TOWN OF VINCENT

Town of Vincent

Car Parking Strategy

Adopted at Council Meeting held on
9 March 2010

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Summary

The Town of Vincent ('the Town' or 'Vincent') prepared a Car Parking Strategy in 2002 ('2002 Strategy'). Vincent requires that the Strategy is reviewed and updated. The 2002 Strategy addressed the existing car parking supply and demand and investigated those factors relating to future demand and management of car parking areas within the Town. The 2008 Car Parking Strategy Review ('2008 Review') is to be used as a reference document and covers the entire Town including areas affected by recent boundary changes. Surveys of supply and demand which were last undertaken in 2002 are not part of the scope of this review.

The 2002 Strategy is a comprehensive, well researched report. With few exceptions, its conclusions and findings are still valid and relevant. It made 33 recommendations for implementation between 2002 and 2012. Many of these were prioritised to be completed by 2008, but this has not occurred. Twenty-one are still to be actioned.

This 2008 Review examines several important parking issues such as the cost of providing parking, minimum parking ratios, and the necessity for a fundamental change in the Town's policy towards parking supply. It also recognises parking as an essential element of an overall integrated transport strategy for the Town and the metropolitan area. All stakeholders need to be made more aware of these sustainability and equity issues and therefore ongoing education is very important.

The approach to parking in Vincent has been to 'predict and provide'. This approach assumes that the use of parking resources should generally be free and that increasing supply is more cost-effective than reducing demand. This current demand satisfaction policy is unsustainable. A paradigm change in approach is necessary.

While Vincent has implemented some pay parking, in many respects this has not been well considered. The principle of user pay is examined. We have made recommendations to expand pay parking and introduce flexible pricing variations between different areas. This is to be accompanied by improved technologies to make payment more convenient, to increase the efficiency of enforcement and to improve the way finding to parking facilities in the Town. These will all contribute to more effective use of the existing supply of parking, before incurring the expense of providing additional capacity.

The cash in lieu system provides developers with a substantial subsidy. It is inequitable, inflexible and impractical and consequently the anticipated funds for building new parking will not be generated. Implementation of more market related regulations for assessing cash in lieu and the more flexible utilisation of the funds derived therefrom, will assist Vincent to improve transport infrastructure.

Potential locations for deck parking have been identified together with a financial model for their construction. We have recommended the implementation of a Parking Control and Management Plan which puts the onus on developers to consider the external influences and their proposed method of controlling and managing their parking.

By implementing the outstanding recommendations from the 2002 Strategy and those recommended in this 2008 Review, Vincent can ensure sufficient parking in the long term to support prosperous and vibrant commercial and high activity centres and encourage accessibility to these centres by all travel modes including walking, cycling and public transport. Better managed parking will have a positive quadruple bottom line impact.

If no action is taken to better manage parking resources, drivers and other stakeholders will continue to expect that they have a right to unlimited free parking and consequently, more and more parking will be demanded by the Town and developers. This cannot be sustained.

Any parking strategy will only be as successful as its implementation. Noting the changing nature of both parking policy and local conditions in Vincent, a key finding of this Review is that the opportunities and recommendations identified in the 2002 Strategy have not been sufficiently actioned. Additionally, progress toward implementation does not appear to have been effectively monitored and recorded. It is necessary for Council to ensure the appropriate level of commitment is provided to the recommendations in both the 2002 Strategy and this 2008 Review.

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PART A

1 Introduction

The Town of Vincent ('the Town' or 'Vincent') prepared a Car Parking Strategy in 2002. Vincent requires that the Strategy is reviewed and updated. The 2002 Strategy addressed the existing car parking supply and demand and investigated those factors relating to future demand and management of car parking areas within the Town for periods of five and ten years.

The 2008 Car Parking Review is to be used as a reference document for Vincent's employees to assist in making informed decisions in regard to car parking and transport issues and strategies.

The objectives of the Review are:

- To examine and review the existing and future car parking supply and demand and to determine whether existing and future car parking supply and demand satisfies the objectives and requirements of the Town of Vincent Town Planning Scheme No.1 and Policies.
- To review the provisions of the Town of Vincent Town Planning Scheme No.1 and Policies relating to car parking in light of the findings of the study and recommend any changes.
- To identify alternative transport initiatives and make recommendations on the feasibility of these within the Town of Vincent in relation to the existing and future needs of the community.

This updated 2008 Review covers the entire Town including areas affected by recent boundary changes, and is to serve Vincent for a five year period until 2013 when it is to be reviewed again. Surveys of supply and demand were last undertaken in 2002. Updating these was recommended in 2002 but is not part of the scope of this Review which has been undertaken based on the 2002 survey data.

2 Background

On 1 July 1994, the restructure of the City of Perth created three new local governments: the Towns of Vincent, Cambridge and Shepparton (now Victoria Park), plus a smaller City of Perth. The Town of Vincent includes the suburbs of North Perth, Leederville, Highgate, Mount Hawthorn, and parts of East Perth, West Perth, Perth City, Mount Lawley and Coolbinia.

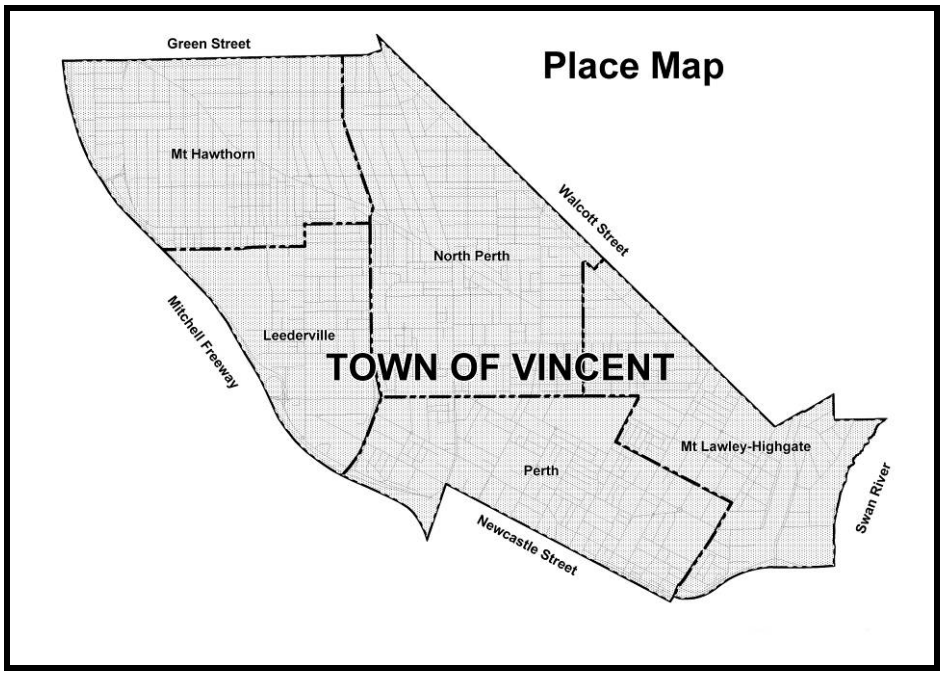


Figure 1: Town of Vincent – ward boundary map

From 1 July 2007 Vincent's boundaries were realigned to include a part of Glendalough east of the Mitchell Freeway and parts of the City of Perth north of the Graham Farmer Freeway. This realignment incorporated certain main streets into the Town including Newcastle Street, William Street and Scarborough Beach Road.

It is anticipated that populations of inner urban areas such as those suburbs within the Town will continue to grow for at least another five years and at this stage, projections beyond 2016 also indicate growth. The demographic trend towards smaller household sizes is expected to continue increasing in the future. This will impact upon future dwelling design, size and densities, which is particularly relevant in the Town where greater dwelling density and diversity is typical.

The Town's demographic profile clearly indicates a growing proportion of 'older' age groups; however, the predominant group (40%) would be classified as couples or singles aged 25 - 44 years, without children (45%). Further census analysis has revealed that while the population is ageing, the Town's existing aged population (65 years and over) is actually declining.

The Department for Planning and Infrastructure's report entitled *Future Perth*[1] projects that the population of the Perth metropolitan region will increase from 1.3 million in 1996 to 2.1 million by 2031. This represents an increase of 800,000 over the period, or an average annual growth rate of 1.4%. However, the subsequent *Wa2moro Report*[2] takes cognisance of the 2007 boundary change. The report estimates that the current population of 30,500 will grow by 6% by 2011 and by a further 4% by 2016 to 33,600.

1 www.dpi.wa.gov.au
2 www.wapc.wa.gov.au/Publications

These projections of an additional 390 persons per year will have a significant impact on parking policy and management within the Town and this will need to be addressed in any review of the Town Planning Scheme.

A growing population usually means an increase in cars. Despite recent increases in fuel prices the private car will remain the dominant mode of travel in Perth. This can be seen from the following data from the Bureau of Statistics[3]:

Registered motor vehicles in WA:

- 2003 1,438,000
- 2007 1,676,000

This represents an increase of 17% over 4 years, an additional 59,500 motor vehicles per year in WA, of which 78% are passenger vehicles. As Vincent's population is approximately 1.25% of the state's population, this broadly represents an additional 580 cars a year. Even if this figure is conservatively halved to reflect Vincent's lower than average rate of vehicle ownership per capita, it still means an increase of 290 cars a year requiring not just one space, but parking at work, at home, at shops, schools, leisure centres, events, and movies.

This study considers the way that parking is provided, both publicly and privately in the Town, and identifies parking strategies which contribute to, rather than undermine, economic, social, and environmental objectives.

3 Literature Summary

3.1 Strategic Plan 2006-2011

The popularity of the Town of Vincent has resulted in a need to balance the growing demand for new development and infill associated with the increasing popularity of inner city living, with the focus on environmental and sustainability issues expected by the community. This has led to the development of a Strategic Plan for the area. It provides a clear focus on the direction that the Town of Vincent should be taking in the future. The Plan has the following strategic objectives:

- improve and maintain the natural and built environment and infrastructure
- progress economic development with adequate financial resources
- enhance community development and wellbeing
- ensure good strategic decision making, governance, leadership and professional management, supported by a positive and desirable workplace with technology for business improvement.

In relation to parking, measures to carry out these objectives include installation of ticket machines, improved parking facilities, reduced complaints and increased revenue, all to be completed between 2006 and 2011.

In addition, the Town of Vincent is to implement transport development and management improvements with a budget of >$100,000 per annum. Improved safety and amenity as well as promotion of alternative means of transport are to be achieved by 2011.

[3] Australia Bureau of Statistics, 9309.0 - Motor Vehicle Census, Australia, 31 Mar 2007.

3.2 Leederville Masterplan

The Leederville Masterplan has been developed to create a blueprint for the future development of the Leederville business area focussing on the environmental, economic and social needs of the community. It encompasses the area bounded by Richmond Street, Oxford Street, Leederville Parade and Loftus Street.

It is significant that the Masterplan states that 'in order to address complaints received about the lack of parking', it is proposed to construct the following car parks:

- a multi-level car park on The Avenue car park site for 360 car bays (an increase of 70 bays)
- a multi-level car park on the Frame Court Car Park site for 375 car bays (an increase of 165 bays).

There is no comment on whether the complaints could not be dealt with by methods other than the creation of more parking capacity. A broad estimate of the construction cost of these two proposed car parks is $18 million. This is effectively for an increase of only an additional 235 parking bays (refer Section 4.2 and Appendix B, page 74). The on-street capacity on Oxford Street will also be reviewed as part of the final plan.

All new developments will be required to provide sufficient on-site parking on their own land, with the Town of Vincent retaining ownership, control and management of all public car parking and car parks.

Furthermore, the delivery or facilitation of appropriate provision of universal access, parking, and other facilities for pedestrians, cyclists and motorists, whilst promoting patronage of nearby public transport facilities, is listed as an environmental sustainability objective.

3.3 Vincent Vision 2024

This document has been prepared to establish a long range community vision for a new Town Planning Scheme and to guide the strategic direction of the Town of Vincent into the future. This has been carried out for five place-based areas:

- Leederville, West Perth
- Mount Hawthorn
- Perth
- North Perth
- Mount Lawley, Highgate

Of relevance to this project are the key transport outcomes on page 19:

- Significant differences exist in vehicle ownership in Vincent compared to the metropolitan area:
  - significantly more households in Vincent have no motor vehicle
  - Vincent households have far fewer vehicles than the metropolitan area.
- Use of public transport to travel to work is almost double for Vincent.
- Far more people in Vincent also walk or cycle to work compared to the metropolitan area.
- Less people in Vincent drive a car to work compared to the metropolitan area.

Accessibility and mobility are key themes which emerged from the community visioning workshop, in particular easy access to a diverse range of facilities, amenities and activities such as shopping, cafes, restaurants, businesses, cinemas, public transport, parks and the city. Being able to walk to most things for people without cars or unable to drive was also valued.

Increasing traffic and car use was identified at the community visioning workshop as a significant trend linked to increasing densities and increasing traffic to the City of Perth through Vincent.

Plenty of parking and adequate parking have been identified as positive observations in the majority of the place-based workshops, and conversely parking deficiencies were identified as a negative observation. Improving car parking was determined to be a vision idea for the future in most of these workshops, along with reducing car dominance, developing/improving public transport and town linkages and creating a pedestrian and cycle friendly environment.

A business survey and forum carried out as a part of the *Vincent Vision 2024*[4] project has shown that businesses are seeking more parking. They would also like parking to be free, well signed, well lit and have an increased security presence.

3.4 Town Planning Scheme No 1

The Town of Vincent prepared this Scheme in order to control and guide development and growth in a responsible manner which can initiate, accommodate and respond to change. It provides guidance on land use, development requirements, planning approvals and enforcement as well as other miscellaneous areas.

Of relevance to this study is the importance of a wide range of choices in transport and access opportunities, as set out in Objective 3a on page 1:

> '(3) The general objectives of this Scheme are -
>
> (a) to cater for the diversity of demands, interests and lifestyles by facilitating and encouraging the provision of a wide range of choices in housing, business, employment, education, leisure, transport and access opportunities;'

It is also noted in the Zone Table on page 8 of this document that car parks are not permitted in the residential zone, and not permitted, unless Council has exercised its discretion by granting planning approval, in residential/commercial, local centre, district centre and commercial zones.

Applications for planning approvals need to be accompanied by a plan showing the location, number, dimension and layout of all car parking spaces intended to be provided. There is no requirement for the application to set out how the car parking spaces will be used or managed.

3.5 Town of Vincent Car Parking Strategy 2002

This is reviewed in detail in Part C Section 5.

3.6 Planning Policy

This is reviewed in detail in Part D Section 9.

4 www.vincentvision2024.com.au/home

PART B

Prior to review of any parking strategy it is essential to consider some important issues in relation to the nature of parking management in a modern urban environment. This section first considers some fundamentals in relation to the ongoing supply and demand for parking. These will form the underlying basis of several recommendations in this review.

4 Fundamental Parking Issues

4.1 Integrated Transport Strategy

Initially, it is important to acknowledge that a parking strategy is only one part of an Integrated Transport Strategy which should also incorporate:

- a road safety strategy
- a green travel plan
- a pedestrian strategy
- a bicycle strategy
- local area traffic management plans
- specific precinct parking management plans.

Several of these are already in place in Vincent.

There is no doubt that the volume of cars within and entering Vincent on a weekly basis is growing. As cars are usually parked more than 22 hours per day, parking is an essential component of the infrastructure required to support private vehicle travel.

Owners of private vehicles are expected to cover the costs associated with owning and operating a car and constructing and maintaining road infrastructure. However, in most instances the costs associated with vehicle storage, i.e. parking, are not usually charged directly to users.

Recommendation – Vincent's parking strategy is to be identified with and coordinated as part of an integrated transport strategy for the Town and the wider metropolitan area.

4.2 Cost of Parking

It is also important to understand some of the costs associated with the provision of parking.

Each on-street kerbside parking space requires 15.6 m² of land and encroaches 2.4 m into the roadway, effectively reducing the roadway by one lane. Off-street parking at-grade, generally requires 28 – 35 m² per space which includes an allowance for aisles and vehicle access. The current cost of constructing above ground deck parking is at least $24,000 per space, plus the cost of land[5]. The cost of below ground parking is even higher at >$33,000 per space.

With the price of commercial land varying from >$2,000 per m² in Oxford Street, Leederville to $3,647 per m² in Beaufort Street, Mount Lawley, (according to recent land sales), the cost of each off-street at-grade space is at least $56,000 plus the cost of construction, an additional $3,600. Thus the provision of every 20 off-street parking spaces represents a current cost of $1.2 million.

[5] Refer to Appendix B.

The opportunity cost of this off-street parking is significant. If the land were sold for other uses, Vincent would benefit from the income generated by the sale. The interest that would be earned on this potential income represents a lost opportunity for the Town.

The land value of the 51 spaces off-street at the Barlee Street car park is annually estimated to be at least $5 million.

Additionally there are costs associated with maintenance and the provision of lighting, security and enforcement. Thus the provision of parking is certainly not inexpensive.

Recommendation - All stakeholders in the Town including ratepayers, property owners, developers, community representatives, business groups and in fact everyone who drives a car, need to become aware of the true commercial capital and ongoing costs of parking resources, in addition to their environmental and social burden.

4.3 Free Parking

The majority of public on and off-street parking in Vincent is non fee paying. It is fundamental to recognise that there is no such thing as free parking. Ratepayers fund on-street parking, a large portion of which is used by non-ratepayers. Vincent ratepayers are not only paying for the cost of cleaning, insurance and maintenance of these spaces, they are subsidising parking on valuable land that could be generating income or could be put to other uses, e.g. the Brisbane Street car park.

Many councils in Australia provide free public parking both on-street and off-street. Paying for public provision and management of parking from general rates is regressive and disproportionately impacts those on low and fixed incomes, such as students and the elderly and those ratepayers who elect to use alternative forms of transport and do not normally drive cars.

Parking is never free; the costs are simply subsumed elsewhere in the economy. Reserving vast quantities of land for parking directly impacts the affordability of property and goods and services. For example, the cost of providing parking for residential dwellings can add 10-30% to the total costs of development. In many medium to high density residential developments the costs associated with providing parking facilities can exceed the capital value of the land[6]. The true cost of parking is hidden in higher development costs, and consequently higher rents and prices to consumers.

The cost of private parking is also not directly paid by drivers due to planning regulations which require new developments to construct off-street parking. These regulations are referred to as minimum parking requirements. The cost of providing private off-street parking is thus bundled into total development costs and paid for by everyone (owners, lessees and visitors), regardless of how much parking they use.

With the benefit of studies overseas, it is apparent that the unintended negative consequences of minimum parking requirements outweigh their benefits in urban areas. These detrimental impacts have, to large extent, been self-reinforcing and created a cycle of motor vehicle dependence.[7] This cycle occurs as a result of the following processes:

- Increased vehicle use creates additional demand for parking.
- This increased demand is then reflected in increased minimum parking requirements.
- These increased parking requirements then result in reduced urban density.
- Reduced urban density then stimulates increased vehicle use, repeating the cycle.

6 Shoup, D.C. (2005). The high cost of free parking. Chicago: Planners Press, American Planning Association.

7 Litman, T. (2006). Parking management best practices. Chicago, III, American Planning Association.

The net effect of subsidised and bundled parking is reduced urban density, increased sprawl, high rates of vehicle ownership and use, more expensive goods and services, as well as increased congestion, air pollution, and noise. In short, current parking management practices contribute towards a host of expensive and undesirable consequences.

4.4 Minimum Parking Requirements

Minimum parking ratios require that new developments provide a certain number of parking spaces. This has been the approach taken in the Leederville Masterplan. In Vincent these minimum parking requirements are determined in a Land Use Parking Requirement Table[8] which is related to the size and nature of the development, where size is generally measured in terms of gross floor area.

To a large extent, minimum parking requirements are a historical by-product of plentiful and inexpensive land and a lack of convenient payment technologies. The requirements were seen as a means for shifting responsibility for catering for parking demand onto private developers, thereby ensuring the safe and efficient operation of the local road network.[9]

The methodology underlying minimum parking requirements is considered to lack accuracy and efficiency in the following ways:

- Uses conservative design standards: Minimum parking requirements are typically designed so as to cater for most peak demands. This considers developments independently of the surrounding urban environment and ignores the potential to share parking resources between adjacent developments, leading to an oversupply of under-utilised parking.

- Results in fragmented parking supplies: Because of the requirement for individual developments to cater for their parking demands, urban areas are increasingly dominated by fragmented parking areas (e.g. the businesses on Newcastle Street west between Loftus and Oxford Streets).

- Ignores value: Minimum parking requirements are ignorant of value and give no consideration to the marginal benefits and costs provided by additional parking spaces. The costs of meeting minimum parking requirements tend to increase in district centres and growth corridors where land values are higher (Mount Lawley), thereby preventing intensification and redevelopment. This works against regional, and local strategies designed to intensify development.

- Is unresponsive to demand management: There are numerous examples of cost-effective parking management measures that do not require increasing the supply of parking. Examples include shower and locker facilities for employees who walk or cycle, unbundling employee parking from salary packages, providing free passenger transport passes for employees, and developing workplace travel plans. Minimum parking requirements fail to account for demand management strategies and therefore provide no incentive for consideration of alternative transport modes.

For all of these reasons, minimum parking requirements are considered to be inaccurate and inefficient. The contradiction between minimum parking requirements and strategic objectives associated with economic development, resource management, transport, and land use is discussed in more detail in Section 9.2. It is also significant that the costs associated with minimum parking requirements have become disproportionately high in relation to their benefits.

[8] Town of Vincent Planning and Building Policy Manual - Parking and Access Policy No 3.7.1 (26/10/2004) at pages 4-6.
[9] Strategic Parking Report for Waitakere City Council - McCormick Rankin Cagney - Feb. 2008.

4.5 Changing Approach to Parking

The traditional approach to parking has been that motorists should nearly always be able to easily find convenient, free parking at every destination. This demand satisfaction attitude was prevalent in the community workshops undertaken in formulating the Vincent Vision 2024. (Refer to Section 3.3).

Under this **predict and provide** approach[10], parking planning is based on the premise that 'parking problem' means 'inadequate supply' and consequently:

- more parking is better
- every destination should satisfy its own parking need (minimum ratios)
- car parks should never fill
- parking should always be free or subsidised or incorporated into building costs.

However, in the last ten years there has been an increasing trend towards more efficient use of existing transport infrastructure as an alternative to expanding roads and parking facilities incorporated in a technique known as travel demand management (TDM). TDM emphasises the movement of people and goods, rather than motor vehicles, and gives priority to more efficient travel and communication modes (such as walking, cycling, car sharing, public transport and telecommuting), particularly under congested conditions. Environmental concerns and rising fuel costs are other factors prompting a reduction in the reliance on private motor vehicles.

This change in approach to the strategic management of parking has been termed a paradigm shift (a fundamental change) and it has developed and is being increasingly applied in urban areas where sustainability is a major objective.

Under this new demand management approach as distinct from a demand satisfaction approach, parking facilities should be used efficiently. This means that car parks at a particular destination may often fill (typically more than once a week), provided that alternative options are available nearby, and drivers have information on these options. It does not mean that car parks should have sufficient capacity to cater to once a week peak demand. It requires that motorists have a choice between paid parking nearby, or free parking a few blocks away. It also requires a high standard of walking conditions between parking facilities and the destinations they may serve. Parking planning should therefore include shared parking, parking pricing and regulations, parking user information, and pedestrian improvements.

The consequences of adopting this new approach are that:

- too much capacity is as harmful as too little (Barlee Street)
- existing parking needs to be used more efficiently (The Avenue car park)
- full car parks are acceptable if additional parking or public transport are available nearby (Frame Court)
- shared parking facilities are desirable between different destinations and generators (Mount Lawley)
- limits should be based on the environmental and other capacity of each centre to accommodate parking, not on their capacity to accommodate development
- drivers should be charged directly for parking – the principle of user pay.

[10] The concept has been clearly articulated by Litman, T (2006) Parking Management Strategies Evaluation and Planning – Victoria Transport Policy Institute.

The challenge for Vincent is to find a balance between adequate parking supply to ensure the vitality of the businesses and district centres in the Town and the environmental, social and economic necessity towards more efficient use of transportation infrastructure and travel demand management techniques.

Parking management policies under this new approach will be effective in reducing the trend of motor vehicle use and ownership and help to share the cost of parking infrastructure equitably. This will provide all users (including the elderly, people with a disability, employees, shoppers, children, students, traders, residents and visitors) with safe and appropriate access to parking in the Town, whilst enabling adequate road access for pedestrians, cyclists, emergency vehicles, buses and street maintenance and delivery vehicles.

