

FAST TRACK TO SUCCESS

CLIENT : Department for Infrastructure and Transport (DIT)
DEVELOPER : Public Transport Projects Alliance Ovingham (PTPAO), comprised of McConnell Dowell, Arup, Mott Macdonald, and the Department for Infrastructure and Transport
STRUCTURAL & CIVIL ENGINEER : Mott MacDonald and Arup
CONSTRUCTION VALUE : \$231 million
TYPE : Rail/Transport/Infrastructure



The Ovingham Level Crossing Removal Project has improved travel times, reliability of bus services, increased freight productivity, and safety for all road users and includes green space, sports courts and public art.

The \$231 million project, jointly funded by the Australian and South Australian governments on a 50:50 basis, involved the removal of the level crossing at Torrens Road, Ovingham, the construction of a new overpass over both the interstate rail line and the Gawler passenger rail line, new bike lanes and an upgrade of the Torrens Road/Churchill Road intersection.

The project was delivered by the South Australian Department for Infrastructure and Transport in an Alliance with McConnell Dowell, Mott MacDonald and Arup, ensuring a collaborative approach was taken to complete the works.

The crossing was located near the fringe of the Adelaide CBD on Torrens Road at Ovingham. An average of 21,300 vehicles passed through this level crossing each day.

“The overpass has removed the need for traffic to stop to allow for passing trains, reducing travel times and congestion for motorists,” said Jon Whelan, Chief Executive of the South Australian Department for

Infrastructure and Transport. “It has also improved public transport usage to north-western Adelaide, as buses will no longer need to stop at the boom gates. This has cut travel times and increased both reliability and safety.”

Girders for the Torrens Road bridge were fabricated in South Australia at Bowhill Engineering. “Moving the 100 tonne, 50m long girders was a major exercise in logistics,” said Jeremy Hawkes, Managing Director of Bowhill.

“We have developed good systems on our manufacturing site and great relationships with heavy transport companies that can safely move these large elements along the public roads from Bowhill, over the Murray River at Blanchetown and into Adelaide from the North.”

The large span provided by these girders has allowed for activation of the public space underneath with Futsal and Basketball courts complimented by extensive public art displays and sculptures.

The design of the large public space was a result of a collaborative Aboriginal co-design with the Traditional Owners, incorporating cultural knowledge and narrative of the site into the final built form architecture and public art.

Through this collaboration, the name KARRARENDI YERTA was assigned to the bridge. The name, directly translated as ‘travel overland’ represents the journey that Traditional Owners used as the trade-line between Tandanya (the Adelaide CBD) and Yerta Bilit (the Port Adelaide region). Emerging Kurna artists were partnered with Aboriginal and non-Aboriginal established artists to install artwork aligned to this narrative on the abutment walls, piers and within the open spaces.

Mike Makatron and Harley Hall were two such artists, engaged to deliver the Kakirra ‘moon’ mural on the bridge abutment wall and one of the pier groups. Mike is a full-time muralist with over 20 years of experience and collaborated in a mentorship with Harley, a Kurna, Ngarrindjeri and Kokatha man, who is an artist and social worker, new to creating large scale public artworks.

“It’s the moon phases, but they’re looking down on top of the red landscape, and the totem animal for Kurna is Tundra, the red



kangaroo,” Mike explained of the ‘moon’ mural. “You start with sketch lines, and then just a constant back and forth of making a mess, polishing it, making more mess, polishing it, and just constant push and pull with that.”

Students from Brompton Primary School were also involved in activating the public realm, constructing and painting bird boxes for the Ovingham Level Crossing Removal Project. The boxes, together with the 200 new trees planted across the site, will create important habitats for local wildlife around the new Torrens Road bridge.

“We’re really looking forward to seeing all the wildlife move into the birdboxes when we’re on our way to school in the morning,” said one of the students.

For more information contact Public Transport Projects Alliance Ovingham, phone 1300 613 533, email ovinghamcrossing@ptpa.com.au, website www.ptpa.com.au



STAYING ON TRACK

The Ovingham Level Crossing Removal Project in inner Adelaide has transformed traffic flows for the 21,300 vehicles passing through the area daily.

