

RTSA SA CHAPTER NEWSLETTER

August 2011 Edition



NEXT MEETING: Near miss at Cootamundra

Next meeting – Thursday 1st September 2011

George Erdos, ATSB - Near miss at Cootamundra

On Thursday 12 November 2009, an XPT passenger service, was being routed into No.1 Platform Road at Cootamundra, NSW. The driver received a Medium Turnout indication on signal CA74 signifying that the route into No.1 Platform Road was set and unobstructed. Shortly after passing over the Gundagai Road level crossing and traversing 136 points set into No.1 Platform Road, the driver observed the last wagon of a freight train, located on the Up Main line, was obstructing the path of his train. He applied the train brakes and stopped just short of the freight train.

The investigation determined that a signalling system design error allowed signal CA74 to be cleared for the passage of the XPT even though the route into No.1 Platform Road was obstructed by the last vehicle of the freight train which was stationary on the adjacent Up Main line.



George Erdos

George is a Senior Transport Safety Investigator with the ATSB in Adelaide, he has over 38 years experience in the rail industry. He has held various engineering and executive management positions while employed with the South Australian Railways, State Transport Authority and TransAdelaide (now 'Public Transport Services').

He holds a Degree in Electrical Engineering and a Diploma of Transport Safety Investigation. He is a Fellow of Engineers Australia (FIEAust), a Fellow of the Institution of Railway Signal Engineers (FIRSE), and a Fellow of the Permanent Way Institution (FPWI). He has held a variety of executive positions with the IRSE, National Committee on Railway Engineering (NCRE) and Railway Technical Society of Australasia, (RTSA) including the position of National Chairman on two occasions.

In 2010 George was awarded Life Membership by the RTSA for services to that

TECHNICAL PRESENTATION

VENUE:

Gil Langley Room
Adelaide Oval Function
Centre
Memorial Drive, North
Adelaide SA 5006

DATE:

Thursday 1st September
2011

TIME:

5:45pm for a 6:00pm start

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CHAPTER MEETINGS 2011

Thursday 1st September 2011

George Erdos, ATSB
Near miss at Cootamundra

Thursday 1st October 2011

PTS, Bombardier
Dry Creek Depot Visit (Jointly with
IRSE and PWI)

Thursday 3rd November 2011

Ian Fox, Phil Campbell ARTC
Train Planning (CORE paper)

Thursday 29th November 2011

Annual General Meeting and Dinner
Hyde Park Tavern

Publisher

This newsletter is a publication of the South Australian Chapter of the Railway Technical Society of Australasia. Opinions expressed within are not necessarily those of the Chapter, Society or Editor.

Contributions

Contributions, including news, opinions, or letters to the Editor, are always welcome. Send material by e-mail to saeditor@rtsa.com.au

Continuing Professional Development

Engineers Australia members are reminded that attendance at RTSA technical meetings contributes towards CPD requirements. Each RTSA technical meeting generally has a value of 1 CPD point.

RTSA Website

The RTSA website www.rtsa.com.au has details of RTSA activities, including future meetings and reports from past meetings, for all Chapters. Membership information for potential new members and an application form may be found at www.rtsa.com.au.

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RTSA SA CHAPTER NEWSLETTER

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Editorial



There has not been any correspondence to the SA chapter this month.

I would remind all our members that we welcome correspondence of all kinds; news, points of interest, activities that members may be interested in or our member's thoughts and views on recent rail related engineering events.

The presentation given by Randall Barry and Simon Mitchell at the joint meeting with the PWI on the 4th August 2011 is provided at the end of this newsletter for those who may have missed it.

It is my intention that all future presentations of this nature will be made available on the RTSA website under the SA chapter 'tab'.

This cannot happen until the website has been updated and site access is secured by member log in – watch this space

This month's chatter from Daniel picks up on the enthusiastic and animated presentation by Randall Barry and Simon Mitchell on the procurement of the new 4000 class electric powered trains. It truly was an excellent presentation, not least because of the enthusiasm projected by both speakers.

