Submission No 94

COMMUTER CAR PARKING IN NEW SOUTH WALES

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NSW Government Submission

Inquiry into Commuter Car Parking in NSW

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1 Introduction

This is the NSW Government's submission to the Legislative Assembly's Committee on Transport and Infrastructure's Inquiry into Commuter Car Parking (CCP) in NSW.

Section 2 of the submission covers the legislative, policy and planning frameworks for decision-making around CCP. Section 3 explains the objectives of CCP and the approach to providing CCP. Section 4 considers the potential for restricted access and user pays car parks. Trends in first mile/last mile travel are explored in Section 5. Approaches in other jurisdictions are considered in all sections.

2 NSW Government legislative, policy and planning framework for CCP

Transport for NSW (TfNSW) is the lead agency of the NSW Transport cluster. TfNSW's role is to lead and coordinate the development of a safe, efficient, integrated transport system that keeps people and goods moving, connects communities and shapes the future of our cities, centres and regions.

This section explains TfNSW's role in the planning and provision of CCP.

2.1 NSW legislative framework

Under the *Transport Administration Act 1988,* TfNSW's functions include planning for integrated transport networks and delivery of supporting infrastructure. TfNSW also has functions relating to precinct planning in and around public transport stations, wharves and transport interchanges. TfNSW also plays a key role in enabling accessibility and social inclusion. CCP is an important component of developing and delivering integrated transport networks.

2.2 NSW infrastructure planning policy

Planning, funding, construction and ongoing maintenance of public infrastructure in NSW, including CCP facilities, are supported by the *Infrastructure State Environmental Planning Policy 2007 (Infrastructure SEPP)*. Amendments to the Infrastructure SEPP have been proposed by the Department of Planning and Environment relating to new provisions for railway stations, transport interchanges, commuter carparks, bus stops and bus depots, as part of a suite of changes. Consultation on the proposed changes took place between 3 February and 7 April 2017.

The proposed policy changes seek to address matters relating to commuter car parking, such as single land use of commuter car parking as well as the adaptability to emerging technologies. The proposed changes to the Infrastructure SEPP include:

- Permitting, with consent, retail and business premises in a commuter car park if the premises is located on the ground floor or has street frontage;
- Allowing commuter car parks to be developed with consent on land in certain business, industrial and special purpose zones;
- Permitting the erection of an electric vehicle charger as exempt development in a commuter car park; and
- Notification requirements around certain without consent development, such as commuter car parks.

These changes are intended to assist operators to construct and optimise infrastructure, and to benefit transport users by providing improved services and convenience at public transport interchanges and commuter hubs.

2.3 Current transport policy framework for CCP planning

Public transport interchanges are the gateway to the public transport network. They are where customers join or transfer between modes on the transport system, including combinations of rail, bus, car, taxi, ferry, light rail, bicycle and walking. Transport interchanges encompass infrastructure facilities that provide shelter and amenity in a secure comfortable environment whilst waiting, provide journey information and allow for safe, quick and easy customer access to the transport network. CCP is an important component of transport interchanges.

Transport interchanges are also a key focal point within town centres and neighbourhoods. The development of an interchange, and any associated CCP, needs to be complementary to the land use in the catchment area and integrate with the local landform. It needs to acknowledge heritage and be sympathetic to the surrounding urban domain.

CCP development to date has been undertaken as part of the *Transport Access Program*[1], which funded station upgrades, interchange improvements, ferry wharf upgrades and commuter car parks. The Transport Access Program has focussed principally on the 580 major interchanges in the transport network, including:

- all rail stations;
- all major ferry wharves;
- all bus T-way stops; and
- major bus stops along “trunk” bus corridors.

Decisions for the Transport Access Program have been informed by a prioritisation process that considers the level of demand, the role of the interchange and the local demographics or users of the interchange (Figure 1).

[1] https://www.transport.nsw.gov.au/projects-tap

Service level	Major centres and regional cities	Town centres	Village/Local
Service characteristics	Large interchange places: multi-purpose trips	Transport hub linking rail, bus, bike, walk, drop-off facilities	Localised interchange infrastructure
	Good commercial potential	Medium sized interchange places	Entry to network rather than interchange between modes
	Integrated with town centres – vibrant and busy	Residential/small commercial potential	Shelter, lighting, network and timetable information
	Major interchange facilities – rail, bus, ferry, bike, walk, drop-off facilities	Integrated with town centres – vibrant and busy	Walk, drop-off facilities, bus to rail, bus to ferry
	Minimal commuter car parking	Some have commuter car parking	Some have commuter car parking

Figure 1. Current classification and characteristics of interchanges in NSW

Commuter car parks (CCPs) are an important component of an integrated transport network, improving access to frequent public transport services for customers living in lower-density areas, where it is difficult or costly to provide frequent feeder bus services, and for the elderly or people with a disability.

