Report to General Manager

Attachments: Nil

SUBJECT: Parking Management – Parking Sensor Technology Review

AUTHOR: Michaela Kemp, Traffic and Transport Operations Manager

ENDORSED BY: Duncan Mitchell, Director Engineering and Property Services

EXECUTIVE SUMMARY:

Council began using parking sensors in metered parking areas in 2015 for parking management and enforcement purposes. The technology is specifically designed to provide an integrated parking management and enforcement tool for Council. It can also be used for parking surveys to determine live and average occupancy and turnover rates in a particular street or area.

This report details how the parking sensor technology has been utilised since its introduction in 2015 and how it has improved the overall management of parking in North Sydney.

FINANCIAL IMPLICATIONS:

Nil

Local Government Act 1993: Section 23A Guidelines - Council Decision Making During Merger Proposal Period

The Guidelines have been considered in the preparation of this report and are not applicable.

RECOMMENDATION:

1. THAT Council roll out the parking sensor technology to Council's open air carparks that are not already managed with boom gates.

LINK TO DELIVERY PROGRAM

The relationship with the Delivery Program is as follows:

Direction:	2. Our Built Environment
Outcome:	2.6 Improved traffic management 2.7 Improved parking options and supply

BACKGROUND

In 2012 Council resolved to enter into a contract for the supply of parking sensor technology for on-street parking management. The parking sensors were progressively rolled out in metered parking areas and became operational from July 2015 following a period of thorough system testing.

This report details information on how the data from the parking meter sensors is collected and used for both enforcement and monitoring has improved the management of parking in the North Sydney Council area.

CONSULTATION REQUIREMENTS

Community engagement is not required.

SUSTAINABILITY STATEMENT

The sustainability implications were considered and reported on during the initiation phase of this project.

DETAIL

Parking Sensor Operation

Prior to obtaining the technology, the only method of conducting parking surveys was to manually record parking surveys. This is usually a very accurate method of data collection, however can be limited due to time and cost factors.

A parking sensor is a small electronic device inserted into the ground that detects and records the time a vehicle enters and leaves a parking space. The parking sensors are integrated with the nearby parking meter and are linked to a parking management system that provides real time and aggregated data to Council. Council uses the technology to monitor parking in on-street metered parking areas.

Occupancy and Turnover

Parking demand is often measured in terms of parking occupancy and parking turnover. Both measures provide valuable information about how parking is used and how the parking resource can be managed to address the parking demand.

Parking occupancy is measured as a percentage of the number of vehicles observed to be parked in a nominated zone or area at a particular point in time, over the total number of parking spaces in that same zone or area. The average occupancy is calculated from a series of surveys.

Occupancy rates provide information about how easy or difficult it may be to find a vacant parking space. The accuracy of measuring occupancy is improved when the frequency of surveys is increased.

Parking turnover is measured as a percentage of the number of unique vehicles observed to be parked in a nominated zone or area at two or more particular points in time, over the total number of vehicles observed at each point in time. The average turnover is calculated from a series of surveys.

Parking turnover rates provide information about how often parking spaces become vacant. The accuracy of measuring turnover is improved when the interval between surveys is reduced.

Enforcement

Council has 12 parking officers who patrol 30 parking zones. The officers use a combination of foot patrol, license plate recognition technology and information provided by parking sensors, depending on the location. Parking sensor technology allows the parking officers to monitor larger areas over the same period of time. In coming months, the live data from the parking sensors can be provided electronically to parking officers and will reduce the time that parking officers are required to spend at each parking meter, whilst maintaining the same or better levels of compliance with parking restrictions.

The following chart shows the percentage of penalty infringement notices (PINs) issued in metered parking areas to all parking PINs issued over the past 6 years.