Delivered by the Alliance, the works involve construction of a new road bridge to replace the existing level crossing.

Adelaide based signalling specialist Rail Industry Constructions completed all signalling installation works on the project including the removal of existing signals, boom gates and lights associated with the old level crossing and new signalling infrastructure, combined services routes and axle counters.

Established in 2002, Rail Industry Constructions is an Australian company serving the national rail industry with innovative technology and quality solutions, with a team of qualified experts in a range of railway related disciplines.

One innovation Rail Industry Constructions brought to the project was their patented Tilt Mast Signal which revolutionises signal maintenance by allowing the signal head to be folded into a horizontal position at low level, removing all risks associated with working at height.

The tilt mast signal can be operated by a single person with a simple battery drill with no counterweights or pinch points. It allows all signal maintenance to be carried out at ground level in a safe, ergonomically friendly manner.

Rail Industry Constructions had a good relationship with other contractors onsite and had worked with Alliance partner McConnell Dowell before. The collaborative approach enabled efficient solution delivery despite the challenges associated with this inner-city project.

“There were many challenges around the site including busy roads, operational rail lines and pedestrian movements,” said Jeremy Hayman, Operations Manager.

“We were able to work around these issues through good planning together with the Alliance. Everyone on the project was excellent to work with and we are proud of what we achieved.”

For more information contact Rail Industry Constructions, 47 Kinkaid Avenue, North Plympton SA 5037, phone 0457 736 129, email Jeremy.h@railicon.com.au, website www.railindustryconstructions.com.au

MAKING A LASTING DIFFERENCE

Rider Levett Bucknall (RLB) were engaged by the Alliance to provide Scope Growth Comparisons of the works packages at 30%, 70% and 100% design phase and provided comparisons against the original total outturn cost budget to understand where there was either scope growth or scope reductions as designs progressed.

“During our Scope Growth Comparison engagement we had a two week turnaround time for all works packages at each design gate to provide the completed remeasure and final comparison report,” said Reynor Breetzke, Executive Civil Estimator.

“Often multiple works packages were received at the same time and we were under pressure to maintain turnaround time frames,” said Reynor. “This was managed by adding additional resources from our Civil Estimating Team when required.”

RLB has a dedicated team of 10 experienced Civil and Infrastructure Estimators supported by a team of five Engineering Services Cost Managers, in addition to 60 Quantity Surveyors, enabling RLB to

commit and maintain a dedicated team on major projects such as the Ovingham Level Crossing Removal Project.

“RLB worked collaboratively with the Alliance during the Scope Growth Comparison and provided two of our key resources to work at the project office to facilitate ease of communications,” said Reynor. “This enabled quicker turnaround times through face-to-face interactions.”

RLB’s attendance at the Alliance project office was dynamic, ramping up during busier periods and ensuring a consistent high level of service delivery and dedicated attention at all times.

RLB’s Civil and Infrastructure team added value to South Australia road and transport infrastructure, improving safety and creating efficiency for all users.

For more information contact Rider Levett Bucknall, Level 1, 8 Leigh Street, Adelaide 5000, phone 08 8100 1200, email giulio.altamura@au.rlb.com, website www.RLB.com



DESIGNED FOR DELIVERY

Robert Bird Group are a global structural consulting and construction engineering firm. They were appointed to provide a construction methodology and erection sequence (CMES) study for the bridge structure at Ovingham Level Crossing Removal Project including temporary works design, girder stability, and construction staging.

“Our role was to work out how the bridge could be constructed,” explained James Deane-Butcher, General Manager, Adelaide Office. “We carried out analysis to determine the loads that would be in the structure and designed the temporary works needed to allow it to be installed.”

Robert Bird worked closely with Alliance partner McConnell Dowell to understand their requirements and develop an appropriate construction methodology. “We knew the sequence McConnell Dowell intended to build the structure in, and working with them, we developed the temporary works solution to suit” James said. “A lot of thought went into the strategy along with testing in the digital model.”

Robert Bird focused on minimising the complexity of the erection sequence due to the tight constraint of the busy rail intersection. Another key focus was to minimise the amount of temporary works

Photographs courtesy of PTP Alliance.

required. “We have a saying at Robert Bird that the best form of temporary works is permanent works,” said James. “Minimising the temporary works helps the speed and efficiency of the whole project.”

