



OUR CITY | YOUR BUSINESS
Thought Leadership Series

FREIGHT AND THE CITY

Rethink. Reroute. Reshape

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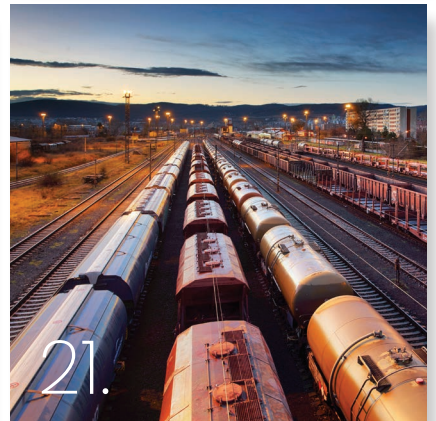
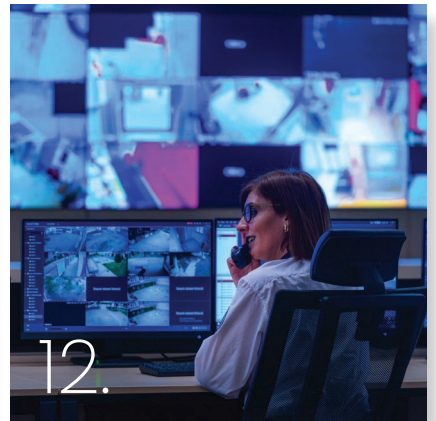
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Foreword

Our world is changing dramatically. COVID has agitated, accelerated, and accentuated change from how we live, where and when we work, to how we interact and transact.

Likewise, change in our climate is pushing society and the economy into new waters, driving individuals, businesses, and governments to engage, function and operate differently.

In addition to these changes, new technologies and capabilities are enabling new possibilities. With the winds of change the door has been flung open making now the time to converge and consolidate these challenges and capabilities.

It is both the time and the place for Sydney to get ahead of the curve so as a city, community and as citizens we are not simply reacting, we are proactively creating an economy and a society we want.

As we have suffered and shifted, isolated and innovated, masked up and measured, the impact and consequences of the pandemic on people has been front and centre of discussions and decisions. Yet as night follows day, freight follows people and we must also reflect, rebalance, and realign the underlying systems of the movement of goods with what we want for the future of our city and its citizens.

From the food that fills the shelves in the local supermarket, the delivery of a piece of furniture to your door or the supply of component parts to be embedded in production lines on the factory floor, freight has adapted to the new present and it too must anticipate and aspire to a new future.

Pre Covid forecasts indicated that the volume of freight carried in Australia between 2018 and 2040 was to grow by over 35 per cent, an increase of some 270 billion tonnes [1]. In NSW the largest growth in freight volumes will occur in Greater Sydney, which will see freight increase by almost 50 per cent by 2036 [2]. These numbers are being reassessed as international and national borders open and close, population growth slows and shifts location, and e-commerce booms. The Covid disruption to supply chains and enhanced demand for efficiency is driving some new emerging trends.

Governments together with the private sector have made significant investment and commitment to our national freight capacity and capability, including intermodal centres, dedicated rail lines linking sea and air, bridges and motorways, and a new airport. Equally commendable is the investment in the collection and coordination of data through initiatives such as the National Freight Data Hub and the NSW Freight Hub.