It is recommended that a strategic vision for parking be set out according to the following broad timetable:

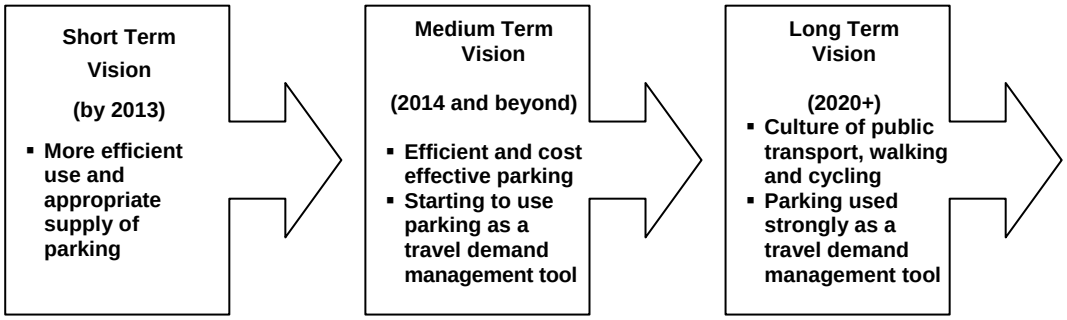


Figure 2: Strategic vision

4.6 Options for Providing Parking

The options for providing parking were not covered by the 2002 Strategy. This section deals with a method of allocating parking and thereby making more effective use of parking supply.

4.6.1 Background

In order to support the Town's basic strategic approach to increasing the density of its high activity centres and to enable developments to provide less parking on site, Vincent will need to ensure the adequate provision of parking for all types of different vehicle user. This supply role requires the Town to develop a balanced and equitable distribution of parking facilities to support a competitive business community.

These objectives can be achieved in the short term (1 - 3 years) by the implementation of pay parking and the more effective control of the supply of existing parking, and in the medium term (4 - 8 years) by more efficient and cost-effective parking and the use of parking as a travel demand management tool. In the long term, with the expanded availability of public transport, there will be a decrease in parking demand per resident and per employee in line with an increasing culture of walking, cycling and the use of public transport. The projected increase in residents and employees will require more parking spaces, but this will be tempered by the availability and usage of other modes of transport especially public transport.

To achieve these goals, **it is recommended that Vincent applies a parking user hierarchy and in the short term optimises and maximises the current supply of parking**. These issues are examined in Sections 4.6.2 to 4.8..

4.6.2 Parking User Groups[11]

It is necessary to identify various parking user groups and develop a hierarchy to assist in assessing and allocating parking resources. The hierarchy assumes that there are no other competing interests for the kerb-side or off-street parking space e.g. footpath trading or eating. The following parking user groups are defined in no particular order and then listed in Table 1 which prioritises the different hierarchies for different areas:

Road safety and other conditions

Parking restrictions required for road safety reasons, pedestrian crossings, emergency purposes and Town services (e.g. roadworks, street sweeping, rubbish collection) take precedence over all other uses.

Public transport

Parking restrictions are to be applied to indicate a bus stop or taxi zone.

Loading

Vehicles used in the delivery of goods and services require space near to their pick-up or delivery point, often for only a short time. When this is not provided off-street, a section of kerb can be set aside for these loading and unloading activities. Parking restrictions can include a loading zone, or allow other kerbside uses along with the provision of loading zones at certain times of the day only. Proper enforcement is necessary to prevent loading zones from becoming private parking for owners or staff of commercial premises.

Service vehicles are vital to the operation of a district centre as a shopping, business, entertainment and civic centre. Service vehicles are defined as trucks, delivery vehicles, couriers, waste collection vehicles, tour coaches and similar vehicles. They should have a high priority for allocation of limited on-street parking spaces. However, planning requirements should consider whether, in relation to larger developments, provision should be made for service vehicles within the development itself. Loading zones should not be provided unless off-street loading facilities are not available.

Access for service vehicles is best protected by the installation of low fee parking meters in loading zones.

They should cater for the needs of legitimate goods carrying vehicles only. These vehicles are usually permitted to stand in a loading zone for 30 minutes while engaged in picking up or setting down goods. Private use motor vehicles should not be entitled to park in loading zones during business hours, but signage should permit short-medium stay parking after hours.

ACROD permit holders

ACROD parking - or accessible parking - is a scheme whereby special parking spaces and other parking privileges are provided to people with disabilities. Permits can be used for standard parking spaces and metered spaces for longer than stated times and for time restricted zones, e.g. P30 for longer than stated times as set out in local bylaws.

Drop-off / pick-up

Where required, short term parking for drop-off / pick-up (e.g. 5 to 15 minute) parking in the vicinity of schools.

[11] Angela Moore of Glenorchy City Tasmania, has succinctly detailed this in the Draft Commercial Precincts Car Parking Plan (Glenorchy City 2007).

Short to medium stay

Short to medium-stay parking for business and retail needs. Generally short-stay parking (up to 2 hours) is provided for shopping areas and medical and professional suites. Medium-term parking (between 2 and 4 hours) is provided for district centre parking, sports facilities, entertainment centres, hotels and motels.

Long stay / commuter

Long-stay parking (4 - 24 hours) is provided to cater for tenants, employees and other drivers.

Park and ride

Parking provided to cater for people transferring to another mode of transport to complete their journey (e.g. catching a bus or train).

Residents

Parking for residents and their visitors. Most residential properties in Vincent have access to at least one off-street car parking space.

Cyclists

Parking for cyclists falls into two broad categories:

- all-day parking for employees and park-and-ride parking at public transport stations
- short term parking for visitors to shopping centres, offices and other institutions.

Motorcycle and scooter parking

Motorcycle parking, which includes scooters, is generally treated no differently to that of cars in this parking study. If vehicles are to be charged for parking, this should apply equally to motorcycles; however, the preference for these vehicles can be indicated by not charging them for parking.

The increasing popularity of scooters should be acknowledged by Vincent with the provision of scooter parking facilities.

It is recommended that Vincent undertakes a program to encourage free parking for scooters in appropriate locations at all the high activity centres. These parking spaces should be well signed and promoted in all council communications.

There are no applicable Australian standards relating to the number of motorcycle spaces that should be provided on or off-street related to the number of car parking spaces. As car parking spaces can be easily divided into two motorcycle spaces, there is flexibility to convert spaces depending on demand.

In recent years, an increasing number of zoning regulations have contained provisions for bicycle and motorcycle parking. These provisions have been handled in some jurisdictions by relating bicycle and motorcycle bays to the number of motorcar parking spaces required. For motorcycles, the number of bays required may be set at 2% of the car spaces but not to exceed 10 motorcycle bays in any one parking facility. Provision of motorcycle bays generally is not required in car parks containing less than 50 spaces[12].

[12] Parking, Robert A Weant & Herbert S Levinson, Eno Transportation Foundation 1990.

4.7 Parking Hierarchy

Saturation of parking infrastructure occurs when demand for parking spaces matches or exceeds supply and different user groups are competing for the same parking space. A parking hierarchy acknowledges that in certain streets, a distinction of priorities needs to be made between user categories.

The objectives of the parking hierarchy are to:

- uphold the safety and convenience of all road users
- encourage the use of alternative transport modes such as bus, train, walking and cycling
- promote equitable and transparent allocation of parking spaces across all user groups
- facilitate consistent decision making regarding parking infrastructure.

In the high activity and district centres of Vincent there are a number of parking zones, providing different parking functions.

Table 1 shows a parking user desirable hierarchy for each parking zone and Table 2 shows the proposed parking zone for each of the user groups.

This hierarchy is desirable to support growth and intensification goals. It may need to be amended to fit in with specific locations for example where commuter and short term parking is required in the day but not at other times (e.g. Frame Court).

Off-street residential parking is considered to be appropriate in private driveways, garages and designated parking areas, and in parking areas which are not specifically designated in council car parks; however, residents will not be prevented from using these.

It is noted that the off-street public car parking is considered to include council owned or managed parking available for use by the general public (rather than private driveways or small privately owned and managed parking areas).

Table 1: Proposed parking user hierarchy for each high activity centre

Priority	Inner core		Outer core	
	On-street	**Off-street**	**On-street**	**Off-street**
Highest	Road safety	Road safety	Road safety	Road safety
	Public transport	ACROD permit	Public transport	Long stay
	Loading	Short to medium stay	Residents	Short to medium stay
	Drop-off / Pick-up	Drop-off / Pick-up	Short to medium stay	ACROD permit
	Short to medium stay	Loading	Long stay	Drop-off / Pick-up
	Residents	Cyclists	Loading	Park-and-ride
	ACROD permit	Long stay	ACROD permit	
Lowest	Long stay		Drop-off / Pick-up	

Priority	Inner core		Outer core	
	On-street	Off-street	On-street	Off-street
Not allowed in this zone	Park-and-ride	Park-and-ride	Cyclists	Public transport
	Cyclists	Residents		Loading
				Residents

Table 2: Proposed parking zone hierarchy for each user group

	Inner core		Outer core	
	On-street	Off-street	On-street	Off-street
Road safety	1 Same priority across all parking locations			
Public transport	1	3	2	4
Loading	1	3	2	4
ACROD permit holders	X	1	X	2
Drop-off / Pick-up	1	2	3	4
Short to medium stay	2	1	3	4
Long stay	4	3	2	1
Park-and-ride	X	X	X	1
Residents	First priority is in driveway, otherwise on street			
Cyclists	2 (on footpath)	1	4 (on footpath)	3

It is recommended that this parking user hierarchy is applied to planning decisions. For example where a request is received from a member of the public for the provision of more drop-off / pick-up locations in their street, opportunities for additional drop-off / pick-up zones are to be explored according to Tables 1 and 2.

4.8 Parking Strategy Objectives

The core of this Review of Vincent's strategy for parking is based on the conclusions reached after examination of the seven issues considered in Sections 4.1 to 4.7. In summary:

- parking is an essential element of an integrated transport strategy
- parking has a cost
- there is no such thing as free parking
- minimum parking ratios currently used are inaccurate and out of date

- the approach to parking planning and management requires a paradigm shift from a demand satisfaction to a demand management approach
- different parking user groups must be recognised
- a parking user hierarchy is to be applied, in different areas.

Consequently it recommended that the following objectives are adopted for the parking strategy for Vincent. The strategy should:

- **Ensure sufficient parking supply to support prosperous and vibrant commercial and high activity centres.**
- **Provide enforcement resources to ensure safety, adequate turnover of parking spaces to support business activity in the areas and to protect residential amenity.**
- **Ensure parking space availability is managed according to the varying needs of businesses, customers and commuters.**
- **Promote 'shared' or publicly available parking in preference to single user parking.**
- **Apply CPTED (crime prevention through environmental design) principles in the design of off-street parking facilities.**
- **Determine an appropriate amount per space for cash in lieu and allow flexibility in how the resulting funds are best spent.**
- **Accommodate parking for all vehicles including motorcycles and bicycles.**
- **Support accessibility to the various high activity centres by recognising all travel modes including walking, cycling and public transport.**
- **Review the strategy for future needs.**

PART C

5 Review of the Town of Vincent's 2002 Car Parking Strategy

Investigations undertaken for the 2002 Strategy were thorough and the report provides a comprehensive analysis of most of the various issues associated with parking in the Town. It interpreted the data from detailed inventories of supply together with extensive surveys of demand and peak usage times.

The 2002 Strategy identified a number of key issues and categorised them into various groups which are discussed below. These are:

- Part Two - Existing car parking supply and demands
- Parts Three and Five - Future car parking demands and facilities
- Part Six - Car parking restrictions
- Part Nine - Alternative transport modes
- Part Eleven - Parking and Access Policy Review.

As the conclusions and recommendations in the other Parts of the 2002 Strategy are strongly supported and still relevant, they have not been further discussed. These are:

- Part Four - Existing car parking facilities
- Part Seven - Public Car Park Feasibility Study BSD Consultants
- Part Eight - Oxford Centre Study Taylor Burrel Planning Consultants
- Part Ten - Car parking generating uses.

The 2002 Report generated 33 recommendations and prioritised the actions to implement them into timetables of high (1 year), medium (5 years) and ongoing (5+ years). It also estimated the cost associated with each recommended action and allocated responsibility for implementation to a division within Vincent, or to an external authority. They are summarised in a table[13]. The majority of these recommendations are still valid and have been carried over.

In the short time available to undertake investigations for this review we have been unable to clarify which of the high and medium priority actions to implement the recommendations have been undertaken.

We repeat this summary of recommendations together with comments on their current relevance in this review at Section 1, page 57.

In the following sections we review the conclusions and recommendations in six of the ten Parts of the 2002 Car Parking Strategy.

[13] 2002 Car Parking Strategy - Part 13 pages 82-87.

5.1 2002 Strategy – Part Two, Existing Supply and Demand

According to the 2002 Strategy, on-street and off-street parking was surveyed during their peak usage times to determine whether the existing parking areas were adequate for the Town's requirements. It is valuable to repeat the following statement from the 2002 Strategy[14]:

> 'The district centres, main commercial areas, and their surrounding areas have been divided into six sectors for the purpose of surveying the existing car parking supply and demands. Each sector has different peak periods for car park utilisation, and to ensure that the most relevant information was collated, these areas were surveyed during their peak periods. These peak periods were identified by the Law and Order Services Section of the Town.
>
> An inventory of the existing parking facilities was prepared to establish the parking supply within each of the sectors. The inventories identified the following:
>
> - existing on-street parking and time restrictions;
> - existing off-street parking (private and public);
> - current usage levels of parking areas.'

Updates of these surveys have not been undertaken since, although it was recommended that these surveys be updated every five years. Without up to date data on changes in supply and demand, Vincent cannot be expected to amend policy and confidently respond to public demands for more parking. As the Town has a resource which is becoming increasingly scarce, it is essential that the quantity of parking supply and demand is known and the change is measured at least every five years.

While this will be expensive and will not be necessary in all areas, **it is recommended as worthwhile to re-examine demand, volumes, duration of stay, peak usage and compliance with restrictions in areas that have undergone significant change since 2002 and within 500 m of each of the high activity centres being Mount Hawthorn, Leederville, Mount Lawley and Newcastle/Lord Streets Perth**. An annual budget allocation should be set aside for the Town to undertake rolling surveys of all car parking demand and supply over a five year period.

Current parking policy and practice in Vincent is designed so that the supply of parking is sufficient to meet the peak demand for free parking ('predict and provide'). Underlying these practices are the following assumptions:

- demand for parking is immutable and relatively constant over time
- parking resources are a public good and should be provided free
- increasing supply is more cost-effective than reducing demand.

Surveys typically indicate significant variations in the demand for parking at different times and locations. Rather than being constant over time, these variations show that parking demand is a dynamic socio-economic response to numerous factors.

A survey of peak time occupancy at seven car parks was undertaken on three typical weekdays and nights in May 2008. These are regarded as 'normal' days because they were unaffected by poor weather, school holidays or any other special events. Table 3 sets out peak day and peak night-time occupancy levels.

[14] 2002 Car Parking Strategy - Part Two page 3.

Table 3: Peak time occupancy on Wednesday 30/4/08, Thursday 1/5/08 and Friday 2/5/08

Car Park	Bays	Wed 12noon-2pm	Thur 12noon-2pm	Fri 12noon-2pm	Wed 8pm-10pm	Thur 8pm-10pm	Fri 8pm-10pm
Frame Crt	210	98%	97%	100%	71%	52%	80%
The Avenue	290	96%	99%	91%	69%	55%	65%
Oxford St	32	19%	22%	25%	0%	0%	0%
Brisbane St	214	34%	35%	4%	7%	25%	67%
Barlee St	51	34%	43%	27%	25%	27%	22%
Chelmsford Rd	56	89%	91%	93%	93%	82%	100%
Raglan Rd	95	95%	95%	99%	93%	88%	98%
TOTAL	948						

The above indicates very high demand at three car parks - Frame Court, Raglan Road and Chelmsford Road during the day and the evening, yet the Barlee Street car park within 250 m of Chelmsford and Raglan Roads has poor occupancy throughout. The Avenue car park is less popular than Frame Court in the evening.

The opportunity thus exists to make more efficient use of the existing supply of bays in the Mount Lawley precinct, using initiatives to encourage use of the Barlee Street car park. Similarly, better use can be made of the current supply at The Avenue car park in the evening before considering the expensive option of constructing additional supply. Initiatives at both these sites with vacant spaces include a combination of better lighting and pedestrian access, substantially upgraded way finding and parking signage systems, and revision of the parking fees at the nearby car parks.

5.2 2002 Strategy – Parts Three and Five, Future Demands and Facilities

An estimate of increased car ownership in WA broadly suggests a conservative increase of 290 cars per year requiring residential parking in the Town. This will increase pressure on available residential parking for other users especially at night and on weekends. The 2002 Strategy estimated that the introduction of the TravelSmart program would reduce car trips by approximately 14%. It is difficult to know whether car trip reduction has in fact occurred as expected as the Town no longer employs a TravelSmart officer. Many external factors have contributed to a variation in private car usage, such as the increased number of employment opportunities in the Town and in the City of Perth, the scarcity and cost of parking for commuters in the City, the expanded availability of public transport and more recently, the price of fuel.

Firstly, the issue of supply is considered.

The 2002 Strategy recommended that a further review of parking requirements be undertaken partially from revised surveys in 2006. This has not occurred. However, it is likely that growth will require more parking in accordance with the Town's Planning Scheme based on the 'predict and provide' approach as described in Section 4.3. The Parking and Access Policy applies minimum requirements to all areas, subject to concessions through the application of adjustment factors such as access to rail and bus transport and public parking facilities. Continued application of these minimums is unsustainable as they add to urban sprawl, fragmented parking facilities and artificially low costs for the use of

private vehicles. **It is recommended that Vincent make a submission to WALGA to undertake a detailed review of these minimums.** Refer to Section 4.6 and Appendix A.

Limits on parking supply are designed to reduce the amount of parking that is provided with new developments.

There are a variety of ways to limit the parking supply, including:

- area caps – a maximum parking supply is set for a defined geographical area
- site caps – a maximum parking supply is set for individual developments
- maximum ratios – a maximum ratio of parking supply to floor area is set for individual developments.

The area and site caps define the maximum number of car parks provided within an area and development respectively, whereas the maximum ratios prescribe the maximum proportion of parking relative to gross floor area.

Limits are to be based on the capacity of each high activity centre to accommodate parking, not on its capacity to accommodate development.

A fine balance needs to be struck between encouragement of sustainable transport options and the provision of enough parking. The 'goldilocks principle' needs to be applied – not too much and not too little, but just the right amount of parking[15]. This will largely depend on the use of several initiatives such as travel smart, shared and reciprocal parking, and improving the convenience and accessibility of public transport.

Pricing parking to manage demand involves charging motorists directly for using parking facilities. Parking prices can be structured to achieve particular objectives (e.g. more convenient parking spaces priced to favour customers and clients, other parking priced to favour long term parkers). Pay parking is an efficient way to reduce parking demand, address parking congestion problems and support objectives to reduce private vehicle travel. It typically results in a parking reduction as well as reducing traffic volumes.

Future demand for parking will grow especially in the district centres of Leederville and Mount Lawley. Leederville has two large at grade car parks which can be used more efficiently by limiting their use by all day parkers (Frame Court) and increasing parking fees at certain times to curtail demand. The centre is well served by public transport east west (buses) and north south (train); however many train commuters use The Avenue car park. The Leederville Masterplan proposes building an additional 235 parking bays (at a high marginal cost as described in Section 3.2).

Mount Lawley does not have the benefit of large at-grade car parks or a nearby train station. The Raglan and Chelmsford Road car parks have a very high level of demand, generally >90% during the day and at night This high demand could and should be dampened by introducing pay parking throughout both sites. The sites currently have a confusing and discriminatory mix whereby 14 of the 94 bays at Raglan Road are subject to pay parking as are 26 of the 56 bays at Chelmsford Road. Charging for parking at 27% of these bays does little to improve the turnover of spaces and causes confusion. **It is recommended that pay parking is extended to all parking bays at the Raglan Road and Chelmsford Road car parks.**

The extremely high demand at these two car parks can be redirected to the under used Barlee Street car park, less than 250 m away. This can be achieved by the combination of introducing fees at Raglan Road and Chelmsford Road, a pricing variation between the cost of parking at these two car parks and Barlee Street, the upgrading of pedestrian access from Walcott Street to Barlee Street, the

[15] Litman, T (2006) Parking Management Strategies Evaluation and Planning – Victoria Transport Policy Institute.

introduction of landscaping at Barlee Street and by improving the signage leading to Barlee Street. Many drivers are unaware of the convenience of Barlee Street.

It is recommended that access and signage to the Barlee Street car park is upgraded and a pricing differential is introduced between Barlee Street and all of the parking available at the Raglan Road and Chelmsford Road car parks.

5.3 2002 Strategy – Part Four, Existing Car Parking Facilities

This deals largely with zoning and design issues and sets out in Table 4.3 a prioritised works program for 18 streets and car parks to be undertaken over a five year period. We have been unable to clarify which elements of the works have been completed. It is significant that the total estimated capital cost over five years amounted to only $30 per parking space.

The 2002 Strategy also recommended the disposal of the occasionally used Brisbane Street car park with resulting funds to be allocated to improved transport infrastructure. This has not been undertaken and this car park adjacent to a major street operates at less than 35% capacity during the day except on weekends. The recommendation in the 2002 Strategy is supported.

While the 2002 Strategy focused on improving public awareness of public parking facilities, and the simplification of much of Vincent's confusing parking signage, it did not mention the important issue of way finding for pedestrians, cyclists and of course for drivers.

The current parking signage in Vincent is inconsistent, not particularly informative and does not provide clear way finding to a destination. There is no indication to visitors to assist them to find short term, or long term car parks. Most signs have a negative connotation such as No Parking or No Standing. There are many instances when signage permitting parking would assist in creating better use of the current available supply, for example signs at Oxford Street directing parkers to the off-street Frame and The Avenue car parks or on Walcott and Beaufort Street advising of the Barlee Street car park. Currently the only signage is at the entry points to the sites.

Improved signage will assist navigation by drivers and increase the perception of available parking in the Town. The current style of way finding signage at The Avenue car park does not indicate the number of spaces available, or the type of parking available (short term or long term).

The signage is further confused by many different types of signs used by private operators of car parks. In the car park at the Leederville Village off Newcastle Street west, there is an array of restricted parking signs and bay markings, which conflict with notices in shop windows that apparently overrule the signs.

A coherent way finding system, for both cars and for pedestrians is a cost-effective means to reduce time spent searching for parking spaces.

For example, Parramatta has implemented a parking way finding system consistently across the city for all council and privately operated parking facilities. This incorporates a hierarchy of signs guiding parkers from major arterial roads, through to specific precincts, and then directly to the car parks. It has been applied by the Parramatta Council to all public parking facilities, whether privately operated or not (some examples are shown in Figure 3). Customer feedback indicates that the system has been very well received by ratepayers, commercial tenants and visitors.

previous signage

Figure 3: Part of the Parramatta suite of way finding signs

The present parking signage in Vincent which is regulatory and provider led, requires changing to a more customer led focus, which informs, guides and assists drivers. **It is recommended that the Town develops a way finding and parking signage package which brands the Town of Vincent and assists drivers to:**

- **know where to look for parking and way finding signage when they need it**
- **understand the way the information is communicated**
- **obtain the information quickly and without fuss.**

The system should be applied across the entire Town equally to council and privately owned public car parking areas.

5.4 2002 Strategy – Part Five, Future Car Parking Facilities

The section deals with the issues of land acquisition, deck car parks, location and design. The analysis and recommendations in the 2002 Strategy are currently still relevant in regard to:

- land acquisition
- Town of Vincent car parks
- private car parks.

The discussion below deals specifically with uses relevant to deck parking.

As with all towns and cities, Vincent has some public parking located in less convenient places and not enough parking where it is currently required. It is vital that any potential deck car park be supported by multiple generators of parking, but it is just as important to note that car parks are long term projects which impact significantly on the surrounding design and traffic environments. Once built, their use cannot easily be changed. There are many issues associated with building deck parking such as whether the Town or the private sector should own and operate the site and whether the structure should incorporate a mixed use facility.

The cash in lieu scheme and the possible expansion of pay parking will create opportunities to make use of accumulated and future funds to build new parking facilities. Although we are informed that no council property disposed of in the past 10 years was suitable or appropriate for conversion to public parking, it is critical and **recommended that prior to the potential disposal of any of Vincent's land bank, a review is undertaken to consider whether any site (other than the Brisbane Street car park) may be required at some future stage for either at-grade or deck parking.**

5.4.1 Deck Parking

Deck parking usually involves the allocation of public resources to build and manage a public parking facility; however, both the development and ownership can be undertaken by the private sector. Firstly the issues associated with the construction of deck parking are examined and then the additional factors which impact on the private sector's decision to invest in car parks are considered.

Consideration of construction of a deck car park requires careful examination of several issues, as a car park once built, is a risky, long term investment, which is seldom capable of transformation to other uses.

Risk factors

A deck car park is a long term investment which requires multiple generators to minimise the financial risk. A car park built to service the demand of one particular type of client, such as students, or visitors to a particular activity centre, carries risk if the single generator ceases to trade and there is no alternative creator of demand. Similarly, if cheaper competition becomes available nearby, there is an income risk to the owner.

The following four elements of risk will apply to any investment decision on deck parking made by the private sector e.g. at The Avenue car park or Frame Court as part of the Leederville Masterplan. The criteria should be no different for the Town of Vincent.

- It is important for any developer when considering deck parking, to be assured that there are multiple generators of demand. The closer the car park to a district centre, the more likely there are many potential demand generators, for short term, commuters, after hour and even residential parkers.

