in 2005. The units offered are as follows:

- Unit 1101 Introduction to parking
- Unit 1102 Parking management
- Unit 1103 Parking design & policy
- Unit 1104 Parking technology & information collection.

Transport industry education program and postgraduate coursework program awards
In 2005, the presentation of awards to outstanding students in the Transport Management Course in Bus and Coach Operations and the postgraduate program in Transport and Traffic was again held in conjunction with the fifth annual Ogden Lecture (see page 28). This high profile evening was held at the State Library of Victoria Theatrette in Melbourne in early August and provided the ideal forum in which to recognize the achievements of our most successful students.

A large audience participated in the evening, including senior officers of the Department of Infrastructure (DOI) and the Executive Director of the Bus Association of Victoria (BAV), as well as many industry, government and academic representatives. The awards are sponsored by industry and government and recognise outstanding performance of bus and coach operators completing subjects in the course. The winners of the 2005 awards were as follows:
• **Bus Association of Victoria** award for best overall performance in the Transport Management Course in Bus & Coach Operations (charter and coach operations, AC accreditation) - Peter Collier, Bendigo Discovery Tours

• **Bus Association of Victoria** award for best overall performance in the Transport Management Course in Bus & Coach Operations (bus and coach operations, AO accreditation) - Julie Danks, Langewarren

• **Department of Infrastructure** Small Operator Award for Unit 4101 Introduction to legislation and operations – Robyn Smith, Wangaratta

• **iComply**, AC/AO Operator Award for Unit 4101 Introduction to legislation and operations – David Rush, McKillop College, Swan Hill

• **The Pitcher Partners** Large Operator Award for Unit 4102 Financial management – Timothy Frampton, Christian’s Bus Co., Ararat

• **The Eastside Truck and Bus Service Centre** Award for Unit 4104, Marketing, planning and operations – Julie Danks, Langewarren

Figure 8: Award recipients and sponsor representatives associated with the Transport Management Course in Bus and Coach Operations at the annual awards night

## Professional Development

**Public transport planning at a route level**

This workshop was held on 25 and 26 October 2005 at the Bayview Conference Centre, Monash University. There were 44 participants, drawn from a wide variety of professional backgrounds including public transport operators and state government agencies. The keynote speaker was Professor Avi Ceder from the Technion Israel Institute of Technology who dealt with his special area of expertise in optimising transit operations. Topics covered at the workshop included operations planning, market forecasting and economic appraisal methods for the development of tram and bus services. This is the second public transport workshop hosted by ITS (Monash), and its success shows the level of interest in this important area of professional practice. A third workshop is being planned for 2008.
RESEARCH ACTIVITIES
Transport research at ITS (Monash) is focused into four program streams with each covering a range of topics as listed below:

- **Travel demand**
  - Mobility management and travel behaviour change
  - Role of information (e.g. ATIS) in influencing travel behaviour
  - Transport and land use interaction
  - Disabled access
  - Demand response to innovative transport modes and technologies

- **Transport operations**
  - Road based public transport
  - Operations management
  - Environmental impacts
  - Intelligent Transport Systems
  - Non-motorised transport

- **Transport and traffic management**
  - Road space and traffic management
  - Investment appraisal and evaluation
  - Demand management
  - Policy

- **Public transport planning and management**
  - Service planning and development
  - Transport needs analysis
  - Demand assessment and forecasting
  - Rural and regional transport
  - Mass transit
  - Transport planning for special events
**Overview of Current Research Projects**

The following abstracts of current research projects have been classified under the above research program streams. Funding source is noted where applicable.

**Travel demand**

- **Evaluation of the 2005 University TravelSMART initiative (Rose)**
  This research project evaluated the TravelSMART initiative run at three Victorian university campuses (Monash, Melbourne and Latrobe) at the start of the 2005 academic year. TravelSmart had a similar impact at La Trobe and Monash Universities, stimulating about 11 per cent of students to either try or use green travel modes and while the impact was about half that (around 6 per cent) at the University of Melbourne. Information about public transport and carpool services were the most highly valued components of the TravelSmart initiative. The survey also provided insight into barriers which need to be overcome to increase the use of environmentally friendly modes for commuting to campus. This research has been undertaken in conjunction with the Victorian Department of Infrastructure.

- **Impacts of in-vehicle navigation systems on travel behaviour (Chan/Rose) – PhD project**
  In-vehicle navigation systems (IVNS) are now available in Australia as a result of the production of navigable map databases for major Australian cities. These devices provide synthetic voice turn-by-turn guidance to assist the driver in navigating to a nominated destination. These in-vehicle devices have the potential to improve safety and mobility. This project focused on the mobility aspect by exploring the extent to which devices of this form can influence decisions relating to trip timing, trip frequency, destination, mode choice and route choice. The extent of impact was determined by the GPS data collected from a field study. Private car drivers were recruited to trial the use of an IVNS for up to four weeks. The participants were required to keep a travel diary. The recorded trips facilitated a comparison of their travel behaviour before and after the usage of the IVNS. To capture their route choice behaviour, a routing exercise was conducted to understand the decision process employed by each participant when following the routes advised by the IVNS. The last part of data collection required the participant to indicate their stated choices of destination and trip timing in a self-completion questionnaire. Merle Chan submitted her thesis in September 2004 and graduated in 2005.

- **A study of parking in multi-use facilities (Tan/Young) - PhD project**
  Tan Yan Weng is an Associate Professor in the School of Civil and Structural Engineering at Nanyang Technological University, Singapore. His current PhD research is in the area of parking systems design, with particular emphasis on developing an interactive stated preference approach to collect information on parking behaviour in multi-use facilities. This study investigates the application of parking modelling to the design and enhancement of multi-storey parking facilities. The PARKSIM model is used as a base and vehicle movement in multi-storey facilities modelled to enhance its present capabilities. The microsimulation model considers different user and vehicle types within a mixed use development as well as different types of parking operations. It incorporates algorithms for route choice, car following and lane-changing within the car park and external road network.
• Travel behaviour change opportunities of major events (Rose)
  This study is exploring the potential of major events (specifically a “ride to work” day) to provide a basis for longer term travel behaviour change. Research efforts in 2005 were directed towards the development of a statistical model which could be used to predict the probability that a participant in the event is likely to continue to ride after the event. The model has potential application in targeting follow-up maintenance activities to habitualise the changed travel behaviour. The research is being conducted in conjunction with Bicycle Victoria and the Victorian Department of Infrastructure (DOI) and is funded by the Australian Greenhouse Office and DOI.

