



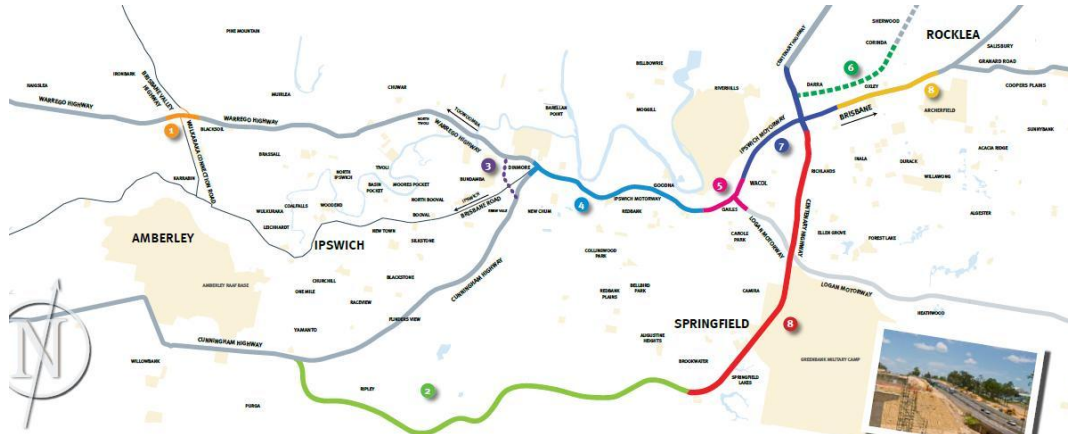
**Origin Alliance**

Ipswich Motorway Upgrade: Dinmore to Goodna Project

**2012 Australian Construction  
Achievement Award (ACAA)  
Technical Paper**

## Abstract

The \$1.95 billion federally-funded Ipswich Motorway Upgrade: Dinmore to Goodna (D2G) Project was one of the most complex road infrastructure projects ever undertaken in South East Queensland. The Ipswich Motorway is located to the West of Brisbane and is the main arterial link between Brisbane and Ipswich. It also forms part of the Auslink National Network, providing links between Brisbane, Sydney, Melbourne and Darwin. It is also a major freight corridor between the Port of Brisbane and Brisbane's Southern industrial hub.



The aim of the D2G Project was to provide an integrated and sustainable transport solution by:

- Making best use of the existing road network;
- Increasing the capacity of the Ipswich Motorway by addressing previous traffic congestion issues;
- Improving road safety, geometry and reliability;
- Improving / increasing local road connectivity and functionality;
- Increasing access to public transport;
- Increasing / improving facilities for pedestrians and cyclists;
- Strengthening road pavements and structures; and
- Installing a state of the art Intelligent Transport System to improve ongoing management of the motorway.

Its completion was the last of several projects worth more than \$4 billion which have been delivered in the Western Corridor in recent years including the Centenary Highway Extension from Springfield to Yamanto (2009), Ipswich / Logan Interchange (2009), and Wacol to Darra upgrade (2010).

The D2G Project was delivered six months early and approximately 10 per cent under budget by Origin Alliance. Established in June 2008, Origin Alliance comprised Abigroup Contractors (Principal Contractor), Fulton Hogan, Seymour Whyte, Parsons Brinckerhoff, SMEC Australia, and the Queensland Department of Transport and Main Roads. The upgraded Ipswich Motorway between Dinmore and Goodna was officially opened on 15 May 2012 by the Federal Infrastructure and Transport Minister, Anthony Albanese, and Queensland Transport and Main Roads Minister, Scott Emerson.

## Key Words

Origin Alliance, Ipswich Motorway Upgrade: Dinmore to Goodna Project, road infrastructure, Queensland Department of Transport and Main Roads, project alliance, integrated transport solution, Western Corridor projects, construction, Abigroup Contractors, Fulton Hogan, Seymour Whyte, Parsons Brinckerhoff, SMEC Australia. .



## Introduction

The \$1.95 billion federally-funded Ipswich Motorway Upgrade: Dinmore to Goodna (D2G) Project was one of the most complex road infrastructure projects ever undertaken in South East Queensland.

The original Ipswich Motorway was developed over many years and was subject to significant periods of peak traffic congestion as well as an unacceptable accident record.



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## Alliance Structure

Traditionally alliances within the infrastructure industry are formed by a contractor, engineering design firm and other service providers in readiness to tender for a major project so the risks and rewards associated with such large and complex projects can be shared as well as strong working relationships formed before construction commences. Origin Alliance was very different. In an Australian first, the QLD Department of Transport and Main Road (DTMR) selected the 5 organisations it wanted to work with on the D2G Project (Abigroup Contractors, Seymour Whyte, Fulton Hogan, Parsons Brinckerhoff and SMEC Australia) and then asked them to forge an alliance. DTMR chose this approach in order to:

- Address the market dynamics of the time. Prior to the GFC, contractors were very busy so experienced resources were hard to find;
- Address the risk of contractors / consultants not making their best people available. DTMR wanted the 'best of the best' for the D2G Project; and
- Provide two smaller-sized contractors with access to a 'mega-sized' project to help up-skill the middle-tier construction industry in QLD.

This new approach to alliancing meant that one of the key challenges for Origin Alliance was the bringing together of a large group of people from six alliance partners, all of which were very different organisations, culturally, size and experience wise, into one cohesive team. This meant that if the D2G Project was going to be delivered safely, effectively, on time and budget, it was vital Origin Alliance had its own unique culture, vision and goals.

Prior to commencement of construction, Origin Alliance took the 'best' processes from the six alliance partners to develop the 'Origin Alliance Way', a blueprint of how things needed to be done on the D2G Project.

Another key step in establishing the project's 'unique culture' was ensuring that everyone, from the Alliance Manager through to the youngest apprentice, worked collaboratively to deliver best-for-project outcomes. This was achieved by everyone leaving their 'home organisation' persona at the site gates and embracing the 'Origin Alliance Way'.



## Project Governance & Management

The alliance structure implemented by DTMR sought to improve project governance by separating the customer / funder and project delivery roles. This led to greater focus on project management by the delivery unit while also imposing increased discipline with respect to scope management.

The central governance body for Origin Alliance was an Alliance Leadership Team (ALT) made up of representatives from all six alliance partner organisations which provided overall project direction. Day-to-day project activities were managed by an Alliance Manager supported by an Alliance Management Team (AMT) which included senior DTMR personnel who had been seconded to the project.

Origin Alliance implemented a robust structure of project reporting which required the Alliance Manager (Mick O'Dwyer from Abigroup Contractors) to present to the ALT on a monthly basis. These presentations complemented a comprehensive system of written reports as well as independent cost and performance audits.

## Project Scope

Key features of the D2G Project included:

- Widening of the existing motorway corridor from two to three lanes in both directions with room for four lanes each way in the future using network managed hard shoulder running;
- Seven kilometres of new service roads adjacent to the motorway to separate local slower moving traffic from fast flowing motorway vehicles;
- Twenty four kilometres of shared pedestrian and cyclist facilities to improve local connectivity and provide better access to public transport;
- Twenty six new bridge structures including five over-motorway shared pedestrian / cyclist bridges with anti-projectile containment steel throw screens together with two under motorway connections;
- Two motorway-to-motorway upgraded interchanges to provide safer, more effective vehicle access to the Warrego and Cunningham Highways; and
- An Intelligent Transport System to provide increased driver safety / road conditions information to motorway users while also ensuring more effective management of the motorway long into the future.



The following quantities of materials were used during construction:

- 500,000+ tonnes of asphalt;
- 1 million plantings;
- 612,449 m<sup>3</sup> of foundation preparation works;
- 1.67 million m<sup>3</sup> of earthworks;
- 563,261 m<sup>3</sup> of cut;
- 725,403 m<sup>3</sup> of fill;
- 708 pre-cast concrete deck units;
- 97 retaining walls;
- 69 sign structures / gantries;
- 17 noise barriers;
- 3,000 tonnes of reinforcement;
- 66,802.76 m<sup>3</sup> of hand-placed concrete pavement; and
- 65,000 m<sup>3</sup> of supplied concrete.





