THE ESTABLISHMENT OF DESIGN PRINCIPLES FOR THE INTEGRATION OF A MIXED LAND USE PRECINCT: THE DAVENPORT ROAD CASE STUDY

MARK ROBERTS

A Dissertation submitted in partial fulfillment of the requirements for the Degree of Master of Town and Regional Planning in the Department of Town and Regional Planning, University of Natal, Durban.

Durban, November 1997

THIS DISSERTATION IS DEDICATED TO MY PARENTS

ACKNOWLEDGMENTS

Special thanks go to my family. Without their support and encouragement this dissertation would not have been possible.

Thanks also goes to the following people for their assistance:
Professor Mike Kahn, for his supervision and guidance
and The Town Planning staff at Durban City Council for supplying information and viewpoints.

TABLE OF CONTENTS

CHAPTER SIX: ACTION PLANS

LIST OF FIGURE

LIST OF TABLES

LIST OF APPENDICES

CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION:

With the increase in urbanization in the world, the demand for housing, employment and services has increased. This has caused the spread of commercial activities into residential areas to cater for the increased need for commercial space, as the supply has not kept pace with demand. The increase in the use of private motor vehicles has spread the cities of today over larger areas creating transport routes that carry high volumes of traffic. These pressures have resulted in residential areas adjacent to these routes being targeted by office, services, industrial and, in some cases, even light industrial developments.

In the Durban area the City Council has been pressured by developers into changing the land uses along main arterial roads such as Umbilo Road and Stamford Hill Road and areas around large shopping centers which were once predominantly residential. These development have not only replaced the old residential qualities along these roads, but have also begun to exert pressure on residential areas and feeder roads further away from the main activity corridor, such as Davenport Road which feeds into Umbilo Road.

In this report I will look at the problems facing the development of a precinct of mixed land use in the metropolitan area of Durban. At present the development of these areas are made up of individual sites that have been developed independent of each other. This creates problems in terms of access between adjacent developments, as well as other facilities in the area, traffic flows (both pedestrian and vehicular movement), and parking. With this background I will look at what needs to be done to improve the characteristics of a mixed land use area using the Davenport Road precinct as a case study. This precinct is an area of mixed land use including light industrial activities, "listed" buildings, commercial activities as well as residential lots. The area includes an emerging

strip development along Davenport Road as well as a nodal development in the form of the Davenport Square Shopping Center. It is these nodes and interface areas as well as policies such as listed buildings, developments next to shopping zones and existing use rights that have led to the increase in mixed land use activities within the Davenport precinct..

1.2 RESEARCH QUESTION:

With the transition of land around existing nodes and areas in close contact with main transport routes, from residential to commercial use, the following questions must be asked: Are existing zoning and building regulations, of the present Town Planning Scheme, suitable to co-ordinate the provision of parking, access to sites, as well as the creation of clear pedestrian links between activities, so that single lot developments can be combined to create an integrated environment for the users? What changes need to be made to the existing regulations and what design principles need to be introduced to achieve this coordinated development?

1.3 HYPOTHESIS:

The existing regulations and design principles for the development of individual lots need to be adapted to facilitate the integration of areas of mixed land use,created by a number of phenomenon, such as listed buildings, existing use rights, and close locality to shopping zones, into a coordinated area of mixed land use that provides controlled development, which meets the needs of access, parking and pedestrian linkages within an integrated development. A more holistic approach to development using "Action Plans" needs to replace existing site by site development. Given this approach, new design principles and adaptation of regulations need to be introduce to facilitate this reform.

1.4 ASSUMPTIONS:

The following assumptions are made:

1. That there are regulations in place that regulate the development of individual sites. These regulations being: national acts, provincial ordinances, town planning schemes, listed buildings, shopping zones, and interface zones.
2. Current Town Planning Schemes encourage only site by site rather than area wide development.
3. The transition of land occurs around nodes and along main transport routes and the current policies encourage change adjacent to nodes. It is individual residential sites that are pressurized into changing.
4. These areas have problems such as inadequate parking, congestion, unclear circulation routes, and no links to each other or to the major nodes.

1.5 METHODOLOGY/ CHAPTER OUTLINE:

This report is divided into 6 chapters, the first chapter sets out the research question, hypothesis and assumptions. In the second chapter the Definition of key phrases will be explained. The third chapter is the literature review. The literature review serves as the background upon which the design principles and adaptation of regulations will be based. The collection of information for the Literature review was from secondary resources. The Fourth chapter will look at the formulation of Design Principles using literature reviewed in chapter three. The Fifth chapter contains the case study of the Davenport precinct. This study involves looking at the existing situation, peoples perception of the area, (using interviews and questionnaire to obtain this information) and finally, the Town planning regulations that effect development in the area which was obtained through interviews with the City Council and the analysis of the Berea South Town Planning Scheme. The Final Chapters will look at design principles and

changes in regulations that enable individual developments to become integrated and work as one unit.

An area within the Davenport precinct (with specific problems) will be used to show how these design principles and changes to regulations could achieve an integrated development.

CHAPTER TWO:
DEFINITIONS

2. DEFINITIONS:

2.1 ADAPTATION OF EXISTING REGULATIONS:

Existing regulations can be divided into two main groups; Firstly there is the Town Planning Scheme, which controls the use of land within an area. Secondly there are development controls, which are regulations/ guidelines that regulate form, intensity, location, amount of buildings, parking, height and open space on a site. At present the existing regulations are not suitable for the type of development that occurs around nodes and within integrated developments, as the regulations are set up to address externalities created by adjacent lots and control the conflict these externalities may create. The regulations do not pro-actively promote the integrated adjacent developments. The adaptation of existing regulations would include the changing of zoning as well as development control. Regulations would have to promote interaction between individual developments through pedestrian linkages and movement as well as parking requirements.

2.2 DESIGN PRINCIPLES:

Design principles are a set of principles that would be used to create a coordinated development. These principles would be used in the design of new development to allow for the integration of individual lots into a an area that provides parking, pedestrian access and linkages. These principles would either be in the form of a master plan, which is more detailed than a Town Planning Scheme, and would involve urban design

principles that would guide development in a specific area. This master plan would guide development through the type of activities and the interaction between activities. Design principles could also include a set of requirements that a developer must follow to enable the integration of individual lots into coordinated group development.. These requirements being; the relationship of the development to surrounding activities, location of parking areas and integration of pedestrian access into existing systems. These design principles would also be linked to an adaptation in the regulations to allow for the use of these design principles.

2.3 TRANSITION OF RESIDENTIAL LAND:

Residential areas are made up of single lots, predominately used for housing. The housing may be in the form of detached, semi-detached, duplexs and flats. The transition occurs on all types, but is easier on detached housing lots. The transition of these residential lots occurs when the land use changes from special residential to general residential, commercial or industrial uses. This change occurs due to pressures placed on the land from surrounding uses or the area being located near existing transition zones. This transition occurs when existing housing, be it detached or flats, are altered to accommodate office space, retail space etc.

2.4 MIXED LAND USE PRECINCT:

A mixed land use precinct is a developed urban area that contains a number of different land uses. Mixed land use can occur:

- within a building or lot in the form of a more than one land use type within a building or on a lot;
- in separate buildings on the same lot; and

- different land uses adjacent to each other on different lots.

These uses range from residential and commercial to industrial. The location of these land uses are random and are subject to policies promoting development. These policies include the development of listed buildings, areas around existing shopping zones being able to be altered and area that have been zoned for specific uses.

2.5 COORDINATED DEVELOPMENT:

A coordinated development is a group of individual activities located in close proximity due to the area's high accessiblitity. A coordinated development is where each individual unit is integrated into a group of "linked" developments through controlled development, which means the use of design principles and revised regulations that provide for parking needs, controlled access as well as pedestrian access between activities.

2.6 ACCESS:

Access is the point at which both traffic and pedestrians enter specific sites. These points can be doors, stairways, paths as well as entrances and exits to parking areas.

2.7 PARKING:

This is the area allocated to the storage of vehicles when not in use. Parking can come in the form of: curb parking (where vehicles are parked along the edge of streets); on site parking (where developments provide parking when developing the site); and where structures or areas are totally set aside for parking (such as garages and parking lots). In

terms of office, commercial and industrial developments parking can be separated into three groups:

- *Parking for business vehicles*: space is provided for the loading and unloading of goods, as well as for the storage of delivery vehicles over night (or when not in use).
- *Parking for employees:* These areas are for people using their own vehicles to get to work. Cars are parked in the morning and only used again when leaving work or during the day to visit clients.
- *Parking for customers:* This area needs to be highly accessible and visible to passing vehicles. It is also noted that this type of parking has a quick "turn-over" of vehicles.

2.8. PEDESTRIAN LINKAGES:

Pedestrian linkages are the routes, between access points, that join developments. These routes can be formed by the built environment such as streets and buildings and existing access points. Routes can also be formed by areas of open space. Lastly present pedestrian route are the most rigid type of linkage.

CHAPTER THREE:
LITERATURE REVIEW

3.1 FUTURE OF MIXED LAND USE AREAS:

Mixed land use occurs where adhoc responses to pressures for change result in a "fine grain" intermingling of different land uses compared to "course grain" large zones of land use. This "fine grain" of mixed land use occurs in transtion zones, areas around major foci, along transport routes. These areas of mixed land use can be in the form shopping and residential, shopping and offices, shopping and personal services, and light and service industry.

The need for commercial land has been increased by activities located in the Central Business District moving outwards from the transitional zone where commercial and industrial activities have extended pressure on residential areas to change to commercial uses. These externalities such as noise, pollution, congestion on the roads, are placed on the residential areas, which in turn causes the residential value of the land to decrease. With the high taxes and land values in the inner city, businesses tend to look to the outer transition zone for the location of business and offices, due to the low costs and the existing regulations that allow for the easy development of single lots.

According to Lynch the introduction of mixed land use precincts into residential areas increases the land value in terms of commercial activities as the demand for commercial land in these areas increase. This demand for commercial land also increases the density of the area as the land is used more efficiently to maximise profits. This increase in the density also increases the number of potential consumers (Lynch 1960). The development of uncontrolled commercial land use in the residential areas, brings with it problems such as, congestion on the roads, noise, pollution and the lack of provision of adequate

parking for the users. With these problems, business has now moved away from individual developments and into shopping centers and malls which have parking areas. The crime and costs are also lower. With activities moving into shopping centers and malls the areas of mixed land use have decayed. These areas have been occupied by activities that are declining and are unsuitable for location in malls and shopping centers.

A survey conducted among members of the American Planning Association in Oregon by Howe and Rabiega in 1992 showed that the planners clearly regarded planned shopping centers more favorably than individual commercial activities across a broad spectrum of design, operational, and merchandising attributes. Results of the Survey found the following problems with individual developments (Howe and Rabiega 1992):

- Individual developments' use of land was not as efficient as shopping centers.
- Traffic problems were worse in areas of individual developments than in integrated planned shopping centers.
- Inadequate parking is more of a problem with individual developments than in shopping centers.
- A precinct of individual mixed land use activities becomes aesthetically repugnant and disorderly which causes these areas to present a negative visual impression.
- People found it easier and more pleasant to shop in shopping centers, as they have better pedestrian access. These problems relate to commercial activities and not office activities, but the principles can be applied to office areas.

The survey also deduced that these precincts of individual developments cannot be eliminated, but rather they should be regulated with strict design controls and zoning. A large number of the planners interviewed indicate that commercial

areas were appropriate in dense urban residential areas for local, neighbourhood, and convenience shops.

According to Bray, there is a trend in South Africa for commercial activities to move back into individual lot developments. The article states the following reasons for this movement back to individual lot developments (Bray 1992):

- Improves human scale and personalizes the area. The shopper is not intimidated by large shopping areas with high walls and large crowds.
- There is a better relationship between large shops and smaller line shops that increase the pedestrian flow.
- Better integration of the shopping area into the surrounding residential areas, the large shopping center is out of place in the residential areas, while an area made up of smaller shops blends in with surrounding residential areas. The area is also integrated into the residential area through the use of pathways and shop frontages.
- The smaller more personalized shops create a more shopper friendly atmosphere.

With this movement back to a more personalized development there are still problems such as congestion, parking, and shop signage that need to be addressed to make the mixed land use precinct a safe and friendly place to shop and obtain services.. Some other problems that create a negative impression is that of drawing pedestrian traffic along walkways as pedestrians move along the most direct route between parking and destination. Shops need signage to attract customers which creates an unsightly facade. Trading hours need to be geared to customer needs, and the openness of the area makes security difficult to control (Bray 1992). The above statement applies to shopping areas but the principles such as improving human scale, better relationship with surrounding areas, better integration with residential areas, and smaller personalized areas can be applied to office developments with in a mixed land use area.

In the city of Boston (Banerjee and Southworth, 1990) local planners attempted to stop the development of precincts of mixed land use by rezoning existing areas to residential or institutional use and consolidating the remaining commercial activities into centers. This process was a slow and painful one and it was hard to find activities that would replace the unwanted commercial activities. With the removal of these activities in one area, new areas of mixed land use would develop in other or surrounding areas.

The removal of areas of mixed land use according to Lynch was not the solution "given our economy and our way of holding land, given our reliance on the private car, the commercial precinct is likely and advantageous pattern, but one that is capable of great improvement" (Banerjee and Southworth, 1990 pg. 615). The development of a coordinated mixed land use area will support the normal behavior of people, allowing them to move and act with ease and have access to what they need. The area will also inform users of time, location, presence of other people, history and public rules. It will also protect the user from the climate, noise, pollution and danger. Finally the area should provide a pleasant visual rhythm and continuity as well as exploit the precinct's aesthetic potential (Banerjee and Southworth, 1990).

Mixed land use precincts may be congested, noisy, polluted and dangerous but they are here to stay. As long as the land value is lower, and `the central business district is congested, expensive, and the regulation allows for easy development, the private sector will exploit these areas. Even if the use of private transport is reduced it seems likely that a more compact form of mixed land use precinct, based on public transport and pedestrian and bicycle routes, would emerge.

3.2. LAND USE CONTROL AND REGULATIONS:

Throughout the ages various forms of land use control have been exercised, building codes were imposed some 5 000 years ago in India, Julius Caesar restricted traffic in the center of Rome, Augustus limited the height of buildings in Rome, and in Athens public health codes required waste to be disposed of 2000m beyond the city walls (M. Branch, 1983). The modern land use controls and regulations date back to 1926 and are based on the U.S. Department of Commerce's Standard Zoning Enabling Act (ULI, Residential Development Handbook, 1978). These limitations are imposed by the central authority and enforced by its regulatory apparatus. With the rapid increase in development in the past twenty years the land use controls have been unable to maintain the desired control over land use.

The Town Planning Scheme is the most common control tool used in South Africa today. The Scheme seeks to regulate the externalities created by different land uses. The Scheme tries to prevent individual lots from imposing externalities such as pollution, noise, violation of space on the privacy of other lots. The Scheme uses zoning as a method of ensuring that land uses complement one another and it limits any conflict between land uses by placing similar land uses together. The Scheme is implemented in a way that controls the development of individual sites through zoning, coverage, setbacks, parking, and bulk etc. The Scheme does not take into account the relationship between adjacent lots. Zoning Schemes restrict the personal interest of landowners in favor of the public interest. Public safety, health, and welfare is protected by limiting some rights of properties. Zoning is a term applied to locally adopted regulations that prescribe the manner in which all privately owned land may be used within the jurisdictional limits of the governing body (American Public Health Association, 1948). The zoning district specifies the use of the land, the building heights, bulk factor, location of buildings, density of the area, the area of a lot which may be used, and the size of the open space required

The Zoning component of the Town Planning Scheme lists specific purposes for zoning, the first purpose is to promote the general welfare of the community through promoting health, safety, and morals. Secondly the purpose of Zoning is to lesson the congestion on the streets; to ensure safety from fire, panic, and other dangers; to provide adequate light and air; to prevent overcrowding; avoid undue concentration of population; and to facilitate the adequate provision of transportation, water, sewage, schools, parks, and other public requirements (ULI, Residential Development Handbook, 1978).

The zoning system controls intensity, location or position and form of development through the use of several regulations. Some of these regulations control both intensity and location of buildings on the lot.

DENSITY:

Density controls the intensity of development within a Town Planning Scheme area. The correct implementation of density standards within zoning schemes, and within subdivision regulations assure that crowding, encroachment on daylight and other blight inducing factors can be controlled. Density can be controlled by using the following planning regulations. The plot size, this controls the number of potential dwelling units per hectare. The smaller the plots the larger the number of dwelling units. This in turn increases the number of households and population per hectare.

SETBACKS:

The use of setbacks also controls intensity *(Figure 1),* but also provides control over the positioning of buildings within a lots boundaries. Setbacks also prevent buildings being place in specific areas such as to close to the street reserve. Setbacks are used to provide adequate space, light and ventilation, as well as safety from fire, and aesthetic

considerations. Setbacks are usually expressed in terms of front, rear, and side yard requirements.

Front or street setbacks are indicated in a number of ways; a minimum distance from the front lot boundary; in relationship to other frontages or street setbacks in the neighbourhood; a set number of meters from the road center line; and as a percentage of the total lot depth.

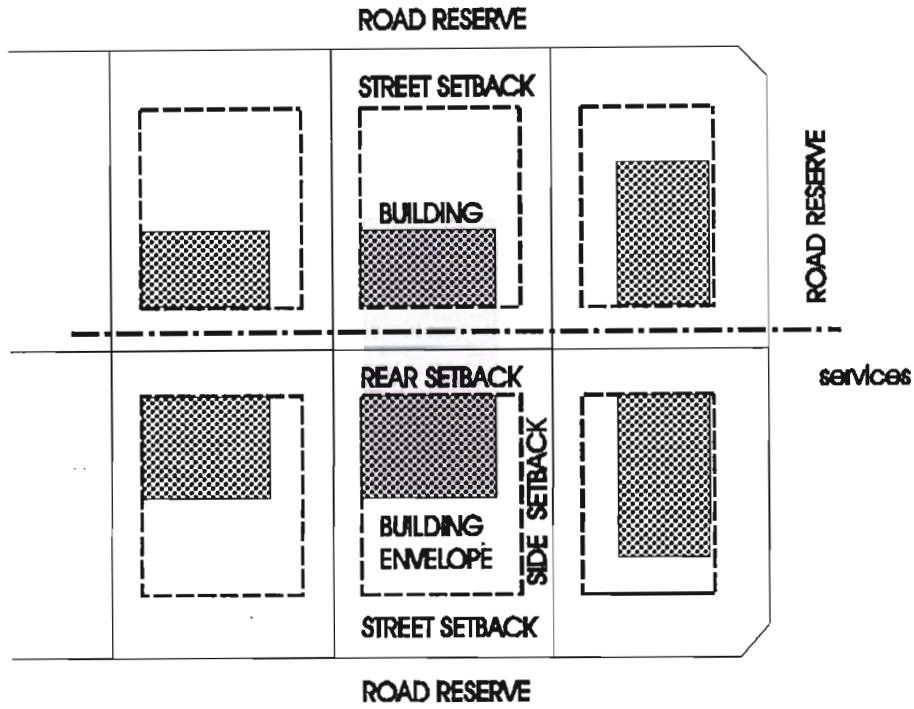


Figure 1: Setbacks use to control intensity and create space between buildings

The topography, frontage and depth of the lot will affect the depth of the street setback. Side setbacks vary according to the height or length of building as well as the number of buildings on the lot. The proximity to other buildings on other lots also affect the depth of side setbacks. The rear setbacks can be expressed in either a distance or a percentage of the total plot depth. The rear setback needs to be of a generous distance so

that services can be placed in this area to avoid problems with maintenance and access to services and to ensure services are kept away from the buildings.

BULK FACTOR AND FLOOR AREA RATIO:

The Bulk Factor and Floor Area Ratio are used to control the intensity of development by restricting or limiting the maximum amount of floor space that can be built on a single lot. Building Bulk or Floor Area Ratio (FAR), this is the total floor space of all stories used on a plot, divided by the area of the plot. The FAR is usually is used in combination with a limit on the number of units allowed on a site, to prevent the building of small units to increase profits.

$$\text{F.A.R.} = \frac{\text{TOTAL BUILDING FLOOR AREA}}{\text{TOTAL LOT AREA}}$$

BUILDING COVERAGE

Building coverage is the total land area that is taken up by buildings. For instance a plot of 1000m² with a coverage of 40% means that 400m² of the plot may be covered by a building (Figure 2).

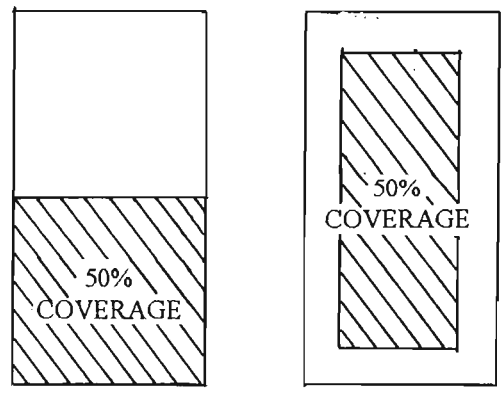


Figure 2: Building coverage

This regulation controls the number of the building by restricting the amount of area within the building envelope that can be built on. If the building covers too large a percentage of the plot, insufficient outdoor space will remain for various uses conducive to health. The lack of space will result in in-adequate circulation and ventilation as well as create a high building density.

BUILDING HEIGHT:

The zoning scheme regulates the building height for both intensity and form/shape of buildings. The FAR, Bulk is controlled by restricting the height of buildings, thus controlling the number of units or activities within a lot. The restriction of height controls the position of the building on the site. The higher the building the greater the setback from the lot boundaries, thus restricting the location of the building from the site boundaries.

The building height can be controlled by restricting the number of floors or the total height of a building. For example, where buildings are located near the ocean, buildings heights can be controlled through restricting buildings to heights above Mean Sea Level (MSL) *(Figure 3)*. This enables sea breezes to circulate more efficiently (to more buildings) as well as provide more buildings with sea views. The restriction of building heights to within an angle taken from the street, enable more daylight to reach the street and buildings (See figure 4). The control of building heights not only controls intensity but also the conflict between land uses for ventilation and views.

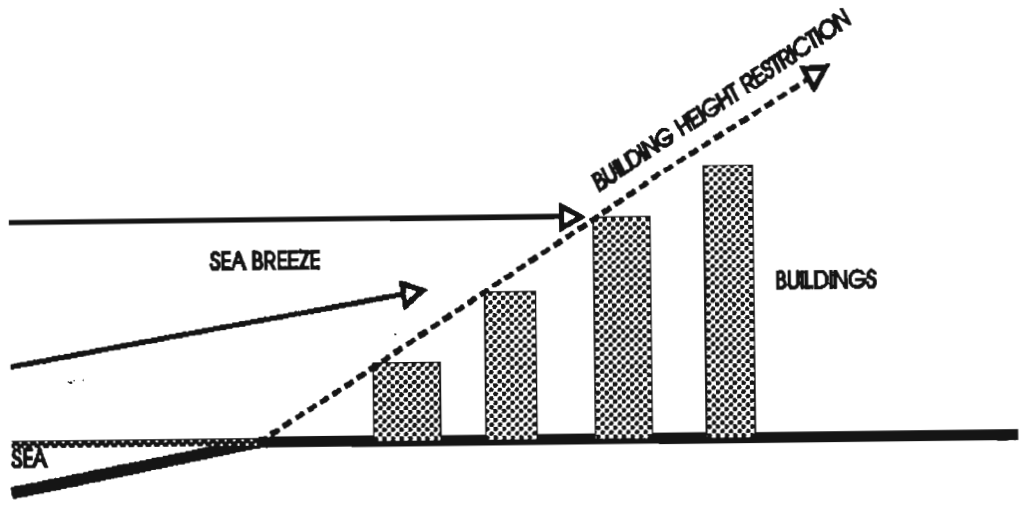


Figure 3: Building height control from MSL

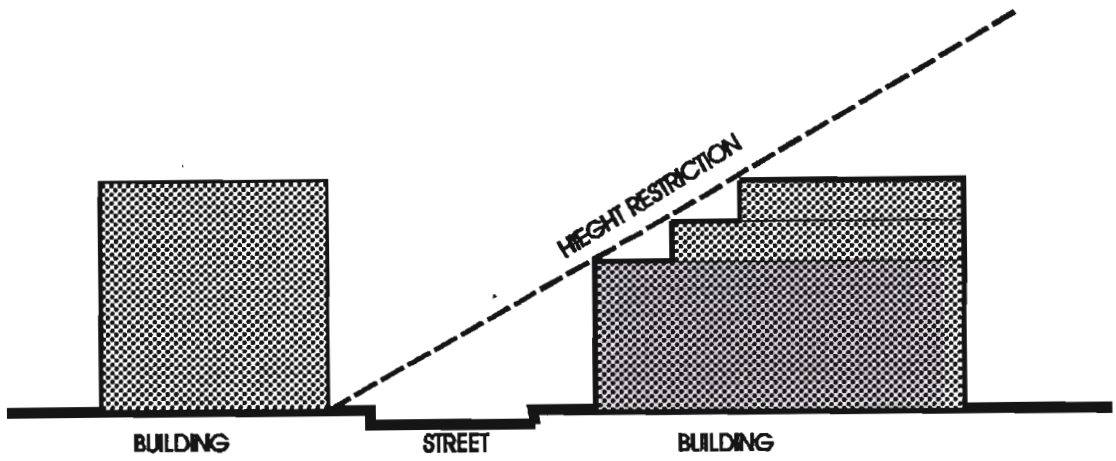


Figure 4: Building height controls angle from the street

PARKING:

For a Zoning Scheme to provide a safe, health environment it needs to control the form of development. This is done by controlling the parking. The congestion on the roads has a direct relationship to the number of parking bays both on and off the street parking. The zoning scheme regulates parking through stipulating the number of parking bays required by each individual development. The number of parking bays varies between land uses. Residential only requires one parking bay per dwelling unit, while activities such as shops need a larger amount due to

the number of users. The number of parking bays are calculated using a number of formulas, such as parking bay per number of dwelling units, parking bays per area of floor space, and parking bays per number of seats or beds. The formulas used vary according to the desired results.

Figure 5: Use of Landscaping in urban design

ACCESS:

The control of the location of access and the number of access points to a lot will influence the form and location of developments on a lot. The control of access is an important regulation in terms of creating a safe environment for persons using both the road network as well as the pedestrian system. The restrictions on the location of access point to parking area and lots helps prevent congestion on the roads. The location of an access point to close to an intersection could result in conflict between vehicles turning into parking areas and vehicles stopped at the intersection, thus creating areas of congestion and conflict *(Figure 6)*. The control of the number of access points to lots, from the road, also minimizes the conflict between the pedestrian and the automobile, as vehicles turning in to lots have to cross the pedestrian routes.

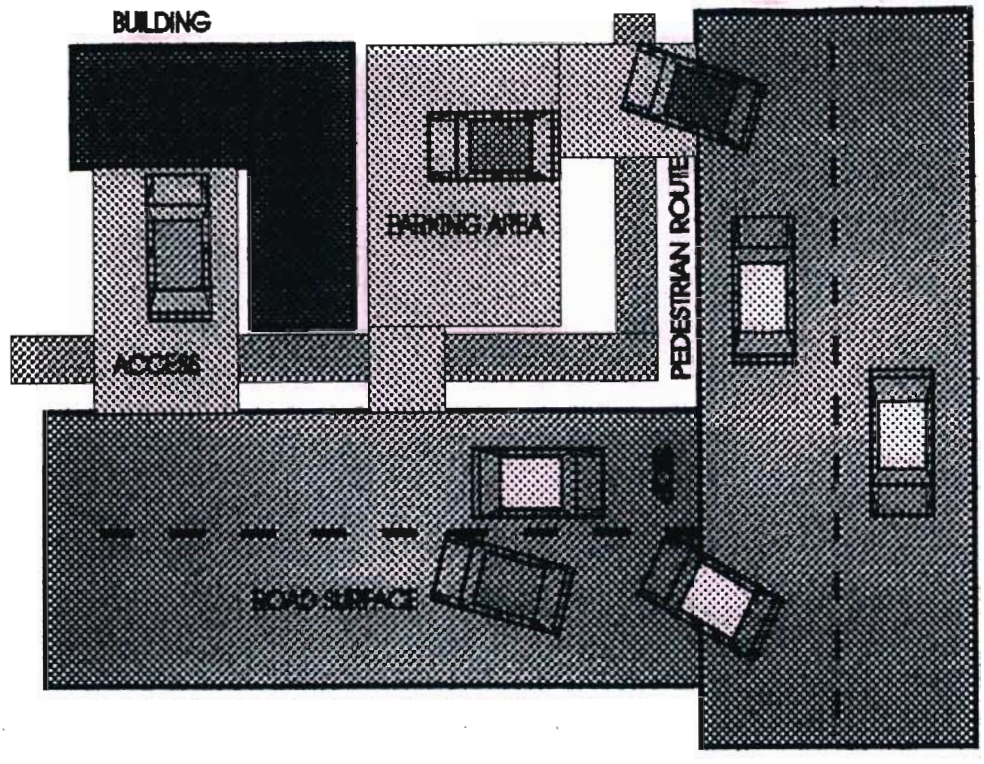


Figure 6: Conflict caused by access points

In recent years the underlying assumption of the zoning scheme, that land uses must be segregated, has come into question. Critics have attacked conventional zoning by separating incompatible uses, arguing that cities instead need a more integrated and close-grained diversity of uses that give each other constant mutual support, both economically and socially (Jane Jacobs, 1962). In the past zoning has almost entirely been negative. Recent thinking has tried to remove the zonings deficiencies by moving to a more beneficial integration of different land uses at a proper scale, and to emphasizing incentives for better designs, provision of amenities and other public activities (ULI, Mixed-use Development Handbook, 1987).

A number of new zoning techniques have been introduced to accomplish these suggestions. For example in California and Canada authorities have introduced a number of new ordinances that form part of the existing zoning ordinance. The Planned Unit Development (PUD)

ordinance has been increasingly used in the suburban communities. The ordinance increases the flexibility in design and sitting of developments. Development plans are arrived at through negotiation between developers and the planning authorities. This allows the developer higher densities, more flexible design, and saving on the building costs while in return the community has more control over the development and the provision of public amenities.

The Special-Purpose District like the PUD ordinance forms part of the existing zoning ordinance. While the PUD is designed primarily for new developments, the Special Purpose District is for the protection of existing areas.

Finally the Mixed Land Use Zone scheme, unlike the above planning tools, permits and encourages mixture of land uses within an area that was once of a single use, such as a residential area. One of the earliest examples of the promotion of mixed land use was in Washington D.C. where the 1974 amendment to the zoning code designated areas as mixed land use districts **(The 1986 version of the ordinance appears in Appendix A)**. The amendment made incentives and bonuses, such as increases in FAR and additional height available, provided various land uses or amenities were included in developments.

In South Africa, the main development control tool is the Town Planning Scheme. The Town Planning scheme is created at a provincial level but is applied at local level. The Town Planning Scheme comprises two parts, firstly there is the zoning scheme map which sets out the land uses within an area. The second part is the written report containing regulations that control the development and the urban form. These regulations are: density, building form, floor coverage, floor area ratio, height, setbacks, open space, parking, landscaping, and access.

