

# Research for the City of Port Phillip's Car Share Policy Review

Final Report



**City of Port Phillip**

17 February 2016



## Executive Summary

This report has been commissioned to inform the development of the City of Port Phillip's On-Street Car Share Policy which expires in 2015.

The City of Port Phillip faces a significant challenge. How can it continue to be a healthy, liveable and connected City when a growing population is bringing with it an increasing number of private motor vehicles?

Back in 1991 there were 30,000 private motor vehicles based in the City of Port Phillip. Since then, at a rate of one car for every two people, the number of cars has increased in step with the population. In 1991 30,000 cars probably seemed like a lot, even 'too many'. But there has been a 60% increase over the following twenty years. By 2011, there were 48,000 cars based in the City of Port Phillip. Since then several thousand more vehicles have been added in buildings, parked by the kerb and then used on the local road network.

The question is how many more cars can be brought into the City before the vision is compromised? Business as usual will see the 'car population' continue to rise to more than double the 2011 number.

This problem has been highlighted in Council's 2015 – 2016 Budget:

*...increasing population growth within our City and very limited opportunities to expand the capacity of our local road network means traffic congestion is likely to increase. Therefore greater focus is on finding the most effective ways to reduce congestion and to encourage people to use public transport, cycle or walk rather than use their car.*

Car share networks are proven to reduce the use of motor vehicles and increase the use of public transport, bicycle riding and walking. This new transport mode enables the City to ease the pressure on network capacity resulting from population growth and cars owned by residents, which in turn reduces the number of cars competing for parking and driving space. Remarkably this can all be achieved at a minimal cost to the Council.

This report describes how the budget focus can be achieved through a strategic expansion of the car share network that strengthens the liveability and amenity of the City of Port Phillip.

Car Share services deliver value by reducing the need for car ownership amongst some residents. This saves households money and reduces the number of privately owned vehicles based in the City of Port Phillip. For every car share vehicle in the network there will be ten fewer privately owned vehicles in the municipality (Millard-Ball, 2005; GHD, 2009; VicRoads, 2009; GHD, 2010; Martin, 2011; Britton, 2014; Phillip Boyle & Associates, 2015). When car ownership is replaced by an 'immediate and convenient access' car share service, local residents become users of the service and cut their vehicle use in half, switching trips (previously made by car) to public transport, bicycle and walking. This strengthens the local economy and helps achieve Council's vision for the City.

By May 2015, Port Phillip's car share network included 79 vehicles (50 in on-street parking spaces and 29 in off-street spaces). This network has removed about 800 privately owned vehicles from the streets of Port Phillip – enough to fill all the metered parking spaces in St Kilda. These 'avoided vehicles' have released significant value to the community in terms of household budgets, reduced congestion, saved space and other transport costs. More than 2,500 residents and businesses use the service. These people have reduced their vehicle kilometres travelled (VKT) in the City of Port Phillip by half. This behavioural change has brought significant value to the wider community including increased health, safety and environmental benefits.

The value that flows to the Port Phillip community from reduced car ownership and use has been modelled using the available data and comparative research. The estimate of benefits has been conservative and based on established assumptions published in the Australian Transport System Management Guidelines. From an economic perspective it should also be noted that the value ascribed to land occupied by car share vehicles has not been amortised and the model therefore over-estimates the annual cost of providing the network. A summary of this modelling is shown in Table 1 below.

**Table 1: Summary of Economic Analysis**

CAR SHARE NETWORK	ECONOMIC VALUE	ECONOMIC COST	RETURN ON INVESTMENT	PRIVATELY OWNED VEHICLES BASED IN THE CITY OF PORT PHILLIP
2015 2,500 residents & businesses served by 79 vehicles (29 off-street).	\$5.4m	\$2.2m	\$2.43 for each \$1 invested	800 vehicles avoided  Number of privately owned vehicles based in the City of Port Phillip grew by 4,500 (2006 - 2011)

Source: Phillip Boyle & Associates (PBA) Analysis

Each car share vehicle in the network is estimated to represent \$40,000 in value (net) to the City of Port Phillip community. The City's support of the service delivers a return of \$2.43 for \$1 of investment. The total annual benefit to the community of the current car share network is \$3.2 million.

Modelling suggests the community cost of a business-as-usual increase in the number of vehicles owned by residents will be more than a billion dollars by 2031.

The City has the opportunity to avoid this cost and gain an equivalent value by developing a car share service that is of sufficient scale to avoid the growth in the number of privately owned vehicles based in the City of Port Phillip.

A summary of the economic factors included in the modelling is provided in Table 2 overleaf.

**Table 2: Summary of economic factors included in the model**

ITEM	UNIT RATE	NOTES
Reduction in Vehicle Kilometres Travelled (VKT) impact on urban amenity & environment	\$0.0116 / VKT avoided	Accounts for nature, landscape and urban barriers
Reduction in VKT impact on congestion	\$0.2249 / VKT avoided	Accounts for the congestion impact of each additional VKT by car
Reduction in VKT impact on crashes	\$0.0485 / VKT avoided	Accounts for the impact of each additional VKT by car on road safety
Health benefit of increased activity (walking & cycling)	\$7.82 / hour walked \$12.22 / hour cycled	Accounts for the benefits that accrue from the physical activity of walking and bicycle riding as well as the associated injury costs
Value of reduced emissions on public health	\$0.0124	Whole community costs of health care (financial impact at the State & Commonwealth level)
Value of reduced emissions on environment	\$0.0066	Whole community economic impact
Value of reduced noise	\$0.0030	Average of whole community impact regardless of road type and proximity of residents
Financial saving for each household (annualised)	\$993.66 / car avoided	Accounts for all on road costs including finance.
Financial saving from reducing VKT	\$0.1618 / VKT avoided	Significantly lower than total car costs so as not to duplicate on-road costs
Opportunity cost of not owning/renting a car space	\$3,306 / car avoided	Would offset against loss of council revenue in metered spaces
Establishment Costs	\$2,006 / car space	Includes staff administration time, signage & line marking
Strategy Development & Management	\$69 / car space p.a.	Includes 0.05 EFT staff

*See Appendix A: Detailed calculations for the economic assessment.*

The current car share service network is not of a sufficient scale to hold back the growth in private vehicle ownership. Allowing for the 800 'avoided' vehicles contributed by the current network; there was a net growth 4,500 privately owned vehicles based in the City of Port Phillip between 2006 and 2011. This growth alone is enough to fill 17% of all the unrestricted on-street parking spaces in the municipality: equivalent to all the unrestricted spaces in Elwood.

It is possible to break the link between population growth and car ownership by expanding the car share service in tandem with population growth. A strategic expansion of the car share service in the period up to 2021 would be sufficient to stop growth in the total number of privately owned vehicles owned by residents of the City of Port Phillip. The scale of network required is achievable (has been achieved elsewhere over a similar time period) and will result in membership of 28,000 residents and local businesses (25% of the population) using a car share network of 750 vehicles.

To reach this goal the service would need to expand by an average of 10 vehicles a month. This scenario would deliver \$51m in annual value to the community in return for an investment of \$20.9m as shown in Table 3 below.

**Table 3: Summary of Economic Analysis for Recommended Car Share Network**

SCALE OF CAR SHARE SERVICE	ECONOMIC VALUE	ECONOMIC COST	BENEFIT/COST RATIO	RESIDENT VEHICLES
2021 (recommended) 28,000 residents & business staff served by 750 vehicles (including 200-300 off-street accessible to all members)	\$51.0m	\$20.9m	\$2.44 : \$1	7,000 vehicles avoided (Privately owned vehicles the same as in 2011)

Source: PBA Analysis

A network of this scale in 2021 would give the City the platform it needs to address the even stronger growth in population anticipated beyond 2020.

This report considers the deployment of such a car share network in the City of Port Phillip, viewing the landscape through a number of lenses to understand the impact of this strategic expansion.

Within the City of Port Phillip there are areas that are well suited to the expansion of car share. These areas typically have high-frequency public transport networks, residential densities over 30 dwellings per hectare and many households with low car ownership. The report suggests where the expansion can be initially focussed and where it expansion less likely to be relevant to (or used by) the community.

Best practice from Europe and North America suggests that the City of Port Phillip can complement and support the growth of the service by doing the following:

- Set community goals for the service to achieve including reducing motor vehicle ownership, congestion and parking stress, cutting the cost of living and business whilst improving amenity, health and safety of the City.
- Set standards for the network including matching demand, offering equity of access (coverage), service reliability and a range of vehicle types.
- Manage the service providers, clarify roles and responsibilities, minimise negative impacts, disciplinary action and regular reporting.

- Drive wider use by growing the network and the membership. Use insights from demography and urban form alongside market clues from service providers. Provide effective locations near intersections in central medians and seek to place most of the network in off-street spaces. Avoid locations on high mobility streets, outside retail shops, and areas of low amenity. Manage the network and vehicle locations based on performance and membership not local ‘perceptions’ or lobbying.
- Use the service to supplement and replace some part of the Council vehicle fleet; and encourage use by Council officers and the wider community.

A key learning from overseas experience is that a proportion of the car share vehicles can and should be located off-street in a way that is accessible to all the members of the service. For example already in the City of Port Phillip a car is located in a building car park that can be accessed from the street by all community members (see cover photo). The expansion scenario recommended assumes that internal cross-divisional cooperation and representation to the State Government will open this pathway.

The report recommends that the expansion be managed in quarterly deployments and that an annual report on the service be made available to the community.

It is clear from the research that the beneficiaries of a car share network include all members of the community. There is a specific user pays element to the service, the main benefits, however, are externalities such as reduced congestion and increased local economic productivity that benefit all ratepayers. Therefore it is recommended that the City of Port Phillip carefully assess how those who benefit (i.e. the whole community) can contribute to the successful management of future car share network expansion.

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# 1. Introduction

The City of Port Phillip is preparing for the revision of its 2012 “*On-Street Car Share Policy*” that expires in September 2015.

The City of Port Phillip has commissioned Phillip Boyle & Associates to:

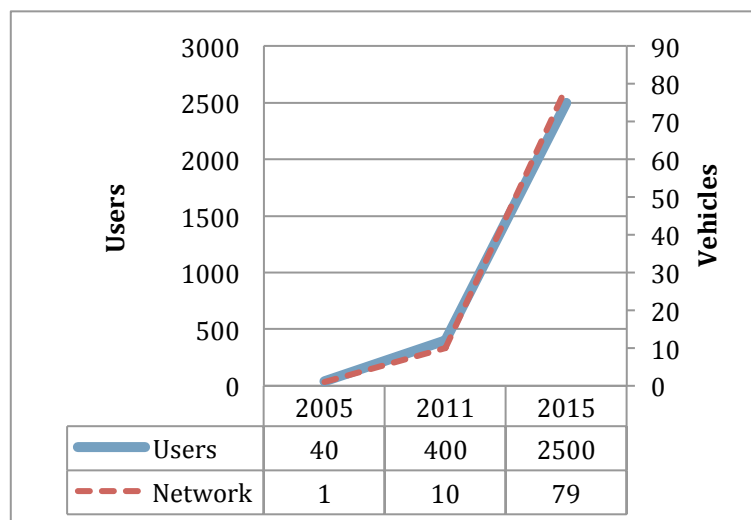
- Analyse the quantifiable benefits and costs of the current car share service in the City in a manner that enables the value (or cost) of different service scales to be estimated
- Identify a suitable scale of service for the City including growth targets that is based on the City’s vision and policies and the likely growth in the City
- Recommend best practice management approaches using international and national examples.

Fixed base car share<sup>1</sup> in the City of Port Phillip was formally launched in 2005. By 2011, the car share network had grown to ten vehicles. In 2015 the car share network totals 79 vehicles including 50 that are parked in on-street parking spaces and 29 that are parked off-street. Three service providers provide the services, none of which receive government subsidy.

In 2012 Port Phillip Council was the first local government in Victoria to adopt an *On Street Car Share Policy*. This step signalled the end of a post-pilot period in which local governments and car share service providers in Australia tested business systems, oversight processes and most importantly market acceptance.

Today, the business systems are well proven and market acceptance is growing steadily. As of June 2015 there are now more than 2,500 residents and local business staff using the service in the City of Port Phillip. Figure 1 below shows the growth in users and in the size of the network.

**Figure 1: Car share in Port Phillip**



Source: PBA Analysis of data from car share service providers via City of Port Phillip

This report includes the following chapters:

1. How car share services deliver value and outlines the elements of value that are relevant for the circumstances, vision and policies City of Port Phillip

<sup>1</sup> Fixed base – There are many types of car and ride sharing services and it is likely that innovation will continue. This report considers fixed base car share in which the vehicle is typically booked for a return trip to a parking space that has been reserved for the service. Of all the car and ride share innovations this type of service has been shown over many years and across many countries to reduce levels of private car ownership and use.

2. An economic model, describing elements of value that can be defined. The result of the model is presented and a 2021 network target size is suggested
3. A review of the context of the City of Port Phillip through a number of lenses and suggests how, when and where the service can be expanded and strengthened to reach the proposed 2021 target
4. A review of international best practice and a series of decision layers to inform the development of Council's new Car Share Policy.

## 2. Car share services enhance liveability

### 2.1. OVERVIEW

Car share services significantly reduce many of the problems caused by strong population growth in areas of high density by delivering space efficiencies and catalysing travel behaviour change to more active and sustainable modes, such as walking, bike riding and catching public transport.

The beneficial elements of these changes can be identified and, where reliable cost formulas are available, the dollar value of some of these elements can be estimated with confidence.

The cost to government of providing the service is low.<sup>2</sup> Federal or State Governments manage vehicle standards and registration but need take no additional action. The services do, however, require the attention of local government, mainly because municipalities control on-street parking space that is needed, to some extent, in order for the services to operate. This local government involvement generates costs.

This chapter of the report introduces a model of the benefits and costs based on the current and potential scale of the service in the City of Port Phillip that will enable the City to design the type and level of support to the service that is directly proportional to the value that the services provide. It describes the mechanism that delivers space efficiencies and catalyses travel behaviour change. It then discusses the problems that will be caused by strong population growth in the City of Port Phillip that can be directly addressed by a strong car share service in the municipality.

This chapter also discusses elements of benefit and cost, describes how the value (or cost) has been calculated and, in some cases, why the element has not been included in the estimate.

The detailed calculations are included in Appendix A: Detailed calculations for the economic assessment.

### 2.2. MEETING TRANSPORT NEEDS WITH LESS SPACE

#### Step one: Reducing car ownership releases space

The value that a community receives from car share services is derived from the reduction in the level of car ownership that the service facilitates. The more the service can reduce car ownership, the more value the community will receive.

When car ownership is replaced by ‘immediate and convenient access to a vehicle’, a cascade of value is triggered.

The first value to be released is ‘space’. Cars when they are being stored or parked take up a lot of space in buildings and outside:

- In buildings, they occupy a 75 cubic metre ‘room’ with a footprint of 30 square metres. This rule of thumb takes account of the access driveways, ramps and corridors that enable the vehicle to get to the car park and car user to get to the car park.
- Outside, one car occupies a footprint of 15m<sup>2</sup>.

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<sup>2</sup> The direct costs of providing the service are born by the service providers and, when a service is up to scale, these costs will be less than the revenue from the users of the service. This means that like taxis and Melbourne Skybus, and unlike tram and bus services, car share services do not need a subsidy to operate.

It is unclear how many car spaces are needed in total to support the use of a car. Some estimates suggest that each vehicle is supported by around three car parking spaces (one at home, one at work and one elsewhere in the built environment) (Victoria Transport Policy Institute, 2015). Long-term storage is usually in a regular location either at work or home. Most short-term car parking is in spaces shared by multiple users in order to maximise the efficiency of the space. A supermarket, for example, does not offer every customer their own dedicated car space from which others are excluded.

The typical car spends most of its time standing still in storage or parking spaces. A private car is typically only in use for 5% of each year; for 95% of the time it is idle (CarPlus, 2010).

It is clear that these idle cars could be put to work in a similar way to the ‘shared’ car spaces at a supermarket. This is what the car share services do. By selling ‘downtime’ in unused cars, car share services enable many people to use one vehicle.<sup>3</sup>

When people’s motoring needs can be met by a car share service, they are able to sell vehicles they own or avoid buying a vehicle. Surveys of car share members have found that, half reduce or avoid car ownership and the other half use the service as a back up household car.

Reductions in vehicle ownership typically occur up to eighteen months after members join once they are convinced about car share service reliability. Others join the service and are able to postpone or avoid purchasing a car.

As a rule of thumb, each car share vehicle represents ten cars that have been disposed of or avoided; resulting in a net reduction of nine vehicles (Millard-Ball, 2005; GHD, 2009; VicRoads, 2009; GHD, 2010; Martin, 2011; Britton, 2014; Phillip Boyle & Associates, 2015). This ‘ownership dissolving’ mechanism works faster and more effectively in high-density areas with many mobility alternatives. In places that have good public transport and other mobility options people tend to use their cars less which drives up the cost per kilometre. As the need for a car goes down and the price goes up, it becomes easier for people to migrate from ownership to the service. Typically these environments have a higher population density, which also favours the cars share service as there are more people living within the catchment of the network.

The overall effect of the service is to reduce the total number of privately owned vehicles based in the City, which in turn releases space in buildings and on-street for other uses or users.

## Step Two: Non-ownership of a car reduces car usage

When ownership is replaced by ‘immediate and convenient access to a vehicle’, a second mechanism comes into play that drives further value for the users and the community.

The typical private car in Australia travels 15,000 vehicle kilometres each year (VKT). This can be compared to a ‘white delivery van’, which travels double this distance (Roy Morgan Research, 2013) and a taxi, which travels ten times this distance (Essential Services Commission, 2014).

In general, car owners in high-density areas with many mobility alternatives cut vehicle kilometres travelled by two thirds and average around 5,000 VKT. Car share users cut this number in half again to around 2,500 VKT (GHD, 2009). Further information is provided in Appendix A.

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<sup>3</sup> The ‘minimalist’ peer-to-peer services act as a broker and marketplace; enabling a vehicle owner to recoup some of the costs they have incurred owning a vehicle they do not use very much. This system has two winners and one loser. The broker can make money when the low-use vehicle is hired and the ‘renter’ can get ‘immediate and convenient access to a vehicle’ for an hourly fee, but the owner has to bear all the remaining ownership and running costs of the vehicle. The ‘third party’ car share services own and rent out the vehicles in their fleet. In this system – when usage is high enough – everyone is a winner.

This reduction comes about for a range of reasons, most significantly because the price of each additional car journey is considered more carefully.

For car owners their next car trip is perceived as ‘free’ because all the costs of the trip – purchase, registration and fuel for example – have been paid before the trip is considered. This means that vehicle owners tend not to weigh up whether to make a particular trip by car. As a result, the car is used for trips that could be better made by other means. Even in Europe 30% of trips made in cars are for distances of less than three kilometres (Dekoster, 1999). In metropolitan Melbourne, around 37% of trips less than 3 km and 53% of trips less than 5 km are currently made by car (VicRoads, 2015)

Unlike owners, car share users pay a fee, in the order of \$15 an hour, every time they use a vehicle. As a result, the next trip for them is not free but is perceived as a ‘loss’ to be weighed against the gain from the purpose of the trip. It is well established that people are strongly motivated to avoid ‘losses’. This powerful mechanism influences the decision whether to choose a car or an alternative mode in order to make the trip.

Faced with this payment decision, car share members find that they can switch ‘every other’ car trip to a walking, bike riding or public transport trip. As a result, the car share user’s VKT is half that of an owner in the same circumstances.

When VKT goes down, a number of benefits accrue to the community including reduced congestion and pollution.

### **Step Three: Private benefits generate further community benefits**

When trips are switched from cars to other modes, a third mechanism comes into play that drives further value for the users and the community. In this phase, the individual benefits accruing to the car share user who switches out of a car trip have public benefit impacts.

One of the consequences of the car trips that are switched to other modes is that the individual does more physical activity either by walking, riding a bicycle or using public transport. This change has an individual benefit as well as a collective public health benefit, in particular preventing diseases caused or exacerbated by physical inactivity such as heart disease, some cancers and diabetes.

As well as being healthier, from a financial point of view, the car share user is also better off. Their expensive car trips are replaced by free or cheaper alternatives and they do not have to put capital into an asset that is steadily losing value. Nor do they have to buy a car space (or residential parking permit) in order to store their car. These household transport savings enable spending (or savings such as debt reduction). Some of these savings are likely to be spent locally (Cortright, 2007).

## **2.3. MORE PEOPLE, MORE CARS, LESS SPACE**

### **A growing number of resident vehicles**

The space reduction that can be derived from car share services is significant to the City of Port Phillip. It will be challenging to fit a significantly larger population into the municipality but it will be even more challenging to fit more people and more privately owned vehicles.

Today there are 48,000 private vehicles for a population of 98,000. The ratio of residential vehicles to population is 49 vehicles for every 100 people. Table 4 shows that this ratio is below the Australian and European averages but high compared to some European centres and neighbouring municipalities.

**Table 4: Ratio of population to privately owned vehicles based in the City of Port Phillip**

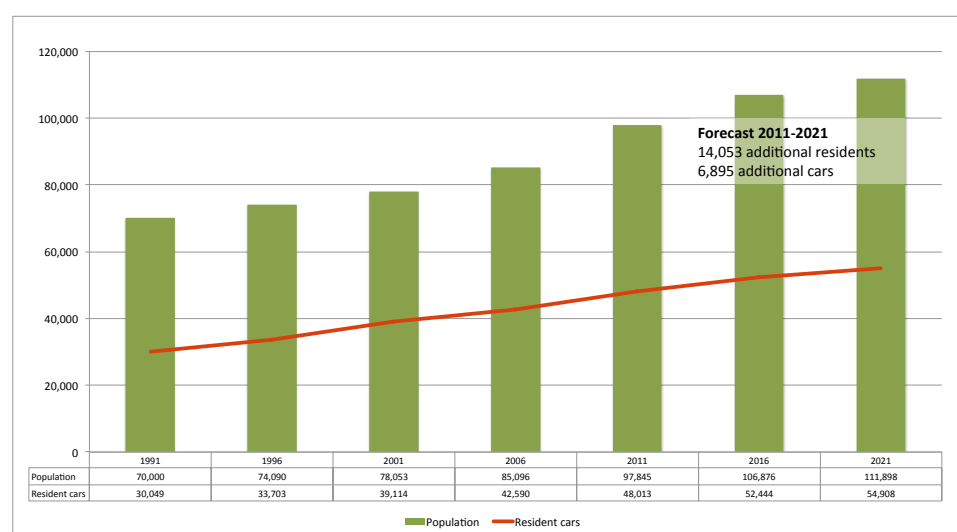
MUNICIPALITY	RESIDENT CARS	POPULATION	CARS PER 100 PEOPLE
Australia			69
European Union			52
<b>City of Port Phillip</b>	<b>48,000</b>	<b>98,000</b>	<b>49</b>
City of Yarra	34,000	79,000	43
City of Melbourne	31,000	100,000	31
Paris, Amsterdam			25

Source: ABS 2011 Census, World Bank data with PBA analysis

By 2021, the population of the municipality is expected to grow by 14% (14,053 additional residents). This population growth will have a significant impact on the number of cars based in the municipality.

If the car ownership rate remains as it is today, at 49 vehicles per 100 people, or 0.49 per person, we can estimate that an additional 7,000 vehicles will be based in the municipality, lifting the number of privately owned vehicles based in the City to 55,000 vehicles. This growth in population and the number of privately owned vehicles based in the City of Port Phillip is represented in Figure 2 below. The chart is based on the years 1991 to 2021 and assumes the current rate of car ownership.

**Figure 2: Forecast of Total Population and privately owned vehicles based in the City**



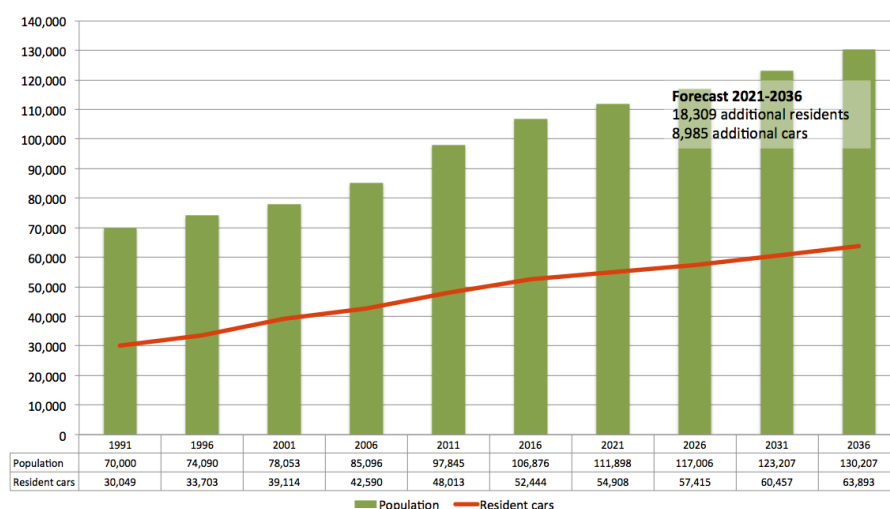
Sources: ABS, 1991-2014 & forecast.id, 2015

However, if the number of privately owned vehicles based in the City can be reduced, then valuable space will be available for purposes other than storing or parking cars.

## Resident vehicles beyond 2021

The trend is expected to continue after 2021 – although is likely to be concentrated due to growth in Fisherman's Bend. On current trends the number of residential vehicles in the City of Port Phillip will continue to grow to 68,000 vehicles.

**Figure 3: Cars per Household: 2021 to 2036: City of Port Phillip**



Sources: ABS, 1991-2014 & forecast.id, 2015

At the same time the Fishermans Bend population will increase and – depending on the ownership rate – add another twenty or thirty thousand privately owned vehicles. The worst-case scenario (assuming the rate of ownership does not increase) is that there would be 100,000 privately owned vehicles in the City of Port Phillip by 2030 – **double the current number**. An illustration of how many privately owned vehicles would exist just in Fisherman's Bend based on three different car ownership rates (the current rate in the City of Port Phillip, City of Melbourne, Paris and Amsterdam) is provided in Table 5 below.

**Table 5: Prediction of privately owned vehicles based in Fishermans Bend**

VEHICLES PER PERSON	2020	2025	2030
49			
(Current City of Port Phillip rate)	2,978	15,224	34,289
31			
(Current City of Melbourne rate)	1,884	9,631	21,693
25			
(Paris, Amsterdam)	1,519	7,767	17,494

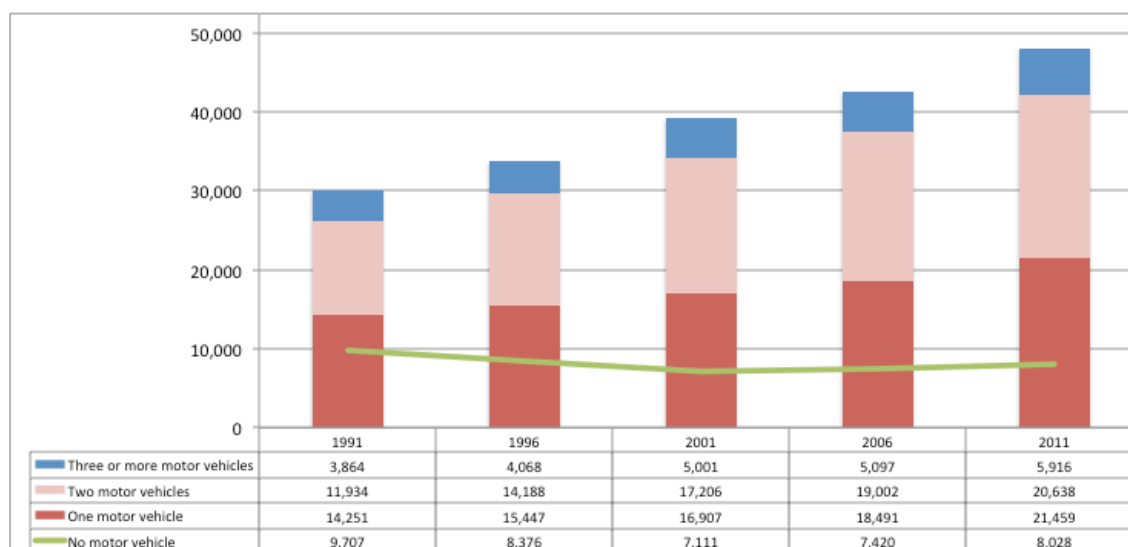
Source: Based on population figures provided by Places Victoria, April 2015.

## A low proportion of households without cars

As well as a high ratio of private vehicle ownership, the City of Port Phillip has had strong growth in the number of multi-car households since 1991 and slow growth in households without cars since 2001. Today there are fewer households without cars than there was in 1991.

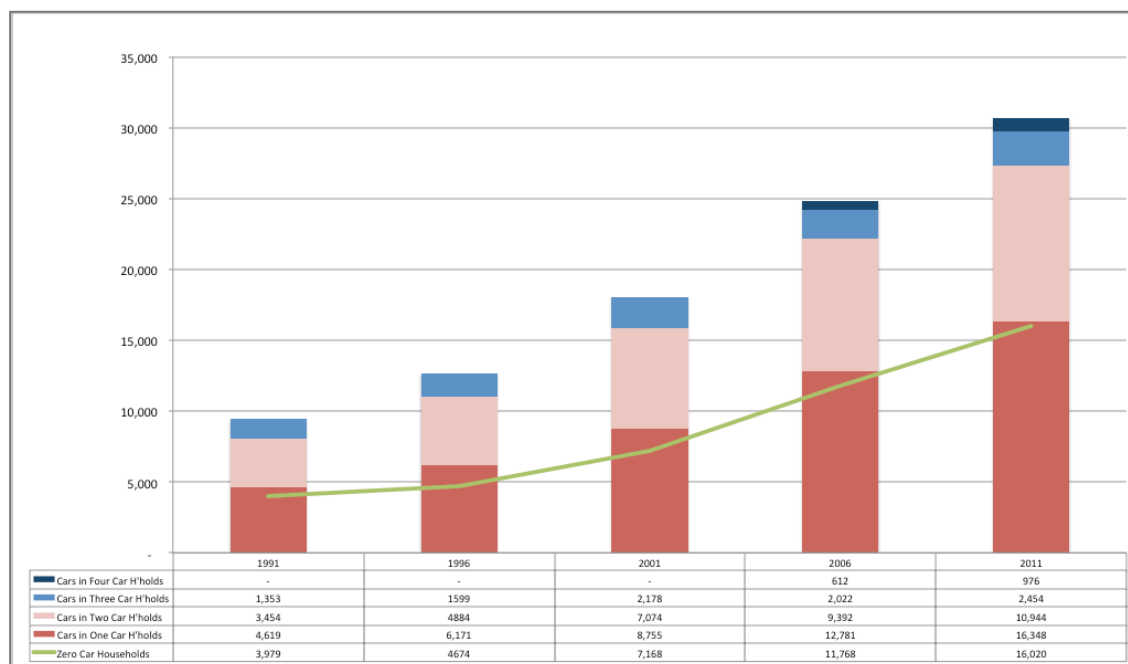
It is instructive to compare the situation in the City of Port Phillip with the situation in the City of Melbourne where the number of households without a car are likely to become the largest household category as shown in Figure 4 and Figure 5 below.

**Figure 4: Cars per Household: 1991 to 2011: City of Port Phillip**



Source: ABS 1991-2014

**Figure 5: Cars per Household: 1991 to 2011: City of Melbourne**



Source: ABS 1991-2014

Both the City of Port Phillip and the City of Melbourne limit residential parking permits in some areas. Residents can park three cars in a resident parking zone in the City of Port Phillip but in some areas of the City of Melbourne only two (North Melbourne) or one permit (Parkville) is available.

In addition the City of Melbourne has allowed zero parking in new developments in the Amendment C133 zone. This two-pronged approach is consistent with the rising number and

proportion households without cars and the lower resident cars/population ratio in that municipality.

In the City of Port Phillip, 75% of the households have one or two cars. The one, two and three car households are all growing in number. Since 1997 the City of Port Phillip has not been issuing on-street parking permits to new developments that increase housing density on site.<sup>4</sup> This appears to have had little impact on the number of cars per household in the City of Port Phillip.

This is partly because the policy intent can be subverted when the 'no-permit' apartment is in an area of unrestricted parking. It appears that in some locations in the City of Port Phillip the apartment residents who have more cars than they can park in the building, park their 'overflow' vehicles on the street. This loophole can be addressed by instituting parking restrictions around no-permit apartments.

What the policy has done is ensure that dwellings have included space for storing and parking vehicles. There are important and unintended negative consequences to this requirement.

When an apartment 'comes with' a car park it is likely that the resident will persist with car ownership even if their car usage is low. Their travel and mode choices will be shaped by having bought an expensive car park that has no other use and no resale value. As we have seen, this travel choice will be costly for them and have congestion and pollution consequences for the neighbourhood. They will also have to bear the financial cost of the stranded asset.

It is not only the purchaser who bears the consequences of stranded assets. The developer may find that they cannot sell all the parking spaces they have been required to include in the building. Equally the renter of an apartment-and-carpark has to pay for both services, even if they only need the apartment.

If the City of Port Phillip does not find and implement more effective responses, these unintended negative consequences will increase.

## Less space to store vehicles

In the future there will be proportionally less space in the City of Port Phillip to park or store privately owned vehicles as the population increases and the number of on and off street parking spaces within the municipality decreases.

### Inside Buildings

It is likely that the area or space available for storage and parking of vehicles inside buildings in the City of Port Phillip will reduce and become more expensive.

