



Central Station Main Works

Case Study

1. Overview

Please provide a brief overview of Laing O'Rourke and its operations in Australia, including number of staff/sites and size/configuration of fleet, etc.

Laing O'Rourke is a global engineering enterprise with 50 years of involvement in Australian construction and infrastructure including more than a decade under the Laing O'Rourke banner.

The business is currently delivering some of Australia's most exciting projects across the transport, building construction, defence, airports, mining, civil and social infrastructure sectors and is committed to becoming the recognised leader for innovation and excellence in the construction industry.

Current projects include:

Sydney

- Pacific Highway Upgrade - Woolgoolga to Ballina (RMS)
- University of Sydney Engineering Campus and Susan Wakil Health Building (University of Sydney)
- Parramatta Light Rail HV power supply upgrade (TfNSW)
- Sydenham Station and Junction (Sydney Metro)
- Central Station Main Works (Sydney Metro)
- Easy Access Station Upgrade, Transport Access Project (TfNSW)

Melbourne

- South East Programme Alliance (Level Crossing Removal Authority)

Darwin

- Larrakeyah Redevelopment and HMAS Coonawarra Naval Operations Facilities (Department of Defence)

Perth

- NorthLink WA central section (Main Roads Western Australia)
- Armidale Road upgrade (Main Roads Western Australia)

Adelaide

- Future Submarine Programme Infrastructure Development Project (Australian Naval Infrastructure)

Rockhampton

- Australia-Singapore Military Training Initiative (Department of Defence)

Please outline Laing O'Rourke's role in the Sydney Metro project.

Laing O'Rourke's role on the project is design and construct.

Please provide a summary of the Sydney Metro project, including specific information and key stats/figures particularly relevant to this case study.



The NSW Government awarded the \$955 million contract to Laing O'Rourke Australia Construction Pty Ltd to deliver the new Sydney Metro platforms under Central Station and Central Walk - a new underground pedestrian concourse to help customers get around Sydney's busiest railway station.

Key elements of the project include:

- The excavation and construction of the new underground Sydney Metro platforms at Central beneath platforms 13, 14 and 15
- The construction of Central Walk - a new 19-metre wide underground concourse from Chalmers Street, connecting customers to suburban rail platforms, Sydney Metro platforms, the new light rail and buses
- An upgrade to the northern concourse, with transformed pedestrian thoroughfares and a feature roof
- Installation of new escalators directly to platforms 12 to 23 for the first time.
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2. Safety management

What are the key workplace road safety challenges Laing O'Rourke has to manage in its construction projects?

The key workplace road safety challenges faced on this project are:

- Minimising disruption to pedestrians, cyclists and motorists
- Ensuring access and egress for construction traffic to the arterial network as soon as practicable
- Reducing disruption to buses
- Minimising changes to traffic operation and kerbside access
- Managing construction traffic generated during network peak periods
- Maintaining access to properties and businesses
- Remaining incident and injury free to workers and members of public
- Working collaboratively with other stakeholders and major projects to mitigate traffic and transport impacts.

How are those challenges managed, at a company level and on the ground?

In order to work out how we will manage these challenges we produce a number of site specific management plans and draw upon our company wide Primary Standards (PS), Fatal and Severe Risk (FSR) audits and System Requirements (SR).

Management plans

The management plans used on this project include:

- Construction Traffic Management Plan (CTMP)
- Chain of Responsibility Management Plan (CoR MP)
- Site Logistic Management Plan.

These documents are based on, and developed in alignment with, *Australian Standard AS 1742.3 "Manual of Uniform Traffic Control Devices"* and comply with:

- RMS Traffic Control at Work Sites Manual
- Principal's General Specification (G10-Traffic and Transport Management)
- Construction Traffic Management Framework
- Construction Environmental Management Framework
- Sydney Metro Principal Contractor Health and Safety Standard



- Scope of Works and Technical Criteria - including the Sydney Metro Frequent Heavy Vehicle Standard.

Construction Traffic Management Plan (CTMP)

The CTMP involves the project team planning all vehicle routes to and from site, including the various entry and exit points from the site. The CTMP assesses traffic impacts associated with the construction of the project on local road networks and includes swept path diagrams to show how vehicles will enter and leave the site. The CTMP also provides details of how the impact of construction works can be mitigated or reduced to minimise disruption to residents, businesses, pedestrians, cyclists, local traffic and emergency services.

Chain of Responsibility Management Plan

The Chain of Responsibility (CoR) Management Plan defines the minimum standard that all parties forming part of the supply chain for the Central Station Main works (CSM) project need to achieve in order to ensure compliance with the Heavy Vehicle National Law (HVNL) and Sydney Metro's heavy vehicle safety and compliance requirements. The Plan forms part of the strategy to reduce the risk of serious incident involving a heavy vehicle traveling to or from project sites on the public road network setting out the management arrangements for the Project's transport activities.

Site Logistics Management Plan

The Site Logistics Management Plan explains the processes and procedures in which people, plant and materials will be managed on site. This plan is developed for implementation prior to commencement of site work and is adhered to throughout the project.