• Parking behaviour (Alexiou/Young) – undergraduate research project
  The process of searching for a parking space is crucial in the design of parking facilities. It is necessary to understand how and why people search for particular spaces. This study investigates the search pattern for drivers in multistorey parking facilities.

Transport operations

• Predicting pavement performance at a road network and road project level (Martin/Young) – PhD project
  Tim Martin is a principal research engineer with ARRB Transport Research Ltd, and commenced his PhD in April 2001. It is postulated, and generally observed, that pavement performance is influenced mainly by levels of maintenance expenditure, climate, traffic loading and its associated dynamic effects and the structural condition of the pavement and its variability along the pavement. All factors are interrelated and correlation of these factors is prevalent in the usual historical performance databases used in quantifying pavement performance. This research aims to develop improved network and program level roughness deterioration models, including identifying the components of uncertainty associated with these models. The quantification of pavement performance will take the form of deterioration relationships expressed as a function of time, traffic loading and other variables and will cover sealed granular pavements (typical of 95% of Australia’s sealed road network) and the typical range of traffic levels and climatic conditions for pavements (network and program level) within most road networks in Australia. Pavement performance will be assessed by an overall serviceability and surface condition measure and an overall structural condition measure. More accurate deterioration models will improve the reliability of the estimates of road wear and cost allocation (with implications for heavy vehicle charging), of the estimates of the differences in road maintenance costs that are due to the various climatic regions in Australia, and of the estimates for maintenance and rehabilitation scheduling along each road in the road network (with implications for the estimation of the capital costs of increased pavement capacity under the regime of increased road use).

• Performance based standards for heavy vehicles (Young)
  This study has explored the role and potential for performance based standards in improving the economic, safety and environmental performance of the road system. This study is part of an Austroads project on performance based standards for heavy vehicles.
• **Environmental impacts of transport (Young)**  
  This project explores the relationship between land use, transport and the environment. Long term changes in transport and their impact on land use and the environment are investigated.

• **Mobile phones as traffic probes (Rose/ Ygnace)**  
  This study is exploring the scope for using mobile phones as traffic probes to collect traffic data. This technology has application to parts of the road transport network which are not instrumented with traditional data collection equipment. This is a collaborative project involving A/Prof Geoff Rose from ITS (Monash) and Dr Jean-Luc Ygnace from INRETS, France. The study was supported by an Engineering Faculty Small Research Grant.

• **Travel time prediction (Li/ Rose) - PhD project**  
  Information on travel time is important to road users and road system managers. This project is developing models which can be used to predict travel times. While traditional approaches focus on prediction of average travel time, this research is also aiming to estimate the level of uncertainty of the forecast. The models are being developed on the basis of the traffic data routinely collected by inductive loop detectors on motorways (speed, flow and occupancy) as well as probe vehicle data which can be provided by automatic vehicle identification systems. This study is being undertaken in conjunction with Transurban and Vic Roads.

• **Travel time prediction (Williams/Rose) – undergraduate research project**  
  Travel times on motorways are calculated from speed data provided by inductive loops. Existing travel time estimation models tend to underestimate travel times particularly in the peak period. This is due in part to the way in which average speeds are determined in the roadside processors. This project considered opportunities to make adjustments to the average speed values to improve the accuracy of the models.

• **The effects of large road freight vehicles on the performance of typical Australian road pavements: the performance of cemented pavement materials under heavy axle loading (Yeo/Young/Kokikara) - PhD project**  
  This project involves a study of road capacity to carry increasing axle loads for pavement structures incorporating cemented materials. Full scale accelerated load testing of two purpose built test pavements will be undertaken to assess the effects of axle load on pavement life. Laboratory test protocols for assessment of the elastic properties and fatigue properties of cemented materials will be investigated and the results of the full scale and laboratory tests will be compared with current theory.

• **Transferred technology based transport, infrastructure and engineering projects financed and undertaken in China and Asia (Karpovitch/Young) - MEngSci project**  
  High economic growth rates of the economies in Asia and China have meant increased transport and infrastructure construction project activity in the region. This program of research aims to investigate and analyse the influence of systems of managing and financing large public transport and infrastructure projects on their outcome.
• **Vehicle drive cycles (de Marco/Warren/Young) – undergraduate research project**
  Private and public transport vehicles are significant contributors to energy consumption and air pollution in urban areas. In order to predict the levels of energy consumption and pollution created by vehicles, it is necessary to understand how drivers make travel route decisions. Data loggers are used to follow private and public transport vehicle movements through the road system. This data forms the basis of a study of vehicle drive cycles which will be used to help predict the levels of energy consumption and pollution created by vehicles.

• **Performance envelopes for cyclists (Bennett/Rose) – undergraduate research project**
  Motorised bicycles in Australia are currently regulated on the basis of a maximum motor power of 200W. In contrast, overseas regulations (specifically in Canada and the USA) specify a maximum speed for a motorised bicycle of 32 kph (20mph). The specification of a maximum speed is consistent with the development of a performance-based standard for the regulation of these vehicles. This project explored potential dimensions for a performance based standard based on the performance envelope for a human powered bicycle. Data collected in the field provided insight into the speed distribution of cyclists when riding on off-road paths and on-road facilities.

**Transport and traffic management**

• **Accuracy and traffic simulation modelling (Young)**
  This project looks at the reliability of traffic simulation models. In particular it investigates the assumptions made in the model and their impact on the output. Particular attention will be paid to assumptions about drivers risk taking.

• **Using the psychology of persuasion for effective implementation of transport policy (Seethaler/Rose/Allen) – PhD project**
  Policies aiming to increase the sustainability of urban transport often face the problem of overcoming unsustainable behaviour patterns that are principally centred around the car and largely dominated by routine choices that do not take sustainability considerations into account. To overcome the barrier of habitual behaviour patterns, awareness campaigns, principally based on the provision of information about the effects of modal choice, are insufficient for stimulating change. Social psychology offers a series of persuasion techniques that are able to reach beyond the mere raising of awareness. For example, involving the target population in a process of personal commitment is likely to increase the up-take of the policy intervention and will therefore have a better chance of creating lasting changes in behaviour. Based on the travel behaviour change (TBC) policy currently under development by the Victorian DOI, this project attempts to study the effect of different persuasion techniques individually and in combination by using an appropriate experimental design and evaluation techniques. This research is being supported by a Victorian Minister of Transport Scholarship.