One success on the project was the reuse of surplus steelwork from a past project. Robert Bird worked with the steel fabricator to identify retained steelwork that could be reworked and rewelded, resulting in cost savings and significant sustainability benefits.

Established in 1982, Robert Bird Group is committed to engineering excellence across all their projects. “We do a lot of challenging and complex projects like this,” James said. “This project is a long needed piece of infrastructure for Adelaide and it has been a pleasure to be involved.”

For more information contact Robert Bird Group, 10 Grenfell Street, Adelaide SA 5000, phone 08 8232 6683, email adeadmin@robertbird.com.au, website www.robertbird.com



EXPERIENCE YOU CAN TRUST

The Ovingham Level Crossing Removal Project in Adelaide involved the construction of a new bridge, removal of a level crossing, and associated track and signalling upgrades. The crossing was used on average by 21,300 vehicles daily.

Engineering Systems Management (E.S.M.) was appointed by the Alliance to perform signalling project management for the project. E.S.M.'s scope of work was to manage the signalling design contractor and installation contractor. E.S.M. also helped develop the level crossing removal Systems Safety Documentation.

“This was a complex and challenging project,” said Mike Hurd, Director of E.S.M. “In particular the presence of an adjacent interstate rail track required coordination with stakeholders including Australian

Rail Track Corporation (ARTC). Rail signalling is sometimes like a military operation,” explained Mike. “It takes lots of careful pre-planning followed by a short piece of work to execute the project. In this case it has been very successful.”

The success of the project was partly due to the good relationship between E.S.M. and the project team. “It was a very good group of people to work with,” Mike said. “We’ve had prior experience with Alliance partners such as McConnell Dowell and they have been fantastic.”

E.S.M. is a specialist professional engineering consultancy dedicated to helping organisations deliver projects that are demonstrably safe. They deliver services nationwide and are recognised as an authority in Safety in Design, providing training through Engineering Education Australia.

“We take a structured and systematic approach to our work,” Mike said. “We start by understanding specifications and provide informed and clear guidance to help decision making with regard to complex safety systems.”

With a range of safety-oriented professional engineering services provided by a team of highly capable, practical and collaborative experts backed by years of experience on complex projects, E.S.M. offers expertise that you can trust.

For more information contact E.S.M., 613/147 Pirie Street, Adelaide SA 5000, phone 08 7222 6068, email info@esmconsulting.com.au, website www.esmconsulting.com.au



CREATING STRONG FOUNDATIONS

Adelaide-based earthmoving contractor Page Excavations carried out the bulk earthworks and road surface preparation for the Ovingham Level Crossing Removal Project.

Page Excavations holds an extensive range of machinery and their friendly team has a strong reputation for quality, safety and reliability. They supplied all the required plant (trucks, rollers, graders and excavators) as well as the labour required to complete the works.

“We have a strong subcontractor network of people we know and trust,” said Daniel Page, Director. “All our operators are highly skilled with many years of experience. We supplied a well-balanced and highly skilled workforce including both Indigenous and female representation for this job.”

Page Excavations had a strong relationship with Alliance partner McConnell Dowell who they have worked with before.

“It is always an enjoyable experience working with them which makes a big difference,” Daniel said. “They have a capable and dynamic team on the project which made it smooth sailing for us.”

Challenges on the project included the high volumes of traffic using the intersection. “There are always a lot of people in that location and safety was paramount,” explained Daniel. “We worked as a team with McConnell Dowell to ensure we could manage the traffic control.”

One innovation brought to the project was the use of recycled glass rubble in the earthworks which improved the sustainability of the overall project. This idea was initiated by McConnell Dowell and carried out by the team at Page Excavations. The experienced team from Page Excavations were able to collaborate closely with the project engineers and supervisors to find the best outcome for the project.

“There are a lot of things we are proud of about this job,” Daniel said. “The overall look and feel of the project is exceptional and it will make a big difference for the local community.”