2.4 CCP and the Integrated Transport Planning Framework

CCP planning has been guided by the 2012 *NSW Long Term Transport Master Plan*[2]. This document has provided the framework for planning an integrated transport system, setting out the overall priorities to guide where funds are invested. Relevant to CCP, the vision for transport interchanges set out in the 2012 Master Plan is:

- Development within the walking and cycling catchments of local centres will improve access to local services and public transport that links to major centres, with seamless interchange opportunities.
- Outer suburbs will be supported by enhanced road connections and interchange improvements that make it easier to use public transport.

[2] https://www.transport.nsw.gov.au/sites/default/files/media/documents/2017/nsw-transport-masterplan-final.pdf

- In regional NSW, providing CCP facilities, or links from motorways to train stations and bus interchanges, will allow people in regional areas to link car trips to public transport services as part of their journey.

2.5 Future Transport planning and the Greater Sydney Commission

The NSW Government committed to reviewing the *Long Term Transport Master Plan* after five years. *Future Transport* is the result of the 2012 Transport Master Plan review; it will replace the 2012 Plan and be the new approach to planning transport and engaging customers. It will be a 40 year strategy focusing on customer needs and the technological, economic and social changes ahead, and will ultimately guide CCP provision.

To help navigate the future of Greater Sydney, the Greater Sydney Commission is aligning three strategies, of which *Future Transport* is one. The other two strategies are the *Greater Sydney Region Plan* and the *State Infrastructure Strategy.*

The three strategies respond to and build on the ten *Directions for Greater Sydney*; guiding principles to achieve the overarching vision for Greater Sydney (Figure 2). The overarching vision is: “Greater Sydney will be a global metropolis of three productive, liveable and sustainable cities: Western Parkland City, Central River City and Eastern Harbour City.”

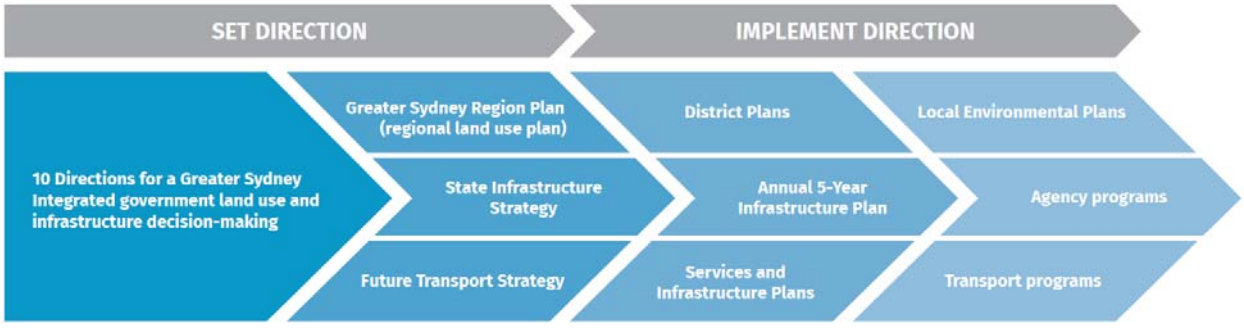

Figure 2. This diagram illustrates how the concurrent development of three major plans will align land use, transport and infrastructure planning and delivery across Greater Sydney.

The goal of the Greater Sydney Commission's Draft District Plans is to have well-coordinated, integrated and effective planning for land use, transport and infrastructure. The Greater Sydney Commission, in collaboration with TfNSW, seeks to maximise the economic and land use opportunities created by investment in transport infrastructure and to integrate land use and transport planning outcomes.

For instance, the NSW Government, through *A Plan for Growing Sydney*[3], has identified urban renewal opportunities along the Glenfield to Macarthur railway corridor to accommodate additional population and support economic growth. The aim of this proposed renewal is to take advantage of the existing and planned transport network, with a focus on mixed use urban activation and increased residential density around train stations. It is intended that this approach will support higher levels of self-containment within the corridor and reduce growth in private vehicle use in areas of relatively high access to transport, jobs and services[4].

TfNSW works in partnership with the Greater Sydney Commission at a strategic and operational level to determine the appropriate settings for the transport strategy, planning, policy, regulation, funding and service delivery that will support their overall objectives. This ensures an integrated approach to land use and transport.

The Commission's target for better access and transport connections in Greater Sydney is a 30 minute city, where:

- most people can commute to their nearest city centre by public transport; and

[3] *A Plan for Growing Sydney*, released in December 2014, is the NSW Government's plan for the future of the Sydney Metropolitan Area over the next 20 years -http://www.planning.nsw.gov.au/Plans-for-your-area/Sydney/A-Plan-for-Growing-Sydney

[4] https://majorprojects.affinitylive.com/public/a601e864ee3b210a2a3714b1bf8013fb/E.%20Glenfield%20to%20Macarthur%20Integrated%20Transport%20Strategy.pdf

- everyone can travel to their nearest strategic or district centre by public transport seven days a week.[5]

The 30 minute city relies on more people using public transport as an alternative to private vehicles and reducing traffic congestion. Greater Sydney will also need a network of interchanges that allow people to access services easily, plus move quickly and safely from one mode of transport to the next.