• **Road space allocation using a simulation program (Stebbing/Sarvi) – undergraduate research project**
  This study investigates the impact of green time ratios on the performance of arterial roads.
• **Road space allocation using a simulation program (freight) (Powell/Sarvi) – undergraduate research project**
  This study investigates truck interaction with public transport in the same lane of traffic.

• **Road space allocation using simulation program (Lorenzo/Sarvi) – undergraduate research project**
  In this project, the impact of setback on the capacity of an arterial is investigated using a micro simulation program.

• **Modelling of weaving phenomena observed during traffic congestion (Young/Sarvi)**
  This work focuses on a little researched area of modelling vehicle acceleration-deceleration behaviour during weaving manoeuvres under congested traffic situations. Traffic congestion frequently occurs at weaving bottleneck sections and it is vital to investigate traffic behaviour and characteristics during traffic weaving processes under congested traffic flow in order to design safer and less congested weaving points.

• **Weaving section study (Sittiarjahn/Sarvi) – undergraduate research project**
  This study focuses on the weaving manoeuvre in congested conditions in Melbourne. In this preliminary study, all suitable sites to conduct data collection are investigated.

• **Conflict experience on shared use off-road paths (Lavery/Rose) – undergraduate research project**
  This research project explored the experiences of people who walk or ride a bicycle on two of Melbourne’s shared use paths. A survey was used to examine user’s experiences with conflicts and the factors which contribute to that conflict. The study built on a questionnaire which was pilot tested at the Monash University Open Day in 2004.

**Public transport planning and management**

• **Improving methodologies to assess on road public transport priority (Currie/Sarvi/Young)**
  This project examines previous approaches to allocating road space for all users and also reviews approaches to giving public transport priority in road space allocation. A new approach to determining ‘optimum’ road space allocation is developed using a Social Cost Benefit approach. Advanced micro-simulation approaches to model traffic impacts of alternative public transport priority designs is used to determine guidelines for ‘optimal’ road space allocation in relation to public transport. The research is being funded by Vic Roads.

• **Identification of spatial gaps in public transport provision in relation to transport needs in the community (Currie)**
  A major requirement of public transport in medium and smaller urban centres is that they are provided effectively in relation to social need for transport. However, no techniques are available or used to assess the effectiveness of public transport in catering for needs particularly on a spatial basis. This project develops an innovative set of techniques in this area and has been applied in recent work in Tasmania.
• **Feasibility study for a Monash Upass (Gibson/Rose) – undergraduate research project**
  Universities in North America operate a public transport pass system often called UPass. In many cases, simply showing a student/staff card entitles the holder to free travel on all public transport services in the city. This project examined experience with these systems in North America and undertook an assessment of a UPass scheme for Monash University.

• **The demand performance of bus rapid transit (Currie)**
  This project compiles valuations of passenger trip attributes which vary with transit mode to identify how bus rapid transit projects compare with heavy and light rail. It includes an international review of available evidence. The results suggest that demand performance should be similar, but the research has identified weaknesses in the approaches adopted and in the coverage of research in this area.

• **A review of Australian bus rapid transit system developments (Currie)**
  A review of current developments in the field of bus rapid transit (BRT) in Australia with an emphasis on performance, lessons learned and future plans. The review is undertaken for the international session on BRT applications for the 2005 Institute of Transportation Engineers conference.

• **Innovative accessible tram stop design (Currie/Smith)**
  A review of the performance of an innovative tram stop design using a speed hump as a means of providing access to a center, road located tram service from a kerbside stop. To date, speed reductions for through traffic have been documented and customer satisfaction is positive. The project is undertaken in collaboration with the City of Port Phillip.

• **Features of successful real time passenger information systems (Currie/Burke)**
  A review of the successful features of systems providing real time passenger information systems for rail, tram and bus systems. The project is undertaken in collaboration with Connexionz New Zealand.

• **A review of the performance of the Athens 2004 Olympic transport system (Currie)**
  A review of the operations of the spectator and Olympic family transportation system for the 2004 Olympic Games. Included a review of day to day performance, an assessment of reports from the various Olympic transport agencies and media monitoring throughout games time. The outcomes of the research were presented to the Bus Association Victoria as an input to transport plans for the 2006 Commonwealth Games in Melbourne.

• **A review of the performance of the Atlanta 1996 and Sydney 2000 transport system (Currie)**
  A review of the operations of the spectator and Olympic family transportation system for the 1996 and 2000 Olympic Games. The review was undertaken as part of the planning for the 2004 Athens Olympic games and was presented at the 8th International Conference on Applications of Advanced Technologies in Transportation Engineering in Beijing in May 2004.
• **Knowledge management in Australian public transport (Currie)**
  This study provided a review of the way in which knowledge regarding urban public transport planning and management is managed in a range of international countries including a comparison with approaches in Australia. The study found significant gaps in Australian approaches, with a lack of a coordinated national approach to knowledge development, retention and distribution. The findings were presented to the second Australian National Public Transport Summit.

• **Transport and social exclusion in metropolitan, rural and regional Australia (Currie)**
  A review of international and Australian research concerning travel for the transport disadvantaged in rural and regional Australia. At this stage the project has focused on a literature review, although some analysis of aggregate transportation statistics for rural and regional areas has been undertaken. Key preliminary findings were presented to the Victorian Planning and Environmental Law Association Annual Conference in 2004.

• **Planning for metropolitan rail-rail interchange (Abeling/Currie)**
  This project aims to identify types of rail-rail interchange in Melbourne and to assess the quality of planning and design to cater for transfers between trains. The project included an international literature review and the development of a typology of rail-rail interchange types for metropolitan Melbourne. A hierarchy for different types of interchanges was developed and a site survey was conducted to determine the quality of the planning and design of different station types. This field work established that planning and design is focussed on only certain types of stations whilst important kinds of transfer behaviours are not being catered for. The research is part of an international student research project in cooperation with the University of Twente in the Netherlands.

• **Designing for pedestrians (Yu/Currie) – undergraduate research project**
  This project will review the factors of importance to creating a safe and attractive environment for pedestrians. It includes a review of readily available research on good practices in designing for pedestrians. It also reviews techniques for undertaking manual quantification of the relative ‘walkability’ of communities and the quality and level of service of existing provision for pedestrians. This project includes the application of self completion ‘walkability’ and “walk quality” assessments at Clayton Campus to assess the performance of existing street and path design and to identify ideas for improving the ‘walkability’ of campus.