The introduction of the new railcars is a major project for DTEI and the effort that has been expended to date and the effort that will be needed to bring this project to fruition cannot be underestimated. We greatly appreciate that Randall and Simon have made time to prepare and deliver this presentation for us.

The issue of pride that Daniel reflects on, be that individual or civic, is highly pertinent at the moment, with events around the world potentially changing people's perception of a particular country or society.

RTSA SA CHAPTER NEWSLETTER

August 2011 Edition Chatter from the Chair



Pride in infrastructure: fixed or rolling?

Last month's presentation on the new 4000-class trains was fantastic and enjoyed a large turnout with a high level of interest. It was also different, somehow; there seemed to be a sense of excitement and even of, for want of a better word, 'pride'. Pride not just in that our city would be stepping into technical modernity with an electrified railway, and could hold its head up high - but apparently pride in the collective ownership of new, faster, sleeker rolling stock.

There seemed to be a tangible disparity in the atmosphere between this presentation and our usual academic presentations on maintenance or improvement of fixed infrastructure. In spite of myself I got the feeling that to be associated with new vehicles of any kind - especially ones with modern appearance and sentiment - just seemed 'cool'. Have people got as engaged about, for example, the Glenelg Tram Overpass? This is a representative new piece of fixed infrastructure whose efforts around urban art and community consultation were widely hailed, but if I were a betting man I'd answer that question with, "no".

This observation isn't as flippant as you might think. Randall alluded to the tram patronage explosion after the various upgrades to the Glenelg tramline. The extensions 'marked a path' on which a public transport service would operate, unlike the earlier buses - a clear advantage, but one afforded by fixed infrastructure, not rollingstock. Also, when taken together with the access to the service afforded by the new stops, the level-of-service was better on balance, but probably not by too much in many areas. My point is, do you really think this same patronage explosion would have occurred if these elements were just introduced for operation with the old H-class trams?

(Even if we'd had enough of them)? Again, my betting-man alter ego would say, "probably not".

So the simple human aspect of appreciating something 'new' seems to be significant - and something worth harnessing to multiply the effectiveness of a service that may be academically sound and technically appropriate but is otherwise a little, well, unexciting. Old. 'The same'. You may say soft problems like this are for Architects to solve, not Engineers - but I say ignore them at your own peril, for they may sub-optimize any project you are building if people, rather than robots are involved. This is the Year of Human(itarian) Engineering, after all.

The relevance to railway public transport in all this is how vulnerable this makes it. Maintaining the hardware of our complex engineering system is never easy, nor cheap, and renewing it is even worse - but if my transport-psychology interpret is even vaguely correct, the tragic result is that despite all this effort Joe Public only values a fraction of it. That is, of course, if - everything goes right... Buses on the other hand are a rollingstock type that costs far less to purchase, operates on infrastructure whose costs are amortised over a much larger user base and can even be the subject of frequent rollingstock-renewal policies which railways would only dream of... it's a tough balance.

In other news, Phase 1 of the \$20m High Speed Rail study was released on 4th August, and the Noarlunga Centre Line's newly-concrete-re-sleepered southern section was reopened on 24 July.

Daniel Martucci – Chair, RTSA SA Chapter



RTSA SA CHAPTER NEWSLETTER

August 2011 Edition High Speed Rail Australia



Australia explores high speed rail



Japan's iconic bullet train. (AFP)

Long airport queues could be the way of the past for domestic travellers as the government leads research into the possibility of launching high speed rail (HSR) down under.

The first phase of a two-part report compiled by the Department of Infrastructure and Transport released earlier this month found that the rail alternative to domestic travel could cost up to \$108 billion and would offer speedy transport from Brisbane through to Sydney, Canberra and Melbourne.

With up to 264 million long-distance trips predicted to be made on the east coast of Australia over the next 45 years, research expects up to 54 million people to utilise the HSR network each from year by 2036 and up to 3.5 million to travel via rail between Brisbane and Sydney.

