# Parking policy and -problems in business areas with reference to the central business district of Paarl.

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Assignment presented in partial fulfilment of the requirements for the degree of Master of Town and Regional Planning at the University of Stellenbosch.

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# **Declaration**

I, the undersigned, hereby declare that the work contained in this assignment is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature:

Date:

# SYNOPSIS

The problem of parking has been with mankind almost from the day that the first carriage was invented. Everyone that owns a motor car knows competing for a parking space in a town centre can be frustrating. This study sets out to explain the phenomenon of parking and attempts to discover how the demand and supply of parking interacts with one another. Parking demand and supply needs to be balanced by policy makers in local governments. Local governments are in a unique position in laying down guidelines for the provision of parking. These guidelines can influence and direct the way in which parking is supplied in the central business district.

A better understanding of parking demand was attained through examining parking behaviour in the central business district of Paarl. The demand for parking was measured and conclusions drawn regarding on-street and off-street parking provision. In-lieu parking fees were found to be a viable alternative to providing parking in the central business district. The minimum parking standards for Paarl were examined and the conclusion arrived at showed that the standards need to be revised. The standards seem to be too high if compared to the current supply of parking in the central business area.

The main recommendations made in this study are that further parking survey studies need to be conducted to forecast the demand for parking in the central business area over the short- to medium term. The Municipality of Paarl should adopt a comprehensive parking policy that guides and manages the provision of parking in the central business district. This policy should be continually adapted and updated to keep track with the changing nature of transport modes and behaviour.

# OPSOMMING

Parkering as 'n probleem is saam met die mensdom al vandat die eerste trekkar ontwikkel is. Elke motoreienaar weet dat dit baie frustrerend kan wees om parkeerplek in die dorpskern te soek. Die studie ondersoek die fenomeen van parkering en poog om te ondek hoe die vraag en aanbod van parkering by mekaar inskakel. Dit is die taak van beleidsmakers in plaaslike owerhede om parkeervraag en -aanbod te balanseer. Plaaslike owerhede is in 'n unieke posisie as dit kom by die ontwerp en implementering van regulasies oor parkeervoorsiening. Hierdie regulasies beïnvloed en lei die manier waaarop parkering in die sentrale sakekern voorsien word.

'n Beter begrip van parkeervraag is verkry deur parkeergedrag in die sentrale sakekern van die Paarl te ondersoek. Die vraag na parkering is gemeet oor 'n sekere tydperk en gevolgtrekkings oor op-straatse en af-straatse parkeervoorsiening is gemaak. Parkeer-voorsieningsfooie in plaas van parkeerplekvoorsiening word gesien as 'n goeie alternatief om te sorg dat genoesame parkeerplekke beskikbaar is in die sentrale kern. Die minimum parkeerstandaarde vir Paarl is ook ondersoek en die gevolgtrekking is gemaak dat hierdie standaarde hersien moet word. Die standaarde kom voor as te hoog as dit vergelyk word met die huidige vraag na parkering in die sentrale sakekern.

Die hoof aanbevelings wat in hierdie stude gemaak is sluit in dat verdere parkeerstudies gedoen moet word om die vraag na parkering te kan vooruitskat. Die vooruitskattings moet oor die kort- tot mediumtermyn geskied om te voorkom dat die data relevansie verloor. Paarl Munisipaliteit moet ook 'n omvattende parkeerbeleid wat die voorsiening en beheer van parkering defineer en lei daarstel. Die beleid moet gereeld verander en aangepas word om tred te hou met veranderings in vervoermodusse en parkeergedrag.

# ACKNOWLEDGEMENTS

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Lastly I would like to dedicate this paper to Christa McFarlane and thank her for her support during this last few months.

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# CHAPTER 1

## INTRODUCTION

## 1.1 Problem Statement

Where streets and squares of towns were once characterised by people strolling, standing around to chat, celebrating special events or trading in different goods, the modern town is characterised by an intricate network of roads designed specifically to carry motor vehicles from one point to another as fast as possible. This is not to say that traffic congestion was not a problem in days gone by. History tells us that Julius Caesar forbade vehicles from entering the business districts of large cities in the Roman Empire during certain hours of the day because of traffic congestion (Brierley, 1972: 1).

An efficiently developed system to carry motor traffic is just as essential in the present time as it was in older times, to help increase the prosperity of a town centre and its surrounding suburbs. Although cities and towns have been built for conditions quite different from those required by the automobile, a great deal of business and commercial life in town centres can only be served by motor traffic these days.

Klose (1965: 9) asks the question if the effect the motor vehicle has on the town environment is positive or negative? He argues that the motorcar has made an incursion into our way of life very gradually over the past 100 years. Thirty years ago the number of cars in use was so small that no great inconvenience was caused by parking on the street or "in front of the door". Now with many more cars on the road this convenient form of transport is becoming more of a threat than at any other time in history. A car parked at the kerb requires thirty times as much road space as a person standing in the

street, when on the move the car requires sixty times as much road space as a pedestrian. The motorcar thus has the effect of encroaching on the space of towns and banishing pedestrians from the streets. It destroys closeness and contact, leaving wide, open desolate places, where the only purpose is to park a car, or long, wide highways that split a town centre into two or four unreachable squares, alienating people from one another. This might be a fanatical viewpoint, but left unchecked the disadvantages of traffic can have such detrimental effects on our environment that life as we know it will never be the same. On the other hand the motor car extends the radius of human activities. It enables people to live in more pleasant surroundings away from their work, it increases their leisure time by shortening trip lengths, it provides fast door-to-door transport and it is convenient and comfortable to use one's own car.

Parking, which is derived from the movement of motor vehicles from a more permanent space to a temporary space, is just as important a factor that affects the day to day lives of nearly every person living in or around towns or cities. Parking influences the appearance of a city or its suburbs, it adds to or reduces traffic congestion and it is a vital component of the urban street environment. The prolonged viability and competitive posture of any commercial area or central business district (CBD) of a town is affected by the availability of parking and maybe playing even a greater roll, the perceptions on parking by the public. Its adequacy influences the economic return on public and private investments, affecting property values and development opportunities (Weant & Levinson, 1990: 1).

Weant & Levinson (1990: 6,7) argue that the community affected by parking reflects many perceptions and perspectives. The average motorist wants to park as near as possible to his or her destination, while being assured of complete safety, all at the

minimum cost possible. Businesses and employers view parking as an economic necessity. They need parking to attract customers to their place of business. A supply of convenient and affordable parking is also necessary to retain staff and employees. Landowners and developers use parking to make a development more marketable. Parking provides access to the development and makes for more favourable development financing and adds assurance for more attractive investment returns.

Urban residents view parking with a degree of emotion. They see the road space in front of their residences as theirs and anyone that encroaches on that space is seen as an intruder. Spill over parking into residential neighbourhoods from nearby commercial, institutional or recreational traffic generators is a problem of increasing concern around town centres.

From the pedestrian's viewpoint, parking can be undesirable if it blocks walking paths or increases walking distances. The safety of pedestrians is also brought into question by unplanned or improperly designed parking lots. Most municipalities and officials recognise the necessity of providing a certain amount of public parking and are willing to enforce their regulatory powers over public and commercial parking to help accomplish community objectives.

As can be seen here parking exerts an influence across a wide spectrum of users and even non-users of motor cars. This influence reflects a growing recognition that the management and control of parking can be a valuable means in helping to realise broader community transport, development and quality-of-life objectives.

## 1.2 Aim of the study

This study is conducted in the context of town and regional planning and must be seen in this light. The purpose of the study is to gain knowledge about parking and problems associated with parking and applying this knowledge to study a specific area. A clear differentiation is made between on-street parking and off-street parking and each is discussed in detail. The study further focuses on parking management and parking policy. The central business district of Paarl is used as an example and may be seen to reflect the problems of small to medium sized rural towns in general. The central business district is studied to gain insight into parking behaviour in the town. A comparison is also made between parking standards of different towns in the Western Cape and Gauteng. The specific parking standards as set out in the zoning regulations for the Paarl is discussed and analysed and recommendations are made base on these findings.

## 1.3 Work method

The work method followed in this study can be summed up as follows:

- To gain a full understanding of the subject matter, a comprehensive literature study was conducted; the literature study forms the basis of this report.

- A detailed parking survey was conducted in the central business district of Paarl over four days. This data was analysed and interpreted and recommendations were made based on the findings.

- The specific parking standards for Paarl were compared to those of other towns in the Western Cape and Gauteng.

- The floor area of each building was calculated and compared to the amount of parking available in the study area. This gives an indication if the minimum parking requirements are followed by each business.

- Recommendations regarding parking policy and standards in Paarl were made to conclude the study.

# CHAPTER 2

# THE PARKING PROBLEM

## 2.1 Introduction

For the motorist there is only one really efficient parking place and that is right outside the door of the destination. Once the motorist steps out of the car he becomes a pedestrian. He is more mobile, more flexible, more sociable; but his radius of action is also more confined. The significance of this statement leads to the conclusion that parking space must be kept as close as possible to the destination of the motorist (Baker & Funaro, 1958: 29).

How near is near from a motorist's point of view will depend greatly upon the size of the city or town under consideration. Tolerable distance between parking space and destination cannot be measured in absolute dimensions. The smaller the city or town the closer the motorist expects to park to his destination. A differentiation is made between short-term parkers, who leave as soon as they have finished their shopping and long-term parkers who are those people working in the town centre who occupy a parking space for a whole day. It is assumed that the day parker is willing to walk a little further than the short-term parker is, particularly if he can benefit from a lower parking rate or even free parking. The motorist, although mostly subconsciously, is always playing off distance against cost (Baker & Funaro, 1958: 38).

Parking provision is where part of the problem lies for local governments and municipalities. Should they provide ample on-street parking for the use of short-term

**Figure 2.1 On-Street vs. Off-street parking**

parkers or should they concentrate more on the provision of off-street parking facilities for use by long- and short-term parkers? Both on-street and off-street parking is necessary for the effective functioning of a town. The question is how much of each should be provided? This is where the need for a comprehensive parking policy that provides the optimal solution becomes apparent.

## 2.2  On-Street Parking

On-street parking developed from a small beginning when there where few cars and roads had sufficient traffic capacity to allow some street parking without causing too many problems for other road users. As traffic volumes increased conflict arose between the demands on space for parking and the movement of traffic. Curb space is used by moving traffic, by taxis and buses picking up and discharging passengers, by commercial vehicles making delivery calls, by people running errands, and by short- and long term parkers (Weant & Levinson, 1990: 241). Although the movement of traffic is the main function of roads and streets, the influence on-street parking has on the vibrancy of a town centre cannot be neglected. The advantages include provision of access to adjacent properties and economic benefits for shop owners.

On-street parking has as its downside a high accident rate. The dangers are with pedestrians, especially children, stepping from behind a vehicle, cars that obstruct the line of vision at street junctions, and drivers reversing into oncoming traffic (Brierly, 1972: 31,32). It can also impede traffic flow. Safety, traffic capacity and access needs of an area are some of the factors that must be considered in the provision of on-street parking.

### 2.2.1  Street congestion and capacity

Parking along a street reduces traffic flow capacity and contributes to congestion. On-street parking limits street capacity in two ways; It occupies lanes that otherwise would be used by moving traffic, and parking manoeuvres frequently reduce the capacity of the adjacent lane. *Table 2.1* shows how on-street parking reduces the capacity of adjacent travel lanes. It can be seen that with only one operational lane adjacent to the parking the effective functioning of a lane can be reduced by 30%. Deciding beforehand for what purpose the street is going to be used (e.g. a high-speed traffic lane rather than a slow-moving access street) can avoid expensive changes later on when traffic flow increases. This might not always be possible, but certainly gives a guideline to developers when building along the street front.

**Table 2.1 Effect of On-Street parking on capacity of adjacent traffic lanes.**

| No. of lanes | No parking | Number of parking manoeuvres per hour | | | |
|:---:|:---:|:---:|:---:|:---:|:---:|
| | | 10 | 20 | 30 | 40 |
| | *Reduction in capacity of adjacent lanes* | | | | |
| 1 | 0% | 15% | 20% | 25% | 30% |
| 2 | 0% | 8% | 11% | 13% | 15% |
| 3 | 0% | 5% | 7% | 9% | 11% |

(Adapted from Weant & Levinson, 1990: 242)

## 2.2.2 Safety

On-street parking adversely affects the safety of the street system. Approximately 15% of all car accidents in America involve parked cars. According to Weant & Levinson (1990: 242) factors contributing to parking accidents include:

- *Vehicles parked or stopped on the roadway.* These vehicles narrow the usable width of the roadway, and are obstacles for moving traffic.

- *Vehicles leaving the parking position.* These vehicles disrupt the traffic flow and, by increasing congestion, may cause rear-end collisions.

- *Vehicles entering the parked position.* The vehicle parking must usually slow to a stop and then back into the parking space.

- *People getting out of parked vehicles on the street side.* The opened car door presents an added obstacle. Passing traffic may be required to stop or swerve suddenly.

- *Reduced sight distance.* Parked vehicles reduce sight distance for pedestrians and other traffic.

## 2.2.3 Parking Restriction

Certain measures can be implemented to decrease the disadvantages of on-street parking. The most drastic action that can be taken is to prohibit any form of on-street parking. This measure as Klose (1965) puts it "…might paralyse the commercial life of the town." Instead of banning parking completely a form of parking restriction might be more suitable as a control measure.

Parking restrictions have three basic objectives:

- To prevent loading, unloading, waiting or parking where such activity would impede traffic movement or safety.

- To provide adequate on-street space for loading and unloading, particularly where off-street space is not available.

- To encourage short term parking to service nearby land uses such as commercial and business activities.
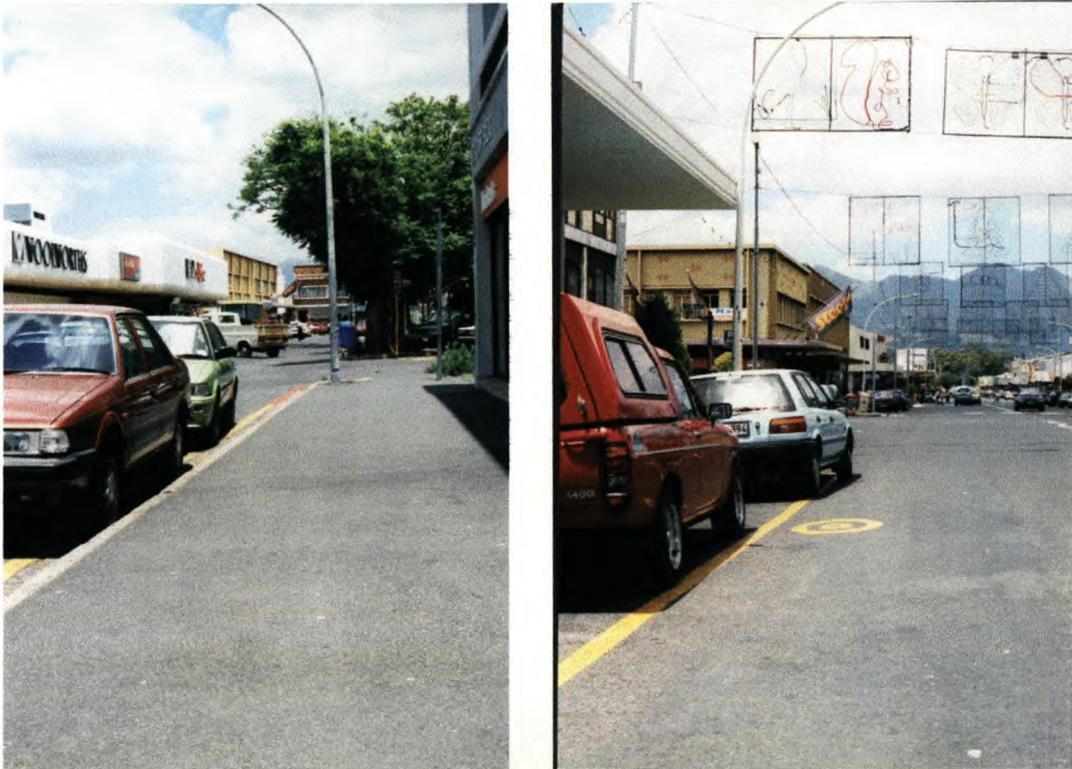


**Figure 2.2 Illegally parked vehicles pose a danger to other traffic and pedestrians alike.**

Attainment of these objectives depends on how well they are enforced. The most common method of control is to restrict the duration of parking through measures such as parking meters, parking discs and parking cards (Weant&Levinson, 1990: 244).

### 2.2.4 Parking meters

Since coming into use on the streets of Oklahoma, USA in 1935, the use of the parking meter has spread rapidly (Brierly, 1972:43). Parking meters are used to aid in the

enforcement of time limit restrictions and to promote desired parking turnover. Meters simplify and reduce the cost of enforcement but its effectiveness depends entirely on how well they are enforced. Advantages of parking meters according to Weant & Levinson (1990: 255) include:

- Provides an accurate time check, simplifying detection of overtime parking and discouraging all-day parkers.
- Increases turnover of parking spaces thus making more parking space available, which leads to economic gains for merchants.
- Reduce personnel required for parking enforcement.
- Aid traffic flow by reducing congestion.
- Reduce double parking.
- Aid in the financing of traffic control and off-street parking facilities through revenue created.

Disadvantages of parking meters include:

- If used where they are not warranted, they arouse resentment.
- Proper enforcement is a necessity otherwise motorists learn they can park longer without being fined.
- Vandalism and breaking of parking meters occur regularly.
- Parking meters is aesthetically unwanted and influences the visual environment.

No one will claim that parking meters offer a complete solution to the parking problem in city centres, other factors such as proper law enforcement also play a role, but parking meters contribute towards establishing an orderly system of street parking where without them there might just be chaos.

