

Rail Horizons

December 2003



From the Chair

After years of dreaming, and planning, the long promised 1420 km line finally joined Alice Springs and Darwin on the 25 September 2003. NT Chief Minister Clare Martin and former Darwin Lord Mayor Dr. Stella Stack inserted the final Pandrol clips five months ahead of schedule and under budget at less than \$800,000 per kilometre.

The project demonstrates that the Australian rail industry can design and build infrastructure in a cost-effective manner. The revenue freight trains start to arrive in Darwin in January, the Ghan in February. We shall not be too far behind when the Conference on Railway Engineering (CORE) goes to Darwin in June.

Appropriately titled "New Horizons for Rail", CORE 2004 will examine how railway engineering in its many modern aspects can deliver freight, passengers and even profits in increasingly competitive markets. Planning for the Conference, which will be the foremost railway technical conference for the year, is well advanced and there will be over 50 papers presented. The exhibition only has a handful of booths left and you are advised to contact Mark Carter, the Conference organiser, as soon as possible if you wish to take a booth.

The three day AusRAILPLUS2003 Conference and Exhibition was held in Sydney in November and we were pleased to work with the ARA, the RTAA, ARIC and IRSE in presenting papers and exhibiting at the RTSA booth. My thanks to the Sydney Chapter for arranging and reviewing the papers and organising the RTSA day.

At the RTAA dinner on the Tuesday night, and attended by some 700 guests, I was pleased to be able to present the RTSA 2003 Individual Award to John Hoare. John is Managing Director of Concord Consulting and former Westrail Chief Civil Engineer and has had a distinguished career spanning some 45 years in the railway industry. He filled many and varied engineering, executive and advisory roles in Western Australia and throughout the

country. John received a plaque and a cheque for \$2,000 for his contributions to the industry.

The National Council met before the conference and we were pleased to welcome Bryan Nye from ARA who addressed us on developments with the Codes of Practice and the release of the Code for Fatigue. He pressed for the need of the industry to speak as one to government and policy makers and present transport solutions rather than just rail solutions. We agreed that we must continue to support the ARA in the development of their policies and their endeavours in getting the voice of the rail industry heard.

The Council reluctantly accepted the resignation of Mr. John Adams as Chair of the Awards Committee. John has served on this and various other NCRE and RTSA committees for some 20 years and his experience will be sadly missed. I wish to thank John for his contribution and wish him well in his ongoing retirement. The Council was pleased to confirm the appointment of Mr. John Dring as the new Chair and look forward to his deliberations on the forthcoming awards.

As announced earlier, next year we will be presenting four awards for excellence in railway engineering.

The awards are:

- The RTSA Student Thesis Award for theses completed during 2003
- The RTSA Individual Award
- The RTSA Industry Award
- A new award for Young Railway Professionals Award will comprise registration and travel costs to attend CORE 04, a Certificate, free membership of the RTSA for one year and a cheque for \$500.

We are seeking nominations in each category from each chapter. Please give consideration to your current and former work associates and others who would be worthy of recognition for their contribution to the industry.

Applications for all awards close in February 2004 and further details are available on our website www.rtsa.com.au

My thanks also to the members who attended the RTSA Annual General Meeting held during AusRAIL. At the meeting, the reappointment of Chris Venn-Brown as Secretary was confirmed together with Ravi Ravitharan as Treasurer. I look forward to continuing to work with Council members and thank them for their time and contribution, which, as you know, is voluntary.

Don't forget CORE 2004 in Darwin from June 20-23.

Start planning and booking your transport now.

John Watsford
RTSA National Chair

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Max Michell's Point of View will return in the next issue. Max is currently contemplating his next column on a mountain top somewhere in Nepal.

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The Railway Technical Society of Australasia

At Last

Acting Prime Minister John Anderson and NSW Transport Services Minister Michael Costa announced on 6 December 2003 that after extensive negotiations between the State and Australian Governments, agreement has been reached for the Australian Rail Track Corporation (ARTC) to lease the NSW interstate track and Hunter Valley rail freight corridors.

The lease will be signed early next year and will take effect from April 2004.

More than \$870 million will be invested in rail infrastructure so the interstate track can carry the predicted near doubling of freight from the current 375 billion tonne kilometres to 648 billion tonne kilometres in 2020.

The NSW and Australian Governments, amongst other things, have agreed to:

- A 60-year lease of the NSW interstate and Hunter Valley rail corridors and track to ARTC, including dedicated freight lines to the Sydney ports and a license to allow ARTC to construct the Southern Sydney Freight Line.
- The NSW Government maintains ownership of the track and remains the employer of staff;
- Clearly defined key performance indicators for maintenance work will be developed co-operatively between ARTC, staff and unions;
- Upgrading of the interstate network to ATC Targets and track enhancements to support Hunter Valley Coal Freight Volumes;
- ARTC will manage the remaining non-interstate, non-Hunter country branch rail network on behalf of NSW. NSW will retain funding responsibility for these lines;
- A joint funding package including a five year infrastructure investment programme by ARTC of more than \$870 million, including a direct Australian Government equity injection into ARTC of \$143 million, and a funding contribution of almost \$62 million by NSW.

According to John Anderson "The ARTC's investment programme will bring the NSW interstate and Hunter Valley rail networks into the 21st century, with better track, better signalling and reduced transit times.

Mr Costa said the agreement was an important step forward for developing a competitive rail freight network.

"We believe in a national approach to rail freight. It's good public policy in the national interest," Mr Costa said.

Benchmarking Skills and Innovation within Transport

by Andrew Honan

If you have heard Dr. Ken Henry (Secretary to the Treasury) lately, or read the Australian Financial Review on its Series C21 (future sustainability of Australia) you would have cause to think of transport, and in particular land transport's, contribution to Australia's long-term prosperity.

For Ken Henry, Australia's GDP growth will come about through the 3 P's. That is, *population* growth, *participation* in the workforce and *productivity*.

With the 'intergenerational' report forecasting that GDP growth will average 2¼% over the next 40 years, questions are being asked as to how the quality of life (and the burden of increased services) will be paid for as Australians live longer and drop out of the workforce.

If you thought that a population explosion would shoulder this burden - forget it. The 'intergenerational' report indicates that birth rates are declining and migration is steady. The 85+-age cohort is forecast to double in 20 years time (quadruple within 40 years time) and very little increase is expected in the 15 to 54-age cohort. The net effect is that population growth will shoulder only 7/8 of 1% of the annual GDP growth.