By global standards, Sydney relies heavily on private vehicles. The challenge for future planning is to continue the increase in public transport and other alternatives such as walking and cycling. Together these behaviour changes, known as the four R's, can improve the efficiency of our transport network:

- **Reduce** - consolidate or replace journeys by using technology or carpooling.
- **Remode** - change mode of transport particularly from single occupancy car trips to public transport, cycling and walking.
- **Retime** - travel in off-peak periods to avoid congested roads or public transport.
- **Reroute** - use alternative, less congested routes by keeping up to date of transport conditions.

The Greater Sydney Commission seeks to influence the uptake of public transport in Greater Sydney by (for example) considering limits on car parking spaces for commercial centres serviced by public transport.[6]

The focus of *Future Transport* is on place-making; preserving or enhancing the character of public spaces and making them more accessible, attractive, comfortable and safe. Public transport crowding and road congestion can be minimised by planning homes and jobs

[5] The Greater Sydney Commission, *Directions for a Greater Sydney 2017-2056*, https://gsc-public-1.s3.amazonaws.com/s3fs-public/directions_for_a_greater_sydney_2017-2056_web.pdf
[6] Greater Sydney Commission, *Draft Central District Plan*, https://www.greater.sydney/digital-district-plan/1015

closer together with transport services. More development can also be located near existing transport services by changing zoning laws to allow for higher density development. Planning for further CCP will occur within the place-making context.

3 Provision of commuter car parking

This section explains the objectives of CCP provision, current usage patterns and the principles guiding the selection of CCP locations in NSW and other jurisdictions.

3.1 Recent Customer Research on CCP

Transport for NSW (TfNSW) puts the customer at the centre of everything we do. Qualitative research conducted into Commuter Car Parking in 2015 showed that most customers are parking at the interchange closest to home. However, other factors that influence choice include availability of parking spaces, to avoid catching a connecting bus to take their preferred train service (e.g. an express). The decision to drive is motivated by a variety of factors not necessarily linked to the availability of local connections. Reasons given include greater convenience, time savings, safety and security.

In most areas, customers say there is a need to leave early to secure a good parking spot in off-street parking. On street parking is prevalent. Customers see advantages and disadvantages in each. Customers surveyed reacted positively to the concept of only allowing access to commuters to park in dedicated off-street parking.

3.2 Potential benefits of commuter car parking

Potential benefits of CCP are to:

- extend the reach of public transport;
- increase the attractiveness of using public transport;
- transfer car parking demand from areas with limited parking available;

- ease congestion by decreasing vehicle trips; and
- concentrate passenger demand on rapid transit routes.

TfNSW has conducted customer research that shows the availability of car parking at commuter hubs positively influences the uptake of public transport. Some customers have indicated that they are dissatisfied with the level of car parking facilities at public transport interchanges and stops[7]. CCP forms 16 per cent of the mode share to train stations in NSW metropolitan areas. International research suggests that the impact of creating new CCP spaces is contingent on a wide range of factors but usually generates new public transport use.[8]

The economic benefits of CCP found in Southern California, USA, include decongestion benefits on corridors to city centres; reduced vehicle kilometres travelled (VKTs) and increased public transport revenue.[9] International research also suggests creating new CCP spaces usually generates new public transport use.[10]

Benefits of CCP to individual commuters include access to transport and substantial savings. Analysis in 2013[11] showed that a car driver replacing a car trip to the Sydney CBD with a public transport trip (while retaining the car) can save an average of $8,141 per annum (based on an average cost of $13,026 per annum to drive to the city).

The savings are greatest for those commuters who drive further, with the average Australian car commuter who lives 25 kilometres from the CBD spending $14,639 per annum, compared with $7,432 for commuters 5 kilometres from the CBD.

[7] Transport for NSW Customer Satisfaction Index Nov and May 2015
[8] Transportation Research Board (2004) *Traveller Response to Transportation System Changes Handbook, Third Edition: Chapter 3, Park-and-Ride/Pool*
[9] System Metrics Group, 2013, *Cost-Benefit Analysis of Park & Ride/Intermodal Strategies within the State Highway System in Southern California*, Caltrans Division of Transportation Planning
[10] Transportation Research Board (2004) *Traveller Response to Transportation System Changes Handbook, Third Edition: Chapter 3, Park-and-Ride/Pool*
[11] Wang (2013) *Commuter costs and potential savings: Public transport versus car commuting in Australia*

3.3 Uptake of commuter car parking

CCPs are well utilised, with many at capacity during peak periods. As the CCPs owned and operated by TfNSW are currently free to access, there are CCP users who are not taking public transport, for example, people who might be shopping or working nearby.