- If the deck car park goes ahead, there would need to be some restrictions on the creation of additional public parking facilities within a reasonable perimeter (minimum 300 m) of the new car park. This prohibition would need to cover the temporary use of land for public parking.

- Any developer will require a commitment by the local authority to a high level of compliance monitoring at all on-street public parking in the vicinity. There needs to be a perception of regular enforcement.

- It is unlikely that the private sector will consider the construction of deck parking if pay parking does not already exist in the district centre. This applies particularly to pay parking on-street. Parkers will only be disposed to pay a fee for parking if they have limited alternatives and if they perceive they are obtaining some value for money.

It is to be noted that the recurrent direct annual costs of maintaining and operating a car park are usually a small percentage of the potential car park income and that any variation in these will not usually have much effect on the return from the investment.

Location and cost of land

One of the major hurdles faced by any potential car park developer is the location and the cost of land. It is often only viable for local authorities to construct deck parking on land they already own, rather than to purchase land for the purpose. Vincent is in the fortunate situation of owning some sites which are well located for future deck parking. The following sites should therefore not be disposed of unless it has been comprehensively confirmed that they will not be required at a future time for decked public parking:

- The Avenue car park in Leederville
- Frame Court in Leederville
- the Barlee Street car park in Mount Lawley
- the Raglan Road car park
- the Chelmsford Road car park.

It is recommended that a deck car park be considered for the Raglan Road site and that an initial design and feasibility study is commissioned for this purpose. It is estimated that an additional 220 parking bays can be accommodated on the site within a three storey development.

A further significant factor in considering deck parking is its impact on the urban landscape. Car parks are generally not attractive buildings and are best constructed where they can be contained within or above or below other uses, not as free standing, single use structures.

Deck car park business model

The costs and potential return from a deck car park are best illustrated by a financial model. This is included as Appendix B.

Development of parking by the city or private sector

The principles relating to risk, land, development and operations are the same for both the private sector and for Vincent. The Town will generally have an advantage over the private sector in that the Town already owns the land, and the internal rate of return requirements may be less stringent than for the private sector, but the remaining principles as set out in the assumptions and the models above apply equally to both developers.

Paving land for parking can impose environmental costs, including loss of greenspace (reduced parkland, garden, playing fields and open space), increased impervious surfaces and related stormwater management costs and aesthetic degradation. Where this has already occurred, the opportunity to construct deck parking will not impose a further environmental cost, and makes use of the already established demand and awareness of the particular site. Additionally, there is also an opportunity cost where valuable land appropriated for parking could be sold off and the income used for alternative purposes.

Conceptually, a city should assume responsibility for providing off-street parking only when the private sector is unable or unwilling to do so to meet specific community needs. In theory, the Town's role should be to complement rather than compete with private sector parking investments. This is not always attainable in practice as the provision of parking is essentially a public service.

The strengths and weaknesses of the basic options for off-street parking development and operation are outlined below.

Private sector development

This enables the parking supply to respond to land use changes and market demands. It avoids placing financial burdens on the city. However, the need to produce a profit may result in an unacceptable supply or standard of parking.

Other than encouraging the construction of high quality parking facilities in buildings, each application for a parking building will need to be dealt with on its merits, with particular cognisance of the various parking generators that will be served by the building. A key criteria is to ensure that there is, or will be at the time of opening, a demonstrable shortfall and that the parking building will not undermine the parking strategy and objectives of the parking management plan for a particular precinct or district centre.

Public sector development

This gives the Town maximum control over supply, location, price and method of operation. It enables the Town to respond to community needs even where parking will not be financially viable. It requires expertise in design and construction as well as operations and management. If a city wishes to retain the management and operation of certain off-street car parks, or build and operate a car park, it may choose to make use of specialist external consultants to assist in the monitoring, marketing and auditing of income. Regular monthly or quarterly input is common practice at many councils in Australia. It provides an objective approach and continuity if key staff resign from council.

Cooperative public private arrangements

This option works best when both parties are able to realise rewards. The public sector may be able to offer land and some protection from competition. The private sector may offer specific development and operating expertise that enables greater efficiencies. It may also offer a political buffer, insulating the Town from adverse impacts that may arise from parking development or operations.

The provision of council owned land at a discounted price, or on a long term lease, is often used as an incentive if a developer undertakes construction of a building which incorporates a significant component of public parking. The Town can select the location at the outset and dictate the principles under which the public parking section of the car park is to operate. This will generally include minimum operating hours, a fee structure that is designed to discourage long term stays, minimum standards of security and customer service, management information and a method for regular review of these issues.

With this cooperative arrangement, there is no need for the Town to have a small and often inefficient involvement in the development, operation and management of off-street parking. Instead, the city can focus its resources on parking on-street and enforcement.

The total resource costs attributable to the provision of parking facilities should be communicated to parking system stakeholders and to the community. In so doing, the cost/benefit of additional parking can be demonstrated.

In order for Vincent to attract the interest of private car park developers, it is essential that the Town first implements pay parking on-street in the core areas, and charges a fee which fairly reflects the convenience premium attaching to these spaces. The fee will result in the relocation of medium and long term parkers to off-street car parks and to vacant spaces further away from the core areas. Private developers will only be interested in construction if they perceive increasing demand and a lack of available options, and if they can determine that parkers will pay for the service.

It is recommended that Vincent identify the specific sites available for potential construction of deck parking. Initial sketch design drawings for each should be prepared together with viability and feasibility studies. The findings of these initial studies should then be made available to the private sector.

A significant issue is whether the Town should monopolise the supply of public parking or encourage its provision by the private sector. **It is recommended that neither the Town nor the private sector should be the only provider and a mix of both is desirable**. A mix provides a benchmark for performance and for the setting of fees (if pay parking) without political interference.

5.4.2 Precinct Parking Management Plans

A Precinct Parking Management Plan is targeted to:

- identify parking supply and management policies and actions to support the short and longer term development of a centre with specific emphasis on land use intensification and supporting the centre's economic viability and vitality
- integrate parking policy and management and the location of off-street parking facilities with committed and planned transport improvements, with particular emphasis on public transport infrastructure and service improvements, the pedestrian and cycle networks and urban design objectives
- better internalise the cost of parking in decision making and, over time, to generate a rate of return on public parking facilities which reflects the opportunity cost of capital

- ensure an equitable cost of parking for drivers.

Each Precinct Parking Management Plan will provide detailed guidance over a 10 year planning horizon in relation to management and control of parking together with a process for the phased implementation of a place based package of measures as the centres move to higher density. The geographic and temporal measures need to be highlighted both in a map and a timeline. There are some key measures such as location of on-street paid parking, time restrictions, residents parking (if any), car park buildings, cycle parking areas, mobility parks, reductions in parking, and spill over areas that will need to be identified in the plan.

A detailed plan for dealing with specific parking issues in each high activity centre in the short, medium and long term will allow local issues to be considered, and transitional arrangements permitted in line with broad transport policy and strategic plans.

The 2002 Strategy compiled a portion of these Precinct Parking Management Plans, but without the benefit of recent surveys of current demand, and detailed projections of future demand and supply these cannot be properly updated. It is also proposed that these are undertaken after the Town confirms its strategic approach to the future management of parking supply and demand.

It is recommended that after Vincent confirms its strategic approach to management of parking, then a specific Precinct Parking Management Plan be undertaken for each high activity centre being:

- **Leederville**
- **Mount Hawthorn**
- **Mount Lawley/Highgate**
- **William Street**
- **Newcastle Street east**
- **Loftus Centre.**

5.5 2002 Strategy – Part Six, Car Parking Restrictions

The 2002 Strategy deals with charges, time restrictions, pay parking and enforcement. All of these are reviewed below. In regard to residential parking, we concur with the conclusions in Section 6.4 and the recommendations in Section 6.7 of the 2002 Strategy.

The 2002 Strategy notes that six of Vincent's 17 car parks charge a fee for parking, and all except Brisbane Street and Frame Court, include either a free period or a section of the car park where parking is free for a certain period (e.g. two hours free at the northern end of The Avenue).

This array of charges and free parking within the same area is confusing and serves no practical purpose. It is difficult to enforce and causes many complaints. It encourages some employees in nearby premises to shift their car every two hours, thus reducing bays available for bona fide short term parkers. There is no evidence that free parking areas attract additional parkers because they are free. Drivers use parking as a means to reaching another destination. It is noted that many parkers in the demarcated 'free' section at The Avenue car park still purchase a ticket from the nearby machines and display it under their windscreen. This confirms that there is little resistance to paying for parking and that the hybrid charge and no-charge system within the one car park is unnecessary.

It is recommended that where pay parking is to be applied, it should be implemented throughout a car park without free parking concessions or different priced zones. This does not preclude variable pricing structure e.g. at night or on weekends.

5.5.1 Pay Parking

In Table 6.2 the Strategy also recommended the phased introduction of ticket machines in 16 zones before 2007. As not one of these has been implemented it is worth reconsidering the issue of pay parking.

Finding a parking space is regarded as an inconvenience, and drivers expect to find a space close to their destination. Human nature is such that users will seek to avoid complying with parking regulations if they believe they have a reasonable chance of getting away with it.

The 10 rangers in Vincent have many responsibilities other than inspecting compliance with parking restrictions and they cannot be expected to adequately patrol more than 1,800 parking spaces. The effectiveness of their patrols is dependent on the layout of the spaces and on the number of different time restrictions.

Compounding the poor resourcing allocated to parking enforcement, is the largely ineffective system of assessing the duration of stay of parked vehicles. The current tyre chalking system requires rangers to visit every parking space at least twice. This procedure becomes increasingly inefficient when there are a variety of 30P, 60P and other signs in the same street. The need to return to every car allows many parkers to abuse time restrictions and to avoid an infringement by simply relocating their vehicle after the first visit by the ranger. This practice is frequently used by staff at many organisations who repark their vehicles one or more times a day.

Parking occupancy detection systems (PODS) are an innovative measure to reduce the need for chalking. These unobtrusive in-ground devices detect the presence of a vehicle in a space and then wirelessly communicate any overstay to an enforcement centre. Several thousand are installed in Australian district centres including Campaspe, Maribyrnong, Yarra, Victoria Park and Cottesloe. They have many benefits:

- less exposure to moving traffic and to potential abuse
- no more bending over to mark tyres
- permit traffic engineers to better understand how spaces are used at all times
- permit the monitoring of the effectiveness of enforcement.

The benefits of more effective levels of parking enforcement flow through to improved turnover of parking spaces, increased availability of short term parking, and as demand is better managed, a greater incentive to consider the use of other forms of transport. The extra income raised from more effective patrolling will cover the cost of new technology and also permit the employment of additional staff. This will increase the perception that illegal parking will attract a fine, thereby providing a greater likelihood that parking regulations will be observed.

The greater the perception that an infringement will be issued for illegal parking, the greater will be the level of compliance by drivers and consequently, each high activity centre will achieve a greater measure of its targeted allocation of parking spaces. More efficient enforcement practices are urgent as they will have an effect on parking demand. The Town is one of the few authorities still issuing tickets manually. This is one reason for the high level of disputed infringements. **It is recommended that technology is purchased to improve the efficiency of enforcement, together with the allocation of additional resources to the enforcement division.**

The debate on the necessity to provide free parking is often instigated by the demands of vested interests who appeal to the Town to provide free parking as a counter to the supposed attractiveness of free parking at competing centres and large trading centres such as shopping malls. This approach assumes that it is the free parking that attracts shoppers to these other locations. It does not acknowledge all of the other attractions that are provided and marketed by malls and other centres.

For example, the high concentration of fashion shops in Rokeby Road, Subiaco, is the major reason for its popularity, as is the concentration of food outlets in Oxford Street, Leederville.

It is also recognised that drivers do not travel to a district centre simply because the parking is free. Parking is a means to other ends. Many drivers today are 'time poor', they have limited time available to achieve all their daily tasks. Drivers want the confidence of being able to find a parking space close to their destination. From several surveys undertaken in other localities, it has been confirmed that drivers would rather pay for this convenience than endure the uncertainty of hunting for and not finding a space.

5.5.2 Positives of Pay Parking

Pay parking is justifiable on several fundamental grounds.

Environmental

Free on-street parking encourages drivers to cruise the streets to avoid less convenient car parks, generating pollution, noise and congestion and wasting fuel. As bus and train services are not free, by offering large areas of free parking, Vincent is not providing any incentive to parkers, especially commuters into the town, to convert and make more use of more sustainable, alternative means of transport.

Equity

It is important to recognise that the term 'free parking' is a misnomer. Ratepayers fund parking facilities that are used by non-ratepayers. On-street parking in core town areas could be used for other purposes such as markets or seating for cafe's and thereby generate income in the Town. There is an opportunity cost foregone when parking is provided free.

Economic

There is a direct economic cost associated with on and off-street parking.

The principle of user pay requires that drivers pay towards the cost of providing, operating and maintaining the parking facilities they use. This principle applies to public transport and the supply of many other services including water. It means that those who do not drive and do not require parking, do not have to incur the cost (whether in the form of rates or higher retail prices) associated with providing free parking.

5.5.3 Private Investment

Another important reason for the implementation of pay parking on-street in high activity centres is that unless it occurs, private developers will not be inclined to undertake construction of surplus parking facilities off-street. The private sector will only consider the provision of pay parking if there is already an established demand and evidence that parkers are prepared to pay a fee. They will not promote an investment which is going to be undermined by free on-street parking which is subject to inefficient enforcement.

The risks of pay parking on-street relate only to it being unpopular as a result of poor service and monitoring. If fees are set too high, demand will decline and parkers may choose to go elsewhere. If the technology used for pay parking is sub-standard and difficult to use, or is unreliable, parkers will disregard it and thereby create an administration nightmare for enforcement staff. ARRB is not aware of a pay parking system that has been withdrawn once established.

The majority of car parks controlled by the Town of Vincent provide free parking.

5.5.4 Traffic Management

Pay parking schemes are intended primarily to assist in the enforcement of time limit restrictions and to promote increased turnover of spaces. They simplify and reduce the cost of enforcement and encourage better compliance. Rangers can more efficiently inspect a much greater number of vehicles by simply undertaking a single inspection of tickets displayed under a windscreen. They do not have to return a second time.

According to the Roads and Traffic Authority in New South Wales:[16]

> 'pay parking is beneficial to provide equitable access to parking spaces for road users on roads where demand for parking exceeds the available parking spaces through increased parking turnover. Where demand exceeds supply, pay parking rations the use of both on-street as well as off-street car parking spaces to allow short to medium term parkers to gain access to parking during business hours by removing competition from all-day parkers. It also ensures that any parking demand strategy is consistent with any land transport strategy for the area, and supports and complements transport objectives especially public transport, rather than working against them.'

5.5.5 Negatives of Pay Parking

The negative impacts of pay parking relate to several issues:

Environmental

Meters add to invasive street obstacles such as bins and light and sign poles. Ticket parking adds to litter although the paper and ink on some parking tickets is bio-degradable. Most meters today are solar powered.

Economic

Parkers must generally predict in advance the time they will park. They cannot pay in arrears after they have used the service. There is usually an overpayment by parkers who leave before their time expires and this paid time cannot be utilised by the next parker in that space. This represents an over recovery by the Town. However, modern meters offer flexible fee structures, whereby, for example, rates can be by the hour between 8 am and 5 pm, and thereafter, a flat fee can apply.

Social

The need to carry or request coins from nearby stores can be overcome by offering options to pay at meters by credit card or mobile phone.

A period of free parking provided to mobility parkers or in loading areas can be viewed as inequitable.

Cultural

Pay parking will always trigger greater demand in adjacent areas that are not subject to a fee. Pay parking must therefore be accompanied by expanded monitoring of compliance and by strategies for dealing with spill over.

It is submitted that these negative impacts are outweighed by the overall benefits of user pay parking.

[16] RTA Publications RTA/Pub.02.026 (Roads and Traffic Authority NSW 2002), at page 5.

5.5.6 Current Parking Fees

The current parking fees in the Town are all the same and reflect several anomalies. They do not cater to different demand patterns in different precincts or emphasise any travel demand management measures. Part of the reason for this reactive approach is the lack of worthwhile data from the paid parking areas in regard to time of entry, duration of stay, vacancy levels, average ticket values etc. (Refer to the Data from machines section in Appendix C).

Many car parks do not charge for parking, some have less than half the bays subject to a fee (see Table 4, in brackets) while others are free. Vincent charges a fee at only 43% of its off street parking bays. At Frame Court, which has > 95% day occupancy, the Town sells a fortunate few commuters a monthly parking permit at a discount of more than 50% of the all day fee. This provides little incentive to use public transport. The following sets out the current structure.

Table 4: Off-street parking in Vincent by area, number of spaces and parking charge

Car park location	Total bays	Parking fee per hour	Parking fee per day
Barlee St	51	$1.50	$8.00
Beatty Park	301	No fee	
Brisbane St	214	$1.50	$8.00
Chelmsford Rd	56 (26)	$1.50	$8.00
Coogee St	51	No fee	-
Dunedin St	42	No fee	-
Fitzgerald St	136	No fee (time restrictions apply)	
Flinders St	26	No fee (time restrictions apply)	
Frame Court	210	$1.50	$8.00
Gill St	47	No fee	-
Loftus Centre	385	No fee (time restrictions apply)	
Oxford St	32	$1.50	$8.00
Pansy St	26	No fee	-
Raglan Rd	95 (14)	$1.50	$8.00
The Avenue	290 (263)	$1.50	$8.00
The Stadium	71	$1.50	$8.00
View St	38	No fee (time restrictions apply)	
Wasley St	42	No fee (time restrictions apply)	
Total	2113		

5.5.7 Pay Parking Technology

The most common form of implementing pay parking on-street is the use of multi-space machines which each service up to 10 spaces, requiring less intrusion on the kerb than single space meters. There are many different types of technology available and machines can be specifically tailored to the requirements of different district centres. Some of the main characteristics of new machines with proven technologies, such as those installed in Perth, Joondalup and Melville include:

- solar power - no electrical cabling required so machines can be relocated

- constant wireless transmission of information and data
- convenient payment options via credit card, smart card, coins, banknotes, mobile phone
- provision of a ticket or a receipt
- provision of an initial grace period e.g. for less than five minutes parking
- provision of a discount to specified cardholders such as pensioners who may receive the first 15 minutes free
- high level of reliability with uptime > 99%
- links to provide payment for customers parking at the discretion of a commercial tenant
- opportunities to offer flexible parking fees at different times, e.g. a flat fee on weekends
- integration with hand held enforcement machines which further reduces the time taken to inspect and issue an infringement.

Figure 4: Solar powered parking meters with several options for payment

The more convenient it is to pay for parking, the less of a burden it becomes for drivers.

The current 76 ticket parking machines in Vincent are out of date, expensive to maintain and provide a poor level of service to drivers.

They are unreliable and require to be inspected every morning. They provide minimal information on volumes, time of arrival or duration of stay. They do not accept credit card or other forms of payment.

It is recommended that Vincent urgently replaces all the existing ticket parking machines with more up to date technology linked to a wireless management system.

As there are a large variety of different technologies available, **it is recommended that Vincent first determine its required functionalities for pay parking technology, before committing to purchase any machines** (refer to Appendix C). Depending on the quantity of machines and the functionality desired, pay parking meters will cost between $7,000 and $11,000 installed. However, the lifecycle costs over seven years can vary considerably, depending on options selected and whether the system is managed in-house or outsourced.

It is no longer necessary for organisations such as Vincent to allocate funds in advance of the purchase of pay parking meters. Most suppliers will provide finance arrangements whereby the cost of capital can be amortised over several years and paid for from the future income earned by the machines.

5.6 Issues Associated with Pay Parking

The implementation of pay parking requires an understanding of many of the issues and processes that need to be considered before, during and after the implementation of pay parking. These are dealt with thoroughly in a paper entitled *Considerations for the Installation of On-Street Pay Parking*[17] which is attached in Appendix C.

6 Parking Education and Plans

The issue of public education was omitted from the 2002 Strategy. This section deals with the importance of stakeholder and community education on parking issues and the need for parking management plans to be prepared together with a development application.

A major objective of a parking policy is to achieve a desirable level of car access to an area and thereby to establish an optimum number of car parking bays for the precinct. Thus, while recognising that vehicle access is a critical element in ensuring the continued viability of Vincent's diverse precincts and high activity centres, a comprehensive parking policy should seek to balance this requirement with the preservation and enhancement of the environment and to encourage a balanced transport and access system.

The Town of Vincent's Parking Policy (N101315) was adopted in April 2006. Its objectives, which are summarised in Section 3 of this report are worth repeating:

- to facilitate the development of adequate parking facilities
- to ensure safe, convenient and efficient access for pedestrians, cyclists and motorists
- to ensure that a major parking problem is unlikely to occur
- to ensure that car parking does not have a detrimental impact on the character and amenity of a residential area
- to ensure that an oversupply of parking does not occur that discourages alternative forms of transport and is detrimental to urban design and centre character.

While these objectives are worthwhile, they are seldom communicated to the community, and are seldom used especially in response to the many letters of complaint received about the perceived shortage of parking. The Town is not unique in this deficiency of communication on parking.

[17] Considerations for the Installation of On-Street Pay Parking – by Larry Schneider of ARRB Group Ltd., presented to Canadian Parking Convention, October 2007.

6.1 Education

Despite every driver being a parker, the broader environmental, economic and social impacts of parking are rarely understood or appreciated by users. The clamour for more parking has been allowed to develop without any communication of its negative effects and growing unsustainability. This is true in Vincent whose website relating to parking is very regulatory oriented. An upgraded and ongoing campaign of communication on the unsustainability of current parking practices is required.

Everyone who drives a car is a stakeholder. The education program needs to be aimed at all stakeholders such as planners, developers, designers, retailers, tenants, elected officials and council officers, business and community groups, schools, residents, visitors, commuters and the general public.

It is recommended that education about and appreciation of parking demand should be available and regularly communicated in the Town's publications. As a minimum, it should deal with the following issues:

- **drivers cannot expect unlimited parking close to their destination**
- **unlimited supply has environmental, social and economic drawbacks**
- **the principle of user pay**
- **need for sustainability planning**
- **benefits of improved compliance**
- **benefits of parking control and management plans (refer to Section 6.2)**
- **options for reinvestment of income from parking services into improving transport infrastructure.**

For example, Seattle in the USA has a proactive parking management program (see Figure 5) that helps stakeholders consider a broad range of possible parking solutions and encourages neighbourhoods to develop parking plans that meet their needs.

Figure 5: Parking in Seattle

The parking web page begins with the question, How May We Serve You? and then goes on to discuss parking management concepts. It describes management strategies suitable for various areas (business districts, residential areas, etc.) and identifies how residents and businesses can initiate changes. It provides parking regulation and enforcement information, and offers instructions on using new parking payment systems as well as providing various planning documents such as a *Guide to Parking Management*.

The Town can also offer on the website to enforce parking regulations on private property allowing the Town to collect additional income and be reimbursed the costs of the necessary additional resources.

6.2 Parking Control and Management Plan (PCMP)

Developers should commit to a parking control and management plan prior to establishing a new parking facility. It is a worthwhile document for the Town, for developers, their tenants and for other parties as it sets out in detail, how parking in the proposed development will be controlled and managed. It has been implemented in several cities and provides clarification for all parties affected by parking at a site.

The requirement for the PCMP places the onus on the developer to give consideration to the proposed practical plans to manage and control the parking on site in order to comply with the planning conditions.

It is recommended that Vincent requires this parking control and management plan to be provided by developers together with their application for all developments requiring more than five spaces.

The structure and content of such a plan are illustrated in Table 5.

Table 5: Off-street parking in Vincent by area, number of spaces and parking charge

Proposed Parking Control and Management Plan to accompany Development Application

1. Background

- Describe objectives of the plan
- Property address
- Property description

Number of parking bays per category, e.g. tenant bays, short stay bays, mobility bays etc.

Number and category of bicycle bays to be managed (if applicable)

Other property details

- Operational responsibilities and contact details

Landlord
Day to day management of car park
Day to day management of bicycle parking

2. Conditions

- General conditions relating to the district parking plan

  Examples include:

  - Short stay turnovers
  - Tenant and public parking bays used for those purposes in accordance with the planning approval
  - Mobility bays clearly marked and set aside for exclusive use
  - Loading/unloading bays clearly marked and set aside for exclusive use
  - Leasing of tenant bays to off-site tenants
  - Ongoing availability of bicycle end of trip facilities

3. Surrounding area

Details of parking on properties within 300 m of the pedestrian entry to the premises located on the property.

Property name and address	Type & No. bays	Method of control	Fee (if any)
1.	Reserved Tenant All day Short term Loading Mobility Other TOTAL		
2.			
3. etc.			

