



NEXT CHAPTER MEETING:

**Thursday 6<sup>th</sup> August**

**JOINT MEETING of the  
Mechanical Joint Technical Programme +  
Railway Technical Society of Australasia, SA**

## *The Noise Abatement Project*

**Reducing wheel/rail noise emission, with a focus on the Adelaide Hills**



Presented by:

**Kirsten Alexander, Manager Network Performance, ARTC and  
Carolyne Southern, Manager Standards & Monitoring, Pacific National**

**Venue: Engineering House, 11 Bagot Street, North Adelaide**

**Light Refreshments from 5.30pm, meeting commences 6.10pm**

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## Chapter Meetings

### Thursday 6 August 2009

Joint Chapter meeting with Mechanical Groups, 11 Bagot St, North Adelaide – 'Wheel Squeal' by Kirsten Alexander and Carolyne Southern.

### Thursday 3 September 2009

Joint Chapter meeting RTSA/PWI hosted by IRSE at Gil Langley Room, Adelaide Oval – 'National Train Communication System' by Mike van de Worp, ARTC.

**NOTE:** Meeting to be followed by free Cocktail Meal and Refreshments. For catering purposes, please RSVP to Malcolm Menadue on 0418 827 126 or at [mmenadue@internode.on.net](mailto:mmenadue@internode.on.net) to confirm your attendance.

### Thursday 1 October 2009

Chapter meeting, 11 Bagot St, North Adelaide – 'Accident Investigation in the Indonesian Railways' by Lucky Soegito, Indonesian Railways.

### Thursday 22 October 2009

PWI Quiz Night, details to follow shortly.

### Thursday 5 November 2009

Chapter meeting – ARTC Network Enhancement investment update by Ben Leske.

### Tuesday 1 December 2009

Annual dinner meeting + AGM, Hyde Park Tavern.

### Publisher

This newsletter is a publication of the South Australian Chapter of the Railway Technical Society of Australasia, Engineering House, 11 Bagot Street, North Adelaide SA 5006. 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 [sa-editor@rtsa.com.au](mailto:sa-editor@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](http://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](http://www.rtsa.com.au).

### Chapter Contacts

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### Newsletter Dispatch

Dispatch of the newsletter is undertaken by Steve Torok. Contact Steve on [storok@tge.com.au](mailto:storok@tge.com.au) if you have any problems receiving newsletter electronically or in hard copy, or change your e-mail address.

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## News

### SA Chapter Meeting July 2<sup>nd</sup>, 2009

The last Chapter meeting saw a presentation on the topic of *Adelaide's Belair Track Upgrade* by Phil Agnew

of the Department for Transport, Energy & Infrastructure. A copy of this presentation is included at the end of this newsletter for those of you who were unable to attend.

## Coming Events

### AusRail Plus 2009, Adelaide

Between 17<sup>th</sup>-19<sup>th</sup> November, Adelaide will host the largest annual rail event in the Asia Pacific region, AusRail Plus, at the Adelaide Convention Centre. With trade exhibitions, networking functions and a

program of international speakers, this 3-day conference will be the biggest rail event of 2009.

Full details can be obtained from [www.ausrail.com/informaoz/AusRAIL/](http://www.ausrail.com/informaoz/AusRAIL/)

## Chairman's Chatter

Back in April, this column commented on the regulatory hurdles facing rail transport in Australia, and noted the glacial pace of reform. Unfortunately, since then – in defiance of the laws of gravity – the glacier may even be moving backwards.

To recap and continue the story ...

Moves to rationalise rail regulation date back to 1996, when Commonwealth and State governments agreed to implement "a cost-effective, nationally consistent approach to railway safety".

The main recommendation from the Independent Review of Rail Safety Arrangements in Australia, carried out for the Australian Transport Council (ATC) – i.e. the Transport Ministers – in September 1999, was that the Commonwealth establish a national body for rail safety regulation.

Moving forward to 2006, the ATC announced that "in a decision that marks a significant achievement in national rail reform, Ministers approved the proposed model national Rail Safety (Reform) Bill and associated aspects of the Rail Safety Reform Package. Once implemented in all States and Territories, Australia will have, for the first time, a nationally consistent legislative framework for rail safety".

"This initiative is part of the COAG reform agenda and is an effective demonstration of the improvements in regulation of transport that can be achieved."

