6. Planning and managing off-street freight and servicing activity

This section provides planners, developers, building managers and other stakeholders with the tools they need to effectively manage off-street freight and logistics activity. The approaches outlined here can apply both to existing and planned loading docks.

6.1 What is the challenge?

Urban planning authorities typically require new developments to provide adequate loading dock space to accommodate the freight and servicing tasks they will generate. These requirements for self-sufficiency are generally set out in DCPs for urban centres.

Consider

The kerbside is part of a road and a public road space. It cannot be reserved or guaranteed for one particular use or user. Today's loading zones may be designated differently next year – they may be required as traffic lanes, for public transport or a number of other uses other than parking or loading.

Self-sufficient developments are buildings or precincts capable of accommodating the freight and servicing tasks they generate without needing to use kerbside parking. By building self-sufficiency into a building's or precinct's design, developers can minimise their impact on the surrounding environment, leading to better place and amenity outcomes.

Architects and developers design most buildings to have a lifespan of 50 years or more. Their designs assume that the facilities a building has when it is completed will be sufficient to service it over future decades. If facilities are insufficient when a building is first completed, the problem is only likely to intensify in future years. For these reasons, architects and developers need to provide facilities that will be suitable for the lifetime of a development, not just for when it is completed.

When developers do not build self-sufficiency into their proposals, their developments will likely cause congestion in surrounding areas, as freight and servicing vehicles will need to rely on and compete for kerbside loading zones. It is not sustainable, however, for new developments to rely on kerbside parking: this approach is likely to compromise placemaking objectives, and road authorities cannot guarantee the availability of kerb space for servicing a building.

Development Control Plans, Development Approvals and Traffic Impact Assessments that support them typically provide sound trip generation data for car and pedestrian movements, and account for parking needs and bicycle use. It is important that developers and approving authorities account for the non-discretionary freight and servicing task when designing new developments.

Consider

Poor loading dock design can force freight and servicing vehicles to rely on kerbside parking adding to congestion and detracting from the amenity of an area. A key objective of the Toolkit is to assist planning authorities, developers and consultants to plan off-street freight facilities and deliver better place outcomes.

6.2 Developing off-street loading docks

Local councils can pave the way for a more efficient transport task and improved place outcomes by setting out comprehensive loading dock requirements for new developments in DCPs. Developers can ensure the amenity of a building or precinct by meeting these requirements.

Although most large buildings will operate for 50 years or more, the cities, landscapes, equipment, work methods and access agreements surrounding them can change over much shorter periods.

Figure 15 compares delivery access and traffic in the Sydney CBD in 1965 and 2020. As might be expected, the city has made significant advances in traffic solutions since 1965.

Figure 15 Screenshot from a Department of Main Roads video showing a delivery vehicle reversing into the dock of the Anthony Horden & Sons department store in Sydney in 1965 (DMR 1965); a delivery vehicle accessing a loading dock in George Street, Sydney in 2020

CASE STUDY

"Suicide of a city: story of Sydney's traffic" (Department of Main Roads film)

In 1965, the then Department of Main Roads released a film exploring some of the causes of traffic congestion facing the CBD at the time. Many of the freight and servicing challenges identified in the film still exist today:

"The main cause of this congestion appears to be the number of commercial vehicles using the streets ... These commercial vehicles are using not only loading zones but are double-parked at various places. These vehicles cannot be classed as through traffic as they are delivering or collecting goods in the heart of the city ... Again, how many of the buildings in the city have provided proper loading facilities? That is, docks that allow trucks to drive in, turn around inside the building and drive out."

(DMR 1965)

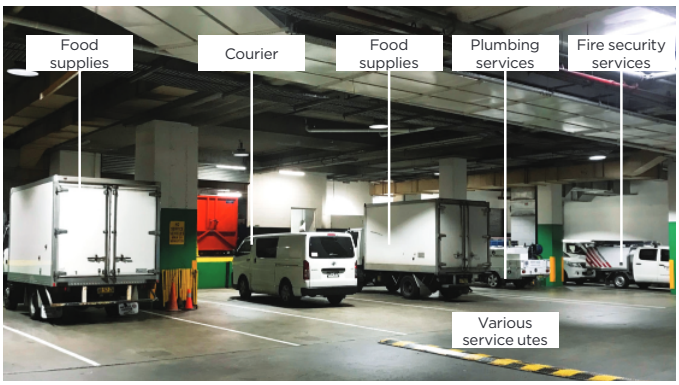
6.3 Freight profiles for different land uses

Every building generates its own freight and servicing task. A variety of commercial vehicle types are used to fulfil these tasks throughout the day, forming distinct patterns of activity. The first step to planning a better loading dock is to understand these patterns – the typical number and type of daily movements to and from a given building or precinct.

6.3.1 Profile of a typical commercial building in the Sydney CBD

Today, a large commercial building measuring 50,000m^2 and containing multiple tenants is likely to generate 130–180 commercial vehicle movements a day. Its typical freight and servicing activity will include:

- postal deliveries
- courier deliveries and collections
- stationery deliveries
- equipment deliveries and collections
- routine and emergency maintenance services
- office fit-out services
- food and beverage deliveries
- deliveries to co-located retail spaces
- eCommerce deliveries
- flower deliveries
- different types of waste collection
- removalist services.