4. Details of public transport and pedestrian facilities serving the premises

5. Proposed strategies to achieve conditions

- Achievement of short stay turnover rates.
  Methods are likely to include pricing and advertising.
- Non-conversion of public parking bays for tenant purposes.
  Methods could include: clear colour coding of tenant and public parking and locating tenant and public parking on different levels.
- Exclusive usage of mobility bays by mobility permit holders.
  Daily/weekly activities to ensure exclusive usage.
  Other activities, such as inspection of mobility marking on half yearly basis.
- Exclusive use of loading bays for loading purposes.
  Daily/weekly activities to ensure exclusive usage.
  Irregular activities, such as inspection of loading bay markings on half-yearly basis.
- Signage discouraging other use and directing couriers and other users towards special purpose bays.
  Outline policies on central loading activities or loading booking system if applicable.
- Ongoing availability of bicycle end of trip facilities.
  Proposed measures to ensure that unused bicycle bays are not converted into storage and visitors are aware of bicycle bays and are able to access these.
- Ongoing provision of safe access and internal route to the bicycle end of trip facilities.
  The safe entry/exit and internal route should be shown on drawings. In addition, the plan should indicate how ongoing provision is ensured, e.g. regular remarking of bicycle lane logos etc.
- Spare parking on site to be offered to the tenants or occupants of buildings not part of the complex unless the parking is to be used for private residential purposes.
  For example, outlining options for reciprocal or shared parking, especially outside of business hours.

7 Review Car Parking Fees

7.1 Pay Parking Fees in Similar District Centres

It is particularly important that on-street parking in the core areas close to the transport interchanges and in the retail areas be used for short-stay parking. The implementation of parking charges on those streets will assist in ensuring a high turnover and will prioritise use for higher value customers.

Parking and transport fees charged in similar district centres are shown in Tables 6 and 7.

Table 6: Comparative parking fees charged at June 2008[18]

	On-street per hour	Off-street per hour	All day parking
Town of Vincent	$1.50 to $2.20	$1.50	max $8.00
City of Perth	$2.00 to $2.60	$1.00 - $2.40	$8.00 - $10.00 10 hrs max
City of Melville	$1.00 to $1.50		$6.00 8 hrs max
City of Fremantle	$2.00	$0.75 - $1.50	$4.00 (Point St)
City of Subiaco	$1.50 to $2.20	$1.50	
Town of Victoria Park	-	-	

Table 7: Comparative daily transport fees charged at June 2008[19]

	Return Train Mon - Fri	Return Bus Mon-Fri
Leederville to Perth City	$3.00	$3.00
Mount Lawley to Perth City	$3.00	$4.40
Mount Hawthorn to Perth City	-	$3.00
Whitfords to Leederville	$8.40	-
Wembley to Leederville	-	$3.00

Vincent's fees are similar to those of Melville and Subiaco, but lower than those in Perth and Fremantle. However, as Vincent is being used as a cheap option for day time parking for employees travelling into the Perth CBD, an increase in parking fees is warranted in some areas of Vincent.

7.2 Adjustments to Pay Parking Fees Off-street

Adjustments to off-street parking fees are warranted for many of the reasons set out in this review, in particular:

- acknowledgement that parking is not free
- a parking user hierarchy is to be implemented
- demand is to be managed rather than satisfied
- alternative forms of transport must be encouraged
- funding is required for improvements to parking infrastructure and deck car parks

[18] Many of these are budgeted to be increased effective 1 July 2008.
[19] Many of these are budgeted to be increased effective 1 July 2008.

- private investment requires an incentive to develop additional parking.

It is recommended that off-street parking fees as set out in Table 8 are introduced/ amended in Vincent. This follows on from the recommendations in Table 6.2 in the 2002 Strategy for the introduction of ticket parking machines at many of these car parks.

Table 8: Off-street parking in Vincent by area, number of spaces and parking charge

Car park location	Total bays	Current fee p/h	**Proposed fee p/h**	Current max p/day	**Proposed max p/day**	**Proposed max after 5 pm**
Barlee St	51	$1.50	$1.20	$8.00	$8.40	$3.60
Beatty Park	301	Nil	50c		No max	
Brisbane St	214	$1.50	n/c	$8.00	$5.00	$5.00
Chelmsford Rd	56	$1.50	$1.80	$8.00	No max	$5.00
Coogee St	51	Nil	50c		No max	
Dunedin St	42	Nil	50c		No max	
Fitzgerald St	136	Nil	50c		No max	
Flinders St	26	Nil	50c		No max	
Frame Court	210	$1.50	$1.50	$8.00	$10.00	$5.00
Gill St	47	Nil	50c		No max	
Loftus Centre	385	Nil	50c		No max	
Oxford St	32	$1.50	n/c	$8.00	$10.00	$5.0
Pansy St	26	Nil	50c		No max	
Raglan Rd	95	$1.50	$1.80	$8.00	No max	$5.00
The Avenue	290	$1.50	$1.80	$8.00	$10.00	$5.00
The Stadium	71	$1.50	n/c	$8.00	n/c	
View St	38	Nil	50c		No max	
Wasley St	42	Nil	50c		No max	
Total	2,113					

Pay parking should operate at all sites for a minimum of 7 am - 7 pm Monday to Sunday, and to 12 midnight in those car parks where a maximum fee after 5 pm applies.

Where pay parking on-street is implemented within 200 m of any of these car parks, the on-street fee will need to be increased to at least 15% above the off-street fee, to reflect the premium nature and convenience of on-street parking, and to provide an incentive to drivers to look for cheaper parking off-street. For example, meter parking fees in Newcastle Street west should be increased at least to $1.10 per half hour when the fee is increased at The Avenue car park.

It is not recommended that Vincent introduce variable pricing for different vehicle sizes, as this requires complex administration and monitoring. In some areas, design considerations may favour 'small car only' bays, but until Vincent's pay parking regime is widely implemented and accepted, the problems associated with variable pricing outweigh the benefits.

7.3 Timing of Implementation of Pay Parking

Pay parking can be introduced at any time and is usually implemented across a specific zone to achieve traffic management, transport policy and other strategic objectives. As a guide:

- Where parking exceeds 85% occupancy at peak times, parking changes should be introduced. These should be set to encourage a high turnover of short stay spaces to make efficient use of the available supply and should apply to all streets within 400 m walking distance of a rail station.

- A low fee for the use of all high occupancy all day on-street spaces within high activity centres should also be set to apply the same user pays principle. In those residential streets where occupancy rates are high due to all day employee parking, the introduction of time restrictions should be considered.

- Where parking is between 65% and 85% occupancy, the demand should be compared with previous survey data taken at maximum 12 month intervals. Where it is increasing, the introduction of paid parking should be programmed for introduction once the 85% threshold is reached (unless there is a specific reason to delay implementation).

Updated surveys of demand volume, duration of stay and origin/destination will indicate where:

- all day parkers are taking up a high proportion of available on-street parking
- on-street parking is under pressure and the introduction of pay parking is required.

It is worth repeating the Conclusion and Recommendations in Section 6.7 of the 2002 Strategy as they are equally valid for the Town of Vincent today:

> ‘The implementation of parking fees and restrictions should not be perceived as a revenue raiser for the Town. Parking bays cost around $2500 each to construct and maintain, without taking into consideration the cost of the land. The Town's ratepayers are predominantly paying for any free parking provided, regardless of whether they utilise it. Therefore, the implementation of a 'user pays' system is considered a more equitable arrangement, similar to the user pays system of public transport. Moneys raised should be given back to the community with the provision of additional services, including the implementation of public transport initiatives and improvement of the Town's footpaths and cycleways.
>
> Residential streets should be protected from non-residential parking and commuters seeking to park for free and ride into the city, with the implementation of residential parking zones and time limits on affected streets. The implementation plan incorporated into this section should be examined and refined further after residents of affected streets have been appropriately consulted.
>
> Ticket machines which are easy to use, environmentally friendly and offer payment options, should be further examined. Signage which is individual to the Town, should be designed and manufactured for the car parking facilities, to denote appropriate information.
>
> **It is recommended that an additional temporary ranger be employed, to improve the level of service and standard of enforcement in the short term.** Overall, with the use of ticket machines instead of time limits, enforcement should become more efficient which will ultimately benefit the community.’

7.4 Fringe Benefit Tax

This issue is clarified as it is often raised in opposition to the implementation of parking fees.

Very broadly, a car parking fringe benefit may arise for each day on which an employer provides a car parking space for the use of an employee only if **all** of the following conditions are satisfied:

- a car is parked at premises that are owned or leased by the employer
- within a one kilometre radius of the premises on which the car is parked, there is a commercial parking station that charges a fee for all-day parking, which is more than the car parking threshold (note that if there is free all-day public parking within one kilometre, then FBT will not arise).
- the car is parked for a total of more than four hours between 7.00 am and 7.00 pm
- the car is owned by, leased to, or otherwise under the control of, an employee, or is provided by the employer
- the parking is provided in respect of the employee's employment
- the car is parked at or near the employee's primary place of employment on that day
- the car is used by the employee to travel between home and work (or work and home) at least once on that day
- the commercial parking station must also, at the beginning of the FBT year, charge a representative fee for all-day parking that is more than the car parking threshold.

Definitions

A commercial car parking station is one that charges a fee for all-day parking, is permanent, and parking which may be subject to a maximum time limit of 1 or 2 or 4 hours. On-street parking is specifically excluded from the definition of a commercial parking station.

All-day parking means parking for a continuous period of at least six hours between 7.00 am and 7.00 pm.

The one kilometre distance is measured not by radius but by the shortest practicable direct route by whatever means this route is travelled, for example, by foot or car.

The employee's primary place of employment is the premises at which the employee performs the majority of their employment-related duties on a particular day.

The car parking threshold is indexed in line with movements in the consumer price index. Table 9 lists the recent car parking thresholds to 2009.

Table 9: FBT threshold for Car Parking

Year ending 31 March	Threshold
2009	$7.07
2008	$6.78
2007	$6.62

PART D

8 Address the Use of Various Areas of the Town for Car Parking by City Commuters/Workers.

Local characteristics determine the suitability and desirability of an area for both informal and formal park-and-ride. Guidelines for park-and-ride provision were set out in Perth's 10 year public transport plan published in 2000[20]. Despite being in existence for several years the guidelines are still relevant in considering the provision, operation and management of park-and-ride. The guidelines are shown as follows:

1. In a low-density operating environment such as metropolitan Perth, the concepts of Park 'n' Ride and Kiss 'n' Ride should be actively promoted.

2. Future Park 'n' Ride stations should only be provided at major public transport nodes, not at minor stops.

3. No Park 'n' Ride stations should be established at Strategic Regional Centres, or at major commercial centres, unless such facilities are financially supported by the centre management.

4. No Park 'n' Ride station should be publicly funded within fare zone 1 - that is, within approximately eight kilometres of central Perth.

5. Wherever possible, Park 'n' Ride stations should be located with direct access off arterial roads. Access via residential streets should not be accepted.

6. The potential for alternative use of Park 'n' Ride stations in the evenings and on weekends should be taken into account in the planning stage.

7. Amenities at future Park 'n' Ride stations should include lighting, security surveillance, provision for Kiss 'n' Ride, bicycle lockers, and facilities for car sharing arrangements.

8. A parking charge should be levied to cover the cost of providing and maintaining these amenities. The charge should be higher for Park 'n' Ride stations closer to central Perth, to better manage travel demand.

9. Any Park 'n' Ride station proposed to be publicly funded should be justified in its own right in terms of socio-economic benefits.

The low availability and relatively high cost of city centre parking in Perth's CBD and well-developed public transport services create demand for park-and-ride. A demand rate (or attractiveness factor) for park-and-ride of 0.7% of a catchment population was determined by the Western Australian Department of Transport (Austroads 2008).[21] While formal park and ride facilities are limited in Vincent, anecdotal evidence indicates informal park and ride commuting is occurring on residential streets, particularly in the Leederville area which is well served by public transport and is located in close proximity to the Mitchell Freeway and the Loftus/Thomas Street transport arterial.

[20] DPI, Better Public Transport 10-Year Plan for Transperth, WA.
[21] The Austoads Guide to Traffic Management, Part 11: Parking (2008).

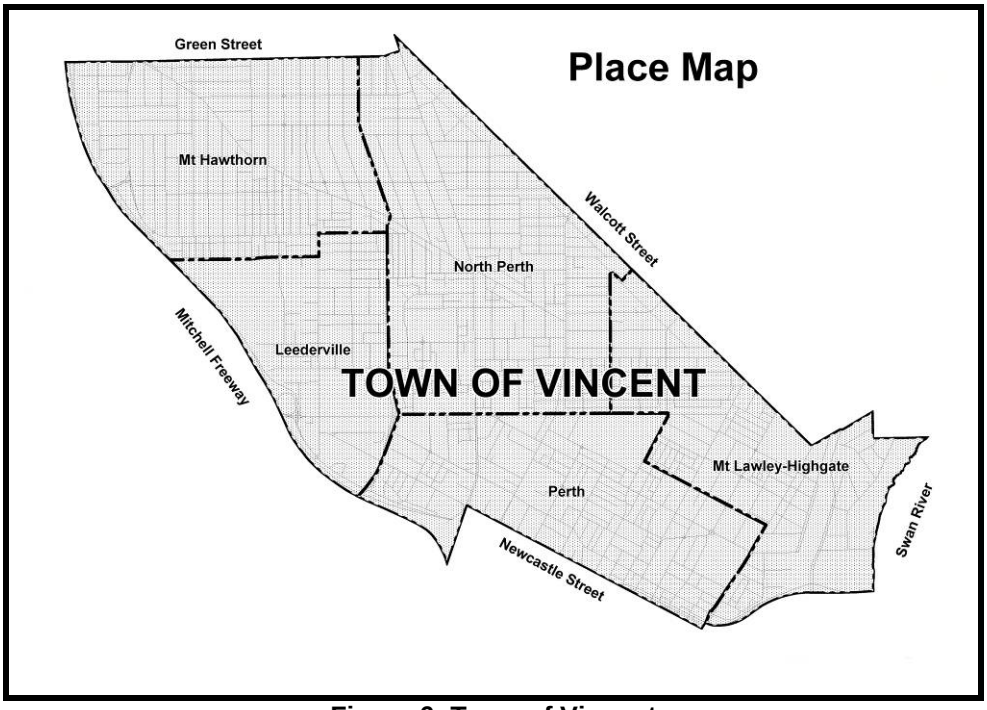


Figure 6: Town of Vincent

As discussed elsewhere in this report Leederville, North Perth, Mount Lawley and Mount Hawthorn have busy employment, retail, entertainment and education precincts. The growing popularity of inner city living has resulted in an increasingly rapid pace of new development, infill and urban renewal. Leederville is named as a key activity corridor in the Perth planning strategy, *Network City* (2006)[22] and almost 50% of Leederville's residents live in high density housing.

The Town's current parking policy states that park and ride facilities will be supported close to public transport interchanges to encourage the use of these services. There are, however, a number of reasons why Leederville is generally not suitable for park and ride. These are discussed below.

It is considered important that any park and ride facility proposed to be publicly funded is justified in terms of socio-economic benefits. Perth has historically been well suited to the provision of park and ride facilities where land has been plentiful and inexpensive. The economic and population growth in recent years has resulted in land becoming more scarce and expensive, and in Vincent space is at a premium and land values are high relative to some outlying areas of Perth. In Leederville, there is no land around the train station that can be utilised by the state government to provide more parking for park-and-ride, without compulsory acquisition.

Vincent is located close to the Perth CBD, with Mount Hawthorn less than six kilometres from Perth CBD and Leederville only three kilometres and two train stops away. Government guidelines and other best practice indicates that park-and-ride facilities should not be publicly funded within fare zone 1 - that is, within approximately eight kilometres of central Perth. The Austroads *Guide to Traffic Management Part 11: Parking* (2008) puts this distance at between 5 - 8 km. This is because park and ride is intended to transfer the majority of a commuter journey to public transport, so that more benefit is derived from park-and-ride facilities and people should be encouraged to use services closer to home. Additionally more public transport services are provided within inner city areas and residents near to these areas should be encouraged to use alternative modes to access these services and discouraged from using park-and-ride.

[22] West Australia Planning Commission

Despite being highly visible and accessible, Vincent is situated within or upstream of where traffic congestion occurs. The incentive and benefit to using park and ride is greatest downstream of congestion where the greatest time savings can be achieved.

To maximise the park-and-ride catchment, park-and-ride facilities should ideally be located at major stations. Although, Leederville and Mount Lawley are serviced by rail, these are not classed as major stations and neither has a bus interchange. North Perth and Mount Hawthorn are well-serviced by buses but also do not have well-developed interchange facilities.

Park and ride in Vincent will only be attractive for drivers commuting to the Perth CBD where transferring to public transport for the remaining distance to Perth CBD is more convenient taking account of parking time, walk time, waiting time, travel time by train and/or be less than the daily cost of parking in Perth CBD taking into account public transport fares and car parking charges (if applied).

Taking the council's vision to 2024 into account, where the reliance on car travel will have decreased significantly and Vincent will have a user-friendly, energy efficient and safe public transport system, there are grounds to discourage park-and-ride in Vincent and in the Leederville area in particular. The Town's centres have grown as employment centres and free or low-cost parking for park-and-ride at major public transport stations or along residential streets may encourage people who work in the town to drive to work rather than using an alternative mode. This may result in drivers unnecessarily circulating to find free or unrestricted parking and may make it more difficult for visitors to Vincent to find parking.

It is recommended that the Town limit the supply of park and ride or support park and ride only where a pay parking regime is implemented to discourage people who work in Vincent from using park-and-ride facilities in the area. This charge would also contribute to the cost of providing park-and-ride facilities and should be higher in Leederville than for park-and-ride stations further from central Perth to manage travel demand.

The recommendation in the Town of Vincent Car Parking Strategy (2002) that residential streets should be protected from non-residential parking and commuters seeking to park for free and ride into the city, with the implementation of residential parking zones and time limits on affected streets, should therefore be upheld.

The implementation of on-street parking fees is generally not supported by businesses, and may encourage some shoppers to travel to alternative locations, in order to obtain free parking. However, particularly in the case of Leederville, where the main attractions are the entertainment facilities and restaurants/cafes, it is considered that most people visit the area to enjoy these facilities rather than to do their day to day convenience shopping. Time restricted parking can also be applied as an alternative to paid parking in shopping areas.

Parking restrictions and fees are likely to have spill over effects onto surrounding areas. For example, time limits in a car park may result in people parking in adjacent local streets. Therefore, areas which are affected by parking restrictions, such as the district centres of the Town, should be surrounded by a 'buffer zone' to prevent drivers parking on residential streets in order to avoid a restriction. The Town currently operates ticketed parking along William Street, between Brisbane and Newcastle Street. This is the only on-street paid parking in the Town, and is also time limited to two hours. Surrounding streets such as Carr Place have time restrictions imposed; however, being free parking it appears that the streets are often congested with drivers attempting to obtain a free car park, or prone to drivers moving vehicles in order to comply with time restrictions.

Free Transit Zone

The free transit zone (FTZ) which operates within the City of Perth, allows passengers free transit on any train or Transperth bus within an allocated zone. The FTZ includes Central Perth, City West, McIver and Claisebrook stations on the Fremantle, Midland and Armadale train lines; the start and finish of the FTZ are clearly marked, on train stations and bus stops. The boundaries of this free travel zone are shown in Figure 7.

There is also a free bus service, called CATS (central area transport service) that operates around the central business district north to Newcastle Street. The current service within the City is substantially funded by the City of Perth through parking revenue.

The Town approached the Minister for Transport in 1998 with a view of extending the free transit zone to incorporate Leederville train station. The Minister denied the request, due to funding arrangements with the City of Perth.

The City of Fremantle has previously experimented with a free local bus system in 1996; however, due to the operational abuse of the service and increased costs, it was aborted within a year. The procedure required the distribution of tickets to all residents of the City.

DPI has indicated that it would consider any realistic offer to extend the free transit zone into the Town. This will involve investigating options as to how the system can be implemented without being abused. It is likely to cost the Town in the vicinity of $300,000 for the first year, depending on usage.

Should the system operate in a similar manner to the existing City of Perth service, it is likely that public transport users from outer northern suburbs will take advantage of this service, by using the Town's parking areas for park-and-ride. Therefore, more stringent controls, including the introduction of parking fees in affected car parks and along busy streets, will have to be imposed prior to any commitment by the Town to fund the free transit zone extension. Revenue from paid parking could be used to fund the service. Alternatively, a system similar to the City of Fremantle which involved the distribution of pre-issued tickets to residents could be instigated.

The results of a questionnaire,[23] about travel habits and parking concerns in Vincent, stated that 90% of survey respondents would support the introduction of free transit within the Town, if it was considered viable. In view of this result, **it is recommended that further liaison and discussions between the Town and DPI take place with regard to the possible extension of the free transit zone into the Town.**

The Town should amend its Parking and Access Policy to expressly state that kiss-and-ride and required facilities such as set-down areas will be actively promoted (possibly in place of park-and-ride) at public transport interchanges to encourage the use of these services.

[23] A questionnaire concerning travel habits and parking concerns was distributed to the residents and businesses of the Town of Vincent.

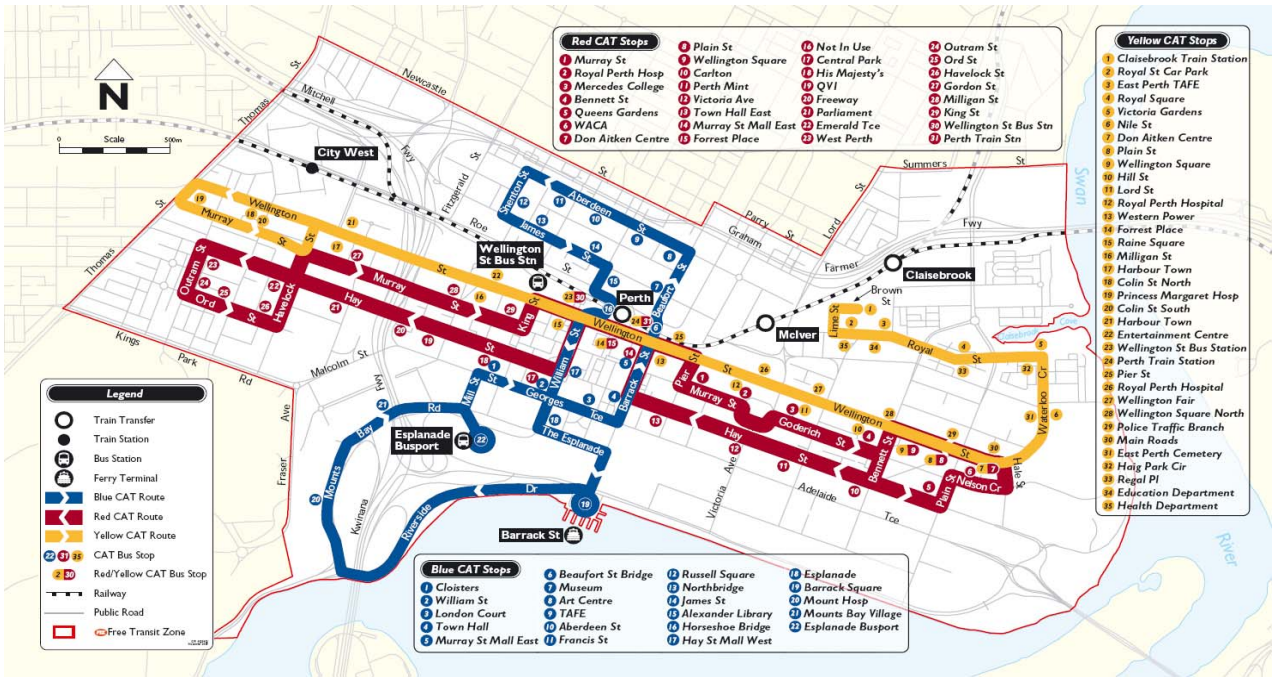


Figure 7: Perth free transit zone

8.1.1 Pedestrian Improvements

Pedestrian improvements to paths and footpaths, creating or improving shortcuts, ensuring good weather protection through continuous building awnings and street trees, pedestrian crossings and addressing security concerns, increase the range of parking facilities that can serve a destination and create a safer and more pleasant experience for users. Principles of crime prevention through environmental design can help create more open and pedestrian-friendly streetscapes.

Understanding the important pedestrian routes that lead from parking areas to the main streets and key destinations within a district centre is essential in order to encourage people to utilise remote parking areas for longer term parking like shopping. **It is recommended that it is critical to identify these important pedestrian streets and routes and ensure that building form next to these streets makes them safe to use.** Building development should address the street (rather than backs of buildings or blank walls) and ensure overlook and passive surveillance where possible). This will complement the recently developed *Citywide Urban Design Rules* that have been developed for *Building Design – Street Frontages* which promote the concept of developing active street frontages for certain streets.

Improving walking and cycling conditions to expand the range of destinations serviced by a parking facility typically results in a parking reduction of 5-10% as well as reducing traffic volumes[24].

[24] Cervero, R. and C. Radisich "Travel choices in pedestrian versus automobile oriented neighbourhoods" UC Transportation Centre 281 (www.uctc.net).

9 Review of Planning Policy 3.7.1 - Parking and Access Policy

A review of the above policy has been undertaken and while generally it is considered appropriate for the current environment, as a result of the strategic recommendations detailed in this report it will also be necessary to amend the policy. This section reviews the existing policy and recommends changes.

Vincent's Parking and Access Policy was updated in October 2004. Its objectives are:

1) To facilitate the development of adequate parking facilities and safe, convenient and efficient access for pedestrians, cyclists and motorists.

2) To ensure the adequate provision of parking for various services, facilities and residential developments and to efficiently manage parking supply and demand.

