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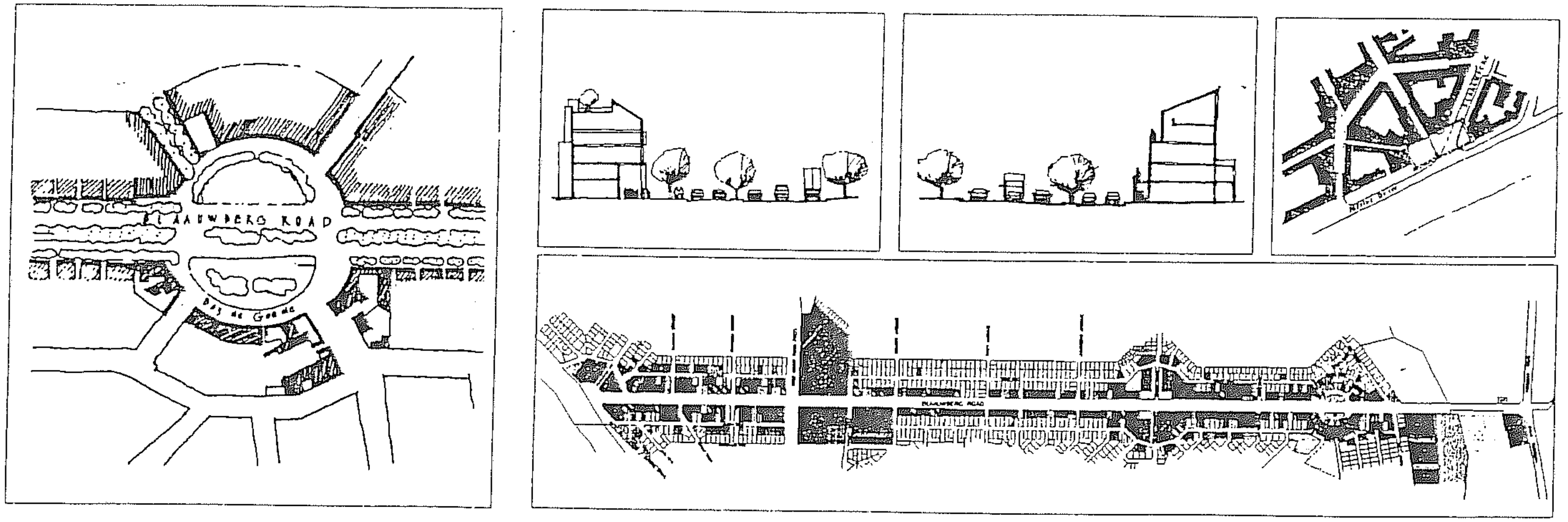
Alicia

Blaauwberg

DRAFT
FOR
DISCUSSION

MANAGEMENT STRATEGY FOR BLAAUWBERG ROAD



September 1998

CHITTENDEN NICKS
PARTNERSHIP
urban & environmental planners

in association with

HAWKINS HAWKINS
& OSBORN
consulting engineers

KRUGER ROOS
architects • urban designers

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CHAPTER 9 CONCLUSIONS AND RECOMMENDATIONS

GLOSSARY OF TERMS

☐ Certain concepts and words, particularly transportation terminology, used in this report have specific meanings and understandings as explained in this glossary.

Access or Accessibility:
Good access or accessibility in planning terms is defined as being able to reach a wide range of activities, people, resources, opportunities and information with the least effort and cost. This may require a degree a mobility to avoid unnecessary wastage of energy and time in getting from origin to destination along public ways or crowded lines of communication where long queues may prevail.

In transportation terms accessibility refers to the ability (and ease) with which one can reach and stop at a desired destination by different modes of transport, including walking, in order to engage in desired activities. Relative proximity of points of origin and destination usually enhances accessibility.

Activity Corridor:
An activity corridor is a band of high-density urban development concentrated along a public transportation route, (the activity spine), where residential, commercial, industrial and recreational activities occur in close proximity. The width of the activity corridor is determined by walking distance from the activity spine, usually 400 to 500 metres on each side of the spine.

Activity Spine:
This refers to the central road of the activity corridor and the land uses and high-density development immediately adjacent to the central road. Activity Spines should be major routes that are connected to one or more metropolitan-scale urban nodes. They should be as direct and straight as possible.

Activity Street:
This refers to a local road which allows for a high degree of accessibility along its length. It is of a smaller scale than the activity spine and does not need to connect major urban nodes. Rather, activity streets should reinforce the larger nodes and corridors, and strengthen the tertiary road network.

Mobility:
Refers to the ability to move relatively swiftly and at an acceptable speed and travel time with freedom to manoeuvre without undue interruption and at acceptable levels of comfort, convenience and safety. This concept applies to all modes of transport. Giving people mobility is one means of overcoming lack of accessibility especially when trip distance or travel times between origin and destination are unacceptable.

Busway:
A right-of-way for express bus operations completely separated from general purpose lanes.

Demand Management:
A new concept of reducing auto trips through the management and pricing of parking, access, and congestion while providing alternatives.

Development Impact Fees:
Fees collected for new development which are used to construct traffic improvements to accommodate the additional vehicular traffic generated by new development.

Integrated Transportation System:
A concept to expand mobility and provide transportation choices by integrating transportation facilities and services appropriate to the land uses in an areas; e.g. putting high occupancy vehicle lanes on transit-accessible roads serving high density development.

Level of Service (LOS):
A qualitative measure describing operational conditions within a traffic stream in terms of speed and travel, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety. Level A denotes the best traffic conditions while Level F indicates gridlock.

Modal Split:
The proportion of total person trips on various types of modes.

Mode:
The types of transportation available for use such as rail, bus, vanpool, single-occupant auto, or bicycle.

Primary Corridors:
The major travel routes identified for additional development to increase the carrying capacity of those corridors.

Transit-Compatible/Supportive Land Use:
A general term applying to higher density and/or intensity land uses and activities, usually urban, that are designed and located to encourage ridership on public transportation.

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Transportation Demand Management (TDM) / Transportation System Management (TSM):
These techniques increase the efficiency of the existing transportation system through lower cost programs like ride sharing, bus fare subsidy programs, parking management and flexitime.

☐ The South African Department of Transport classify roads into the following categories and environments.

Class I:
These are predominantly rural roads whose main function is to facilitate the regional distribution of traffic (inter-city movement).

Class II:
This class of road forms the primary network for the urban areas as a whole. All long-distance traffic movements to, from and within the city should be focused onto such roads.

Class III:
These roads distribute traffic between the principal residential, industrial and business districts of the town and form the links between the primary network and the roads within residential areas.

Intermediate Environment:
Typical "intermediate" roadside development is relatively dense compared to suburban conditions but is not as dense as urban conditions. Development may be found within activity nodes or along activity spines. Driveway access demands are lower, on-street parking is less pervasive, and pedestrian activity is not as great as the urban development environment. The road grid pattern can be coarser than in the "urban" development environment since access seeking traffic volumes are lower.

Urban Environment
Typical "urban" roadside development is dense with residential and/or commercial development occurring within activity nodes along activity spines. Frequent driveway access, on-street parking and pedestrian activity are typical features along most roads serving this environment. The road grid pattern is quite fine in order to serve the high level in this environment.

1.0 INTRODUCTION

1.1 BACKGROUND

The need for this study has emerged due to increasing, ad hoc, pressure for commercial development along Blaauwberg Road, coupled to a concern by the transport authorities to protect and enhance the "mobility" function of this route whilst providing for appropriate "access".

The Blaauwberg Council's Executive Committee has recognised an urgent need for an holistic response regarding the existing and future role, character and management of this urban corridor.

An appropriate management plan has been called for to address existing problems such as impact of commercial development on the residential "edge", land use potential, traffic management and urban design quality of the corridor.

1.2 THE STUDY AREA

The study area (refer to Figure 1.1) comprises the length and adjacent urban blocks along Blaauwberg Road between Marine Drive and Koeberg Road in Table View.

1.3 THE BRIEF

Chittenden Nicks Partnership Urban and Environmental Planners, in association with Hawkins Hawkins & Osborn Consulting Engineers and Kruger Roos Architects and Urban Designers were appointed by the Blaauwberg Municipality in January 1998 after a selective proposal process.

The study brief calls for predominantly transportation and land use / urban design inputs to be developed in an integrated manner.

The following points highlight key issues as presented in the project brief.

1.3.1 Transportation Issues

- The future and existing role and function of Blaauwberg Road in terms of access, mobility, and public transport;
- Existing and future role of public transport along Blaauwberg Road;
- Road capacity (existing and future);
- Potential for higher order uses in terms of traffic generation, road capacity, access and road safety standards;
- Existing and future parking requirements;
- Relationship with future development specifically the proposed extensions and function of Koeberg Road and Raats Drive.

1.3.2 Land Use and Urban Design Issues

- The role and context of Blaauwberg Road in terms of existing Metro, Sub-Regional and Local Planning principles;
- An understanding of the existing land use trends and uses along Blaauwberg Road;
- Proposals for land uses which could be accommodated along Blaauwberg Road as well as the adjacent areas;
- Proposals for the appropriate positioning of land uses;
- The envisaged character of Blaauwberg Road in terms of environmental and urban design consideration;
- Consideration of the appropriate interface with residential uses and potential increase of the scope of proposals to beyond Blaauwberg Road itself;
- Criteria for development and development parameters;
- Identification of strategic focus areas.

1.3.3 Other Issues

The Draft MSDF and Draft Bloubergsvlei Sub-Regional Plan create the broad metropolitan and regional context for this study. There are two draft Local Structure Plans that have an impact on development principles and management strategies along Blaauwberg Road, namely: the Table View North Structure Plan, and the Milnerton and Environs Structure Plan.

The Draft "Blaauwberg Road/Koeberg Road Intersection Local Area Structure Plan" has been completed, but has not been formally approved by Council. There are many issues that still remain unresolved such as the future extension of Blaauwberg Road to the east as well as the future Koeberg Road alignment to the north. Such issues cannot be resolved at this stage and are dependent on metropolitan and regional authority consensus. Nonetheless, it is proposed that findings of the Structure Plan be incorporated into the Blaauwberg Road Management Strategy (BRMS) study where impacts may be dealt with holistically.

Although no report has been finalised for the Marine Circle Local Structure Plan, there are similar issues that have to be dealt with in broader terms. It is also proposed that the work done up till now on this Structure Plan be incorporated into the BRMS.

1.4 CONTEXTUAL ISSUES

The planning context is analysed in depth in Chapter 2; however the following broad remarks can be made.

The West Coast Corridor was identified in 1980, by the then Department of Physical Planning, as the main growth axis in the Greater Cape Metropole. Indeed, the Table View North area has been described as the fastest growing in the country, if not in Africa! High growth rates presently being experienced in Table View (approximately 6% p.a.) are largely attributable to this 1980 initiative, and to the fact that remaining areas available for expansion of medium to higher income housing in the Cape Town area are rapidly approaching capacity.

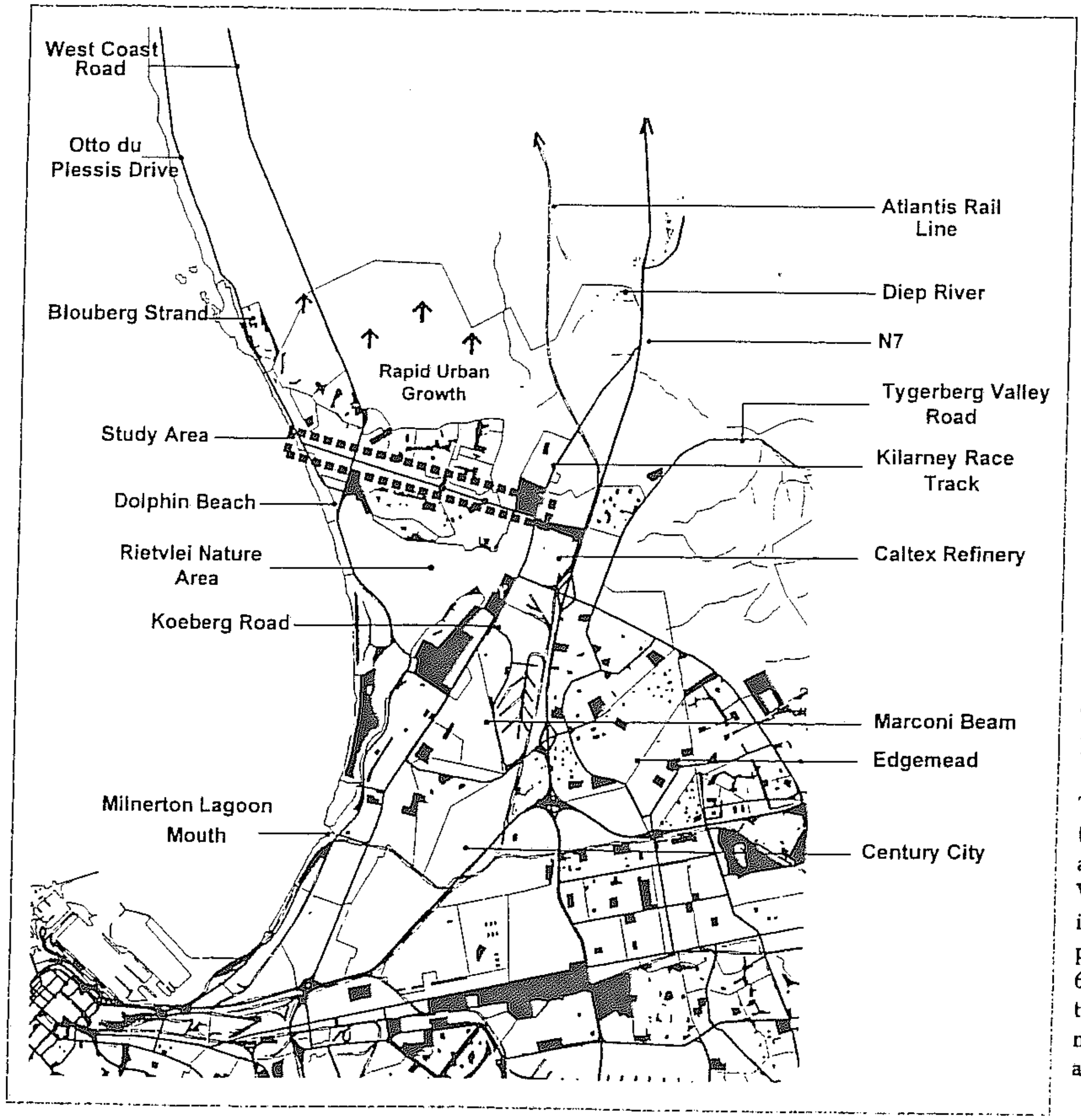


Figure 1.1: The Study Area in Local Context

At present, major activity and employment centers lie to the south and south-east of Table View. Cape Town's CBD attracts approximately 40% of commuter traffic from Table View and it's surrounding neighbours, whilst about 25% head northwards. Remaining traffic also has southward bound destinations: Montagu Gardens, Paarden Eiland and Salt River areas.

The future possible development of commercial and office space in Table View needs to be seen in a Metropolitan Context. In the light of metropolitan growth and problems of congestion and crime in the CBD, the demand for new residential and employment locations (particularly office space) has resulted in developing decentralised nodes, notably in the southern and northern suburbs, and strategic locations such as Capricorn, Century City and the airport.

In its entirety, development at Century City alone, will provide approximately 750 000 m^2 of office space: more than ¾ of the current office space available in Cape Town's CBD. It is estimated that roughly 2.5 million m^2 of office space will be available in decentralised nodes in the future. Taking these contextual realities into account, land-use proposals envisaged along Blaauwberg Road need to be realistic and pragmatic in nature. The corridor will have a limited attraction for decentralised offices given other opportunities in the northern and southern suburbs.

1.5 PLANNING PROGRAMME AND METHODOLOGY

The planning programme adopted for the study is illustrated opposite. (Figure 1.2)

1.6 GUIDANCE

The study has been guided by a technical committee comprising both local officials and metropolitan and provincial transportation authorities.

1.7 PUBLIC PARTICIPATION

Public involvement has formed a cornerstone of the study. The study was initiated via an announcement in the press in April 1998, and a call for input was made. Two public meetings were held.

A first public meeting was held at the Milnerton Library Lecture Hall on 13 May 1998. Issues highlighted which have been dealt with by the project team, may be summarised accordingly:

- Parking and the location thereof;
- Enabling appropriate land use activities to facilitate both community and proposed commercial needs;
- Addressing block depth redevelopment;
- Creating both a mobility and an accessibility function by developing different precincts;
- Addressing traffic issues, including pedestrian movement and public transport facilities;
- Developing urban design guidelines which may address height restrictions and frontages;

(See Annexures for Minutes of the Public Meeting No. 1)

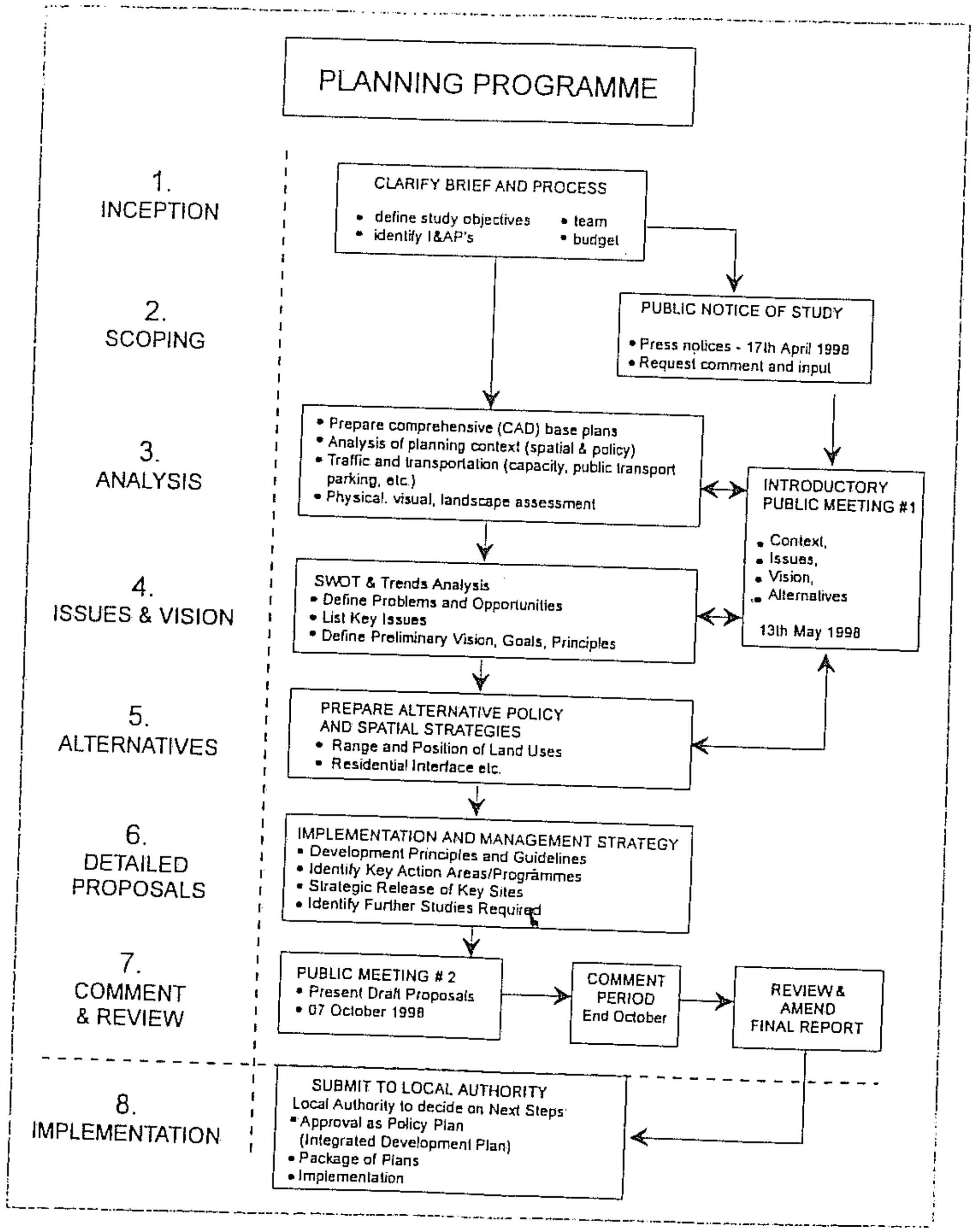


Figure 1.2: Planning Programme

2.0 METROPOLITAN AND SUB-REGIONAL CONTEXT

Various metropolitan and sub-regional plans provide the context for future development along Blaauwberg Road. Relevant plans are biefly summarised below.

2.1 THE METROPOLITAN SPATIAL DEVELOPMENT FRAMEWORK (MSDF, 1996)

Recommendations emanating from this report should embrace the MSDF's six key principles, namely:

- **To foster sustainable development.** The success of any spatial framework and management strategy will depend on the sustainable use of resources.

- **To contain urban sprawl.** The Cape Metropolitan Region lost an estimated 7 700 ha of agricultural land to urban development between 1980 and 1990. Our cities are growing outward daily at an alarming rate, contributing in turn, to traffic congestion and placing immense demands on the provision of social infrastructure and other supporting activities. Curbing sprawl by intensifying existing corridors, such as Blaauwberg Road, is a fundamental policy.

- **To promote a denser urban structure.** Containing urban sprawl will require a denser urban structure to accommodate future population growth and urban development. Denser urban areas offer better economies of scale.

- **To encourage urban integration.** Sprawling, mono-functional development patterns have resulted in inconvenient environments, perpetuating high social and economic costs. Integrated, mixed land use will assist in ensuring equitable, efficient and economically sustainable urban development.

- **To redress imbalances.** Future planning has to redress the legacy of the past by creating opportunities, and improving access for everyone.

- **To ensure a high quality urban environment**, to encourage personal, social and economic development.

These six principles are spatially expressed in metropolitan corridors, nodes and open spaces. **Koeberg Road** is defined as a primary development corridor and will certainly influence activities in the study area in the longer term.

The *"Diep River* **Metropolitan Open Space System"**, bisects Blaauwberg Road to create a network of inter-linked, open space. Opportunities for recreation and conservation will be provided in this system. Figure 2.1 indicates a summary of MSDF spatial proposals.

2.2 BLOUBERGSVLEI SUB-REGIONAL PLAN (DRAFT, ONGOING 1996)

In accordance with the MSDF's spatial planning proposals, the Bloubergsvlei Sub-Regional Plan (prepared by Planning Partnership) proposes secondary "activity spines" and "activity streets" of a more local nature, to connect perpendicularly with the main Koeberg Road spine.

Secondary activity spines indicated on Figure 2.2 include:

- A connecting route between the recreation-oriented node at Big Bay and the proposed central business node for the Bloubergsvlei area to the east;
- The Table View North Activity spine between the Bayside/Marine Circle area and the proposed node at the railway station immediately north of the Diep River crossing (Parklands Main Road, refer to 2.6);
- The Blaauwberg Road "transportation" corridor which is proposed to extend eastwards past Richwood.

2.2.1 Transportation Infrastructure

- The upgrading of the Atlantis rail line to a passenger service with stations at various points including where the proposed extension of Blaauwberg Road crosses the railway line is proposed;
- Koeberg Road is seen as an important bus route with separate bus lanes.
- Blaauwberg Road is proposed to be extended eastward to intersect with the N7 just north of the fuel depot tank farm. (This is the subject of a specialist report by Jeffares and Green Transport Consultants);
- A possible route for HOV (High Occupancy Vehicle) lanes along Otto du Plessis Drive to the Cape Town CBD has been identified;
- Blaauwberg Road is indicated as a Class II "transportation corridor". From the West Coast Road intersection eastwards, high intensity urban development is limited to identified nodes only.

2.2.2 Urban Development

The Bloubergsvlei Sub-Regional Plan proposes the development of two primary "nodes". The first is at intersection of the rail line, the east-west arterial link and the Parklands activity street. This node is to become the central business district of the Bloubergsvlei area. A second primary node is envisaged along Blaauwberg Road within the Marine Circle/Bayside section. This node is to become the business centre for Table View and environs.

"High-intensity" development (up to 70 units per ha mixed with business and commercial activities) are concentrated along primary activity corridors and railway lines, to enable social, economic and public transportation viability. The section along Blaauwberg Road between Marine Circle and Bayside is classified accordingly, as well as the nodes at Flamingo Square and Boy de Goede.

"Medium intensity" urban development is proposed to include residential uses with a mix of housing types and densities of approximately 28 units per hectare.

The remainder of Blaauwberg Road from Otto du Plessis Drive to the Koeberg Road intersection is indicated in this category.