A further eight million passenger are forecasted to travel via HSR between Sydney and Melbourne, while rail trips between Newcastle, the Central Coast and Sydney are expected to attract 15 million.

While travel fares would be considerably lower than flying, with a ticket between Newcastle and Sydney expected to cost up to \$16.50 for commuters, the time of travel for inter-city non-running times could increase as trips between Melbourne and Sydney exceeding up to three hours via rail and one hour by air.

As part of expenditure, the government identified possible centre stations that would need development in short-listed areas including Roma Street and South Bank in Brisbane, Central Station, Eveleigh, Homebush and Parramatta in Sydney, Southern Cross Station and North Melbourne in Melbourne and Civic and Canberra Airport in Canberra.

Despite their popularity as gateways into the cities, Melbourne and Sydney airport have been ruled out as possible station locations because "initial patronage demand forecasts indicate most HSR demand would be for travel to the CBDs, rather than to airports".

The second phase of report results will cover the travel market more extensively as well as highlight travel demand, the nature and costs of projects and plan for institutional framework and delivering the HSR program

<http://www.etravelblackboard.com/article/122200/australia-explores-high-speed-rail>

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August 2011 High Speed Rail International



Fast trains winning battle with planes in Europe



Australia may one day have high-speed trains like those in France. Photo: AFP

IN MELBOURNE, French Transport Minister Thierry Mariani said Europeans were increasingly choosing the convenience of fast rail over air travel.

The corridor between Paris and London is no longer the world's busiest air route, with some surveys suggesting 90 per cent of people are choosing to travel by fast rail instead.

"The air traffic between these two countries and two cities ... is less and less because we have high-speed trains," Mr Mariani said.

Australia may one day have high-speed trains like those in France.

"If ... Paris and London or Paris and Brussels disappears off the most important [air route] list ... it's because everybody takes the train."

Ironically, Mr Mariani spoke of his enthusiasm for fast rail during a tour of French conglomerate Thales's futuristic new Melbourne air-traffic control research, development and training centre, CASIA, at the World Trade Centre.

At meetings with federal Transport Minister Anthony Albanese and his Victorian and New South Wales counterparts Terry Mulder and Gladys Berejiklian, Mr Mariani expressed the keen interest of French rail companies in being involved in an Australian high-speed rail project.

He said one of his reasons for travelling to Australia was to "make the point about the project of high-speed railway.

The latest AECOM Australia feasibility study for the federal Transport Department puts the cost of establishing high-speed rail linking Melbourne, Canberra, Sydney and Brisbane anywhere between \$61 billion and \$108 billion, depending on the route options chosen.

The leg from Melbourne to Canberra could cost \$19.5 billion to \$25.6 billion, and Canberra to Sydney another \$10.9 billion to \$24.5 billion.

Disappointingly for Melburnians crying out for a fast train to connect the airport with the CBD and interstate routes, the study finds that while there is a rail corridor which passes close to Melbourne Airport, a fast train "will not provide a suitable airport rail link".

"Airport rail links must have the ability to accommodate large volumes of passengers without seat reservations and are also likely to operate at a relatively high service frequency, making frequent stops at multiple locations," the report says.

Read more:

<http://www.smh.com.au/travel/travel-news/fast-trains-winning-battle-with-planes-in-europe-20110823-1j7ku.html#ixzz1W6AE8Uhc>.

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Light Rail – New Zealand



Christchurch light rail link could cost less than expected



*A concept image of the new Christchurch CBD (supplied)
By Newstalk ZB staff*

Christchurch's Mayor says the proposed light rail link between the University of Canterbury and the rebuilt city centre could cost far less than the \$400 million price tag.

The light rail link will take half of the \$800 million proposed budget for transport in the rebuild.

Mayor Bob Parker says the price tag means the light rail project is bound to be controversial but he believes the cost will be less than what's been budgeted - especially given new tramlines in the city have been built for between \$5 million and \$7 million per kilometre.

"The university is about 7.5 kilometres, so if we said \$7 million a kilometre and we had some passing loops in there, I think the actual infrastructure cost could actually be significantly lower," he told Newstalk ZB.