As the value of land in the municipality rises, lower-value uses such as parking structures are being replaced by higher value uses particularly apartments and offices. An apartment with a footprint the size of two car spaces – around 60m<sup>2</sup> – can be sold for five times the price of two car spaces in the same building.

Figure 6 shows a typical example of this trend at 12 Queens Road where a seven storey car park will be replaced with 20 levels of residential apartments. 'The basement will provide 104 bicycle bays and 260 car parking spaces (below the statutory 331 required).'

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<sup>4</sup> Not all residential properties are eligible to participate in the Parking Permit Scheme. The No Parking Permit Policy (NPPP) applies to all new residential developments, where there is an increase in the number of residential dwellings on the lot (or in the case of a subdivision of an existing building where insufficient parking exists), irrespective of the level of on-site parking provided.

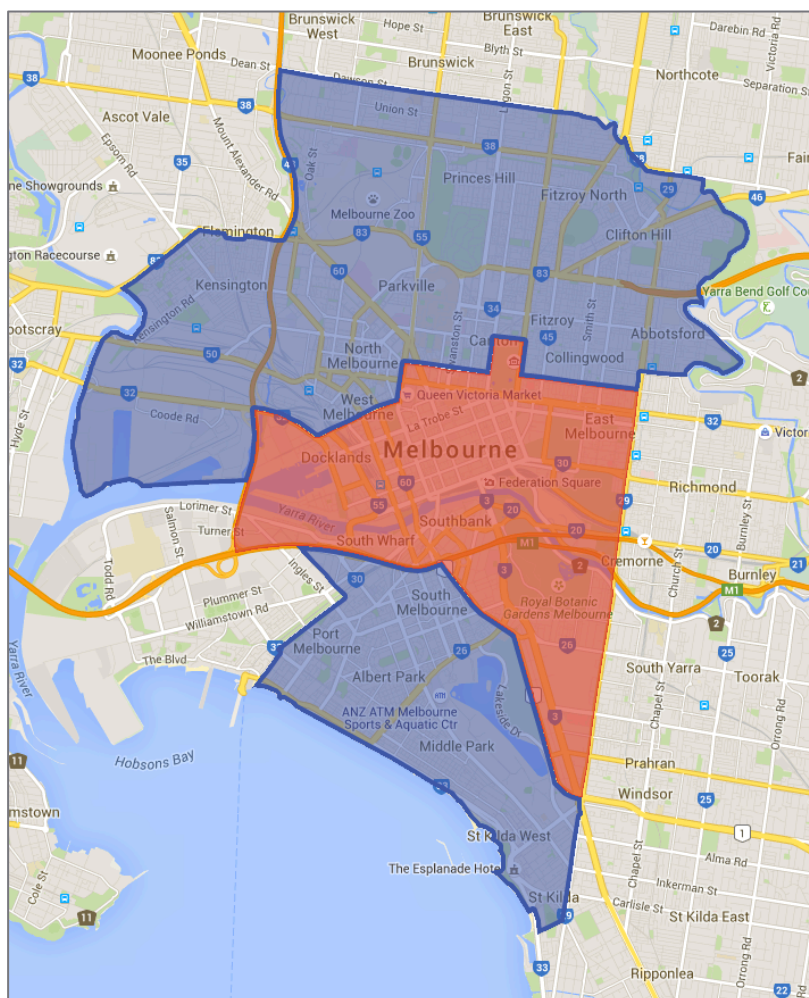
**Figure 6: Car park at 12 Queens Road**



Source: PBA

In addition to the pressure of land value, the State ‘Congestion Levy’ imposes a tax on commuter parking spaces and has been extended into the City of Port Phillip as shown in Figure 7 below. This is likely to reduce commercially available off-street car parking both in buildings and on vacant land.

**Figure 7: Congestion Levy area**



Source: State Revenue Office, 2014

### **Outside Buildings / On-street parking**

There are 53,275 on street parking bays in the City of Port Phillip. Although non-residents also use these spaces, the space-to-resident ratio is instructive. Today there are 2.1 residents for every on-street parking space.

It is likely that the area or space available for storage and parking of vehicles outside on public and private land will be reduced:

- On-street car spaces on some streets and at popular destinations are being replaced by higher value uses such tram platform stops and wider footpaths. Examples include the replacement of eighty spaces on Jacka Boulevard by bicycle lanes and the Tram Route 96 project, which will reduce the parking supply in the Acland Street area by 51 spaces (PTV, 2013).
- On-street car spaces in residential streets are being replaced by alternative uses including pedestrian crossings, tree planting and storm water management. These higher value uses of space will further restrict the available kerbside space.
- Off-street car parking in currently otherwise vacant lots is also likely to be reduced as the developed value rises above the revenue that can be derived from a car park.

**Figure 8: Montague Street car park**

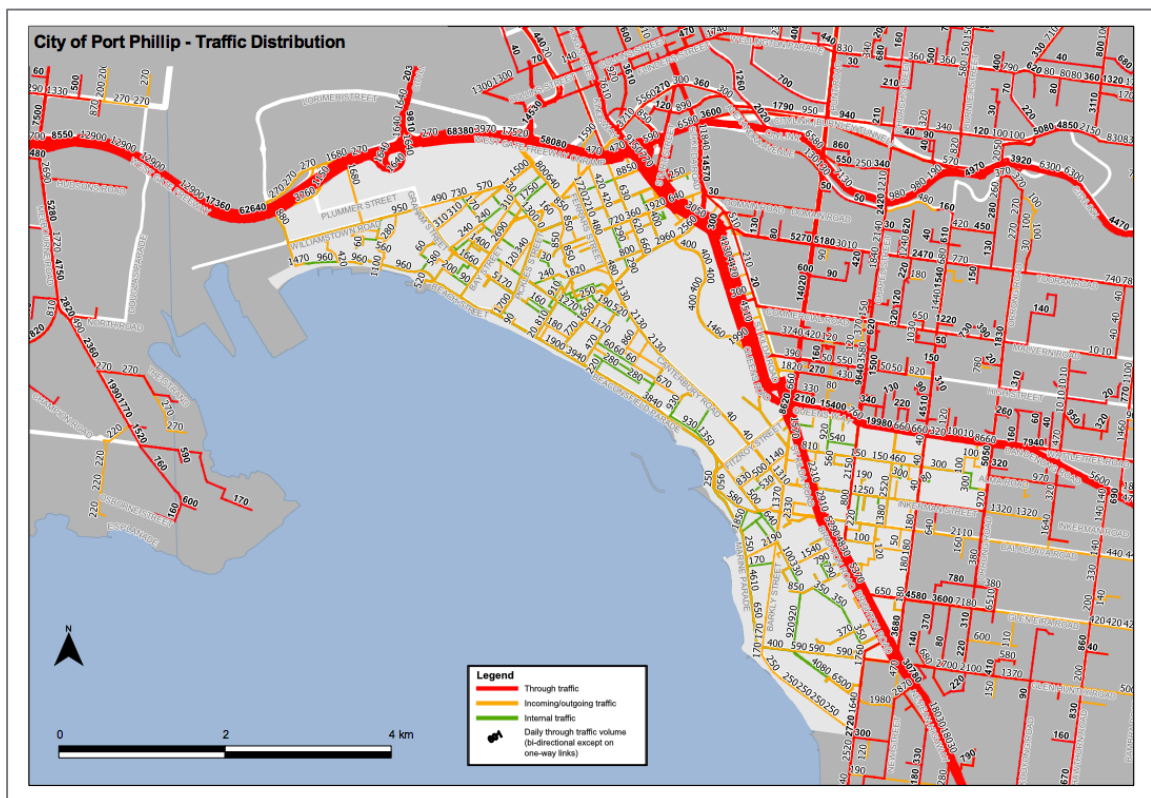


Source: Google Streetview

## More vehicles on the existing road network

The increasing number of privately owned vehicles based in the City will put additional pressure on the available road space. Access roads that lead to the CBD are already at capacity in peak times but that the internal road network is not as stressed as shown in Figure 9 below.

**Figure 9: Through, incoming/outgoing and internal motor vehicle traffic**



Source: Jacobs, 2014

This is likely to be where the growing number of privately owned vehicles based in the City will have a significant impact, increasing the internal, incoming and outgoing motor vehicle traffic.

The area available for driving motor vehicles within the City of Port Phillip is unlikely to increase in the future. It is also unlikely that the peak road network capacity can be significantly increased in the future.

As the Sustainable Transport Strategy notes, ‘traffic congestion is a major issue for the City of Port Phillip. The major roads that run through the City are already carrying a high number of motor vehicles each day, as shown in recent counts completed by Council and VicRoads:

- Kings Way carries 90,000 vehicles per day
- Brighton Road carries 67,000 vehicles per day
- Queens Road carries 75,000 vehicles per day
- Dandenong Road carries 63,000 vehicles per day
- Beaconsfield Parade carries 36,000 vehicles per day.

To compound the problem, the area of road space available to move motor vehicles is likely to be reduced in some places. Road space will be reallocated to pedestrians, bicycle riders and public transport, modes that use the space much more efficiently and contribute more significantly to the economy.

## **2.4. ALIGNMENT WITH COUNCIL VISION AND STRATEGIES**

The pressures noted above have been identified – along with appropriate countermeasures – in a number of City of Port Phillip strategies, including Council’s 2015/16 Budget.

At the highest level, the City Of Port Phillip Council Plan 2013-2017, Community Plan 2007-2017, Municipal Strategic Statement and Toward Zero Sustainable Environment Strategy frames the Council’s Sustainable Transport Strategy (STS). Alongside the STS are the Structure Plans, Urban Design Frameworks and Municipal Public Health and Wellbeing Plan 2013-2017.

The Sustainable Transport Strategy itself which ‘aims to create a connected and liveable city where residents, visitors and workers can live and travel without a car by improving the convenience, safety, accessibility and range of sustainable travel choices across our city’ sits above more detailed strategies and statements for bicycle riding, walking and public transport.

Car share services are explicitly mentioned in the Sustainable Transport Strategy including that Council will:

- Encourage the uptake of car share schemes for both households and businesses.
- Influence the community’s decisions to travel via sustainable transport by providing appropriate support, information and skill development.
- Allocate on-street space for parking based on the hierarchy of parking need that ensures the safety of all road users whilst accommodating the parking needs of residents, businesses and visitors and promotes sustainable solutions that reinforce the road user hierarchy.

However targets were not set directly for the service as they were for other elements of the strategy.<sup>5</sup> For example, increased use of the service will help the City meet the targets set for walking and public transport trips.

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<sup>5</sup> Council also has committed to reducing community greenhouse gas emissions by 50% by 2020 (City of Port Phillip, 2007)

When placed alongside the priority criteria, car share services emerge as a strong priority.

**Figure 10: Car share in the Sustainable Transport Strategy**



Source: City of Port Phillip, 2014

**Table 6: Priority Criteria City of Port Phillip Sustainable Transport Strategy 4.7**

CRITERIA	AIM	IS THIS MET BY CAR SHARE?
Environmental	Reduce greenhouse gas emissions	Yes
	Reduce air pollution from travel modes choices	Yes
Geographical context	Areas of concentrated employment, activity centres, shopping strips, popular routes	Appropriate locations can be chosen
Safety & Accessibility	Reduce casualty accidents	Reduces the number of car trips and increases the number of walking, riding and public transport trips
Better Integration	Better provides for travel by people of all ages and abilities	Applies only to licenced drivers
	Longer term innovative solutions as well as resolving short term/existing issues	Yes
	Potential for a coordinated approach across other projects and plans	Yes
	Provides or strengthens a link to a public transport stop or station within the catchment of a public transport stop or station.	Yes where appropriate
Influencing Behaviour	Attracts people to use sustainable transport	Yes
	Increases the convenience of walking, bike riding or using public transport	Yes
Strategic Fit	Consistent with and informs other Council policies	Yes
	Working in partnership with match-funding provided by another organisation	Yes
	Aligned with State Government strategic priorities	There are no direct car share State Government priorities
Legislative Compliance	Complies with all relevant Government legislation	Yes

Source: City of Port Phillip, 2014

A comprehensive car share policy will also identify synergies with strategies across the Council providing a foundation for cross division cooperation. Opportunities include:

Those related to best use of space:

- City of Port Phillip Budget 2015/16
- Open Space Strategy (2009)
- Greening Port Phillip – An Urban Forest Approach (2010)
- Open Space Water Management Plan (2011)
- Water Plan – Towards a Water Sensitive City (2010)

Those related to a connected and liveable city and the impacts of transport:

- City of Port Phillip Budget 2015/16

Sustainable Transport Strategy and other related policies including:

- Sustainable Transport Precinct Plans – Guiding principles (2012)
- Safer Streets 2013-2020 – The Road User Safety Strategy
- Progressively reducing speed limits to 40kph in Local Areas

Those related to pollution, noise and climate change including:

- Towards Zero – Sustainable Environment Strategy (2007)
- Sustainable Design Strategy & Sustainable Design Policy

Regional strategies including:

- Inner Melbourne Action Plan

Those related to economic development including:

- Fishermans Bend Planning and Economic Development Strategy
- Port Phillip Economic Development Strategy 2012–16
- Industry & Business Strategy (2003)
- Housing Strategy 2007-2017

## 2.5. CONCLUSION

It can be seen that the benefits that car share services bring are relevant and important for high-density urban areas that are experiencing strong population growth like the City of Port Phillip.

By reducing vehicle ownership and use, car share services directly address the challenges posed to the City's built form and road space brought about by a rising population.

This role is recognised in the Council's sustainable transport strategies and complements a number of other strategies and directions adopted by Council.

### 3. Economic evaluation

This section provides an overview of the benefit and cost model.

The detailed calculations and references to the measures and ratios used are in Appendix A: Detailed calculations for the economic assessment. Conservative benefit estimates have been used to avoid potential for optimism bias.

The section is divided as follows:

- Car use and car share service assumptions
- Benefits
- Costs
- Conclusion

The estimate is sufficiently robust to inform the policy but has some limitations, including:

- A number of benefits have not been included in the estimate in particular the opportunity value of space outside and in buildings.
- The data from the car share users is self reported<sup>6</sup>

#### 3.1. PRIVATE CAR AND CAR SHARE SERVICE ASSUMPTIONS

The following assumptions have been made:

##### **Members per car share vehicle**

Data from car share service providers shows that on average each car supports around twenty members. (See Appendix A: Detailed calculations for the economic assessment)

##### **Ownership**

Research shows that for every car share deployed there are ten cars avoided. Four of these ten are existing vehicles that new car share users decide to sell (and not replace). Six of these ten cars avoided are cars that would have otherwise been purchased in future by existing residents. For example someone who moves to the City of Port Phillip with the expectation that they will move again in a couple of years may choose to ‘rent’ a car as well as rent a house. Established households may for example be able to avoid purchasing an additional vehicle as the children grow up.

##### **Vehicle Kilometres Travelled (VKT)**

Avoided VKT is used to estimate social benefits for mobility and public health.

Motoring organisations such as the RACV base their estimates on an annual ‘average’ VKT of 15,000 km (Harris, 2015). Data from the Victorian Integrated Survey of Travel and Activity (VISTA) suggests that a car based in the City of Port Phillip is only driven for 4,000km a year

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<sup>6</sup> Some of the estimates rely on self-reported data from car share users. For example, the shift in mode that is brought about by car share use is self-reported. Even though the data is self-reported a number of similar surveys in Europe and North America have shown similar results. In Australia, the various service providers collect this data using their own survey questions. These questions are similar but do vary between service providers. It will be important in the future to establish consistent and robust methods for these measures.

(Department of Transport, 2010). Data from the service providers suggest that each car share user drives an average of 2,000km each year (GHD, 2009).

The modelling of benefits and costs uses the conservative figure of a 2,000km reduction for every car share user in the City of Port Phillip (Harris, 2015).

### **Value of a private car**

The 'annual value' includes capital value, insurance and registration. Insurance and registration costs can be identified as being around one thousand dollars a year.

The capital value of depreciating assets with different purchase prices and care regimes is more difficult to determine. The model in effect sets this at zero by using \$1,000 for the annual value of the vehicle that is disposed of. The annual value of the car in the model is probably underestimated.

It is likely that some of the cars that are disposed of (or not bought) by people using the service will have no resale value – especially if they have been bought for infrequent use. It is also true that any value recovered by selling a car would have to be amortised across the period that the person went without a car – which is likely to vary and would be difficult to determine. In practice, however, someone who sold a car for \$10,000 and used the service would have a benefit that does not appear in the model.

## **3.2. BENEFITS**

Reducing motor vehicle ownership and use releases four categories of value:

- Public realm value which includes environmental impacts
- Mobility value which includes congestion impacts
- Public health value
- Economic multiplier

These are discussed individually below.

### **Public Space value**

Value is added to the public realm in two ways:

- When motor vehicle ownership is reduced, car storage and parking can be reduced and the space used for other purposes. These higher uses generate increased activity and higher amenity of the public realm.
- When motor vehicle ownership is converted to motor vehicle access services, the number vehicle kilometres travelled per annum is reduced. This reduces damage to the public realm.

### **The opportunity cost of space allocated to parking**

Unfortunately, there are no robust measures available to calculate the opportunity cost of land or structures used for storing and parking cars. This is unfortunate because this is probably the area of greatest value.

What can usefully be identified are the key areas of value in outside and inside space.

## Outside

As noted above, private and public land is taken up parking and storing motor vehicles. That this land has an alternative higher value can be shown by the transformation of car parks and car parking into other uses.

The following alternative value categories can be identified:

- Economic activity including residential, commercial or retail activities.
- Values, which might be categorised under the heading ‘social capital’. A pop-up market for example would have both economic and social value.
- Values relating to amenity and sustainability such as urban forests and water sensitive urban design as shown in Figure 11 below.

**Figure 11: Parking space replaced in Maddern and Bridport St**



Source: City of Port Phillip

When the land used for parking is on a roadway in the form of kerbside parking, the alternative mobility value could accrue to:

- Motor vehicles (clearways)
- Public transport (tram fairways and bus lanes, accessible tram stops)
- Bicycle riding (separated bike lanes)
- Walking (priority crossings and kerb outstands)
- Freight and local economic value (loading zones)

The City might also transfer land from the ‘roadway’ category into the open space category and enable the public realm (road reserve) to be used for other purposes. The City has replaced car parking spaces with footpath widening, street trees, bicycle racks and commercial uses such as al fresco dining.

Of course, many of these values could be calculated – public transport delay is routinely calculated to identify capital and wages savings – but this methodology has not been applied in to the use of space and generalised metrics are not available.

## Inside Buildings

There is considerable alternative value available when vehicle storage and parking space in buildings is repurposed or avoided. Since car parking in structures is expensive on ground level, more expensive above ground and even more expensive below ground, it is likely that this category of 'inside' alternative value will be greater than the 'outside' alternative value.

There are many costs associated with car parks. These can include purchase of the land, any excavation and remediation if the soil is contaminated, construction, maintenance, loan fees and legal costs. Many of these will vary from site to site and will depend on scale, but it is possible to get an appreciation of the cost of providing parking by using construction costs, which are well documented and similar in across Australia. These range from \$10,000 - \$60,000 per car space.

The costs of parking appear in buildings in a number of ways:

- The building is bigger than it would be without car parks and costs more to build
- The building is the same size but without car parks it can generate a greater yield. As a rule of thumb, two car spaces in a building is equivalent to a single-bedroom apartment, four car spaces take up a similar area to a small retail store.
- The apartments cost more because they come with car parks. The higher price will put them out of reach of some buyers and renters and will take a higher proportion of an owner or renters earnings. A purchaser who can avoid buying a \$50,000 car park might be able to save three times that amount in interest payments on their mortgage (Conics, 2009).

It will be seen below that Bremen in Germany measures the value of the car share service by understanding the avoided cost of constructing car-parking structures. Using this rule of thumb and a construction cost of \$50,000 a space, the construction cost of building car parks to hold 10,000 additional privately owned vehicles based in the City of Port Phillip would be half a billion dollars.

Another ripple of cost is generated when car parks are built into buildings and then not used.

Apartment residents can generate this unused space when they realise that they do not need a car or a car park space. Developers find that their buildings transition from having 'not enough' car parks in the period when people first move in to having 'too many' car storage spaces over a period of eighteen months. These empty spaces behind the security door, unneeded by the owners and unavailable to other users, are stranded assets (unless the possibility of reuse has been allowed for in the design).

Even purpose-built parking structures contain unused space. These structures tend to be built based on speculative demand with a view to meeting peak demand requirements. This means that in most cases the total car park is rarely fully occupied. The space that is unoccupied 90% of the time is an opportunity cost in that it could be used for more productive economic activity.

When parking structures close over night, they lock out any use even for parking.

It is possible for a whole parking structure to have a negative return even in a popular location. In 2012, a car park structure was investigated for the St Kilda Triangle site. Three scenarios were examined – 200, 300 and 500 space structures. The expected construction cost was \$50,000 per space. The assessment was that without commercial space, none of the options had financial merit and that in all cases the 500-space option had no financial merit (ARUP, 2012).

**Figure 12: Car park podium in Moray Street**



Photo: PBA Photo

Car parks in buildings can generate losses in the surrounding area. The City of Melbourne noted another problem with car park podiums. The Southbank Structure Plan says that buildings with parking podiums create:

*‘a dead and intimidating public realm lacking in activity and natural surveillance. This inactivity reduces the security, vibrancy and attractiveness of the street and makes Southbank a poor walking environment and a cold and unfriendly place.’*

The opposite is also true. For this reason ground floor parking spaces are sometimes retrofitted with higher order users such as retail as shown in the example from the Melbourne CBD in Figure 13 below.

**Figure 13: Retail is a higher value use than ground floor parking**



Photo: PBA Photo

Finally requiring car parks in change of use buildings can make it difficult or impossible to recycle heritage buildings. The heritage structure may not have any doors or openings wide enough to

allow a car to enter. Equally the interior space may not allow space efficient manoeuvring, compromising the active space inside the structure. In this way car-parking requirements may prohibit a change of use and prevent a class of buildings from reaching a higher capital value.

As was noted above – many of these values could be calculated. However in this report the value of the alternative use of these types of parking space has not been included in the economic model, as it would require significant primary research to quantify with appropriate certainty.

### Negative impact on local amenity and environment

There is however, one value which can be calculated – damage to the public realm.

Every kilometre travelled in a car has an impact on the public realm in terms of creating urban barriers (such as Kings Way), loss of habitat (trees and vegetation links), soil, water and landscape degradation. These impacts have been quantified in dollar terms by specific research and published in the Australian and New Zealand guidelines for transportation system management. The rate of impact is around one cent for each vehicle kilometre and the cumulative total impact is an economic one (not financial) borne by the community as a whole.

### Summary

A summary of the spatial benefits included (and not included) in the economic model is provided in Table 7 below.

**Table 7: Summary of Spatial Benefits**

ITEM	INCLUDED IN MODEL	UNIT RATE	NOTES
Value of alternative use of public and private land 'outside' including on and off road.	No		
Impact of kerbside parking spaces on urban amenity	No		Could be equal to the impacts of VKT on urban realm
Cost of land and cost of construction of car parks	No		
Value of alternative use or avoided car parks inside buildings	No		Could duplicate financial impact on users and economic multiplier
<b>Impact on urban amenity &amp; environment of Vehicle Kilometres Travelled (VKT) p.a.</b>	<b>Yes</b>	<b>\$0.0116 / VKT avoided</b>	<b>Accounts for nature, landscape and urban barriers</b>

## Mobility value

Reducing motor vehicle ownership and use releases two types of mobility value:

- Reduced congestion resulting from lower VKT
- Increased access to kerbside space resulting from fewer cars parked

### Reduced congestion

A reduction in VKT will, by definition, mean that congestion on the road network is reduced. In addition, a reduction in VKT will also lead to a lower incidence of vehicle crashes. Values for the economic benefit related to congestion and road safety have been determined through research and published in the Australian and New Zealand guidelines for transport system management. These values have been used in the economic model.

### Private access to newly available kerbside space

In a suburban setting, such as Elwood, when a resident disposes of a car, the benefit is usually taken by another resident who parks in the vacated space. The benefit may be taken by a number of residents who can find parking spaces more easily. Although it could be significant, this mobility value is very difficult to determine and is therefore not included in the economic model.

### Public access to newly available kerbside space

Alternatively, the newly available space could be used for additional lane space, left turn lanes or space for other road users to park (loading zones, taxis, public transport). These benefits are difficult to quantify as they would be specific to each circumstance and therefore they are not included in the economic model.

### Summary

A summary of the mobility benefits included (and not included) in the economic model is provided in Table 8 below.

**Table 8: Summary of Mobility Benefits**

ITEM	INCLUDED IN MODEL	UNIT RATE	NOTES
VKT impact on congestion	Yes	\$0.2249 / VKT avoided	Accounts for the congestion impact of each additional VKT by car
VKT impact on crashes	Yes	\$0.0485 / VKT avoided	Accounts for the impact of each additional VKT by car on road safety
Value of additional mobility for other road users related to on-street parking	No		The benefits of repurposing kerbside parking to facilitate the movement of other modes.

*Note: See Appendix A: Detailed calculations for the economic assessment.*

## Public health value

Shifting trips away from motor vehicles and reducing motor vehicle use releases three types of public health value, specifically benefits from:

- Increased physical activity (walking and cycling)
- Reduced vehicle emissions (public health impacts from air pollution and the societal impact of greenhouse gas emissions)
- Reduced noise

Increased physical activity generates a public health benefit. This value is generated when travel that otherwise would occur by car is switched to an active mode such as walking, bike riding and public transport. The model uses self-reported mode use data provided by car share subscribers. Each car share user changes their travel behaviour in a range of different ways but in general the data suggests that 15% of trips are shifted away from the car, half to transit and half to a combination of walking and cycling.

Research shows that on average each car share user walks or cycles for an additional 10 minutes each day. This increase in physical activity results in health benefits to the user and societal benefits from reduced health care and increased productivity of the workforce. These benefits have been estimated in financial terms and published in Department of Infrastructure and Transport (2013).

Lower VKT results directly in fewer emissions including air pollution that contributes to health conditions such as asthma and wider environmental problems (such as the greenhouse effect and acid rain). These impacts have been estimated in financial terms and published in AustRoads (2014).

## Summary

A summary of the public health value included (and not included) in the economic model is provided in Table 9 below.

**Table 9: Summary of Public Health Benefits**

ITEM	INCLUDED IN MODEL	UNIT RATE	NOTES
Health benefit of increased activity (walking & cycling)	Yes	\$7.82 / hour walked \$12.22 / hour cycled	Accounts for the benefits that accrue from the physical activity of walking and bicycle riding as well as the associated injury costs
Value of reduced emissions on public health	Yes	\$0.0124	Whole community costs of health care (financial impact at the State & Commonwealth level)
Value of reduced emissions on environment	Yes	\$0.0066	Whole community economic impact
Value of reduced noise	Yes	\$0.0030	Average of whole community impact regardless of road type and proximity of residents

*Note: See Appendix A: Detailed calculations for the economic assessment.*

## Economic multipliers

Reducing motor vehicle ownership and use releases two types of economic value:

- Households have lower transport costs (direct financial impact on households)
- More money is retained in the local economy (multiplier impact of household finance retained).

### The impacts of car ownership on the household travel budget

Users of car share services find that they can cut their household transport budget substantially. Their 'alternative transport costs' such as spending on taxis, bicycles and public transport tickets rise but their motor vehicle costs such as financing, maintenance, insurance, registration, parking, fines and tolls is reduced. Other costs such as purchasing a car park with an apartment can be avoided.

The amounts will vary, but a household could find itself with a 'transport surplus' of five thousand dollars. (A more conservative amount is used in the model). It is not unusual for car share users to consciously reallocate money in their conceptual household budget. 'The money I save thanks to [car share] pays for my holidays' reports a Mobility (Switzerland) member.

The most significant car-related cost is a car park. When a household does not have to store a car, they do not need to buy or own a car park. This cost can be substantial. Each car space in a multi-storey car park costs at least \$30,000 to construct and spaces in new apartments can cost \$50,000 to buy. The capital commitment and debt servicing that is avoided is another financial

benefit that accrues to the share car user. As noted above this can be three times the cost of the car park.

The estimate assumes that five out of twenty users (25%) have been able to avoid buying a \$50,000 off street car park. The value was based on the cost of purchasing a car space at market rates and paying for it with a typical mortgage.

In the model, the financial savings are based on the rate of change (in travel behaviour) per car share user. This means that there is no need to account for the 2,000 annual VKT for each car share member or the ongoing operational costs of the car share vehicles (both private costs and their impact on the community).

Research suggests that up to 80% of this 'surplus' is likely to be spent in the local economy as people with low motor vehicle use are less likely to drive to where they spend their money and more likely to shop locally. This 'marginal propensity to consume' locally will vary by person. Some people will not spend the 'surplus', perhaps preferring to retire debt or save up for a longer-term goal such as a holiday or investment. In all cases, some element of the money saved returns to the local economy.

If the average marginal propensity to consume is 80%, then an economic multiplier of 5 can be expected. This however has not been included in the model.

### Summary

A summary of the economic multipliers included (and not included) in the economic model is provided in Table 10 below.

**Table 10: Summary of Economic Multiplier Benefits**

ITEM	INCLUDED IN MODEL	UNIT RATE	NOTES
Financial saving for each household (annualised)	Yes	\$993.66 / car avoided	Accounts for all on road costs including finance.
Financial saving from reducing VKT	Yes	\$0.1618 / VKT avoided	Significantly lower than total car costs so as not to duplicate on-road costs
Opportunity cost of not owning/renting a car space	Yes	\$3,306 / car avoided	
Economic multiplier – shop local	No		See Cartright, 2007

*Note: See Appendix A: Detailed calculations for the economic assessment.*

## 3.3. COSTS

The introduction and expansion of car share services trigger a number of costs:

- Supporting infrastructure and maintenance
- Administration

- The opportunity cost of the public space occupied by the car share vehicle

These are currently off-set by charging each car share service provider for access to dedicated on-street parking spaces.

### Infrastructure

The infrastructure required to establish a car share parking space includes up to:

- Two signs on poles
- 15 metres of line marking around the space
- “Car Share” lettering and other markings
- Staff time required to allocate on-street spaces

These amounts are maximums that reduce if the car spaces are allocated in pairs (as they then share some of the infrastructure) and depending on the location and design of the car space (angle of parking could reduce the line marking required).

In some exceptional situations there may be other costs including construction of the car space. The infrastructure costs have been estimated to amount to \$910 per space. The staff time required to allocate spaces have been informed by consultation with the City of Port Phillip and is estimated to cost \$1,096 per space.

The current model estimates the average costs of capital infrastructure required in year 1 of the car share vehicle deployment (essentially a snapshot). This limitation results in the annualised cost of maintaining a car park being excluded from the model.

### Strategic Policy

Additional staff time is required to manage the strategic policy and development of the mode and is likely to grow in proportion to the number of spaces that are added to the network each year. It has been estimated to currently require approximately 0.05 effective full-time (EFT) employment from a band 6 employee and is expected to require 0.2 EFT for strategic expansion.

### Opportunity cost of space

It is necessary to include in the model an element that stands for the opportunity ‘cost’ of the public space that the car share service occupies. This enables the model to reveal whether putting land to the use of a car share service is worthwhile and if it is worthwhile, the extent of that value.

There are no direct or available measures to use to make this assessment and it is worth noting that in these circumstances relevant benefits have been left out.

Nonetheless, a number of proxy indicators of value have been identified:

#### 1. **A tree**

According to *Greening Port Phillip: An urban forest approach* (City of Port Phillip, 2010), the basic monetary value of a tree is determined by matching the trunk diameter at breast height (DBH) with its corresponding value. A 40cm DBH tree has a basic monetary value of around \$12,000

#### 2. **A Park**

In 2012, the City of Melbourne expanded the Errol Street Reserve ten fold by resuming road space for the park. This project cost \$5m or just over one thousand dollars a square metre. If we assume that this cost is directly related to the value that will be gained by turning it into parkland, we can say that a 15m<sup>2</sup> car park has a ‘parkland’ value of \$17,000.

3. **A car park**

A car park in the City of Port Phillip costs \$25,000 - this provides another insight into value.

4. **The land for a building**

The value of land in the City of Port Phillip is currently \$3,000 a square metre. At this rate, a car park would cost \$46,000.

5. **A multi storey car park**

As noted above the ARUP study of a car park at the triangle site used the assumption that each space would cost \$50,000 to build. We can use this figure to understand the opportunity value of a car park.

6. **A annual financial return on commercial space**

The average cost of leasing office and retail space in the City of Port Phillip is around \$350 per square metre per annum. This value provides a useful benchmark for the average annual value of each square metre of commercial space. It is difficult to justify using these rates for all spaces in Port Phillip, although they provide a useful comparison to the other economic valuation methods.

These values suggest that the opportunity cost of a parking space in the City of Port Phillip is, considering a range of uses, in the order of \$26,000. This average value has been used in the model.

If the current car share network were all occupying public space (which they are not) – they would have an opportunity value of \$1.5m. The land underneath the current *residential vehicle fleet* has an opportunity value of over \$1.3 billion.

It is important to note this cost is an estimate of the value of public space occupied by a car share vehicle. These costs do not apply if the vehicle is parked in a private building. If, as occurs at the moment, a third of the car share vehicles were parked in private space, then the costs would fall in relation to that proportion.

The model assumes that all the car share vehicles are parked in public space.

### **Fees and charges**

The model includes as a benefit the ‘management fee’ that the City of Port Phillip charges (\$1,000 per space over a duration of 3 years for establishment) as this can be seen to be revenue that offsets the City’s costs.

However from a policy point of view any fees levied on car share services should be considered a cost as fees and charges will suppress the use and expansion of the car share network.