"Low intensity" urban uses comprise a maximum residential density of 16 units/ha of a mostly "single residential" character. The recommendations of this report propose certain amendments to the sub-regional plan.

2.3 TABLE VIEW NORTH STRUCTURE PLAN (1991)

This Structure Plan, (also prepared by Planning Partnership), is indicated in concept form in Figure 2.3 and indicates Blaauwberg Road as an activity spine with key "nodes" along its length and extending to the rail line and N7 to the north-east and beyond.

The use of public transportation on the activity spines, providing access to the stations or the recreational nodes is proposed.

Important open space systems are identified, including the Diep River Corridor.

2.4 MILNERTON AND ENVIRONS STRUCTURE PLAN (1997)

This plan, indicated on Figure 2.4, identifies general policies with regard to the open space system, land-use patterns and transportation infrastructure. The Bloubergsvlei Sub-Regional Plan and the Table View North Structure Plan have informed this structure plan. Similar spatial development proposals are thus emphasised.

2.4.1 Transportation Issues

- Local and metropolitan systems that contribute to the relief of traffic congestion and enhance mobility for the community must be provided.
- The land use pattern must support public transportation, facilitate multi-use trips, and minimise the number and length of vehicle trips.
- The hierarchical structure of routes must be developed and reinforced so as to keep through traffic on appropriate routes and protect sensitive residential environments from excessive traffic loads.
- Road safety must be improved by providing appropriate facilities, improving geometric design where necessary, and encouraging appropriate speeds.
- A system of bicycle paths throughout the municipal area must be provided.
- Pedestrian walkways must be provided where feasible, particularly between schools and bus stops.

2.4.2 Table View Action Area

Table View residents expressed the need for more facilities (particularly shopping and cinema facilities), improvements to the open space system and for "white-collar" work opportunities.

Proposals thus concentrate upon a provision of mixed use opportunities at the Bayside area and its extension into a proposed activity link along Parklands Main Road and to Marine Circle. Two local nodes along Blaauwberg Road are also envisaged as opportunity areas.

A road link between the Flamingo Vlei area in Table View and Otto du Plessis Drive (via an extension to Pentz Drive) is proposed to reduce the traffic load on the Blaauwberg Road/Otto du Plessis intersection.

2.4.3 Bloubergrant Action Area

The residents of Bloubergrant are keen to see improvements to the beachfront area, more facilities, and a limit on high-rise buildings along the beachfront.

The Marine Circle area is a rapidly growing node, and is seen as part of the future Central Business Area (together with the Bayside area) for the municipal area. The proposals include increased business rights at the circle, as well as along the portion of Blaauwberg Road between Marine Circle and the Bayside area. Transitional zones of mixed uses and medium density residential are also proposed.

2.5 MARINE CIRCLE FRAMEWORK (DRAFT 1996)

Key recommendations relevant to this report are as follows (refer to Figure 2.5):

A re-alignment of the Marine Circle intersection is proposed, resulting in the southern section of Marine Drive terminating with a T-intersection with a continuous Blaauwberg Road/Marine Drive alignment.

- Increased business rights around the Marine Circle node, as well as along the coastline, and along Blaauwberg Road between Marine Circle and the Bayside nodes. This is in recognition of the inevitable pressure on the area as a result of the rapid present and predicted future growth of the Table View area, as well as the identified role of the greater node as the future Central Business Area for Milnerton.
- The creation of a "transition zone" between the business precinct and the surrounding residential areas, in the form of "General Residential" uses adjacent to the business zones, followed by "Group Housing" uses, and then "Single Residential" areas.
- To increase the activity of the transition zones, flexibility must be allowed in use rights for the "General Residential" zones, to allow for limited business activities. The exercising of the allowable residential rights within the "Business" zones must also be encouraged.
- It is not recommended to close or downgrade Porterfield Road at this stage. A policy allowing for the granting of higher residential density rights along Porterfield Road is proposed.
- Short Street north of the Bayside Centre is proposed to be extended to intersect with the West Coast Road, to improve access to the growing business area, and relieve pressure on the Blaauwberg /West Coast Road intersection.
- The extension of Pentz Drive to intersect with the West Coast Road opposite Marine Drive intersection is considered essential to complete the road network in the area, and relieve pressure on the West Coast Road / Blaauwberg Road intersection. This should allow for consideration to be given to making this latter intersection more pedestrian-friendly. (Environmental issues are however critical.)
- Improved road access at Popham and at Dunbar Streets must be provided for the proposed business zones along this portion of Blaauwberg Road.

The following guidelines are recommended:

- Buildings should create integrated urban environments. A variety of building heights will create complexity and excitement through enhancing the building/street relationship.
- The definition of edges in public and private spaces will serve to maintain a sense of "enclosure and scale".
- Rather than excessively large open parking lots it is recommended that roads be redesigned to accommodate street parking.
- A pedestrian system and major directional routes should link the streets, parking lots in the cores of each block, and the main retail and social activities with the beachfront environment.
- The surrounding residential area should be better integrated with Marine Circle.
- New structures along the beachfront should preserve as much as possible the existing views from the retail/entertainment activities "behind".
- Due to the climatic, soil and water conditions of the area, minimal emphasis should be placed on green "planting", which can take a long time to make a positive impact. An appropriate combination between hard and soft landscaping is advisable.

2.6 PARKLANDS DEVELOPMENT FRAMEWORK (1997)

The proposed framework, refer to Figure 2.6, indicates activity streets, district distributor roads and local distributor roads in the Raats Drive area to the north of Blaauwberg Road. These proposals generally comply with those presented in the various structure plans described above.

2.6.1 Mixed Uses

The proposed mixed-use area is structured along the activity street, Parklands Main Road, as well as Link Road. It also includes the "triangle" of land formed by the confluence of these two roads, which coincides with the TVNSP's proposed office park site and the BSRP's area of high intensity urban development.

The mix of land-uses that is envisaged will occur along this zone includes residential, business, offices, retail, service stations and community uses as well as public open space.

Land-uses are envisaged as being mixed both horizontally across the demarcated area and vertically within buildings, in order to promote the "urban" nature of the development. There is a strong residential component in the form of general residential uses, which it is estimated will provide some 650 dwelling units based on an assumed net density of 70 dus per net ha.

The proposed total commercial bulk of approximately 100 000m^2 is seen as being distributed within the mixed-use area, with a concentration of office floor area occurring in the "triangle", bounded by Parklands Main Road, Park Drive and Link Road. Retail uses may be more dispersed with a focus on proposed retail node's at major intersections along the activity street, including at Wood Drive.

2.6.2 Transportation

The 32m wide "activity street" known as Parklands Main Road, will combine the dual function of both an accessibility and mobility route. While this road will ultimately be a four-lane road, initially, only the southern carriageway will be built. Collector roads are proposed connecting the residential neighbourhoods to Parklands Main Road. Cycle paths and pedestrian routes throughout the development, to encourage local foot and cycle movement, are proposed.

2.7 POTSDAM TAXI/BUS TERMINUS

In 1988, the Municipality of Milnerton motivated the relocation of the Killarney Bus Terminus to the north west corner of the intersection of Blaauwberg Road and Koeberg Road.

There is a need to consolidate the activities of public transport in the area at a focal point where ablution facilities, shelters, lighting, security and information can be provided. Current facilities in the area are minimal and sub-standard. The consolidation of public transport activities at a suitably located focal point will promote the use of public transport through enhanced visibility, convenience, information and safety.

For the continued development of the area it has been recognised that additional transport capacity will need to be provided through:

- Provision of additional capacity on the road network.
- Encouraging higher vehicle occupancy.
- The provision of additional road and rail based public transport.
- Providing an improved public transport service to encourage a modal shift from private vehicle to public transport.

2.7.1 Taxi, bus and other facilities include:

- A total off-peak storage for 40 taxis.
- A vehicle washing area, and a light vehicle maintenance area.
- Loading and storage facilities for busses.
- Ablution facilities and offices.

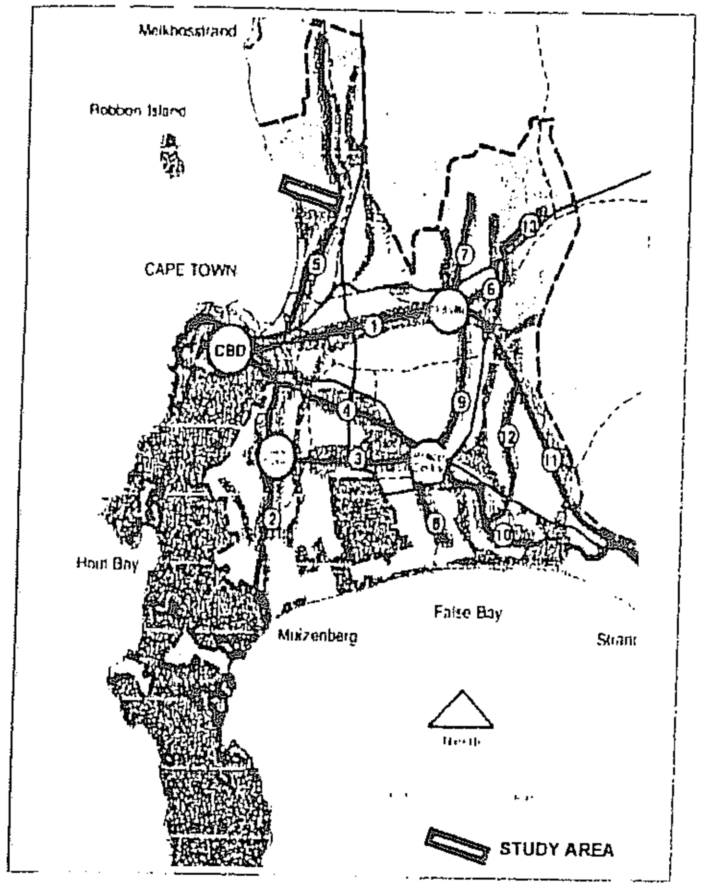


Figure 2.1: Blaauwberg Road in Metropolitan Context (extract MSDF April 1996)

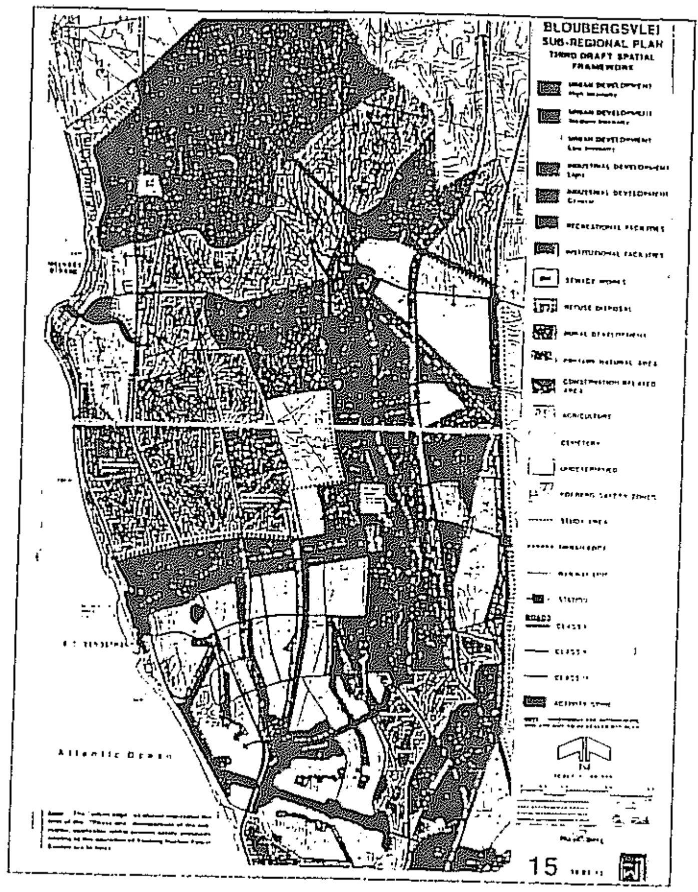


Figure 2.2: The Bloubergsvlei Sub-regional Plan (Draft 3 still in Progress)

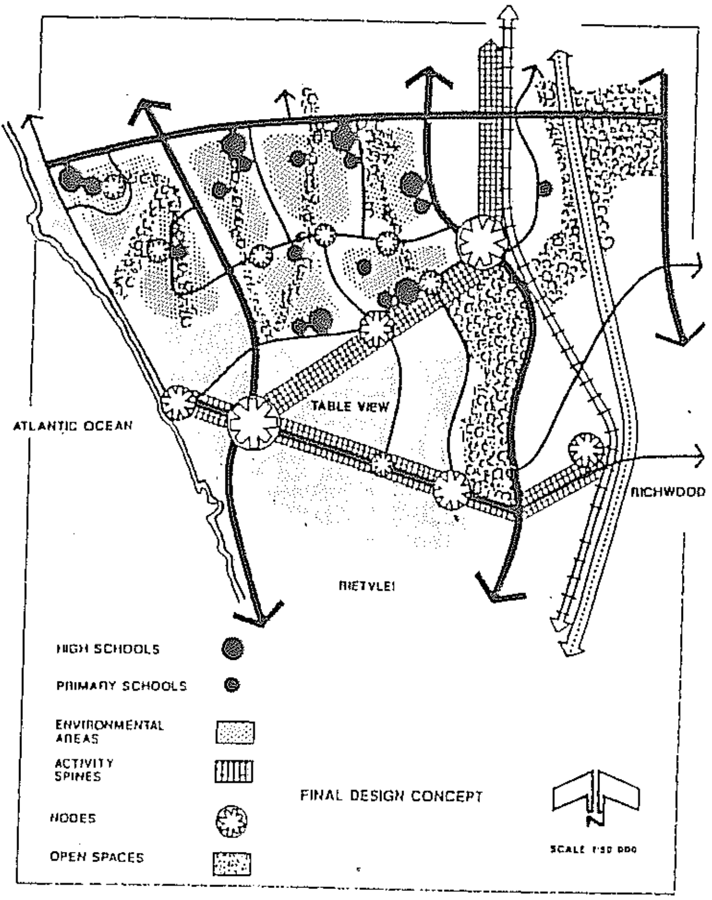


Figure 2.3: Table View North Structure Plan (March 1991)

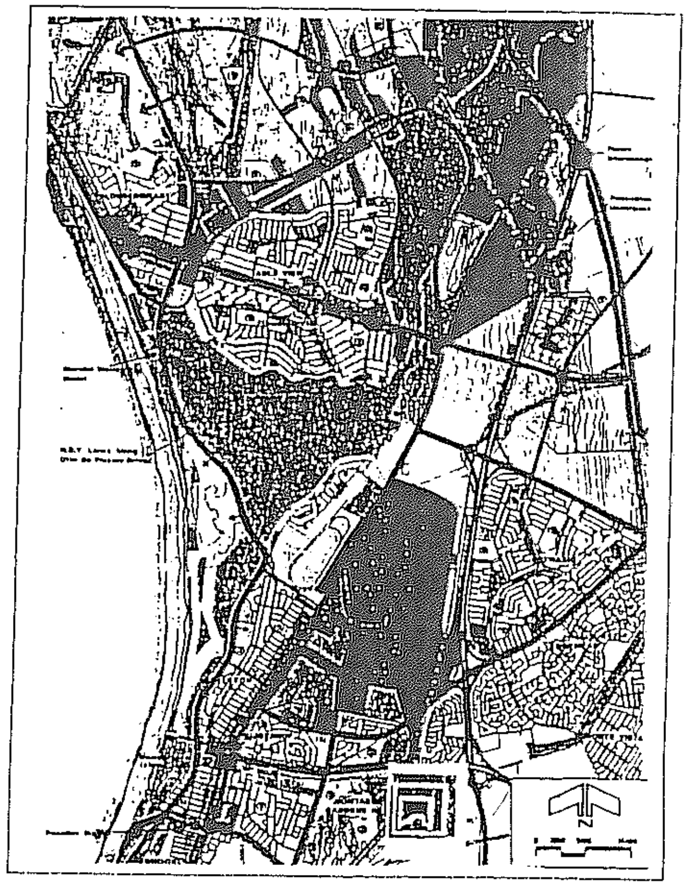


Figure 2.4: Milnerton and Environs Structure Plan (December 1997)

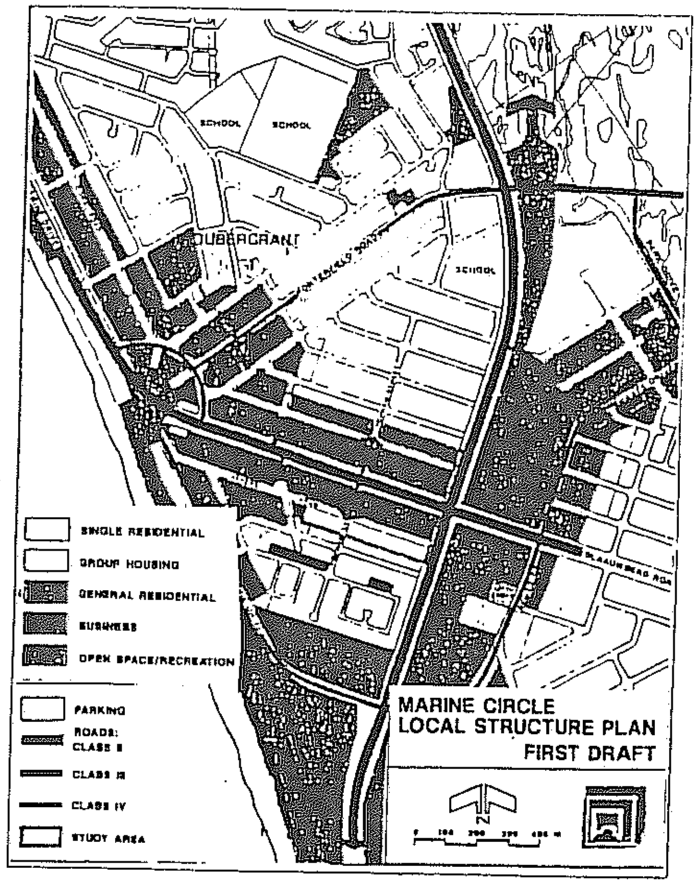


Figure 2.5: Marine Circle Draft Framework (February 1996)

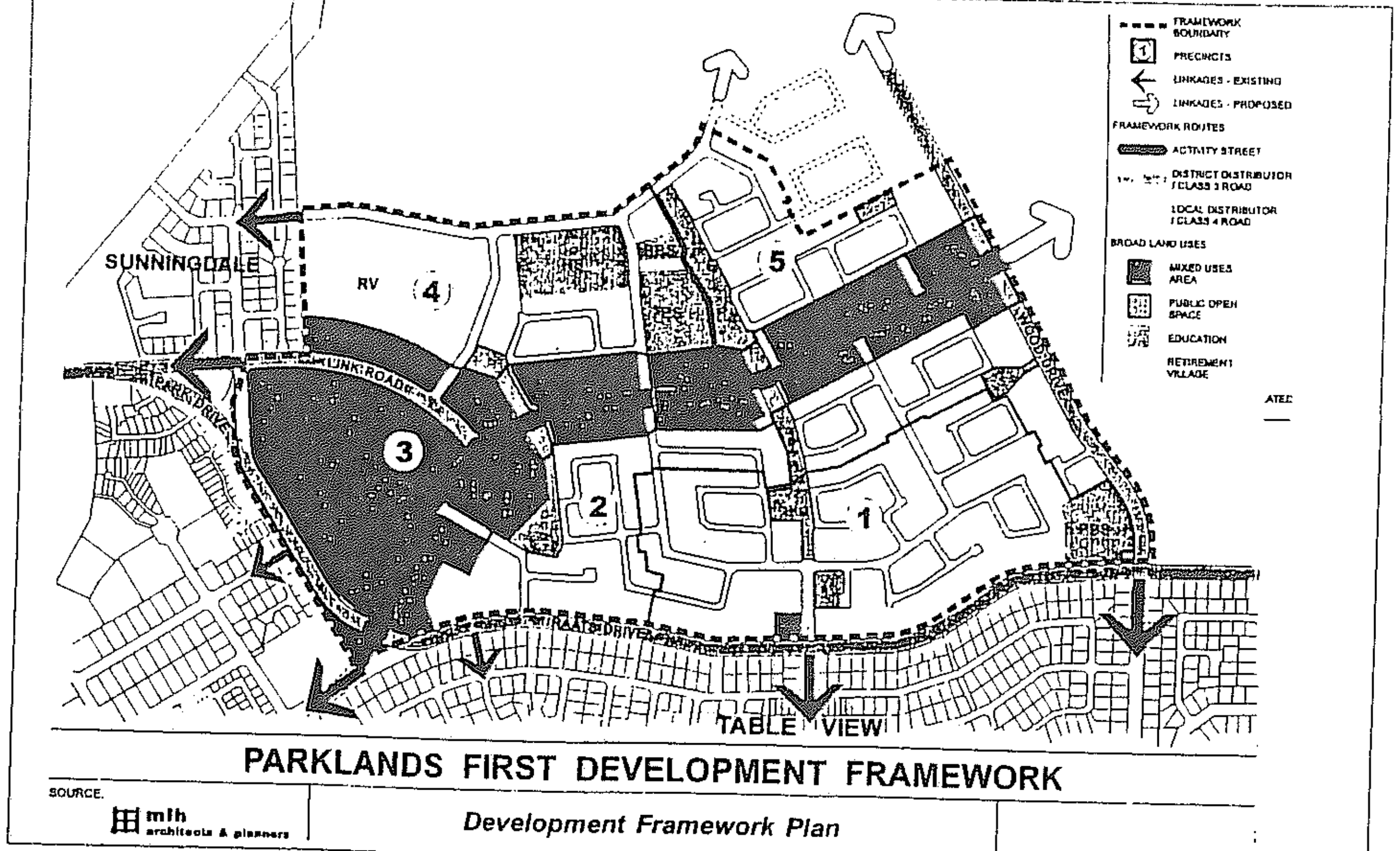


Figure 2.6: Parklands Development Framework (November 1997)

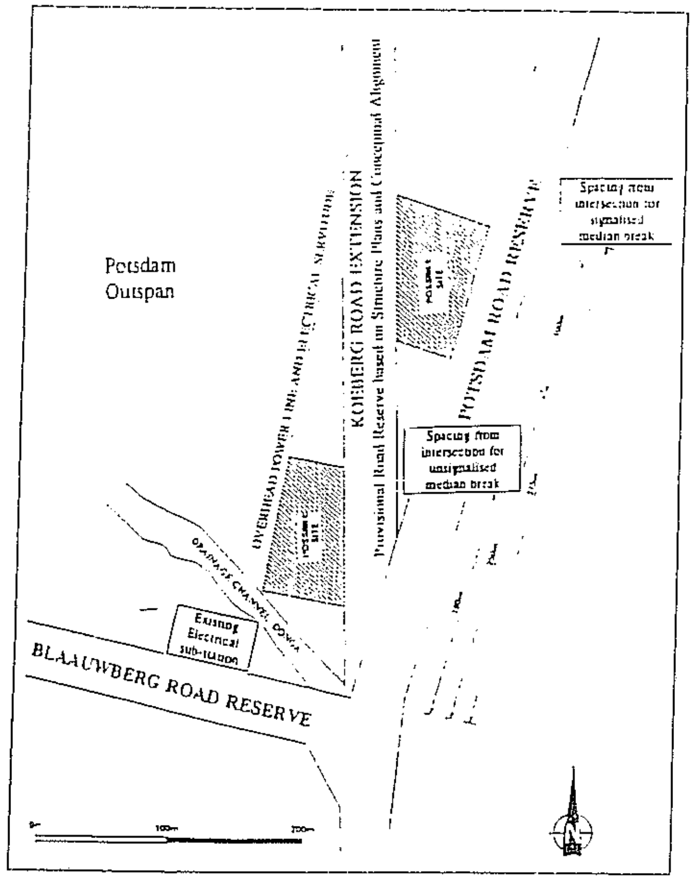


Figure 2.7: Potsdam Taxi / Bus Terminus (November 1997)

2.8 BLAAUWBERG / KOEBERG INTERSECTION. LOCAL STRUCTURE PLAN

A working group of the then Milnerton Municipality appointed consultants (Gapp, October 1995) to take a holistic view of development opportunities at the intersection to devise a strategy "that will effectively link physical, economic and environmental consideration".

Proposals impacting on the area include:

- The various alignments for the extension of Blaauwberg Road proposed in the Milnerton Structure Plan, and the Table View North Structure Plan;
- The proposed diamond interchange will have considerable implication for site access;
- The various re-alignments of Koeberg Road and their impact on the Nature Area and Killarney Race Track.