In November 2016, TfNSW conducted customer research at six CCPs which measured capacity by time of day on weekdays and weekends, and obtained customer insights from 1,800 participants at those six CCPs. The research showed that, on weekdays, five of the six CCPs were at or over capacity by 7am. The customer survey indicated that, on weekdays, an average of 88 per cent of customers using commuter car parks are accessing public transport. Between sites, this figure ranges from 54 to 98 per cent. For the remaining CCP users who were not accessing public transport, their main purposes were shopping or working nearby.

3.4 Providing CCP in NSW

TfNSW plans and, through its agencies or contractors, constructs and maintains CCPs. Commuter parking demands are occasionally met through partnerships with local governments or other entities.

Because customers make choices about their mode of access to interchanges by considering all the available facilities and services, international transport agencies have found that increases in CCP supply can result in shifts from other access modes such as bus and kiss and ride, in addition to new public transport trips attracted away from car.[12,13] As such, CCP is implemented as part of an integrated transport strategy including other access modes to maximise wider benefits.

[12] Hamer, P, 2010, *Analysing the Effectiveness of Park and Ride as a Generator of Public Transport Mode Shift*
[13] Transport Scotland, 2012, *The Effects of Park and Ride Supply and Pricing on Public Transport Demand*

Provision of CCP is also impacted by accessibility requirements. Under the Disability (Access to Premises – Buildings) Standards 2010 Access Code / Building Code of Australia (BCA) provisions, the number of accessible parking spaces required to be provided is defined by the Class of building.

Public transport buildings are Class 9b. As a result, where up to 1000 car parking spaces are provided, there must be 1 space for every 50 car parking spaces or part thereof. For each additional 100 car parking spaces or part thereof in excess of 1000 car parking space, 1 additional space is required. It is also important to note that under the prescribed Accessibility Standards an "accessway" (pedestrian Continuous Path of travel) from any required accessible car parking to relevant buildings are required to be accessible.

In relation to the future provision of CCPs, it is likely that over the next decade significant numbers of electric vehicles (EVs), including battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), will be added to the NSW light vehicle fleet.[14] This means that commuter car park planners, designers and operators will need to consider how these vehicles' recharging needs will be accommodated. For example, car park planners could consider incorporating sufficient electrical capacity and infrastructure to provide for cost-effective future upgrade to support EVs.

3.5 Approach in other jurisdictions

Most jurisdictions in Australia and overseas restrict CCPs at interchanges that are close to city centres and other destinations, to reduce vehicle kilometres travelled (VKTs) and intercept car trips as far as possible from their destination.

Distance thresholds for discouragement of CCP at interchanges varies, but in general is greater than 5 kilometres for CBDs and 2 kilometres for other major centres.

[14] http://www.ev-volumes.com/

Australian Capital Territory

In the ACT, bus-based CCP facilities are generally provided more than 10 kilometres from the city centre.[15]

Western Australia

A Parking Management Area has been established on the outskirts of Perth's central business district. CCP is provided outside this area and are supported by a network of free CAT (Central Area Transport) buses.[16] CCPs are also provided at rail stations, most of which are more than 5 kilometres from the city centre.

London, United Kingdom

In London, some 75 per cent of CCPs are more than 30 kilometres from the city centre, with the remainder generally more than 8 kilometres from the city. CCPs are not provided within 2 kilometres of other major centres.

United States of America

In the USA, CCPs are identified as being best located beyond the limit of urbanised areas to avoid locations in congested areas.[17]

Italy

Due to traffic congestion, in the late 1980s, Milan, Rome, Bologna and Florence held referendums that succeeded in implementing ZTLs (Zones with Limited Traffic), where driving and parking are authorised to permit holders only[18].

[15] ACT Government, 2012, Transport for Canberra: Transport for a sustainable city, Environment and Sustainable Development
[16] Transport Western Australia, 2012, *Perth Parking Policy*, Western Australian Government Gazette, 9 October 2012
[17] Texas A&M Transportation Institute, 2012, *Park and Ride Lots, Mobility Strategies* *http://mobility.tamu.edu/mip/strategies.php*
[18] Ferilli, G (2008) *An analysis of the city centre car parking market: The supply side point of view* http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.626.3941&rep=rep1&type=pdf

4 The potential for controlled access or user pays commuter car parks

This section presents customer research about controlled access and user pays car parks in NSW and approaches in other jurisdictions.

4.1 Customer research on access to commuter car parks

The CCP facilities in NSW are free to access for all users. TfNSW research suggests that there are CCP users who are not taking public transport, for example, people who might be shopping or working nearby. Availability of CCP spaces is often limited, with many CCPs reaching capacity during peak periods on weekdays.

