



Chatswood Transport Interchange

Site: Chatswood – Sydney

Owner: NSW CityRail

Client/Project Manager: CRI Australia

Project Timeline: 2005 – 2008

Business Unit: Wormald Installations NSW

The Chatswood railway station is the ninth busiest in the Sydney CityRail network. It is currently used by over 35,000 rail commuters daily, but this number is expected to reach more than 100,000 commuters and pedestrians.

The Chatswood Transport Interchange (CTI) is a major infrastructure development for the NSW Government. It incorporates the re-development of the Chatswood railway station, development of new bus and taxi interchanges and the construction of a retail and residential complex that will house over 80 retail outlets and eventually over 500 residential units.

Rigorous system design delivers confidence

In such a high profile development, where thousands of people could be impacted by an incident, nothing can be left to chance. The design and analysis of the fire and emergency system was extensive,

with careful calculations of things like hydraulic performance and response times. Wormald managed through a specialist engineer the design documentation and quality regime required by the head contractor, RailCorp and the Transport Infrastructure Development Corporation.

A number of reports were prepared throughout the design and installation process using comprehensive methodologies such as Failure Modes, Effects and Criticality Analysis (FMECA) and Reliability, Availability, Maintainability and Safety Analysis (RAMS). The fire systems developed aim met or exceeded all requirements of regulators and stakeholders.

Exceptional fire and emergency solutions

Very few companies can match Wormald's experience in providing large scale fire and emergency installations. Wormald were engaged to design, supply, install and commission a fully integrated fire and emergency system including:

- > Automatic Fire Detection and Alarm System
- > Combined Sprinkler / Hydrant System
- > Emergency Warning & Intercommunication System (EWIS) and Public Address (PA) System
- > Inergen® Gaseous Fire Suppression System
- > Portable Fire Extinguishers

The Automatic Fire Detection System incorporates analogue addressable MX photoelectric type smoke detectors located throughout the project. The system has separate zones for public areas and service areas on each level.

The EWIS and PA systems have a special interface with CityRail's existing Digital Voice Announcement (DVA) system, controlled by central control in the city. Recessed ceiling mounted speakers broadcast tones and paging throughout the project. In the retail building works they are fixed to the concrete soffit to be relocated by the retail fit out contractor. Horn type speakers provide broadcast tones and paging to carpark, plantrooms and bus interchange areas. Warden intercommunication phones within each EWIS zone provide direct communication with the building Emergency Control Panel.

The combined Sprinkler/Hydrant System is fed by town mains water supply directly into the fire main manifold. A 160 kilolitre fire water tank provides a second source of fire water, delivering a Grade 1 supply. An electric pump draws from the town main and a back-up diesel pump draws from the fire water tank.

Inergen® Gaseous suppression systems are installed in the site's IT plant rooms including switching, communications,

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signalling and power rooms. Inergen® is a superior fire extinguishing agent and much safer than CO₂ alternatives. It does not impair the vision of a person evacuating the area, is not toxic or corrosive, electrically non-conductive and environmentally friendly.

The entire system is managed by the Main Fire Indicator Panel, Master Emergency Control Panel and Fire Fan Control Panel located in the Fire Control Room. These panels control the Automatic Fire Detection System, Fire Fan Control System and the EWIS installed, delivering a single integrated Fire and Life Safety Strategy for the CTI.

Complex installation conditions matched by outstanding capability

By far the most significant challenge in installing the fire and emergency system was working within a busy train station – trains are continually running through the building site. Scheduled train service shut downs are limited and run to a very strict timetable. The window for installation work is brief and cannot be extended if the planned work is not completed on time. Another complication was the dependency

on other contractors. Fire protection equipment must be installed on building components – if they are not ready then fire and emergency systems cannot be installed.

Matt Rose, Wormald's Project Manager, says: 'The key to managing this complexity is 3-fold. Firstly, everything must be planned completely before any work is commenced. We need to know what we will achieve and how we will achieve it every day. Secondly, we need to be immensely flexible, especially when our work is so dependent on the work of others. We have some very good leading hands managing the day to day work. If there is an unexpected change in the work plan they quickly look for opportunities to advance our part of the work. Thirdly, we communicate. We talk with the site project manager, with other contractors and within our own team to make sure we all know as much as we can about how the work is progressing and any emerging difficulties. And we prefer to talk on site where we can see the people and the work – so that we make decisions based on a clear picture of what is actually going on.'

"On a project such as the Chatswood Transport Interchange, confidence in the main service providers, such as Wormald is paramount. Wormald's management and on-site teams, both prior and during construction, gave us the confidence needed to work in the live rail and pedestrian interface areas.

Wormald performed all their requirements fluidly in teamwork alongside other contractors and maintained an understanding of the differing needs of the stakeholders and other workmen.

As Wormald was involved in many key areas and have continued to maintain the completed areas, as well as areas still in construction, their management needs to be multi-dimensional"

*- Ed Selby
Project Director, Chatswood Transport Interchange*

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