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TRACKSTAR PROGRAM ALLIANCE - ROBINA TO VARSITY LAKES RAIL EXTENSION

Creating better places for people, communities and businesses to grow

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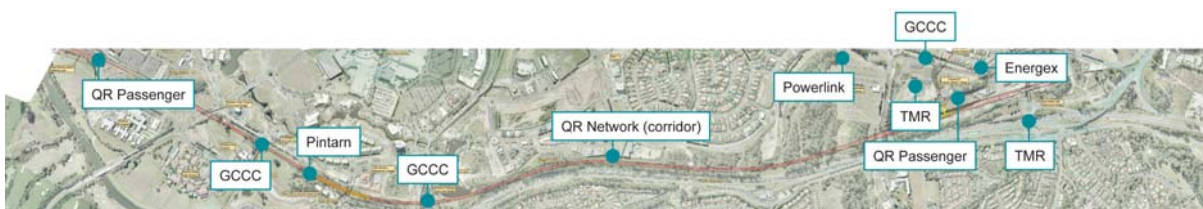
ABSTRACT

Unprecedented growth in South East Queensland for more than 15 years put significant pressure on the state's transport infrastructure, from the Sunshine Coast to the Gold Coast. In 2006, the Queensland Government responded by forming its first rail Program Alliance, created to deliver vital public infrastructure and build rail industry capability in Queensland.

TrackStar Program Alliance was tasked with a series of complex, multi-disciplinary rail infrastructure projects including the \$277 million dollar Robina to Varsity Lakes Rail Extension. The project fast-tracked the existing Gold Coast rail line 4.2km from Robina southwards to a new station at Varsity Lakes, where a Transit Oriented Development will grow around the station.

Featuring a new eco-rail station, landfill remediation of more than one million tonnes of waste, a cut and cover tunnel structure, more than 3km of major roadworks and undergrounding of 110kV power lines, Robina to Varsity Lakes (RVL) required a Whole of Government approach to manage scope for seven different asset owners over three years.

An additional 57% scope was progressively awarded during the construction period and the motivated team responded with flexible re-sequencing of works, a collaborative attitude, innovative technologies and integration with specialist rail systems teams to finish the project in ground-breaking time. Works were completed under budget and six months ahead of the Government's schedule.



Additional scope for seven asset owners was geographically divided into separable portions.

TrackStar's long-term focus provided an enduring and positive legacy for the rail industry. This was achieved at RVL through alignment with Client objectives, rather than just traditional project delivery. In particular, RVL focussed on building Queensland Rail capability by sharing experience and knowledge from the private sector with Queensland Rail secondees employed full time on site.

KEY WORDS

ACAA, TrackStar, Robina to Varsity Lakes, rail infrastructure, Queensland Rail, Program Alliance, Whole of Government, station sustainability, Transit Oriented Development, landfill remediation, cut and cover tunnel, station architecture, integrated public transport, rail systems

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A) CONTRACT TYPE

A Program Alliance Agreement was initiated in 2006 for TrackStar Alliance to deliver multiple projects. The Alliance partners included:

- Queensland Rail (Owner / Operator)
- Thiess United Group Joint Venture (Constructor)
- Aurecon and AECOM (Designer).

This was the first time in its 145-year history that Queensland Rail formed an integrated Program Alliance team to deliver the full scope of rail infrastructure projects. The initial contract was for four projects valued at \$660m and grew to nine projects throughout Central and South-East Queensland for \$1.1b. TrackStar Alliance has delivered the program under budget and ahead of time.

In February 2011, TrackStar was the successful proponent from a competitive alliance process for the \$475m Darra to Springfield Transport Corridor Stage 2 project, due for completion in 2013. This significant project has extended the alliance tenure an additional three years, testimony to the Client's confidence in the value that TrackStar can deliver.

The alliance contract provided the flexibility needed to manage a project as diverse as RVL, as it allowed Queensland Rail to significantly increase the scope of work through Head Agreements with other asset owners. Benefits enabled by the alliance contract are listed below.