However, although the framework was put in place, different jurisdictions amended the details to suit their own requirements, so national consistency was not achieved.

In July 2008, the ATC requested a Regulatory Impact Statement from the National Transport Commission, on a single national rail safety regulatory and investigation framework. The statement was published in November 2008.

More recently, the ATC met on 22 May 2009. It agreed to endorse the Regulatory Impact Statement for transmission to COAG, including a recommendation for a single national regulator. The ATC recommended that COAG agree to proceed to further develop arrangements so that by 2013 a national rail safety regulator would provide a one-stop shop for all those operating in and on Australia's rail networks, and that the Australian Transport Safety Bureau become the preferred national rail safety incident investigator.

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Although this seemed to foretell real progress, it was not to be. The COAG meeting on 2 July endorsed “the creation of a national rail safety regulatory system and the Australian Transport Safety Bureau (ATSB) becoming the preferred investigator of rail accidents. Currently Australia has seven rail safety regulators, three rail safety investigators and different rules in every state.”

This sounds good, but there is a subtle departure from the ATC recommendations. A national rail safety regulatory system is not the same as a national rail safety regulator.

This difference is explained further, deep in the fine print. COAG agreed to “implement national regulation for rail safety”. One wonders how this is an advance on what was agreed to in 1996.

The communiqué continues: “COAG agreed to develop a national rail safety regulatory system with further consideration of the scope and form of the

regulator following receipt of advice at the end of 2009 from the Standing Committee on Transport on specific safety requirements within jurisdictions, especially in relation to urban systems and the interface with interstate and freight operations. The ATC will report to COAG at its first meeting in 2010 on progress in developing a national rail safety regulatory system and investigator with a view to bringing the final National Partnership to COAG for approval by mid-2011. This advice should consider all options, including how to strengthen the effectiveness of the Rail Safety Regulators Panel.”

What this bureaucratic gobbledegook appears to mean is that the States are digging in to protect their respective patches. One struggles to discern any tangible progress in this area over the past 13 years.

Nevertheless, we continue to wait hopefully.

Duncan McLeod

## Adelaide's Belair Track Upgrade

The slides from Phil Agnew's 2<sup>nd</sup> July presentation can be seen on the following pages:

# ENGINEERS AUSTRALIA RTSA – SA Chapter

## Belair Line Upgrade

Presented by Phil Agnew, Senior Project Manager

2 July 2009



## Background

### June 2007

- \$121 million to upgrade Belair (Hills) and Noarlunga lines

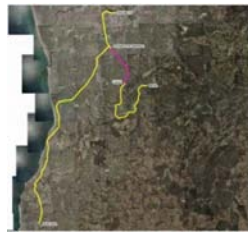
### June 2008

- \$2 billion announcement that included track upgrade of entire network



## Belair Line – Goodwood to Belair

- 15 track kilometres
- logistically difficult - limited corridor access
- adjacent ARTC freight line
- 3,100 boardings per day



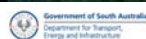
## Key Milestones

- |            |   |
|------------|---|
| June 2007  | Upgrade of Belair hills announced   |
| Early 2008 | Planning investigations underway  |
| June 2008  | Upgrade of Belair plains announced  |
| Mid 2008   | Reference design developed<br>Design and Construction specification developed |
| July 2008  | Expressions of Interest for Design and Construct Contract                     |
| Sep 2008   | Tenders short listed  |



## Key Milestones

- |            |  |
|------------|--|
| Nov 2008   | Issue Request for Tender                     |
| Dec 2008   | Cabinet and Public Works Committee approvals |
| Dec 2008   | Tenders submitted and assessed               |
| Jan 2009   | Preferred Tenderer engaged                   |
| Jan 2009   | Design underway                              |
| April 2009 | Construction begins                          |
| Aug 2009   | Expected construction completion             |



## Planning Investigations

- Survey
- Client Engineer engagement
- Geotechnical investigation
- Environmental investigation
- Services investigation
- Sleeper supply
- Rail supply



## Scope Development

- Government expectations
- Existing environment
- Operational requirements
- Maintenance requirements
- Design life
- Risk allocation