The World Square loading dock in the Sydney CBD at 11:30am on a weekday morning

6.3.2 Profile of a typical high-density residential building in inner Sydney

With the growth of eCommerce, more people moving to the inner city and fewer residents owning cars, the freight task generated by urban residential developments is likely to continue growing. This task includes:

- grocery deliveries
- courier deliveries
- food deliveries
- maintenance activity
- renovation services
- bulky item deliveries and removals (for example, furniture and white goods)
- removalist services
- different types of waste collection
- commercial deliveries where ground floor retail is included.

Planners of residential developments face a particular challenge: unlike tenants in commercial buildings, the decisions residential tenants make about the deliveries and services they need are uncoordinated and often unpredictable. For example, a 400-unit development is likely to see at least 400 individuals making separate decisions every day about what will be delivered to the building.

6.3.3 Profile of a typical large hotel

Deliveries to large hotels are likely to be consolidated and coordinated. Typically, activity will include:

- linen collections and deliveries
- food and drink deliveries
- courier activity
- routine and emergency maintenance services
- different types of waste collection.

6.3.4 Mixed-use developments

The freight and servicing profile of a mixed-use development that includes commercial, residential and hotel tenants will involve elements of all three profiles.

While the transport task will peak at different times of a day in a mixed-use development, some overlaps and conflicts will occur.

6.4 Logistics solutions to loading dock constraints

Ideally, planners and developers will design self-sufficient buildings and precincts capable of accommodating their own freight and servicing tasks. An optimum loading dock design will allow access for HRVs, which in an urban centre such as the CBD, allows for the most efficient transport movements.

As smaller vehicles carry fewer goods, docks that can only receive smaller vehicles may end up generating more trips into the CBD for the same number of deliveries. The **TfNSW Guide to Traffic Impact Assessment** recommends that at least 50 per cent, and in some cases 100 per cent, of spaces in a dock should be able to accommodate larger trucks. Such a provision would ensure more efficient delivery of goods. A larger, better configured dock allows transport operators to use the most efficient vehicles at their disposal.

However, there are many of examples of docks that do not have sufficient capacity or that can only accommodate smaller vehicles. Expanding or reconfiguring these existing loading docks is not always feasible, as it is typically a high-cost solution. Where they are unable to be expanded, these constrained docks can force freight and servicing operators to rely on kerbside loading zones, the provision of which is not guaranteed. Reliance on an unpredictable shared kerbside resource can lead to poor service and delivery reliability and create hidden costs for customers. In the worst case, it could lower a building's rent, drive away tenants, or necessitate disruptive upgrades to improve access.

This section outlines various solutions building managers can use in this case, to help mitigate the impacts of constrained loading docks without relying on kerbside loading zones.

The solutions outlined in the following **Section 6.5** fall into four categories: Retime, Remode, Reroute, Reduce (the 4Rs). Further description is provided in **Figure 16**.

Retime	Shift freight and servicing activities outside peak times to create opportunities for greater efficiency.
Remode	Use modes of transport that are more efficient than trucks for CBD movements, where feasible.
Reroute	Avoid using the CBD for through traffic, where feasible. Be aware of alternatives that can improve efficiency.
Reduce	Consolidate deliveries, improve vehicle utilisation, reduce trip numbers, procure sustainably and develop buildings' delivery and servicing plans.

Figure 16 Finding solutions: the 4Rs approach to last mile freight management

6.5 Logistics management strategies

Where sufficient dock space cannot be provided, building managers may need to design and implement management strategies to accommodate their freight and servicing task. This section identifies some of these solutions, but it is not an exhaustive list.

Deliveries such as milk are often made outside of business opening hours

	Impact						
	Relative cost to implement	Low			Medium		High
Extended hours of operations	$						
Scheduling/booking systems	$$						
Smart locker system	$$						
Loading dock receiving personnel	$$$						
Preferred logistics partner/sublet space	$						
Freight consolidation – building	$$						
Freight consolidation – multiple buildings	$$$						
Group procurement	$$						
Revised loading dock design	$$$$						
Building partnership	$$						
Precinct approach	$$$						

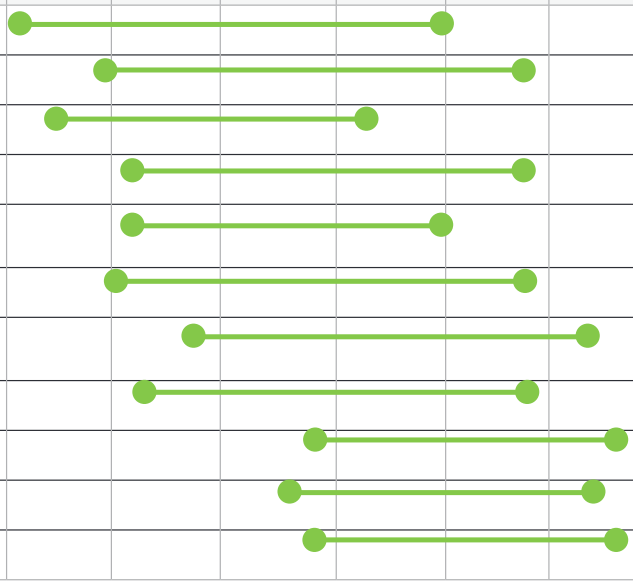


Figure 17 Freight and servicing management strategies to improve loading dock capacity

6.5.1 Providing alternative loading dock space

Alternative parking spaces such as off-site car parks are one option to accommodate vehicles with long dwell times. Alternatives to standard loading dock spaces can be utilised to park smaller vehicles where:

- the height of the vehicle allows it
- the items being delivered into the building are easy to handle and transport
- there is a dedicated courier bay to facilitate quick deliveries or parcel handover to a concierge.