• **The design of public transport interchanges and terminals (Nadarajah/Tinnetti/Currie) – undergraduate research project**
  This project includes a review of research literature regarding public transport stations, terminals, interchanges and bus and tram stops to understand the design requirements, techniques for evaluating interchanges and good practices and innovations in design. The project then involves the application of the findings of this research on the Huntingdale bus rail interchange and Monash University interchange to assess their performance from a transit operations and patronage amenity viewpoint. Recommendations for improving these interchanges arise from the review.
• **Design of the Caulfield-Huntingdale-Monash-Rowville bus rapid transit service (Allan/Currie) – undergraduate research project**
  The Victorian Government has announced it will invest over $30M on a Smart Bus service between Caulfield, Monash and Rowville on Wellington Road. The aim is to deliver Victoria’s first ‘Bus Rapid Transit’ service in line with worlds best practice. This project aims is to develop design concepts for the proposed service with reference to world best practice in relation to Bus Rapid Transit (BRT). The project will include a review of BRT literature, a review of existing Smart Bus services and the policy context of Smart Bus in Victoria, an assessment of existing conditions in the proposed service corridor including field surveys and the development of design concepts for the service.

• **Tram stop design for persons with disabilities (King/Currie) – undergraduate research project**
  As a result of the Commonwealth Disability Discrimination Act, all infrastructure facilities available for use by the general public must be designed such that they are accessible to persons with physical or other impairments. For the Melbourne tram system this is a significant challenge since it implies a major redesign of its over 1,700 tram stops to enable wheelchair access to its tram and light rail vehicles. This project reviews the requirements of the legislation and the plan which the Victorian Government has developed to address these issues. It includes a review of available literature on accessibility and trams and site surveys of existing tram stops to assess their suitability. Alternative re-designs for tram stop are reviewed and recommendations developed.

• **Study of public transport priority projects in Melbourne (Lai/Sarvi)**
  The aim of this project is to examine public transport priority projects in Melbourne, with an emphasis on bus priority systems.

• **Public transport stop analysis (Radion/Cheng/Sarvi) – undergraduate research project**
  This study focuses on the functionality of different tram stops in terms of safety and interaction with general traffic.

• **Public transport network schedule coordination (Bromley/Currie) - undergraduate research project**
  This project will investigate the issue of bus rail and tram schedule coordination via a literature review and an assessment of existing schedules. The aim of the project is to understand the quality of existing schedule coordination and the logic adopted, if any, for providing better standards of coordination at key network nodes in the existing set of schedules. Methods and performance measures to assess the quality of network coordination will be developed. Suggestions for improving strategies to provide network coordination will be made.

• **Independent review of new transitways demand forecasting research – RTA Sydney Transitways (Currie)**
  This study performs an assessment of international research evidence concerning travel time savings and impacts on public transport demand. This was used as a basis to assess travel demand forecasts for the proposed North East Transitway in Sydney.
• **Review of transit trip attribute values for bus rapid transit (Currie)**

   This project provides a compilation of international evidence concerning transfer penalties and mode specific constants for on street bus, heavy and light rail and bus rapid transit systems. The research was used to compare likely demand performance of bus rapid transit against alternative public transport modes.

**Transport Research Workshops (TRWs)**

ITS (Monash) has always held seminars during the year, at which staff, students and visitors are able to present recent results, discuss grant applications and workshop new ideas for projects. At each TRW, a formal presentation is made by one of the ITS (Monash) staff or students or by a visiting researcher. Presentations made during 2005 included:

• "Physical Activity and Transport". - Dr Jan Garrard (School of Health Science, Deakin University)

• “Transport, Infrastructure and Engineering Projects Based on Transferred Technology Financed in China and Asia” – Mark Karpovich (M.Eng.Sci student)

• "Traffic Detection Schemes at Signalized Intersections" - Professor Darcy Bullock, Purdue University, Indiana, USA

• “Assessment of Rail-Rail Interchanges” – Martijn Abeling, Department of Civil Engineering, University of Twente, The Netherlands.

**TR@M Workshop**

Monash University has a wide range of research interests spread across all faculties which are of relevance to the transport sector. With the support of the Vice-Chancellor, a workshop was held to showcase current transport research activities and stimulate multidisciplinary transport research through the development of a transport research network at Monash University.

The workshop was arranged by a small steering group consisting of Associate Professor Geoff Rose, Professor Graham Currie and Dr Majid Sarvi from ITS (Monash), Professor Ian Johnston from the Monash University Accident Research Centre (MUARC), Professor Harmen Oppewal from the Department of Marketing and Associate Professor Arthur DeBono from Art and Design. Over 30 participants gathered at the Bayview Conference Centre on 31 March for the program of seminar presentations and discussions.

The workshop was held over two days, with a dinner on the first evening. Guest speakers on the first day included the Vice-Chancellor, Professor Richard Larkins and Ms Gwyn Morgan (Research Grants and Ethics Branch) along with Dr Anthony Ockwell (Federal Department of Transport and Regional Services), Dr Ken Ogden (RACV) and, Dr Tim Patton (Victorian Department of Infrastructure). The balance of the first day was devoted to brief research presentations by active Monash researchers. The second day consisted of small group discussions led by a facilitator. This component was designed to examine how multidisciplinary transport research could be fostered at Monash University through the development of a transport research network.

The outcomes of this workshop were very encouraging. Firstly, the workshop demonstrated the depth and breadth of transport research at Monash. Delegates
attended from geography, law, management, economics, art and design, MUARC, marketing, engineering (mechanical, electrical and civil), information technology and the Monash student association. Secondly, the discussion groups on the second day identified a large number of potential collaborative projects. The other outcome of the discussions was that there was a strong feeling amongst delegates that there was scope for development of a ‘virtual’ multidisciplinary transport research network. A steering committee was established and charged with preparing a proposal for submission to the Vic-Chancellors’ Group through the Deputy Vice Chancellor (Research). This concept of a multi disciplinary transport research network was subsequently selected as one of the themes to be funded in 2006 within the new Monash Sustainability Institute.

Study Trip to Japan
Dr Majid Sarvi travelled to Tokyo to work with Professor Masao Kuwahara over the summer of 2005/2006. The project was entitled “A three dimensional driving simulator combined with a traffic simulation to study driving behaviours”. The main aim of this research was to utilize a three dimensional dynamic driving simulator linked with a network traffic micro-simulation to study driving behaviour. Having adequate and accurate understanding of driving behaviour is vital to traffic and transport engineers. One of the most challenging driving tasks occurs when a driver is involved in a dynamic combination of lateral and longitudinal movements (e.g. lane changing and merging manoeuvres).

