2015

The evolution of car parking – technology creating risk and opportunity

Demand is exceeding supply - local governments are curtailing growth in car parking spaces in CBDs and no new multi-storey car parks are being developed. This combined with congestion levies places upward pressure on parking fees.

Recent advances in technology and social trends are driving investment; and people's relationship with their vehicle is changing, affecting the traditional view of car parks as a business model. At the same time investors are increasingly exploring alternative opportunities in non-traditional asset classes that include car parks.

So where is the business of car parking going?

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THE CHANGING NATURE OF CAR PARKS

In the years since the previous edition of this paper, changes in technology, social trends and environmental concerns seem to have accelerated. Whilst most of the car parks we visit do not seem to have changed much, there is a huge amount of investment and investigation happening into people's relationship with their vehicles, and how this will impact on the traditional way of looking at car parks as a business model. Most of our major CBD markets now have a car parking levy regime in place – these are here to stay, and only likely to increase. With most capital city councils pushing for increased usage of public transport and limiting the number of car spaces, CBD parking is set to become more expensive. The question for property owners is how to deal with the impact of the levy – and ultimately will the levy be borne by individual parkers?

The supply of commercial car spaces across Australian CBDs is very limited. Fewer parking bays are being developed within new office and residential buildings, and no new stand-alone car parking stations are currently proposed. In fact, we are seeing the demolition of several existing car parking stations to a make way for apartment and office developments. As a result, car park rentals are generally expected to trend upwards.

Similar to other commercial investment markets, car parking has benefited from the weight of capital and interest from offshore purchasers. Investors are increasingly exploring alternative investment opportunities in non-traditional asset classes that include car parks. While investment demand is strong and returns have firmed, industry growth is slow due to limited expansion opportunities.

The car parking sector is not immune from the advances and impacts of technology. The development of self-parking cars and robotic parking systems is already occurring. A number of licence plate recognition systems and app-based programs are currently being rolled out in the Australian market whereby a driver does not need to take a ticket in order to gain access to a car park. These developments create both risks and opportunities for car park owners. So where is the business of car parking going?

DEMAND CONTINUES TO EXCEED SUPPLY

Spike in new supply expected in 2015

With local government planning policies aimed at curtailing growth in the number of new car parking spaces within CBD locations, and no new multi-storey car parks being developed, demand is exceeding supply. Growing workforce numbers, increasing CBD resident populations and a resurgence in city retailing are combining to lift demand for car parking. While at the same time supply of new car parks has slowed. Between 2013 and 2015 the total number of CBD car parking spaces will have grown by just 2.1 per cent, from 156,791 to 160,086. The largest increases will occur in Melbourne and Canberra. During 2015 we anticipate a jump in supply with 2,415 car spaces to be added across the major CBD markets, up from 880 in 2014. This is due to an increase in the number of office buildings being completed this year. Over 2016 and 2017 around 1,110 bays are expected to be supplied, with a further 3,286 mooted in the medium-term. Melbourne retains its position having the most car spaces at 41,687 bays.

> Growing workforce numbers, increasing CBD resident populations and a resurgence in city retailing are combining to lift demand for car parking.

Future non-residential car spaces in Australian CBDs 2009 - 2015

	Number of Spaces				2013 - 2015	
	2009	2011	2013	2015	No.	% Change
Adelaide CBD	25,509	25,530	26,640	26,720	80	0.3%
Brisbane CBD	24,474	25,141	25,415	25,633	218	0.9%
Canberra	11,583	11,514	11,784	12,683	899	7.1%
Melbourne CBD	39,080	39,898	40,612	41,687	1,075	2.6%
Perth CBD	23,216	22,831	23,715	24,424	709	2.9%
Sydney CBD	29,447	28,498	28,625	28,939	314	1.1%
TOTAL	**153,309**	**153,412**	**156,791**	**160,086**	**3,295**	**2.1%**

Source: RPData / PCA / Colliers Edge

The majority of car spaces in Australian CBDs are used by workers. Deloitte Access Economics forecast the number of workers across Australian CBDs will have increased by 21,452 in the five years to 2015. While low by historic standards, employment growth does appear to be developing some momentum. The pace of improvement will hinge on how well the positive impacts of low interest rates flow through to employment in the finance sector. Recent developments in interest and exchange rates should support the likelihood of a return to solid job gains in the medium-term. We can compare the supply of parking to demand by using a ratio of CBD car spaces per 100 workers. After declining between 2006 and 2011 in most capital cities, outcomes have been mixed over the past four years. The ratio of car spaces to workers was broadly steady between 2013 and 2015 with the exception of Adelaide, Perth and Canberra which have seen an increase. The most significant increase has been in Canberra, moving from 18.9 to 21.5. The cities which have the lowest ratio of car spaces to workers remain our largest CBDs – Sydney at 12.2 and Melbourne with 14.2; while the Adelaide CBD is the highest at 25.2.