The Mayor has also dispelled rumours the draft plan stops buildings higher than seven storeys.

"If you want to build an eight storey, a 10 storey, a 12 storey or a 20 storey building, the plan does not say that is not permitted, it just says at that point you're going to have to go through a resource consent process."

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Coming Events



Advance Notification of next year's RTSA Awards

Please note that nominations for the 2012 Railway Engineering Student Thesis Award and the Wheel-Rail Interface Award are now being taken.

For both awards the closing date is Friday 24th November 2011.

Both awards attract prizes of:
\$4000;
Plaque and;
One year free membership of the RTSA.

Full details can be found in the March newsletter.



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Meet the Team



We have completed the Bio's of the newly appointed Committee members and so we move on to our long-standing ones.

We start with:

Mike Hurd Chapter Secretary



Mike's love of trains started when he was 4 and he got his first train set. A key point here is that he still has it.

Having travelled the world to choose somewhere to live that had better weather than England's, Mike and his wife emigrated from the UK 6.5 years ago and has never looked back. They love the weather in Adelaide and the opportunity to get outdoors throughout the year, and enjoy bushwalking, kayaking, sailing (poorly) and cycling (slowly).

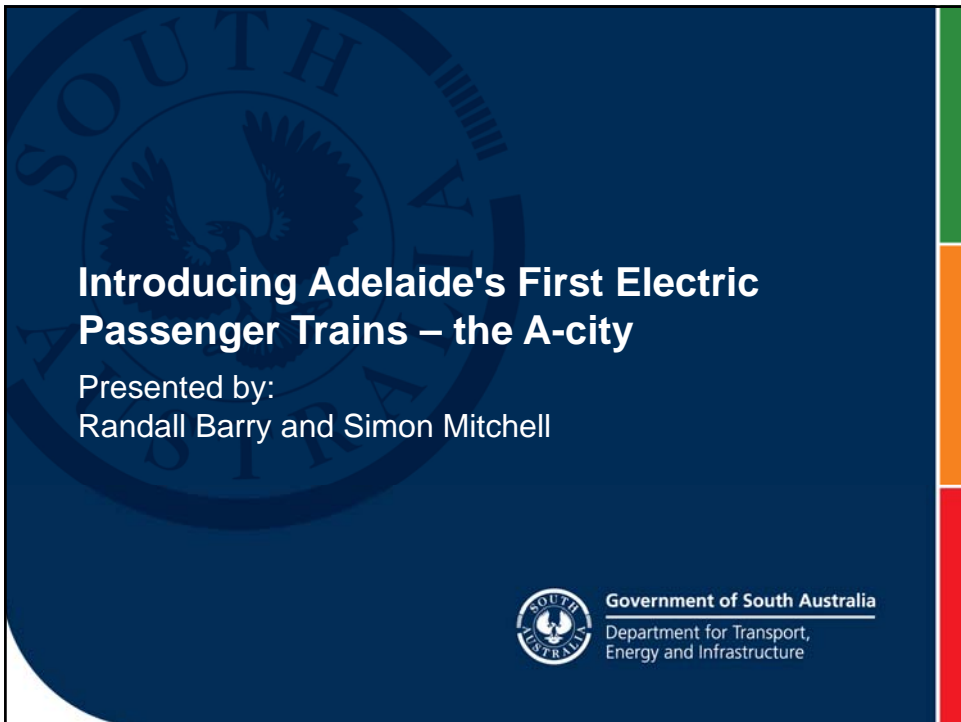
They are about to embark on their biggest adventure yet because they are due to have their first child (daughter) in October.
(She will, of course, be getting a train set.)

Mike graduated from Liverpool University in 1989 and began his career with Rolls-Royce working with control systems for nuclear reactors on the Royal Navy's submarines. In 2004 Mike secured a position with ASC (formerly the Australian Submarine Corporation) in Adelaide

In 2009 Mike finally got the opportunity to follow his passion when he left the defence industry and joined the Department for Transport, Energy and Infrastructure to work on the Rail Revitalisation programme for Adelaide's metropolitan passenger rail network.