## 2.2.5 ADO cash card system

A new parking meter system that draws its origins from the current movement towards a cash-less society is the ADO cash card system. The system works on the basis that motorists have to have in their possession an ADO cash card, which can be bought at specified retailers. This card can only be used on ADO parking meters. This system has already proved it works in managing parking areas effectively and efficiently. Stellenbosch Municipality implemented the system March 2000. They made a few vital errors during the implementation phase, one of which was not advertising the change beforehand. This lead to many problems, including an apathy of the public towards the new system.

Once the attitude of the public changed and they came to accept the system, the effectiveness was apparent in the way parking turnover increased and demand for parking decreased in prime area parking lots. Occupancy of parking lots have decreased by an average of 20% since the meters were installed. A total of 14 389 cards have been sold from March 2000 to August 2000 and income generated from meters stood at R 366 066 for the same time period. Income rose from R 37 625 in March to R 88 000 in August, an increase of 42%, which shows that people are accepting the system (Stellenbosch, Technical services committee 2000).

Paarl Municipality has already overcome the initial obstacles by first testing the public's attitude towards the cash-card system. They launched an extensive advertising campaign and only implemented the system in one parking area (area A, Figure 4.2). The public responded well to the new system and 45 new parking meters were installed during January 2001 in Fabriek Street and Main Street bordering area A.

The ADO system has a few shortcomings, but with proper management these can be minimised. Disadvantages of the ADO system include:

- Only some retailers sell and reload the cash-cards.

- The initial amount of R40 is expensive to pay for a card.

- The public takes time to get used to the new system and this causes the system to run inefficiently.

- The time limit on the cards doesn't always suit the needs of the shopper.

- Probably the biggest disadvantage is that tourists that come from other provinces or countries do not own ADO cards and therefore will not be able to park legally. This leads to the town receiving negative publicity from outsiders and being referred to as "unfriendly" and "inconsiderate".

If the system is implemented correctly then most of effects the disadvantages have will be lessened or removed completely. Advantages that stand to be gained from implementation of the ADO system include:

- Vandalism of coin meters comes to an end.

- The card can also be used in other places (Sea Point, Cape Town, Claremont, Somerset West and even Hermanus).

- No change is needed for meters.

## 2.3 Off-Street Parking

Off-street parking lots have become a necessity in any modern town. They accommodate the spill over from on-street parking and provide an alternative to on-street parking. Three types of off-street parking lots can be distinguished; underground parking lots, multi-storey car parks and surface parking lots. The main reason why parking areas have expanded to large off-street lots is because of changes in the way

people live, work and learn. All communities expect businesses or local governments to provide on-site parking to prevent congestion on public streets and the spill over of traffic into residential neighbourhoods. Provision of off-street parking even increases property values in the central business district.

But everyone has come to realise that the provision of adequate parking also conflicts with some economic development, aesthetic design and environmental goals. Large parking lots reduce the land available for development and contribute to drainage and flooding problems. Too much parking also encourages more private transport, which generates further problems such as congestion and air pollution. The need to balance parking provision with other community goals such as a more compact urban form, improved pedestrian systems, and enhanced urban design, becomes the responsibility of the local municipality.

The prevalence of huge parking lots and structures has led to another serious problem, the aesthetics of the parking lot. Visually parking areas are mostly unattractive, they have no relationship to the buildings and activities around them, they are not attractive places for pedestrians and they do not have the interest and attraction of other urban open spaces (Smith, 1988:1). Parking lot design, the aesthetics of parking lots and shared parking are the three main points that will be discussed in this section.

### 2.3.1 Parking lot design

Parking lots dominate off-street parking. To quote Weant & Levinson (1990:55) "They provide more than three-quarters of all off-street parking space and accommodate nearly 90% of the parking demand not satisfied with on-street parking." Open parking

lots are highly visible to oncoming traffic. They are perceived to be more accessible and safe than a parking structure and they serve as an auxiliary to almost any land use.

There are three primary objectives of parking lot design (Weant & Levinson, 1990: 155, 156):

i. *A parking lot must be safe and convenient.* It should provide adequate access that minimises conflict with street traffic. Adequate sight distance should be provided for at access points. Internal circulation should be easy to follow and as obvious as possible. Parking dimensions should be generous enough to simplify manoeuvring in and out of spaces. Walking distances between parking space and building entrances should be within acceptable limits.

ii. *A parking lot should be space efficient and economical to operate.* Ideal parking dimensions should be selected if not specified by zoning regulations. The parking layout should take advantage of the site to maximise the number of parking spaces in the least amount of paved space. Maintenance needs and operating labour requirements should be minimised. Future change, development or requirements should be anticipated and planned for.

iii. *A parking lot should be compatible with its environment.* Lot design should provide suitable provisions for protection and landscaping. The design should meet or exceed local design requirements. The lot should show a concern for appearance. Sensitive design from a functional and aesthetic perspective is essential.

A further objective that is very important is the separation of different uses in a parking lot. A clear differentiation should be made between customer parking, employee parking, special parking zones and loading zones. Much of the parking demand derives from the

people who work at the business. It is imperative that employees do not park in the prime parking spaces. Separate employee parking areas should be identified and allocated to employees, thus ensuring the maximum use of prime parking spaces for customers. Ways to encourage employees to park further away from the business is to subsidise parking fees or handing out weekly or monthly parking coupons. Employees generally would not mind parking further from work if the parking provided is free of charge; therefore employers can develop unused sites further away from their place of business.

Special parking zones for disabled people should also be provided, usually as close as possible to the entrance of a building. These spaces should be clearly marked, to avoid occupation by normal cars. In other countries the number of handicapped parking spaces that should be provided is usually a percentage of the total number of regular user spaces provided, but the author has not come across any regulations regarding disabled parking in South Africa. Motorcycle areas can also be provided to stop a motorcycle from occupying one single parking bay at a time.

### 2.3.2 Loading zones

Offloading of goods from wholesalers can interfere with parking and traffic movement and cause major problems. Special space should be set aside for this purpose. Loading zones in large activity centres should be designed with separate access for delivery vehicles. This is in most cases almost impossible in smaller activity centres due to the shortage of space. In these cases the circulation pattern should be as far as possible designed to avoid interference with other automobile and pedestrian movements or with high turnover parking. Rear access is commonly used for deliveries, but in cases where

delivery activity is minimal, over-the-sidewalk delivery and service can be adequate (Weant & Levinson, 1990: 168). *Figure 2.3* shows common types of delivery layouts.
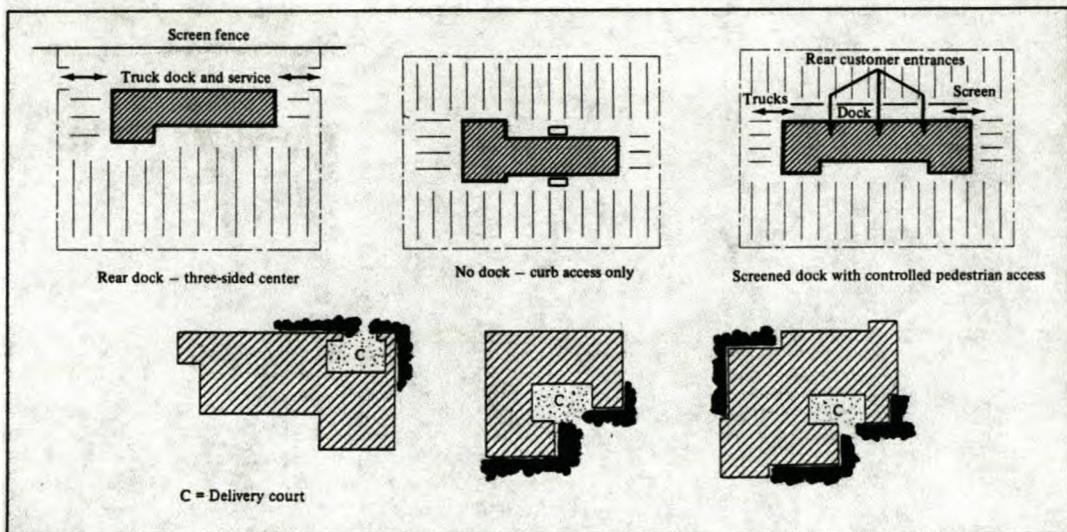


**Figure 2.3 Examples of truck delivery layouts (Weant & Levinson, 1990: 170)**

It is as said before important to designate certain areas for certain uses. This can also be accomplished through implementing aesthetic elements in a parking area.

### 2.3.3  Aesthetics of parking



**Figure 2.4 Good aesthetics (left) vs. Bad aesthetics (right)**

*Figure 2.4* shows that parking lots with trees and islands visually look more pleasing than lots without these amenities. The islands also provide a walkway where pedestrians

can safely walk to their cars. All too often no attention is given to improving the appearance of a parking lot. The possible effectiveness of parking lot landscaping as a way of maintaining community appearance and property values is overlooked simply because it increases the construction costs or it decreases the available space for parking. One may ask then what is the required or optimal amount of landscaping needed to enhance a parking lot. The simple answer would be generous landscaping. It can break up the wide expanses of parking areas and improve the appearance of new construction. It can be used to separate pedestrian and vehicular traffic and to differentiate between the functional areas of a lot, such as long-term, employee parking and short-term, visitor parking.
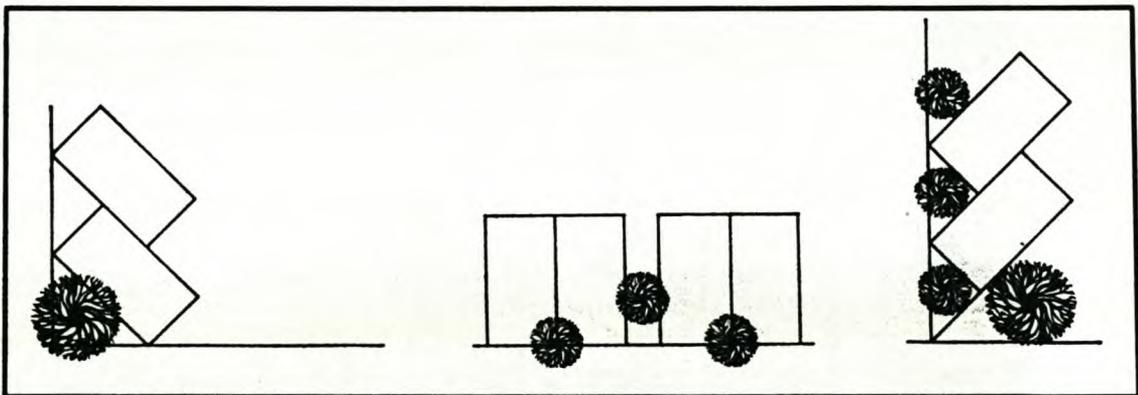
**Figure 2.5 Suitable places for planting trees between parking spaces**

Using landscaping to define different parking areas helps to control traffic and lower traffic speeds, ensuring greater traffic safety and increasing efficiency in the operation of the lot. The use of deciduous and flowering trees in the interior provides shade for the cars and the lot surface. Perimeter landscaping reduce the glare of automobile headlights and parking lot lighting.

**Figure 2.6 Spacing of trees between every second parking space provides enough shade if trees are full-grown.**



**Figure 2.7 Effective landscaping of unusable or awkward corners**

The most important part of parking lot landscaping is seen as buffering and screening. Placing or putting the parking lot out of sight of adjacent streets or residential neighbourhoods reduces the visual impact the lot has on its surroundings. Different screening techniques include walls, berming or graded slopes, evergreen plantings (e.g. trees), densely planted hedges and fences. Berms and graded slopes can be excellent screens. Although they might be expensive, they are easy to construct, easy to maintain, and visually more pleasing than walls and fences. They also reduce noise pollution by absorbing and muffling the sound of cars, which trees and shrubs cannot do as effectively (Smith, 1988:6). Using trees as a visual screen is very effective and in *Figures 2.8* and *2.9* examples are given of effective screening techniques.
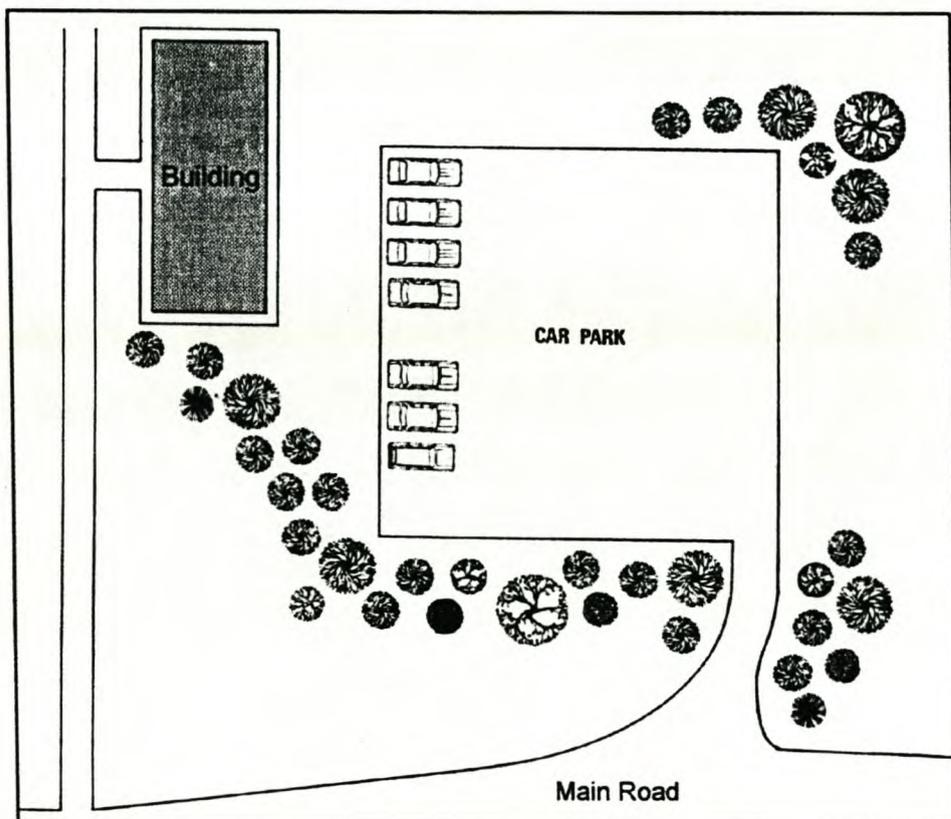
**Figure 2.8 Screening a parking lot with the aid of trees and shrubs**

**(Brierley, 1972: 124)**
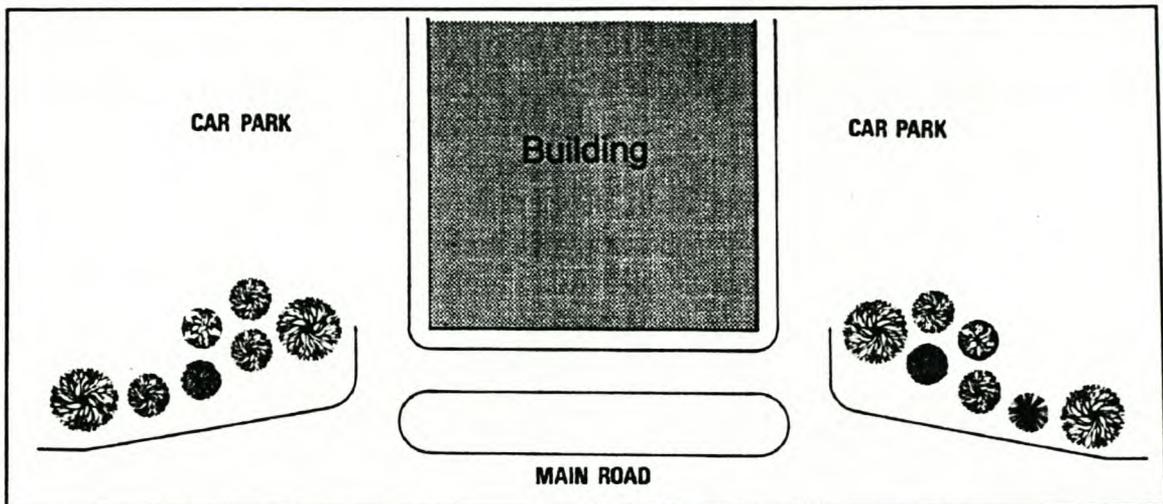
**Figure 2.9 Suitable visual screening of parking lots (Brierley, 1972: 124)**

Parking lots are often the principle entryways to major commercial or industrial development. A person's first impression of a development is usually the one provided by this access point. The quality of the buildings entrance design must be matched by the quality of the access to the parking lot. The first impression a visitor gets will be when entering the parking lot and not the building therefore attention must be given to improving the visual aesthetics of parking lot design.

### 2.3.4 Shared parking

While parking lot design and the aesthetics of parking focuses on the impact of a single parking lot on the surroundings, shared parking focuses attention on the impact of too many or too big parking lots in our surroundings. Shared parking can be defined as the multiple use of the same parking area by more than one business, commercial or recreational entity (e.g. a bank and a church sharing a parking area). Several advantages of shared parking are given in Metro's Shared Parking Handbook (2000).

They include:

i)    More efficient use of urban land, limiting sprawl, thereby preserving farms and forest lands outside the urban growth boundary.

ii)   Reducing the amount of parking lot surfaces will help keep our waters cleaner through limiting polluted storm water runoffs.

iii)  Parking spaces are not cheap. With each parking space that a developer can avoid constructing, there is an immense cost saving.

iv)   Land is not cheap and commercial land prices keep rising. While sufficient parking is necessary to avoid traffic problems and overflow into adjacent areas, it is important that unnecessarily large parking lots are not constructed.

v)    Large parking lots are intimidating to walk through. Unless a designated pathway exists, pedestrians must manoeuvre between moving cars which makes it unsafe.

vi)   With fewer over-built parking lots (and good connections), walking between destinations, rather than driving, will be easier.

vii)  With the space saved by using our existing parking lots more efficiently, we can devote larger areas to landscaping, nature-scaping and other land uses.