Changes in CBD workforce 2007 - 2015

	CBD Workforce				
	2007	2009	2011	2013	2015
Sydney CBD	236,007	235,479	236,322	236,689	237,986
Melbourne CBD	259,741	278,535	280,067	283,778	293,689
Brisbane CBD	109,059	114,522	119,052	117,248	117,817
Adelaide CBD	101,059	106,466	109,191	108,232	105,972
Perth CBD	113,986	117,946	127,055	136,880	138,970
Canberra	52,342	56,283	60,394	62,208	59,100
TOTAL	**873,062**	**909,231**	**932,081**	**945,035**	**953,533**

Source: Deloitte Access Economics / Colliers Edge

> Parking conditions in the Sydney CBD are expected to tighten significantly with a substantial number of on-street parking spaces being removed over time to accommodate the CBD and South East Light Rail.

Non-residential car spaces 2007 - 2015

	Car Spaces				
	2007	2009	2011	2013	2015
Sydney CBD	28,173	29,447	28,498	28,625	28,939
Melbourne CBD	39,211	39,080	39,898	40,612	41,687
Brisbane CBD	22,833	24,474	25,141	25,415	25,633
Adelaide CBD	24,589	25,509	25,530	26,640	26,720
Perth CBD	20,921	23,216	22,831	23,715	24,424
Canberra	8,071	11,583	11,514	11,784	12,683

Source: Deloitte Access Economics / Colliers Edge

Non-residential car spaces per 100 CBD workers 2007 - 2015

	Car Spaces per 100 workers				
	2007	2009	2011	2013	2015
Sydney CBD	11.9	12.5	12.1	12.1	12.2
Melbourne CBD	15.1	14	14.2	14.3	14.2
Brisbane CBD	20.8	21.4	21.1	21.7	21.8
Adelaide CBD	24.3	24	23.4	24.6	25.2
Perth CBD	18.4	19.7	18	17.3	17.6
Canberra	15.4	20.6	19.1	18.9	21.5

Source: Deloitte Access Economics / Colliers Edge

On a global comparison, Sydney has one of the lowest CBD parking spaces to employee ratios, currently at 12.2 spaces for every 100 workers. The Sydney CBD also has one of the highest non-discounted median daily parking rates at $70.85. The City of Sydney aims to reduce the provision of new parking spaces by 50 per cent by 2030. They also continue to prioritise on-street parking for service/delivery vehicles, taxis and disabled persons versus short-term parkers. Consequently we are also seeing an adjustment of on-street parking rates to approach off-street rates. Car sharing has also become more popular – within the Sydney CBD there are currently 13 on-street spaces designated for car share parking.

Parking conditions in the Sydney CBD are expected to tighten significantly with a substantial number of on-street parking spaces being removed over time to accommodate the CBD and South East Light Rail. The project will connect Circular Quay to Central, and in the south east Kingsford and Randwick via Surry Hills including Moore Park and the University of NSW. The proposal includes 20 light rail stops and the pedestrianisation of George Street between Bathurst and Hunter. The system is expected to be open and operational in 2019. The light rail will have a major impact on the operation of streets in the CBD as bus routes will be diverted and most on-street parking and loading zones will be lost to create bus lanes, general traffic and turning lanes. This will push additional parking off-street.

Quay West Car Park, Sydney NSW
Valued on behalf of Mirvac

PRICING GAINS PERSIST

With casual car parking rates significantly higher than Early Bird and daily rental rates, we have a scenario where one type of user is subsidising another. Car park owners have somewhat cushioned the impact of price rises on long term users by increasing casual hourly rates. From this perspective, levies and the push to decrease the attractiveness of driving into the CBD haven't essentially reduced the number of cars driving into the city – it has just shifted the increased cost to casual parkers. Colliers International analysed pricing data from over 200 car parks run by the major commercial operators. CBD daily rates for parking continued to increase steadily between 2013 and 2015 across most major markets, with the exception of Adelaide, Melbourne and Perth. The performance of office markets are a good indicator of short-term movements in parking rates. An imbalance between the amounts of car parking being developed to the increased number of workers leads to higher demand for car parking and more significant price increases. The provision of parking analysed previously provides a good indication of parking rates. The Adelaide CBD has the highest provision of parking per CBD worker, and also has one of the cheapest average daily rates at $22.29. The Sydney CBD has the lowest provision per worker and consequently the highest average daily rate at $70.85. The biggest increase in average daily rates over the past five years has occurred in the Brisbane market, where rates have gone from $39.00 in 2011 to $69.03 in 2015. This is primarily due to minimal supply of new car parking spaces during this period. There has been a slight decline in the average daily rate in Adelaide and Melbourne over the last five years.