In the past few years there has been increased pressure for development where transitional areas meet residential areas, in most town and cities in South Africa. The existing town planning scheme is unable to provide regulations that control the conflict between these land uses. To control this conflict many local authorities have introduced buffer zones. This involves a gradation from high intensity uses down to low intensity residential uses. In Durban the authorities introduced Controlled Interface Zones which are superimposed over existing zoning stipulated in the Town Planning Scheme, for the proposed development area (Monitor, Vol 7, 1989). The intention of the new controlled interface zone is to allow, by Special Consent, the establishment of non-residential activities to act as interface between existing residential areas and the transition zone. To keep the visual character of a residential area intact the Town Planning Scheme regulations such as, floor area ratio, coverage, building lines, height, and rear space of the zone (on which the controlled interface zone was placed) will be kept. The appearance and design of buildings were also controlled in these areas to retain the residential character of surrounding areas. Further controls of the new interface zone include, the design of access and parking to restrict traffic movement into residential areas and the control of signage, pollution and storage. These controls not only preserve the existing character of the areas but also improved the visual character.

The establishment of Action Plans is another form of development control. Action Plans are created from a set of design principles that are then applied to a specific area. The intention of an action plan is to develop the area using a set of principles. The action plan takes into account what is existing and works to implement the design principles into the existing situation. The action plan covers small areas and takes urban design principles into account.

3.3. DESIGN PRINCIPLES AND LAND USES:

The present conflict and uncoordinated development of land use types and zonings in mixed land use precincts make these areas unpleasant for the user. The uncoordinated development of individual lots within a precinct of related uses causes problems for the user such as lack of parking, access, congestion, pollution, and noise. In so many ways areas of mixed land use fails it's user. Some of these problems are specific to a particular type of person but most of these failures are felt by almost everyone that frequents the precinct. According to Lynch a well designed mixed land use precinct will (Banerjee and Southworth, 1990):

- Support the normal behavior of people, it will allow people to move freely, have access to what they need, and permit them to be sociable rather than merely task-oriented activities;
- Inform them. A precinct of mixed land uses should relate time, location, function, the presence of other people, and public rule in a clear and interesting way;
- Promote their health, comfort and safety. The area should protect the user from the natural elements, pollution, noise and other types of stress; and
- Engage and delight the user. It should provide continuity, visual rhythm and exploit the esthetic potential of the area.

For a mixed land use precinct to become a good public area, and provide the above features, the following elements and issues need to be addressed (Banerjee and Southworth, 1990):

- Provision of access for non-motorists, such as pedestrians, public transport users, cycles, and the handicapped. This will be done through the design and management of sidewalks, the cycle way, access points and the street curbs.
- Control of air pollution, noise, and climate.

- Creation of convenience clusters that provide for basic human needs. These clusters could be in the form of bus stops which at a later stage could become social meeting places.
- Communication of function, time, and place, the creation of a pleasant sequence to pass through, in which destination can easily be located. The activities within a mixed land uses precinct should be designed as a total system.
- Use of street space and street objects, turning the public space into a pleasant and useful area by using waste land and objects found along the street such as bus stops, parks etc.
- The general form and pattern of activities within the area, moving away from the uncontrolled development of individual lots to development that considers the relationship between parts of the precinct as well as their context.

Today a mixed land use precinct, is made-up of an area of urban development which includes residential activities ranging from detached housing to flats that have been converted into business and offices. Within this area there are also commercial activities and service and light industrial activities.

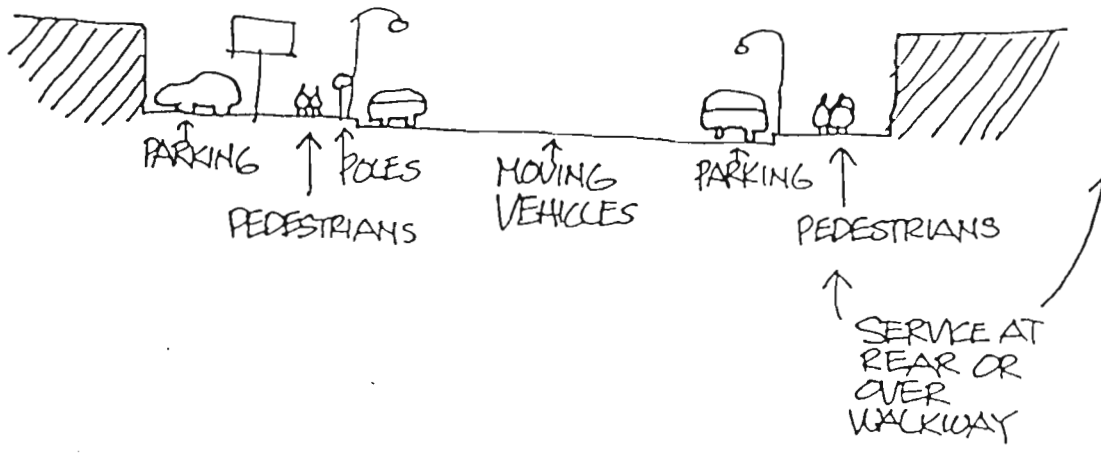


Figure 7: Typical street cross-section within a mixed land use area (Lynch 1990)

Community facilities such as churches, schools and recreational areas are also found within this area. Access is gained through a network of roads. This road network carries cars, buses and bicycles, with curb parking at the edge of the road separating cars and buses from the public walks which carry pedestrian traffic *(Figure 7)*. Shops and offices within the precinct are sometimes set back behind parking areas.

This places the pedestrian in a 'sea' of cars. Pedestrians and bicycles have to compete with cars and services to gain access to shops and services. Buses have to stop beside rows of parked cars causing congestion on already over used roads. The area along the side walk has no room for vegetation (Banerjee and Southworth, 1990).

According to Lynch with existing mixed land use precincts, the most reasonable design solution would be to ban curb parking and give this area over to pedestrian and bicycle movement. This area could be divided into paths for pedestrians and cyclists by a level change, with vegetation between them to divide and protect each form of movement (*Figure 8*).

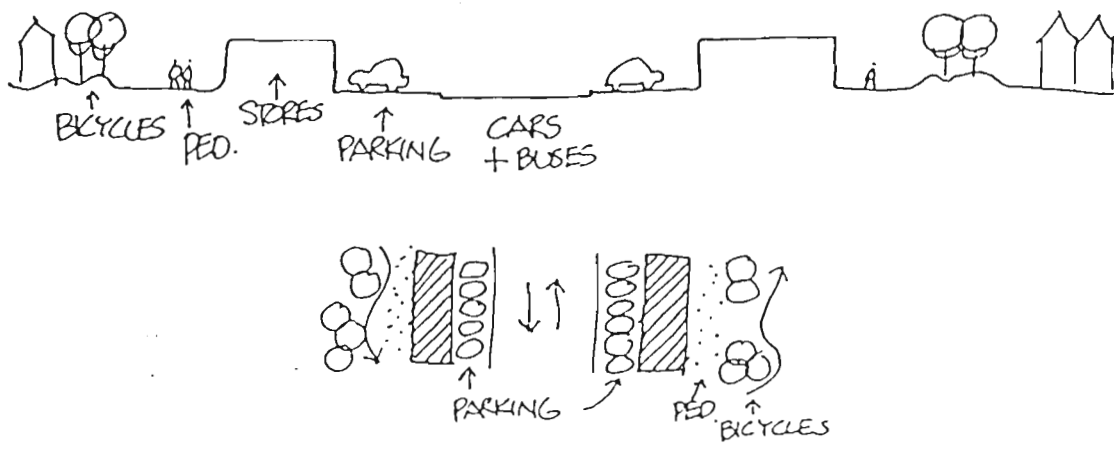


Figure 8: Rear pedestrian/cycle paths protecting residential areas from mixed land use (Lynch 1990)

Parking could be provided by subjecting parking areas to a setback. This would result in the provision of parking behind or between buildings. Open space could also be provided, behind commercial buildings (and be used for cyclists and pedestrians) however this means that pedestrians and bicycle traffic would be removed from the shop frontages. This open space could also form a soft barrier between residential areas and commercial shops within these areas.

The creation of a soft barrier between mixed land use areas and residential areas, in the form of open space, could include trails, allotment gardens for neighbourhood residents, or as park land catering for natural features. Where open space is not available, walls, earth berm, or continuous planting could be used to screen mixed land uses from residential areas. These landscaped pedestrian routes could lead from the residential area to focus points along the precinct such as major shopping nodes (Banerjee and Southworth, 1990).

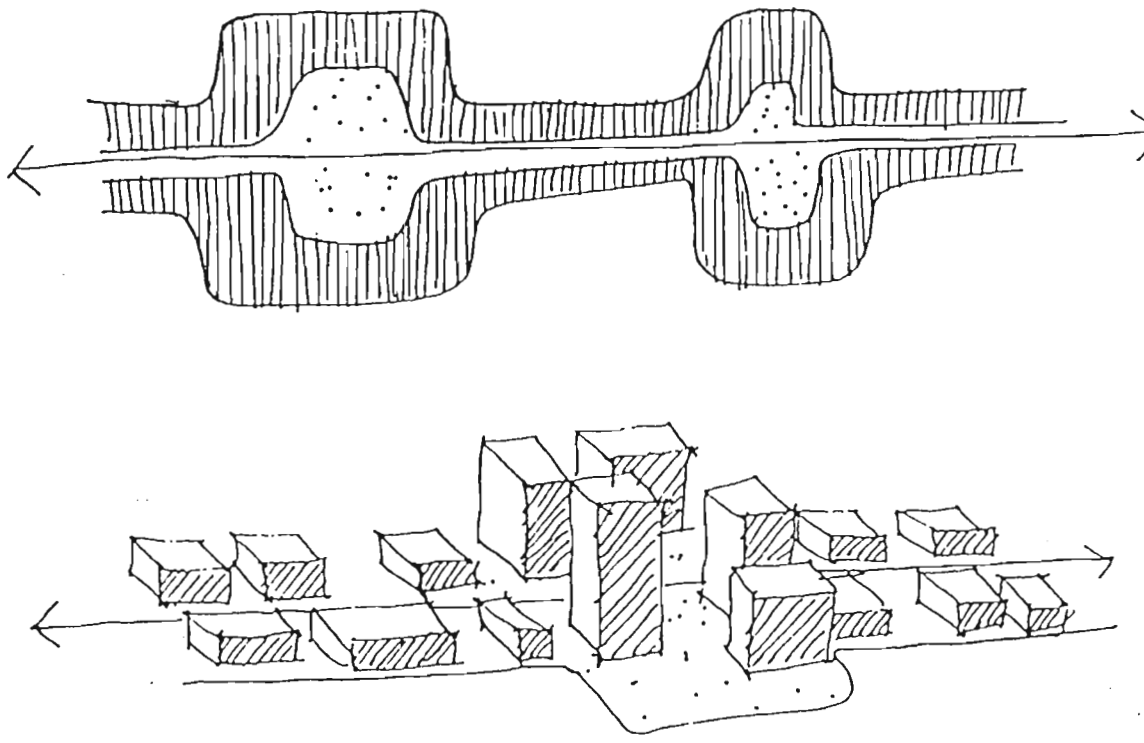


Figure 9: Focal points using height, bulk, density and land use (Lynch 1990)

The development of focus points and events within a precinct would create a visual map for the motorist and bus user, as well as the pedestrian walking through the area (See Figure 9). The use of controls on height, setbacks, bulk, and spacing of structures around areas of focus would help to create legibility (Banerjee and Southworth, 1990).

Selected points where land values are high, such as major intersections, focus points need to be established through the increase in building heights, bulk, density and type of land use (*Figure 9*). The creation of these focus points will create an expansion of development along the main access routes thus creating a continuous form. The use of certain types of land use such as community orientated activities such as cafes, shops, Laundromats, restaurants, and entertainment, as well as development that have more than one use (for example buildings with shops on the ground floor with flats and offices above) should be located along the mnain roads with in the mixed land use area to allow for better access.

The introduction of these activities would increase the number of users not only during the day but also at night. The increase in pedestrians and people living in the area would create a safer environment for people to shop, live and work in.

A good example of Lynch's ideas is the redevelopment of Vermont Avenue area in Los Angeles. The project was undertaken by the City's Department of Housing Preservation and Production (HPPD). The mixed land use area of Vermont Avenue is located in South Central Los Angeles and covers an area of approximately 9 899 acres. The area is organised into an even grid pattern. The area ties surrounding residential areas together and acts as a thoroughfare for regional traffic.

Although the area contains some flourishing activities, most land uses are inconsistent and incompatible and the structures are deteriorating. The area has

a number of liquor stores, cheque-cashing facilities, auto-related uses, and pawn shops. The area lacks sufficient neighbourhood-serving shops and services, particularly grocery stores. The lack of these services make people leave the area to do shopping.

The HPPD asked the Urban Land Institute (ULI) panel to look at the Vermont Avenue commercial precinct and to develop strategies that could be used as a model for the revitalization of other mixed land use areas.

The panel recommended a concept plan for Vermont Avenue that involved the concentration of retail activities at key intersections, the use of mixed-use projects, and the eventual replacement of much of the existing commercial development between these concentrated areas of retail activity with low-rise multifamily housing. The introduction of mixed-use projects and multi-family housing would increase the population and threshold of the area. They also recommended the narrowing of certain areas of the Avenue where service lanes are situated. This narrowing of streets would allow an area of space along one side of the street that could be used for development or a linear parkland.

The panel recommended the creation of a symbolic heart or town center for the community, at one of the main intersections. This town center would include the following land uses: neighbourhood-serving shops and services, amenity-rich apartment housing, multi nodal transportation nodes, a civil hall for public uses (such as offices for the city council and representatives of city departments). A police station, a library, a post office, service providers (such as a building and safety inspector), and a one stop development permitting office, a community meeting room, and a landscaped public area, restaurants and theaters were suggested for the area. The development would be done under the PUD ordinance of the cities planning controls.

Suchman suggests that the redevelopment of Vermont Avenue will help to define and stabilize the surrounding neighbourhoods. He also adds that this definition and stabilization of the surrounding communities must be aided by additional public investment in schools, parks, libraries and other community services (Suchman, Urban Land May 1993).

Alex Achimore looks at an alternative to the development of individual lots. He looks at the development of "strip" community centers *(Figure 10)*. According to Achimore "The "strip" community retail center may be high on efficiency, but it is low on amenities and choices. It is time to look at alternatives that reintegrate retail with broader community functions." (Achimore. Urban Land August 1993). The challenge for "strip" centers is to find a form that combines the social benefits of community center with fundamental retail realities.

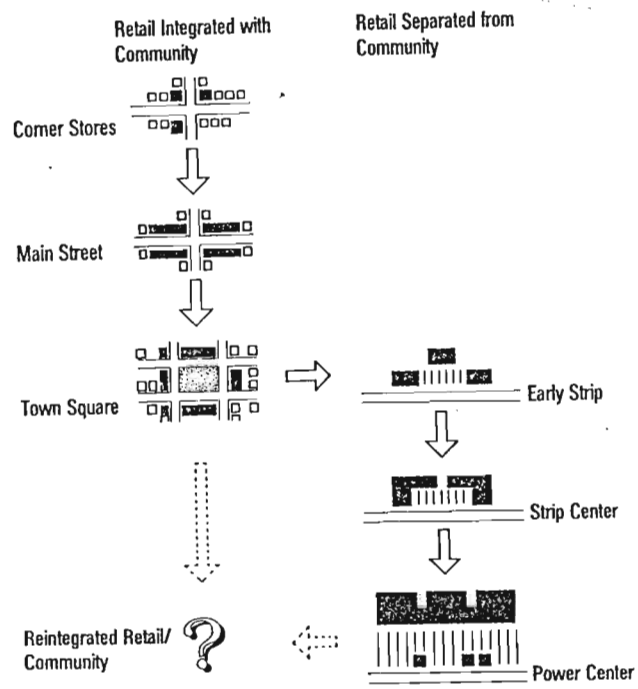


Figure 10: Evolution of community retail

(Achimore, Urban Land, 1993)

For such a concept to work the development of such a "strip" center would have to include a reasonably large anchor store of approximately 50 000 square feet. The anchor store would also need a large areas of parking space directly in front of the stores entry points as well as having a clear sight line from major arterial roads. The placement of the smaller tenants is an area where Achimore states can be some design flexibility. The location of these smaller tenants do not need to be in the line of sight from major arterial roads. "Impulse buying, on which they depend, cannot be nurtured from 400 feet away at 40 miles an hour" (Achimore, Urban Land 1993, Pg 36). The smaller retail tenants can do well as long as they are a short, pleasant walk from the anchor tenant and their entrances and signs are discernible to traffic entering and leaving the anchor tenants parking areas (See figure 11). The location of these smaller tenants provide opportunities to create activity zones in which the automobile is less dominant (Achimore, Urban Land, August 1993).

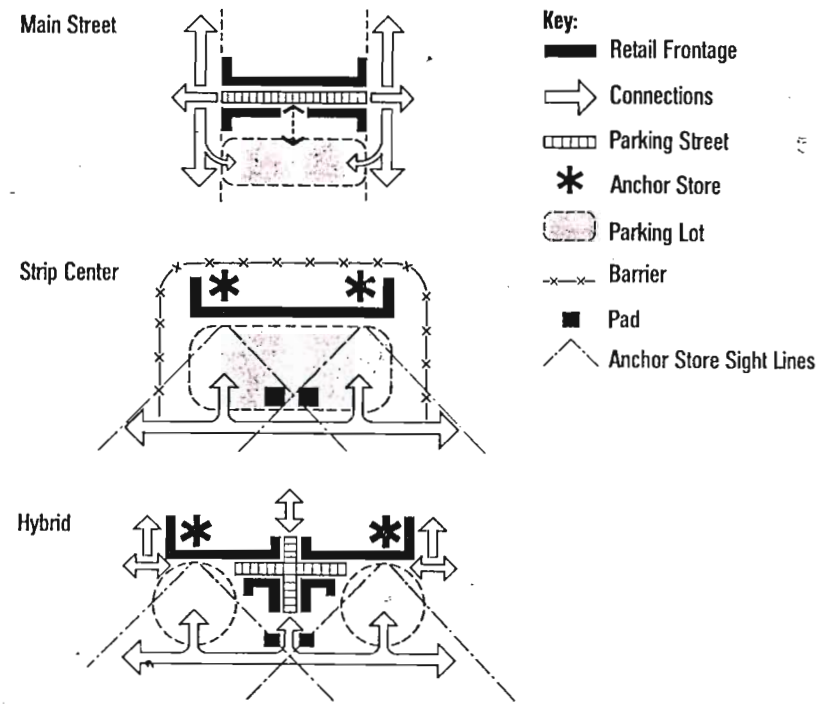


Figure 11: Community retail center prototypes

(Achimore, Urban Land, 1993)

The removal of automobiles from these retail zones is neither necessary nor recommended. Instead forms of transport, including automobiles, buses, and streetcars, should be sought to add interest and maximize the on-site population, as long as no single mode, including pedestrian, is allowed to dominate (Achimore, Urban Land August 1993).

For the creation of a more community orientated strip center links to surrounding land uses need to be established. A typical strip shopping center orientates activities onto one side, ignoring the other sides. The placing of housing, offices, parks, entertainment, or public facilities along these unused edges would integrate the commercial area into the surrounding residential areas. The introduction of these activities to the area and the linkage of these facilities by pedestrian routes, would increase the range of activities and could benefit sales by increasing traffic flows especially to less visible areas.

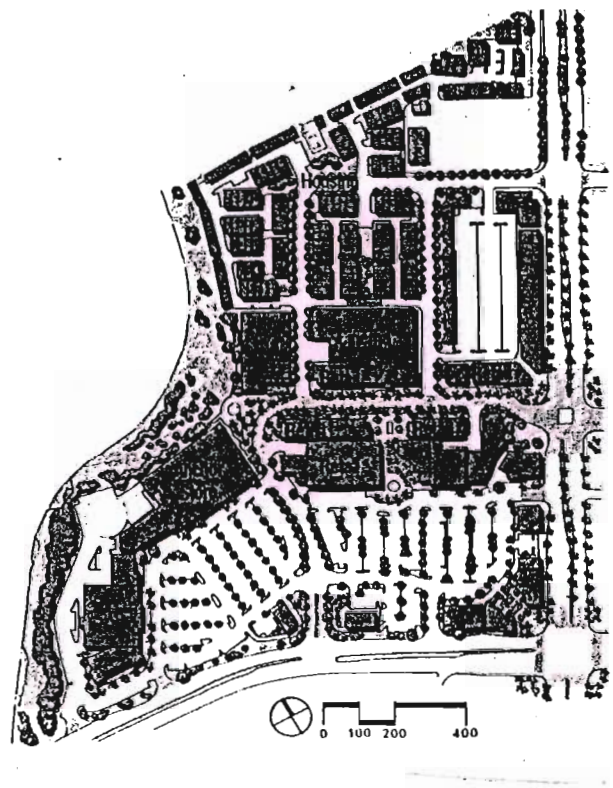


Figure 12: Berea, California community shopping center.
(Achimore, Urban Land, 1993)

The use of a number of smaller parking lots may also be used to create a more secure and safe parking area. This subject will be discussed at a later stage of the report.

A good example of this type of mixed land use precinct development can be seen in the city of Berea, California. Through its new master plan, it has broadened the function of its community shopping centers by the addition of retail activities along connectors to nearby land-uses. While the "strip" center provides space for anchor tenants and numerous smaller tenants, several connector streets provide parking and retail frontage that will link the "strip" center to parks, housing, cinema, and other uses within walking distance *(See Figure 12)*. The division of parking into smaller areas also improves the access to these areas of mixed land development, as users can park closer to their destination rather than in one large parking area close to the main anchor tenant.

3.4. ACCESS AND PEDESTRIAN LINKAGES:

An urban area is an immense warehouse of information, it stimulates diverse ways of life, events, and facilities, as well as a prime occasion for learning. Development policies and design principles should aim to make this information accessible to as much of the urban population as possible.Access can be divided into basic types. Firstly there is access to other people: to kin, to friends, to potential mates, and to a variety of more casual acquaintances. This contact between humans is fundamental to their well-being. The introduction of electronic communication and the automobile has influenced the way people access each other. This has had an influence on the patterns of development with in urban areas (Lynch 1960).

The second type of access is that of access to human activities. The key access for adults is that of work and residence. Service activities such as financial, medical, recreation, educational, and religion are also included.

Access to certain materials is also important. In today's society this means a trip down to the local store or supermarket to get food and other goods. Access to services such as water and energy have been taken for granted by people living in most developed urban areas, and the higher income areas within developing urban areas.

People also want access to places, such as open space, shelter and even wasteland. In the developed countries demand for access to particular landscapes such as cultural areas, areas with symbolic meaning and areas that offer recreational potential is high due to the poor not having large areas of private open space for recreational purposes.

Finally people want access to information. This information ranges from activities such as banks (that need highly accurate information) to neighbours who gather to gossip, and professionals clustering together during lunch hour at offices. In the early 1980's Melvin Webber observed that the shift in the mode of communication is a prime determinant in the reshaping of the urban pattern (Lynch, 1981).

Access is a matter of psychological, as well as physical, connection. Areas within the urban context can be divided into areas of public space which allows access to all people. These areas include road reserve and public open space such as parks and recreational activities. The second type of space is semi public, which consist of areas that are open to the public but are under the control of the government or institutions, facilities such as schools, libraries, and transportation nodes. Finally there is private space which is residential plots which are under the control of the individual (See figure 13)

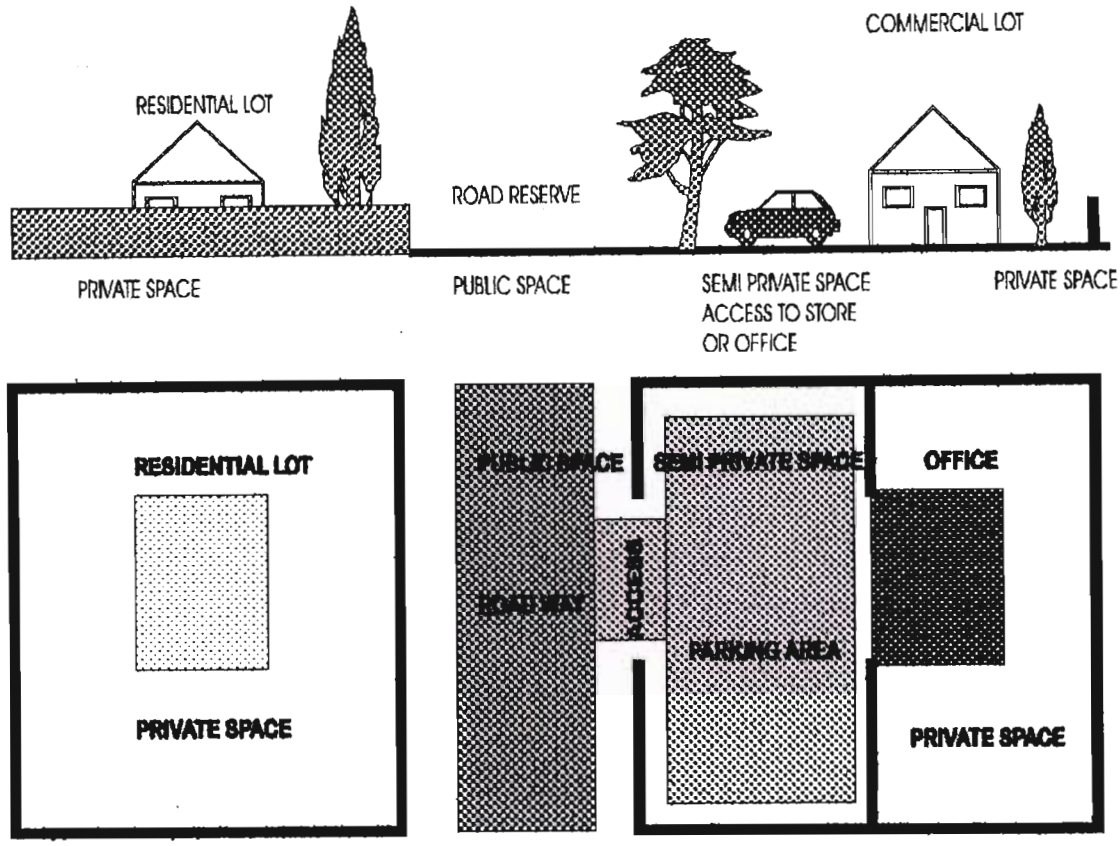


Figure 13: private/public open space

This private space can be divided into private and semi private space. Semi private is the area that can be observed from public space and other private space. The divide between private and public space is a major factor in the provision of access, especially in strip developments were old residential houses have been turned into shops and offices. The psychological aspect of entering into semi-private space causes people to stay away from these areas. The introduction of barriers such as walls, fences and hedges create problems for people trying to enter and move from one plot to another. The walls and hedges also create problems in the surveillance of streets and surrounding areas.

In the future most people in developing countries will not be able to afford personalized motor vehicles in order to gain access to urban opportunities and facilities. It is for this reason that facilities should be designed to accommodate

the person traveling on foot. The design of a pedestrian orientated commercial area would allow the poor to overcome the main barrier to access to facilities, that of distance (Dewar, Uytenbogaardt, 1991).

Sidewalks are usually too narrow, and trees, utilities, and parked cars become even more of a barrier, especially to people carrying parcels or mothers with infants. In places the sidewalk just disappears, giving way to driveways, gas stations, auto repair yards, or just literally disappears. The pavement is not very gracious to the person on foot but it is forbidding to the blind or to a person in a wheelchair.

Not all people work, shop, or move through an area of mixed land use development, for teenagers these areas are hangouts. It is a place were they can get together. These youths need access to areas that are not directly in the public way but allow them access to food, entertainment and other young people. Usually they get together on street corners or in front of a shop (Banerjee and Southworth, 1990). The elderly are even worse off. Those who are unemployed or retired spend large amounts of their time sitting along the streets. The automobile has forced the street to abandon many of the social functions of the old public street.

People working within a mixed land use precinct need good access to other facilities just like the residential and of the area. Store owners need good access for their customers, storage, access for delivery vans, and access to signage along the street frontage. The individual worker may also want access to quiet areas and pleasant surroundings, it is in this that these built up areas do not deliver.

Kevin Lynch completed the draft policies for the "Boston Tomorrow" project (1960). Although the policies looked at central Boston, they emphasized the support of human, physical and psychological needs rather than the needs of

vehicles and buildings. Looking at access, Lynch stated that "The activities and facilities of central Boston should be accessible to people who visit, live, and work in the city." (Banerjee and Southworth, 1990). Lynch proposed the following policies to address these needs:

- *Relate the density of development in any area to the capacity of that locality.* Physical access to and within an area is affected by the condition and capacity of the streets, parking facilities, walkways, and public transport, and by the location and density of activities within the area.
- *Minimize vehicular traffic and congestion.* An increase in vehicular traffic will increase congestion and pollution. Access policies should therefore restrict and control vehicular access by promoting the following:
    1. A proposed amendment of the zoning code which would ensure the developers of large developments undertake traffic studies and the study of the impact increased traffic flow would have on surrounding access.
    2. Controlling the parking in the area by restricting the number of parking bays in the area. The location and size of parking areas can also prevent congestion within the area.
    3. A policy to improve the public transport system. With an efficient public transport system the use of cars will be decreased.

- *Improve access by public transport.* In Boston the public transport system is old and has scheduling problems. To improve the system the following should be done:
    4. Major development should be located in areas convenient to transportation routes and facilities.
    5. New transportation facilities' requirements (such as stations, terminals and pedestrian linkages) need to be established and connected to proposed developments.

6. Restrict curtain roads to transit vehicles and taxis only. This would allow for a faster moving public transport system which in turn would reduce congestion and allow people to have easier access to public transport.

- *Make pedestrian access easy, direct and inviting.* To improve the pedestrian access in Boston city center, Lynch proposed the following actions:
    7. Sidewalks should be designed to accommodate the anticipated volumes of pedestrian traffic. The sidewalks should have minimal obstacles that would obstruct pedestrian movement, adequate space for people waiting to cross roads or for people just waiting on the sidewalk. There should be on barriers restricting the movement of the elderly and handicapped. The development of guidelines for the development of pedestrian access should reflect the characteristics of the area within which it is found.
    8. The existing pedestrian network should be strengthened and were required new connections should be established to create better access for the user.

- *Facilitate access for cyclists.* The problem for cyclists in Boston include; conflict with vehicles, unsafe pavements and the lack of storage space for unused bicycles.
    9. These problems can be resolved by: providing secure storage space in all major buildings.
    10. The creation of safe bicycle routes along roads. This should be incorporated into the design of large scale developments.

Good accessibility should allow all people living, working and visiting the area access to shopping, workplace, education and entertainment (Banerjee and

Southworth, 1990). Development policies should aim to make these activities and information accessible to all sectors of the urban population

3.5. PARKING:

No matter how much parking there is in an area there is always some problem with it. For example, it is either, in the wrong place, difficult to enter and exit, or always full. Parking is not the problem that it is made out to be. It certainly is a problem that can be solved (Reed, Planning Quarterly, September 1994).