State and local governments routinely subsidise public transport. This subsidy can be expressed in cash. State governments enter ‘cost plus’ contracts with public transport operators paying the cost of the service and 6% for the operators profit. Subsidies also can be in kind or in opportunities forgone. Local governments provide free kerbside space for bus stops and taxi ranks for example.

When a congestion charge is levied, public transport is exempt as the point of the congestion charge is to favour one mode over another. If a bus had to pay a congestion charge, two things would happen. The fares would rise and patronage would fall. A 10% fare increase causes patronage to fall by about 5% (Litman, 2015).

Fees levied on car share operators have the same effect. Fees and levies cause hourly fees to rise. Higher fees suppress use and the attractiveness of the service to potential members. The service provider’s revenue falls making some of the locations uneconomic. This would probably cause the service provider to remove the lowest earning vehicles, which – if the service provider is skilful –

will be the new sites that have not yet built up a supportive membership. The service will thereby shrink back to scale that the revenue can support.

If the charge or levy is high enough this retrenchment of vehicles could trigger defections of users and initiate vicious cycle of withdrawal on both the customer and service side until the service is completely withdrawn.

Car share services are particularly vulnerable to this effect when the scale of the service is small and profits are being reinvested in growth.

This vicious circle can be avoided if service management rules including fees and charges need to be set in the context of the strategic value of a reduction in motor vehicle ownership and use.

### **Parking meter revenue**

Independently of other costs, some municipalities are mistakenly concerned about Car Share vehicles impacting on parking meter revenue.

The model did not include 'lost meter revenue' as it is very unlikely that any significant meter revenue would be lost. There are two reasons for this:

1. It is easy to keep meter revenue at the desired level:
  - Most of the on-street car share network can be located in non-metered locations. In the City of Port Phillip, metered spaces currently only make up 22% of the total on-street spaces.
  - Where car share vehicles need to be in a location that is currently metered, a nearby un-metered bay can be turned into a metered bay to keep the number of metered bays the same.
  - If car share vehicles need to be in a location that is currently metered, and there were no unmetered bays available (this is very unlikely), then the price of the existing meters in that area can be increased to restore revenue
2. There are always some empty metered car spaces. There are no sites in the City of Port Phillip where all the metered parking spaces are fully occupied and there are no empty metered bays within a couple of blocks. As long as there are empty metered parking spaces, then a car share vehicle can be located without affecting parking meter revenue.

This occupancy calculation can be illustrated by the situation in the City of Sydney. Currently the City of Sydney has 600 car share vehicles in what they estimate to be 3% of the on-street car parking spaces. By comparison the City of Port Phillip would have to install 1,500 vehicles to occupy 3% of the available fifty thousand spaces.

This 3% load means that for every 100 spaces, car share vehicles would occupy three spaces. If the occupancy before the car share deployment was 85%, adding three share cars will take it up to 88%, meaning that there will still be twelve empty spaces for every 100. These empty spaces will be able to receive revenue from the next person who wants to park in a metered bay.

This situation – where there is always an available space – is generally true even in popular destinations. In the CBD of Melbourne for example, 100% occupancy of every meter rarely occurs in one block without a metered space becoming available in another block nearby.

### **Summary**

A summary of the costs included (and not included) in the economic model is provided in Table 11 below.

**Table 11: Summary of Costs**

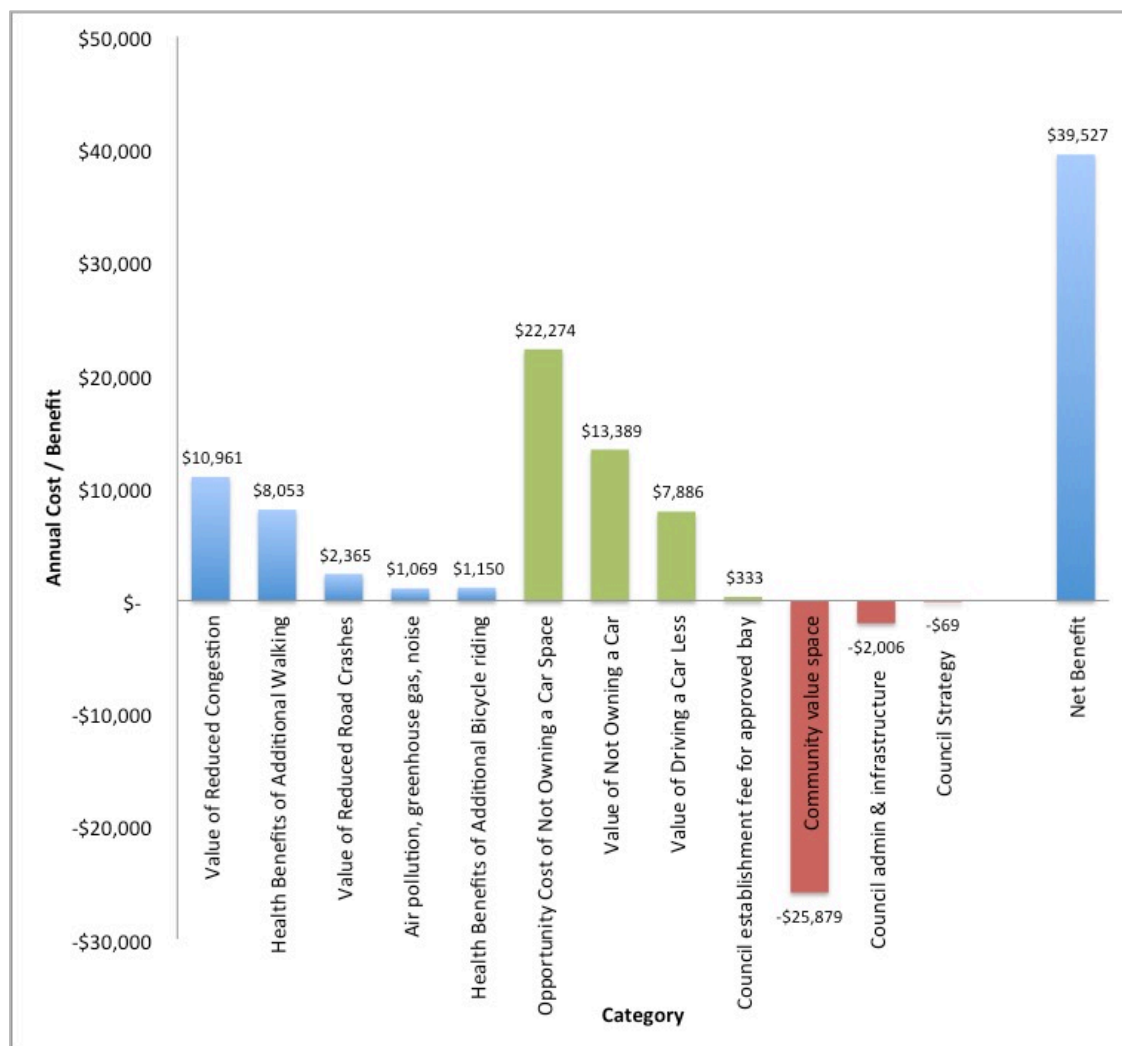
ITEM	INCLUDED IN MODEL	UNIT RATE	NOTES
Establishment Costs	Yes	\$2,006 / car space	Includes staff administration time, signage & line marking
Strategic Development & Management	Yes	\$69 / car space p.a.	Includes 0.05 EFT staff
Opportunity value of a car park space in the City of Port Phillip	Yes	\$25,879 / car space p.a.	A value derived from the value or cost of six alternative uses of the space
Parking Revenue (Fines and Tickets)	Yes	\$0	City of Port Phillip parking revenue is not affected by car share vehicles

*Note: See Appendix A: Detailed calculations for the economic assessment.*

### 3.4. THE BENEFIT COST RATIO

The analysis has estimated total benefits and costs to users, the community and the City of Port Phillip as shown in Figure 14 below.

**Figure 14: Summary of Benefits and Costs**



Source: PBA modelling

The greatest value to the individual is the avoided cost of a car space while the greatest value to the community is reduced congestion and improved public health:

- Each car in the car share network provides a value of around \$68,000.
- For each car deployed the cost to the City of Port Phillip has been estimated to be around \$28,000.
- The Benefit-Cost Ratio is estimated to be at least \$2.43 for every \$1 the City of Port Phillip spends on car share services.
- The net economic benefits that flow from the car share service through reduced ownership and use of motor vehicles to the City of Port Phillip community into better use of built and open space, more efficient movement on roads, increased public health and improved household and local economies can be estimated conservatively at \$3 million in 2014.

## 4. A sustainable car share network

The City of Port Phillip is considering how to achieve the best outcomes for the community from Car Share services. Maximising car share membership and use will deliver significant benefits including reduced congestion, more car spaces available for other uses and reduced cost of living in term of transport costs and health impacts.

### 4.1. CHOOSING APPROACHES

There are three broad approaches followed by local governments:

- Strategic expansion (proactive)
- Responsive expansion (reactive)
- Suppression

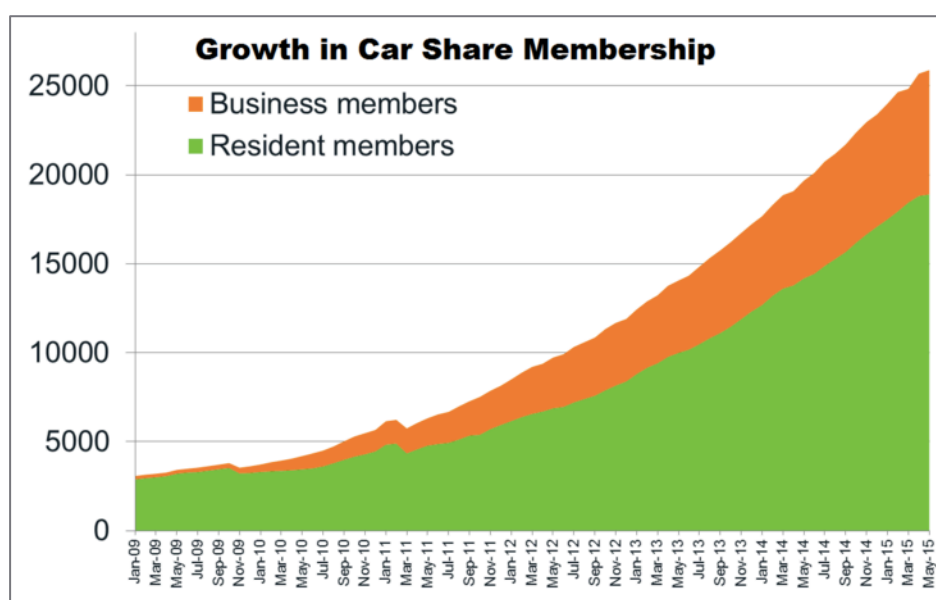
#### Strategic expansion

In Australia, the two capital city councils of Sydney and Melbourne illustrate two of the approaches.

Over the last half dozen years the City of Sydney has increased the number of on-street spaces for share car vehicles by 10 each month. This growth in service availability reflected (and stimulated) a growth in membership. Today there are 600 on-street vehicles available in the municipality and another 200 inside buildings. The membership is equivalent to 20% of the residents of the municipality.

Growth in car share membership in the City of Sydney is shown in Figure 15 below which illustrates the growing proportion of business members.<sup>7</sup>

**Figure 15: Sydney: Growth in Car Share Membership**



Source: City of Sydney, 2015

<sup>7</sup> Business members use the share cars based in the City of Sydney during work hours. This enables the company to reduce car pool costs.

### **Responsive expansion**

Over the same period, the City of Melbourne's policy can be characterised as 'responsive expansion'. The City has set a car share network target (300 vehicles) and has provided on-street spaces typically at the request of service providers. The service has also charged an annual fee for spaces within the Hoddle Grid – and is understood to be the only municipality charging annual fees for spaces.

Expansion of the service in the City of Melbourne has therefore been slower, as the Council waits for service providers to determine (and commit to) growth opportunities. By comparison, Sydney's 'strategic expansion' has occurred because the Council 'forces' the service providers to expand their service to the community or risk being overtaken by competitors.

Expansion can also be slowed by resourcing constraints within Council as well as the need to be coordinated across Council divisions such as statutory planning, parking management, traffic management and sustainable transport initiatives.

### **Suppression**

Over the same period, some municipalities have followed a policy that can be characterised as suppression. Some have made zero on-street spaces available over a number of years. In these municipalities, the only car share vehicles available to residents are on private land. Some municipalities have called for applications for expansion but then refused to provide sites for the car share vehicles.

These approaches have suppressed the use of the services but have not stopped their communities seeking access to car share services. In these situations, people tend to 'cross the border' to car share networks based in neighbouring municipalities. The service providers have also sought to meet demand by locating vehicles in areas with no parking restrictions.

As a result, these municipalities have developed significantly smaller car share networks and lower levels of membership (and benefits) in proportion to their population.

## **Support is usually based on understanding**

There are no characteristics of transport or land use that might lead to the differences in approach between the municipalities mentioned above. Nor are there significant differences between the high level policies of the municipalities relating to congestion and land use.

What does differ is the level of understanding (amongst community and Councillors) regarding the value that a car share network creates.

In general, where the benefits are understood and where there is an awareness of the necessity of responding to population growth, the car share services are supported. In these areas municipalities act on the conviction that the services, like commercial train, tram, bus and taxi services, deliver a strong community benefit. Some municipalities, the City of Melbourne for example, formally define the car share service as a form of public transport.

Municipalities that suppress the growth of the service take an 'in practice' position that the services are a commercial business rather than a community benefit. Some hold the view that because the services are businesses and because some of these businesses are not based in Australia that they are in some way illegitimate or undeserving of support. This view is not consistent with the support given by the State and municipalities to train, bus and tram services – all of which are run by multinational companies many times larger than the car share service providers. Nor does a business structure make taxi services, Skybus and other airport bus services unworthy of support.

It is recommended that the City of Port Phillip adopt a “Strategic Expansion” approach to managing the Car Share Network. This is based on the knowledge of significant economic and financial benefits that are generated by Car Share Services for local communities where services are provided.

It is also recommended that the City of Port Phillip seek to ensure that all members of the community have reasonable access to the car share network.

## **4.2. BASIS FOR CAR SHARE POLICY REVIEW**

There is a significant threat to urban amenity in the City of Port Phillip from population growth and the associated growth in the number of privately owned vehicles based in the City of Port Phillip.

If the population grows as forecast in City of Port Phillip and in the Fishermans Bend precinct and if that additional population has a similar rate of car ownership and use as the current population, then the number of privately owned vehicles based in the City will double by 2031 to over 100,000 vehicles. At the same time the space available to store and park vehicles on-street and off-street space will shrink.

This growth in privately owned vehicles based in the City has begun. Despite the reduction delivered by the car share service, the overall number of privately owned vehicles based in the City of Port Phillip had a net growth, between 2006 and 2011, of 4,500 vehicles. This is equivalent to the total number of unrestricted parking spaces in Elwood.

The space that future privately owned vehicles will occupy when in storage, parking or in use, as well as the financial, environmental and social costs that would flow, will erode the mobility and amenity values that are attracting people to the City.

There is an urgent need to break the link between increased population and an increase in the total number of privately owned vehicles based in the municipality.

A strong car share service provides the City with a means to break this link through a partnership between the City, the car share services and the users.

The City can take advantage of responsive growth lead by the service providers and stimulated by the users recommending the service to their friends and neighbours. In this role the City gives permission to expand the service to support the residents and businesses that wish to take advantage of it. In addition it can embark on a program of strategic expansion in which the City drives the growth in the scale and use of the service through planning, placement and promotion. The typical actions required of Council are highlighted in Table 12 below.

**Table 12: Typical Actions required of Local Government regarding Car Share Services**

APPROACH	LEADER	TYPICAL COUNCIL ACTION
Permission	Service provider Members	Respond to request to deploy a car in a specific location
Planning	Statutory Planning	Reduce the car parking requirement for a building that includes car share vehicle/s
Placement	Cross divisional initiatives: Parking, Traffic, Open Space	Incorporate a car share space into a local improvement project
Promotion	Council	Encourage residents and businesses to join and use car share services

### 4.3. FUTURE CAR SHARE POLICY

Currently around 2,500 people are using a car share network of 79 car share vehicles. As a result, the number of privately owned vehicles based in the City is around 800 vehicles smaller than it would have been without the car share service. However, between the 2006 and 2011 the number of privately owned vehicles based in the City continued to grow (by 5,423 additional vehicles), despite 800 additional vehicles being avoided.

#### Equitable access to a reliable network of car share services

The current car share network does not provide equitable access to all residents in the municipality. Some areas of Port Phillip, including those with lower incomes, do not yet have easy access to the car share network because the network of car share vehicles has not yet expanded into all Port Phillip neighbourhoods.

In order to provide equitable access across all neighbourhoods the car share network will need to have around 14 stations or nodes per square kilometre in residential areas. To provide a reasonable level of service reliability an average of three car share vehicles will need to be deployed at each station. In total, providing a base level of service to the whole Port Phillip community will require installation of 750 car share vehicles at 250 locations. It is estimated that 30-40% of these would be located in off-street parking areas.

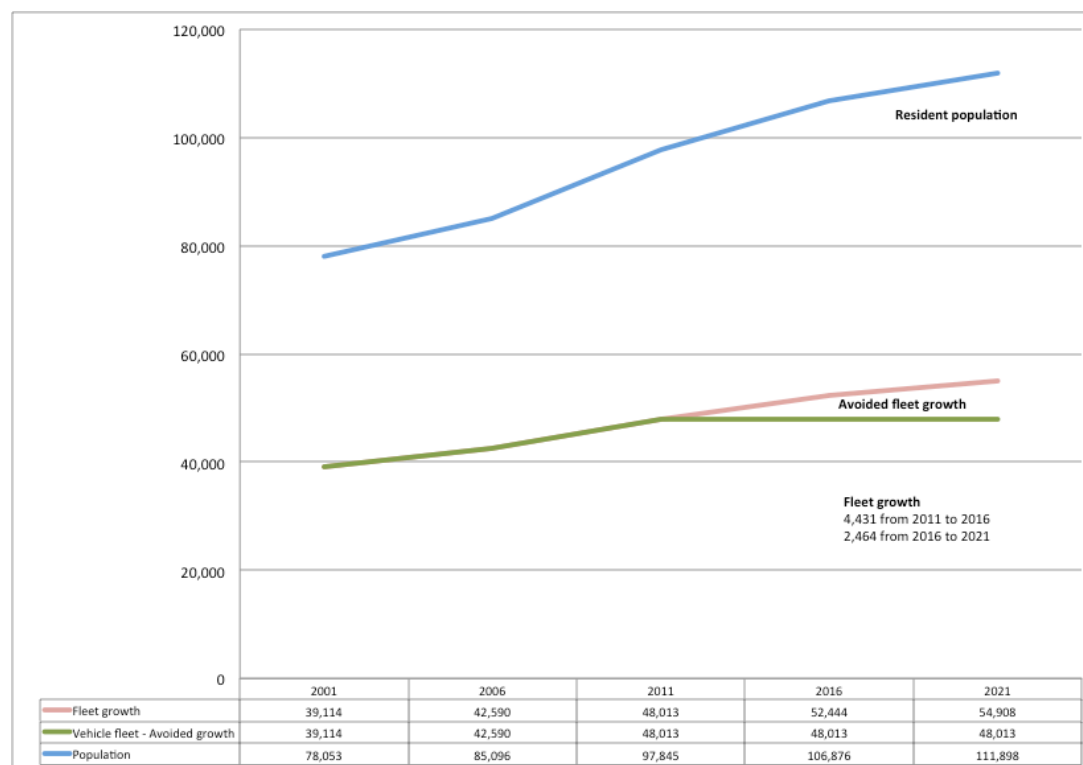
This level of service will be developed by the car share service providers over time. The faster it develops, the sooner Council and the community will receive the benefits provided in terms of congestion relief, car parking availability, health improvements and financial savings.

#### More sustainable population growth

As discussed above there is significant population growth projected to occur in the City of Port Phillip over the coming years (over 14,000 additional new residents between 2011-2021) and decades. Without access to car share services the future population will bring additional (almost 7,000 between 2011-2021) privately owned vehicles with them. This is not sustainable from a range of perspectives, in particular the increased local congestion those cars would cause and the 21 hectares of space required to store the vehicles.

If the car share network is expanded to around 750 vehicles by 2021, then growth in privately owned vehicles based in the City could be totally avoided (amounting to 6,895 fewer vehicles in Port Phillip). The steady green line in Figure 16 below shows this trajectory.

**Figure 16: Forecast Population Growth and Impact on Resident Vehicle Numbers**



Source: PBA analysis of City of Port Phillip data

It is recommended that the future Car Share Policy set the target of ‘a net zero increase in the number of privately owned vehicles based in the City of Port Phillip (based on 2011 Census data)’.

This high level target will define the problem that the service is meant to address and thereby shape all the related strategies, policies, management guidelines and performance measures. A strategic expansion scenario has therefore been outlined based on avoiding growth in the number of privately owned vehicles that are based in the City of Port Phillip.

### Impact

This proposed 2021 car share network will deliver \$51m of value in return for an investment of \$20.9m as shown Table 13 below.

**Table 13: Summary of Targets**

CAR SHARE NETWORK SIZE	MEMBERS	AVOIDED RESIDENT VEHICLES	BENEFIT	COST	VALUE
79 (2015)	2,500 (2015)	800 (Estimated)	\$5.4m	\$2.2m	\$3.2m
750 (2021)	28,000 (2021)	7,000 – 10,000 (Estimated)	\$51m	\$20.9m	\$30.1m

To give a sense of the impact of this car share network, if all the proposed car share vehicles were to be:

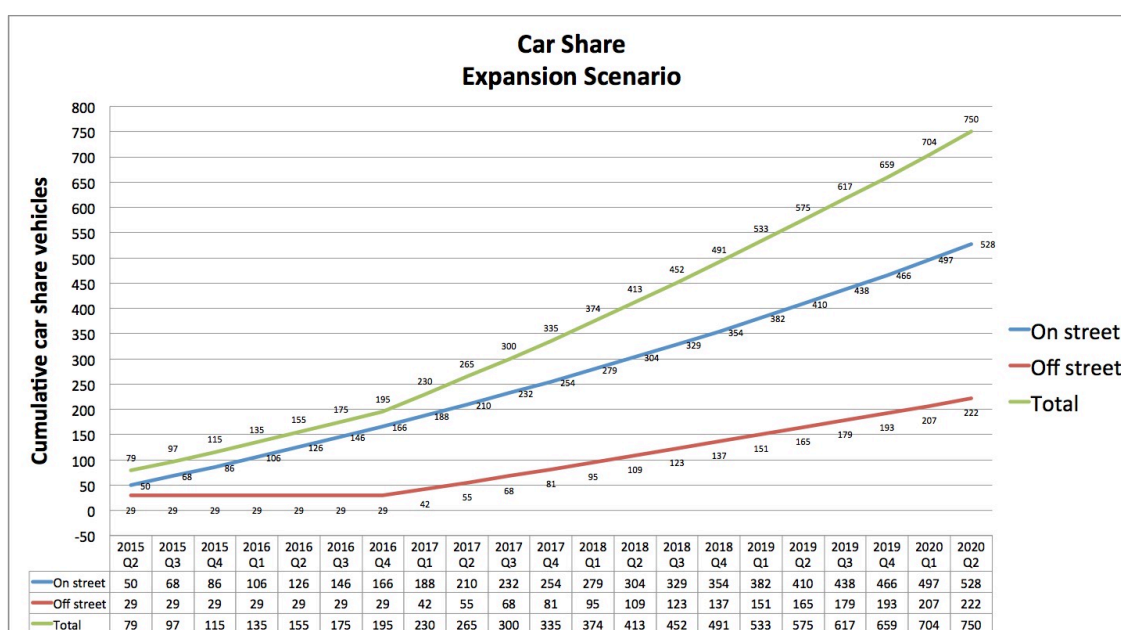
- Placed in on-street parking bays it would occupy 1% of the current on-street parking spaces across the City.
- Evenly spread across the streets in the City of Port Phillip, each road in the City (there are around 750) would have one vehicle. (In practice the vehicles would be grouped in twos and threes).

### Deployment scenario

The scenario assumes that a significant proportion of the car share network can be deployed in off-street parking areas (often as part of new apartment developments). These vehicles would be available to all people who live in the neighbourhood. The City of Port Phillip can influence the development outcomes through the statutory planning processes in order to meet these targets. The scenario also assumes that it might take a couple of years before this comes into effect.

The number of car share vehicles deployed in on-street spaces (blue) would grow steadily while the number of vehicles in off-street spaces (red) grows more rapidly as shown in Figure 17 below.

**Figure 17: Possible deployment scenario for 750 car share vehicles**



Source: PBA analysis

## Long Term sustainability

The recommended future car share policy target provides a basis from which to tackle even greater population growth challenges (in the years beyond 2021).

During this period the population in the municipality will surge and could cause a significant growth in privately owned vehicles based in the City (to more than double the 2011 number) as shown in Table 14 below.

**Table 14: Forecast private vehicle numbers (business as usual)**

VEHICLES PER PERSON	2011	2020	2025	2030
49	48,013	<b>60,393</b>	<b>75,681</b>	<b>98,182</b>
(Current City of Port Phillip rate)				

Source: ABS, CoPP with PBA analysis.

A significant proportion of this growth is caused by population growth forecast to occur in Fishermans Bend. To avoid growth in private vehicles, by 2030 the City will need to have a total car share network of 4,000 car share vehicles in the municipality by 2030 – half in Fishermans Bend and half in the rest of the municipality.

Without this strategic expansion of the car share network the municipality will be literally swamped with additional privately owned vehicles, significantly increased congestion and more demand for parking (at residents' homes and places they visit).

## An alternative strategy

The previous section outlined an approach that will enable the City of Port Phillip to avoid a growth in the number of privately owned vehicles in the municipality (using 2011 as a base year). By holding the number of vehicles at the 2011 level, the City will ensure that competition for storage, parking and driving space will not be worse in 2021.

It is recognised that to achieve this level of ownership will require a significant change in approach, albeit one consistent with the City's high level policies. For this reason it makes sense to ask if there are some less ambitious goals that would provide much of the benefit for less effort.

Unfortunately it is not possible to recommend any car share network that enables some growth in the number of privately owned vehicles in the City for a number of reasons:

- The City takes the view that the level of congestion and competition for space today is unacceptable and is already causing significant problems
- The benefits that would accrue from a moderate increase in the car share network would be overwhelmed by other growth in private vehicles based in the municipality.
- The impact of additional vehicles on the road network is not linear. When a road is congested, each additional vehicle increases the travel time for those using the road. Further, each vehicle that enters the congested road has a bigger impact than the one that entered the road before them. This cumulative impact explains how a road comes to a standstill.
- There is a genuine risk that additional congestion caused simply by increasing population with current levels of vehicle ownership is blamed on the "newest mode" (car share) unless the mode is deployed at a rate that avoids any noticeable increase in congestion and parking stress.

Fortunately the City is in control of many policy levers that can influence the size of the car share network and has the capability, over time to set more ambitious targets than those recommended in the previous section.

The alternative to avoiding an increase in the number of private motor vehicles based in the City of Port Phillip is to aim to reduce the number. This can be conceived in a number of ways:

- Rather than using 2011 as the base year the City could use other base years
- The City could aim to move from 49 vehicles per 100 residents to a lower number

These options are shown in Table 15 below.

**Table 15: Ownership rate based on a population of 112,000 (2021)**

MUNICIPALITY	OWNERSHIP RATE PER 100 PEOPLE	NUMBER OF PRIVATE VEHICLES OWNED BY RESIDENTS	CITY OF PORT PHILLIP BASE YEAR (CENSUS DATE)
Better than current City of Port Phillip	45	50,400	2011
Better than current City of Yarra	40	44,800	Between 2006 - 2011
-	35	39,200	2001
Slightly better than current City of Melbourne	30	33,600	1996
Paris, Amsterdam	25	28,000	Before 1991

Source: PBA Analysis

In a reduction strategy:

- The modelled benefits would be gained to a greater extent
- The problems of congestion and competition for space would be eased
- The performance of the road network – especially the ‘internal network’ would be increased.

The recommended alternative target is for a reduction in private vehicle ownership to 40 vehicles per 100 residents or a base year of 2006 when there were 43,590 vehicles based in the City of Port Phillip.

## 4.4. CHOOSING A TARGET

There is a range of 2021 targets that the Council could choose to pursue. These are highlighted in Table 16 below.

**Table 16: Possible targets for the network**

TARGETS	'MOTORISATION' CAR OWNERSHIP /100 RESIDENTS	PRIVATE VEHICLES <sup>1</sup> IN 2021	CAR SHARE VEHICLES IN 2021	VEHICLES <sup>1</sup> AVOIDED BY 2021
Reduce local road & parking congestion to 2001 levels	35	39,200	1,500	15,700
Reduce local road & parking congestion to 2011 levels	42	48,013	750	7,500
Stabilise local road & parking congestion at 2016 levels	46	52,444	250	2,500
No limit on parking & local road congestion increases	49	54,908	160	1,600

*Note:* Privately owned vehicles stored in Port Phillip overnight (does not include vehicles driven to Port Phillip during the day)

*Source:* PBA Analysis

The table above compares the number of privately owned vehicles based in the City of Port Phillip and the related motorisation rate with the scale of the car share network that would be needed to deliver that outcome.

The recommended target is to reduce congestion of parking and local roads to 2011 levels (in line with goals stated in the 2016 Budget and Sustainable Transport Strategy). The scale of car share network to achieve this target is achievable (has been achieved by others in similar circumstances) and would reduce the number of private vehicles based in the City of Port Phillip in 2021 by 14%.

Business as usual (no limit on future congestion) assumes that the next six years will be similar to the past. The current car share network would grow by around 80 vehicles (including 20 vehicles in off-street locations) but not enough to match the growth in population and private car ownership.

## 5. An area by area projection

This section provides a high level answer to the question ‘What would a car share network of 750 vehicles look like?’

It considers the areas of the City of Port Phillip through a number of lenses, including where:

- Population increase is forecast to occur
- Journey to work data identifies low car use
- Car ownership levels are low and 40k/h speed zones exist or are proposed
- Incomes are low.

The available datasets divide the City of Port Phillip into different areas. The following section therefore includes:

- A City of Port Phillip ‘Parking Precincts’ view
- A suburb view: Albert Park, Balaclava, Elwood, Melbourne, Middle Park, Port Melbourne, Ripponlea, South Melbourne, St Kilda, St Kilda East, West and Windsor.
- A ‘Forecast ID’ view: Albert/Middle Park, Elwood/Ripponlea, Port Melbourne, South Melbourne, St Kilda Road, St Kilda East.
- Areas within Fishermans Bend: Montague, Sandridge and Wirraway
- ABS Census SA1 areas

The different ‘views’ are not directly comparable but used together; they allow a description of what a future expansion of the car share network at the scale that is recommended would look like.

It is recommended that a detailed ‘Deployment Plan’ be prepared to identify the scale of the desired network in each precinct (or other type of area category) over time in the City of Port Phillip. This plan would then guide the efforts on the ground to identify the specific ‘locations’ of the vehicles.

### 5.1. AREAS OF POPULATION GROWTH

The growth of car share service network will be greater in areas where the population growth is greater. This is because the aim of the strategy is to allow for population increase but reduce the number of cars based in the City of Port Phillip.

In these areas parking spaces for car share vehicles will be needed in on-street spaces and on private property (existing or future buildings or car parking areas).

There will be two important opportunities in these areas. The ‘yet to be built’ apartments can be adapted to allow vehicles from the car share network to be located inside the building but available to the wider community. The ‘yet to move’ people can be influenced in their expectations and, during the weeks after their move, can be influenced as they establish their mobility habits.

In practice some new residents will bring cars with them and some existing residents in population growth areas will make use of car share services (then dispose of a car). If the use of car share services increases at a rate proportional to population growth then the net increase in privately owned cars based in the City would be zero. It may even be possible in practice to reduce the number of privately owned vehicles based in these areas.

In Fishermans Bend the growth is not currently underway but when the development begins it will be significant, forecasts show upwards of 70,000 people by 2031. The cars needed in these areas have not been estimated as they are likely to be, and will need to be, inside new buildings. Planning issues are discussed below.