These alternative spaces may also require the cooperation of property owners and building managers, which can be complicated to secure. In addition, it is not always feasible for larger vehicles with bulky deliveries to use alternative spaces which may be located far from the destination building's loading dock. Where alternative parking spaces are used, it is typically only a short-term solution.

6.5.2 Shared dock space

Building managers can make agreements within a local area for sharing parking facilities. Ultimately, with this approach less parking is required and the local environment is improved as a result.

Schemes such as this depend on some buildings with surplus capacity being willing to share. Some shared dock schemes have emerged in Sydney where there is at least some partial common ownership across buildings in the same vicinity.

CASE STUDY **Ginza scheme, Tokyo**

The Ginza dock-sharing scheme was developed to combat drivers' use of illegal on-street parking for loading and unloading. Owners of buildings that are part of the scheme support it by contributing to a fund for improving local transport provisions. The scheme also provides additional capacity for multi-tenanted buildings.

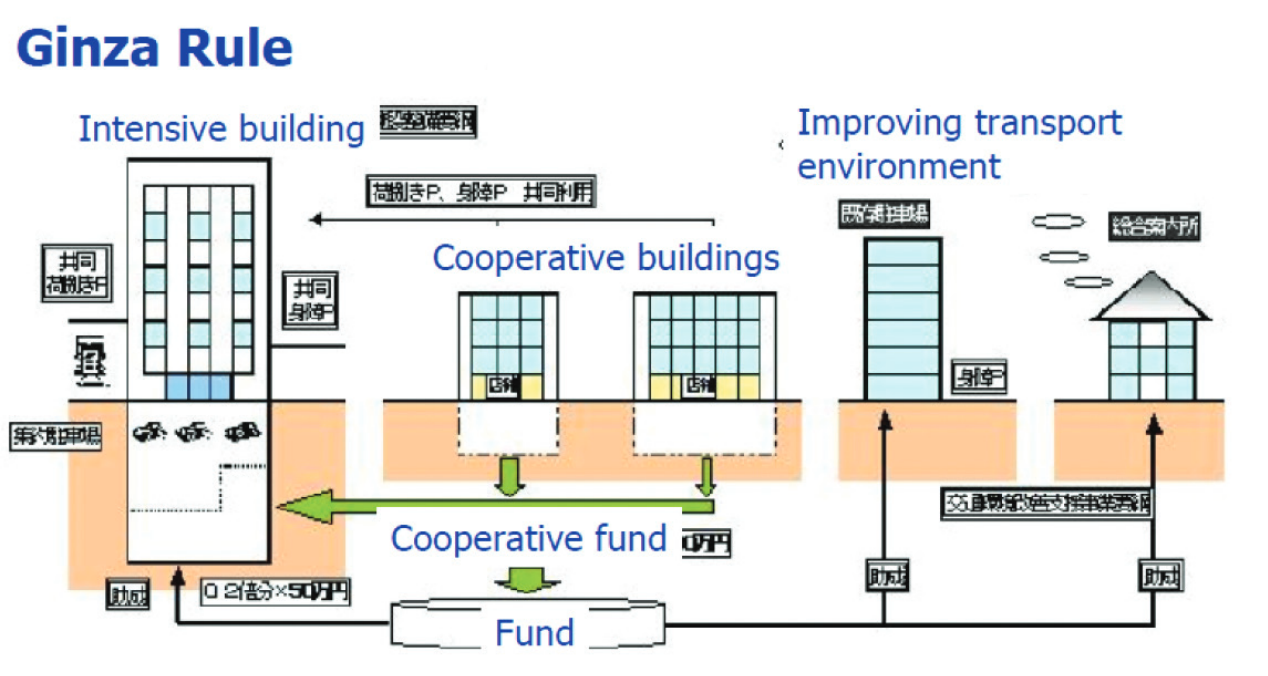


Figure 18 A shared parking scheme in Ginza, Tokyo (Matsumoto 2009)

Docks shared between several buildings are most commonly found in precinct developments, usually where a development is owned by one corporation or conglomerate. Other shared docks would need to rely on a body corporate (and potentially a local authority) to take a leading role in negotiations between two or more buildings.

6.5.3 Extended operating hours

For the most part, managed loading docks around the Sydney CBD have restricted operating hours. However, managed loading docks with 24-hour access give suppliers an opportunity to avoid congestion and inefficiency by moving their delivery and servicing movements to out of peak periods. Building managers can also schedule non-critical building services and fit-out works to occur outside business hours, reassigning the longest dwelling vehicles to non-peak periods.

By retiming deliveries and service movements into underutilised periods, the demand placed on loading dock facilities and surrounding networks during business hours is alleviated.

Facilitating access and allowing suppliers to make overnight deliveries can reduce daytime dock demand and ease broader traffic and congestion on the network. While businesses will generally need to pay their employees a higher rate of pay for working a night-time shift to make deliveries, this cost is likely to be offset by shorter delivery completion times.