For more information contact Page Excavations, PO Box 827, Mount Compass SA 5210, phone 0400 642 602, email dan@pageexcavations.com.au



QUALITY ENGINEERING SOLUTIONS

HDS Australia is a specialist civil engineering and project management consultancy practice. They provide high quality solutions for safe and sustainable public infrastructure with a particular focus on road and wastewater projects.

HDS were appointed by Alliance partner McConnell Dowell to conduct independent design reviews, road safety audits and design certification of the temporary traffic arrangements associated with the Ovingham Level Crossing Removal Project to the North-West of Adelaide's CBD. Their main focus was on maintaining road safety for the public during the construction stages.

“There were three main stages with different temporary road diversions which needed to be considered” explained Daniel Ahrens, Managing Director. “We worked to ensure the safety of traffic flows, minimise crash risks and remove hazards for vulnerable users like cyclists and pedestrians at each stage.”

HDS were able to draw on their extensive experience working on both state and local government projects. Their road safety auditors are pre-qualified by the Department for Infrastructure and Transport and have a deep understanding of South Australian road management.

With offices in South Australia, New South Wales and Victoria, HDS has strong capability in all aspects of road design and transport planning and a particular focus on road safety and heavy vehicles.

First established in Adelaide in 1988, HDS has a long track record of providing outstanding technical consulting services on similar projects with other alliances like the Fleurieu Connections Alliance and Port Wakefield to Port Augusta Alliance and also worked with McConnell Dowell on projects like the O-Bahn City Access.

“The project was very well managed with good outcomes and strong communication between all parties” said Daniel.

“It was a complex challenge to try and maintain high volume traffic flows, pedestrian movements and a cycling Greenway route within a confined site alongside a busy inner-city intersection and we are pleased to have helped deliver such a positive result for the community.”

For more information contact HDS Australia, 277 Magill Road, Trinity Gardens SA 5068, phone 08 8333 3760, email sa@hdsaustralia.com.au, website www.hdsaustralia.com.au



Omada Certifies Robust Signalling Design



At Omada Rail Systems, safety is a priority. Specialising in railway signalling and telecommunications engineering, Omada has been the Independent Design Certifier of the signalling design for the Ovingham Level Crossing Removal Project since September 2021.

The Ovingham level crossing had three railway tracks intersecting with a busy road. When the Torrens Road bridge was built, the boom gates at the crossing were removed. Upgraded signalling was required to authorise trains to move past the now absent road junction.

In collaboration with the Alliance, Omada reviewed signalling design and documentation produced by the design contractor to facilitate the crossing protection equipment removal.

During the safety and compliance review of the various design packages, Omada engaged with client stakeholders and issued a clear and consolidated set of review comments to be addressed by the design contractor. Omada subsequently ensured all comments were satisfactorily addressed and tracked to closure.

Omada's commitment to exemplary safety assurance took their review beyond the standard checks. In addition to high-level reviews, they analysed detailed designs and undertook in-depth calculations to test the validity of design assumptions.

Omada demonstrates a reputable track record as an Independent Design Certifier, providing expert consultation across Australia.



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SUSTAINABLE CONCRETE

Hallett Group is a specialist provider of cement and concrete, quarry products, transport, steel, timber and building materials. Over 40 years they have grown to become one of South Australia's largest construction materials supplier, with a strong customer focus and a reputation for innovation, integrity and business excellence.

For the Ovingham Level Crossing Removal Project Hallett supplied 4,000m³ of their innovative Enviro Construct DIT concrete mix for use in piling, structural and non-structural elements. This unique mix developed by Hallett Concrete uses SCMs (supplementary cementitious materials) to replace up to 50% of the cement in the mix with a blend of flyash and slag, reducing the overall cement content of the concrete while meeting Department for Infrastructure and Transport (DIT) requirements.

"The need for environmentally friendly low-carbon concrete products has been around for many years," said Nigel Waterhouse, Business Development Manager. "However, the use of such products has often been limited by specification requirements, material availability and concrete plant capability."

"Hallett's new range of state-of-the-art low-carbon mixes exceed specification requirements while also providing excellent early strength, set and workability allowing them to be used across the whole project

without delaying the construction schedule. This was the first known time that a 50% low carbon concrete mix was used in a Department for Infrastructure and Transport project."