## Outcomes Achieved Against Planned Targets for Key Project Parameters

At project commencement, DTMR and the ALT agreed specific performance criteria based on a mix of cost and non-cost criteria.

From a cost perspective, Origin Alliance's performance was excellent with the D2G Project being delivered under budget due to good management, project optimisation, and innovative solutions to complex construction challenges.

- **Cost** – the original cost of the overall project was \$1.95 billion including all design and construction works. Through innovations and careful management, the overall project was delivered approximately 10% under budget.
- **Time** – despite the devastating impacts of the January 2011 floods in Queensland on both the motorway and project site offices, the project was officially opened six months ahead of schedule;
- **Quality** – through a rigorous quality management system, all required quality benchmarks were achieved within the agreed time and cost parameters of the project.

During project start-up, DTMR defined a set of Key Results Areas (KRAs) based on the most important non-cost items for the project. Over the life of the project, each KRA was independently measured using a set of detailed key performance indicators. The resulting performance data was then independently verified. As of 15 May 2012, the D2G Project's KRA scores were:

- KRA 1 – Traffic Flow Safety – 10 out of 10;
- KRA 2 – Traffic Flow Reliability – 9.5 out of 10;
- KRA 3 – Community and Stakeholder – 8.4 out of 10;
- KRA 4 – Connectivity and Access During Construction – 7.8 out of 10; and
- KRA 5 – Design Optimisation and Maintenance Minimisation – 7.5 out of 10.

## Complexity, Difficulty & Optimisation of the Construction Task

Origin Alliance overcome significant design, engineering, construction and weather constraints to successfully deliver the D2G Project.

The most challenging constraint for the D2G Project was the construction corridor itself. The D2G Project had to be constructed in an extremely narrow construction corridor, with significant Queensland Rail Assets and the Brisbane River on one side and established businesses, industry and residential suburbs on the other.

In addition, the upgrade had to be delivered under live traffic 24 hours per day, with a requirement to keep two lanes of traffic open in both directions during peak traffic periods.



## Meeting the Challenges & Complexities:

### Mine Remediation

During preliminary site investigation and the early stages of design, two separate abandoned coal mines and a third adjacent mine were identified under sections of the footprint of the new motorway. While there was some knowledge of the existence of these mines that had been operational from the mid-19th Century until the late 1980s, details as to size, depth and accurate location were largely unknown, as was their stability and risk of collapse.

To overcome this challenge, Origin Alliance formed a sub-alliance with a specialist mine fill company, the Keller Group, to help develop a unique solution to deal with the specific conditions of each mine which included the presence of methane gas and contaminated water. The mine remediation works were unique because:

- It was the largest mine fill operation every undertaken by the road industry and involved working at the forefront of Australian engineering practice, with no previous project examples of this size or scope;
- The mine fill elements were on the motorway upgrade's critical path, with the risk of delay penalties of up to \$1 million per day;
- It required generated significant innovations across a variety of disciplines including rock mechanics, mine engineering, soil/structure interaction, soil mechanics and geotechnical as well as mine gas and groundwater management.

Key achievements delivered by the sub-alliance successfully, which filled all three mines using a specially designed and stingently tested grout within the required timeframes and under budget, included:

- Protection to the motorway against future subsidence and elimination of the risk of a motorway collapse affecting nearby properties;
- Completion of 1,650 drill holes with a combined length of nearly 75 kilometres and injection of a fill volume of more than 125,000 m<sup>3</sup>;
- Innovative construction staging using targeting and raked drilling techniques to eliminate a potential program gap of 12 months;
- Effective management of the significant environmental and safety impacts of the works through careful handling and treatment of extracted mine water as well as the controlled flaring of methane gases where appropriate;
- Approval for material reuse from the Queensland Department of Environment and Resource Management (DERM), including reuse of pond ash from a local power station and contaminated groundwater



- Sharing of the significant project learnings with the road industry and State / Local Government Departments as well as through published papers on the unique project characteristics and innovations.

## Bridge Design & Construction

When investigating the upgraded road geometry in June 2008, it became apparent that the majority of existing bridges along the motorway would be problematic due to them either being in the wrong location, not having the required clearances or having abutments and piers within the confines of the new motorway alignment.

Despite Origin Alliance's best endeavours to retain these structures, 13 bridges in total had to be demolished to create the safest possible alignment. In their place, 26 new bridges were built including five over motorway shared pedestrian / cyclist structures.

Because of the complexity of the demolition work and need to meet stringent environmental requirements relating to the potential contamination of local waterways underneath some existing bridges, Origin Alliance made the decision to self-perform the demolition works and took the necessary steps to gain a D1 Demolition Licence, the highest grade possible in Queensland.

The key challenge here was that some of these bridges had to be built before the old ones had been demolished due to Origin Alliance's mandate to maintain connectivity throughout the works.

In addition, some bridge piers had to be engineered to fit within the new motorway median, a median that did not actually exist at the start of the construction works.

In the case of some of the bridges, construction space was so limited that a combination of skew piers and removal of pile caps were necessary to achieve the required SSSD. While consideration was given to long span steel trusses, cost, construction logistics and DTMR's preference for low maintenance bridges resulted in a series of multi-span twin Super Tee precast beams. Origin Alliance also sought exception from DTMR to produce Super Tees with rectangular block-outs at each end. This allowed diaphragm reinforcements to be placed like a beam across the tops of the girders and greatly reduced congestion.

To compensate for the loss of various landmark bridges along the motorway, anti-projectile throw screen steelwork on each bridge was used to represent a unique element of the landscape. This included use of purple steel work in areas where lilac jacaranda trees were prevalent (Goodna) and green steel work in areas adjacent to parklands (Dinmore).





This steelwork proved to be another major challenge for Origin Alliance. The throw screens were secured to the bridge decks. Fully encapsulating the shared path to prevent accidental or purposeful dropping of objects onto the motorway, these screens used a series of reversing frames to create a unique twisting effect shared by both the road users and pedestrians. Comprising some 5,000 elements per bridge, the steelwork was extensively modelled in StruCad and essentially 'stick-built' using a combination of ground and deck-mounted cranes.

Another of the key challenges involved in constructing a motorway upgrade adjacent to so many vehicles, was the need to effectively stage the works to ensure traffic safety, flow and connectivity were not adversely affected. The challenge was made even harder by the need to construct bridges over mine voids as well as in the footprint of existing structures using different spans and elevations, all within tight geometrical constraints.

To overcome these issues, bridge concepts, program priorities and staging requirements were developed through extensive consultation with the on-site construction team and DTMR. Collaborating each day, structural form and functionality were optimised for the new motorway alignment while also targeting value for money outcomes as well as ease of construction in all areas of road and bridge design. Among the many tasks undertaken, particular attention was paid to the construction of the bridges over the three mine voids (Mine Street bridges) as well as construction of the westbound Warrego Highway Bridge which was a six-span high-skew structure traversing Queensland rail assets and four lanes of motorway traffic.

## Impact of the January 2011 Floods

The January 2011 floods in Queensland had a significant impact on the D2G Project with 40 per cent of the motorway submerge for four days and the main project site office inundated and inoperable for close to four weeks.

The first task for the Origin Alliance team, once the waters had subsided was to check the structural integrity of the motorway which was found to have held up extremely well, with remediation works required in only one area, Six Mile Creek where the sheer force of the moving waters had compromised the abutments of the bridge over Six Mile Creek. This remediation work took approximately 10 months to complete and was undertaken in parallel with the continuing motorway upgrade works.

During the floods clean-up process, Origin Alliance provided a significant amount of man-power to assist the local community to get back on their feet by clearing away the large amounts of rubbish and mud as well as through the provision of machinery such as bobcats and trucks. At the same time, the Origin Alliance team formed a flood mitigation team to clear its main project offices and return it to a workable state. This took approximately four weeks due to the loss of all equipment located on the ground floor including IT systems, paper documents, office resources, vehicles, temporary buildings and site fencing as well as other key facilities,



## Design

Back in June 2008, when Origin Alliance was originally established, there was no firm project scope. What eventuated over time was an initial works package to which significant additional work as added, all of which had to be constructed in parallel with the original scope of works.