These are indicated on Figure 2.8 and include:

- Conservation of Potsdam Natural areas and integration with Rietvlei;
- Fencing and controlled entrance;
- Intensive utilisation of the 'Outspan' for recreational use;
- Resist attempts to rezone and develop the "Outspan";
- Develop a formal bus terminus and taxi rank including a service station and truck stop;
- Finalise the alignment of Koeberg / Blaauwberg Road intersection and improve to cater for increased traffic as an at-grade intersection;
- The works Yard site should be developed for motor related or light manufacturing;
- Urban design and landscaping guidelines should be drawn up.

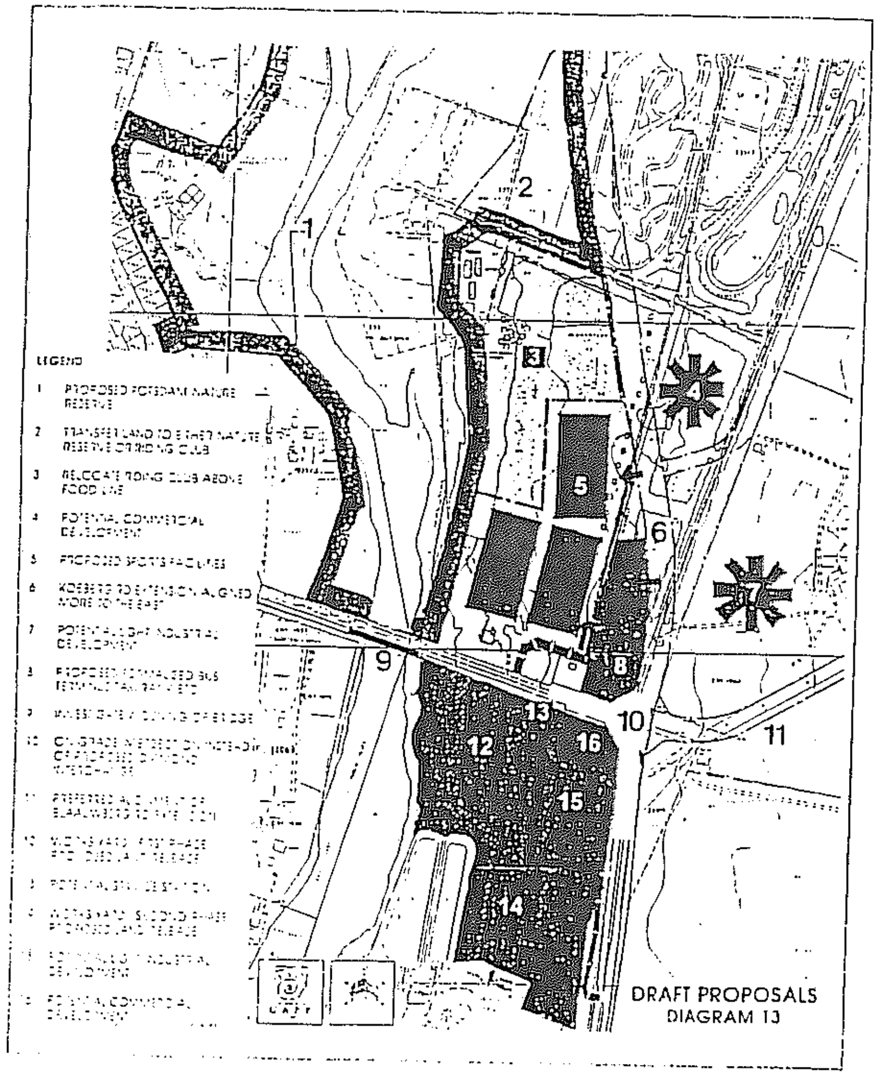


Figure 2.8: Blaauwberg / Koeberg Intersection (October 1995)

2.9 BLAAUWBERG ROAD EXTENSION : ALTERNATIVE ROUTE ALIGNMENTS

Jeffares and Green in a report prepared in April 1998 prefer the northern route on the grounds of its superior:

- Travel time savings;
- Support for public transport;
- Developmental effectiveness;
- Savings in accidents;
- Lesser risk of exposure to explosions at the Refinery;
- Greater public acceptability;
- Favourable staging options; and
- Lower implementation cost.

2.9.1 Contextual Recommendations

The report recommends that:

- The northern route is accepted in principle as the most effective and that the metropolitan road network is amended accordingly;
- The feasibility of an additional interchange on the N7 between the current Plattekloof and future M12 Interchanges is investigated in more detail, and submitted to the relevant authorities for approval;
- That the classification of Tygerberg Valley Road is changed from a Class 3 to a Class 2 road;
- The location of stations on the Cape Town - Atlantis rail line in the vicinity of Blaauwberg Road is reviewed; and
- The preliminary design for the northern route alignment be finalised to protect the road reserve.

3.0 PRECEDENT

In an attempt to analyse the future form and function of Blaauwberg road, international and local precedent has been looked at.

3.1 CURITIBA

In 1974 a competition was held to provide the city of Curitiba in Brazil, (a city as old as Cape Town, the size of Bloemfontein, with 1.5 million people) with a traffic and land use management plan. The winning entry set out to integrate technical, business and community concerns. The city would no longer grow in ever widening circles; instead it would follow a linear plan. High rise buildings would be concentrated along the public transit axes, improving traffic flows and curbing the growth of wealthy "ghetto" suburbs.

Curitiba pioneered the use of express busses on exclusive traffic lanes. Articulated busses 25 meters long carry 270 people. Their exits lock into the *ligeirinhos:* specially designed perspex-tube shelters where passengers pay their fare on entry to speed up boarding once a bus arrives. The city's transport network embraces a 509km web of five radial axes, 270km of feeder lines and 185km of inter district lines. It carries more than half a million passengers per day.

To briefly summarise, Curitiba has become a world leader in effective city management with a clear vision of its future development and an effective implementation programme. The most outstanding aspect of Curitiba is the degree of integration that has been achieved of the whole city management effort. There is inter-professional co-operation and collaboration with a co-ordinated approach to the prioritisation of problems and issues across all sectors. For example, the bus transport system and the land use planning process are mutually supportive and relate to the overall objective of the attainment of a sustainable urban system. Refer to Figure 3.1.

Emphasis clearly has been directed towards making the city a lovely place to live, work and recreate. Priority is given to collective transport rather that individual transport. Cleanliness is almost everywhere and pride in the appearance of the city is all embracing. The street is the meeting place, the "social glue" and a place for community life.

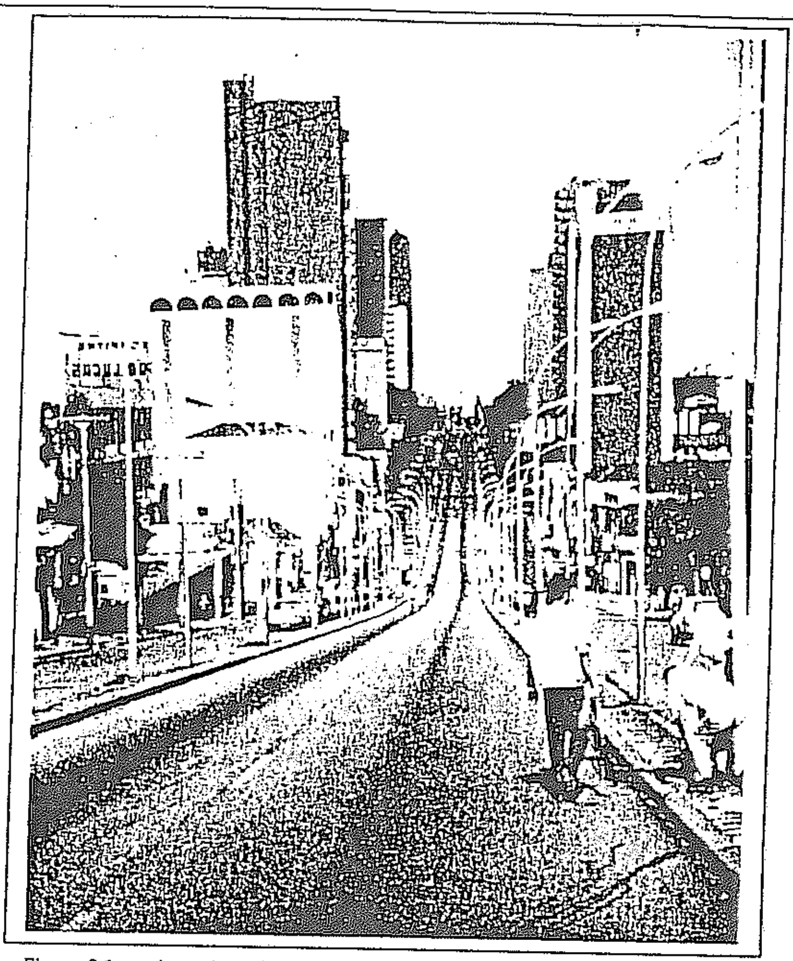


Figure 3.1: A section of the "trinary" transport system in Curitiba showing the median bus lanes and high density residential.

3.2 DURBAN ROAD

Durban Road in Bellville is introduced as an important precedent due to its highly successful and prolific economic development over the past four years. Underlying success factors include:

- high traffic flows
- decentralisation forces from the CBD
- growing wealthy residential hinterland
- large regional shopping centre
- good access/linkage to Metro Road System
- pro-active local authority

The then Bellville Municipality was proactive in anticipating development possibilities along Durban Road, and hence started to implement key infrastructure from the outset. A "start, small, and build-outward later" philosophy was adopted, establishing several "generations" of redevelopment, approximately three to four years apart.

Quality "A" grade office developments, with specific retail facilities, were encouraged. Retaining a human scale was a key urban design principle to govern the height and bulk of individual buildings. Likewise, good quality landscaping was initiated via specific guidelines. Durban Road successfully integrates mobility and accessibility functions. Refer to Fig. 3.2.

The next "phase" for Durban Road is to ensure residential integration. However, a problem arises in that land values are constantly escalating, resulting in office space speculation and hence an oversupply. This problem should be avoided in the Blaauwberg Road study area, by integrating residential development with other land uses from the start.

An important lesson from Durban Road is the extent of development possible within a more constrained city block than Table View. In contrast to Blaauwberg Road's 57m reserve and 42m wide blocks, Durban Road has 2 x 25m wide one way couplets, with only a 30m wide block width. (See Figures 3.3 and 3.4 overleaf)

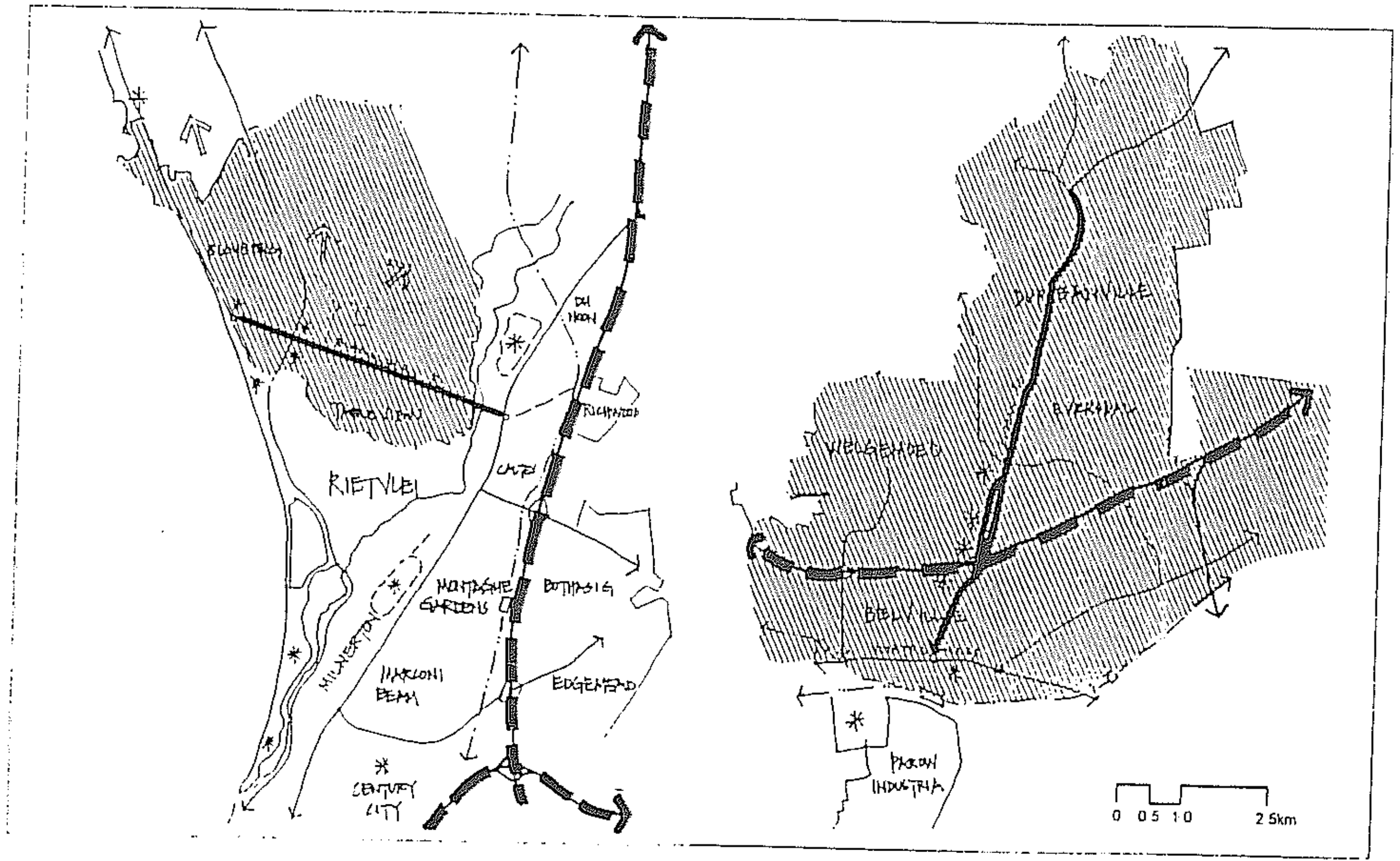


Figure 3.2: Comparative Area Analysis : Table View and Durbanville

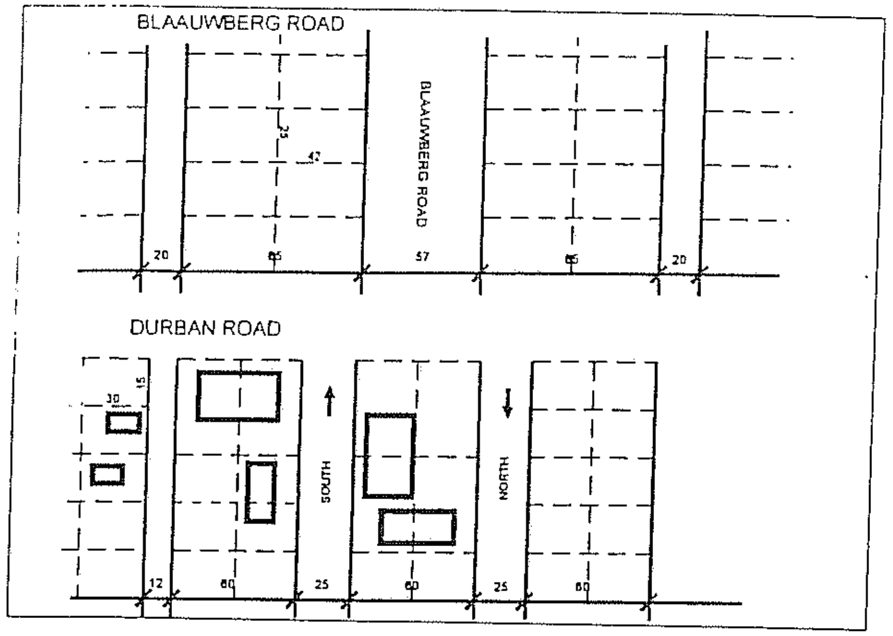


Figure 3.3: Block widths in Blaauwberg vs Durban Road

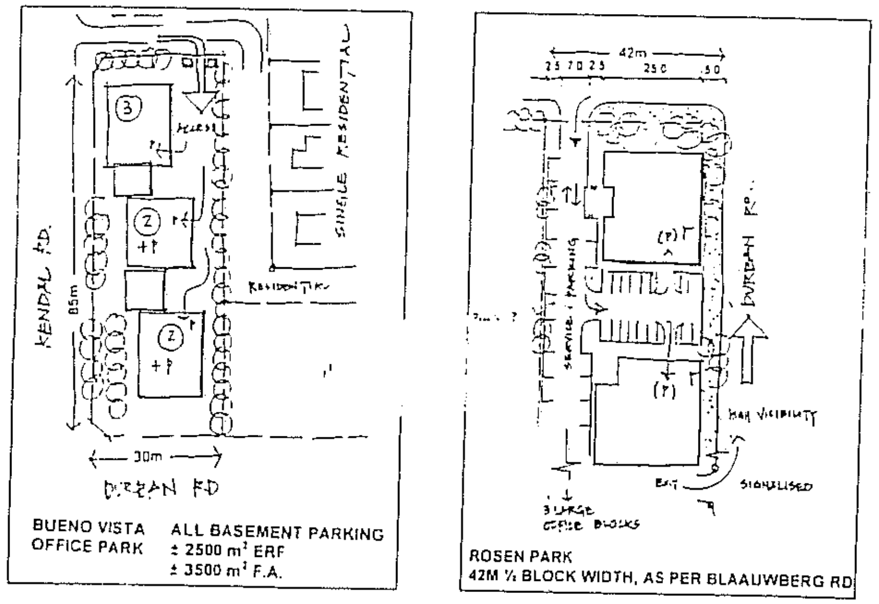
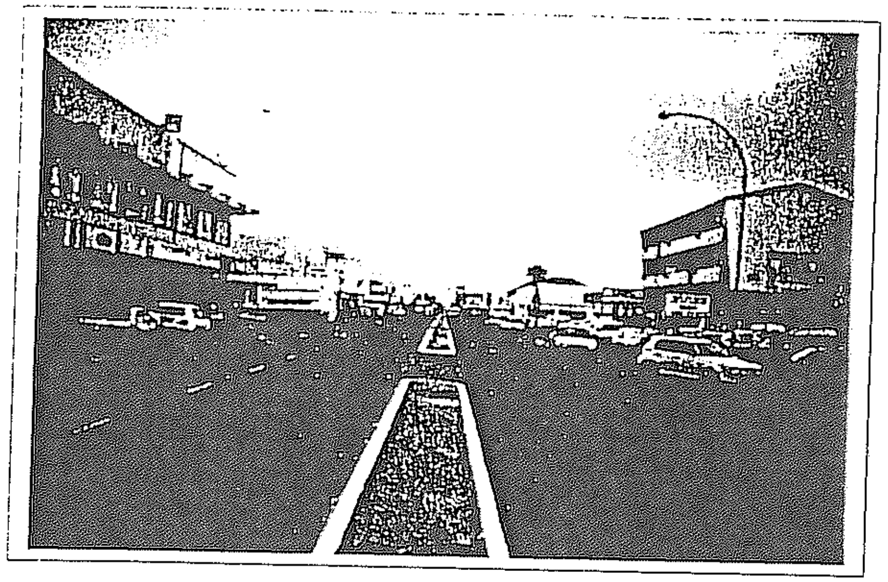


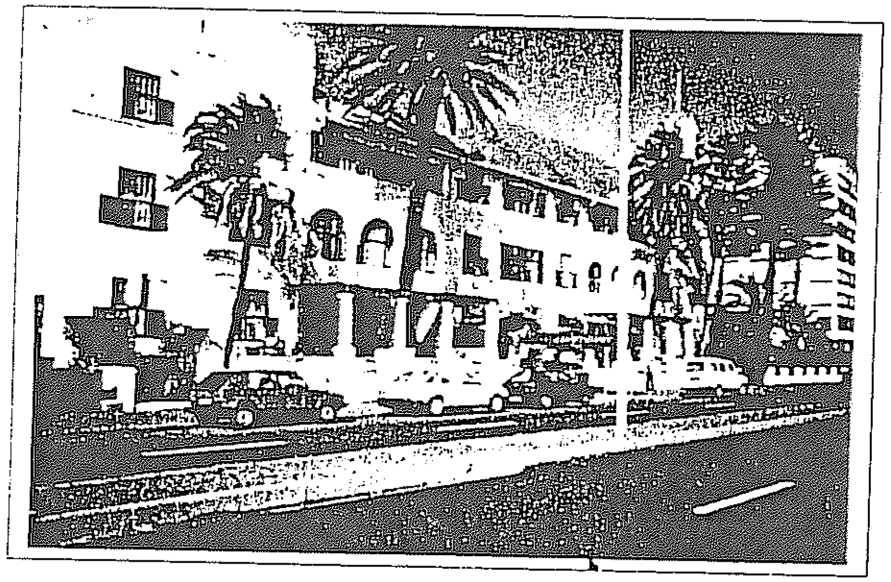
Figure 3.4: The diagrams indicate examples of the type of development configuration that has emerged in Durban Road.

3.3 OTHER LOCAL EXAMPLES

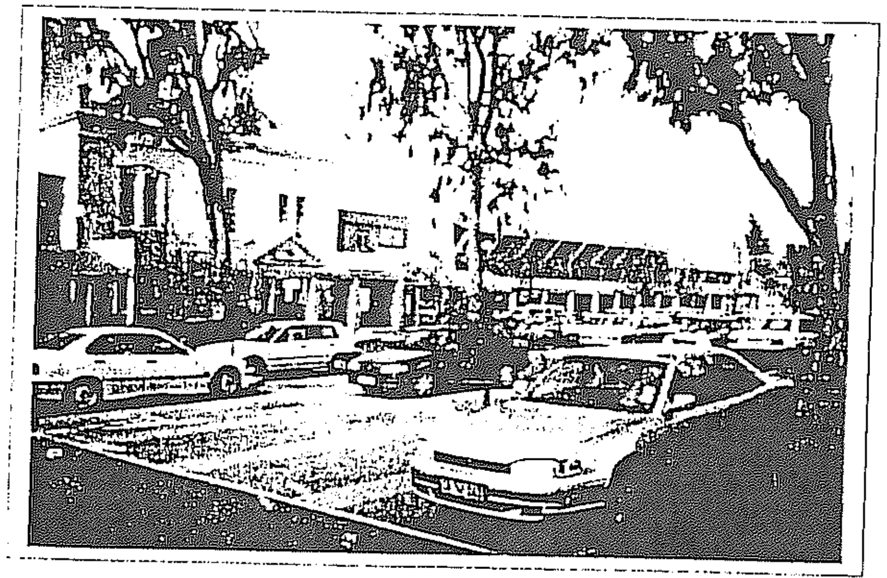
The photographs alongside indicate several local examples of combined accessibility and mobility routes from around Cape Town which illustrate both positive and negative features.



Voortrekker Road.

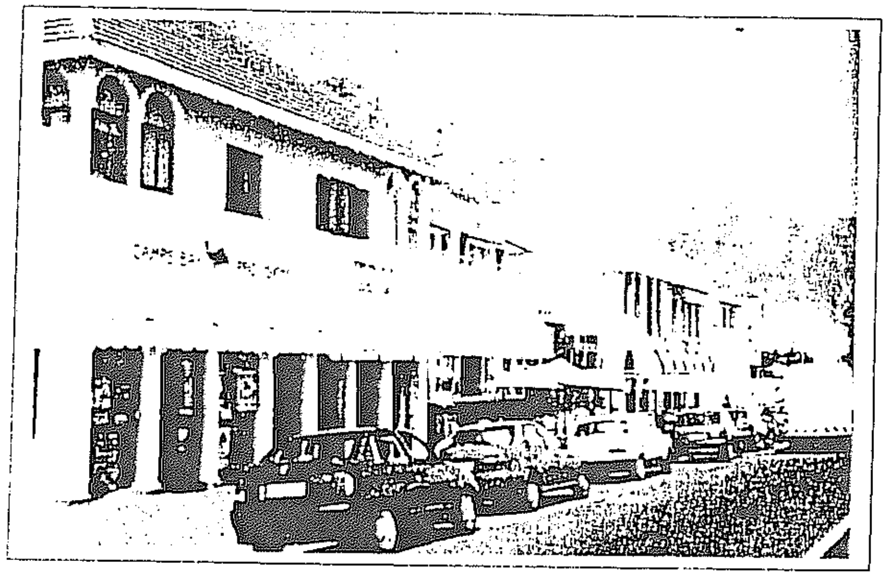


Beach Road; Sea Point.



Rosmead Avenue.

Victoria Drive; "New"Camps Bay.



Victoria Drive; "Old" Camps Bay.

Victoria Road; Hout Bay.

Figures 3.5: Local Precedent : Movement And Activity Routes

4.0 "VISION"

The overall vision for Blaauwberg Road is to combine the "activity" and "mobility" function of this corridor (refer to Glossary) by:

- Providing for both free flowing traffic, public transport, access to erven, as well as pedestrians and cyclists;
- Promoting a higher density of mixed use development along its axis;
- Enhancing existing activity nodes;
- Integrating the metropolitan open space system effectively.