TfNSW research in 2015 revealed that customers value free parking at train stations but they acknowledge that free CCPs reduce the availability of spaces. The research found that there was some level of interest in a small fee for value added elements such as:

- Guaranteed park close to public transport
- Vehicle security and personal safety measures such as security guards or cameras
- Discounts for regular commuters
- Undercover

Customers also made suggestions regarding:

- an app to check parking spot availability, and
- an app/website to book a spot the night before.

In other jurisdictions, a mix of free and paid CCP strategies are applied.

Perth

In Perth, a Monday to Friday $2 per day flat fee for all train station CCP spaces has been introduced. Customers can pay via Smartrider ticket, or pay cash via pay and display ticket machines.[19]

Canberra

In Canberra, a permit is required at CCP locations with high demand. To be eligible for a permit, a minimum balance is to be met on smart card tickets (MyWay). The permits are valid for 3 months.[20]

Adelaide

In Adelaide, a CCP at Tea Tree Plaza Interchange at Modbury is $2 per day when validated, with a Metrocard, within 2 hours of using public transport. Casual parking is $10 per day[21].

Canada

In Canada, Calgary introduced a proportion of reserved parking spaces for $90 per month in 2002 (spaces are reserved from 2am to 10am on weekdays and are free after 10am) and moved to a daily fee for all spaces of $3 in 2009, coordinated with a program of facility improvements and expansions. The city of 1 million previously had free CCPs at bus and light rail stations, which customers complained were always full. Within a year, the availability of CCP spaces had gone from zero to 35 per cent, patronage had not been affected, the volume of customers parking on-street to avoid the charge had not increased and the car park revenues exceeded operating costs. CCP customers could also arrive later and still find vacant car spaces. Calgary has recently moved away from paid CCP for all

[19] http://www.transperth.wa.gov.au/parking
[20] http://www.transport.act.gov.au/getting-around/bus-services/passenger-info/park-and-ride
[21] http://www.adelaidemetro.com.au/Announcements/News/Tea-Tree-Plaza-Interchange-Park-n-Ride

spaces, returning to a reserved space system at $85/month; however, the change has not been popular with customers.[22]

Europe

Many European cities charge varying fees for CCP use, some integrated with public transport tickets and some separately charged. Most provide a flat fee for up to 12 or 14 hours parking, with hourly charges for longer stays. Athens offers free CCP, while Madrid, Paris, London and Moscow have varying charges and Dublin has a mix of paid and free CCP.[23]

United States

In the USA, metropolitan areas including the San Francisco Bay Area, Sacramento, Denver, Chicago, Pittsburgh, Atlanta, Washington, D.C., and Boston charge daily rates for parking. Rates are influenced by whether the CCP is operated by a transport agency or a private operator and vary widely between US$1 and US$12 dollars, with some offering monthly passes.[24]

The impact of CCP charges on customer demand and mode choice has been variable in the USA. While Bay Area Rapid Transit introduced car parking charges that didn't "significantly change individuals' preferences for access mode or parking location choices"[25], the Massachusetts Bay Transit Authority was able to shift demand from heavily used stations to underutilised train stations by reducing parking charges at underutilised stations.[26]

[22] Calgary Transit, 2011, *Park and Ride Survey, Reserved Parking, Summary of Findings*
[23] Dublin Transportation Office, 2005, *Rail Park & Ride Strategy for the Greater Dublin Area* https://www.nationaltransport.ie/wp-content/uploads/2011/12/gda_park_ride_20041.pdf
[24] Shaheen S & Martin E, 2011, *Smart Parking Value Pricing Pilot Project (VPPP) on the COASTER Commuter Rail Line in San Diego, California,* San Diego Association of Governments
[25] Habib K, Mahmoud M & Coleman J, 2013, *The Effect of Parking Charges at Transit Stations on 'Park and Ride' Mode Choice: Lessons Learned from a Stated Preference Survey in Greater Vancouver*, Transit Research Board
[26] Shaheen S & Martin E, 2011, *Smart Parking Value Pricing Pilot Project (VPPP) on the COASTER Commuter Rail Line in San Diego, California,* San Diego Association of Governments

4.2 Controlled access to commuter car parks

To ensure the maximum number of car parking spaces is available for public transport customers and commuter car parks are used for the purposes intended, TfNSW is conducting a trial of Opal activated commuter car parks on the Northern Beaches where we are creating around 900 new commuter spaces at six new car parks for customers seeking to link with the new B-Line bus services, which will launch at the end of the year. Opal card technology is already used to access bike sheds at several train stations.[27]

Various measures have been explored in other jurisdictions in relation to controlled access.

Melbourne

In Melbourne, Transport for Victoria is responsible for CCP and the Municipal Association of Victoria (MAV) is encouraging the investigation of using the smart travel card, myki, to restrict CCP access as part of wider transport discussions.[28]

Ipswich

In Ipswich Queensland, several CCP spaces were limited to 15 minute parking before 9am, assisting with dropping off/picking up public transport passengers using the public transport system and permitting all-day parking after that time[29]. These parking restrictions have since been removed to increase availability of early morning parking for commuters.

