

# Top of the chain:

Leadership in safety standards  
cascades for benefit of all

**Organisation:** Laing O'Rourke

**Project:** Central Station Main Works

**Heavy vehicle movements:**

- Daily: 80+
- Weekly: 400+
- Project life: 4 years



## Case Study:

# All in this together:

## How leadership at the top can drive safety for all

**Organisation:** Laing O'Rourke

**Project:** Central Station Main Works

**No. of drivers:** 80+ per month

**Staff:** 140+



LAING O'ROURKE

### Key outcomes

- o Mandating safety standards as part of project contracts is an effective way to increase safety performance across the supply chain without impeding project delivery
- o Being upfront about safety expectations early in the tendering process allows organisations to plan how to comply and factor any additional costs into bids
- o Clear communication is critical in ensuring all parties understand expectations and the consequences of not meeting expected standards
- o Leadership is required: you must be prepared to turn trucks away or not engage suppliers if they do not meet project standards
- o Benefits of insisting on specific safety standards in major projects flow to the community by reducing interactions with heavy vehicles in urban areas, particularly with pedestrians and other road users
- o Projects taking this approach are becoming more common, with examples in Australia and overseas demonstrating safety benefits to organisations involved and the community

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### Synopsis

Mandating safety standards as part of project contracts can increase safety performance across the supply chain without impeding project delivery. It is also an opportunity for organisations to build a reputation as safety leaders while making people in their industry, and their community, safer.



## Introduction

Sydney Metro is a major project in every sense: in construction jobs created, quality of life improvements for the community and, unfortunately, potential disruption to the city's daily life while it's being built.

It is estimated, for example, one million tonnes of construction materials will be transported to various sites over the project, and more than 500,000 truck movements will be required to move 5.8 million tonnes of spoil from inner-urban construction sites over the life of the Sydney Metro City & Southwest project.

With construction planned until 2024 and work spanning populous urban areas such as the Sydney CBD and Inner West, the construction transport task creates significant challenges in managing increased risks to road users.

However, in doing so effectively, the project also has the potential to profoundly influence road and workplace safety in Australia, serving as a practical example of how setting out minimum safety standards as part of a project can maximise safety across the supply chain.

From the outset, Sydney Metro was upfront in the safety standards successful project bidders – and in turn their subcontractors and suppliers – had to meet.

This case study focuses specifically on the approach taken by Laing O'Rourke Australia Construction Pty Ltd, as the 'Principal Contractor' selected to construct the Central Station Metro component of Sydney Metro, to meet mandated project safety standards and ensure its entire supply chain also complied.

In particular, it considers how expectations were communicated, how they were achieved and whether, based on this practical example, such a whole-of-supply chain approach is workable in Australia.

## Company overview

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.

Laing O'Rourke employees more than 12,000 employees and operates in two major geographic hubs: Europe and Australia. European operations span Abu Dhabi, Canada, Dubai and the United Kingdom. Australian operations cover Australia, Hong Kong, New Zealand and South East Asia. The company operates in building construction, infrastructure construction, investment and development, modular manufacturing, engineering expertise and support services.

The organisation is 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.

In addition to the Central Station Metro and Sydenham Station and Junction projects as part of Sydney Metro, Laing O'Rourke is also upgrading railway stations for Transport for NSW and the Woolgoolga to Ballina section of the Pacific Highway.

Elsewhere, projects include:

- **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 and Armadale Road upgrade
- **Adelaide:** Future Submarine Programme Infrastructure Development Project
- **Rockhampton:** Australia-Singapore Military Training Initiative, Department of Defence.

## The 'flow-down' effect

Sydney Metro recognised there would be significant increase in heavy vehicle movements across metropolitan Sydney to support the construction freight task.

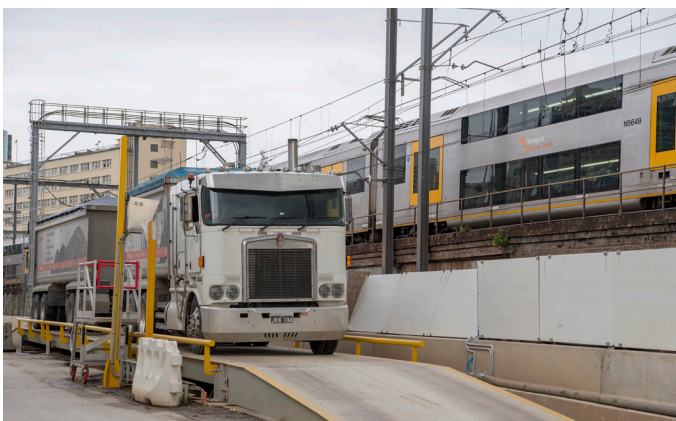
So the authority made it an aim to reduce public safety risks as much as possible, leveraging global best-practice approaches to managing work-related road safety associated with infrastructure projects in urban areas. In fact, the standard Sydney Metro contract aligns closely with Transport for London's Construction Logistics and Community Safety (CLOCS) program, which mandated safety standards on the multi-billion dollar Crossrail project in London.