The plan ensures that the project meets legislative requirements under the:

- WHS Act & Regulations
- Rail Safety National Law
- Heavy Vehicle National Law.

Heavy vehicle movements are managed through Laing O'Rourke Delivery Management System (DMS) known as Voyage Control. Voyage Control (VC) is an interactive tracking and scheduling platform that is utilised for the scheduling and management of all deliveries associated with the CSM works.

Each applicable subcontractor is required to complete the mandatory mobilisation steps prior to registering to Voyage Control to commence making deliveries to site. These steps include:

- **Vehicle pre-mobilisation** - It is the subcontractor's responsibility to ensure delivery vehicles are compliant for site access before booking to deliver to site; and
- **Driver pre-mobilisation** - Licences, inductions and site-specific training information for all drivers who may be completing deliveries to or from site must be loaded into Pegasus (competency management database).

Details of delivery vehicles and drivers are audited on a regular basis to ensure compliance with the established project procedures.

In order to ensure compliance with CoR legislation with regards to vehicle mass, the CSM project has installed a 22m x 3m four deck above ground steel weighbridge. Every truck and dog leaving the project is required to drive over the weighbridge where a visual display unit identifies each axle weight and the gross weight of the vehicle. If the vehicle is within the maximum regulatory weight, the visual display unit will indicate with green LED lights and the driver obtains a printed ticket, recording the weight of the transaction. In the event of an overload situation, a red LED light will be shown and the driver is required to acknowledge on the computer that the vehicle is overloaded and will not be issued a ticket. In addition, the computer will send an email to Laing O'Rourke advising them of the overload so that the excess material can be removed.

Primary standards

In addition, these management plans are aligned with Laing O'Rourke's Primary Standards (PS) including:

- PS Fitness for work

- PS Traffic Management
- PS Site Establishment and Logistics
- PS Plant and Equipment.

Our PS have been developed to provide a framework for Laing O'Rourke to manage risk as well as create opportunity for innovation. Our PS are designed to eliminate or minimise the risk of fatalities, injuries and events arising from a specific risk while meeting legislative requirements.

Fatal and severe risk audits

As part of this process, we also carry out Fatal and Severe Risks (FSR) audits which focus on high consequence risks. We have developed a set of controls standards that provide clear guidance on how we manage these risks and what critical controls need to be planned for, implemented and monitored.

Examples of our FSR audits include:

- FSR 02 Plant and Equipment
- FSR 15 Traffic Management.

System requirements

Our system requirements (SR) describe the required process for setting up projects and sites for success. These systems ensure Laing O'Rourke is in a position to operate within its intended environment, establish projects and sites correctly for successful delivery and operations with regards to their health and safety risk profile.

Examples of our SR's include:

- SR Planning
- SR Supply Chain Management.

With regards to Sydney Metro, how was the Sydney Metro standard put in place for the construction of the Central Station project?

The Sydney Metro – Frequent Heavy Vehicle Safety Requirements outline the minimum safety technology, equipment and accreditation requirements for all frequent heavy vehicles working on CSM. A frequent heavy vehicle is defined as a vehicle visiting Central Station five or more times over the project duration.

As a project, we have strictly enforced this by ensuring prior to any subcontractor or supplier being able to gain access to CSM, that they are required to complete the mandatory driver and vehicle mobilisation steps.

Upon successful completion of these steps, an inspection number is issued to the vehicle using Laing O'Rourke's Field View system - without the Field View inspection number the vehicle cannot be booked into VC and therefore cannot enter site. If a vehicle arrives without a booking, it is turned away.

How was the standard and your approach explained to your workforce, and how did you ensure it was understood and applied 'on the ground'?

In order to apply this standard to the project, we a number of workshops with our subcontractors and suppliers. These workshops have been designed to ensure that the supply chain fully understood our expectations around compliance and what processes need to be undertaken to upskill to maintain best practice. To further emphasise a culture of compliance, suppliers such as Boral Concrete were invited to display their compliant vehicles on site.

What was your approach in applying the standard to this project and complying with its requirements?

In order to apply this standard to the project, the requirements were written into each scope of works document that went out to tender and once awarded was written into the contract documents. Upon contract award, the subcontractor or supplier would be invited to a pre-kick off meeting where they would be reminded of their commitments and given an opportunity to ask questions about achieving this standard.

The project team is committed to improving safety within the heavy vehicle industry and compliance to Chain of Responsibility (CoR) legislation. This is achieved by eliminating, where reasonably practicable, all CoR related risks by placing focus on:



1. Mass - risks minimised using load plans, payload registers, container weight declarations, booking procedures, regular inspections and dispatch manifests.
2. Dimensions - risk minimised using load plans, booking procedures, over-dimensional permits and route planning.
3. Load restraint - risk minimised using loading and restraint guidance, load safety inspection checklist, equipment pre-start checklists and load restraint training.
4. Fatigue - prevented and monitored using driver's schedules, route planning, journey management plans, work diaries, timesheets, and loading and unloading time's guidance.
5. Speed - prevented and monitored using speed management review checklists, driver schedules and timeslot management, vehicle speed limiters and safe driving toolbox talks.
6. Training - ensuring Laing O'Rourke operations staff complete the online CoR training awareness module.