- Integration with Queensland Rail's in-house teams for timely design and construction of specialist rail systems (track, signalling, overhead traction power and telecommunications)
- Innovation including station architecture, tunnel design and tunnel fire and life safety systems to provide maintenance, operation, whole of life, sustainability and community benefits
- Collaboration with other asset owners to complete works associated with the TOD in a very tight footprint, with a short timeframe and different interfaces and requirements
- Better Client interaction than traditional contracts through involvement and governance in the Alliance Leadership Team (ALT) to identify potential issues and develop solutions
- Incentivised arrangements for outstanding performance through a pain-gain share arrangement
- Shared risk profile for all partners, ensuring a best for program and project approach.

B) PROJECT AND SCOPE

The Robina to Varsity Lakes Extension Project and Transit Oriented Development (TOD) started as a 4.2km alignment between Robina and Varsity Lakes to extend passenger rail services on the Gold Coast Line, with a new station at the hub for the proposed TOD called Varsity Station Village. The project expanded by 57% to include extra scope from seven asset owners, requiring delivery within an integrated environment to meet milestones and different stakeholder demands.

| Scope of work (Asset owner) | Scope details |
|--|--|
| Railway (Queensland Rail Network) | <ul style="list-style-type: none"> 4.2km of dual bidirectional track railway including all disciplines (civil, structural, building, fire and life safety systems, track, signalling, overhead electrification, power supply and telecoms) 9.3km of track and 18.1km of overhead line electrification (OHLE) |
| Landfill (Department of Transport) | <ul style="list-style-type: none"> Removal of previous landfill in an old quarry, with removed material (more than one million tonnes) replaced with engineered fill to allow station development |
| Rail station / carpark (Queensland Rail Passenger) | <ul style="list-style-type: none"> Iconic station design with high standard hard and soft finishes, lighting features and control systems, compliance with disability standards and innovations never used before by Queensland Rail, such as sustainable rainwater harvesting and photo-voltaic cells to return power to the grid |
| Station Plaza (Queensland Rail Passenger) | <ul style="list-style-type: none"> Striking blend of lighting and urban design features to integrate with the TOD precinct |
| Tunnel (Queensland Rail Network) | <ul style="list-style-type: none"> Innovative 300m cut and cover tunnel design using natural ventilation and rock structure for walls instead of conventional tunnel designs, saving \$8m in construction costs Sensitive approach to rock blasting operations for the tunnel within 20m of "The Glades" community and an aged care centre |
| Tunnel services (Queensland Rail Network) | <ul style="list-style-type: none"> World class fire and life safety tunnel systems integrated directly with Queensland Rail Brisbane Train Control Center and emergency services agencies |
| Local roadworks (Gold Coast City Council) | <ul style="list-style-type: none"> Road over rail bridges at Robina Parkway (four-lane sub arterial road), Investigator Drive, East / West link road and Easthill Drive |
| TOD roadworks (Gold Coast City Council) | <ul style="list-style-type: none"> Scottsdale Drive duplication, Coromandel Lane, Station Parade, High Street, Transit Way, Stapley Drive, Casua Drive |
| Motorway connection (Department of Main Roads) | <ul style="list-style-type: none"> Motorway Exit 85 southbound ramp from the M1 Pacific Motorway and East West link bridge / roadworks / roundabout in only six months to allow increased access capacity to the TOD, and integrate with adjacent interchange works by the Department of Main Roads |
| Train stabling yard (Queensland Rail Network) | <ul style="list-style-type: none"> A new high level security design for future Queensland Rail stabling facilities near the NRL "Skilled Park" stadium |
| Power transmission (ENERGEX) | <ul style="list-style-type: none"> Fast-tracking of 110kV underground works in conjunction with Scottsdale Drive upgrade to meet ENERGEX program |
| Access roads Pintarn, Powerlink | <ul style="list-style-type: none"> Access roads for private developer and power substation |

C) PROJECT DELIVERY ACHIEVEMENTS

Whole of Government approach

Extra scope was progressively added to RVL from seven asset owners while the team was on site, increasing schedule complexity. This required a Whole of Government approach for works in the TOD to be completed for the opening of Varsity Lakes station. For example, an existing roundabout was modified to a signalised intersection at the Motorway Exit 85 southbound ramp from the M1 Pacific Motorway.