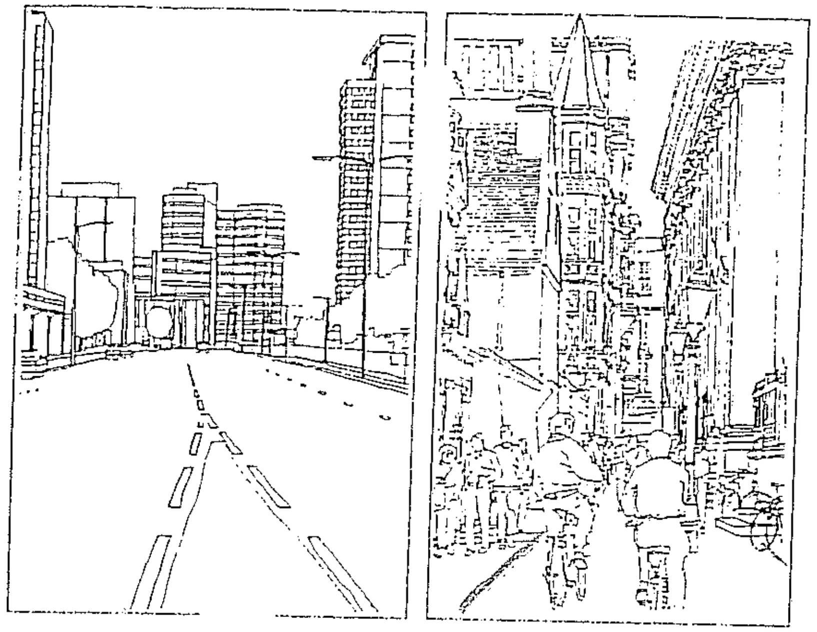


Figure 4.1: Mobility (left) versus Activity Streets (right) - encouraging a combination of use (source: Tibbalds, 1992)

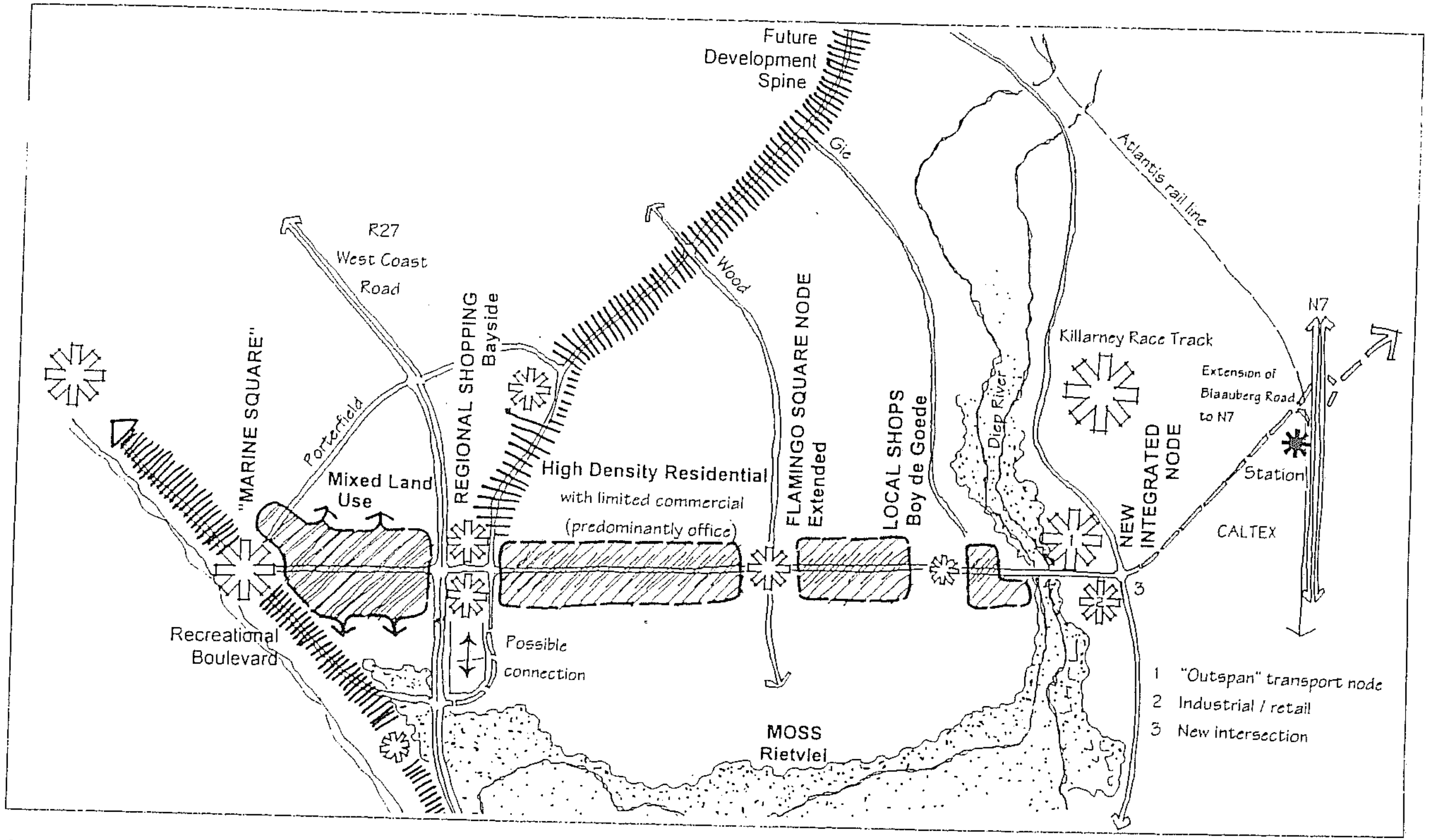


Figure 4.2: "The new heart of Table View" - Promoting an integrated transport, land-use and public open space system, to ensure a mix of land-uses and vibrant activity nodes

4.1 COMBINED ACTIVITY AND MOBILITY STREETS

Many "modern" environments are unfortunately characterised by spread-out, mediocre buildings, "left-over" space, and uncomfortable "human scale". Most of these environments have been designed for the benefit of motorised vehicles, and have devastated towns and cities the world over. By contrast, "traditional" or historic environments emphasise spaces between buildings and usually demonstrate principles relating to human scale, richness, contrast and "legibility".

Recent research into efficient patterns of urban structure and the development role of transport, notably the MSDF and work for the Dept of Transport (see CNP; Activity Corridors as an Urban Strategy), identified "activity streets" as an important element of city structure for the following reasons:

i. These streets are major transportation routes for both local pedestrians and vehicles as well as for through traffic from other areas;

ii. This higher order of traffic in turn makes these streets the local focus of business activities, for instance for retail and office land-uses;

iii. All this activity generates a local focus of convenience and efficiency for the location of other higher order facilities for instance, schools, crèches, sports fields, medium and high density residential development, cinemas, theatres and so on;

iv. These linear routes tend to be the focus of problems and issues that have to be addressed by local authorities. These range from traffic and parking problems to the high number of rezoning applications that are received for properties nearby or abutting these routes.

The combining of the "activity" and "mobility" function of Blaauwberg Road has been supported by the Technical Steering Committee of this project including the Provincial Roads and Metropolitan Transport authorities. Indeed, the initiatives have been welcomed as a desirable "prototype" which can be applied to a variety of urban contexts where the separation of "access" and "mobility" is not desirable.

4.2 MIXED LAND USE, DIVERISTY AND VITALITY

Urban planners have been advocating for some time the merits of intensifying residential densities and increasing the range of land-use mix along important movement routes.

This approach directly addresses the need to reduce travel distances, increase local convenience and reduce urban sprawl. It is premised on "urban" living as a more efficient and enabling life-style than low-density suburbia that is dependent on ownership of motor cars in order to function. Growth of the city should be accommodated through intensifying land-use along existing linear routes or traffic desire lines, as proposed in the MSDF, rather than establishing discrete new towns or suburbs.

The recreation of a rich and diverse public environment is one of the urban planner's most important tasks in late twentieth century society. Urban environments should be complex, intricate and lively, but too often are undermined by the over-simplification of land uses or activities, and dull uniformity. We must aim to produce environments which are of a mixed-use nature and are of a deliberately rich and varied character.

In recent decades, concepts of zoning complexity and diversity, particularly along activity corridors such as Blaauwberg Road, are not easily embraced by city builders - whether architects, planners or developers. By contrast, the mixed-use character of traditional urban streets, such as Victoria Road in Woodstock or Main Road, Wynberg, where the typical "high street" building block consists of ground floor shops with offices and/or residential accommodation on the upper floors is based on those universal principles that make historic cities in Europe so attractive.

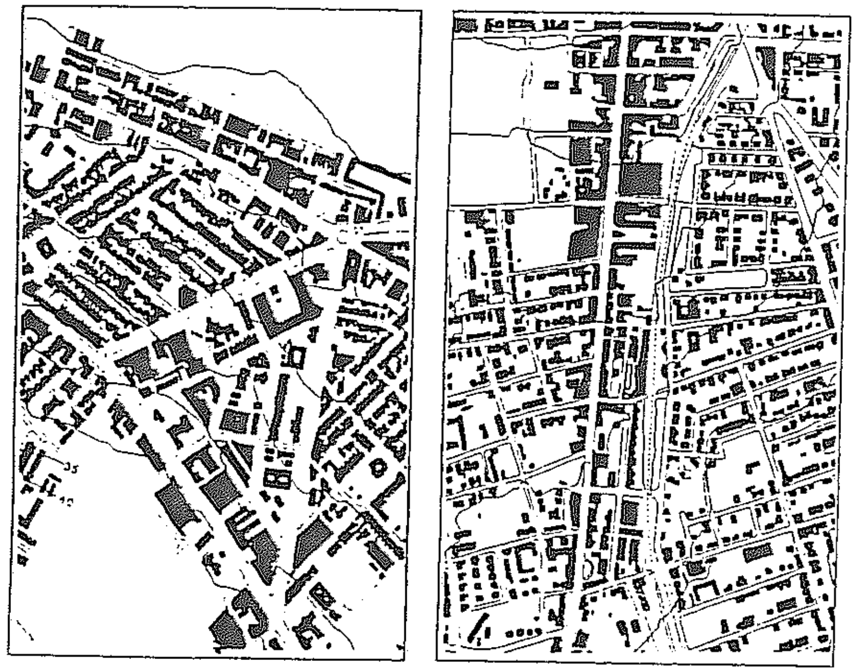


Figure 4.3: Traditional Urban Corridors : Victoria Road, Woodstock (left) and Main Road, Wynberg (right). (source: Dewar, et.al.)

Jane Jacobs (ref. Tibbalds, 1992) defined four conditions for generating "exuberant diversity" along an urban corridor so relevant to a management strategy for new development along Blaauwberg Road. They are worth quoting in full:

- Activities along an urban corridor must serve more than one primary function; preferably more than two. These must ensure the presence of people who go outdoors on different schedules and are in the place for different purposes, but who are able to use many facilities in common.
- Most blocks must be short; that is; streets and opportunities to turn corners must be frequent.
- The urban corridor must display a variety of buildings that vary in age and condition, including a good portion of old fabric so that they vary in the economic yield that they must produce.
- There must be a sufficiently dense concentration of people, for whatever purposes they may be there. This includes dense concentration in the case of people who are there because of residence.

Jacobs had much to say about each of these conditions, but perhaps the most important was that each one was not enough by itself. All four in combination are necessary to generate urban diversity; the absence of any one of the four frustrates an urban corridor's potential.

Furthermore, the interface between the built fabric and the street, along traditional urban corridors, displays a fundamental effect on the quality of public space. Interface provides the public space with a sense of scale, enclosure, shelter, continuity and protection: basic design principles currently absent along Blaauwberg Road. Consequently, these design principles influence the way in which the public space is used.

Most successful urban activity streets ensure that the interface provides a positive space and that it accommodates necessary social functions. A management strategy to guide new development along Blaauwberg Road will harness these design principles.

4.3 INTEGRATING TRANSPORT SYSTEMS WITH LAND USES

Cape Town's metropolitan area is highly dependent on private owned transport. Consequently, existing transport systems are inefficient and expensive. Rail, taxi and bus systems need to be integrated to create an effective, economical and efficiently managed system of access to and from all parts of the metropolitan area. Furthermore, transport links should be integrated with land-use developments. Higher density activities need to be concentrated around transport routes. A management approach that will transform the system and facilitate ongoing physical change, is required.

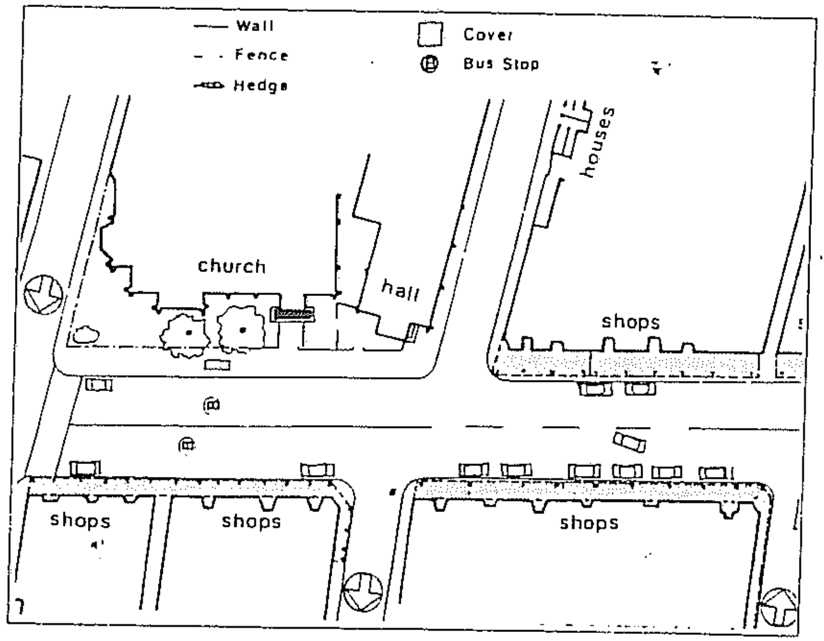


Figure 4.4: Integrating Urban Space, (source: Dewar, et. al.)

4.4 ENHANCING EXISTING ACTIVITY NODES

The importance of the street as a key component in the urban fabric should be re-established. Internal shopping centres and comprehensive development schemes have all too often destroyed street continuity (for example Bayside Centre). Their impact on the streetscape has invariably been a damaging one. They have tended to produce blank, bland frontages, facades set back from the street edge and many awkward leftover spaces. As opportunities arise through redevelopment, the raw and ragged edges resulting from insensitive past design must be mended. Building lines should be re-established to defined streets, nodes and public realms.

4.5 INTEGRATING THE METROPOLITAN OPEN SPACE SYSTEM (MOSS)

It is of fundamental importance to create an integrated, linked and well-maintained metropolitan open space system, to provide opportunities for conservation and recreation. Blaauwberg Road connects two important metropolitan open space systems; the Diep River Corridor, and the Table Bay beachfront. At the local level, the road itself, with its impressive avenue of eucalyptus trees, forms an open space corridor in its own right.

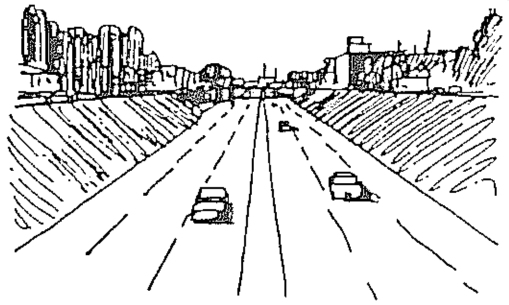
4.6 SUMMARY: THE URBAN DESIGN VISION

URBAN DESIGN : "TEN COMMANDMENTS"

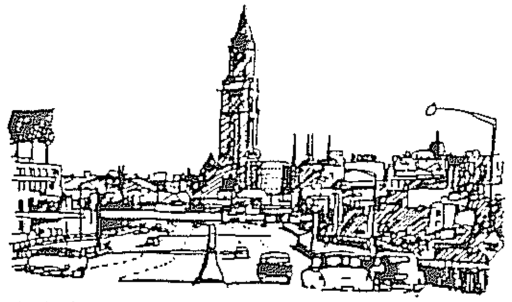
1. thou shalt consider places before buildings;
2. thou shalt have humility to learn from the past and respect thy context;
3. thou shalt encourage the mixing of uses in towns and cities;
4. thou shalt design on a human scale;
5. thou shalt encourage freedom to walk about;
6. thou shalt cater for all sections of the community and consult with them;
7. thou shalt build legible environments;
8. thou shalt build to last and adapt;
9. thou shalt avoid change on too great a scale at the same time;
10. thou shalt, with all the means available, promote intricacy, joy and visual delight in the built environment.

(source: Royal Town Planning Institute)

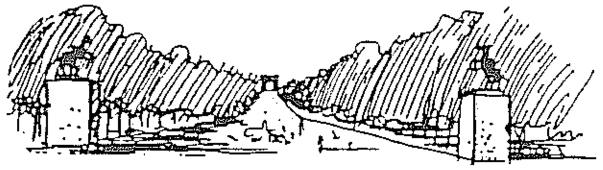
Figure 4.5: Urban Design: Ten Commandments



A six-lane sunken *expressway in Detroit.*



A six-lane elevated *expressway in Boston.*



The Champs Elysées in Paris

Figure 4.6: Expressways

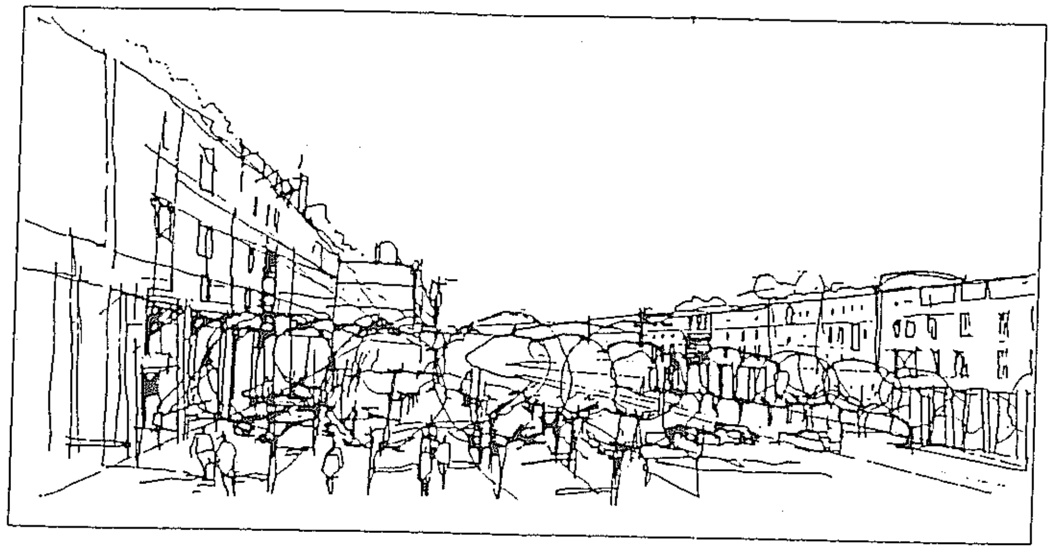


Figure 4.7: Enclosed street space : Las Ramblas, Barcelona

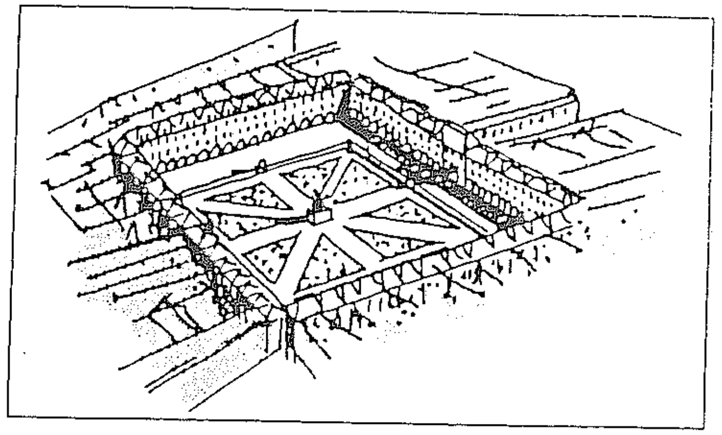


Figure 4.9: Place des Voges, Paris

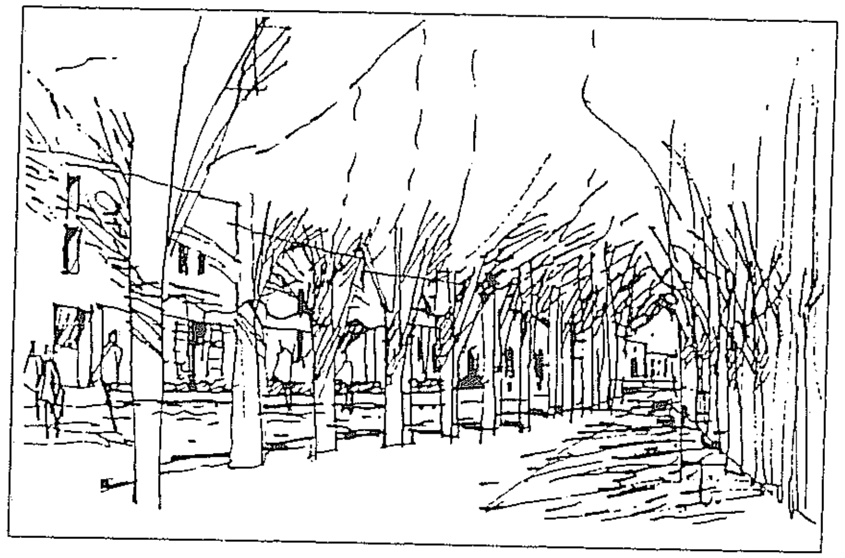


Figure 4.8: Tree lined boulevards

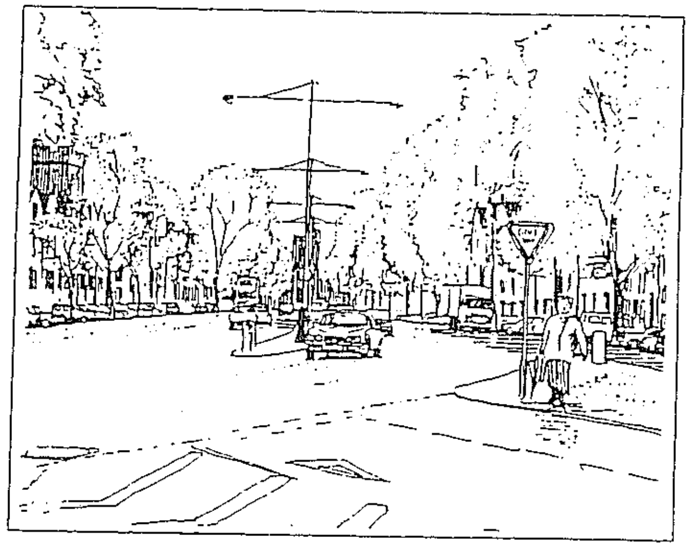


Figure 4.10: St. Giles, Oxford, England

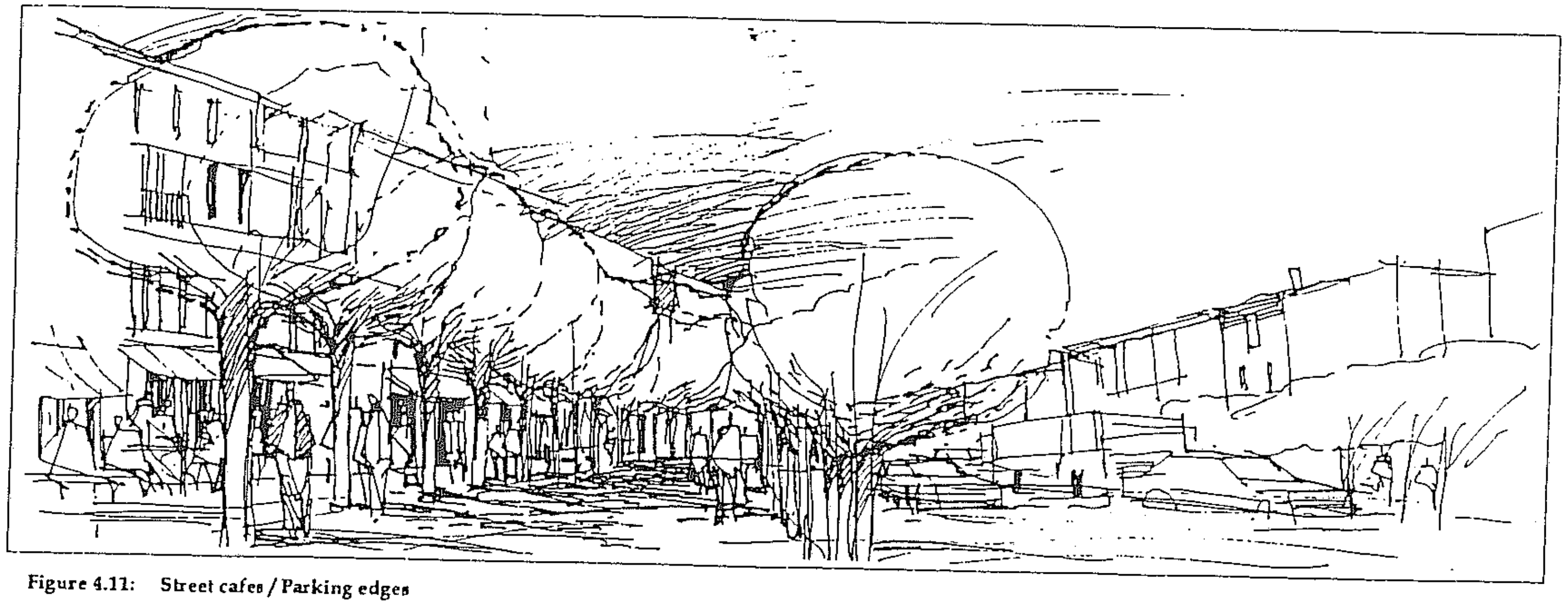


Figure 4.11: Street cafes / Parking edges

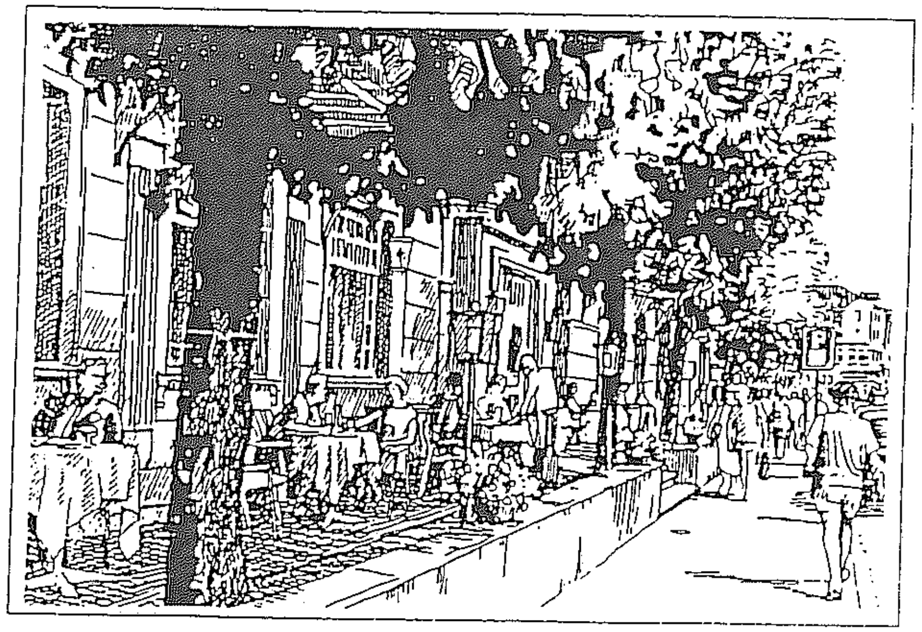


Figure 4.12: Street cafes / Parking edges

ANALYSIS SECTION: The next three chapters of the report provide an in-depth analysis of the existing situation in Blaauwberg Road itself. The discussion is separated as follows:

Chapter 5 : Land Use & Urban Design
Chapter 6 : Environment
Chapter 7 : Traffic and Transport

5.0 LAND-USE AND URBAN DESIGN ISSUES

5.1 CHARACTERISTICS OF THE CORRIDOR

The Blaauwberg Road Corridor from Marine Circle to Koeberg Road is approximately 5 kilometres in length with distinctive sections, nodes and precincts which are briefly described below, (refer to Figure 5.1). A further analysis from a transportation perspective is contained in Chapter 7.

5.1.1 Sections

The corridor has three distinct sections.

- Section I: Marine Circle to West Coast Road
    - The existing cross section of this section of road is a central 2 lane carriage-way with service roads on each side separated by wide medians.
    - In terms of the D.o.T road access policy, this section of road is a Class 2 in an "intermediate" development environment, but in the future it could be classified as a "Class II in an urban environment".
- Section II: West Coast Road to Diep River Bridge
    - The cross section of this section is the reverse of Section I, comprising a dual carriage-way of 2 lanes each with a large central median. No service road exists.
    - In terms of the road access policy, this section is a "Class II in an intermediate development environment".
- Section III: Diep River Bridge to Koeberg Road
    - This section of road has a narrower road reserve (50m); and a 4 lane divided cross section which widens to 5 at the Koeberg Road intersection. Ultimately, this section will have a 6 lane divided cross section in the vicinity if the bridge.
    - The road is a continuation of the Class II mobility route.

5.1.2 Precincts

The corridor can be divided into several precincts within the three broad sections, indicated diagrammatically on Figure 5.1.

5.1.3 Nodes

Figure 5.1 similarly indicates the pattern of existing "nodes" and indicates comfortable (5 minute) walking distance radii (400m). Of note is that, at least 4 blocks on either side of the corridor would fall into a comfortable walking distance to potential facilities in the road. No overlap exists, indicating that existing nodes along Blaauwberg Road are inadequate and spread-out, resulting in a built environment that is highly dependent on motor vehicles.

5.2 RESIDENTIAL DENSITIES

The MSDF highlights the need to intensify densities along major corridors and spines so that as many people as possible live within walking distance of potential public transport corridors.

Such a pattern would reinforce the economic thresholds required to support higher level activities like shops, offices, and transport services that should naturally occur along an urban corridor.

Research has shown that densities exceeding approximately 17 dwelling units per hectare are the minimum threshold to support public transport. In addition to high population densities will ensure a twenty-four hour presence and enhance surveillance and safety.

Figure 5.2 indicates an analysis of existing residential densities along Blaauwberg Road.

In summary, an average density exists, within the first 1½ blocks on each side of the road of approximately 23,8 du/per hectare. Therefore, sufficient density presently exists to support a public transport system. The dominance of private car ownership and lack of work opportunities in the area however mitigates against public transport.

5.3 LAND-USE PATTERNS

A "fine-grained multi-functional mix" including a range of dwelling types, shopping, working, community, educational, worshipping and recreation, is required for environments to be lively, safe, offering multiple opportunity and economically efficient. "

Figure 5.3 illustrates existing land-uses along Blaauwberg Road. The corridor is beginning to display a degree of mixed uses, particularly in Section I, but lower to medium density residential predominates as a land use (as indicated in 5.2). A distinction is made between "apartments" and "group housing". this has been based on horizontal separation of units for the former, and vertical for the latter.

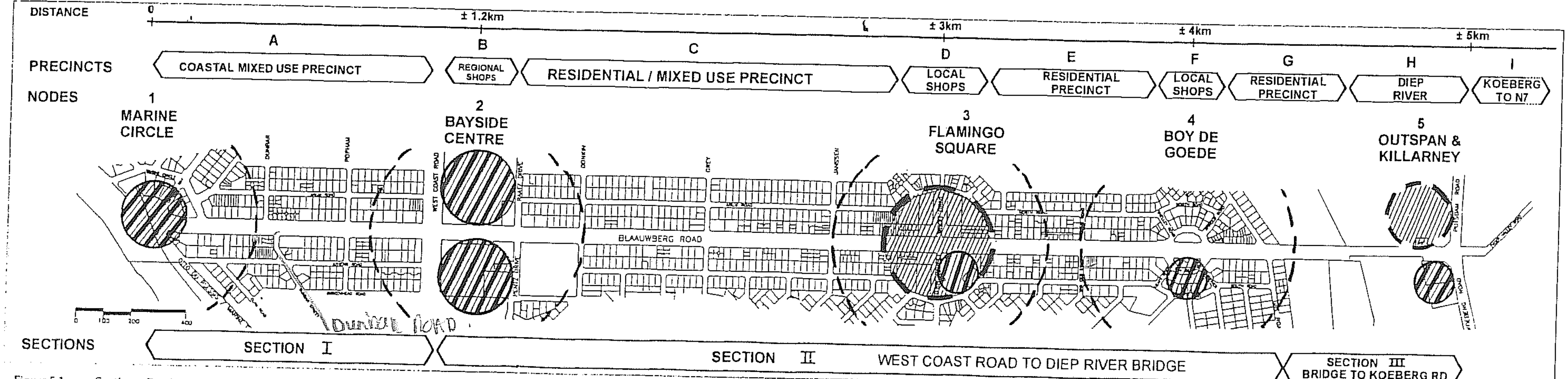
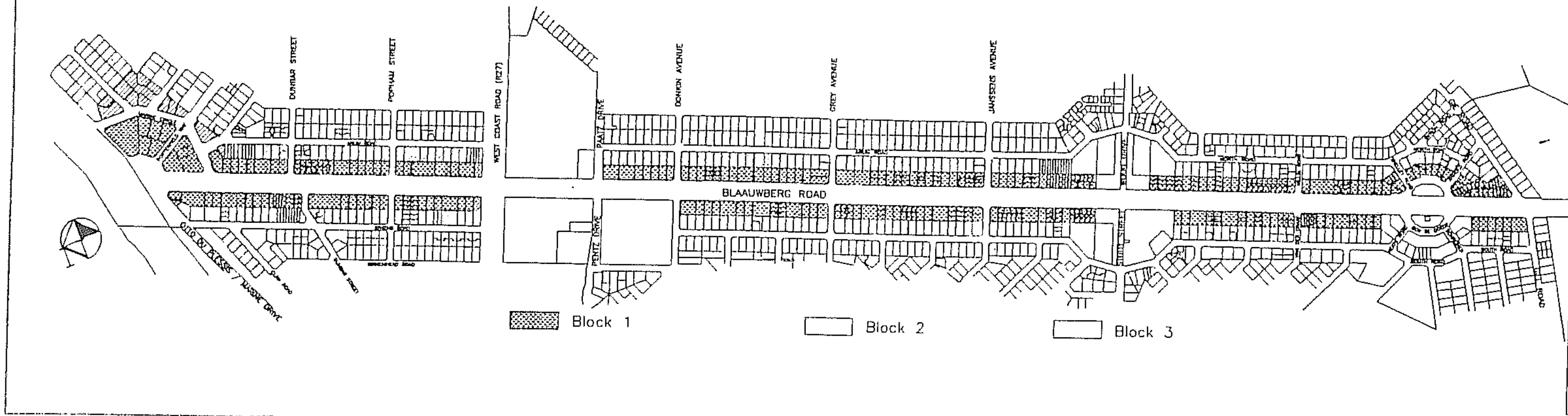


Figure 5.1: Sections, Precincts and Nodes of the Blaauwberg Road Corridor. Also indicated is a comfortable walking distance radius from the nodes (200 m).



Block	Land use	Existing
First half block	Retail/Office Commercial Residential	998 units (35 units/ha)
Second half block	Residential	602 units (22 units/ha)
Third half block	Residential	494 units (18 units/ha)
Total	Retail/Office Commercial Residential	2 094 units (25 units/ha)

Figure 5.2: Existing residential densities

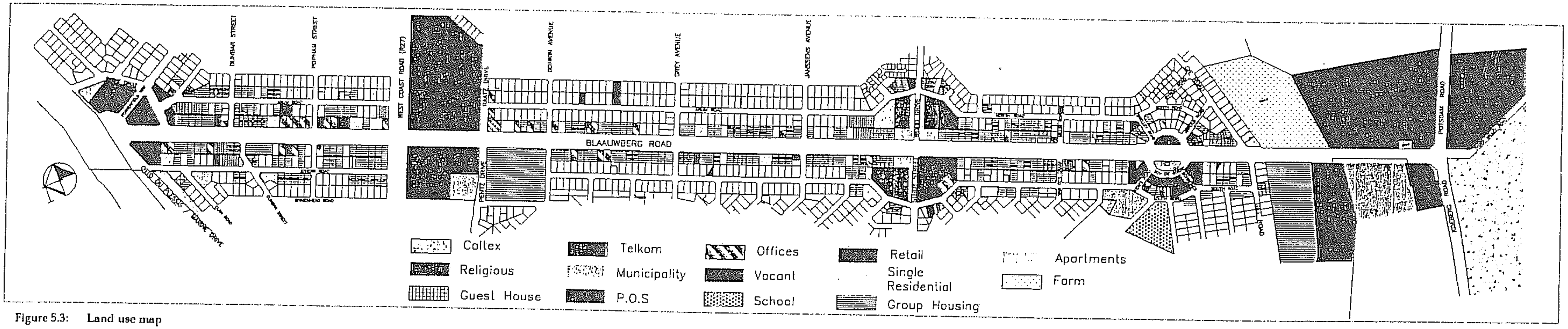


Figure 5.3: Land use map

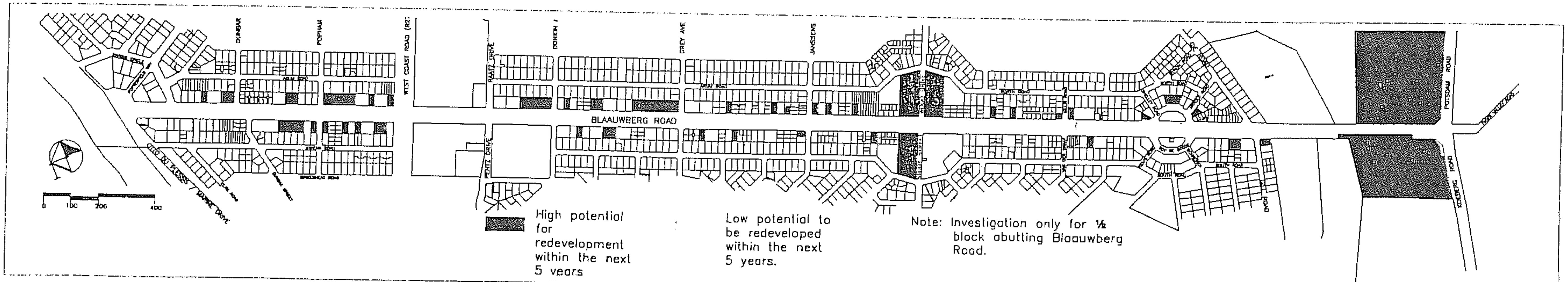


Figure 5.4: Areas of High Land Use or Redevelopment Potential

These trends in land use change have lead to this study. The "exposure" of the road to moving traffic and therefore "visibility" is naturally leading to pressures for a change of use to commercial and office. This pattern of commercial and office transformation is indicated on Figure 5.3.

The challenge of growth management is to recognise and appropriately guide and control these urban land uses and transportation forces dynamic.

5.4 AREAS OF HIGH LAND-USE POTENTIAL

Figure 5.4 indicates (estimated areas of relatively short-term within the next five years) redevelopment potential. (Analysis only along Blaauwberg Road edge.) These sites are either vacant, are of a single residential nature, or have not undergone change of use by means of subdivision, consolidation or redevelopment in recent years.

Areas of highest potential exist around Flamingo Square and where contiguous properties of a single dwelling nature exist.

The area of greatest apparent potential (but with great complexity due to multiple ownership) due to its incredible location, is the Marine Circle Area.

Similarly, the Outspan/Potsdam site, due to its vacant nature, and situation on a prime intersection has enormous potential. The fact that it is in public ownership however, along with P.O.S. zoning has mitigated against its development to date.

5.5 ZONING

Figure 5.5 identifies the current zoning of the study area. The corridor is dominated by a "General Residential Zoning" for most of its length, for at least a block and a half. An interesting anomaly however is that the area between Raats Drive and Flamingo Centre only has General Residential Zoning for the immediate half block abutting the road. The hinterland is zoned for single residential.

The pattern of General Business Zoning generally, illustrates the four "nodes" of Marine Circle, Bayside Centre, Flamingo Square, and Boy De Goede. The pattern of formal change of land use to General Business is interesting in that this predominates in Section I (i.e. between Marine Circle and West Coast Road).

Of further interest is to compare the land use map (Figure 5.3) with the zoning map (Figure 5.5 which illustrates the extent of non-conforming use particularly office development in the Raats Drive to Grey Avenue area.

5.6 LAND USE DEPARTURES, VACANT LAND AND LAND IN PUBLIC OWNERSHIP

Figure 5.6, illustrates recent land-use departures granted, as supplied by local authority officials. As may be expected, rezonings from "general residential" to "general business" have taken place predominantly in the area which, in accordance with the various Structure Plans, has been identified as a primary business node for Milnerton (the Marine Circle node). This trend should be encouraged, along with appropriate conditions.

East of the West Coast Road, departures to allow sectional title development are evident. Accordingly, higher density residential developments have been implemented (but usually have exacerbated access problems; Refer to Chapter 7). Remaining departures include work-related activities; such as medical practices, veterinary practices and electronic businesses.

Figure 5.7 depicts the few vacant sites along Blaauwberg Road. These sites present development opportunities, particularly in the vicinity of Marine Circle and Flamingo Square nodes, where mixed-use activities may be intensified.

Figure 5.7 also identifies public open space and land in public ownership. These sites also offer development potential, especially at Flamingo Square, where activities should be intensified through making public land available.

(Note that records show that land is still in Municipality ownership although the land use is for religious purposes.)

5.7 PATTERNS OF CONSOLIDATION AND SUBDIVISION

Figure 5.8 indicates the patterns of historic consolidation and subdivision along Blaauwberg Road. This pattern is important since it gives clues to the type of demand evident, but more importantly, indicates the relative difficulty that will be experienced in regard to ensuring better access and configuration. (Refer to Chapter 7.)

Erven that have been subdivided will generally create greater amounts of vehicle conflict / access points whilst those that have been consolidated generally have single points of entry to secure premises.

5.8 BLAAUWBERG ROAD AS MOBILITY ROUTE

Figure 5.8 illustrates existing consolidated and sub-divided sites along Blaauwberg Road. Almost half of the sites along Blaauwberg Road have been subjected to a cadastral change, by either consolidating or subdividing existing erven.

Short-term physical change of sites with recent cadastral amendments would be highly unlikely, due to financial costs, planning complexities and a deflated economic market.

Figure 5.4 identifies those erven that have recently undergone some form of renovation or upgrade, and will probably not be to redeveloped in the short term.

Included in the category of sites that are not likely to undergo land-use or development change in the short to medium term are the two regional shopping centres. Remaining sites represent those that are most likely to undergo redevelopment or land use change in the short to medium term.

Figure 5.6 indicates that the trends along Blaauwberg Road are not towards consolidation but unfortunately for subdivision. This pattern has resulted multiple access points onto Blaauwberg Road which compromises its mobility function.

Approximately 20%, of all the erven along Blaauwberg Road have been consolidated. The Management Strategy (see Chapter 8) will set policy to reverse this trend by favouring consolidations.

The present and proposed nature of Blaauwberg Road as a Class II mobility route has several potential environmental problems. Mobility routes are normally corridors of high levels of pollution, both of a gaseous and noise nature.

Other perceived problems are:

- Buildings face away from the street with wide setback conditions. Almost no street interface occurs, leaving a monotonous, sterile and unsafe environment (refer to Figure 5.9a).
- The road, even at its current four lane cross section serves as a barrier and activity is limited. Landscaping, road and pavement are isolated patches without a coherent scale, identity or quality of "place" (refer to figure 5.9b).
- The suburban residential structure exacerbates the mono-functional character (refer to Figure 5.9a).
- Road signage, traffic lights, wide roads with tarred surfaces, wide pavements and precast-concrete walling contributes to a negative street interface (refer to Figure 5.9c).
- The "American suburban strip" becomes the pre-dominant condition, with large shopping centres interspaced by group housing. The architectural design of most of the housing is uninspiring (refer to Figure 5.9d).

Landscaping is in places limited to the median where Bluegums and recently, palm trees have been planted (Refer to Figure 5.9e).

