2. How the freight task is changing

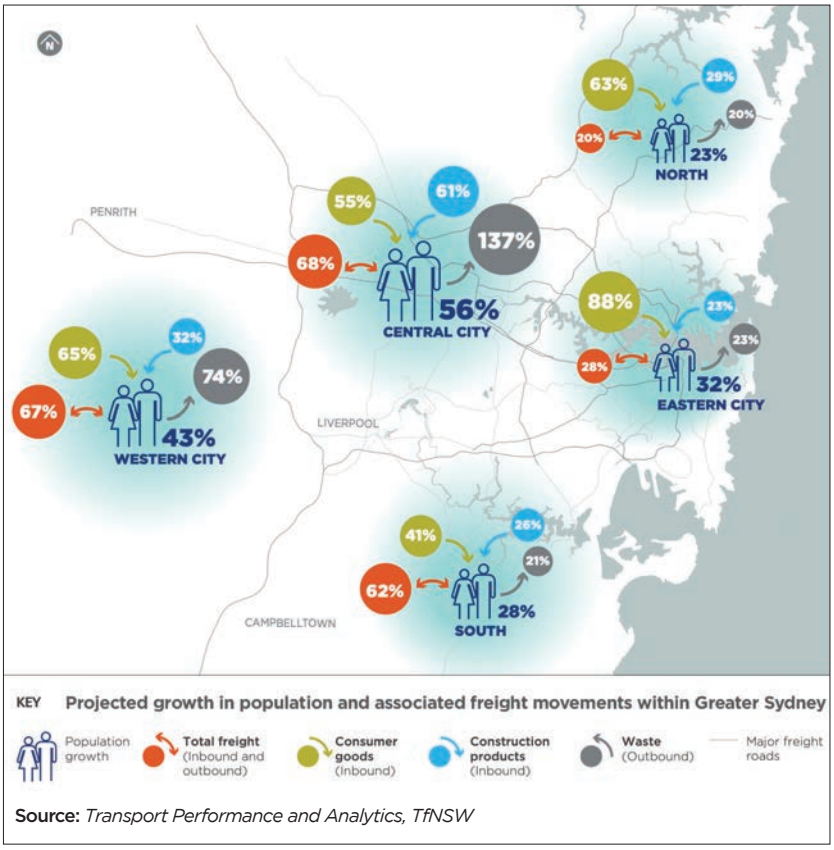
This section looks at how the freight task is growing and changing, and how this relates to current urban planning objectives. It sets out the challenges that urban planners will need to resolve to accommodate the freight task and outlines how the freight industry can respond to the shifting urban environment.

2.1 The increasing freight task

Between 1993 and 2018, the city of Sydney's population grew by 1.3 million people. Now sitting at 4.7 million, the city is expected to welcome another 1.3 million residents by 2036 (Greater Sydney Commission [GSC] 2018, p.27). While the effects of the COViD pandemic on population growth are not yet fully understood, based on this estimate, Sydney's freight task is forecast to increase by approximately 50 per cent by 2036.

Over the last decade, freight forecasts for the years ahead have been regularly revised upwards. The World Economic Forum predicted a 78 per cent increase in last mile deliveries between 2020 and 2030 (World Economic Forum [WEF] 2020, p.6), with the main drivers being increasing urbanisation, growth in eCommerce and an increase in "same day" and "instant" deliveries. This is likely to result in 36 per cent more delivery vehicles on the road.

It is not just that the freight task is growing – the service expectations associated with changing consumer demand and behaviour and the evolving nature of the built environment are also contributing to an increasingly complex logistics environment.



Source: *Transport Performance and Analytics, TfNSW*

Figure 3 Greater Sydney changes in population and freight demand, 2018 to 2036 (TfNSW 2018b, p.27)

2.2 Why the freight task is growing

The major trends shaping the freight task are outlined in the following sections.

2.2.1 Transformation in CBDs

Sydney, for example, is undergoing a major infrastructure renewal. New developments in urban centres are designed as places for people. Increasingly, urban planners are designing places around active transport and mass transport solutions such as light rail and metro. But for the businesses thriving in these new developments, getting the deliveries and services they need can be a challenge.