This included significant increases to road elevation and tie-in to a new road rail bridge. The RVL team delivered design and construction for the Department of Main Roads in only six months.

A detailed five-stage plan was implemented for efficient and safe execution of works, including temporary diversion roads and some temporary design works.

Pictured left is Exit 85 and East West link bridge, roadworks and roundabout.

Difficulties included gaining approval for Total Cost Estimates (TCEs) and to understand the impact on the project from the different added constraints. An “open book” approach built trust with owners not associated with Queensland Rail and TrackStar. Early cost plans assisted alignment and agreement on scope and schedule, ensuring “no surprises” and no approval delays.

An Independent Estimator (Currie and Brown) reviewed all TCEs to benchmark these and demonstrate value was being achieved. A one-off detailed review was carried out by the Independent Financial Auditor (KPMG) in 2010 specifically for third party funded works, to ensure costing allocations between areas were correct.

Other challenges included meeting milestones for design and inter-disciplinary check (IDC), managing different handover requirements, achieving practical completion for multiple separable portions with asset owners. Senior RVL team members became champions for different asset owners and geographic portions of the job to manage these challenges. They collaborated and consulted extensively, building relationships through early planning and engagement. The team’s efforts paid off; completing 57% more work in only eight months.

Landfill remediation of more than one million tonnes

Various options for utilising the landfill site were considered. These included piling and a rail viaduct through the landfill, with uncertainty in relation to hitting bedrock, the corrosive nature of the waste, gas management (flaring) required in the long term. A second option included “bridging” over the lower sections of the landfill with geo-grids and pavement platform, requiring management of long-term consolidation.

The third and preferred option was to remove the landfill and replace it with engineered fill back to the height required for the station pad. This would allow the landfill to be removed from the contaminated land register, eliminating future management costs for Queensland Rail and maximising the TOD envelope for future development and community benefit.

Removal of 25% more landfill than originally estimated required construction re-sequencing to optimise access for the station construction works to start on time. Rather than starting from one end of the landfill and working through sequentially like normal practice, remediation works were undertaken on two fronts.



This included the central, deepest part (20m) of the landfill at the location of the future Varsity Lakes station to allow the team to excavate down and remove the refuse so that engineered fill could be placed back up to create a stable pad for station works to start on time. Landfill removal continued in parallel on the northern sections while station construction commenced next to these works.

Pictured left: Station pad ready before landfill remediation completion.

A sub-alliance with landfill remediation specialist, Thiess Services, allowed contract flexibility for a later, refined cost estimate to be agreed with less risk and contingency allowance. This was made possible when the landfill excavation works reached the 30% mark and actual material density, volume and classification could be measured.

This innovative two stage TCE process gave the Client a significantly cheaper solution based on real data, reducing the cost from the external industry price (high risk based on unknowns) of \$42m to RVL's second Total Cost Estimate of \$37m (this estimate was achieved with the Actual Outturn Cost). Significant extra work totalling \$3m was undertaken at no additional cost to Queensland Rail to remove additional landfill.

As the landfill was excavated, vermin and odour control was required for nearby homes. Strawberry spray at the landfill mitigated odour from the exposed landfill areas. Leachate from the waste was managed through environmental controls and monitoring both on and off site, with truck wheel washing to limit transfer of leachate on to local streets. Extra seals for trucks prevented debris on roads and a full time sweeper truck was engaged to keep truck routes clean for the public.

Cut and cover tunnel construction next to residents



The lower half of the excavation for the cut and cover tunnel was founded in extremely hard rock (strengths >180MPa). Excavation and blasting was required next to a high-cost residential golf community and a specialised aged care facility. Risks faced included blast vibration, over pressure and fly-rock affecting residents and adjacent buildings as well as community concern about noise and disturbance and damage to structures from blast vibration.

Pictured left: Progress on the 300m cut-and-cover tunnel.