There have been few comprehensive research publications concerned with traffic behaviour and characteristics in these situations. The absence of reliable data with which simulated processes, such as car following, may be compared presents a significant challenge, and one that has become increasingly apparent in the development of models of driving behaviour in these situations over the last few year. Obtaining such data and the associated increase in model validity that this would allow is increasing in importance in order to assess the effectiveness of new, advanced telematic systems which are designed to improve traffic flow and safety. One source of such data to assist in this process is the use of laboratory based simulators. In these experiments, the driver is placed in a fully controlled virtual environment where his reactions to external stimuli can be accurately measured in a systematic manner.

Exploring Opportunities for Collaborative Research
In April, Dr Jean-Luc Ygnace visited from France and he returned in November accompanied by a delegation from INRETS, the French National Institute for Transport and Safety Research. Dr Ygnace is a Senior Researcher with INRETS and has been involved in a number of research projects in both Europe and the USA in the field of Intelligent Transport Systems. His visits to Monash were used to develop a number of areas for collaborative research with INRETS.

Dr Ygnace had visited ITS (Monash) previously in 2002, and since then has worked with Associate Professor Rose on a collaborative project on using mobile phones as traffic probes to collect traffic data.

During his visit in 2005, Dr Ygnace presented a seminar outlining another collaborative project he is currently undertaking. The project, which is part of the CALFRANCE transportation research cooperation agreement between France and California, involves a public/private partnership to dramatically increase the attractiveness of train passenger transportation in both countries and to speed up the market deployment of
passenger services by solving major technological barriers in the field of internet connectivity and telecommunication. The seminar focused on the “train connected project”, which involves pilot demonstrations of WirelessLAN, High speed Internet connectivity and Info-centric Services on trains operating on the Capitol Corridor in California with research co-operation on similar efforts with SNCF in France for the French TGV network between Paris and Lyon.

Figure 9 : Dr Jean-Luc Ygnace with Professor Graham Currie

Public Transport Design Research Initiative
The design concepts resulting from the first year of the Public Transport Design Research Initiative were displayed in an “expo” mounted in the Faculty of Art and Design at the Monash Caulfield Campus in November. The initiative is a collaboration of the Institute of Transport Studies and the Monash Design Group, and sprang from the TR@M workshop held in April. The project aims to apply the skills of one of the world’s leading design groups to the problems facing our future public transport system.

Around 30 design concepts including models, plans and audio-visual displays were presented, and the design teams behind each project were present to explain the concepts and to field questions. The concepts were innovative, challenging and often ‘outside the box’ of conventional planning approaches in public transport.

Professor Graham Currie of ITS (Monash) gave the keynote address to a large audience in attendance as part of the expo preview.
Figure 10: John Stanley, Executive Director of the Bus Association of Victoria (Left), Professor Graham Currie (Centre) and Felicity Kotsiaris, Manager On-Line Customer Services at Meltlink (on Professor Currie’s Left) present awards to winning students in the Public Transport Research Design Initiative.

Figure 11: The students presented a range of impressive concepts for new public transport vehicles.

Special thanks goes to John Reeves, Advertising Manager, Track and Signal Magazine, for allowing us to reproduce these photos from the event in our annual report.
COMMUNITY AND PROFESSIONAL SERVICE ACTIVITIES

Fifth Annual Ogden Transport Lecture
The Ogden Transport Lecture was initiated in 2001 by the Institute of Transport Studies (ITS) to recognise Professor Ken Ogden’s role in founding Monash’s transport program in 1969. The 2005 Ogden Lecture was held on 1 August at the theatrette in the State Library of Victoria in Melbourne. The keynote address was given by, Transport Adviser, The World Bank, on ‘The Transport Challenge in Developing Countries’.

The sizeable audience included senior officers of the VicRoads, the Department of Infrastructure and the Bus Association of Victoria, as well as industry and government representatives and academics.

![Figure 12 : Mr Paul Amos delivering the 2005 Ogden Transport Lecture](image)

International Positions
- Fellow, Chartered Institute of Logistics and Transport, United Kingdom (Clements, Young).
- Fellow, Institute of Transportation Engineers, U.S.A. (Young).
- International panel member, Transport Cooperative Research Program Project H-32 ‘Determining elements needed to create high ridership transit systems’ (Currie)
- Transportation Research Board Committee A1E1 ‘Bus transit systems’ – International Friend of the Committee (Currie)
- Transportation Research Board Committee AP025 ‘Public transportation planning and development’ – International Friend of the Committee (Currie)
• Transportation Research Board Committee ‘Transit capacity and quality of service’ - International Friend of the Committee (Currie)
• Member, Transportation Research Board (Sarvi)

**Australian Positions**

• Member, Institute of Transportation Engineers (ITE) Australia and New Zealand Section (Sarvi, Rose)
• Fellow, Institute of Transportation Engineers (ITE) Australia and New Zealand Section (Young)
• Student Chapter Coordinator, Institute of Transportation Engineers (ITE) Australia and New Zealand Section (Sarvi)
• Member, Advisory Committee, NRTC Committee on Performance Based Standards (Young)
• Member, Australian Institute of Traffic Planning and Management (AITPM) (Rose)
• Member, Chartered Institute of Logistics and Transport (de Alwis)
• Member, Chartered Institute of Logistics and Transport (Victorian section), General Committee and Passenger Transport Group Committee (Clements)
• Corresponding Member, National Committee on Transportation Engineering, Institution of Engineers, Australia (Rose)
• Member, Institution of Engineers Australia Victorian Division Transport Branch Committee (Sarvi)
• Member, Monash University Faculty of Engineering Board, Steering Committee (Young)
• Chair, Monash University Department of Civil Engineering Management Committee (Young)
• Chair, Monash University Faculty of Engineering Graduate and Further Education Committee (Young).
• Deputy Chair, Monash University Faculty of Engineering Education Committee (Young)
• Member, Monash University Education Committee (Young)
• Member, Monash University Car Parking Policy Committee (Rose)
• Member, Monash University Transport Planning Committee (Rose)
• Member, Monash University Faculty of Engineering Senior Lecturer Promotions Committee (Rose)
• Member, Victorian Local Governance Association Committee on Sustainable Transport (Currie)
• Academic member, Victorian Road Based Public Transport Advisory Committee (Currie)
• Steering committee member, Victorian Auditor Generals Office (performance audit of rail franchising arrangements) (Currie)
• Secretary, AITPM Victorian Committee (Young)
Editorial Positions

- Bill Young is on the Advisory Board of the journal *Transportation*.
- John Clements is a member of the International Editorial Advisory Board of the *International Journal of Logistics: Research and Applications*.