And don't think participation rates will provide for the life that you have been accustomed to. Whilst I personally relish the idea of working past the age of 65 (at least on a part-time basis), I'm sure most colleagues would be pursuing their interests rather than their careers (which of course are mutually exclusive). In fact overall participation is forecast to *take away* 3/8 of 1% from GDP growth.

So thinking, not only have we 'done our bit', looming retirees (along with the generation X's) will have to think of a new framework to increase productivity. So much so that productivity must contribute year-on-year 1¾ % of GDP growth. That is, 1¾ % pa compounding over 40 years!

Dr. Henry implies that this productivity needs to come from 'capital deepening' as well as 'multifactor' productivity ("The first measures the impact of giving workers more capital to work with - for example, giving a trench digger a back-hoe to replace his shovel. The second component measures everything else that allows a worker to produce more output. At the level of the firm it captures improved efficiencies in the production process and the utilisation of new technologies. At the level of the aggregate economy it captures all of these firm specific effects but, in addition, the impact of resources moving

from lower to higher productivity activities. Hence, it captures the impact of microeconomic reform."¹)

Trying to understand the skill and innovation drivers of (land) transport and how it can contribute to Australia's future is in itself a challenge. The structure of capital deepening and its relationship with skilled employment as well as the role of innovation are critical issues for prosperity in road and rail transport services.

Productivity Commission (PC) research on skilled employment² restates two hypotheses:

- That technological advances are biased in favour of the employment of skilled workers. Further that this drives up the demand for skilled workers and hence their wages, by increasing their productivity compared to less skilled labour (This effect is called Skilled Biased Technical Change – SBTC).
- Globalisation, in particular imports from low wage countries, have lowered demand and wages for less skilled labour (the 'trade' hypothesis)

This PC report indicates that during the period 1987-1994 the Transport and Storage (T&S) sector actually decreased its use of skilled to unskilled hours by 7.7%. And hourly wages increased over the period by a modest 8.5%³ (low compared with other sectors such as finance and hospitality). The story reads: whilst all major service sectors headed north in this performance measure, transport bucked the trend and went south. In effect transport 'dumbed itself down' whilst other service sectors got 'sexy'. Hospitality and financial service sectors were smarter, commanding higher respect; higher rates of pay and had newer entrants.

In particular, evidence from the report indicates that while the general economy had a preference (over this period) to increase skilled as opposed to unskilled labour by 24%, road's preference was a low 12% and rail's was a meager 5.9%. Offsetting this preference (to skilled technical change) was the cost, in terms of relative wages. Over this period, the economy's relative wages of skilled to unskilled increased by 21% leading to a *net shift to skilled labour of 3%*. However for road, with a relative wages increases of 14.5%, this lead to a *net deskilling of 2.5%*. Rail was worse - its relative wage increase was 14.9%, indicating a *net deskilling of around 9%*.

¹ Dr. Henry presentation to Australian Transport Research Forum 2002

² The Role of Technology in Determining Skilled Employment: An Economy Approach 2001 Table D.3

³ Table B1 & fig 1.1 The Role of Technology in Determining Skilled Employment: An Economy Approach 2001

TABLE 1: Educational Attainment by industry as a percentage of all industry groups

Group	Higher Degree	Post Grad Diploma	Bach.	Under. Diploma	Assoc Diploma (VET)	Skilled Voc. Qual (VET)	Basic Voc. Qual (VET)	Total with Post School Qual
Transport & Storage	0.8	0.8	7.4	5.2	3.0	16.2	8.7	42.1
All Industries	2.6	2.7	14.5	5.9	3.6	14.2	9.0	52.4

This 'hiding to nowhere' of deskilling both road and rail jobs has left many workers stuck in a time vault.

The picture is clear - not only was there very little change in the structure of their jobs, but also these workers fared worse than most, on the wages front. This is in spite of high T&S labour productivity. One can only imagine how hard the mouse wheel must have been running (hours worked) for workers in this sector (especially to maintain comparative income). Just ask Chris Althaus at the Australian Trucking Association how hard truckers have been running over this period.

The answer of course is not to introduce more flexibility in wages (either skilled or unskilled), but to change the structure of employment so as to enable technical change and upskilling.

The same PC report indicates that although capital deepening occurred within T&S over this period that this capital was biased to less skilled labour. That is, capital substituted skilled, rather than upskilled labour. Further PC research⁴ holds some clues as to nature and drivers of this capital deepening. Capital stock can be disaggregated into Buildings & Structures (B&S) (which includes infrastructure), Machinery and Equipment (M&E) and software. For T&S (from 1986-98) skilled labour was positively correlated to M&E (capital intensity) but *negatively* correlated to B&S (capital intensity).

Just why this capital biased unskilled labour is inconclusive - perhaps capital deepening as a result of investments in infrastructure (for example the One Nation Rail program, the National Highway Scheme etc) resulted in skilled jobs substitution?

The RTSA (along with the ARA) lament the availability of quality data. This is no more so than data relevant to skills, capital deepening and innovation in transport.

Interestingly, the nature of other service industry's upskilling (and productivity from 1987-1994) was via *interactive* skills enhancement rather than *motor* skills. Transport services (both urban task and freight task) have

the ability to develop into integrated networks. These joined up systems offer the prospect of accelerated interactive skill development that leads not only to more job opportunities, higher wages but also higher multifactor productivity in the future.

If we fast-forward to 2001 and look at the education profile of the T&S sector we see another story as shown by the ABS⁵ Figures in Table 1 above.

The T&S sector employed 347,204⁶ people in 2000, and although the supply of Vocational and Educational Training (VET) skills in this sector appear comparable to 'all industries' averages, higher education attainment is grossly underrepresented - approximately 10% lower than 'all industries' averages (7.1% in Bachelors attainment, 1.9% in Post Graduate Diploma attainment and 1.8% in Higher Degree attainment).

Although this lack of higher education attainment (as compared with VET skills) may suggest a lack of career 'pathway' from blue to white collar employment (or 'articulation' between the VET and higher education system), it may also suggest a lack of jobs for *interactive* skills as opposed to *motor* skills (within T&S). Equally, the well-proportioned supply of VET attainment may be more a function of the active labour market programs in the VET sector, or even formal recognition (by awards from 1991 onwards) of previous unrecognized skills.