RVL undertook blast simulations to ensure no damage to buildings. TrackStar Board Meetings (ALT) discussed vibration limits and monitored progress regularly. A carefully designed blasting program was developed to remove the material and a specialist drilling company with similar experience in urban blasting was engaged. Rock was removed in manageable sizes to create a reasonably neat cut line for the tunnel's concrete construction works to progress, control fly rock and restrict peak particle velocities at the corridor boundaries (the standard measure for ground vibration) to below the 10mm/s required by the Australian Standards for all blasts.

Tunnel construction was made more difficult by the restricted construction access from one end into the cut with blasting and excavation at the other end. Extremely fractured rock and the potential for “block” and slip failures required close monitoring of blast vibrations and time restrictions for blasting were required (ie not peak hour / school times).

Clay seams within some areas of rock presented a higher failure potential, requiring extensive shotcrete. This equated to four times the TCE allowance and was absorbed as an alliance risk. Live services for nearby residents were suspended on a separate steel truss bridge to allow for different stages of blasting and tunnel construction below. Progressive top down shotcreting and weep-hole drainage for slope stability was provided, so no more than a four metre high unprotected face was left open.

Risks relating to ground conditions and water were shared with the blasting sub-contractor, resulting in significant savings of approx \$.5m below budget.

Close and regular communication managed this complex and high-risk task, which was on the joint critical path for the project. This included more than 1,000 community contacts about pre- or post-construction property assessments; accounting for more than a third of the total 2,500 project contacts. Advance SMS messages on blast times were texted to all nearby residents, warning whistles alerted people that a blast would follow, Blast Guards on access roads / entrances stopped cars and pedestrians, a newsletter was sent to residents on blasting progress and blast signs showed proposed times for next blasts.

Blasting was completed after nine months with zero safety incidents recorded and 775 condition assessments demonstrated no property damage resulted.

Station sets new benchmarks



Through collaboration with Queensland Rail, TrackStar developed a design for the greenfield TOD station which challenged the prevailing industrial aesthetic.

A new benchmark of sustainability, quality and amenity was forged to attract and encourage the travelling public.

Pictured left: The Varsity Lakes station provides a welcoming, open, safe, public transport experience.

New rail construction benchmarks were introduced for the first time, such as:

- Natural ventilation and lighting reduce power consumption and increase security
- Rainwater tanks provide water for landscaping and toilet flushing at the station
- Photo-voltaic cells on platform canopies generate power to the grid
- Crime Prevention through Environmental Design (CPTED) principles
- A high level of visual identification for surrounding urban areas and from the adjacent M1 Motorway
- High quality urban design and landscaping
- Added Value Vending Machine (AVVM) and other station facilities.

The station has created a new sense of pride with a civic scale and presence for the local community; bringing with it a willingness to protect and care for the facility - evidenced by lack of vandalism and graffiti more than 12 months after opening. A raft of new features, finishes and practices at Varsity Lakes Station were subsequently incorporated into the Queensland Rail's new Station Design Guide.

Integrated rail systems delivery



Queensland Rail resources were stretched across the network, working on numerous projects.

To accommodate this, the RVL team worked with Queensland Rail's overhead team to arrange for a TrackStar civil crew to construct mast footings and install the overhead masts (*pictured left*).

Rather than competing with other rail projects for Queensland Rail resources, one experienced Queensland Rail linesman supervised and audited the RVL team and ensured requirements were met.

The task was finished two months early, under budget, with all quality expectations met. This was an innovative alternative to the usual practice of Queensland Rail teams undertaking the mast works and alleviated pressure on their specialist crews.

Wildlife relocation innovation

The RVL team drew on a TrackStar Program environmental leadership initiative involving a partnership with the Australia Zoo "Wildlife Warriors" Ecological Services Unit (ESU). TrackStar incorporated the ESU draft spotter / catcher 'code of practice' into the TrackStar habitat management plan for wildlife management on construction projects - a first for the infrastructure industry.