Reviews of Papers

- Geoff Rose refereed papers for *Road and Transport Research*, the *ATRF Conference*, the *Thinking on Two Wheels Conference* and the *International Symposium on Transportation and Traffic Theory*.
- Majid Sarvi reviewed papers for the *ARRB journal* and the *International Symposium on Transportation and Traffic Theory*.

Conference, Seminar and Forum Presentations and Attendance

- Australian Institute of Transport Planning and Management – Annual Retreat – after dinner speaker November 2005 (Currie)
- Victorian Roads Based Public Transport Advisory Council – Public Forums – Bendigo, Coburg and Narre Warren (Currie)
- Melbourne Transport Forum – ‘Most Livable and Best Connected?’ November 2005 (Currie)
- Presentation to the Victorian Competition and Efficiency Commission Inquiry into Managing Congestion October 2005 (Currie)
- UITP National Assembly Speech on Transport Futures - 8th Nov 2005 (Currie)
- Presentation on bus development and contracting issues– DoI and Dept Treasury and Finance, June 2005 (Currie)
- Presentation on bus development and contracting issues– Victorian Auditor Generals Office July 2005 (Currie)
- International Students of Sustainability Conference 2005 – Melbourne Sustainable Transport Futures Presentation (Currie)

Overseas and Interstate Visits

- University of Tokyo, Japan (Rose)
- Delft Technical University, The Netherlands (Rose)
- University of Groningen, The Netherlands (Rose)
- University of Maryland (Sarvi)

Other activities

- 774 3LO drive time interview with Virgina Trioli — “Clarendon Street tram initiatives” - March 2005 (Currie)
- Channel 31 Newsline – “Impacts of fuel price rises on public transport use” (Currie)
• Australian Financial Review – “Long day's journey into night”- an article on long distance commuting in Australia - May 2005 (Currie)
• Monash Leader newspapers – “Rowville transit options review” - May 2005 (Currie)
• Knox leader newspapers – “Rowville transit options review” - June 2005 (Currie)
• The Age – “Bus development futures” - June 2005 (Currie)
• The Age - “Drive 2025 - what the future holds” – August 2005 (Currie)
• The Age – “Public transport on the right track?”- August 2005 (Currie)
• Steering Committee Member – Victorian Auditor General’s Office – performance audit – public transport franchising arrangements (Currie)
• International Panel Member - US Transit Cooperative Research Program – Project H-32 "Determining the elements needed to create high ridership transit systems" (Currie)
• Member – US Transportation Research Board Committee AP050 on Bus Transit Systems (Currie)
• US Transportation Research Board Committee AP025 Transit Planning & Development - International Friend of the Committee (Currie)
• US Transportation Research Board Committee AP075 Light Rail Transit - International Friend of the Committee (Currie)
• Member – Victorian Road Based Public Transport Advisory Council (Currie)
• Member - Union Internationale des Transports Publics (UITP) – Academic Network (Currie)
• Foundation Member – City of Yarra Transport Advisory Committee (Currie)
• Reviewer – City of Melbourne – issues consultation papers on transport (Rose, Young and Currie)
• Invited as Editorial Board Member – Australian Road Research Board journal “Road and Transport Research” - June 2005 (Currie)
• Independent review of the NSW State Government decision to close the Newcastle branch line – August-Sept 2005 (Currie)
CENTRE MANAGEMENT ACTIVITIES

Reconstitution of the Advisory Committee
Following one of the recommendations of the Faculty Review of the Centre conducted in 2003, steps were taken in 2004 to reconstitute the Advisory Committee. Due to retirements and career changes, it was timely to review the membership of the former committee and to reconstitute it in line with the current activities and priorities of the centre. The individuals identified below agreed to serve on the committee. The committee met twice in 2005 (February and July) and provided us with a number of ideas which will strengthen our forward planning.

External members of the ITS (Monash) Advisory Committee are:

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<tr>
<th>Name</th>
<th>Position</th>
<th>Organisation</th>
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<tbody>
<tr>
<td>Dr Anthony Ockwell</td>
<td>Assistant Secretary</td>
<td>Federal Department of Transport &amp; Regional Services (DoTARs)</td>
</tr>
<tr>
<td>Mr Stuart Hicks</td>
<td>Chairman</td>
<td>National Transport Commission</td>
</tr>
<tr>
<td>Dr Tim Patton</td>
<td>Manager, Planning &amp; Policy Division</td>
<td>Department of Infrastructure</td>
</tr>
<tr>
<td>Mr Ted Vincent</td>
<td>General Manager, Traffic &amp; Transport Integration</td>
<td>VicRoads</td>
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<tr>
<td>Dr Michael Kennedy</td>
<td>Chief Executive Officer</td>
<td>Mornington Peninsula Shire</td>
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<td>Mr John Stanley</td>
<td>Executive Director</td>
<td>Bus Association Victoria</td>
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<tr>
<td>Dr Ken Ogden</td>
<td>General Manager, Public Policy</td>
<td>RACV</td>
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<tr>
<td>Mr Bernie Carolan</td>
<td>Chief Executive Officer</td>
<td>Metlink</td>
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<tr>
<td>Dr Mary Lydon</td>
<td>General Manager, R &amp; I</td>
<td>ARRB Transport Research</td>
</tr>
<tr>
<td>Mr William McDougall</td>
<td>Melbourne Traffic &amp; Transport Team Leader</td>
<td>Sinclair Knight Merz</td>
</tr>
<tr>
<td>Mr Peter Hunkin</td>
<td>Business Centre Manager, Traffic Division</td>
<td>Hyder Consulting (Aust) Pty Ltd</td>
</tr>
<tr>
<td>Mr Ian Pitcher</td>
<td>Director, Victoria Division</td>
<td>Maunsell Consulting</td>
</tr>
<tr>
<td>Ms Charmaine Dunstan</td>
<td>Director</td>
<td>Traffix Group Pty Ltd</td>
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<tr>
<td>Ms Kate Partenio</td>
<td>Director</td>
<td>GTA Consultants</td>
</tr>
<tr>
<td>Mr Jim Stevenson</td>
<td>Special advisor</td>
<td>Department of Infrastructure and National Transport Commission</td>
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APPENDIX A - STAFF

Geoff Rose, BEng Q/T, MSc PhD Northwestern, MIEAust CPEng
Associate Professor, Department of Civil Engineering
Director, ITS (Monash)

Geoff's professional interests cover intelligent transport systems, travel behaviour and non-motorised transport. His experience spans government, consulting and academia. He is Director of the postgraduate program in transport being offered by distance education and is the author of three units, Intelligent transport systems, Traffic engineering fundamentals and Transport network models, currently offered in the program. Active research projects relate to travel behaviour change programs, bicycle facility level of service, impacts of intelligent transport systems on travel behaviour and strategic planning of field service systems.