Hallett Concrete focus on producing new sustainable products and the success of the project, has seen an uptake in specification of low-carbon concrete mixes from many clients. The high performance of the low-carbon mix makes it attractive even for projects without sustainability requirements.

In addition to the Ovingham Level Crossing Removal Project, Hallett Group has supplied most of the major projects completed in South Australia in the last five years including the Darlington Upgrade Project, one of the largest combined quarry and concrete projects ever delivered in South Australia. Hallett strives to remain at the forefront of technology and innovation in construction materials so they can continue to provide real value to their customers.

For more information contact Hallett Group, 126 Churchill Road North, Dry Creek SA 5094, phone 08 8366 7777, website www.hallett.com.au



REPURPOSING VEGETATION

Project Green Group removed, nursed and retransplanted a number of established palm trees situated along the Ovingham Level Crossing Removal Project site. As part of the project, the trees were removed from the area where the new road bridge was constructed across the railway line at Ovingham Railway Station.

This challenging project was situated alongside a busy street with high pedestrian movements. The skilled, trained arborists at Project Green Group were qualified to manage the complex works.

All remaining timber from vegetation clearance works was harvested and reused either by direct donation to local schools or for use in public art, or through Project Green's social enterprise 'Wood for Good' which processed the timber into firewood which was sold with profits distributed to charities.

"Project Green Group is a unique end-to-end full service arboricultural group," explained Steven McKenny, National Business Development Manager.

"We incorporate four interdependent entities that can work individually or together to make a positive difference to the environment.

Project Green is an arboricultural consultancy, Austral Tree Solutions provides specialist tree management and Wood for Good is our social enterprise." Project Green Group are Adelaide-based and expanding into Victoria with new operations in Swan Hill, Shepparton and Mildura.

They service all types of projects including public and private sector works spanning from domestic works to multi-million-dollar projects. They have an extensive plant holding including excavators, tippers and loaders as well as a highly trained arboricultural workforce.

"It was a pleasure to be involved with the Ovingham Level Crossing Removal Project," Steven said. "We've worked with Alliance partner McConnell Dowell before and it is always good to do business with them. This is a great project which will make a big difference for the community and we are proud to have played a part."

For more information contact Project Green Group, 25-27 Ceafield Road, Para Hills SA 5096, phone 1800 994 929, email steve@projectgreen.net.au, website www.projectgreen.com.au



COMMITMENT TO INNOVATION

REMONDIS Australia was engaged by Alliance partner McConnell Dowell to manage waste to support the project in meeting its environmental waste diversion targets on the Ovingham Level Crossing Removal Project. The target recycling rate for this project was a minimum of 90%.

"Our job was to implement strategies that would transform waste into secondary raw materials to create new sources of energy," said Construction Segment Manager, David Muncaster.

The waste management plan encompassed two areas – the office area for organic, general and paper & cardboard waste, and the construction site which had specific bins for concrete, steel, timber and general waste. REMONDIS conducted education sessions for all workers onsite so they could gain an understanding of the different bins and what was recycled in each.

"The dry waste – timber, metals, plastics, cardboard and paper – were taken to an alternative fuel company to be converted into a high calorific and recyclable energy source called Process Engineered Fuel (PEF), a renewable energy substitute for coal and gas in high combustion facilities such as Adelaide Brighton Cement," said David.

All salvaged materials are recycled or recovered. Where possible, inert fractions are further processed for resupply to the civil construction



market. These recovered materials are used in the production of road bases, synthetic sport fields and bike tracks.

"By recovering both the combustible and non-combustible materials found in the dry waste, we recycle or re-use 95% of all incoming materials that would otherwise be sent to landfill," said David. "That's the highest diversion rate possible in Australia."

With over 1,100 employees and 38 business locations in Australia, REMONDIS Australia serves more than 24,000 commercial, industrial and municipal customers and their communities. They provide full service, end-to-end waste collection, treatment, resource recovery and management solutions right across the country.

"We believe we can achieve a more sustainable future in which waste is a resource."

For more information contact REMONDIS Australia, Level 4, 163 O'Riordan Street, Mascot NSW 2020, phone 02 9032 7100, website www.remondis-australia.com.au