2.2.2 Population growth

By 2056, NSW will be home to 12 million people, an increase of four million from 2019. As the population increases, so will the freight task however the biggest challenges are likely to occur in last mile deliveries to urban centres and high-density residential areas. To cater for these densely packed, high-demand areas, a new approach to freight may be necessary.

2.2.3 Land rezoning and urban encroachment

As population growth generates demand for housing, former inner city industrial and logistics lands are being rezoned to accommodate high-density housing. These new residential areas will generate a new freight and servicing task, putting more vehicles – travelling greater distances from the relocated freight depots – on the road.

Pitt Street, Sydney: Growth in demand has increased the number of freight vehicles (in particular vans) on city streets.

2.2.4 Creating vibrant places

Many factors go into making cities attractive to residents and visitors. A key attraction of many cities is the wide variety of goods and services they offer. Unlike less urbanised areas, cities can cater to a wide range of consumer tastes. To ensure cities can maintain the diversity of choices people want, planners, developers and logicians must consider how to facilitate the expanded freight task.

2.2.5 Changing consumer preferences

People are increasingly doing more of their shopping online. It is now possible to buy goods from around the world in a 24-hour economy. While buying online is easy, purchases need to be delivered, and people often expect them immediately. This not only increases the freight task – it also makes the task more complex, as on-demand goods and services are delivered on an *ad hoc* basis rather than consolidated into set delivery schedules.

Delivery patterns could also change as highly urbanised centres develop a 24 hour economy, generating demand outside of traditional business hours. Currently, the peak time for deliveries into the Sydney CBD is between 9am and 12pm, but the demands generated by online shopping and the 24-hour economy could change this.

2.2.6 Increased environmental awareness

As concerns about the environment grow, city-dwellers are becoming more sensitive to air and noise pollution. At present, the growing number of freight deliveries in urban centres contributes to raising CO2 emission levels. Increasingly, consumers prefer environmentally friendly alternatives to petrol–powered freight vehicles. However, it is worth noting that introducing quieter electric vehicles would not solve Sydney's congestion problems.

2.2.7 Short-term impacts of construction

Major construction projects add to congestion by creating additional supply chains and increasing the freight task in urban areas. Large trucks deliver construction materials and equipment, while light commercial vehicles bring smaller deliveries and tradespeople. The time-sensitive nature of these deliveries can compel drivers to allow extra time for travelling into the city. If they arrive at the construction site early, drivers may queue along the street or circle the block waiting for their turn to unload. This can cause significant congestion, especially in narrow city streets.

In addition, work zones are often established around construction sites. These can take up kerbside space, potentially for years, which other delivery and service vehicles previously relied upon.

2.2.8 Increasing imports

Australia's manufacturing industry has shrunk in recent decades, while import volume has increased. This has caused an increase in supply chain activity branching out from trade gateways.

In Sydney, the major trade gateways are within the inner metropolitan area. However, the industrial zones that once supported freight and logistics facilities are being moved further away from these gateways to make room for residential developments. As a result, truck drivers are travelling greater distances between gateways, logistics facilities and final destinations, increasing congestion as they spend more time on the road.

2.2.9 Changing transport trends – connected and automated vehicles

The emergence of connected and automated vehicles, in particular driverless vehicles, presents urban planners with several challenges, including managing the movements of zero-occupancy vehicles and providing space to pick up and drop off passengers and goods. However, the current consensus is that the total demand for parking spaces (on- and off-street) in the Sydney CBD will be lower once driverless vehicles are in common use. If so, one of the key challenges facing urban planners may be partially solved.

CASE STUDY

New York steps up efforts to manage its massive freight task

Whatever the impact on roadways, the public loves internet shopping.

"We've entered an entirely new way of buying goods and services, but our infrastructure is only adapting incrementally," said Sarah Kaufman, Associate Director of the Rudin Center for Transportation Policy and Management of New York University. "We need to completely rethink how we use our streets if we want to maintain our current shopping and delivery habits." (Haag & Hu 2019)

New York is battling to manage its freight task, with an estimated 1.5 million online orders being delivered to its residents each day. What is more, the city's freight task is expected to grow 40 per cent by 2050.