3) To ensure that the environmental and amenity objectives of the Town of Vincent Town Planning Scheme No. 1 are not prejudiced.

4) To maintain a high standard of secure and attractive parking facilities.

5) To provide guidance on the development and design of parking facilities.

A major objective of a parking policy is to achieve a desirable level of car access to an area and thereby to establish an optimum number of car parking bays for a precinct. Thus, while recognising that vehicle access is a critical element in ensuring the continued viability of Vincent's diverse precincts, a comprehensive parking policy should seek to balance this requirement with the preservation and enhancement of the environment and to encourage a balanced transport and access system.

Although the objectives in the Town's Parking and Access Policy serve broader planning goals and strategic transport objectives, Vincent does not have clearly defined targets which set out limits to parking supply in each of the various centres comprising the scope of this report. These limits should be based on the environmental and other capacity of each centre to accommodate parking, not on its capacity to accommodate development. This is an important distinction. Modern parking policy should incorporate a philosophy of demand management, not demand satisfaction. The scope of such policy should incorporate elements of supply, location, price and type – the major distinction being between long-stay (commuter) and short-stay parking.

The following general changes would be recommended:

- **More emphasis on TravelSmart and other alternative transport initiatives. The policy already makes provision for end of trip facilities; however, this could be expanded to account for the latest trends and initiatives.**

- **More emphasis on incentives to provide intensification of development around public transport and district centres, and conversely, providing an appropriate supply of parking in other areas. By balancing supply and demand for parking, this will go a long way towards meeting the sustainable development objectives of the Town. As an example, any underutilised car parks should be downsized or redeveloped to meet these objectives, with car parking provided in more strategic locations.**

- **Provision for design guidelines, particularly for multi storey or prominent car parks, to provide for good urban form that also addresses any parking shortfall. Parking should generally be screened where possible and design guidelines may assist prospective developers with this.**

9.1 Commuter Versus Short term Parking

There is some recognition of different parking user groups in Vincent. These include provision for loading, access permit holders, drop-off/pick-up, park-and-ride, residents and cyclists, but Vincent does not sufficiently recognise the most important distinction in parking user groups which is between short-stay (<2 hours) and medium-stay parkers (2 - 4 hours), and long-stay/commuter parkers (>4 hours).

While Vincent does have a mix of short and longer term allocations of some of its public parking spaces, the Town does not yet apply a clear parking hierarchy to acknowledge that in certain private developments a distinction of priorities should be made between user categories. The standard conditions issued with a Vincent planning approval for parking do not incorporate any specific requirements for the management or use of the parking other than compliance with the minimum number of bays specified.

This practice is out of date as there is no specification to maintain a certain percentage of spaces for short term users only. It was noted during site visits that in many car parks there is little or no distinction between short term and long term parking or between staff or visitor parking.

It is recommended that the Town expands the conditions of approval for parking which will include sections dealing with:

- **compliance with minimum configuration and design standards**
- **the requirement for parking bays to be used in accordance with approved modes of use**
- **a need to comply with the parking control and management plan prepared for the development.**

It is generally regarded as best practice that in the area surrounding high activity centres it is desirable that the emphasis be on the provision of short term parking particularly on-street. Public long term car parks should be located further away from central activity areas.[25]

In addition, commuters should be discouraged from using short term parking and moving their cars. Unfortunately, the absence of pay parking technology and the resulting inefficient methods of enforcement in Vincent do not provide a sufficient disincentive to long term parkers who overstay in spaces set aside for short term parking. This is particularly evident in Carr Place and Newcastle/Lord Streets.

9.2 Parking Rates

The first policy statement in the Vincent Parking and Access Policy is:

1) On site parking is to be provided at a rate that adequately meets the demand generated by a particular use or activity as determined by the Town of Vincent.

This 'rate' is a minimum parking requirement which requires that new developments provide a certain number of parking spaces. In Vincent these minimum parking requirements are determined in a Land Use Parking Requirement Table[26] which is related to the size and nature of the development, where size is generally measured in terms of gross floor area.

[25] (per Todd Litman - Victoria Transport Policy Institute, Canada. Parking Management Strategies, Evaluation and Planning April 2006).

[26] Town of Vincent Planning and Building Policy Manual - Parking and Access Policy No 3.7.1 (26/10/2004) at pages 4—6.

It is submitted that the methods used more than 20 years ago to plan for parking are no longer ideal or totally relevant to Vincent They are not reflective of current research into actual requirements. Empirical research undertaken in other Australian States into actual parking demand for shops, supermarkets, restaurants and medical centres, shows that the number of spaces required is between 50% and 80% of the rates stated in their planning codes.

For example, Table 10 compares the results of research undertaken recently in Victoria[27] with current practice:

Table 10: Comparison of current, theoretical and actual parking ratios

Use	Current code in Victoria	Theoretical research	Town of Vincent
Shop	8 spaces per 100 m^2	3-4 spaces per 100 m^2	6.7 spaces per 100 m^2
Supermarket	8 spaces per 100 m^2	5-6 spaces per 100 m^2	6.7 spaces per 100 m^2 (1 per 15 m2)
Dwelling R Codes	2 spaces per dwelling	1-2 spaces per dwelling	Minimum 2 spaces
Office	3.5 spaces per 100 m^2	2-3.5 spaces per 100 m^2	2 spaces per 100 m^2
Restaurant	0.6 spaces per seat	0.2 spaces per seat (lunchtime) 0.4 spaces per seat (evening)	1 space per 4.5 m^2
Medical Centre	5 spaces per practitioner	4 spaces per practitioner (General) 3 spaces per practitioner (Specialist)	3 spaces per consulting room

The Victorian Department of Planning and Community Development reviewed parking provisions in August 2007.[28]

The review found that not only has the inflated supply of parking artificially lowered the costs of driving, but also encouraged low density land use development that has in turn increased vehicle dependence. This has created a positive feedback loop where increased vehicle use creates additional demand for parking which is then reflected by increased minimum parking requirements which in turn stimulates increased vehicle use.

In addition to having unintended detrimental consequences, the methodology underlying minimum parking requirements is considered to lack accuracy and robustness in many situations.

Calculations of minimum parking requirements are typically based on statistical relationships between land use and floor area. In many cases, these relationships explain as little as 5% of the actual demand for parking, thereby indicating that other factors are far more significant than floor area in determining demand for parking.[29] In addition, parking demands may vary significantly in relation to external socio-economic factors, such as the convenience of public transport, the availability and price of parking at the destination and the price of fuel. While it may be convenient to base parking requirements on floor area and land use, the statistical relationships are generally weak and provide little insight into actual demand for parking, either now or into the future

There are numerous examples of cost-effective parking management measures which do not require increasing the supply of parking. Examples include shower and locker facilities for employees who

[27] Russell Fairlie Ratio Consultants - Planning & Design for Activity Centres 2007.
[28] Review of Parking Provisions in the Victorian Planning Provisions Advisory Committee Report, August 2007.
[29] "The High Cost of Free Parking", Donald Shoup, American Planning Association, 2005, pp. 31-48.

walk or cycle, unbundling employee parking from salary packages, providing free passenger transport passes for employees, and developing workplace travel plans. Minimum parking requirements fail to account for demand management measures and therefore provide no incentives for consideration of alternative transport modes.

As development grows in Vincent, the costs of meeting minimum parking requirements will escalate and impede efficient land use development.

Although there is probably little opportunity to reallocate off-street spaces that have been provided on site by developers/businesses, there is an opportunity to review these ratios to ensure they are more relevant for managing future parking provision rather than addressing current supply/management issues.

Parking supply rates for new developments should be reviewed and strategically based on facts and research, and ultimately incorporated into the planning scheme.

It is recommended that a re-evaluation of the current parking planning ratios is necessary in order for Vincent to ensure it is applying practical relevance to future parking requirements.

Initially the 'optimal' number of parking spaces should be determined for a range of different land uses depending on the type and scale of activity on the site, the site location, the role of public transport, the number of persons per car attracted to the site and other factors

The intention is to ensure that sufficient parking and loading is provided on site to meet the needs of the users of the development without requiring parking or loading on-street in the vicinity of the site. It should be noted that the parking rates may overstate the car parking needs for developments where there is (or will be) a relatively high use of alternatives to the car or where the car occupancies are expected to be relatively high for the activity concerned.

Number of spaces

The Land Use Parking Requirement Table has more than 20 classifications for shops in addition to several medical, residential and leisure ratios. **It is recommended that the categories and ratios are amalgamated into fewer categories in order to simplify administration while accepting that most are only approximations in any case**.

Shortfall parking

It is recommended that the following section be added to the Shortfall Parking Table in Section 10.

Factors Reducing the Number of Parking Spaces Required

The following factors will be taken into account in assessing applications for a reduction in the number of parking spaces required:

1. Where parking spaces can serve more than one use or function (e.g. restaurants may derive some of their business from workers already parked in the area).
2. Where the same parking spaces can be available for uses which have peak demands at different times of day.
3. Where it can be demonstrated that use of alternatives to the single occupant car will reduce the demand for parking. This includes:
    - where the development will provide facilities for cyclists including bicycle parking, lockers and showers
    - where a travel plan will be in place, is properly justified and will be maintained over time.

Applications for developments sharing parking with other developments or with a mix of uses may be able to justify a reduced parking provision on the basis of efficiencies gained. Where off-site parking is to contribute significantly to the development's parking provision, it should be close to the site - defined as within 100 m of the site - and be accessible when needed. An enduring agreement such as ownership or lease should exist for the off-site parking to ensure it remains available over time. Informal arrangements such as the use of vacant lots should not be relied on to contribute to the parking requirement.

Unbundling parking

The cost of parking for residential and commercial units is conventionally passed on to the owners or tenants indirectly through the purchase price or rental payment (bundled) rather than directly through a separate charge. This means that tenants or owners are not given the opportunity to purchase only as much parking as they need, and are not able to save money by using fewer parking spaces. By including the parking cost with the unit's cost, the parking is automatically paid for, even if it is not wanted or needed. If people can save money by having fewer cars, they may make different choices.

The removal (or reduction) of minimum parking requirements permits developers to offer apartments without parking or with a single space rather than two spaces thus providing choice and improving affordability. Care must be taken to ensure that adjacent streets are protected from displaced resident parking. The availability of adequate on-street short stay parking for visitors should also be ensured.

An alternative is to enable unbundled parking, i.e. the renting or selling of parking spaces separately, rather than automatically including them with the building space.

High minimum parking requirements discourage developers from unbundling parking because the development is required to provide enough parking to satisfy the demand when parking is free, rather than only the number of spaces that residents would pay for if given the option.

For unbundled parking to function efficiently, building owners must be able to lease or sell excess parking spaces (such as through a parking brokerage service), and the Town needs to regulate on-street parking to avoid spill over problems that could result if residents use on-street parking to avoid paying for parking spaces. **It is recommended that the role of unbundled parking in higher density residential developments and techniques for facilitating it is investigated.**

9.3 Cash in Lieu

Section 11 of the Parking and Access Policy provides for the consideration of cash in lieu of parking where a non-residential development has a shortfall of parking in a comparison with the required planning rates.

The policy provides for the contribution to be held in a trust fund which commenced in 2001 and currently has an accumulated balance of approximately $1.1 million.

It is submitted that Vincent's policy on cash in lieu is inequitable, inflexible and impractical and should be urgently revised.

Inequitable

Section 11 iii) provides that the contribution rate per bay is to be based on the estimated cost of the construction of the bay and any other related costs such as for access ways, manoeuvring areas, landscape areas, landscaping, lighting etc.

This specifically excludes the cost of land and this is reinforced by the current cash in lieu determination set by the Town in terms of Section 11 (v) which is currently $2,700 per space with a proposed increase to $2,800 from July 2008.

Cash in lieu contributions should be commercially realistic and updated annually by an independent valuer. They should be regarded as a true cost of development, and not as a bargain discount. In Leederville, a development offering to pay cash in lieu of $2,700 for an off-street space effectively obtains a ratepayer funded subsidy of $53,300 per space (28 m^2 x $2,000 - $2,700).

This uncommercial fee provides a developer with a substantial ratepayer funded discount which is arbitrary and inequitable for other developers and for the community. **It is recommended that the words 'the market rates for the cost of the land and' are inserted before the words 'estimated cost of contribution' in Section 11 (iii)**.

This addition was suggested in Section 11.4 of the 2002 Strategy.

Inflexible

Section 11 (vii) limits the purposes to which the trust fund can be applied to providing/upgrading existing and proposed public parking facilities.

It is recommended that the range of uses for the trust fund be expanded to include the words 'and improvements to public transport infrastructure, where the Town considers that such expenditure would result in a reduced demand for parking in that area.'

This last use is broad and can be extended to include expenditure on technology for way finding signage and pay parking as well as improvements to the pedestrian and cycling network as these qualify in reducing the demand for parking.

Section 11 (xi) requires that the funds are to be repaid if not used for additional parking within 10 years of receipt. Unless the change to Section 11 (vii) is made, it may be difficult for the Town to expend the funds within 10 years considering the cost of land and the construction costs of parking. **It is recommended that this section should be deleted**.

Many councils with similar schemes such as Fremantle have amended their scheme to permit the hypothecation of the funds to incorporate improvements to transport infrastructure, not exclusively parking, and to permit such investment anywhere within the vicinity. Thus cash in lieu received from a development in the north-west of the city can be applied in the south-east.

Impractical

Section 11 (xii) permits the Town, a discretion to issue free parking passes for any applicant that has contributed to the trust fund. **It is recommended that this is deleted from the policy as it will create an administrative and enforcement nightmare, and it is contrary to the principle of user pay.**

It is further recommended that when a cash in lieu submission is provided to council for consideration, the submission should always be signed by the owner of the premises and not by any business owner or tenant. The owner will obtain the long term benefit of any cash in lieu concession.

10 Review of Each District Centre

10.1 Local Boundary Realignment

From 1 July 2007, part of the suburb of Glendalough south of the Mitchell Freeway and parts of East Perth and West Perth north of the Graham Farmer Freeway were transferred to the control of the Town of Vincent.

The realignments represented rationalisation of the existing situation on the ground. For instance, the sections of East and West Perth were already isolated from the City of Perth by the Freeway and the area in Glendalough already formed part of the suburb of Mount Hawthorn.

Whilst located a reasonable distance from any of the district centres, these areas already form part of the community within the Town of Vincent and the recent realignment only serves to reinforce this. While residents and workers within these areas may have in part been drawn from the Town of Vincent, now that they are included within the Town, these areas will now have to be formally considered by the Town in its future planning.

10.2 Demographics

In February 2008, Data Analysis Australia prepared a demographic study on behalf of the Town of Vincent. The findings of the study included the following:

- There has been a 9.4% increase in the population of the Town between 2001 and 2006.
- There has been an increase in the number of households (both single and couples) without children.
- There has been an increase in the number of households earning more than $1000 per week.
- The most popular form of dwelling is a townhouse with two or more dwellings.
- The most common occupation for both males and females is ‘professional’.

In the Data Analysis Australia document – *Town of Vincent 2024 – Demographic Profile* it is noted that whilst almost 15% of households in Vincent have no motor vehicles, compared with 7.8% of metropolitan households, the suburbs with the highest proportion of two or more motor vehicles are Mount Hawthorn (46.5%), followed by North Perth (38.9%), Leederville (37.6%) and Mount Lawley (35.9%).

From the above, it can be concluded that the Town has a growing population, is relatively affluent and reliant on private vehicle transport, even for those residents in close proximity to the district centres. All of these factors mean that there will be increasing car parking demands in the future on the Town, which will need to be carefully managed.

As surveys have not been undertaken for this review a desktop review of each district centre has been undertaken to determine existing and future car parking supply. The results are presented in Sections 10.3 to 10.7.

10.3 Mount Lawley Centre Precinct

The Mount Lawley Centre Precinct is primarily zoned District Centre under the Local Scheme, with Residential R40 – 60 immediately surrounding it.

The Precinct primarily serves the retail, commercial and community needs of the district, with a strong, attractive residential centre. All parking for commercial developments should be adequately provided for on site, and in general, parking and access should be in accordance with the Parking and Access Policy 2002 as amended by this 2008 review.

Car parking within the Mount Lawley Centre is provided as follows:

Raglan Street car park – 98 bays
Barlee Street car park – 47 bays
Chelmsford Road car park – 56 bays.

In addition, an itemised list of on street parking has been provided as Appendix 1 to the 2002 Strategy.

10.4 North Perth Centre Precinct

The North Perth Centre Precinct is primarily zoned District Centre under the Local Scheme, with Residential R40 – 60 immediately surrounding it.

The Precinct primarily serves the retail, general commercial and community needs of the surrounding district, with a strong, attractive residential centre. All parking for commercial developments should be adequately provided for on site, and in general, parking and access should be in accordance with the Parking and Access Policy 2002.

There are 136 bays within the North Perth Centre.

In addition, an itemised list of on-street parking has been provided as Appendix 1 to the 2002 Strategy.

10.5 Mount Hawthorn Centre Precinct

The Mount Hawthorn Centre Precinct has a principal function of meeting the retail, general commercial and community needs of the residents and workers in surrounding suburbs, with the shopping area forming its focus.

The Precinct is primarily zoned District Centre under the Local Scheme with Residential R30 immediately surrounding it.

Within the Precinct, there are three areas of land zoned Special Use – Car Park, which are occupied by car parking facilities. Their continued use in encouraged by the Town, with any future change in land use requiring a scheme amendment.

Within this Precinct, the provision of bicycle storage and end of trip facilities is encouraged, with adequate parking to be provided and screened from streets and residences. Commercial car parking is required to be provided at the rear of properties.

Car parking within the Mount Hawthorn Centre is provided as follows:

Flinders Street car park – 30 bays
Oxford Street car park – 32 bays
Coogee Street car park – 51 bays.

In addition, an itemised list of on-street parking has been provided as Appendix 1 to the 2002 Strategy.

10.6 Oxford Centre Precinct

The Oxford Centre Precinct has been subject to a previous study and the main district centre is located within the 'core area' of the Precinct.

The locality is primarily zoned District Centre under the Local Scheme with a variety of zonings immediately surrounding including Residential R80, Commercial, Residential / Commercial R80 and reserves for Public Purposes – Primary School, Public Purposes – Technical School and Primary Regional Road.

The district predominantly provides a retail, business and commercial function to the surrounding locality. Bicycle and end of trip facilities are encouraged, with all access and parking to be in accordance with the Parking and Access Policy.

Car parking within the Oxford Centre is provided as follows:

The Avenue car park – 290 bays
Frame Court car park – 210 bays

In addition, an itemised list of on-street parking has been provided as Appendix 1 to the 2002 Strategy.

10.7 Proposed Major Developments

In terms of proposed major developments that may affect the district centres, an examination of building licences granted over the past 18 months shows that the majority of approved developments are new residential developments, where parking is to be provided on site.

In terms of major commercial developments, the Town of Vincent has identified The Avenue car park and the regeneration of the City Motors block.

In addition, the record of building licences issued over the past 18 months has only identified the following major commercial developments:

- Loftus Centre redevelopment
- 81 Walcott Street, Mount Lawley (three storey mixed use development with residential, four shops and a eating house)
- 154-156 Newcastle Street (mixed use development with supermarket and residential units).

A great deal of new commercial and residential development has been intensively developed around public transport routes, to encourage the use of public transport services and reduce the reliance on motor vehicle use.

The review of the car parking strategy will need to take the above developments into account, but also be flexible enough to cater for future developments not yet on the horizon.

10.8 Local Scheme and Policies

Whilst the Town of Vincent Town Planning Scheme No. 1 does not specifically deal with parking requirements, there are several polices and strategies that fall within the Scheme that should be considered.

Town of Vincent 2002 Car Parking Strategy (2002 Strategy)

From a district centre point of view, Part Two of the Strategy examines the existing car parking supply and demands of the Town. It looks at the four aforementioned district centres as well as parts of Perth and West Perth. The Strategy comprehensively identifies the existing demands and no changes are recommended.

Part Three of the Strategy examines future car parking demands, and rightly points out that 'future parking requirements cannot be determined wholly by predicting population growth, development potential and public transport usage. These factors are variable and can be subject to unpredictable economic and social changes'. The recommendations made relating to embracing the TravelSmart program, introducing higher densities around public transport routes, shops and district centres are all still supported.

Part Ten of the Strategy deals with car parking generating uses, all of which are still relevant with the addition of those outlined above.

Further recommendations

A review of recent planning and transport reports should be undertaken, in particular the Leederville Traffic and Services Study (Connell Wagner 2008) and the Leederville Station Study currently being undertaken by consultants on behalf of the DPI. The relevance of older reports reviewed in Sections Seven and Eight of the 2002 Parking Strategy should be considered in the context of the recommendations of the Parking Review.

Recent boundary changes resulted in a nine hectare area of land being transferred to Vincent from the City of Perth. Master planning work is currently being undertaken for this area. **A review should be carried out of the West Perth Regeneration Study once this is finalised and a traffic and services study carried out if required.**

11 Findings and Conclusions

11.1 Findings

The 2002 Car Parking Strategy for the Town of Vincent is a comprehensive, well researched report. With few exceptions, its conclusions and findings are still valid and relevant. It made 33 recommendations for implementation between 2002 and 2012. Many of these were prioritised to be completed by 2008, but this has not occurred. Twenty-one are still to be actioned.

The Town of Vincent has several divisions responsible for aspects of parking management and there is no single division to focus on implementing the recommendations required for a long term sustainable parking strategy. Resolution of parking issues in the town appears to be reactive rather than proactive with an overriding element of appeasing complaints.

While Vincent has implemented some pay parking, in many respects this has been hesitant, and not well considered. The cash in lieu system provides developers with a substantial subsidy, and consequently the funds for building new parking will not achieve that aim. Vincent has lost opportunities to improve the supply and control of parking by delaying the implementation of pay parking and many other recommendations made in the 2002 Strategy.

If no action is taken to better manage parking resources, the Town cannot sustain the current demand satisfaction approach where each development provides its own parking, where drivers and property occupiers expect that they have a right to unlimited free parking and consequently, more and more parking will need to be provided by the Town and developers.

The Strategy will only be as successful as its implementation. Noting the changing nature of both parking policy and local conditions in Vincent, a key finding of this Review is that the opportunities and recommendations identified in the 2002 Parking Strategy have not been sufficiently implemented. Additionally, progress toward implementation does not appear to have been effectively monitored and recorded. It is necessary for council to ensure the appropriate level of commitment is provided to the strategy. **It is recommended that a process to monitor progress towards implementation of these recommendations, and to record where actions and recommendations are deferred, superseded and achieved, should be adopted**.

11.2 Conclusions

The Town requires a paradigm shift in the way it approaches the supply and management of parking. This demand management approach needs to be accompanied by implementation of the overdue recommendations made in the 2002 Strategy. There needs to be a focus on providing improved technologies for pay parking, for enforcement and for way finding signage. All of these will assist in making more effective use of the existing supply of parking.

Implementation of more market related regulations for assessing cash in lieu payments and the more flexible utilisation of the funds derived therefrom, will assist Vincent to improve overall transport and access infrastructure.

Pay parking in off-street sites can be accompanied by substantial improvements to the aesthetics, pedestrian accessibility and safety of these sites. It will also encourage the development of additional parking facilities by the private sector and thereby lessen the burden of provision on the Town.

By implementing the outstanding strategies from 2002 and those recommended in this 2008 review, Vincent can ensure sufficient parking in the long term to support prosperous and vibrant commercial and high activity centres and support accessibility to these centres by encouraging all travel modes including walking, cycling and public transport. Better managed parking will have a positive quadruple bottom line impact:

- Economic – it will support increased development in district centres and growth corridors with more efficient use of land for both parking and other land uses. The user pay principle is likely to mean businesses will pay for parking spaces which are more likely to be available. Development opportunities will increase and become more cost-effective when parking costs can be minimised and congestion is managed.

- Social – it will support a shift to high density which allows more housing and jobs which are easily accessible but may also reduce the amount of available land, because at grade parking may be converted to building, which may or may not incorporate parking.

- Cultural – it will support more effective monitoring of compliance which will create more turnover of spaces in high activity areas and free up more bays for the correct users. This will attract more activity and investment to higher density areas.

- Environmental – until cars become electric and do not emit pollution, emissions will be less than if an increased parking supply was provided, which attracts more vehicles to main centres and growth corridors.