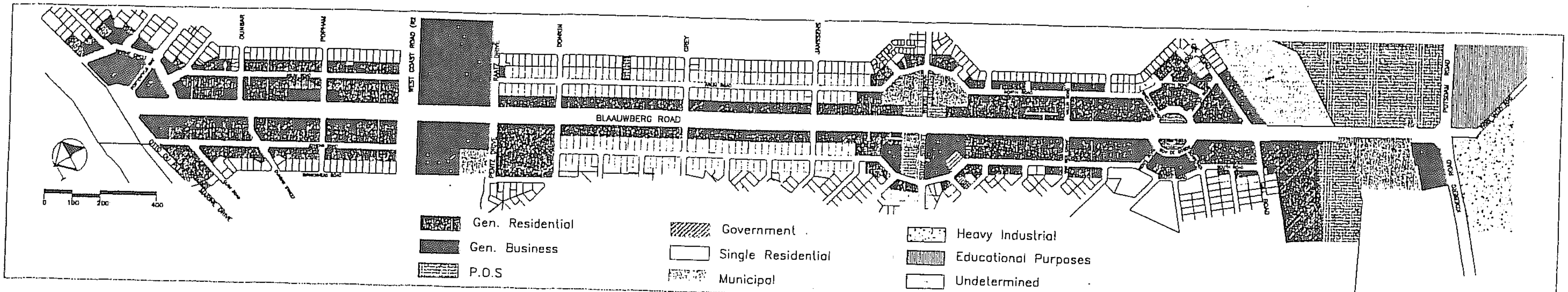


Figure 5.5: Zoning Map

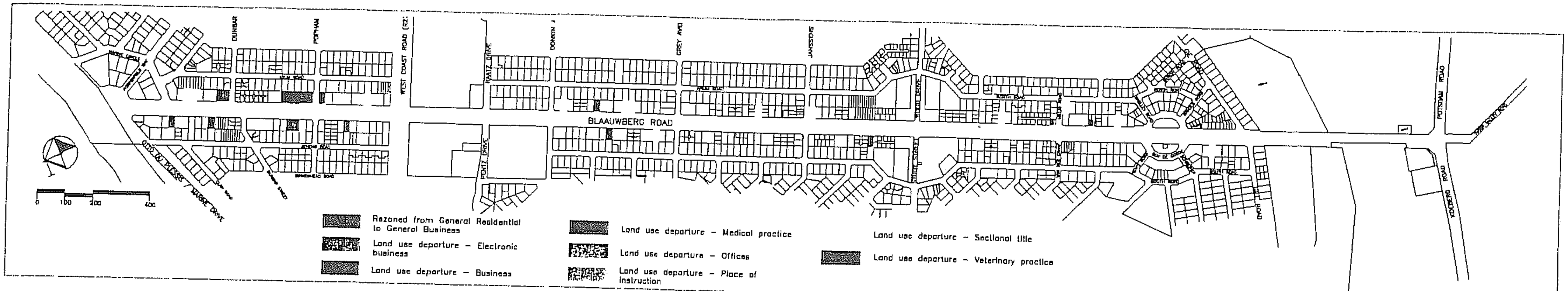


Figure 5.6: Land Use Departures

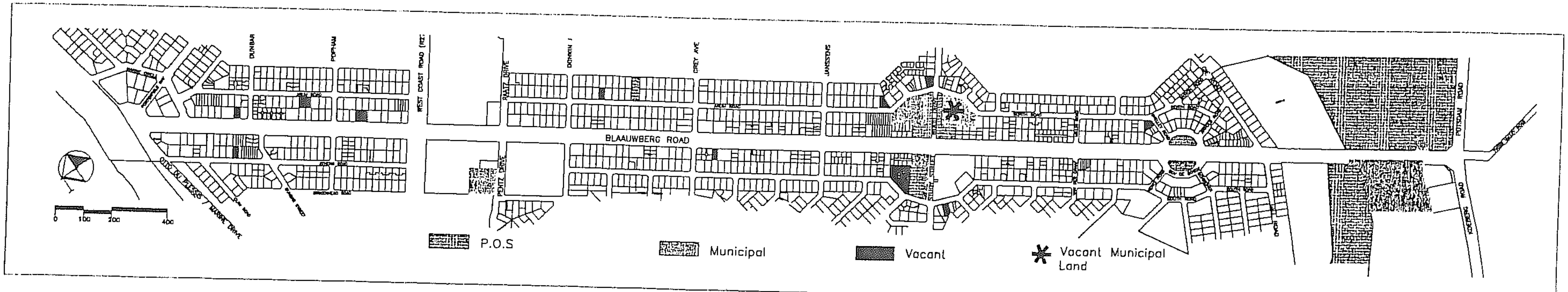


Figure 5.7: Vacant Land and Public Land Ownership

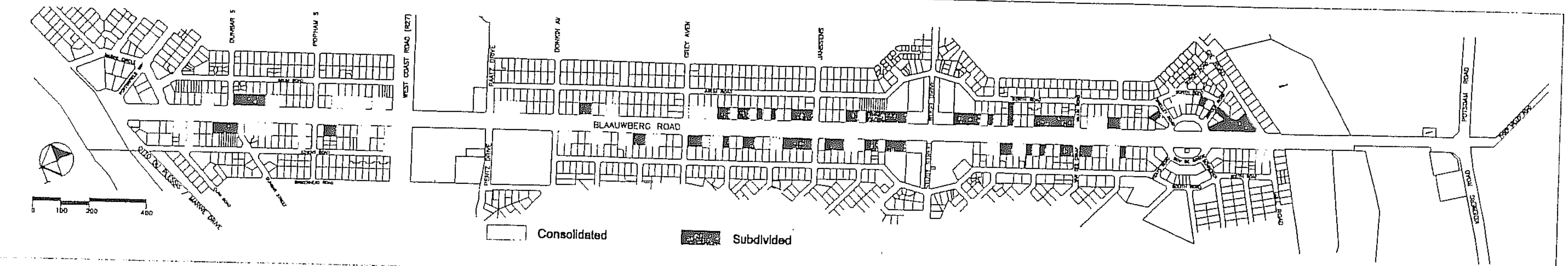


Figure 5.8: Pattern of Consolidation and Subdivision

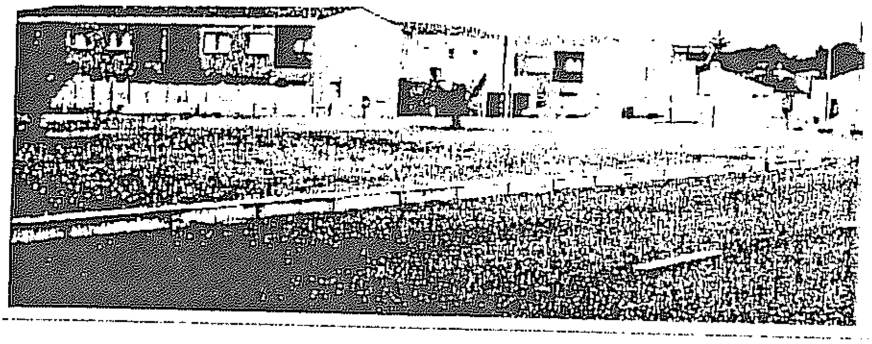


Figure 5.9a: Buildings Face Away From The Road

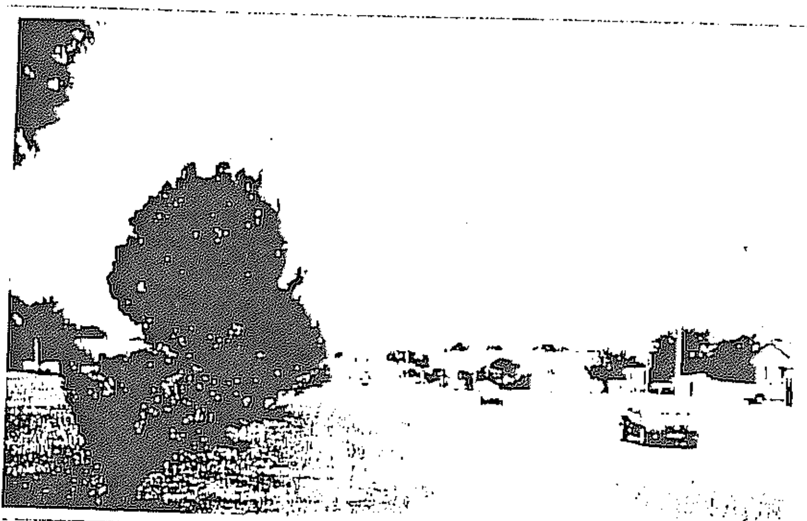


Figure 5.9b: The Road Acts As A Barrier.

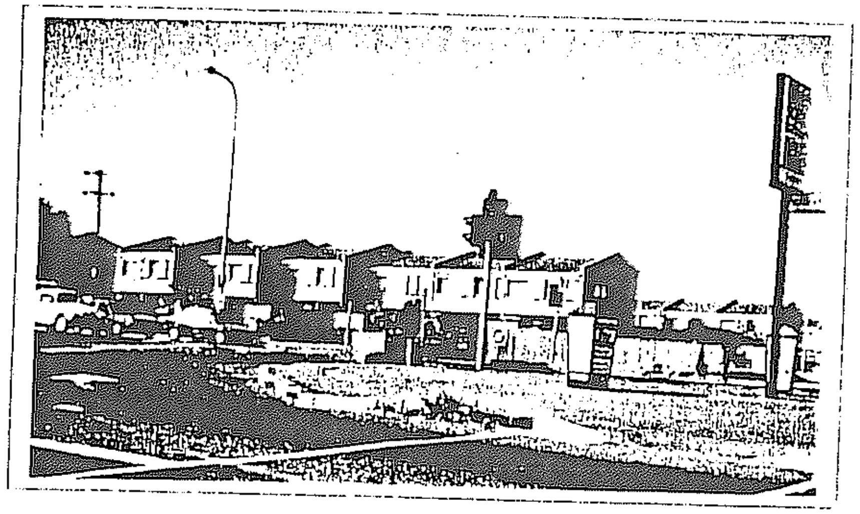


Figure 5.9c: Road Signs, Traffic Lights and Bins

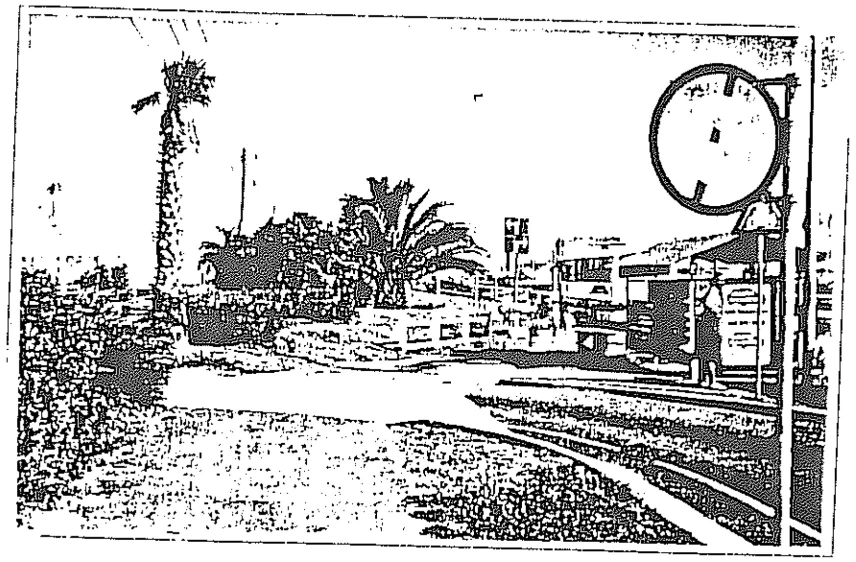


Figure 5.9d: Bus Embayments and Informal Trading Opposite Bayside Centre

Figure 5.9e: Blue Gums And Palms Exist In The Median

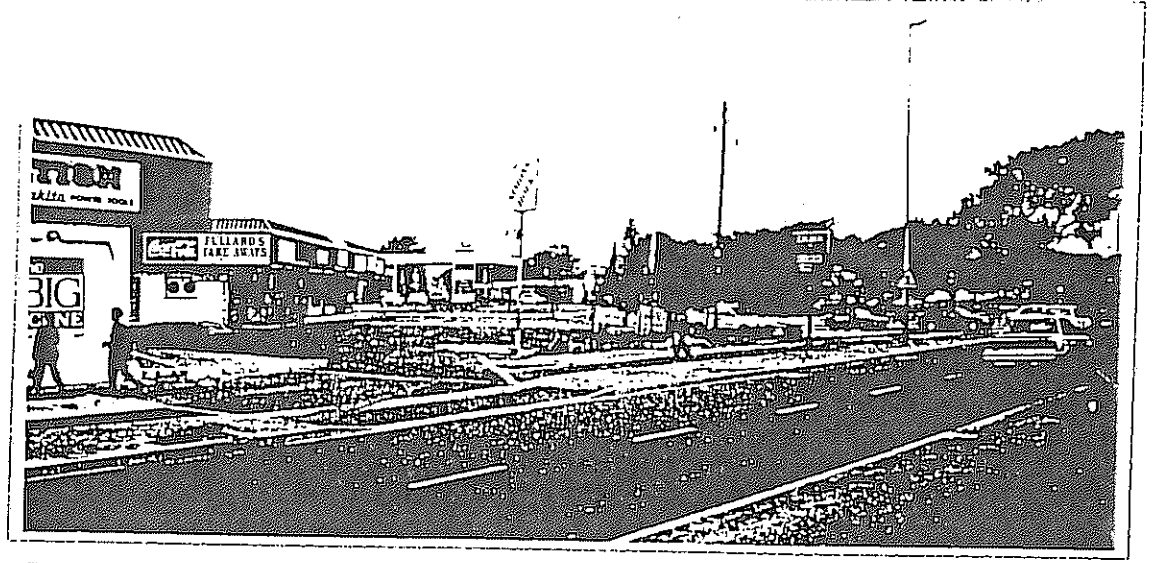


Figure 5.10: Boy de Goede. Lack of "Place"

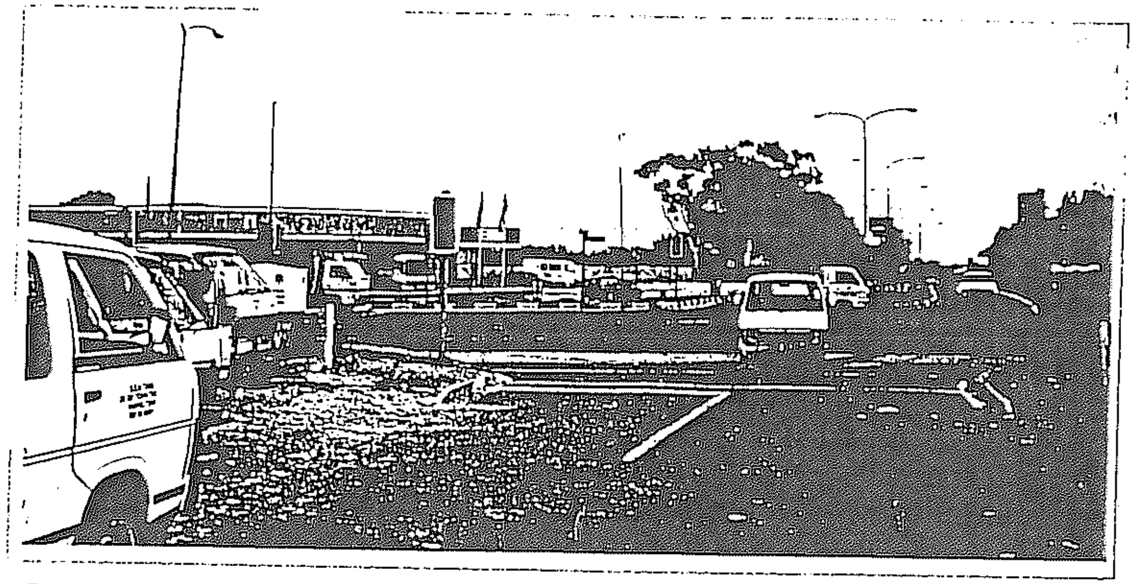


Figure 5.11: Koeberg Road Intersection: Need for Intersection Improvements and Place for Taxis

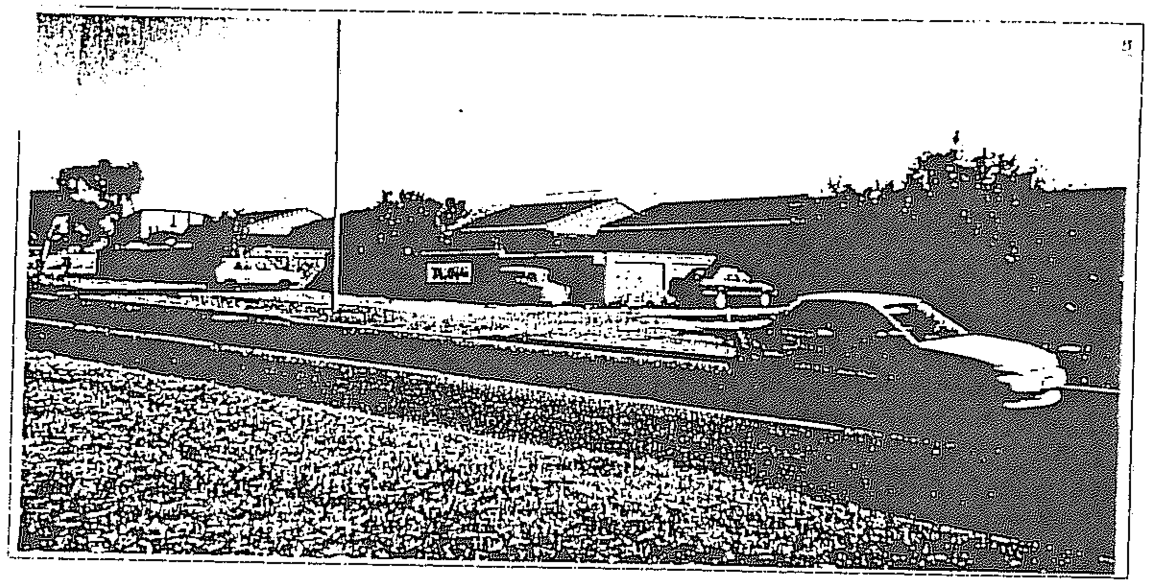


Figure 5.12: High Traffic Speeds, Poor Landscape Quality, Multiple Access and Lack of Surveillance

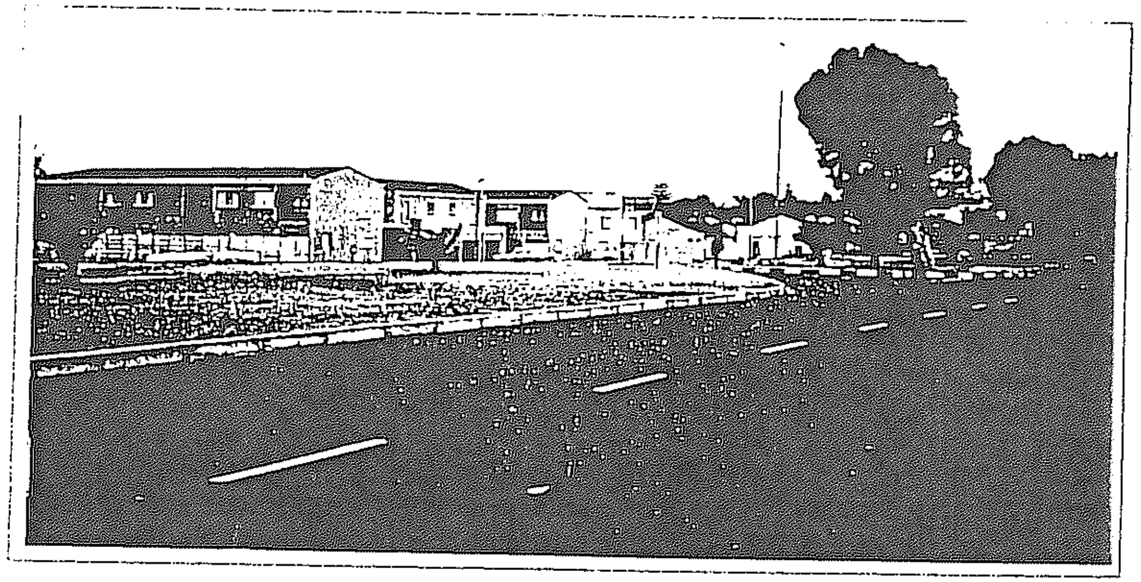


Figure 5.13: Image Showing Effect of Medians Without Eucalyptus - large Expanse of Tar and Grass, No "Enclosure" of the Street.

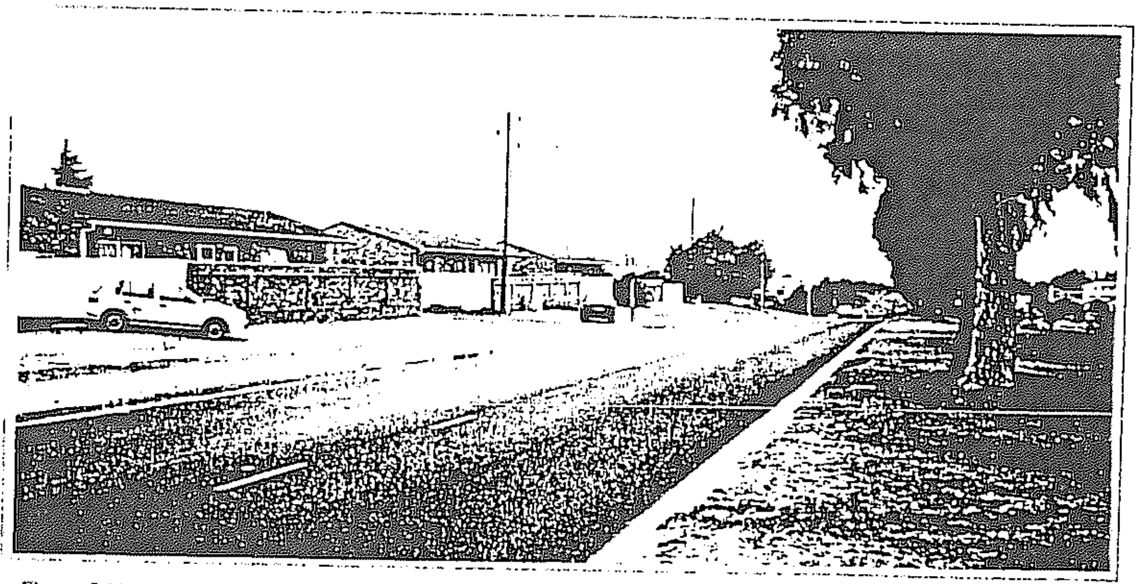


Figure 5.14: Low Density Development and Lack of Street Quality

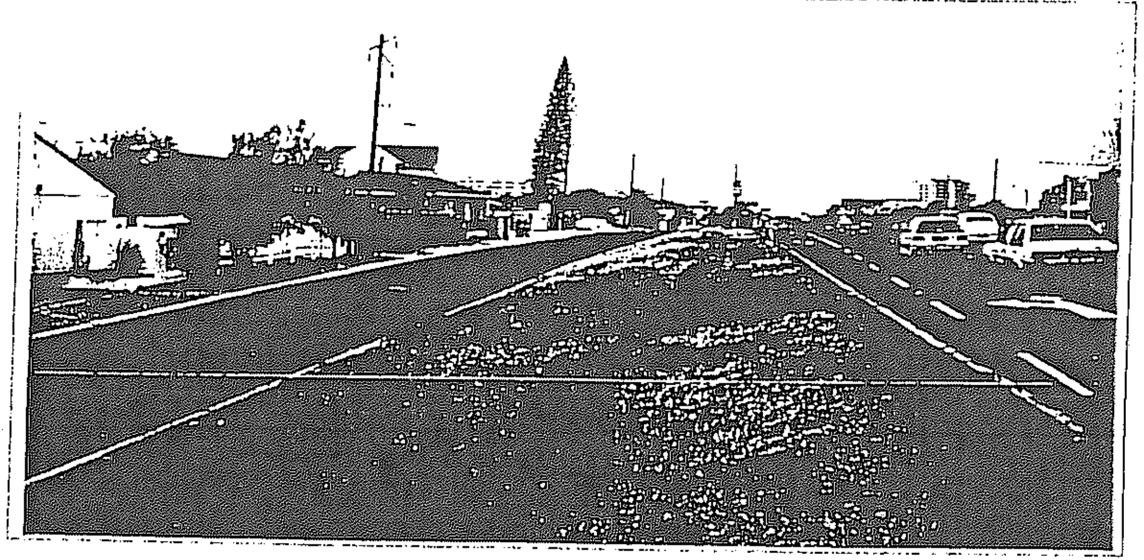


Figure 5.15: Lack of Landscaping and Poor Edge Quality Along Section I

6.0 ENVIRONMENT

Chapter 6 looks at the "qualitative" environment of Blaauwberg Road from a built and natural landscape perspective.

6.1 IMAGEABILITY

"Imigeability" is the quality (shape, colour, or arrangement) which evokes a strong image. A highly imagable (legible or visible) part of the city would seem well formed, distinct, remarkable. It would have a pattern of continuity with many distinctive parts clearly interconnected (Lynch,1960).

In terms of "imageability", the "public environment" of Blaauwberg Road suffers from a multiplicity of competing and conflicting visual messages. The street, which should serve as public "space" is where the greatest amount of human contact and interaction takes place is merely a movement corridor with a lack of human scale.

The fundamental objective of this management strategy is to achieve *good design* of the public and private realm by ensuring complexity, but with certain uniformity and a richness of environmental quality. Elements of "imageability" include the "edge quality"; potential landmarks and nodes along this corridor.

Blaauwberg Road should thus display qualities of uniqueness such as a characteristic spatial quality; special textures, particularly of landscape elements or façade; or particular lighting and street furniture patterns.

These elements should be applied to give continuity to the path, thus ensuring unified design. Blaauwberg Road should thus become the "skeleton" of Blaauwberg/Table View's urban image. The corridor should be perceived as a route with a destination point, supported perceptually and physically by strong termini.

6.2 THE BUILT ENVIRONMENT

The built environment along the corridor suffers from a lack of design "richness". Buildings generally turn their backs on the street, the road verges are cluttered with signage, driveways, litter bins, post boxes (especially for sectional title developments), and are getting enclosed by unattractive vibracrete walls (refer to Figure 6.2 and 6.3). There is no "enclosure" to the street given that most buildings are only of one to two stories.

6.3 THE NATURAL ENVIRONMENT

- Introduction

Blaauwberg Road has a unique and distinctive landscape character (which is an important redeeming feature given the poor built environmental quality). This is due mainly to the double row of very attractive mature Eucalyptus trees that exist in the median (between West Coast Road and Koeberg Road).

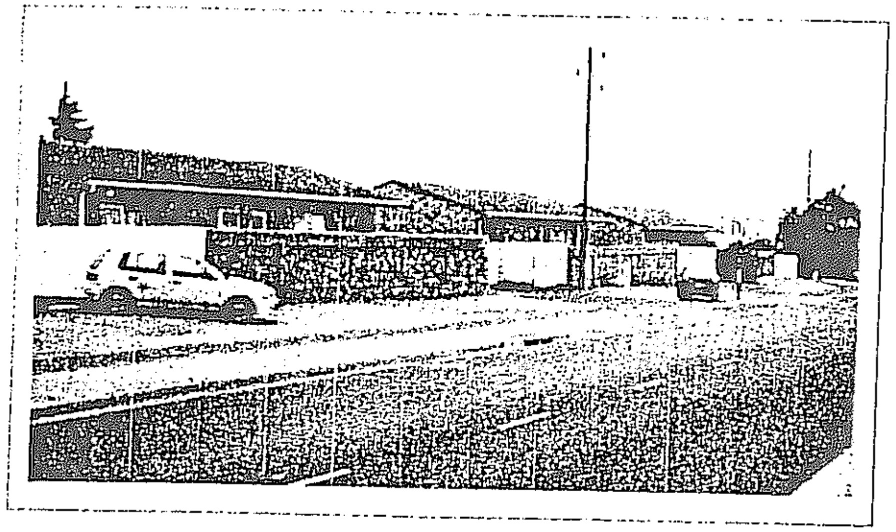


Figure 6.1: Poor "Edge" Quality.

Notwithstanding that the trees are exotic, they form an important part of the "cultural landscape", and give Blaauwberg Road its distinctive green character, in stark contrast to many other roads in the local and metropolitan area.

The Eucalyptus trees are irregularly spaced, and also predominate on the south side of the road. A row of palms (*Phoenix canariensis*) has been recently planted down the centre of the entire median.

In contrast to the median, the verges of the road are generally poorly landscaped, predominantly with exotic tree species, and very little softening with shrubs and ground cover.

- Pruning / Felling of Eucalyptus Trees

Council intends to gradually fell all Eucalyptus trees in the road median (personal communication with Mr G Frost; Parks & Recreation Dept.; Blaauwberg) as this tree consumes far greater quantities of water than indigenous tree species and therefore impacts on the vegetation around the root zone.

Council "pollards" (i.e. prunes) the Eucalyptus on a regular basis to prevent the trees from becoming too large and dangerous. Residents of Blaauwberg Road have raised concerns about the obstruction the leaves have on their gutters and drains.