Some features of the new code of practice have been shared with industry:

- Pre-clear and grub fauna trapping to reduce the number of fauna that would otherwise be in danger
- Dismantle trees with hollows using cherry pickers and arborists as well as fauna spotter catchers to safely remove arboreal fauna for relocation
- Retain and modify salvaged tree hollows for compensatory habitat relocation in other areas.



The RVL team engaged with Currumbin Wildlife Sanctuary to undertake spotter/catcher activities and re-locate fauna from the rail corridor. Termite mounds found during the 'clear and grub' activities in the rail corridor were transferred to Currumbin to assist in echidna habitat research. Redundant pipe culverts became animal homes in enclosures. Animals relocated included carpet pythons, wallabies, butcher birds, sugar gliders, bearded dragons and green tree frogs (*pictured left*).

Industrial relations harmony

Industrial harmony characterised the entire duration of the RVL project and the five-year Program Alliance. This was achieved through an innovative "performance based" Enterprise Agreement, which developed a culture of working together and strong performance with all the workforce.

A first for the Construction Industry in Queensland, the agreement was based on the successful "Bunnings Warehouse" model that has worked in a different sector where the construction workforce were assessed and good performance was rewarded. Strong working relationships with unions flowed down to workforce and sub-contractors. RVL strongly adhered to the National Code of Practice for the Construction Industry when assessing all subcontractors in the selection process.

More harmonious relationships on site resulted in more patience and sensitivity to the community on a daily basis, such as more willingness to address smaller grass roots issues during traffic control and on busy roads.

D) TARGETS AND OUTCOMES

Key Result Areas (KRAs) were developed across the Program Alliance to align with the Client's real needs. These were evaluated quarterly and the team strived to achieve and exceed targets that were measurable, meaningful and manageable.

TrackStar's KRAs were different to traditional project targets and were streamlined to provide a real client focus. A summary of outcomes follows.

Create Client Value (KRA#1)

Outstanding time achievements included completing 57% extra scope in eight months and commissioning the project on time for the start of revenue services on 14 December 2009, six months ahead of the Government's timeline of June 2010.

World's best quality outcomes were delivered for the Robina tunnel fire and life systems. Queensland Rail had not delivered rail tunnel systems since the mid 1980s, so RVL updated tunnel fire and life standards to meet Australian, European and US industry best practice.

Key fire and life safety provisions were developed following extensive and close liaison with emergency services agencies. Remote motorised switches were introduced in the rail tunnel for the first time on the Queensland Rail network.

The fire and life system integrated directly with Queensland Rail's Train Control Centre in Brisbane and emergency services agencies to provide excellent operability and reliability. Remote isolation of electrical traction power at Robina tunnel controlled from the tunnel service building or Mayne Control (80kms away) was a first for Queensland Rail and response agencies.



Innovation contributed to an outstanding overall 8% saving on the TCE. For example, the cut and cover tunnel was the first of its kind in Queensland. Design innovation used the naturally formed hard rock face in the tunnel structure as the primary support for the tunnel walls and concrete abutments along both sides of the cutting to support roof beams.

Pictured left: Natural rock was used for the walls in the Robina tunnel rather than traditional concrete walls.

Due to the fracture angle of the in-situ materials, extensive reinforcement with rock anchors was required to stabilise critical rock faces prior to shotcreting. This innovative configuration was an enhancement over expensive vertical concrete walls without the need for a concrete base slab, saving time and \$8m associated with additional excavation, backfilling and formwork.

Added value was provided to Queensland Rail through whole of life savings of up to \$1m over 50 years by elevating platforms at Varsity Lakes station. This allows Queensland Rail much easier access during maintenance and when installing additional services.

TrackStar's solution replaced the traditional use of earth filled platforms, which require excavation for future installations.

HSE Leadership (KRA#2)

HSE transformation was achieved by up-skilling the large sub-contractor workforce (who undertook 55% of site hours) and by transferring new processes such as Job Safety Environment Assessments (JSEAs) and Work Activity Briefings (WABs) to workforce and Queensland Rail staff. Several of the bigger subcontract companies subsequently implemented similar HSE strategies on their worksites.



A Safe Spine injury prevention program included compulsory warm up exercises before each shift for workers and training was provided to all staff and workforce on back care (*pictured left*). Zero back injuries occurred after its implementation.