The city faces significant traffic congestion on key gateway routes. An ever-increasing number of delivery vehicles has slowed average speeds by 23 per cent in the last five years. At the same time, record levels of illegal parking are causing problems kerbside, while the practice of sorting parcels on the footpath is irritating pedestrians.

The city's authorities are taking steps to manage these challenges. In 2019, they increased the number of kerbside loading zones to accommodate parcel deliveries. They also incentivised night-time loading and are developing a scheme mandating that deliveries must be received overnight in city-owned buildings. However, authorities are aware that this scheme will not work for all tenants. A trial is also taking place to promote the use of e-cargo bikes.

The city is investing US$100 million in developing better water and rail line terminals to encourage the use of alternative modes of transport. For their part, private sector stakeholders are trying to locate warehouses as close to their customers as possible to reduce their dependence on trucks and vans in the city centre.

"It became apparent that if New York City is going to be a competitive city in the world economy, it's going to need logistics fulfilment centres as close to the consumer as possible," said Dov Hertz of DH Property Holdings, a real estate development company with plans for three last mile warehouses in Brooklyn. (Haag & Hu 2019)

2.3 Movement and Place

TfNSW is not just focused on planning transport assets and services: a key emphasis is on how these assets and services will work to support successful cities. The Movement and Place Continuum provides a tool to manage the network in a way that supports safe, efficient and reliable journeys for people and freight while enhancing the liveability and amenity of places (TfNSW 2018, p.17). It is important to recognise, however, that places for people will still generate a freight and servicing task, and often a significant one.

The key focus of the Toolkit is how to manage these freight and service vehicle movements to leverage liveability and amenity outcomes on parts of the transport network that are focussed on place functions.

It is easy to imagine the large vehicles on main roads moving big quantities of freight as efficiently as possible between trade gateways and warehouses to end customers. However, these large vehicles are unsuitable for navigating narrow city streets and making multiple deliveries in dense urban centres. As a result, lots of small vehicles leave warehouses on the urban fringe to make last mile deliveries to customers in the city, contributing to congestion on motorways and movement corridors.

Ideally the most efficient transport approach would be large trucks moving freight to the edge of CBDs and then transhipping goods to smaller vehicles to complete the last mile delivery to the customers in the urban centre. Organising this transhipment is not easy hence this approach is not often taken currently. However, changing market dynamics mean this transhipment is becoming an efficient and commercially sustainable method.