- Residents view on maintenance

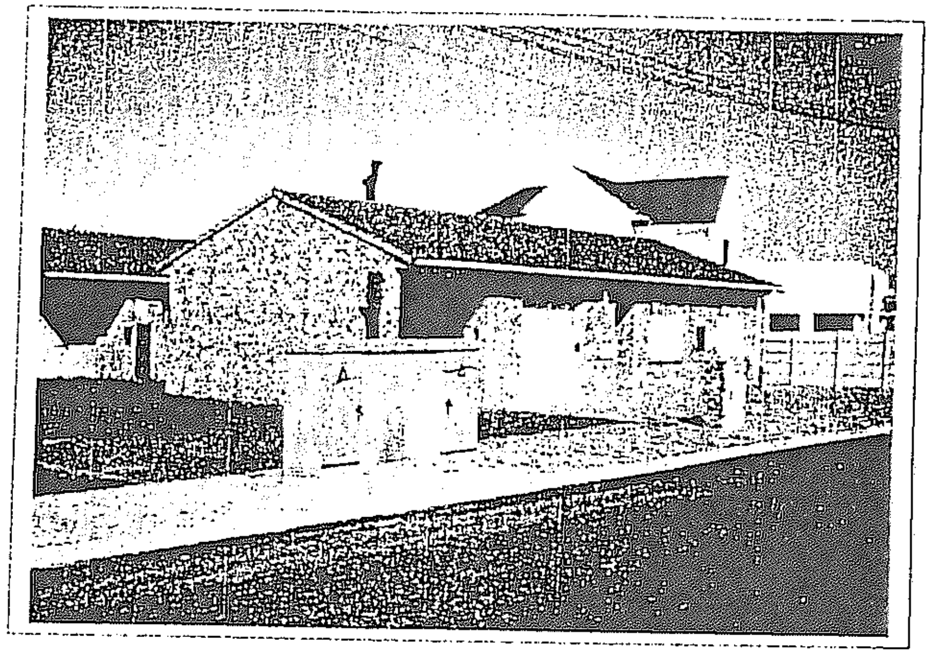
There is generally a lack of assistance from adjoining landowners to assist Council in the maintenance of road verges (personal communication with. Mr G Frost; Parks & Recreation).

- Need for landscaping

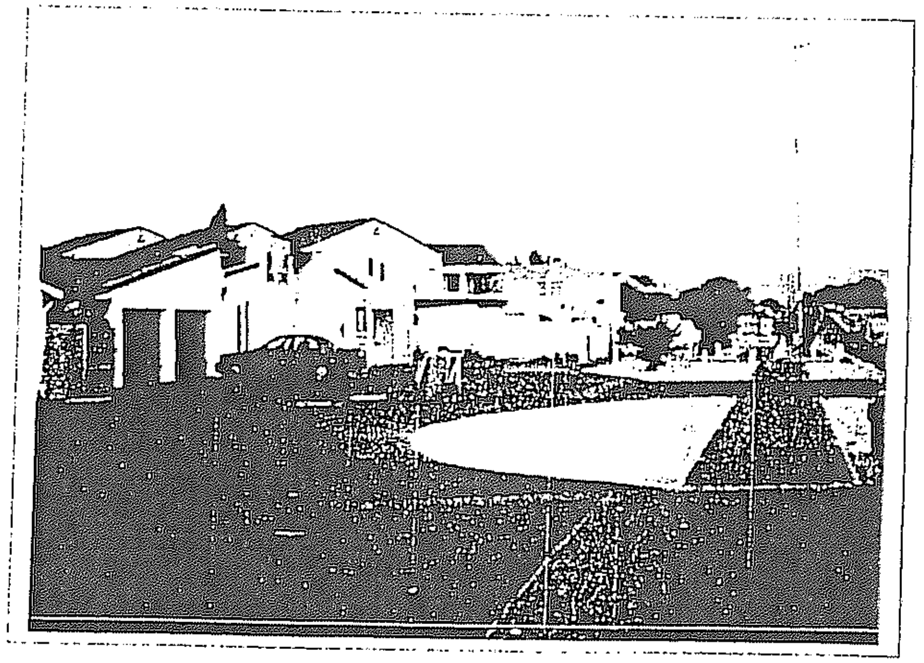
The large grassed areas generally found on the road verges require far greater quantities of water to remain green than the use of indigenous shrubs to cover the same surface area.

- Need for uniformity

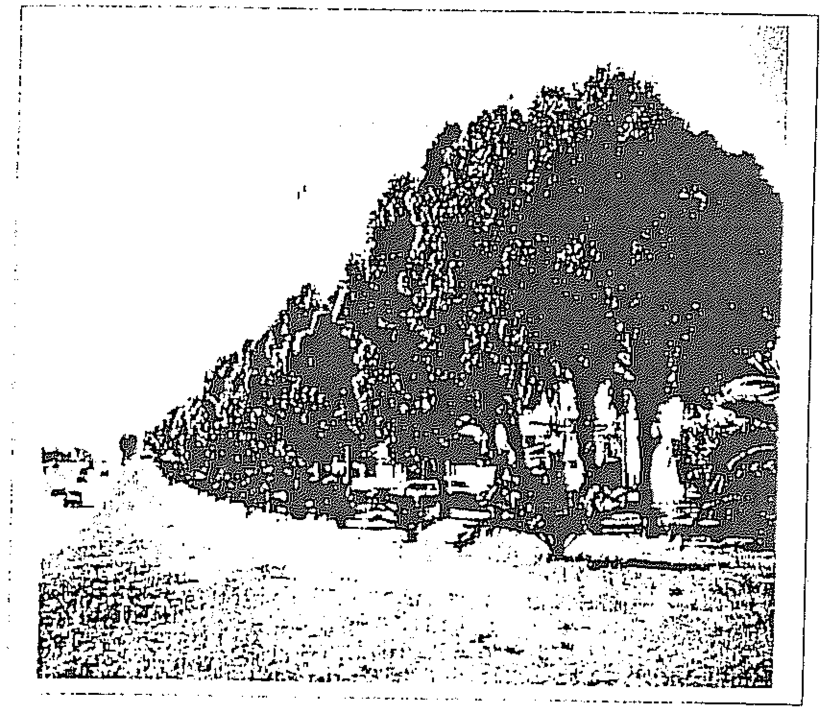
There are generally too many different tree varieties along the road verge which mitigates against the creation of a consistent "boulevard" effect from Koeberg Road to Marine Circle.



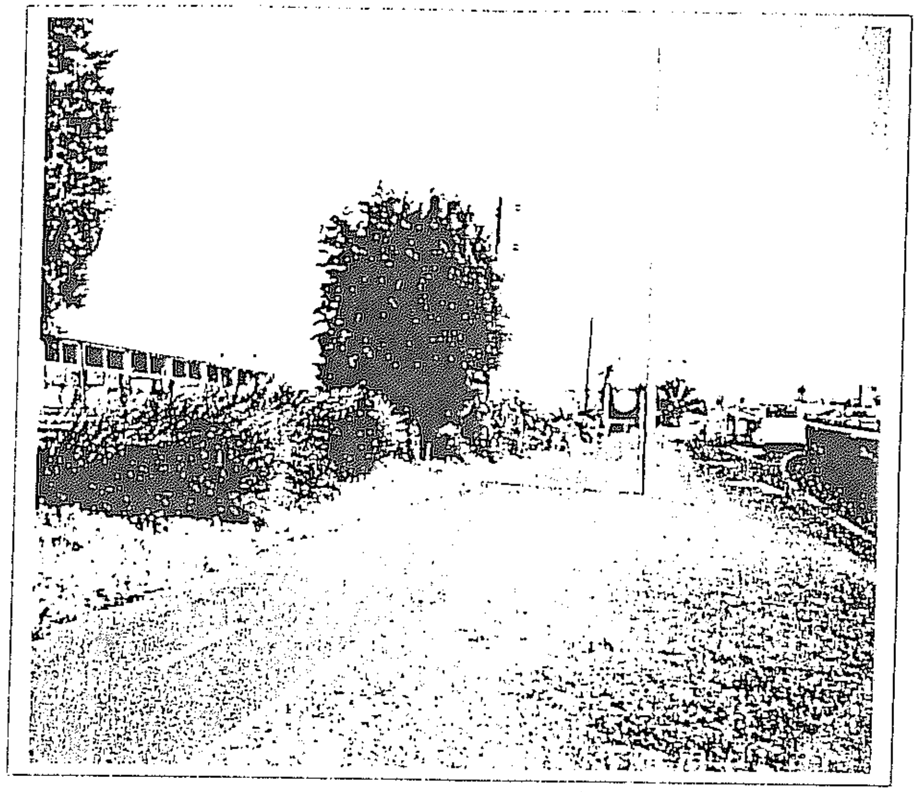
Figures 6.2 and 6.3 below: "Visual Clutter" Of Litterbins, Electrical Boxes, Post Boxes, Driveways



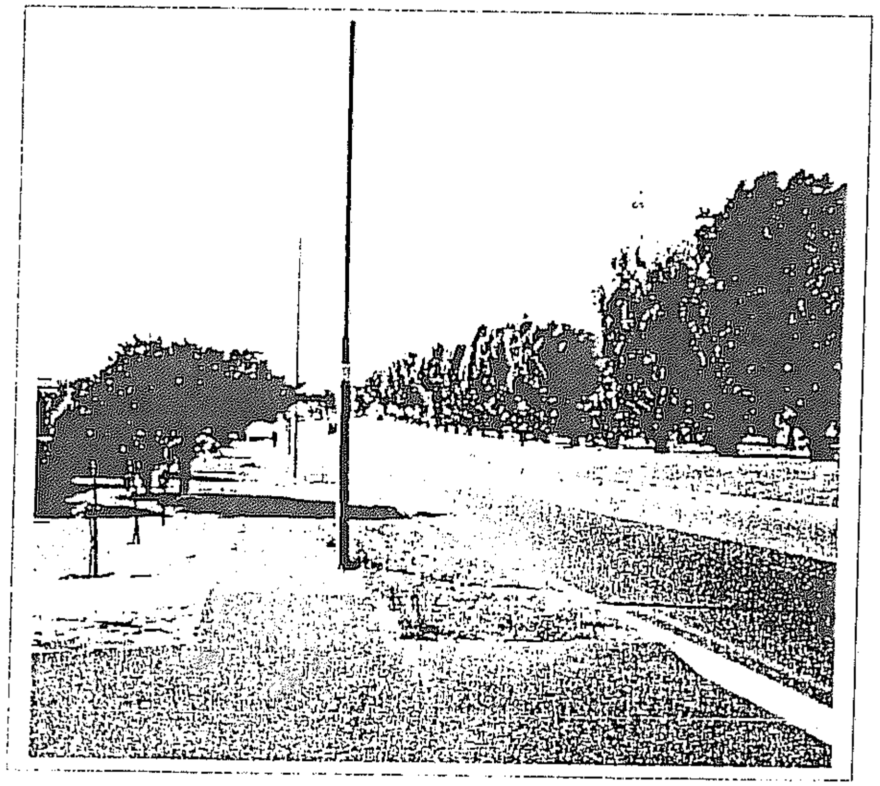
A distinctive landscape character of Blaauwberg Road is the existing Avenues of Eucalyptus trees and *Phoenix* canariensis.



Mature Eucalyptus predominate on south side of road median. Palms recently planted in this centre median. Note lack of landscaping on shoulders.

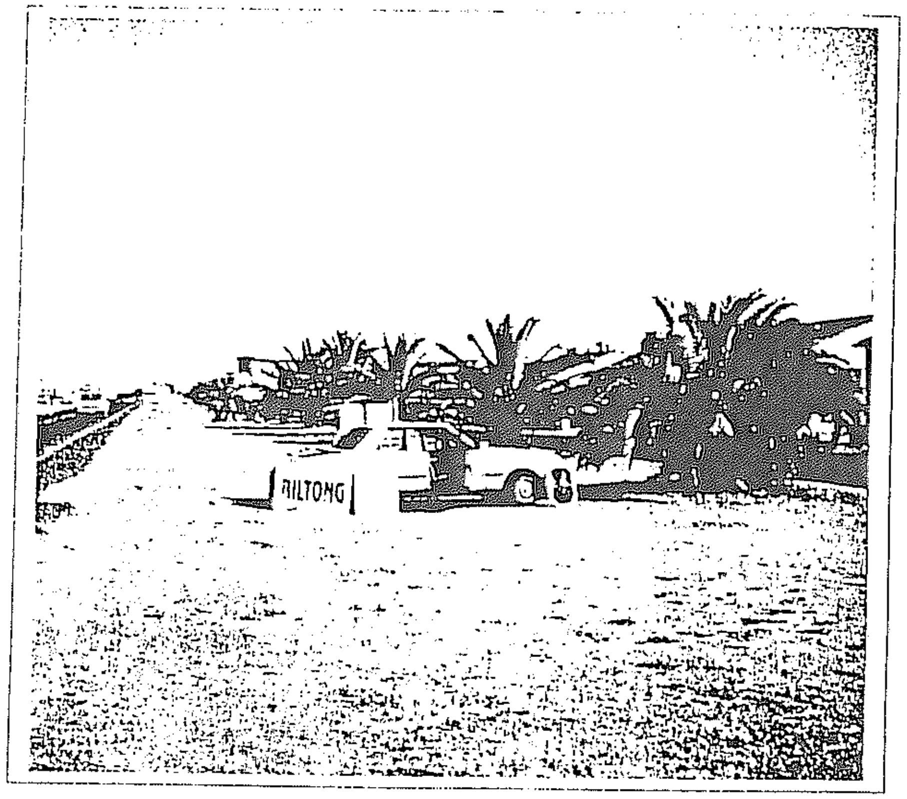


Existing verge planting near Bayside Centre (small shrubs provide an excellent screen in narrow planting areas).

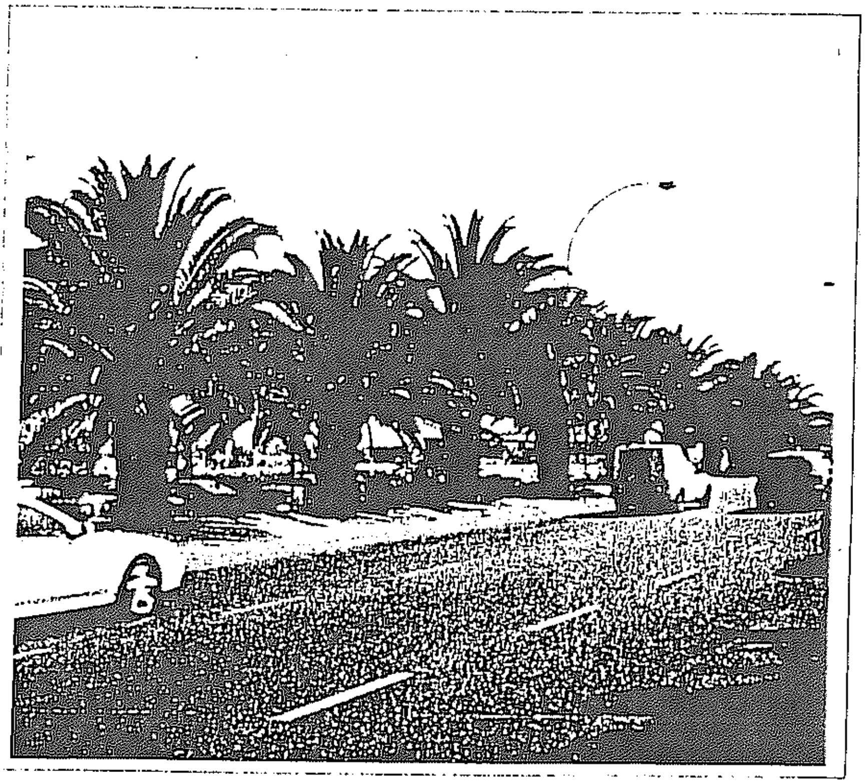


Existing Road Verge.Characteristics:

- Lack of sound buffer and screening landscaping.
- Lack of deciduous tree planting, and
- Inappropriate exotic species predominate.



Existing verge between Service Road and Blaauwberg Road - Marine Circle Area. Informal trading.



Future vision for Blaauwberg Road (mature Phoenix canariensis found in Durban Road).

Figure 6.4: **Existing Landscape and Environmental Conditions in Blaauwberg Road**

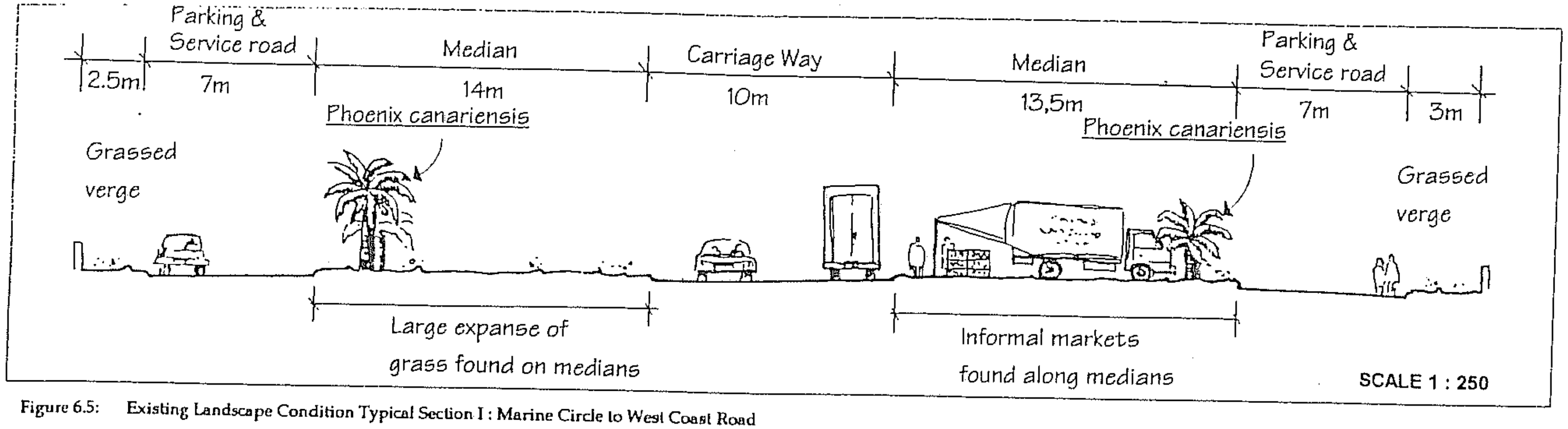
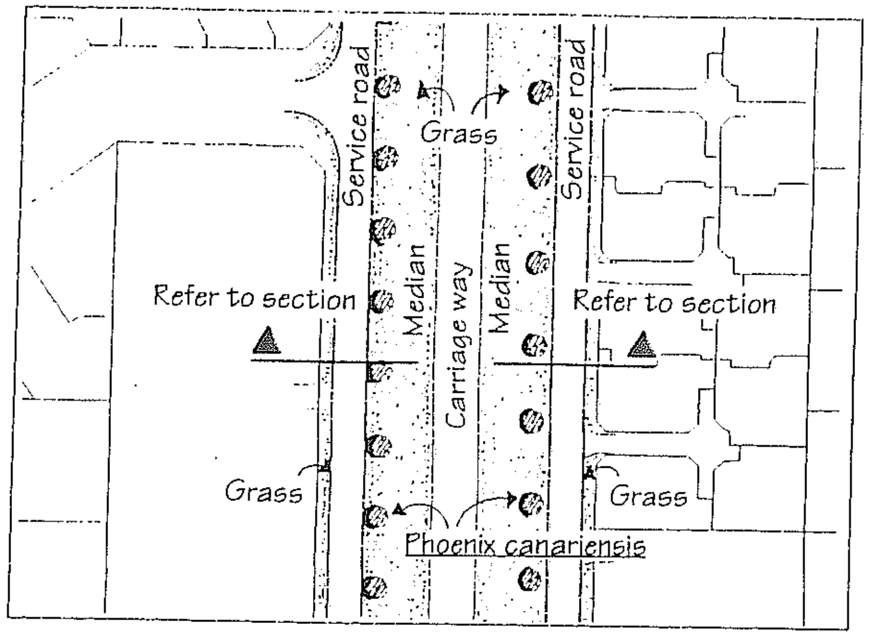


Figure 6.5: Existing Landscape Condition Typical Section I : Marine Circle to West Coast Road



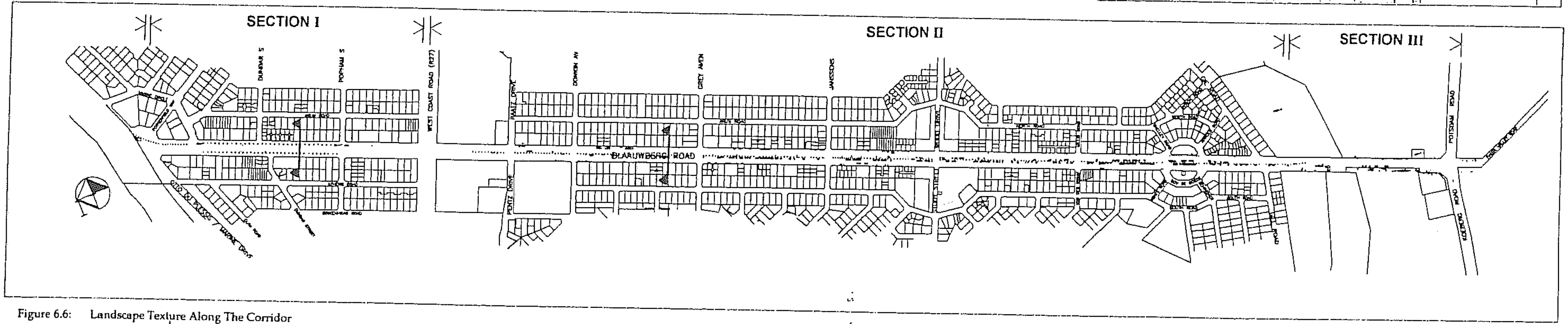


Figure 6.6: Landscape Texture Along The Corridor

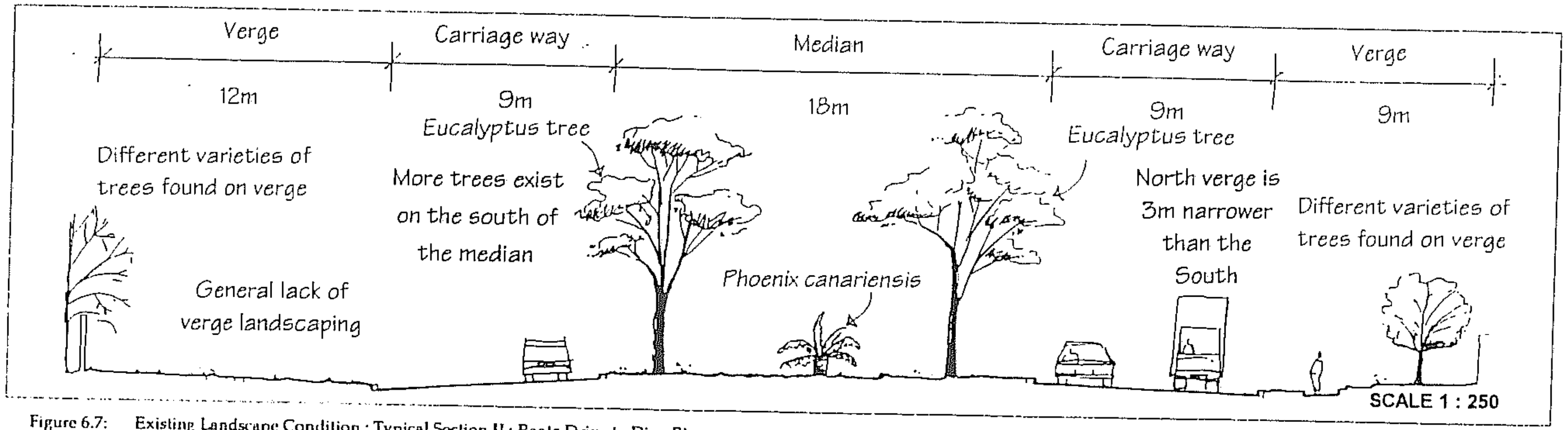
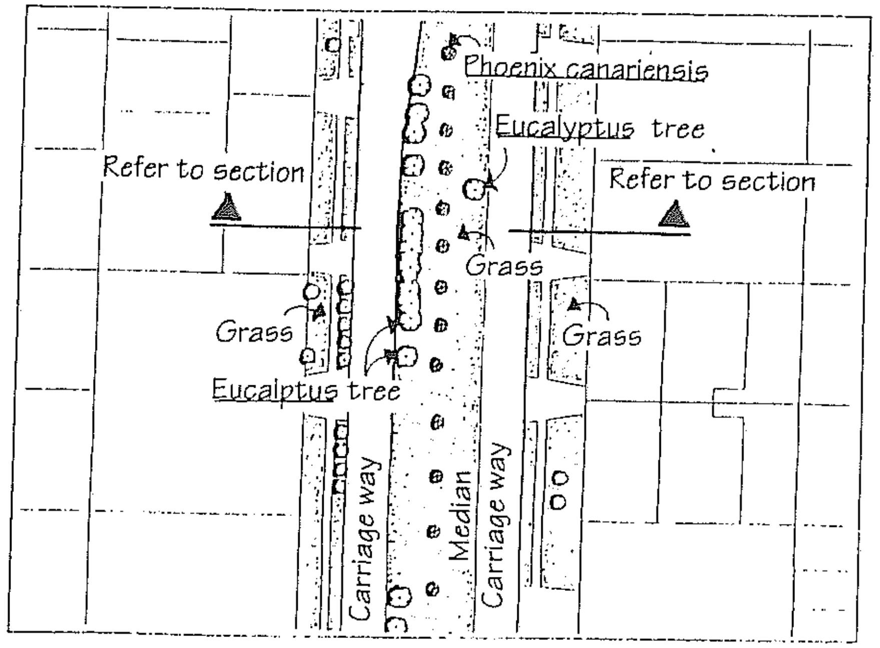


Figure 6.7: Existing Landscape Condition : Typical Section II : Raats Drive to Diep River



7.0 TRAFFIC AND TRANSPORTATION

7.1 CONTEXTUAL ANALYSIS

Table View North is linked to the metropolitan area to the south, primarily via three major north-south arterials, i.e. the N7 Freeway (Trunk Road 11), Koeberg Road, and Otto du Plessis Drive/Marine Drive :

- *N7 Freeway* : The N7 is a Class 1 facility and extends southward to its interchange with the N1 Freeway. At this interchange, the N7 links with Vanguard Drive, a Class 2 facility.
- *Koeberg Road* : To the south, between its intersections with Loxton Road and Blaauwberg Road, Koeberg Road functions as a Class 2 facility, with a limited number of access intersections primarily with major east-west roads. Southward of Loxton Road, Koeberg Road operates as a Class 3 activity spine.
- *Otto du Plessis Drive/Marine Drive* : Otto du Plessis functions as a Class 2 facility from its intersection with Blaauwberg Road in the north, to its interchange with the Table Bay Boulevard (N1).