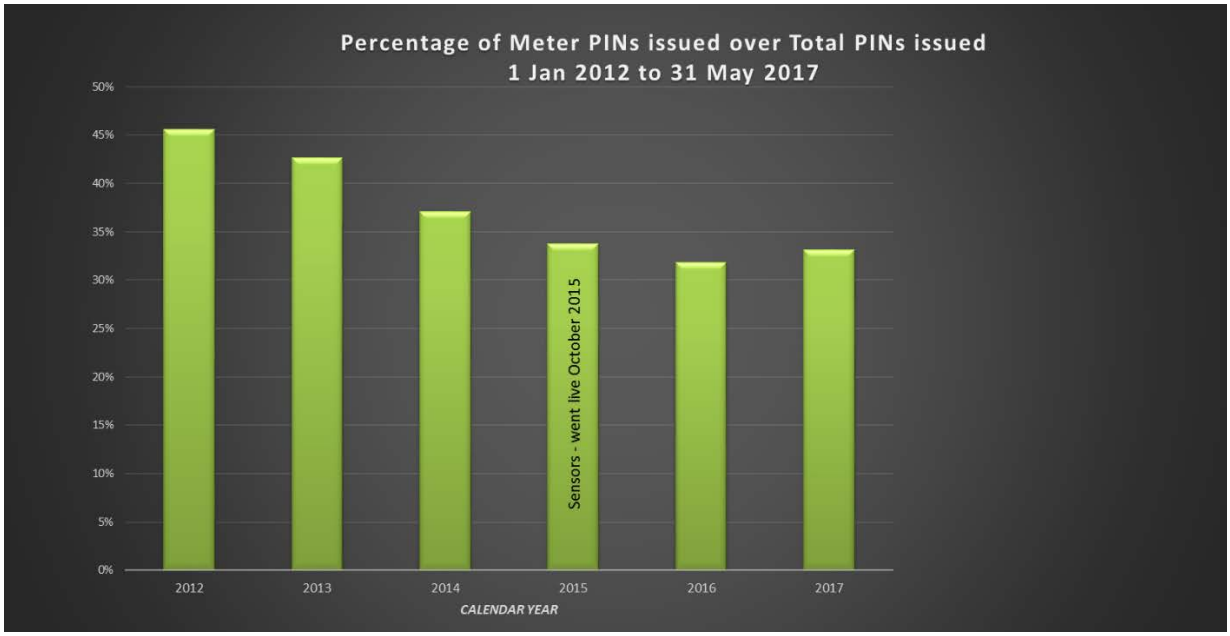

Figure 1 Percentage of Meter PINS issued to Total PINS issued

The above graph shows that the proportion of parking meter PINs issued was trending down between 2012 and 2014. In 2014 the proportion of meter PINs issued was 45.5%. In 2017 it was 33%. This represents a further decrease in parking sensor PINs of 11% (percentage change) after parking sensors were installed over the period between 2014 and 2017.

Since parking sensors provide a more efficient method of monitoring and achieving parking compliance, it means that parking officers can undertake more regular patrols of individual streets and because it is faster it enables parking officers to cover a larger area in the same amount of time.

As a result of improved compliance, parking officers are able to dedicate more time to the enforcement of safety issues such as parking in No Stopping Zones and School Zones.

Before and After Comparison of Parking Occupancy and Turnover

Occupancy and turnover was compared over the last three years for a sample of 15 streets. The results are shown in Figure 2 and Figure 3.

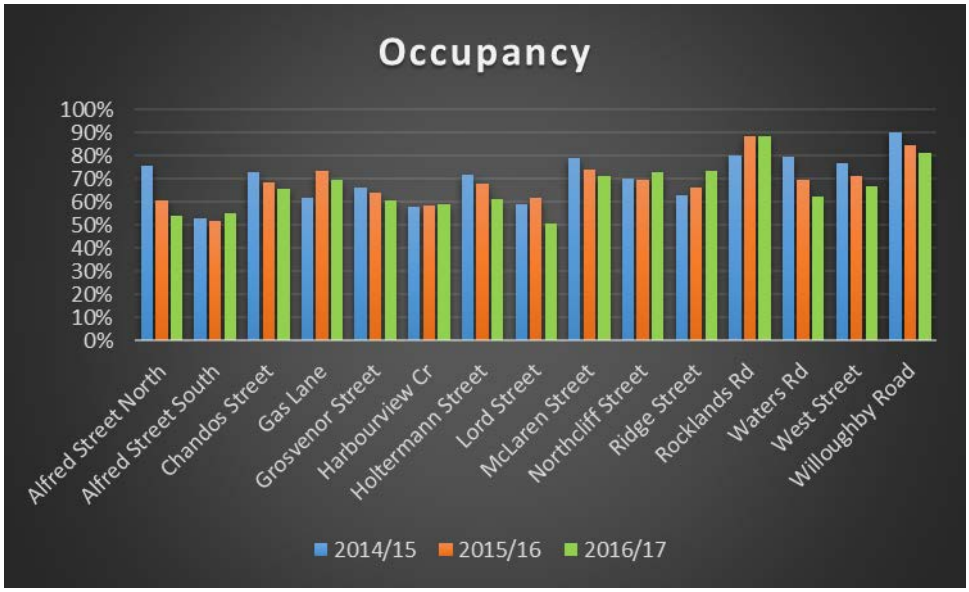

Figure 2 Comparison of parking occupancy rates in metered parking areas pre and post-installation of parking sensors

The average occupancy for the sample streets in 2014/15 was 70%. In 2015/16 the average occupancy was 69%. In 2016/17 the average occupancy was 66%. This represents a 6% (percentage change) decrease in occupancy rates over the two-year period since the sensors were installed.