The uses sharing a parking area should have different peak hours. Hours of operation can overlap, but the highest use time should not conflict. A clear agreement should be established between the parties so that maintenance, lighting and litter uses are resolved. The key to successful management of shared parking is making all the affected parties work together. This can be achieved by devising a complete management strategy including the above mentioned factors. With less and less space becoming available in central business districts shared parking might just be the way to go.

## 2.3.5 Parking garages

Parking garages offer an alternative way to protect the historic cores of town centres in that they take up much less space than open parking lots. The main design criteria for a parking garage should be that it functionally and visually fit into the surrounding environment. This environment includes the scale and form of surrounding buildings. It should also provide simple, convenient and efficient access for users. Entering and exiting should be accomplished with minimum delay. Travel between floors should be clear and follow natural paths. Parking and un-parking should be easy and pedestrian circulation should be safe and direct. Signing, lighting, drainage and ventilation should be adequate. Ample safety and security must be provided. Successful operation depends in a large measure on how well a garage is designed (Weant & Levinson, 1990:179). According to Brierley (1972:128) there are four important factors to consider when designing a multi-storey car park. First, the parking demand must be determined. Second, simplicity and speed in parking and un-parking must be taken into account. Third, the cost of the operation and last, the building must harmonise with its surroundings.

The biggest constraining factor on building multi-storey car parks is the cost of building and a close second to that the cost of maintaining the parking garage. The cost saving of using a smaller piece of land that might be required for building a parking lot must be played of against the cost of developing and maintaining the multi-storey car park. To reduce the high cost the developer can for example use the ground floor for general retail purposes and depending on the zoning requirements even the second floor for office space. The third floor and higher can then be utilised for parking space.

Except for the cost of constructing a multi-storey car park the other main constraining factor can be the local zoning regulations for a town. These regulations usually specify the maximum coverage and the total floor area of the building. For example, the maximum coverage and number of floors allowed for buildings in the central business area of Paarl are respectively 80% and three floors. These regulations certainly affect the viability of any development, because the more floors the building has the cheaper the ratio of land to floor space. It is economically more viable to build a seven storey building than a three storey building in a central business district were land prices are high.

Parking garages in small rural towns have never been viable due to the high cost associated with developing the site, but in Paarl this boundary has now been crossed. At the intersection of Main and Lady Grey Street a company has completed plans for a three storey building, which will comprise ground level retailing, first floor office space and a second floor parking garage. This is an indication that parking garages are beginning to become economically viable in Paarl.

## 2.4 Parking Bay Dimensions

The following factors are generally accepted as playing a role in determining parking bay dimensions: Vehicle size, operational characteristics, driving ability and user convenience. The vehicle size will affect the bay and aisle dimensions to a certain extent. The most important dimensions are the following: Vehicle width, vehicle length, minimum turning radius and rear overhang. These dimensions have a direct effect on the manoeuvrability of a vehicle and therefore on the parking layout and dimensions.

Motor cars in South Africa are generally smaller than their counterparts in North America and possibly slightly larger than most European cars. A study conducted in 1985 by the Department of Transport proposed a South African design vehicle with a length of 4.8 m and a width of 1.8 m (Parking Standards, 1985: Ch. 3 – 15). The author agrees that these figures do not provide for larger cars (e.g. combi's or mini bus taxis), but does reflect the average dimensions of cars on South African roads. This standard will be used throughout the rest of the chapter.

### 2.4.1 On-Street parking

There are basically two types of on-street parking, namely parking at an angle (includes 45°-, 60°-, 90° parking) and parallel parking. Weant & Levinson (1990: 243) argue that angle parking uses less curb space per unit than parallel parking, but it requires more space for manoeuvring thereby increasing exposure and hazard. Visibility can be inadequate for drivers backing out into traffic; oncoming drivers must suddenly stop as cars unpark; and drivers must proceed slowly to find empty spaces. Consequently, angle parking results in substantially higher accident rates than parallel parking. Parking at an angle on-street is generally viewed as very unsafe and should be avoided as far as possible.

It is worthwhile mentioning that there are certain places where angle parking might work better than parallel parking. Due to the fact that angle parking is mostly used in off-street parking lots and is based on the same principles as angle parking on-street only examples of parallel parking will be discussed in this section.

Two basic types of parallel on-street parking can be distinguished, namely the interior bay and paired parking. These are shown in *Figures 2.10* and *2.11* respectively.
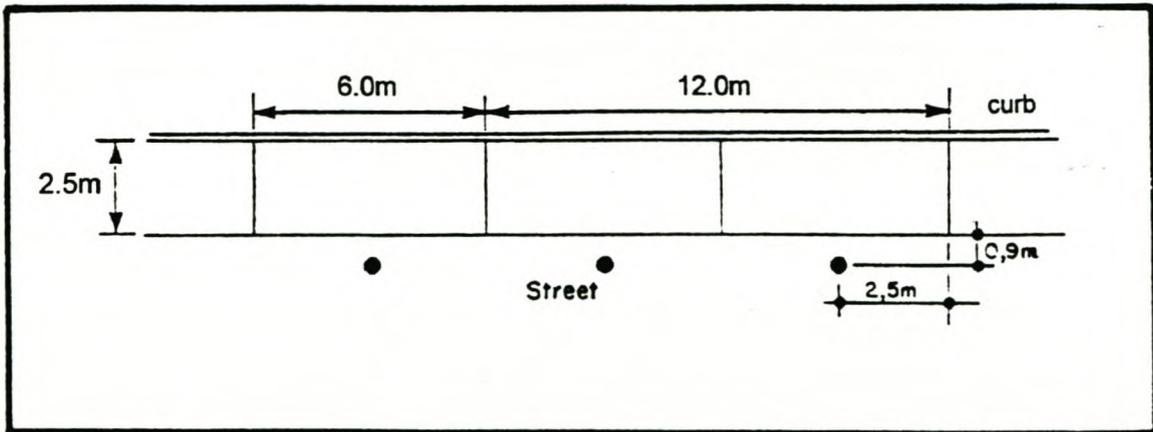
**Figure 2.10 The Interior Bay**

The interior bay has a length of 6 m and a width of 2.5 m, which allows enough space for a standard car to manoeuvre in and out of the bay with ease. The paired bays have a length of only 5 m, but the 2 m space between every second bay leaves enough room for a car to manoeuvre in and out with ease.
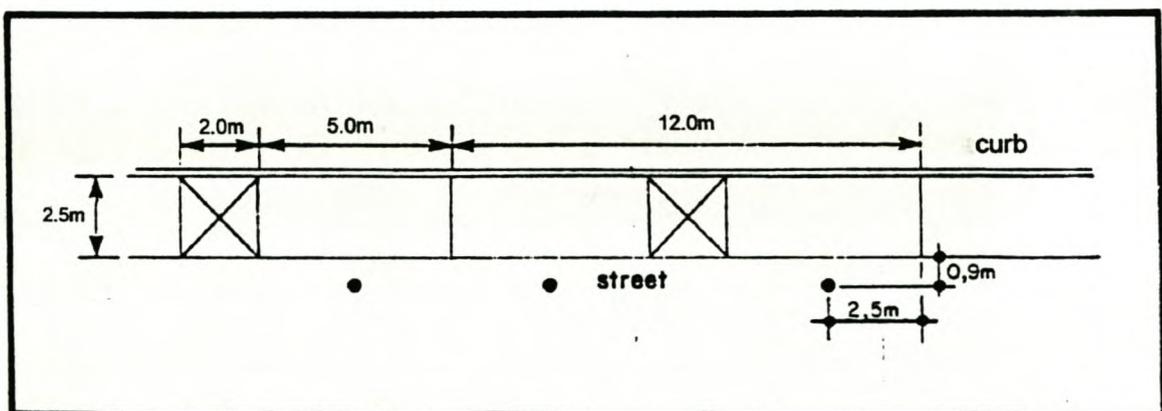


**Figure 2.11 Paired Parking Bays**

**(Adapted from Parking Standards, 1985: Ch. 3 – 30)**

The bay width of 2.5 m does not provide for the driver to enter or exit the vehicle safely. Therefore it is necessary to either increase the bay width or increase the width of the adjacent traffic lane where possible.

## 2.4.2 Off-Street parking

Three types of off-street parking angles are commonly used; they are 90°, 60° and 45° parking angles. The choice between 90°- and angle parking will *inter alia* depend on the dimensions of the site available and the required circulation pattern. However, in many cases 90° parking has advantages over angle parking such as flexibility, greater convenience to the parker, operating efficiency, safety, shorter driving distances and less circulation of parkers. With 90° parking, two-way traffic flow is usually required to attain these advantages. With angle parking, one-way flow is normally used. Significant savings in space can be achieved where angle-parking spaces are allowed to interlock with one another.

*Figure 2.12* shows examples of dimensions needed for parking cars at angles of 45°, 60° and 90°. The number of bays (N) required can be calculated by using the formula supplied for each angle in the diagrams. For example, if the total length of a row is 100 meters and parking needs to be provided at an angle of 45°, 27 bays will fit into the space. The same at 60°, 34 bays will fit and at 90°, 40 bays will fit into the space.

The conclusion arrived at here shows fewer parking spaces can be provided the smaller the angle at which it is provided. It is worthwhile to note that if interlocking is allowed according to O'Flaherty (in Claassen 1999) 60° parking will provide 380 cars per hectare and 90° parking will only provide 375 cars per hectare. This shows that angle parking can be just as space effective as 90° parking when allowed to interlock, but does entail the use of a one way road layout which has its own problems (Welch, 1969).

$$N = \frac{L - 1.591}{3.536}$$

N = Number of bays

$$N = \frac{L - 1.643}{2.887}$$

N = Number of bays

$$N = \frac{L}{2.500}$$

N = Number of bays
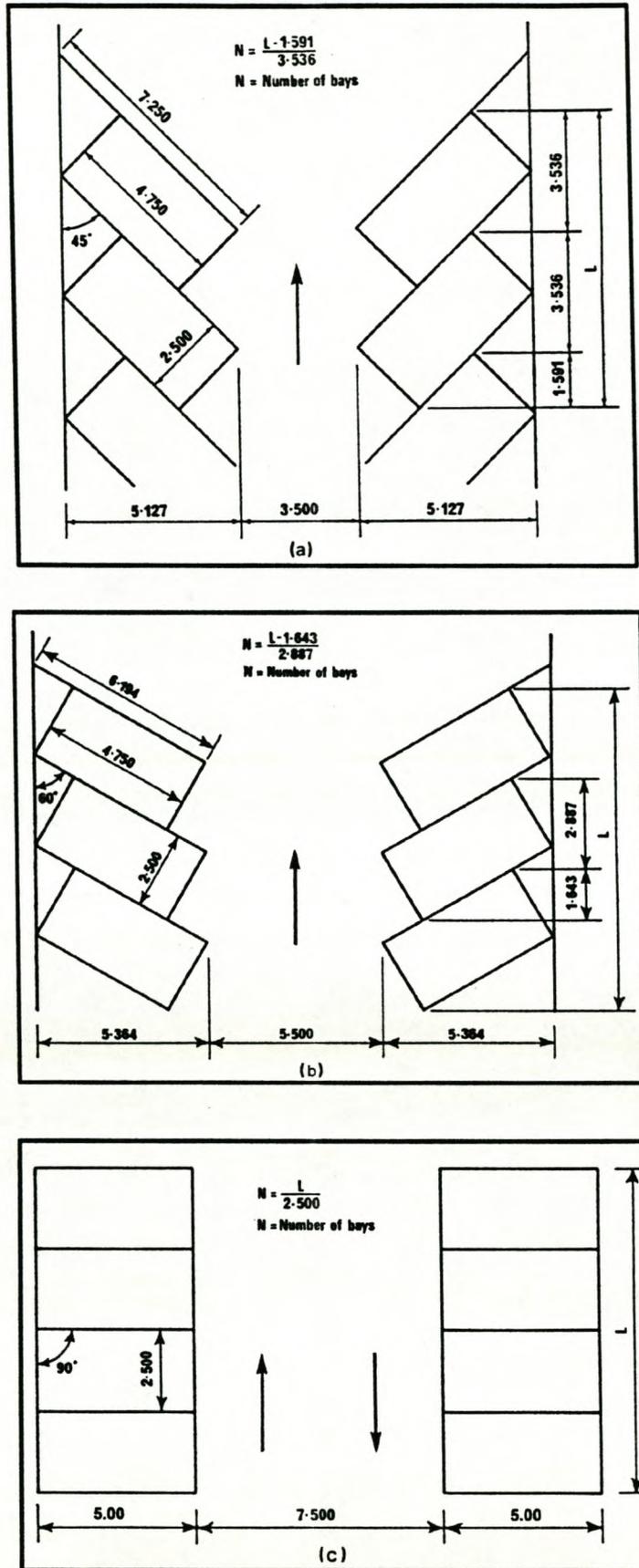
**Figure 2.12 (a) - (c) Dimensions required for parking cars at angles of**

**45°, 60°, and 90° (Brierley, 1972: 107,108)**

The number of square meters per parking space is also important when laying out a parking area. The norm that is usually applied is 30 m² per parking space, which includes aisles and accesses (Parking Standards, 1985: Ch. 3 – 25). *Table 2.2* gives an example of parking dimensions used for different parking angles. Notice how less space is needed per module if parking spaces are allowed to interlock with one another.

**Table 2.2 Parking Dimensions.**

| Parking Angle | Bay Width (m) | Bay Depth (m) | Aisle Width (m) | | Module Width (m)* | |
|---|---|---|---|---|---|---|
| | | | 2-way | 1-way | 2-way | 1-way |
| NO INTERLOCKING | | | | | | |
| 90° | 2.5 | 5.0 | 7.5 | 7.5 | 17.5 | 17.5 |
| 60° | 2.5 | 5.3 | 5.4 | 5.3 | 16.0 | 15.0 |
| 45° | 2.5 | 4.9 | 5.2 | 4.9 | 15.0 | 14.0 |
| INTERLOCKING ON ONE SIDE | | | | | | |
| 60° | 2.5 | 4.8 | 5.4 | 4.4 | 15.5 | 14.5 |
| 45° | 2.5 | 4.2 | 5.2 | 4.2 | 14.3 | 13.3 |
| INTERLOCKING ON BOTH SIDES | | | | | | |
| 60° | 2.5 | 4.8 | 5.4 | 4.4 | 15.0 | 14.0 |
| 45° | 2.5 | 4.2 | 5.2 | 4.2 | 13.6 | 12.6 |

*The parking module represents two rows of parking bays with the aisle in between.

(Adapted from Parking Standards, 1985: Ch. 3 – 27)

## 2.5  Conclusion

The chapter focused on the different aspects of on-street and off-street parking. The parking problem must be examined out of the motorist's viewpoint and this leads to the conclusion that parking provision is linked to many factors including cost, distance,

public attitude etc. Solving the parking problem is by and large the responsibility of the local government.

On-street parking was compared to off-street parking not to choose between the two, but to aid the policy maker in providing an optimal solution for the parking problem. On-street parking has as its main problems street congestion and road capacity linked to safety of motorists and pedestrians. A partial solution to the on-street parking problem seems to be a form of parking restrictions, which mainly includes the use of parking meters to aid in the regulation of parking laws.

The off-street parking problem mainly has to do with placing the parking lot into the surrounding area with the least discomfort or hindrance to adjacent properties. The main points that were discussed included parking lot layout and the accompanying aesthetics. Shared parking as one of the means in solving the off-street parking problem was discussed in detail. Parking garages were also discussed separately due to the significant nature of these structures.

Finally the chapter looked at different parking bay dimensions for on-street and off-street parking bays. The layout of the parking bays depends *inter alia* on the dimensions of the area in question. In general it seems that 90° parking is the most efficient, but if angle parking is allowed to interlock similar savings can be achieved, but more one way traffic is required.

# CHAPTER 3

## PARKING MANAGEMENT

### 3.1 Introduction

Municipalities who sit at the helm of parking management have to face many broad issues when dealing with parking policy. They must be responsive to a multitude of special interest groups and organisations. It seems that the public sees the local municipality's job to be the creation of space for the cars of shoppers and businessmen in the congested town centres. In selecting the sites and design of parking facilities, however, the official attains the advantage of being able to determine the source and objective of moving traffic so that he can influence future traffic flow patterns. Provided he makes the most of this opportunity, he will thus have a lever that will enable him to bring about profound changes in the structures of cities and towns.

However, it will rarely be possible to solve all the parking problems of a town in one single move. In most cases it will be necessary to keep pace with demand through applying partial solutions, but by adopting a comprehensive plan where the small measures are guided by the whole, a proactive solution can be reached that is much more effective than relying on reactive aids (Klose, 1965: 19).

### 3.2 Parking Policy

#### 3.2.1 Parking demand and supply

It is quite impossible to outline a policy that would work in all towns. Circumstances and problems differ widely from one town to the next and separate policies should be developed for separate towns. The fundamental goal of parking policies is to make the downtown as attractive as possible. The problem is that when central business districts

become very desirable locations, the demand for parking increases at the same time that the cost of supplying parking increases. Therefore, choosing the parking and transportation policies that are best for the business centre requires an understanding of not only how the policies affect the demand and supply for parking, but also how parking demand an supply affect the value of the central business district in the eyes of businesses and consumers (Voith, 1998: 4).