Parking can be divided into two main types: on site parking and curb parking. Curb parking is one of the main causes of congestion on the roads due to cars pulling in and out of parking spaces, as well as slow moving traffic looking for parking spaces (Eno Foundation, 1975). Parking also inhibits visual and physical linkages across streets, as vehicles park along the street between activities on either side of the street. Curb parking comes in the form of angled parking which takes up a large area of road surface and needs larger areas for traffic to enter and exit. The most common parking along a street is parallel parking which occupies the least space, but allows for fewer parking spaces along the street. Convenience centers usually favour curb parking since shoppers that come to these areas do not intend spending a lot of time in the area. On site parking is where individual developments provide parking on their site. The number of parking bays provided is controlled by the Town Planning Scheme which usually calculates the number of parking bays per area of floor space in retail developments. The on site parking is usually found between the street and the shop frontage which creates friction with access to these shops. On site parking can also be placed at the rear of the development and out of sight, thus not used to its full capacity (De Chiara, 1975 pg 447).

The problem of on site parking not being used to it's fullest potential has been addressed by Reed. He suggests the use of consolidated parking areas where

adjoining developments develop parking areas that accommodate the parking needs of two or more buildings. Due to the number of facilities within a strip development, people often visit more than one land use, thus a consolidated parking area can serve more than one land use and save on space used for parking *(See Figure 14)*.

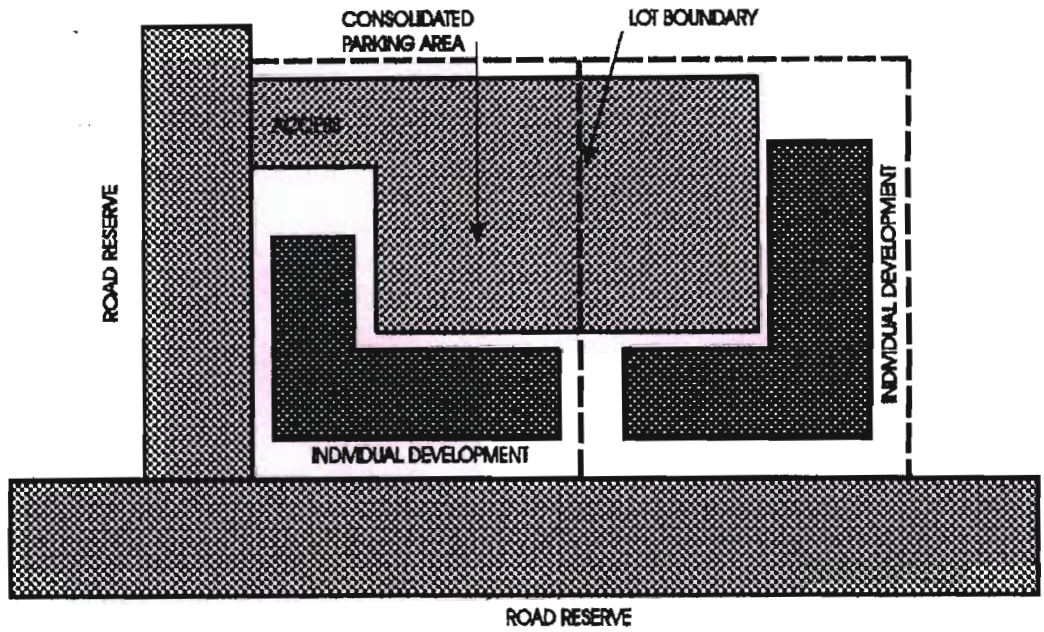


Figure 14 : Consolidated parking and access

These consolidated parking areas can be developed through the use of simple guidelines such as landscaping, key entry points to parking areas, as well as making adjacent parking lots' entry point directly opposite, making it easier to go from one parking area to another. The solution of consolidated parking areas often requires co-operation between adjacent land owners which is alien to most land owners. The syndrome of " people parking in my parking space to use your store but I have to pay the taxes on the land" (Reed, Planning Quarterly, September 1994) results in the development of individual parking lots that can not provide sufficient parking bays.

Within existing commercial areas, a reasonable solution is the banning of curb parking, giving this space over to utilities, pedestrian and bicycle routes, and bus stops. Parking would be provided through setbacks so that parking can be located either behind or between structures. This would encourage retail activities to front directly on to the walkway rather than on to parking lots. This would give pedestrians better access to the shops.

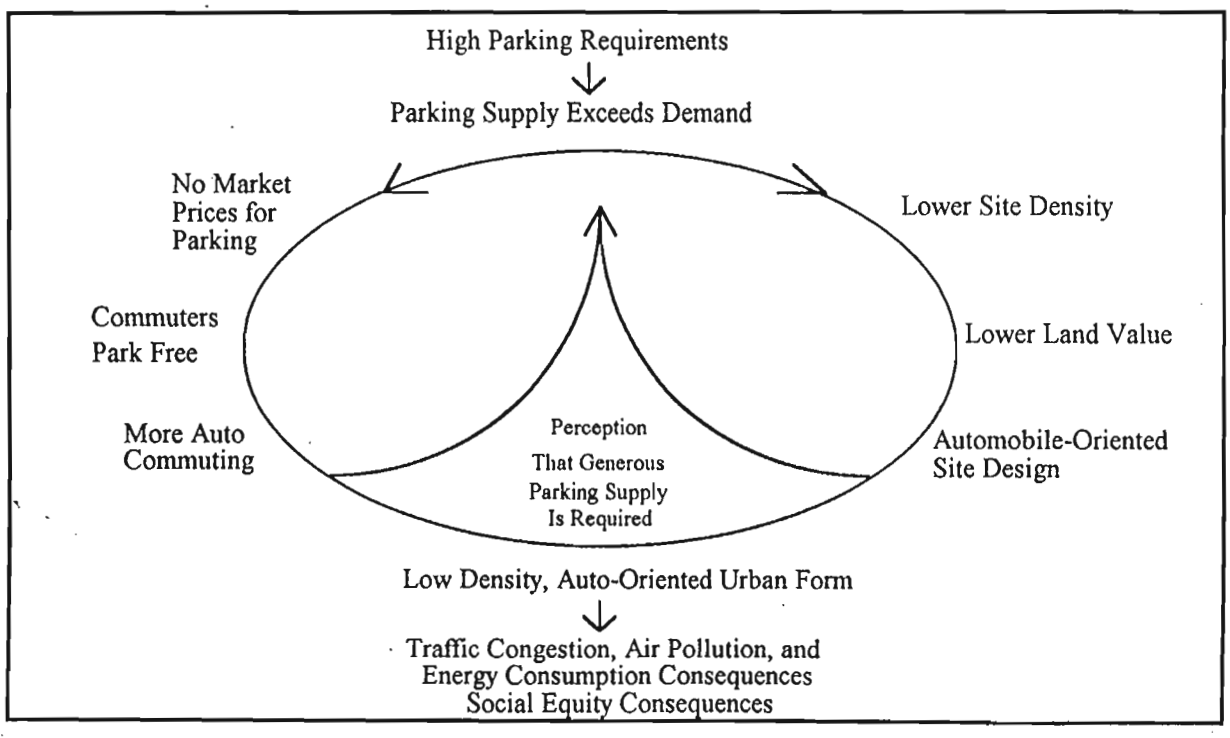


Figure 15: Implications of over supply of parking

(Willson, APA, 1995)

The development of large parking areas in mixed land use precincts becomes a security problem and may ultimately deter customers. The design of smaller parking lots which allow users easier access to shops is preferable. The visibility and adjacency make the patrons feel safe (A. Achimore, Urban Land, 1993). Inadequate public transport, on-site shops or consumer services, and long distances between activities (along unsafe sidewalks) has caused a large number of people to use their motor vehicles to move between activities within a mixed land use precinct.

The availability of free parking within an area of mixed land use encourages workers and shoppers to commute alone. It also uses up a large area of valuable land for the storage of vehicles, thus creating congestion and pollution. This low density and low land value has created an environment orientated around the automobile *(See Figure 15)* The over-supply of parking in areas has a negative effect on the area. Instead of decreasing congestion, pollution and creating a compact pedestrian orientated strip, it has the opposite effect. The increase in parking decreases the market price for parking, which allows the commuters free parking which encourages more vehicle users. The increase in the number of parking spaces lowers density and land value, this creates urban sprawl which causes development to be orientated towards the automobile. This low density, automobile orientated urban form, leads to congestion, pollution etc. (R. Willson, APA Journal, 1995).

Cheap and easy parking usually deters walking, if people must pass through large areas of parked and moving cars to get between buildings and shopping areas. People prefer to use their own vehicle even if it is over a short distance.

Many communities have introduced parking reforms. For example Bellevue, Washington has changed parking standards from minimum floor to a maximum ceiling. The officials believe that minimum standards simply served to inflate parking supplies. Builders have been inclined to over build parking to gain a marketing edge (R Cervero, Built Environment, 1990). The community of Warner in suburban Los Angeles charged for parking which resulted in a decrease in the number of solo-commuting. Other communities substituted parking areas for vanpools and buspools which reduced the number of individuals using motor vehicles and the need for parking.

The State of California enacted legislation in 1992 requiring that employers who provide a parking subsidy to employees must also offer parking cash-out programs (A, Shoup APA Journal 1995). This means that, instead of paying for

parking spaces for employees, employers pay the employee to use public transport and carpool rather than use their own transport to get to work. The scheme has a number of advantages: firstly, it gives the employee choice, as before, the employer gave the option of a parking subside or nothing, now it gives the choice of cash thus giving cash value to the employee carpooling. Secondly, the offering of cash does not cost the employer, as the employer only has to offer cash-out if the employer pays for a parking space for the employee, not if parking is provide free.

The problem with spill over parking in residential areas is a major factor of the cash-out scheme, it is for this reason that all curb parking in the areas were either prohibited or metered for short term use rather than all day. Due to these measures employees could not take the cash and then just park in the street as they had to pay for parking in the street (A. Shoup, APA Journal 1995).

CHAPTER FOUR:
FORMULATION OF DESIGN PRINCIPLES

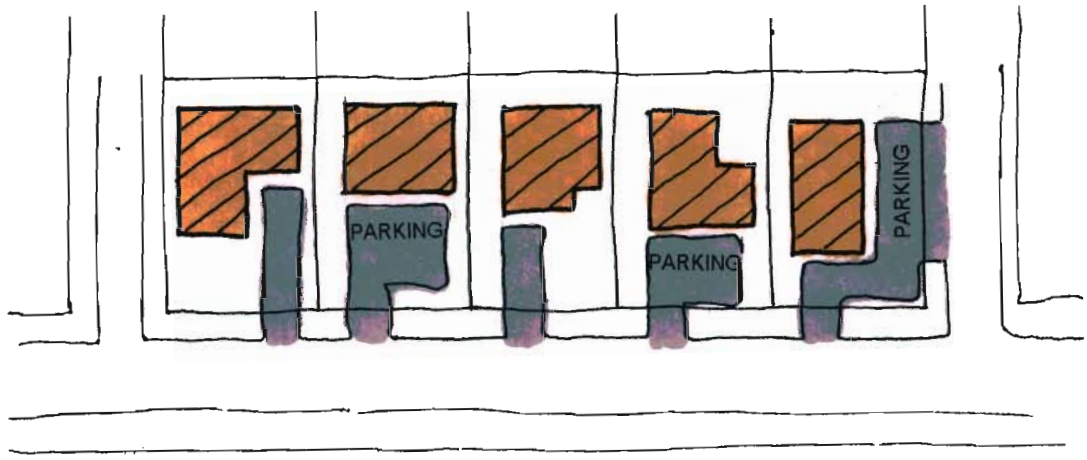
4.1. INTRODUCTION:

This section of the report will look at specific problems within the mixed land uses precinct, namely, parking, access and linkages between activities. The development of design principles and the adaptation of existing planning regulations that will allow for the development of single lots into an integrated group of lots will also be discussed. The development of these principles will use the theoretical base established in chapter Three. These Design principles will be in the form of a set of guidelines that can be used in the development of any integrated groups of individual lots. These principles will be used to reduce parking problems, use land more efficiently, improve physical appearance of the area and create a pleasant and shopper friendly environment for people to shop and work in.

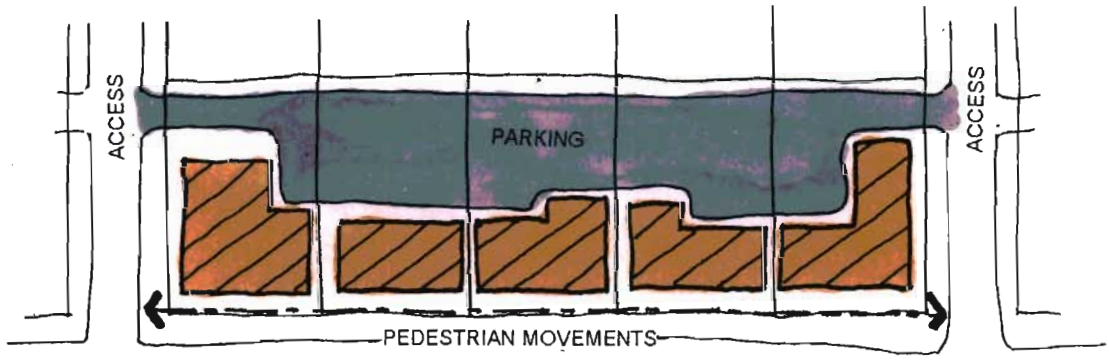
4.2. PARKING:

Parking is a major issue in most mixed land use areas. Most people interviewed indicated that congestion and parking were one of the problems in the Davenport precinct. Parking problems will never be solved to everyone's satisfaction. People want to park outside the shop that they are visiting, they want direct access to facilities which is not always possible. The period of time each vehicle is parked in a commercial area is relatively short due to the nature of activities undertaken. The parking that needs to be provided for offices and service industries is different, as the number of customers are less and the period that vehicles are parked is longer. For these reasons, parking in a mixed land use area should be divided into small parking lots closely located to groups of activities. The creation of these well located small parking areas will reduce congestion on the surrounding roads. The number of parking bays needed to adequately serve the shoppers is reduced due to the high turn over of vehicles in

the parking areas. The parking areas also have to be linked to surrounding activities to allow people to park in one place and walk between groups of shops.



A:- PRESENT SITUATION



B:- PROPOSED SITUATION

Figure 16: The development of consolidated parking areas to service a number of shops and services

The solution to the problem is to create small pockets of parking by establishing consolidated parking areas using land from adjoining lots (See Figure 16). The creation of these parking lots would require cooperation between land owners or

Local Authorities insist that individual parking areas are adjacent to one another in order to later create linkages and consolidated parking areas.

The joint development of parking areas behind buildings provides a safe movement channel for pedestrians and reduces the conflict parked vehicles have with traffic moving along the main roads. The location of parking at the rear allows pedestrian to have clear access to the buildings from along the street frontage by limiting areas where vehicles cross pavements to enter parking areas as well as the number of vehicles parking along the road. Using land from a number of lots to develop a large parking area would allow the parking area to service a number of shops and thus reduces the need for vehicles to move between shops. The parking area needs good access to the back of all the shops and services within the area (not only the shops around it but also other facilities in the area along the street).

The entrance to these facilities needs to be well located, preferably directly opposite another entrance point or otherwise needs to be clearly marked as parking areas. Entrances to these parking areas should not be located on major roads (to prevent conflicts with traffic and pedestrian using the pavements).

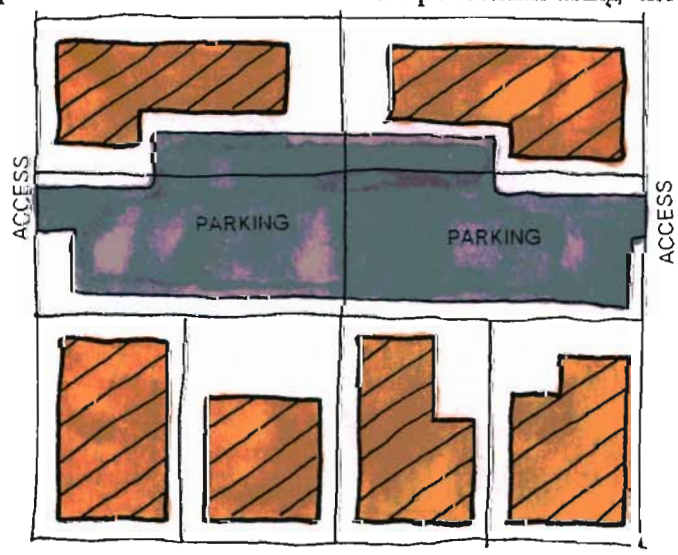


Figure 17: Authorities purchasing land to develop parking areas where the need arises within a mixed land use area

Due to the built-up form and small lot sizes within a mixed land use area, developers are unable to provide adequate on-site parking. For this reason, developers should be able to make cash payments instead of building the required number of parking spaces. These funds would enable the authority to purchase land and develop collective off-street parking facilities (in areas of need) within the mixed land use area (See Figure 17). This would be done by buying lots behind the activities and turning them into consolidated parking areas. This needs to be closely monitored to ensure that the parking is provided in areas of need.

The development of parking areas at the rear of commercial lots has implications for the building line regulations. To allow for sufficient space at the rear of a lot (to develop a parking area) the street building lines need to be reduced or removed and the rear building line needs to be increased to provide a larger area where buildings can not be built and parking can be provided. The reduction in the street building line also allows for better access for pedestrians.

4.3. LINKAGES:

The development of individual lots has caused problems with the linkage of these activities to adjoining lots. The development of residential lots into businesses and offices, has caused problems, with each lot having barriers such as walls and fences, which limit the free movement of people between activities.

The development of lots within a mixed land use area should create an interesting and attractive facade along the public sidewalk (which supports and generates pedestrian activity), and encourages people to move between the activities and the rest of the precinct. The following guidelines can be used to create good linkages between activities (See Figure 18).

- The retail frontage should be designed to maximise window display area and/or outside areas for merchandise display.

- The retail frontage should abut the sidewalk or common outdoor space adjacent to the sidewalk. This would involve the removal of or decreasing the front building line.
- Where alternative vehicular access is possible and appropriate, driveways to parking and service areas should not take access from the main commercial street.
- Setbacks between the sidewalk and store frontage should not be used for parking and loading facilities.
- The retail frontage should be designed to minimise the amount of space taken up by access to basements or upper storeys. This would focus on the main entrance to the shop.
- Sideways should be designed to accommodate expected use.
- Obstacles impeding pedestrian movement along the pavement should be kept to a minimum.
- Existing pedestrian routes should be strengthened and new routes established (where required) to integrate the area with surrounding areas.

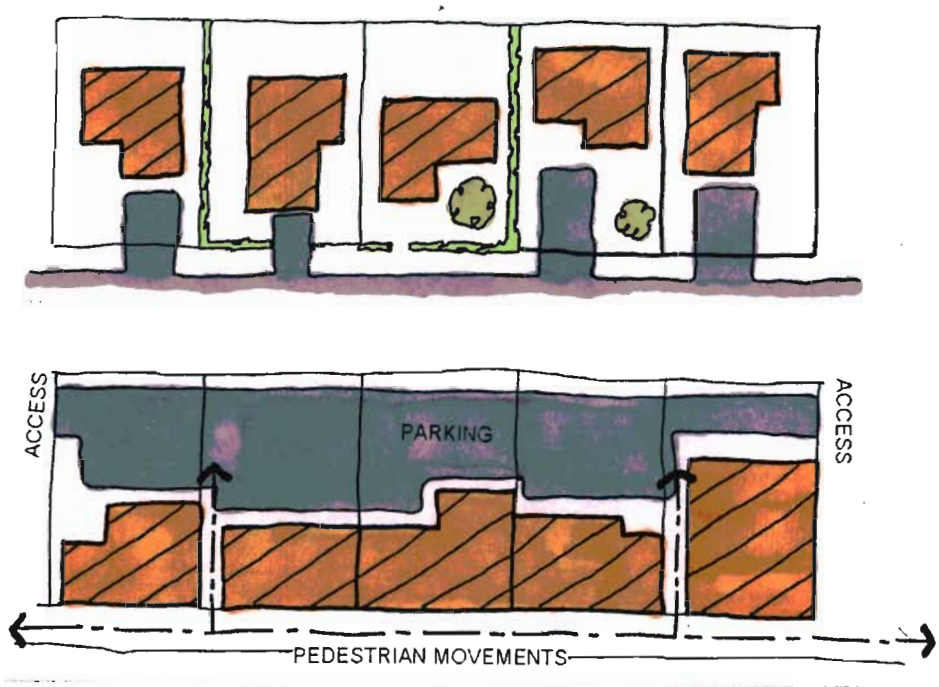


Figure 18: The development of linkages by reducing the street setback to allow direct access for pedestrians from the street.

Disjointed shopping districts pose a problem for both shoppers and businessmen. Many shopping trips require visiting more than one shop. It becomes less convenient to accomplish such a shopping trip if shops are separated by other types of uses. Within a mixed land use area, activities that benefit from passing pedestrian traffic need to be grouped together to allow for such activities to benefit from each others attractive forces and physical improvements to the area. It also reduces the cost of streetscape improvements as the distances are much shorter.

In the development of individual lots, consideration needs to be made for linkages with and access points to other buildings in the area (See Figure 19).

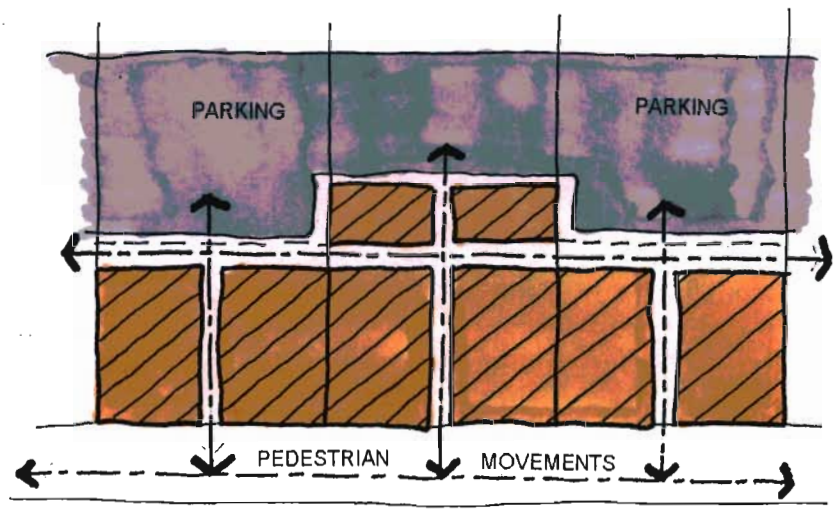


Figure 19: The development of pedestrian walkways linking shops together and encouraging pedestrian movement

The development of new projects in an area need to create linkages with surrounding activities. This can be done by creating internal walkways that link

the project to other activities in the area. The development of projects with internal walkways (that protect users from the elements and traffic) will create a better environment for pedestrians to move along and encourage people to walk between shops. Walkways also need to link the parking areas in the rear of the lot to the street frontage and shops within the lot.

The alignment of these walkways (between individual lot developments so that an unhinded movement channel for pedestrians can be created) needs to be enforced through the development of special "right of way servitudes" within each individual lot in which no building can take place other than that for pedestrian movement.

The success of a mixed land use precinct depends on the service it provides to its customers. A precinct will loose business if the surrounding residential areas are not developed and catered for. The surrounding residential areas need good access and linkages to the shopping facilities within the area. There needs to be access to parking for people doing shopping by car and good linkages for pedestrians between the residential areas and the commercial areas. These linkages need to be safe and free of obstructions.

4.4. ACCESS:

Access points to commercial facilities, within a mixed land use area, should promote free movement of both vehicles and pedestrians. Access points should be:

- Easily identified, through signage and location;
- Safe for people entering and exiting
- not create conflict with other traffic and pedestrians;
- not be restricted by barriers

Access points are closely related to linkages. Developments are linked together through access points. For better linkages between activities, access points need

to placed in the most direct location, such as directly opposite each other. This creates the most direct route between activities (creating pedestrian movement) as people tend to use the shortest route between two activities.

4.5. PHYSICAL APPEARANCE:

Physical appearance makes shopping a more or less pleasant experience. Shop owners prefer to locate in an area with a well-maintained and attractive appearance and "good image". Often poorly maintained areas can't attract the more successful merchants. The appearance of an area therefore influences types and quality of goods and services within an area.

Finally, an unattractive environment (in a retail area) detracts from the vista the city presents to users and reflects negatively on the surrounding neighbourhood.

To improve the physical appearance of a mixed land use area, the following aspects need to be addressed;

- Measures to improve public facilities and the appearance of the street environment. Public facilities such as libraries and community centers are compatible with shopping activities as they expand the social functions the area plays in the community. The street appearance can be improved by authorities providing parks, street, furniture, trees and maintain pavements etc.
- The appearance of existing private property and buildings. The existing buildings have a greater impact on the appearance of a commercial area than either the public facilities or new developments. The City needs to encourage shop owners to keep their premises in good condition, and improve the appearance of the shop fronts, windows, and displays.
- The type of development within the area needs to blend in with surrounding areas. Small more personalized shops create a more shopper friendly atmosphere.

CHAPTER FIVE:

CASE STUDY: DAVENPORT ROAD MIXED LAND USE PRECINCT.

5.1. RESEARCH METHODOLOGY:

This section of the report investigates a precinct which has been subject to change as a consequence of a number of phenomenon so that it has become an area of mixed land use. These changes have occurred in an adhoc manner. Consequently, it become, clear that such areas should be treated holisticlly in order to create integrated development.

The case study of the Davenport Road precinct will be investigated/ examined in order to recommened the type of approach that requires a different or new approach to that of the current policies and regulations.

A) PERCEPTION OF THE AREA

Information regarding people's perception of the area and use of the area have been collected. This information was collected from primary sources namely people living, shopping and working in the area. The collection of this information was through the use of questionnaires, interviews and site surveys.

The main target groups for these interviews and questionnaires were the activities located between Davenport road and Clark road such as offices and retailers as well as people using the area. The information collected in these questionnaires identified areas that are used frequently as well as the main type of activities within the area, the types of activities in the area that play an important part in the provision of facilities and access and hinder the coordinated development of individual lots.

The information on people's perceptions of the area was collected using a sample survey that collected information from people using facilities in the area and passing through the area. Candidates for the interviews were selected randomly throughout the study precinct.

B) PARKING

The amount of existing parking and type of parking available was identified on the same basis as land use types. The study precinct was extensively explored and the following aspects, with regard to parking, were established:

- Type of parking (on-site, street parking, garage parking)
- Use of parking (customer parking, employee parking, delivery and loading areas)
- Location of parking,
- Number of parking spaces, and
- Location of street parking, loading areas etc.

Questionnaires were also used to obtain information from businesses within the study area about the number of on site parking provided and use of parking within individual lots. The business interviews included businesses around the Davenport Shopping Center that have been impacted upon by the center, as well as offices using listed buildings as premises. The type of activities within the area (that play an important role in the generation of parking needs) were also researched, using interviews and observations. Due to the number of activities in the area, information was collected using a random survey sample. Information was collected from 40 commercial and office sites in the study precinct, these activities varied from medical offices, professional consulting firms to corner cafes and banking facilities.

Information relating to the area's safety, convenience of facilities, and access to facilities was collected through the use of individual interviews. The information

was collected from three groups of people, people using the area for work, people shopping in the area, and people using recreational facilities within the area. This information will be used to identify areas that do not meet the users needs. This enabled action plans to be developed to improve the character of the area and to meet the needs of the users. The interviews were carried out in offices and commercial activities along Davenport road, in the Davenport Shopping Center and the surrounding residential areas and recreational facilities such as Bulwer Park.

A survey was conducted along the main roads within the study area on Wednesday 22 October from 8 am to 4 pm. This survey identified areas of conflict between traffic as well as between traffic and pedestrians. The survey also identified areas where vehicles were parked illegally, thus causing conflict. The analysis of pedestrian movement was also done during this time, by observing pedestrian movement channels such as pavements, walkways and open space in the area, in order to determine the main pedestrian routes and any obstacles to pedestrian movement. The location of signage was investigated to see if the location of shop signage conflicted with traffic control signage and pedestrian movement along the roads.

C) PLANNING REGULATIONS

The Town Planning Scheme has a major role to play in the creation of integrated developments but at present does not provide for integrated development. The report looks at the existing regulations in the Berea South Town Planning Scheme that affect development within the precinct and what needs to be changed in order to encourage integrated development.. The regulations that will be looked at include the land use, lot size, density, setbacks, building height, floor area ratio. These regulations play a major role in the type and size of development within the precinct, the way in which they restrict development will be looked at in this section of the report. Other polices that

influence the development of mixed land use in the area, such as interface zones, proximity to shopping zones and listed buildings, will be looked at.

5.1.2 LOCAL CONTEXT:

The study precinct of Davenport is located within the Durban Metropolitan area between Umbilo road (Provincial route) R102 which runs from the South coast areas to the North coast areas and Bulwer road (M8 metropolitan route) which runs from Berea South to Berea North. The area is located along the transitional zone between both the commercial area around the C.B.D. and the industrial area around the harbour and the residential areas of Glenwood and Bulwer. This transitional zone places pressure on the lower end of the precinct and the impact of shopping centers placeing presurre on surrounding areas to change land use to accommodate new commercial and industrial areas. The area has access to both the Southern freeway as well as the N3 freeway.

The proposed area precinct is located within the Bulwer residential area between Umbilo road, Bulwer road, Clark road and Ferguson road (See figure 20). Davenport road runs through the center of the precinct joining Manning road and Bulwer road to Umbilo road in the South. The Davenport Center is located along Davenport road between Brand road and Frere road (in the middle of the study area), and is the areas main commercial node. A number of retail outlets and offices have located around this node and have started to create a commercial cluster within the Davenport precinct. The Bulwer park is located on the corner of Manning road and Davenport road.

Davenport road links many activities in the Bulwer area, such as St. Augustines Hospital, Meyrick Bennett Children's Center in the North,

and Bulwer Park, Gladen Park and the Shopping area around Davenport Square Shopping Center and the industrial and commercial areas along Umbilo road and Bulwer/ Nicholson connects the area with the lower areas of the Berea,. The study precinct is located in a residential area with a well established community. A number of shopping centers are located in the Bulwer area namely the Berea Shopping Center and Buxtons Center, and are in close proximity to the study precinct. There are also a number of community facilities such as schools, churches, parks and recreational facilities in the Glenwood area. (See figure 21).