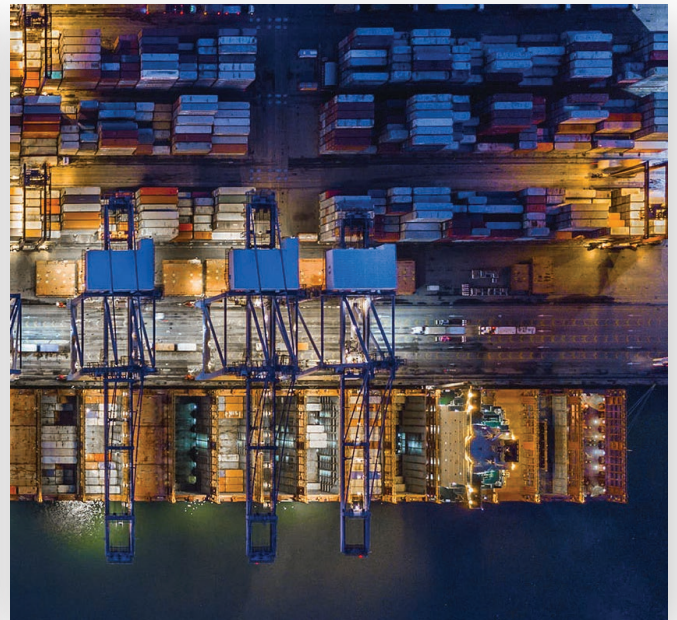
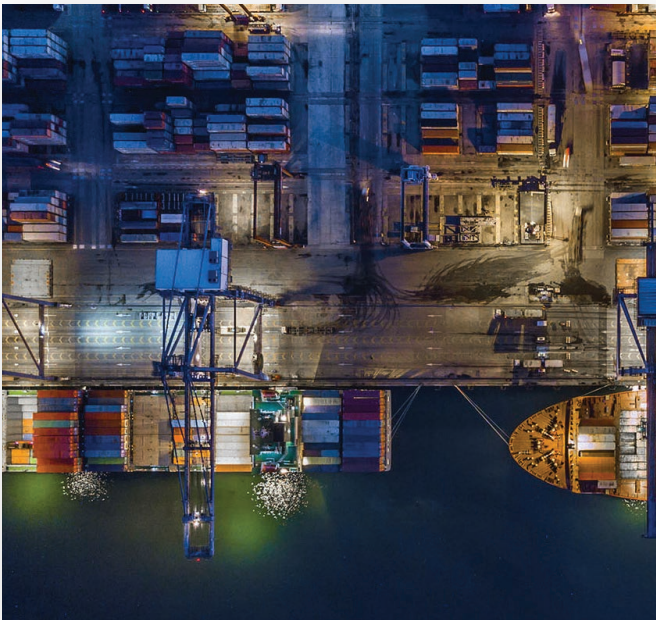


These enable improved performance benchmarking and reporting, bringing about greater visibility and viability of the national freight network. Successful freight is not only about infrastructure. Success relies on end-to-end systems and processes that co-ordinate, integrate and anticipate a complex series of inter-related parts and actions to deliver timely meetings and hand-over of goods. All this must be achieved in the context of a changing city the size, scale, and sophistication of Sydney.

This Paper centres on certainty. It takes a holistic and systems approach to create more certainty to the critical 'meetings' that are inherent in the movement of goods in, out, and across our city. It takes a strategic, customer-centric and fresh perspective to the old problem of ensuring the transportation of goods is efficient and effective to serve people in our City.

Now more than ever, as Sydney and the nation recovers from the pandemic, economic productivity and prosperity matters. This means freight matters. Drawing on the insights of industry leaders at the front line and under the expert guidance of Dr Neil Temperley, this Paper rethinks, reroutes and reshapes the freight system to challenge the current paradigm and provide a blueprint for the future.

Executive Summary



This Paper takes a new perspective on the challenges and opportunities of the movement of goods in and around the large urban metropolis, Sydney. The approach and recommendations, or Big Moves, apply equally to cities across Australia as well as at a regional, State, and national level to facilitate an efficient and people orientated freight system.

In many instances our traditional approach has limited our efforts to fix freight. Freight has not always been connected to the ebb and flow of people mobility, creating a conflict and tension rather than synergy and a more holistic system.

Similarly, system fragmentation has been recognised as a challenge, yet the traditional approach has been to break down the whole into manageable parts or problems to be solved separately resulting in non-interoperable solutions and sometimes creating new problems.

In essence, we currently have valuable solutions to improve the individual components of the freight supply chain - we do not have a blueprint for the integrated mobility of people and goods in a 'well-run city'.

We need to reach for the latest tools of data and technology to not simply address the component problems, but to enhance the system outcomes and performance, including the user experience.

Key Take Outs

Time to Rethink

The time is right for a change. Driven by new imperatives and opportunities we can leverage the enhanced license for social participation and experimentation and the capabilities and tools that technology provides. We must challenge the traditional approach of reducing complexity to component problems and develop a freight system that integrates mobility for people and the city.

Blueprint

Co-create a blueprint for the future we want - a blueprint that outlines the requirements for data, policy, and regulation. One that takes a holistic approach to processes, operations and supports a 'level playing field' for vendors, is driven by excellence in customer experience and is aligned with the aspirations and goals of the city.

No Surprises

By leveraging technology citizens can be the driver, be informed and forewarned and able to respond in a way knowing how freight will impact them. In this way citizens, business and government can make informed trade-offs as to the benefits and impact of the movement of goods. They should not be taken by surprise.

Collaborate and Experiment

With increasing unpredictability in our world, the future depends on collaboration and experimentation. Failing fast and agility are key techniques to navigate and work with uncertainty to bring about enhanced end-to-end performance of the freight - city ecosystem.