12 Consolidated Recommendations

Table 10: Recommendations from the 2008 Car Parking Review

	Action	Ref. Section	Responsibility	Priority	Approx. cost
1.	Vincent's Parking Strategy is to be identified with and coordinated as part of an integrated transport strategy for the Town and the wider metropolitan area.	4.1	PBH	M	-
2.	All stakeholders in the Town including ratepayers, property owners, developers, community representatives, business groups and in fact everyone who drives a car, needs to become aware of the true commercial capital and ongoing costs of parking resources, in addition to its environmental and social burden.	4.2	PBH/DS/PR	H ongoing	-
3.	A strategic vision for parking be set out according to the timetable in Figure 2.	4.5	PBH		-
4.	Vincent applies a parking user hierarchy and in the short term optimises and maximises the current supply of parking.	4.6.1	PBH		-
5.	Vincent undertakes a program to encourage free parking for scooters in appropriate locations at all the high activity centres. These parking spaces should be well signed and promoted in all council communications.	4.6.2	TS	M	$15,000
6.	A parking user hierarchy is applied to planning decisions.	4.7	PBH		-
7.	The following objectives are adopted for the Parking Strategy for Vincent. The strategy should:	4.8			
	▸ Ensure sufficient parking supply to support prosperous and vibrant commercial and high activity centres.		PBH	M	-
	▸ Provide enforcement resources to ensure safety, adequate turnover of parking spaces to support business activity in the areas and to protect residential amenity.		RS	H	-
	▸ Ensure parking space availability is managed according to the varying needs of businesses, customers and commuters.		RS	M	-
	▸ Promote 'shared' or publicly available parking in preference to single user parking.		PBH	M	-
	▸ Apply CPTED (crime prevention through environmental design) principles in the design of off-street parking facilities.		PBH	M	-
	▸ Determine an appropriate amount per space for cash in lieu and allow flexibility in how the resulting funds are best spent.		CS	H	-
	▸ Accommodate parking for all vehicles including motorcycles and bicycles.		TS	M	-
	▸ Support accessibility to the various high activity centres by recognising all travel modes including walking, cycling and public transport.			M	
	▸ Review the strategy for future needs.		PBH/RS/DS	L	-

	Action	Ref. Section	Responsibility	Priority	Approx. cost
8.	Re-examine demand, volumes, duration of stay, peak usage and compliance with restrictions in areas that have undergone significant change since 2002 and within 500 m of each of the high activity centres being Mount Hawthorn, Leederville, Mount Lawley and Newcastle/Lord Streets Perth.	5.1	PBH	H	$15,000
9.	Vincent make a submission to WALGA to undertake a detailed review of these minimums.	5.2	PBH/WALGA	M	-
10.	Pay parking is extended to all parking bays at the Raglan Road and Chelmsford Road car parks.	5.2	TS	H	$10,000 per machine
11.	Access and signage to the Barlee Street car park is upgraded and a pricing differential is introduced between Barlee Street and all of the parking bays at the Raglan Road and Chelmsford Road car parks.	5.2	TS	H	$30,000
12.	The Town develops a way finding and parking signage package which brands the Town of Vincent and assists drivers to: ▸ know where to look for parking and way finding signage when they need it. ▸ understand the way the information is communicated. ▸ obtain the information quickly and without fuss. The system should be applied across the entire Town equally to council and privately owned public car parking areas.	5.3	TS/PR	M	$40,000
13.	Prior to the potential disposal of any of Vincent's land bank, a review is undertaken to consider whether any site (other than the Brisbane Street car park) may be required at some future stage for either at-grade or deck parking.	5.4	CS	ongoing	-
14.	A deck car park be considered for the Raglan Road site and that an initial design and feasibility study is commissioned for this purpose.	5.4.1	CS	M	$15,000 each
15.	Vincent identify the specific sites available for potential construction of deck parking. Initial sketch design drawings for each should be prepared together with viability and feasibility studies. The findings of these initial studies should then be made available to the private sector.	5.4.1	CS	M	
16.	Neither the Town nor the private sector should be the only provider and a mix of both is desirable.	5.4.1	PBH	M	-
17.	After Vincent confirms its strategic approach to management of parking, then a specific Precinct Parking Management Plan be undertaken for each high activity centre being: ▸ Leederville ▸ Mount Hawthorn ▸ Mount Lawley/Highgate ▸ William Street ▸ Newcastle Street east ▸ Loftus Centre.	5.4.2	PBH	M	$8,000 each
18.	Where pay parking is to be applied, it should be implemented throughout a car park without free parking concessions or different priced zones. This does not preclude variable pricing structure e.g. at	5.5	TS	H	

	Action	Ref. Section	Responsibility	Priority	Approx. cost
	night or on weekends.				
19.	Technology is purchased to improve the efficiency of enforcement, together with the allocation of additional resources to the enforcement division.	5.5.1	RS	H	$7,000 per machine
20.	Vincent urgently replace all the existing ticket parking machines with more up to date technology linked to a wireless management system.	5.5.7	TS	H	$10,000 per machine
21.	Vincent first determine its required functionalities for pay parking technology, before committing to purchase any machines	5.5.7	TS/RS	H	-
22.	Education about and appreciation of parking demand should be available and regularly communicated in the Town's publications. As a minimum, it should deal with the following issues: ▸ drivers cannot expect unlimited parking close to their destination ▸ unlimited supply has environmental, social and economic drawbacks ▸ the principle of user pay ▸ need for sustainability planning ▸ benefits of improved compliance ▸ benefits of parking control and management plans (refer to Section 6.2) ▸ options for reinvestment of income from parking services into improving transport infrastructure.	6.1	PR	M	-
23.	Vincent require a parking control and management plan (PCMP) to be provided by developers together with their application for all developments requiring more than five spaces.	6.2	PBH	M	-
24.	Off-street parking fees as set out in Table 8 are introduced/amended in Vincent.	7.2	TS	H	-
25.	An additional temporary ranger be employed, to improve the level of service and standard of enforcement in the short term.	7.3	RS	H	$60,000
26.	The Town limit the supply of park and ride or support park and ride only where a paid parking regime is implemented to discourage people who work in Vincent from using park and ride facilities in the area. This charge would also contribute to the cost of providing park and ride facilities and should be higher in Leederville than for park and ride stations further from central Perth. The recommendation in the Town of Vincent Car Parking Strategy (2002) that residential streets should be protected from non-residential parking and commuters seeking to park for free and ride into the city, with the implementation of residential parking zones and time limits on affected streets, should be upheld.	8	PBH	M	-
27.	Further liaison and discussions between the Town and DPI take place with regard to the possible extension of the free transit zone into the Town.	8	PBH	M	-
28.	It is recommended that it is critical to identify these important pedestrian streets and routes and ensure that building form next to these streets makes them safe to use.	8.1.1	PBH/RS	M	-

	Action	Ref. Section	Responsibility	Priority	Approx. cost
29.	The following general changes would be recommended: ▸ More emphasis on TravelSmart and other alternative transport initiatives. The policy already makes provision for end of trip facilities; however, this could be expanded to account for the latest trends and initiatives. ▸ More emphasis on incentives to provide intensification of development around public transport and district centres, and conversely, providing an appropriate supply of parking in other areas. By balancing supply and demand for parking, this will go a long way towards meeting the sustainable development objectives of the Town. As an example, any underutilised car parks should be downsized or redeveloped to meet these objectives, with car parking provided in more strategic locations. ▸ Provision for design guidelines, particularly for multi storey or prominent car parks, to provide for good urban form that also addresses any parking shortfall. Parking should generally be screened where possible and design guidelines may assist prospective developers with this.	9	PBH PBH PBH	M M M	-
30.	The Town expands the conditions of approval for parking which will include sections dealing with: ▸ compliance with minimum configuration and design standards ▸ the requirement for parking bays to be used in accordance with approved modes of use ▸ the need to comply with the Parking control and management plan prepared for the development.	9.1	PBH	H	-
31.	A re-evaluation of the current parking planning ratios is necessary in order for Vincent to ensure it is applying practical relevance to future parking requirements.	9.2	PBH/WALGA	M	-
32.	The categories and ratios are amalgamated into fewer categories in order to simplify administration while accepting that most are only approximations in any case.	9.2	PBH/WALGA	M	-
33.	The following section be added to the Shortfall Parking Table in Section 10. Factors Reducing the Number of Parking Spaces Required The following factors will be taken into account in assessing applications for a reduction in the number of parking spaces required: 1. Where parking spaces can serve more than one use or function (e.g. restaurants may derive some of their business from workers already parked in the area). 2. Where the same parking spaces can be available for uses which have peak demands at different times of day. 3. Where it can be demonstrated that use of	9.2	PBH PBH	M M	-

	Action	Ref. Section	Responsibility	Priority	Approx. cost
	alternatives to the single occupant car will reduce the demand for parking. This includes: ▸ where the development will provide facilities for cyclists including bicycle parking, lockers and showers ▸ where a travel plan will be in place, is properly justified and will be maintained over time.		PBH	M	
34.	The role of unbundled parking in higher density residential developments and techniques for facilitating it is investigated.	9.2	PBH	M	-
35.	The words 'the market rates for the cost of the land and' are inserted before the words 'estimated cost of contribution' in Section 11 (iii) of cash in lieu in the Parking and Access Policy.	9.3	CS	H	-
36.	The range of uses for the trust fund be expanded to include cash in lieu	9.3	CS	H	-
37.	Section 11 (xi) of Cash in Lieu Policy should be deleted.	9.3	CS	H	-
38.	Section 11 (xii)) of Cash in Lieu Policy should be deleted.	9.3	CS	H	-
39.	When a cash in lieu submission is provided to council for consideration, the submission should always be signed by the owner of the premises and not by any business owner or tenant.	9.3	PBH	H	-
40.	A review of recent planning and transport reports should be undertaken. In particular the Leederville Traffic and Services Study (Connell Wagner 2008) and the Leederville Station Study currently being undertaken by consultants on behalf of the DPI. The relevance of older reports reviewed in sections seven and eight of the 2002 Parking Strategy should be considered in the context of the recommendations of the Parking Review.	10.8	PBH	M	-
41.	A review should be carried out of the West Perth Regeneration Study once this is finalised and a traffic and services study carried out if required.	10.8	PBH	M	-
42.	That a process to monitor progress towards implementation of these recommendations, and to record where actions and recommendations are deferred, superseded and achieved, should be adopted.	11.1	PBH	M	-

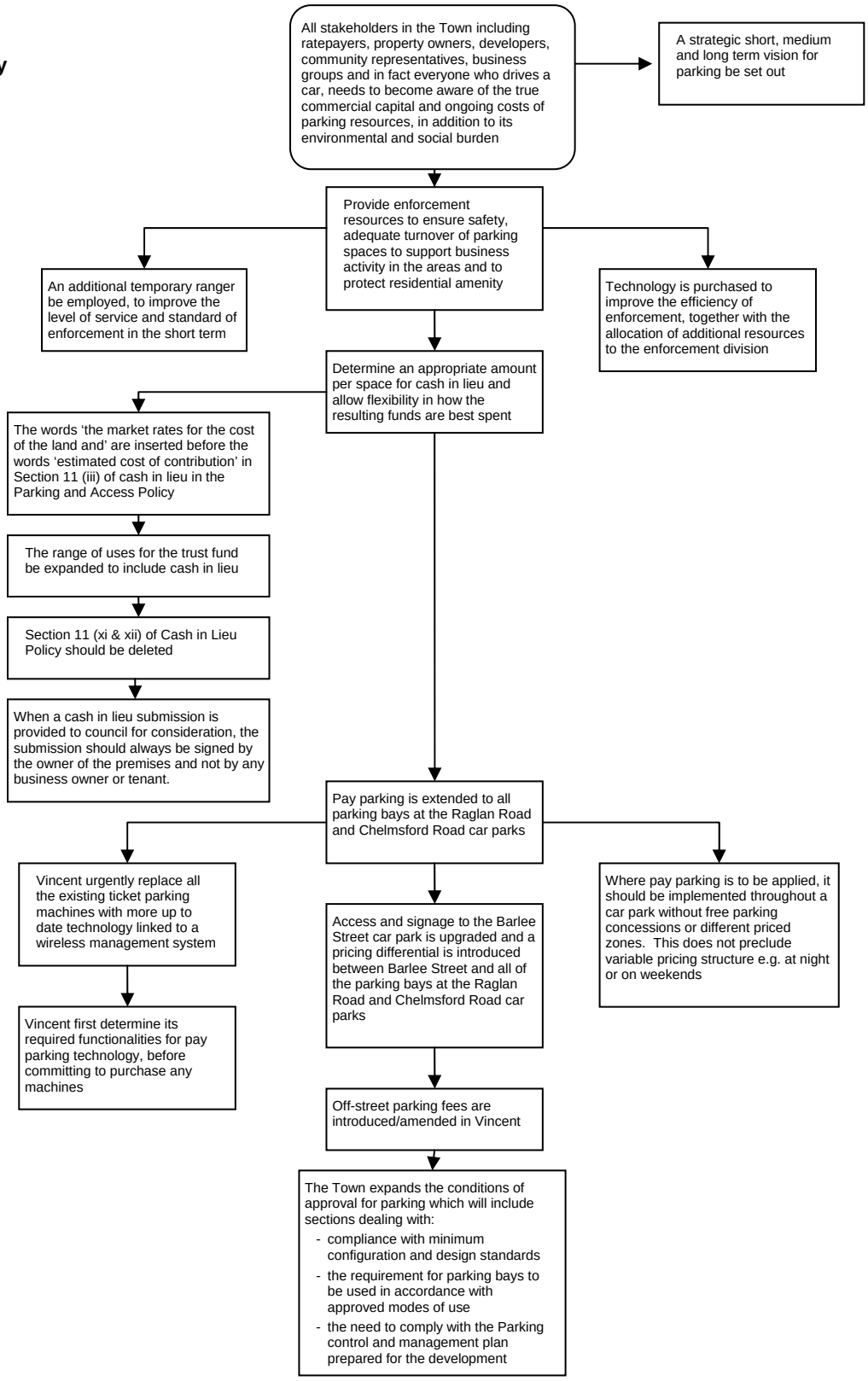
Key:

Responsibility:
- CS - Corporate Services
- DS - Development Services
- RS - Ranger Services
- PBH - Planning, Building and Heritage Services
- PR - Public Relations
- TS - Technical Services
- WALGA - West Australia Local Government Association

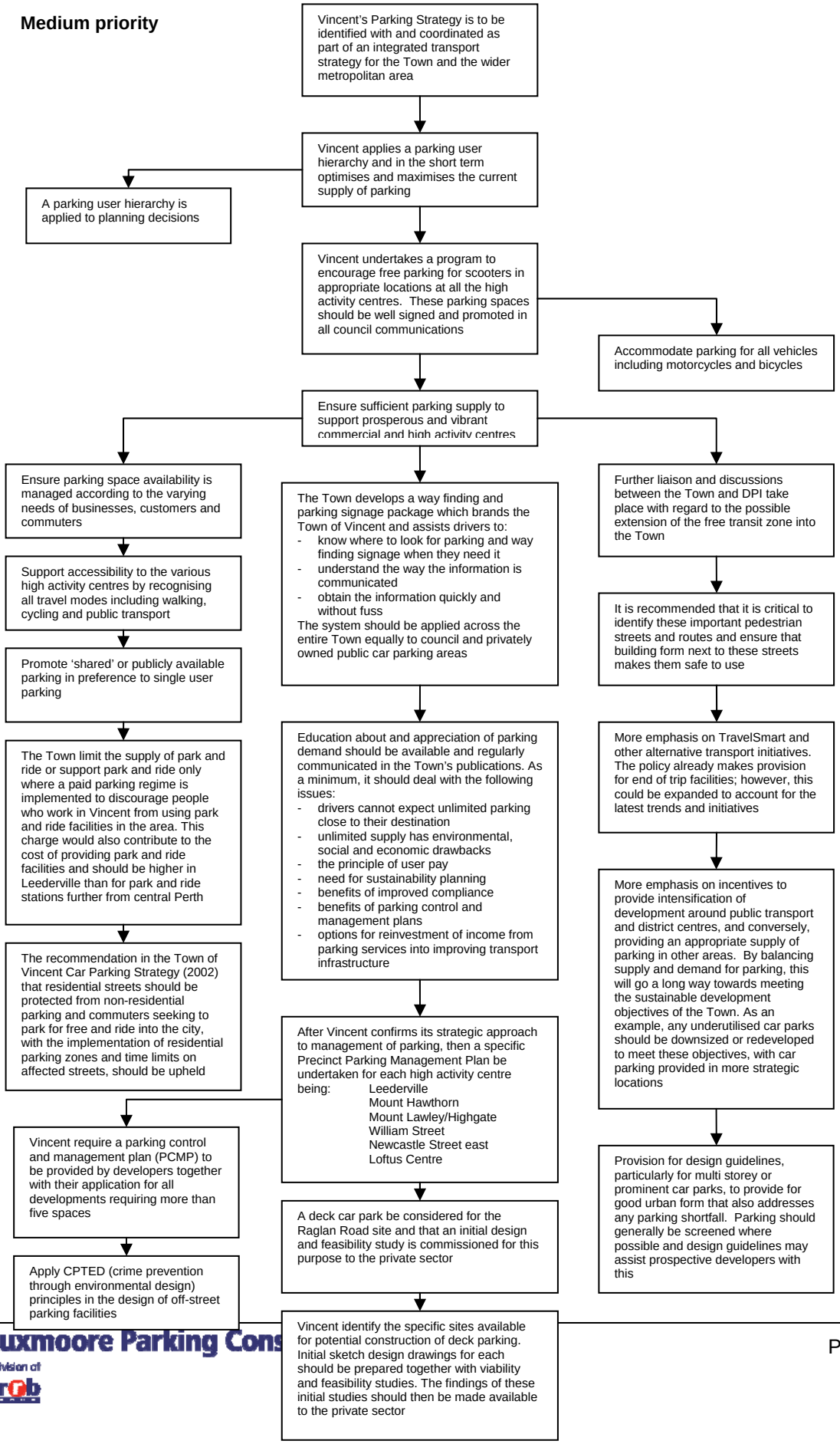
Priority:
- H - High (12 months)
- M - Medium (1 – 5 years)
- L - Low (5 – 10 years)

Recommendations from the 2008 Car Parking Review, prioritised

High priority



Medium priority



Medium / on-going priority

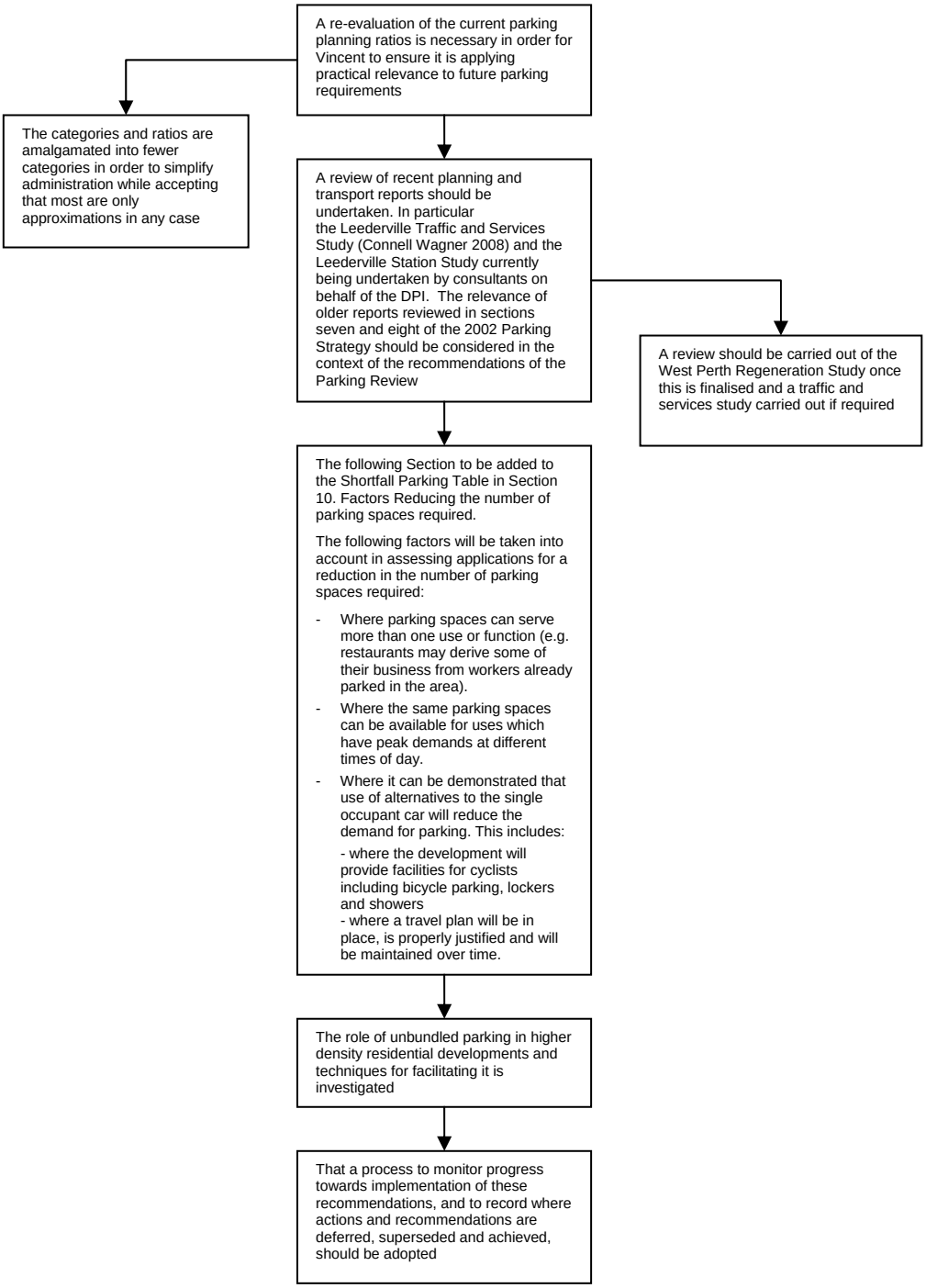


Table 11: Recommendations from the 2002 Car Parking Strategy still to be actioned

	Action	Ref. Section	Responsibility	Priority	Approx. cost	2008 comments
1.	Rezone car parks to appropriately reflect their use.[30]	4.1	PBH	High	Nil	
2.	Prepare and implement a comprehensive upgrade program for the Town's car parks.	4.3	TS	High	Nil	Necessary
3.	Rezone, develop, subdivide, and/or dispose the Gill Street car park.[31]	4.4.1	PBH/CS	Medium	$20,000	Review based on surveys
4.	Construct additional parking, as required on Les Lilleyman Reserve.	4.4.1	TS	Medium	$90,000	Necessary
5.	Dispose of a portion of the Brisbane Street car park.[32]	4.4.2	CS	Medium	$5,000	Review based on surveys
6.	Investigate areas which have been identified as requiring additional parking, for potential acquisitions.[33]	5.1	Town	Ongoing	To be discussed	Necessary
7.	Continued monitoring of the Barlee Street Car Park with the view of possibly redeveloping this site for a more urban oriented mixed use.[32]	5.1	RS	Ongoing	Nil (initially)	Necessary
8.	Prepare and implement design guidelines for the development of multi storey car parks in the Town.[33]	5.2	DS/TS	Medium	Nil	Necessary
9.	Apply parking restrictions in accordance with the recommendations made in Table 6.2.	6.5	TS/RS	High	$310,000	Necessary
10.	Establish a fund from the revenue raised through parking fees, for alternative transport initiatives.	6.3	CS	Medium	Nil	Necessary
11.	Convert Oxford Street within the Oxford Centre into a shared use zone.	8.2	TS	Medium	$500,000	Necessary
12.	Consider a reduction in parking requirements and/or more flexible development control standards in the Precinct, in light of its proximity to the Perth central area and public transport facilities.	8.2	PBH	Medium	Nil	Necessary
13.	Implement alternative transport initiatives such as TravelSmart.[34]	9.3	Town	High	$97,000 over 2 years	Necessary
14.	Implement an education and marketing program to promote the use of different modes of transport.	9.3	Town	Medium	To be discussed	Necessary

30 Will be considered as part of the Town Planning Scheme Review.
31 Gill Street car park has been successfully upgraded.
32 No longer practical.
33 Ongoing.
34 Actioned, however, TravelSmart is not considered the most appropriate initiative for the Town.

	Action	Ref. Section	Responsibility	Priority	Approx. cost	2008 comments
15.	Incorporate bicycle parking requirements in the Parking and Access Policy.	9.5	PBH	High	Nil	
16.	Prepare and implement a study on major pedestrian routes in the Town.	9.5	PBH/TS	Medium	Nil	Necessary
17.	Encourage match promoters to support public transport usage to large games.[35].	10.1 10.2	Town/WAFL/ Other	High	Nil	Necessary
18.	Commence action to encourage private landowners to open their car parks for public usage after hours.	10.5	Town	High	Nil	Necessary
19.	Encourage hotel management to promote the use of alternative modes of transport to their establishment.[36].	10.7	DS/TS	Ongoing	Nil	Necessary
20.	Encourage owners of private car parks which have been identified as unacceptable to improve the condition, to the Town's specifications and satisfaction.	10.7.1	PBH	High/ Medium	Nil	Necessary
21.	Encourage schools to take part in TravelSmart to School or Safe Routes to School, prior to receiving funding assistance for additional car parks.	10.8	Town	Ongoing	Nil	Necessary

[35] Actioned in part.
[36] Ongoing.

13 Appendices

A. Extract from Victorian Parking Rates Review

52.06 CAR PARKING

-/-/-
VC-

52.06-1 Purpose

To ensure that car parking facilities are provided in accordance with:

- The State Planning Policy Framework and the Local Planning Policy Framework including the Municipal Strategic Statement and local planning policies.
- Any Integrated Transport Plan or Structure Plan.

To promote sustainable transport alternatives.