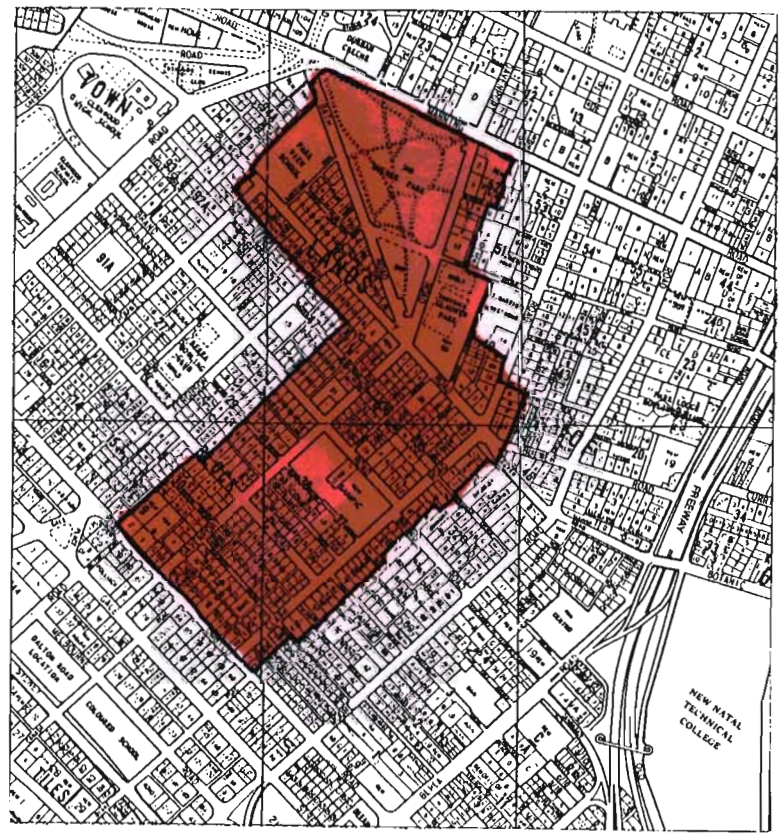


Figure 20: Study Precinct

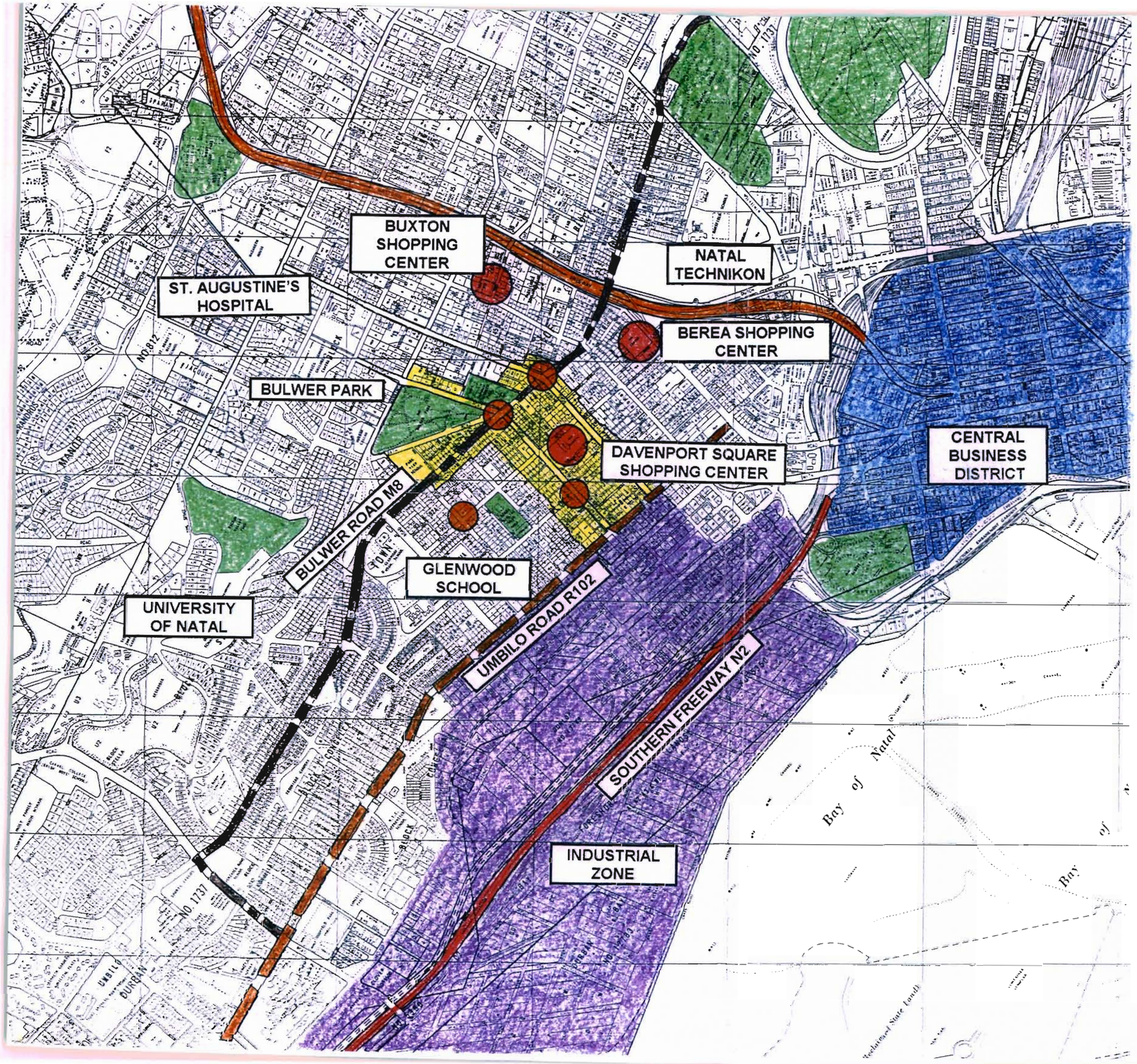


FIGURE	21

KEY:

- STUDY AREA
- MAJOR SHOPPING NODE
- SHOPPING CLUSTER
- NATIONAL ROAD (N2)
- NATIONAL ROAD (N3)
- PROVINCIAL ROAD (R102)
- METROPOLITAN ROAD (M8)
- OPEN SPACE
- CENTRAL BUSINESS DISTRICT
- INDUSTRIAL ZONE

DRAWING TITLE:

LOCALITY

PROJECT TITLE:

DAVENPORT
MIXED LAND USE PRECINCT ANALYSIS
BEREA SOUTH

SCALE: 1: 15 000
DATE: 01 OCTOBER 1997

5.2. LAND USE ANALYSIS:

The information on land uses within the Davenport precinct was compiled through the analysis of individual sites in the area. The survey was conducted on the 24 October and was done by walking through the area. Land use was identified using the following categories (See Figure 23):

- Detached housing,
- Semi Detached,
- Duplexes,
- Flats,
- Commercial,
- Offices,
- Church,
- School,
- Pre-school,
- Open Space, and
- Vacant

All sites in the Davenport precinct were also rated on their building condition, access, and parking.

RESIDENTIAL LAND USE:

The residential component of the study area is made up of detached housing, semi-detached housing, maisonettes and flats. The condition of the residential buildings and lots vary between areas. In the vicinity of Bulwer Road the buildings and lots are well maintained while buildings in the lower areas near the General Business 2 zone along Umbilo have not been maintained due to the type of uses in the area, such as service industry as well as the close location to the light industrial zone. Flats and Maisonettes are found around the Davenport Square Shopping Center and along Umbilo road, increasing the density in these

areas and giving higher access to commercial areas. Areas of flats are also found around the Bulwer park along Davenport road. These flats use the open space as a recreational area. A number of the detached and semi detached houses within the area have been altered and changed into offices and retail outlets. The average lot size within the area is 900m². The residential developments within the area are of a high building standard and are of a middle to high income nature. The areas along the Umbilo road have been influenced by the activities along the road and are not as well kept as residential units along Bulwer and Davenport roads. This neglect of the residential units in this area is due to the pressures that are placed on these areas to change to the surrounding land use. The externalities created from surrounding land uses such as noise, pollution and crime have resulted in land prices decreasing as well as changes in land use occuring. The whole residential area in the study precinct, according to the Town Planning Scheme, is zoned as General Residential 2.

INSTITUTIONAL:

There are only three institutional land uses in the study precinct: Firstly, a church site on the corner of Bulwer road and Clark road, which also accommodates a pre-school. The location of which influences traffic flows and pedestrian linkages in the precinct due to parents delivering and collecting children from the pre-school. A second church site is also located on the corner of Brand road and Clark road, Thirdly, an art gallery located along Bulwer road.

There are also additional institutional sites surrounding the study area that influence the traffic flow and pedestrian routes in the area, by increasing the movement to the surrounding areas. These sites include church sites in Frere road and Brand road, and St. Martin's Boy's Home in Clark road.. The study area has direct access to these facilities along the main roads running through the study area.

EDUCATION:

There is one educational site within the study precinct. This being the Park View School located near the Bulwer park along Bulwer road (which allows easy access to both people walking and from both public and private modes of transport along Bulwer road).

There are also a number of pre-school and crèches within the study area. There are a number of other educational sites in close walking distance to the study area. These educational sites include schools such as Glenwood High school, Glenwood infants' school, and a number of crèches. There are also special educational facilities in the surrounding areas, namely the Open Air school which caters for the physically disabled, and is open to all in Kwa Zulu Natal.

OPEN SPACE:

Open space in the area can be divided into two types, firstly there is public open space which is open space that the public has free access to. Secondly, there is private open space.

PUBLIC OPEN SPACE

Within the precinct there are three areas of public open space. Firstly there is Bulwer Park, which is a large area of open space that is well maintained and is used as a pedestrian link between the upper areas of Glenwood and Bulwer and the commercial node around the Davenport Square Shopping Center. Bulwer Park directs pedestrian traffic into Davenport road. The Bulwer Park also has recreational areas with a cycle track and playing equipment for the youth as well as large areas of open space that are used as recreational areas for surrounding flats. These areas of recreational space are however underutilised mainly due to surrounding areas being made up of residential lots that provide private open space in the form of private gardens. This was the main aim of the Town Planning Scheme in 1967.

The second area of public open space is located along the Davenport avenue between the General shopping and General Business 2 zones located along Umbilo road and the surrounding residential areas. The open space has no specific use, other than creating an area of open space within a dense built up area. There are a number of offices and commercial activities that face the area and use it for parking. The area is not linked to other open spaces or other activities in the precinct. The area has been created as an "after thought" by rezoning residential lots to create an area of open space. It has become an area for the dumping of waste and an area for vagrants (See Figure 22). The playing equipment located in the area is not use due to location, condition, surrounding private open space, and type of people using the area. The area has become unsafe due to the lack of use, maintenance and surveillance from surrounding lots which do not face directly onto the open space area.

Figure 22: Public open space that is under utilized due to location.

The third public open space area is located on the corner of Clark and Bulwer roads and is situated near the Baptist Church and is used as a parking area for the church. Access to this area is limited. The site is zoned governmant according to the Town Planning Scheme. The site is proposes for an electrical sub station to serve the surounding Bulwer area.

PRIVATE OPEN SPACE:

The second type of open space is that of private open space. This type of open space is controlled by a private body or person. Access to these areas are limited to a select few. The first large area of private open space is located on the edge of the study precinct along Davenport road adjacent to the Bulwer park. This private open space is the Gladwyn Park and is used as football fields and bowling greens and has well maintained facilities.

The second area of private open space is the Berea Bowling Club which is located in Ferguson road on the outer edge of the precinct. Most of the residential lots in the precinct have private open space which reduces the demand on public open space as well as reducing the need for public open space in the precinct.

INDUSTRIAL:

Industrial activities are located outside the study area along Umbilo road and are limited to light and service industries. The area is linked to the harbour and railway network through the Dalbridge station. These facilities have located in this area due to the central location and the area's access to the industrial areas of the south, the C.B.D. and harbour, and opportunities and low rents caused by externalites such as traffic flows along Umbilo road, pollution and noise. This industrial area affects the lower residential areas of Bulwer causing the change in land use due to the same externalities that have caused industry to

move to the area, which has decreased residential land prices and caused traffic congestion in the residential area as people look for parking in these areas.

COMMERCIAL LAND USES:

Commercial activities in the study precinct can be divided into four main types, all of which have been promoted by the City Council through policies and regulations

A) GENERAL SHOPPING

The first type of commercial activities in the precinct are the areas zoned, according to the Town Planning Scheme, as General Shopping. The major General Shopping zone in the study precinct is the Davenport Square Shopping Center. The types of activities found in this shopping center include a major supermarket, a number of chain stores, news outlets, a bottle store, a restaurant, and a number of small retail businesses, and medical offices. The Davenport Square Shopping Center can be classified as a Neighbourhood Shopping Center of some 10 000m² (Kahn 1981). The center has a number of smaller tenants placed along an internal pedestrian mall. The center also has a number of external shops facing the parking area along Davenport road.

Other small offices and shops have located a short walking distance from the main anchor tenant, these being the banking, shopping and medical facilities along Brand road and the offices and shops located along Davenport road and Clark road (See Table 1). An office complex is situated on the second floor of the center and accommodates some 35 office. There are a number of other shopping centers within the Glenwood/Bulwer area that influence the catchment area of commercial facilities within the study area (See Figure 21).

B) GENERAL BUSINESS 2

The second type of commercial activity is the zone of General Business 2, which is located along the Umbilo road to create a transitional area to protect the lower areas of Bulwer from the industrial areas of Umbilo. The area around Umbilo road accommodates light industry and service industry facilities such as bottle stores, bars, vehicle repair services and second hand shops. These facilities would not usually locate in or around shopping centers due to the high rents and type of activity located in a center, but would be found in areas that are deteriorating and changing such as a transition zone where rents and land prices are low.

TABLE :1 NUMBER AND TYPE OF COMMERCIAL ACTIVITIES WITHIN THE DAVENPORT PRECINCT (1997)

ACTIVITY(1)	NUMBER	%
SERVICE	48	35.5
RETAIL	26	19.3
PROFESSIONAL	22	16.3
INDUSTRIAL	13	9.6
MEDICAL	7	5.2
BANKING	3	2.2
ENTERTAINMENT	4	3.0
GARAGE	2	1.5
CAFE	3	2.2
VACANT	7	5.2
TOTAL	**135**	**100.00**

source (Site Analysis 1997)

(1) DOES NOT INCLUDE ACTIVITIES WITHIN THE DAVENPORT SQUARE SHOPPING CENTER.

C) AREA IMPACTED BY SHOPPING AND GENERAL BUSINESS NODES

The third type of commercial areas are where commercial activities have located in areas created by the impact of major General Shopping or General Business 2 nodes which have created the need for a change in land use around these nodes. This can be seen around the Davenport Square Shopping Center, where through Special Consent applications, businesses have changed the land use of

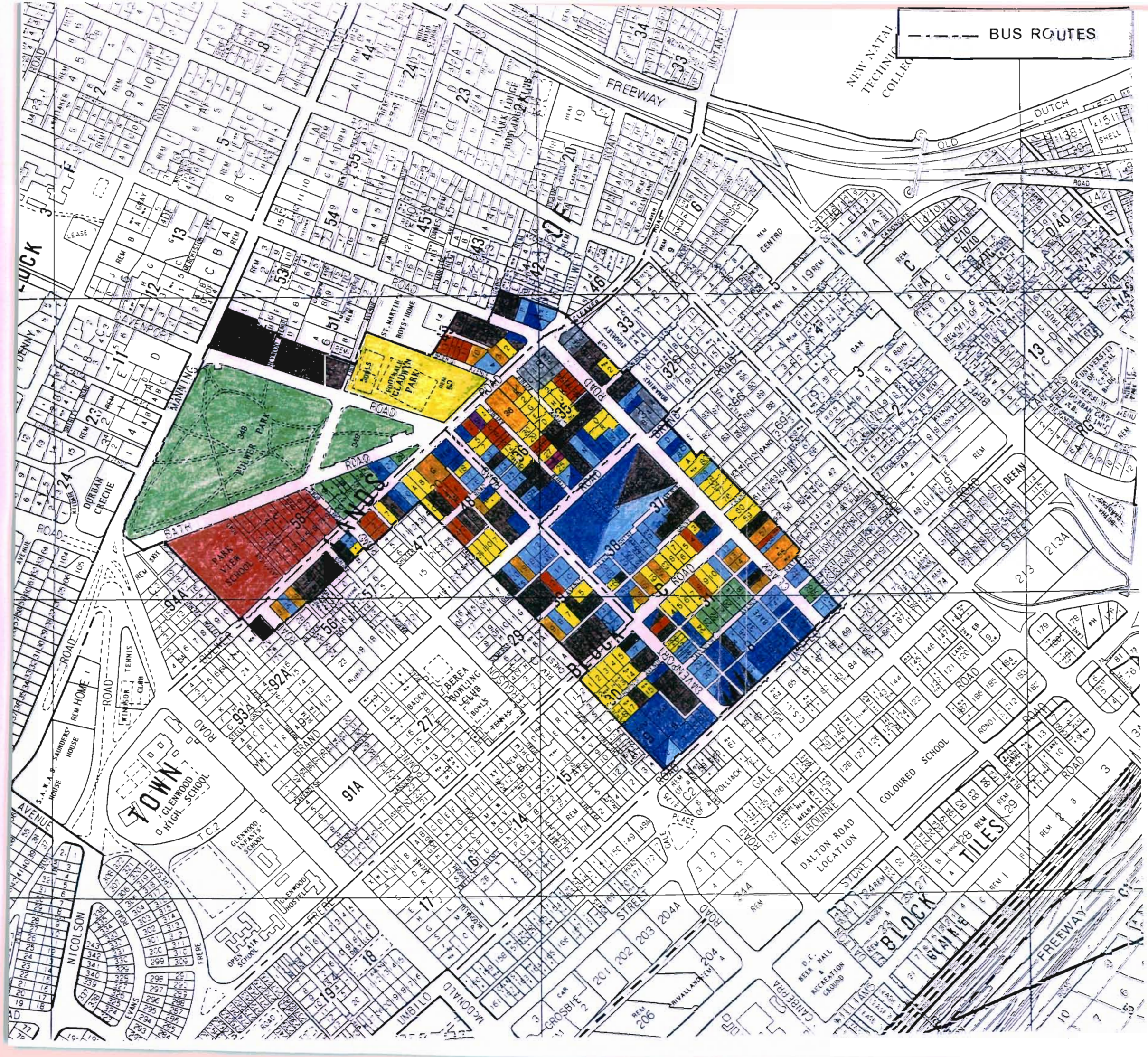


FIGURE	23

- SINGLE DWELLING UNIT
- SEMI DETACHED
- DUPLEX
- FLATS
- COMMERCIAL
- OFFICES
- SCHOOL
- CHURCH
- PRE SCHOOL
- PRIVATE OPEN SPACE
- PUBLIC OPEN SPACE
- VACANT

DRAWING TITLE:

LAND USE

PROJECT TITLE:

DAVENPORT
MIXED LAND USE PRECINCT
ANALYSIS
BEREA SOUTH

SCALE: 1: 6 000
DATE: 01 OCTOBER 1997

residential lots around the center to that of shops and offices. A number of banking facilities have located along Brand road opposite the Davenport Square Shopping Center and within the center itself. These banking facilities have redeveloped the lots to cater for their specific needs A number of medical facilities ranging from Dentists and Optometrists to Doctors and Physiotherapists have also located in and around the Davenport Square Shopping Center and along both Brand and Davenport roads. The development of both banking and medical facilities have had a major effect on both parking and access in the area. A number of commercial activities found in the study area are individual residential lots that have been listed as historical buildings. The City Council, through Special Consent, allows these building to be used as offices. They allow this as business will restore the buildings to their original architectural character. A number of offices have located along Davenport road between the intersection of Brand road and the intersection of Bulwer road. The buildings used for offices in these area are either listed buildings or are in close proximity to the business nodes in the area

D) AREA EFFECTED BY TRANSITION ZONE

The area between Brand road and Umbilo road along Davenport road is also the location of a number of offices which have used residential homes as offices, keeping the original architectural style. The development regulations have an implication on the use of these buildings as offices and shops as development has to comply with the existing regulations.

E) EXISTING USE RIGHTS

The fifth type of commercial area is the Existing Use Right areas where commercial uses existed before the Town Planning Scheme was put in place. In these area the land is zoned General Residential 2 but existing business are allowed to continue (See Figure 36). Existing Use Rights occur on the corner of Bulwer road and Davenport road, the corner of Frere road and Davenport road and the Corner of Frere road and Clark road.

The business interviewed in the Davenport area indicated that proximity to clients (47%) as the main reason for locating in the area with closeness to other business (32%) being the second reason. 57.5% of business interviewed in the area operate over a city wide catchment.

A number of activities have located away from the main nodes along the smaller side streets. All these activities have turned detached and semi-detached residential housing units into offices or have redeveloped lots to cater for specific business needs.

5.3 ATTITUDE TOWARDS THE DAVENPORT AREA:

The community within the Bulwer area is made up of mainly middle and high income groups (Berea South Town Planning Scheme 1987). In 1996 a survey was undertaken as part of a residential study of the Glenwood area, in which peoples perception of the quality of the area around the Davenport Square Shopping Center were obtained. Using the same questions in a survey with the people living in the area in 1997, the following attitudes and changes to past attitudes with regard to the area were established.

Most residents interviewed indicated that they used local shopping facilities, with 90% using the Davenport Square Shopping Center for their requirements. Of the people interviewed, 80% use the banking facilities in the area, while only 47% used the medical offices in the area (See Table 2). Convenience and proximity to home were the main reasons for using the facilities in the area. The use of shopping facilities have not change over the past year. They also stated that they did not use the area for Public services, entertainment and recreation due to the fact that the area was lacking in these facilities.

TABLE: 2 REASONS FOR USING SHOPPING FACILITIES (1997)

REASON	NUMBER	%
CONVENIENCE	21	52.50
CLOSE TO HOME	7	17.50
VARIETY	9	22.50
LOW PRICES	1	2.50
CLOSE TO TRANSPORT	2	5.00
TOTAL	40	100.00

SOURCE (SURVEY 1997)

According to the residents interviewed, there is a lack of public facilities such as libraries, post offices etc. within the study area. The authorities need to address the provision of public facilities such as policing services, post offices and local recreational facilities within the study area.

Congestion in the study area has changed over the last year. In the 1996 survey (conducted by Town Planning Students of Natal University) 63% of residents interviewed stated that there was only light congestion in the study area. In the survey conducted in 1997 only 42.5% of the residents state that there was light congestion in the area while 55% indicated that congestion was becoming a problem. Medium congestion being large number of vehicles on the road at curtain times of the day and lack of parking causing double parking and conflict with vehicle waiting for parking. The congestion in the study area is more of a perception as there are large areas of parked cars in the parking lot infront of the shopping center. In some places the congestion is high such as around the shopping center where most of the commercial activities take place. Congestion in other areas is relatively low with little or no conflict between vehicles.

TABLE 3: TRAFFIC CONGESTION WITHIN THE STUDY AREA (1997)

TRAFFIC CONGESTION	NUMBER	%
NONE	0	0.00
LIGHT	17	42.50
MEDIUM	22	55.00
HEAVY	1	2.50
TOTAL	**40**	**100.00**

SOURCE (SURVEY 1997)

The commercial retailers and offices surveyed indicate that there is a problem with congestion around the shopping center and along Brand road and Umbilo

road. This increase in congestion could be due to the development of a new banking hall along Brand road opposite the parking area for the Davenport Square Shopping Center (See Table 3). With the development of the new banking facility vehicles park illegally in the bus stop zone and on the pavement in front of the new banking hall causing an increase in the congestion in the area. The entrance to the parking area at the rear of the bank also creates congestion and conflict as it is located opposite the entrance to the shopping center's parking area, causing conflict with traffic on the road as well as vehicles entering and exiting the parking area at the shopping center (See Figure 24). The offices and shops along Davenport road indicate that there is little or no congestion on the roads due to vehicle users using the parking area at the shopping center.

The use of private cars for transport to shopping and work also creates problems with congestion. Of the people interviewed in the study area 67% of the people use their own cars to get to work and go shopping while only 5% used public transport.. The view of residents on noise and safety within the study area has not change drastically over the past year. Residents still find the area is safe, but 97% of people interviewed would not use the area after hours due to there being no entertainment and shopping facilities open in the area after dark and security. They also indicate that crime is a problem (at night in the area).

Figure: 24 New Banking Hall along Brand road causing an increase in congestion and conflict

5.4 TRANSPORT AND PEDESTRIAN NETWORKS:

5.4.1 ROAD NETWORK:

The road system within the study precinct is a grid system. The grid system is made up of Clark road, Davenport road and Furgeson road running in a North West direction. Clark and Davenport roads can be classified as local collector roads, join the upper areas of Berea South to the Provincial route Umbilo road (R102). The roads running in North East direction are Umbilo road (102), Brand road, Frere road and Bulwer road which is a Metropolitan route (M8). The M8 route connects areas in Berea South with the Northern areas of Berea across the N3 highway. Brand road, Ferguson road and Frere road can only be classified as access roads as they only service small areas within the Bulwer/Glenwood area (See Figure 17).

Within the study area there are a number of smaller access roads and one ways streets that run parallel to the larger collector roads. These road are access roads to individual lots and access for services.

Traffic flows in the area were established through on site observation on a Thursday and Friday over a period of 12 hr. The surveys were taken from the corner of Davenport road and Brand road and the corner of Davenport road and Bulwer road. The one way traffic along Umbilo is a constant flow of traffic moving through the area from the Southern areas of Durban to the C.B.D (Town Planning Scheme 1987).

This traffic passes through the study area and only stops for activities located along Umbilo road or turn up Clark road and Moore road to access the upper areas of Berea South. The same can be said for traffic along Bulwer road, with only a small amount of traffic stopping at

activities along Bulwer road (mainly the petrol station and commercial activities on the corner of Davenport and Bulwer roads). Bulwer road is one of the main routes taken by people using the Davenport Square Shopping Center. Other routes used for access to the shopping center are Clark road and Brand road. Brand road, although only a Local Access road, is one of the major access points to the Davenport Square Shopping Center due to the main entrances to the centers parking areas and petrol station being located along this road. Traffic flows along Davenport road are not as high as Clark road, as motorists use Clark road as a through route from Umbilo road to the upper areas of Berea South. Clark road also has less traffic controls at intersections unlike Davenport road which has two controlled intersections between Umbilo road and Bulwer road.

The public transport network within the area runs along Bulwer road, along Brand road between Moore road and Davenport road and along Davenport road from Bulwer road turning into Frere road and running South West (See Figure 23).

The bus service as well as taxi services run along Umbilo road into the center of Durban (See Figure 25). Taxis do not operate within the study area. There are a number of bus stops in the study area namely along Brand road at the entrance to the Davenport Squares Shopping Centers parking area. Along Davenport road outside the pedestrian entrance to the shopping center and along Bulwer road outside the school.

5.4.2 PEDESTRIAN ROUTES:

Pedestrian movement within the study area is mainly limited to movement along the pavements and within the shopping center. The area does not have a well defined pedestrian movement system. The

Figure 25: High Volumes of fast moving traffic along Umbilo Road

pavements are not well maintained and the movement of pedestrians is obstructed by untrimmed trees, bus stops, poles, hawkers and services, which is particularly disruptive for the handicapped and mothers with infants.

The use of pavement areas by informal traders along Brand road (in front of the Shopping center to display their goods) also disrupts the flow of pedestrians. The main flow of pedestrians is around the Davenport Square Shopping Center and from the activities on the opposite side of Brand road. The design of the shopping center forms a major part of the pedestrian movement network joining Clark road with Davenport road. There is a large number of people using this route to enter the shopping center from both roads as well as to moving through the center. The open space system in the area is linked to the pedestrian movement system by service lanes that are unsafe and not suited for pedestrian movement, as they run at the rear of buildings and do not provide any direct access to buildings. Open space in the study area, namely the open space along Davenport Avenue, can not be integrated into the system due to its poor relation to facilities such as the shopping center and existing pedestrian route routes.

The system of lanes that join Davenport road and Clark road do not play a role in the pedestrian movement system as they only join these roads and do not link these areas to focus points or nodes such as the shopping center. A number of these lanes are just access routes to the back of sites and are cul-de-sacs which lead nowhere. The condition of these lanes is poor (See Figure 26). The lanes are flanked by high walls at the rear of lots, and are located between rows of lots and have limited access to these lots as well as having no surveillance from these lots.

Figure 26: Access lanes running behind residential lots

Access for pedestrians to the Davenport Square Shopping Center sites is through the large parking area, which has a high number of vehicles entering and exiting at the same point as the pedestrians area entering and exiting the parking area (See Figure 28). The access to individual lots, that are used for offices and retail space, is also a problem for both pedestrians and vehicles. Due to the high crime in South Africa, most lots have high walls or fences around them which limits peoples access into lots as the walls and fences create a perception that these areas are private.

5.5 PARKING AND ACCESS:

Parking in the study area can be divided into two types (See Figure 27). Firstly there is curb parking which is found along all the main roads running through the area. Parking along the roads is in the form of parallel parking which causes the roads to become narrower and causes congestion when vehicles enter and leave these spaces. These parking areas around the Davenport Square Shopping Center have a high turnover as people use these parking for short periods of time to do shopping and related activities. The analysis of parking in the study area shows that parallel parking along the streets is not demarcated, which does not allow the parking areas to be used to their full potential, as vehicle can park anywhere and usually waste space.

Prohibited parking areas are marked out but are not complied with. The use of these areas for parking has implications for people accessing public transport, as vehicles park in the bus stops causing people to board and exit the bus in the traffic lane which causes congestion. This use of the bus stop along Brand road by vehicles increases the congestion and conflict between vehicles along this road.

Vehicles parking on the pavement cause problems for pedestrian movement and access. This can be seen outside the First National Bank, where the provided parking is located at the rear of the building and has no direct access. The illegal parking of vehicles in loading zones also causes congestion, as trucks tend to off-load in the street. This illegal parking can be seen along Brand road in front of the shopping center and commercial facilities on the opposite side of the road.