Figure 3 shows the relative turnover rates in the sample street over three years. A turnover greater than 1 indicates that the parking is turning over regularly and, on average, vehicles are parking for a shorter period than the time limits. A turnover of less than 1 indicates that the parking is not turning over as regularly and, on average vehicles are parking longer than the time limits.

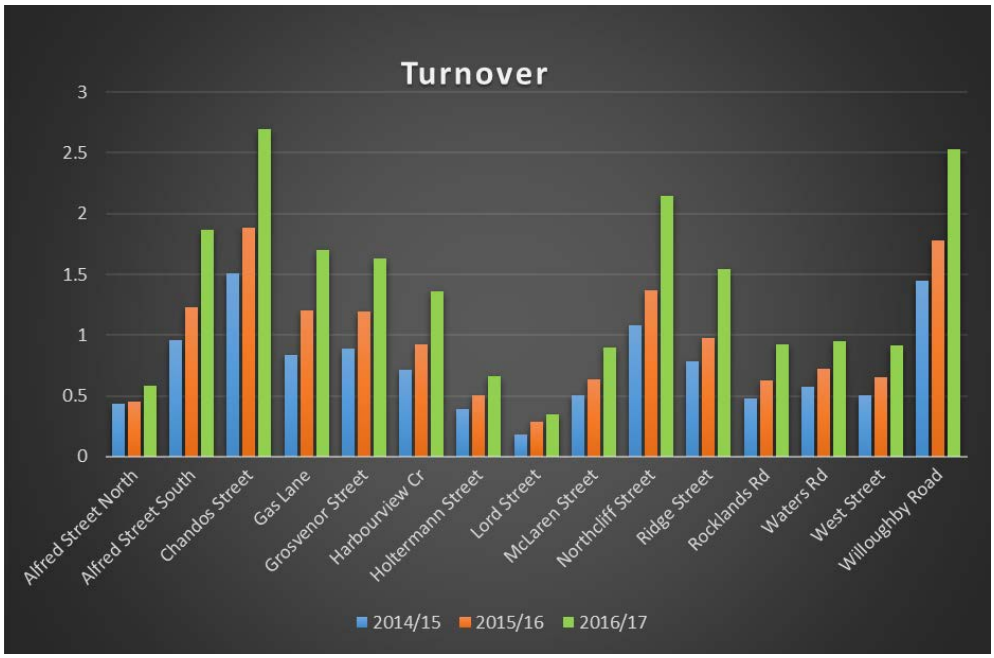

Figure 3 Comparison of parking turnover rates in metered parking areas pre and post-installation of parking sensors

The average turnover for the sample streets in 2014/15 was 0.75. The average turnover in 2015/16 was 0.96 and the average turnover in 2016/17 for the sample streets was 1.38. This represents a 44% increase in turnover since the parking sensors were installed.

Discussion

Both parking occupancy and turnover rates have improved since the parking sensors were installed. The proportion of penalty infringement notices (PINs) at parking meters compared to all PINs issued has also decreased since the sensor technology was installed.

One of the benefits of the parking sensors is that because they can record the time a vehicle entered the bay, they can prevent users from topping up the parking meter after their time period has expired. Prior to the sensors being installed this capability wasn't available. Whilst these overstays make up a small proportion of vehicles, it means that overall parking turnover is reduced and this can impact on how the parking is managed for the majority of users, to the detriment of customers and businesses.

It has been found that parking meters in North Sydney generally ensures a higher turnover of parking compared to timed, un-metered parking for the following reasons:

- Motorists minimise their utilisation of the parking resource where they have to pay
- There is a higher level of compliance at parking meters

A higher turnover of parking means that more residents and customers actually have access to the parking resource.

A higher turnover rate allows Council to use the collective occupancy and turnover data to review and set the most appropriate restrictions across the parking meter network to ensure spaces are used in the most efficient way and the time restrictions are appropriate for the surrounding land uses. This means that more people (customers) can access to the parking resource.

Conclusion

It has been found that parking meters in North Sydney generally ensures a higher turnover of parking compared to timed, un-metered parking. A higher turnover of parking means that more residents and customers actually have access to the parking resource.

Both parking occupancy and turnover rates in metered parking areas have improved since the parking sensors were installed. The proportion of penalty infringement notices (PINs) at parking meters compared to all PINs issued has also decreased since the sensor technology was installed.

This indicates that the parking sensors have improved overall management of parking in the metered areas. The success of parking meters and sensors also provides Council with an option to expand its parking meter network, particularly in locations where there is high parking demand and low parking turnover.

Given the success of the parking sensors in metered parking areas, sensors could also be rolled out to Council's open air time-restricted carparks that are not currently controlled by other means such as boom gates or meters. This would assist in managing turnover and occupancy in these areas.