Fix the Obvious

Address the obvious anomalies in regulations that are no longer fit for purpose and smooth out the regulatory inconsistencies that exist as freight moves across State boundaries.

Leadership

Impactful changes to freight in the city will take bold 'joined up' leadership. Leadership from the freight industry and urban development, local government and State and national government, all must have an equal eye and energy on creating a city that embeds freight as a driver of productivity and prosperity.



IMPACT OF COVID 19

Increased efficiency - increasing demand, coupled with reduced congestion arising from COVID-19 shutdowns, has increased the efficiency of freight movements.

If we want our cities to run well, both the transport and the 'parking networks' have to function effectively. Experience in Australia and overseas tells us that these shared resources require active management and cooperation of customers in order to work at peak productivity and efficiency.

Significant reduction in air freight capacity - 74 per cent reduction in Regular Public Transport (RPT) domestic flights and an 83 per cent reduction in RPT international flights from July 2019 to July 2020.

Shipping recovery - international shipping has recovered quickly after experiencing a modest, initial slowdown with some Australian ports now exceeding 2019 trade volumes and achieving record monthly throughputs.

eCommerce growth - online shopping continues to increase, with parcel volumes up 80 per cent compared to last year.

Source: National Freight and Supply Chain Strategy Annual Report 2019 - 2020



Introduction

We all have to share the same city. Every person, every vehicle and every piece of freight are in a sense a customer of Sydney's transport network. The decisions each customer makes have an impact on the experience of others.

If we want Sydney to run well, both transport and the invisible meetings between goods and transportation have to function effectively. Experience in Australia and overseas tells us that these shared resources require active management and cooperation of customers in order to work at peak productivity and efficiency.

While our transport networks are shared resources, our use of land is not. Too often, freight competes with people for vital land. Every sea, rail, and airport requires a certain amount of surrounding land for warehousing, aggregation and distribution of goods.

Particularly over long distances, rail can be a cost-effective means to move bulk and containerised goods without impacting road congestion and safety. But rail requires dedicated land corridors and land for terminals either end where freight is transferred to trucks.

To be effective, well-run cities require proper land-use planning and management in addition to proper transport network and management. These decisions are at the centre of an efficient freight system.

Rethinking the Future

It is time for a genuine rethink where we challenge traditional models, mindsets, and assumptions. Starting with understanding the customers and stakeholders and seeking to provide excellence in customer experience and outcomes. This rethinking is primarily a design process – beginning with a fundamental vision for how a well-run integrated system for the mobility of people and goods could (and should) work.

Government Role

Before trying to determine what policy or regulatory framework this might require, Government plays a key role in leading the discussion on what is the best that can be achieved in our city and eventually, what trade-offs might be involved for stakeholders. Since the movement of freight and of people are intertwined, the discussion must encompass a vision for a variety of stakeholder 'customers'. This design discussion should focus on concepts for future excellence in customer experience and city outcomes. It must begin with 'what could be achieved' before moving on to the challenges involved. This approach is a radical departure from traditional approaches of problem identification, followed by a search for solutions.

The world continues to change dramatically. It is driven by: new imperatives; new challenges such as pandemics; and has new enabling tools of data, analytics and technology. Government must play a critical role to rethink Sydney's freight future.

The Customer Role

When it comes to running our cities, our system managers do not always work directly with customers. These operators and planners do not have clear line of sight as to what customers are doing, more importantly - what customers intend to do.

We need to encourage our customers and stakeholders to participate and contribute to the 'well-run city', by unlocking this potential and participation, the system will operate very differently.

Reasons to Rethink Freight

Freight is an integral, inescapable part of every citizen's life and of every business. If our freight system runs well, we all get the goods we need when we want them. If it is run badly, we all pay the cost in higher-priced goods, and suffer anxiety and frustration when goods aren't on shelves as expected or when deliveries simply don't arrive on time.

Business freight is no different, delivery drivers are frustrated by congestion and delays; not finding parking or queuing, or the receiver not being ready or present for the unloading or hand-over.

An examination of city 'operations' tells us that freight — and freight-related transport — takes more, longer, convoluted journeys than often necessary. For example, containerised freight may travel west across the city to be unpacked then transferred to trucks which double-back east for delivery to a store. Trucks are emptier than they need be and many of the containers we see on our roads are empty — being shuffled to and from empty container storage parks.