Design of the upgraded motorway was sub-divided into various packages covering different aspects of the assets and stages of development (concept, detailed, final designs). Principal design disciplines included roads and alignments, structures, drainage, geotechnical, ITS/lighting, landscape/urban design, temporary traffic management, environment and PUP.

An integrated design and construct program was maintained by Origin Alliance to track package delivery against construction timeframes. The Design Team also maintained a deliverable schedule to track package milestones. In total, 515 design packages were delivered.

The Design Team was divided into integrated sub-teams based on design support roles, namely delivery of the detailed design and construction phase services. Technical design was carried out in accordance with the Scope of Works and Technical Criteria (SWTC) as well as other associated documents.

A design criteria report was developed for each design discipline to ensure that Origin Alliance's interpretation of design requirements and standards was consistent with the client's expectations. Proposed non-conformances against the SWTC were clarified through the 'Request for Information' (RFI) process. Packages that dealt with local roads and new service roads adopted Ipswich City Council standards where appropriate. T

Throughout the design development process, Value Engineering, Safety-in-Design, innovation and constructability were emphasised, with workshops being held to ensure that all key stakeholders were involved in the design process and that's the design intent was 'best for project'.

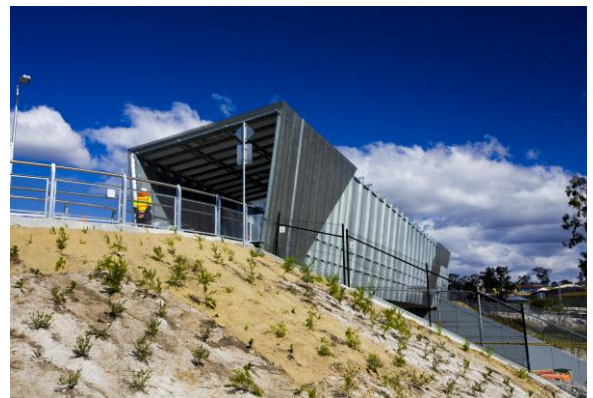
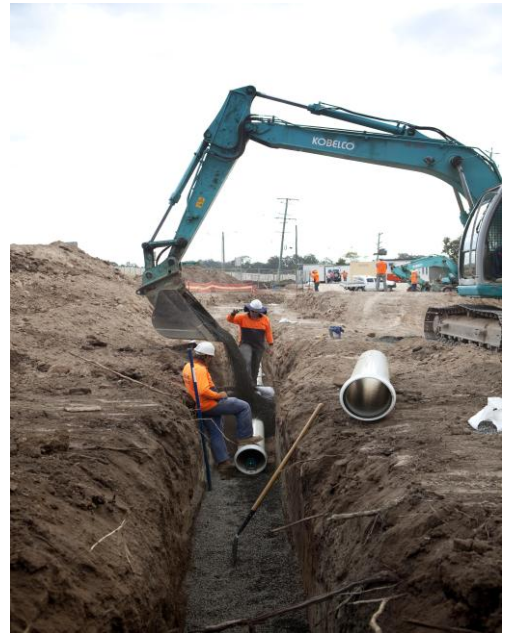
The Construction and Engineering Teams were highly involved in the design process. Constructability reviews were held to discuss any constructability issues. These teams were also consulted in relation to any innovations and options that were incorporated into the design. Meetings were also held with key stakeholders to discuss program and design progress as well as gain a better understanding of construction priorities and the adjusted design program. Key design challenges on the D2G Project included:

- Mine subsidence issues;
- Flooding issues;
- QR review and sign-off;
- Transverse drainage issues;
- Adherence to a challenging design / construction program;
- Maintenance of staff motivation to avoid burnout on such a long and demanding project; and
- Need for consistent design quality across all 515 design packages.

Key aspects of the design of the upgraded motorway included:

- Standardised design for drainage including channels , lined / unlined drains, transition between Type 28 kerbing to a batter drain, kerb and channel to a batter drain, unlined channel to a batter drain, use of batter drains on embankments, details of rock lined, vegetable dissipaters;

- Pavements design in accordance with general mechanistic procedure (Austroads 2008) as well as the additional requirements outlined in DTMR 2005 design guidelines;
- Majority of pavement comprising full-depth asphalt only;
- Pavements along each control line sectioned into individual links based on uniform traffic volume, typically terminated at intersections or locations where traffic left / entered motorway;
- Modified subsoil drain adopted throughout the project, typically comprised 100mm trench dug to a depth of 600mm, contained by a 40mm x 300mm geo-composite drain core;
- Filter media comprising 20mm no-fines concrete;
- Total of 189 structures design packages including 79 retaining walls, 26 bridges, 23 temporary retaining walls, 17 noise barriers, 69 sign structures/gantries;
- Geotechnical site investigations undertaken for all bridges / retaining walls / other structures. Stand-alone geotechnical packages for earthworks in each zone, culvert outfall to Brisbane River;
- ITS system which was designed using a combination of technologies to support future DTMR requirements. The system includes a co-ordinated on-ramp signalling / metering system, 4 electrical VMS, CCTV monitoring, help phones, Vehicle Classification System, Vehicle Detection System, web cameras, Road Weather Monitoring Stations, Automatic Number Plate Recognition;
- Innovative landscape / urban design which includes streetscape treatments, feature plantings at high profile locations, revegetation / remedial landscape works for areas disturbed by the construction works, landscaped drainage systems, pavements for pedestrian use, rest stops, seating and shade structures at critical locations, pedestrian way-finding signage. Urban design treatments for pedestrian bridges, road bridges, retaining walls and noise barriers were incorporated as part of these design packages.



## Planning & Programming

During the Target Cost Estimate phase, the Master Program was developed as an integrated design and construction program in collaboration with the client, key stakeholders and the Design, Construction, Community, Environment and Safety Teams.

The Master Program was developed using Primavera 3 Project Management Software expanded to include design, public utilities diversions, procurement, property resumptions and civil/structural works.



At the start of construction, the Planning and Construction Teams moved to Asta Powerproject which was not that known in the Australian construction industry. None of Origin Alliance's planners had ever used the software. This software was chosen because it would provide a robust cost effective planning software package that met the needs of both the planners working on the Master Program as well as the short term program needs of the Construction Team.

The Asta software has a powerful coding as well as filtering and sorting facilities which gave the Planning Team the ability to keep the Construction Team fully informed on materials / resource requirements despite the Master Program numbering over 13,000 activities. The Asta software came with a complementary viewer which provided direct access to the Master Program for the wider Project Team and key stakeholders, something they would not normally have.

A good example of the benefits of the Asta software was when the Project Controls Team started measuring the permanent materials quantities from the 100% design drawings. Although design had not reached IFC across all zones, there was a high enough degree of accuracy for these quantities to be provided to the Planning Team and loaded into the Master Program. Using these accurate quantities, the total project budget was then spread across tasks in the Master Program. Once the budget was loaded into the Master Program, a baseline s-curve was generated for comparison with the Project Controls Team's monthly Earned Value Reporting.

Overall the planning on the D2G Project was a major success thanks to the close working relationship between the Planning and Construction Teams, upfront work done by Origin Alliance to ensure the overall traffic staging would see construction through to a successful conclusion, and use of the Asta software backed up by GIS mapping software (OriginMap). This approach gave Origin Alliance the ability to review / adopt opportunities, highlight constraints, confidently plan traffic switches / construction works well ahead of time.

## Construction

With the majority of construction works needing to be undertaken over / adjacent to the existing motorway, it was crucial that Origin Alliance put in place effective construction staging / traffic management schemes to help prioritise the many design aspects of the project.

This approach ensured resources such as designers, surveyors, engineers, project managers and the PUP team could be directed areas critical to the staged delivery of the D2G Project.

To achieve this, the project was divided into 2 geographical areas (East and West) and 4 zones. Each area and zone included all TTM phases and civil / structural works. A global team was responsible for activities requiring central coordination such as landscaping, asphalt works, PUP, ITS, Electricals, and gantry construction.