There is no doubt that the VET system, and in particular the transport Industry Training Advisory Board (along with Registered Training Organizations) has transformed and significantly contributed to the supply of transparent and portable competency-based skills. In the end however, it maybe existing demand skills-structure that is marginalizing transport workers, rather than supply programs. The matching of skills supply with emerging skills demand (in a shortened timeframe) nevertheless continues to be a key challenge for the industry.

⁵ Table from Freight Logistics in Australia An Agenda for Action & ABS Cat No 6227.0

⁶ pp 52 Table from Freight Logistics in Australia An Agenda for Action & DEWRSB , Employee earnings benefits and trade Union Membership August 2001.0

⁴ The Increasing Demand for Skilled Workers in Australia: The Role of Technical Change Productivity Commission Sept 2000

TABLE 2: Economic Development

Group	Total (\$'000)	% To all Groups	Business Source (\$'000)	Commonwealth Source (\$'000)	State/Territory (\$'000)	Higher Education (\$'000)	Private Non-Profit (\$'000)
Transport	123 690	1.90	80 569 (1.9%)	9 688 (1.1%)	10 649 (1.9%)	22 783 (2.9%)	-
All Groups	6 493 571	100	4 317 832	816 407	558 629	795 346	5 359

The problem then turns to innovation and Information and Communication Technologies (ICT) as drivers for improvements in multifactor productivity.

Innovation can be interpreted as⁷

- The introduction of major new office technology
- The introduction of major new plant, machinery or equipment
- Changes in products or services produced
- A restructuring of how work is done
- A reorganisation of the management structure

Whilst all eyes are turned to AusLink as the new deal for land transport, this may end up being a tall 'ask'. Certainly further infrastructure investment is expected (hopefully new money for both roads *and* rail). It is also hoped that the new institutional arrangements, which will reorganize freight processes, will also prove positive.

Processes that bring about innovation within the logistics chain and the private / public transport networks however, are highly complex. The use of IT has not had the kick-on effect as it should have within T&S. Although Information and Communications Technologies (ICT) have different impacts on different industries, the growth in IT capital services within (T&S) should not have gone *backwards* by 3.2%⁸ (between the productivity peaks of 1988/89 – 1993/4 and 1993/4 – 2000).

Whether AusLink will respond directly to these challenges or try and influence market forces to correct this imbalance remains to be seen.

Although there is doubt as to the effect of infrastructure spending on upskilling, there is certainly no doubt as to the complementary effects between ICT growth, innovation and upskilling.

⁷ The role of Training and Innovation in Workplace Performance Productivity Commission (December 1999)

⁸ Uptake and Impacts of ICTs in the Australia Economy- Productivity Commission Table 2.5

Innovation that enables increase use of ICT, as well as network economies, will be a major contributor to skilled employment, activity demand, and productivity in transport systems in the long run. This will profoundly shape the transport services industry of the future.

Turning more directly to R&D expenditure as a proxy for innovation.

Figures released from the ABS⁹ (Table 2) on R&D reinforce the poor 'investment' in transport innovation.

It is no surprise that aggregate transport R&D expenditure is less than 2% to all groups within 'economic development'. Given that the transport task constitutes between 4.9 and 5.3% of economic activity (and much higher for logistics) it is evident that R&D expenditure in this area is not matched to its importance within the economy.

Australia's transport research deficit is \$194.5M pa (3% shortfall of total economic research). Research through higher education is iniquitous to the value of \$15.9M pa, whilst the commitments of state and federal governments to their economic development is some \$16.75M and \$31.0M respectively off the mark. Opportunities for businesses to fully participate in transport research are now emerging.

Whether it is equity within the competitive research grants of the Australian Research Council, lack of government leadership, or business community response, overall research is not being conducted which will enable innovation to occur.

So, whilst we can understand that Australia's future economic well-being is linked to the 3 P's, we are yet to see (within land transport) the framework which sets these drivers in motion.

We all want to see capital deepening in the form of infrastructure investment. It should not matter whether it is private or public money - so long as taxpayers or consumers are not 'taken for a ride'. The reality however is

⁹ ABS Cat. 8112.0 July 2002

that funding for rail infrastructure (in particular) is still to take off.

We need also to see investment in innovation, both in terms of R&D as well as ICT, so that workers have increased opportunities and see it as a worthwhile / progressive industry. However R&D intensity remains one of the lowest in Australia's economy.

In many ways land transport stakeholders missed out on the dividends of previous economic growth phases. It did not build on the general microeconomic platform of the early to mid 1990's, and in some cases it made mistakes. Transport plays a key role in enabling the Australian economy to grow, but now 'its time must come'.

Government Relations Committee

Mr Bryan Nye, new CEO of the Australasian Railway Association (ARA) met with National Council and members of the Committee on 16 November. This meeting gave a valuable insight to likely future directions of both the rail industry and the ARA, and we look forward to working together. ARA's five priority areas, which were also outlined at AusRail Plus, are infrastructure, communications, accreditation, Codes of Practice (to go beyond the Defined Interstate Rail Network) and urban planning.

With Mr David Kilsby, Chairman of the National Committee of Transport Engineering of Engineers Australia, Mr Athol Yates (of EA) and myself, a helpful meeting was held on 1 December in Canberra with the **Secretary, Mr Ken Matthews**, and other senior staff of the **Department of Transport and Regional Services**. Items raised included our strong support for the release of the AusLink, White Paper, sustainability (to which incoming EA President Mr Doug Jones has identified as a priority area), early finalisation of a good agreement between ARTC and the NSW Government, and funds for advanced planning of major track upgrades. This would well complement over \$65 million of Federal funds since 1996 allocated to advanced planning of National Highway System upgrades.

Recent submissions to government by the RTSA GRC include:

- Third Determination of road user charges for heavy vehicles to the National Road Transport Commission.
- Submission re the 2004 federal budget to the Treasury. These were invited early. The full submission in on rtsa.com.au and a summary follows.

- House of Representatives Standing Committee on Transport and Regional Services.
- The Neville Committee is holding yet another inquiry touching on rail, this one deals the effect of privatisation of Government Business Enterprises, including rail, on regional Australia,
- A follow up submission in response to the interim report of the NSW Ministerial Inquiry into Public Transport Funding. The interim report sets an agenda for rail passenger transport in NSW and has a section on road pricing.
- A submission to a NSW Legislative Council Committee examining port development in NSW, including rail access to ports.