Regularly freight competes with people on our road and rail networks. Freight trains wait as they cross the passenger rail network. Large trucks are an unnerving but necessary addition to our roads that are often forced to travel when congestion is worst. Freight ports, hubs, and warehouses are industrial sites that compete with residential development for available land.

We all pay the cost, and we miss the benefits of an integrated mobility system that runs well. These missed opportunities and costs impact the city and citizens economically, environmentally, as well result in social impact such as higher stress levels.

The following are some of the traditional problems a design approach focused on customer experience and city goals will recognise and address.

Uncertainty

Uncertainty is the nemesis of mobility. Uncertainty in relation to travel and arrival times, parking

availability as well as uncertainty as to whether a delivery will arrive as planned, or whether the receiver will be present and ready for handover all must be eliminated. A vision and blueprint for a well run city must address this uncertainty head on.

Customer Experience

Much of mobility customer frustration and anxiety is tied to uncertainty exacerbating unnecessary waiting and delays or long travel times. A freight blueprint begins with excellence in customer experience which includes minimising frustration and anxiety.

Market Failure to Self Improve

Due to the competitive, multi-party interactive nature of mobility and logistics, ideas that require collaboration to succeed often fail. There is not an incentive for any one player to implement a change that benefits the industry. This means improvements don't evolve easily and instead they have to be



Challenging Freight Mindsets



Customer Experience
Design and Excellence



Designs not Tools



Intangibles not
Tangibles



Engage Don't Observe



Don't Blindly Copy



Researchers into design methodologies warn us of the dangers of our models that hold us back from seeing challenges in new ways [6]. Rethinking freight and logistics, and indeed mobility of people and freight in a city, means we must challenge our own mindsets.

Key Mindset Challenges:

Customer Experience Design and Excellence

Design Thinking methodologies [7] seek to prevent the tendencies of practitioners to think in fixed ways and jump to solutions. They help us to see problems in a new light, to put the user or the customer first, and understand the root causes of customers' stated problems. While this is helpful, Design Thinking methodologies are largely problem-focused, and there is a better way.

Customer Experience Design begins with exploring what an excellent customer experience would look like [8]. Combined with other city goals such as sustainability and productivity, excellence in customer experience establishes the ideal, and the vision from which the design and requirements flow.

Designs not Tools

Today, practitioners find themselves presented with an exciting toolkit that enables new possibilities. These tools include: data; open data; Internet of Things sensors; analytics; machine learning (artificial intelligence); block chain; digital twins; booking systems; parking apps; game-changing new business models like Uber; mobile devices; and better, safer, environmentally friendly trains and trucks.

Read any modern city strategy document and you will find much of the information is about the tools and how they are revolutionising how cities operate. For many future city practitioners, their future thinking begins — and too often ends — with the tools. Tools should not rule our mindsets.

Further, advances in data and technology are not the only tools enabling change. Policy and regulation likewise play a critical role.

So, if we want to rethink freight and logistics we need to put tools into the right perspective.

Intangibles not Tangibles

When we focus on freight the natural tendency is to focus on the physicality of moving goods. These are the ‘tangibles’: planes, trucks, trains, ships; roads, corridors, road networks; docks, ports, hubs, terminals; distribution centres, warehouses and shopping centres. These critical components are by no means future proof; so as a city grows, these tangibles need to also grow and adapt with changes planned well in advance.

For many practitioners, future thinking about freight often begins and ends with better planning of the physical infrastructure. However, if we want to rethink freight we must move beyond the tendency to only focus on the physicality of moving goods and address the intangibles that can be improved. Given the physical limitations of a city, we must minimise the frustration, anxiety, guesswork, uncertainty and inefficiencies to achieve excellent customer-focused experiences and outcomes. Often, this means we must move our attention to the processes and information that enables excellence. These are the neglected intangibles. They are largely future-proof.

Engage Don’t Observe

Historically, traffic management centres in cities discretely observe what customers are doing but don’t engage directly with them. Rather than ask, “Where are you going today?” They use sensors to observe what vehicles are doing now and, if they are relatively high tech, based on past data they use analytics to predict how congestion will evolve.

The new tools of mobile devices mean that we can now engage directly with customers and move from reactive observation to proactively managed mobility systems.

Don’t Blindly Copy

A common risk management strategy is simply to copy ‘best practice’ of others. For a city as complex and sophisticated as Sydney, while there are lessons from other cities, these need to be adapted and anchored in the specific context, construct and culture of our city.

Ideas in Action

Driver App

Here is an idea for an App for truck drivers. This example illustrates how ideas can be nurtured in the context of a freight blueprint that is centred on customer experience and design methodology.