William Young, BE (Hons I) UNSW, GradDipMgt Deakin, MBA Deakin, MSc, PhD, FIEAust, FCIT, FITE, MACRS
Head, Department of Civil Engineering, Monash University

Professor William Young is Chair of Civil Engineering, Monash University. He has a distinguished professional and academic career, having worked at Monash University for 29 years and prior to joining Monash in the transport industry in England, Germany and several states of Australia for four years. He has also held visiting positions at Oxford, Nanyang, Karlsruhe, Michigan State and Hong Kong Universities, and with the Australian Bureau of Transport and Communication Economics. He received his BE (with honours) degree from the University of New South Wales (1970), his Graduate Diploma in Management and MBA from Deakin University (1997, 1999), and his Master of Science (1990) and PhD (1982) from Monash University. Professor Young has wide-ranging interests and has researched, consulted and published widely in the areas of land-use/transport/environment interaction, parking, engineering management and education. He has worked on several international research projects with teams from Sweden, Hong Kong, Japan, the UK, Germany and Indonesia, and was an Associate Editor of the international journal Transportation for 12 years. He has published over 300 papers and co-authored four books on transportation. He has been awarded a Chartered Institute of Transport Excellence Award, Bureau of Transport and Communication Fellowship, Alexander Von Humboldt Fellowship, and Monash Postgraduate Award. He has 29 years experience in teaching at an undergraduate and postgraduate level, and has also developed and run many distance education programs, short courses and workshops for industry. Professor Young has held a number of senior administrative positions at Monash, including: Head of the Department of Civil Engineering (1999-date), Head of the Caulfield Division of the Department of Civil Engineering (1995-1997), Head of the Institute of Transport Studies (Monash) (1995-1998), Head of the Monash Transport Group (1994,1995,1996), Director of Graduate and Further Education in the Faculty of Engineering (2001-date) and Chairperson of the Monash University Advisory Committee on People with Disabilities (1997-2002). He is a Fellow of the Institution of Engineers, Australia (IEAust)), the Institute of Transportation Engineers and the Chartered Institute of Transport, and a Member of the Australian College of Road Safety. He has been Chair of the Victorian Transport Committee (IEAust), the National Committee of Transport (IEAust), and the Institution of Transportation Engineers Australia.
Graham Currie, BSc (Hons) Huddersfield, MSc Cranfield
Professor of Public Transport, Department of Civil Engineering

Professor Currie has over 25 years experience as a transit planner and research. He has worked for some of the world's leading public transport operators including London Transport. He is an internationally recognised advisor on public transport planning and has undertaken research projects in Europe, Asia, North America and throughout Australasia. He is a World Bank accredited consultant and has developed and managed training programs in public transport planning for them in Asia. Professor Currie is a full member of the US Transportation Research Board committee on Bus Transit Systems and also the TRB committee on Light Rail Transit. He is a member of the UITP (International Association of Public Transport) academic network and the Victorian Roads Based Public Transport Advisory Council in Australia. Prof Currie has led numerous research projects in public transport in all states and territories of Australia as well as assignments in Europe, Asia and North America. His research interests include bus rapid transit, behavioural factors in transit use, improving streetcar operations, transit signal priority, social perspectives on transit planning, market futures in transit, demand responsive transit, transit interchange design, schedule coordination optimisation and planning transit systems for major special events.

Majid Sarvi, BEng MEng Tehran, PhD Tokyo
Lecturer, Department of Civil Engineering

Majid's master's degree was in highway and transportation engineering. He worked at Tokyo University on the subject of traffic and transportation with emphasis on human factors and freeway operation and obtained his PhD there. He worked as a research fellow at Tokyo University and was the Chief Engineer at the i-transport laboratory in Tokyo in 2002. Majid has also worked as the chief researcher of the ITS research group of the Social System Research Institute and as a transport analyst with the Hong Kong Transport Department. Majid's research interests include traffic operations, traffic flow theory, transport modeling, micro simulation programming, intelligent transport systems, public transit, application of GPS to transport studies, and highway operations. Majid joined ITS as a Research Fellow and was appointed to the position of Lecturer in Civil Engineering in February 2004.

John Clements, Bcom DipEd Mec Madmin FCILT
Program Director, Transport Management Course in Bus and Coach Operations

John joined ITS (Monash) in July 2000. Prior to that he was Acting Head of the School of Marketing at RMIT University, and had previously been Head of the Department of Marketing, Logistics and Property and a Principal Lecturer responsible for the Transport and Logistics Management Group at RMIT. John is a Fellow of the Chartered Institute of Logistics and Transport and actively involved in the CILT (Victorian Section) General Committee and is Chair of the Passenger Transport Group. His major interests are in transport economics, policy and management and he is the author of the postgraduate unit Transport Economics which is offered by distance education as part of the ITS (Monash) Masters degree program in transport and traffic. He has professional and consulting experience in the public sector, including the Victorian Ministry of Transport, the public transport operating authorities and water resource boards. John is a member of the editorial advisory board of the International Journal of Logistics: Research and Applications. He has undertaken quality assurance auditing with Open
Astrid De Alwis, BA Melb, GradDipTr&DistMgt RMITU, MLogMgt, MCILT
Assistant Program Director, Transport Management Course in Bus and Coach Operations

**Astrid** is a logistician with a transport background. Initially in freight and currently in passenger transport, she has taught, written and/or practised transport for more than fourteen years. Working as a transport consultant to several commercial transport organisations, she has produced some key industry publications. Astrid’s chief strength lies in her varied and cross-disciplinary educational and experiential background. Having worked in government, industry and academia, and on local and international projects, Astrid brings to ITS (Monash) a broad blend of skills and aptitudes.

While assisting with the ongoing development and delivery of the Transport Management Course in Bus and Coach Operations, Astrid is also pursuing a consulting interest in business systems and business development.