Historic average car park rates for Australian CBDs

	CBD Average Daily Rates			
	2009	2011	2013	2015
Adelaide CBD	$18.50	$23.20	$23.00	$22.29
Brisbane CBD	$47.50	$39.00	$53.00	$69.03
Canberra	$8.50	$10.00	$15.50	$18.21
Melbourne CBD	$52.00	$66.00	$65.00	$63.61
Perth CBD	$29.00	$31.00	$35.00	$31.89
Sydney CBD	$54.50	$64.00	$68.00	$70.85

Source: Colliers Edge

Car park rates for Australian CBDs

	CBD Daily Rate Ranges			
	Minimum	Maximum	Average	Early Bird Average
Adelaide CBD	$10.00	$29.00	$22.29	$13.08
Brisbane CBD	$40.00	$89.00	$69.03	$25.25
Canberra	$7.00	$30.00	$18.21	$11.33
Melbourne CBD	$15.00	$89.00	$63.61	$17.74
Perth CBD	$15.00	$55.00	$31.89	$18.75
Sydney CBD	$25.00	$89.00	$70.85	$27.00

Source: Colliers Edge

The Sydney market currently has the highest average Early Bird rate at $27.00 per day with Canberra recording the lowest at just $11.33. The difference between the full daily rate and Early Bird rates is typically a discount of 40 per cent. This gap has widened over

> The fact remains that the levies are here to stay and are only likely to increase, in quantum and in geographical extension.

the past few years as steeper discounts are available. This has occurred in part with the advent of online booking systems. While not offered at all locations online booking is growing steadily, at least by the two major operators across 'everyday' type car parks not just for events. This may have the effect of eroding parking revenues over time as drivers get used to the idea of being able to book online. The concept of online booking was initially to attract people who would not otherwise drive, but in practice this has not so far been the case. The introduction of online booking by both the major car park operators has seen Early Bird, hourly and daily rates offered cheaper than the advertised rate. This typically ranges between 10 per cent and 50 percent for Early Bird; and 20 per cent to 35 per cent for hourly and daily rates. To encourage customer loyalty, both major car park operators have also recently introduced tie-ins with the Qantas Frequent Flyer program and the Myer One scheme, allowing patrons to accumulate points from dollars spent on car parking.

CONGESTION LEVY UPDATE

Congestion Levies (aka Parking Levies or Transport Development Levies) have been a feature of some CBDs around Australia for many years now, with their stated objective being to reduce congestion by encouraging people to switch to public transport. Over the years, some cities have been more successful than others in providing viable options for commuters (for example, the Perth CAT system). The fact remains that the levies are here to stay and are only likely to increase, in quantum and in geographical extension. Therefore, understanding and managing the impact of changes in the levy will be an ongoing concern for car park owners.

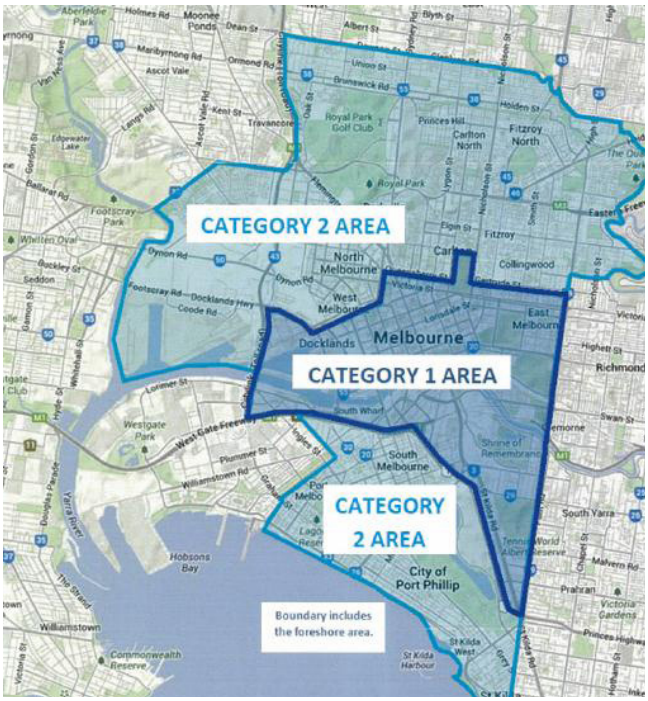
OVERVIEW OF THE LEVY

Here is a brief history of the levy in each capital city:

SYDNEY: The Levy was implemented in 1996 with an annual charge of $200 (Category 1 area, namely the CBD) which doubled in 1997 and again in 2000 when it went to $800. In 2000, a Category 2 area was introduced to encompass secondary CBDs such as Chatswood and Parramatta at $400. After crawling along at CPI increases, the next big jump took place in 2009 when levy charges increased to $2,000 (Category 1) and $710 (Category 2). As of 2014, the levy in Sydney stands at $2,260 and $800 respectively.