United States and Canada

In San Francisco and Denver in the USA and Calgary in Canada, off-peak commuter access is provided as part of these cities' paid reserved parking schemes. A proportion of CCP

[27] Transport for NSW, 2017. *Bike sheds and lockers*. https://appln.transport.nsw.gov.au/bikelockers/faces/jsp/public/home.xhtml
[28] http://www.heraldsun.com.au/news/victoria/mykionly-carparks-wins-support-as-way-of-resolving-commuter-crush/news-story/116b10606c3fb16577e5885814a724c1
[29] http://www.qt.com.au/news/commuters-cop-it/1324060/

spaces are reserved for pre-paid customers, but after 10am, any vacant reserved spaces become free for all commuters.[30]

5 Consideration of alternative modes of first mile/last mile travel

This section provides information on first mile/last mile travel trends, including research in other jurisdictions, which may change how commuters reach public transport interchanges.

5.1 First mile/last mile travel

There is a scarcity of data available on the first mile/last mile role played by the well-established segments of the point to point transport industry – taxis and traditional hire vehicles. However, the data that is available confirms that point to point transport has a significant role to play in the future in enabling transfers to and from interchanges.

In an Australian context, taxi ranks have long formed a part of the infrastructure of urban railway stations, providing rail commuters with a reliable and readily-accessible option to meet their first mile/last mile needs for transfer directly to or from a nominated location.

5.2 Recent Point to Point transport reforms

Point to point transport provides flexible, convenient options for passengers to get from A to B via the route they choose at a time that suits. Modes of point to point transport include taxis, hire cars, tourist services, rideshare services and community transport.

The recent reforms in NSW represent the biggest change to the state's point to point transport industry in a generation. Significant reform has been underway since mid-2015, with a new regulatory framework for the industry expected to be fully in place by the end of 2017. While maintaining strict safety standards, the new regulatory environment will

[30] Rodier C, Shaheen S, Blake T, 2010, *Smart Parking Pilot on the Coaster Commuter Rail Line in San Diego, California, California* PATH Research Report, UCB-ITS-PRR-2010-11 http://tsrc.berkeley.edu/sites/default/files/Smart%20Parking%20Pilot%20on%20the%20Coaster%20Commuter%20Rail%20Line%20in%20San%20Diego%2C%20CA.pdf

encourage all point to point transport providers to innovate in order to meet the demands of customers for greater flexibility and more choice of point to point transport service options.

The liberalisation of the point to point transport industry lowers barriers to entry for new service providers and drivers alike. Increased supply should lead to both more choice for commuters and create downward pressure on the cost of using point to point transport services. This increases the incentive for commuters to consider point to point transport as a cost-effective option for their first mile/last mile needs.

These factors will increase the role that point to point services play in enabling customers to transfer to and from transport interchanges, potentially moderating demand for CCP.

5.3 Experience in other jurisdictions

Melbourne

In Melbourne, the 2016 report *Emerging transport technologies: Assessing impacts and implications for the City of Melbourne*[31] noted that:

> *Melbourne … experience[s] higher levels of car parking demand relative to supply. Facilitating ride sharing options to train stations will help free up car parking around [train stations]. For instance, if an Uber service was able to take three people to a train station, that frees up to three car parking places at a train station. If that Uber driver could make three trips during peak hour, that amounts to nine people who have arrived at a train station without one parking space required.*

United States

In Boston, research by Uber[32] following the launch of UberPOOL in 2015 found that approximately 40 per cent of all UberPOOL and UberX trips started or ended near a subway station. The findings indicate that the availability of point to point transport services present

[31] https://www.melbourne.vic.gov.au/SiteCollectionDocuments/emerging-technologies-final.PDF
[32] https://www.uber.com/blog/boston/the-multimodal-goal-how-uber-is-getting-more-people-to-and-from-the-t/

commuters with a workable means of navigating the first mile/last mile question when connecting to mass transit systems. Of particular note, the research indicated that people were not only using rideshare during peak commuter hours: rather, the usage of the UberPOOL and UberX as means to connect with the subway system was constant throughout all times of the day.

Also in Boston, research by another rideshare company, Lyft, found that 25 per cent of its riders use the service to connect to public transport. In addition, 46 per cent of its riders consider that rideshare provides them with a feasible alternative to car ownership. These findings accord with those of a 2017 European Federation for Transport and Environment study[33]. The study concluded that as well as providing commuters with 'multi-modal' options for addressing the first mile/last mile question, rideshare services do in fact reduce the overall numbers of vehicles on the road and vehicle kilometres driven

In Colorado, a six month pilot by 'Go Centennial' offered commuters living within a six square kilometre service area the option of taking a free Lyft ride between the light rail station and any point within the service area. The number of first mile/last mile trips being taken by commuters increased by 4.6 per cent[34]. Those taking up the free option were first time users, suggesting a latent demand.