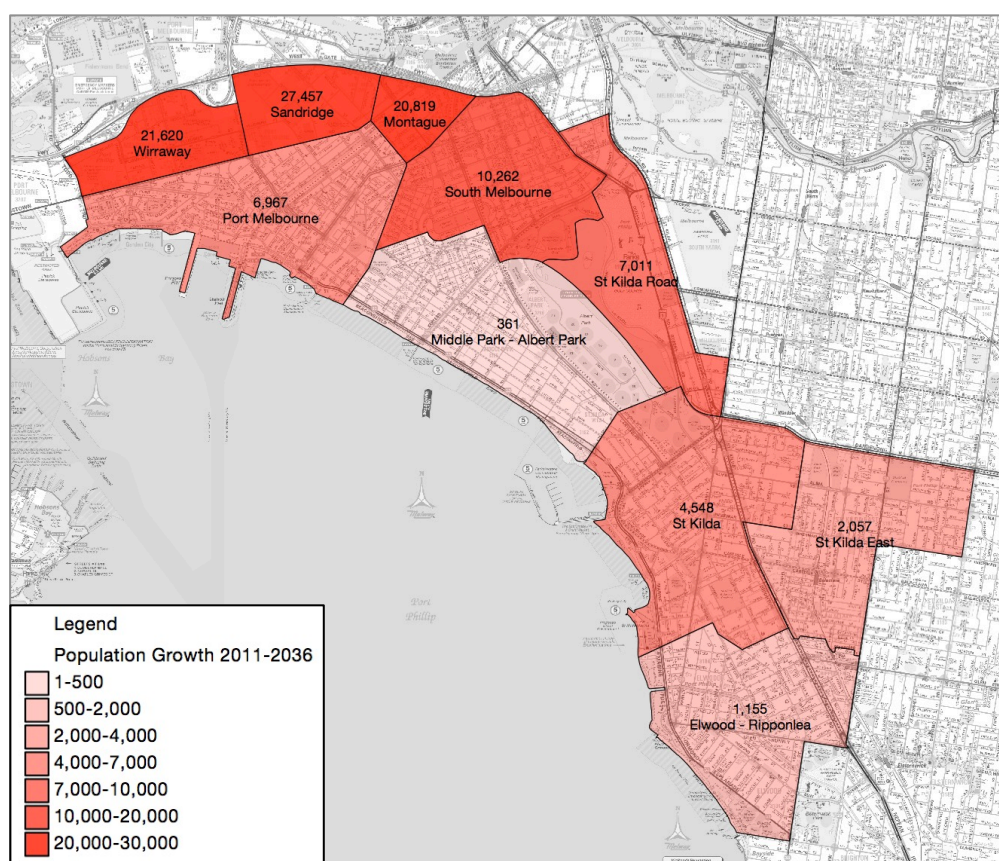
Using this lens we can see that population growth will be:

- Strong in Fishermans Bend. It is anticipated that most of the car share vehicles will be located in buildings. A small number will be in on-street parking spaces.
- Low in Middle Park and St Kilda West. The car share service can be expanded in these areas to reduce parking stress but is not needed to address population growth.

The increase in the number of car share vehicles required in each neighbourhood to offset growth in privately owned vehicles based in the City of Port Phillip to 2036 can be understood by mapping where population growth will occur in Figure 18 below.

Growth will be greatest in Fishermans Bend, followed by South Melbourne and the St Kilda Road Corridor. Transport precincts including 'St Kilda East', 'Elwood', 'Middle Park & St Kilda West', 'Balaclava and Ripponlea' will have the lowest population growth. The car share network will grow in similar proportions.

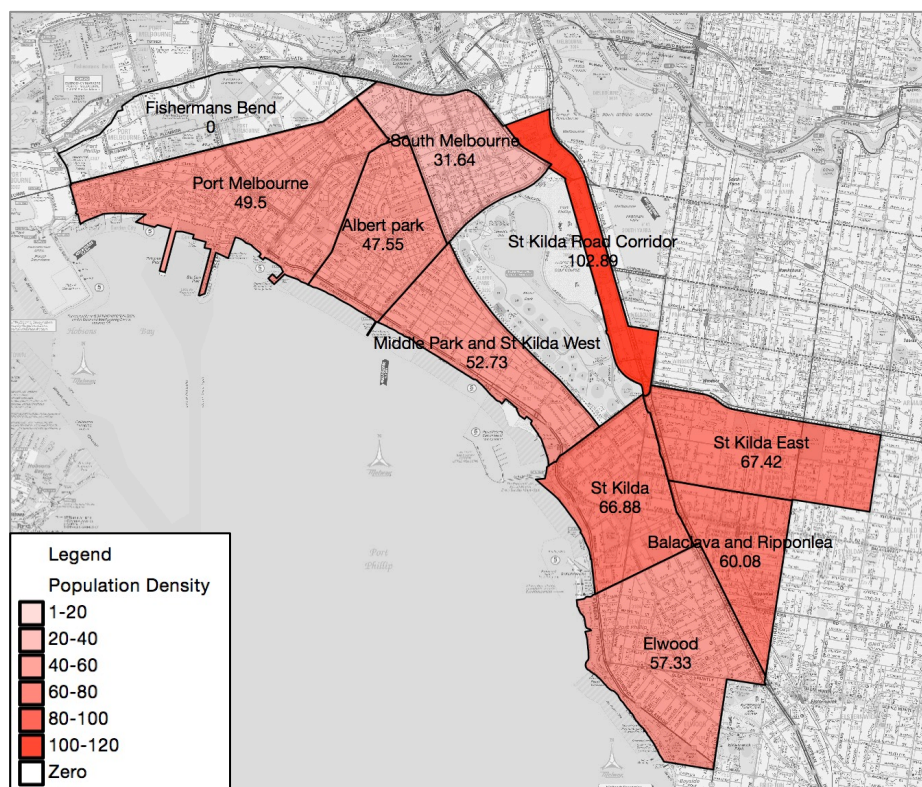
**Figure 18: Future population growth by area**



Source: Growth forecasts from CoPP forecast.id and Places Victoria (Fishermans Bend)

The deployment plan will also take density into account. The location of existing high-density areas is shown in Figure 19 below. Although the areas that include St Kilda East, Elwood, Balaclava and Ripponlea are not expected to experience high population growth, they do have higher densities. This makes it likely that they will be favourable environments for the growth of the network.

**Figure 19: Population Density of CoPP Parking Precincts (Residents per Hectare)**



Source: PBA Analysis of ABS 2011 & CoPP Parking Precincts

## 5.2. JOURNEY TO WORK PATTERNS

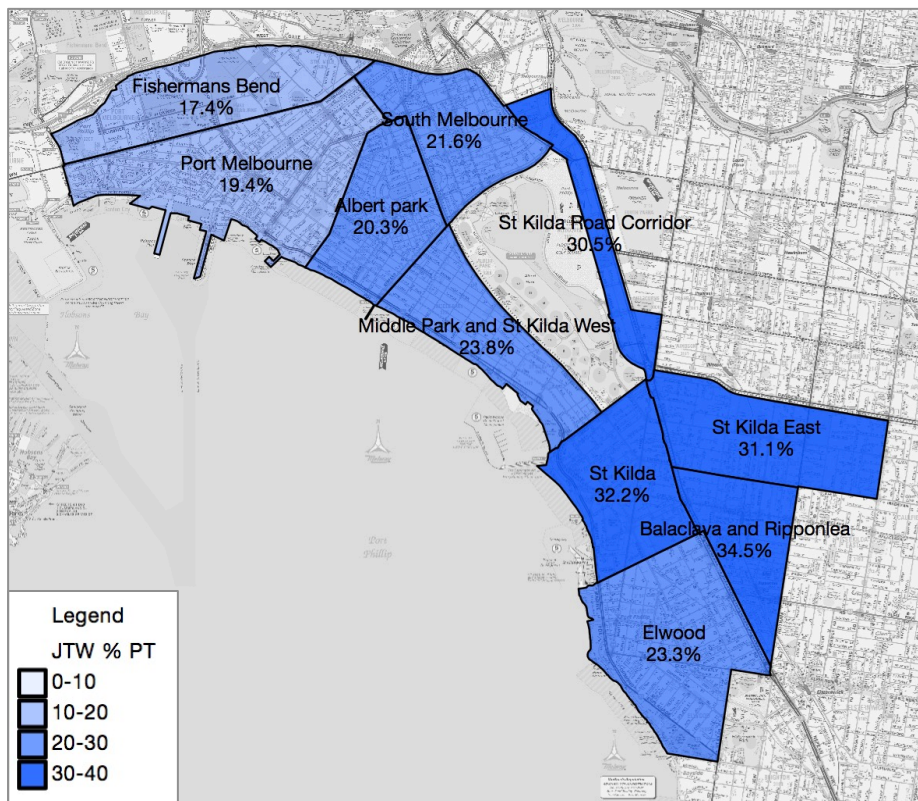
In general people make around twenty-four transport trips a week. When ten of these trips - the journey to work – are by car, it is unlikely that people will move away from private ownership of a vehicle.

On the other hand, if the journey to work is not by car and other local trips can be made by alternative modes, then the car is likely to be lightly used and the owner is likely to consider car share services as an alternative to ownership.

### Public transport

Neighbourhoods where a high proportion of journeys to work are completed by public transport are shown in Figure 20 below.

**Figure 20: Journey to work by public transport**



Source: PBA Analysis of ABS 2011 & CoPP Parking Precincts

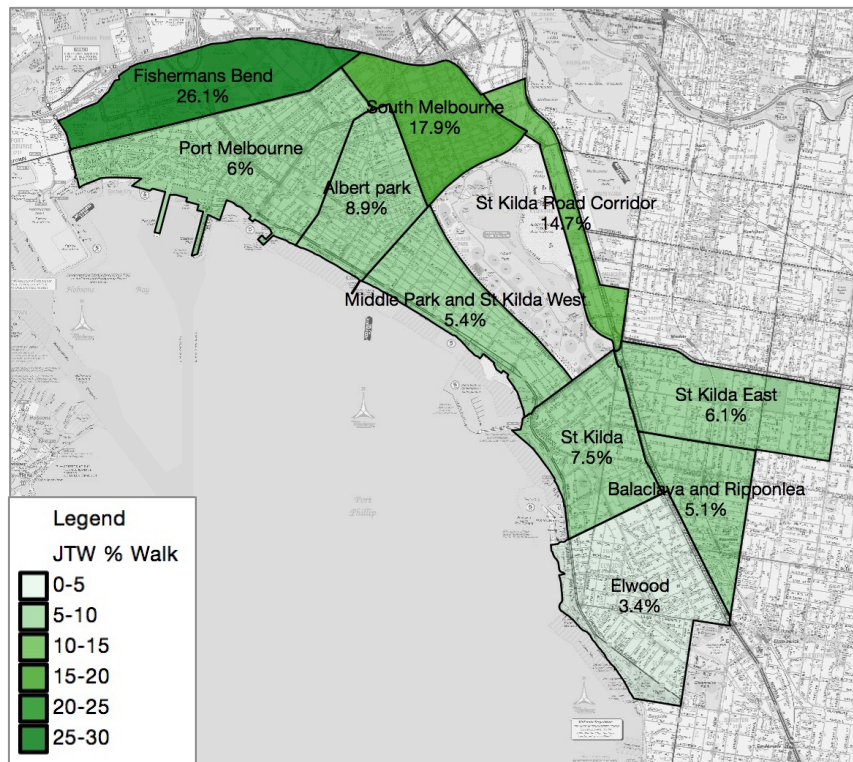
This highlights that potential car share users live in the south and east, in neighbourhoods including:

- St Kilda Road Corridor
- St Kilda East
- St Kilda
- Balaclava and Ripponlea

### **Walk to work**

Neighbourhoods where a high proportion of journeys to work are made by walking are highlighted in Figure 21 below.

**Figure 21: Journey to work on foot**



*Note:* Journey to work on foot figures are inflated for Fishermans Bend as the existing residential population is concentrated near the Southbank / South Melbourne corner

*Source:* ABS 2011 compared to CoPP Parking Precincts

This highlights that potential car share users live in the north and north-east, including:

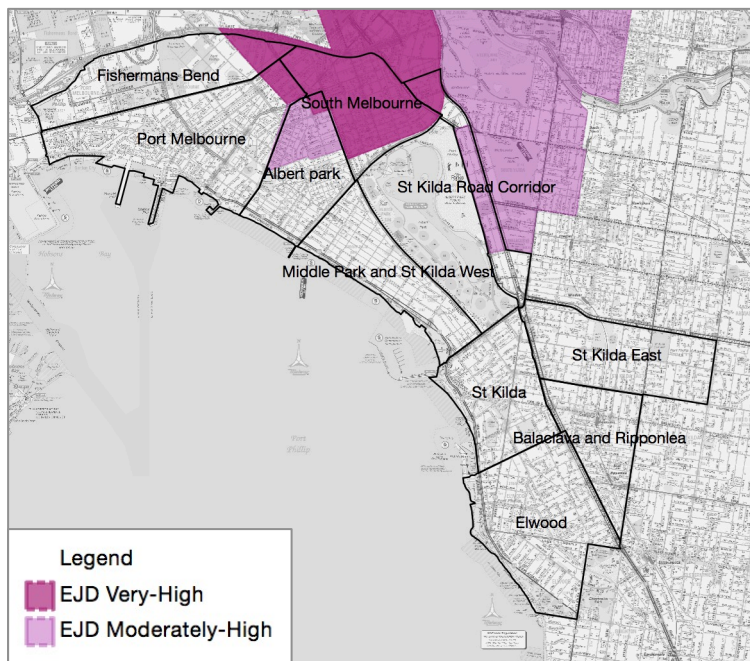
- South Melbourne
- St Kilda Road Corridor

Bicycle trips to work were considered but these are evenly distributed across the municipality.

### Effective job density

Effective job density (EJD) measures the level of employment relative to the time taken to gain access to that employment and the mode split that those employees experience (Rawnsley & Szafraniecz, 2010). EJD can be used to 'see transport' through the lens of 'jobs'. In general EJD will be higher where space efficient modes allow more people to get more quickly to many jobs in a small area. Areas in the north east of the City of Port Phillip experience high effective job density as shown in Figure 22 below.

**Figure 22: 'Very-High' and 'Moderately-High' effective job density**



In addition, car share services support employment density by allowing many people access to cars for work trips without requiring company car pools or commuting by car.

A summary of the degree to which neighbourhoods exhibit current travel patterns that support car share services is provided in Table 17 below.

**Table 17: Travel Patterns that support car share services across Port Phillip**

AREA	PUBLIC TRANSPORT	WALK TO WORK	EFFECTIVE JOB DENSITY	SUMMARY
Fishermans Bend	Low	High*	Yes	Positive in Future
Port Melbourne	Low	Low	-	Neutral
South Melbourne	Medium	Medium	Yes	Very Positive
Albert Park	Medium	Low	-	Neutral
St Kilda Road Corridor	High	Medium	Yes	Very Positive
St Kilda	High	Medium	-	Positive
Middle Park and St Kilda West	Medium	Low		Neutral
St Kilda East	High	Low		Positive
Balaclava and Ripponlea	High	Low	-	Positive
Elwood	Medium	= low	-	Neutral

### 5.3. CAR OWNERSHIP AND LOW SPEED ZONES

Fourteen per cent of the households in the City of Port Phillip do not own a car. There are however neighbourhoods in which more than 25% of households do not own a car. These are likely to be favourable locations for car share services. These are highlighted in Figure 23 below. The deployment plan could also take into account the areas that are on or above the average.

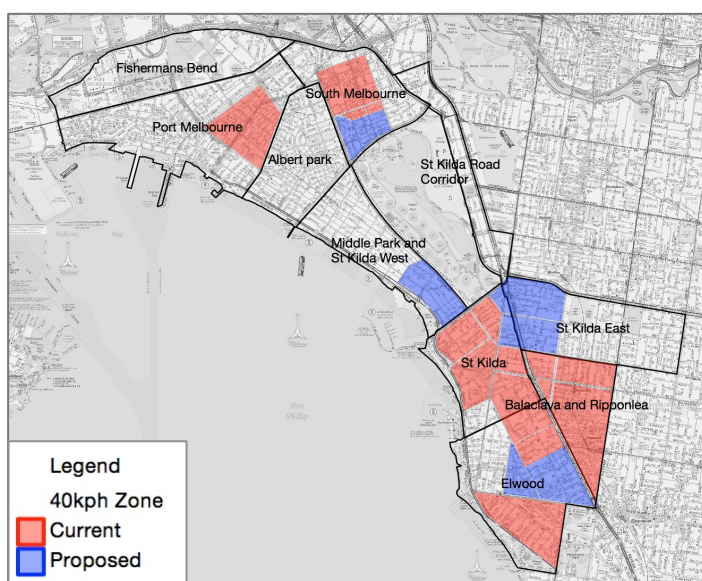
**Figure 23: Areas where more than 25% of households do not own a car**



Source: ABS 2011

Areas with lower vehicle speeds are likely to support walking and therefore also support car share services. In low speed areas the car trip is perceived to be less advantageous and second the lower ambient speeds encourage people to make walking and bicycle trips. The formal 40k/h speed zones could be a favourable location for car share services. These areas are shown in Figure 24 below. 'In practice' low speed zones – where the speeds are low even if the regulations allow 50k/h – could also be considered.

**Figure 24: Existing and proposed 40k/h speed zones**



Source: City of Port Phillip

A summary of the neighbourhoods and how they support car share services in terms of car ownership and speed zones is provided in Table 18 below.

**Table 18: Favourable context summary**

AREA	HOUSEHOLDS WITHOUT A CAR	40 KPH ZONES	POTENTIAL FOR CAR SHARE
Fishermans Bend	None	None	Potential for high proportion of households that do not own a car.
Port Melbourne	Some	Some	Between neutral and positive
South Melbourne	Some	Yes	Very positive
Albert Park	Some	None	Neutral
St Kilda Road Corridor	Some	None	Neutral
St Kilda	Many	Yes	Very Positive
Middle Park and St Kilda West	A few	Some	Neutral
St Kilda East	More	Some	Positive
Balaclava and Ripponlea	Some	Yes	Positive
Elwood	A few	Yes	Between neutral and positive

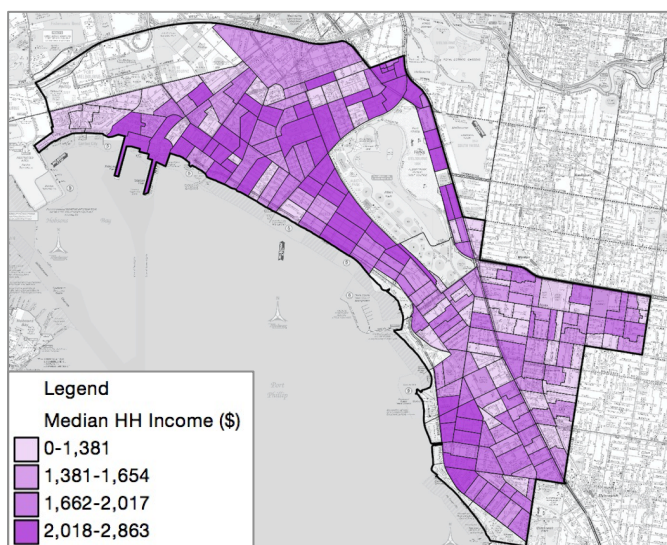
## 5.4. ADDRESSING DISADVANTAGE

It is likely that households without cars that also have a low income are unable to afford to run a car. There are strong reasons for providing car share services in low-income areas however experience suggests that there are barriers to adoption of shared services.

For example not everyone has access to smart phones or the Internet. It is likely that a program to deploy of car share services to expand the transport options of lower income households will need to be supported by behavioural programs that address these barriers.

Figure 25 shows the variation in average income across the municipality. The lighter colour represents lower average incomes.

**Figure 25: Variation in Average Income**



Source: ABS 2011

A summary of the variation in incomes across various neighbourhoods is provided in Table 19 below.

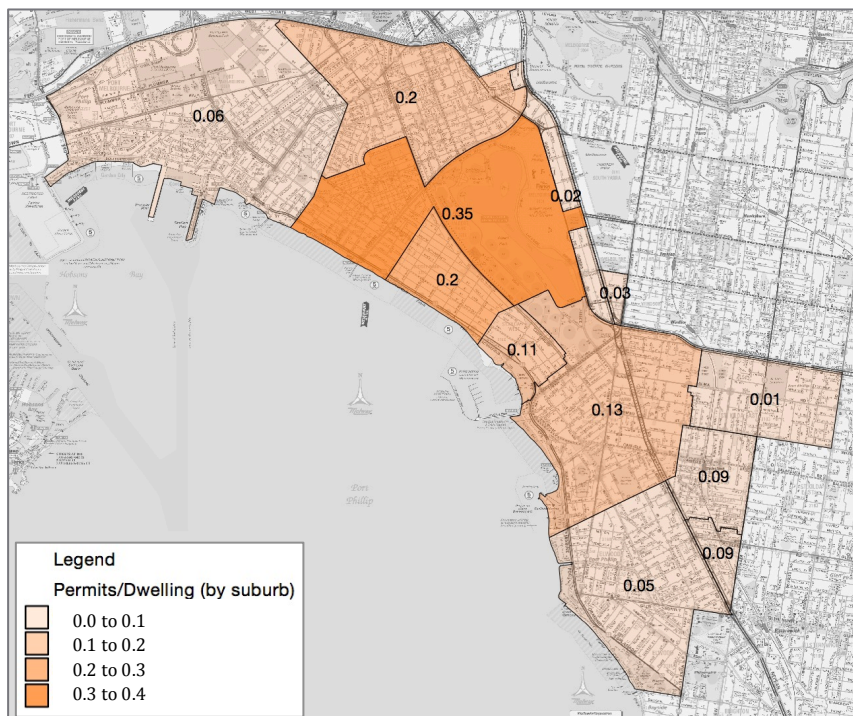
**Table 19: Addressing disadvantage summary**

AREA	HOUSEHOLDS WITHOUT A CAR	HOUSEHOLDS WITHOUT A CAR AND LOW INCOME	SUMMARY
Fishermans Bend	None	-	-
Port Melbourne	Some	Yes	Priority
South Melbourne	Some	Yes	Priority
Albert Park	Some	Yes	Priority
St Kilda Road Corridor	Some	No	
St Kilda	Many	Yes	High Priority
Middle Park and St Kilda West	A few	Yes	Priority
St Kilda East	More	Yes	High Priority
Balaclava and Ripponlea	Some	Yes	High Priority
Elwood	A few	No	

## 5.5. CURRENT PARKING CONTEXT

The average number of residential parking permits per dwelling provides an insight into the current level of on-street parking congestion (or parking stress). Neighbourhoods from South Melbourne to St Kilda have higher levels of residential parking permits per dwelling as shown in Figure 26 below.

**Figure 26: Parking permit stress (permits per dwelling by suburb)**



Source: PBA analysis of City of Port Phillip data

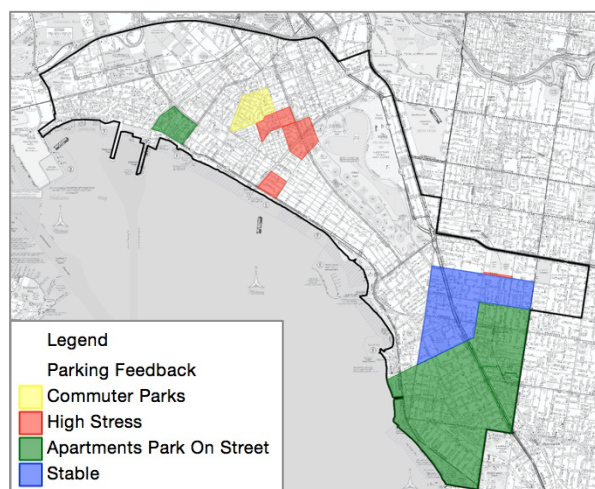
This highlights that resident parking stress is not a barrier to the expansion of the service in:

- The St Kilda Road Corridor
- Port Melbourne
- St Kilda East
- Balaclava and Ripponlea
- Elwood

Feedback from City of Port Phillip staff identified areas across the municipality that experience parking congestion. These are shown in Figure 27 below by type:

- Areas of car share opportunity near current and future apartments
- Areas of low stress and stability
- Areas of significant parking stress around particularly dense residential or activity areas
- Areas where the City of Port Phillip is used for 'park and ride' to the CBD

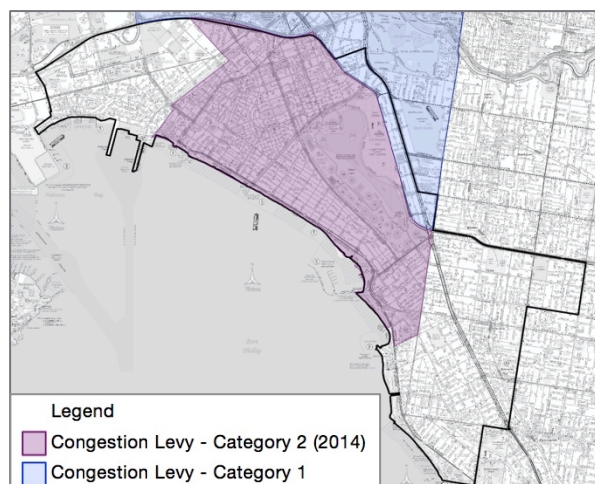
**Figure 27: Parking stress – staff feedback**



Source: City of Port Phillip staff interviews

The State Government Congestion Levy covers most of the municipality as shown in Figure 28 below. This Levy is likely to affect supply immediately in some locations and generally in the long term. The Levy is also likely to be extended to Fishermans Bend.

**Figure 28: Area included in the State congestion levy**



Source: State Revenue Office, 2014

The proportion of all on-street spaces that would be used by car share vehicles provides another indicator of how difficult it might be to find appropriate locations for car share vehicle deployment. The proportion of on-street parking spaces in each neighbourhood that would be used for car share vehicles by 2021 is shown in Table 20 below.

**Table 20: Proportion of on-street parking required for the car share network by 2021**

AREA	PARKING SPACES (PERMIT, TIMED OR ALL DAY)	RECOMMENDED CAR SHARE VEHICLES (2021)	% OF ON-STREET SPACES
Fishermans Bend	2,590	64	2.5%
Port Melbourne	9,435	77	0.8%
South Melbourne	5,660	102	1.8%
Albert Park	6,324	42	0.7%
St Kilda Road Corridor	1,456	74	5.1%
St Kilda	4,505	98	2.2%
Middle Park and St Kilda West	6,941	52	0.7%
St Kilda East	4,642	96	2.1%
Balaclava and Ripponlea	3,398	75	2.2%
Elwood	5,616	70	1.2%
<b>Total</b>	<b>50,567</b>	<b>750</b>	<b>1.5%</b>

Source: City of Port Phillip, 2014a

Notes: The table above compares the total number of car share vehicles with on-street spaces. This overestimates the impact, because in reality around 30% of car share vehicles are located in off-street parking locations. The percentage of spaces affected is therefore expected to be 30% lower than the table suggests. Parking precincts with good opportunities for off-street spaces (such as the St Kilda Road Corridor) may be 30% lower than the table suggests.

A summary of the potential for each neighbourhood to need and accommodate growth of the car share network is provided in Table 21 below.

**Table 21: Impact of car share network expansion on existing uses of parking**

AREA	RESIDENT PERMITS	FEEDBACK FROM STAFF	STATE PARKING LEVY	CAR SHARE EXPANSION POTENTIAL
Fishermans Bend	Low		Likely	Expansion
Port Melbourne	Low	Apartments to be built near Graham Street	Some	Expansion
South Melbourne	High	Commuter park and ride stress	Yes	Limited expansion - use parking value hierarchy to decide locations
Albert Park	High	Some areas of stress	Yes	Expansion to address resident parking congestion
St Kilda Road Corridor	Low		Yes	Expansion especially in off-street spaces
St Kilda	Medium	Some areas stable	Some	Limited expansion
Middle Park and St Kilda West	Medium		Yes	Expansion
St Kilda East	Low	Some areas stable	None	Expansion
Balaclava and Ripponlea	Low	Stable Apartment residents park on street	None	Expansion
Elwood	Low	Stable Apartment residents park on street	None	Expansion

## 5.6. PROVIDING FOR COVERAGE

In January 2016, internal discussions at the City of Port Phillip resulted in a target of 330 car share vehicles in the city by 2021. This target allows for significant expansion of the existing car share network and would limit the 2021 resident vehicle population to around 2016 levels. To maximise the benefits of the network, the first step is to provide suitable coverage for 90% of the population. After suitable coverage is provided, growth can be added to match demand and improve service reliability.

City of Port Phillip's transport precincts totals an area of 18 square kilometres. To provide coverage for this area, approximately 225-car share pods will be required (assuming a uniform grid network and a walking catchment of 200 metres). For a network of 330 cars, this would allow 1 to 2 vehicles at every car share pod.

**Table 22: Expansion scenarios**

AREA	ON-STREET PARKING SPACES (PERMIT, TIMED OR ALL DAY)	COVERAGE SCENARIO (2021)	% OF ON-STREET SPACES	GROWTH SCENARIO (2021)	% OF ON-STREET SPACES
Fishermans Bend	2590	35	1.4%	64	2.5%
Port Melbourne	9435	55	0.6%	77	0.8%
South Melbourne	5660	28	0.5%	102	1.8%
Albert Park	6324	27	0.4%	42	0.7%
St Kilda Road Corridor	1456	15	1.0%	74	5.1%
St Kilda	4505	32	0.7%	98	2.2%
Middle Park and St Kilda West	6941	30	0.4%	52	0.7%
St Kilda East	4642	37	0.8%	96	2.1%
Balaclava and Ripponlea	3398	23	0.7%	75	2.2%
Elwood	5616	48	0.9%	70	1.2%
<b>Total</b>	<b>50567</b>	<b>330</b>		<b>750</b>	

Notes: In the growth scenario, the number of car share vehicles has been estimated depending on the potential of the mode in each precinct.

## 5.7. CONCLUSION

The insights from this overview are summarised in Table 23 below.

**Table 23: Summary of all lenses**

AREA	TRAVEL BEHAVIOURS	CONTEXT	ADDRESSING DISADVANTAGE	CURRENT PARKING STRESS	SUMMARY
Fishermans Bend	Positive in Future	Positive		Expand	Ensure planning requirements will apply
Port Melbourne		Between neutral and positive	Priority	Expand to address residential parking stress	Key area expand strongly
South Melbourne	Very Positive	Very positive	Priority	Expand with caution	Key area, expand with caution
Albert Park			Priority	Expand	Expand
St Kilda Road Corridor	Very Positive			Expand in off-street spaces	Key area, expand strongly Use off street
St Kilda	Positive	Very Positive	High Priority	Expand with caution	Key area, expand with caution
Middle Park and St Kilda West			Priority	Expand	Expand
St Kilda East	Positive	Positive	High Priority	Expand with caution	Expand especially near apartments and low income areas
Balaclava and Ripponlea	Positive	Positive	High Priority	Expand	Expand especially near apartments and low income areas
Elwood		Between neutral and positive		Expand	Expand especially near apartments

## 6. A Review of Car Share Best Practice

The City of Port Phillip wishes to develop its Car Share policy in the light of best practice. To identify world's best practice this study concentrated on the European and North American markets. The European and North American car share markets have been established for more than a dozen years and have grown strongly. They are home to what have become the two most successful car share networks in the world. *Mobility* grew out of the first successful car sharing system launched in Switzerland in 1997.<sup>8</sup> *ZipCar* was the first North American car share system to grow to scale, and was launched in Boston in 2000. They have also been studied and reported on in some breadth.

Experiences from other places (across Australia or around the world) provide valuable insight only in cases where the context regarding mobility, car share service types and the role of municipal government are similar to the Port Phillip context. A summary of the applicability of published international experiences to the City of Port Phillip is provided in Table 24 below.

**Table 24: Summary of International Context**

LOCATION	CONTEXT	TRANSFERABLE INSIGHT
Australia: Sydney	State Government allows apartments without car spaces	Developer provides space for 33 car share vehicles in a new development in Chippendale. More than half the apartments have been sold without a car parking space
Australia: Sydney	Lower levels of parking availability than Melbourne. Higher levels of congestion	City of Sydney makes 10 spaces a month available for car share over a period of five years
USA: San Francisco, San Diego	Population growth driving new apartments in context of perceived shortage of parking	Planning rules allow developments that include car share to reduce number of car spaces
Europe: London	Congestion charge in centre. High level of car share membership	London still searching for best practice. Has identified barriers to expansion
Europe: Netherlands	Low levels of private vehicle ownership, Strong integrated alternatives especially bicycle/train. Peer-to-peer car share is popular	Price is a significant factor in enrolment and use
Europe: Germany	Many local approaches. Rail operator is biggest car share operator. Bremen has a systemic approach	Bremen has set targets for membership as well as cost and space saving from the service
Europe: Switzerland	The 'home' of car sharing. Strong national provider. Strong polices and effective mobility alternatives. Local government does not control on-street parking or statutory planning	Service provider and other transport operators (rather than municipalities) driving expansion
Asia: China	Low levels of private vehicle ownership	-
Asia: Japan	High land value, strong ownership disincentives	-
Asia: Singapore	Strong ownership and use disincentives	-

<sup>8</sup> *Mobility Car Sharing Switzerland* was founded in 1997 through the merger of *AutoTeilet-Genossenschaft (ATG)* and *ShareCom*

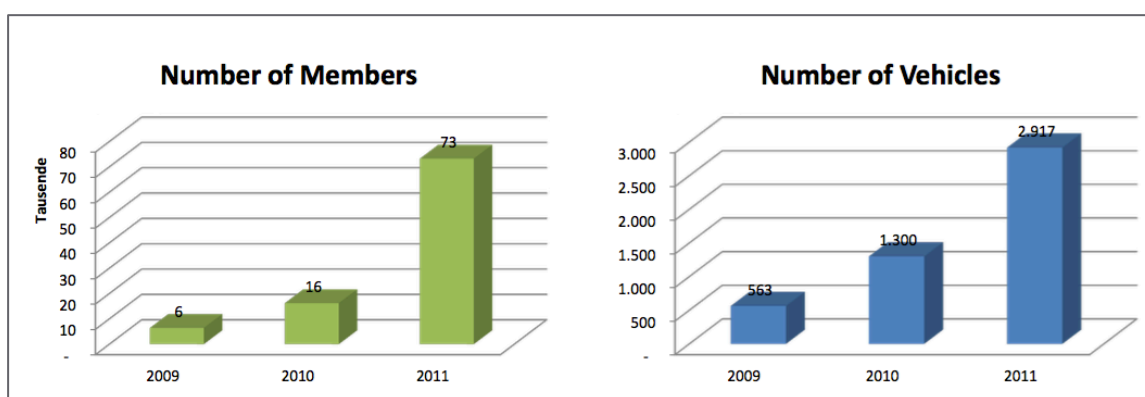
### Free-floating car services

The report does not consider free-floating services as these are technically not ‘car share services’ that provide the level of benefits provided by ‘fixed base’ operations. Free-floating car services are not considered to be best practice from an urban mobility perspective. They are neither currently available nor anticipated to be provided in the City of Port Phillip in the near future.

