Parking in the Future; Virtual Parking and Technology to make informed decisions

C Covich[1], M Palamara[2], K Day[3]
[1]Mosman Council, Sydney NSW
[2]Headway Traffic and Transport, NSW
[3] Mosman Council, Sydney NSW

KEYWORDS: parking, technology, innovation.

INTRODUCTION

Using technology to make informed decisions:

Traffic and parking feature prominently in the minds of residents and local business owners. These issues have ranked amongst the 'Top 3' for Mosman residents in four consecutive biennial community surveys. In these surveys, an average 33% of respondents have identified traffic and parking as major issues for Mosman over the next 5-10 years

In 2014, to properly address these concerns, Mosman Council enlisted various consultants to help it chart a new direction for efficient management and forward planning of the area's traffic and parking requirements. Over the past five years since that time there have been many twists and turns, and the path continues to evolve

One of the many challenges faced along this journey was proper decision making without any emotional constraints. The availability of long term data was previously costly, time demanding and only accurate to large time blocks. Since the installation of smart parking technology within the Mosman local commercial precinct, data has poured in; providing the opportunity to realise the power of the data for the management of parking.

At the same time Council has also embarked on an ambitious Virtual Parking journey with the introduction of a Mosman Parking App showing real time on street parking data as well as VPermit, a virtual permit system replacing paper forms and parking stickers.

The use of this tangible data is now assisting us in making short and long term strategic decisions leading to better management of parking as an asset. It has given us insights into parking demand, restriction timings and enforcement. It has also given us an insight into the interesting behaviour of over stayers.

The paper will detail Mosman's parking journey, the highway to the future, the speed humps and dead ends along the way.

METHOD

Smart Parking Technology

In line with Councils Parking Strategy, in 2016 Council appointed Smart Parking Pty Ltd to implement a suite of parking technologies within the municipality. This included for on-street locations and on-street carparks. The deployment has seen the installation of 1100 on street parking bay sensors, 215 off-street parking bay sensors, 509 overhead guidance indicators in three multistorey carparks, 49 LED parking availability signs and plinths, and introduction of the innovative Park Mosman mobile app for smart phones and tablet devices. By introducing smart parking technology Mosman Council was able to:

- Improve the parking user experience for free and paid off and on-street parking
- Decrease user travel times, and time spent circling for parking
- Decrease traffic congestion in Mosman, and reduce user carbon footprint through reduced emissions
- Improve user compliance and parking enforcement efficiency
- Improve access to local businesses

Figure 1: Top Left a smart parking in ground sensor. Bottom Left the Smart Parking Dashboard showing sensor location and occupancy. Right the installation of an electronic parking sign connected to the sensors.

Innovative Park Mosman app

Given the abundancy of real time data available from the Smart Parking sensors, Council sought the best mechanism to deliver this information to drivers. The best way was to do this is via an app.

Utilising the data available through the parking data, Council worked with Pivotal to develop an innovative and customised smart phone application, Park Mosman. This enables drivers to locate parking within the main shopping areas of Mosman and Spit Junction, including available parking spaces both on street and in Council car parks.

Using their smart phone or tablet device drivers can view available parking to make an informed decision about where to park. In addition to this, further information is available for individual parking zones including maximum stay, time restrictions and the type of parking available such as accessible parking.

Information provided through the app is continually updated and refined to ensure drivers stay well informed about where and when to park in Mosman.
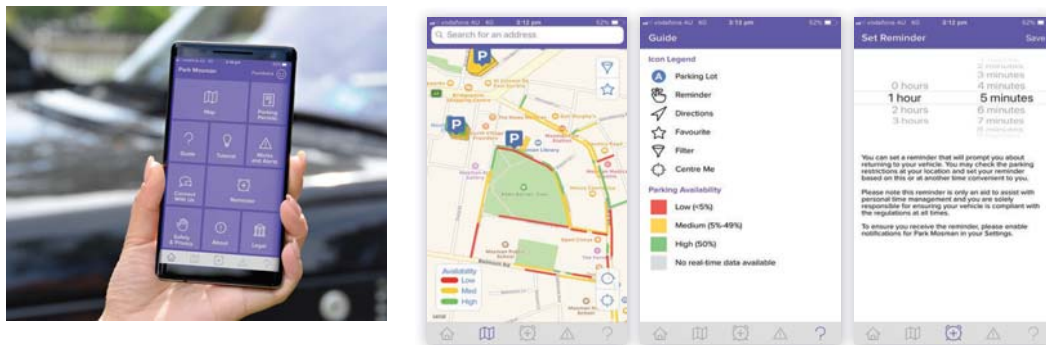