Sydney Metro's measures to reduce risk were designed around the [Safe System](#) approach to road safety and focused on minimising the risk of heavy vehicles in Sydney's urban environments, particularly to vulnerable road users (pedestrians and cyclists).

Project safety requirements were outlined up-front to prospective tenderers, including compliance with Chain of Responsibility, work-related road safety, vehicle safety standards and driver induction training (organisations tendering for the project already met many of the requirements).

The safety requirements were essentially 'flow-down' clauses, with Principal Contractors required to ensure compliance of its supply chain with vehicle safety technology and equipment standards.

Standards included, for example, blind spot mirrors and underrun protection on vehicles, driver familiarisation and Chain of Responsibility education, and measures to reduce the number of trucks on the road (see Rules of Engagement breakout box).



## Rules of engagement

Safety measures to reduce risk across the Sydney Metro project are based on the [Safe System](#) approach to road safety. This aims to create a safer road transport system overall through Safer Vehicles (improving vehicle standards operating on the project), Safer Road Users (increasing driver education and raising public road safety awareness), and Safer Roads (route planning in construction traffic management, and monitoring and enforcing haulage operations).

Selected examples of on-the-ground safety measures are presented below.

### **Minimum vehicle safety technologies and equipment**

Designed to reduce risks to other road users from common crash types in urban road environments. Heavy vehicles required nearside and forward blind spot mirrors or equivalent systems such as cameras to increase the driver's vision and reduce blind spots; side underrun protection systems designed to reduce the risk of a pedestrian or cyclist from being crushed or run-over by the rear axle wheels of a heavy vehicle; and signage and markings to warn road users of vehicle blind spots and overall enhanced visibility.

### **Accreditation**

Demonstrate proactive management of duties under the Heavy Vehicle National Law, including fleet maintenance, mass management and fatigue, through independent accreditation to national road transport accreditation schemes, such as NHVAS and TruckSafe.

### **Driver education**

Familiarisation training for heavy vehicle drivers to become accustomed with Sydney CBD conditions, focusing on road hazard awareness, low-risk driving behaviours and sharing the road safely in urban areas.

### **Chain of Responsibility**

Develop and implement a Chain of Responsibility (CoR) Management Plan to mitigate risks to public, and complete accredited CoR training package providing an overview of legal requirements for managing road transport operations.

### **Safer road environment**

Measures to minimise risks associated with construction project traffic and create a safer road environment for public road users, including higher-productivity vehicles, consolidating deliveries, and marshalling trucks to minimise the number of trucks on the road.

## The Laing O'Rourke approach

Laing O'Rourke was chosen as the Principal Contractor to design and construct new platforms and a new 19m wide underground pedestrian concourse at Central Station as well as install new escalators and upgrade the northern concourse.

As a longstanding and reputable organisation, Laing O'Rourke is no stranger to addressing and minimising workplace and road safety risks. As a construction company, risk is inherent in its operations.

Laing O'Rourke is committed to improving safety within the heavy vehicle industry and complying with Chain of Responsibility legislation. This is achieved by eliminating, where reasonably practicable, CoR-related risks by focusing on:

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

## Risk, requirements and planning

As with any project of this size, the Central Station Metro project created several workplace and road safety challenges that Laing O'Rourke needed to manage, including:

- Minimising disruption to pedestrians, cyclists and motorists and changes to traffic operation and kerbside access
- Ensuring access and egress for construction traffic to the arterial network as soon as possible
- Managing construction traffic generated during network peak periods and maintaining access to properties and businesses

- Remaining incident and injury free to workers and members of public, and
- Working collaboratively with other stakeholders and major projects to mitigate traffic and transport impacts, including reducing disruption to buses.

To work out how to [manage these challenges](#), Laing O'Rourke put together site specific management plans, including plans to manage construction traffic and site logistics, as well a Chain of Responsibility (CoR) Management Plan.

The CoR plan, for example, set out management arrangements for the project's transport activities and minimum standards all parties in the project supply chain needed to achieve to comply with both Sydney Metro's heavy vehicle safety and compliance requirements and industry legislation. It was a key 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.

The Site Logistic Management Plan details how people, plant and materials are managed on site. Developed for implementation before site work and adhered to throughout the project, the site logistic plan ensures the project meets its workplace health and safety and other legislative requirements.