In 2011, Mike took-up a position with Aurecon as a consulting engineer working on safety Instrumented systems in the power generation and mining and industrial sectors. Mike keeps his eye on developments in the rail industry via the RTSA.





All images are used for illustrative purposes only and do not indicate a preferred or proposed supplier or product.



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Process

Buyer Survey

- 47 Question Survey of all Australian and selected overseas metro passenger rail buyers
- Good advice on requirements definition, tender evaluation, contract structure and approaches, timeframes, resources to deliver (quantum & type), common supplier risks, lessons learnt, general advice (eg use of options)

For the benefit of all South Australians



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Process

Request for information (Rfi)

- Provided key elements of specification to Rolling Stock manufacturers
- What do you think? What will work best for you?
- Key learnings included 3 not 2 car sets, State funded, product range

For the benefit of all South Australians



Process – Request for Proposal (RfP)

- Supply of 66 gauge convertible 25kV railcars (nominally as 22 x 3 car sets) with options for additional vehicles particularly with regard to 3000 class DEMU conversions
- Compulsory and discretionary options (eg selective door opening, tunnel operation, simulator)
- Maintenance (10 + 5 years) with a period, if not all, as shared maintenance facility with existing Diesel fleet maintainer

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Process – Request for Proposal (RfP)

- Open call vs EoI/RfT
- Functional Specification tendered eg set timetable performance requirements rather than maximum speed, acceleration and braking curves; capacity rather than vehicle dimensions and layouts etc
- Extensive 5-month negotiations to put greater detail to contract and technical specification

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Process – Request for Proposal (RfP)

- **Evaluation Structure**
 1. **Specialist Technical team** ——— Supported by engineering consultancy Interfleet – highly specialised UK resources - (wheel/rail, HVAC, etc)
 2. Specialist Commercial team
 3. Primary Evaluation Team
 4. Local specialist areas
 5. Due diligence
- **Executed 31 March 2011 with Forex fun**

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Process – Request for Proposal (RfP)

- **Evaluation Structure**

1. Specialist Technical team

2. **Specialist Commercial team** ——— Support by KPMG
again with specific
Australian passenger rollingstock
experience

3. Primary Evaluation Team

4. Local specialist areas

5. Due diligence

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Department for Transport,
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Process – Request for Proposal (RfP)

- **Evaluation Structure**

1. Specialist Technical team

2. Specialist Commercial team

3. **Primary Evaluation Team** ——— Local, full-time team

4. Local specialist areas

5. Due diligence

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Process – Request for Proposal (RfP)

- **Evaluation Structure**

1. Specialist Technical team

2. Specialist Commercial team

3. Primary Evaluation Team

4. **Local specialist areas** ———— Signals, maintenance, rolling stock, electrification etc. all provided review and input when required & on preferred bid

5. Due diligence

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Process – Request for Proposal (RfP)

- **Evaluation Structure**

1. Specialist Technical team

2. Specialist Commercial team

3. Primary Evaluation Team

4. Local specialist areas

5. **Due diligence** — On vehicle and on bidder

- **Executed 31 March 2011 with Forex fun**

For the benefit of all South Australians



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What we bought...

- 22 3-car set Electric Multiple Units
- Bombardier Transportation Australia
- Modern design
- Modern standards
- Modern systems



For the benefit of all South Australians



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Modern Design – VLocity Carshell

- Proven design
- Lessons learned
- Use existing processes
- Less risk



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Modern Design – Made in Australia

- **Best use of Australian Sub-suppliers**
- **Keep our investment local**
- **Similar views:**
 - Safety
 - Quality
 - Customer Service



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Modern Design - Crashworthiness

- **Latest crashworthiness standards**
- **Most crashworthy passenger vehicle built in Australia**
- **New standard EN 15227 protects driver**
- **Disposable elements ensure no damage to vehicle <36 kph**