Early development of the construction staging allowed Origin Alliance to facilitate and confirm discussions with local authorities and key stakeholders regarding land requirements and resumptions. Key construction initiatives delivered by Origin Alliance included:



- Development of ArcGis software to include the latest design model / construction staging to enable detailed planning for upcoming works. This technology was invaluable in determining motorway access / egress to upcoming works areas, potential construction conflicts, accurate procurement;
- Dedicated resource to coordinate staging requirements within Temporary Traffic Management design team which ensured these works were delivered to the same standard as the permanent works;
- Comprehensive review of PUP conflicts ahead of time which enabled works to be commenced efficiently and effectively;
- In-house D1 Demolition Licence (the highest grade available) which enabled Origin Alliance to self-perform demolition of 13 bridges over the motorway, QR, local interchanges. Work was critical to safe delivery of the D2G Project;
- Comprehensive review / provision of construction advice and input into the concept design extended all the way through the project. It included such things as determining concrete pedestrian bridges rather than steel ones, ramp or lift provisions for disabled access and special events;
- Open planning sessions for Origin Alliance staff / key subcontractors which ensured appropriate level of cross communication and understanding. Was particularly vital for items of critical importance eg undertaking bridge demolition work adjacent to a live highway, installing 1140T precast beam products in 2 locations using 3 cranes in 1 QR rail possession;
- Timely procurement of key materials / subcontractors which was critical to the sourcing of steel fabrication / precast beam production both of which had long lead times



## Targets & Outcomes

Traffic management was one of the most challenging aspects of the D2G Project due to the construction works being undertaken under live traffic conditions and the extremely narrow and constrained construction corridor. To overcome these challenges, Origin Alliance implemented the following processes:

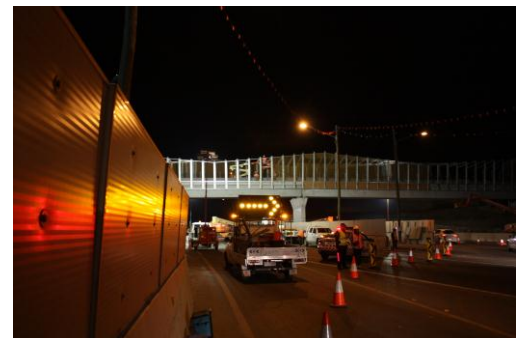
- Innovative traffic staging to minimise the impact on ' motorway users as well as local roads involving more than 40 major traffic switches and hundreds of smaller changes;
- Dedicated traffic programmer to organise traffic controller shifts, liaise with local police (average of 2,600 traffic controllers /45 police per month);
- Independent road safety audit - after each major traffic switch;



- All works for traffic management undertaken at night to further minimise impacts;
- Use of Bluetooth technology to monitor travel times through the construction corridor. The Bluetooth signals from individual vehicles were time tracked in real time to ensure Origin Alliance was delivering an acceptable traffic reliability / flow performance;
- Use of 15 VMS to display high profile road safety messages along the motorway. The campaign became very popular with locals and motorway users alike due the inclusion of some light humour. Some of the messages generated coverage in the local paper while others have now been adopted by the Brisbane Metropolitan Traffic Management Centre;
- Use of ROADMEMORY technology to further gauge traffic flow reliability. This included the use of video, an accelerometer and GPS to measure bumps in the road from irregularities / potholes as part of the day-to-day motorway maintenance program;
- Installation of digital photography technology on traffic management vehicles to enable photos and other data to be gathered to help identify maintenance issues as they occur. Identified problems were fixed during the following night shift where possible;
- Dedicated tow truck to do routine and on-call passes of the motorway to pick up cars and/or debris as required;
- Bump Truck (with a truck mounted attenuator), sign truck or both to shadow the tow truck and/or other vehicles where a hazard needed to be removed from the motorway;
- Motorway maintenance on a monthly basis including mowing, signage, road repair, debris removal, sweeping, whipper snipping to generate significant cost savings;
- Use of split shifts for some traffic controllers to reduce the risk of information gaps between the day and night shift teams.

Other key traffic management activities included: :

- Preparation of 612 long /short term traffic control plans;
- Use of an average of 600 traffic controllers per week at a cost of \$16m;
- Use of average of 45 police at night per week;
- Installation of approximately 30kms of PCBs, 2,500 triton barriers, 200 iron man barriers to protect workers from live traffic;
- Installation of 4 temporary cameras on the motorway – together with 15 VMS and 4 VLS (one with CCTV) to ensure the safety of workers and motorway users;
- Effective management of 1200 incidences on the motorway which required attendance by the bump truck or tow truck support between March 2010 and 15 June 2012;





- Significant temporary line marking which was completed mostly at night;
- Innovative placement of temporary road signage – due to a significant lack of motorway shoulder space;
- Mitigation of the January 2011 flood impacts which resulted in significant damage to existing signage, line markings, PCBS, anti-gawk screens, and other traffic control equipment.

## Quality Assurance

Origin Alliance's Quality Management System was established using Abigroup's QMS including its QESE Program for quality, safety and environmental management. It was then tailored to suit Origin Alliance's contractual requirements, specific project conditions, and the fact that there were six alliance partners.

From the outset, Origin Alliance was cognisant of the fact that the quality of the product, services and output was of the utmost importance to the client and as such considered a High Performance Zone. In line with this, a set of challenging quality KPIs were developed and measured on a monthly basis. These KPIs included:

- Inspection & Surveillance;
- Lot Management;
- Non-Conformances.

To help reduce the number of repetitive non-conformances raised, a Quality Alert notification system was developed to communicate issues along with corrective and preventative actions. This approach also allowed Origin Alliance to benchmark high standard work across the entire project. This initiative was very successful in reducing major areas of concern. This was supported by monthly quality focuses where any trend developments became a focal point for the Quality Team which would increase surveillance, quality alerts and tool boxing of work crews.

As part of the quality systems, project trends were collated so specific issues and root causes could be filtered and reviewed. These were reported to the Construction Team on a weekly basis. Short training modules were developed for the Construction Team to specifically introduce them to the quality management system and project's overall quality requirements. These modules were interactive and were a key factor in the project engineers and other construction team members undertaking their quality responsibilities in an effective manner.

A robust project auditing regime was implemented with over 158 audits conducted during the life of the D2G Project. These included internal, external, sub-contractor and supplier audits with desktop reviews of nominated sub-contractors and suppliers undertaken as a separate exercise.

Internal training and awareness sessions were held formally and informally throughout the project to ensure Origin Alliance's quality obligations were understood and being effectively communicated across Origin Alliance. These training sessions also provided the opportunity to remind and update people about Origin Alliance's quality systems and their role in updating and managing these systems.

The Quality Team had shared quality and verification responsibilities, with Quality Team members being assigned to specific construction zones to provide surveillance, site and lot verification duties, auditing duties, reviewing of IWMS, ITPs, and quality mentoring of staff where required. In terms of verification, a responsibility matrix was agreed with the hold point schedule in 2009 which meant the Quality Team was responsible for over 55 per cent of the hold points alone.

This allowed the Independent Verifier to concentrate on verifying works where the structural integrity of the motorway was affected as well as provide surveillance on site more effectively. Other hold points were distributed to other key personnel including electrical inspector as well as the geotechnical and landscape designers.

This approach proved to be very beneficial to Origin Alliance as it resulted in better integration of the IV while still enabling them to maintain their independence. It also enabled the Construction Team to seek advice from the IV in a proactive manner to ensure the project scope of works and PSTS were strictly adhered to.

As part of the shared approach to verification, rigid review and approvals systems were put in place and monitored to ensure full transparency, thus providing the client with confidence that they were receiving a quality service in-house.

## **Risk Management**

Origin Alliance adopted a robust risk management approach followed a detailed risks assessment which formed the basis for the TOC. It was undertaken by a multi-disciplinary team and resulted in a detailed Register of All Risks & Opportunities (R&O Register) being established. Because of the size, complexity and duration of the construction program for the D2G Project, there were a number of significant risks inherent in its execution.