To ensure the provision of an appropriate number of car spaces having regard to the demand likely to be generated by the new use and development and to the relevant social, economic, environmental and physical circumstances of the locality and access to alternative travel modes.

To provide measures to encourage alternative travel modes to the motor car.

To provide a standard set of car parking rates for specified uses.

To provide the opportunity to specify alternative local parking rates, including maximum rates, in appropriate locations.

To promote the efficient use of car spaces through the consolidation of car parking facilities.

To protect the residential amenity from car parking associated with commercial uses and activity centres.

To ensure that the design and location of car parking areas:

- Does not adversely affect the amenity of the locality, such as increased noise or disturbance to dwellings and the amenity of pedestrians and other road users.
- Achieves a high standard of urban and landscape design.
- Provides for water sensitive urban design,
- Creates a safe environment for users, particularly at night.
- Protects the role and function of nearby roads.
- Facilitates the use of all travel modes.
- Facilitates easy and efficient movement and delivery of goods.

52.06-2 Provision of car spaces

-/-/-
VC-

When must car spaces be provided?

A new use must not commence or the floor area of an existing use must not be increased until the required car spaces have been provided.

This does not apply if the car parking requirement for the new use is less than the requirement for the existing use, provided the existing number of car spaces is not reduced.

Where the floor area occupied by an existing use is increased, the car parking requirement only applies to the floor area of any extension of the use or site area, provided the existing number of car spaces is not reduced.

How can car spaces be provided?

Provision can be made for car parking spaces by:

- Providing the car spaces on the land.
- Providing the car spaces on nearby land to the satisfaction of the responsible authority.
- Contributing to a parking and access fund specified in a schedule to a Parking Overlay at Clause 45.08.
- A combination of the above to the satisfaction of the responsible authority.

A parking and access fund established by a municipality may require payment of cash-in-lieu for the provision of car parking spaces. The fund may be used for the provision of car parking, improving access by other travel modes or other travel management measures, unless a schedule in the Parking Overlay specifies otherwise.

52.06-3
--/--/--
VC--

Number of car spaces to be provided

The number of car spaces required to be provided for specified uses are set out in Column A of the table at Clause 52.06-5, unless a different requirement is specified in a Parking Overlay at Clause 45.08.

Note:
Column B figures for Activity Centres require the introduction of a Parking Overlay to be applied.

The requirement for a use listed in the table is the product of Column A and Column C of the table. Where the table to Clause 52.06-4 or a Parking Overlay specifies a percentage of site area this includes accessways but not driveways.

If no requirement is specified in the table at Clause 52.06-5 or in a Parking Overlay an adequate number of car spaces must be provided to the satisfaction of the responsible authority.

These requirements do not apply if there is a parking requirement for the particular use under another clause.

Reducing the car parking requirement

Note:
Reduction is used to refer to determining a lower empirically based rate (than specified in the Table) for a proposal.

A permit may be granted to reduce the required number of car spaces unless a Schedule to a Parking Overlay at Clause 45.08 specifies otherwise.

A permit cannot be granted to reduce the requirement below a reasonable empirical assessment for the parking demand likely to be generated.

Decision guidelines

Before a requirement for car spaces is reduced the applicant must satisfy the responsible authority that the reduced provision is justified having regard to:

- An empirical assessment of car parking demand including:
  - Reduction in demand due to multi purpose trips in an area.
  - The variation of car parking demand over time.
  - The availability of public transport in the locality.
  - The likely car ownership rates of likely or proposed residents of accommodation.
- The contribution to alternative transport initiatives including:
  - Contributions to works for alternative modes.
  - The provision of bicycle parking and end of trip facilities for cyclists.
  - Contributions to, or an agreement to carry out, a travel demand management program.

  - Direct provision of public transport services.

- Any other relevant consideration.

Waiving the provision of parking

Note:
Waiving is used to refer to not providing all or part of the spaces required.

A permit may be granted to waive all or part of the provision of car spaces required (including a reduced requirement) unless a Schedule to the Parking Overlay at Clause 45.08 specifies otherwise.

Before a requirement for the provision of car spaces is waived, the applicant must satisfy the responsible authority that waiving all or part of the required spaces is justified having regard to:

- Any relevant Local Planning Policy, Integrated Transport Plan or Structure Plan.
- The availability of car parking:
  - Including efficiencies gained from the consolidation of shared car parking spaces.
  - In public car parks intended to serve the land.
  - On streets within business zones.
- The economic viability of an activity centre and any adverse economic impact a shortfall of parking may have on the economic viability of an activity centre.
- The future growth and development of an activity centre.
- Any empirical car parking deficiency associated with the existing use of the land, but only where existing buildings are being reused.
- Any credit that should be allowed for a car parking spaces provided on common land or by a Special Charge scheme or cash-in-lieu payment.
- The equity of waiving the car parking requirement having regard to any historic contributions by existing businesses.
- Local amenity including pedestrian amenity and the amenity of nearby residential areas.
- Local traffic management.
- The need to create safe functional and attractive parking areas.
- The need to respect the character of the neighbourhood or achieve a quality urban outcome.
- Any other relevant consideration.

52.06-4 Design and construction

--/--/--
VC--

Car parking plan

Before any use commences or any building or works associated with that use or an existing use is constructed, a plan must be prepared to the satisfaction of the responsible authority showing:

- All required car spaces
- Access lanes, driveways and associated works
- Allocation of spaces to different uses or tenancies, if appropriate.
- Landscaping.

A plan is not required when the spaces will be provided by way of a contribution to a parking and access fund.

Provision before commencement

Before any use commences or any new building is occupied, the car spaces, access lanes, driveways and associated works and landscaping shown on the parking plan must, to the satisfaction of the responsible authority, be provided and available for use and be:

- Formed to such levels and drained so that they can be used in accordance with the plan.
- Treated with an all-weather seal or some other durable surface.
- Line-marked or provided with some other adequate means of showing the car spaces.

Design standards

Note:
There is guidance on the design of parking in the *Activity Centre Guidelines*, *Guidelines for Higher Density Residential Development* and the *Safer Design Guidelines for Victoria*.

Responsible authorities should have regard to the following documents:

- Design Guidelines for Higher Density Residential Development (Department of Sustainability and Environment 2004) in assessing the design of car parking in residential development of four or more storeys.
- Activity Centre Design Guidelines (Department of Sustainability and Environment 2005) in assessing the design of car parking in activity centres.
- Safer Design Guidelines for Victoria (Crime Prevention Victoria and Department of Sustainability and Environment 2005) in assessing the design of car parking.

The car parking plan should meet the following standards. A permit may be granted to vary any dimension or requirement of this clause.

General

The layout of car parking areas should provide for Water Sensitive Urban Design treatment and landscaping as appropriate.

Accessways and spaces

Accessways should:

- Be at least 3 metres wide.
- Have an internal radius of at least 4 metres at changes of direction or intersections or be wider than 4.2 metres.
- Allow vehicles parked in the last space of a dead-end accessway in public car parks to exist in a forward direction with one manoeuvre.
- Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres.

Car spaces and accessways should have the following minimum dimensions:

Angle of car spaces to accessway	Accessway width	Car park width	Car park length
Parallel	3.6 m	2.3 m	6.7 m
45°	3.5 m	2.6 m	4.9 m
60°	4.9 m	2.6 m	4.9 m
90°	6.4 m	2.6 m	4.9 m
	5.8 m	2.8 m	4.9 m
	5.2 m	3.0 m	4.9 m
	4.8 m	3.2 m	4.9 m

Where a wall, fence column, tree guard or any other structure abuts a car space clearance should be provided in accordance with Diagram 1.

Car spaces may include trees planted in rain gardens with flush grills 2 metres by 2 metres set at 45 degrees to the car space at the rear corners.

A structure may project into the space if it is at least 2.1 metres above the space. A column or tree guard may project into a space if it within the area marked in Diagram 1.

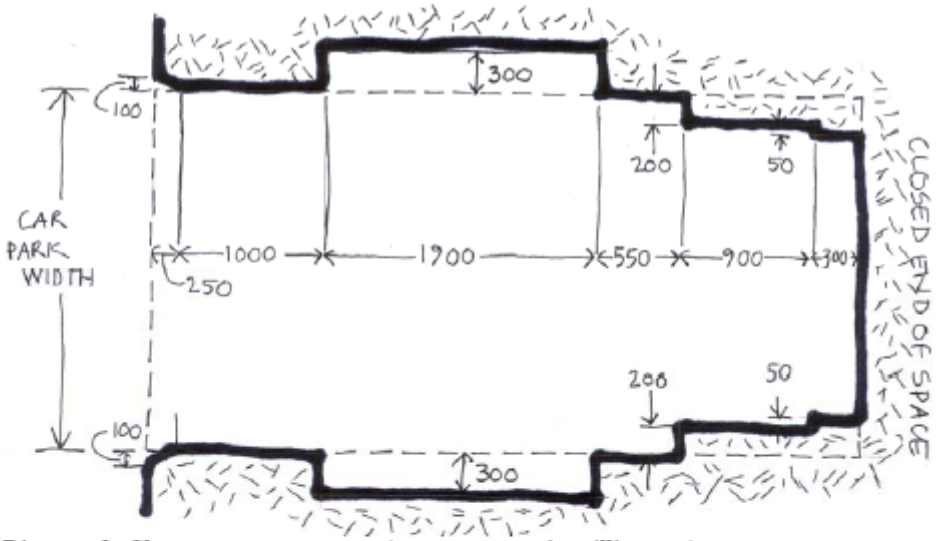


Diagram 1: Clearances to car spaces (measurements in millimetres)

Entries and exits

Pedestrian entrances and exists should be separate from vehicular entrances and exits.

Accessways should:

- Provide a turning space so that cars can exit the site in a forward direction if the accessway serves four or more car spaces or connects to a road in a Road Zone.

- Provide a passing area at the entrance at least 5 metres wide and 7 metres long if the accessway serves ten or more spaces and is either more than 50 metres long or connects to a road in a Road Zone.
- Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of the exit lane and 2.5 metres along the exit lane from the frontage to provide a clear view of pedestrians on the footpath of the frontage road.

If an accessway to 4 or more car spaces is from land in a Road Zone, the access to the car spaces must be at least 6 metres from the frontage.

If entry to the car space is from a road, the width of the accessway may include the road.

Gradients

Accessways should have a maximum grade of 1 in 20 (5 per cent) for at least 6 metres from the frontage. This does not apply to access ways serving three or fewer dwellings, or access ways that comply with the Australian Standard.

Ramps (except within 6 metres of the frontage) should have the following maximum grades:

Type of car park	Length of ramp	Maximum grade
Public car parks	20 metres or less	1:5 (20 %)
	longer than 20 metres	1:6 (16.7 %)
Private or residential car parks	20 metres or less	1:4 (25 %)
	longer than 20 metres	1:5 (20 %)

Where the different in grade between two sections of ramp or floor is greater than 1:8 (12.5 per cent) for a summit grade change, or greater than 1:6.7 (15 per cent) for a sag grade change the ramp should include a transition section of at least 2.0 metres to prevent vehicles scaping or bottoming.

Grade changes of greater than 1:5.6 (18 per cent) or less than 3 metres apart should be assessed for clearances using the Australian standard.

Mechanical parking

Mechanical parking may be used to meet the parking requirement provided:

- The headroom clearance for a driver accessing a car is not less than 2 metres.
- Sufficient vehicle queuing space is available on-site to allow a vehicle to wait without unduly blocking access ways.
- The spaces are allocated to specific users who are familiar with the operation of the equipment or are used in valet parking situations.

Decision guidelines

Before deciding that any plan is satisfactory, or whether a permit should be granted to vary any dimension or requirement, the responsible authority must consider:

- Any relevant Local Planning Policy, Integrated Transport Plan, or Structure Plan.

- Whether the layout of car spaces and access lanes are consistent with the specific standards or a variation generally in accordance with Australian Standard AS2890.1 – 2004, Parking facilities, Part 1: Off-street car parking.
- The protection and enhancement of the streetscape.
- The provision of landscaping for screening and shade.
- The design and construction standards proposed for paving, drainage, line marking, signage, lighting and other relevant matters.
- The provision for pedestrian movement within and around the parking area.
- The measures proposed to enhance the security of people using the parking area.
- The provision of parking facilities for cyclists and disabled people.
- The type and size of vehicle likely to use the parking area.
- The ease and safety with which vehicles gain access to the site and circulate within the parking area.
- The need for the required car spaces to adjoin the premises used by each occupier, if the land is occupied by more than one occupier.

52.06-5 Requirements

-/-/-
VC-

Use	Rate		Car parking measure
	Column A Standard	Column B Activity centre	
Shop other than listed in this table	4	3.5	to each 100 sq m of leasable floor area
Amusement parlour	4	3.5	to each 100 sq m of leasable floor area
Art and craft centre	4	3.5	to each 100 sq m of leasable floor area
Betting agency	4	3.5	to each 100 sq m of leasable floor area
Postal agency	4	3.5	to each 100 sq m of leasable floor area
Primary produce store	4	3.5	to each 100 sq m of leasable floor area
Supermarket	5	5	to each 100 sq m of leasable floor area
Restricted retail premises	3	2.5	to each 100 sq m of leasable floor area
Convenience shop if the leasable floor area exceeds 80 sq m	10	–	to each premises
	–	3.5	to each 100 sq m of leasable floor area
Market	8	3.5	to each 100 sq m of leasable floor area
Food and drink premises other than listed in this table	4	3.5	to each 100 sq m of leasable floor area
Restaurant	0.4	–	to each patron permitted
	–	3.5	to each 100 sq m of leasable floor area
Convenience restaurant	0.4	–	to each patron permitted
	–	3.5	to each 100 sq m of leasable floor area
Winery	0.4	–	to each patron permitted
	–	3.5	to each 100 sq m of leasable floor area
Tavern	0.4	–	to each patron permitted
	–	3.5	to each 100 sq m of leasable floor area
Hotel	0.4	–	to each patron permitted
	–	3.5	to each 100 sq m of leasable floor area
Gambling premises	0.4	–	to each patron permitted
	–	3.5	to each 100 sq m of leasable floor area
Office other than listed in this table	3.5	3	to each 100 sq m of net floor area
Mail centre	3.5	3	to each 100 sq m of net floor area
Research centre	3.5	3	to each 100 sq m of net floor area
Dwelling	1	1	to each one or two bedroom dwelling, plus
	2	2	to each three or more bedroom dwelling (with studies or studios that are separate rooms counted as bedrooms), plus
	1	0	for visitors to every five dwellings for developments of five or more dwellings
Home occupation	1	1	to each person who works in the home occupation who is not a resident of the dwelling

Use	Rate		Car parking measure
	Column A Standard	Column B Activity centre	
Display home	5	0	to each dwelling for five or fewer contiguous dwellings, plus 2 to each additional contiguous dwelling
Residential village except provided by the Office of Housing	1	1	to each one or two bedroom dwelling, plus
	2	2	to each three or more bedroom dwelling (with studies or studios that are separate rooms counted as bedrooms), plus
	1	0	for visitors to every five dwellings for developments of five or more dwellings
Retirement village except provided by the office of Housing	1	1	for each one or two bedroom dwelling, plus
	2	2	for each three or more bedroom dwelling (with studies or studios that are separate rooms counted as bedrooms), plus
	1	0	for visitors for every five dwellings for developments of five or more dwellings
Residential village provided by the Office of Housing	0.3	0.3	to each dwelling
Retirement village provided by the Office of Housing	0.3	0.3	to each dwelling
Residential aged care facility	0.3	0.3	to each lodging room
Motel	1	1	to each unit, and to each manager dwelling, plus 50 per cent of the relevant requirement of any ancillary use
Place of assembly, except Amusement parlour	0.3	0.3	to each patron catered for
Cinema based entertainment complex	0.3	0.3	to each patron catered for
Funeral parlour	0.3	0.3	to each seat or to each sq m of net floor area, whichever is greater
Medical centre	5	–	to each person providing health services
	–	3.5	to each 100 sq m of leasable floor area
Veterinary centre	5	–	to each person providing animal health services
	–	3.5	to each 100 sq m of leasable floor area
Industry other than listed in this table	2.9	1	to each 100 sq m of net floor area of buildings
Warehouse other than listed in this table	1.5	1	to each 100 sq m of net floor area
Freezing and cool storage	1.5	1	to each 100 sq m of net floor area
Motor repairs	3	3	to each 100 sq m of net floor area plus one space for each vehicle being serviced, repaired or fitted with accessories, including vehicles waiting to be serviced, repaired or fitted with accessories, or to be collected by their owners
Fuel depot	10	10	per cent of site area
Landscape gardening supplies	10	10	per cent of site area
Materials recycling	10	10	per cent of site area
Milk depot	10	10	per cent of site area

Use	Rate		Car parking measure
	Column A Standard	Column B Activity centre	
Saleyard	10	10	per cent of site area
Store other than listed in this table	10	10	per cent of site area
Trade supplies	10	10	per cent of site area
Education centre other than listed in this table	0.4	0.3	to each student that is part of the peak student load
Child care centre	0.2	0.2	to each child
Primary school	1	1	to each employee
Secondary school	1.2	1.2	to each employee
Bowling green	6	6	to each rink, plus 50 per cent of the relevant requirement of any ancillary use
Golf course	4	4	to each hole, plus 50 per cent of the relevant requirement of any ancillary use
Squash court other than in conjunction with a dwelling	3	3	to each court, plus 50 per cent of the relevant requirement of any ancillary use
Swimming pool other than in conjunction with a dwelling	5.6	5.6	to each 100 sq m of site
Tennis court other than in conjunction with a dwelling	4	4	to each court, plus 50 per cent of the relevant requirement of any ancillary use

B. Deck Parking

The following parameters are based on the construction of a deck car park on the current parking site at The Avenue in Leederville, however, they could be applied to similar sites.

For the purpose of the business model, it is assumed that the new deck car parking facility will be constructed in 2011. Additional assumptions which are essential to the success of this development are separated into development and operational categories.

Development assumptions

- 250 spaces above ground deck car park > 3 levels.
- Cost of land is nil.
- Operation commences in 2012.
- Interest on the loan is at 7% per annum and the discount rate is 8%.
- Repayment of the principal and interest in equal instalments over 25 years.
- 31 m^2 per bay with a current construction cost of $27,000. (The model excludes inflationary increases in cost). This estimate is considered reasonable based on the Rawlinsons 2007 Construction Handbook[37] (at page 50) allowing for an increased country area loading and the inclusion of all car park presentation, signage and revenue and access control equipment in keeping with the following assumptions:
  - the car park design will be driver friendly at entry, at exit, and in searching for spaces
  - facilities such as pedestrian walkways, toilets, stairs, doors and lifts will be of a high standard befitting a busy public car park. The car park will be well lit and ventilated
  - revenue escalates at 4.5% per annum and recurrent costs at 3%
  - all parkers will pay for parking, and there will be no free or discounted parking
  - no additional public parking will be developed within 300 m of the car park
  - pay parking in the surrounding streets will be introduced at least 12 months before construction commences
  - the current on-street public parking enforcement regime is to be escalated.

Operational assumptions

- There will be a strong perception of safety and security in the car park for all users and their vehicles, with CCTV and mobile patrols. Without these, the motivation for the public to pay for parking will be diminished.
- It will be open to the public for a substantial portion of the day and evening (minimum 6 am to midnight).
- Control will be via a self pay operation with boom gates, but a mobile security/customer service presence will be available on-site.

[37] Rawlinsons Australian Construction Handbook 25 Ed. 2007 (Rawlinsons 2007).

- The public parking fee in 2012 is to be $1.50 per hour to a maximum of $12.00 for any 24 hour period. This is based on an assumed fee for on-street parking greater than $1.50 per hour in 2012.
- The revenue model is conservative and gives a priority to short term parkers, then long term parkers who purchase a monthly pass, then all day parkers and finally, early birds.
- An allowance of $15 per space per annum for consumables, power, maintenance, insurances, finance charges and promotion. These charges will vary only slightly as a result of an increase in the number of spaces.

If all of the above assumptions are achieved, the car park will be operationally profitable from Year 1, but will take 10 years before it first shows an annual surplus after deducting the annual loan instalment. Negative NPV (net present value) is -$85,706 and the investment shows a 7.0% internal rate of return.

Tables 12, 13 and 14 set out the estimated costs, revenue and the financial model for the proposed car park.

Table 12: Proposed 250 space deck car park in Leederville – cost estimates

ARRB Deck Car Park Model for Vincent	250 Spaces			PARKING	COST	ESTIMATE			19/03/2008
Ongoing Direct Costs									
Avge Increase pa	3%			**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Security 18 hrs per day				$141,000	$145,230	$149,587	$154,075	$158,697	$163,458
Rates per space				$5,000	$5,150	$5,305	$5,464	$5,628	$5,796
Maint. Bldg/Eqpt/Systems				$6,750	$6,953	$7,161	$7,376	$7,597	$7,825
Insurances PL/Bldg				$4,500	$4,635	$4,774	$4,917	$5,065	$5,217
Consumables/tkts/cleaning				$15,000	$15,450	$15,914	$16,391	$16,883	$17,389
Accounts/admin/audit				$1,500	$1,545	$1,591	$1,639	$1,688	$1,739
Sundry				$6,000	$6,180	$6,365	$6,556	$6,753	$6,956
Total $ excl GST				**$179,750**	**$185,143**	**$190,697**	**$196,418**	**$202,310**	**$208,380**
Cost/space/annum				**$719**	**$741**	**$763**	**$786**	**$809**	**$834**

Table 13: Proposed 250 space deck car park in Leederville – revenue estimates

ARRB Deck Car Park Model for Vincent	250 Spaces			PARKING REVENUE ESTIMATE					2/05/2008
Parking Fees									
Avge Increase pa	4.5%			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Public per hr max 8 hours				$1.50	$1.57	$1.64	$1.71	$1.79	$1.87
All day parkers				$7.50	$7.84	$8.19	$8.56	$8.94	$9.35
Evenings/w'end				$3.50	$3.66	$3.82	$3.99	$4.17	$4.36
Monthly pass				$160.00	$167.20	$174.72	$182.59	$190.80	$199.39
Parking Volumes	Volumes	Avge duration	Usage	Estimated	Annual	Revenues			
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Public Mon - Sat	180	2.5	30%	$175,500	$183,398	$191,650	$200,275	$209,287	$218,705
All day Mon - Fri	150	7	60%	$292,500	$305,663	$319,417	$333,791	$348,812	$364,508
Monthly pass	20	8	7%	$38,400	$40,128	$41,934	$43,821	$45,793	$47,853
Public evenings	30	2.5	20%	$27,300	$28,529	$29,812	$31,154	$32,556	$34,021
Public weekends	90	4	40%	$32,760	$34,234	$35,775	$37,385	$39,067	$40,825
Total $ excl GST				**$566,460**	**$591,951**	**$618,588**	**$646,425**	**$675,514**	**$705,912**
Revenue/space/day				$6.21	$6.49	$6.78	$7.08	$7.40	$7.74

Table 14: Proposed 250 space deck car park in Leederville – financial model

ARRB DECK CARPARK FINANCIAL MODEL																									
						250 BAYS							**2/05/2008**												
Assumptions																									
Capital Value of Project 2009	$ 6,750,000				3 levels																				
Long Term Interest Rate	7.00%				250 bays																				
Period of Lease	25	Years			31m2 per bay																				
Discount Rate	8.00%				$27,000 per bay																				
Annual Increase in Parking Charges	4.50%				Year 1 rev/bay/day $6.08																				
Casual Increase in Parking Charges	4.50%																								
Annual Increase in Operating Costs	3.00%									Years															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	$'000	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Gross Casual Carparking Revenue	542	**566**	592	619	646	675	706	738	771	805	842	880	919	961	1,004	1,049	1,096	1,145	1,197	1,251	1,307	1,366	1,427	1,492	1,559	1,629
Gross Permanent Carparking Revenue	0	**-**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	542	**566**	592	619	646	675	706	738	771	805	842	880	919	961	1,004	1,049	1,096	1,145	1,197	1,251	1,307	1,366	1,427	1,492	1,559	1,629
Operating Costs	175	**180**	186	191	197	203	209	215	222	228	235	242	250	257	265	273	281	289	298	307	316	326	335	345	356	366
Net Revenue	367	**386**	406	427	449	473	497	522	549	577	607	637	670	704	739	776	815	856	899	944	991	1,040	1,092	1,146	1,203	1,263
Lease Payments		**-579**	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579	-579
Surplus/Deficit		**-193**	**-173**	**-152**	**-130**	**-107**	**-82**	**-57**	**-30**	**-2**	**27**	**58**	**90**	**124**	**160**	**197**	**236**	**277**	**320**	**365**	**412**	**461**	**513**	**567**	**624**	**683**
Total repayment of capital & interest	$ (11,584,420)																									
Return (Cost) over lease term	$ 1,340,655																									
PRESENT VALUE OF CASH FLOWS	$ (85,706)																									
INTERNAL RATE OF RETURN	7.0%																									

C. Issues Associated with Paid Parking

Paper, presented by Larry Schneider of ARRB Group, to the Canadian Parking Convention, Prince Edward Island, 1 October 2007.

This paper sets out the major issues associated with the implementation of pay parking and options to deal with these issues.