The Utah Transit Authority's 2015 First Mile/Last Mile Strategies Study[35] noted that taxi stands at mass transit hubs form a key part of the first mile/last mile 'ecosystem'. The study found that taxis could build on their longstanding place within the first mile/last mile 'ecosystem' by promoting more 'taxi sharing' programs.

[33] https://www.transportenvironment.org/sites/te/files/publications/Does-sharing-cars-really-reduce-car-use-June per cent202017.pdf
[34] http://www.centennialco.gov/uploads/files/Government/Iteam/Go per cent20Centennial per cent20Final per cent20Report_for per cent20web.pdf
[35] https://www.rideuta.com/-/media/Files/Studies-Reports/UTAFirst_LastMileFINALCOMP1.ashx?la=en

India

In India, Bangalore Metro Rail Corporation Limited in India recently called for tenders for a point to point transport provider to exclusively service 30 of its metropolitan railway stations[36] to improve first mile/last mile connectivity. The Delhi government plans to issue up to 10,000 'Maxi Cab' permits in 2017[37] to improve last mile connectivity. Currently there are 120 Maxi Cabs on Delhi's roads and almost 70 per cent of Delhiites rely on their private vehicles for journeys of less than six kilometres in length.

Should the growing use of rideshare lead to reduced private vehicle ownership, the implications for road use and commuter car parking will be significant.

5.4 On demand transport pilots

The On Demand Transport program was announced in November 2016. It aims to identify and pilot creative new transport options for people to reach their destinations quickly, safely, easily, efficiently, at a time that suits them. To stimulate a market response, Transport for NSW issued a Request for Expression of Innovation (RFEOI) with broad terms and objectives inviting interested parties to put forward their solutions for pilots of on-demand services.

The pilots are designed to test potential new public transport service delivery models to determine the feasibility of Incorporating them more widely in future service contracts as a more cost effective way method of service delivery that improves customer outcomes.

This RFEOI closed on 27 February 2017, following which TfNSW evaluated submissions, and then negotiated with a number of proponents to set up on-demand service trials that are scheduled to commence later in 2017. The geographic scope for the pilots will be locations

[36] https://motiondigest.com/2016/12/07/bangalore-metro-sets-last-mile-connectivity-example-for-malaysia/
[37] http://www.hindustantimes.com/delhi-news/delhi-govt-plans-ac-maxi-cabs-to-plug-last-mile-connectivity-gaps/story-kFGnw6FFMFt8ud4WZHxJAJ.html

within the Sydney Metropolitan and Outer Sydney Metropolitan regions, including Wollongong and Newcastle.

Market response to On Demand services may impact future demand for CCP.

5.5 Connected and automated vehicles

Connected and Automated Vehicles (CAVs) offer opportunities to enhance future urban design, land-use and parking infrastructure, and transport service provision, by facilitating the integration of on-demand and shared CAVs with mass transit services.

Many new vehicles available in the market today already have 'Park Assist' functions that can automatically steer the car into parallel and bay parking spaces, and also out of parallel parking spaces.[38] In the future, automated valet parking functions are expected to enable passengers to be dropped off, with the vehicle manoeuvring to and from parking places and parking itself remotely without the need for human monitoring.[39]

A simulation for the International Transport Forum, an OECD agency, tested several scenarios for automated vehicle use. It found that in all cases, self-driving fleets eliminated the need for all on-street parking and could remove up to 80 per cent of off-street parking.[40]

5.6 Integration of Active Transport

The Northern Beaches Council, in partnership with the NSW Government, is investing $22.3 million in infrastructure that is focused on integrating active walking paths and cycleways that link to B-Line transport hubs and services.

The centrepiece is an iconic fully continuous coastal walkway linking Palm Beach to Manly together with cycleways and shared paths linking north and south, east and west.

[38] http://au.pcmag.com/cars-products/31181/guide/the-best-driver-assist-cars-of-2017
[39] https://www.volkswagen-media-services.com/en/detailpage/-/detail/V-Charge-Volkswagen-pushes-development-of-automated-parking-and-charging-of-electric-vehicles/view/2448606/2ef74bb2c669d2073d17b2e2d769ab25?p_p_auth=A18nF8i9
[40] https://www.itf-oecd.org/sites/default/files/docs/15cpb_self-drivingcars.pdf, p. 15

This staged investment will allow pedestrian and cycleway access to faster public transport. The proposed timeline for completion is for stage one to be completed by October 2017 and stage two by January 2019[41].

5.7 Bike share schemes

Bike share is emerging as an increasingly convenient option for commuters in Sydney. Traditional bike share schemes involve hiring a bike from a fixed location (or "dock") and returning it to another fixed location. Under this model, the operator largely has control of the location of its bikes and the customer must return the bike to a specific location. In July 2017, the Australian company Reddy Go commenced a trial of dock-less bikes, deploying 160 bikes in the Sydney CBD with a view to expand quickly and reach other centres. The cost is $1.99 for 30 minutes and bikes can be left wherever it is legal to do so. These dock-less schemes provide new levels of convenience and flexibility customers and provide an alternative for first mile/last mile travel to connect with public transport services.