Figure 2: Left Front page of Mosman Parking App. Right pages of the Mosman Parking App.

Intelligent data

The occupancy data collected through Mosman's smart parking sensors is relayed in real-time to the car parking management software tool. Accurate vehicle-by-vehicle, minute-by-minute data on actual usage of the car parks gives Council the key data needed in day-to-day management as well as allowing us to make informed decisions on our parking policies. This data has allowed Council staff to identify areas of high occupancy as well as identify areas where duration of stay is an issue. Informed decisions can then be made as to time restrictions without relying on anecdotal information. In addition this data means Council does not have to undertake extensive parking surveys which might only provide a narrow view on issues and little information on patterns of behaviour.
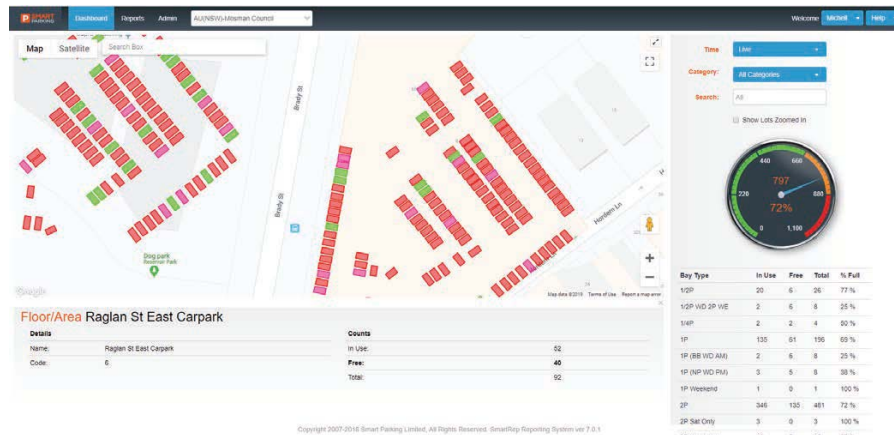
Figure 3: Smart Parking Dashboard

Virtual parking permits

To further progress its innovative approach and harnessing of technology, in 2017 Mosman Council set about replacing its display parking permit stickers with digital parking permits.

Council, like many other institutions of government, had an outdated process of issuing and managing year-long display parking permit stickers. Customers would have to visit Council's premises to get a physical parking permit sticker, and then attach that sticker to their vehicle's windscreen. If they changed vehicles during the year, they were required to return to Council's offices to fill in a statutory declaration and get a replacement sticker. This approach was time intensive and a frequent source of customer frustration, and congestion in Council's customer service. It also resulted in some cases of fraud, with the photocopying of permits, and presented a significant administrative burden for Council staff.

Council made the decision to modernise and move permits to an online system, taking cues from examples such as NSW's switch to digital vehicle registrations in 2013 and Medicare's technology upgrade to allow claims to be made online.

As of early 2018, no local government in Australia was using year-long digital parking permits. Council conducted a review of possible system providers, and invited proposals and presentations. A provider that had established systems in a number of universities across Australia was selected, CellOPark (also known as Smarter Parking). The solution they provided was vPermit (virtual permit).

Mosman Council operates two annual parking permit schemes – resident parking schemes, to provide easier parking for people living in areas that experience

heightened demand for parking due to commercial reasons, and the foreshore parking scheme, which enables residents to park in selected foreshore paring areas for recreational use. As the number of resident parking scheme permit holders is the much lower of the two, Council decided to develop the system to cater for this group first as a means of controlling risk during innovation.