Not all deliveries can occur out of hours, however. Even in a 24-hour loading dock, activity is still likely to peak in the morning.

CASE STUDY

Shred-it – overnight servicing activity

Freight operations in the CBD during peak daytime hours can be especially challenging and inefficient for operators of large vehicles, who cannot always easily access loading dock spaces and must sometimes rely on kerbside loading zones instead. The task is particularly difficult if the vehicle is delivering or collecting bulky items that are cumbersome to move over long distances.

TfNSW's former 12 Castlereagh Street office (now demolished) faced this problem when the secure document disposal service, Shred-It, was collecting wastepaper bins – each bin could weigh upwards of 100kg. To assist Shred-it's operations, TfNSW provided its staff with overnight access. This allowed Shred-it's drivers to reduce the time they spent looking for a loading zone and accessing the building's lifts, boosting their overall productivity (TfNSW 2016).

6.5.4 Scheduling and booking

Several loading docks around the Sydney CBD now require all suppliers and receivers to book their deliveries using the dock's booking system. These systems enable dock managers to schedule deliveries based on the space available, and to avoid the congestion and inefficiency that arises when peak demand exceeds dock capacity.

A booking system also lets building managers designate particular periods when they would prefer not to receive any deliveries, or to restrict deliveries to off-peak hours.

A number of market providers are offering advanced scheduling software for loading docks. These systems allocate unique barcodes or pin numbers to each appointment, which drivers validate at security gates to gain access to the loading dock.

Scheduled deliveries to retailers at Macquarie Centre

CASE STUDY

Loading Dock booking systems

Westfield Sydney was an early adopter of a loading dock booking system. Before the system's 2010 implementation, the congested dock caused delivery and servicing delays as well as safety risks. These problems would spill over into King Street, worsening traffic congestion in the surrounding area.

Following the implementation:

- average vehicle dwell time dropped from 44 to 25 minutes
- congestion in the dock has been eliminated and King Street congestion has eased
- demand is no longer concentrated in peak periods but distributed more evenly across the day.

(Sanders 2018, p.23)

6.5.5 Loading dock personnel

Managed logistics approaches can make loading docks more efficient, reduce the dwell time of delivery vehicles and unlock additional capacity during peak periods.

One option is to employ additional loading dock staff or provide a freight concierge service to receive deliveries for all tenants. These personnel can either store goods for collection by tenants or deliver goods directly to the tenants throughout the building.

This approach substantially reduces dwell time for delivery vehicles and improves peak hour throughput. Reducing a loading dock's average dwell time from 20 minutes to 15 minutes equates to a 33 per cent increase in capacity. However, this also requires space to be allocated for storage so that deliveries can be received and managed reliably and securely. In addition, building staff need to take responsibility for deliveries until they reach the customer.

This approach is often used in securely managed buildings where delivery drivers are not permitted access beyond the dock. It represents a high standard of service and logistics management for building tenants, sometimes referred to as a 'white glove' service.

6.5.6 Smart locker system

With a smart locker system, drivers can deposit multiple deliveries into dedicated onsite lockers, public off-site lockers or other secure spaces. Customers are then informed of their delivery and provided with the instructions they need to collect it, which they can generally do at any time that is convenient for them. Today, this approach is most commonly targeted at eCommerce consumers. It is significantly less common for deliveries to businesses, although businesses can provide keys to at least part of their building when they have a trusted relationship with a logistics provider or supplier.

Lockers can improve vehicle turnaround within loading docks as multiple deliveries can be made to a single locker bank rather than to multiple customers. Lockers can also enable secure out of hours deliveries by removing the need for a customer to be present to receive the goods, which is one of the key barriers to overnight servicing.

6.5.7 Building and office policies on personal deliveries

Some commercial buildings ban workers from receiving personal eCommerce deliveries. This measure is typically adopted due to concerns about the reception desk becoming an overloaded storage point for peoples' personal deliveries rather than loading dock constraints.

Banning individuals from receiving personal eCommerce deliveries at their office altogether may not alleviate pressure on the dock, as couriers making these deliveries may well have other items to deliver to that building anyway.

6.5.8 Appointing preferred logistics partners

One approach to improving loading dock efficiency is to appoint a specialist third-party logistics provider (3PL) to manage deliveries into the building. 3PLs can employ a wide range of measures to make the dock function more efficiently, depending on the size of the dock and the nature of the freight and servicing task at the building. They might, for example, consolidate all deliveries to the building in a logistics facility outside of the CBD. From there, the consolidated deliveries can be moved more efficiently using one vehicle (instead of many) to the loading dock, reducing overall vehicle movements and reducing pressure on the dock.

Whichever solution a 3PL adopts, their expertise could help a building manager to reduce traffic, reduce dwell time and increase throughput in the dock.

6.5.9 Group or coordinated procurement

Building managers can limit the number of deliveries to their docks by limiting the number of suppliers tenants use or coordinating delivery times.

A number of building managers, organisations and neighbourhoods are exploring group procurement solutions to reduce vehicle movements to their docks. Coordination can occur between tenants in individual buildings, or between tenants in several buildings in a precinct who share the same owner.