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## Key Scope Elements

- Design development
- Earthworks and drainage
- Remove existing contaminated material
- New formation (DTEI design)
- New ballast
- Gauge convertible concrete sleepers
- New rail
- Recondition existing turnouts
- Upgrade 5 level crossings
- Signal decommissioning, protection and recommissioning
- Upgrade 3 rail deck culverts
- Continuously welded rail



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## Specification Development

- Review TransAdelaide Code of Practice
- Include design and construction components
- Comprehensive review with view to operational requirements and other established rail specifications
- Adopt CoP for heavy rail specification
- General elements adopted as required from DTEI Master Specification

SPECIFICATION DIVISION 11 MISC AND CONSTRUCTION - HEAVY RAILWAY WORK	
<b>CONTENTS</b>	
<b>Table 1</b>	<b>Design Requirements - General</b>
Part 1001	Design Requirements - General
Part 1002	Quality Management System for Design
Part 1004	Asset Management
Part 1005	Design - Environmental
<b>Table 2</b>	<b>Operational Signage</b>
Part 1011	Operational Signage
Part 1012	Track Signage
Part 1013	Track Markings
Part 1014	Signage
Part 1040	Excavation and Earthworks
Part 1041	Track Support Systems
Part 1051	Rail and Rail Sleepers
Part 1052	Overhead Cables, Buffle Stops and Details
Part 1053	Power and Cabling
Part 1061	Rail Sleepers - General
Part 1071	Access Control and Protection
Part 1080	Signaling

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## Contract

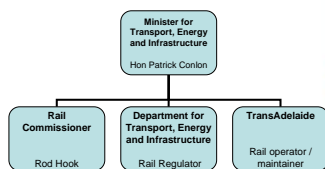
- Design and Construct Contract based on AS 4300 General Conditions of Contract
- Expression of Interest to shortlist to three tenderers
- Request for Tenders evaluated in accordance with DTEI & probity requirements
- John Holland Coleman Rail Joint Venture engaged to undertake works
- First project delivered by *Rail Commissioner*



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## Rail Safety Act 2007

- Rail assets transferred to the Minister in late 2007
- First major rail project in the state delivered under new legislation
- Established *Rail Commissioner* as the party with effective management and control to deliver major rail projects
- Contractor required to comply with and compliment *Rail Commissioner's* Safety Management System



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## Design Challenges

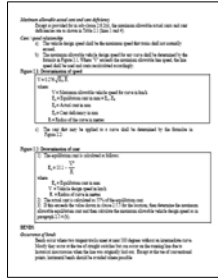
- Historical steam rail corridor
- Sub-standard clearance to ARTC
- Narrow corridor
- Tight radius curves
  - 22 sub 350m radius curves
  - 10 sub 250m radius curves
- Existing sub-standard gradients
- Significant no. of fixed points



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## Design Development

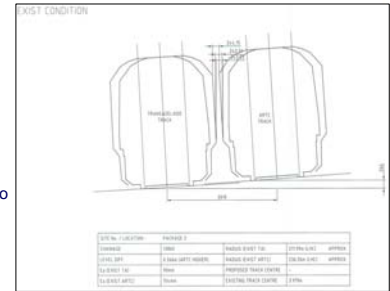
- Collaborative design approach
- Rail Commissioner, TransAdelaide, Client Engineer, ARTC design consultant, KBR and JHCRJV all present at design meetings and reviews
- Issues resolved progressively
- Design reviews at tender, preliminary and final design



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## Design Development - ARTC Clearance

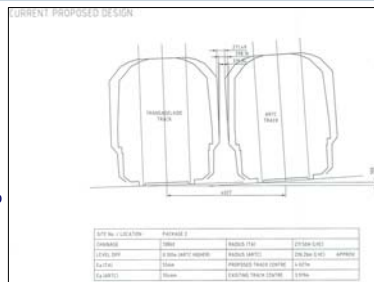
- Existing substandard clearances between the two tracks
- ARTC requirement to achieve 4m centres or no worse than existing
- Spot checks also taken to ensure compliant air gap



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## Design Development - ARTC Clearance

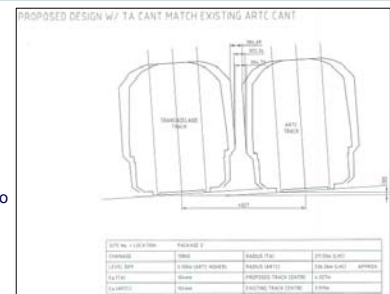
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## Design Development - ARTC Clearance