VPermits for the resident parking scheme were launched in October 2018, and since that time Council has successfully issued over 1,100 digital resident parking permits. Using this scheme enforcing officers simply type in the licence plate number into an app on their smart phone to check the validity of the permit. During this first stage of the rollout a range of user feedback was collected, and improvements to the user experience have accordingly been made in preparation for the bigger migration of foreshore parking permits to the vPermit system. This will be launched in June/ July 2019 and is expected to deliver a display to digital switchover of 10,000 permits. Following migration of the foreshore parking permits to vPermits almost 100% of Mosman Council's parking permits will be managed online as digital permits.

The digital vPermit system delivers a range of benefits. Customers are no longer required to visit Council to obtain or change their permits, and can do it from the comfort of their own homes regardless of office hours, saving a considerable amount of time. Changes to permits can be made in a matter of seconds, and the use of plastics is reduced giving a better environmental outcome. Council is also better able to analyse its parking permit data and control fraud, and the administrative burden for the management of the schemes is reduced.

The new system has not been without challenges. Some customers are less technologically literate and require guidance to use the system, which Council customer service staff provide. Optical character recognition to read customers' drivers' licences (which prove residency in Mosman), and matching data sets between Council's property database and RMS's address database, is good but not perfect. Despite these challenges, the system has delivered superior customer convenience for parking permits

Other Opportunities

Installation of in-ground technology was not a 'cash grab' the use of technology for enforcement purposes was deferred until the system was operational and there was time to undertake sufficient monitoring and research. In due course, it will offer many opportunities for this.

The current system allows for future expansion and implementation of other technologies. Smart Parking's open API provides opportunities for integrating Council's parking data with third party assets including in the area of enforcement.

Since parking rangers first started walking streets little has changed in the use of white chalk. Smart Parking technology looks to make this redundant with a more effective and efficient approach to compliance. It provides access to the most highly-requested real-time status information across both a local and global parking network, in a single and consistent way.

In line with Council's original intention, in 2019 Council engaged PTC to review the system with a view to utilising it for enforcement. As part of the review, the community was consulted but this resulted in little meaningful feedback. Analysing the data however showed how useful that in itself was, and yielded interesting insights:

- On average, 7.8% of vehicles overstay the timed restriction including a grace period
- On weekends this reduced to 5.8% of vehicles
- The majority of overstays occur on the bottom/ ground level of car parks
- The majority of vehicles overstay 0-30mins
- Of those who overstay, up to 40% overstay over 30minutes in a 2 hour zone

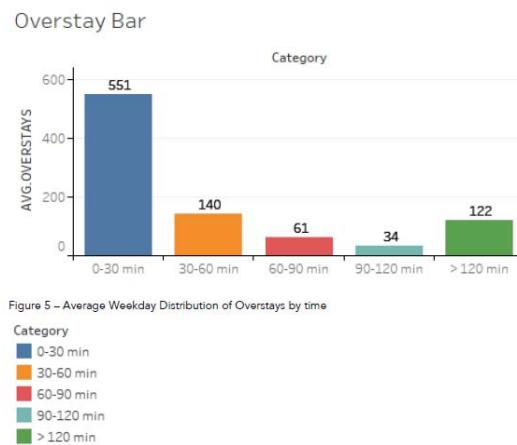Council will consider this matter again in late 2019

Figure 5 – Average Weekday Distribution of Overstays by time

Category
- 0-30 min
- 30-60 min
- 60-90 min
- 90-120 min
- > 120 min

Figure 4: Extraction of data from Sensors.

CONCLUSION

Parking as an asset:

Parking is a land use matter and should be treated as an asset. All assets should perform and not be undervalued. Without data, real data, the performance of an

asset cannot be truly understood. It is time to embrace technology when it comes to parking, so decisions are not based on one off reviews or emotional and anecdotal information.

Whilst parking technology is still on a journey, there is much to be learnt and tried along the way. These learnings can provide benefits to residents and businesses, all who have a stake in the way the asset is managed.

<u>REFERENCES</u>

https://www.smartparking.com/

https://www.cellopark.com.au/Site/