Group procurement reduces the likelihood of different suppliers – and different vehicles – providing the same product or service to neighbouring tenants. Coordinating procurement can significantly reduce the number of movements to loading docks. Well-coordinated approaches can also reduce costs through participants' bulk purchasing power and efficiencies for the supplier.

For waste in particular, it is common to incorporate a coordinated procurement solution into the early design of a building's loading dock operations. **Section 8.3** highlights examples of precinct approaches that have resulted in less vehicle movements and savings for participating businesses.

CASE STUDY

A tale of two buildings

Two 12-storey buildings accommodated multiple teams within the same organisation. In building A, the various teams cooperate to order stationery on the same weekday. In building B, seven teams order individually.

In both buildings, the personnel managing the stationery order kept the virtual shopping basket open for several days before submitting it. The items being bought could therefore not be considered as urgent. However, the terms of procurement stipulated that the orders be fulfilled the next working day after they were submitted.

In building A, one stationery delivery was made per week. In building B, three were made each week.

CASE STUDY

London Boroughs Consolidation Centre scheme

In 2012, the London Boroughs of Camden, Enfield and Waltham Forest agreed to trial a new method of managing and coordinating deliveries to council addresses using a consolidation facility. The trial commenced in 2014 for a period of nine months using a facility in North London, the London Boroughs Consolidation Centre (LBCC).

By the 2015, the scheme had been expanded to include additional partners. The LBCC was being used by over 80 suppliers, and was generating significant benefits including:

- 46 per cent reduction in vehicle trips to council sites
- 45 per cent reduction in vehicle kilometres travelled
- 41 per cent reduction in CO^2 emissions from the freight task of participating councils.

Although the project initially received public sector funding, it has generated procurement savings from reduced supply distances and fewer suppliers (Transport for London [TfL] 2015).

6.5.10 Freight consolidation

By consolidating deliveries, freight operators can reduce the number of vehicle movements to a given building. This can reduce peak demand and the congestion it generates. This strategy can be especially effective where loading docks can accommodate larger vehicles. It is also used where loading dock capacity at a destination is constrained. Deliveries to most supermarkets, for instance, work in this manner. It is not always possible, however, to build docks that can accommodate larger vehicles. Where this is the case, it is necessary to provide enough space and have processes in place that support the higher number of smaller vehicles needed to deliver the same volume of freight.

Consolidated delivery is a more attractive option when multiple businesses share the same supplier. Multiple trips by the same carrier can also be detrimental to loading dock efficiency. Encouraging consolidation is a method of reducing vehicle movements to individual loading docks, but it requires docks with enough space and access to accommodate large vehicles.

6.5.11 Consolidation centre models

6.5.11.1 Individual building consolidation

A building manager may commission a 3PL to direct all deliveries bound for their building to a consolidation facility outside the city centre. Moving dock space to a freight facility outside the CBD is cheaper than developing dock space within the CBD. However, lower capital development costs at the final CBD destination are replaced by higher ongoing operational costs.

Ideally, the consolidation centre should not be too far from the final destination – a shorter distance improves delivery options and reliability.

6.5.11.2 Multiple building consolidation services

A multi-building consolidation approach can improve efficiencies, reduce the number of deliveries to a given development, and allow for non-urgent activity to be conducted outside peak hours. Consolidating deliveries will also reduce vehicle traffic and congestion across the entire CBD network.

CASE STUDY

Freight consolidation in Soramachi, Tokyo

The Skytree precinct in Tokyo is home to 230,000m² of mixed-use commercial, educational, entertainment and retail space. To make the precinct's freight and servicing task more efficient, logistics specialists provide consolidation services to the precinct. With 800 consignments every day destined for the location, 420 are delivered directly while 380 are sent to consolidation centres, where they are organised into just five vehicles (Taniguchi & Quershii 2014).

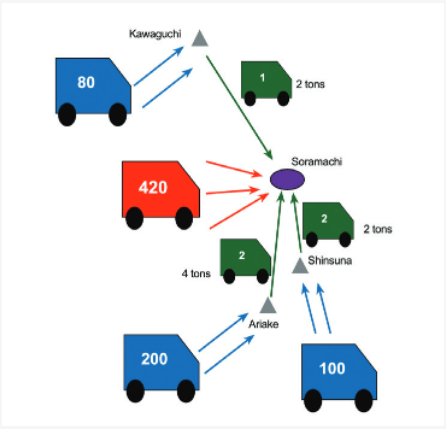
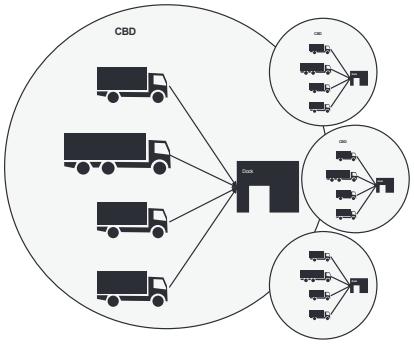


Table 14 Comparison of different approaches to completing deliveries in urban centres

Facility type

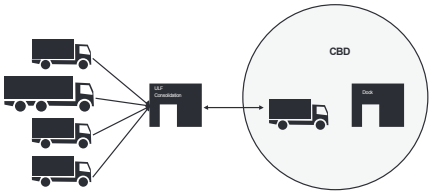
Standard approach

Loading docks typically service individual buildings in the CBD. All deliveries for customers in the building would be required to come to this destination and utilise the dock. From a space and access perspective, developing one loading dock for every building to meet its freight and servicing requirements can be costly and difficult.