Summary of RTSA pre budget submission to Federal Treasury

The main areas the Railway Technical Society of Australasia (RTSA) would like to see addressed in the 2004 Federal Budget are:

- Provision of additional funds (\$450 million as per the early 1990s) to facilitate a long overdue upgrade of the mainline interstate track linking Australia's three largest cities.
- A change in current aspects of the Tax System to encourage the use of public transport, and to give less incentive for motor vehicle usage.

Major points from the submission include.

1. Rail freight is significantly safer than road freight and on average, rail freight is three times more energy efficient than road transport. There is a need for the transport sector to reduce greenhouse gas emissions. This will require infrastructure investment and improved road pricing.
2. Present levels of road pricing for heavy trucks and the absence of mass distance charges results in under-recovery of road system costs from the heavier long distance trucks. As a result, some general freight better suited to rail will go by trucks on public roads.
3. In light of the importance of NSW to the national economy, the Commonwealth should become involved in funding the major track upgrades necessary between Melbourne, Sydney and Brisbane to allow for truly efficient and competitive rail freight operations. This will require some track straightening and/or advancing a Melbourne - Parkes - Brisbane route. The Society notes that major interstate rail advances since Federation have required Prime Ministerial intervention and support.
4. The social and environmental costs from road and rail freight need to be recovered. Investment in both urban and intercity rail would "reduce dependence on imported oil,

reduce greenhouse gases, and improve road safety, and air quality in major cities.”

5. The Society submits that the Government should seek to ensure that AusLink tackles head on a need to bring road user charges nearer to the total costs imposed on the community. Our budget submission includes a summary of our AusLink submission.

6. Road congestion pricing should be introduced in Australia's larger cities.

7. The Sydney Greater Metropolitan Region has major road traffic problems. To encourage more use of rail needs about \$20 billion of rail “catch up” investment this decade. This could partly be funded through road pricing.

8. Education and training are important, and there is a role for the public sector in rail.

The full submission may be viewed at rtsa.com.au then publications then submissions.

With this issue of Rail Horizons, a copy of a booklet *'Planning a New Railway: Alice Springs to Darwin'* is included for your Christmas and holiday reading. The booklet has been produced by both the SA Chapter and the Committee, and its main article is a personal account of the planning and survey by Mr Des Smith. Also included is a 'time line' of some of the events over the many years leading to its construction, and a Foreword by the Hon Tim Fischer.

Philip Laird,
Government Relations Committee

Rail in the Next Decade

To quote from the 2002 Forward Vision Report "the great Medicare blow-out came to the top of the agenda. ... Responding to the controversy, the government set up an urgent inquiry to identify aspects of health care costs that were controllable. And guess what? The inquiry found that road trauma and premature deaths from urban vehicle pollution were significant components of these controllable costs. Around 1700 fatalities, 20 000 hospitalisations and 60 000 cases requiring medical treatment were recorded each year as directly attributable to road crashes, and there was a similar number of cases of road-induced 'air poisoning'. ...

[The new ARA CEO]... was quick to respond, and in what seemed like no time—at least to railway people—he had placed the problems of road trauma, trucking trauma, asthma, particulate poisoning, greenhouse and environment, and a host of other road-related nasties, high on the agenda. The government had to do something.

A Land Transport Equity Act was enacted, greatly strengthening the earlier AusLink plan. ...

Vehicle Kilometres and Health Costs for Capital Cities			
	ABS Vehicle Kms (million)	BTRE Cents/vkm	Health Costs c/ vehicle/ km
Sydney	31305	1498	4.8
Melbourne	30313	914	3.0
Brisbane	14928	420	2.8
Adelaide	7866	222	2.8
Perth	11053	214	1.9
Hobart	1666	0.9	0.9
Darwin	802	15	1.9
Canberra	2450	n/a	n/a
All Capitals	100383	12750	3.3

In a BTRE paper "The economic consequences of the health effects of transport emissions in Australian capital cities" presented to the recent Australian Transport Research Forum in Wellington, New Zealand, mid range estimates for the cost of adverse health impacts due to air pollution amounting to \$3.3 billion for the year 2000 were given. This comprises \$1.6 billion for mortality (premature death as a result of air pollution) and \$1.7 billion for morbidity (quality of life and productive capacity of people impaired or reduced). Estimates from the Australian Bureau of Statistics Survey of Motor Vehicle Usage coupled with the BTRE mid range estimates for each capital city are shown in the table above, along with the average cost per vehicle kilometre.

This Table suggests that if you live in Sydney, when an average vehicle goes by, it is generating community health costs of 4.8 cents per vehicle kilometre. This cost will be higher for heavy trucks, and smaller for cars. To this may be added the Australian average road crash cost per vehicle of about 8 cents per km (using the now older BTRE estimate of \$15 billion as the cost of road crashes per year), and the ABS total of about 188 billion kilometres driven by all vehicles in 2000, the average road crash cost is about 8 cents per kilometre. It would simply not occur to most people, when getting in their cars, and starting to drive that the average road crash cost is the same order as the cost of petrol.

The costs of road trauma, plus road congestion and related air pollution costs amount to about \$30 billion per annum. Such high costs suggest the view expressed in our "Rail for Sustainable Cities" brochure that there is a role for Canberra in urban transport, and that there is a good case for reinstatement of Federal grants for urban transport capital works.

New Zealand Study Tour – Part II

by James Black

This continues on from Part I of the article that appeared in the June issues of Rail Horizons

Day 5 of the RTSA study Tour to New Zealand in February this year continued with a visit to the **Christchurch Municipal Tourist Tramway**.

As the trams in Christchurch were replaced with diesel bus services, there still remained a nostalgia for this earlier form of transport. Paul Henman of the Central City Municipal Council gave the Study Group a presentation of the recent restoration of this form of transport in the City itself.

At Ferrymead a small collection of tram cars had been retained in a museum by enthusiasts. On a small section of track that had not been pulled up they ran these cars for public display.

The mid-80s saw a proposal presented to Council with a focus for a tourist based tram service. A loop plan emerged passing points of local tourist interest with stops located appropriately for access.