The second type of parking is off street parking. The major area of off street parking is the parking area for the Davenport Square Shopping Center, which caters for the people using the center, and has a high turn over of users. A large

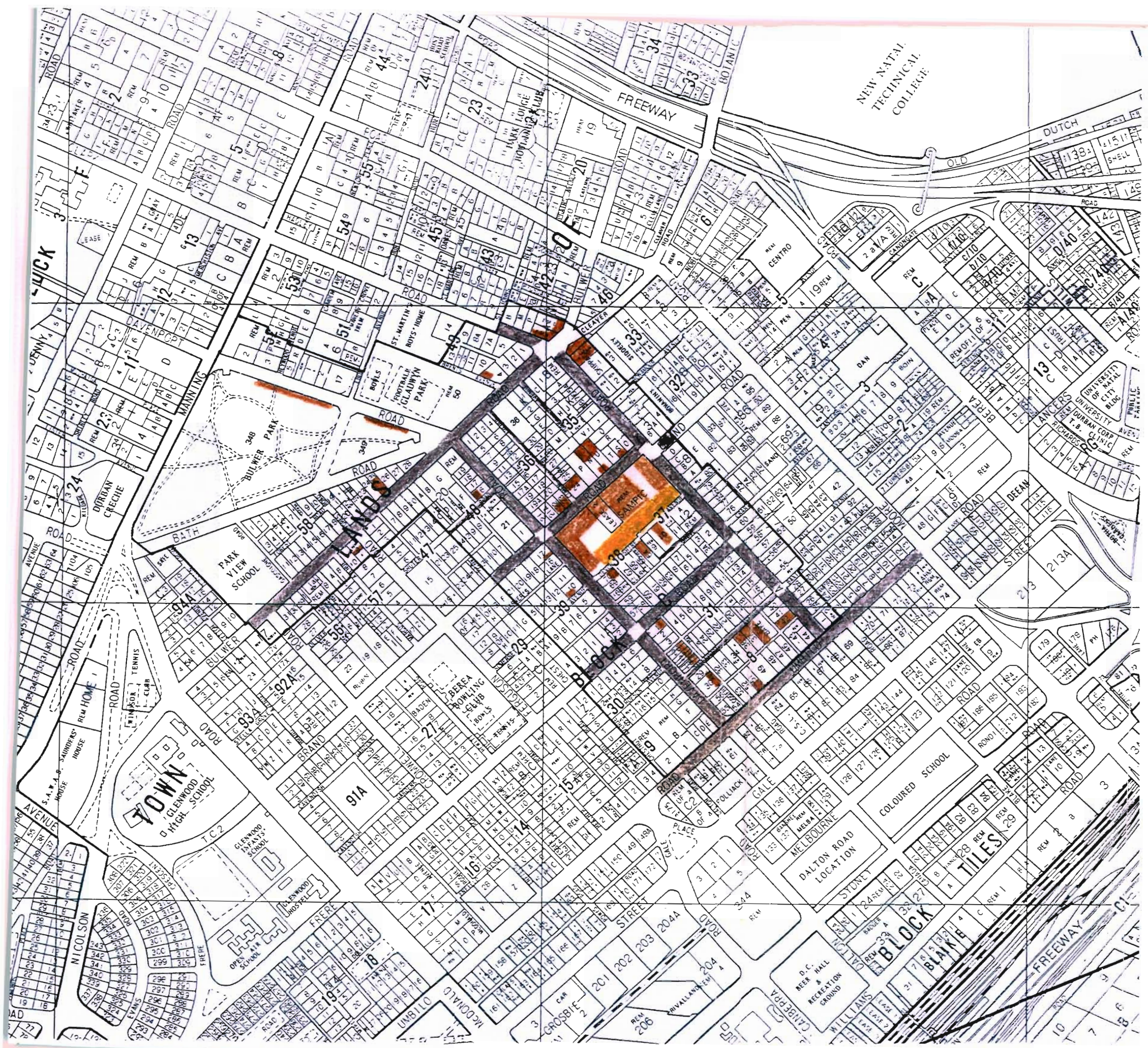


FIGURE	27

KEY:

- ON STREET PARKING
- OFF STREET PARKING
- PARKING GARAGE

DRAWING TITLE:

PARKING

PROJECT TITLE:

DAVENPORT
MIXED LAND USE PRECINCT ANALYSIS
BEREA SOUTH

SCALE: 1: 6 000
DATE: 01 OCTOBER 1997

numbers of people use the parking area but do business in areas outside the shopping center this creates congestion in the center's parking area, but lessens the parking demands in the surrounding areas (See Figure 28). A number of individual sites have provided parking, but these parking areas are underutilized. These areas are underutilized due to most of them been located along service lanes and at the rear of buildings where people do not expect them. Access to these parking areas is restricted and the size of them gives the perception that they are not parking areas.

Figure 28: Large off road parking area in front of Davenport Square Shopping Center.

Figure 29: Consolidated parking area behind First National Bank and Medical Offices

The First National Bank and adjoining business have created a consolidated parking area behind the development. The parking area at the rare is underutilized due to the location, as people do not appear to know that it is there (See Figure 29).

The shopping center has a large highly visible parking area which is easily accessible. The pedestrian access to the banking hall is located along the street front and away from the parking area, causing people to have to walk to the street frontage to gain access to the bank. People tend to take the most direct route between parking areas and entrances to activities. In the case of the banking hall people tend to park in the street in front of the building or in the large parking lot in front of the shopping center which has a more direct access route to the banking facility.

This large parking area in front of the shopping center encourages people to use their own cars to go shopping due to the perception that there is ample parking available.

Figure 30: Access to parking areas by potential customers restricted by barriers.

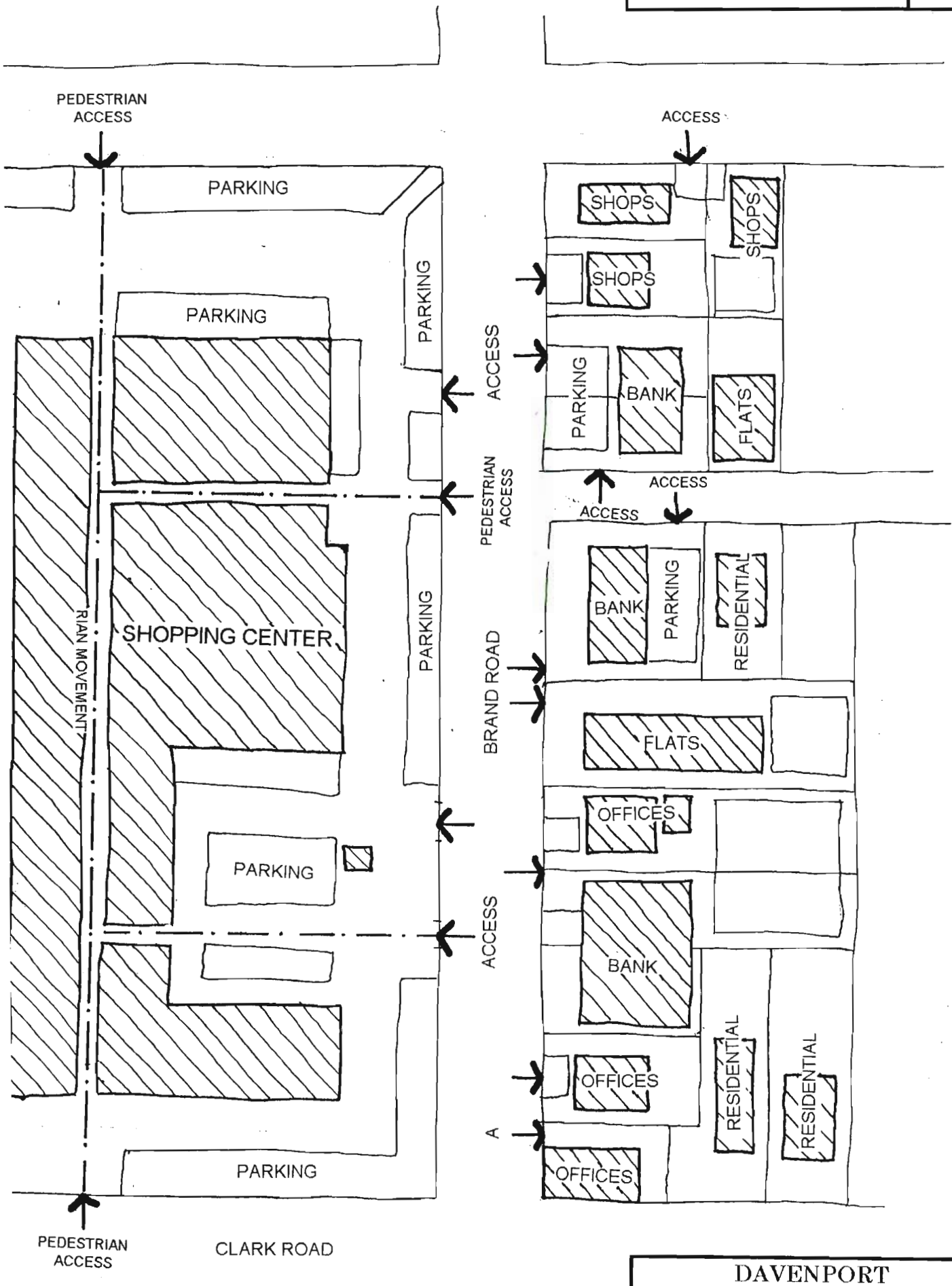
Most individual offices and shops along Davenport road and Brand road provide limited parking for their employees and minimal parking for customers at the rear of lots and along service lanes. This forces potential customers to park in the street (where access is more direct), and the shopping center's parking area, as it is well located and accessible (See Figure 30).

Of the offices and retail activities within the study precinct, 19% of them are professional offices. These types of activities do not depend on the provision of parking as they do not have a high turn over of clients, unlike the banking and medical services who need a large number of parking to accommodate the large number of clients.

Access to parking areas in the study area is either restricted to employees through the use of barriers and signage, or access is located in areas that are not visible to passing traffic.

Vehicular access to lots over the pavement along the Davenport roads is limited, with most lots having only pedestrian access along Davenport road, while vehicle access is obtained from the rear of the lot along narrow lanes (See Figure 34). Access and linkages between buildings have been hampered in the development of individual lots in the Davenport precinct, due to the use of walls, fences and vegetation to prevent access into lots. The building lines allow for the buildings to be setback some distance from the pedestrian routes creating an area of semi private space between the building and the pedestrian routes (See Figure 33). The setbacks also create a broken streetscape and obstruct entrances and access points to both buildings and parking areas. Setbacks also allow for parking areas in front of the buildings, which leads to unclear pedestrian linkages. The parking of vehicles along the road also creates unclear pedestrian linkages and access. This can be seen with the pedestrian access to the Davenport Square Shopping Center where vehicles parking along the road obscure the entrance and make it unclear (See Figure 31).

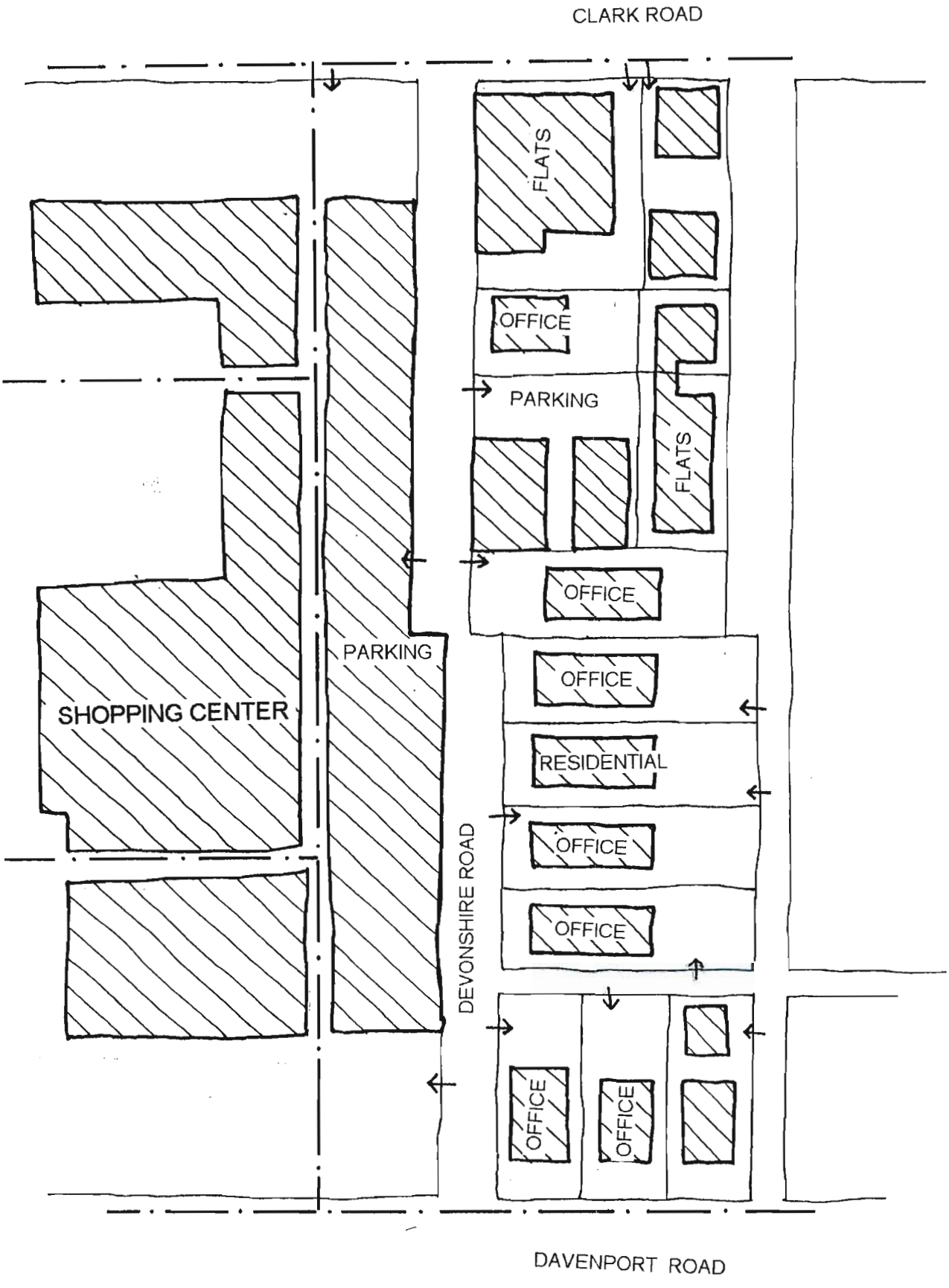
FIGURE	31



DAVENPORT
MIXED LAND USE PRECINCT ANALYSIS

EXISTING SITUATION
DAVENPORT COMMERCIAL AREA

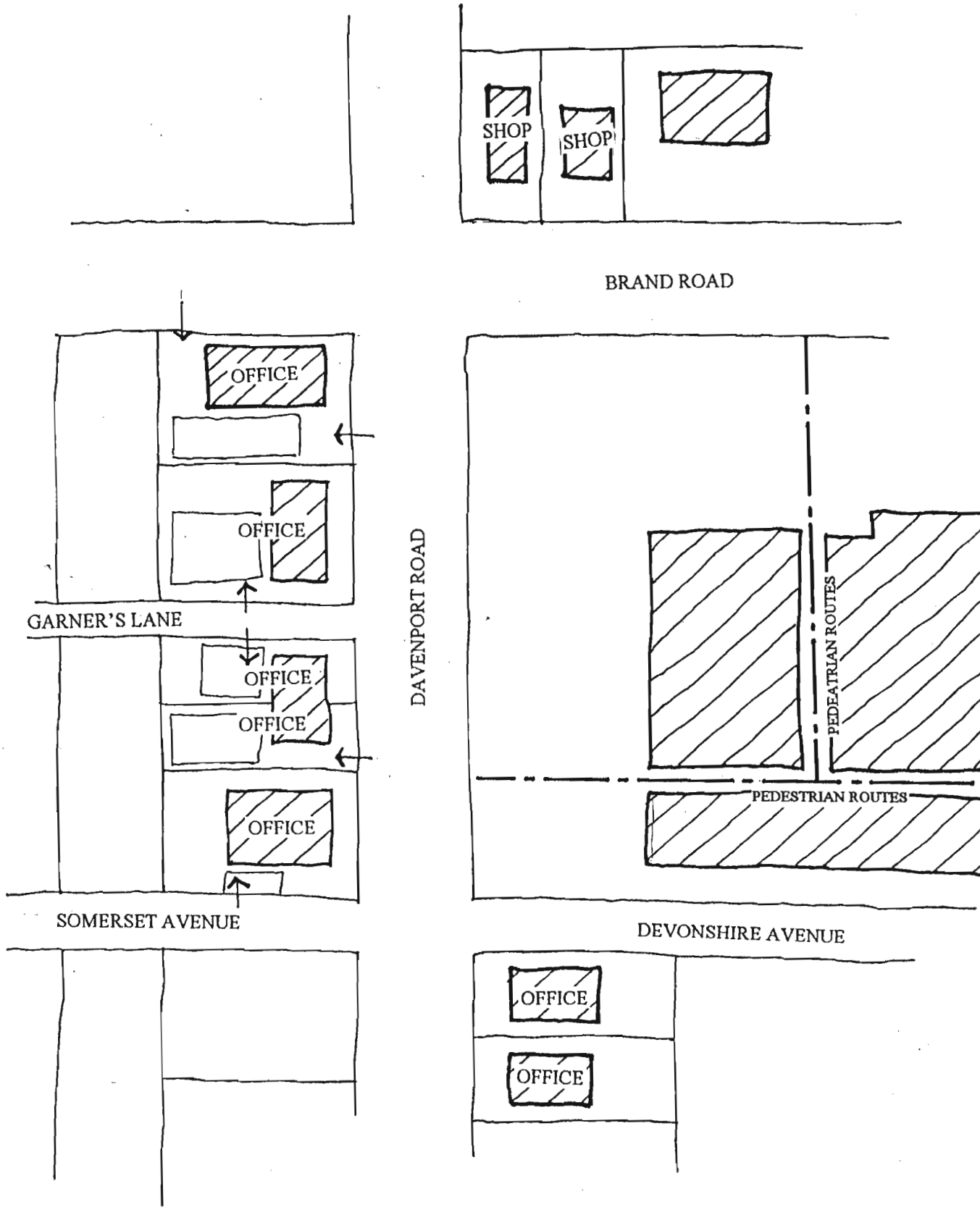
FIGURE	32



DAVENPORT
MIXED LAND USE PRECINCT
ANALYSIS

EXISTING SITUATION
DEVONSHIRE AVENUE AREA

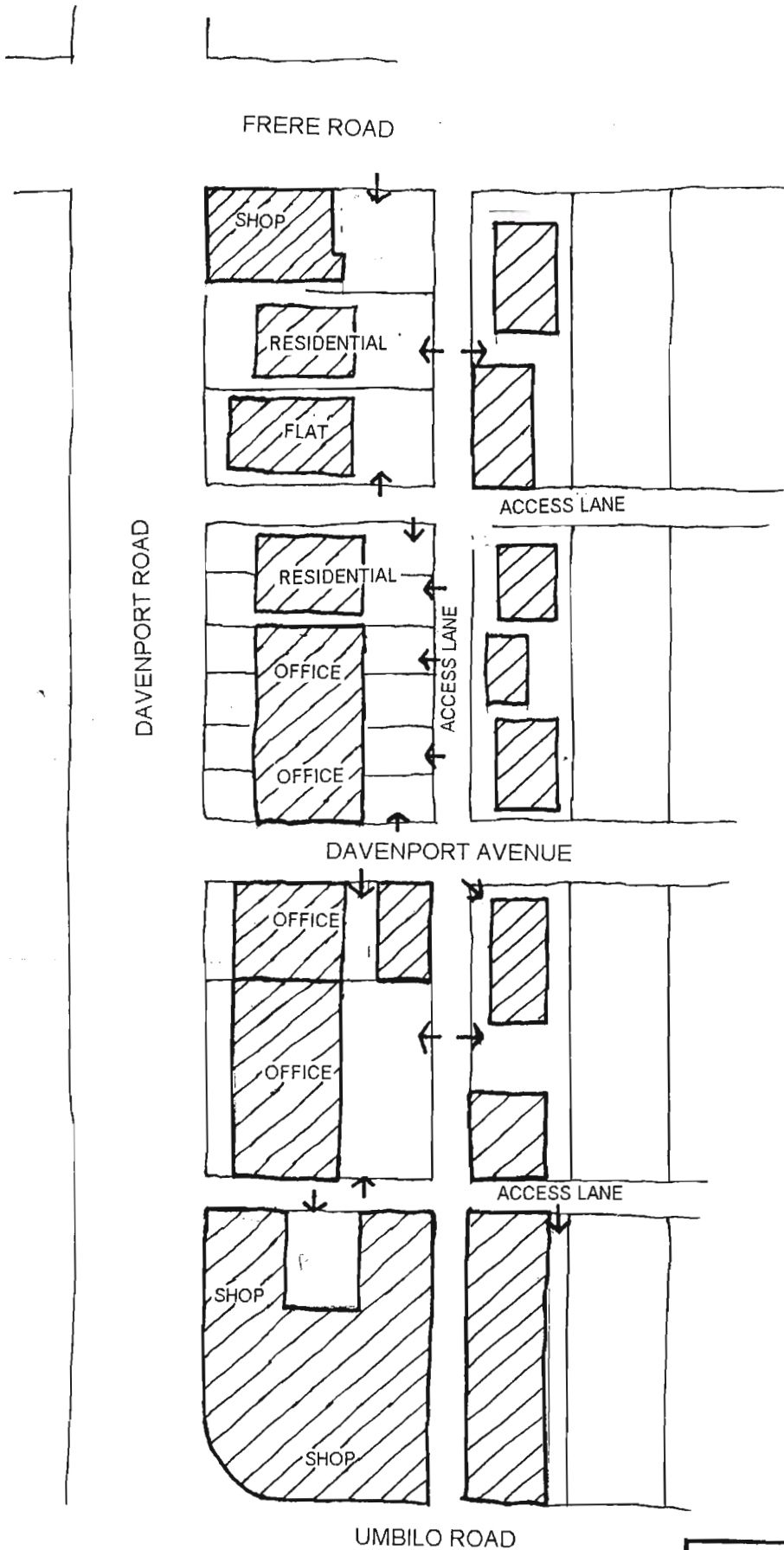
FIGURE	33



DAVENPORT
MIXED LAND USE PRECINCT
ANALYSIS

EXISTING SITUATION
DAVENPORT SHOPPING CENTER
OFFICE AREA

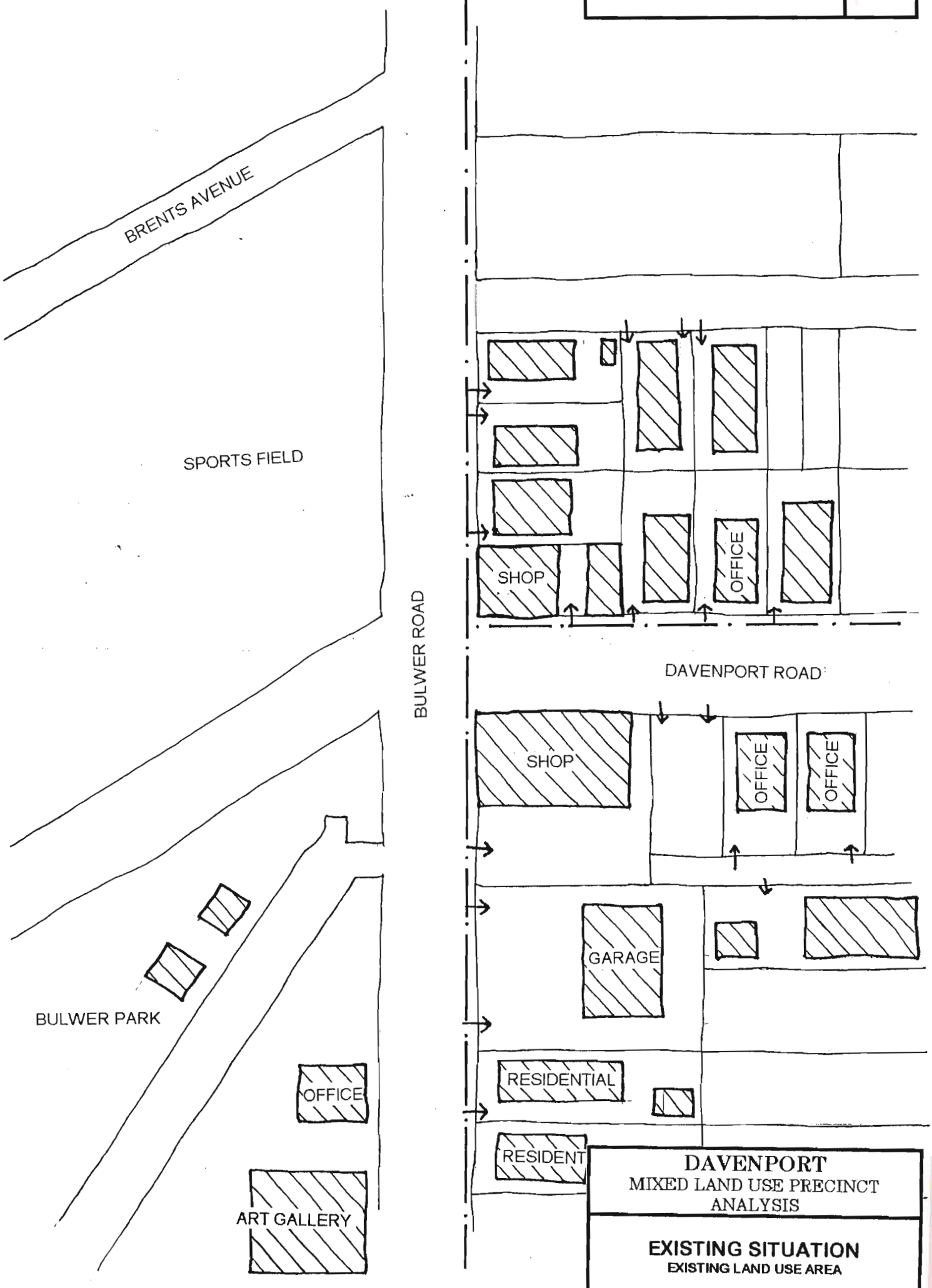
FIGURE	34



DAVENPORT
MIXED LAND USE PRECINCT
ANALYSIS

EXISTING SITUATION
DAVENPORT OFFICE AREA

FIGURE	35



DAVENPORT
MIXED LAND USE PRECINCT
ANALYSIS

EXISTING SITUATION
EXISTING LAND USE AREA

5.6. TOWN PLANNING SCHEME, BEREA SOUTH.

The Berea South area was the first area in the Durban area to have a Town Planning Scheme. The first planning scheme for the area was developed and approved by the City Council in 1967. The Town Planning Scheme for the area was subject to an extensive review in 1984. This section of the report will look at the Berea Town Planning Scheme produced by the Durban City Council in 1965 and reviewed in 1987.

The development of the Town Planning Scheme for the Berea area was to encourage and police the development of the area to a set of standards and requirements. The scheme also provides a guideline for the provision of community facilities and services.

The study area fall under the Bulwer sub-region of the Berea South Town Planning Scheme. The area comprises mainly of General Residential 2 with a General Shopping zone in the middle.

The development proposals put forward in the Town Planning Scheme as well as the regulations set out in the scheme to control development will also be looked at in this section of the report The Bulwer sub-region of Berea will be examined in terms of residential use, Shopping, and open space. The building regulations such as Building setbacks, coverage, FAR, height and parking will also be examined.

5.6.1 ZONES SCHEME:

The Town Planning Scheme makes provision for the establishment of a zoning scheme (See Figure 37) in which lots are allocated a specific zoning. The study area comprises mainly of General Residential 2 with a number of General shopping zones throughout the area, there is also a

General Business zone located along Umbilo road. Church, and Open Space zones are located in the precinct.

RESIDENTIAL ZONE

In the Town Planning Scheme, provision has been made to prevent the development of curtain types of residential units on land designated for another type of residential use, e.g. the development of flats on Special Residential lots. In the scheme, flats may only be erected in General Residential areas, which may also contain pre scheme developments such as maisonettes or single dwelling units. This means that detached dwelling units would be confined to special residential zones. The introduction of this regulation would reduce the number of special consent applications. Special consent applications will still be used for the development of other types of activities in these areas such as Churches, crèches, and shopping etc.

The study area has been zoned as General Residential 2 which limits the use to the development of flats and other residential uses. Other land uses may be developed but only with special consent (See Appendix C). The development of any other land use on these sites has to comply with the above regulations, unless relaxation of these regulations is granted by the authorities

SHOPPING AND BUSINESS:

The Town Planning Scheme intends to make the residential areas self-reliant in respect to shopping facilities. The provision of shopping areas within the residential area, according to the Town Planning Scheme, will reduce congestion in the city center and reduce the demand on the public transport system, as well as enable the road network to cope with the volume of traffic. The increased use of private transport, and the development of shopping areas in the residential area has created

FIGURE 36

LISTED BUILDINGS
SCHEME BOUNDARY
BULWER ZONE

KEY

- SPECIAL RESIDENTIAL MINIMUM LOT SIZE 900m²
- SPECIAL RESIDENTIAL MINIMUM LOT SIZE 650m²
- MAISONETTES MINIMUM LOT SIZE 900m²
- GENERAL RESIDENTIAL 1
- GENERAL RESIDENTIAL 2
- GENERAL SHOPPING
- GENERAL BUSINESS 2
- INSTITUTIONAL 1
- INSTITUTIONAL 2
- PLACE OF WORSHIP
- EDUCATION 2
- CRÈCHE
- PETROL SERVICE STATION
- PUBLIC OPEN SPACE

DRAWING

DAVENPORT
MIXED LAND USE PRECINCT ANALYSIS

EXISTING USE RIGHTS

PROJECT TITLE:

DAVENPORT MIXED LAND USE PRECINCT ANALYSIS

BEREA SOUTH

SCALE 1 : 6 000

DATE 01 OCTOBER 1997

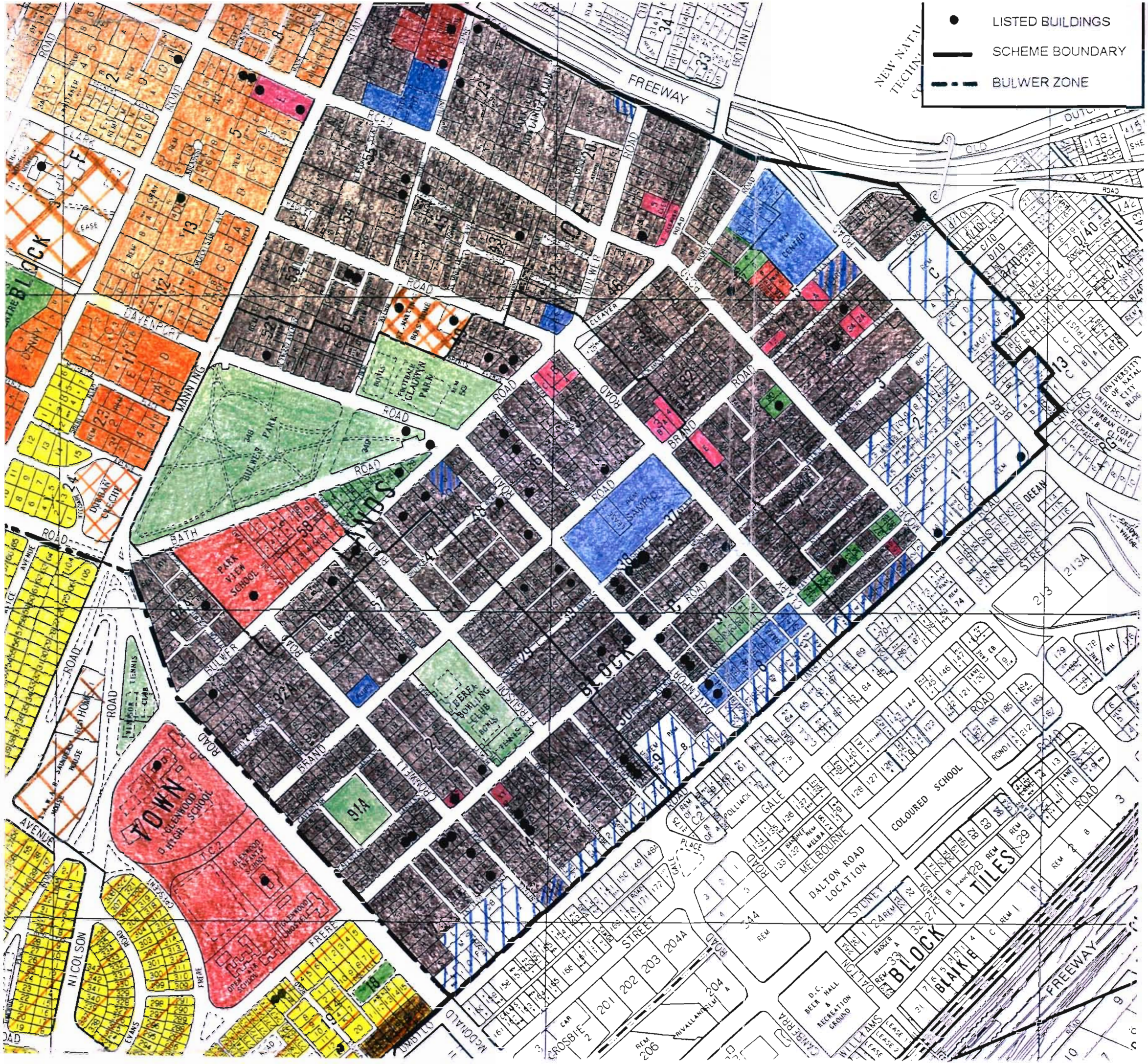


FIGURE	37

KEY:

- SPECIAL RESIDENTIAL MINIMUM LOT SIZE 900m²
- SPECIAL RESIDENTIAL MINIMUM LOT SIZE 650m²
- MAISONETTES MINIMUM LOT SIZE 900m²
- GENERAL RESIDENTIAL 1
- GENERAL RESIDENTIAL 2
- GENERAL SHOPPING
- GENERAL BUSINESS 2
- INSTITUTIONAL 1
- INSTITUTIONAL 2
- PLACE OF WORSHIP
- EDUCATION 2
- CRÈCHE
- PETROL SERVICE STATION
- PUBLIC OPEN SPACE

DRAWING TITLE:

ZONING SCHEME

PROJECT TITLE:

DAVENPORT
MIXED LAND USE PRECINCT ANALYSIS
BEREA SOUTH

SCALE: 1: 6 000
DATE: 01 OCTOBER 1997

congestion in these area, and reduced the number of people using public transport over the past 10 years.