All of these risks were listed and managed on an ongoing basis in Origin Alliance's R&O Register. Items included in this Register were not limited to financial or technical risks only but also included Community, Stakeholder, Environmental and external risks associated with the D2G Project.

Over the life of the D2G Project, the R&O Register was evaluated, scrutinised and updated on a regular basis. Once new likelihoods and consequences for each item were finalised, the revised R&O Register was distributed to all Alliance Leadership Team members for ratification. In addition, a number of R&O Workshops were undertaken to ensure project risks and opportunities were at the forefront of the Alliance and Project Teams' minds.

As well as planned risks and opportunities, the R&O Register also included unplanned risks and opportunities which reflected potential risks in different contexts. The quantifiable unplanned R&O profiles were priced up by presenting three different values – pessimistic, best guess, and optimistic.

A good example of Origin Alliance's pro-active approach to risk management was after the January 2011 floods in QLD. An R&O Focus meeting was held where it was agreed that, given the biggest risk to the D2G Project had occurred, the event should be treated as a 'Game Changer'.

As a result of this event, the whole R&O Register was critically reviewed and updated accordingly. At the time of the TOC, the project risk was calculated as the 'difference between the value of P50 confidence level (derived from the Monte Carl analysis) and the project's raw cost.

Three months prior to practical completion ( March 2012) of the D2G Project, the status on Unplanned R&Os was updated by the Unplanned Risk Owners through one-on-one meetings along with the Planned R&O by Cost Code Owners using the On-Trax system.

The March 2012 modelled risk profile was compared to the TOC model as well as the post flood model to gauge the effectiveness of the risk management controls /processes that had been used by Origin Alliance.

Overall, Origin Alliance's R&O P50 contingency had been reduced by more than 97% which clearly demonstrated that Origin Alliance had managed its risks and opportunities very well and that no additional 'game changing' risks had been encountered.

## OH&S Management

Safety was a key focus for Origin Alliance due to the team being made up of close to 1,200 people from six very different organisations together with hundreds of sub-contractors and consultants.

Key to the success of the D2G Project, which was completed with no major safety incidences, was creation of a no-blame culture which encouraged all incidents to be reported no matter how small.



This safety culture was underpinned by the Alliance Team ensuring that all necessary processes and procedures were in place and strictly complied with during the life of the project

This was clearly demonstrated during the 2010 FSC which enabled the principal contractor (Abigroup) to be recertified. The D2G Project demonstrated only 2 minor NCRs, with Origin Alliance being complimented by the FSC for *'its comprehensive OHS system that was consistently being implemented.'*

Origin Alliance's key safety performance indicators over the life of the D2G Project included:

- **Project Frequency Rates (12mth rolling) as at June 2012: LTIFR = 0.0, MTIFR = 18.59**
- **Project Lifetime May 2008 to June 2012: LTIFR = 0.5, MTIFR = 17.1, NTIFR = 13.4, Lost Time Rate = 1**
- **Safety Observations = 3,792, Safety Inspections = 4,053, Site Inductions = 10,803, Total man hours = 8,266,639.**

Key OH&S initiatives introduced by Origin Alliance included:

- Tailored Safety Leadership Program (Pinnacle) which provided 300+ key construction site personnel with the skills they needed to engage, educate and motivate their teams to work safely;
- Effective incident investigation program focused on lessons learnt and ensuring the same issues did not arise again, was supported by the provision of ICAM training to 88 key site personnel;



# OriginAlliance

Connecting Dinmore to Goodna

- Safety Observer Program which formalised 'the 'spotter role to a position of control / responsibility. It is currently being assessed by Abigroup for wider industry use;
- SafeSpine, a mandatory, site-wide, significantly reduced strains / sprains, helped maintain construction productivity. Now being used across a number of QLD construction sites;
- Verification of Competency (VOC) process which, because it extremely stringent, has set new benchmarks in competency levels;
- Automated Permit to Excavate (PTE) system which proved to be highly effective across such a large / complex construction site, helped further improve safety;
- Increased use of onsite mobile technology which provided field staff with access to 'real time data' to further ensure site safety / construction efficiencies. Helped set new industry standards;
- Intensive program of internal communications aimed at keeping everyone focused on work safely, particularly during the final 12 months of the project when incidences tend to peak (Finishing Strongly / Don't Drop the Ball campaign);
- Specific educational programs to suit site conditions which were rolled out as work intensified on site (eg Origin Alliance is Live program to educate people about working in and around electrical cables);
- Mock Court training for 120 key site personnel at a local Magistrates Court to provide realistic scenario safety training as to how prosecution / defence lawyers pursue actual cases.

All of these innovations contributed to Origin Alliance winning the 2011 QLD Major Contractors Project Excellence in Safety Award and the 2012 QLD Government's Safe Work Award for Best OHS Management System.

## Environment & Heritage

A key factor in Origin Alliance's success was the very positive relationship it established and maintained during the life of the D2G Project with the environmental regulators including the QLD Department of Environmental Resources Management (DERM).

As a result of this, Origin Alliance was selected as an infrastructure project site to participate in a 3-year ESCCP project conducted by DERM in partnership with local governments to improve the water quality in SE QLD's waterways. Key environmental management activities and innovations undertaken by Origin Alliance included:



- Ground breaking trials including the use of vetiver grass for erosion / sediment control, automated flocculent dosing systems for the treatment of water in sediment basins, and use of Tiffblair grass as a low maintenance / increased germination option;
- Positive local environmental legacies including dry fauna passage in local creeks, weed treatment of local creeks, and translocation of 30 Mangrove lilies as part of bank stabilisation works;
- Preservation of Indigenous / Non-Indigenous heritage including stone kerbing in front of a local school and timber piles at Six Mile Creek Bridge, both of which are now popular new heritage items of interest;
- New proprietary erosion and sediment control risk assessment tool (ESCRAT) which combines 3 volumes of the IECA guidelines relating to erosion risk levels, sedimentation design standards and techniques into 1 easy to use spread sheet.
- Significant recycling of construction materials on / off site including debris from the demolition of 13 existing bridges; and
- Extensive remediation works to restore Goodna and Six Mile Creeks both of which were significantly damaged during the January 2011 QLD floods.



## Stakeholder Satisfaction

Key to the success of the D2G Project and Origin Alliance was its commitment to delivering effective community engagement and stakeholder management. Origin Alliance achieved this by adopting a back to basics approach which maximised the opportunity for people to interact with the project team in person.

Because of the demographics of the local suburbs (low socio economic, below average reading abilities, below average access to the internet/email, high proportion of non-English speaking residents), Origin Alliance's key engagement activities included:

- Weekly door knocks of the local area;
- Regular stakeholder briefings for local businesses, schools, Local MPs, Councillors;
- Monthly public displays at two local shopping centres;
- Static display at local shopping centres;
- Provision of support for local charities / organisations, not just financially but also access to the OA workforce to undertake basic construction /maintenance tasks;
- Visitor Experience Centre to educate local communities and other key stakeholders about the project, its benefits and progress to date. Mini bus tours of the construction works were provided once a month for individuals and on-demand for local groups such as seniors, schools, universities, industry groups, transport sector, DTMR personnel, OA employees. The VEC attracted more than 3,200 visitors between May 2010 and June 2012.





To monitor Origin Alliance's community and stakeholder satisfaction levels, independent research was undertaken every 6 months as part of the KRA process.

During the life of the project, Origin Alliance received an average of only 7 community complaints per week and achieved a KRA rating for Community and Stakeholder of 8.4 out of 10 which is classified as outstanding.

As a result of its first class community engagement and stakeholder management performance, Origin Alliance won the 2011 National Association of Women in Construction Award for Marketing & Community Engagement, was runner-up at the 2012 International Association of Public Participation Core Value Awards (Project of the Year in QLD), and was highly commended at the Queensland 2012 Public Relations Institute of Australia Best Internal Communications Campaign.