Brenda O’Keefe
Administration Manager

**Brenda** is responsible for managing administrative support at ITS (Monash). This includes administering all aspects of ITS (Monash)'s industry distance education programs in the Transport Management Course in Bus and Coach Operations and the Education Program in Parking Management. She handles all general course enquiries, student enrolment and record keeping as well as all written communications with students throughout the semester. Brenda is also heavily involved with the role of administering all aspects of the Department of Civil Engineering's off-campus learning postgraduate programs in Transport and Traffic and also the Infrastructure Engineering and Management program. This also includes handling all general course enquiries, processing enrolments, re-enrolments, withdrawals and completions and carrying out extensive liaison with the Off-Campus Unit at Gippsland, other areas within the university system and the Faculty of Engineering's Postgraduate Manager. In her administrative support role, Brenda manages the production of all advertising and study guide material (which includes extensive liaison with printers and designers), and supports all other ITS (Monash) activities including seminars, workshops and public lectures. Brenda also undertakes website and WebCT development and maintenance for ITS (Monash) as well as for the Department of Civil Engineering's postgraduate programs.

Julia Arnold
Administrative Officer (Finance)

**Julia** works one day a week to provide income and expenditure reports, budgets, projections and other financial accounting services, as well as assisting with reports and other large administrative tasks.
Adjunct faculty

Rahmi Akçelik, CivEng ITU, PhD Leeds, Fellow IEAust, Fellow ITE
Director, Akcelik and Associates Pty Ltd

Dr Akçelik is an Honorary Associate in the Department of Civil Engineering at Monash University, and Director of Akçelik and Associates Pty Ltd. He is a leading scientist and software developer in the area of traffic management, with over 250 technical publications in his area of expertise. His research and software development company specialises in the areas of road traffic operations, traffic engineering, management and control. Dr Akçelik is member of various US Transportation Research Board (TRB) Committees. Awards received by Dr Akçelik include the 1999 Clunies Ross National Science and Technology award for outstanding contribution to the application of science and technology in Australia, and the Institute of Transportation Engineers Australia and New Zealand Section Certificate of Commendation in recognition of an outstanding contribution to the advancement of the profession, and the Institute of Transportation Engineers (USA) 1986 Transportation Energy Conservation Award for research into energy savings from urban traffic management.

Rita Seethaler, MEc Berne

Rita graduated with a Master of Economics and Political Science from the University of Berne, Switzerland, in 1994. She has worked for the Swiss Federal Office of Statistics and for the Bureau of Transport Studies (Federal Department for Environment, Transport, Energy and Communications), Berne. She is presently a Director of the Urban Transport Institute, Victoria and an Associate of the Institute of Transport Studies (Monash University). She is the author of the postgraduate unit Infrastructure project and policy evaluation, which is offered by distance education as part of the postgraduate program in infrastructure engineering and management at ITS-Monash. Rita is currently undertaking a PhD with ITS (Monash).

Tony Richardson, BE (Hons) MEngSc UNSW PhD

Tony has wide experience in academia, having worked at Monash University, RMIT, the University of Melbourne, the University of Sydney and Cornell University in the USA. He has also worked for the Australian Road Research Board, the Victorian Ministry of Transport and in his own consulting practice. As well as being an Adjunct Professor at Monash, Tony is also a Director of the Urban Transport Institute, Victoria. He is the author of the postgraduate unit Infrastructure project management which is offered by distance education as part of the postgraduate program in infrastructure engineering and management at ITS-Monash.

Visiting research scholars

Associate Professor Arvid Arkre, visitor (22 Aug 2005 to 24 June 2006) from Norwegian University of Science and Technology, Department of Civil and Transport Engineering, Trondheim, NORWAY. Arvid’s research interests include: Traffic flow theory; Traffic management; Traffic signals; Capacity and level of service for roads and different types of junctions; Driver behavior and efficient traffic flow; Traffic survey methods and equipment; Traffic simulation and modelling; Queueing theory and statistical modelling; Computer models and programming; Intelligent transport systems; Road traffic accident investigation.
PhD students

Merle Chan

*Merle* completed her undergraduate degree in civil engineering at the University of Auckland, and is examining the impact of in-vehicle navigation systems on travel behaviour. The study focuses on the mobility impacts of these devices but recognises that there are related safety impacts through changes to exposure. She submitted her thesis in September 2004 and was awarded her PhD in May 2005.

Ruimin Li, Bachelor of Highway and Railway Engineering *Inner Mongolia Polytechnic University, Masters of Transportation Civil Engineering SEU China*

*Ruimin* has worked as a professional engineer in Beijing in highway and intersection design. Previous research interests included pavement management and the evaluation of paving on steel decking. Ruimin was awarded a Monash Graduate Scholarship for her PhD study, which focuses on the long-term travel time variability prediction. Based on historical travel time data and weather forecasting information, the proposed model would be able to provide estimation of travel time variability, such as 90th percentile travel times, a few days before the journey.

Tim Martin

*Tim* is a principal research engineer with ARRB Transport Research Ltd, and commenced his PhD in April 2001. He is working on the components of uncertainty in predicting pavement performance at a road network and road program level.

Tan Yan Weng, BE MEngSc MCILT M’pore MREAAA

*Yan Weng* is an Associate Professor in the School of Civil and Environmental Engineering at Nanyang Technological University, Singapore. His current PhD research is in the area of parking systems design, with particular emphasis on developing an interactive stated preference approach to collect information on parking behaviour in multi-use facilities.

Rita Seethaler, MEng Berne

*Rita* graduated with a Master of Economics and Political Science from the University of Berne, Switzerland, in 1994 and is presently a Director of the Urban Transport Institute, Victoria and an Associate of the Institute of Transport Studies (Monash University). She was awarded a PhD scholarship by the Victorian Minister for Transport to develop evaluation approaches for “total transport” strategies. Rita is currently looking at this concept from the perspective of developing and measuring the impact of psychological persuasion techniques on peoples’ travel choices.

Richard Yeo BE (Hons) M Eng (Res) RMIT

*Richard* has worked with Maunsell Consultants and VicRoads and is currently a Principal Engineer (Pavements) at ARRB. His main research interests are in the areas of construction quality, pavement performance, accelerated pavement testing, stabilisation and pavement materials characterisation. He is a member of the Austroads Pavement Technology Review Panel and is currently the manager of the Australian Accelerated Loading Facility (ALF) program. Richard is leading the research associated with investigating the impact of heavy vehicles on the pavement infrastructure. This is one of the largest research projects currently being conducted by ARRB, in terms of both scope and funding.

MEngSci students

Mark Karpovich BE MEng Sci

*Mark* has more than 20 years’ experience in infrastructure and transport engineering projects in Hong Kong and Australia. His present field of study is transport and infrastructure projects with western technology financed in Asia and the Far East.
APPENDIX B - PUBLICATIONS

Books and book chapters


Journal articles


Journal articles (in press)


Journal articles (in progress)

Conference papers (presented/published)


Project reports