Without control by local governments central business district parking prices will be 'regulated' by market demand and supply. The *demand* for parking is called a derived demand. Parking is not an end in itself; it simply allows people access to places where they want to conduct their business. The demand for parking in the business centre thus depends on how many people want to drive to the centre to do their business. The overall number of people who want to drive there, in turn depends on the attractiveness of the business centre relative to other shopping centres. The attractiveness of the business area can be measured by three strong interrelating factors, namely agglomeration, access and congestion. Desirable central business districts are bound to have a higher demand for parking.

The *supply* of parking in a central business district depends on the cost of creating, maintaining and operating parking lots or providing parking spaces. Among the most important costs is the price of land on which the parking space must be constructed. If land is highly valued for commercial uses, parking providers will have to pay high prices for closely situated or adjoining land to build their parking facilities. In short, the more valuable the CBD destination, the more costly it becomes to provide parking.

Governments can also influence the supply of parking by implementing fees and land-use restrictions. Parking fees are used to generate revenue and to reduce automobile congestion. By taxing parking, towns increase the cost of providing additional parking spaces, effectively reducing parking supply. Limiting the uses of central business district land can also regulate the supply of parking. In South Africa land-use regulations in central business districts are usually very relaxed, but there is a trend developing where municipalities are enforcing more strict land-use regulations. This is partly due to the fact that the high density of development in a business area increases the likelihood that one person's activities can adversely affect another's. Taken together, local policies often act to lower the supply of parking (Voith, 1998: 4,5).

### 3.2.2 Responsibility

The demand and supply of parking has been discussed and one question still needs to be answered is: "Who, in the end, is responsible for managing and controlling parking demand and supply? Through most peoples' eyes the local level of government is accepted as the authority responsible for car parking. Local authorities are in a unique position to control parking in towns. Their interest spreads over the whole area of a town and they are concerned with the general prosperity of an area. They are equally interested in off-street parking, on-street parking, traffic management and traffic control. Their concern is the motorist as well as the pedestrian. They have the power to make laws and regulations controlling parking. This puts the local municipality in a unique position regarding parking management.

Within this context, the municipality's role according to Weant & Levinson (1990) is to:
- Establish parking programme goals and objectives;
- Develop policies and plans;

- Establish zoning requirements for parking;

- Regulate commercial parking;

- Manage and regulate on-street parking and loading;

- Enforce laws and regulations concerning parking, and adjudicate offences.

If the local authority is the only authority that can exercise comprehensive control over parking in a town, who then should provide the parking facilities? Should it be left to private enterprise, should the local authority undertake this work directly, or should they delegate their powers to an agency (Brierley, 1972: 311)?

### 3.2.3 Unified control

Brierley (1972: 312) distinguishes between three types of control that can be exercised: control by the local authority, private control and a parking authority.

a) Local authority

The local authority alone can be responsible for unified control. As the traffic authority they are responsible for the control of on-street parking, and by taking the initiative in providing off-street parking they can control the bulk of the parking facilities in the central business district of a town. There may be periods when there are restrictions on the capital investment that a local authority is permitted to undertake. This leads to private investment in developments.

b) Private control

Private capital may be used for comprehensive developments where the developer will expect the parking to serve his piece of development. Through communication with the private developer, the local authority can regulate and guide the development as to keep

it from interfering with adjacent businesses or offices. It is important that these private enterprises be integrated with the parking policy for the town. This can be achieved through establishing a partnership basis with the local authority.

c) Parking authority

An alternative for local government is to establish a parking authority. This authority must operate under strict regulations as established by the local authority. The biggest advantage of establishing a parking authority is the removal of parking decisions from political conflict and control. The majority of people are strong believers in private enterprise and parking authorities can lease parking sites to private firms for management and control whilst still having complete control over the site. Parking authorities can usually be managed on strict business methods and practices and can be guided by the profit motive. This form of control has never been implemented in South Africa. The creation of such a parking authority to regulate parking in bigger towns and cities in South Africa has much merit and could bring about advantages for all role players in the free market system. A parking authority is not such a viable option in smaller towns as the size and therefore the income of the municipality is to small to justify a parking authority.

### 3.2.4 Policy objectives

Weant & Levinson (1990: 9) argue that parking policy should reflect mobility and development objectives, but within the fiscal constraints set by community resources. Goals should be to improve access, and to support central business district development and to maintain viable attractions and amenities. Policy writers and their policies should view parking as an important land use and service that benefits users, businesses,

developers and the general public. Implicit throughout, one must remember that the role

of parking is both an economic necessity and an essential public service.

Parking policies may have more than one objective. Weant & Levinson (1990) and

Brierley (1972) state that these objectives could include:

- Strengthening the city centre;

- Attracting new development;

- Make more efficient use of available street capacity and land resources;

- Encourage economic growth and –activity.

- Maintaining a free flow of traffic on main traffic routes;

- Maintaining free and safe movement for pedestrians;

- Controlling on-street parking so as not to interfere with the free movement of traffic;

- Providing off-street parking to meet the demand of feeder roads;

- Organising and managing all the parking facilities efficiently and economically.

Klose (1965: 21) argues that where a central business district comprises a historic town

centre, this town centre must be left essentially unaltered: one of the main objectives of

parking policy in any historic town. The reality is however that in a country with high

levels of car ownership the demand for parking in the central business district will remain

so high that it can never be satisfied completely, without maybe destroying important

civic and culture amenities. Klose further argues that although it has been proposed

before that private through traffic be barred from certain areas of the town centre, such a

measure might have a negative impact on the commercial life of a town. The public

would no doubt rather then prefer the out-of-town shopping centre than the in-town

centre that can only be reached by public transport or on foot. Even when parking is

available in smaller towns the cost of parking will discourage the public from doing

business in the central business district when they can park for free in the out-of-town centres. The cost of travelling further will always be played off against the cost of parking in the town centre.

### 3.2.5 Parking management actions

Parking management has emerged in recent years as a means of better co-ordinating parking with overall transportation, development and environmental policy. Parking management is most effective where the public sector owns, operates, or controls a large portion of the total parking supply.

**Table 3.1 Ways to manage parking in town centres**

| Parking Management Actions | | | | |
|---|---|---|---|---|
| **On-street parking supply** | **Off-street parking supply** | **Pricing** | **Enforcement** | **Marketing** |
| Add or remove spaces | Expand or restrict off-street supply in CBD | Change parking rates | Non-police enforcement personnel | Advertising |
| Change mix of short- and long term parking | Change mix of short- and long-term parking | Increase rates | Ticketing | Brochures |
| Parking restrictions | Zoning requirements | Decrease rates | Towing | Maps |
| Peak period restrictions | Shared parking | Free parking in CBD | Booting | Media |
| Permissible parking duration's | Construct new lots and garages | Short- vs. long-term rates | | |
| Prohibitions on parking before specified hours | Restrict parking before or during selected hours of the day | Geographically Differentiated rates | | |
| Loading zone regulations | Handicapped parking | Monthly contract rates | | |
| Bus | | Employer parking subsidies | | |
| Taxi | | | | |
| Delivery | | | | |

(Adapted from Weant & Levinson, 1990: 13)

Parking management is most applicable in town and city centres where high densities and land shortages are most common. The common types of parking management actions are shown in *Table 3.1*. It includes actions related to on-street parking supply, off-street parking supply, fringe and corridor parking, pricing, enforcement and marketing (Weant & Levinson, 1990: 12).

### 3.3 Parking requirements

### 3.3.1 Zoning regulations

Towns view zoning regulations for parking firstly as a way to balance parking supply and demand and secondly as a way to achieve planned and orderly community development. Zoning ordinances normally specify the minimum number of parking spaces required for certain types of land uses. They also indicate how the parking should be provided in terms of minimum design features, setbacks and usage provisions. Zoning ensures an adequate supply of parking as communities grow and change. It mandates parking space requirements according to a predetermined schedule for common land uses, based on typical generated parking demands. The objective of zoning requirements is to provide sufficient off-street parking space to accommodate recurrent peak-parking demands. At the same time, zoning policies should not enforce an excessive amount of parking space because of the cost and impacts involved. The underlying goal is reasonable and balanced land use management (Weant & Levinson, 1990: 35).

Parking requirements have come about because communities believed that private developers would not provide adequate off-street parking spaces if not required to do so by the local authorities. They were, and still are, seen as a way to bring parking demand and supply into balance. Zoning is also used as a parking management tool to regulate

the parking supply thereby achieving broader development and quality of life objectives. Initially, zoning for parking was designed to alleviate street traffic congestion. Zoning requirements also help to avoid the nuisance and interference between adjoining properties and to facilitate safe and efficient traffic movement.

Zoning can be used in at least three other ways to benefit urban transportation.

- By regulating the location of major traffic generating activities, it can help protect costly transport facilities from becoming overloaded at critical points.
- By helping to ensure that new urban development occurs in conformity with land-use plans, zoning helps assure that the environmental quality of the community is not lowered.
- By regulating the location of unsightly activities and the design of facilities, it can help provide a more aesthetic and safer environment.

Zoning standards for parking should be objectively set and tailored to each community's needs. Most importantly they must be periodically updated. The various agencies that have an interest in ordinance implementation must work collectively and co-ordinate their actions. Above all, the zoning policies must be co-ordinated with the urban transportation and development policies. One important fact that must be remembered is that zoning regulations however do not offer a complete solution to the urban parking problem on their own (Weant & Levinson: 1990: 55, 56).

Minimum parking standards for 12 towns in the Western Cape and in Gauteng have been compiled in *Table 3.2*. The Western Cape standards are on average lower than the Gauteng standards. This difference can be explained by the fact that the regulations in the Western Cape use gross floor area (g.f.a.), while the regulations for Gauteng use

gross leasable floor area (g.l.f.a.). The gross leasable floor area is usually smaller than the gross floor area. This means that where for example Stellenbosch requires four parking spaces per 100 m$^2$ gross floor area and Brits requires the same amount of parking per gross leasable floor area, the Brits regulations require more parking per square meter.

### Table 3.2 Minimum Parking Requirements

| Town | Minimum parking requirements (Space/100m$^2$) | | | |
|---|---|---|---|---|
| | Offices | Shops | Flats (per unit) | Hotel (per room) |
| *Western Cape (g.f.a.)* | | | | |
| Franschhoek | 5 | 1.67 | 1 | 0.5 (+20) |
| Malmesbury | 3.33 | 3.33 | 0.5 | 0.5 (+20) |
| Paarl | 3.33 | 3.33 | 0.5 | 0.5 (+20) |
| Somerset-West | 1.67 | 1.67 | 1 | 0.5 |
| Stellenbosch | 4 | 4 | 5 / 100 m$^2$ | 0.7 |
| Vredendal | 1.67 | 1.67 | 1 | 0.5 (+20) |
| Wellington | 1.67 | 1.67 | 1 | 0.5 (+20) |
| *Gauteng (g.l.f.a.)* | | | | |
| Brits | 4 | 4 | 1 | 1 (+2 / 100 m$^2$ public area) |
| Cullinan | 2 | 2 | 1 | 1 (+6 / 100 m$^2$ public area) |
| Delmas | 2 | 2 | 1 | 1 |
| Springs | 3 | 3 | 0.6 | 1 (+6 / 100 m$^2$ public area) |
| Warmbad | 2 | 2 | No data | No data |
| *Department of Transport (g.l.f.a.)* | | | | |
| Parking Standards (1985) | 2.5 | 6 | No data | 1 |

The standards were adapted to make these comparable to one another, e.g. the Paarl standards are suppose to read 1 parking space per 30 m$^2$. When adapted in the table it reads 3.33 parking spaces per 100 m$^2$.

### 3.3.2  In lieu parking fees

Often it may not be possible for a developer to provide all off-street parking on-site. There are two ways to overcome this problem. The local authority can require the developer to supply the parking on another site or it can make the developer pay an in-lieu fee for not providing the parking. In practice in-lieu fees have benefited developers by offering them an alternative to providing expensive parking spaces. Shoup (1999) surveyed in-lieu parking programs in 46 cities (America (24), Canada (7), The United Kingdom (6), South Africa (2) and one in Iceland). He summarised his findings in four sections: The (a) advantages and (b) disadvantages of in-lieu fees, (c) how cities set the fees, and (d) who decides on what action to take. A short overview of his study will be given, following the same structure.

(a) Advantages of in-lieu fees

- *A new option.* In-lieu fees give developers an alternative to meeting the parking requirements on sites where providing all the required parking spaces would be difficult or very expensive.

- *Shared parking.* Public parking spaces allow shared use among different sites where the peak parking demand occurs at different times. Shared parking is more efficient if supplied by one regulatory body and is one of the easiest ways to make better use of scarce urban land.

- *Better urban design.* Local authorities can put public parking lots where they have the lowest impact on vehicle and pedestrian circulation. Less on-site parking allows continuous storefronts without "dead" gaps for adjacent surface parking lots.

- *Fewer variances.* Developers often request parking variances when it seems that providing the required parking would be difficult. If developers can pay cash rather than provide the required parking, authorities don't have to grant variances and can therefore be more consistent in applying policy.

- *Historic preservation.* In-lieu fees allow protection of historic buildings where the new use requires additional parking. The in-lieu policy therefore makes it easier to preserve historic buildings and rehabilitate historic areas, especially in old CBD's.

(b) Disadvantages of in-lieu fees

- *Lack of on-site parking.* Parking is a valuable asset for any development. A lack of on-site parking can reduce the attractiveness of a development to tenants and customers. Developers can always still choose to rather provide the parking than paying the fee.

- *High fees.* In-lieu fees are very expensive most of the time due to high land values. Most authorities set in-lieu fees lower than the cost of providing the parking space, "otherwise it would just be too high"; is the answer of most officials. When the cost of required parking is hidden in the cost of development, cost does not seem to matter. As soon as cost is made explicit in cash, everyone thinks it's too high.

- *No guarantees.* The local authority may intend to use the in-lieu fee revenue to finance public parking, but it is never guaranteed when and where the parking space will be provided. Sometimes the revenue is used for financing other government projects and then the parking is never built with the funds reserved therefore.

- *Fewer parking spaces.* In-lieu fees will reduce the parking supply if cities provide less than one public parking space for each in-lieu fee paid. A smaller parking supply can put an area at a competitive disadvantage. In most cases shared parking reduces the total parking supply needed to meet the sum of all individual peak parking demands.

(c) How cities set the fees.

Shoup (1999) states that local authorities use two basic approaches to set their in-lieu fees. The first is to calculate the appropriate fee per parking space on a case-by-case basis for each project. The second is to have a uniform fee per parking space for all projects. The case-by-case procedure required a land value appraisal to estimate the cost of public parking near each project that applied to pay the fee. Developers complain that not knowing the fee until after the appraisal creates uncertainty in project planning. The case-by-case approach is complicated, time-consuming and expensive.

Thirty-seven or the 46 cities choose to set uniform fees probably because of their certainty, simplicity and equity. These fees are easier for the authority to administer and for developers to use. Developers can easily incorporate the fee in a financial analysis and decide whether to provide the parking or pay the fee. In South Africa, municipalities usually base their fees on the municipal property assessment or on the market value of the property per square meter. Paarl for example set their fees according to market value. Clause 53 of the zoning regulations reads as follows:

CLAUSE 53    (1)     On every site on which a building or buildings are to be erected to be used as shops or business premises or where a building or buildings will be converted to such use, one parking bay per 30m$^2$ of gross floor area of the building(s) must be provided on-site, 25% of which to be demarcated and sign-posted for visitors to the site.

(2)     Should Council consider the provision of all or portion of the required parking on the site in terms of any clause to be impractical or undesirable, it may consider it's provision in part or in whole on a nearby appropriate site, and/or a monetary contribution in lieu thereof, for the general provision of parking as determined by Council from time to time, on the basis of the following formula:

**Number of parking bays required multiplied by 30 multiplied by market value of relevant land per m$^2$**, provided that where the Council is of opinion that in view of the proposed activities on the site the full provision of on site parking as prescribed is either unnecessary or only necessary to a lesser extent, it may in it's discretion reduce the required provision of parking or the monetary contribution to be paid in it's place as it thinks fit.

Most cities' in-lieu fees do not cover the full cost of providing the parking space. Authorities aim to set their fees high enough to pay for public parking, yet low enough to attract development. Franschhoek zoning regulations had a very vague clause concerning paying in-lieu fees for parking. It stated that a developer could pay a sum equal to the taxable estimate per square meter of ground. This lead to a case in 1997 where according to the last assessment of the property in 1987 a developer had to pay R 2 130 for one parking space, but according to the market value of the property he had to pay R22 650. Stemming from this it was decided that in-lieu fees would be calculated according to 60% of the market value of similar properties in the area. Another positive point is that these in in-lieu fees are put in a parking fund for exclusive use in supplying parking.

In overseas countries most authorities have no explicit policy regarding how often to revise the fees, and some cities' fees have not changed for many years. In-lieu fees for overseas countries vary from $2 000 (R14 000) to $27 520 (R192 640) per parking space not provided.

(d) Who decides whether to provide parking or pay the fee?

According to the survey of Shoup (1999) most authorities allow developers to choose whether to pay the fee or provide the parking, but only a few authorities require

developers to pay the fee rather than provide the parking. Officials in these latter cities cited several reasons for requiring developers to pay the fees: to centralise parking facilities, put more parking supply under public management, encourage shared parking, discourage the rapid increase of surface parking lots, emphasise continuous shop-fronts, improve pedestrian circulation, reduce traffic congestion and improve urban design.

In South Africa it seems municipalities would rather have developers provide the parking spaces themselves. The reason for this might be that municipalities never actually provide the parking with the money received from the developer. In the case of Paarl the in-lieu money does not go into a separate parking fund, but 'disappears' into the total budget of the municipality. The money then never gets used to provide parking, but for other purposes that need more 'urgent' funding.