How did you ensure contractors also met the standards? Was there any difference in your approach for internal workers versus contractors?

Our approach is universal across staff and subcontractors.

And was it only truck drivers who needed to understand and meet the standard or other workers too?

Laing O'Rourke believes that everyone working on the project should understand and be responsible for implementing the standard for it to be effective. As an example, our traffic controllers at the front gate needed to understand how they played a role in CSM being compliant. Our supervisors out in the field also needed to know what to look for and the objectives of what we are trying to achieve and why. As part of this process, all Laing O'Rourke employees undergo mandatory CoR training. The training is part of the company induction and is completed online by watching a series of videos and answering questions.

What was Laing O'Rourke's response when trucks or drivers didn't meet the standard?

Drivers and vehicles that do not meet the minimum requirements or standard are not granted access to the CSM site. When there was a breach with compliance, the subcontractor or supplier is notified of how and why this was a breach. To close out the breach, the subcontractor or supplier creates an action plan to prevent reoccurrence. Lessons learned and positive observations are shared regularly with the project team.

Was there resistance from the internal workforce or contractors or any other barriers to implementation, and how were these overcome?

Contractors have asked for a waiver to exceed the number of visits to site using noncompliant vehicles (Maximum 5). The Project has ruled out issuing waivers to maintain compliance with our policies and provide the subcontractors with the contact details for alternate compliant subcontractors. A database of compliant vehicles has also been shared with our subcontractors and supply chain.

There was also the issue of making sure everyone was aware of the standard. As a result, a lot of time and effort has gone into promoting and increasing awareness of the standard. This was achieved by facilitating a number of forums through which three invited project subcontractors with Metro-compliant vehicles were able to display their vehicles on site and demonstrate how they had achieved compliance to the wider project supply chain, project team and client.

What about at management level?

Senior management has taken a leading role supporting the initiative and assisting with enforcing compliance.

3. Results and lessons

How do you measure if the approach is effective in improving safety, and can you attribute any positive results to use of the standard?

The effectiveness of this approach in enhancing safety can be measured in several ways including:

- Reviewing the number of vehicle movements across the project verses the number of incidents reported



- Using Voyage Control to smooth out traffic flows by restricting the number of vehicle movements at site entry points, reducing the impact of our construction operations on the local road network
- Reviewing weighbridge data to identify any overloaded vehicles prior to them leaving the site to ensure compliance with regulatory mass limits
- Registering any breaches to the HVNL and tracking them to identify negative and positive trends to either individual drivers or subcontractors.

So what are/have been the benefits or advantages of implementing the approach, not only for safety but also, for example, to the bottom line, culture, behaviour, reputation, etc?

The approach adopted has delivered the following benefits:

- **Driver accountability** - Additional driver training has expanded awareness and accountability for managing fatigue and CoR compliance
- **Visibility** - Parts of the new standard are visual and easy to spot compliance (e.g. Side Underrun Protection and Blind Spot Mirrors). This helps with driving compliance as individuals know what to look for and don't need to be a subject matter expert to know if the vehicle is compliant or not
- **Behaviour** - The new standard and its enforcement, helps to improve the site culture i.e. CSM takes their responsibilities seriously and the standards are enforced for all vehicles.

How has the standard on this project compared to other major construction projects you have worked on?

This project demonstrates Laing O'Rourke's commitment to safety compliance and innovation to enhance industry standards. As a result of this approach, this project is a flagship project for new innovations in managing heavy vehicle movements with initiatives such as weighbridge and Voyage Control now setting a new benchmark for industry best practice.

Has the required compliance with the standard created any impediments to project completion?

In order to drive a culture of compliance across the supply chain, at times difficult decisions need to be made. This has included the project team sending a full load of concrete away because the truck was not compliant and the supplier continued to break the rules effectively delaying a planned concrete pour.

Instances like this cause short-term delays but are important to uphold a culture of compliance.

There are also additional costs involved with enhancing and upgrading the safety features and sending the drivers to additional training.

However, this project has demonstrated that compliance with safety standards should not impede completion, when they are planned and funded correctly. Providing a contractor with compliance standards at tender stage provides ample time for the supply chain to understand and implement them.

What have you learned that you can share as key lessons for others considering adopting the standards in their projects, both in terms of the value of the approach and its application to infrastructure projects as well as in terms of on-the-ground implementation?

The project team has learned the following key lessons in adopting and implementing safety standards:

- **Be resolute:** If you are going to improve things and drive the standard you need to have an all or nothing approach. Project teams must be prepared to enforce the standard i.e. send vehicles away which can affect short-term productivity
- **Start early: Project teams must** ensure their supply chains and subcontractors know what you are trying to achieve and why. The more notice you give them, the better placed they are to react
- **Leadership is essential:** To change anything requires strong leadership. Whoever is leading the change needs to be passionate about it, take ownership and have the power to influence
- **Look for opportunities for innovation:** Project teams should continue to look for new ways to lift the bar on safety standards using new technologies and creative input from their own teams.