### Asian experience

The Asian market was investigated. The service is growing strongly in Singapore and becoming established in China and Taiwan. The fastest growing Asian market is in Japan as shown in Figure 29 below.

**Figure 29: Growth in fixed base car share in Japan 2009 - 2011**



Source: Chen, 2011

However the transport context in Asia is quite different from Australia.

Carsharing in China (Jung, 2014) describes the transport context in the major centres. In Beijing private car trips have a mode share of 35%, bus has 29%, e-bikes have 17% (23% in Shanghai), subways 11% and taxis 7%. Most of the interest in car share services comes from those who do not have a car and in that context car share threatens the high (compared to Australia) mode share of taxis.

In Singapore the car share services are developing in context of strong demand management. Taxes and charges are designed to suppress private ownership and car use. This favours the use of car share services. There are two aspects to the management of road travel demand. The first aspect is the restraint of vehicle ownership (through cost and licensing). The second aspect of the management of road travel demand is the restraint of vehicle usage, which is achieved primarily through the Electronic Road Pricing (ERP) system and charges such as petrol tax (Kearns, 2014).

### Best practice research for local government

It is important to note that the identification of best practice has not been the focus of the majority of the studies that are available. Instead much of the work of the early years has been spent understanding the fixed base car share mechanism from the customers or business operator point of view and has sought to answer questions such as ‘what is this service?’ ‘what does it cost?’ and ‘how does it work?’. As a result the municipal perspective is rarely encountered directly.

Nonetheless a number of themes for municipal best practice emerge and are reported below. At this early stage in the development of car share it is possible to say that there is no one place that symbolises best practice in the way Amsterdam or Copenhagen represent best practice for bicycle transport, or the way that Bogota and Curitiba provide best practice in bus rapid transit and Switzerland and Germany offer in heavy rail services.

A leadership role in best practice support for car share is therefore open to the City of Port Phillip.

## 6.1. BEST PRACTICE - RESULTS

Overall the best practice review found that no single municipality has what Phillip Boyle and Associates considers a best practice approach to maximising the benefit for their community from car share services. This is a reflection of the level of innovation in the service and the short period of time that it has been available.

The resources of this study have focussed on identifying elements of 'best practice' from current local government approaches. To some extent, best practice can be assembled by combining the elements of best practice identified below.

To deal with this emerging innovation it is also useful to look towards best practice in local government and local service provision more generally.

Car share best practice can be derived from the provision of other services such as the Port Phillip Community Bus Service, public bus services, taxi services. Comparison to transport services is highly logical, although not the only sector worth considering. Other services that could provide best practice experience include:

- Residential garbage collection contracts provide equity of access to all residents, and best practice selects service providers based on a range of factors including price and appropriate disposal standards
- Library services - provided in-house or through a contract tend to focus on equity of access and reducing the cost to access information
- Leisure services - tend to be provided on the basis of a specific catchment area, with best practice filling market gaps, not competing with the private sector
- Community based health and welfare services – can be provided in-house or by third parties partly funded by Council through grants programs to ensure equity of access and high service standards

In summary from these locally provided services we see the following best practice outcomes:

- Equity of access to the service (for all residents/ratepayers) is an important outcome
- Future community needs are planned for and services are expanded to meet those needs
- Service standards and community expectations are defined clearly
- Services are provided (in-house or in partnership with third parties) in an efficient manner
- Service provision is monitored to confirm appropriate delivery and monitor community satisfaction

These are typically achieved with the following best practice approaches

- The community's needs with respect to the service are investigated and understood
- Clear strategy that guides growth of services to meet future community needs is defined
- There is Councillor involvement and consultation in forming strategy and policy but not in day to day decisions (such as which books to purchase for the library or which route the garbage trucks should use).
- Tendering is often used to select the service provider that can best meet service standards (and provides open competition between in-house and private sector providers).
- Monitoring processes ensure compliance with service specification and confirm that community expectations are being met.

It is recommended that further consideration be given to how best practice across broader local government sectors can provide insight and guidance for the City of Port Phillip regarding its future car share policy.

## Car Share Leading Practices

### Growing Membership is the Key to Success

Car share services have reached their widest audience in Germany; early adopters like the City of Hannover have been supportive of car share and worked to integrate the service into their wider policy and strategic framework.

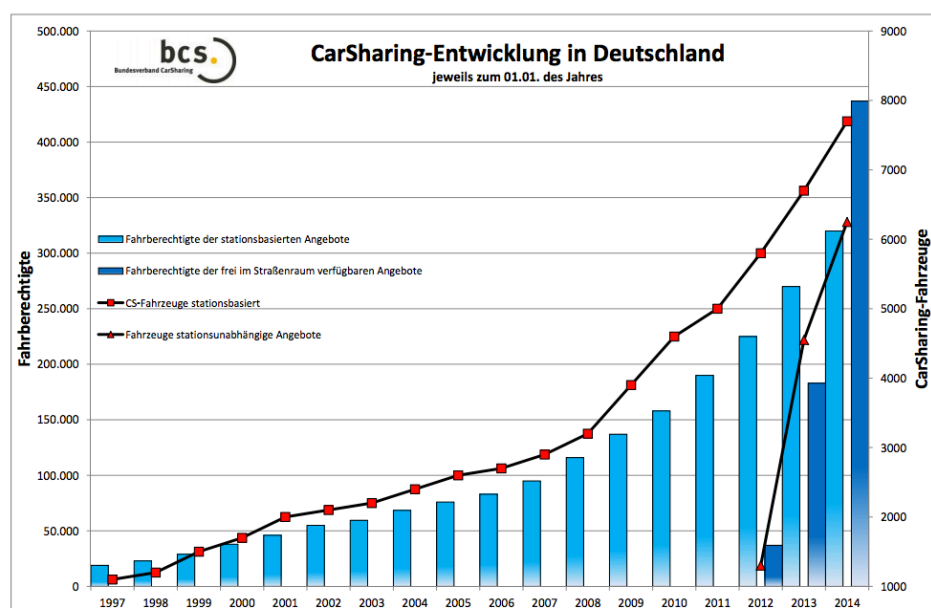
Germany is the main car share market in Europe with more than one million members in 2013 for all types of car share (Mobility Car Sharing, 2013). The German car share service providers association reported that at the start of 2014 there were 320,000 members using 7,700 fixed base car share vehicles in 3,900 locations (Bundesverband CarSharing, 2014). Therefore there are 2 cars at each site and 40 members to each car. Leaving aside other car share types, (which broadly double the number of users and cars), there are one thousand people in Germany to each car share vehicle. In areas of strong fixed base car share use this falls to around 500 people per vehicle.

Germany has two characteristics that are worth noting.

- There are 150 organisations providing car share services. The fragmented service provision will be keeping service and marketing costs high as well as diluting the influence of the ‘industry’.
- Germany is also the home of the ‘free floating’ service, which has yet to establish that it has the impact of reducing car ownership. Many car share reports out of Germany conflate these two quite different services.

Membership and network growth (left and right sides of the chart respectively) in Germany are shown in Figure 30 below for both fixed base (light blue) and free floating (dark blue) systems.

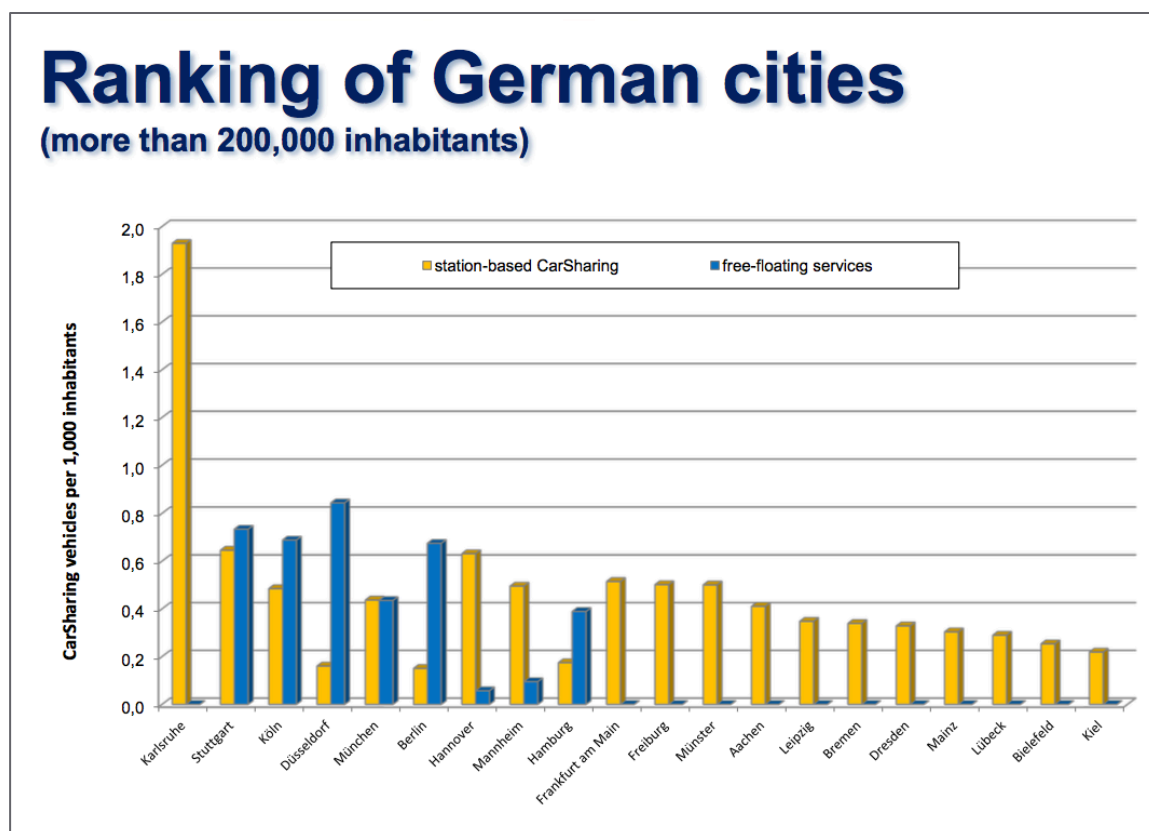
**Figure 30: Car share in Germany vehicles (red), members (blue). (Free floating dark blue)**



Source: Britton, 2014

In 2013 Karlsruhe had the most car share vehicles per head of population – one for every 500 people – or as Figure 31 shows, 1.92 vehicles for every one thousand people.

**Figure 31: Car share vehicles per head of population (2013)**



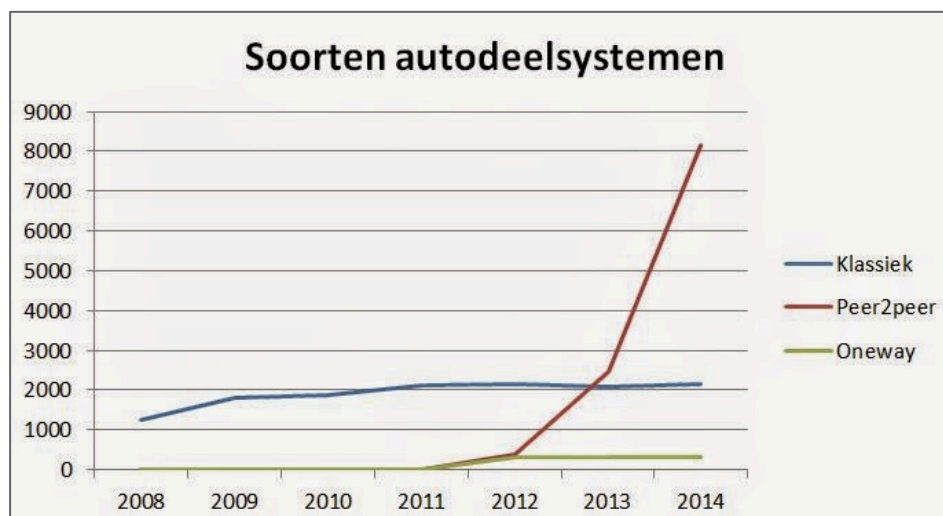
Source: Britton, 2014

It is also worthwhile to note that car share has not been uniformly successful across Europe. Nor is it uniformly successful across Germany. Innovations take off at unpredictable speeds and contingent factors have a strong influence.

The service provider Mobility is strong in Switzerland (particularly Zurich). It has 112,000 members and grew by 6.6% (6,900) in 2013. The service has deployed 1,395 vehicles, mostly (73%) off-street in groups of around three vehicles (2.65) (Mobility Car Sharing, 2013).

In contrast, car share services have experienced slow growth in the Netherlands. In 2011 there were only a couple of thousand car share vehicles deployed, mostly in Amsterdam. This changed with the introduction of peer-to-peer systems, which increased the number of vehicles available (but not necessarily the use) up to 5,275 as shown in Figure 32 below.

**Figure 32: Growth of car share vehicles in the Netherlands**



Source: CROW KpVV, 2015

The sharp growth in the Netherlands may reflect a lowering of the price point. Peer to peer systems are cheaper to use as the car owner provides the sunk capital of the vehicle. The growth in the vehicles on offer may reflect the desire of car owners to get some return from their underused assets.

Each year Mobility concentrates recruitment marketing on a particular town. In 2013 the target was Bâle. Recruitment in this town was two percentage points higher than the average across Switzerland. (Bâle 8.6%, Suisse: 6.6%).

### A systemic approach

The City of Bremen in northern Germany has what appears to be the most 'systemic' approach to the development of car share services.

The City has set mode targets in its Sustainable Mobility Plan. Car sharing is seen to be a key part of the sustainable transport program. 'Only together [can they] be an alternative to the private car.' (Jung, 2014)

The City set recruitment targets through the Aktionsplan 'Car-Sharing für Bremen' 2009. The aim was to recruit at least 20,000 users by 2020 – a fourfold increase (5,100 in 2009). They benchmarked this target from Zurich, which at that stage had 16,000 members in a population of 380,000.

The City set targets based on recruitment. The aim was to reduce the number of privately owned vehicles based in Bremen by 6000. As a condition of cooperation Bremen requires car share operators to demonstrate through surveys the number of vehicles that have been retired or avoided.

Highly visible infrastructure can assist with marketing transport services. For example car parking is typically placed in front of buildings because of the benefits businesses get from customers perceiving access to be 'easy'. The same concepts are true for public transport (trams versus buses) and car share services. Investing in the car share infrastructure is one way of showing the community that the mode is viable and worthy of their consideration and use.

In Bremen this concept has been taken a step further to offer 'mobility stations' that provide a range of transport options for the local community and become a 'one-stop-shop' for mobility.

The services offered can include car share, bike share, local area maps, taxi call buttons and public transport stops. In 2013 the City began to install smaller bays inside kerb extensions.

The plan identified the aim to develop the use of car share by private households as well as in business fleets as well as to integrate car share stations into new apartments which should be 'at ground level' and 'accessible to the public'. Developers have the option to provide parking or a mobility package that includes car share.

The City estimates it has spent €300,000 on infrastructure (Mobil.punkt stations) and marketing. The main elements of Bremen's promotion plan include:

- Mobility station infrastructure (as shown in Figure 33 below)
- Integration into neighbourhood parking management
- Including car share in new developments
- Integration with public transport
- Using car share for their own municipal car fleet
- Marketing and Information

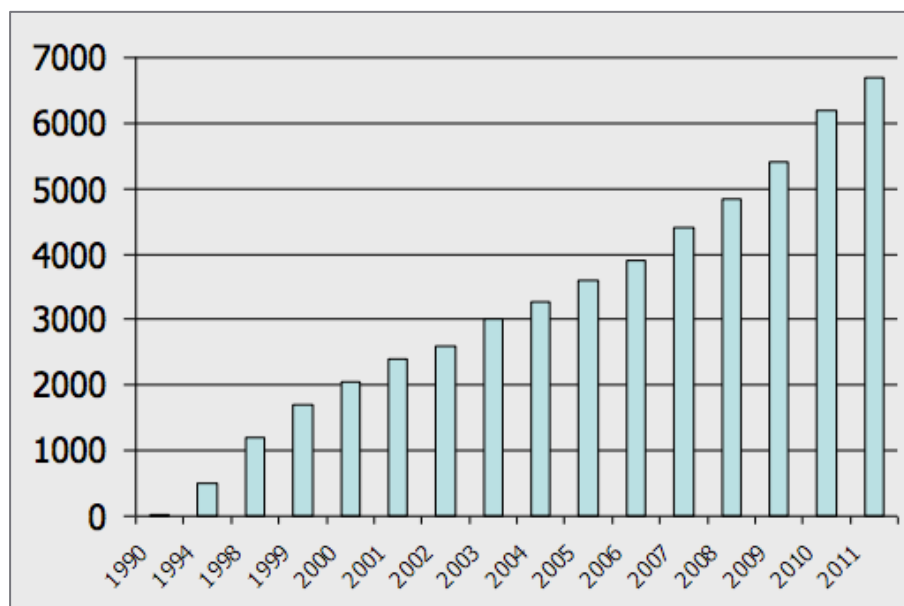
**Figure 33: Bremen's Mobility Station (mobil.punkt)**



Source: Photo by Michael Glotz-Richter

It has estimated that the 1,500 avoided motor vehicles have saved the City of €20-40 million for parking infrastructure costs. However, it is not clear if the actions since 2009 have had a significant impact as shown in Figure 34 below.

**Figure 34: Membership growth of car share in Bremen**



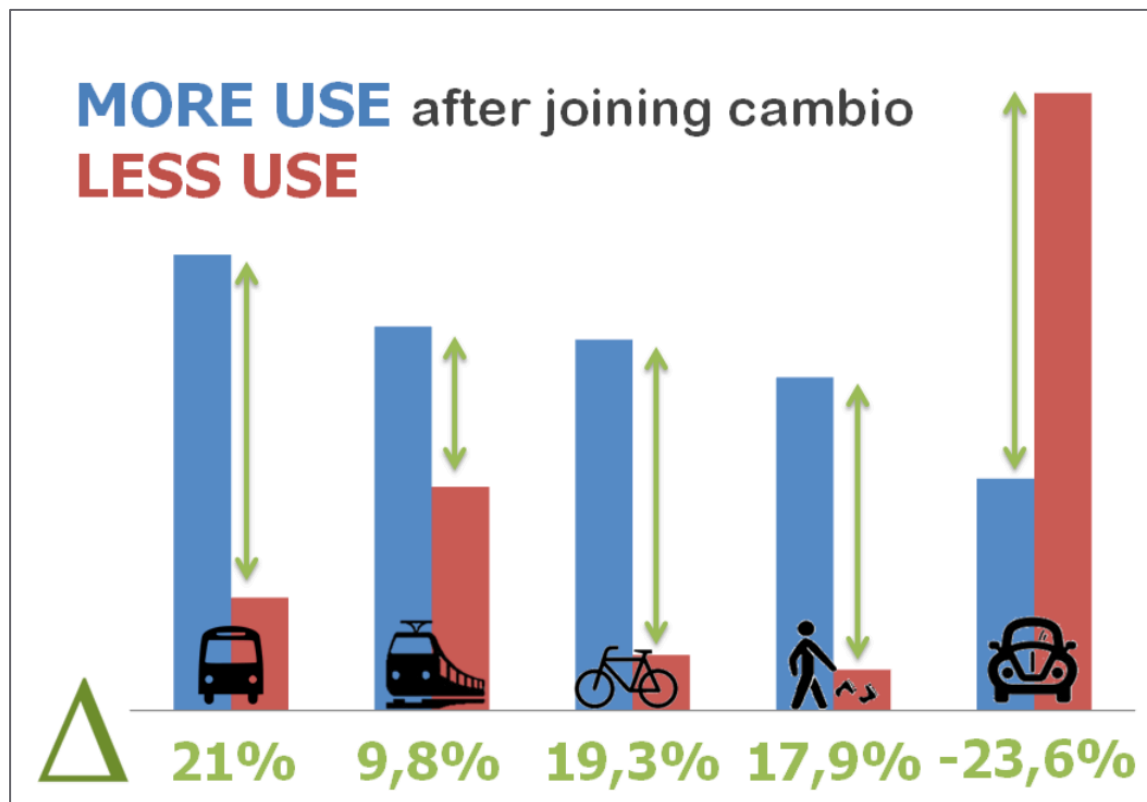
Source: ICLEI, 2011

By 2014 the service had 10,000 users and, at the moment, looks like it will not reach its targets.

The reasons for the growth are not clear from the existing research. Commentary suggests that the promotion efforts of Bremen municipality have assisted in achieving the growth, but direct correlation is unclear.

In Belgium the service provider Cambio has 700 cars 21,000 users. In Brussels membership is growing by 40% a year. Figure 35 below shows the mode shifts that have followed car share use. In the view of the car share service provider 'The best support for shared mobility, are investments in public transport and bike infrastructure.'

**Figure 35: Change in mode by cars share users in Belgium**



Source: Meuleman, 2015

### Integration with Public Transport

One of the key differences between the European and the North American (or Australian) car share schemes is the level of service integration. This reflects the greater autonomy and influence the European towns have in shaping transport choice.

This autonomy is not without limits. Australian local governments have more influence on kerbside parking for example whereas many European cities run public transport service, parking garages, congestion zones and diesel motor 'permits' for example. These services are often strongly influenced by higher-level liveability and environmental strategies.

In Germany one of the leading car share cities (Hannover) is served by Stadtmobil car sharing with a network of over 1,500 vehicles, Quicar the Volkswagen car share service with 270 vehicles and Flinkster the DeutscheBahn (German Railways) car share division (Carsharing Vergleicher, 2015).

**Table 25: Service scale Hannover**

CITY	AREA	POPULATION	DENSITY	CAR SHARE FLEET	PEOPLE/CAR
Hannover	1,108 sq km	900,517	813	1,770	509
Boston	232 sq km	646,000	2,784	1,000	646
Zurich	88 sq km	367,000	4,170	700	524
City of Port Phillip	20 sq km	91,000	4,550	79	1,152

Since 2007 the Regional Association of Public Transport Operators of Hannover have been offering a €7 upgrade to the annual public transport ticket (€600 – 1900) called the HannoverMobil pass which combines:

- Access to car share (without paying the annual membership fee)
- Discounts on taxis and depot hire cars,
- Cashless payment in participating taxi fleet
- Discounts on bike share
- Discounted bicycle parking in the town centre.
- Free luggage storage

A similar card is offered in Osnabrück. This service includes similar features to Hannover as well as electric bicycles. It appears that take up of these offers is modest and that customers have not sought to integrate their access channel to mobility.

Interestingly DeutscheBahn is the largest car share operator in Germany. The company also operates a bike share scheme Call a Bike offers lower prices for rail pass holders. Some city governments subsidise this service to provide a free first half hour.

Mobility in Switzerland has integrated with Swiss Railway Company (SBB) to offer “Click & Drive”. Mobility operates 1,000 cars that are placed right at 350 train stations throughout Switzerland. As the CEO of Mobility says ‘Carsharing is not about cars it is about people who want to easily use multiple mobility solutions’ (Bomatter, 2013).

Train passengers can book both products together to provide a linked trip. The station staff can enrol people in the car share service. The railway integrates car sharing, together with taxi, bike-park, park & ride and bus into their signposts at railway stations. Mobility provides a discount to season ticket holders and employees of SBB and will help SBB move to a chip card.

The Transport Authority in Montréal (Société de transport de Montréal (STM)) is also developing system integration under its public transport mission, which it interprets as ‘competing with car ownership’. STM has integrated the local car share operator into its marketing and operations and plans to add the BIXI bike-sharing service, taxis and, with the help of the taxi industry, a shared taxibus service in ten areas where the low population density makes a bus service impracticable (Borghuis, 2013).

### Council’s vehicle fleet

San Francisco plans to reduce the 1,500 light (non emergency) vehicle fleet by 25% over the next dozen years by including car share vehicles in the fleet.

Chicago began this process in 2011 and reports saving \$3m in capital and \$30,000 a year in operating costs while cutting the fleet by 10% (125 vehicles). New York expects to save half a million dollars by replacing 50 cars with 25 car share vehicles.

Washington DC saved more than \$300,000 during a four month fleet management pilot program and more than \$1 million in the first 12 months. The projected savings are \$6m over 5 years. The approach has been followed by a number of other municipalities including Houston, Indianapolis and Vancouver.

### **Technology**

From a user perspective there is no significant difference between the many different car share offerings around the world:

- The user has access to a portfolio of vehicle types
- Bookings are made on line, often on mobile phones.
- Access to the vehicle is by smart card and payments are made online.
- Business costs are similar as all service providers buy standard vehicles.
- Direct competition and the price transparency facilitated by web-enabled search have made retail prices similar between the services

From a business point of view there is no significant difference between the service providers. Some (typically in Europe) are structured as cooperatives while others have a standard private or public business structure. These ownership structures, however, have no influence on the business model, which derives a profit from the arbitrage between the cost of ownership and the cost of short-term hire to the users. At the moment in Australia the operators are concentrating on increasing the scale of their networks however this effort is not being funded by a reduction in service quality.

The most significant evolution in service technology that can be anticipated is the transition towards full electric vehicles charged by renewable energy.

### **Electric vehicles**

It is possible to imagine a future evolution of the car share vehicles to include and eventually become electric vehicles. This process has begun in Europe and North America. There is a logic to this deployment when a large proportion – or all – electricity is generated from renewable sources. This logic is lacking in the City of Port Phillip while it is supplied with electricity that has been generated some distance away by burning brown coal (Victorian Government, 2012).

Leaving aside the power generation problem, it is clear that in general electric vehicles are ‘better’ than conventional vehicles in a number of ways. They are, however, at the moment unfamiliar to potential users and this strongly suppresses their use for long or short-term hire (let alone purchase). After offering electric vehicles for a period, a Melbourne depot hire company has withdrawn electric vehicles from its car share network because customers would not choose to use them.

The experience of Osnabrück with electric car share vehicles is instructive. The vehicles had to be supported by charging infrastructure, including supply and payment systems as well as weather and vandalism protection. Each site can cost up to \$20,000 per site with a lifecycle of five years. The service provider had higher vehicle purchase costs that they were unable to pass on to users in a higher rate. The service provider’s revenues were lower than for conventional vehicles as the vehicles were not available during the ‘transitional’ period when they were charging. Customers used the vehicles for shorter trips on average than conventional vehicles suggesting range anxiety was influencing behaviour (Kim, 2015).

Nonetheless the City may wish to experiment and provide leadership with electric vehicles. From the point of view of developing car share services it is important car share is not chosen for such

an initiative. Electric or hybrid car share vehicles in the network would be significant barrier to membership growth and vehicle use.

### Emission standards

Numerous governments worldwide have established greenhouse-gas emission standards for passenger and light commercial vehicles. These standards are primarily managed at a federal level, however it is common for state and local governments to apply for waivers in order to enact stricter regulations. One example is the State of California in the US. Due to the severe motor-vehicle air pollution issues in the Los Angeles metropolitan area, California has special dispensation to enact their own stricter automobile emissions standards. Various states in the US have similarly adopted the California standards.

In Australia the Department of Infrastructure and Regional Development is responsible for managing policy and standards development on vehicle emissions, vehicle noise and fuel consumption labelling. Standards for emissions and vehicle safety are set through the Australian Design Rules (ADRs). Australian emission standards are based off European regulations, with a selection of Japanese and US standards. Australia will finalise the transition to the Euro 5 source standard by 2016, with Euro 6 to be introduced 2017/18. In contrast, the Euro 6 standard has been in force since 2014 for EU member states.

A comparison of the international emission standards for personal car (PC) and light-commercial vehicles (LCV) is shown Table 26 in below. It can be seen that Australian emissions standards are lagging compared to other key countries.

**Table 26: CO<sub>2</sub> emission standards & targets benchmarking**

COUNTRY	EXISTING PC SITUATION (G CO <sub>2</sub> /KM)	CURRENT LDV SITUATION (G CO <sub>2</sub> /KM)	FUTURE PC TARGETS (G CO <sub>2</sub> /KM)	FUTURE LCV TARGETS (G CO <sub>2</sub> /KM)
Australia	192 g/km (2013)			None*
European Union	123 (2014)	180 (2012)	95 (2020)	147 (2020)
Japan	119 (2014)	164 (2012)	105 (2020)	135 (2022)
US & Canada	157 (2014)	183 (2014)	97 (2025)	112 (2025)
California	138 (2014) (<3750 lbs)	218 (2014) (>3751-8500 lbs)	82 (2025)	100 (2025)

*Notes: Most international countries have separate standards applying to passenger vehicles and light commercial vehicles. The Climate Change Authority's research report recommended a single standard for all light vehicles in Australia.*

*\*Target standards have been enacted with the exception of Australia. Australia has considered such standards but has not progressed. The Climate Change Authority has recommended Australia to adopt a target of 105 gCO<sub>2</sub>/km (2020).*

*Sources: ICCT, 2014; ICCT, 2015; Climate Change Authority, 2014*

### Land Use Integration Expands the Network and Membership Base

Mobility in Switzerland offers “mobility@home” for apartment residents. The program is based on an annual all-inclusive fee, which includes Mobility subscriptions for all the residents. The vehicles are parked at the entrance to the apartment car parks.

In a similar move in Australia, GoGet initially located 37 car spaces (33 basement and 4 at surface level) in the \$2billion Central Park Apartments in Chippendale (central Sydney) as shown in Figure 36 below. Additional vehicles have been phased in as demand for private parking has been found to be lacking and demand for car share vehicles has been found to be high.

**Figure 36: Central Park Apartments Sydney**



Sources: PBA Photo

Access to these cars is not included in the body corporate fees. Car share members without access to the building can still gain access to the cars. When a booking is made the car share card allows the non-resident to enter the building car park to reach the car share vehicle.

Since the 1980s the City of Seattle has approved 2,400 units in projects with no parking at all (City of Seattle, 2015). Recently the Seattle Department of Planning and Development recommended to the Council that developers of new projects in neighbourhoods with good transit be required to provide residents with a transit pass and membership in a car and bike sharing services.

This initiative follows the lead set in 2008 by Californian planning authorities have been offering a GreenTRIP certification for residential developments that offer:

- Free transit passes
- Bike-share pods
- TransitScreen in the lobbies
- Promotion of “peer-to-peer” car-sharing platforms
- Car-share memberships (fixed base and peer to peer)

GreenTRIP Certified buildings can reduce the amount of parking provided.

It has been estimated that if San Jose, in California, implemented GreenTRIP strategies as it develops its next 120,000 homes, the cost of construction would be reduced by \$2.4 billion, helping create housing that middle-income people can afford, and greatly reducing construction costs for affordable homes (TransForm California, 2015).

The GreenTRIP program also publishes material for building owners and potential car share users that highlights the personal and communal benefits of the mode. An example brochure is shown in Figure 37 below.

**Figure 37: GreenTRIP Brochure. California**

# GreenTRIP

## TRAFFIC REDUCTION STRATEGIES FREE CARSHARE MEMBERSHIP

TRAFFIC REDUCTION + INNOVATIVE PARKING

### WHAT IS CARSHARING?

Carsharing is a service that gives members 24/7 access to a fleet of unattended vehicles from convenient locations on an hourly basis.

Members simply reserve a car online or via mobile app to access the car and go.

They drive a car when they need to for a fraction of the costs associated with car ownership.

AAA (2013) estimates the nationwide average monthly cost of owning a car is \$760. The average monthly bill for City CarShare members is \$60 per month.

### FREE CARSHARE MEMBERSHIP

#### GreenTRIP CERTIFICATION THRESHOLDS

- Provide **2 free** carshare memberships per unit for **40 years**, eliminating the cost barrier to participation (residents must meet eligibility requirements of the carshare provider).
- Identify an existing carshare Pod within **1/4 mile** of the project or provide one onsite, ideally inside the building.

### CITY CARSHARE OFFERS:

- CommunityShare Program: 50% discount to low-income prequalified households
- AccessMobile: wheelchair accessible vans

Application Fee: \$25 per driver

Membership Cost: \$60/year

Average Cost per Hour Total: \$7.50/hour plus \$0.35/mile

Use Units: Hourly and Daily

Hourly: Starts at \$5.75/hour

Contact: Anita Daley, Marketing Director, (415) 970-6217

Cars in the Bay Area: 400+

Insurance: \$1 million

### ZIPCAR OFFERS:

Pricing Model for Affordable Housing Development: \$0 application fee and \$25 annual membership fee

Application Fee: \$25 per driver

Membership Cost: \$60/year

Average Cost per Hour Total: \$8.50/hour (180 miles/day, gas included)

Use Units: Hourly and Daily

Hourly: Starts at \$8.50/hour

Mileage: Up to 180 miles/day at no charge

Contact: Jon Tyburski, Locations Manager, 415-495-7478

Cars in the Bay Area: 1000+

Insurance: \$300,000 (if over 21 years), \$750 damage fee (optional waivers available)

### PROVEN RECORD FOR TRAFFIC REDUCTION

- 25% of City CarShare members have shed 1 or more vehicles.<sup>1</sup>
- 15,500 City CarShare members share 430 cars, equal to 36 members per car.<sup>1</sup>
- City CarShare estimates 600 to 2800 fewer cars driving on Bay Area roads at any given time.<sup>1</sup>
- Zipcar members are driving 50% fewer vehicle miles traveled than when they owned their own vehicle.<sup>2</sup>
- 62% of households in Transportation Sustainability Research Center study did not have a vehicle prior to joining car sharing service.<sup>3</sup>
- Households joining carsharing owned an average of 0.47 vehicles per household before joining, but that average dropped to 0.24 after membership.<sup>3</sup>

<sup>1</sup> <http://tinyurl.com/CCS-2013-FactSheet>

<sup>2</sup> <http://tinyurl.com/Zipcar-membersurvey>

<sup>3</sup> <http://tinyurl.com/ACCESS-carshare>

last updated Jan 2015

PAGE 1 CARSHARE

Source: TransForm California, 2016

The planning code in San Francisco includes car share requirements as shown in Table 28 below.