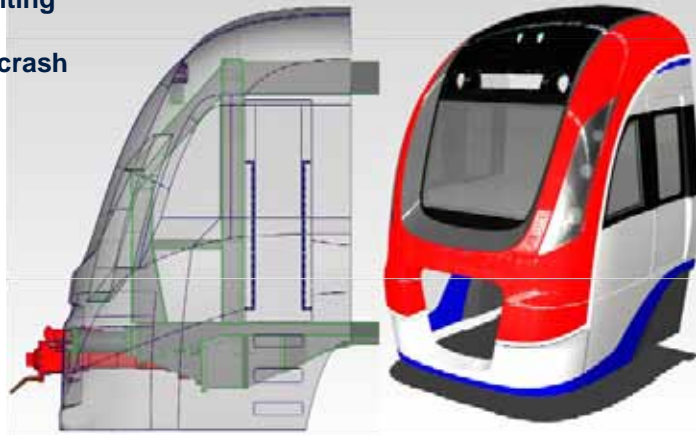
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Modern Design – Nose Cone

- Visibility lighting
- Deformable crash tubes
- Recessed windscreen



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Modern Design – Cab Access

- Platform access for drivers
- Better response to passengers who require assistance
- Safer entry from track level



For the benefit of all South Australians



Modern Design – Interior Layout

- Designed for good passenger flow
- Open, modern environment
- Seating design will allow full access for wheelchairs and maximises passenger capacity



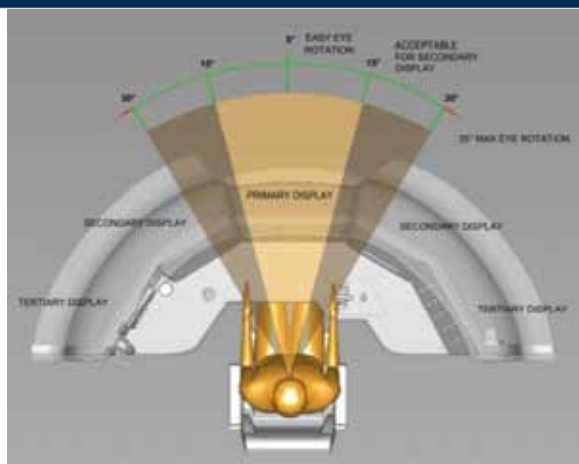
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Modern Design - Ergonomics

- Ergonomic working environment for all drivers
- Engaged industry professionals
- Drivers involved with every step of the process



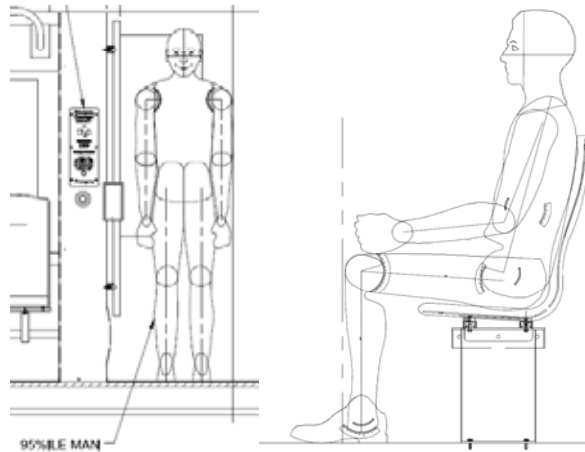
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Modern Design - Ergonomics

- Ergonomic working environment for all drivers
- Engaged industry professionals
- Drivers involved with every step of the process



For the benefit of all South Australians



Modern Design – DDA

- Disability Discrimination Act
- Disability Standards for Accessible Public Transport
- Minimised stepping gaps
- Audio and visual announcements
- Two way communication with driver



For the benefit of all South Australians



Modern Standards – Noise

- Latest Australasian Railway Association noise standards
- Quiet operation, minimal impact to customers and the environment
- Acoustic insulation inside walls
- Rubber isolation mounts under floor