There is still a case for applying in-lieu parking fees. In-lieu fees unveiled the high cost of parking requirements. Viewed sceptically, minimum parking requirements subsidise cars and distort urban form. In-lieu fees mitigate the damage caused by parking requirements. The in-lieu fees assist development on difficult sites, encourage shared parking, reduce the demand for variances, improve urban design, and support historic preservation. In-lieu fees allow developers to reduce parking demand rather than increase parking supply. This will lead to a reduction in traffic congestion, air pollution and energy consumption. The option to reduce parking demand rather than increase parking supply will benefit developers, property owners, employers, commuters, transit agencies, cities and the environment (Shoup, 1999: 318, 319).

## 3.4 Conclusion

The chapter has shown that parking is very important to the local economy of any town, and its administration calls for a conscious effort by both public and private sectors. The responsibility of providing parking falls squarely on the shoulders of the local municipality, but this puts them in a unique position regarding parking management. The municipality needs to have clearly set out goals and objectives to reach a solution that would work for all role players. Parking management should play an important part in local authority's overall transport plan to realise broader community development objectives.

Zoning requirements play an important role in balancing parking demand and supply. The zoning requirements should be flexible enough to allow developers to follow market trends, but should also regulate the provision of enough parking in the central business district. Instead of providing the required parking, developers have the alternative of paying an in-lieu fee for parking. In theory this fee must then be used by the municipality to provide adequate off-street parking at another place in the business area. Zoning policies should also be integrated with urban transportation and development policies in order for the potential benefits of zoning ordinances to be realised.

# CHAPTER 4

## CASE STUDY,

## PAARL CENTRAL BUSINESS DISTRICT

### 4.1 Introduction

Paarl is situated in the heart of the Western Cape, 56 km from Cape Town in the region known as the Winelands District. Paarl received its name from Abraham Gabbema, in 1657, whom named the area "Peerlbergh" after the two huge granite rocks situated above the town and which look just like pearls glistening in the sunlight. Paarl is a bustling town cradled in the picturesque Berg River valley between the second largest granite outcrop in the world and the towering Du Toitskloof Mountains. Mountains, rivers and rich flora together with a rich cultural and architectural heritage contribute to making Paarl a unique destination in the Western Cape.
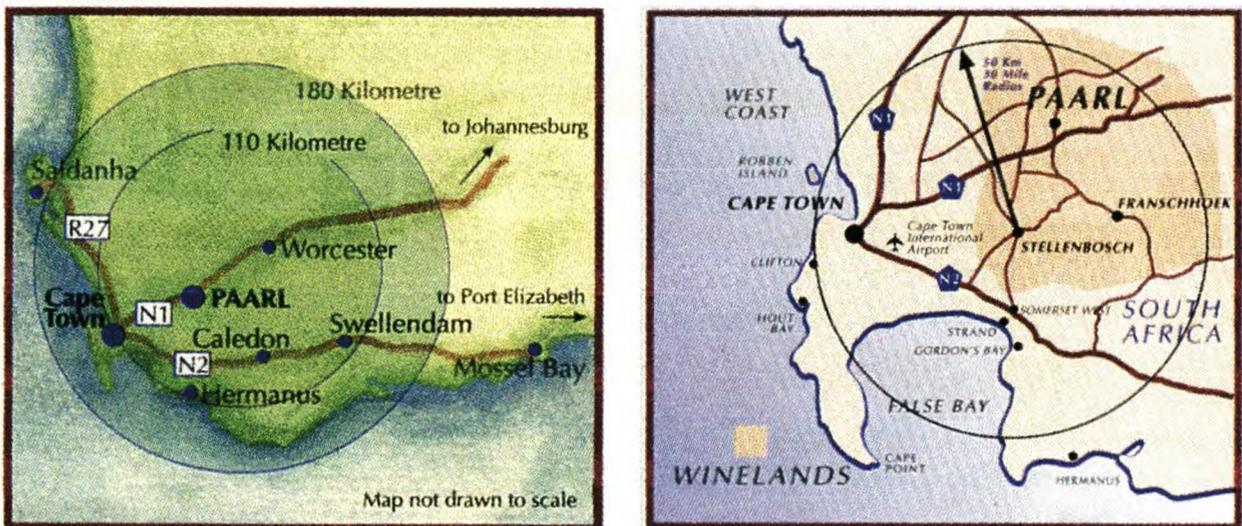
**Figure 4.1 Location map of Paarl and surrounding towns with travel distance radius (Paarl, South Africa 1999).**

Average temperatures in Paarl range from mild 14°C in winter and a hot 29°C in the summer. An average rainfall of 944 mm falls mainly from June to August every year. The climate contributes to the production of internationally renowned wines, export fruit and fresh produce. The history and prosperity of this town is depicted in the many examples of fine architecture in the town and surrounding region.

The town has an area of 6700 ha (including the Paarl Mountain Nature Reserve of 2895 ha). Municipal status was gained in 1849 and Paarl is the largest municipality outside the Cape Metropole in the Western Cape. Paarl has an estimated population of 108 612 people (59% Coloured, 18% White, and 23% Black). The unemployment figure for the municipal area is 22% with an estimated workforce of 42 128 people (Census 1996). The business and commercial life is concentrated in the central business district of the town, but there are also many industries and businesses located in the area surrounding the town. Over 1200 commercial activities can be found in and around Paarl (including 23 general dealers, 46 builders, 46 transport contractors, 12 service stations, and 23 restaurants). Paarl borders the N1 national road from Cape Town through Worcester to Johannesburg and Pretoria, which makes it very accessible for vehicle transport. Other main roads include the R44 to Malmesbury, Klapmuts and Stellenbosch and the R303 to Franschhoek and Wellington.

## 4.2 Study Area

*Figure 4.2* (p 50) shows the demarcated study area of the central business district in Paarl. The study area includes all the main off-street parking lots within two blocks from, the main commercial street, Lady Grey Street. Main Street forms the western boundary of the study area and Berg River Boulevard the eastern boundary. All the main businesses are located within walking distance form Lady Grey Street. Three shopping

centres (Pick 'n Pay, Shoprite, Checkers) constitute the main activity centres in the central business district.

## 4.3 Parking Survey

Bruinette, Kruger and Stoffberg did the only previous parking study in 1986 for the entire Paarl. The method they used to determine and forecast the parking demand was by applying relevant parking standards for different uses in the central business district. They differentiated between two main uses, commercial use and office use. The parking standards were taken as four spaces per 100 m$^2$ for commercial use and two spaces per 100 m$^2$ for office use.

The estimated number of parking spaces available in the central business district roughly came to 2500. They projected that parking demand would increase to 4300 spaces in 1990, 5200 spaces in 2000 and 6200 spaces in 2010. They estimated that a parking shortage of 1400 spaces existed in 1986 in the central business area. A limited parking survey was also conducted over a one-day period. Only two parking areas, Wamakers square and the New Street area (currently Shoprite), were include in the study.

According to their survey an under supply of parking existed in these areas as the lots were filled to capacity for most of the day. Their conclusion stated that Paarl had a major parking shortage and recommended measures to alleviate the problem. These measures included the development of new parking lots, recommendations regarding the minimum parking requirements and recommendations on applying parking fees for parking lots.
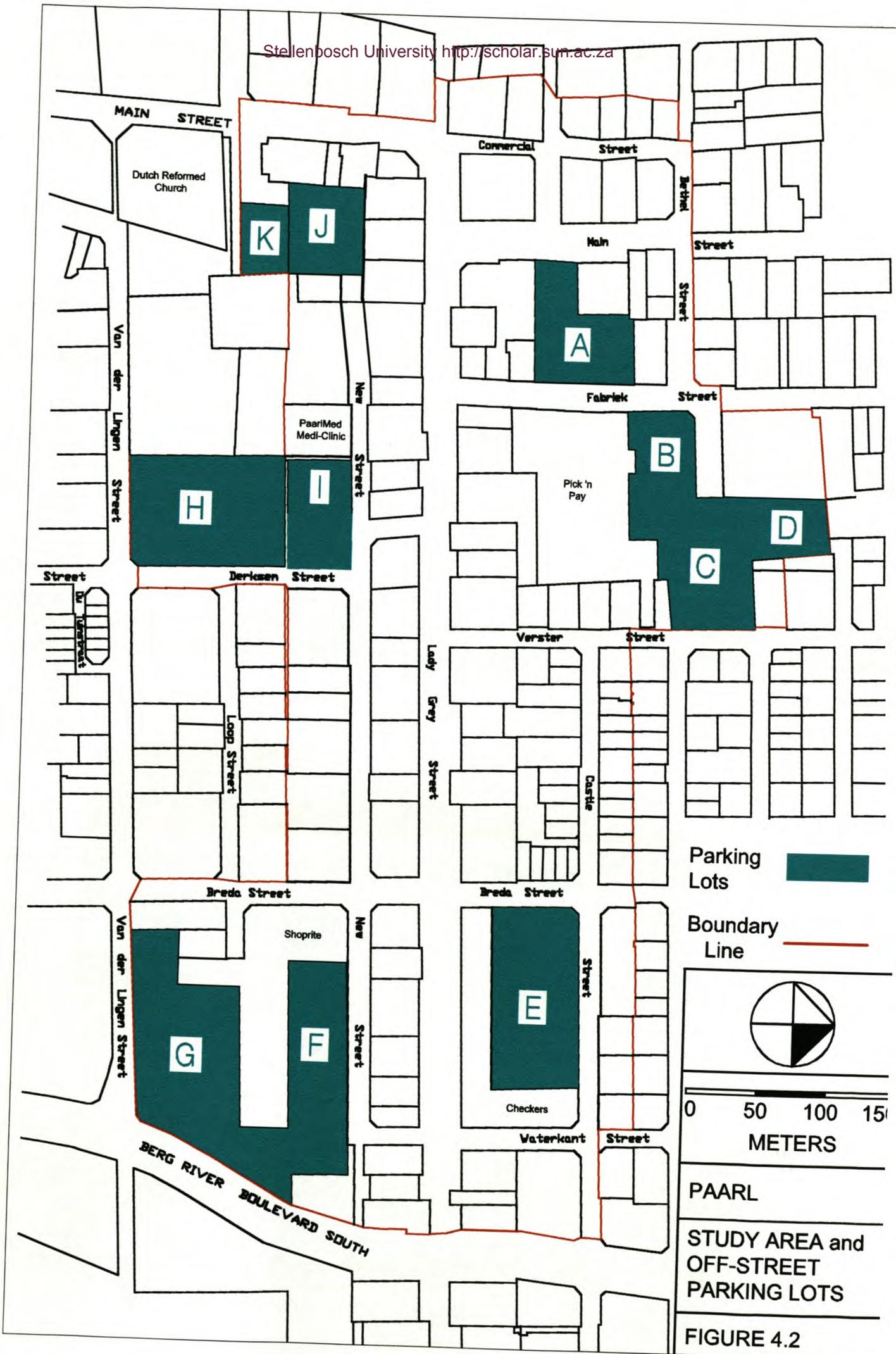
**Parking Lots**

**Boundary Line**

0   50   100   15(

**METERS**
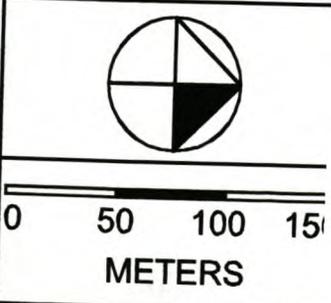
**PAARL**

**STUDY AREA and OFF-STREET PARKING LOTS**

**FIGURE 4.2**

For the purpose of this study a parking survey was conducted over four days. The survey determined the occupancy rate of different on-street and off-street parking areas in the demarcated study area. A complete study where the turnover rate of parking is also measured could not be conducted due to limited manpower, but the occupancy rate gives a good indication of the parking demand in the central business area.

The survey was conducted between 28 November 2000 and 2 December 2000. Tuesday, Wednesday, Friday and Saturday were chosen as suitable days. The survey was conducted between 08h00 in the morning and 18h00 in the evening except on Saturday when the survey was conducted until 15h00 in the afternoon. Occupied parking spaces in the demarcated parking areas where counted on an hourly basis to give an indication of the occupancy rate.

### 4.3.1  Parking demand

The total on-street and off-street parking occupancy for each day is summarised in *Table 4.1 & 4.2. Chart 4.1 - 4.8* reflect the average parking occupancy for each day.

### Table 4.1 Total on-street parking occupancy

| Place: | Paarl | | | | | | | |
| | Total On-Street Parking (Max: 370 spaces) | | | | | | | |
| Date: | 28-Nov-00 | | 29-Nov-00 | | 01-Dec-00 | | 02-Dec-00 | |
| Time Period | Number | Illegal | Number | Illegal | Number | Illegal | Number | Illegal |
| 08:00 - 09:00 | 209 | 6 | 204 | 13 | 194 | 14 | 263 | 31 |
| 09:00 - 10:00 | 276 | 30 | 314 | 23 | 304 | 27 | 341 | 56 |
| 10:00 - 11:00 | 321 | 31 | 326 | 30 | 300 | 36 | 354 | 72 |
| 11:00 - 12:00 | 310 | 25 | 310 | 41 | 323 | 36 | 356 | 84 |
| 12:00 - 13:00 | 296 | 30 | 300 | 27 | 311 | 31 | 354 | 55 |
| 13:00 - 14:00 | 319 | 27 | 337 | 36 | 310 | 33 | 275 | 45 |
| 14:00 - 15:00 | 300 | 30 | 282 | 28 | 315 | 33 | 164 | 21 |
| 15:00 - 16:00 | 306 | 29 | 300 | 32 | 309 · | 34 | | |
| 16:00 - 17:00 | 301 | 22 | 265 | 25 | 300 | 34 | | |
| 17:00 - 18:00 | 263 | 19 | 268 | 32 | 276 | 34 | | |

Chart 4.1: Total On-street parking occupancy on Tuesday, 28 November 2000

Chart 4.2: Total On-street parking occupancy on Wednesday, 29 November 2000

Chart 4.3: Total On-street parking occupancy on Friday, 1 December 2000

Chart 4.4: Total On-street parking occupancy on Saturday, 2 December 2000
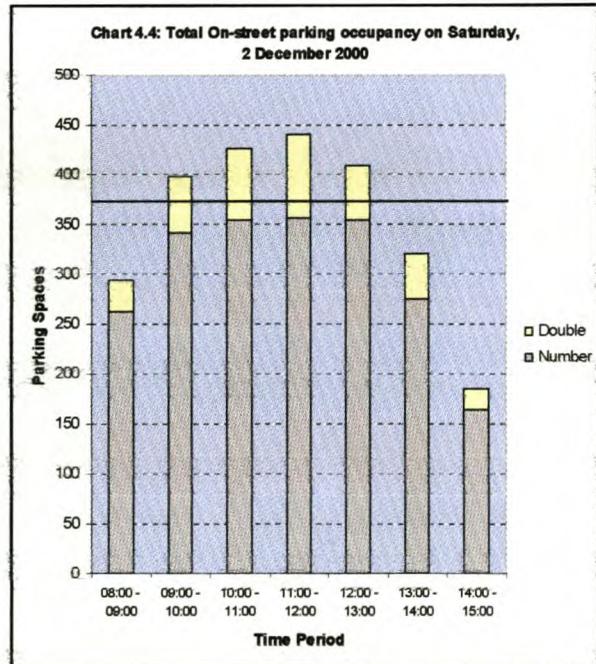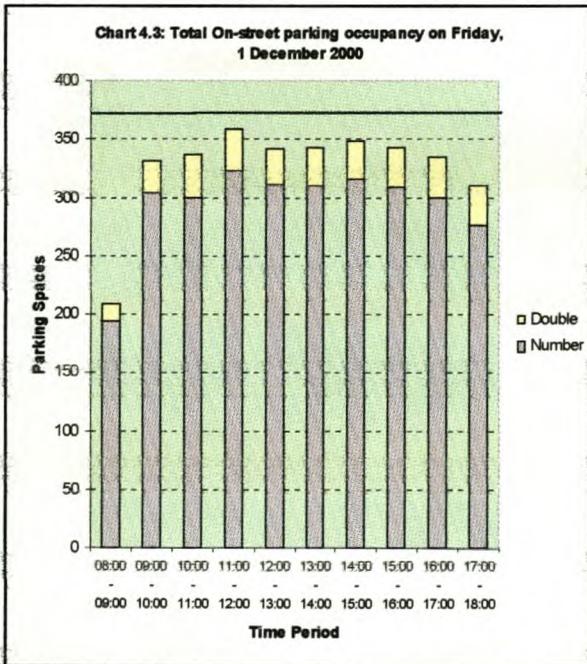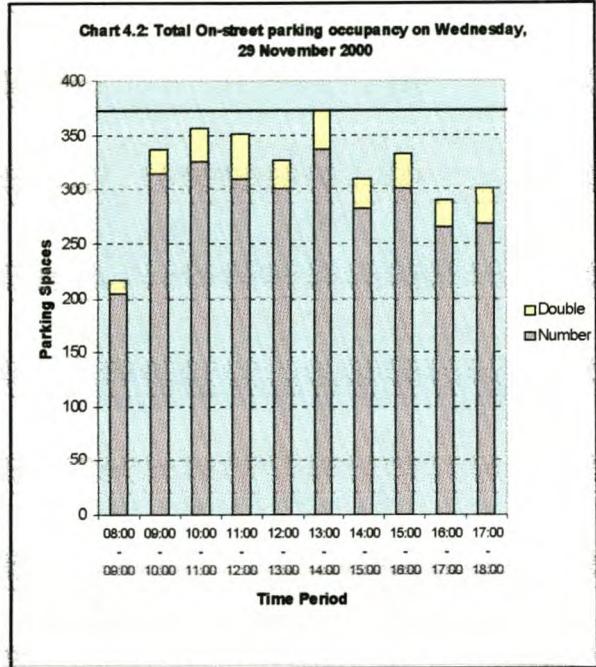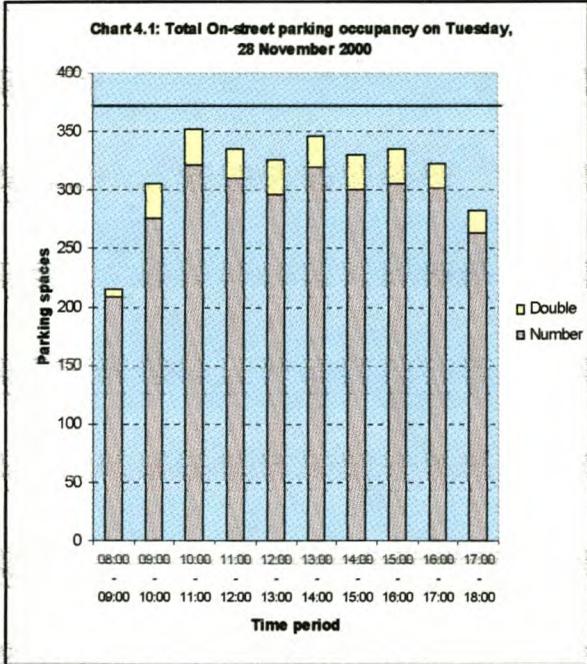
## Table 4.2 Total off-street parking occupancy