The Town Planning Scheme has identified a number of shopping areas within the Bulwer area of the Berea South Town Planning Scheme. These centers have been arranged so that they are within 500m walking distance to the residential lots they intend to serve. Due to the area being heavily built up, only two sites could be provided for major shopping areas. The Town Planning Scheme makes provision for the zoning out of some of the smaller shops centers and corner shops on the basis that they contribute to traffic congestion or the over provision of shopping facilities in a specific area. Provision has also been made for the establishment of service industries that are essential for the day-to-day needs of the community. The scheme stipulates that these service industries must not influence the surrounding residential areas and not cater for the city wide area.

The shopping zones have been divided into shopping in General Residential, which allows for the development of flats within the bulk regulations of the shopping zone. This increases the height within these zones. The development of flats in shopping zones within special residential zones should be limited. These shopping zones should fit in with surrounding residential uses. This control of the development of residential units in shopping areas both in General Residential and special residential influences the bulk curve or skyline of the area. (See Figure 38)

The main areas identified as shopping zones in the scheme are, The corner of Hunt road and Moore road being Buxton Center. The land lying between Brand road, Clark road, Devonshire Avenue and Davenport road being Davenport Square Shopping Center.

Subsequently the area between Noble road and Berea road has been developed into a shopping area known as the Berea Center.

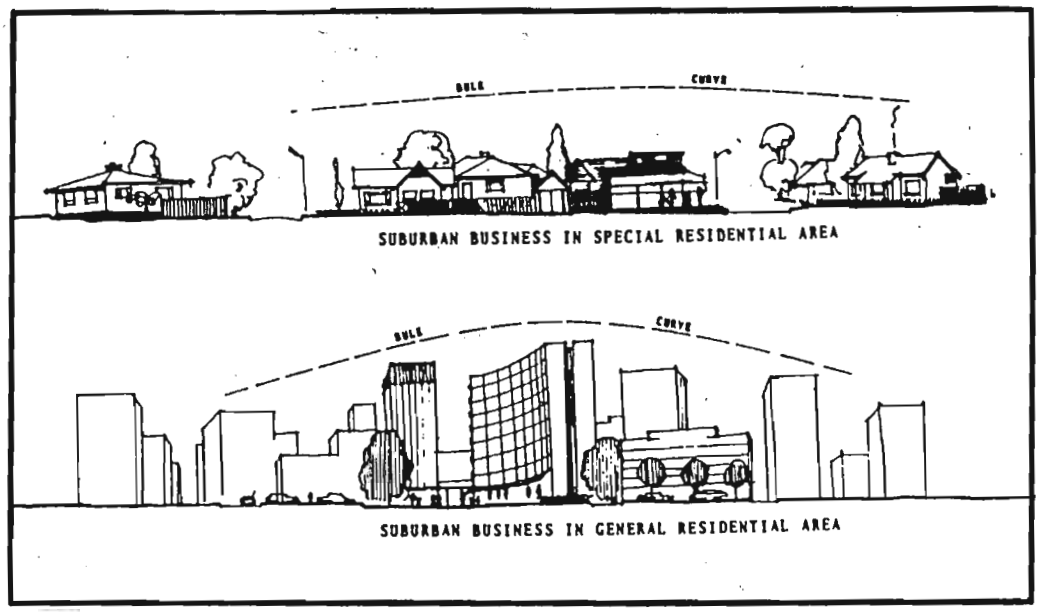


Figure 38: The form of shopping centers in the Berea
(source Town Planning Scheme 1967)

The General Shopping zone in the Town Planning Scheme allows for the development of the following activities on a General Shopping lot: Institutional, offices, residential building, restaurants, and shops. The development of the following may be allowed with a special consent approval: dry cleaners, licensed hotel, laundry, parking garage, petrol station, place of amusement, place of instruction, place of worship, shop for sale of motor vehicles, service industry etc. (See Appendix 3).

The purpose of establishing a General Business 2 zone along Umbilo road is to buffer the General Residential area in the lower Bulwer area from the General Industrial zone below it. The General Business 2 zone allows for the establishment of business premises as well as light

industrial buildings (See Appendix 3). The provision of a General Shopping zone between Davenport road and Clark road along Davenport avenue also provides a buffer between the industrial activities and the residential activities in the Berea area.

The Bulwer area provided 42 358 m² of the 64 095m² of shopping area for the Berea South area in 1984. Of this 55% was located in the area between Davenport road and Moore road. Of the areas designated for General Shopping in the Bulwer area, the only area that is not fully developed is the Davenport/Umbilo area.

OPEN SPACE:

The Town Planning Scheme makes provision for Open Space through the establishment of Play Lots and Active and Passive open space. The Town Planning Commission's standards for children's playlots in residential areas is 0.5 ha per 1 000 people. If these standards are applied to the Bulwer area there is a deficiency of open space in the area. However within the Bulwer area there are large areas of open space such as the Bulwer Park which can be used by the children in the area. The provision of open space in the Bulwer area is a serious one owing to the high density in the area.

The development of Active open Space is also a problem due to the area being densely developed. The residents of the Bulwer area will have to travel to use Active open space. It is possible to improve the situation of Passive Open Space by the acquisition of small areas of land for play lots, but this is impossible for the provision of Active Open Space as the areas needed are large. The acquisition of land in the Berea is a problem as the land is expensive. An example of this acquisition of land is that of the area along Davenport Avenue between Clark road and Davenport road. Residential properties in this area were old and due for

redevelopment. The location of this site is a problem as people never used the area due to it being located in the middle of a residential area, with only limited access along narrow lanes. This has subsequently caused the area to be rezoned for General Residential 2 purposes. Other areas, that were acquired for open space, are areas along Noble road which, like the area in Davenport Avenue, is poorly located. The only area that has any use is the area along Bulwer road and Bath road. This area has been incorporated into the existing Bulwer Park.

TABLE 4: OPEN SPACE REQUIREMENTS FOR BULWER AREA (1964)

OPEN SPACE TYPE	REQUIREMENT IN HECTARES	AVAILABLE IN HECTARES
PASSIVE OPEN SPACE	77.04	61.3
ACTIVE OPEN SPACE	90.96	17.2
TOTAL OPEN SPACE	168.0	78.5

SOURCE (TOWN PLANNING SCHEME 1964)

The amount of open space required in the Bulwer area has not changed significantly over the years due to the area being well developed (See Table 4).

The authorities proposed that the community have access to school grounds for recreation activities.

With the review of the Town Planning Scheme in 1984 the authorities revised the standards of 2.83 ha per 1 000 people to and area of 2.0 ha per 1 000 people. The reasoning behind this was:

- The availability of the beach. The authorities encouraged the development of facilities along the beach front.

- The provision of major recreation facilities outside the Bulwer residential area: and
- Conclusions drawn from a detailed investigation of recreation demands in the residential districts of Old Line Suburbs

ROAD STRUCTURE:

The Town Planning Scheme makes provision for the closing of a number of streets in the Berea area. With the review of the scheme in 1984 the authority recommended that these closures only occur when financially viable or when necessary. They also pointed out that a number of lots gain vehicular access along these narrow streets. These streets are also necessary for the maintenance of services.

5.6.2 DEVELOPMENT REGULATIONS:

The regulations in regard to building lines, side and rear spaces, and off-street parking, have been designed to protect the character and amenities of the area generally, but cases will occur when it would be an undue hardship not to grant relaxation in certain respects. In fact if regulations are observed to the letter, on certain smaller lots and lots on steep slopes, it would result in these areas being considered undevelopable. The minor relaxation of regulations can result in a better form of development.

COVERAGE

In the 1967 Town Planning Scheme the coverage for multi-unit buildings was 20%, this was to ensure adequate space around the building which would create a better living environment for the community due to the following reasons:

- It would avoid the interference with each other's amenities;
- The provision of space on site for children's recreational purposes;
- Improve aesthetics of the area through the development of gardens; and
- Avoid the distruction of trees in the area.

Due to low coverage the General Residential buildings are somewhat taller which leads to criticism of the low coverage due to the fact that buildings interfere with each others views. The authorities however state that due to the large spaces between building views are not obstructed.

With the review of the regulations in 1984 the coverage of General residential was increased to 40% to create an area of high density. This was done with the lower Berea/Bulwer area in mind. It was used to create a barrier between the industrial area along Umbilo and the residential areas of Berea South. A number of developments that proceed the Town Planning Scheme have higher coverage that the proposed 40% of the Town Panning Scheme. These developments remain, but new development must comply with the coverage regulations

BULK FACTORS AND DENSITY CONTROL:

In the past, the Town Planning Scheme used the Floor Space Index system to limit the bulk of buildings and indirectly the density of occupation of each lot.

Today the Floor Space Index system is considered outdated and has been abandoned by the City Council. The Floor Space Index has been replaced by the Floor Area Ratio in the Berea area as well as in the other areas of Durban **(See Appendix F).**

The Berea area has been divided into two main areas, namely, the Upper Berea and Lower Berea. This division is to permit greater densities in the Lower Berea, while keeping the densities lower in the upper Berea. The standards are slightly lower in this area but the amenity standards have not been lowered in the passed ten years.

BUILDING LINES:

The standard building line throughout the residential area within the Berea Town Planning Scheme is 7,5m, with the size and shape of many of the lots in

the area being small and irregular. This has prompted the reduction in the building line to 4,5m on sites that are small.

The objectives of the Building Lines in the Berea Town Planning Scheme are as follows;

- The enhancement of the street picture by increasing the distance between buildings on either side of the street;
- The land between the buildings and street becomes available for the development of gardens and the planting of trees, thus increasing the aesthetic appeal of the area;
- The distance between the buildings and the roads enables the streets to be widened without unduly interfering with the ultimate aesthetic standard; and
- The areas between the buildings can be used for parking, while the areas in front can be used for un-loading and parking which reduces the interference with the general movement of traffic on the streets.

A number of the buildings in the study area are pre scheme and often do not comply with the building lines. This causes problems with other controls such as parking.

PARKING REGULATIONS:

Parking in the Berea has been a problem in the past, with developments (especially multi-unit residential, commercial and industrial developments) not having provided adequate off-street parking. The standards that have been set in the Berea Town Planning Scheme regulate the minimum parking requirement for both Shopping zones and General Residential.

TABLE 5: PARKING REQUIREMENTS

ZONING	PARKING
GENERAL RESIDENTIAL 2	1 BAY PER UNIT
GENERAL SHOPPING	1 BAY PER 15m² OF FLOOR SPACE
GENERAL BUSINESS 2	1 BAY PER 150m² OF INDUSTRIAL FLOOR AREA (1) 1 BAY PER 30m² OF COMMERCIAL FLOOR SPACE
PLACE OF WORSHIP	1 BAY PER 8 PEOPLE OR AREA FOR SEATING

SOURCE (DURBAN CITY COUNCIL 1997)

(1) SEE APPENDIX 4:- off street parking formula for special shopping and general business 2 zones.

Due to the small size of the lots in the Berea area, developers can apply for the relaxation of the parking standards. If the lot that is to be developed is less than 1 hectare, but greater than one half of a hectare the developer only needs to provide 75% of the required parking stipulated by the regulations. If the lot is less than one half of a hectare, then the developer only needs to provided 60% of the required parking.

THE SPECIAL CONSENT PROCEDURE:

The Special Consent procedure allows the City Council to exercise it's discretion as to whether a related land use can be developed in a particular zoning. For example, the development of offices and commercial activities on lots that have been impacted by the shopping zone around Davenport Square Shopping Center. The City Council needs to take into account the effect of such a development on the surrounding amenities. Such discretions are difficult to exercise as they are isolated and there is no consistency in the policy which is followed. Even if there was consistency on the part of the City Council, the whole procedure is open to an Appeals procedure, whereby the applicant or any other objector can take the decision on appeal.

Within the study area there are three area were special consent use is allowed. Fistly there are the areas around the Shopping and General Business nodes. These area have been impacted upon by these activities. Secondly there area the areas around Existing Use Rights, and thirdly there are listed buildings which through Special Consent have been changed into offices to preserve their architectural style.

LISTED BUILDINGS:

A number of buildings in the Berea South Town Planning Scheme have been listed as historical buildings due to the type of architectural design and age. Most of the houses that have been listed have been built in the Edwardian and Union periods and were designed in a Victorian style (See Figure 39).

Figure 39: Listed building uses as offices along Bulwer Road.

The City Council permits these listed building to be used as offices where it is unsuitable to remain residential. They allow this on condition that the buildings are restored to their original styles, thus preserving them (See Figure 40).

Figure 40: Listed building uses as offices Along Brand Road close to General Shopping zone.

ADJACENT TO SHOPPING ZONES:

Lots that are located close to shopping zones are impacted on by the increase in congestion, traffic flows, pollution, noise and the demand for parking. Due to these impacts the buildings can be used for related uses through Special Consent applications. The development of these sites still has to comply with the existing regulations as existing buildings are still used. Due to the use of these regulations, the development of residential sites into commercial uses, result in the required parking bays not being provided due to the size of the lots.

TRANSTION ZONES:

Lots located near the Transition Zone (lots located near areas of mixed land use and Shopping and Business nodes) are impacted on by increases in traffic volumes, parking needs, congestion, noise and pollution. The areas around the Transition Zone can be changed (through special consent applications) to uses that relate to those already in the Transition Zone. Like the areas around the shopping zone, the change in land use has to comply with existing development regulations.

In the study area there is also a Interface Zone running along Umbilo Road. In this area lots have been impacted upon by the high traffic volumes and Light Industrial activities in the area. Through Special Consent residential lots in the area can be changed to surounding land use.

CHAPTER SIX

RECOMMENDED ACTION PLANS

6. INTRODUCTION

Action area Plans will be developed for three areas in the Davenport precinct where the most change has occurred;

- The area around the Davenport Square Shopping Center which has been impacted upon by the commercial node as a consequence of the increase in congestion, noise, traffic flows and pedestrian movement. The area that will be looked at includes the activities along Brand road, Devonshire road, and the offices along Davenport road.
- The area along Davenport road between Umbilo road and Frere road which has been impacted upon by the interface zone of light industries along Umbilo road. This area has a number of light industrial activities and listed buildings which through special consent, are being used as offices.
- The area of Existing Land Use Rights at the intersection of Davenport road and Bulwer road. In this area there are a number of commercial activities and offices using listed buildings as premises.

These Action Plans will set out guidelines for the integration of individual lots through the provision of adequate parking, strong linkages (through positioning of access points) and pedestrian movement channels so that a suitable environment for people to shop and work in can be created.

6.1. DAVENPORT SQUARE COMMERCIAL AREA:- ACTION PLAN

The commercial area around the Davenport Square Shopping Center is made up of individual commercial activities (located along Brand road and offices along Clark road, Davenport road and Devonshire Avenue). The commercial and office areas around the center have no strong linkages with the center. There are only two pedestrian access points linking the activities along Brand road and linking Clark road and Davenport road. The activities along Devonshire Avenue have no direct access to the center. The individual shops and offices in the area have no strong linkages with each other due to the individual development of lots and the barriers preventing access.

6.1.2 ACTION PLAN:

The action plan will be used to create an integrated group of existing individual lots so that parking needs, pedestrian access and linkages between lots can be provided. The Action Plan will use the Design Principles that have been established in the previous chapter.

LAND USE:

The type of activity that will be encouraged to locate in this area are activities that encourage, depend on, and support pedestrian traffic. For example, public facilities such as post offices and libraries and community halls that encourage people to use the area. The type of activities should complement the activities already located in the shopping center and should blend in with surrounding activities. Residential land use in this area should be encouraged to change to accommodate the activities mentioned above.

PARKING:

Parking in this area is important as people will be encouraged to park and walk. This will be achieved through the development of strong linkages between the activities and parking areas. The parking requirements therefore are for small well located parking areas close to shopping facilities (See Figure 42). The action plan makes provision for two small well located parking area behind the commercial activities along Brand road. Access to these parking areas will be from Cohen Avenue, Brand road and Davenport road. Vehicular access to these areas will be limited to only two points per parking area, while several pedestrian access points will be provided to allow for easy access to all areas of the commercial precinct. The location of the parking area, in relation to the buildings, will also allow for access to shops that need direct access for vehicles.

The areas along Devonshire road and Davenport road are mainly made up of offices and there for the linkage between building is not as important as in commercial areas. The parking is provided in small consolidated parking area at the rear of the offices with access from access lanes (See Figure 43 & 44)

LINKAGES:

For good pedestrian movement within a commercial area there needs to be strong linkages between activities. This also applies to parking. Parking will not be used if it has no linkages with surrounding activities.

To create strong linkages in the Davenport commercial area, shops should have direct, unhinded access by pedestrians. This is done by making provision (on all lots) for the establishment of walkways either through the center of new developments or down one side of the lot where buildings already exist. Provision has also been made for linkages

between lots by creating walkways that link adjacent lots (See Figure 41).

The creation of these walkways encourages people to move through the area and not use transport to get from one shop to the next. The establishment of linkages with the shopping center is important. This is done by improving existing pedestrian linkages (See Figure 44). These linkages need to be well defined, allowing people to identify these as pedestrian linkages. Restricting the parking of cars near these entrance points allows pedestrians to clearly see the linkages Align future linkages with existing pedestrian linkages and access to shops.

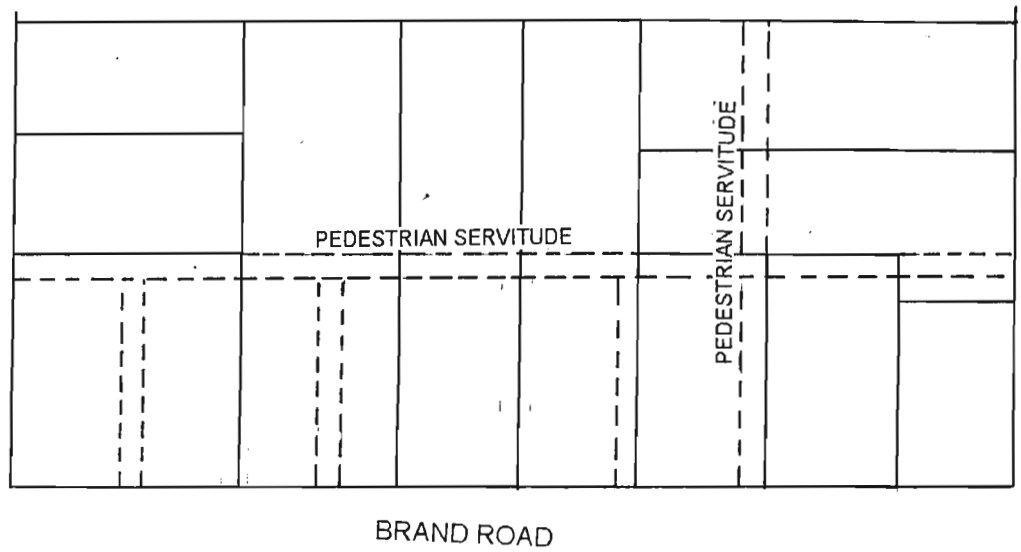


Figure 41: The establishment of servitudes within developments to increase linkages

ACCESS:

Access is closely related to linkages. In the commercial area along Brand road, vehicular access has been limited to only two points. This will reduce the conflict between vehicles and between pedestrians and vehicles (See Figure 42). Access to parking areas has been located on minor roads to reduce conflict. For the location of these access points (to parking areas along minor roads) to work, the access points need to be well signed. Pedestrian access on the other hand, has been increased along Brand road, to allow for easier access to shopping facilities as well as the parking areas behind the shops. Access points to the parking area of the shopping center need to be improved to prevent conflict and congestion along Davenport road and Brand road. The access points need to be located so that they do not conflict with vehicles waiting at the controlled intersection along Davenport road as well as the parking area behind the First National Bank. There is also conflict also between the number of access points to the shopping center and the access points on the other side of the road. The number of access points on both sides of the road needs to be reduced.

BUILDING REGULATIONS:

The building regulations need to be adapted to allow for new buildings to be located closer to the street (to allow for a more direct pedestrian access) and increase the area at the rear of the lot (to enable the creation of parking areas).

Coverage of sites needs to be increased to allow for more of the lot to be developed.The relaxation of setback to allow for developments to face directly onto the street. The land use zoning should allow for the development of mixed land use to enable the development of residential, offices and shops on the same site. This will increase the number of people using the area as well as increasing the variety in the area.

FIGURE	42

DAVENPORT
MIXED LAND USE PRECINCT ANALYSIS

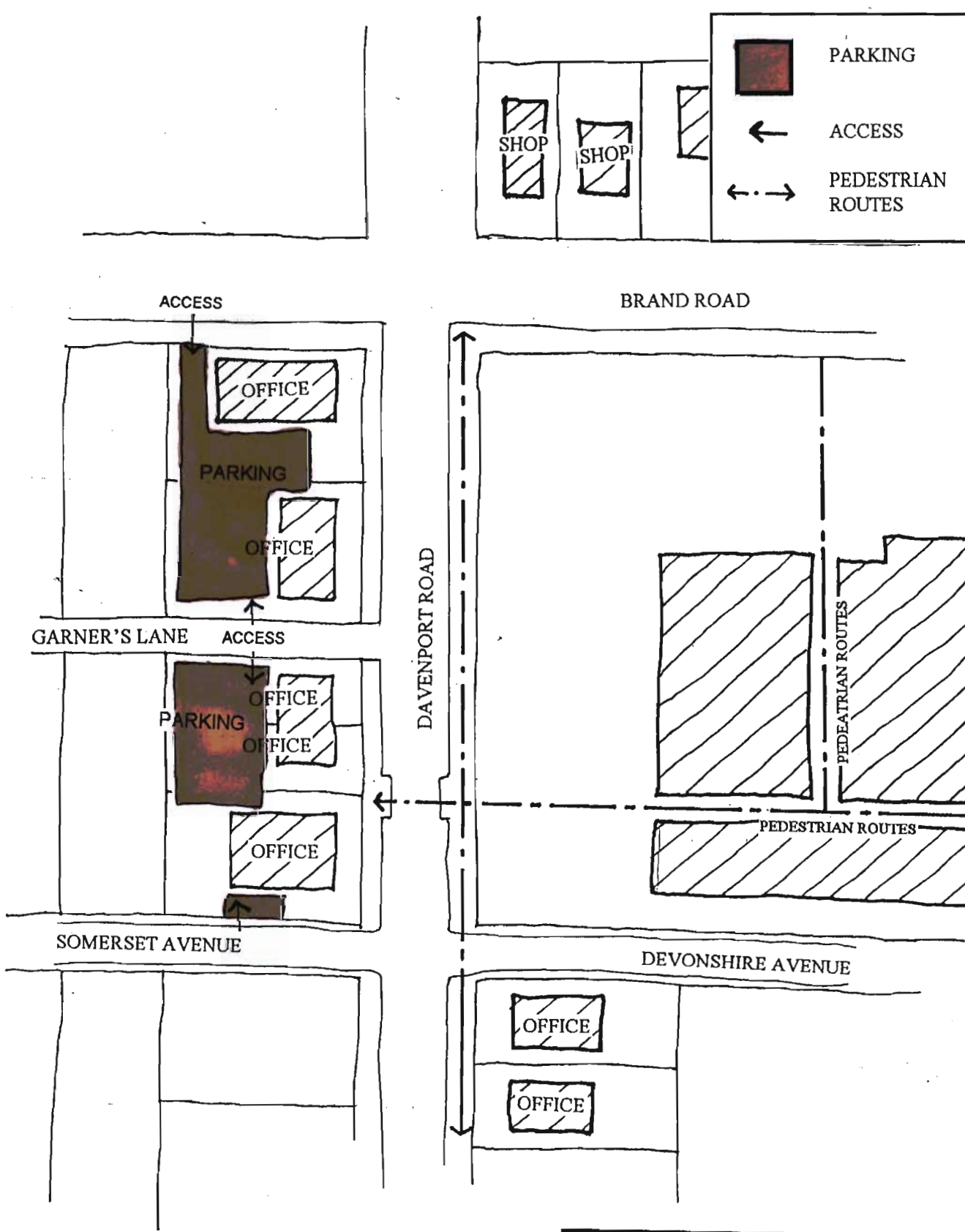
ACTION PLAN
DAVENPORT COMMERCIAL AREA

FIGURE	43

DAVENPORT
MIXED LAND USE PRECINCT ANALYSIS

ACTION PLAN
DEVONSHIRE AVENUE AREA

FIGURE	44



DAVENPORT
MIXED LAND USE PRECINCT
ANALYSIS

ACTION PLAN
DAVENPORT SHOPPING CENTER
OFFICE AREA

6.2. DAVENPORT OFFICE AREA:- ACTION PLAN

The area along Davenport road is made up of residential lots, offices, shops and light industrial activities. The buildings have been densely developed within the General Business 2 zone along Umbilo road. A number of these lots have Light Industry, shopping and residential activities in one building. Parking in the area is provided by small on-site parking lots located at the rear of the buildings and access to these areas is along small access lanes.

Access to the offices in the area is from the pavement along Davenport road. Access and linkage between offices is restricted by walls and fences along the street frontage separating buildings.

6.2.2 ACTION PLAN:

This Action Plan will establish an integrated area of offices and light industry (through the use of consolidated parking areas, access and land uses and adaptation of existing regulations). This Action Plan will integrate the light industrial areas with the area's offices. This will be done through the use of consolidated parking, access and linkages.

LAND USES:

The main type of land use in this area will be office use, with shopping uses in the Existing Use Right area at the intersection of Davenport road and Frere road. The creation of a shopping area at this point will address the areas shopping needs. The type of shopping envisaged for this area is day-to-day needs and services for the surrounding residential, and office areas. The General Business 2 zone along Umbilo road will not only provide services and shopping needs for the office area but also provide light industrial premises within the area.

PARKING:

Parking in this area will be provided through the creation of consolidated parking areas at the rear of the lots. Due to the size of the lots, additional areas for parking will be needed. This will be created by consolidating the service lanes into the parking lots (See Figure 45). The placement of the parking areas behind the office buildings will create a buffer between the commercial area along Davenport road and the light industrial areas located in the areas behind Davenport road and along Umbilo road.

ACCESS:

Access to the parking areas will be along the existing access lanes. The lanes that join both Davenport road and Umbilo road will be closed, to limit vehicular traffic crossing pedestrian routes and reduce congestion on these roads (by cars turning in and out of the access points to the parking lots). These lanes that have been closed to vehicular traffic will be used as pedestrian access only, to allow for a more direct access from the parking areas to Davenport road and to the offices facing the street and activities along Umbilo road (See Figure 45). The access to the parking areas will be located along existing minor roads such as Frere road and Davenport avenue.

LINKAGES:

Linkages in this area are not as important as in a shopping area, as people come to the area for a specific objective and do not have to move between buildings to achieve this. Linkages in the office area will be through the consolidated parking areas which will allow the user to move freely between buildings. The pavement will also be used as a linkages. For this to work, buildings need to be placed close to the front of the lot to allow for easier access to the building by pedestrians (See Figure 45). The existing lanes and road system allow for linkages with other

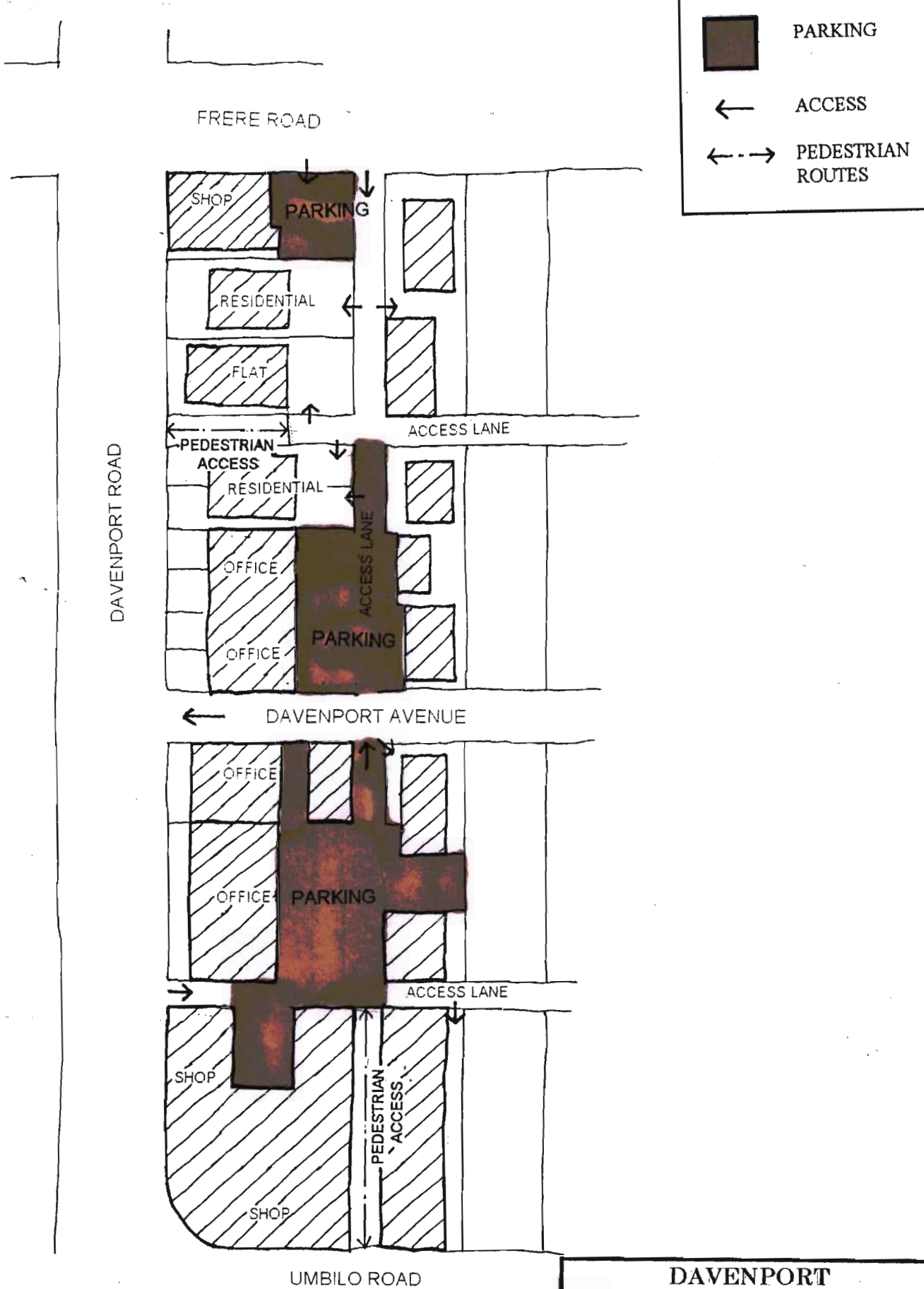
activities in the surrounding areas such as the shopping areas. The lanes link the areas along Clark road and Davenport road together. The creation of linkages that run between individual offices would increase the access to both the offices and the parking areas at the rear of the building.