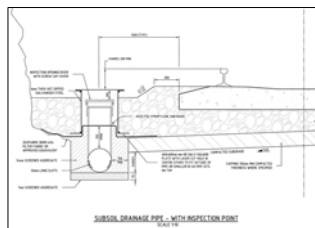
- Existing substandard clearances between the two tracks
- ARTC requirement to achieve 4m centres or no worse than existing
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## Design Development - Drainage

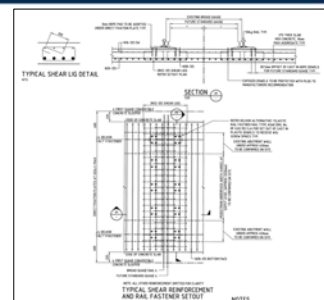
- Cess drain utilised where possible
- Drainage design challenging due to tight cuttings
- Slotted pipe with risers as solution
- Galvanised inspection covers
- Located centrally through platforms
- Shallower between platforms to minimise excavation adjacent to ARTC live track



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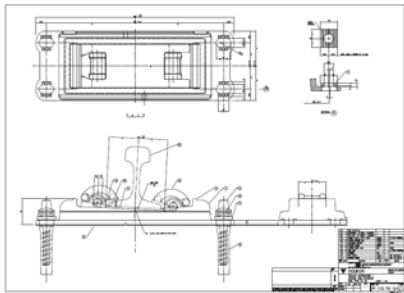
## Design Development – Subways

- Inadequate cover and clearance to subways
- Fixed track height due to platform clearance requirements
- Direct fixed slab solution
- Delcor plates with elastic fastening



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## Design Development – Subways



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## Construction – Key Issues

- Adjacent live freight movements
- Safety
  - Rail
  - Pedestrian
  - OHS&W
- Inclement weather
- Formation design
- Rock
- 15km Construction site
- Very tight program



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## Construction – Key Activities

- Signal isolation and disconnection
- Track stripping
- Bulk earthworks
- Drainage works
- Final trim
- Materials delivery
- Bottom ballasting
- Track laying
- Final ballast, tamp & regulate
- Signal reconnection and commissioning



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## Construction - Environmental



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## Construction – Signal Isolation and Disconnection



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## Construction – Signal Isolation and Disconnection



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## Construction – Track Stripping



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## Construction – Track Stripping



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## Construction – Bulk Earthworks



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## Construction – Bulk Earthworks



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## Construction – Drainage Works



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## Construction – Drainage Works



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## Construction – Final Trim



## Construction – Final Trim



## Construction – Materials Delivery



## Construction – Materials Delivery



## Construction – Bottom Ballasting



## Construction – Track Laying



## Construction – Track Laying



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## Construction – Final Ballast



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## Construction – Tamp and Regulate



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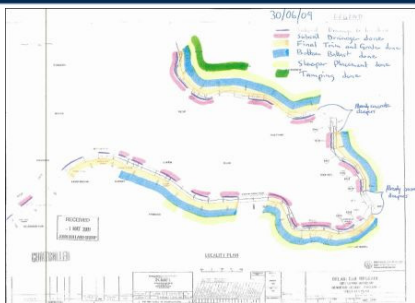
## Progress So Far

- 100% Track stripping
- 85% Bulk earthworks
- 75% Final formation
- 70% Bottom ballast
- 60% Drainage
- 60% Track laid
- 15% Track tamped
- Welding, IRJ insertion underway
- Culvert/Subway works underway



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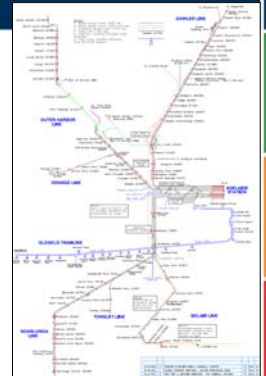
## Progress So Far



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## What's Left

- 5 Level crossings beginning 3<sup>rd</sup> July
- Closing Cross Road for the weekend of the 18<sup>th</sup>/19<sup>th</sup>
- Pour slabs at Mitcham and Torrens Park subways
- Finalise earthworks, drainage and track works
- Signal connection and recommissioning
- Handover and integrity testing



## Questions?