Considerations for the Installation of On-street Pay Parking

Introduction

Parking is a very scarce resource.
Everyone wants it. They want plenty of it and they want if for free.
Where is the equity? How do you allocate it to those with the greatest need? How do you discourage certain parkers and encourage others?

This presentation is not about whether to implement pay parking or not. That is a separate and sensitive topic. But with the growth in vehicle numbers in Canada exceeding 700 additional vehicles per day, every single day, and with it the ever increasing demand for parking spaces, at home, at work and for leisure activities, pay parking control seems inevitable – it is just a question of time.

What I want to raise for you today, are many of the issues that need to be considered, before, during and after the implementation of pay parking in your streets. These issues apply not only to ward councils, but are equally relevant to hospitals, university campuses, recreation sites and large and small shopping centres. The owners of all of these 'free' parking facilities will be collectively referred to in this paper as the 'organisation'.

Who will be affected

Pay parking has an immediate effect on any vehicle coming in to your area. Obviously the major group is drivers themselves.

Drivers - There are many kinds of drivers and we need to be aware of their different needs. Consider the requirements and concerns of:

- short tem parkers and visitors
- commuters and long term parkers
- loading vehicles and couriers
- residents
- handicapped drivers, taxis, tour buses
- drivers with children.

Other stakeholders that will be affected by the introduction of pay parking are:

Businesses and commercial premises – most of whom will tell you that their business cannot exist without free parking.

Residents – feel they are entitled to parking for all their cars, trailers, campervans and visitors.

Staff in your organisation – those dealing with planning, policy, communications, finance, maintenance, compliance, and security.

Ward councillors and staff – face the quandary of balancing the views of their constituents with the long term good.

Ratepayers and community councils – pay towards subsidising free parking for non-ratepayers. Some ratepayers don't need to park as they use alternative forms of transport.

Owners of nearby car parking areas – which currently provide free parking. They will be immediately and severely affected by spill over, unless they too make changes.

Other similar and competing organisations – who will be monitoring the success or otherwise of your program.

So there are the interests of many different parties to consider in the pay parking debate.

Three Stages

The implementation of pay parking involves three stages, each of which requires careful preparation and completion if the next stage is to be successful. These three are the:

- evaluation and decision stage
- implementation stage
- management of the system once it is installed and operating.

The organisation must be very clear about what the issues in each are in each stage, and in particular, the order in which they are to be dealt with.

Evaluation and decision to implement pay parking

The important issues here are **communication, feasibility studies, surveys, financial models and consultation.**

Communication

Throughout the decision making process, it is vital that official communications are released regularly. A poorly planned or communicated decision will sink a worthwhile pay parking scheme, and it will be many years before the concept can be raised again. It is essential to communicate the plans and timetable in a transparent, clear and timely manner, even if the exercise leads to a decision not to implement pay parking.

In Randwick NSW Australia, an inner suburb of Sydney, it was simply announced that pay parking was to be introduced, and the reason given was that the income was needed to fill a large hole in the council's budget. There was a massive outcry by residents and businesses, and the project had to be withdrawn. It is unlikely to be attempted again.

Stakeholders need to be regularly updated by official communications. We all hate paying for parking, and exaggerated rumour will spread like wildfire if all stakeholders are not kept informed from the very beginning of the process. Use your website, your newsletter and even private letters to explain why pay parking is being considered, how the decision making process will occur and what the expected timetable will be.

Feasibility studies

Get the information needed to make an informed decision. Establish where the pay parking should and should not be located, Highlight areas which will require special consideration, such as school drop-off

zones. Dealing with spill over into adjacent residential areas will require a solution to allay the fears of residents. Assess all of the costs, and all of the income, including infringement income.

Surveys

Occupancy and duration surveys are essential for any meaningful feasibility study. Do not rely on anecdotal information. Comprehensive surveys should also examine origin and destination, and number of passengers per vehicle. Significant results from the survey should be repeated at least once a year, to establish trends.

Financial models

Consider several financial models, with different fees and different hours of operation and different levels of compliance. Make sure you get an independent, experienced professional to undertake the study, not an equipment supplier or operator or anyone that will do it at no charge.

Consultation

The introduction of a pay parking scheme should be done with consultation that allows for transparency in the process, and provides steps to adequately disseminate information in an accurate and timely manner.

Consultation involves the organisation proactively engaging with different stakeholders to seek their views about a specific proposal or range of parking options that are being considered. It is not simply a question of 'do you want pay parking in your street?' We all know the answer to this rhetorical question. Consultation involves explaining what the problems and the options are, what will occur if no action is taken, and how pay parking will impact on drivers. The process requires empathy to individual difficulties and where necessary, catering to some exceptions. There are many different techniques for successful consultation including briefings with representative groups, mailbox drops, online surveys and feedback sessions with community councils.

Consultation has been cited by a number of councils as the most important component in the successful introduction of pay parking The benefit of consultation is knowledge that the views of stakeholders in the community have been incorporated in decisions of the organisation to achieve better outcomes for people and their precinct.

Implementation of the system

Once a decision has been made (and communicated), preparation is necessary to ensure that it:

- will be a long lasting system
- will satisfy all current and future requirements
- is not expensive
- is easy to maintain
- does not suffer from much downtime
- will be well supported
- will be simple to control.

Each of these is an important criterion, as there is no miracle which answers the ward council's typical wish list 'We have straightforward needs - quick to use, well supported, no vandalism, no downtime, easy to maintain, simple to control.....and cheap!!'

We attend a parking equipment exhibition such as this in PEI and are impressed with what is available. The suppliers visit us and provide negative feedback on their competitor's products. You hear some awful stories about mistakes made elsewhere. Try and keep a balanced view towards to all that you initially see and hear.

Follow a logical process, and be prepared to invest in the assistance of an objective and experienced consultant. A little investment early on will save you a lot of money later.

The first step is to decide on all of the **functionality** you would like to have. What is expected of and appropriate to your organisation? Issues to be considered here are:

- user friendliness - height, design and simple logical steps to pay
- payment options - coin, notes, credit card, smart card, mobile phone
- security for the customer - illumination in bad light
- environmental friendliness
- power - battery, solar
- will paper be required? Will it be bio-degradeable?
- management issues
- programming - of fee changes
- resistance to vandalism and graffiti
- wireless communications - customer hotline
- integration with infringement issuing technology
- management information - what data do you need and how easy is this to obtain
- multi space or pay and display - there are several advantages and disadvantages to each.

Many of these issues are comprehensively covered by the latest examples of modern technology displayed at the equipment exhibition at this convention. You need to work out what is most suitable for your pay parking area and for your customers. For example, if your average fee is likely to be above $10, then is a note reader a worthwhile option? Do you want to be able to offer payment by both credit card and mobile phone?

Your organisation will be making a long term investment and upgrades are expensive to install after installation. Organisations with credit card capability are finding upwards of 25% of drivers paying by credit card. But for those that want to retrospectively add on credit card capability at a later date, the additional cost is almost half the price of a new machine.

Most importantly, observe drivers and use machines installed elsewhere. Spend time paying at different machines in wet weather and at night. Consider what happens if a foreign coin is used or whether payment by mobile phone will be popular at your parking facility.

Secondly, prepare **documentation and specifications for the supply, installation and commissioning of pay parking machines.**

This documentation will incorporate all of the technical specifications and functionality you have considered in Step 1, plus require details of:

- capital costs and annual licence fees
- all consumables and monthly and annual expenses
- all charges associated with credit cards
- workings of the communication system
- location of the central management and monitoring system
- audit and information packages
- inspection and alteration of signage
- project plan for supply and installation
- schedule of cost of additional machines
- training costs
- warranty inclusions and exclusions

- mark up of bay numbers and lines.

Once all of this has been incorporated into a specification document (which may be used for tendering or to obtain quotes), consideration needs to be given to specification for several other vital services associated with pay parking - **the maintenance of the pay parking machines, signage, cash collection and infringement control.**

Issues here include:

- call out charges during business and after hours including travel
- definition of vandalism
- procedure for dealing with graffiti
- reprogramming of machines
- availability and cost of spare parts
- repeat training charges
- location of every machine and clear signage which allows infringement control
- cash collection procedure and reporting
- batched or on-line credit card processing
- reconciliation of non-cash payments
- insurances
- compliance with ward council and other statutory organisations
- how will compliance be enforced, and does this procedure comply with legislation?

Maintenance

This can make or break a pay parking scheme.

Reliability is essential for customer confidence in the system and this has a direct bearing on both parking and enforcement income. Poor maintenance often leads to increased downtime.

Maintenance can also be expensive if not controlled so it needs to be broken down into its different components.

Additionally, we are often swayed by the idea of a full warranty. This needs to be clarified as to what is, and what is not included under the definition.

Prior to documents being issued, consideration needs to be given to the tender **evaluation process.** This will involve:

- determination of the financial and non-financial criteria
- preparation of a whole of life comparative capital and recurrent cost analysis
- a demonstration of the exact machines you are considering
- visiting the supplier's factory or local office
- personal discussion with referees in regard to the quality and reliability of the machine and the level of support available from the supplier
- finalising the formal contract for supply.

Whole of life costs

A purchase of 20 parking machines and a management system will cost at least $180,000. The machines will be in place for a minimum of five years. Generally the hardware provided today is appropriate and durable for much longer than the software. The major changes that will occur in the future will be improved software functionality. It is therefore essential that a whole of life cost analysis

be undertaken which incorporates capital and installation costs as well as the cost of consumables, spare parts, software variations, preventative and reactive maintenance, credit card fees, and importantly, all communication costs. We have noted instances where the initial capital cost of a system comprises less than 25% of the total five year cost.

XYZ Council 4-Apr-07	Financial Evaluation of Tenders for Contract No ….. Ticket Parking Machines					
Supplier	A	B	C	D	E	
Machine	A1	B2	C3	D4	E5	
INSTALLED COSTS (with Credit Card)						
Supply and install 29 machines	248,675	182,990	167,374	232,290	223,851	
Supply spare cash boxes	9,280	9,425	10,150	11,165	5,307	
Supply and install Central Mment System	nil	18,000	11,610	2,500	18,056	
Removal and make good 53 units	51,280	29,680	26,500	37,100	38,240	
Training 76 hrs	3800	3600	included	2500	6840	**Ranking**
Subtotal (i)	**313,035**	**243,695**	**215,634**	**285,555**	**292,294**	C,B,D,E,A
5 YEAR RECURRENT COSTS						
Credit Card Charges	-	56,250	nil	-	-	
CMS hosting	2,500	n/a	included	41,760	28,014	
CMS licence	40,020	14,500	47,430	included	included	
Communication	17,400	13,920	67,497	52,200	113,100	
Tickets	65,000	69,071	97,500	78,750	37,600	
Maintenance (Yrs 1-3)	66,019	64,380	39,853	n/a	67,895	
Maintenance of CMS	nil	8,100	n/a	included	included	
Subtotal (ii)	**190,939**	**226,221**	**252,280**	**172,710**	**246,609**	
5 year spare parts including install	44,641	40,808	86,238	59,711	66,943	
Subtotal (iii)	44,641	40,808	86,238	59,711	66,943	
TOTAL (i-iii)	**548,615**	**510,724**	**554,152**	**517,976**	**605,846**	B,E,D,A,C
(i) as % (iii)	**57%**	**48%**	**39%**	**55%**	**48%**	
Warranty months	24	24	12	12	24	
Loading zone functionality	8,062	6,815	included	included	included	
Supply and install Mcommerce	2,900	1,450	not tendered	na	31,871	
Additional cash boxes	320	325	350	385	196	
Additional training (per hour)	50	na	na	150	120	
Call out fees B/hrs	85	70	na	n/a	120	
Call out fees A/hrs	128	90	na	n/a	160	
Assumptions:						
29 machines operating 313 days a year	Average ticket value $3.20		14,000 tkts pm pa		30% by cr card	

Finally, after many months of preparation, persuasion and negotiation, the machines, and the signs are finally installed and commissioned. You now need to make sure that they are all working in accordance with all your specifications. This requires inspection by a capable person to:

- confirm correct location and positioning of the machines and signage
- ensure all deliverables have been complied with by testing the various procedures at each machine
- check the responsiveness of the customer helpline, and the accuracy of the cash collection, banking and reporting systems.

There will be some teething problems, but with thorough preparation, these should all be resolved within a few weeks, not months.

Management of pay parking

This is the area that is most important to the success of any pay parking system, yet it is often under resourced and under estimated. Unfortunately, once the equipment is installed, it is usually left to the conscientious effort of a few staff who take the trouble to learn the system and make full use of the available information.

We have often come across pay parking systems where the sole concern of the organisation after commissioning, has been to ensure that there are a minimum of customer complaints, that the supplier honours their obligations in terms of the contracts, and that the cash collected matches what is banked. As the income is often large, this cash reconciliation is taken as an indication that the system has been successful.

Organisations that are satisfied with this follow up do not undertake detailed reconciliation on whether the system has achieved what it set out to do. They may not wish to obtain evidence that it has not resulted in the adverse effects threatened by its opponents. They do not bother to maximise the income, minimise downtime and leverage the control available from a pay parking system.

A professionally operated pay parking system requires accurate and timely information, not all of which is available from the machines. There are several important issues involved here.

Compliance

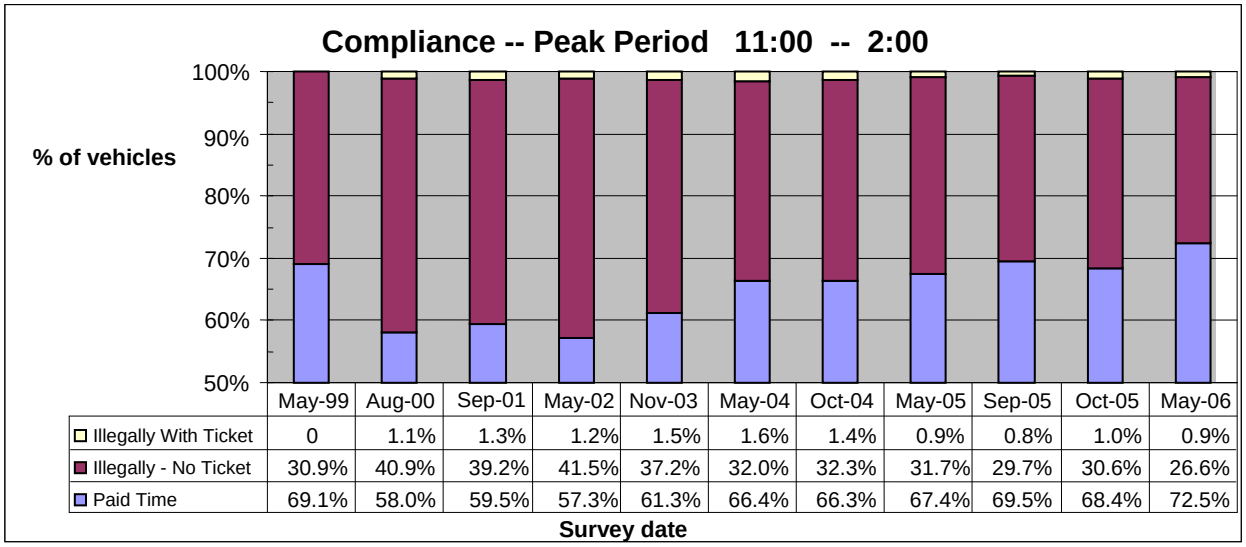
The success of a pay parking system which is not controlled by boom gates, can only be adjudicated with an accurate understanding of the level of compliance.

Compliance is the proportion of parkers that correctly pay for their parking. Parkers who don't pay, or overstay the expiry of their paid time are said to be non-compliant. Consider the following model for a typical hospital visitor parking area, which illustrates the significance of compliance levels.

ARRB Parking Income Model	
	Hospital
PARKING REVENUE	
Operating hours	Mon-Sun 0700 - 2100
No of parking bays	200
No of parking machines	29
Average Parking Fee ($/hr)	$ 2.00
Maximum stay duration (hr)	3
Average stay duration (hr)	1.50
Average transaction value	$ 3.00
Number of parkers per bay per day	5
Paid time per day (hr)	7.5
Transactions per annum	364,000
Parking revenue at 100% compliance	**$ 1,092,000**
Compliance @ 66%	$ 720,720
Compliance @ 80%	$ 873,600
Compliance per each 1%	$ 10,920
Total parking revenue forfeited @ 66%	$ 371,280
Total parking revenue forfeited @ 80%	$ 218,400

Until such stage as PODS (parking occupancy detection systems) are installed in every bay, the only way to assess compliance is by regular audit surveys, several times a year. Very few organisations undertake comprehensive surveys, and base their estimate of compliance on inaccurate feedback from different sources. If you calculate what a 1% variation in compliance means to your organisation, you may well be able to justify and find the resources necessary to undertake proper surveys.

The following chart is an excellent example of comprehensive measured compliance during peak demand time over a period of several years.



	May-99	Aug-00	Sep-01	May-02	Nov-03	May-04	Oct-04	May-05	Sep-05	Oct-05	May-06
Illegally With Ticket	0	1.1%	1.3%	1.2%	1.5%	1.6%	1.4%	0.9%	0.8%	1.0%	0.9%
Illegally - No Ticket	30.9%	40.9%	39.2%	41.5%	37.2%	32.0%	32.3%	31.7%	29.7%	30.6%	26.6%
Paid Time	69.1%	58.0%	59.5%	57.3%	61.3%	66.4%	66.3%	67.4%	69.5%	68.4%	72.5%

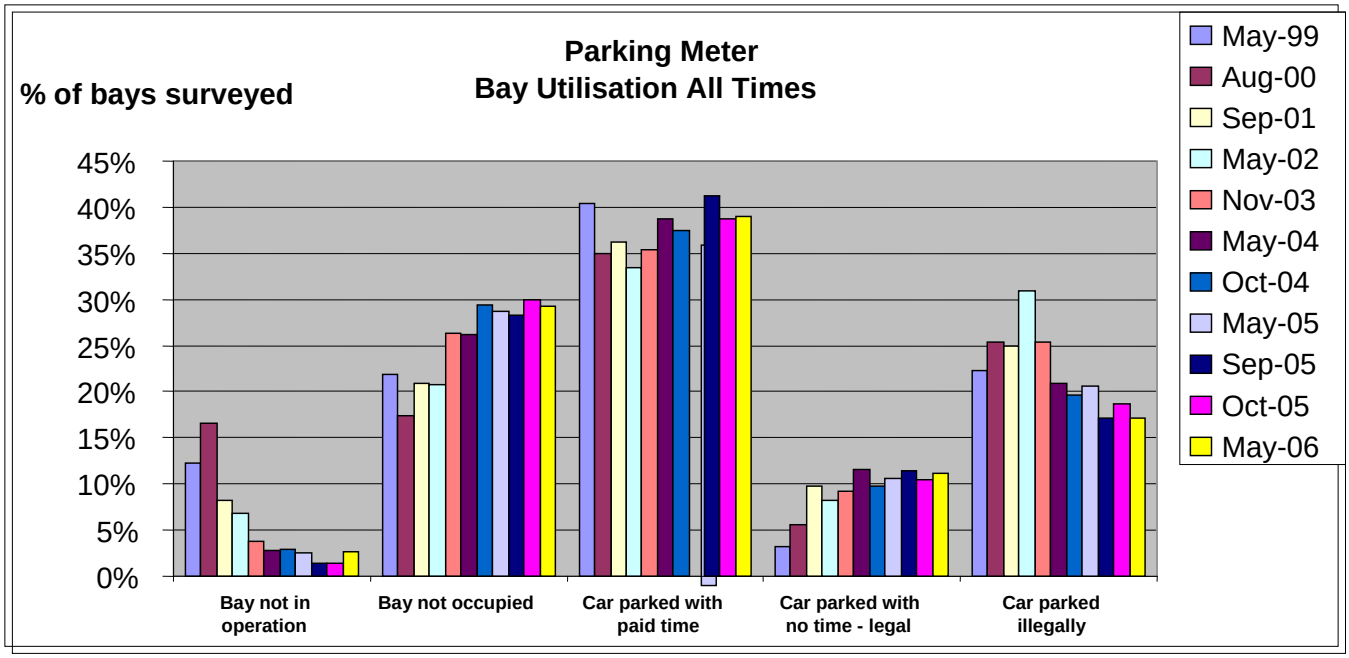
This shows that paid time (% compliance) is not fixed after the initial pay parking teething period is over. It requires regular monitoring and if it falls below an acceptable level, steps must be taken to rectify the situation.

Uptime

After compliance, machine uptime has a significant influence on the success of your pay parking system. Uptime is defined as the time, during normal operating hours, when the parking machine is available for use by the public. As soon as a machine is 'down' this provides a reason for drivers not to pay and reduces the opportunity for your organisation to generate income from either parking or enforcement. A downtime of 1% may not sound much, but using the above hospital example, it is equivalent to more than 3.6 days a year when none of the parking machines is capable of being used. Even at only a 66% compliance rate, this equates to annual parking revenue loss of $6,911.

It is therefore vital to install reliable machines which are supported by capable technical back-up and a responsive maintenance team.

The following chart is an example which compares downtime, bay occupancy and compliance over several years. The data used to compile this assists in keeping track of the effect of vandalism and breakdowns at the machines, and the reasons for downtime.



Training

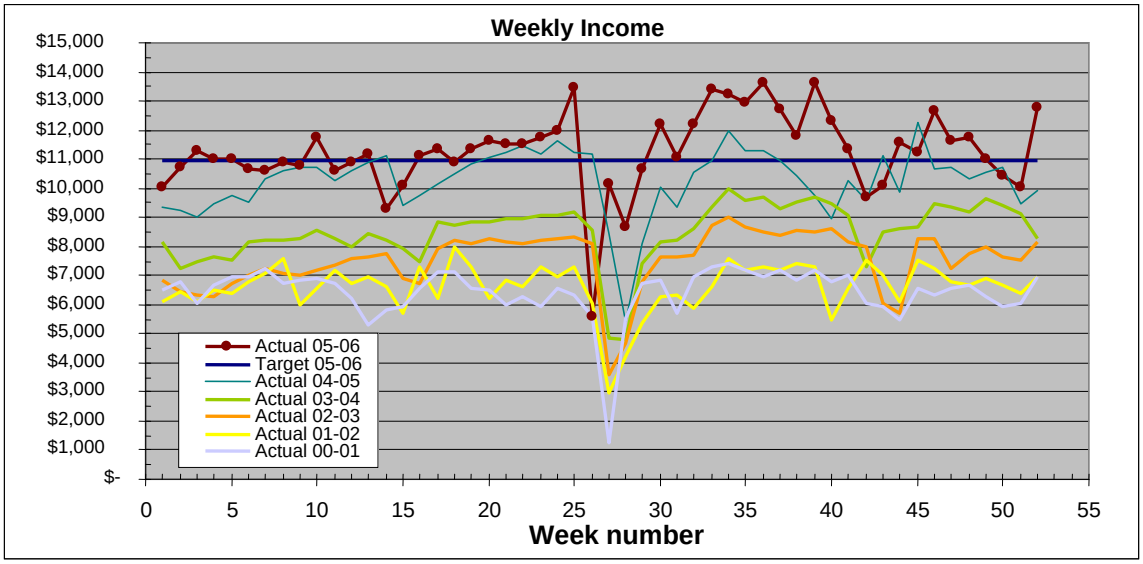
There is always a concern for initial training to ensure the machines work and cash collection and banking is reconciled. While this is necessary, it is also important to ensure subsequent training after the system has bedded down. Staff involved in finance, enforcement, marketing and especially, proactive management of the pay parking system, need annual refresher training on what the system is capable of providing and how the data and software can be better used to make it more effective. Lock this in with your equipment supplier.

Data from the machines

A central management system is capable of providing a lot of figures, but only a few suppliers have converted the data into useful management information. It is important to clarify this prior to purchase because the chances of you subsequently getting all the data will be slim and probably expensive. It is better to specify in detail all that you require and more importantly, to collate this data into weekly, monthly and annual trends. These trend charts should at least cover:

- parking machine income per week
- income per machine/per bay
- parking turnover per bay per day
- average transaction value in different precincts
- percentage payment by non-cash methods
- number and type of customer complaint
- number of breakdowns and the major reasons for these
- average repair times
- infringements issued by volume and value
- occupancy of surrounding parking areas.

The chart below is a summary of detailed revenue information per week over seven years. The data used can also be extended to provide a breakdown of percentage payment by coin and by credit card.



Armed with this type of data, management of the organisation can and should make changes to the pay parking system including possible variation of the fees and the operating hours. They can also amend the enforcement regime in order to ensure and maintain higher levels of compliance.

Timetable

Every organisation will have different problems to resolve prior to implementation of pay parking, but the following timetable can be used as a broad guideline.

Task	Timetable
Communication	ongoing
Feasibility study	3 months
Consultation	3 months
Specify functionality	1 month
Prepare and issue tender for supply	3 months
Tender period	1 month
Tender evaluation and negotiation	2 months
Prepare, issue and evaluate supporting tenders	2 months
Delivery lead time	2 months
Commissioning testing	1 month
Total	**18 months**

In this short summary, I am unable to go into detail on the many permutations of the different issues, and the various options for resolving them. This presentation has tried to highlight for you, as a basic check list, the issues involved in implementing a pay parking system.