MELBOURNE: In Melbourne the congestion levy commenced in 2006 at a concessionary rate of $400 before doubling in 2007. It then continued increasing by CPI each year until 2014 when it went from $930 to $1,300 per bay. At the same time the bays subject to the levy also increased from those considered as long stay (occupied for longer than four hours per day) to all bays in the car park (with some minor exemptions). The levy has also expanded geographically into a new area known as Category 2 which is leviable from 1/1/2015 at $950 per bay. The areas covered by Category 1 and the new Category 2 are shown in the map on the following page:

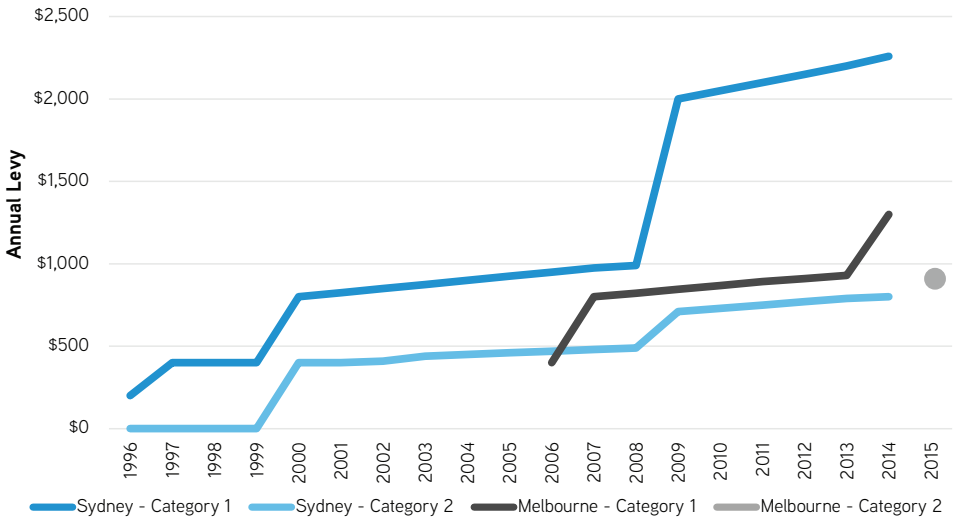
1 Dixon Street Sydney Car Park
Sold on behalf of Hyperion Property Syndicates Limited



PERTH: The levy in Perth was introduced in 1999 and currently ranges between $911 (non-residential parking) and $813 (short stay public parking and on-street parking).

ADELAIDE: Property owners breathed a sigh of relief when the mooted introduction of a congestion levy in Adelaide was overthrown by the incoming state government at the recent elections. The levy was due to be introduced from 1st July 2014 at an amount of $750 per bay.

Sydney and Melbourne historical congestion levy rates



Source: Parking & Traffic Consultants

> The main concern is to ensure that the cost of the levy is matched as closely as possible to increases in parking fees.

THE IMPACT ON CAR PARK OWNERS

The big question for property owners is how to deal with the impact of the levy. A 1,000 leviable bay car park in Chatswood will, for example, incur an additional maximum cost of $800,000 (subject to occupancy and exemptions). Where does this money come from? Is the owner able to pass this cost onto the car park operator and to what extent? This will depend on the provisions of the lease or management agreement. But operators are likely to seek to minimise their exposure by either re-negotiating rentals or trying to limit their liability just to CPI increases, leaving owners in many cases with the responsibility for such hikes as the recent one for Melbourne.

USER PAYS?

Ultimately the levy will be borne by individual parkers. The extent to which this will be possible depends on a number of considerations which will vary across different parker types.

PERMANENT PARKERS: spaces licenced to large corporations who pay for parking on behalf of their employees are normally quoted at a monthly rate + levy + GST. For these spaces the levy can be passed on directly and immediately to the licensees. It is generally expected that parking for these customers is relatively inelastic and therefore passing on the levy in full will not result in a significant decrease in licenced spaces. At worst there may be some temporary reductions but ultimately the benefits of having a dedicated parking space will outweigh the additional cost (being $1 per day calculated as $1,300-$930/365 days in Melbourne).