Project management plans also draw on, and are aligned to, existing company safety policies and procedures, such as Laing O'Rourke's Primary Standards, which provide a framework to eliminate or minimise the risk of fatalities, injuries and events arising from a specific risk while meeting legislative requirements. Its Primary Standards cover [fitness for work](#) and [plant and equipment](#) as well as [traffic management](#) and [site logistics](#).

Sydney Metro's requirements were written into each scope of works document that went out to tender and, once awarded, then written into contract documents.

Once the contract was awarded, Laing O'Rourke's subcontractor or supplier was invited to a pre-kick off meeting where they would be reminded of their commitments and given an opportunity to ask questions about achieving the required standard.

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## On-the-ground compliance

### Heavy vehicle movements

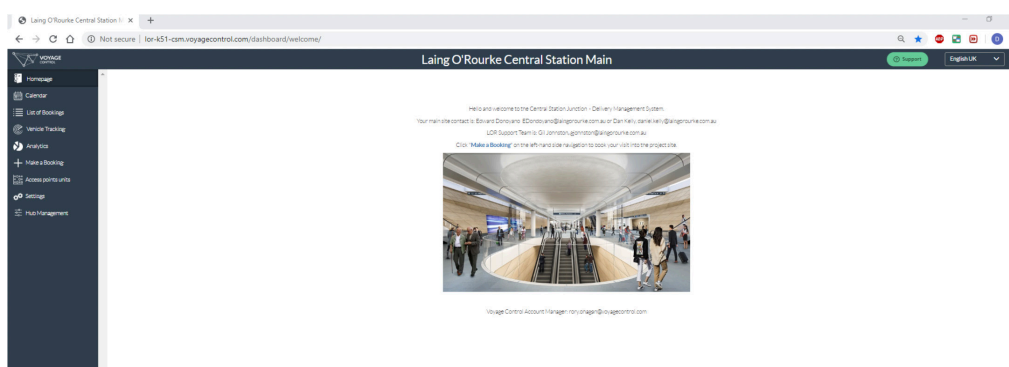
All project heavy vehicle movements are managed through Voyage Control, Laing O'Rourke's Delivery Management System.

Voyage Control (pictured) is an interactive tracking and scheduling platform that is used to schedule and manage all deliveries associated with the Central Station Metro project.

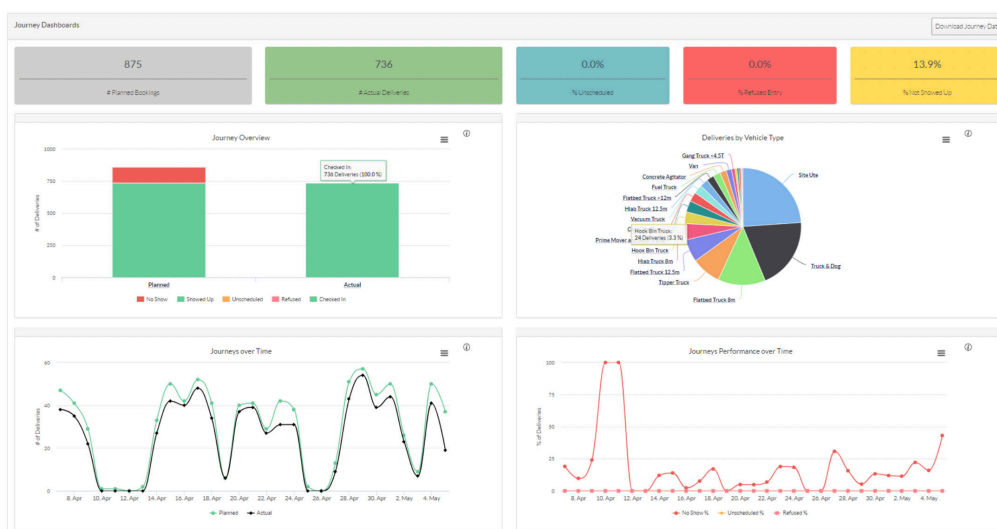
Before subcontractors can register for the Voyage Control system and begin making deliveries to site, they must complete the mandatory 'mobilisation steps'. These steps include ensuring delivery vehicles are compliant for site access before booking to deliver to site, and that licences, inductions and site-specific training information for all drivers who may be delivering to or from site are loaded into the company's competency management database.

Details of delivery vehicles and drivers are regularly checked to ensure compliance.