| Place: | Paarl | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Total Off-Street (Max: 1495 spaces) | | | | | | | |
| Date: | 28-Nov-00 | | 29-Nov-00 | | 01-Dec-00 | | 02-Dec-00 | |
| Time period | Number | Illegal | Number | Illegal | Number | Illegal | Number | Illegal |
| 08:00 - 09:00 | 389 | 1 | 426 | 3 | 363 | 2 | 677 | 5 |
| 09:00 - 10:00 | 700 | 5 | 758 | 3 | 801 | 6 | 1101 | 40 |
| 10:00 - 11:00 | 856 | 5 | 874 | 8 | 989 | 19 | 1271 | 67 |
| 11:00 - 12:00 | 935 | 6 | 884 | 6 | 961 | 12 | 1305 | 71 |
| 12:00 - 13:00 | 867 | 4 | 821 | 7 | 943 | 8 | 1197 | 53 |
| 13:00 - 14:00 | 908 | 5 | 878 | 11 | 939 | 9 | 840 | 30 |
| 14:00 - 15:00 | 779 | 5 | 790 | 6 | 873 | 19 | 342 | 10 |
| 15:00 - 16:00 | 832 | 10 | 826 | 17 | 965 | 14 | | |
| 16:00 - 17:00 | 775 | 7 | 724 | 6 | 872 | 9 | | |
| 17:00 - 18:00 | 648 | 3 | 625 | 7 | 865 | 13 | | |



Chart 4.5: Total Off-street parking occupancy on Tuesday, 28 November 2000



Chart 4.6: Total Off-street parking occupancy on Wednesday, 29 November 2000



Chart 4.7: Total Off-street parking occupancy on Friday, 1 December 2000



Chart 4.8: Total Off-street parking occupancy on Saturday, 2 December 2000
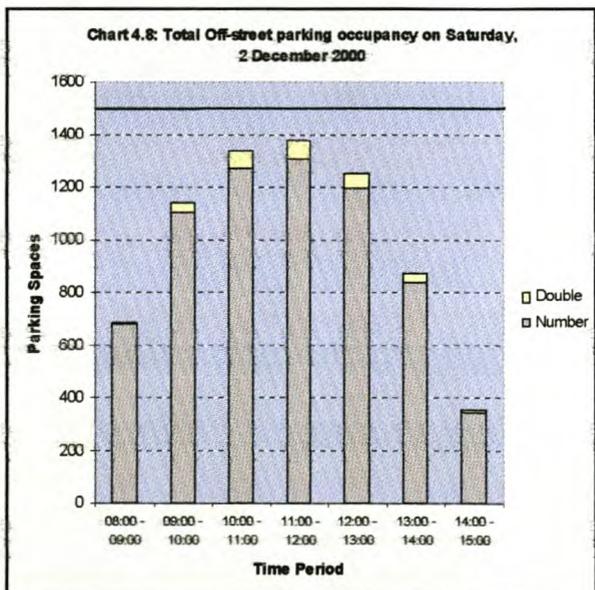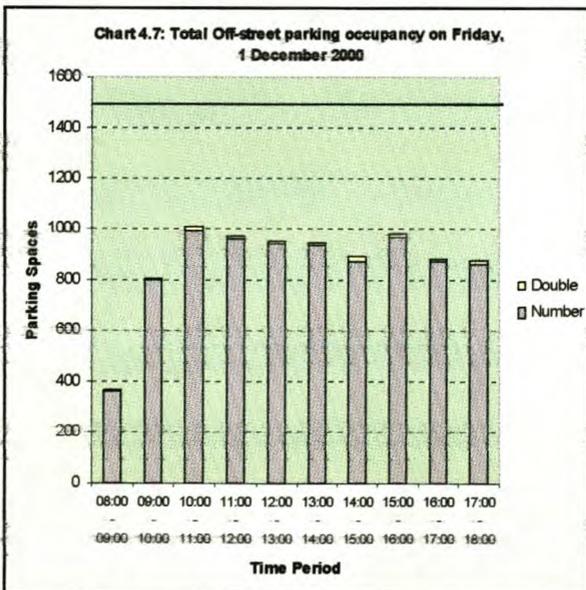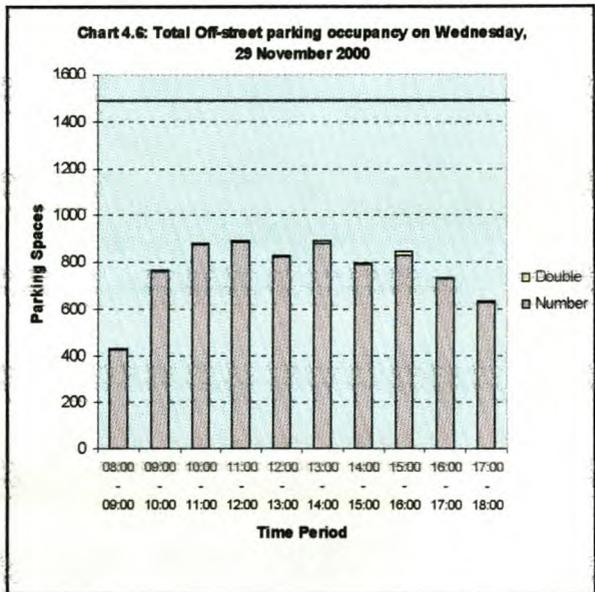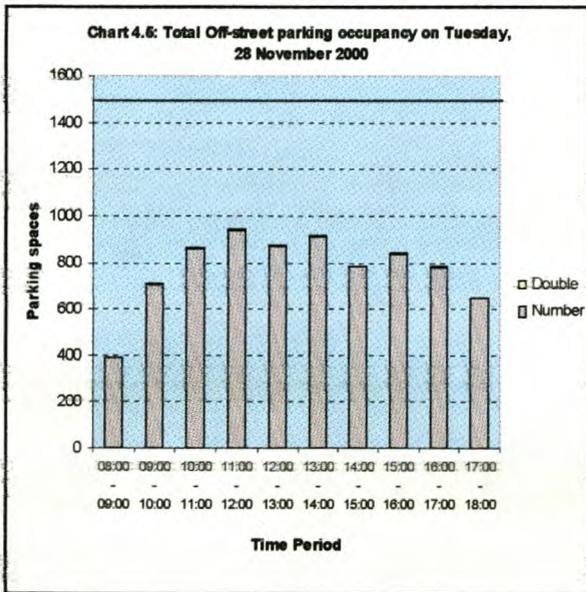
## 4.3.2 Observations

The charts reflect the occupancy rate of the total on-street and off-street parking areas over four days and differentiate between legally parked vehicles and vehicles that are double- or illegally parked. The occupancy rate for each day and the average occupancy over four days are shown in *Table 4.3*.

**Table 4.3 Average parking occupancy**

| Type of Parking | Days | | | | |
| --- | --- | --- | --- | --- | --- |
| | Tuesday | Wednesday | Friday | Saturday | Average |
| On-Street | 85% | 86% | 88% | 95% | 89% |
| Off-Street | 52% | 51% | 58% | 67% | 57% |
| Average | 69% | 69% | 73% | 81% | 73% |

The on-street parking occupancy for the whole study area remained high throughout the four-day period. As can be expected it reached a high on Saturday with the occupancy reaching a maximum of 119% between 11:00 and 12:00. The on-street parking never filled over capacity during the week, therefore it seems that only on Saturday the central business district has a parking shortage. The total off-street parking occupancy also reached a maximum on Saturday, but total demand never exceeded total supply. The highest occupancy was recorded between 11:00 and 12:00 on Saturday when it reached 1376 occupied spaces. This is just below the maximum number of 1495 spaces in the study area.

It is imperative to note that a higher parking demand was recorded in the western part of the study area (consisting of parking areas A, B, I, J and K). The author concludes that this is because most of the consumer buying power is located in upper Paarl. The area is separated with an imaginary line running north south along Verster Street.

It can be assumed that the wealthier people do their shopping on the western side of the line (Upper Paarl) and the poorer people on the eastern side (Lower Paarl).

Special observations for each separate parking area will be discussed in short.

## Area A: Jan Phillips Square (ADO parking meters)

This off-street parking area consists of 100 angled parking spaces interlocked with one another, with two-way aisles serving the area. The ADO Company controls this area. There is ample foliage cover and this seems to be a prime parking spot for shoppers in possession of ADO parking cards. These cards need to be loaded with credits at any ADO retailer and offers an alternative to carrying change around. Unfortunately this is the only parking area that uses the ADO system, as it is a testing ground for implementing the ADO system in other areas as well. The parking area had an average occupancy rate of 83% over the four-day survey period.



**Figure 4.3 Area A, Jan Phillips Square**

**Chart 4.9: Area A**

☐ Occupancy ■ Illegal
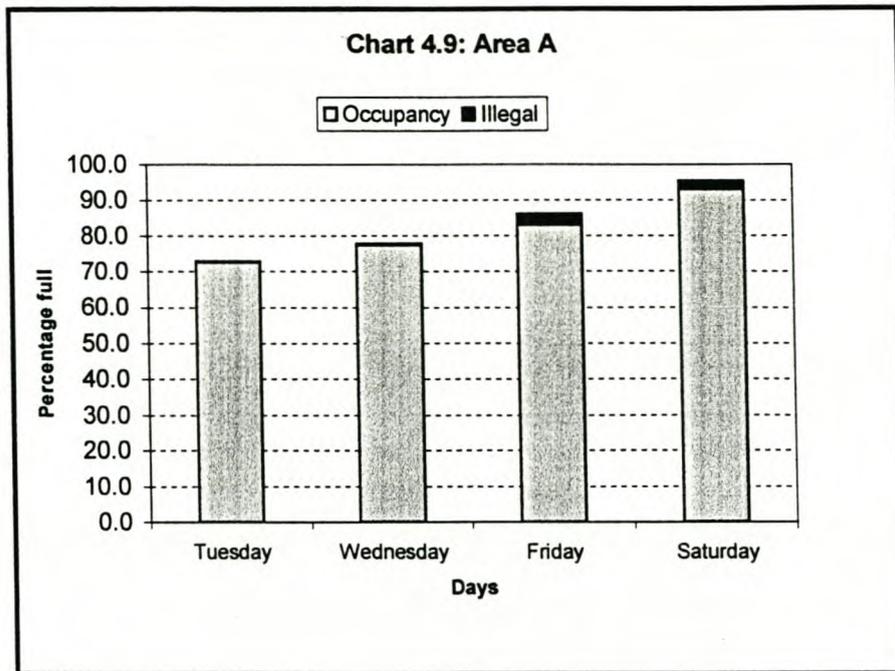


## Areas B, C, D: Wamakers Square

The area consists of three distinctive separate off-street parking squares, all serving the Pick & Pay centre. This is a municipal parking area leased by the adjacent building owner. The lease contract states that the owner must pay an annual sum each year for the rent of the parking area. The owner is also responsible for the upkeep of the parking lot. A total of 463 free 90° parking spaces are available in this area. Area B (203 spaces) had an average occupancy rate over the four day period of 84%. During peak periods of the day Area B is continually filled to maximum capacity and seems to be a popular parking area. Area C and D's occupancy rate respectively constituted 68% and 40%. Area B functions as the main parking area whilst areas C & D function as overflow parking areas. Area D is mainly only used on Saturdays when parking demand is at its highest.
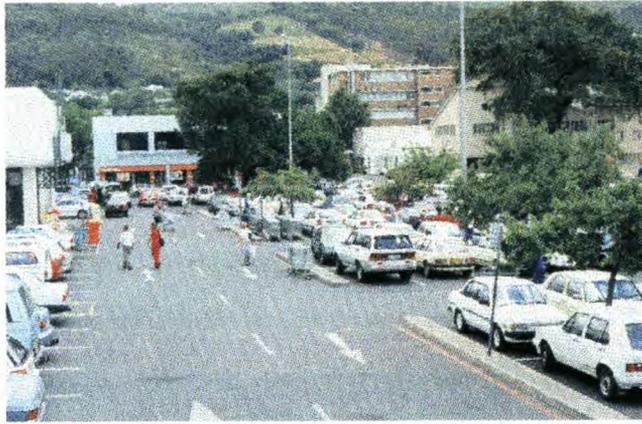
**Figure 4.4 Area B, Wamakers Square**
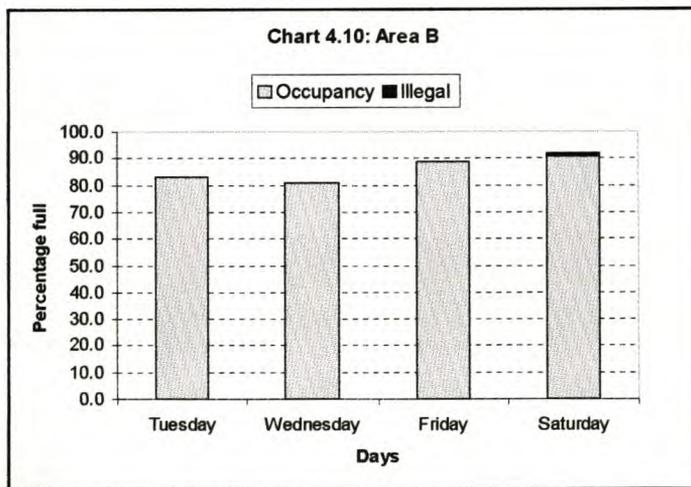





**Figure 4.5 Area C, D, Wamakers Square**
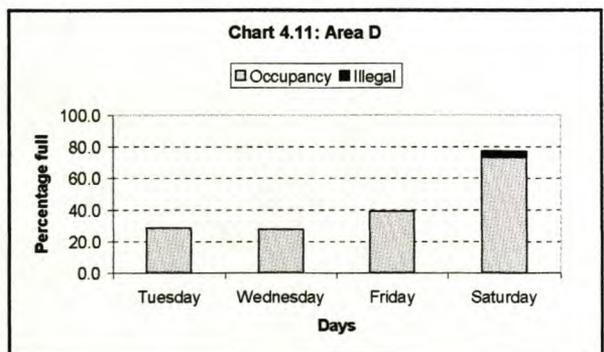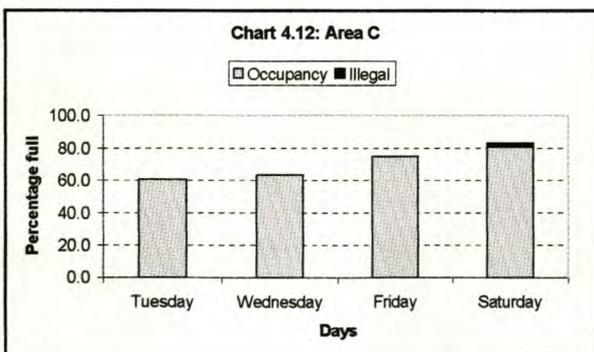
## Area E: Checkers centre

This area offers free on-site parking for customers visiting the Checkers centre (156 spaces at 90°). The lot is privately owned and operated by Checkers. The average occupancy rate for this site was 75% over the four-day period. On Saturday the occupancy rate averaged 117% from 09h00 until 13h00.