CASUAL PARKERS: they pay for parking based on length of stay and the fee covers levy and GST (which are not separately stated). A casual space in the Melbourne CBD which until 1/1/2014 was not subject to levy, will now incur an additional cost of $4.30 per day ($1,300pa divided by 302 days assuming six days trading per week). On an assumed daily turnover of three times this means an additional cost of $1.45 per transaction. On an average parking fee for two hours stay in the CBD of $35.00 (as of March 2014), passing on the levy cost of $1.45 would represent an increase in the parking fee of 4.1 per cent and therefore this might take some time to be able to be recovered in full. It is interesting to note that the average parking fee for two hours stay in January 2013 was approximately $34.00 and therefore there has been an increase in the last year of around 3 per cent, slightly more than inflation, so there may be already some movement happening in casual rates to recover, at least in part, the cost of the additional levy. This is supported by anecdotal evidence from operators. Due to the temporary nature of this category, it is likely that pricing will be relatively inelastic and again the benefits will likely outweigh the inconvenience of switching to public transport.

EARLY BIRDS PARKERS: this is probably the most sensitive category of all. They are all day parkers who use their car to go to work and normally pay for parking out of their own pocket. Again taking the Melbourne example, we would need to consider the additional levy (as early bird spaces would have already been subject to levy under the previous regime being long stay bays) of $370 per annum but in this case we have to divide by 252 days (excluding weekends and public holidays) which results in an additional cost of approximately $1.50 per day and since these parkers stay all day, also per transaction.

172 Flinders Street, Melbourne
Valued on behalf of Dexus

The average early bird price in the Melbourne CBD was $16.20 (in March 2014), having increased from approximately $15.85 in January 2013 (2.2 per cent). Passing on the full levy increase to this category would represent an increase of 9.3 per cent and it is likely that this would result in a certain percentage of parkers switching to a different mode of transport, in the short term at least.

LEVIES ARE HERE TO STAY

As can be appreciated, the management of the parking levy requires careful analysis and thought and will likely vary from city to city and between individual car parks. The main concern is to ensure that the cost of the levy is matched as closely as possible to increases in parking fees for all the categories of parker to ensure that property owners achieve as good an outcome as possible over time.

INVESTMENT MARKET

The overall commercial investment market within the majority of capital cities across Australia is strong at present with an unprecedented weight of capital chasing a finite supply of investment grade properties. Investors are therefore exploring alternative investment opportunities in non-traditional asset classes including car parks.

Car parks are a tightly held asset class that rarely trade, even in good economic times. Apart from the investment fundamentals of a car park, such as the car park's return on investment, a number of car park assets are held for alternative reasons including land banking or providing car parking to owner occupiers.

PROPERTY	DATE	SALE PRICE	NO. OF CAR SPACES	RATE ($/SPACE)
20-28 La Trobe Street, Melbourne	Oct-14	$17,500,000	706	27,787
300 Flinders Street, Melbourne	Jan-14	$40,000,000	574	69,686
Sydney Opera House Car Park	Dec-13	$80,000,000	1,176	68,027
10 Lincoln Crescent, Woolloomooloo	Nov-13	$1,600,000*	81 (income producing bays)	19,753
McWhirters Car Park, 728 Ann Street, Fortitude Valley	Oct-13	$44,000,000	770	49,351**
224-250 La Trobe Street, Melbourne	Oct-13	$43,150,000	689	62,627
Car Park, 1 Dixon Street, Sydney	Sep-13	$8,050,000	100	80,050
517-537 Flinders Lane	May-13	$6,000,000	106	56,604
Norwest Car Park	Nov-12	$5,500,000	504 (income producing bays)	10,913
222 Russell Street, Melbourne	Aug-12	$16,880,000	427	39,532
50 Bolton Street, Newcastle	Aug-12	$5,600,000	521	10,749
170-190 Russell Street, Melbourne	Jul-12	$39,500,000***	409	46,000**
300 Flinders Street, Melbourne	Nov-11	$28,200,000	574	49,129
Strata Lots 51-54/SP78631 of 55 Holt Street Surry Hills	Oct-11	$4,150,000	76	54,605
224-250 La Trobe Street, Melbourne	Sep-11	$29,200,000	689	35,269

* Approximate only
** Excludes apportioned value of retail/office
*** Including retail/office

34-60 Little Collins St, Melbourne
Valued on behalf of Dexus

The types of investors that are attracted to car parks include car park operators, investors looking to spread their investment risk over a variety of property types including a number of institutional investors and, particularly in the CBD, investors looking for redevelopment opportunities.

Dependent on location, car parks are attractive as a source of secure cash flow, with relatively stable income growth and low vacancy risk as a result of continuous demand for car parking. It is important to note however, that net profits can be impacted by changes in government policies including changes to congestion levies or changes to town planning policies which have the potential to impact on the patronage of particular car parks. A summary of the most recent car park sale transactions is provided on the page above.