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Modern Standards – Fire Protection

- Latest fire protection standards
- BS 6853, SA 2122, AS 3744
- Restricts flames, smoke and toxic chemicals

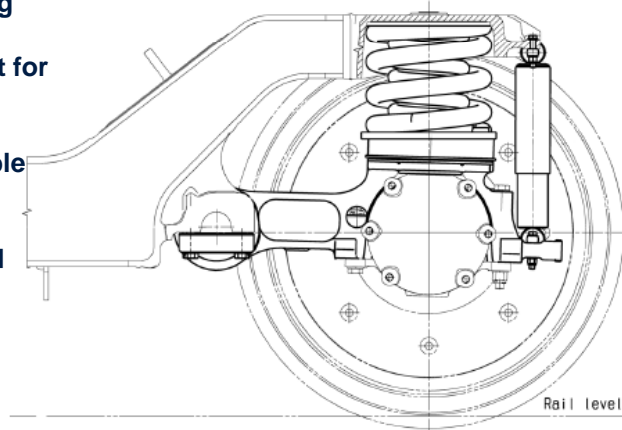
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Modern Standards – Ride Quality

- Computer modelling
- Best in ride comfort for customers
- Safe and comfortable for crew
- Australian standard tailored to Adelaide requirements



For the benefit of all South Australians



Modern Systems – Braking

- Three forms of braking:
 - Regenerative (Electrodynamic)
 - Electronically Controlled Pneumatic
 - Park brake
- Measures the weight on each railcar
- Full integration with Wheel Slide Protection

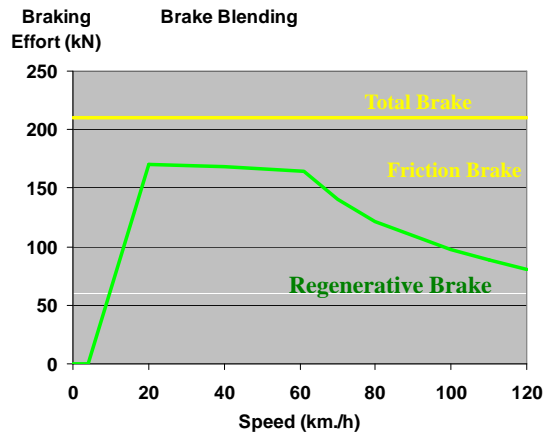


For the benefit of all South Australians



Modern Systems – Braking

- Triple-redundant brake computer
- Blends each brake for maximum efficiency



For the benefit of all South Australians

Modern Systems – Wheel Slip/Slide

- Most advanced Wheel Slip system in Australia
- Monitors every axle and responds to track conditions immediately
- Maximises use of regenerative brake
- Maximises adhesion

For the benefit of all South Australians

Modern Systems – Current Collection

- **High-reach pantograph**
 - 7.2m Maximum wire height
- **Over-height protection**
- **Carbon damage protection**

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Modern Systems – Air Conditioning

- **Supercharged air conditioning**
- **20°C inside when 40°C outside**
- **Rated for full operation at 53°C**
- **Dual redundant systems**
- **Driver's personal air conditioner**



For the benefit of all South Australians



Modern Systems – CCTV

- Full coverage of saloon, doors and signals
- 20 full-colour digital video cameras per train
- Live viewing from cab
- Passenger Emergency Intercom



For the benefit of all South Australians



Modern Systems – Passenger Info

- Latest Passenger Information System
- Six internal displays
- Six side displays
- Two end displays
- Visual and verbal announcements
- Automated, knowledge of timetable



For the benefit of all South Australians



Modern Systems – Driver’s Cab

- Designed for ergonomics and function
- Created from scratch
- Fully customised for Adelaide