**Figure 4.6 Area E, Checkers centre**
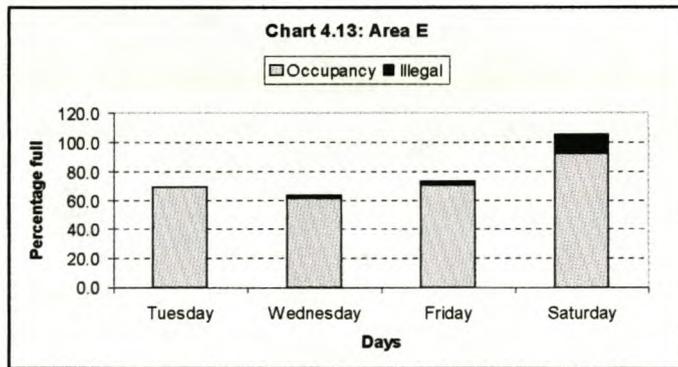


## Area F, G: Shoprite

Free on-site parking for Shoprite centre customers consist of 89 spaces in area F and 217 spaces in area G. This lot is owned and operated by Shoprite. Average occupancy rates for areas F & G were respectively 54% and 45%. Area G is under utilised, even on Saturday the average occupancy rate only reached 80%. Area G further has the

problem that delivery trucks usually park in normal parking spaces posing a danger for other vehicle traffic. *Figure 4.7* shows an example of this problem. Area F borders the taxi ranks and almost 50% of the parking spaces are occupied by taxis due to shortage of parking space in the taxi ranks. These taxis occupy the spaces for the whole day, which limits the number of available spaces in area F. This is not a major problem since area F is severely under utilised.
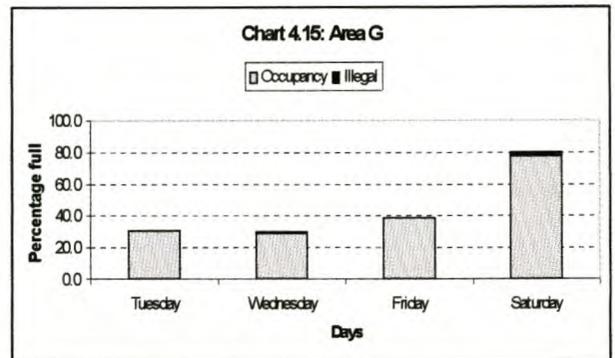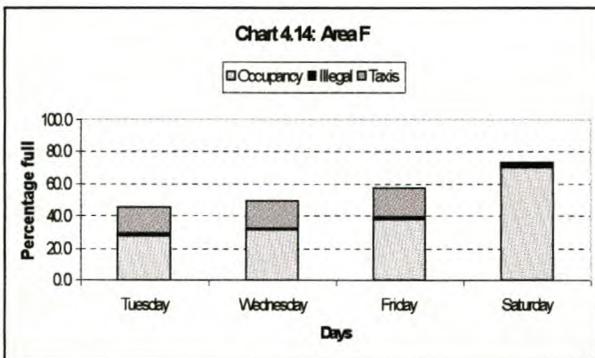






**Figure 4.7 Area F, Shoprite North (Showing taxis occupying parking spaces).**
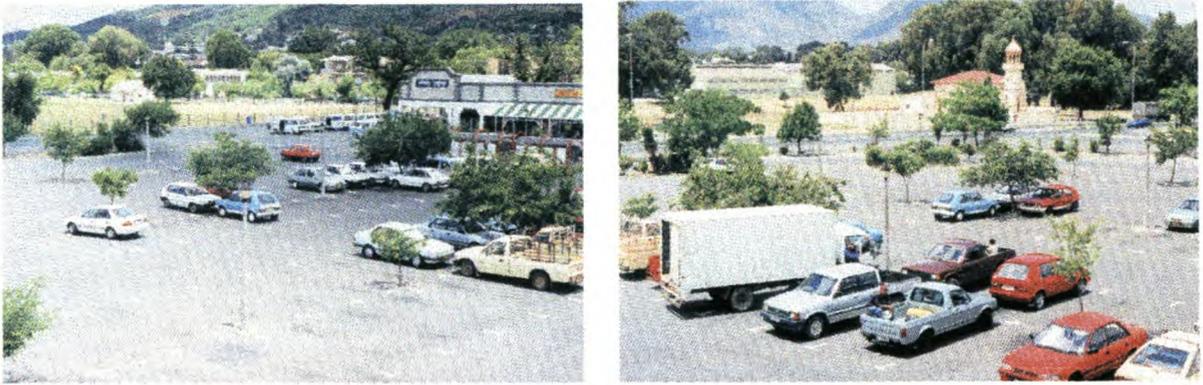
**Figure 4.8 Area G, Shoprite (South)**

## Taxi Ranks

The taxi ranks are situated opposite area F and space is provided for 48 taxis. The current taxi rank does not provide enough space to fulfil in the demand, this leads to taxis parking in parking lot F and sometimes even in lot G. *Figure 4.9* shows how the taxis obstruct the street turning out of Lady Grey Street.
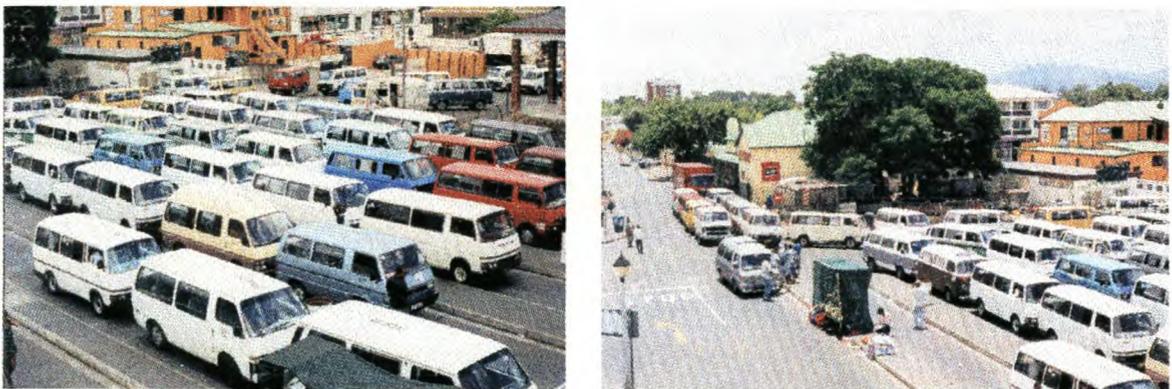


**Figure 4.9 Taxi Ranks**



Chart 4.16: Taxi Ranks
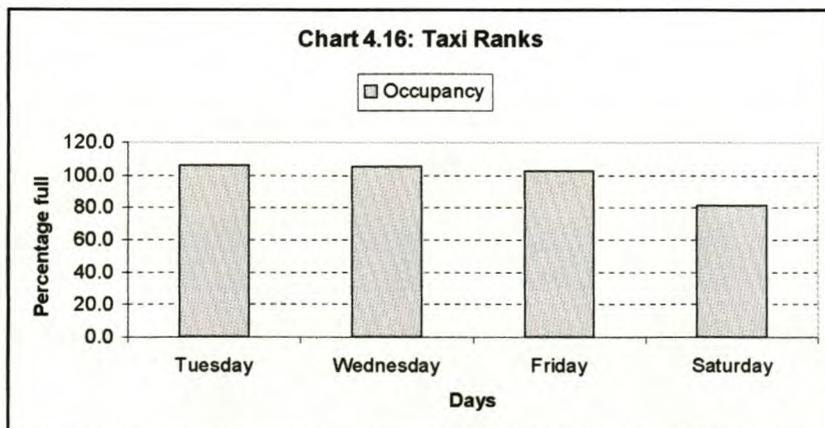
## Areas I, H: Patriot Square

Area I consist of 46 free parking bays (90°). The Municipality owns this lot. The average occupancy rate for this area was 94%. Area H bordering area I is also a free parking lot owned by the Municipality. Area H has 299 parking spaces, which makes it the biggest parking lot in the central business district. The average occupancy rate for area H was a low 37%, which can be ascribed to the many parking spaces available and the long distance from the main business areas. It implies that many people are not willing to park a long distance from their destination. On Saturday between 09h00 and 13h00 the average parking occupancy for area H reached a high of 55%.
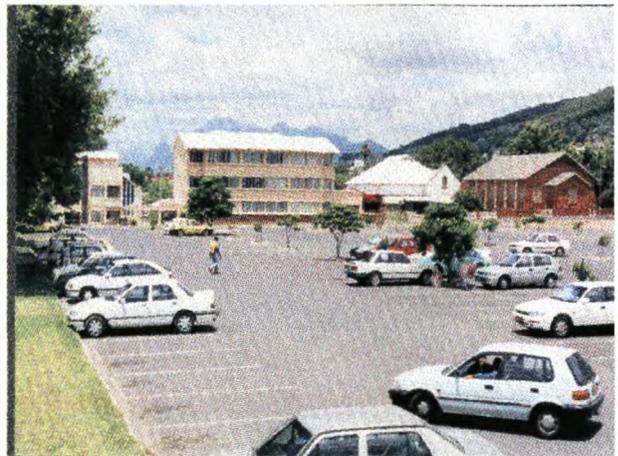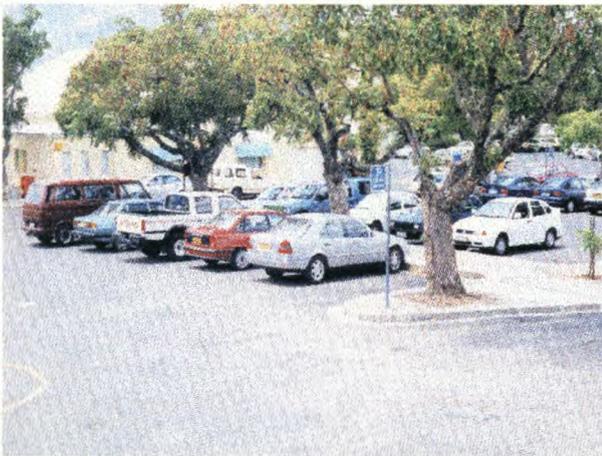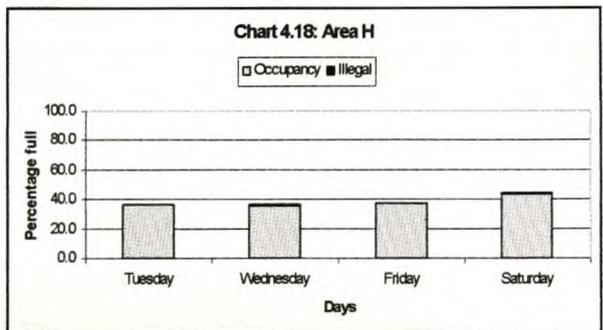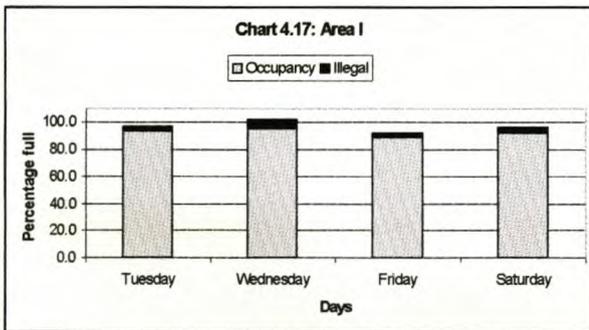




**Figure 4.10 Areas I, H, Patriot Square**

## Areas J, K: Van der Lingen Square

Area J is a coin-metered short-term parking area with a total of 58 parking spaces. The average occupancy rate was 86%. It is seen that motorists are willing to pay a nominal fee (20c for half-an-hour) to park close to their destination. Area K borders area J and is used as a free long-term parking area. The occupancy rate for area K during the week was 85% and on Saturday only 40%. The assumption can be made that area K is used by employees of surrounding businesses during the week and in a lesser degree by shoppers on weekends. Both these areas are publicly owned and the Municipality is responsible for the upkeep and management of the areas.
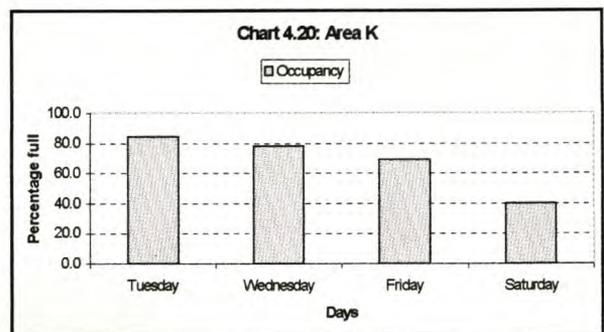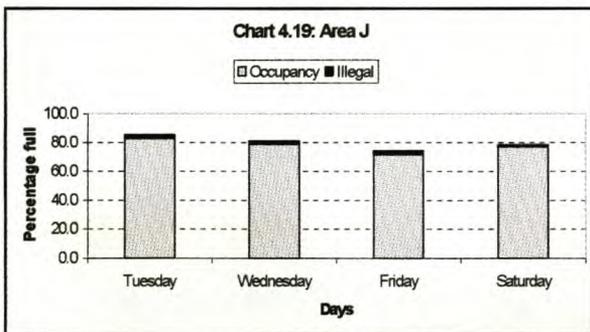




**Figure 4.11 Area J, K, Van der Lingen Square**

## Lady Grey Street (On-street)

The main business area continues all along Lady Grey Street and all the major retailers and shops are located here. A total of 112 on-street parking spaces are available. All the spaces are coin-metered (20c for half-an-hour). The average occupancy rate for these parking spaces over the four-day period was 93%. This figure can be expected to be so high, because of the prime location of the parking spaces.
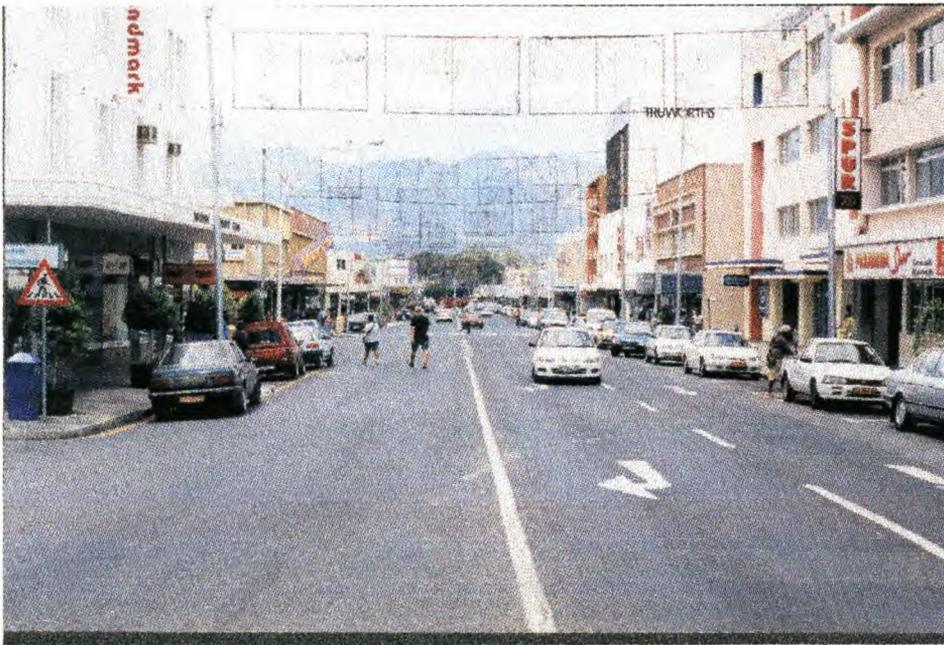


**Figure 4.12 Lady Grey Street (facing East)**
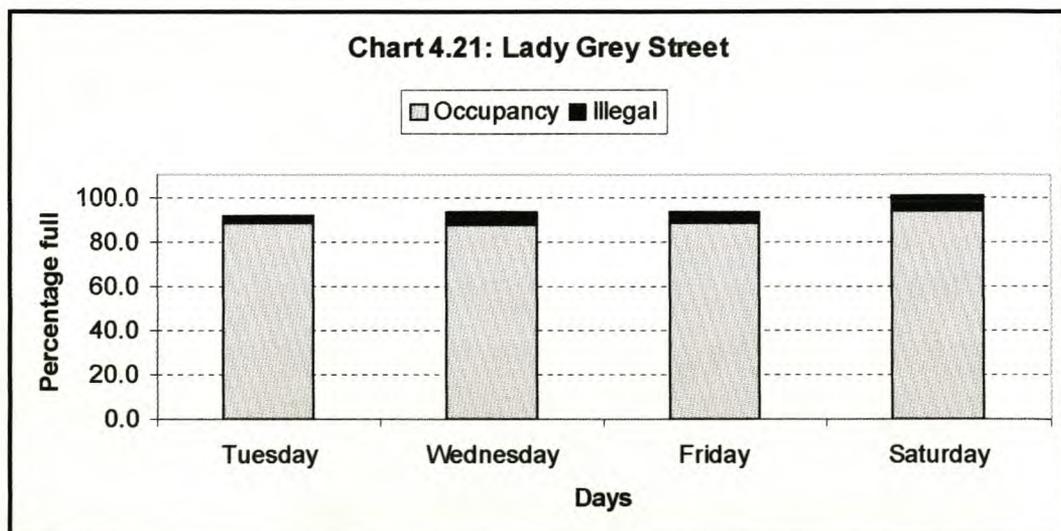
## 4.4 Minimum parking standards

### 4.4.1 Zoning regulations

As discussed in chapter three, Paarl Municipality only started enforcing minimum parking regulations in the mid-eighties. If the parking regulations had been enforced earlier the town would certainly have looked different in shape and size. The purpose of this section is to measure how much parking should have been supplied for each building and to compare this to the current parking supply in the study area. The study area has been demarcated in six sectors (see *Figure 4.13* for zoning map and sectoral demarcation). The sectors are presented as circles with a radius of 150 m. The radius of 150 m is taken as the maximum walking distance between parking area and destination. The centre of each circle is at the central activity point of the different parking areas.

Walking distance will vary according to trip purpose and destination, but in a small central business district it can be assumed that pedestrians would not walk very far. Within each sector the gross floor area of the business and retail buildings are measured and divided by the minimum parking standard for these uses (one parking bay / 30 m$^2$ gross floor area of building). This figure is then compared to the current on- and off-street parking supply. The results for each zone are shown in *Table 4.4*.