Management used each team event as an opportunity to promote the safety culture. Engineers were required to attend daily pre-start meetings. Safety workshops were held with all workforce to seek feedback on initiatives and refine safety practices.

The RVL team regularly went beyond the call of duty to ensure public safety. This included additional traffic control at Pacific Motorway Exit 85 works for better guidance to motorists. Complete separation of construction works from traffic at Scottsdale Drive during road duplication and ENERGEX undergrounding was achieved through installation of a steel guardrail, water filled barriers and a temporary fence along the whole 2km length of the road.

Sustainability initiatives on site included recycling waste concrete from landfill remediation rather than hauling it off site. This was crushed with a mobile plant on site for use as road base on landfill haul roads. Green-office features at the demountable site office went over and above industry standards to reduce water, energy and material usage.

Provide Stakeholder Satisfaction (KRA#3)

Quarterly evaluation showed 96% - 100% of issues relating to TrackStar's work were resolved. Over the three-year construction period (May 2007 – May 2010), 168 complaints and 44 positive comments were received from the community and complaints were closed out satisfactorily. No public complaints about relevant issues were elevated to the Minister for Transport.

Potential community issues were mitigated proactively, with survey results finding 68% of residents and 71% of businesses were satisfied with traffic management despite the other significant construction works in the whole Robina area.

TrackStar's focus on enhancing Queensland Rail's positive corporate reputation with all stakeholders was acknowledged through key agency satisfaction survey results ranging from 81% - 86%. The Queensland Government (Premier and Transport Ministers) visited the site 11 times and directly acknowledged TrackStar's efforts to support the Government's reputation.

RVL's Community Liaison Coordinator provided additional issues management support to Queensland Rail for concerns raised that were not construction-related. Regular positive media coverage was achieved through proactive media releases, tours and events.

The combined effect of this positive commentary yielded sustained community confidence in the constructor, Queensland Rail and the State Government. This leaves a healthy legacy and local goodwill for future State construction projects.

Building Queensland Rail capability (KRA#4)

RVL employed more than 300 people at construction peak, comprising 75% of team members who were new to the rail industry. This has significantly contributed to the rail industry, including local workforce.

Eleven full time staff members were rotated through the project from Queensland Rail (representing 11% of on-site staff) and are transferring new knowledge about construction practices, safety and relationship-based contracting in to Queensland Rail. This includes safety systems and cashflow / forecasting processes.

Numerous initiatives were developed for Queensland Rail including use of plastic straps to support RSS wall panels over deep soft acid sulphate soils at RVL. This was the first time this restraint technique was used in Queensland and allows Queensland Rail to consider more use of RSS walls in other projects, particularly where ground conditions are undesirable.

TrackStar also participated in Queensland Rail's Industry Affiliates Program (IAP) and achieved the highest ever participation rates. Students undertook projects with TrackStar, with many being employed by TrackStar on graduation.

Positive interaction with Queensland Rail interfaces achieved 70 – 77% satisfaction results in surveys of six specialist rail discipline teams. TrackStar's values-based approach resulted in most issues involving interfaces to be dealt with and resolved promptly. This was made possible through a partnership based on a set of agreed values and provided a positive model for those involved for future construction projects.

E) LEADERSHIP AND MANAGEMENT

Relationship-based approach to peak performance

RVL's values based culture was championed by the Project Management Team and helped the team to overcome scope and time challenges, build relationships with critical Queensland Rail teams to keep the schedule on track and coordinate with other asset owners.

For example, construction of new roads around the station was approved in November 2007 but construction did not start until December 2008. This allowed government to incorporate another scope change, undergrounding of unsightly 110kV overhead powerlines on transmission towers into the overall TOD scheme.



The team changed the critical path to ensure Scottsdale Drive work was completed for the station opening and start of revenue services. RVL's scope included detailed survey of road reserve services to fast-track ENERGEX's design under the roadway and trenching 37km of conduits. This was achieved before road pavement construction started as part of the duplication of Scottsdale Drive, which TrackStar undertook for Gold Coast City Council.

