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**SIEMENS RAIL SERVICES (BAYSIDE) PTY LTD
ACN 088 116 974 (“Siemens Rail Services”)**

Submission in relation to
“The factors leading to and causes of failures in the
provision of Metropolitan and V/Line Train Services”

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1. Introduction

Siemens:

For over 160 years Siemens has stood for technological excellence, innovation, quality, reliability, and internationality in some **190 countries**.

Locally for over **135 years**, Siemens in Australia and New Zealand has been providing innovative, technology-based solutions to meet some of society's most pressing issues.

Siemens is a **world leading manufacturer of commuter and metro trains**. Since 1998, Siemens trains have been delivered to numerous cities including Deutsche Bahn's Mittelrheinbahn; Kuala Lumpur, Malaysia; BTS Bangkok, Thailand; Metro Oslo, Norway; Sao Paulo, Brazil; Brussels, Belgium, and cities in United Kingdom; Greece; Bulgaria; Slovenia and Netherlands.

Background:

In March 2000, Siemens Ltd. was **awarded a contract to supply 62 new three-car trains** to Melbourne's metropolitan network.

The contract was **originally entered into with National Express Group Australia (Bayside Trains) Pty Ltd** ("National Express") (the original franchisee).

The trains were **specifically designed to meet National Express requirements** for use on the Bayside train franchise and as a result were named the "**Nexas**" trains.

The first Siemens Nexas train was put into revenue service on 21 March 2003.

Background:

Having demonstrated Siemens capability to deliver **on-time and on-budget**, an option for a **further 10 trains** was exercised in order to meet increased train capacity and anticipated additional demand with visitors to the **Commonwealth Games in 2006**.

Through the **insolvency of National Express**, Siemens continued to support the State in the delivery and maintenance of the Siemens fleet.

Delivery of all 72 trains was completed in January 2006.



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2. The Siemens Nexas Trains

The Design:

The Siemens Nexas trains are designed for **commuter operations**.

They have **superior high quality** features.

The Siemens Nexas trains consist of **three-car units** comprises of two motor cars and one trailer car (T-car). The motor cars carry the traction container, the brake resistor and electrical equipment boxes underfloor.

The trains are **DDA compliant** and allow wheelchair bound passengers to utilise the full train length.

Wide open gangways provide appearance of interior space and enhanced security whilst allowing the train to operate with partial air-conditioning failure.

The trains are equipped with **airbag suspension providing superior ride comfort**, constructed from long lasting **stainless steel reducing lifetime cost**, have **extra wide doors** designed for National Express to allow faster passenger entry and egress.

Seating layout provides increased legroom and passenger comfort.

Anti-vandalism features:

Anti-vandalism features including graffiti resistant panels have been included to minimise train downtime.

Local Content:

The trains contain substantial **local content** fitted at Newport Workshops prior to commissioning

Ergonomics:

Ergonomically designed seats are made from aluminium frames with separate seat and back cushions which are easily exchangeable using a vandal resistant fastening system.

The **driver's cab** was designed in **close cooperation** with the operator and the drivers.



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3. Siemens Rail Services (Bayside) Pty Ltd

Siemens Rail Services (Bayside) Pty Ltd:

Siemens Rail Services (SRS) is a wholly owned subsidiary of Siemens Ltd., which is the Siemens Regional Company in Australia. Both members of the Siemens AG group of companies. SRS (Bayside) is a special purpose company incorporated for the sole purpose of maintaining the Siemens [Nexas] trains.

SRS is contracted to provide maintenance of the trains under a **Fleet Maintenance Agreement for a period of 15 years** (subject to refranchising) at the Newport depot.

SRS Maintenance Responsibilities:

SRS performs **preventative maintenance** on the Siemens Nexas trains in accordance with an agreed **Rolling Stock Maintenance Plan** together with **reactive maintenance** as required to a fixed lump sum price based on bands of kilometres travelled.

The whole fleet of Siemens Nexas trains **travels on average between 650k to 900k km per month**.

Key Performance Indicators under the Fleet Maintenance Agreement include **availability for revenue service from the Newport depot and train reliability**. These key performance indicators have consistently been achieved through the maintenance period.

Case Study:

Public transport at the **Commonwealth Games** was a strong focus for Government. Extensive planning and preparation was undertaken by Connex with all stakeholders including DOT, Unions, UMTL and Siemens.