**Table 4.4 Parking supply (current and required) per sector**

| Sector | Gross Floor Area (m$^2$) | Minimum Required Parking (1 bay / 30 m$^2$ g.f.a.) | Current Parking Supply (On-, Off-Street) | (Deficit) / Surplus |
|---|---|---|---|---|
| Sector 1 | 47 595 | 1587 bays | 530 bays | (1057) |
| Sector 2 | 34 706 | 1157 bays | 685 bays | (472) |
| Sector 3 | 19 786 | 660 bays | 260 bays | (400) |
| Sector 4 | 18 862 | 629 bays | 405 bays | (224) |
| Sector 5 | 17 500 | 583 bays | 530 bays | (53) |
| Sector 6 | 34 045 | 1135 bays | 389 bays | (746) |

**FIGURE 4.13**

ZONING MAP FOR STUDY AREA

PAARL

Zones

Parking Lots

Business Use

METERS

0    50    100    150
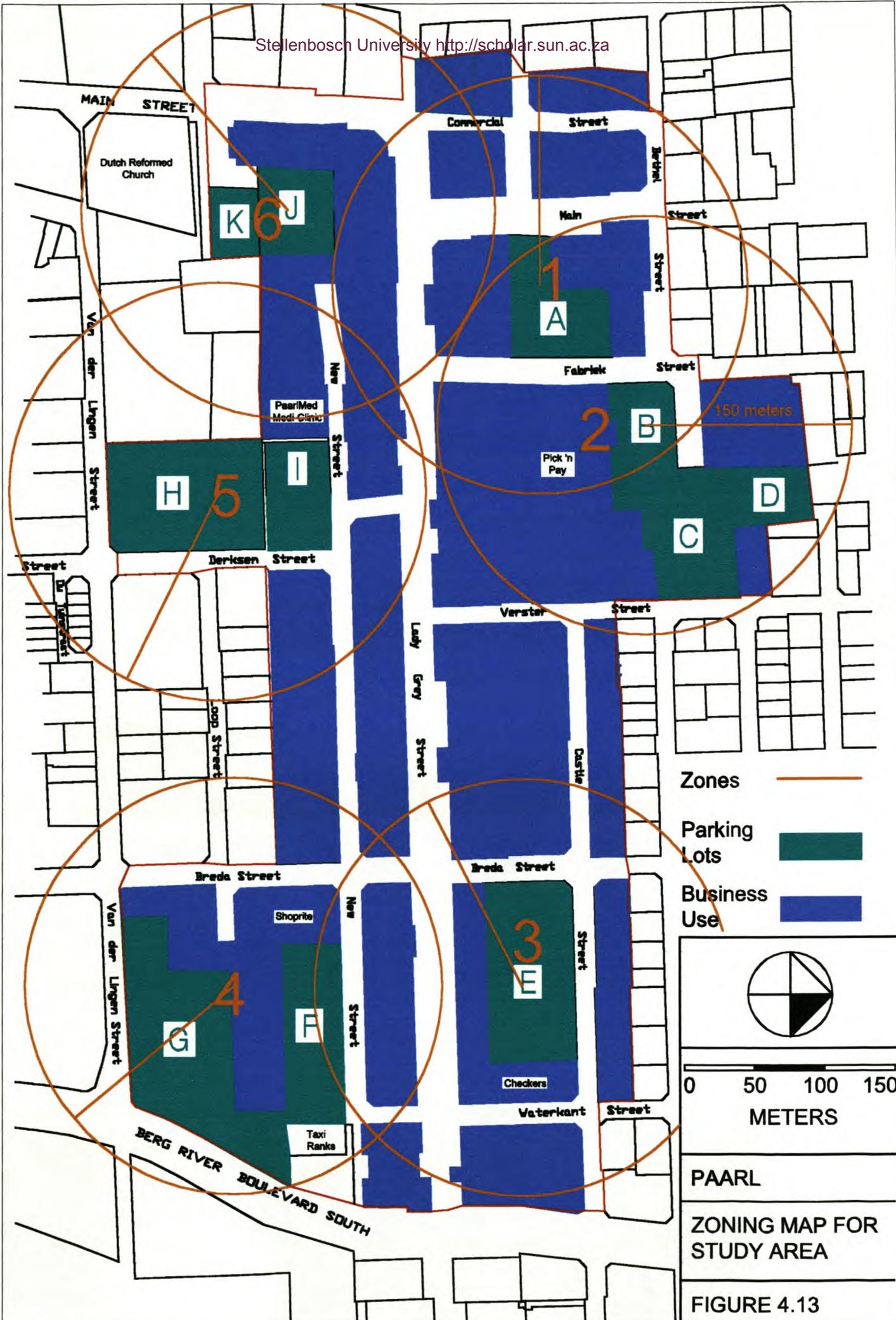
Buildings and parking spaces overlap for some of the zones. This means that some of the buildings and parking spaces were double-counted. Some buildings do not fall in any of the zones and constitute a problem that will be discussed in the next chapter. People usually have more than one choice of where to park and because human behaviour differs from person to person it makes it difficult to demarcate areas and set boundaries. The results of the table show that there is a definite disparity between the minimum parking requirements and the current supply of parking.

In each sector a deficit exist between the required amount of parking and the current supply. This could mean that there is an under supply of parking in the central area. However, it also indicates that the minimum parking standards set for the central business district are too high. This conclusion is based on the parking survey that was conducted. The parking survey showed that for each parking area an over supply existed. One could defend the high standards by maintaining that the demand for parking will increase in the future, as the central business district grows, but the fact remains that for present use the minimum parking standards seem to be, on average, too high.

### 4.4.2  In-lieu parking

Paarl Municipality has only recently started enforcing their zoning regulations regarding in-lieu parking fees. The author is aware of only three cases where developers had to pay in-lieu fees for not providing the required amount of parking. In one case the owner of the property made additions to a building that resulted in a bigger gross floor area of business. The owner refused to supply parking for the additional floor space and also refused to pay an in-lieu fee for not providing the parking. This case has not yet been resolved.

Another case occurred in 1997 when First National Bank made additions to its property on the corner of Main- and Lady Grey Street. The bank had a shortfall of four parking spaces after completing the additions. The official involved recommended to the council that the bank pay an in-lieu fee of R6 641,25 per parking bay not supplied. The council approved the recommendation and instructed the owner to pay the required amount (R 26 565). The bank complied and paid the in-lieu fee.

The third case involved property in the central business district of Mbekweni (Paarl's black township). This lead to the council approving a recommendation that all parking bays on business properties smaller than 500m$^2$ in Mbekweni's central business area be set a fixed in-lieu parking fee of R360 (year unknown).

The differences in these examples shows that the in-lieu fees can vary considerably when they are set according to the market value per m$^2$ of land. In spite of this fact, this is still the best way to calculate the cost of parking. Using the market value of land instead of the general municipal valuation provides firstly, a more reliable and true value of the cost of the land and secondly, of providing parking.

The first case raises the question if the Municipality really has the means to enforce parking regulations, if they are not complied with. The Municipality must in cases like this decide if the monetary value of the transgression is worth the cost of going to court. In-lieu parking fees are becoming more of a reality as available land in the central business district dwindles, which will leave municipalities with more cases like this to solve.

## 4.5 Conclusion

The parking survey showed that there is a definite over supply of parking in the central business area of the Paarl as a whole with only a few parking lots reaching maximum capacity over the study period. This leads to the question if the Paarl really has a parking problem. The simple answer would be no, but one might say that this is a short-sighted answer. A long-term vision is what is needed to realise that in future the parking demand would most certainly expand beyond the current supply. Another point to raise is that certain areas in the central business district are not in close proximity to a parking area. These 'dead zones' might in future yet give the biggest parking problems.

# CHAPTER 5

## SYNTHESIS

## 5.1 Supply of parking

According to the parking survey done as part of this study there are at present 2200 parking spaces available in the demarcated study area. Bruinette *et al* estimated the parking supply at 2500 spaces. The difference of 300 spaces can be ascribed to the fact that the current study area is smaller than the one used in the previous study. What is interesting is that the total parking supply has remained constant over the time period between 1986 and 2000. One would normally expect parking supply to increase and commensurate with the growth of the central business district over time.

According to the projections made in the Bruinette *et al* study a demand of 5200 spaces would exist in the year 2000, which means that at present there should be a shortage of 2700 parking spaces in the central business district. This forecast is not supported by the findings from the parking survey done in this study. On Saturday between 11:00 and 12:00 noon, which is supposed to be the busiest time of day, a total parking occupancy of only 1816 cars were counted out of a possible 1865 parking spaces. The average of the four-day period only reached 73% and on Saturday the total demand for parking in the study area only reached 81%. The figures in *Table 4.1, Table 4.2 and Table 4.3* of Chapter 4 contradicts the projections made by Bruinette *et al* and shows that these projections are too high.

The only assumption that will be ventured into for this study is that parking demand will certainly increase as the central business district grows and expands. This might be seen as a foregone conclusion, but the growth of parking demand in central Paarl

depends on a number of factors, such as local economic prosperity, local population growth and local investment opportunities (e.g. tourism), which all play an indirect role. The demand for parking relies on many inter-related factors that have been discussed in chapter three.

One aspect that could explain some of the exaggerated forecasts of Bruinette *et al's* study is that they could not have foreseen the increased role of combi taxis. Obviously with so many shoppers making use of taxis, the demand for parking space is proportionately lower. The biggest growth in the population of Paarl is in the middle to lower income groups and they tend to make use of public transport, usually taxis.

On-street parking supply has no potential for expansion in the central business area. All possible spaces for on-street parking has been set out. This means that the parking supply will have to be increased through the current off-street parking lots and future areas that still needs to be demarcated. The most important fact is that the municipality has to play a vital role in the supply of parking. The municipality has the means necessary to guide and direct the future demand for parking through certain supply measures. These measures include location of new parking areas and management of existing parking areas.

### 5.1.1 Location of new parking areas

The municipality has two options here. One is to find new areas where parking lots can be built. This leads to a problem as most of the possible sites either have businesses on them or are located too far away from the central business area. Buying out expensive retail land is not an option for the Municipality when looking for sites to develop parking on, as funds are usually limited. The only real solution is when a private developer buys

land and develops it, the Municipality must enforce the zoning scheme regulations and make the developer provide parking or the developer must pay an in-lieu fee for not providing the parking. The Municipality then has to provide the parking at another site in close proximity to the development.

In the case of Paarl if an in-lieu fee is paid the money goes in to the general budget, which constitutes a problem. The money is never used for supplying parking, but for more pressing matters, such as housing or education. It is argued that a separate parking fund be created where such funds can go into. In-lieu parking fees will become more general in future as available land in the business district declines. Therefore the necessity of a separate parking fund exists in the budget.

As noted in Chapter 4 an imaginary line running along Verster Street splits the study area into the upper business district and the lower business district. The lower area does not in general have a shortage of parking space due to the fact that the population is more dependent on public transport (in the form of taxis). Only on Saturday did the demand increase enough to justify the current supply.

The only viable option for more parking space exists in the lower central business district. This is at the current Shoprite centre. Parking area G as seen in the survey is severely under utilised and this area can be used as an overflow parking lot. The problem is that area G is located far from the centre of the business area and ownership belongs to Shoprite. If more parking is needed then the Municipality can enter into negotiations with Shoprite to hire or buy part of the property and manage it as a publicly owned parking lot.

The problem in the upper business district is not one of a shortage of parking spaces, but rather of attitude. Motorists shopping in the upper area do not seem willing to walk a fair distance to do their shopping. Each motorist wants to park as close as possible to the destination. Area H on the south side of Lady Grey is under utilised most of the week, even on Saturdays. The same with area C on the north side. This indicates that shoppers are not willing to walk far to do their shopping. Possible sites for future parking lots in Upper Paarl are also limited. One option is the area bordering Van der Lingen square (Area J, K) at the Dutch Reformed Church ground. This property can be developed and upgraded as a tarred parking lot, which would provide roughly 100 more parking spaces.

Parking garages could become a more viable option as Paarl's central business district expands and grows. Numerous opportunities exist where parking garages could be erected. Examples include area H, area C and D and even area K and J. Although the Municipality might never have the funds to develop such structures, in the short term private ventures will provide the capital to meet the supply of parking. This will only happen if a parking structure seems viable on economic terms and conditions.

In the long-term money generated from public / private ventures can pay for parking garages. The Municipality can start these ventures by selling land to developers and attaching terms and conditions to the sale of the land. This will then lead to developers meeting the demand for parking by building multi-storey car parks. An in depth study of the costs associated with building multi-storey car parks was not done in this project and it is therefore recommended that further studies be done to determine the viability of multi-storey car parks in the central business district of Paarl.

## 5.1.2 Managing existing parking areas

Paarl municipality is in control of most of the parking lots in the central business district and they are therefore responsible for the management of these parking lots. As postulated before motorists should pay a fee for parking in the central business district. Paarl at the moment only has two parking areas that are metered. Area J uses coin-operated units and area A works on the ADO cash card system. Lady Grey Street and most of the adjacent streets also use coin-operated units at present. Section 2.2.5 discussed the ADO cash-card system in detail. Paarl Municipality has tested the ADO system and has recognised the potential for applying this system to the whole central business district. According to deputy traffic superintendent Cornelissen the municipality is currently busy with negotiating a further contract with ADO

It is therefore postulated that the ADO cash card system be implemented over a set period of time in the central business district. It must be remembered that this system needs proper enforcement to work efficiently and the Municipality should take this into account before going ahead with implementing this system. It still remains imperative to offer the public an alternative to paying for parking.

It is therefore recommended that certain parking areas be left as free parking areas. A motorist should have the choice to park close to the destination and pay a parking charge or park further away and park for free. Having free parking close to the central business district leads to a greater amount of customers for the businesses, which in turn leads to the greater economic well being of the town. Free parking is also needed to draw tourists to the town. Paarl is one of the Boland province's greatest tourist attractions. Increased tourism leads to more investment in the town and surrounding area, which increases the prosperity of the people.

Area H, Area D and Area K on the perimeter of the business area could be left as free parking zones, but prime areas e.g. Area B, C, I, J should be installed with parking meters. Private parking areas E, F, and G are not controlled by the municipality and can therefore not be forced to comply with the municipality's decision regarding the A.D.O. meters.

## 5.2 Minimum parking requirements

The sector study showed that the minimum parking requirements as set out in the zoning regulations were on average much higher than the current parking supply in the central business district. When comparing the measured parking demand to the minimum parking requirements it can also be seen that that the zoning regulations are too high for the demand in the central business district.

The parking survey showed that the current parking supply is enough to meet the current demand and because and oversupply exists, future demand can also be accommodated up to a point. It is therefore recommended that a further study be done to verify the facts in this parking study and to examine the possibility of lowering the minimum parking standards regarding businesses and shops in the central business district.

The sector study also highlighted "dead spots" in the study area. These spots are areas where no off-street parking lot exists to support the on-street parking. The main "dead spot" was found to be between Verster and Breda Street, especially in Castle Street. This Street presents a problem in the future due to the fact that it is a low capacity 13 m street built for residential purposes. The zoning for the adjacent properties all stand at special business zone and already the south side properties have been converted to

businesses. When the north side properties convert to business zones the street will have to cope with a much higher parking demand, which at present cannot be provided in. The Municipality must apply stringent measures regarding parking provision for new business developments here, but also in the rest of the central business district.

## 5.3 Conclusion

This chapter focused on postulating certain possibilities that can be followed by the municipality. Recommendations were made regarding the location of new parking areas, and on managing existing parking resources. The A.D.O. cash card system was discussed in detail and it was recommended that the system be implemented fully in the Paarl central business district. A question mark was also placed over the relevancy of the current zoning regulations regarding parking. It was found that the zoning regulations were much too high for current parking demand in the central business area.

# CHAPTER 6

## CONCLUSION

The parking problem can be seen as a multi-dimensional problem. On the one hand parking stimulates the attraction power of the central business district, promotes economic development and makes commercial centres viable. On the other hand an excessive parking supply in a town leads to unsightly open areas, which are not maintained due to lack of income. It degenerates central business areas to slums and causes businesses to move to the perimeter of the town. Balancing the supply of parking with the demand for parking is one of the difficult tasks that stares municipalities in the face. This study showed that a comprehensive parking policy is necessary to guide municipalities in the task of managing parking problems.

Municipalities in South Africa have one way to regulate the provision of parking in central business areas. They extensively use zoning regulations as a guideline to administer the provision of parking. This study has shown that the zoning regulations of Paarl is somewhat outdated and needs to be revised. As parking demand changes constantly these zoning regulations should also be updated at regular intervals to keep pace with a changing society. In-lieu parking fees are becoming more common as land for parking in the central business district becomes scarce. It is imperative that the funds generated from in-lieu parking fees be used for providing parking at other suitable locations.

The most important fact that came to light in the parking survey is that the central business area of Paarl does not seem to have a shortage of parking at the moment. This can be ascribed to the increased role that combi taxis have played in the transportation of people from home to work to leisure. The fact remains that in the near future there will

be a shortage of parking if the Municipality does not give attention to the forming problem. Parking demand needs to be analysed and investigated further to forecast the future demand of parking. These forecasts should be over the short- to medium-term (five to ten years) as it is useless making long-term forecasts due to the changing nature of transport modes and behaviour. These forecasts should be used to draw up a parking management strategy that describes the actions the Municipality is going to take in the future regarding parking and problems associated therewith.

Problem areas in the central business district were identified with the sectoral study. These areas are where no existing parking area is situated close by. These "dead zones" need to be evaluated and steps taken to prevent these areas turning into problem parking areas.

In the end, policy makers should remember that towns and cities were planned and built for conditions quite different from those required for the use of the motorcar. The motorcar must be integrated into the town with the least or no hindrance to other activities and care must be taken to protect the surrounding environment from the detrimental effects of the motorcar. The goal of the policy maker should be to promote traffic in the central business area whilst balancing parking supply with other goals such as aesthetics, safety, congestion, movement, efficiency and effectiveness of the whole transport system.

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