Routing through the City, interference to other road users (cars, cyclists), how the stops could safely handle travellers, safety issues (brake lights, turning indicators, braking), the ultimate approval of the Land Transport safety Authority were all some of the early obstacles. Then there were environmental issues such as traction overhead pole placement and other visual issues – many newspaper editorials and frequent letter to the Editor raised objections to the plan.

Even Government Legislation had removed the words ‘tram’ and ‘tramway’ from the respective Acts with the disappearance of this form of transport.

Eventually Council’s approval in principal was granted and the specific details of the project could be tackled. Licencing, Statutory Approvals, Funding, Operational Structures, Ownership and the calling of tenders for construction and operation followed.

The track is 90lb surplus rail continuously welded and laid on concrete slab formation. A local joke says that this method of track construction is so strong will hold Christchurch together during its next earthquake! In-fills of brick pavers laid in herring-bone style give the appearance of cobblestones of old. Bolted on guard rails are used on curves as required and point work was imported from the UK.

Two single bogie trams, one originally from Christchurch and the other from Dunedin, plus two former Melbourne

W2 class trams provide the operational fleet, one of the latter having been fitted out as restaurant car.

Different traction and braking systems provide variety in the maintenance work, which is carried out in a small tram-shed that accommodates the car collection and is equipped with a pit for underfloor inspections.

The Group took a run around the City in one of Melbourne’s old warriors adding to the memories of similar journeys back home. Local patronage has not met the original expectations of the Business Plan, but tourist numbers have been encouraging. According our guide for the day, other cities are investigating similar projects based on the Christchurch example - a chance for a market to find good homes for some of Melbourne’s retired W class trams?

The day concluded with visit to New Zealand’s major electronics manufacturer, **Tait Electronics Ltd**.

Well known throughout the world as a supplier of mobile radio communications equipment, it is of particular interest to the rail industry and is represented in Australia by users in New South Wales and Queensland.

Many of Tait’s customers around the world have special needs and include Emergency Services, Prison Operators, Oil and Gas Producers, Airport Controllers and Drug Enforcement Agencies amongst others. At the time of the visit, a current commitment was supplying communications needs for the America’s Cup yacht race to be held in Auckland a few months later.

A briefing, a factory visit and discussions on ‘Solutions not products’ as the company claims gave the Group a good insight into this major New Zealand manufacturer.

Hand held mobile units, repeaters and base station equipment made in the three building complex in an outer suburb of Christchurch allows Tait electronics to market its products worldwide.

Examples of product customisation were given including

- Firemen on callout may need back up, but wearing fireproof gloves can make button pushing on mobile communication devices unmanageable. So communication devices for fire trucks are fitted with larger buttons.
- Small hands in some countries are not able to hold standard mobile communicators, so in some circumstances a smaller battery pack is fitted to reduce the ‘back bulge’.

The Christchurch assembly line is highly automated as one would expect, but Tait still has a global workforce of around 800 people.

The company was founded by Angus Tait (now 'Sir') who despite being 84 is still active in the company that he started, overseeing the continually developing product lines of mobile communications equipment, all in analogue mode.

The final day of the Study Tour started with a visit to the **Air New Zealand No1 Maintenance Hangar** adjacent to the Christchurch Airport where Ken Brice, a retired Air New Zealand avionics technician, showed the Group around.

The huge cavernous building had three aircraft receiving attention at the time and one could imagine two 747s being housed in the structure at one time with room to spare!

The Civils in the Group marvelled at the delicate concrete beam supporting the entrance span from the tarmac. Although not sighted the ends continue to ground holds, so it is really a long flat arch. There was not a column in sight.

The first aircraft observed was a Qantas 737-400 undergoing periodic maintenance. Mobile scaffolds surrounded the aircraft with sections rising to the top of the rear tail. Panels for access, allowed a close inspection of functional areas filled with pipes, wiring and auxiliary equipment not seen in normal service.

The second area held a squeaky clean, new, 737-700 in Virgin Blue trim. It was easily recognisable by its curved, flared upright wing tips, more bird like than early versions of this Boeing mid-sized passenger jet. Empty of seats, pre-service work was underway prior to final fitting out.

The third aircraft was a little more unusual – a Hercules fitted for Antarctic shuttle service – equipped with skis and additional fuel tanks on wing pods between the engines and the fuselage.

One conclusion the Group arrived at was the Maintenance Centres ability to handle a variety of aircraft and for customers other than themselves as contract maintainers.

The next visit was to the **Air NZ/ Pratt & Whitney Jet Engine Centre** some distance away. Here, jet engine rebuilds are handled – the most common being the popular Pratt & Whitney JT8D which is used in many mid-sized jet aircraft.

The workshop is divided into separate areas to handle the different engine sub assemblies such as the low pressure stage, the compressor stage and the high pressure stage, normally flange bolted together in a completed jet engine. These are brought together after their respective rebuilds on to a vertical work-stand controlled by hydraulic activators. This allows the fitters to work at a convenient height. The work-stand starts in a floor pit and as sections of the engine are added, it can be lowered – it assumes the

reverse occurs in disassembly. A method similar to the handling of boiler repairs in the days of steam.

Turbine blade fitting and balancing was an interesting aside to the tour as blade replacement is one of the major tasks in engine rebuilds.

The principle of the jet aircraft engine looks simple, but it takes a lot of parts to convert theory into practice. In evidence on the work benches were voluminous company manuals – frequently referred to by those in the workshops.

Lastly, our guide took us (with obvious pride) to the area where he once worked, the Electrical Shops and Instrument and Communications Areas.

In the No1 hanger the small units of aircraft avionics systems were out of their normal home under the pilot's cockpit. Here in the repair shop they could be seen on the bench amongst the various specialist recalibrating and repairing them.

One point of interest discovered during the visit is the way and aircraft's electrical power is generated. Mounted on the jet engine is an alternator to generate the 400Hz high cycle power, shaft coupled to the rotation of the turbine. During takeoff and flight the engine will have its rotational speed varied. In order to maintain a constant frequency in the alternator's output (which calls for constant RPM) a mechanical gearbox relates the varying inputs to a constant output, in speed, so solving the problem

The final visit of the Study Tour was to **The International Antarctic Centre** located adjacent to the airport. Nearby is a building called the International Antarctic Departure Centre. This was established for America's Antarctic Research Programme and handles the logistics of freight and passengers by shuttle flights travelling to and from the US South Pole base. There are approximately 2000 people at the Pole, mainly researchers and their support staff. They have the benefit of fresh food in the four months of the year when weather and conditions allow aircraft access. Christchurch has become an important support centre for those working in Antarctica with British and Italian scientific programmes also using it as a base.