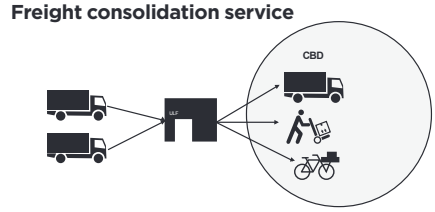


Consolidation/urban logistics facility

Directing deliveries to a consolidation centre on the fringes of the CBD may be a cheaper option for city-based businesses than operating a full-sized loading dock onsite. Several CBD buildings can cooperate to use a consolidation facility as their loading dock. Depending on distance, logistics personnel can use alternative transport modes such as bikes to deliver goods to their final CBD destinations. This can help to reduce congestion and therefore emissions in loading docks and on CBD roads.



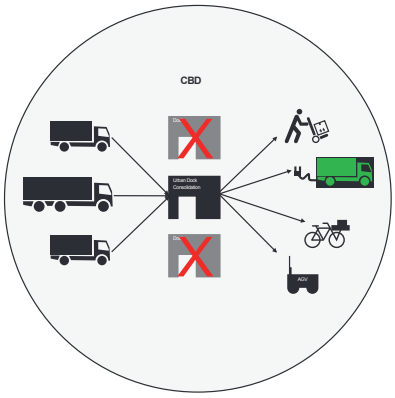
Freight consolidation service



Urban logistics facility (using consolidation)

Precinct facilities

A precinct loading dock reduces overall vehicle movements by consolidating movements into a single dock. All vehicles enter the single dock to deliver or provide a service to customers in the precinct, including using alternative transport modes such as bikes or trolleys.



6.6 Enabling alternative urban logistics facilities

Section 6.5 focused on logistics solutions available to building managers in urban centres. Local authorities also have an important role to play in enabling these logistics facilities and networks to develop.

Today, logistics facilities typically operate in industrial zones on the fringes of cities. In metropolitan areas around the world, inner-city areas that formerly housed these facilities are being rezoned, often for high-density residential use. Ironically, the demands of inner-city residents increase the local logistics task and generate more freight vehicle movements to the area.

Consider

Local Environmental Plans, prepared by councils and other local planning authorities, do not always permit the development of freight facilities in urban commercial and residential areas. Deliveries to these areas, however are the most expensive part of supply chain – the last mile. These urban commercial and residential areas also generate the most demand, being where many customers work and live. Enabling the development of appropriate freight facilities in these areas can reduce congestion, improve local amenity, and free up kerbside space for other uses.

Logistics activity has changed substantially in recent years. The facilities that support last mile eCommerce deliveries are very different to traditional warehousing and logistics facilities. If planners recognise these differences and permit urban logistics facilities to open closer to the centres of customer demand, they can reduce the impact of freight movements on city traffic in urban areas. This can lead to better place outcomes for urban centres.

For the last mile, alternative modes for delivering goods, such as bikes, can become more efficient than traditional delivery vans. These alternative modes also have a smaller environmental impact, in terms of noise and air pollution, than larger vehicles.

CASE STUDY

Examples of urban logistics facilities

- In Paris – "Logistics Hotels" are small mixed use developments located in residential neighbourhoods instead of the industrial urban fringe used to manage last mile deliveries. One example is Chapelle International, which commenced operations in 2018. The project was developed by Sogaris, owned by the City of Paris and operated as a private company. By its final completion in 2023, the multi-use development will have 900 homes, a crèche, a school, a university campus, sports facilities offices, a place for amateur artists to practice and a logistics hotel connected to rail and clean urban vehicles. It is expected to reduce truck movements to the inner city by 50,000 each year (Beaulieu 2018).
- The rise of same day (or shorter) delivery models has made urban distribution, logistics and warehousing space popular and more lucrative. Paris has launched plans to convert abandoned parking facilities and gas stations into distribution warehouses (Marshall 2020).
- **Section 6.7** of the Toolkit discusses remoding deliveries using the example of a New York–based online store. To achieve a one-hour delivery service in New York, the business needed a logistics facility closer to customers. In 2015, it set one up on the fifth floor of a midtown Manhattan commercial tower – not a place commonly associated with warehousing facilities (Lumb 2015).
- Similarly, a UK logistics provider has established a 500m^2 facility it calls a 'micro depot' in Westminster, London – just 400 metres from Buckingham Palace. The provider plans to develop more micro depots across other parts of London (Pink 2018).
- In Sydney and other Australian cities, some logistics companies have developed facilities within or near major shopping centres. These companies consolidate customer orders in logistics centres on city fringes, reducing the number of vehicle trips to the city centre. From city centre facilities, CBD-based logistics personnel walk around the precinct making deliveries to customers. This significantly reduces drivers' trips to – and parking challenges within – CBD areas.

A delivery being made by a walker from an urban freight facility in the Sydney CBD

6.7 Remoding

The major logistics facilities from where goods are despatched, such as distribution centres, warehouses and trade gateways, are often located far from the urban centres. Larger trucks are the most efficient of moving these goods from the major logistics facilities to areas of high consumer demand, such as CBDs and regional town centres. Larger vehicles carry more freight and generate fewer trips than smaller trucks and vans, easing congestion and reducing emissions.