Idea

The concept is for an App for truck drivers to notify mobility system managers of travel plans (Origin and Destination), and to provide live journey progress via tracking. The driver will indicate the truck type, freight type and quantity enabling an enhanced understanding of performance variables.

Drivers accumulate points for contributing data for all journeys made by truck or car. Points can be traded for prizes and gifts, reduced fees, or preferred parking etc.

The Vision

The vision to improve economic sustainability (productivity) and environmental sustainability (reduced emissions) by creating the 'well run city' by managing truck journeys and congestion. Our vision encompasses an excellent customer experience for 'customers' of the system, including truck drivers and those receiving the goods.

The Design Process

1. For the purpose of this example, let's pretend we have been through several rounds of a co-design process with all customer segments. We have heeded the advice of System Thinking methodologies and examined mobility as a whole and not treated freight and people separately.
2. We know the core needs and fears of different customer types. We know they are willing to participate and contribute data if the right incentives are in place. We know the required regulations and technologies the government may have to facilitate to enable a level playing field. Our design requires a distributed National Mobility Data Hub that enables controlled access to key data by service providers.
3. We imagine we now have a detailed blueprint for a 'Well-Run City' that is broadly acceptable.
4. During our design consultations, we assembled a checklist of problems and needs of customers and stakeholders we use to validate ideas.
5. Our design requirements have specified which data items are most valuable and a priority to target.
6. We know a key problem is that trucking companies are unwilling to share data.
7. Our design co-creation process has told us that we'll get about 10% driver participation. We require an incentive to get drivers involved.

Data Requirements

The design process identified both what data was required and for what purpose and provided insights into making the App data sources future-proof.

Problem Checklist

Problems identified in the design process were used to validate the design - not to drive the thought process. This included ways to innovatively address the reluctance of logistics companies to share data by using driver data as an initial proxy.

Product

A prototype of the Driver App was developed and tested collecting key data on journey times, routes and customer satisfaction providing a feedback loop for improvement on the certainty and efficiency of goods and transportation 'meetings'.

Big Moves



CREATE CUSTOMER CERTAINTY

This is a rethinking process around system design for the mobility of freight and people. We need to focus on the operations and process of the 'well-run city' vision to determine what is required to meet an 'ideal' customers experience for different customer aligned to core city goals.

Success is:

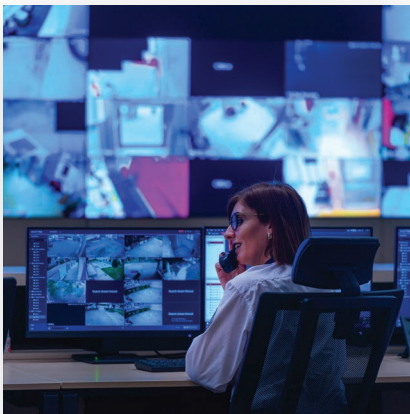
- A co-created vision for customer experience in the 'well-run city, region, nation'.
- A co-created blueprint for the 'well-run city' that include high level requirements for tools including data, policy, and regulation.
- Clear information and informed decisions on the trade-offs with customers and stakeholders.

Actions

- Initiate a Customer Experience Design and Systems Thinking/ Design process with a series of sessions and co-creation workshops.
- Focus on excellence in future mobility customer experience, city goals and the requirements for intangibles in the 'well-run city'.
- Identify customer segments, and map specific customer needs and aspirations.
- Focus on plausible futures, customer core needs and critical city goals of a level playing field, sustainability (economic, environmental, social), reliability, liveability.

Who

Business and government to lead this initiative. Key participants in the futuring process include customer/user experience designers, systems design input and representatives of key customer types.



Our key moves are critical and complimentary.

They are less about calls for large increases in funding and more for people's time and focus. We want stakeholders to 'seize the day' and commit to collaboration around some specific issues. Business and government must be bold and unify to create an integrated mobility system for people and goods.

Our key moves demand challenging models, mindsets, and assumptions about how to apply tools to improve freight. To do this, **we advocate for a design-driven, customer-centric, systems approach to the future we want to create.**



MOVE TWO

KEEP CITIZENS INFORMED AND FOREWARNED

Success is:

We can not prevent citizens challenging freight-related plans and activities in their neighbourhoods. We can keep them well informed and protect them from misinformation through an increase in the visibility and value of freight to the city and citizens.

- There should be no surprises for citizens or stakeholders.
- Ensure citizens are well educated in the issues, reasons and trade-offs.