*All project heavy vehicle movements are managed through Voyage Control...an interactive tracking and scheduling platform that is used to schedule and manage all deliveries associated with the project.*



Voyage Control Central Station Main Works site entrance



Voyage Control journey analytics

### Heavy vehicle safety requirements

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

Laing O'Rourke has strictly enforced this by ensuring every subcontractor or supplier completes the mandatory driver and vehicle mobilisation steps for gaining access to the site. Through a vehicle pre-mobilisation inspection, Laing O'Rourke's plant manager inspects each heavy vehicle, during the project's pre-mobilisation stage, before authorising the vehicle to work on the project.

Once these steps are completed, 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 Voyage Control and therefore cannot enter site. If a vehicle arrives without a booking, it is turned away.

Similarly, drivers and vehicles who don't meet the minimum requirements or standards are simply not granted access to the site.

When there is a breach with compliance, the subcontractor or supplier is notified of how and why it was a breach, and the subcontractor or supplier creates an action plan to prevent a repeat. Lessons learned and positive observations are shared regularly with the project team.

### Mass compliance

The Central Station Metro project has installed a 22m x 3m four-deck above-ground steel weighbridge to ensure compliance with the regulatory mass limits under the Heavy Vehicle National Law.

Every truck and dog leaving the project must 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 compliance via green LED lights and the driver obtains a printed ticket, recording the weight of the transaction.

In the event of an overload, 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 it of the overload so that the excess material can be removed. The heavy vehicle then turns around and is unloaded and the process repeats, ensuring only legally loaded trucks leave the site.

### Measuring success

While the Central Station Metro project is still underway, early indications are still useful in measuring the value of benefits of this supply chain approach to safety.

Laing O'Rourke believes there are several measures that can be used to determine the effectiveness of this approach in enhancing safety, including:

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

The approach has already delivered numerous safety benefits, ranging from individual driver education and behaviour to improving the safety culture on-site:

- **Driver accountability:** Additional driver training has expanded awareness and accountability for managing fatigue and CoR compliance
- **Visibility:** Parts of the new standard are visual, making it easy to spot compliance, such as side underrun protection and blind spot mirrors. This contributes to 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, that is, safety responsibilities are taken seriously and the standards are enforced for all vehicles.

While each project is unique, Laing O'Rourke has also applied many of the standards required for the Central Station Metro work to other Australian projects.

## Making it work

### Compliance culture

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.

### Additional costs

There are additional costs involved with enhancing and upgrading safety features and sending 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.

### Coordinated approach

All Laing O'Rourke employees underwent mandatory CoR training because the organisation believes that for the safety standard approach to be effective, everyone working on the project needs to understand how their role contributes and be responsible for implementing it.

Traffic controllers at the front gate, for example, needed to understand the critical role they played in the project complying.

Supervisors in the field needed to know what to look for and understand what the company was trying to achieve and why.

The CoR training is part of company induction and is completed online by watching a series of videos and answering questions.

### Spreading the word

It was also imperative everyone involved was aware of the safety standard. This meant time and effort was invested in communicating expectations and promoting and increasing awareness of the standard.

Therefore communication became a key element of the project, to ensure Principal Contractors understood expectations so they could pass them on.

Sydney Metro, for example, conducted briefing sessions with Principal Contractors, in particular with operational project engineers and logistics and safety teams, in the early stages of the project being awarded.

In turn, Laing O'Rourke held several workshops with its subcontractors and suppliers. The workshops were designed to ensure that the supply chain fully understood the company's expectations around compliance and what processes needed to be undertaken to upskill to maintain best practice.

In addition, the company facilitated a number of forums, inviting major project subcontractors with project-compliant vehicles to display their vehicles on site and demonstrate how they had achieved compliance to the wider project supply chain, project team and clients. Such demonstrations further emphasised a culture of compliance.

## Lessons learned

The Laing O'Rourke project team has learned several key lessons in adopting and implementing safety standards. At the top of the list are:

- **Be resolute:** If you are going to improve safety performance and drive the standard, you need to have an all or nothing approach. Project teams must be prepared to enforce the standard at all times including sending vehicles away, which can affect short-term productivity.
- **Start early:** Project teams must ensure their supply chains and subcontractors know what they are trying to achieve and why. The more advanced warning that is provided, the better placed they will be 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.

This project demonstrates Laing O'Rourke's commitment to safety compliance and innovation to enhance industry standards. As a result of this approach, the Central Station Metro is a flagship project for new innovations to manage the safety risks associated with construction heavy vehicle movements on large infrastructure projects, such as:

- driving improvements to minimum heavy vehicle safety standards
- monitoring construction vehicle movements and deliveries using a Delivery Management System, and
- ensuring accurate regulatory mass compliance through the operation of an on-site temporary weighbridge.

Together, these steps are now setting a new benchmark for industry best practice.