It was natural then that people wanting to know more about the Antarctic experience should be in the market to be enticed into a suitable display and so the International Antarctic Centre came to be realised.

The Centre has a number of displays and presentations, including audio visual displays, a wide screen rear projection from 20 synchronised projectors, and aquarium displaying a variety of fish from southern waters, geological samples and various paraphernalia associated with Antarctic travel. The Centre also boast a cool room where the temperature is maintained at -5° C and small

piles are scattered around the room, enough to allow for snow-balling and other ice pursuits. Great for kids and enjoyed by most of the Study Group!

To complete the mental excursion to the cold South and to experience its transportation, the Group, 'volunteered' for a ride in a 'Hagglund' snow-mobile. Developed in Norway, it is two enclosed cabs coupled together with wide caterpillar tracks fitted under each cab and both driven from a power unit in the front cab with its driver. Passengers are strapped in and are taken around a demonstration course to show the units versatility.

Its ability to mount a 30° incline and traverse a slope on its side at the same angle; to span 3 crevasses and float through water were demonstrated. This side trip too about 15 minutes and was a fitting climax to 'Transportation in New Zealand'.

Thanks must go to all our guides, host and presenters. Their time and patience made the visits and the subsequent question and answer sessions productive and worthwhile. Thanks also to RTAS member David Lewis, now Wellington based, for preparing and negotiating a marvellous itinerary along with travel and accommodation.

CORE2004

Just over six months to go and CORE2004 is already generating exceptional interest. Exhibition space is all but sold out with some twenty six exhibitors already signed up and only one or two booths remaining at the time of going to press.

ARTC, FreightLink and the NT Government are the Major Sponsors for CORE2004, which promises to be a landmark event. OneSteel, John Holland and Barclay Mowlem have all signed up as Silver Sponsors and their support is greatly appreciated.

The participation of sponsors and exhibitors is vital to the success of the CORE conferences. CORE is recognised as "The Conference" where up to date and informative Technical information is presented and debated. With CORE2004 presenting 54 papers over three streams in two days it certainly is a 'value for money event' and participation costs for delegates, sponsors and exhibitors are kept deliberately low compared to other commercial events in order to attract maximum industry participation. Both directly through the RTSA and indirectly through other channels, most of the surplus from CORE finds its way back into the rail industry.

For 2004, both delegate and exhibitor fees have been kept at the same levels as for CORE2002, which not only is recognition of the fact that delegate travel costs may be a

little higher than usual to Darwin, but also represents excellent value for money!

Due to capacity constraints at the Holiday Inn Esplanade, delegate numbers for CORE2004 will have to be limited to an absolute maximum of 350. Delegate booking for CORE2004 will open on 12 January 2004, however provisional reservations will be accepted now via e-mail to registration@core2004.on.net or by fax to **08 8261 2219**. Prospective delegates are therefore encouraged to book as early as possible to ensure securing a place.

The CORE2004 Organising Committee has been investigating the options for train travel to and from Darwin for CORE2004. The committee even considered changing the dates of the conference to better fit in with the Ghan timetable, but unfortunately the Conference Venue was already booked out to other parties. We are awaiting details of a possible special train to Darwin and details will be in the Registration Booklet in January if this proves to be a viable option

Prospective delegates are advised of the following options if traveling by Ghan to or from Darwin:

- Catching the Ghan northbound from Adelaide on Sunday 13 June and arriving in Darwin on Tuesday 15 June and then taking in some pre-conference touring
- Catching the southbound Ghan from Darwin on the morning of Wednesday 23 June 2004. The only drawback here is that those joining the train will miss the Technical visit scheduled for 23 June; however the rail journey is a technical visit of a grand scale in itself. Another option of course is to indulge in some post conference touring and take the southbound Ghan on 30 June.

CORE2004 has negotiated a 15% discount with Great Southern Railway for any rail journeys to and from CORE2004.

The CORE web site has been updated with travel and accommodation details along with those of the proposed Partners' tours. The CORE2004 registration brochure will be mailed out to all RTSA members in Mid-January and the booking form will be available as a downloadable PDF from the CORE2004 web site at the same time.

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E-News

RTSA Discussion Forum

Members are reminded that the new Discussion Forum has been added to the RTSA web site and has four 4 discussion categories up and running: General; Rolling Stock; Track; Interface.

The forum is easily accessible from the RTSA Home Page and very easy to navigate once you reach the Forum pages.

Rail Horizons via e-mail

A number of members have requested to receive Rail Horizons electronically. The society is investigating the feasibility and options for this - the current Newsletter as a PDF file is around 1.2Mb.

Anyone who would prefer to receive Rail Horizons electronically should send an e-mail to Nina Lenz at the RTSA Secretariat.

nlenz@ieaust.org.au

Chapter Reports

Victoria & Tasmania

Our October meeting enjoyed a thoughtfully prepared and well illustrated presentation by Philip Dunn concerning the rail industry in New Zealand. Many of our members have recently been active in NZ rail developments, and Phil's presentation covered a mix of historical, geographical and technical facts. It was followed by an interesting discussion.

Forthcoming Programme

Our next Chapter Meeting will be our Christmas function to be held at IEAust Vic HQ, 21 Bedford Street West Melbourne at 6:00 pm on Wednesday, 10 December. This is being kindly hosted by Siemens Limited, who have been very active in the Melbourne Rail Industry supplying new EMU trains and "Combino" trams. As well as a technical presentation about these very modern vehicles, Siemens will also provide some refreshments in keeping with the festive season. Full details of these functions will be circulated soon.

On **Wednesday 18 February 2004**, we are planning a site visit to Spencer Street Station which is currently undergoing a \$25 million re-construction. This is no mean

feat, as rail operations are continuing throughout the project. This meeting will be hosted by GHD. Full details will be circulated early in the New Year.

The **March meeting (Wednesday 17)** will be a presentation by David Griffiths of Rail Technology International on "Rail Flaw Detection".

We have scheduled Wednesday 19 May for our annual Dinner Meeting.

