Tugun Bypass - Motorway & Tunnel

Market Sector: Road, Tunnels

Location:
Tweed Heads, QLD

Office:
Sydney

Client:
PacificLink Alliance

Services:
- Mechanical
- Electrical
- Hydraulics
- Communications
- Security
- Fire protection
- Fire engineering
- Automation

Awards:
- Engineering Excellence Award, Engineers Australia Queensland Division’s 2009 Engineering Excellence Awards
- R.W. Hawken Award, Engineers Australia Queensland Division’s 2009 Engineering Excellence Awards

Description:
The Tugun Bypass project was intended to improve the Brisbane to Sydney traffic corridor along the Pacific Highway. The plan was to eliminate congestion on the local roads through Tugun, with a new, north-south running motorway section between Currumbin and Tweed Heads.

The motorway link required a short tunnel capable of withstanding extension of the Gold Coast Airport runway, which it passes, and acoustic screening of the carriageways from existing residential properties.

NDY was engaged by the PacificLink Alliance to undertake design of all of the tunnel and motorway services for the bid phase. On becoming the successful bidder, NDY also provided detail design and construction phase services.

Although short (less than 400 metres), the design criteria for the tunnel involved not only all the issues that need to be addressed for longer tunnels (automatically controlled multi-stage lighting, secured power supply, air quality, fire incident detection, suppression and smoke management, secured fire water supply, traffic management, motorist and emergency services communication) but also higher level criteria to meet the demands of a motorway with no restriction on goods carried other than flammable gases and explosives.

Most Australian tunnels are designed for 80 km/hr speed; the Tugun motorway is designed for 110 km/hr. This requires higher intensity tunnel lighting and design to ensure stopping distances are safe.

The design of the Level 3 HV power supplies was undertaken by NDY, in consultation with Country Energy. These power the lighting, ventilation/smoke management systems and fire services and safeguard against power outages.