**Table 27: San Francisco code requirements**

NUMBER OF RESIDENTIAL UNITS	NUMBER OF REQUIRED CAR-SHARE PARKING PLACES
0 – 49	0
50 – 200	1
201 or more	2, plus 1 for every 200 dwelling units over 200
NUMBER OF PARKING SPACES PROVIDED FOR NON-RESIDENTIAL USES OR IN A NON-ACCESSORY PARKING FACILITY	NUMBER OF REQUIRED CAR-SHARE PARKING PLACES
0 – 24	0
25 – 49	1
50 or more	1, plus 1 for every 50 parking spaces over 50

Source: City of San Francisco, 2013

This highlights a very specific land use planning requirement to provide car share services in buildings over a certain size. In San Francisco this generates an ongoing and proportionate increase in network growth and service supply for every additional development (as appropriate).

### Specific Municipal Governance Issues

In May 2015 the car share operators, London Councils, the Greater London Authority (GLA), Transport for London (TfL) and key stakeholders released a strategy for car share (Transport for London, 2015). The group identified ten areas of development summarised below:

- Better monitoring, evidence and reporting of the benefits of the service
- Increase the use of car share vehicles as work related pool cars, business and commercial fleets and reduce the high level of reimbursement for travel in a private vehicle.
- Raise awareness and provide incentives for recruitment and use.
- ‘Reciprocity’ so members can use vehicles from another service.
- Improve the complex area of parking regulation and management (shared across three jurisdictions with variations across each local Council)
- Improving coordination between Council and service providers especially around bay allocation.
- Policy support including for planning requirements
- Providing charging infrastructure so car share fleets can be switched to electric power.

This strategy suggests that the service in the UK is still struggling to move into a best practice paradigm (despite being one of the largest car share markets with over 135,000 members).

One element that many jurisdictions are seeking to improve is the allocation of parking spaces to various users. This is a function in which the City of Port Phillip already exhibits best practice by using the hierarchy of space. The City of Port Phillip’s hierarchy of parking need is shown in Figure 38 below.

**Figure 38: Hierarchy of Parking Needs**



Source: City of Port Phillip, 2010a

## Community Engagement

Within the bay allocation process is an expectation that local community opinions (particularly of residents) will be taken into account. The current process involves consulting with immediately adjoining property owners to advise them of the intended change to the parking restrictions. Any concerns they raise are considered by council officers when making the final decision about where to locate the car share vehicles.

World's best practice regarding parking restrictions is for Council officers to use the hierarchy of user needs and defined municipal policy and strategy to determine the best use of space. In most cities around the world it is rare for residents to be consulted during decision-making processes, rather the focus is on informing local ratepayers of decisions once they have been made. However this is due to the much higher densities that exist in these other cities, and the reduced perception of 'ownership or control' that residents (in particular) have over the public land in front of their property.

Australian cities (including Port Phillip) have a lower density than most other cities around the world and this leads to a greater sense of 'entitlement' toward the car space in front of a property. Some believe their rate payments include access to on-street parking. Some people are genuinely annoyed if anyone else parks a vehicle 'in their space' even though it is on a public road. This means that the City of Port Phillip needs to engage with community members when considering new parking restrictions.

The community engagement process should be the same for any change to the user based restrictions on kerbside parking. For example the process to change from unrestricted parking to a car share space should be the same as the process to change from unrestricted parking to a loading zone or disabled parking bay.

### **Resources required**

The resources required to implement best practice car share policy typically amount to around one effective full time staff member. This accounts for the policy and strategy development, deployment plan preparation, daily administration and infrastructure procurement and installation.

There are a range of ways in which that management expertise can be provided. No municipality would have a single staff member doing all the necessary tasks, and all would outsource specific elements of the process such as the manufacture and installation of signage. In addition aspects of the strategy development, deployment plan preparation and administration of daily tasks have been allocated to consulting firms.

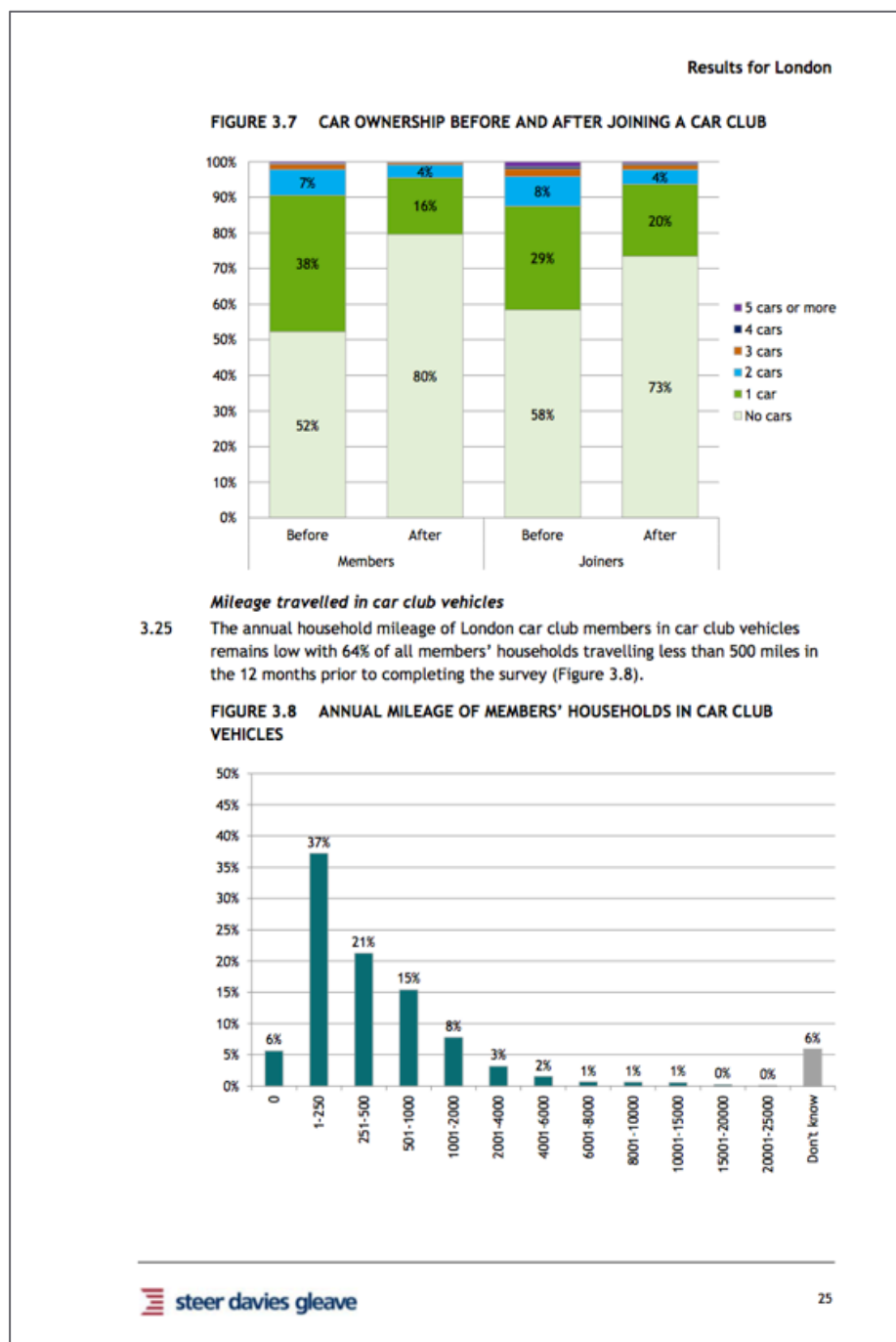
Continuing to develop the best practice models needed for car share network management will rely on leveraging the skills and experiences of transport network managers, with a particular focus on those who have managed competitive public transport processes and built operator partnerships. The City of Port Phillip should consider how partnerships with operators could also be leveraged to improve understanding of the critical success factors and potentially fund administration processes.

The community engagement should occur on the clear understanding that no resident has the ability to ‘veto’ a parking restriction from the roadway in front of their property, although council officers will take their views into consideration when making a decision.

## Communicating the success

It is important to communicate about the success of any new program. An example of best practice community communication related to car share success is shown in Figure 39 below.

**Figure 39: Communicating the reduction in vehicles (London)**



Source: Steer Davies Gleave, 2014

## 6.2. INSIGHTS FOR BEST PRACTICE

Resulting from the analysis of car share services around the world and other services provided by local government the following outcomes are considered to be local government best practice related to car share services:

- Set the goals: Locate service benefits within strategic goals, identify service targets and establish appropriate policies.
- Set the standards: Define the level and quality of service desired across the community.
- Manage the service providers: Promote market based competition for service provision and establish a partnership with service providers
- Grow the vehicle network. Provide a steady supply of new sites so the service can grow. Stimulate the provision of car share vehicles on private property through land use planning controls (strategic and statutory) and voluntary agreements.
- Grow the number of users. Promote use of the service amongst residents and ratepayers
- Use the service: Convert the municipality's car fleet into share car vehicles as appropriate
- Report on progress: Investigate and report back on service performance and benefits to the community as a whole.

These are discussed in more detail below.

### Outcome One – Set the Goals

Best practice for local government generally and car share services specifically is to have clear goals about what car share services should achieve for the local community. This should start with targets that relate directly to the future liveability, mobility and amenity within the City of Port Phillip. These goals related to car share services should include the desire to:

- Reduce or minimise future levels of traffic congestion
- Reduce the impact of private vehicles on amenity, health and safety
- Reduce the cost of living for residents and the cost of doing business in Port Phillip

#### Traffic congestion

The impact of car share on congestion levels can be measured by comparing the kilometres travelled per annum in private vehicles (including car share vehicles) by members and non-members.

In order to minimise any increase in traffic congestion the City of Port Phillip should have a goal for the community to not increase (or even reduce) the total number of vehicle kilometres travelled in private vehicles each year.

A specific VKT goal would be consistent with (or a clarification of) the strategic goal in the Sustainable Transport Strategy to reduce private vehicle travel by residents from 77% to 55% of 'total distance travelled'.

#### Amenity, health and safety

Car share networks significantly reduce the number of vehicles owned by the community and the use of private vehicles, while also increasing the use of active transport and public transport services. This in turn makes the local streets more vibrant, increases local amenity, improves individual and community health and increases transport safety. The space saved through

reduced car ownership also becomes significant when many car spaces can be converted into habitable (commercial or residential) space.

In order to increase the amenity, health and safety of the community the City of Port Phillip should set a community goal of having 25% of the resident population signed up as car share members.

### **Cost of living/doing business**

Car share networks have a significant impact on the rate of vehicle ownership and the cost of transport for households and businesses. The savings in transport costs have a direct impact on cost of living pressures, and cost to do business in Port Phillip. Household savings are typically used to reduce debt faster or are spent within the local economy.

In order for the car share network to reduce the cost of living or doing business across the whole municipality it needs to be accessible to all. The City of Port Phillip should set a goal of having a car share 'station' located within 200 metres walk of every resident and business in the municipality.

## **Outcome Two – Set the Standards**

The service standards need to be set in order to provide clear expectations for all stakeholders (including the local community, businesses, councillors, operators and council officers). Service standards are important because private sector operators need to have confidence about future levels of demand before they can make it a priority to invest in Port Phillip before all other municipalities.

Without this confidence, private sector investors are less likely to provide the services needed by the community to achieve the overarching transport and mobility goals.

In Port Phillip the service standards required to achieve the goals outlined above include:

- Increasing network coverage
- Assuring service reliability
- Matching service levels to demand
- Providing a range of vehicle types

### **Network coverage**

International and local research shows that early adopters will travel a significant distance to access the car share network, but a significant proportion of the population will only use the service regularly if vehicles are located within 200 metres of their home/business.

However, increasing network coverage will take time and needs to occur at a sustainable pace.

The City of Port Phillip should aim to increase coverage broadly across the municipality with a very large catchment around each car share station and then gradually reduce the size of the catchment for each station by 'filling the gaps'.

### **Service reliability**

As with any form of public transport reliability of service is critical to growing patronage and maintaining customer loyalty. The car share stations need to be sufficient enough (in terms of the number of vehicles provided) to ensure that customers are provided with 'reliable' access to a vehicle when they need it.

Car share systems tend to operate on advanced bookings, but if a customer consistently finds that their local vehicle is unavailable at the specific times they need it (despite seeking to book in advance) they will quickly revert to private car ownership because the alternative is ‘not reliable enough’.

To ensure service reliability the City of Port Phillip should require additional vehicles be deployed if the average usage of existing vehicles exceeds 7.5 hours per day on average over three consecutive months.

### **Match service levels with demand**

Conversely if demand is too low, specific car share vehicles can be a ‘drag’ on the overall network performance and are an inefficient allocation of resources. A similar situation occurs on the bus network, where services that are not carrying passengers can be reallocated to areas where they would be used (and therefore the network would be more efficient and productive).

The base level of network coverage (having a car share station within 200m of all residents/businesses) is critical to long term equity of access to transport across the municipality. The City of Port Phillip should specify that additional (multiple) vehicles can be removed from specific stations where the level of use drops below an average of 3 hours per day per vehicle over three consecutive months. Various exceptions to this standard would apply given due consideration of the period of time it takes to establish a membership base and future residential growth forecasts in each area.

### **Range of Vehicle types**

Ensuring that vehicles are available to match a variety of transport demands is a key element of service reliability. With specific regard to vehicle types, a number of service providers are currently offering mini-vans and mini-buses at strategic locations. These types of vehicles attract members from a wider regional catchment (well beyond a 200m walk) and therefore need to be located in close proximity to transport hubs (tram corridors, junctions and stations).

The City of Port Phillip should aim to allocate some parking bays near transport hubs to ‘special types’ of car share vehicles that are likely to have a regional catchment. In the same way the City of Port Phillip should also aim to have a parking space near (not necessarily within) retail precincts that is allocated to car share vehicles that are often used by businesses (such as small vans).

### **Vehicle Emissions Standards**

Despite the obvious benefits of stricter emission standards in Australia, setting emission standards specifically for car share vehicles can potentially be counter productive for the City of Port Phillip.

There are two possible scenarios if Council requires more stringent emission standards for car share vehicles:

1. The additional requirement increases the cost (capital costs of cars and ongoing costs for compliance and checking), resulting in higher costs to the operator and users of the services
  - The increased cost would be spread between car share operators and the users of the service and would subsequently suppress the growth of the car share network and membership.
  - The ‘opportunity’ cost of each vehicle suppressed would mean 9 additional residential vehicles that would otherwise be removed/prevented, and 1,800 additional vehicle kilometres travelled for every member suppressed.
  - The benefits would be the reduced emissions across the fleet.

- The BCR would depend on the ratio above however it is expected that the benefits from more efficient vehicles would be significantly less than having additional vehicles or members.
- 2. Annual savings from the more efficient vehicles outweigh the capital and regulatory costs, resulting in reduced cost to the operator and users of the service
  - If this were the case, smart operators would be choosing the more efficient vehicles irrespective of the emission standards.

While Australia is currently lagging behind other key countries in setting government wide vehicle emission standards, the City of Port Phillip will reduce more emissions by getting more people to use car share and reducing their VKT than by requiring emission standards.

The City of Port Phillip should not set vehicle emission standards specific to car share vehicles at the cost of growing membership. If standards are to be set by the City of Port Phillip, it should be set municipality wide and not specific to car share vehicles. Alternative and more practical requirements can be implemented to limit harmful emissions being: no diesel vehicles and no vehicles older than 5 years.

## **Outcome Three – Manage the Service Providers**

There are currently three qualified car share service providers in the City of Port Phillip under the existing policy. The City welcomes competition in the sector and would welcome additional service providers, so long as they meet specific conditions and requirements. In other parts of the country there has been at least one example of a car share operator being asked to leave a program due to non-compliance with policy and conditions set by the municipality.

The City of Port Phillip needs to ensure that the management of service providers (current and future) occurs fairly and transparently and achieves the best value for money outcomes for the community.

The provision of car share services is very much a partnership between local government and service providers in a similar way to other local government contracts that are tendered to the private sector. To achieve the City's goals in a transparent manner, service providers need to be managed with regard to:

- Providing clear expectations regarding roles and responsibilities
- Minimising negative impacts resulting from the provision of services (similar to minimising the impact of a train line on the community)
- Obtaining and reviewing regular reports regarding the services provided to residents and businesses in Port Phillip
- Disciplining service providers if they do not meet their agreed obligations

### **Roles and responsibilities**

The City of Port Phillip should be responsible for setting growth expectations in a manner that is sustainable for service providers and builds toward the strategic goals (most particularly equity of service across the whole municipality).

As with any partnership the full suite of roles and responsibilities should be developed in consultation with the service providers. However given the multiple partners involved, the City of Port Phillip should be careful to ensure that all service providers are treated equally and transparently.

Service providers should pay for reasonable costs associated with setting up and providing the service, and the City of Port Phillip should invest reasonable resources (particularly staff time) to ensure the strategic growth of the car share network is optimised to meet community needs sustainably.

### **Minimising negative impacts**

Both the City of Port Phillip and service providers seek to minimise the negative impacts of car share vehicles. However there is a lack of information about what negative impacts might arise and the priorities for access to kerb space with regards to car share vehicles.

The City of Port Phillip should investigate the negative impacts and seek to define mitigation processes that avoids creating negative impacts and minimises them if they cannot be avoided.

### **Regular reporting**

Car share service providers are currently required to report on a range of statistics on a regular basis. These reporting processes should be streamlined and completed online to ensure that the City of Port Phillip is collecting the right information (not simply a large amount of information) in a manner that minimises the effort required by car share service providers. The reporting should include service providers' analysis of the current situation and how their services should change in order to comply with the City of Port Phillip's service standards.

The format of these regular reports should be standardised across all service providers so that they are easy to compare. The City of Port Phillip should allocate specific resources (staff time) to review reports after they are due and follow up on any issues that the analysis highlights.

### **Disciplinary action**

The City of Port Phillip should establish clear disciplinary processes for service providers who are not meeting their responsibilities. A lower level of action (more corrective) may also be needed if car share vehicles are not performing at the required standards (either too busy or not busy enough). The City will need to be transparent and fair in all disciplinary action and may need to also establish dispute resolution procedures, which may lead to a clear appeals process to some higher-level institution (such as the full Council or the Victorian Civil and Administrative Tribunal).

These best practices need to be established well in advance of problems occurring, because once problems do occur it is very difficult to retrofit an appeals process that all parties agree with. The lack of a fair and transparent dispute resolution process is a critical weakness in the current arrangement.

## **Outcome Four – Grow the Vehicle Network**

Car share services cannot be used in areas where they don't exist. This basic and fundamental fact makes it critical for the City of Port Phillip to help grow the car share network (that is the geographic coverage or reach of the car share stations). This is very similar to the way municipalities were involved in the expansion of Melbourne's first tram networks, as the provision of more efficient transport makes their municipalities more liveable and more desirable.

In order to grow the vehicle network the City of Port Phillip will need to identify sustainable growth patterns (with the assistance of service provider partners) and develop an area by area deployment plan that extends geographic coverage into all neighbourhoods within the municipality. A best practice deployment plans needs to include:

- An iterative process that involves service providers to determine sustainable growth patterns

that achieve the strategic goals (in terms of equity of access and service reliability)

- Identification of key demographic and urban form attributes that indicate a latent demand for car share services
- Mapping of those attributes across the municipality to highlight priority neighbourhoods for network growth

### **Iterative process**

The iterative process needs to be clear, fair and transparent for all stakeholders, including the community and car share service providers. The process should involve some high level public consultation to inform the community about the benefits of growing car share and discuss issues that could arise when vehicles are sited.

The City of Port Phillip should allocate sufficient resources to lead the iterative process including providing the lead on demographic analysis and identification of areas that are likely to need additional service.

### **Demographic and urban form attributes**

The demographic and urban form attributes that best practice shows to be important are population density, car ownership levels, current car share membership levels, public transport service levels, walkability of the urban environment and travel patterns. To be world's best practice, the City of Port Phillip should seek to better understand the correlation of specific attributes with car share use in the municipality.

### **Mapping**

These attributes should be mapped across the municipality in order to highlight neighbourhoods and local areas that lack adequate car share network coverage or service levels. This process will highlight the City of Port Phillip's priorities for future network growth.

Following agreement on the priorities for deployment a process of local site selection needs to be undertaken. Best practice location decisions will include:

- Locate cars at intersections
- Use central medians where possible
- Encourage provision of car share vehicles on private property through land use planning controls (strategic and statutory) in a similar manner to the City of San Francisco
- Discourage specific locations such as high turnover locations in retail shopping strips

### **Near intersections**

Intersections are effective locations because there is good pedestrian access from multiple directions (as opposed to from only two directions in a mid-block location). They are also effective because high intensity land uses tend to be located on intersections and a length (typically 9 metres) of the kerb space is quarantined from parking for safety reasons. An intersection location also provides the car driver with more choice about which direction to travel to commence their journey.

These elements also mean that there is a specific advantage to locating car share vehicles at intersections. This is because car share vehicles rely on twenty members gaining easy access to the vehicle and are used (on average) six times per day (more frequently than resident's vehicles).

Sites at intersections will:

- Maximise the access catchment for the vehicle

- Help users locate the cars
- Make the commencement of a users journey easy.

### **Central medians**

Car share vehicles need to be easy to access from a wide range of directions, but do not need to be in the ‘premium’ spaces closest to buildings. This is because the user of the car is typically making a ‘special’ or ‘irregular’ journey and is generally unlikely to be making a journey directly related to the nearby buildings.

Central median locations are slightly more difficult to get to (as a pedestrian) and are therefore less suited to high turnover car parking for people using local buildings. In addition they are difficult or impossible to use for a range of user groups including taxis, loading and bus stops.

It is recommended that where central medians have parking spaces, these be the first spaces considered for locating car share vehicles. Only in cases where the median spaces are deemed unacceptable (or required for some other use) would the car share vehicle be located in a kerbside space.

### **Off-street spaces**

Today most of the car share network is located in on-street parking spaces. This pattern reflects the start-up phase in which the service providers prefer to use prominent on-street locations in order to raise awareness of the new service. The pattern also reflects the difficulty of establishing off-street locations.

There is no direct support for car share services or requirement to provide car share spaces in The Victorian Planning Provisions. Nor do any local Councils currently have effective local provisions relating to car share networks. There is significant scope for the City of Port Phillip to negotiate and/or have specific requirements for car share provisions in the planning scheme

There are several reasons to encourage off-street car share locations:

- Vehicles located inside an apartment building can better meet user needs (particularly for members who are residents of the building)
- Any such spaces will reduce the overall burden on existing infrastructure
- Often car parking inside buildings is underutilised, and car share spaces effectively re-purpose that space with a productive use.

These reasons are particularly relevant in buildings with more than 50 apartments (as one car share would typically be required to support the residents). In buildings with more than 200 apartments, three car share vehicles should be provided and be accessible to the public.

Without off-street spaces the expansion of car share service capacity will have a greater impact on what is a shrinking amount of on-street parking. The following factors will need to be taken into account when facilitating the expansion of the service to off-street locations:

### *Access by the general public*

Car share vehicles cannot be isolated inside buildings. Individual cars that are only available to those inside a building are generally not financially sustainable. This is true of vehicles that are owned and managed by those inside a building or by a service provider managing a wider network.

However even small buildings can successfully host a car share vehicle if it is also available to the wider network of users. This can be achieved by parking the vehicles in a publicly accessible area of the building envelope as shown in Figure 40 below.

**Figure 40: A publicly accessible car share vehicle within a building envelope**



Alternatively the building's security systems can be adapted to allow those who have booked the vehicle to enter the building.

#### *Inadequate revenue*

Even when a vehicle is available to the wider network of members, off-street locations can have inadequate use to support the vehicle. Research in Melbourne shows that some off-street locations are self-supporting but generally have less use than the on-street locations. There are important and encouraging exceptions to this and further study of the impact that location has on usage should be considered.

#### *Ability to influence off-street location*

Unlike on-street spaces, most off-street spaces are outside the jurisdiction of the City. The City's role is therefore one of support and encouragement and the City should investigate how it can:

- Support the recruitment around existing off-street car share locations
- Influence developers and building owners so that publicly accessible sites become more common, potentially through a local provision in the City of Port Phillip Planning Scheme
- Consider a specific scheme to retrofit car share locations to existing buildings.

#### **Locations that are discouraged**

A number of locations are not recommended for storing car share vehicles. For example car share vehicles should not be stored outside retail premises (if possible) because the nexus between users of the two is very low. A typical car space in a retail environment with a 1 or 2 hour time limit caters for 5.5 cars per day. Car share vehicles on average do not cater for that number of people, and the people using the car share vehicle are not using the vehicle to access local retail facilities.

The principle of balancing transport network needs requires that the car share vehicle storage avoid locations that lack a nexus with car share users needs or have a higher and better alternative use.

A specific program of re-locating car share vehicles away from inappropriate locations should be implemented.

### **High mobility streets**

Some high mobility streets have many transport modes competing for very limited road space. In such cases the City should avoid locating car share vehicles on those streets. Typically car share vehicles should not be located on streets that have:

- Bus Lanes (at any time of day)
- High pedestrian volumes (making future footpath extensions likely)
- High demands for loading vehicles

However, there is good reason to locate car share vehicles close to transport ‘hubs’ that are on some of these high mobility streets. In these instances the car share vehicles should be located in a side street close to the specific transport hub.

There are some ‘high mobility streets’ that have more than one carriageway such as St Kilda Road. These streets have greater availability of space and may be appropriate for car share vehicles in some circumstances.

### **Outside retail stores**

In general, locations outside retail stores are not appropriate for car share vehicles. These locations are best used for high-turnover parking for customers frequenting the stores.

Exceptions to this may exist with regard to specific locations where there is limited parking available and the car share service coverage needs to be achieved. This could be the case in larger retail areas such as South Melbourne where a 200m catchment for a specific vehicle may have no kerb space that is not used for retail activity.

### **Areas of low amenity**

It is important that the vehicles are located in places where people feel comfortable to come and go on their own (particularly when it is dark and there are few other people on the street). This is because ‘reliability’ of access to the car share vehicle depends on it being accessible at any time of the day or week.

Therefore vehicles should not be located in areas of particularly low amenity or pedestrian activity. This is likely to impact on the very fine detail of location and siting, by avoiding spaces that are hidden, or in locations with poor lighting and no passive visual surveillance.

### **Good Governance**

It is important for all stakeholders that the expansion of on-street bays not be subject to change based on very localised objections. A clear process will protect Council, service providers and the community from wasting resources on issues that are similar to where an Australia Letter Posting Box is located. At the locational level the criteria that guide specific decisions about which car space to use should be determined in advance and agreed through Council.

## **Outcome Five – Grow Membership and Use**

Car share businesses target people who have a car that they don’t use very much. In general these people live in higher density areas where vehicle ownership charges such as storage and parking – on and off street – are unavoidable and costly.

Car share services enable people to trade a high-cost, low-use mobility option for a low-cost, low-use option. The people who switch from car ownership pay for the actual cost of the trips they use as well as a small margin to the service provider.

The car share businesses make money and remain viable when certain conditions are met:

- The scale, profile and location of their network is appropriate to the scale, location and usage patterns of the users.
- The costs of providing the service and the profit margin are sufficiently below the cost of ownership in order to recruit users:
  - The network is large enough to spread costs such as vehicle leasing, cleaning and servicing to an acceptable level.
  - The user group is large enough and active enough to support the staff base including a 24-hour call centre for example.

If these conditions are not met, the service providers will go out of business and the community will have fewer mobility choices as a result. This could be similar to when tram and bus operators started going bankrupt and the State government chose to take over some operations to ensure services are provided.

To reach breakeven the services have to urgently increase both members and cars in order to get up to scale as quickly as possible. This has been described as a ‘chicken and egg’ process in which both come first and both lead to an increase in the other.

Global experience suggests it is impossible to break even on a car share network of 50 vehicles in a particular area. Today after nearly twenty years, Mobility has around 700 vehicles in Zürich (Milos & Francesco, 2014), one of its ‘home towns’, while ZipCar after fifteen years has 1,000 vehicles in its birthplace of Boston.

With three service providers deploying a total of 79 vehicles in the City of Port Phillip it can be seen that the growth rate of the service is at least an order of magnitude behind best practice. Even though, as can be seen in Table 28 the density in Port Phillip is higher than in either of the other centres.

It can also be seen that none of the providers are yet up to break even in the City of Port Phillip by having more than 50 vehicles.

Most importantly because the 79 vehicles are split between three service providers, users will not see a compelling offer.

**Table 28: Service scale**

CITY	AREA	POPULATION	DENSITY	CAR SHARE NETWORK	PEOPLE/CAR
Boston	232 sq km	646,000	2,784	1,000	646
Zurich	88 sq km	367,000	4,170	700	524
City of Port Phillip	20 sq km	91,000	4,550	79	1,152

Best practice in this regard requires that in partnership with the service providers the City of Port Phillip promote use of the car share network and encourage membership growth. Best practices can be found in the manner that the City already promotes other Council sponsored events and community facilities such as the library service.

Alternative and more innovative promotion practices could be investigated based on the manner in which other municipalities have supported car share service providers around the world. These tend to include streamlined internal approval processes and specific launch events or ongoing promotion activities (such as commentary within local newsletters). It is not best practice at this

stage to significantly subsidise service providers, though nor is it best practice to charge service providers more than a nominal fee for access to on-street car spaces

## **Outcome Six – Use the Service**

It is important that Councillors and Council staff have personal experience of car share for the same reason that it is difficult to design childcare if you have never been a parent and difficult to manage public transport if you always drive a car.

A significant barrier to understanding of the service is low awareness of decision makers. If all those involved in Council have the opportunity to use car share, then the decisions and policies about car share can reference personal experience.

Use of the service by Council also adds weight to the Council's support of the service to the community.

One way to provide this experience base is to investigate the Council fleet. Some of all of the fleet could be based on car share vehicles – which would or could be available for community use out of hours. As noted above, municipalities in the United States have achieved substantial savings in this way.

Investigation of taxi voucher claims may identify trips to destinations that can be done more economically by car share. Return visits to the VicRoads regional office in Sunshine would for example be cheaper by share car (\$60 for four hours) than by taxi (\$80 - \$120).

Another avenue is to identify staff with duties that require occasional car use from a fixed base. It may be possible to establish car share at both South Melbourne and St Kilda Town Halls to support inter office visits when a car is the most appropriate choice.

Libraries can be a recruitment point for the community, a base for vehicles ('borrow a book borrow a car') and may support library staff who need to use a car.

## **Outcome Seven – Report on Progress**

As with other public transport, the performance management and public reporting of the service is the foundation of future community support. The community needs to know why the service is being supported and that it is delivering a community benefit proportionate to that support.

At this stage, reporting is more important for people who do not use the service than for those that do. This is because those that use the service are receiving a good return (otherwise they wouldn't use the service). In general users recognise that there is a community benefit but do not need it to be quantified.

Outside the world of users it is a different matter. Typically the service is challenged at two levels.

In general suspicious observers are concerned that 'the car never moves' or 'no one uses it'. This challenge can be met by systematic performance reporting. Reports based on service standards can be published quarterly to establish confidence that the vehicles are supported by locals and are sufficiently active. Quarterly performance reports analogous to the 'Track Record' of public transport services published by Public Transport Victoria can be published to show that the service is pulling its weight.

At a higher level the service is challenged for its community contribution. People are aware that they benefit when other people choose not to smoke, but they are not aware that they benefit when others choose not to own a motor vehicle. The challenge at this higher level is often framed

as a critique of the business ‘they are just making money out of public space’, ‘these are big multinational companies looking for a free kick’. The same criticism can be levelled at waste collection and other public transport services but in these cases the public is aware of the benefit of the service and understands that a business makes a profit providing that service.

The best way to meet this challenge is to report on the accumulated benefits of the scheme as identified in the economic model. The information may need to be communicated through a number of channels as well as in the typical report format. In the early years it may be appropriate to complement the report with some road shows or town hall meetings to give people a chance to express their views and ask questions. At some stage in the future the report will become less important as people will have understood the benefits.

### 6.3. PORT PHILLIP REPORT CARD

Across the best practice outcomes Port Phillip is performing well, with some room for improvement as shown in Table 29 below.