Other bike sharing schemes are operating in Melbourne, Bendigo, Brisbane, Adelaide, Western Australia, Northern Territory and the ACT.

Increased expansion and uptake of these schemes may impact on the future demand for, and design of, CCP facilities.

[41] https://northernbeaches.nsw.gov.au/sites/default/files/documents/general-information/major-projects/connecting-northern-beach-info-booklet.pdf

Appendix A – Provision of commuter car parking

The current number of commuter car parking spots

There are currently over 36,000 dedicated off-street CCP spaces at train stations in NSW on the Sydney Trains and Intercity network. There are also many other free off-street CCPs operated by local councils. Of the 307 Sydney Trains and NSW intercity network, 215 have dedicated off-street dedicated CCPs.

Of the 68 regional stations in NSW, 48 have marked customer long-stay car parks and 20 have unsealed, unmarked parking spaces.

Assessment of Sydney Metropolitan Commuter car parks stations in 2014 showed that, on average, just under 40 per cent of the current CCP demand at metropolitan stations is accommodated in formal off-street commuter car parks, while 50-60 per cent of CCP demand may be accommodated on-street or in council (or private) operated car parks.

Experience from Australia and overseas[42] suggests it is not possible to fully satisfy CCP demand in formal off-street car parks, or eliminate on-street parking by CCP customers, even when new off-street CCP is provided. Additional CCP customers will be attracted to the interchange, some as new customers and some from other interchange locations; and customers may also change access modes from bus and kiss & ride, to CCP. Hamer (2010) recommends a target of 50 per cent of total CCP demand be accommodated off-street.

Over 5,700 new CCP spaces have been made available to public transport customers across NSW since 2011. While the majority of these spaces have been provided at train stations, 183 spaces were provided at Torrs St Baulkham Hills to serve transport customers using the M2 bus T-Way. Another 89 spaces at Barclay Road North Rocks serve M2 bus users.

[42] Hamer, P, 2010, *Analysing the Effectiveness of Park and Ride as a Generator of Public Transport Mode Shift* http://atrf.info/papers/2009/2009_Hamer.pdf

Commuter car parking planned and under construction

There are currently six CCPs in construction, detailed design or planning under the Transport Access Program:

- Ashfield – approximately 120 new car parking spaces, expected to open early 2018;
- Eastwood – Finalising location of the car park
- Merrylands – Finalising land with property owners
- Prairiewood – Finalising land with property owners
- Campbelltown – Negotiating with council land for car park; and
- Pendle Hill – Finalising land with property owners.

New CCP facilities are also being constructed as part of Sydney's North-West Metro, where 4,000 off-street dedicated CCP spaces will be provided (1000 at Cudgegong Road, 1200 at Kellyville, 800 at Bella Vista, 600 at Showground, 400 at Cherrybrook).

To support the operation of the Northern Beaches B-Line service, approximately 900 new CCP spaces are being provided over six locations between Mona Vale and Manly Vale (Mona Vale, Warriewood, Narrabeen, Dee Why, Brookvale and Manly Vale).

Inter-jurisdictional comparison of CCP

Table 1 provides a comparison of CCP spaces available in the Sydney Greater Metropolitan Area with those in other jurisdictions.

Table 1. Comparison table of number of spaces[43]

City	Population	CCP spaces at train stations	CCP Spaces / population	Number of stations	Stations with CCP	% of total stations with CCP	CCP spaces / station
Sydney GMA[44] **NSW**	**6,057,761**[45]	**36,000**[46]	**0.0059**	**307**	**215**	**70**	**117**
Wellington NZ	487,700	5,201	0.011	49	38	77	106
Calgary CA	1,265,100	13,170	0.010	36	19	53	366
Auckland NZ	1,486,000	2,202	0.001	41	18	44	54
Portland US	1,583,138	10,239	0.006	63	28	44	151
Perth WA	1,740,000	16,658	0.010	68	48	70	245
Brisbane Qld	2,043,000	20,745	0.010	145	124	85	143
Vancouver CA	2,419,700	5,853	0.002	55	9	16	106
San Francisco USA	3,228,605	49,640	0.015	44	33	75	1,128
Atlanta USA	3,499,840	24,000	0.007	38	23	60	632
Melbourne, Vic	4,077,000	34,461	0.008	219	174	79	157

[43] https://at.govt.nz/media/503106/ATParkingDiscussion.pdf.
[44] Greater Metropolitan Area (GMA) of Sydney comprising the Illawarra, Lower Hunter and Greater Sydney Regions
[45] At May 2016
[46] At July 2017