From our analysis of car park sales in major capital cities throughout Australia it is noted that yields for mature car parks often show a correlation with those of similarly priced commercial buildings in comparable locations. Recent transactions indicate that as a general trend, car parks which are subject to leases reflect slightly lower yields compared with car parks subject to management agreements; however this is dependent on the terms of the particular lease agreement.

One example of the strength of the current investment market for car park assets is 300 Flinders Street, Melbourne which comprised a strata titled car park (ground plus eight upper levels) purchased in December 2011 for $28 million. The purchaser subsequently undertook a minor cosmetic and operational upgrade and secured a ten year lease with a reputable car parking tenant (Secure Parking). The asset traded two years later for $40 million providing a $12 million increase in value. The 2014 sale reflected an initial yield of 6.07 per cent.

CAR PARK RENTALS

With regard to car park rentals within Sydney and Melbourne we are seeing varying movements on a case-by-case basis primarily dependant on the performance of each asset and competition in specific precincts. Generally however, rentals and trading incomes appear to have stabilised in recent years. In our opinion it is unlikely that there will be a significant improvement in car park rentals or trading incomes in the short term. However in the medium to long term, with fewer new parking bays being developed within new commercial and residential projects, no new stand-alone parking stations proposed, and the proposed demolition of several existing car parks for apartment and office development, car park rentals (depending on location) are expected to trend upwards. Of importance within Sydney over the longer term will be the anticipated changes to traffic conditions in the CBD post completion of the light rail network which will see a major transformation of George Street and traffic changes to neighbouring streets. Re-directed traffic may benefit some car parking stations while impacting negatively on other stations. Understanding these potential changes is critical in any longer term projections for a car park.

From a permanent user commercial tenant perspective we have also seen car parking rentals stabilise with limited growth shown in recent times. Current annual permanent car parking rates in the Sydney and Melbourne CBD's range as follows:

2-6 Trade Park Drive, Tullamarine
Valued on behalf of a financier

SYDNEY

- Core Precinct $11,000-$14,000 plus GST and Levy
- Mid-Town Precinct $9,000 to $12,000 plus GST and Levy
- Western Corridor Precinct $8,000 to $10,000 plus GST and Levy

MELBOURNE

- Eastern and Western Core: $5,750 to $6,950 plus GST and Levy
- CBD Grid Remainder: $5,400 to $5,900 plus GST and Levy
- Docklands: $4,200 to $4,600 plus GST and Levy

DISRUPTIVE TECHNOLOGY

A few weeks ago there was an interview on the radio with the management of Port Headland Airport discussing the growing issue of fly-in-fly-out employees leaving their cars in the car park unlocked and with the key in the ignition, in order to provide a workmate arriving on the same flight with a car to go home. Whilst the topic of the interview related to the insurance issues arising from the huge increase in stolen vehicles, this also highlights a potential loss of parking revenue for the airport since the time spent by a vehicle in the car park is reduced to a few hours at most, against the days previously spent when one employee would leave his or her car in the car park for the duration of their shift. So where is the business of car parking going?

We are all familiar with the Airbnb concept where a whole industry has sprung from people renting out a room or a whole house for a temporary time in competition to hotels. It was originally set up by a couple of young entrepreneurs in California to provide options due to shortage of hotel accommodation during a large conference and it went from setting up airbeds in shared spaces to a variety of properties including entire homes and apartments, private rooms, castles, boats, manors, tree houses, teepees, igloos, private islands and other properties. According to Wikipedia, by 2013 it had over 800,000 listings in 33,000 cities and 192 countries.

A similar situation has arisen with Uber within the taxi industry. Again according to Wikipedia, Uber is an app-based transportation network and taxi company headquartered in San Francisco, California, which uses a smartphone application to receive ride requests and then sends these trip requests to their drivers. As of December 16, 2014, the service was available in 53 countries and more than 200 cities worldwide and was valued at more than US$40 billion.

Neither Airbnb nor Uber own a single asset to generate revenues from. We mention these two examples as an indication that if traditional industries such as taxis and accommodation can be so significantly affected by the power of personal communication technology, the parking industry may be similarly challenged and owners of car parks need to be aware of the repercussions this may have for their properties. Putting aside legal, risk and fiscal issues which are outside our expertise, the fact remains that cars spend most of the time parked in various locations (at home, at work, at the airport, etc.) and this presents a latent opportunity for these vehicles to be used by others who have a short term need for a car. The fly-in fly-out example mentioned earlier seems to address this exact issue.

Riverside Quay Car Park, Southbank
Valued on behalf of Mirvac

On the other hand, there are unused spaces in private car parks and even homes, which are not generating revenue for the owner, while there are people looking for a place to park, perhaps in a location not well served by public car parks.