**Table 29: Port Phillip Best Practice Report Card**

OUTCOME	RATING	SUGGESTED IMPROVEMENTS
Service Levels	Medium	<ul style="list-style-type: none"> <li>Set a geographic coverage target of 90% of residents living within 200m of a car share station</li> <li>Set a service level target of an average of three cars at each station</li> <li>Special vehicle types (such as vans) should be located in close proximity to public transport hubs</li> </ul>
Competitive Market	High	<ul style="list-style-type: none"> <li>Continue allowing fixed base car share companies to expand the network (including new service providers) – do not cap the number of service providers</li> <li>Build a more transparent and robust tender based model for allocating bays to service providers</li> </ul>
Network Expansion	Medium	<ul style="list-style-type: none"> <li>The current fee payment structure (paid upfront) reduces organic growth and increases the risk of expanding the network. It is suggested that the payment be made after a 6-12 month period or when a threshold of use is achieved.</li> </ul>
Promotion	Medium	<ul style="list-style-type: none"> <li>Provide regular communication to ratepayers about the benefits of car share and encouraging residents and businesses to consider how the option may work for their specific circumstances</li> <li>Highlight for all stakeholders that even if they don't use it, they benefit from their neighbours using it because their 'neighbours car space' is then available for others to use</li> </ul>
Off-Street Deployment	Low	<ul style="list-style-type: none"> <li>Incorporate specific information, objectives and decision guidelines regarding car share into the local provisions of the Port Phillip Planning Scheme</li> <li>Work with existing land owners in areas experiencing parking stress to encourage car share vehicles to be deployed in off-street locations</li> </ul>
Use Municipal Car Fleet	Low	<ul style="list-style-type: none"> <li>Identify a small number of municipal vehicles that could be substituted with car share vehicles. Tender these to one or more companies who would then make them available to the wider community outside business hours</li> </ul>

## 6.4. BEST PRACTICE SUMMARY

The review of best practice identified a number of principles that can inform the City of Port Phillip. Some of the specific practices can be adapted and adopted.

### **The principle of equity**

Car share services providers will tend to expand the network in areas where people can afford it. They will not necessarily expand into areas where people need the service (but cannot afford it) as a priority. Municipal government can actively seek to ensure equity of service to its community by establishing a “base level” of service in terms of proximity to the network and reliability of the service.

### **The principle of quality**

The start-up phase is over and the era of professionalism and accountability is here. Today there is no need to compromise the service and reduce the potential benefits to the community by incubating frail service providers.

### **The principle of scale**

To be successful the service has to be widely and constantly available. This means everyone within reach of a car and enough cars at locations to ensure that the service is always available.

### **The principle of integration**

Car share is a transport service and will make the maximum contribution when it is integrated with the current alternatives to private vehicle ownership and use.

Integration with public transport can be done by location. Popular trams stops can, for example, become versions of the ‘Mobility Points’ used by Bremen.

Integration with land use is very poor in Australia and yet it is fundamentally necessary for success. Without sufficient off-street spaces, the City of Port Phillip will struggle to develop a service that avoids a growth in the number of privately owned vehicles based in the municipality. The support and compliance of developers is critical to the success of this strategy.

The Californian requirements are best practice and reflect the advice to British local governments (CarPlus, 2012):

- ‘Publish guidance for developers on car-free and low-car housing.’
- ‘Require car clubs to be included in planning agreements / conditions, when granting planning permission for appropriate residential developments.’
- ‘New developments can also provide bays for the surrounding community.’

### **The principle of fleet savings**

Car share services stand on two legs – private and organisational use. It is important to develop strength in both offers.

### **The principle of municipal support**

Local governments in Australia facilitate and manage many services and shared facilities – libraries and swimming pools are two examples. Bremen illustrates that car share services can become similar ‘core businesses’ for municipalities with similar public benefit aims.

These principles have been incorporated into the suggested policy directions in the next section.

## 7. The Elements of a Future Car Share Policy

This section draws together the insights that have been gained from:

- A study of the costs and benefits of the service in Port Phillip
- A scan of the relevant characteristics of the Port Phillip urban geography.
- A review of car share services around the world
- An understanding of local government strategy and service provision

The section recommends a series of policy layers that reflect this review and that will support an expansion of the service in order to avoid an increase in the number of privately owned vehicles based in the City as the population grows.

Each layer is important. If the high level foundations are not solid, then no amount of careful and innovative implementation will compensate for that lack. It is the experience of many municipalities that without unambiguous and strong policy the growth of the service is constrained by exhausting bay-by-bay debates.

The operations level needs to be efficient and effective. Best practice also suggests that a car share service will deliver most value when it has support across internal Council boundaries and habits. For example without support from ‘planning’, it will be difficult for ‘parking’ to provide enough space for the service to expand.

One of the barriers to growth is the understanding of the function and benefits of the service. As with other public transport, the performance management and public reporting of the service is the foundation of future community support.

The layers are interdependent. Strong high level policies and targets without effective implementation will become aspirations rather than achievements. Implementation cannot proceed without strong strategic support.

## 7.1. OVERVIEW

The considerations at various levels and their possible expression are illustrated in Table 30 below.

**Table 30: An indicative Policy framework**

POLICY ELEMENT	AIM	BASED ON
Understanding and support	'Everybody is behind this'	Strong case, clearly explained, well communicated
Service Definition	Provide support to services that reduce ownership and use	Type of service and meeting performance standards
Policy definitions	Strong, unambiguous, practical definitions.	The benefits the City wishes to gain from the service.
Targets and data	Performance targets to manage the system. Performance reporting to build understanding and support	The benefits that the system is delivering
Integration: Mobility	To achieve the sustainable transport targets	Cross mode and cross responsibility linkages.
Integration: Internal	'This will help us get to where we agreed we want to go'	Cross Council commitment and teamwork
Integration: Built form, open space	To enable the desired network to be deployed and to maximise the repurposed space	Complementary built form and open space policies and initiatives
Integration: recruitment	Maximise the number of residents and businesses who benefit from the service	Leveraging Council contacts with the community
Management Guidelines	To guide officers, service providers and the community	Effective, efficient and transparent processes
Service standards	Define acceptable level of service	Recognised service parameters

## 7.2. UNDERSTANDING AND SUPPORT

A policy of strategic expansion will need to be built on a strong foundation of understanding of the value and importance of car share services. Issues that need to be addressed are outlined in Table 31 below.

**Table 31: Issues that need to be addressed to develop widespread support**

FOCUS	DIRECTION	POSSIBLE INITIATIVES
Why	Develop understanding why it is important and valuable	Summary of impending threat, BCR of car share, Future Car Share Policy Booklet, video, precinct debate/workshops
How	Develop understanding of processes	Future Car Share Policy materials.
When and where	Develop understanding of service expansion approach	Car share service development plan 2015 - 2022
Engagement	Develop understanding of how the program will be reported and how people can influence the program.	Future Car Share Policy materials Appropriate materials for various audiences: Councillors Council staff Community

## 7.3. POLICY DEFINITIONS

A policy of strategic expansion will need to be built on a strong foundation of policies. Anchor points for these policies are suggested in Table 32 below.

**Table 32: A list of policy anchor points to support strategic expansion**

FOCUS	DIRECTION	POSSIBLE INITIATIVES
Role of service	Confirm 'complementary' role or upgrade to be 'an element of integrated alternative mobility service'	Review definition of role of service
Definition of service	Support services that demonstrate reductions in ownership and use	Include other service providers provided robust research shows lower car ownership will result
Hierarchy of space	Strengthen objective criteria, value and decision-making. Categorise with tram/bus stops, taxi ranks	Review space hierarchy
Policy integration	Gain endorsement for policy linkage statements	Future Car Share Policy
Reporting	Define service performance and reporting including public reporting	Quarterly internal Annual public report
Alignment and renewal	Integrate the service into the sustainable transport suite of policies and plans	Sustainable Transport Strategy

## 7.4. SERVICE TARGETS AND DATA

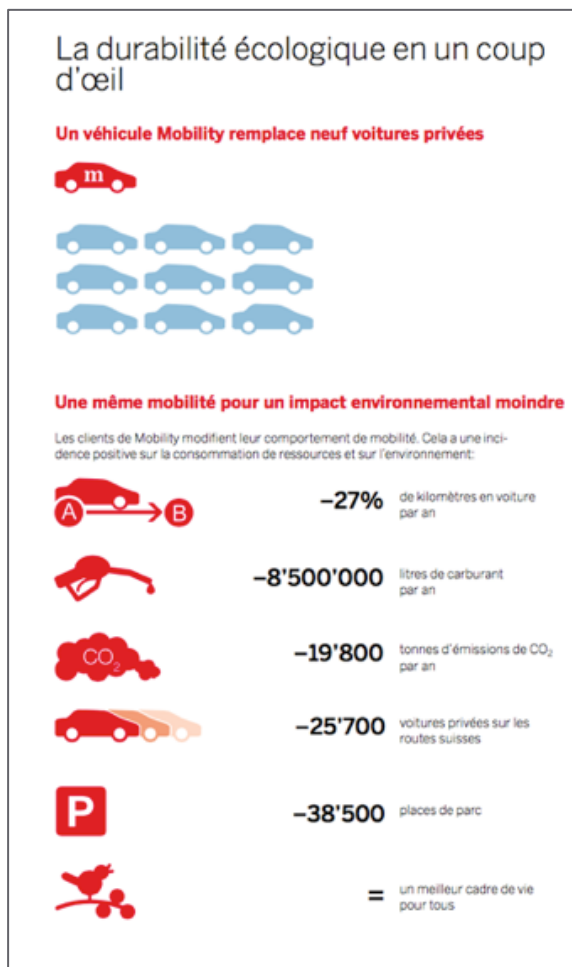
A policy of strategic expansion will need specific, measurable, achievable, relevant and time based targets as suggested in Table 33 below.

**Table 33: List of possible targets for the service**

TARGET	FUNCTION	POSSIBLE SETTING
The 'Motorisation rate'	Strategic KPI	43 vehicles per 100 residents (Currently 49/100)
Resident vehicle ownership target	Strategic KPI	Net zero increase in the number of private cars based in the City of Port Phillip (based on 2011 Census data)
The cost benefit model	Calculate benefits and costs	Annual public report on service
Service benefit targets	Communicate benefits and costs	7,000 private cars avoided. Space related benefits. VKT avoided and related benefits.
Service targets	Management, performance and reporting	Membership equivalent to 25% of resident population. 750 vehicles. 1 vehicle per 500 people
Performance standard: Access	Coverage of service Equity of access	90% of the population within 150 - 200 metres walk of all residents
Performance standard: Availability	Reliability of service	Three car share vehicles provided at each "station".

An graphical example of how these can be communicated with the public is provided in Figure 41 below.

**Figure 41: Performance report on a car share service (Switzerland)**



Source: *Mobility Car Sharing, 2013*

## 7.5. INTEGRATION: MOBILITY

A policy of strategic expansion will rely on integration with other modes. Some of the key integration opportunities are highlighted in Table 34 below.

**Table 34: List of mobility integration opportunities**

FOCUS	DIRECTION	POSSIBLE INITIATIVES
Train	Integrate and connect sustainable modes	Incentives for people with registered Myki, Co-locate vehicles at stations
Tram	Develop association based on high use of this mode in City of Port Phillip	Co-locate at stops/platforms.
Bus	Integrate and connect sustainable modes	Co-locate at major bus stops/airport bus stops
Taxi	Integrate and connect sustainable modes	Co-locate at ranks
Bicycle	Integrate and connect sustainable modes	Bike parking at Car share locations Co-locate bike lanes/routes and car share locations Reach out to bike share users based in City of Port Phillip
Walking	Integrate and connect sustainable modes	Co-locate at intersections, especially 'wombat' crossings.
40kph zones	Develop the service in these areas that are more walkable	Specifically seek to place car share vehicles into neighbourhoods with 40km/h zones
Resident Parking permits	Offer parking permit applicants membership of the service Use car share to postpone the need for permits.	Opt out/opt in architecture Incentives Parking permit application process
Parking stress	Avoid areas of high stress. Replace commuter park-and-ride areas with service.	eg Albert and Middle Park eg South Melbourne
Business fleet	Leverage Port Phillip Business to recruit members and deploy vans	Identify retailers who would use a van
Council fleet	Follow US practice and use car share for a proportion of the Council fleet	Council fleet, Learner drivers, Community buses

## 7.6. INTEGRATION: COUNCIL INFLUENCE

A policy of strategic expansion will rely on spaces being available in private buildings and where Council is reshaping the public realm. The Council has a number of opportunities to recruit people to the service as highlighted in Table 35 below.

**Table 35: List of Council integration opportunities**

FOCUS	DIRECTION	POSSIBLE INITIATIVES
<b>Land use integration</b>		
Residential growth areas	Develop service where apartments are being developed.	Deploy vehicles near or in new developments
Apartment planning requirements/requests	Offer in lieu or offset and minimum requirements for car share in apartments	Planning approvals Voluntary agreements with developers
Current apartments	Develop service where apartment based vehicles are using unrestricted parking.	For example Elwood, Balaclava, Ripponlea
Areas with high residential and job densities	Develop service	For example St Kilda Road precinct
<b>Council capital works integration</b>		
Investments in streets and open space	Link car share deployment with complementary changes to the street	Integrate with local area traffic management and parking precinct plans
<b>Recruitment integration</b>		
Council registrations	Use Council registration processes to recruit members and inform residents and businesses	Library, Pool, Rates, Parking permits, first offence parking ticket waiver
Other 'use but don't own' services	Promote car share in a parallel environment	Laundromats, Cinemas
Council grants	Condition of grant that grantee has access to cars share	Council grant programs can require mobility standards
Council activities	Recruitment videos for example at Council Town Hall events	Council events, activities at Town Hall, libraries for example
Councillors and staff	Develop an 'inside' understanding	Enrol all Councillors and staff and provide two free hours of travel.

## 7.7. MANAGEMENT GUIDELINES

A policy of strategic expansion will rely on efficient and effective management processes such as those outlined in Table 36 below.

**Table 36: Indicative list of management considerations for car share 'Mode managers'**

ELEMENT	AIM	BASED ON
Service standards	An efficient service	Metrics that identify: Unserved populations 'stressed' or 'lazy' cars. See below.
Partnership agreement	Outline conditions of Council support	A partnership with mutual responsibilities and obligations
Reporting requirements	Up to date service reporting Annual service report (public)	Reports in agreed format from service providers
Location guidelines	Maximising the effectiveness of deployed vehicles, minimising disruption	Coverage, capacity, hierarchy of space allocation. Locations to avoid
Deployment guidelines and plan	Enable the service to get up to desired scale	Spatial, behavioural and other data showing where service is needed and where it will thrive.
Fees and charges	To pay for management of the service	Outgoings
Expansion process	Council requests for service provision, Service providers requests for locations.	Plan and guidelines
Probation process	To enable new sites to be trialled before being confirmed.	Level of use against time deployed.
Competition process	Process to deal with service providers entering or leaving the market. Process to deal with competition for number and location of bays.	Tender
Tuning process	Enable the Council to manage the introduction or departure of service providers Enable the Council to manage the introduction, relocation or removal of bays	Plan and guidelines
Community connection	How the program will be reported and how people can influence the program	Guidelines

## 7.8. SERVICE STANDARDS

Management processes will rely on service standards such as those shown in Table 37 below.

**Table 37: Service standards**

SERVICE FACTOR	RATE
Service growth: Users/vehicles	% per quarter
Service penetration	1 vehicle per 500 people
Access to service – coverage/equity	90% of the population within 200m of a vehicle
Catchment	All members within 200m of a vehicle
Service reliability	Every site has three vehicles
Service provision	All sites provided have a car
Service availability	All cars available 24/7
Business resident ratio	50:50
Activity per car	>3 hours and <6 hours a day
Membership per car	1:20
Support (identification with) particular cars	>10
Off/on street vehicle deployment ratio	30-40% off-street/60 -70% on street
Profile of vehicles in car share network	Portfolio criteria
Number of service providers	No less than two

## 8. Conclusions

This report has considered three key elements of car share research for the City of Port Phillip:

- Benefits and costs of the service to the community
- What would strategic expansion of the service in Port Phillip look like in its optimal form
- International best practice for local municipalities

The current car share service (2,500 members supported by 79 vehicles) delivers around \$3.2m of value to the City of Port Phillip community each year. This value derives from the space that has been made available for other uses and reduction in vehicles kilometres travelled in cars. There are around 800 fewer vehicles owned by residents due to car share.

Currently, any population growth within Port Phillip municipality introduces more privately owned vehicles into the local environment exacerbating local congestion and reducing availability of car parking. Over the next five years the City of Port Phillip could partner with car share service providers to prevent an increase in the overall number of privately owned vehicles based in the municipality

To avoid growth in the total number of privately owned vehicles based in the municipality, a strategic expansion of the car share network would need to attract a membership of around 28,000 residents supported by 750 vehicles in 2021. This car share network can be accommodated in the available on-street spaces but it is recommended that the City take steps to ensure that most of the car share network is based in off-street car parks.

Such a car share network would deliver around \$32m of value to the community every year.

From 2021 a further expansion of the service will be needed to keep pace with population growth including in the Fishermans Bend precinct.

Best practice from around the world suggests a number of principles that can guide the efforts of local government: quality, scale, integration, car ownership savings and municipal support.

The key recommendations include:

1. A strategic expansion of the car share service to a membership of 28,000 members supported by 750 vehicles in 2021 to avoid all growth in the number of privately owned vehicles based in the municipality and to prepare for the greater challenge faced beyond 2020.
2. Aim for around 30% of the car share vehicles to be located in on-street locations.
3. This expansion be based on a high level policy that has been debated, understood and endorsed by the community.
4. This policy should be supported by service definition, targets and data, as well as service integration across divisions responsible for: sustainability and transport, city design, city strategy, city development, public space and fleet management and recruitment.
5. The management of the mode should be based on: service standards, partnership agreements, reporting requirements, location guidelines, allocation guidelines, a deployment plan including expansion and tuning processes and guidelines, an approach to managing multiple operators, a position on fees and charges and a method for community input at a strategic and local level.
6. A quarterly performance and review process supported by annual public reporting should be used to manage and communicate the benefits of the system.

Suggested next steps include:

- Develop a single Port Phillip quarterly performance report and inaugural annual report that covers all operators as a basis for future consultation with the community.
- Preparation of and consultation over The future Car Share Policy in particular the rationale for the strategic expansion of the car share network.

Simultaneously it will be possible to develop the management processes and guidelines that support any level of service including:

- Service standards and definition
- Partnership agreements
- Reporting requirements
- Location guidelines
- Allocation processes
- A robust and fair approach to managing multiple operators
- A position on fees and charges
- Community input processes at both a strategic and local level.

The City should explore how it can catalyse change in the development industry and stimulate building retrofits that enable the service providers to base cars in off-street locations. This includes seeking an exemption from the Congestion Levy.

Following the adoption of the future Car Share Policy, Council will need to develop a deployment plan that includes:

- Service integration across divisions
- Member recruitment
- Clear definitions of responsibilities and duties
- Assessment of whether the Council's own vehicle fleet can be replaced in part with car share services.

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# Appendix A: Detailed calculations for the economic assessment

## Overview



CITY OF PORT PHILLIP

ECONOMIC MODEL

COST BENEFIT ANALYSIS

Per Annum CPI

2.8%

B: Assumptions	Unit Rate (adjusted 2014)	Unit Rate	CPI Adjustment	Year of Unit Rate	Unit	# Note/	Reference
Members per Car	26.95	26.95			Members per Car		
Reduced Car Ownership: Members that do not replace their car	0.16	0.16			Cars avoided per Member	1	
Reduced Car Ownership: Members that are able to sell their car	0.16	0.16			Cars avoided per Member	1	
Reduced Car Ownership: Members that use carshare as a backup	0.15	0.15			Cars avoided per Member	2	
Reduced Car Ownership: Members that never buy a car	0.04	0.04			Cars avoided per Member	3	
Reduced Car Ownership Cost	\$993.66	\$775.00	28.2%	2005	Car avoided	4	
VKT Avoided per Member	1,809	1,809			VKT avoided per Member		
Reduced air pollution	\$0.0124	\$0.0121	2.8%	2013	VKT avoided	5	
Reduced greenhouse gases	\$0.0066	\$0.0064	2.8%	2013	VKT avoided	5	
Reduced noise	\$0.0030	\$0.0029	2.8%	2013	VKT avoided	5	
Reduced impact on soil / water, biodiversity, nature / landscape, urban barriers	\$0.0116	\$0.0113	2.8%	2013	VKT avoided	5	
Decongestion	\$0.2249	\$0.2070	8.6%	2011	VKT avoided	6	
Road Safety benefit	\$0.0485	\$0.0400	21.3%	2007	VKT avoided	7	
Reduced car usage cost	\$0.1618	\$0.1618	0.0%	2014	VKT avoided	8	
Additional time spent walking	6.28	6.28			Minutes per Member / Day		
Additional time spent cycling	0.57	0.57			Minutes per Member / Day		
Net Health benefit of additional walking (assumes 5 km/h)	\$7.82	\$7.20	8.6%	2011	Extra Hour Walked	9	
Net Health benefit of additional cycling (assumes 15 km/h)	\$12.22	\$11.25	8.6%	2011	Extra Hour Cycled	9	
Opportunity Cost of Owning Car Space	\$3,306.05	\$3,216.00	2.8%	2013	Car avoided	10	
Recovered fee for car share bay (agreement duration 3 years)	\$333.33	\$333.33	0.0%	2014	On-Street Car Park Used for Car Share	11	
Community value space	\$25,878.58	\$25,878.58	0.0%	2014	On-Street Car Park Used for Car Share	12	
Cost to Council of CURRENT Admin & Infrastructure (per space)	\$2,005.56	\$2,005.56	0.0%	2014	On-Street Car Park Used for Car Share	13	
Cost of CURRENT strategy to Council	\$5,477.81	\$5,477.81	0.0%	2014	On-Street Car Park Used for Car Share	14	
Cost of FUTURE strategy to Council	\$21,911.24	\$21,911.24	0.0%	2014	On-Street Car Park Used for Car Share	15	

A

Members per Car in City of Port Phillip (cars updated 31 Aug 2015)	On-street Bays	Off-Street Bays	Total Cars	Personal	Corporate	Total	Members
GoGet	17	21	38	719	167	886	
FlexiCar	22	11	33	1,187	253	1,440	
GreenShareCar	23	0	23	223	45	268	
Total	62	32	94	2,129	465	2,594	

Total (May 2015)	50	29	79	2,129	465	2,594
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Note/Reference
Table 1 - GHD 2009, City of Melbourne Car Sharing Research, p 29. Cites two North American studies; one 9-13 private cars, one says 15 private cars.
Assume 50% of balance of respondents that are not "use as backup" or "never buy". Rule of One Half. GoGet, 2014 Carshare Member Survey - City of Port Phillip, 31%
Assume 50% of balance of respondents that are not "use as backup" or "never buy". Rule of One Half. GoGet, 2014 Carshare Member Survey - City of Port Phillip, 31%
Rule of One Half. GoGet, 2014 Carshare Member Survey - City of Port Phillip, 30%
Rule of One Half. GoGet, 2014 Carshare Member Survey - City of Port Phillip, 8%
Australian Transport Council 2004, <i>National Guidelines for Transport System Management in Australia: Volume 4 Urban Transport</i> , Australian Transport Council, p 56.
Table 2
Austroroads 2014, <i>Austroroads Tehcnical Report AP-T285-14: Updating Environmental Externalities Unit Values</i> , Austroroads, Table 6.1.
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RACV 2014, <i>Vehicle Operating Costs (Light Cars): Toyota Yaris 5dr running costs</i> .
(Average Minutes per Trip) x (Additional Trips). Department of Transport 2010, <i>Victorian Integrated Survey of Transport &amp; Activity (VISTA) 2009-2010</i> , Victorian Government. GHD 2010, <i>City of Melbourne Car Sharing Research, Appendix G: Car Sharing Members Survey</i> .
(Average Minutes per Trip) x (Additional Trips). Department of Transport 2010, <i>Victorian Integrated Survey of Transport &amp; Activity (VISTA) 2009-2010</i> , Victorian Government. GHD 2010, <i>City of Melbourne Car Sharing Research, Appendix G: Car Sharing Members Survey</i> .
Health benefit minus injury costs multiplied by speed - Department of Infrastructure & Transport 2013, <i>Walking, Riding and Access to Public Transport: Supporting Active Transit in Australian Communities</i> , Commonwealth of Australia.
Health benefit minus injury costs multiplied by speed - Department of Infrastructure & Transport 2013, <i>Walking, Riding and Access to Public Transport: Supporting Active Transit in Australian Communities</i> , Commonwealth of Australia.
Assumes 50% of Avoided Cars would have had an off-street space. Annual Repayment of a 30 year CBA Home Loan equal to the value of an average Melbourne Off-Street Car Parking Space (\$50,100).Findacarpark 2014, <i>Park it and pay</i> , Melbourne's average car park sale price of \$50,100. Commonwealth Bank of Australia, <i>Home Loan Calculator</i>
City of Port Phillip. Establishment fee of \$1,000 for each approved bay. Duration of the agreement: 3 years
Department of Transport, Planning and Local Infrastructure 2013, <i>Creating Liveable Open Space - Case Studies</i> July 2013, p 16. City of Melbourne, <i>Making a Great City Greener 2012-2032. Urban Forest Strategy</i> , p 22. Real Estate market research.
Estimated. Assumptions based on: Infrastructure: 15m of linemarking and 2 poles and signs & Maintenance: \$0 p.a.
Estimated. Assumptions based on: Salaries for Council Staff: Band 6 + on-costs * 0.05 EFT
Estimated. Assumptions based on: Salaries for Council Staff: Band 6 + on-costs * 0.2 EFT

## Assumptions

C				Source	Note
Mode Shift due to Car Share	Before Car Share	After Car Share	Change	GHD 2010, City of Melbourne Car Sharing Research, Appendix G: Car Sharing Members Survey. 'Primary Mode' only however respondents could nominate more than one 'Primary Mode' and so Mode Share adjusted pro-rata to total 100%.	
Bus	5.3%	11.2%	109%		
Train	10.6%	11.4%	7%		
Tram	12.1%	12.8%	6%		
Walking	9.8%	13.7%	41%		
Cycling	20.8%	24.2%	16%		
Motorbike / Scooter	18.7%	17.4%	-7%		
Car (as Driver)	21.2%	9.2%	-56%		
Car (as Passenger)	1.5%	0.0%	-100%		
Walking and Cycling	30.6%	37.9%	7%		
Public Transport	28.0%	35.4%	7%		
Car and Motorbike	41.4%	26.6%	-15%		

D				Source	Note
Trip Rates Change	Before Car Share	After Car Share	Change	Department of Transport 2010, Victorian Integrated Survey of Transport & Activity (VISTA), 2009-2010. Vista for 'Before'. After based on change per mode from Table C.	
<i>Trip Rates per person per day</i>					
Bus	0.05	0.10	0.05		
Train	0.14	0.15	0.01		
Tram	0.31	0.33	0.02		
Walking	0.99	1.39	0.40		
Cycling	0.13	0.15	0.02		
Other (incl Motorbike / Scooter & Taxi)	0.06	0.05	-0.00		
Car (as Driver)	1.49	0.65	-0.84		
Car (as Passenger)	0.49	-	-0.49		
<i>Walk Minutes per Trip</i>					
Bus	20.88				
Train	20.38				
Tram	13.80				
Walking	11.92				
Cycling	-				
Taxi	0.36				
Other (incl Motorbike / Scooter)	-				
Car (as Driver)	0.15				
Car (as Passenger)	0.02				
<i>Cycle Minutes per Trip</i>					
Cycling	25.89				
Tram	0.06				
<i>Walking Minutes Increase per person per day due to Mode Shift</i>			<b>6.28</b>		
Bus			1.13		
Train			0.21		
Tram			0.27		
Walking			4.80		
Cycling			-		
Other (incl Motorbike / Scooter & Taxi)			-		
Car (as Driver)			-0.13		
Car (as Passenger)			-0.01		
<i>Total</i>					
<i>Cycling Minutes Increase per person per day due to Mode Shift</i>			<b>0.57</b>		
Cycling			0.55		
Tram			0.02		
<i>Additional Hours per Annum per Person</i>	365.25				
Walking Hours			38.20		
Cycling Hours			3.49		

E					Source	Note
<i>Change in VKT per Annum due to Car Share</i>	VKT	% of Members	Per Member	Per Car	GHD 2010, City of Melbourne Car Sharing Research, Appendix G: Car Sharing Members Survey.	
<i>Method 1: GHD City of Melbourne User Survey (n = 335)</i>						
VKT before Car Share	< 1000	35.6%	178			
	1000 to 2000	14.7%	221			
	2000 to 3000	8.0%	200			
	3000 to 4000	7.4%	259			
	4000 to 6000	10.7%	535			
	6000 to 8000	5.8%	406			
	8000 to 12000	9.5%	950			
	12000 to 15000	2.8%	378			
	> 15000	5.5%	963			Assume even distribution (or 17,500 for > 15,000)
	<b>Total</b>		<b>4,089</b>			
VKT After Car Share	< 1000	34.7%	174			
	1000 to 2000	28.8%	432			
	2000 to 4000	15.3%	459			
	4000 to 6000	9.5%	475			
	6000 to 8000	4.0%	280			
	8000 to 12000	4.9%	490			
	12000 to 15000	0.9%	122			
	> 15000	1.8%	315			
	<b>Total</b>		<b>2,746</b>			
VKT Avoided				1,343		
<i>Method 2: CoM Data Analysis</i>					Department of Transport 2010, Victorian Integrated Survey of Transport & Activity (VISTA), 2009-2010.  Rule of thumb based on the City of Melbourne data analysis.	
VKT of Typical Resident of City of Port Phillip	4,548		<b>4,548</b>			
Percentage decline of driving distance of car share members (in the City of Melbourne)		50%				
Average VKT expected after joining car sharing	2,274		2,274			
VKT Avoided				2,274		
VKT Before (average of two methods)			4,319			
VKT After (average of two methods)			2,510			
Estimated VKT Avoided per Annum				<b>1,809</b>		Average of both methods.

F		Source	Note
	<b>Cost of Car space</b>		
	<i>Method 1: Creating a liveable live space</i>		
	Project cost		Department of Transport, Planning and Local Infrastructure 2013, Creating Liveable Open Space - Case Studies July 2013, p 16.
	Project area (in square meters)	\$5,000,000	
	Cost per square meter	4,371	
		\$1,144	
	Car space (2.5m x 6.0m)	15	Clause 52.06 Car Parking - Port Phillip Planning Scheme
	The cost of a car space	\$17,159	
	<i>Method 2: Urban forest amenity value</i>		
	Melbourne's urban forest amenity value	\$700,000,000	City of Melbourne, Making a Great City Greener 2012-2032. Urban Forest Strategy 2014, p 22
	Trees population	70,000	
	Tree value (cost of a car space)	\$10,000	
	Tree value (40cm diameter at breast height tree = 1 car space)	\$11,706	Greening Port Phillip: An urban forest approach
	Tree = 35 sq meters		
	<i>Method 3: St. Kilda triangle car park</i>		
	Building cost	\$15,000,000	ARUP, St Kilda Triangle, Car Park Investigation. Final Report June 2012, p 21
	Car parking spaces	300	
	Cost of a car space	\$50,000	
	<i>Method 4: Real Estate Research</i>		
	Cost of a car space in the market	\$25,000	http://www.realestate.com.au/property-residential-land-vic-st-kilda-200989163 Car park space at 81/352 Canterbury Road St, Kilda Vic 3182
	<i>Method 5: Real Estate Research</i>		
	Contemporary site values (purchase price) of properties in the City of Port Phillip		
	Cost per square meter	\$3,078	
	Car space (2.5m x 6.0m)	15	
	Cost of a car space	\$46,170	
	<i>Method 6: Real Estate Research</i>		
	Contemporary site values (lease price p.a) in the City of Port Phillip		
	Cost per square meter	\$349	
	Car space (2.5m x 6.0m)	15	
	Cost of a car space	\$5,237	
	<b>Cost of a car space</b>	<b>\$25,879</b>	Average of methods.

G		Source
	<b>Cost of Administration and Infrastructure</b>	
	<i>Infrastructure</i>	
	Linemarking (15m) & grinding where necessary	\$210
	"CAR SHARE" lettering & other special ground markings	\$400
	Poles and signs (including removal of existing and displaced bays)	\$300
	<b>Sub-Total</b>	<b>\$910</b>
	<i>Maintenance</i>	
	Maintenance of bays (not included as it is an annual cost except for in year 1)	\$500
	<i>Administration</i>	
	Salary (Band 6)	\$84,274
	On Costs	30%
	Salary including on-costs	\$109,556
	Current Management of Strategic Policy (EFT)	0.05
	Salaries for Strategic Policy (CURRENT)	\$5,478
	Car share spaces (on-street only)	50
	Salaries / space for Strategic Policy (CURRENT)	\$110
	Allocation of on-street car spaces (EFT)	0.20
	Salaries for on-street allocation (in 2015)	\$21,911
	Bays allocated in 2015	20
	Salaries / space for on-street allocation (in 2015)	\$1,096
	<i>Reduction in parking revenue</i>	
	Reductions only (car share fees are in benefits at D28)	\$0
	<b>Cost of a car space (CURRENT)</b>	<b>\$2,115</b>

H		Source
	<b>Sliding scale of EFT requirements</b>	
	<i>Administration</i>	
	Future Management of Strategic Policy (EFT)	0.20
	Salaries for Strategic Policy (FUTURE)	\$21,911
	Additional car share spaces (on-street only) - TOTAL IN EXPANSION SCENARIO	470
	Number of years expansion occurs over	5
	Additional car share spaces p.a. (on-street only) - IN EXPANSION SCENARIO	94
	Salaries / space for Strategic Policy (BASED ON EXPANSION SCENARIO)	\$233
	Sub-total Salaries	\$43,822
	Car share spaces (on-street only)	50
	Salaries / space	\$876
	<b>Cost of a car space (BASED ON EXPANSION SCENARIO)</b>	<b>\$2,239</b>

## Appendix B: Location Principles

The best practice review did not identify any cases where the allocation of parking bays was thoroughly best practice. This is for a number of reasons:

- The service is still new and its value and contribution is poorly understood. Car share is sometimes dealt with as the ‘new apprentice’ and given the bays that are not wanted for other uses. In some cases it is seen as the straw that breaks the camel’s back and is given no spaces. The antidote to this is a sound and compelling strategy and a shared understanding of the problem that car share is trying to solve and the importance of locating the service.
- Parking, like road space, is not managed as a scarce and finite resource. Road and parking space pricing are set at or near market rates by private road and parking providers but governments are strongly influenced by those who wish to benefit from free goods. Dynamic pricing that changes based on the level of load is emerging. The ‘near and far’ dimension is rarely priced well in parking whereas in stadiums or concerts it is standard practice to pay more for seats up the front. When the value of space is understood and correctly priced, a car share service can take the place it earns based on the value it generates. The use of space hierarchy is critical here. The hierarchy needs to be specific enough to provide guidance and support decisions that may come under scrutiny.