BUILDING REGULATIONS:

The existing regulations that control the development in the area need to be adapted so that developments can provide parking and access to the users. Access to the lots can be provide by limiting parking in front of the lot and decreasing the area between the building and the lot boundaries. The coverage of the building needs to be controlled to allow for sufficient space for parking at the rear. The height of the buildings in the area need to be controlled so that the developments fit in with the surrounding residential areas. The height of the shopping areas (at the intersections of Umbilo road and Frere road) can be increased to create focus points within the area.

The development of new buildings, both offices and light industrial in the area, need to allow for access from both the street front and the parking areas. This would enable the parking areas to work more effectively.

FIGURE	45



DAVENPORT
MIXED LAND USE PRECINCT ANALYSIS

ACTION PLAN
DAVENPORT OFFICE AREA

6.3. EXISTING USE RIGHTS AREA:- ACTION PLAN

The area is made up of individual residential lots along Davenport road and Bulwer road. A number of these residential lots have been changed to office use through special consent, due to the buildings being listed or due to the impact on them from surrounding activities. The commercial facilities have located in this area due to the Existing Use Rights that occur on the corner of Davenport road and Bulwer road. Parking in this area is in the form of on-site parking. Due to the lots being originally residential the limited provision of parking in this area is a problem. Access to most sites is from the street and is restricted by physical barriers. The area has no strong linkages to the surrounding parks, school and playing fields.

LAND USE:

The type of activities in this area should be the kind that blend in with the surrounding residential dwelling units, such as small corner shops, neighbourhood shopping facilities, service activities (that do not impact on neigbouring lots) and offices. Any further commercial development should take place along Bulwer road, as this road has better access and linkages with possible parking areas on the opposite side of the road. The residential character should be kept along Davenport road by only allowing residential dwelling units to be used as office developments.

PARKING:

Due to the type of activities in the area, a large amount of parking is not required. The offices in the area are mainly professional practices which do not generate large volumes of customers and traffic. The only area that will require a fair amount of parking is the commercial areas on the corner of Davenport road and Bulwer road and the Art Gallery in Bulwer Park (on the opposite side of Bulwer road). Parking at the Art Gallery and offices in Bulwer Park can be provided by providing a

parking area along Bath road which runs behind the Art Gallery (See Figure 46). This parking area can also be used by people using the park as well as the commercial area on the opposite side of Bulwer road, provided good linkages and access are established between the two areas. Small numbers of on-site parking can be provided in the area, which would provide parking for the office uses in the area, but a larger parking area needs to be developed for the proposed restaurant that is being developed in the Existing Use Rights area. This can be done by incorporating adjacent sites into the development to provide a consolidated parking area.

ACCESS:

Access to commercial facilities in the area is established due to these facilities having been there before the Town Planning Scheme was established. The commercial facilities have direct pedestrian access from the road. This has been created by the buildings having been built on the street front. Offices on the other hand (like most offices in the Davenport Precinct) have poor access due to the barriers and buildings been setback from the street. This is due to the nature of the building, namely being of a residential nature that has been turned into commercial use. These barriers need to be removed to allow for stronger linkages and access. Areas in front of office developments need to be open, allowing easy access to buildings by pedestrians.

LINKAGES:

There are no strong linkages between the activities on either side of Bulwer road. These linkages need to strengthened by creating pedestrian links across Bulwer road and pedestrian links between the parking areas and commercial activities within the area (See Figure 46). The commercial and community facilities outside the area (such as the school

and the Davenport Square commercial node) need to be linked into this area.

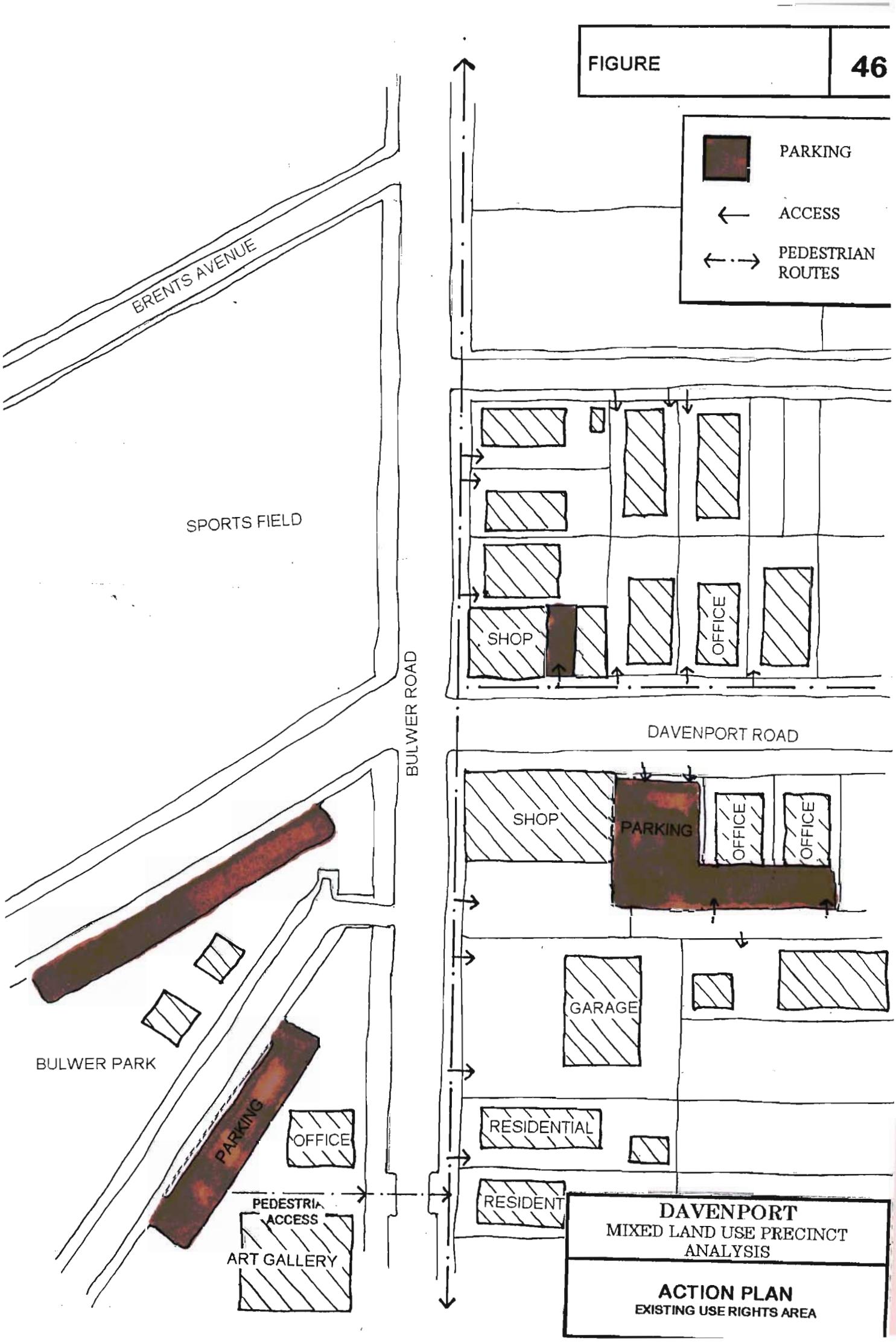


FIGURE
46
PARKING
ACCESS
PEDESTRIAN ROUTES
BRENTS AVENUE
SPORTS FIELD
BULWER ROAD
DAVENPORT ROAD
SHOP
OFFICE
SHOP
PARKING
OFFICE
OFFICE
GARAGE
BULWER PARK
PARKING
OFFICE
RESIDENTIAL
RESIDENT
PEDESTRIA
ACCESS
ART GALLERY
DAVENPORT
MIXED LAND USE PRECINCT
ANALYSIS
ACTION PLAN
EXISTING USE RIGHTS AREA

CHAPTER SEVEN
CONCLUSIONS

In this chapter the main points of this report will be summarized to give an overview of the findings. Within the Durban Metropolitan Area certain residential areas have been impacted upon by the increased demand for industrial and commercial land. This demand within the built up areas of Durban has caused the spread of commercial activities into the residential areas. The change in technology and the use of the private vehicle has also influenced the move of business out of the C.B.D. where rent, crime and congestion are high. This move (of business into the outlying residential areas) has caused a number of problems.

The examination of the Davenport mixed land use precinct (which is located near the transitional zone between light industry and business and residential use) has deduced that the area is affected by the movement of non-residential activities into the area to create a Mixed Land Use precinct. The introduction of these non-residential activities increases congestion (through the increased use of vehicles by people going and coming from work, as well as people shopping in the area). The increase in congestion is also created by commercial activities in the area not providing sufficient parking (due to lot size, poor policing of standards, and the use of previously residential buildings for offices and shops which do not allow for sufficient space for parking).

People interviewed within the Davenport area indicated that access to facilities in the area was restricted due to crime levels within the city as well as the use of residential dwellings as offices and shops. These perceptual barriers created areas of private space in front of shops and offices where potential customers felt that they could not enter. The linkage of facilities was also a problem, with pavements being the only pedestrian linkage between activities. These

pavements were poorly maintained with untrimmed trees and street furniture blocking the path of pedestrians. The parking of cars on the pavement was also a problem, as it obstructed pedestrian flows, as well as obscured access points.

The land use in the area varied from office use to medical and light industry. The major commercial area was the Davenport Square Shopping Center which created the most problems, namely congestion, pedestrian movement, access and linkages. The center had limited access and linkages to surrounding areas. The only pedestrian access to surrounding areas was along a walkway that ran through the middle of the shopping center. The location of activities in the area also depended on the type of activity. The light industrial and service industries are located near Umbilo road, while the medical and commercial activities are located around the Davenport Square Shopping Center. The offices are randomly located throughout the area from the light industrial area to the area around the shopping center.

The Davenport precinct falls under the Berea South Town Planning Scheme. It provides two tools for the development of the Berea South Area. Firstly the zoning scheme, which restricts the type of uses that can be built in the area. These restrictions help to prevent externalities that are caused by the location of non-conducive activities together, such as light industrial areas (that create pollution and noise near residential areas). The study precinct is zoned General Residential 2, with a General Shopping zone along Brand road and General Business 2 along Umbilo Road. The General Residential zone allows for the development of any type of residential dwelling from detached housing to flats. The areas was zoned General Residential 2 to create a buffer between the upper residential areas of Berea South and the Industrial zone in Umbilo.

The second tool is development regulations which control the form, intensity and location of individual buildings on a lot. The intensity of development is controlled by the following regulations, density, setback, bulk factor and floor

area ratio and building coverage. The location of buildings on a lot is controlled by the setback, building height and coverage. Other factors such as parking, access, and landscaping are also controlled by the Town Planning Scheme in order to provide a safe environment for people to live in.

The problem with the existing Town Planning Scheme is that it controls and encourages the development of individual lots, and does not encourage the development of lots in a group to provide good access and linkages between individual lots. Due to the increased pressure for change in land use (in the Davenport precinct) the authorities allowed the change of the use of the land through Special Consent applications. The authorities allowed these Special Consent application for the following reasons;

- The impact of the interface zone along Umbilo road. The surrounding residential areas were being affected by the congestion, increase in traffic flows, pollution and noise created by the light industry along Umbilo road. It was for these reasons (and the existing General Business 2 zone) that the authorities allowed surrounding residential lots to be used as light industry, service industry and offices.
- The areas around existing shopping zones, namely the area around Davenport Square Shopping Center, which was been impacted upon by the increase in traffic flow, parking needs, and pedestrian movement. The areas affected were mainly opposite the center along Brand road, Clark road, Davenport road and Devonshire avenue. The types of activities allowed to locate along these roads (opposite the center) were shops and offices.
- The use of Listed Buildings as offices. Listed buildings, were buildings identified by the authorities that had architectural value and were worth keeping. The authorities allowed these buildings to be used as offices as they would be renovated and kept in good condition. These listed buildings are located throughout the study area but mainly along Davenport road.
- The Existing Use right area within the study precinct are areas that were used for commercial purposes before the Town Planning Scheme was put in

place. The authorities (through the use of the Town Planning Scheme) rezoned these commercial areas to General Business 2 but where shops existed they were allowed to remain.

The use of these individual residential lots as commercial, light industry and service industry caused problems with parking, access, and linkages between facilities. The planning regulations did not allow for the establishment of integrated developments throught the provision of combined parking areas, access points and linkages between individual lots. The regulations (through control of the type of land use permitted in an area) prevented the mixture of land use types and prevented the creation of a more vibrant and accessible environment for the people to live in. The use of setbacks prevented pedestrian access from the street as well as the linking of adjacent buildings. The control of the existing regulations were limited, thus many individual lots did not comply with regulations creating problems for the surrounding activities.

Design Principles for the integration of individual lots into a group of activities were set out in chapter 4. Design principles for parking requirements, focused on the creation of consolidated parking areas (using a number of lots to create a parking area that services a number of shops and facilities). Parking was removed from the front of developments to create better access for pedestrians by reducing the front setback. The linking of development together was achieved through the creation of walkways, running through the middle of new developments, allowing direct pedestrian access to shops and parking areas. In existing developments, walkways were created along the side setbacks to link the front of shops to the parking areas at the rear. Linkages and access points were also made more visible through the removal of parking areas along the street (where access points are located) enabling the pedestrian easier access. The Design Principles suggested in this report have been developed not only for the Davenport area but with a little modification can be used in any mixed land use area.

Within the Davenport precinct these Design Principles were used to formulate Action Plans for four distinctive areas where change in land use has occurred. The principles were used to integrate existing developments on individual lots, so that they provide adequate parking, linkages (between adjacent buildings) as well as the major activities such as the shopping center within the area, create clear access points.

In summing up the dissertation, it has been shown that the development of individual lots in a mixed land use area is influenced by existing land uses. The side-by-side development provides neither adequate linkages, access nor parking. The existing regulations (which promote individual lot development) need to be adapted to allow for the development of a more holistic view of an area of mixed land use. The creation of new Design Principles needs to be introduce to create linkages, and access between lots as well as provide adequate parking facilities.

BIBLIOGRAPHY

Achimore. A. August 1993, Putting the community back into community retail Urban Land

Ahmed. F, Memela. N, Msezana. M, and Roberts. M. 1996. Glenwood Residential Analysis, University of Natal, Durban, Unpublished.

American Public Health Association,1948 Planning the Neighborhood, Public Administration Service, Illinois.

Cape Ordinance No 15 of 1985, 1990 Land Use Planning Ordinance, Juridata, Cape Town

Banerjee, T and Southworth, M. (Ed) 1990, City Sence and City Design, Writings and Projects of Kevin Lynch, The MIT Press, Cambridge, Massachusetts

Bookout, L April 1992 Neotraditional Town Planning, Bucking Conventional Codes and Standards Urban Land.

Branch, M.C. 1983. Comprehensive City Planning, Amercian Planning Association, Washington, D.C.

Bray, R. September 1992, Retail strip development: Urban Problem Unique to South Africa. Planning Journal 123.

City Engineers Department, 1965, City Engineers report on the planning of the Berea, City of Durban

Cutler, L and Cutler, S, 1972, Recycling The City For People, The Urban Design Process, Van Nostrand Reinhold Company, London.

De Chiara, 1975 Urban planning and design criteria, Van Nostrand Reihold, London

Dewar, D. 1984, Urban Poverty and city development some perspectives and guidelines, Carnegie Conference, paper No 163.

Dewar,D and Uytenbogaardt, R. 1991, South African Cities, A Manifesto For Change, Mills Litho (Pty) Ltd, Urban Problems Research Unit, University of Cape Town.

Eno Foundation for Highway Traffic Control, 1957 Parking, Eno Foundation, Saugatuck.

Greer, N. 1993 Unstripping the Strip Edinborough and centennial Lakes, Urban Land (April)

Herbert, D and Johnston, R, 1976 Social areas in cities Volume 1 Spatial processes and Form John Wiley & Son London.

Hough, M, 1995, Cities and Natural Process, Routledge, London.

Jacobs, A. 1985, Looking at Cities, Harvard University Press. Canbridge, Massachusetts.

Jocobs, J. 1962 The Death and Life of Great America Cities. Jonathan Cape. London

Kahn, M; 1981 Regional Shopping Centres Research Project : A Study of Shopping in Metropolitan Durban. The Natal Town and Regional Planning Commission.

Lynch, K. 1960 The image of the City, MIT Press, Canbridge Massachusetts.

Lynch, K. 1981, A Theory of Good City Form, MIT Press, Canbridge, Massachusetts.

Lynch, K. 1962. Site Planning. MIT Press, Canbridge Massachusetts.

McCarthy J. 1996 Planning the Durban Pietermaritzburg Corridor, Unpublished.

McCarthy J, and Smit D. 1984, South African City: Theory in Analysis and Planning, Juta, Cape Town.

McLaughlin, S.G. 1982, Retailing Economic Policies for Retail Strips, City of Toronto Planning and Development, Toronto.

McMillen, A. January 1976, Pedestrian Movement in a Local Plan, The Planner.

Moskowitz, H.S. and Lindbloom, C.G. 1981.The Illustrated Book of Development Definitions. Rutgers University, New Jersey.

Reed, D. September 1994. Urban Design on Main Street , more than Civic Kitsch, Planning Quarterly.

Schiller, R. July 1986, Retail Decentralisation, The Coming of the Third Wave, The Planner.

Simmie, J. 1993. Planning at the Crossroads, Universty College London Press, London.

Suchman, D. May 1993 Recreating Vermont Avenue, Urban Land.

Town Planning Branch, City Engineers Dept, 1986, Berea South Review, report on objections, City of Durban.

Urban Land Institute ULI, 1978.Residential Development Handbook. The Urban Land Institute, Washington D.C.

Urban Land Institute ULI 1987. Mixed-use Development Handbook. The Urban Land Institute, Washington D.C.

APPENDIX A

District of Columbia Zoning Regulations for Mixed-Use District

District of Columbia Zoning Regulations for Mixed-Use Districts

600 GENERAL PROVISIONS

600.1 The purpose of the mixed-use (CR) zone district shall be to encourage a diversity of compatible land uses, which may include a mixture of residential, office, retail, recreational, light industrial, and other miscellaneous uses.

600.2 Development shall be guided by an approved public policy or plan and through the use of the planned unit development, special exception, or other site plan review process.

600.3 By the use of the public review and planning powers, the provisions of this chapter also shall be intended to do the following:

(a) Help create major new residential and mixed-use areas in planned locations at appropriate densities, heights, and mixtures of uses;

(b) Encourage the preservation and rehabilitation of structures of historic or architectural merit in the District;

(c) Encourage areas devoted primarily to pedestrians by separating pedestrian and vehicular circulation patterns and by requiring off-street parking spaces in accordance with this objective and with the objectives of specific area plans;

(d) Encourage flexibility in architectural design and building bulk; Provided, that the designs and building bulk shall be compatible and harmonious with adjoining development over the CR district as a whole;

(e) Make recreation areas more accessible to the CR district's residents and visitors; and

(f) In a variety of ways, create environments conducive to a higher quality of life and environment for residents, businesses, employees, and institutions in the District of Columbia as specified in District plans and policies.

600.4 The CR district shall be applied to selected geographic areas where a mixture of uses and building densities is intended to carry out elements of the city's development plans, including goals in employment, population, transportation, housing, public facilities, and environmental quality.

600.5 A CR district may be located on the periphery of the Central Employment Area.

600.6 In certain of these areas, as designated now or in the future by public plans and policies, a mixture of uses and building densities shall be intended to promote and protect the public health, safety, convenience, order, prosperity, and general welfare of the community as best accomplished by the CR district.

600.7 Except as provided in chapters 23 through 25 of this title, in the CR district, no building or premises shall be used and no building shall be erected or altered that is arranged, intended, or designed to be used, except for one (1) or more of the uses listed in §§601 through 617.

601 USES AS A MATTER OF RIGHT (CR)

601.1 The following uses shall be permitted as a matter of right in a CR district:

(a) Dwelling, flat, or multiple dwelling;
(b) Rooming or boarding house;
(c) Community center;
(d) Hotel or inn;
(e) Church or other place of worship;
(f) Retail sales or services not specified in §602 and §§605 through 617;
(g) Office;
(h) Private school or trade school;
(i) Private club, restaurant, or fast-food restaurant; Provided, that a fast-food restaurant shall not include a drive-through;
(j) Artist's studio;
(k) Private or public theater;
(l) Boat club or marina;
(m) Swimming pool;
(n) Recreational building or use;
(o) Park or open space;
(p) Library;
(q) Museum; and
(r) Embassy, chancery, or international organization.

601.2 In addition to the uses provided in §601.1, the following uses also shall be permitted as a matter of right in a CR district:

(a) Youth residential care home, community residence facility, health care facility, or emergency shelter for not more than four (4) persons, not including resident supervisors and their families;

(b) Youth residential care home, community residence facility, or health care facility for five (5) to fifteen (15) persons, not including resident supervisors and their families; Provided, that there shall be no property containing an existing community-based residential facility for five (5) or more persons in the same square and that there shall be no property containing an existing community-based residential facility for five (5) or more persons within a radius of five hundred feet (500') from any portion of the subject property; and

(c) Child development center.

601.3 Accessory uses (including parking), accessory buildings, or accessory structures customarily incidental and subordinate to the principal uses permitted in §§601.1 and 601.2 shall be permitted as a matter of right in a CR district.

601.4 Subject to the provisions of §2501, mechanical amusement machines shall be permitted as a matter of right in a CR district as accessory uses to the following uses:

(a) Hotel or inn;
(b) Retail sales or services not specified in §602 and §§605 through 617;
(c) Restaurant or private club;
(d) Boat club or marina;
(e) Bowling alley; and
(f) College or university.

601.5 A child development home shall be permitted as a matter of right as an accessory use in a CR district; Provided, that the dwelling unit in which the child development home is located shall be the principal residence of the caregiver, and the use shall otherwise meet the definition of a home occupation.

602 PROHIBITED USES (CR)

602.1 The following uses shall be specifically prohibited in CR districts:

(a) Animal hospital or veterinarian;
(b) Car wash, as a principal use;
(c) Chemical manufacturing, storage, or distribution;
(d) Drive-in establishment (any establishment where goods or services are rendered directly to occupants of motor vehicles while in the vehicles);
(e) Enameling, plating, or painting (except artist's studio), as a principal use;
(f) Material salvage;
(g) Outdoor advertising or billboard as a principal use;
(h) Outdoor material storage;
(i) Packing or crating operations as a principal use;
(j) Parking lot;
(k) Gasoline service station;
(l) Smelting or rendering;
(m) Carting, express, moving, or hauling terminal or yard, except a cooperative central delivery or pick-up system for goods or merchandise solely to serve businesses in the area;
(n) Any industrial use prohibited in an M district;
(o) Any use first permitted in the M district;
(p) Any establishment that has as a principal use the administration of massages; and
(q) Sexually oriented business establishment.

§§603–604: RESERVED

605 PLANNING OFFICE REVIEW (CR)

605.1 Wherever the provisions of §§606 through 617 require referral of an application to the Office of Planning for coordination, review, and report, the coordination, review, and report shall consider the following:

(a) Whether the proposed use furthers the objectives of the mixed-use district;
(b) The relationship of the proposed use to other planning considerations for the area and the District of Columbia as a whole, including the plans, programs, and policies of other departments and agencies of the District government;
(c) The impact of the proposed site plan on neighboring properties;
(d) The proposed site plan, including the relationship of different uses on the site; and
(e) Any other matters that are within the Office's jurisdiction.

605.2 Wherever the provisions of §§606 through 617 require referral of an application by the Office of Planning to the D.C. Department of Public Works, the report by the Department of Public Works to the Office of Planning shall include the following matters related to transportation and the environment:

(a) Considerations of the traffic to be generated and its impact;
(b) The location and design of vehicular access and parking facilities;
(c) The number of parking and loading facilities;
(d) The treatment of public space;
(e) The availability of sewer and water capacity;
(f) The impact on air quality;
(g) The potential noise from commercial, industrial, and traffic sources; and
(h) Any other matters that are within the Department's jurisdiction.

606 HOSPITALS AND CLINICS (CR)

606.1 Hospital or clinic use shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of this section.

606.2 The hospital or clinic use shall be located so that it is not likely to become objectionable to surrounding and nearby property because of noise, traffic, or parking.

606.3 There shall be a demonstrated need for the facility.

606.4 The applicant shall submit to the Board a detailed plan for the hospital or clinic and accessory facilities, showing the following:

(a) Location, height, and bulk of all improvements, including but not limited to buildings, parking and loading facilities, screening, signs, and public utility facilities; and
(b) A description of the activities to be carried on at the hospital or clinic, including the capacities of the various facilities within the hospital or clinic.

606.5 Before taking final action on an application for hospital or clinic use, the Board shall refer the application to the D.C. Office of Planning for coordination, review, and report.

606.6 The report of the Office of Planning shall include the reports and recommendations of the D.C. Department of Public Works, as well as other departments and agencies of the District government as appropriate.

606.7 Before taking final action on an application for hospital or clinic use, the Board shall refer the application to the Office of Planning for review and report by the Department of Human Resources on the need for the facility as well as the specific design of the facility.

§607: RESERVED

608 UTILITIES (CR)

608.1 Use as an electric substation, natural gas regulator station, public utility pumping station, or telephone exchange shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of this section. . . .

609 BOWLING ALLEYS (CR)

609.1 Use as a bowling alley shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of this section. . . .

610 MANUFACTURING AND PROCESSING (CR)

610.1 Use for light manufacturing, processing, fabricating, or milling shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of this section. . . .

611 WAREHOUSES AND WHOLESALERS (CR)

611.1 Warehouse or wholesale use shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of §610 of this chapter.

612 BUILDING SERVICE TRADES (CR)

612.1 Use for building service trades, including but not limited to plumber, electrician, exterminator, or air-conditioning mechanic, shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of §610 of this chapter.

613 RESEARCH AND TESTING (CR)

613.1 Warehouse or wholesale use shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of §610 of this chapter.

614 VEHICLE SALES AND REPAIR (CR)

614.1 Use for automobile or motorcycle sales or repair shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of this section. . . .

615 COLLEGES AND UNIVERSITIES (CR)

615.1 College or university use shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of this section. . . .

616 COMMUNITY-BASED RESIDENTIAL FACILITIES (CR)

616.1 The following categories of uses as a community-based residential facility shall be permitted in a CR district when authorized by the Board of Zoning Adjustment in accordance with the conditions specified in §3108 of chapter 31 of this title, if the Board considers that this use is appropriate in furthering the objectives of the mixed-use districts, subject to the provisions of this section. . . .

617–629: RESERVED

630 HEIGHT OF BUILDINGS OR STRUCTURES (CR)

630.1 Except as provided in this section, the height of buildings and structures shall not exceed ninety feet (90').

630.2 Freestanding, primarily ground-supported signs shall not exceed twenty feet (20') in height.

630.3 In the CR district, the height of buildings and structures shall be measured as provided elsewhere in these regulations, except that height shall be measured to the highest point of the roof excluding parapets not exceeding five feet (5') in height.

630.4 A spire, tower, dome, pinnacle, or minaret serving as an architectural embellishment, radio or television tower, chimney, or smokestack may be erected to a height in excess of ninety feet (90').

630.5 If erected or enlarged as provided in §639, housing for mechanical equipment or a stairway or elevator penthouse may be erected to a height in excess of that authorized in the district in which it is located: Provided, that the housing or penthouse shall be set back from all lot lines of the lot upon which the structure is located a distance equal to their respective heights above the roof of the top story.

630.6 The roof structures shall not exceed eighteen feet six inches (18' 6") in height above the roof upon which they are located.

631 FLOOR/AREA RATIO (CR)

631.1 In the CR district, the floor-area ratio of all buildings and structures on a lot shall not exceed six (6.0), not more than three (3.0) of which may be used for other than residential purposes.

631.2 For the purposes of this section, the term "residential purposes" shall include dwellings, flats, multiple dwellings, rooming and boarding houses, community-based residential facilities, inns, and guest room areas and service areas within hotels.

631.3 For the purposes of this section, the allowable residential and nonresidential bulk of a CR district may be apportioned between two (2) or more lots in the same square, regardless of the normal limitation on floor area: Provided, that the aggregate residential and nonresidential floor area may not exceed the normal limits for the CR district.

631.4 A covenant running with the land and applicable to all properties involved in the apportionment shall be executed by all of the owners of the properties and the District government prior to the issuance of any building permits. The covenant shall be for the purpose of insuring that the total floor area does not exceed the limits applicable to residential and nonresidential uses.

§632: RESERVED

633 REQUIRED PUBLIC SPACE AT GROUND LEVEL (CR)

633.1 An area equivalent to ten percent (10%) of the total lot area shall be provided for all new development.

633.2 The area for new development shall be located immediately adjacent to the main entrance to the principal building or structure on the lot, and shall serve as a transitional space between the street or pedestrian right-of-way and the building or structure.

633.3 The area for new development shall be open to the sky or have a minimum vertical clearance of one (1) story or ten feet (10').

633.4 The area shall be suitably lighted and landscaped for public use and may be utilized for temporary commercial displays.

633.5 The space shall be open and available to the general public on a continuous basis.

633.6 The area shall not be charged against the gross floor area of the building.

634 PERCENTAGE OF LOT OCCUPANCY (CR)

634.1 No structure, including accessory buildings, devoted to residential use shall occupy more than seventy-five percent (75%) of the lot upon which it is located.

634.2 For the purposes of this section, the percentage of lot occupancy may be calculated on a horizontal plane located at the lowest level where residential uses begin.

634.3 For the purposes of this section, "residential uses" shall include dwellings, flats, multiple dwellings, rooming and boarding houses, hospitals, and community-based residential facilities.

635 PRIVATE RESIDENTIAL RECREATION SPACE (CR)

635.1 Private residential recreation space shall be that space suitably equipped and devoted to active or passive recreation for the residents of a particular residential building or structure.