There are technological developments being discussed currently that will allow drivers to access available car park spaces or even allow private citizens to barter or sell their driveway or kerbside space. Current versions of smart phone apps are already putting pressure on car park owners through intensifying competition and also pushing re-evaluation of the best use of available spaces. For example, could it be possible for a monthly or yearly user to re-let their space while they are on holiday for a price? Can the owners of permanent car parks monetise their sometimes unused spaces for casual parking? Now that the door is open, the possibilities are endless.

Car park end-users want to find an available car park at a competitive price in real time. Public car parks are either operated by Councils or private entities. Councils around Australia are slowly embracing dynamic signage to alert drivers of real time car park availability. Some car park operators provide their own individual apps which are able to provide real time availability and special pricing data. So there is vulnerability to a one stop shop, delivered in real-time app, even more so if that application can supply exclusive daily or weekly deals.

These developments represent risks and opportunities for car park owners which need to be considered as new business ventures are developed. Airports for example have had to deal with off-airport competitors undermining their market. At San Francisco International Airport and Mineta San Jose International Airport amongst others, a company is offering free parking to drivers who are happy for their car to be rented to an incoming passenger, effectively eroding not just the parking revenue but also the car rental business at the airport. While writing this paper such a business has commenced operating near Melbourne Airport.

THE INTELLIGENT VEHICLE

Audi, Volvo and other car manufacturers are in the process of developing self-parking cars. Controlled via an app, cars are able not only to park themselves but also return to a specific location to pick up the driver again. This technology is not that far away: according to news reports, Volvo is developing the S60 prototype with a mainstream model mooted for production in 2017.

The impact of these vehicles on traditional car park design will need to be taken into consideration as “drop off” and “pick up” areas would need to be created. Since cars will not be parked by a person the size of the bay may be able to be reduced (no door openings, etc.) and savings might be able to be achieved in terms of lighting and signage as pedestrians would only congregate at the pick-up and drop-off points. Parking structures being designed now will have a useful life of 30 years or more and therefore allowance and flexibility to respond to these potential changes will need to be made (column free spaces are a good way of future proofing).

The Audi A7 for example, is able to navigate car parks without the use of GPS, as it has laser scanners and cameras which provide a 360 degree view of the vehicle’s surroundings, creating a map as it goes. Audi also developed a concept model able to monitor traffic lights, road signs and line markings.

ROBOTIC PARKING SYSTEMS

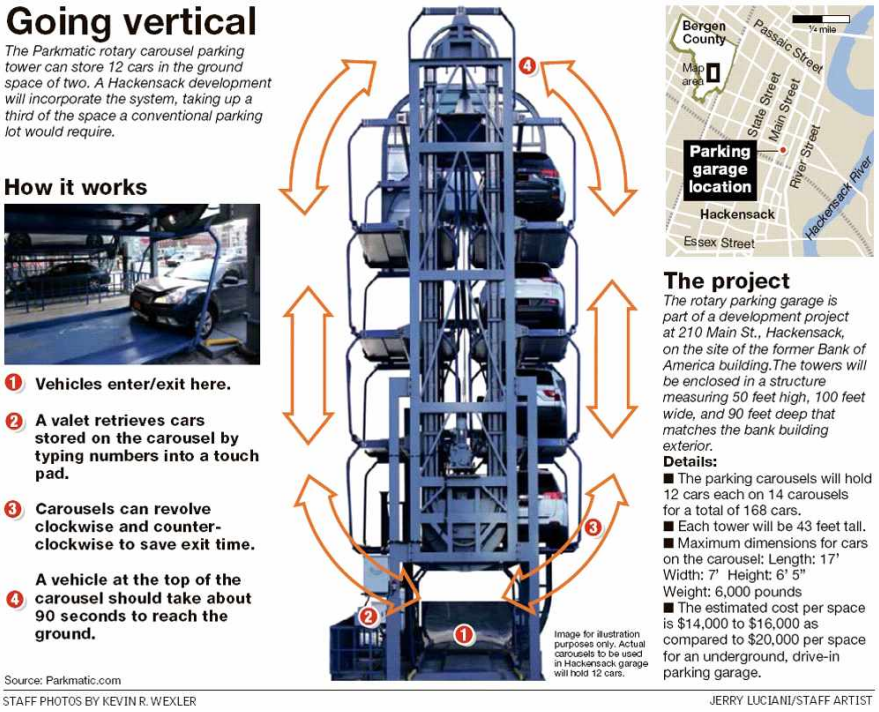
Australia has been notoriously slow in considering automatic parking stations. Early unsuccessful projects have negatively affected how these technologies are perceived, particularly with regards to customer service when a system failure occurs. However, new developments in the technology seem to indicate that the take up overseas is increasing and local developers and owners need to consider the cost/benefit deriving from an

A robotic valet at Dusseldorf's airport in Germany is now in operation where the equipment lifts the vehicle and slots it into a designated parking bay. The robot (RAY) is an automated fork lift truck whose operation is aimed at the business customer, usually time poor, controlled and booked via an app. All the driver has to do is drop the car off in a designated area, go to a nearby touch screen to confirm the car is empty, and RAY does the rest.