The train network performed very well during this time – the result of **excellent cooperation** between all the parties.

This form of cooperation is required on a continuous basis.

4. What can we learn from issues reported to SRS in the FMP

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Issues reported to SRS in the FMP:

Siemens statistics show the following events were reported in descending order of occurrence:

- No Fault Found events averages around 213 per month
- Vandalism events are around 110 per month across the Siemens fleet
- System faults over the last 12 months, about 65 system faults (e.g. windows, lighting, couplers, CCTV, PA, HVAC, doors, pantograph etc) are reported per month (0.03 events per train per day)

Siemens view:

The Siemens view on factors leading to and causes of failures in provision of train services is as follows:

- Vandalism including vandalism of the cab is a frequent occurrence causing disruption to the system
- Number of train types with differing cab controls
- Poor condition of infrastructure incl low adhesion areas
- 1500V overhead supply voltage failure
- Signal Passed at Danger (SPAD's)
- Speed Limits

5. The Siemens view explained

- Vandalism including vandalism of the cab is a frequent occurrence causing disruption to the system
- Number of different train types on the system; there are 4 train types each with different driver controls operated on the metropolitan network. Train drivers are required to switch between train types at short intervals. As each train is remarkably different, particularly in fault display, this can result in misunderstanding on fault reporting and incorrect operation.
- Poor condition of infrastructure; The public transport infrastructure is aged and requires upgrading, renewal and improved maintenance. Areas of very low adhesion are found on the network. Specifically level crossings; points; tracks; sleepers and sub-stations are in need of replacement.

6. The Siemens view explained

- 1500V overhead supply voltage failure; The 1500V is supplied via overhead contact wire. Faults in traction substations lead to unreliability of the 1500V supply.
- Signal Passed at Danger (SPAD's); Signal Passed at Danger (SPAD's) reports occur in all rolling stock and in all rail systems. Of these, platform overshoots in Siemens Nexas trains have received heightened media attention. However attention needs to be paid to all SPAD's in all types of rolling stock. For SRS, the occurrence, frequency and cause of SPAD's is difficult to analyse due to the lack of a transparent reporting system that is capable of critical analysis.
- Speed Limits; One of the difficulties in the Melbourne train operation is the set time table [for all conditions] which makes it difficult for drivers to set speeds appropriate for prevailing conditions (wet conditions; poor track condition etc).

7. Finding a solution

Further enhance the performance of infrastructure equipment and training of personnel (to complement the Victorian Government investments in rolling stock) – including applying newer, more effective technology.

Consider:

- **Points and level crossing upgrade, track grinding, rail replacement, sanding solutions**
- **Safety solutions (rail communications, level crossing technologies, automatic train protection)**
- **Signalling systems and electrification solutions**

With rising urbanisation placing increased pressure on our existing rail systems, the provision and education of safety-critical rail technologies is not only our social responsibility but a priority for us all.

8. Looking to the future

In August 2009, Siemens concluded negotiations with Metro Trains Melbourne (the successful new franchisee replacing Connex) to continue managing the maintenance of the Siemens trains for an initial three year period. This arrangement will enable Siemens and MTM to share their knowledge and focus jointly on providing a superior train service.

Siemens is confident that, together with the new franchisee MTM and the Victorian Government, improved measures will be implemented on the system to manage low adhesion conditions occurring from time to time in the Melbourne network.



9. Conclusion

Siemens Nexus trains are **high quality with a number of superior features** over other trains on the system.

The **brake system of the Siemens Nexus trains performs well** and is not the root cause of platform overshoots.

Further, **SPAD's are experienced by all trains over the entire network.**

The causes of each SPAD must be carefully analysed and a **transparent reporting system** used to compare differences and similarities in order to establish the root cause.

Siemens Nexus trains were **unnecessarily withdrawn** from revenue service during hot weather.

The Melbourne rail corridor **infrastructure requires significant additional attention** in regards to maintenance and upgrades.

Other system and operational issues need to be reviewed and addressed.

If drivers continue to be required to operate trains with different cab controls on a frequent basis, they should be provided with **adequate ongoing support and training.**

Siemens is confident that, together with the new franchisee MTM, improved measures will be implemented on the system to **manage low adhesion conditions** occurring from time to time in the Melbourne network.



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