The best practice in allocation of kerbside space for various users currently occurs at the City of Port Phillip, although it has yet to include ‘car share services’ into the hierarchy or user needs.

Where practice is published this is often in contexts that do not translate directly to Australia. British parking is regulated through a public process of Traffic Regulation Orders and Traffic Management Orders that do not apply or have a parallel here. In Germany it appears that parking regulations are set at a national level and are outside the remit of the local governments. European local governments can make provision in the residential parking garages they manage but this is not yet a service offered by local government here.

Overseas many car share spaces are provided for on private land. This is appropriate – as long as the vehicles are available to general public. Best practice is undoubtedly to get as many of the car share vehicles off the road as possible consistent with the performance of the overall network. A proportion of on-street vehicles are necessary to advertise and provide confidence in the service.

In the UK there is discussion about whether to place the vehicles in ‘pay and display’ areas or locate them in residential areas. This is a false question. The ideal location is one where the residential and business use most favours and supports car share use which may be in either of the above two categories.

Some UK principles (CarPlus, 2010) that are worth adopting include:

- ‘Specific parking bay location would be best decided through partnership between the local authority and an operator.’
- Avoiding protracted decision-making processes that hold up deployment
- Integrating car share ‘into relevant policy to help to achieve other objectives (e.g. tightening parking ratios in new developments, incorporating into workplace travel plans etc).’
- Recognise situations where it may be economically and practically more advantageous to subsidise car club services rather than commissioning socially necessary public transport in the same area or neighbourhood
- Provide some kick-start funding to assist car clubs with publicity, marketing and the launch.

Other principles include re-purposing lazy space:

- Converting areas of yellow single lines; (No Parking)
- Converting unused loading bays

- Identify spaces which are not currently allocated, such as where there is a change of use, or new stretches of road where former access roads between rows of houses have been in-filled with new housing

The car share association in the UK (CarPlus, 2012) offers the following:

Bay locations should be identified by someone with expertise in highway and specifically parking design, issues as well as having knowledge of the local area. Without this there is a danger that a lot of locations will prove unsuccessful. With the local authority's priorities in mind it is a good idea to walk around the sites with the operators and traffic engineers / consultants to take advantage of the wealth of knowledge each have. Their experience will be invaluable to help avoid pitfalls such as not choosing sites right outside someone's house or reducing visibility for pedestrians crossing. There are several issues that will be important to car club operators in selecting bay locations:

**Tree cover** - cars that are damaged by tree sap or birds will not be viable and will have to be moved at a later date, causing inconvenience to car club members.

**Lighting** – Operators need their members to check for damage before their journey so the bay must be well lit.

**End of run bays** – Car club members are occasional drivers who are often not as proficient at driving as an average license holder. Asking them to parallel park between two cars is therefore not a great idea – provision of bays at the end of rows allows for easier parking and also helps maintenance teams to clean the vehicle.

**Locating bays close to other infrastructure** – New bays should avoid impacting upon other road infrastructure such as cycle lanes, bus lanes or bus stops. Whilst it is the responsibility of the Local Authority to ensure that this does not happen, impacts upon cycle lanes in particular are bound to cause major objections/complaints once installed.

**Locating bays outside fast food outlets or leisure centres should also be avoided.** By taking a collaborative approach a useful dialogue can take place about the different issues to consider, and a shortlist of sites can be identified with the maximum chance of being implemented and viable. (This may refer to vehicle damage)

This advice contains the following principles:

- Identify principles for locations that meet the requirements of the authority ('not where they will reduce visibility for pedestrians')
- Include principles that meet the needs of the service providers (end of run bays)

### **Future Car Share Policy Bay location principles**

The principles that are developed to guide bay selection in the City of Port Phillip should reflect the strategy. Decisions should reflect an understanding of car share services as a transport mode that can be optimised or compromised by location decisions. The following approach is recommended.

**Table 38: Location Principles for Car Share Bays**

SUSTAINABLE TRANSPORT STRATEGY GUIDING PRINCIPLES	CRITERIA FOR DETERMINING CAR SHARE BAY PLACEMENT
<p><b>1. Ensure Priority</b></p> <p>The Council will give preference to, and right of way to sustainable transport modes in terms of allocating time, space and facilities, guided by Council's Road User Hierarchy.</p>	<p><b>Location Criteria</b></p> <p><u>Parking Hierarchy:</u></p> <ul style="list-style-type: none"> <li>Follows the hierarchy of parking need in determining the location, based on parking controls nearby</li> </ul> <p><u>Convenience:</u></p> <ul style="list-style-type: none"> <li>Put cars where users request them or where demand is demonstrated</li> <li>Place cars inside and outside apartments or commercial properties</li> <li>Avoid high turnover areas especially near shops</li> <li>Use centre medians where available</li> <li>Put more than one car at a location to increase 'capacity' and reliability</li> </ul> <hr/> <p><b>Siting Criteria</b></p> <p><u>Favourable Context:</u></p> <ul style="list-style-type: none"> <li>Near activity/community hubs, areas of high employment, residential densities or low vehicle ownership.</li> <li>Install permanent car share bays in areas where parking is not controlled</li> </ul>
<p><b>2. Increased Integration</b></p> <p>The Council will strive to achieve a City where places are interlinked through walking, bike riding and public transport routes that are efficient, direct, attractive and competitive.</p>	<p><b>Location Criteria</b></p> <p><u>Transport Integration:</u></p> <ul style="list-style-type: none"> <li>Place car share near tram stops, bus stops or train stations</li> <li>Place cars on arterials and at 'exits' to communities</li> </ul> <hr/> <p><b>Siting Criteria</b></p> <p><u>Effective Catchment:</u></p> <ul style="list-style-type: none"> <li>Use effective catchments rather than crow-flies catchments</li> <li>Put cars within 200m of existing members</li> <li>Put cars within 300m of each other to provide 'coverage'</li> <li>Put cars at intersections to maximise the access catchment</li> </ul> <p><u>Efficiency</u></p> <ul style="list-style-type: none"> <li>Uses spaces which are no longer required and can be repurposed (loading zones, taxi zones, residential disabled parking)</li> <li>Review current set backs and inherited layouts – creating new space and removing redundancy</li> <li>Authorise 'small bays for small cars'</li> </ul>

## SUSTAINABLE TRANSPORT STRATEGY GUIDING PRINCIPLES

## CRITERIA FOR DETERMINING CAR SHARE BAY PLACEMENT

### 3. Improve Safety and Accessibility

Council will work to provide conditions which allow people of all abilities to feel safer using our streets and sustainable transport options.

#### Location Criteria

##### Safety:

- Avoid orientations that block sightlines from access ways, crossovers or pedestrian crossing points (formal and informal)
- Provides sufficient clearances from service covers, manholes, drainage pits and conduits.

##### Accessibility

- Places where access is difficult or time limited (e.g. timed parking)

##### Mobility impaired

- Preserves DDA accessibility such as dropped kerbs, circulation space next to disabled parking spaces, tram and bus stops.

#### Siting Criteria

##### Amenity:

- Avoid public realms with low amenity.
- In an area with good passive surveillance (pedestrian traffic and street lighting)

### 4. Raise Profile

The Council will strive to raise the profile of walking, bike riding and public transport along with the benefits of these transport modes through provision of information, facilities and active promotion to drive change in travel behaviour.

#### Location Criteria

##### Visibility

- Ideally car share bays are at the beginning or end of row of car parking spaces where they will be more easily seen
- A proportion of car share spaces should ensure maximum visibility and access by being close to a shopping strip, major attractor or areas with high pedestrian traffic
- Avoid areas that are difficult to find

##### Promotion & Awareness

- Communicates the benefits of car share on lowering parking demand and cost saving for people becoming members
- Clearly communicates the purpose of the car share bay

## Appendix C: Implementation

If the Port Phillip Council decides to continue the current rate of expansion of the car share service, then the current implementation process will suffice.

If on the other hand the Port Phillip Council decides to accelerate of the rate of expansion then the City will need to establish a more formal and thorough process to cope with the higher number of location decisions and the likely higher level of public interest in the strategy and its consequences. The faster the rate of growth, the more efficient and robust the system will need to be.

This section identifies a number of elements that would support a high level of expansion.

### Deployment Plan

Depending on the rate of growth required, the City may need a deployment plan for growing the network in on-street and off-street parking spaces.

#### *On-street*

Once the strategic goal and annual targets have been set by Council, the City of Port Phillip will need to identify how many cars will need to be deployed in the different areas of the municipality in order to meet the targets.

An on-street deployment plan would provide this information using a similar process to that outlined in Chapter Five.

Based on an agreed category such as postcode, suburb or precinct, the deployment plan would identify the number of vehicles that would be needed in each area and suggest an annual target to reach the desired level of service. For example it might be revealed that in order to meet the strategic goal, twelve vehicles need to be deployed in a particular area each year. The actual locations of these vehicles would not be addressed in the Deployment Plan (as it must remain focussed at the neighbourhood level).

If necessary and appropriate, this plan could be discussed with residents and businesses in each area. This would follow on from some form of community engagement and consultation regarding the high level policy and strategy.

#### *Off-street*

Alongside the on-street plan an off-street deployment plan could be developed (if required due to the size of expansion required to meet the strategic goals). This will be more like a program rather than a plan as the final outcomes will require third party support (building developers and car share operators). This program would seek to incorporate best practice related to car share into the City of Port Phillip's urban planning assessment processes.

The program could include internal guidelines and policy development including:

- Definition of suitable trade offs and negotiations
- Definition of minimum provision conditions
- Briefing and training as necessary and appropriate for statutory planners
- Methods for enrolling developers and ensuring a mutually suitable process for developers and service providers

- Practice notes and other external guidelines or advice
- Draft requirements for Section 173 Agreements related to car share service provision
- Development of suitable text for inclusion into the Local Planning Policy Framework and potential clause/s for inclusion into the Port Phillip Planning Scheme

## Location guidelines

At a level below the On-street Deployment Plan would sit the Location Guidelines. (See the discussion and principles in Appendix B.) Location guidelines will need to be developed to enable the efficient identification of suitable sites. These guidelines will need to be based on:

- Identifying the sites that will allow the service to perform at the highest level
- The parking hierarchy of user needs for kerbside space
- Other considerations such as those identified in the On-street Bike Parking – Location and Siting Principles and Criteria

## Identifying potential sites

Using the Deployment Plan and the Location Guidelines it will be possible to identify an appropriate number of suitable sites in the different areas. This process would develop two lists for each area – a list of “new nodes” (where there is no pre-existing node) and a list of “node expansions” where an existing node is to be expanded. These specific car parking bays can then be offered to the service providers. The conditions of the offer and the suggested quarterly process are outlined below.

## Performance guidelines

The strategic expansion of car share requires two performance-reporting frameworks:

- One to inform the management of the performance of the current service and the process of expansion
- Another to communicate to the Council and community on the contribution that the service is making in return for the support of the City.

It is recommended that these two frameworks run on a quarterly and annual cycle respectively.

### *C.1 Quarterly reports and process*

The quarterly performance report supports the Council as the mode manager in the adjustment and development of the service.

Service providers will provide data that enables the Council and the service providers to see:

- The overall performance of the service (potentially made available to the public)
- Locations that are underserved, overused or underperforming

The Council will provide:

- A summary of public comments, complaints and grievances.
- How the performance data relates to strategic targets
- Next steps from the deployment plan

This information will enable the partners to agree actions for the next quarter, which might include:

- Recruiting targets and areas including joint promotions in expansion areas or to increase the use of low-use vehicles
- Agreed relocations of unsuccessful bays
- Agreed responses to concerns and any related changes in response
- Identification of zones where the service can be improved by coverage or capacity
- Agreement on new bays to be released in that quarter. (The scenario is based on growth of 10 vehicles a quarter)

### *C.2 Service provider report in detail*

To enable this process the service providers will be required to provide a report to the City by a specific date. The report will include the following measures (described in detail below):

- The scale and growth of the current service delivered by each provider
- The member/vehicle ratio
- Areas where members do not have ‘convenient access’
- Locations where cars have insufficient members or too many members
- Locations where a vehicle has not been provided
- Locations where the vehicle/s are not active enough
- Locations where the vehicle/s are too busy

The data will be consistent in format, content and definitions so that reports from all service providers can be combined quickly and easily into an overview.

A summary of the Quarterly Report can be published to enable the public to observe the performance of the service. The Quarterly Performance Report is analogous to the ‘Track Record’ of public transport services published by Public Transport Victoria every quarter.

## **Performance measures**

### *Measure One: Service scale and growth – % annual growth*

Service providers will report total cars (on and off-street) and total members over time.

The City will use the data to understand the growth rates and potential of the services. It will combine the data to understand the scale and member/vehicle ratio of the total service revealing trends and progress towards Targets.

The location of all cars deployed in the City will be reported in a GIS file so that the City can provide the public with an up to date web based map of all sites from all providers.

### *Measure Two: Service scale: Member/vehicle ratio – 20:1*

Service providers will report on the total member/vehicle ratio – the number of members divided by the number of deployed cars. This information will reveal whether the services are overweight in cars or members and whether there are enough vehicles deployed to meet subscriber demand.

The desired score for this criterion is within 15% of 20 members to 1 car. Ratios outside this suggest that vehicle deployment is getting ahead of member recruitment or vice versa.

### *Measure Three: Vehicle support ratio – Between 10 – 20*

Service providers will report on the number of members associated with each car and identify the residential addresses of members on a GIS map. At least five people and no more than 20 should support each car share vehicle.

This information will reveal which car share vehicles are under or over supported.

The City does not want to support a location that is not supported by local residents and businesses. Nor does it want too many people queuing for access to one car. This report will enable cars to be placed in areas where the membership is high and, if necessary, moved from areas that have inadequate support.

### *Measure Four: Where members are ‘too far’ (>200m) from a car*

Service providers will provide a GIS map showing the number and location of members who live more than 200 metres from their nominated ‘home’ car. All service providers will report this data in a common and consistent manner that will indicate where unserved members are without revealing the exact address of those members.

The City wants to ensure that all members have ‘convenient access’ to vehicles - defined as being within 200 metres. The policy does not consider vehicles parked outside the municipality. It is recognised that some residents may be near a vehicle that is parked in the neighbouring municipality.

It is also recognised that in some locations and in some time periods users may need to belong to more than one service provider in order to get the basic level of service.

### *Measure Five: All sites have a car in place – 24/7*

The service providers will report any locations and time periods when they have not provided a car to a space. This will include times that car share vehicles spend in maintenance. Every space provided to the service providers must be provided with a vehicle 90% of each week (including non-booked and booked times). No car share locations should go more than a full day without a vehicle.

This information will ensure that there are no unfilled spaces allocated to car share vehicles. If a service provider does not have a suitable reason for an empty site, the City may choose to reallocate the space to another provider or terminate the allocation of that space to car share services.

### *Measure Six: Avoid underused vehicles (<3 hours/day)*

The service providers will provide a GIS map of the location of all vehicles that do not meet the minimum number of trips per vehicle per site against the time the site has been available.

This information will reveal which cars are under or over used. The City does not want to support a location or vehicle that does not provide a community benefit greater than the individual use of that space. Nor does it want the service growth to be constrained by over use.

The minimum number of trips is 10 trips per month or an average of 3 hours use each day. At this level the use of the vehicle is equivalent to private ownership and no benefit accrues to the community.

Underuse will always occur at a new location. At a well chosen site this initial underuse will be resolved in six months. Persistent underuse can be a sign that a car is in a poor location or that deployment has got out of balance with membership size and usage rates.

Underuse can also be caused by deployment of an inappropriate vehicle, a change in land use or other temporary circumstances such as road works or building construction.

### *Measure Seven: Avoid overused vehicles (>6 hours/day)*

The service providers will provide a GIS report of the location of all vehicles that are being used more than 6 hours a day.

Overuse is a sign that the membership number and usage rate is getting out of balance with availability. An overused vehicle, one that is usually booked out, will not achieve the goal of the policy as it reduces mobility for current subscribers and suppresses the recruitment of new subscribers.

### *Service standards*

The quarterly report criteria would be drawn from a longer list of service standards such as those below in Table 39 below.

**Table 39: Service standards**

SERVICE FACTOR	RATE
Service growth: Users/vehicles	% per quarter
Service penetration	1 vehicle per 500 people
Service coverage	90% of the population within 200m of a vehicle
Catchment	All members within 200m of a vehicle
Service reliability	Every site has two or three vehicles
Service provision	All sites provided have a car
Availability	All cars available 24/7
Business resident ratio	50:50
Activity per car	>3 hours and <6 hours a day
Membership per car	1:20
Support (identification with) particular cars	>10
Off/on street vehicle deployment ratio	30/70
Profile of car share vehicles	Portfolio criteria
Number of service providers	No less than two

## Other considerations

### *C.3 Quarterly deployment & location decisions*

It is recommended that the City and the service providers make deployment and location decisions once every quarter in a regular process linked to the quarterly performance reporting.

A quarterly decision point will allow both sides and all parties to the partnership to establish a systematic and predictable process that will maximise time efficiency and predictability<sup>9</sup> on both sides of the partnership.

For example service providers would know that a site has been approved and can prepare cars to deploy. This avoids the problem of paying for and storing cars that have been prepared ‘on spec’.

In principle, the decision process would be as follows:

- The Council receives the Quarterly Report and identifies the areas it would like to be occupied in the next quarter as well as the locations where performance needs to improve
- All parties review the Quarterly report and other inputs, such as the land use information, and identify sites that they would like to occupy or be occupied
- Service providers apply for locations with supporting evidence
- Service providers report on countermeasures they will adopt for poorly performing sites
- At the agreed date the Council will communicate which sites will be approved and by, auction or other process, determine which service provider will occupy them
- Preparation of the sites
- Deployment of vehicles.

The process would then repeat every three months. It is recommend that an Annual Deployment Plan be developed to support these decisions.

### *C.4 GIS based records and decision making*

The City will hold a comprehensive and centralised digital resource of the car share network provided by the service providers.

A GIS resource will enable the City to make predictions and suggestions relating to land use to the service providers as well as enabling calculations on node spacing in the network to identify which locations potentially have the biggest impact on the availability of the network.

As much as possible the status and deployment proposals should be held on Geographic information systems (GIS). Both the City and the service providers use these systems for record keeping and decision-making and it is appropriate that that deployment is managed in this way.

The GIS data can, through an appropriate channel, inform the general public on the availability of the services.

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*9 Predictability: Late and early availability of locations causes problems for the service providers. When availability is delayed, the service provider is unable to generate revenue and must store and support a vehicle they have prepared and purchased. When the location is prepared and set aside for a car share vehicle earlier than anticipated, and the vehicle is not available, the prepared location – at this stage no longer available for other uses – cannot be filled.*

### *C.5 Consultation, Feedback & Grievance guidelines*

In some cities car share deployment can be a focus for some community questions and concerns. As the car share service network grows, there is likely to be increased interest from the community including questions and complaints.

Strategic expansion of a car share service will be similar to the growth or development of a bus or tram service. Practical opposition can replace in principle support for the service when people find the upgrade will take place outside their house.

Above all it is important to have the community debates at the correct level. A characteristic of the current approach in Australia in general is that the strategic question – why are we doing this – is raised at each proposed location. If however that high level debate has been resolved, then discussion about a particular location can be largely confined to the local circumstances.

Typically people want to know that local people support the car share service and that the vehicles are being adequately used.

It may also be appropriate, perhaps in the Deployment Plan, to include procedures for:

- ‘Neighbourhood alerts’ that the service providers will complete at the appropriate times during deployment
- Community feedback and grievances to be understood and assessed. This process would ensure that feedback and complaints are:
  - Considered at the next quarterly review
  - Answered in a manner consistent with the policy
  - Communicated to Councillors in a way that keeps them informed of the level and nature of concerns expressed by the community

### *C.6 Annual guidelines*

This policy recommends two annual processes.

- An Annual Deployment Plan
- An Annual Report that incorporates:
  - Progress towards the Goal
  - The features and performance of the service as a whole
  - The benefits and costs of the policy

The plan will enable:

- Council staff across the organisation to support the strategic expansion
- The car share service providers to purchase additional vehicles to match the City’s deployment plan
- the community to plan ahead. For example, car share operators may and residents may defer purchasing an additional car based on the City’s deployment plan.

### *C.7 Annual deployment plan*

An Annual Deployment Plan will be required to determine the most logical geographic expansion of the car share service in order to meet Council’s policy goals. In preparing this plan the City would review:

- The coverage and capacity of the current car share network as well as its performance
- Changes in land use and population along with other relevant information such as increases

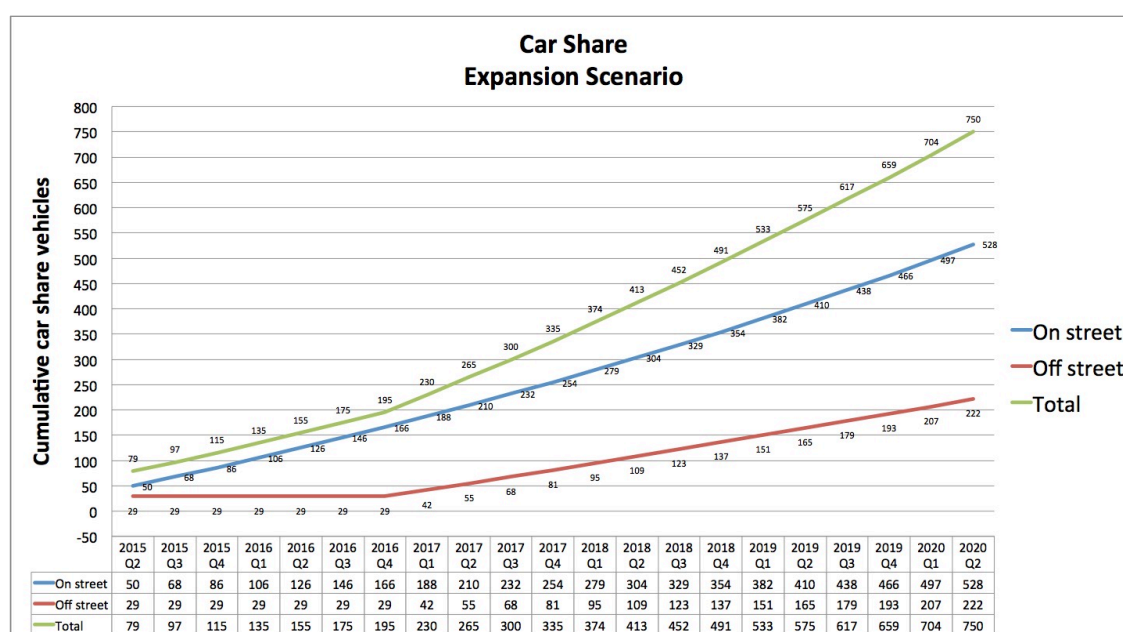
in intensity from new developments and reductions in private vehicle parking capacity

- Comments and feedback from the community.

The annual deployment plan should break down the vehicle deployment process by geography and by priority (timeframes for deployment to occur).

At least 10 new vehicles will need to be deployed on street each month in order to meet the current and draft Policy targets as shown in Figure 42 below.

**Figure 42: Possible deployment scenario for a car share network of 750 vehicles**



Source: PBA analysis

## C.8 Annual report Guidelines

It is recommended that an annual report to be developed. The report will require at least three sections:

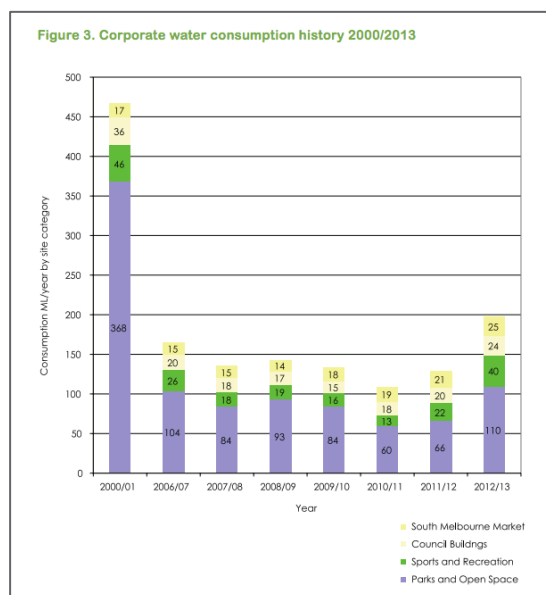
- Progress towards the Goal and Targets
- Review of the service in detail
- Estimate of the Benefits and Costs of the Service

The Annual Report will enable the public – in particular the majority who do not use the service – to see if the service is delivering on the high level goals of the policy. A published report on the benefits and performance of the scheme will show that it is ‘pulling its weight’.

The Annual Report will also ensure that progress is aligned to other policies and initiatives. It will identify ways that this policy can support other aims of Council as well as areas where complementary policies could be developed across the various arms of Council.

This report would be similar to the reports prepared overseas by the service providers themselves (Mobility in Switzerland for example) or for third parties by car share service associations (CarPlus in the UK for example) and would be analogous to the *Toward Zero Report* prepared by the City of Port Phillip as illustrated in Figure 43 below.

**Figure 43: Corporate water use reported in Toward Zero Annual Progress Report**



The recommended outline of such a report can be supplied.

### *C.9 Multiple service providers*

There are obvious disadvantages in too few or too many operators.

A single operator service should be avoided. A single operator may prove a more difficult partner for the City than a couple of operators. A single operator may also have the opportunity to charge a higher price if they hold the monopoly. For these reasons it is not appropriate to follow the 'bus operator zone' paradigm.

Too many operators would also cause problems. The duplicated infrastructure, including cars and staff, would increase the costs of the overall service. Because there is no code sharing, users may find themselves close to car share vehicle but far from one that they can use.

Many operators would also increase the City's communication and coordination challenge. For these reasons it is appropriate to limit the number of service providers.

On this basis the suggested number of providers is 'at least two'. The upper number is hard to recommend as, in the case of the City of Port Phillip, a future operator might be able to place 1,000 cars in one of the precincts of Fishermans Bend. This would provide adequate scale for their business without increasing the complexity of the City's partnerships across the rest of the municipality.

The recommended approach is to performance manage a short list of providers and favour those who deliver the best results in terms of recruitment, resident satisfaction and other measures that support the aims of the strategy.

We have seen above that fees and charges can cripple the service so the ability to pay is not a useful way to rank providers. Service providers do have capabilities that are valuable to the municipality and that set them apart from each other. These include:

- Ability and track record in negotiating spaces in new developments. Service providers that can place cars off-street are valuable partners.

- Size of car share network and operation. A larger service will have more ability to ‘work on the business’. This should result in better recruiting. They will also be more able to carry a diverse portfolio of vehicles. Loss making vehicles can be more easily supported.
- The willingness to carry loss-making vehicles as a way of extending the coverage or availability of the service. The City can subsidise locations (as the City of Moreland does in one instance) in order to reach a population, or provide a particular type of car but a partner that is also prepared to invest in the growth of the service is valuable.

It is recommended that locations be tendered among the short list of participating service providers. Tendering will enable services to build local networks as a space near an already successful location for Company A will be more valuable to them than to Company B. It will also enable the City to be fair and at the same time provide more bays to one service provider than another.

The money raised through tendering can be reinvested in the development of the service by, for example, providing try-before-you-buy hours of access to people considering joining the service or as a reward for people who reduce the number of parking permits they require.

### *C.10 Fees and charges*

This section considers the issues that arise when a municipality seeks to charge car share service users a fee.

It is necessary to base any fee on sound policy.

The current policy uses the frame of an ‘establishment fee’ that recovers costs incurred by Council during the installation of a designated car share bay. However, the car share services are a form of public transport. By comparison, Council does not charge bus, tram or taxi operators for setting aside and marking kerbside space for their exclusive use<sup>10</sup>. Nor is a fee charged for delivery vehicles or users of timed parking for the installation of poles and paint that manage the parking space.

The current policy also frames the fee as a road hierarchy measure ‘in line with the Road User Hierarchy, Council prefers to prioritise non-motorised modes of transport and public transport over motorised vehicles.’ However no other motorised vehicles for public or private use are charged such a fee.

However as the ‘mode manager’ of the service the City of Port Phillip does have a reason to charge a fee to the service just as the State Government charges a fee to the taxi services, which it manages. It is also appropriate for a vehicle that is parked in a restricted zone pay for a parking permit – even if the number of residents that use it is significantly higher than the private vehicle next to it as the payment is based on the vehicle not on the owner.

It is important that any fees or charges that the City of Port Phillip imposes should take account of these factors.

It is therefore recommended that any charges be framed as a mode management fee.

The next question is how much should the management fee be and how often should it be charged?

It could be argued that best practice would be for the Council not charge to manage the service. For example the Council not only manages but underwrites the free Community bus service

<sup>10</sup> It should be noted that amount of space allocated to any other public transport mode (bus, tram or taxi) is more than that required for the car share network (even under the most ambitious growth target).

(users are not charged, nor is the operator). Libraries are provided without charge to the users (unless a user breaks the borrowing rules). Under this paradigm the Council would manage the car share service without charge.

In addition, the use of partial subsidies is quite common best practice around the world with regards to public transport. Mode managers often subsidise modes to ensure that the service can be delivered equitably across a given geographic area. Bus companies often make their profit from a combination of fares and subsidies. This is similar to best practice regarding some other Council facilities such as aquatic centres that are often operated by a private entity, charge users a fee and also receive a subsidy from ratepayers. The subsidies are necessary because without the subsidy the service would not be available.

In all cases where services are provided by a third party, any charges that are applied are passed through to the end users.

It could also be argued that there should be no charge to car share users because the major beneficiaries of the service (in terms of reduced local road congestion and increased parking availability) are actually the wider community. All ratepayers benefit from the reduced level of car ownership and the reduced vehicle kilometres travelled but do not contribute to the network establishment or service operating costs. This logic leads to the Victorian government (being the mode manager for public transport) providing significant subsidy and management time to ensure the broader community benefit from an effective public transport network. The Council could consider management of the car share network equivalent to the state's management of other public transport.

It is important to consider the impact of fees on the users and overall viability of the service. Any additional cost to provide the service will increase the price that users need to be charged, and will reduce the 'attractiveness' of the service.

Fortunately, the car share services do not currently need a subsidy in order to operate. However they are not making significant profits. In fact car share operators in Australia are currently re-investing any profit into network growth. No Australian operator is yet at a scale that allows profit to be distributed to shareholders/owners.

When a business is making a profit it can choose whether to pass on a charge to the customer or cut the profit margin. The car share services do not currently have this option. Therefore any fees and charges will definitely be passed onto the customer through higher prices. Higher prices will reduce the attractiveness of the service, and impact on membership and then network growth. Modelling shows that even a modest charge by Council reduces the available car share network to the community and in some instances would result in a complete withdrawal of service (as the membership is unwilling to pay increased prices).

From an economic point of view this would be a perverse decision. We can see from the model that any charges that reduce the benefits from the service will be equivalent to a loss of community benefits. That is \$10,000 of revenue to the City of Port Phillip from the service will represent a \$22,000 loss to the community.

Another perverse outcome that has been observed in global practice is that some municipalities are cross-subsidising other "sustainable transport initiatives" from fees on car share users. This would only be rational if the "other sustainable transport initiatives" had a higher benefit cost ratio higher than car share services. This practice is at-odds with the high level of benefit that car share networks provide (compared with other sustainable transport initiatives).

World's best practice is to define the circumstances under which a fee can be charged without causing a price increase that results in significantly fewer members and thereby reduced levels of service. World's best practice also seeks to allocate revenue risk appropriately (not arbitrarily) so

that services providers do not need to factor in high levels of risk to their financial models (which would inflate prices).

<p>If the Council decides to continue charging a management fee it is recommended that it be:</p> <ul style="list-style-type: none"><li>• No greater than the actual cost of managing the service or \$350 per annum (whichever is less)</li><li>• Based on a per vehicle payment</li><li>• Only applied to newly deployed vehicles once the vehicle is used enough to provide a sustainable financial return</li><li>• Waived in the instances where vehicles are provided to ensure equity of access to services (such as in low income areas)</li><li>• Charged annually in advance (rather than a larger fee at a greater interval) and set for a defined period that reflects the financial return on investment (public transport franchises are efficient when awarded for a 7 year period with a 5 year optional extension)</li></ul>
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It is also recommended that Council explore a mechanism that allows the service providers to pay more than the fee in specific circumstances, particularly when there is high demand for a specific space.

If a car share service provider removes one or more cars from their network it could be appropriate to offer the space to other providers. World's best practice is for a form of tender to allocate spaces in a competitive and transparent manner. All parking spaces would be valued differently based on their location and the various service providers' assessment of their worth. The problem of fees being too-high or too low is resolved by the tender as no provider will pay more than it is worth, and they will compete to get access to spaces they can make a financial return from. In addition, problems related to fair-dealing and transparency are thus resolved by the open and competitive tender process.

This mechanism will also be necessary if the number of providers increases or the bays that are made available through strategic expansion are desired by multiple operators. This method was followed in principle by the City of Sydney for many years although in practice there was usually only one bidder.