## **Stakeholder Management & Interface**

To ensure it effectively interfaced with its key stakeholders, Origin Alliance:

- Established / maintained very strong working relationship with State/Federal MPs & Local Councillors;
- Appointed a full time Rail Interface Manager to coordinate \$100 million of works associated with QR assets and ensure there were no delays to the construction program;
- Funded a full time Ipswich City Council Project Manager to obtain the necessary approvals, resolve conflicts, and plan/ co-ordinate commissioning activities as part of Origin Alliance maintaining a good working relationship with asset owners;
- Co-funded a permanent on-site representative from Construction Skills QLD to help manage the project's investment in training, in particular two unique training programs (Constructive Kids / Constructive Mob) which created 44 entry level jobs for local community members and Year 12 students.



## Human Resources

Human Resources Management centred on the establishment of systems and processes which enabled Origin Alliance to operate as a stand alone entity separate to the 6 alliance partner home organisations. This allowed the Origin Alliance HR Team to service and support all employees irrespective of their home organisation. In terms of establishing the Origin Alliance Team, people were selected for roles on a 'best for project basis' regardless of their home organisation.

The HR team was involved in the recruitment process from the start of the project to ensure they got the right fit of employees and also maintained discipline within remuneration benchmarks. A Resource Coordination Group was set up to deal with project ramp up periods. A labour hire firm was contracted to provide labour as and when needed during intense periods of construction.

Alliance health was a shared responsibility between the Alliance Manager and HR Managers. A dedicated internal resource was engaged to drive Alliance Health initiatives. Origin Alliance's approach to alliance health was to manage activities 'in house' with support from external consultancies as only when required.

Origin Alliance's aim was to manage everyone on site via high performance 'can do' philosophies while creating a culture of openness, integrity, trust, cooperation, mutual support, respect, flexibility, honesty and loyalty to the project, a culture that would be fostered by all members of the team throughout the life of the project. A key part of this approach was to promote internally where possible.



Outstanding results and new benchmarks were set across all key project areas supported by 'leading edge' cultural practices and procedures to ensure the welfare of the workforce, visitors, local community and environment.

For example, the attitude of 'protecting yourself and your colleagues from injury' and 'enhancing yours and your colleagues' health and work environment' was extended beyond the workplace to all activities on site. Origin Alliance's cultural vision was to raise the bar for the construction industry in terms of skill levels, innovative solutions, and effective processes by drawing the right people together to solve complex construction problems no matter how small or large they may be. This was achieved by everyone on the Origin Alliance team respecting each other's knowledge and contribution, engaging with each other to present collaborative solutions, and empowering each other to deliver effective outcomes.

Over the life of the D2G Project, Origin Alliance's average staff retention rate was significantly lower than the industry average thanks to its balanced approach with a clear focus on terms and conditions, succession planning, leadership, and learning / development. Origin Alliance undertook annual Performance & Development reviews. The resulting data formed the basis for succession planning and learning and development programs and activities at Origin Alliance.

## Training & Development

Upon commencement of the D2G Project, Origin Alliance developed an engineering competency matrix to determine its development needs within the operations team. Staff training needs analysis was then conducted on an annual basis. The resulting data was tracked and actioned by the HR Team in conjunction with the dedicated Training Manager and his team.

During the life of the D2G Project, Origin Alliance invested \$6.38 million in training which equates to an average of \$141,687.30 per month. More than 550,000 man training hours helped successfully deliver 2,683 accredited qualifications across field / office staff as well as 95 traineeships. This helped ensure that everyone on site had the skills and knowledge they needed to be able to work safely, effectively and productively.

As part of this investment in training, Origin Alliance developed 2 unique training programs – Constructive Kids and Constructive Mob – which provided local community members with identified barriers to employment with the skills and knowledge they needed to successfully enter the construction industry. In total, these two programs created 44 entry level construction industry jobs.

As a result of Origin Alliance's commitment to training, in 2011 it won the Ipswich Chamber of Commerce Employer Commitment to Training Award, and DTMR Excellence Award (SMART Category). In 2012, Origin Alliance won the QLD Training Awards, Employer of the Year Award for the Brisbane Metropolitan Area.

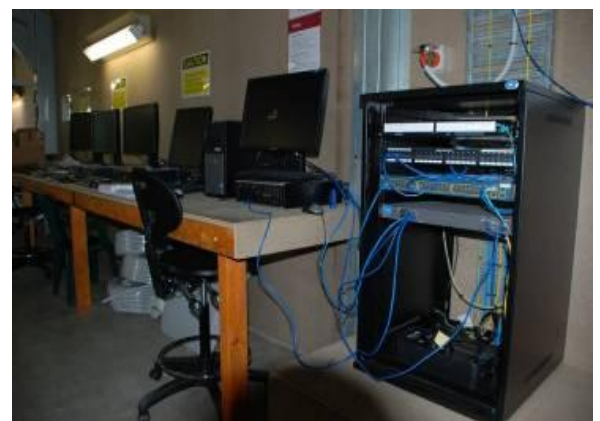


## Project Innovations

### Intelligent Transport System

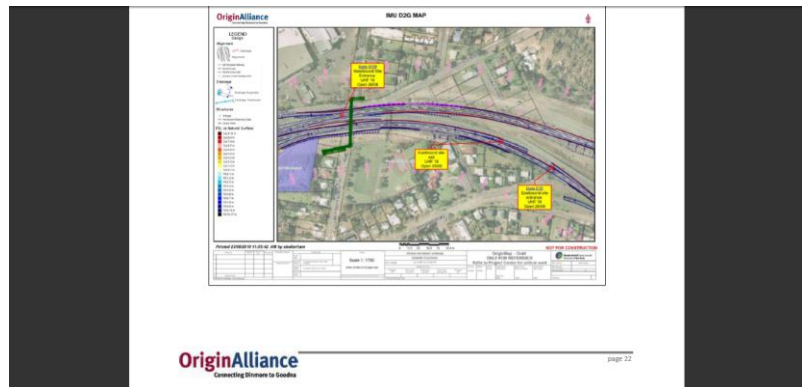
In an Australian first, the entire ITS system was built on site so all aspects of the central control system, high / low speed networks, primary interfaces, individual devices, software, hardware and connectivity/integration with the Brisbane Metropolitan Traffic Management Centre could be comprehensively tested PRIOR to the ITS system being deployed in the field.

This approach is easily transferable, interoperable, sustainable and likely to have a significant impact on the way ITS systems are constructed, tested and installed as part of future road infrastructure projects in Australia.



## Design Process

Origin Alliance used both GIS and VDC/BIM technologies to share data between the two platforms to achieve a wide range of 'best for project' outcomes. GIS, through the use of an innovative and aptly named OriginMap application, supported the project's success and has been highly praised by the project team as well as the Alliance and Leadership teams. It has also sparked new interest in and promoted better understanding about spatial technologies in the construction industry, thus paving the way for increased use of similar spatial systems.



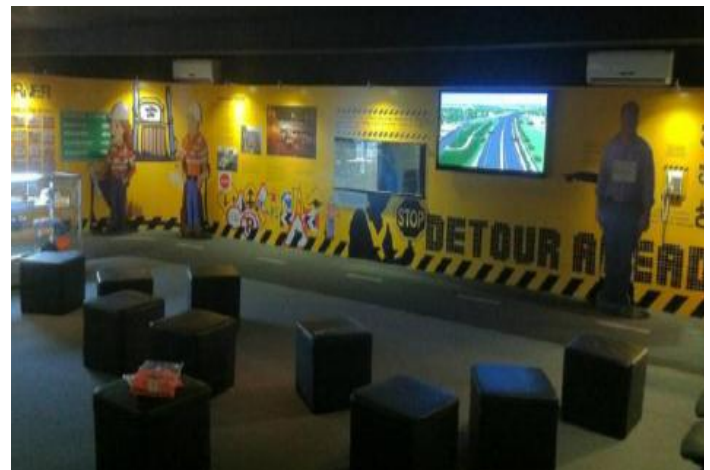
OriginMap proven to be a valuable and highly appreciated service with more than 72,000 recorded sessions and production of around 17,000 PDF maps and drawings, all of which resulted in significant cost savings. Other tangible benefits included faster access to current information, faster communication, a reduction in duplication of effort, and provision of a map and drawing print capacity for use by individual project team members.