Actions

- Use a Digital Twin to show current and future freight requirements: land use, rail and truck movements. Keep this as a living plan and reminder to all of freight task, e.g. show Sydney Airport and Port Botany now, and at maximum capacity.
- Use three levels of government as a cross-reference on land usage, e.g. each level can post their version of preferred future land usage. This may provide a cross check and buffer against one level changing direction.
- Prepare best practice clauses for local government to adopt in development applications to mitigate misalignment of expectations. This would include clauses to manage noise, access and land use.

Who

State Government leads collaboration process for all levels of government for a consistent approach and for funding.



Collaboration and Experiment

Government and other stakeholders should collaborate around key technology trials and regulation ‘holidays’.

Success is:

- Experiment with innovations related to noise and curfews: e.g. truck and forklift noise at unloading and loading docks.
- Regular meetings of interest groups or Community of Practice.

Who

Business and government bring together a community of practice of key stakeholders/regulators to experiment and share lessons learned.



BUILD FREIGHT-PEOPLE MOBILITY CULTURE

Drive culture change of mobility innovation and freight thinking by integrating freight into decision making processes of people transport.

Success is:

- Develop people-mobility checklist to apply when making decisions.
- Ensure freight and people needs are fully integrated into transport planning and system design.
- Urban designers, passenger planners, and residential plans devote 10 per cent thought to freight. The freight implications to be incorporated into review of plans.

Actions

Bring together local, state/territory, national government to develop an People-Mobility Action Plan.

Who

Transport and Infrastructure Council leads in local government.

MOVE FOUR

ELIMINATE OBVIOUS ANOMALIES

While we can not design a proper future by simply fixing the anomalies of today, they still have to be dealt with, e.g. curfews based around noise characteristics of aircraft that are no longer used.

Actions

Create a living web page and forum of current anomalies to be addressed. Show status and who is taking the lead on each. Invite comment from citizens and stakeholders. Note that future-proof noise curfews would regulate the actual problem 'permitted noise levels after hours' and not target the historical cause (trucks, planes).

Who

State Government in partnership with business facilitate and invite contributions from stakeholders, and maintain the web page.

MOVE FIVE

MAXIMISE THE VALUE OF TRANSPORT ASSETS

Throughout the pandemic our infrastructure has shown resilience. Now is the time to realise the full value of our transport infrastructure at a city and local level. This includes public transport where there is a possibility that demand for some forms would remain at reduced levels. This creates the opportunity to think differently about using spare capacity to move freight and people together. In addition, there is a need to improve last mile freight logistics in urban areas such as the Sydney CBD. For example, reconfiguration and use of loading zones and wait times as well as use of technology to enhance driver and customer interaction.

Success is:

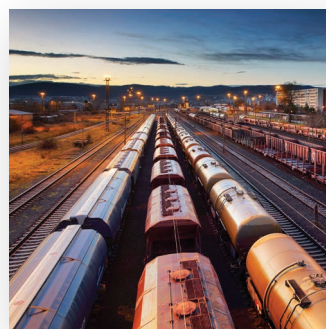
- Holistic planning of people and freight mobility.
- Reduced congestion in urban areas.
- Improved 'last mile' experience for customers.

Actions

Work with transport authorities, such as Transport for NSW and Planning, to identify obstacles to moving freight and people together on public transport infrastructure to identify where there is capacity on the network and consider how it could be used to improve last mile freight logistics. Work with NSW Planning and Local Government to enhance kerbside delivery.

Who

NSW Government and local governments.



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Sydney Business Chamber is the leading voice for business in Sydney. We advocate, influence and deliver policies and outcomes to drive economic growth and create opportunities to invest, work, live and visit our city.

For two hundred years we have worked to advance Sydney as a global, competitive and liveable city, on behalf of our membership including; financial and professional services, construction, health, education, the arts and tourism sectors. Please share this newsletter and [visit us](#) here to find out about becoming a Member or contact us on +61 2 9350 8119.



Dr Neil Temperley worked for research and innovation organisations often working at the interface between invention and real-world application. Neil helped establish and then led the Transport and Logistics Living Lab which was sponsored by National ICT Australia with support from the NSW Government, SAP and Fraunhofer. This was Australia's first Living Lab that brought together industry, research and government to discuss innovation and opportunities for collaboration.

Afterwards Neil worked as a Data61/CSIRO product manager focusing on Smart Cities. He now works as a writer, consultant and educator in future cities, transport and logistics.

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