Works were handed over to ENERGEX in the first week of November 2009, in time for the station opening in December.

Pictured above: Undergrounding of ENERGEX conduits to replace 30m-high transmission towers.

Values-based culture delivers innovation

Creativity is at the heart of TrackStar's culture and is one of the alliance's five core values. Leaders encouraged team members to pursue creativity through parallel design and construction processes.

All TrackStar staff attended innovation training and workshops in convergence / divergence thinking, how to work innovatively as a team and the online "Idea Catcher" register. Values awards were presented to staff for creativity to acknowledge the innovations that were implemented. Resulting innovations at RVL optimised use of critical resources and left community benefits.

For example, traditionally Queensland Rail's equipment huts have been located within the rail corridor. To avoid compromising the station's high visual identification, huts were located within the station (under the concourse). Location of the huts in the station also eliminated maintenance risks associated with huts located next to live rail.

Technical challenges relating to traction and multiple earth neutral (MEN) zones coexisting were overcome by exhaustive risk analysis, meticulous construction verification including the use of Touch Voltage Injection testing to quantify risks and determine earth potential rise.

The success of this installation and testing provided a broader benefit to Queensland Rail by reaffirming design principles for traction earthing design developed before the project.

Program major achievements

The Program Alliance approach supported multiple projects in multiple locations to achieve Queensland Rail's expectations, despite very different, project-specific constraints and conditions.

Results achieved for the Program and Projects have been acknowledged by numerous industry awards:

| Program and other projects | RVL |
|--|---|
| <ul style="list-style-type: none"> ▪ <i>2008 Project Safety Excellence Award</i> – Queensland Major Contractors Association (QMCA) ▪ <i>2008 Alliance Contracting Excellence (ACE) Awards</i> – Honourable Mention for Excellence in Major Project / Capital Alliances ▪ <i>2008 Alliance Team of the Year</i> – Alliancing Association of Australasia (AAA) ▪ <i>2009 X-tra Mile Innovation Award</i> – Permanent Way Institution ▪ <i>2009 Project Management Achievement Awards</i>, Project Management Institute (PMI) – Highly Commended | <ul style="list-style-type: none"> ▪ <i>2009 Sustainable Industries Awards</i>, Environmental Protection Association – High Commendation ▪ <i>2010 Building of the Year – Gold Coast Regional Architecture Awards</i>, Architects Institute of Australia (AIA) ▪ <i>2010 Urban Design Award – Gold Coast Regional Architecture Awards</i>, Architects Institute of Australia (AIA) ▪ <i>2010 Engineers Australia Queensland Excellence Awards</i> – High Commendation, Project Management ▪ <i>2010 Engineers Australia Queensland Excellence Awards</i>, High Commendation, Infrastructure Over \$20m ▪ <i>2010 Consult Australia Awards for Excellence</i> – Highly Commended |

F) CONCLUSION

Queensland Rail's first Program Alliance delivered outstanding outcomes on complex rail infrastructure projects. RVL is testament to this success, overcoming significant technical challenges and responding flexibly through a relationship-based approach to the requirements of ongoing additional scope.

The project delivered a key link in the region's integrated public transport system ahead of time and under budget. An iconic new eco-rail station and integrated TOD works built on the site of this former urban wasteland sets the scene for a vital urban space and a more sustainable community.

Many firsts were developed for the rail industry, providing whole of life, operations and maintenance cost savings and benefits. Highlights include the Varsity Lakes station, which introduced a new station design legacy for future Queensland Rail stations. Innovations influencing future rail construction include Robina tunnel's natural ventilation and fire and life safety systems, elevated platforms at the station and location of rail systems equipment huts under the station concourse.

Importantly, RVL supported Queensland's 'rail revival'. It enriched the industry's future through new thinking and methods embraced by people new and old to the industry. Queensland Rail secondees at RVL are transferring new knowledge as they work their way up through the industry's ranks, constructor and design consultancy employees have gained valuable rail construction experience and local workforce has been significantly up-skilled in rail construction practice and safety.