A good example of the innovation achieved by Origin Alliance was use of OriginMap in conjunction significantly improved the efficiency of the construction staging which, in turn, helped ensure the project was delivered 6 six months early. Another way OriginMap was regularly used was during technical planning meetings as it provided an easily accessible, immediate and accurate source for the latest approved drawings and designs.

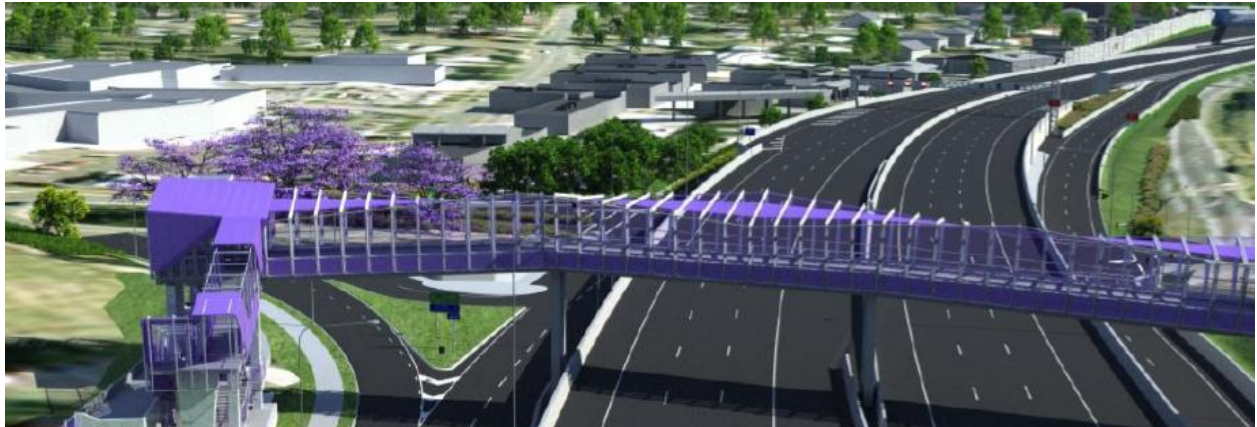
## Community Engagement

The 3D and 12D detail contained in the design engineering model was strategically leveraged through the use of innovative visualisation skills to produce a suite of high impact engagement tools that were a key factor in helping 'bring the project to life' for the local community, staff and other key stakeholders.

These tools allowed the Community Team to provide stakeholders with a 'visualisation' of how the motorway would look and operate once the upgrade was complete a well as demonstrate how on and off ramps would operate, how traffic would flow on the new motorway, the features of the new pedestrian bridges, what the proposed landscaping would look like, and the many other benefits of the upgraded motorway.







The only changes made to the model was to extrapolate and upgrade to provide a more realistic picture of what the project would look like and include surrounding contextual objects outside of the model as realistic as possible. Community and stakeholder representation was a key focus that the Community Team produced more than 4,000 copies of the model for distribution to stakeholders.

As a result of the effective and innovative use of spatial technologies, Origin Alliance was acknowledged at the 2012 QLD Spatial Excellence Awards with a Highly Commended in the Award for Innovation, named as Winner for the Award for Spatial Enablement and named as Winner of the JM MAC Serisier Award for Overall Excellence.



## Quality

From early 2010, mobile technology was trialled using IPADs and rugged technology. Nominated engineers and supervisors used the mobile technology in the field to access RFI/DSN, approved IFC issued drawings, permits, emails, hold points and other data in real time.

Use of this technology proved very beneficial on such a large and geographically spread project. It was also vital during the clean-up after the floods when key staff were operating from their nearest home organisations for up to four weeks away from the inundated project site office. In 2012, the innovative use of mobile technology won the Abigroup Northern Construction Region Award for Innovation.

## Alliance Leadership

As Alliance Manager, Mick O'Dwyer led a team of professional, highly-talented engineering and construction professionals to solve some of the most complex construction challenges and deliver a world-class product. He achieved this by ensuring collaboration across the 6 alliance members, keeping the playing field level to ensure there was no single 'lead' organisation within the Alliance.

As Alliance Manager, he led an effective and cohesive Alliance Management Team (AMT), managed around 1,200 people on site during peak production, delivered \$1.65 billion of design and construction work over 51-months within strict time, cost and quality parameters, achieved 5 non-cost related KRAs, and co-ordinated all stakeholders including three levels of government, around 30,000 directly impacted residents, and 90,000 motorway users.



From the outset, Mick O'Dwyer was determined to build a culture where everyone was passionately committed to a shared vision and goal built upon a site-wide commitment to the Origin Alliance Team. He also insisted that everyone worked together collaboratively to solve complex problems. It was also mandatory that team members respected each other's knowledge, contribution, and role on the project. It was a given that team members would develop collaborative, effective solutions with input based on people's knowledge and skills rather than their status or position.



Mentoring and coaching played a major role in the development of the Origin Alliance team. Mentoring was undertaken in a variety of ways including the design and implementation of 2 unique training programs which enabled 22 Year 12 local school students and 22 long-term unemployed indigenous residents to successfully enter the construction industry.

Recognition of people's achievements played a major part in Origin Alliance's success via its formal Reward & Recognition Program which publicly acknowledged and rewarded the performance of staff / field staff workers every 6 months via a nomination process. Separate programs were run for project staff and field workers. Winners were randomly selected from the barrel of 'nomination tickets'. Each month, all R&R nominees for that period were highlighted in the internal site-wide Goal Post newsletter.

Other key factors which contributed to the success of Origin Alliance included:

- Co-location of everyone on-site in one main project office location;
- Appointment of 2 Area Managers plus 4 integrated Zone Managers which improved communications across such a large construction site and overall project efficiencies;
- Strong leadership by the AMT which adopted a hands-on approach by ensuring they knew exactly what was happening out on site / across the wider project team at all times. This hands-on approach included each AMT member taking time to get to know the people that were part of Origin Alliance and greeting them by their first name when they saw them out on site or in and around the project site offices.

The AMT members took a real interest in how people were being kept informed about the project and the various information sharing mechanisms that were used across the project site. Another example of the AMT's hands-on approach was their regular attendance at on-site internal communications events, including 6am tool box talks and pre-start meetings, so they could personally encourage everyone to continue working as one team.

The AMT was also a vocal / active champion of innovative thinking across the project. Despite being a high risk project, people were actively encouraged to introduce new ideas and run with them.

- Willingness of all 6 alliance partners to work collaboratively / proudly together under the Origin Alliance banner. A good example of this was people's commitment to wearing the Origin Alliance uniform instead of their own home organisation clothing. Even consultants and sub-contractors working on the D2G Project willingly donned the Origin Alliance uniform to demonstrate their commitment to the Alliance's shared goals, values and visions;
- Clear focus on creating team pride, not only in the work that people were doing but also their overall contribution to the Origin Alliance. The following quotes clearly demonstrate how passionate people were about being part of the Origin Alliance Team;

*'At Origin Alliance, I have had the pleasure of working with some of the finest, sharpest and kindest people that have probably existed in a workplace.'* **Kellie Alterator, Document Controller;**

*'This project has been more than just a work place, it is the people that have given it soul. I would like to put out a special mention to management for picking the right people for the job here and turning it into a real family unit,'* **Chloe Pett, Quality Administrator;**

*'I feel I have bonded closely with so many people on the job and even though I know the time is right to move on, I am still going to miss being around such a special group of people and celebrating what we have achieved.'* **Nick Mclean Project Engineer (Structures);**

*'This will be one of those projects that will have a lasting impression on me. I have made some truly great friends here and have had a great time working alongside you all. There are too many people to thank individually so to each and every one of you, thank you very much for making this a great place to work.'* **Creag McLaren, Construction Manager;**

Prior to commencement of construction in early 2009, Origin Alliance took the 'best' processes from the 6 alliance partners to develop the 'Origin Alliance Way', a blueprint of how things needed to be done on the D2G Project. Another key step in establishing the project's unique culture was to ensure that everyone, from the Alliance Manager, through to the youngest apprentice, worked collaboratively to deliver best-for-project outcomes.