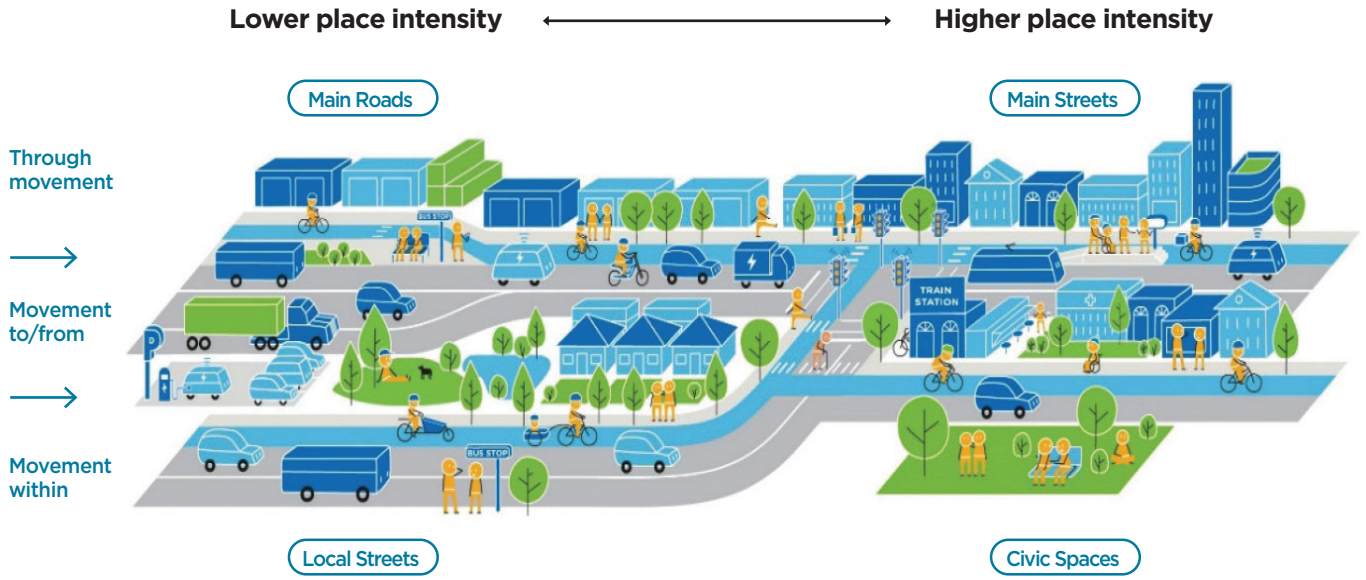


Figure 4 TfNSW's Movement and Place Continuum

2.4 Understanding the economic, social and environmental externalities generated in the last mile

Different stakeholders have different sets of objectives when they plan and manage the freight task. Logistics operators focus on generating revenue, minimising costs and fulfilling customers' service expectations. According to some estimates, this last mile currently accounts for over 50 per cent of the overall supply chain and logistics costs of delivering goods into a city (Spector 2020).

State and local governments focus on developing and implementing policy and planning reforms to improve the broader economic performance and development of cities. This means fulfilling social and environmental objectives to make localities attractive from safety, health and liveability perspectives. These objectives influence the day-to-day management and the long-term planning and development of cities.

As well as creating places for people and improving amenity, state and local governments need to manage the transport network so that it meets the needs of all users, including passengers and those moving freight. Government's priorities in managing the transport network change according to the time of day and the day of the week. For example:

- on weekday AM and PM peaks, priorities focus on public transport and moving commuters
- in the evening, attention may switch to supporting a city's 24 hour economy by providing more space for public transport, active transport, on demand transport, parking or activation to support local business activity, depending on the location
- between AM and PM peaks, the focus is on utilising kerbside space to support business activity
- overnight, the priority in residential and commercial areas may be cleaning, maintenance and waste removal. Some areas, particularly residential, have noise restrictions that can limit overnight delivery or servicing activity.

While the broader social, economic and environmental objectives of government and the commercial objectives of the private sector may not always align, congestion has a detrimental effect on both. As such, both sets of stakeholders have an interest in managing it effectively.

2.5 Freight task growth case studies

CASE STUDY

Cosmopolitan urban environments and consumer choice drives an increasing freight task

On one side of a street in the Sydney CBD, there are 230 different types of bread for sale from 35 different suppliers, displayed in 21 different shops. Every day, the street sees 80 bread deliveries, most of which occur in time for breakfast.

The selection of bread on this street is just one example of the wide range of choices modern cities provide. The same is true of any other product category: copy paper, types of cleaning products, noodles or craft beer, for example. But the choice and diversity on which global, cosmopolitan cities thrive lead to a substantial growth in the freight task.

The diverse range of products available to consumers are sold by an equally diverse range of businesses. According to the Australian Bureau of Statistics (ABS), the City of Sydney had 71,841 registered businesses in 2019, a 14.7 per cent increase since 2015 (ABS 2020; ABS 2018).

CASE STUDY

Previously unseen levels of construction activity and traffic

In recent years, Sydney has benefited from significant levels of public and private sector investment. This has spurred unprecedented construction activity in the Sydney CBD, as well as other major urban centres such as Parramatta and Macquarie Park.

This construction activity has generated a substantial transport task, with large commercial vehicles bringing materials to sites and smaller commercial vehicles ferrying tradespeople. For instance, the construction of the International Convention Centre Sydney at Darling Harbour generated over 16,000 concrete truck movements. Similarly, the AMP tower at Circular Quay required more than 900 trucks to deliver scaffolding to the site. The same number will be required to remove the scaffolding.

View of construction activity at Parramatta Square in 2019