According to the manufacturer, RAY uses sensors to measure and photograph the car, lifts it and takes it to one of the reserved 249 parking spaces. The space saving system can accommodate 60% more cars than a traditional car park and is also connected to the airport's flight data system: RAY will retrieve the car based on flight itineraries. The app also lets car owners communicate with RAY if there are any flight delays.

RAY is not the only robot valet being installed. A New Jersey company (Boomerang) also aims to take parking to the next level by using an automated parking system that can park cars without human intervention. Therefore, car parks need no light and little ventilation and can fit more cars into a smaller space, freeing up valuable land for other real estate. The design incorporates redundancy by providing multiple entry bays, multiple robots and multiple lifts so there is no single point of failure.

Finally, a parking concept that was born in the United States years ago is making a comeback to a luxury housing complex planned for a slender site in Hackensack, NJ. The system resembles an upturned dry cleaner's revolving conveyor - each loop can store 12 cars; with 14 separate loops enclosed in a single building planned to go up behind a renovated former Bank of America building. The developers can fit 168 cars or SUVs in a third of the space of a parking garage and at a savings of $US1 million. Without this technology, the developers said they could not have met the parking requirements for the 135 apartments and businesses they need to create to make the mixed-use development profitable. In order to address the perceived risk of equipment breakdown attached to these systems, the manufacturers of this solution have incorporated a manual override to lower cars if the mechanical system fails or gets stuck.



ARE PARKING TICKETS THE NEXT DINOSAURS?

A number of systems and applications are currently being released in the Australian market whereby a driver does not need to take a ticket in order to gain access to a car park. By the use of licence plate recognition cameras or other app-based programs, a car entry is recorded in the system inclusive of time of entry and registration plate. Payment can occur by entering the registration number at the automatic pay station and the car can exit when the camera placed at the exit point recognizes the number plate and the fact that payment has taken place to lift the boom gate automatically. Various systems offer derivations of the solution, the aim of which is to provide benefits to both the property owner and the customer. For the former, there are reduced capital and maintenance costs for ticket issuing and accepting machines as well as lower cost of consumables (i.e. tickets). For the customer, the process is much faster making entry and exit more expedient.

There are still some issues that need to be resolved with regard to the reliability of equipment reading registration plates accurately and therefore requiring a back-up procedure for situations where an entry, a payment and an exit cannot be accurately matched by the system. However, in a retail environment for example where up to two or three hours of parking is provided for free, and the consequent low volume of paid transactions, this solution offers a real alternative. Such a system was recently launched at Westfield Miranda. Customers can also register via an app to have their payment automatically processed from their credit card rather than queuing at the pay station.

These systems are also particularly useful for regular parkers such as staff and students at universities, where following an online or app registration drivers can pay for parking by simply activating their arrival and departure times on the app with no equipment required on site at all.

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FINDING A SPACE AROUND TOWN

Following on from the previous version of this white paper, not a lot has happened with regard to city-wide guidance in Australia, although there are a number of local councils currently considering the opportunities of this technology to maximize use of available parking spaces (compared to building more parking) and to manage increasing levels of congestion.

A recent project in the city of Zug in Switzerland may provide more Australian councils with the required inspiration. A total of 2,500 on street and off street spaces are being managed under a town wide Parking Guidance System installed last December via parking sensors providing real time occupancy information on individual parking spaces. Dynamic signs located at key access points into the city provide real time information on parking availability. In an official statement, the councillor Heinz Tännler explains: "The Zug parking guidance system is an asset in several ways. It relieves the city from unnecessary search traffic, helps to save fuel and optimizes the availability of existing parking facilities. In short, the new solution is an advantage for many. These benefits have a major impact on the city of Zug, which as an attractive canton capital and economic engine of the region relies heavily on the good accessibility of the city."

CUSTOMER SERVICE

"Putting your phone away and listening to the person talking to you?

There is an app for that, it's call MANNERS"

Having addressed a number of technological developments either in use or looming in the horizon, most of which effectively involve the elimination of human interaction, it is important to point out the value of customer service. This can never be overstated. All other things being equal, a customer will choose to park in the site which provides the best service. A number of property owners are in the process of deploying concierge style reception areas inspired by five-star hotels, including creation of livery and branding that will associate that particular service to the owner of buildings across a number of cities and locations. This level of service is expected to be taken all the way through into the car park which, as we well know, is often the first and last point of contact. Expect to see more of that in the coming years as owners seek to differentiate their buildings by adding that extra level of service.