STORE 2005 - Brazil

A reminder that David Griffiths (a Victorian Chapter Committee member) is planning our third Study Tour on Railway Engineering (STORE), this time to Brazil. It is planned that this will coincide with the next International Heavy Haul Conference, to be held during 2005 in Rio de Janeiro. There will be plenty of opportunities for some very interesting railway site visits, to say nothing of some spectacular tourist sightseeing opportunities. The trip will not be inexpensive, so interested members (*from all Chapters!*) might start planning their budgets now. More details are now available from David, and obviously the more participants, the better the value. We'll keep you advised.

Season's Greetings

We would like to wish all RTSA members and their families all the very best for the rapidly approaching festive season. We look forward to a very interesting program in 2004.

David Ferris, Chapter Chair

Western Australia

Over the past three months the WA Chapter has conducted two technical meetings – both attended by 20 to 25 members.

26 October 2003

Mr Bill Richards presented a paper associated with the aerial surveying of longitudinal assets. Representing FLI-MAP a company offering the service the technique uses helicopters fitted with laser and video equipment to scan, record and process the physical data detected during a low fly over the route being examined.

The system has been well proven elsewhere in the world and has just been adopted for a survey to be carried out across all Perth Urban rail routes.

27 November 2003

For the last technical meeting of 2003 the WA Chapter was fortunate to have Mr Mike Mohan, CEO of the

Australian Railroad Group in Perth provide his impressions of the current railway scene.

Mr Mohan has come to Perth with over 34 years experience in railways. He was President, Chief Operating Officer and member of the Board of Southern Pacific Transportation Company. In 1996 when the railway was acquired by Union Pacific Railroad it was the sixth largest railroad in the United States with over 23,000 kms of track and over 19,000 employees.

The presentation focused largely on the role being played by ARG in the current industry and Mr Mohan answered a series of technical questions relating to the status of the local freight railway infrastructure.

Questionnaire

A survey in the form of a questionnaire to all WA members was conducted to assess the needs of members in relation to the programming of future RTSA meetings. Although the response was not high (around 15% of all e-mailed members) there were some significant outcomes:

- Generally an annual program of 6 to 8 technical meetings each year is favoured with consideration given to some site inspections.
- The current arrangement of conducting midday meetings is preferred over evening meetings.
- A wide range of subjects has been favoured - dependant on the respondents' personal background.
- In addition a need exists to provide feedback of technical meetings and events to Pilbara members.

The WA committee will consider these outcomes when considering future programs.

2004 Program

The new program for 2004 will commence on **12 February** with a presentation on Fatigue Management followed by a visit by the International President, Institute Railway Signal Engineers on **Tuesday 23 March**. Prior to the commencement of the year the full program for 2004 will be drawn up and promulgated.

John Syers, WA Chapter Chair

New South Wales

23 September

A Joint meeting with the Civil & Structural Engineering Panel. Two topics on the subject of the "Parramatta Rail Link" were:

The Project and the Phase 1 CIVSYS Contract presented by Ron Thomas of Theiss Hochtief Joint Venture, Sydney.

Ron spoke about the biggest Design & Construct Contract ever let by the NSW Government. His presentation focussed on the TBM driven tunnels and the TBM, as well as the cavern excavations for the stations along the line.

David Roberts spoke on the "Approach to Controlling Train Generated Noise and Vibration"; David is the Manager - Railways, GHD Pty. Ltd., Sydney. He spoke on the stringent noise and vibration criteria that the new railway must meet and track systems developed to ensure compliance.

25 October

Site inspection to the Rail Management Centre and tour of Central Station including a visit to the clock tower and the mysterious platforms 26 & 27. For security reasons this visit was cancelled by the SRA due to security issues with the World Rugby match being played on the day at the Olympic venue at Homebush. This tour is planned to be re-scheduled for next February.

30 October

Frank Bosci, Marketing Director of Alstom Australia presented on the topic "Very High Speed Rail in Australia - Signals Stuck on Red!" Frank covered the history and frustration's by private industry in attempting to introduce Very High Speed trains in this county without the full support and backing of the Government.

17 to 19 November

AusRAIL Plus 2003 Conference, Sydney. John Watsford and Bill Laidlaw were on the Steering Committee and Technical Committee respectively. AusRAIL Plus 2003 was a joint venture incorporating ARA, ARIC, RTAA, IRSE & RTSA, Informa are the coordinating body. Exhibition space was virtually sold and registrations exceeded expectations. Brochures had been posted to all RTSA members over the months leading up to AusRAIL.

The RTSA conducted a full day stream on the Tuesday and had a stand within the exhibition hall staffed over the full conference. RTSA awards were presented during the RTAA dinner on the Tuesday evening, the ARA Black Tie Dinner was held on the Wednesday evening. Accommodation was a difficulty with the Rugby World Cup competing for rooms in Sydney at the same time.

2004

Nominations for the 2004 committee are being sought; due in January with the AGM scheduled for Thursday, 26 February subject to the auditorium being available. The 2004 calendar is nearing completion however meeting dates for 2004 are subject to the allocation of the auditorium.

Bill Laidlaw, Chapter Chair

Queensland

Chapter Membership:

138 members as of 31 October 2003.

Events

This has been a quarter with much activity for the Queensland Chapter. There were 4 events held, three of which involved some significant organisation and planning.

16 September 2003

Seminar "*Railways – Equitable Solutions for People with Disabilities*". Mrs Julie Attwood, Member for Mt Ommaney represented the Qld Minister for Transport to open the seminar. Her speech highlighted the government's very positive contribution to making public rail transport more accessible to people with disabilities. Other speakers were Dr Barry O'Connor, Deakin University, Susan Booth, Qld Anti-Discrimination Commissioner, Andrew Whitten, EDI Rail, Gary Leis, Qld Department of Public Works, Don Bletchly, Qld Transport. The seminar covered aspects ranging from legislation requirements to codes and standards, with a focus on conflicting requirements. *Attendance 60.*

22 October 2003

"*Rail CRC's Contribution Towards Education and Training Development for the Railway Industry*", Assoc Prof Ken Kwong, Rail CRC and Central Queensland University. The presentation covered the education and training projects being undertaken under the Rail CRC. The presentation included demonstration of the knowledge base that was being established. In relation to the Railway Signalling Course, there is an expectation that the first modules be offered early 2004. *Attendance 14.*