Courier bike deliveries in the Sydney CBD

Once in urban centres, however, larger vehicles quickly become less efficient. These vehicles are less suited to making multiple deliveries than smaller vehicles. They are also more more difficult to drive around narrow CBD streets or some town centres with roundabouts and traffic calming measures. Large vehicles are also often too high or long to access many loading docks or to park easily in on-street loading zones. It is often more efficient and practical to remode to smaller vehicles, bicycles or walking couriers with trolleys or other equipment to complete this urban last mile delivery task.

To enable remoding for last mile deliveries, an intermediate point on the fringes of the CBD, such as a consolidation centre or urban logistics facility, is required. These facilities allow:

- larger trucks to move consolidated loads more efficiently on the "trunk" journeys from the warehouse to an urban centre logistics facility
- goods to be transhipped to alternative modes, such as vans, bicycles and walking couriers for the last mile delivery in CBDs and town centres.

It is also important for councils to support remoding through the provision of appropriate street infrastructure and access, such as good quality footpaths, widened kerb ramps and bicycle lanes and facilities.

CASE STUDY

Remoding – biking, walking and public transport

As demand grows, congestion on the roads becomes a point of failure in supply chains. But there are various alternatives to the traditional freight approach of dispatching trucks.

Since Amazon launched its Prime Now one-hour delivery service, its employees in New York, USA, make most of their one-hour deliveries to Manhattan using the subway. An Amazon spokesperson noted that

"In Manhattan, our folks bike, walk or use public transportation. They only drive if the item is large like a flat-screen TV." (Lumb 2015)

In late 2019, in response to the high volumes of parcels being delivered each day into New York, the city's Mayor announced a program to encourage the use of cargo bikes as an alternative to trucks. The program allows cargo bikes to use commercial loading areas typically reserved for trucks free of charge (Haag & Hu 2019b).

(IMAGE: Sturla 2019)

In Sydney, there are thousands of electric bikes used to makes deliveries each day, mostly food deliveries. In the niche market these bikes serve, they are a more versatile and sustainable mode of transport than fossil fuel powered commercial vehicles.

There is a growing expectation that connected and automated vehicles will play a greater role in urban centre deliveries in the future. A great deal of research and media attention is focused on aerial drone deliveries in particular, however busy urban environments present substantial safety and infrastructure challenges for their use. These challenges may eventually be overcome, or terrestrial drones, which are already commonly found within some warehouses and hospitals, may be adopted instead.

For last mile deliveries over short distances, alternative modes of transport can be a more efficient method of delivery than sending vehicles into the CBD.

6.7.1 Sydney Courier Hub

In 2016, TfNSW and the City of Sydney developed a micro-distribution hub (the Courier Hub) by repurposing a disused wash bay in the Goulburn Street car park, Sydney. Today, a number of couriers making deliveries on foot or by bike into the city use the Courier Hub as a central distribution and collection point. In mid-2019, seven operators were working from the hub.

It is a small space but it is unique in Australia as an open-access, multi-user facility aimed at delivering urban environmental benefits and time savings (by easing pressure on couriers driving into a challenging road and parking environment), and reducing congestion in a small but significant way.

The Courier Hub demonstrates an easy alternative way to deliver goods into congested CBD areas.

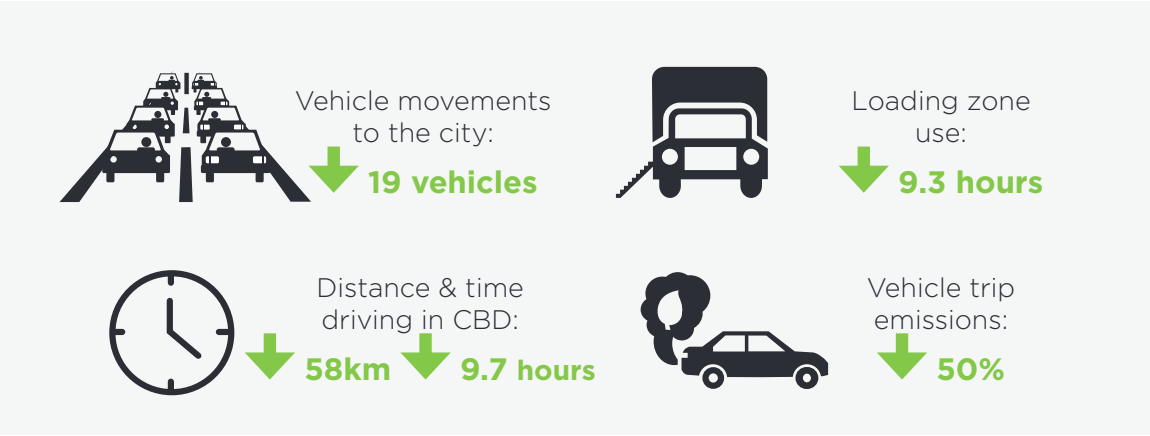


Figure 19 Daily benefits of seven carriers using the Courier Hub in 2019

In a 2016 assessment, two couriers were given the same 10 orders to deliver in the CBD. One took the orders to the Courier Hub, then delivered them by bike. The other used a van. The assessment found:

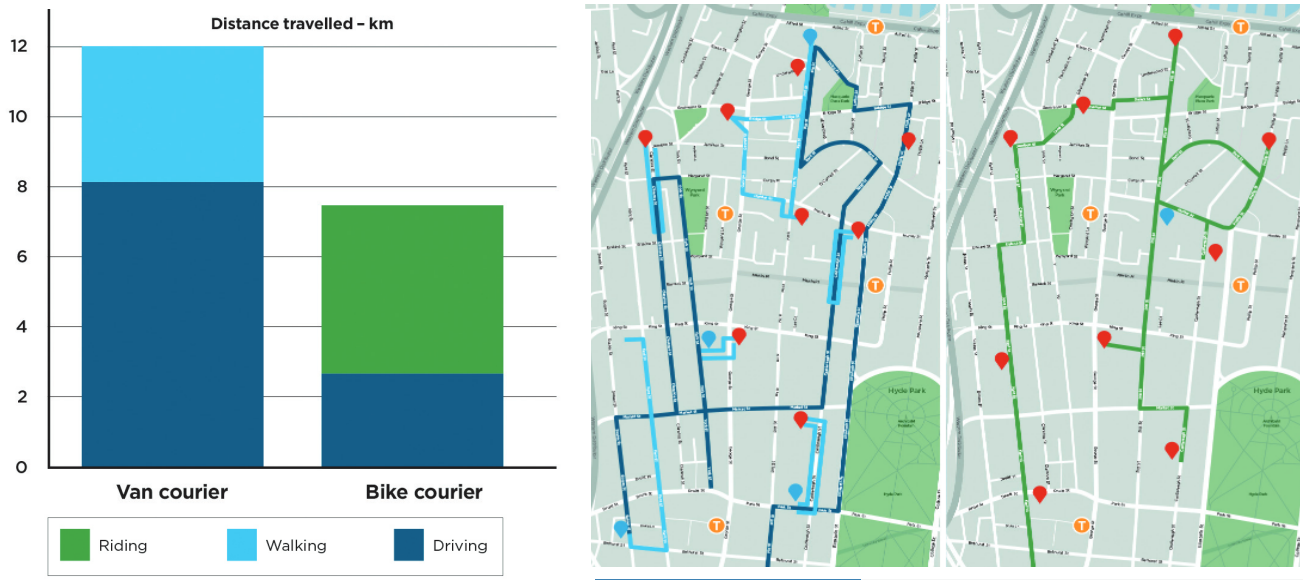
- the bike courier travelled 4.7 kilometres to complete the task
- the van courier drove 5.5 kilometres then walked 3.9 kilometres to complete the task – travelling a total of 9.4 kilometres.

The assessment also found that:

- an experienced bike courier could make deliveries to the same 10 locations in half the time it took an experienced van courier to complete the same task
- the main challenge for the van courier was finding on-street parking close to the delivery point
- during the AM peak, the van driver spent approximately 30 per cent of their time searching for a suitable parking location, and 70 per cent of their time walking to the delivery point.

Bike couriers delivering to a CBD office building

Figure 20 Learnings from the 2016 assessment of the Goulburn Street Courier Hub



6.8 Delivery and Servicing Plans

Delivery and Servicing Plans (DSPs) are a methodology to help manage the freight and servicing activities of a building or precinct. They can improve the efficiency of freight and servicing activities, as well as reducing their impact on the surrounding precinct and transport network. While DSPs focus primarily on the impacts on the local precinct, they can also have broader benefits for traffic coming into an urban area.

DSPs can incorporate a wide range of measures that achieve beneficial outcomes by reducing freight activity and minimising the impact of this activity. The measures incorporated into DSPs can be flexible and include procurement strategies, limitations on (personal) deliveries, freight consolidation schemes, use of alternative modes, off-peak deliveries, waste management schemes and the use of low emissions vehicles.

The goals of a DSP are to:

- **Minimise freight and servicing trips.** This can be achieved by methods such as promoting efficiency in the procurement process, use of consolidation centres or micro-depots, limiting personal deliveries to offices, investigating alternative modes for last mile deliveries, and providing onsite storage to reduce the frequency of deliveries.
- **Match demand to network capacity.** This can include encouraging more deliveries outside of peak times (including overnight where possible), considering alternative routes to a destination, implementing a booking system for loading dock access.
- **Mitigate the impact of freight trips.** This can be achieved by planning appropriately for the types of vehicles to be used. It could include considering alternative modes where feasible and also ensuring, through good design, that the most efficient and clean vehicles can be used for a task. It can also mean working with suppliers to ensure they are using vehicles that support these goals.
- **Monitoring freight activity**. Capturing metrics for freight and servicing activity such as of air quality, noise, road safety and traffic impacts.

CASE STUDY

Shared service providers can reduce the number of vehicle movements to a building

The City of London identifies DSPs as "the single most effective way of proactively managing delivery and service arrangements." To achieve outcomes beneficial to the local area, the City of London's freight plan for the "Square Mile" mandates that a DSP accompanies any development with floor space over 1000m^2 where the development is likely to "have a significant impact on the transport network."

The approach encourages:

- all new developments to receive deliveries outside the peak hours
- all major developments to use a consolidation centre to reduce the number of vehicles required to fulfil the delivery requirements.

(City of London 2018, pp.16-18)