This was achieved by ensuring everyone left their 'home organisation' persona at the site gates and embraced the 'Origin Alliance Way'. An Alliance Charter was developed which set out the agreed values that everyone on the project was expected to adhere to.

Everyone who was inducted onto site (around 10,000) including sub-contractors had to sign a 'personal contract and commitment' with Origin Alliance in the form of the 'Golden Rules'. These set out how people were expected to behave while working on site and included two behaviours which captured the essence of the 'Origin Alliance Way', namely mates helping each other to achieve the best possible outcome for the project, client and company through bad and good times, and everyone aiming for high performance while acting with respect and integrity.



At its peak construction, Origin Alliance comprised around 1,200 people including full time employees, design staff, direct labour, temporary labour hire, and subcontractors. A 2 pronged approach to employee engagement was undertaken with implementation of a wide range of information sharing activities supported by a program of specific team building events.

## Knowledge Transfer

One of Origin Alliance's key objectives was to raise the bar for the construction industry in terms of people's skills and knowledge. That is why knowledge transfer was a key focus. Origin Alliance's effective Lessons Learnt process played an important part in the success of the D2G Project.

From the outset, every team meeting agenda included a brief discussion on lessons learnt for the week. This approach encouraged every team member to air their views and personally contribute to the delivery of the D2G Project. These discussions took place across not only project staff but also within the field staff work crews. Yearly 'lessons learnt' workshops were held to capture as much data as possible.

To ensure this knowledge was shared effectively, a number of detailed reports were prepared as part of the handover process to the client / 6 Alliance partners including:

- Project Completion Report which provides a detailed outline of exactly what was been delivered as part of the D2G project including all of the key policies and procedures that were used by Origin Alliance to successfully exceed all of its key objectives;
- Value for Money Report which outlines where and how Origin Alliance was been able to deliver exceptional value for money for the client through the development of innovation solutions to overcome complex and significant engineering and construction challenges;
- Lessons Learnt Information Pack which summarise all of the above data so the 6 alliance partners can use this information on other projects, as part of their staff education programs, within future tenders and bids, as well as part of technical papers and conference presentations within the construction and engineering industries.

Over the life of the project, new, innovative or enhanced work procedures and policies were carefully recorded so they could be shared with not only the 6 alliance partners but also the industry as a whole. The scale, size and complexity of the D2G Project resulted in significant lessons being learnt including:

- Origin Alliance's Safety Observer Program has been reviewed in detail by local representatives from Work Safe all of whom were impressed with the improvements made to a previously informal industry approach to site safety;
- The lessons learnt from the unique and challenging mine fill sub-alliance have subsequently been shared with Ipswich City Council, the Hunter Expressway project team in NSW, as well as with overseas parties in the US;
- Origin Alliance's Visitor Experience Centre (VEC) attracted more than 3,200 visitors between May 2010 and June 2012 including members of the AustRoads National Design Team; Representatives from the Philippines Government Public Works Department; DTMR, Engineers Australia; Project Team Members from TrackStar, Legacy Way, Mains Kessels, QR, BMG Engineering; TAFE, local high schools, WorkLinks, University of QLD and the Sunshine Coast.



## Conclusion

The upgrade of the Ipswich Motorway between Dinmore and Goodna has been one of the most successful road infrastructure projects ever undertaken in Queensland. Despite its many challenges and constraints it was delivered six months early and approximately 10 per cent under budget.

Over the three years of construction, a significant number of innovations in engineering, design and construction were developed, knowledge and experience that is now being shared across the Australian infrastructure industry.

At its peak, some 1,200 people worked on the project, many of whom had significantly improved their core skills as part of Origin Alliance. These people are now able to share this knowledge and wisdom as they continue their careers in the infrastructure industry.

Perhaps the best way to sum up the D2G Project and its successful delivery by Origin Alliance is to look at the comments and feedback from some people who can often be among the harshest of critics of major construction projects.



Among Origin Alliance's key stakeholders were the two Federal MPs and one State MP whose constituents were directly impacted by the D2G Project. During the construction period, Origin Alliance worked closely with all of its local elected representatives to ensure they were kept fully informed and felt part of the overall project. Following is the feedback Origin Alliance received from these key stakeholders following completion of the project. This feedback forms part of a unique document called Conversations with the Community which captured a wide variety of internal and external feedback during the D2G Project:



## **Mrs Jo-Ann Millar, State MP for Bundamba, QLD;**

*'I believe the relationships that have been built by Origin Alliance with the local community, including with myself, have been a major factor in the overall project running so smoothly. The key to everything going so well has been Origin Alliance's willingness to listen to people's concerns and how hard they have worked to try and resolve those issues if possible. People really do respond more positively when they believe they are being listened to and taken seriously.'*



*'What Origin Alliance did in the following days and weeks following the floods will always be, in my mind, the kindest most grateful act of compassion I have ever seen from a commercial organisation. At that time, Origin Alliance had its own problems with its Redbank site office being totally inundated but rather than just worrying about themselves they put their own repairs on hold and got out there to help the community first.'*

*'What I loved about Origin Alliance was the value-add the team provided. This willingness to go that extra mile is worth millions of dollars to my constituents, in particular the younger members of the community. Everything Origin Alliance did to try and increase the employability of our local kids and long-term unemployed has given hope to everyone in the community. Together we've opened their eyes to the future and the possibilities that exist within the construction industry.'*

*'If I was to sum up the D2G Project, it would be that before the upgrade, this whole area was the ugly duckling of the west but now we are the beautiful swan. From the start, it was a delight to work with Origin Alliance and I, for one, was extremely sad when the people who make up Origin Alliance finished up. The people of this area, myself included, have long been passionate about our motorway and now, thanks to Origin Alliance, we have something to be truly proud of.'*

## **Bernie Ripoll, Federal MP for Oxley**

*'I have said it many times before, but in terms of community consultation, this project has been a huge success and a model on how to engage with community. In my view, it has been the best project in Australia demonstrating that a consultative approach with the community can be done – in fact it has been a key part of the success of the overall project.'*

*'The Origin Alliance has been different – it has been so much more strategic with lots of communication such as newsletters and community involvement. The fact that the Origin Alliance team made an absolute commitment to the job and the community means they will be sadly missed in our community. From the outset we knew they had a huge and complex task and were here for the long haul. We understand through their work quality and commitment and duct engagement with local people this was going to be a success. And whenever an issue came to hand we've collectively been able to provide feedback from the community and work through those issues. Overall it's all been exceptionally positive.'*



*'The most important lesson learnt is that you can deliver a large, complex, multi-staged project under full traffic conditions in a really good way. The project does not have to take an adversarial approach. It doesn't have to be us versus them. Even under the most trying, complex conditions, Origin Alliance has managed to maintain a collaborative approach. I certainly give full marks to Origin Alliance for being able to manage such a huge project so effectively.'*

*'Origin Alliance created a real connection over the three years with the local community. And let's not forget the project was a long haul, not just during construction, but also from the original planning through to actual delivery. Certainly it was sad from that perspective when it came to an end as Origin Alliance had become part of the local community.'*

## **Shayne Neumann, Federal MP for Blair**

*'Before the upgrade, the Ipswich Motorway was a dog track. People would take their life and limbs in their hands when using the motorway. People had to leave half an hour early to get anywhere. People were always late getting to work, or for medical appointments and so forth in Brisbane. It was bad and it wasn't just people's life and lifestyle that was being affected, the motorway was also bad for the economic development of the whole region. For example, farmers would have produce rotting or at risk. People were being killed and injured. Insurance costs for car owners in the area were astronomical for anyone living in the Western Corridor. All in all it was appalling.'*



*'Overall, the whole upgrade process was extremely good and there are many of us, myself included, who regularly wax lyrical about Origin Alliance and the project as a whole. That's because the upgrade is not just important to the local region. It's also going to have a positive impact on the Lockyer Valley and Toowoomba. It's also going to help the people of Ipswich heading into Brisbane.'*

*'I think the efficiency and effectiveness of Origin Alliance, which brought the brains of all of the members together, has been amazing. The way everyone who was part of the Alliance worked together was outstanding from start to finish.'*