5 November 2003

Site Visit to Foxboro Australia – "*Inspection of the Integrated Control System for the KCRC Hong Kong East Rail Extension*". The site visit included a presentation by Mike Garrett about the project and the system, which was undergoing factory acceptance testing. Those attending saw a very impressive display of state-of-the-art technology. The Brisbane facility is the company's SCADA systems worldwide headquarters including research and development. *Attendance 32.*

26 November 2003

"*Planning for the Introduction of Light Rail to the Gold Coast*", Rod Grose, Gold Coast City Council – Joint event with Gold Coast Local Group. The meeting was held on the Gold Coast. QR provided free train travel for Brisbane

based attendees. Transport on the Gold Coast strip is expected to increase by some 60% by 2010 as a direct result of the forecast population and visitor growth. The existing transport infrastructure is already struggling to cope with current peak traffic flows. In developing a transport strategy to address the problem, a feasibility study in a light rail system was initiated by the Gold Coast City Council and Queensland Government, through Queensland Transport and sponsored by the Federal Government. The presentation highlighted the similarities of the Gold Coast with various like-sized cities in Europe and the pros and cons of adopting light rail. The final report is expected to be released in the near future. There was some optimism that light rail will be part of the adopted transport strategy. *Attendance 40.*

Acknowledgements

These events would not have been possible without the support the RTSA Queensland Chapter receives. In relation to the specific events held this quarter, the Chapter thanks, the presenters, the Queensland Government, QR, Foxboro, Engineers Australia and the Gold Coast Local Group.

Coming Events

Below is the technical program for the events currently planned. Technical Meetings will be held in the Hawken Auditorium, IEAust Queensland Division, on the 4th Wednesday of the month at 18:00, unless otherwise advised. For further details please visit the Queensland Division of Engineers Australia Events page <http://qld.ieaust.org.au/jetspeed/> nearer to the time of the event.

- | | |
|---------------|---|
| 25 Feb | Track Machinery – Reviewing past purchase decisions and lessons for the future. |
| 24 Mar | Cargo Sprinter |
| 28 Apr | Rail operations planning - Planimate
Capacity Dynamics and Visirail tools |
| 26 May | Acoustic Bearing Detector |

George Nikandros, Queensland Chapter Chair

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South Australia

New Committee

Elections for the SA Chapter Committee were held at the AGM held on 25 November 2003. The committee for the coming year is:

Chapter Chair: Robert Schweiger

Secretary: Roger Wyatt

Treasurer: George Erdos

Committee: Bill Edmonds, John Dring, Duncan McLeod, Malcolm Menadue, Max Michell, Steve Torok, Stephen Townsend

The term of this committee expires in November 2004. Committee meetings are normally held on the 1st Thursday of the month from February to November.

The AGM is held on the last Tuesday of November in the form of a dinner meeting.

Chapter Membership

As of June 30 2003 the SA chapter had 97 members while the Northern Territory had 4.

CORE2004 – Darwin, June 20-23

The SA Chapter committee is well along in the organisation for the CORE2004 conference to be held in Darwin from the 20-23 June 2004. The committee is made up of the SA Chapter committee as well as Graeme Barkway, Harry Olsen, Julie Halifax and Cheryl Fahey along with our PCO Mark Carter.

Please see separate report for this upcoming event.

Future Events

Technical Meetings are generally held in the Bagot Street, North Adelaide office of Engineers Australia on the 1st Thursday of the month at 18:00 (light meal and refreshments from 17:30). Two joint meetings are held with the PWI of SA each year.

The 2003/04 program is currently:

- | | |
|------------|--|
| 5 February | Railway Network Vulnerability:
Prof Mike Taylor |
| 4 March | New AK Car: Neil Orange (RSA) |
| 3 June | New GSM-R Communications
System: John Aitken |
| 20-23 June | CORE2004 |

Robert Schweiger
Chairman, South Australian Chapter

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Conference on Railway Engineering 2004

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KNOW YOUR INDUSTRY DISTANCE LEARNING COURSES

Queensland University of Technology and the Australian Railway Research Institute are continuing to provide a new direction for railway continuing education and professional development. This joint venture between QUT and ARRI is directed at business managers, operators, engineers and technical personnel from railway industry and consultants in a new railway environment who are looking for a broader vision of the industry.

The first course is “**Railway Business and Engineering**” and it comprises five modules as follows: railway business, railway access, project management, infrastructure and rolling stock. The second course is “**Railway Management, Operation, and Safety**” and comprises four modules: railway management, railway operation, railway safety management, and signalling & communications systems.

These courses were well subscribed with participants from Brazil, Hong Kong, New Zealand and Australia when offered in 2002 and 2003. We are planning to run both courses again in the first half of 2004 and those who successfully complete them can claim it towards appropriate Graduate Certificate / Diploma / Masters level study. All the study material has been written by widely recognized practicing engineers and managers, who also assist with the operation of the units and assessment of assignments.

Both units (courses) are full-fee paying and available in a self-paced, independent study mode with high quality resources supplied to participants; they are self-contained units with individual assessment. Each registrant will receive a certificate of successful completion.

QUT

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RTSA Awards Committee

Long time Committee member and inaugural Chairman, John Adams has stood down from the Awards Committee and we wish John well in his 'retirement'. Since formation of the RTSA in 1998, John has not only brought good judgement to bear on numerous applications for Awards, but also formulated helpful conditions for the growing number of RTSA awards. His presence has been an inspiration to us all particularly in the time and attention that he has paid over the years talking to applicants, reviewing applications, selecting the winners and finally making the presentations at CORE.

John's high level contribution to railways in Australia including as Chief Civil Engineer with Australian National, NCRE over 15 years and to the South Australia Chapter including organisation of the successful Conference on Railway Engineering at Adelaide in May 2000 have been maintained with the Awards programme.

The new Awards Committee Chairman is John Dring with Philip Laird and Robert Schweiger as Committee members..

As you all are aware, nominations have been called for the four awards that are to be made in 2004, being:

- Railway Engineering Student's Thesis Award (closing date 20 February 2004)
- Young Railway Engineer's Award (closing date 27 February 2004)
- Annual Individual Award (closing date 13 February 2004)
- Biennial Industry Award (closing date 13 February 2004)

Full details, with application forms, may be found on at rtsa.com.au or by contacting the RTSA Administrator Ms Nina Lenz. The major awards will be presented at CORE 2004 in Darwin. The Awards Committee looks forward to a good number of nominations in each of these categories.

John Dring, Awards Committee Chairman