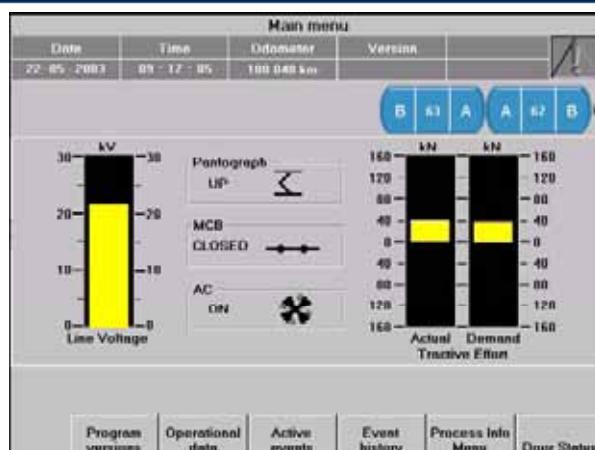
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Modern Systems – Train Information

- Fault detection and Information
- Train-critical statuses and measurements



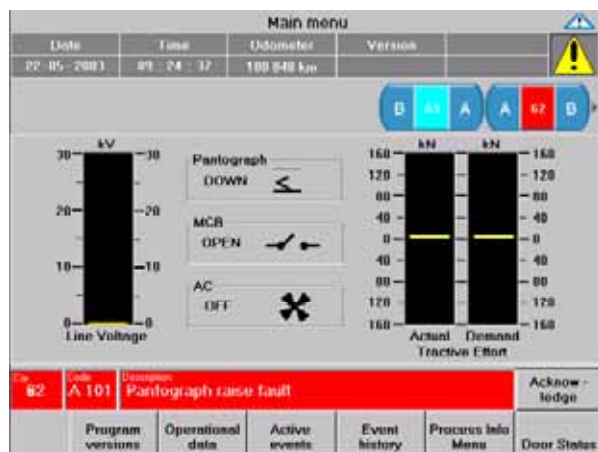
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Modern Systems – Train Information

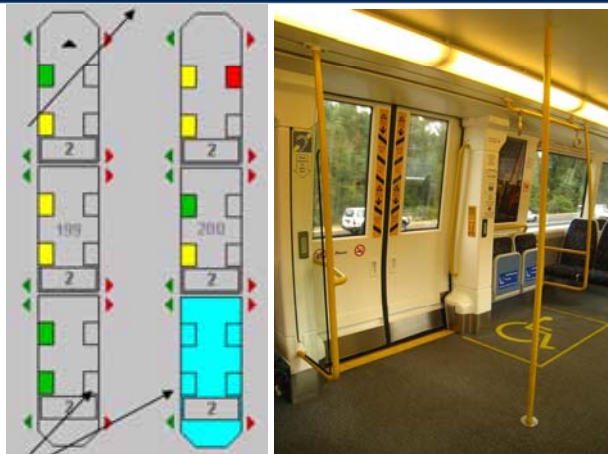
- Fault detection and Information
- Train-critical statuses and measurements



For the benefit of all South Australians

Modern Systems – Doors

- Electronic plug doors
- Failsafe with traction interlocking
- Stepping gap minimisation



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Design Lifecycle

- **Staff Consultation**
- **Customer Groups**
- **Project Interfaces**
 - Electrification
 - Stations upgrades
 - Seaford extension
 - Existing trains



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Challenge – Gauge Conversion

- **Easily convertible from broad to standard gauge**
- **Spanner job**
- **No change to equipment**
- **Holistic approach to conversion**



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Challenges – Interior Design

- **Contradictory passenger requirements**
 - Handrails for seniors, vision impaired
 - Open spaces for wheelchairs, people without specific accessibility needs
 - A little bit extra comfort of passengers compared to right to travel



For the benefit of all South Australians



Challenges – Wheel Slip Technology

- **Vastly improved Wheel Slip Technology**
- **Shorter stopping distances**
- **Best adhesion control**
- **Existing driver practices**

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Where to from here?

- Finalise customisation in November 2011
- Begin Manufacturing in January 2012
- Delivery early 2013 through to 2014
- Testing on Seaford extension (closed track)
- Planned acceptance of first train mid 2013
- Six trains ready for service end Q3 2013

For the benefit of all South Australians



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