635.2 Private residential recreation space may be located at ground level, on or above the residential plane, on rooftops, or within the building or structure: Provided, that seventy percent (70%) of the total of this space shall be open to the sky.

635.3 An area equal to fifteen percent (15%) of the gross floor area devoted to residential purposes shall be provided as private residential recreation space.

635.4 For the purposes of this section, "residential purposes" shall include dwellings, flats, multiple dwellings, rooming and boarding houses, and community-based residential facilities.

636 REAR YARDS (CR)

636.1 A rear yard shall be provided for each residential building or structure.

636.2 When the residential use begins at or below grade, the minimum depth of rear yard shall be three inches per foot (3"/ft.) of vertical distance from the mean finished grade at the middle of the rear of the structure to the highest point of the main roof, but not less than twelve feet (12').

636.3 When the residential use begins above grade, the minimum depth of rear yard shall be three inches per foot (3"/ft.) of vertical distance from the horizontal plane upon which the residential use begins to the highest point of the main roof, but not less than twelve feet (12').

636.4 The rear yard under §636.3 shall be provided at and above the residential plane.

636.5 In the case of a through lot or a corner lot abutting three (3) or more streets, no rear yard shall be required for any building or structure.

636.6 For the purposes of this section, "residential building or structure" shall include those used as or intended to be used as dwellings, flats, multiple dwellings, rooming and boarding houses, hospitals, hotels, inns, and community-based residential facilities.

637 SIDE YARDS (CR)

637.1 No side yard shall be required for any structure located in a CR district.

637.2 If a side yard is provided, its minimum width shall be three inches per foot (3"/ft.) of height of building, but not less than eight feet (8').

638 COURTS (CR)

638.1 Where an open court is provided in a CR district, the court shall have the following minimum dimensions:

(a) Residential building:
3 inches per foot of height of court, but not less than 10 feet

(b) Hotel and other permitted building:
2½ inches per foot of height of court, but not less than 6 feet [Errata]

638.2 Where a closed court is provided in a CR district, the court shall have the following minimum dimensions:

(a) Residential building:
Width: 4 inches per foot of height of court, but not less than 15 feet
Area: Twice the square of the required width of court dimension

(b) Hotel and other permitted building:
Width: 2½ inches per foot of height of court, but not less than 12 feet
Area: Twice the square of the required width of court dimension

638.3 For the purposes of this section, "residential building" shall include those used as or intended to be used as dwellings, flats, multiple dwellings, rooming and boarding houses, hospitals, and community-based residential facilities.

638.4 In the case of a building devoted to both residential and nonresidential uses, the minimum width and area of a court shall be computed as follows:

(a) When the residential and nonresidential uses are located on different floors of the building, the width and area requirements shall be computed for each use at the plane of each floor of the building; and

(b) When the residential and nonresidential uses are located on the same floor of the building, the width and area requirements for that plane shall be computed based on the requirements for residential buildings set forth in §§638.1 and 638.2.

638.5 No required opening for the admission of light and natural ventilation shall open onto a court niche where the ratio between the width of court niche and the depth of court niche is less than two to one (2:1).

638.6 No portion of a court niche shall be farther than three feet (3') from a point where the court niche is less than three feet (3') in width. . . .

APPENDIX B

Questionnaire and Results from Survey of Davenport Area

ANALYSIS OF
DAVENPORT COMMERCIAL AREA

DISSERTATION FOR
MASTER OF TOWN AND REGIONAL PLANNING
UNIVERSITY OF NATAL (DURBAN)

THE PURPOSE OF THIS QUESTIONNAIRE IS TO GATHER RELEVANT INFORMATION TO ANALYSE AND EVALUATE THE COMMERCIAL ACTIVITIES ALONG DAVENPORT ROAD AND AROUND DAVENPORT SHOPPING CENTER.

ALL INFORMATION GIVEN WILL BE DEALT WITH IN THE STRICTEST CONFIDENCE.

Please indicate choice with a X were applicable.

1 TYPE OF BUSINESS

1	RETAIL	
2.	SERVICE	
3.	CONSULTING	
4	PROFESSIONAL	
5	MEDICAL	
6	OTHER (specify)	

2. REASON FOR LOCATING IN THE DAVENPORT AREAS?

1	PROXIMITY TO CLIENTS	
2	RENTS	
3	CONGESTION OF CBD	
4	BUILDING REGULATIONS	
5	CRIME	
6	CLOSE TO OTHER BUSINESS	
7	OTHER	

3. **NUMBER OF EMPLOYEES.**

NUMBER OF EMPLOYEES	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
MORE THAN 10	

4. **NUMBER OF PARKING BAYS ON PREMISES FOR STAFF PARKING**

PARKING BAYS	
NONE	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
MORE THAN 10	

5. **NUMBER OF PARKING BAYS ON SITE FOR CUSTOMERS.**

PARKING BAYS	
NONE	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
MORE THAN 10	

SECTION TO BE COMPLETED BY INDIVIDUAL EMPLOYEES.

INDICATE ANSWER WITH A X

QUESTIONS	ANSWER
1. TRIPS TO WORK	
CAR	
BUS	
TAXI	
LIFT CLUB	
WALK	
MOTORBIKE	
BICYCLE	
2. PLACE OF RESIDENCE	
BULWER	
GLENWOOD	
MUSGRAVE	
ESSENWOOD	
SYDENHAM	
WINDERMERE	
MORNINGSIDE	
WESTRIDGE	
UMBILO	
QUEENBURGH	
DURBAN NORTH	
WESTVILLE	
PHOENIX	
KWAMASHU	
UMLAZI	
OTHER (specify)	
3. USE OF THE DAVENPORT AREA FOR OTHER ACTIVITIES?	
SHOPPING	
BANKING	
SERVICES (Post office etc.)	
ENTERTAINMENT(restaurants etc.)	
MEDICAL SERVICES	
RECREATION (parks, open space)	
OTHER	
4. REASONS FOR USING THE AREA	
CONVENIENCE	
LOW PRICES	
VARIETY	
4. ARE THESE FACILITIES EASILY ACCESSIBLE?	
YES	
NO (if NO give reasons below)	
5. IS THE AREA CONGESTED?	
NONE	
LIGHT	
MEDIUM	
HIGH	
6. HAS THE AREA SUFFICIENT PARKING?	
YES	
NO	
7. WHAT IS THE CONDITION OF FACILITIES IN THE AREA?	
GOOD	
FAIR	
BAD	
8. DO YOU USE THE AREA AFTER DARK?	
YES	
NO	

REASONS/REMARKS.....

.....

.....

.....

.....

RESULTS FROM SURVEY OF DAVENPORT AREA

1: TYPE OF BUSINESS

	TYPE OF BUSINESS	N°(1)	%
1	RETAIL	20	19.8
2	SERVICE	29	28.7
3	CAFE	2	2.0
4	PROFESSIONAL	19	18.8
5	MEDICAL	5	5.0
6	BANKING	3	3.0
7	ENTERTAINMENT	2	2.0
8	INDUSTRIAL	13	12.8
9	GARAGE	2	2.0
10	VACANT	6	5.9
	TOTAL	**101**	**100.00**

(1) NOT INCLUDING ACTIVITIES IN SHOPPING CENTER

2: REASONS FOR LOCATING IN DAVENPORT AREA?

1	PROXIMITY TO CLIENTS	19	47.50
2	RENTS	6	15.00
3	CONGESTION IN CBD	2	5.00
4	BUILDING REGULATIONS	0	0.00
5	CLOSE TO OTHER BUSINESS	13	32.50
	TOTAL	**40**	**100.00**

3: CATCHMENT AREA

	AREA	N°	%
1	LOCAL	11	27.50
2	CITY WIDE	23	57.50
3	REGIONAL	6	15.00
	TOTAL	**40**	**100.00**

4: NUMBER OF EMPLOYEES

NUMBER OF EMPLOYEES	N°	%
1	0	0.00
2	4	10.00
3	7	17.50
4	9	22.50
5	12	30.00
6	6	15.00
7	0	0.00
8	1	2.50
9	0	0.00
10	0	0.00
MORE THAN 10	1	2.50
TOTAL	**40**	**100.00**

4: NUMBER OF PARKING BAY FOR EMPLOYEES

PARKING BAYS	N°	%
NONE	9	22.50
1	0	0.00
2	16	40.00
3	0	0.00
4	8	20.00
5	1	2.50
6	5	12.50
7	0	0.00
8	0	0.00
9	0	0.00
10	0	0.00
MORE THAN 10	1	2.50
TOTAL	**40**	**100.00**

5: NUMBER OF PARKING BAY FOR CUSTOMERS

PARKING BAYS	N°	%
NONE	28	70.00
1	0	0.00
2	9	22.50
3	0	0.00
4	2	5.00
5	0	0.00
6	0	0.00
7	0	0.00
8	0	0.00
9	0	0.00
10	0	0.00
MORE THAN 10	1	2.50
TOTAL	**40**	**100.00**

6: HOW DO PEOPLE GET TO WORK

	MODE OF TRANSPORT	N°	%
1	CAR	27	67.50
2	BUS	2	5.00
3	TAXI	0	0.00
4	LIFT CLUB	5	12.50
5	WALK	6	15.00
6	MOTORBIKE	0	0.00
7	BICYCLE	0	0.00
	TOTAL	**40**	**100.00**

7: PLACE OF RESIDENCE

	SUBURB	N°			%
		SHOP	WORK	LIVE	
1	BULWER	2	5	2	22.50
2	GLENWOOD	6	7	10	57.50
3	MUSGRAVE	-	1	-	2.50
4	ESSONWOOD	-	2	-	5.00
5	MORNINGSIDE	-	1	-	2.50
6	SYDENHAM	-	2	-	5.00
7	WESTVILLE	-	1	-	2.50
8	DURBAN NORTH	-	1	-	2.50
	TOTAL	**8**	**20**	**12**	**100.00**

8: THE USE OF THE DAVENPORT AREA FOR OTHER ACTIVITIES

	ACTIVITY	N° (1)	%
1	SHOPPING	36	90.00
2	BANKING	32	80.00
3	PUBLIC SERVICES	0	0.00
4	ENTERTAINMENT	0	0.00
5	MEDICAL	19	47.50
6	RECREATIONAL	0	0.00

(1) RESPONDENTS GAVE MORE THAN ONE ANSWER

9: ACCESSIBILITY OF FACILITIES

	ARE FACILITIES ACCESSIBLE	N°	%
1	YES	32	80.0
2	NO	8	20.00
	TOTAL	**40**	**100.00**

10: CONGESTION IN THE AREA

	IS THE AREA CONGESTED	N°	%
1	NONE	0	0.00
2	LIGHT	18	45.00
3	MEDIUM	21	52.50
4	HEAVY	1	2.50
	TOTAL	**40**	**100.00**

11: CONDITION OF PAVEMENTS AND WALKWAYS

	ARE THE PAVEMENTS AND WALKWAYS WELL KEPT	N°	%
1	GOOD	0	0.00
1	FAIR	28	70.00
2	POOR	12	30.00
	TOTAL	**40**	**100.00**

12: USES OF THE AREA AFTER HOURS

	DO YOU USE THE AREA AT NIGHT	N°	%
1	YES	1	2.50
2	NO	39	97.50
	TOTAL	**40**	**100.00**

APPENDIX C

Durban City Council Town Planning Regulations for Berea South

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
1(a) and 1(b) Special Residential	Yellow	Dwelling House, Ancillary Unit, Cluster Housing Development.	Agriculture, Place of Instruction, Place of Worship, Social Hall, Creche, Special Building or use, Offices in terms of clause 7, Institution,any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
2. Maisonette	Orange	Dwelling House, Ancillary Unit when ancillary to a Dwelling House, Maisonettes, Cluster Housing Development.	Agriculture, Place of Instruction, Place of Worship, Social Hall, Creche, Special Building or use, Offices in terms of clause 7, Institution, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
3. Extended Residential	Yellow and Orange Bands	Dwelling House, Ancillary Unit when ancillary to a Dwelling House, Extended Residential Building, Cluster Housing Development.	Agriculture, Place of Instruction, Place of Worship, Social Hall, Creche, Special Building or use, Offices in terms of clause 7, Institution, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
4. Duplex	Brown and Orange Bands	Duplexs Flats, Dwelling House, Ancillary Unit when ancillary to a Dwelling House, Maisonettes, Cluster Housing Development	Place of Instruction, Place of Worship Social Hall, Creche, Special Building or use, Offices in terms of clause 7, Institution, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

APPENDIX 1

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
5. General Residential 1	Light Brown	Dwelling House, Ancillary Unit when ancillary to a Dwelling House, Maisonettes, Residential Building, Institution, Cluster Housing Development.	Agriculture, Licensed Hotel, Parking Garage, Place of Instruction, Place of Worship, Social Hall, Creche, Special Building or use, Offices in terms of clause 7, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
6. General Residential 2	Dark Brown	Dwelling House, Ancillary Unit when ancillary to a Dwelling House, Institution, Maisonettes Residential Building, provided that in the Merewent, Chatsworth and Austerville South and North areas a Licensed Hotel may be erected without special consent on a site marked by the symbol "H" in red, Cluster Housing Development.	Agriculture, Licensed Hotel, Parking Garage, Place of Instruction, Place of Worship, Social Hall, Creche, Special Building or use, Offices in terms of clause 7, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
7. General Residential 3	Light and Dark Brown Bands	Dwelling House, Ancillary Unit when ancillary to a Dwelling House, Institution, Maisonettes, Residential Building, provided that in the Merewent, Chatsworth and Austerville South and North areas a Licensed Hotel may be erected without special consent on a site marked by the symbol "H" in red, Cluster Housing Development.	Agriculture, Licensed Hotel, Parking Garage, Place of Instruction, Place of Worship, Social Hall, Creche, Special Building or use, Offices in terms of clause 7, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
8. General Residential 4	Dark Brown with Light Brown Hatch	Dwelling House, Ancillary Unit when ancillary to a Dwelling House, Institution, Maisonettes, Residential Building, provided that in the Merewent, Chatsworth and Austerville South and North areas a Licensed Hotel may be erected without special consent on a site marked by the symbol "H" in red, Cluster Housing Development	Agriculture, Licensed Hotel, Parking Garage, Place of Instruction, Place of Worship, Social Hall, Creche, Special Building or use, Offices in terms of clause 7, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
9. General Residential 5	Light Brown with Dark Brown Hatch	Dwelling House, Ancillary Unit when ancillary to a Dwelling House, Maisonettes, Residential Building, Licensed Hotel, Institution.	Place of Instruction, Place of Worship, Parking Garage; Social Hall, Creche, Restaurant in a building containing flats which is situated below any part of the building which contains the flats, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
10. Place of Worship	Cross-Hatched Red with symbol "W".	Dwelling House when ancillary to a Place of Worship, Place of Worship, Creche when ancillary to a Place of Worship.	A Special Building which is ancillary to a Place of Worship or any use so ancillary, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
11. Creche	Cross-Hatched Orange with symbol "C".	Creche, Dwelling House when ancillary to a Creche, Place of Worship when ancillary to a Creche.	A Special Building which is ancillary to a Creche or any use so ancillary, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
11 bis. Minor Shopping	Light Blue with Darker Blue Border	Shops (excluding shops for the sale of motor vehicles) Residential Building.	Offices, Restaurant, Laundry, Place of Amusement, Place of Instruction, Hairdressing Salon, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
12. Special Shopping	Light Blue	Offices, Residential Building, Restaurants, Shops, (excluding Shops of the kind referred to in Column 4).	Dry-Cleaning or Dyeing Establishment (but excluding a Receiving Depot), Laundry, Parking Garage, Petrol Service Station, Place of Amusement, Place of Instruction, Place of Worship, Shop for sale of motor vehicles, Service Industry, Social Hall, Totalisator Depot, Creche, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
13. General Shopping	Dark Blue	Institution, Offices, Residential Building, Restaurants, Shops (excluding Shops of the kind referred to in Column 4).	Dry-Cleaning or Dyeing Establishments (but excluding a receiving depot), Licensed Hotel, Laundry, Parking Garage, Petrol Service Station, Place of Amusement, Place of Instruction, Place of Worship, Shop for sale of motor vehicles, Service Industry, Social Hall, Totalisator Depot, Creche, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
14. General Business (Central Area)	Dark Blue with White Hatch	Business premises (excluding those refered to in Column 4), Dwelling Houses, Residential Building, Restaurant, Licensed Hotel, Place of Worship, Place of Assembly, Place of Amusement, Institution, Place of Instruction, Creche, Industrial Building (excluding those referred to in Columns 4 and 5), Social Hall, Totalisator Depot.	Parking Garage except as is provided in sub-clause 6(23), Petrol Service Station, Panel Beating, Spray Painting, other uses not under Columns 3 and 5, any other use authorised in terms of clause 6 bis.	Noxious Industrial Building (excluding those referred to in Column 4).
14 bis. General Business 2	Dark Blue Cross Hatch	Business premises (excluding those referred to in Column 4), Light Industrial Building (excluding those referred to in Columns 4 and 5).	Petrol Service Station, Totalisator Depot, Place of Instruction, Industrial Building, Panel Beating and Spray Painting, Special Building or use, other uses not under Columns 3 and 5, any other use authorised in terms of clause 6 bis.	Dwellings, Maisonettes, Residential Buildings and Noxious Industry.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
14 ter. General Business 3	Dark Blue Cross Bands	As in General Business (Central Area) Zone.	As in General Business (Central Area) Zone.	Other uses not under Columns 3 and 4.
14 quat. General Business 4	Dark Blue Hatch	As in General Business (Central Area) Zone.	As in General Business (Central Area) Zone.	Other uses not under Columns 3 and 4.
15. Petrol Service Station	Light Blue with Purple Hatch	Petrol Service Station.	Parking Garage , Special Building, Sale of Motor vehicles, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
16. Cultural and Entertainment	Light and Dark Scarlet Bands	Place of Assembly, Art Gallery, Museum, Conference Hall, Place of Amusement other than a Billiard Saloon, Circus Arena or Skating Rink.	Skating Rink, Business Uses incidental to a Place of Amusement or Conference Hall, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
17. Educational 1	Pink	Place of Instruction	Dwelling House, Maisonettes, Place of Worship, Social Hall, Sports Club and any Residential Building, Creche or Special Building ancillary to a Place of Instruction or any use so ancillary, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
18. Educational 2	Pink with Darker Pink Border	As in Educational 1 Use Zone.	As in Educational 1 Use Zone, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
19. Educational 3	Pink with Darker Pink Hatch	Place of Instruction.	Dwelling House, Maisonettes, Place of Worship or Social Hall which is not ancillary to any Place of Instruction, Residential Building, Sports Club, Creche or Special Building which is ancillary to a Place of Instruction or any use so ancillary, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
20. Institutional 1	Cross-Hatched with Narrow Brown	Institution.	Dwelling House, Maisonettes, Place of Instruction, Place of Worship, Residential Building, Social Hall, Sports Club, Creche, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
21. Institutional 2	Cross-Hatched with Narrow and Broad Brown	As in Institutional 1 Use Zone.	As in Institutional 1 Use Zone, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
22. Institutional 3	Hatched with Narrow Brown	Institution.	Dwelling House, Maisonettes, Place of Instruction, Place of Worship, Residential Building, Social Hall, Sports Club, Creche, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
23. Cemetery	Cross-Hatched Dark Green	Burials and all Buildings ancillary to Cemeteries (other than Crematoria).	Crematorium, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
24. Special	Cross-Hatched Black and Numbered	Details of permitted and prohibited uses appear in Appendix 2, any other use authorised in terms of clause 6 bis.		
25. Private Open Space	Light Green	Recreational Purposes (excluding the erection of any Buildings).	Creche or any Buildings to be used for Recreational Purposes or other purposes ancillary or incidental thereto, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
26. Light Industrial	Purple	Light Industrial, Service Industrial.	Institution, Offices, Parking Garage, Petrol Service Station, Shop in terms of clause 6(31), Restaurant, Totalisator Depot, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
27. General Industrial	Purple with Dark Purple Hatch	Industrial purposes other than Extractive or Noxious.	Institution, Offices, Parking Garge, Petrol Service Station, Shop in terms of clause 6(31), Restaurant, Totalisator Depot, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
28. Noxious Industrial	Purple with Dark Purple Cross-Hatch	Industrial purposes other than Extractive.	Institution, Offices, Parking Garage, Petrol Service Station, Restaurant, Shop in terms of clause 6(31), Totalisator Depot, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.

1. USE ZONE	2. SYMBOL ON MAP	3. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED	4. PURPOSES FOR WHICH LAND MAY BE USED OR FOR WHICH BUILDINGS MAY BE ERECTED AND USED ONLY WITH THE SPECIAL CONSENT OF THE COUNCIL	5. PURPOSES FOR WHICH LAND MAY NOT BE USED OR FOR WHICH BUILDINGS MAY NOT BE ERECTED AND USED
29. Extractive Industrial	Cross-Hatched Purple	Extractive Industrial.	Industrial purposes restricted to the manufacture and storage of products based upon or associated with the raw materials extracted from the land, Recreational Building, Special Building or use, any other use authorised in terms of clause 6 bis.	Other uses not under Columns 3 and 4.
30. Indeterminate	Brown Dots		All uses, any other use authorised in terms of clause 6 bis.	

APPENDIX D

Durban City Council Building Regulations

CITY OF DURBAN STAD DURBAN

TOWN PLANNING SCHEME IN COURSE OF PREPARATION

TO BE COMPLETED BY ENQUIRER : RECORD OF PERSONAL ENQUIRY

NAME AND ADDRESS OF ENQUIRER ..... DATE: .....

.....

..... TEL. NO: .....

SITE PARTICULARS: DESCRIPTION: .....

..... NET SITE AREA: .....

ADDRESS: .....

GENERAL TOWN PLANNING INFORMATION

ZONING: GENERAL RESIDENTIAL 2.

PLOT AREA RATIO: 1.

COVERAGE: 40%.

MIN. BUILDING LINE: 7,5.

MIN. SIDE SPACE: 3m or 1,2m per floor. MAX 15m.

MIN. REAR SPACE: 5m. 1,2m per floor

MAX. PERMITTED HEIGHT: N/A.

PARKING REQUIREMENTS: 1 BAY per Unit.

NO. OF UNITS: Site Area ÷ 55.

REMARKS: 1 "The controls given above are those specific to the land use zone in which the property falls. However, attention is drawn to the Town Planning Regulations where, in certain cases, additional requirements can be called for at the discretion of the Executive Director (Physical Environment) and no information recorded above can be taken as comprehensive. Specific detailed information can only be given in respect of an application after it has been lodged showing the detailed proposals of the development.

Note 1: This information has been compiled at the above date, but as the Town Planning Scheme is in course of preparation it may be amended from time to time.

Note 2: The information given is in respect of Town Planning requirements only and must not be construed as indicating requirements in terms of the City Council's By-Laws or the National Building Regulations.

INFORMATION COMPILED BY ..... CHECKED BY: .....

CITY OF DURBAN STAD DURBAN

TOWN PLANNING SCHEME IN COURSE OF PREPARATION

TO BE COMPLETED BY ENQUIRER : RECORD OF PERSONAL ENQUIRY

NAME AND ADDRESS OF ENQUIRER ..... DATE: .....

.....

..... TEL. NO: .....

SITE PARTICULARS: DESCRIPTION: .....

..... NET SITE AREA: .....

ADDRESS: .....

GENERAL TOWN PLANNING INFORMATION

ZONING: GENERAL SHOPPING.

PLOT AREA RATIO: 1,5.

COVERAGE: 50% for Shops & Offices 20% FOR FLATS.

MIN. BUILDING LINE: 7,5 FOR FLATS 3m SHOPS & OFFICES.

MIN. SIDE SPACE: 3m IF ON PERIPHERY.

MIN. REAR SPACE: 5m IF ON PERIPHERY.

MAX. PERMITTED HEIGHT: N/A.

PARKING REQUIREMENTS: AS PER SHEDULE.

NO. OF UNITS: N/A.

REMARKS: 1 "The controls given above are those specific to the land use zone in which the property falls. However, attention is drawn to the Town Planning Regulations where, in certain cases, additional requirements can be called for at the discretion of the Executive Director (Physical Environment) and no information recorded above can be taken as comprehensive. Specific detailed information can only be given in respect of an application after it has been lodged showing the detailed proposals of the development.

Note 1: This information has been compiled at the above date, but as the Town Planning Scheme is in course of preparation it may be amended from time to time.

Note 2: The information given is in respect of Town Planning requirements only and must not be construed as indicating requirements in terms of the City Council's By-Laws or the National Building Regulations.

INFORMATION COMPILED BY ..... CHECKED BY: .....

CITY OF DURBAN STAD DURBAN

TOWN PLANNING SCHEME IN COURSE OF PREPARATION

TO BE COMPLETED BY ENQUIRER : RECORD OF PERSONAL ENQUIRY

NAME AND ADDRESS OF ENQUIRER ..... DATE: .....

.....

..... TEL. NO: .....

SITE PARTICULARS: DESCRIPTION: .....

..... NET SITE AREA: .....

ADDRESS: .....

GENERAL TOWN PLANNING INFORMATION

ZONING: GENERAL BUSINESS 2

PLOT AREA RATIO: 1,5

COVERAGE: NBR

MIN. BUILDING LINE: 0m

MIN. SIDE SPACE: NBR

MIN. REAR SPACE: NBR

MAX. PERMITTED HEIGHT: 25m

PARKING REQUIREMENTS: 1 PER 150 m^2 FOR INDUSTRIAL FLOOR AREA.
1 PER 30 m^2 FOR COMMECIAL.

NO. OF UNITS: N/A

REMARKS: 1 "The controls given above are those specific to the land use zone in which the property falls. However, attention is drawn to the Town Planning Regulations where, in certain cases, additional requirements can be called for at the discretion of the Executive Director (Physical Environment) and no information recorded above can be taken as comprehensive. Specific detailed information can only be given in respect of an application after it has been lodged showing the detailed proposals of the development.

Note 1: This information has been compiled at the above date, but as the Town Planning Scheme is in course of preparation it may be amended from time to time.

Note 2: The information given is in respect of Town Planning requirements only and must not be construed as indicating requirements in terms of the City Council's By-Laws or the National Building Regulations.

INFORMATION COMPILED BY ..... CHECKED BY: .....

CITY OF DURBAN STAD DURBAN

TOWN PLANNING SCHEME IN COURSE OF PREPARATION

TO BE COMPLETED BY ENQUIRER : RECORD OF PERSONAL ENQUIRY

NAME AND ADDRESS OF ENQUIRER ..... DATE: .....

.....

..... TEL. NO: .....

SITE PARTICULARS: DESCRIPTION: .....

..... NET SITE AREA: .....

ADDRESS: .....

GENERAL TOWN PLANNING INFORMATION

ZONING: PLACE OF WORSHIP

PLOT AREA RATIO: N/A

COVERAGE: N/A

MIN. BUILDING LINE: 7,5m

MIN. SIDE SPACE: 3m

MIN. REAR SPACE: 5m

MAX. PERMITTED HEIGHT: N/A

PARKING REQUIREMENTS: 1 BAY PER 8 PEOPLE, AREA OF SEATING ÷ 8 ÷ 4

NO. OF UNITS: N/A

REMARKS: 1 "The controls given above are those specific to the land use zone in which the property falls. However, attention is drawn to the Town Planning Regulations where, in certain cases, additional requirements can be called for at the discretion of the Executive Director (Physical Environment) and no information recorded above can be taken as comprehensive. Specific detailed information can only be given in respect of an application after it has been lodged showing the detailed proposals of the development.

Note 1: This information has been compiled at the above date, but as the Town Planning Scheme is in course of preparation it may be amended from time to time.

Note 2: The information given is in respect of Town Planning requirements only and must not be construed as indicating requirements in terms of the City Council's By-Laws or the National Building Regulations.

INFORMATION COMPILED BY ..... CHECKED BY: .....

APPENDIX E

Off-Street Parking Formula for Special Shopping, General Shopping and General Business 2 Zones

OFF-STREET PARKING FORMULA FOR SPECIAL SHOPPING, GENERAL SHOPPING AND GENERAL BUSINESS 2 ZONES

In the case of shops and offices in Special Shopping, General Shoppingand General Business 2 zones, the following formula is to be applied :

(i) There shall be within the curtilage of the site sufficient parking facilities to provide one parking space for every 15 square metres of total floor area of such shops and offices, provided that where such total floor area exceeds the equivalent of 30% of the area of the site, parking for such excess floor area shall be provided at a rate of one parking space for every 30 square metres of such excess; and provided further that in the case of shops or offices converted to use as such or extended in size, the parking facilities in accordance with this paragraph shall be based only on the total floor area of such converted or extended area of shops or offices and shall be provided at a rate of one parking space per 15 square metres of total converted or extended floor area up to the equivalent of 30% of the area of the site, unless already provided at this rate, whereafter the rate shall be one parking space for 30 square metres of the total converted or extended floor area;

(ii) Where the total extent of the shopping zone in which the site of the building is situated, whether or not such zone is intersected by any street, is less than one hectare but greater than one half of a hectare, there shall be within the curtilage of the site sufficient parking facilities to provide parking spaces at the rate of 75% of the requirements of paragraph (i) hereof and 60% of such requirements where the total extent of such shopping zone is one half of a hectare or less.

(iii) The requirements of paragraphs (i) and (ii) hereof shall not apply in respect of General Shopping zones in the Point Lanes area and General Business 2 zones where there shall be within the curtilage of the site sufficient parking facilities to provide one parking space for every 30 square metres of the total floor area of such shops and offices.

The total floor area and the area of the site shall be calculated in accordance with Clause 23(7) of the Town Planning Scheme Regulations.

APPENDIX F

FLOOR AREA RATIO

FLOOR AREA RATIO

- The area is calculated using the site as well as a portion of the street reserve. The irregular shape of some of the street reserves as well as the width of the roads and angles of intersection make it difficult to calculate half the road reserve area;
- The system has no control over the number of dwelling units permitted on the site, this allows developers to crowed a large number of smaller units on to the site to increase profits;
- The sites located along wide streets and on the corners have a decided advantage to properties situated on narrow streets and in the mid block; and
- Areas adjacent to open space have also made representation for the inclusion of half the area of open space to be included in the site area, this would cause over development in these areas.

The system of Floor Area Ratio takes the total area of the site and multiplies it by the Floor Area Ratio in order to determine the total floor area of building permitted on the site.

To avoid the development of as many units as possible within the Floor Area permitted, the Berea Town Planning Scheme limits the number of dwelling units permitted on a site. The number of units is related to the total floor area.

The limit on the number of units per site, as well as an increase in the total floor area in the Berea area, encourages developers to provide larger flats. This would also encourage a better class of development within the Berea area.

The Floor Area Ratio is calculated on a sliding scale with a higher ratio for larger lots. This increase in the Floor Area Ratio for larger lots encourages the consolidation of smaller lots, which has the following advantages;

- Architects have greater freedom of design on larger lots;
- The consolidation of smaller sites will avoid the constant application for relaxation of building lines and space around buildings;
- The units can be designed along more generous lines if the building is large; and
- The development of larger buildings along a street is more attractive than a number of individual buildings in close proximity to each other.