The vast majority of commuters use these arterials not only to access destinations to the south (i.e. Milnerton, Paarden Eiland, Cape Town CBD, etc.), but also to the east, in Bellville, Parow, Durbanville, etc. These north-south roads are operating close to, or at capacity, and can accommodate limited growth in demand within peak periods. Substantial demand increases are therefore likely to lead to the extension of commuter peak periods.

Kaauwberg Road (Class 2) is currently the major east-west arterial linking Marine Drive in the west with Koeberg Road in the east. In the longer term, Parklands Main Road and Sandown Road will also be important east-west linkages. The Blaauwberg area as a whole is characterised by discontinuous east-west linkages, due to a number of significant barriers, including the Diep River, the N7 Freeway, large tracts of industrial land, and the Atlantis railway line. These discontinuities cause considerable additional pressure on the north-south arterials during commuter peak periods. Blaauwberg Road is a case in point, which is indirectly connected to the N7 Freeway via Koeberg Road (north-south), and Plattekloof Road (east-west). The north-south aligned distributors linking Blaauwberg Road to the developing areas to the north are Raats Drive (Class 4), Wood Drive (Class 3), Janssens Avenue (Class 4) and Gie Road (Class 4).

At a local scale, the road network is significantly affected by the Rietvlei Nature Reserve. There are no road links extending southward from Table View between Otto du Plessis Drive and Koeberg Road, as a result of which most southbound trips during the morning peak period are loaded onto Blaauwberg Road, which serves a linking function to the north-south arterials.

7.2 COLLECTION OF DATA

7.2.1 Transport Planning Data

7.2.1.1 Road Planning

There are a number of major road proposals in the Municipal area, many of which relate to the large scale developments to the north of the Table View area. The proposals are mainly intended to augment the existing range of north-south routes, or improve the capacity of existing 550 arterials. Other road proposals relate to east-west routes, which are generally incomplete or discontinuous. The Metropolitan road proposals which will have an impact on Blaauwberg Road are listed below (Refer to Figure 7.1).

- The extension of Koeberg Road from Blaauwberg Road northwards, to provide an arterial to the west of the proposed Main Road 28 (M12) and the N7 Freeway. Together with the MR28 and the West Coast Road, it will form a major north-south arterial providing essential access for the Table View North area in particular. In the short term, the upgrading of the southbound carriageway of Koeberg Road between Blaauwberg Road and Plattekloof Road to 3 lanes for a short section along the southbound carriageway, is required to accommodate the heavy eastbound right turn movement from Blaauwberg Road into Koeberg Road.

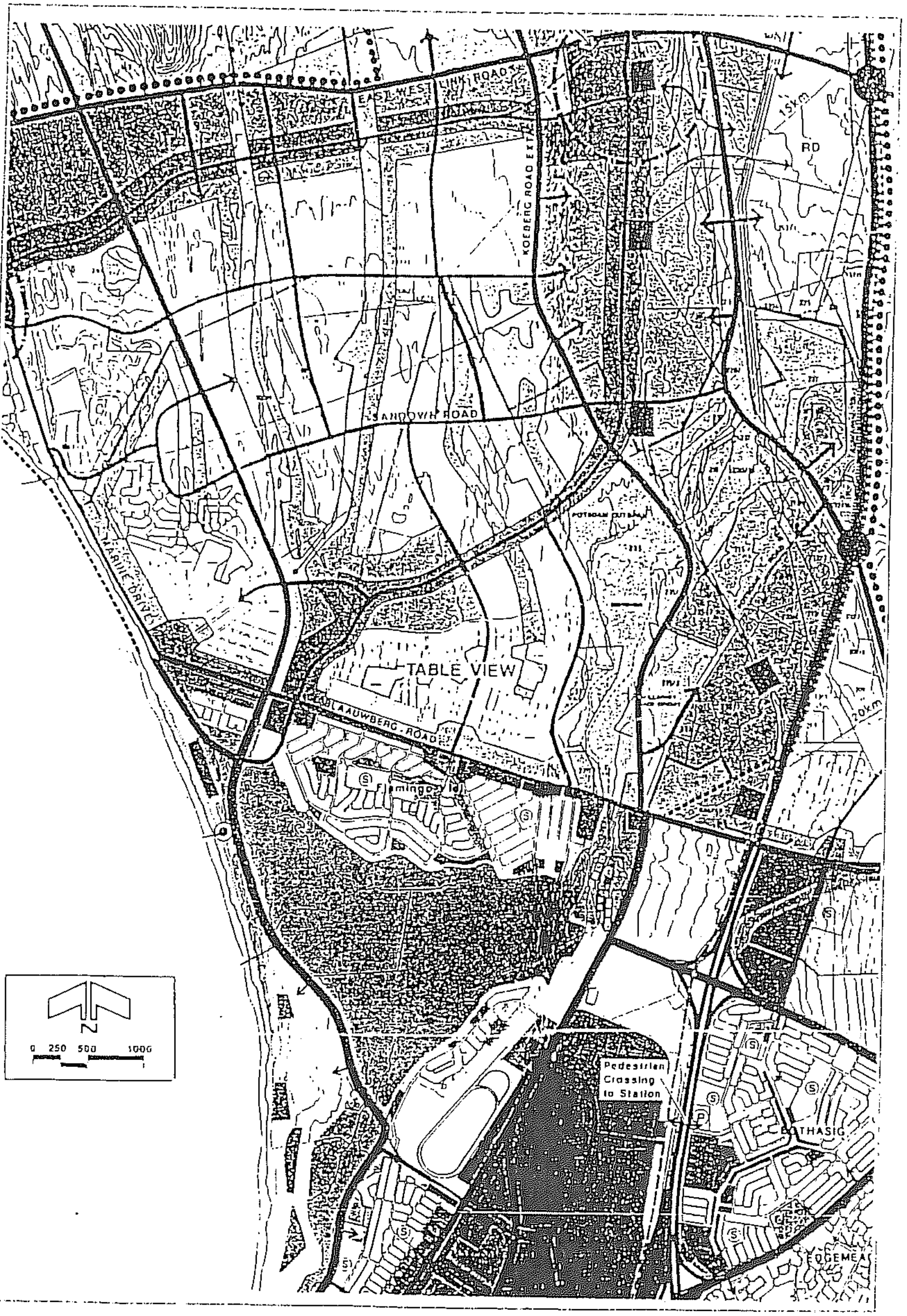


Figure 7.1: Bloubergsvlei Subregional Plan and Milnerton Structure Plan

- The Metropolitan Spatial Development Framework (MSDF, 1996) as well as the various structure plans prepared for the area, have identified Koeberg Road as the central activity spine within the northern activity corridor. Due to the greater emphasis that is placed on the roads access function relative to its mobility function, a parallel bypass route, Omuramba Drive, has been planned and is being implemented to the east of Koeberg Road through Marconi Beam to link up with the N1 Freeway via the Sable Road interchange.
- The construction of Main Road 28, a proposed north-south arterial, which will link the N1 Freeway at the Monte Vista interchange in the south with the N7 Freeway in the north at an interchange adjacent to the Du Noon site. Northwards of this point it will be aligned between the N7 Freeway and the Atlantis railway line.
- The provision of high occupancy vehicle (HOV) or public transit lanes along Otto du Plessis Drive to the south of Racecourse Road has been proposed to resolve the bottleneck conditions through the Milnerton area.
- The upgrading of Blaauwberg Road to a 6 lane facility along its length. In the short term, only the sections between the Diep River bridge and Koeberg Road, and between Otto du Plessis Drive and Park/Raats Drive are to be upgraded.
- The upgrading of Plattekloof Road, between Koeberg Road and the N1 Freeway, to a four lane, dual carriageway arterial.
- The construction of the Parklands Main Road as the main structuring element on the site, functioning as an activity route along a diagonal alignment from Raats Drive north-eastward (to the proposed station node in Table View North to the north of the Diep River).
- The eastward extension of Blaauwberg Road from the intersection with Koeberg Road across the N7 to meet with the proposed Main Road 28. Two possible alignments for this extension are being evaluated namely the southern alignment that is located between the Caltex Refinery and tank farm, and the northern alignment that is located to the north of the tank farm. For the northern alignment, a partial intersection with the N7 may be possible.
- The construction of Sandowne Road between the West Coast Road and the N7 (via a short section of the M12).

7.2.1.2 Public Transport

The following proposals have previously been put forward in structure planning reports relevant to the Table View North area (Refer to Figure 7.1).

- Upgrading of Atlantis Railway Line to a passenger rail service with development nodes at station locations.
- East-west public transport feeder routes to future stations. In this regard, routes such as Blaauwberg Road, Parklands Main Road and Sandown Road extension take on increased importance as public transport routes in the Table View North area.
- High occupancy vehicle (HOV) lanes along the Otto du Plessis Drive corridor with associated park and ride areas ideally at major shopping centres. Initially the HOV lane scheme would be introduced to the south of Boundary Road with the second phase being the section between Racecourse Road and Boundary Road.
- The relocation and upgrading of the present Killarney bus terminus.
- The upgrading of existing bus embayments along Blaauwberg Road.
- High occupancy vehicle (HOV) or bus lanes along Koeberg Road.
- The construction of the Postsdam Transport Interchange in the north west quadrant of the Blaauwberg Road/Koeberg Road intersection.

7.2.2 Traffic Data

Commuter peak period (weekday AM and PM), and shopping peak period (Saturday midday) intersection data was obtained from previous counts conducted by the planning team at key intersections on Blaauwberg Road as follows:

- Blaauwberg Road / Marine Drive (July 1995)
- Blaauwberg Road / Marine Circle (July 1995)
- Blaauwberg Road / Popham Road (July 1995)
- Blaauwberg Road / Otto du Plessis Drive (October 1997)
- Blaauwberg Road / Raats Drive / Pentz Drive (October 1997)
- Blaauwberg Road / Janssens Avenue (October 1997)
- Blaauwberg Road / Wood Drive / Study Street (October 1997)
- Blaauwberg Road / Koeberg Road (October 1997)

In addition, an automatic counter was placed on Blaauwberg Road west of Popham Road in April 1998, to obtain 24 hour traffic flows. 24 hour counts for Blaauwberg Road east of Janssens Road were obtained from the Cape Metropolitan Council (CMC), for certain days in 1991 - 1993, and 1995 - 1997. A summary of the peak hour counts for the critical intersections on Blaauwberg Road is indicated in Figure 7.2. The 24 hour counts were used to produce graphs of the average hourly flows and average annual traffic growth, and are indicated in Figure 7.3. A summary of link flows obtained from the intersection counts is indicated in Figure 7.4.

7.2.3 Accident Data

Accident data for Blaauwberg Road was obtained from the Blaauwberg Municipality, for the period October 1994 - February 1998. Accident statistics measured along the route are summarised in Figure 7.5.

7.2.4 Public Transport Data

As part of the peak period intersection counts discussed in Section 7.1.2, the number of buses and taxis utilizing critical intersections within the study area during peak periods, was also recorded. Summaries of the bus and taxi counts are indicated in Figures 7.6 and 7.7 respectively, for the three peak hours under construction.

7.2.5 Pedestrian / Cyclist Data

Weekday AM peak period pedestrian and cyclist counts were conducted by the planning team at the following intersections:

- Blaauwberg Road / Marine Drive Intersection (June 1998)
- Blaauwberg Road /Otto du Plessis Drive Intersection (June 1998)
- Blaauwberg Road /Raats Drive / Pentz Drive (June 1998)
- Blaauwberg Road / Janssens Avenue (June 1998)
- Blaauwberg Road / Wood Drive / Study Street (June 1998)
- Blaauwberg Road / Boy de Goede Circle (West) (June 1998)
- Blaauwberg Road / Boy de Goede Circle (East) (June 1998)
-

A summary of the counts is indicated in Figure 7.8.

7.2.6 Parking Data

Parking surveys during the Friday PM and Saturday midday peak periods were conducted by the planning team in April and July 1998. A summary of the surveys is indicated in Figure 7.9.

7.2.7 Speed Data

Travel time surveys along Blaauwberg Road were conducted by the planning team, during the weekday midday and PM peak periods, during June 1998 to determine the average vehicle operating speeds. A summary of the surveys is indicated in Figure 7.10. Speed surveys were not undertaken during the AM peak period as the Diep River bridge construction which commenced in early 1998, had disrupted the eastbound traffic flow regime, and hence speed results would not have been representative of the pre construction situation.

7.3 EVALUATION OF EXISTING TRANSPORTATION SYSTEM

7.3.1 Traffic Flows

Existing peak hour two way flows on the road system in the vicinity of Blaauwberg Road are summarised in Table 7.1:

SECTION OF ROUTE (No of lanes)	PEAK HOUR FLOWS (veh/hr)		
	WEEKDAY AM	WEEKDAY PM	SATURDAY MIDDAY
East of Marine Drive (2)	334	476	468
East of Marine Circle (2)	624	944	1010
East of Popham Road (2)	968	1494	1484
East of Otto du Plessis Drive (4)	2775	3366	2967
East of Raats Dr/Pentz Drive (4))	2386	2824	2434
East of Janssens Avenue(4)	2160	2506	2550
East of Wood Dr / Study Street (4)	2370	2415	2413
West of Koeberg Road (4)	3328	3080	3150

Table 7.1: Existing Peak Hour Two Way Link Flows on Blaauwberg Road

Two way flows on Blaauwberg Road west of Popham Road are well below the capacity of the two lane section (capacity of between 1 800 to 2 000 vehicles per hour, two way flow) during all peak hours under consideration, except for the in season Sunday peak hour when this section of Blaauwberg Road operates at near capacity conditions. To the east of Popham Road, Blaauwberg Road widens to a four lane section and the flows measured on this section of Blaauwberg Road are well below the capacity of the four lane section (capacity of between 3 600 and 4 000 vehicles per hour, two way flow).

Between Otto du Plessis Drive and Koeberg Road, two way flows on the four lane section vary between 2100 and 3400 vehicles per hour indicating that during some peak hours the route operates at close to capacity conditions (capacity of the four lane section of between 3 600 and 4 000 vehicles per hour).

7.3.2 Level of Service Assessment

The performance of each of the critical intersections along Blaauwberg Road has been assessed using procedures from the 1994 Highway Capacity Manual (Transport Research Board, 1994). A computerised version of the manual, the Highway Capacity Software (Version 2.4), has been used to facilitate the analysis. A summary of the results of the analyses is given in Table 7.2, and full details of the results are included in the Appendices.

INTERSECTION	TYPE OF CONTROL	PEAK HOUR LEVEL OF SERVICE[1]		
		WEEKDAY AM	WEEKDAY PM	SATURDAY MIDDAY
Blaauwberg/Marine	Signalised	B	B	B
Blaauwberg/Marine Circle	Signalised	B	C	B
Blaauwberg/Popham	Unsignalised	C	F[2]	B
Blaauwberg/Otto du Plessis	Signalised	D	C	C
Blaauwberg/Raats/ Pentz	Signalised	C	D	D
Blaauwberg/Janssens	Signalised	B	B	B
Blaauwberg/Wood/Study	Signalised	B	F	B
Blaauwberg/Koeberg	Signalised	E	F	B

Table 7.2: Summary Of Results Of Intersection Analysis

Note:
1. Level of service is a measure of the performance of an intersection and is based on the average delay incurred per vehicle utilising the intersection (sec/veh). The highest level of service (LOS) is LOS A where little or no delay is incurred (<5 sec/veh) and the lowest level of service (LOS F) indicates high levels of delay (>60 sec/veh).
2. Indicates intersection level of service. Critical movements may be operating at low levels of service.

The performance of each intersection has been discussed in detail in Figure 7.11. The following comments/observations should be highlighted:

- Blaauwberg Road / Popham Road intersection
  The northbound approach to this unsignalised intersection operates at a very low level of service (LOS F) during all the peak hours under consideration. It should be noted that this unsignalised intersection already partially warrants the installation of traffic signals.
- Blaauwberg Road / Wood Drive / Study Street intersection
  The very low level of service (LOS F) during the weekday PM peak hour, is mainly due to the relatively high eastbound and westbound right turn moves, and poor signal phasing and timing.
- Blaauwberg Road / Koeberg Road intersection
  The low levels of service (LOS E / F) during the weekday AM and PM peak hours, are due to the very high eastbound right turn move, and the relatively high southbound right turn move. In addition, the narrowing of Blaauwberg Road over the Diep River Bridge (currently being upgraded), causes the queue on the northbound approach to back up to Plattekloof Road during the weekday PM and Saturday midday peak hours.

7.3.3 Public Transport Assessment

A telephone survey, conducted as part of the Milnerton Structure planning process identified that approximately 10% of the residents within the area utilise buses to get to and from work. It should be noted that this percentage does not take into account domestic staff who utilise buses and taxis to get to employment opportunities within the Milnerton Area.

Although a large number of public transport vehicles utilise Blaauwberg Road, the majority of them are passing through the area. The current public transport usage for the area can however, be assumed to be between 10% and 20% during the commuter peak periods.

7.3.4 Accident Analysis

The number and severity of the accidents on Blaauwberg Road for the period October 1994 to February 1998 (41 months), as indicated in Figure 7.5, is summarised in Table 7.3:

TYPE OF ACCIDENT	AT INTERSECTIONS	NON INTERSECTION	TOTAL
Fatal	1	3	4
Serious Injury	7	3	10
Slight Injury	60	69	129
Total	381	297	678

Table 7.3 : Number of Accidents (October 1994 - February 1998)

In addition to the above statistics, accident black spots were identified along Blaauwberg Road. A summary of the accident black spots is indicated in Table 7.4.

INTERSECTION	NUMBER OF ACCIDENTS	AVERAGE NUMBER OF ACCIDENTS PER MONTH
Boy de Goede Circle	78	1.9
Otto du Plessis Drive	72	1.8
Koeberg Road	57	1.4
Raats Drive / Pentz Drive	56	1.4
Janssens Avenue	34	0.8

Table 7.4 : Accident Black Spots on Blaauwberg Road

7.3.5 Parking Analysis

As indicated in Figure 7.7, at present all the major commercial areas and shopping centres have sufficient parking during peak commuter shopping periods on Fridays and Saturdays. An analysis of the current parking utilisation ratios a three commercial shopping centres is indicated in Table 7.5.

	PARKING SUPPLY bays/100m² GLA	PARKING UTILISATION (bays/100m² GLA)	
		FRIDAY PM	SATURDAY MIDDAY
Bayside Shopping Centre	5,7	2,2	4,5
Table View Mall	6,9	3,6	4,9
Flamingo Square	5	3,3	3,5
Average	5,9	3,0	4,3

Table 7.5 : Summary of Parking Utilisation Ratios

The above ratios indicate that during a normal month end Saturday midday peak hour, the parking areas at these three centres are between 70% and 80% utilised. The Department of Transport's draft Road Access Policy (RAP) (PAWC, 1996) recommends parking ratios for various land uses and for different levels of public transport use (Refer to extract of RAP in Table 7.6). Currently Blaauwberg Road can be classified as a normal zone. If in the future public transport is promoted in the Blaauwberg Road corridor, ratios under the PTI Zone classification may be considered to further promote the use of public transport.

LAND USE	PARKING RATIO (bays/100m²/GLA)	
	NORMAL ZONE[1]	PTI ZONE[2]
Single Shops	4	2
Shopping Centre	6	4
Offices	4	2

Table 7.6 : Off Street Parking Ratios As Per Draft Road Access Policy (PAWC, 1996)

Notes : 1. Normal Zone : Parking ratios are based on a survey of local authority requirements for areas where public transport is not being promoted

2. Refer to sites in areas where the use of public transport is to be promoted but where the provision of public transport is currently considered to be inadequate

7.3.6 Pedestrian / Cyclist Assessment

As indicated in Figure 7.8, there is significant pedestrian activity along Blaauwberg Road, particularly in the vicinity of Janssens Avenue, Wood Drive / Study Street, and Boy de Goede Circle. At Boy de Goede Circle (west), a pointsman was on duty during the weekday AM peak period to assist pedestrians crossing Blaauwberg Road. The cyclist flows shown in Figure 7.8 indicate that cycle usage on Blaauwberg Road is very low.

7.3.7 Speed Assessment

As indicated in Figure 7.10, vehicle operating speeds to the west of Donkin Avenue are generally below the speed limit. Factors contributing to this include the poor road surface and two lane undivided cross section to the west of Popham Road, and the relatively high level of vehicle activity in the vicinity of the shopping centres. To the east of Donkin Avenue, the speeds are generally above the speed limit. Factors contributing to this include the generous four lane divided cross section, and the relatively long distances between intersections

7.4 SUMMARY OF TRANSPORTATION ISSUES

As part of the Milnerton Structure Planning process, a postal survey was undertaken to determine the transportation issues and problems in the Milnerton area. The results of the responses from Table View residents is summarised in Table 7.7.

Problem/Issue	% of respondents
• Increase in traffic due to visitors on weekends and peak times	13%
• Shortage of reliable public transport	6%
• High speeds in built-up areas	5%
• Poor street lighting	4%
• Sidewalks untidy - unpaved	3%
• No sidewalks	3%
• No train service	1%
• Street names and signs broken down	1%
• Too little parking	1%
• Narrow streets	1%

Table 7.7: Summary Of Transportation Issues And Problems In Table View Area

Additional traffic issues raised at the public meeting held on 13 May 1998 are summarised as follows:

- The location of future commercial parking areas in relation to the buildings i.e. facing the street or in courtyards
- Would the current road reserve of Blaauwberg Road be wide enough to accommodate the planning team's proposals
- Pedestrian crossing concerns need to be addressed in the light of the proposed cross section
- Public transport needs to be improved in the area and a train service provided

The existing system evaluation has brought the following transportation issues to light:

- Certain sections of Blaauwberg Road are already operating at close to capacity conditions during commuter, shopping and recreational peak periods.
- Certain intersections along Blaauwberg Road are operating at low and very low levels of service (LOS E/F) during peak hours. Capacity improvements will be required at certain intersections. Theses may include signalisation (e.g. Popham Road Intersection) or the optimisation of signal phasing and timing plans (e.g. Wood Drive).
- Although a high number of public transport vehicles operate on Blaauwberg Road, less than 15% of the commuters to and from the Blaauwberg Road area use public transport.
- Scholars need to cross Blaauwberg Road to access the schools to the south of Blaauwberg Road. The crossing of this busy road is a safety concern.

Speeds in excess of the 70 km/hr speed limit have been recorded along the route thereby also posing a safety concern.

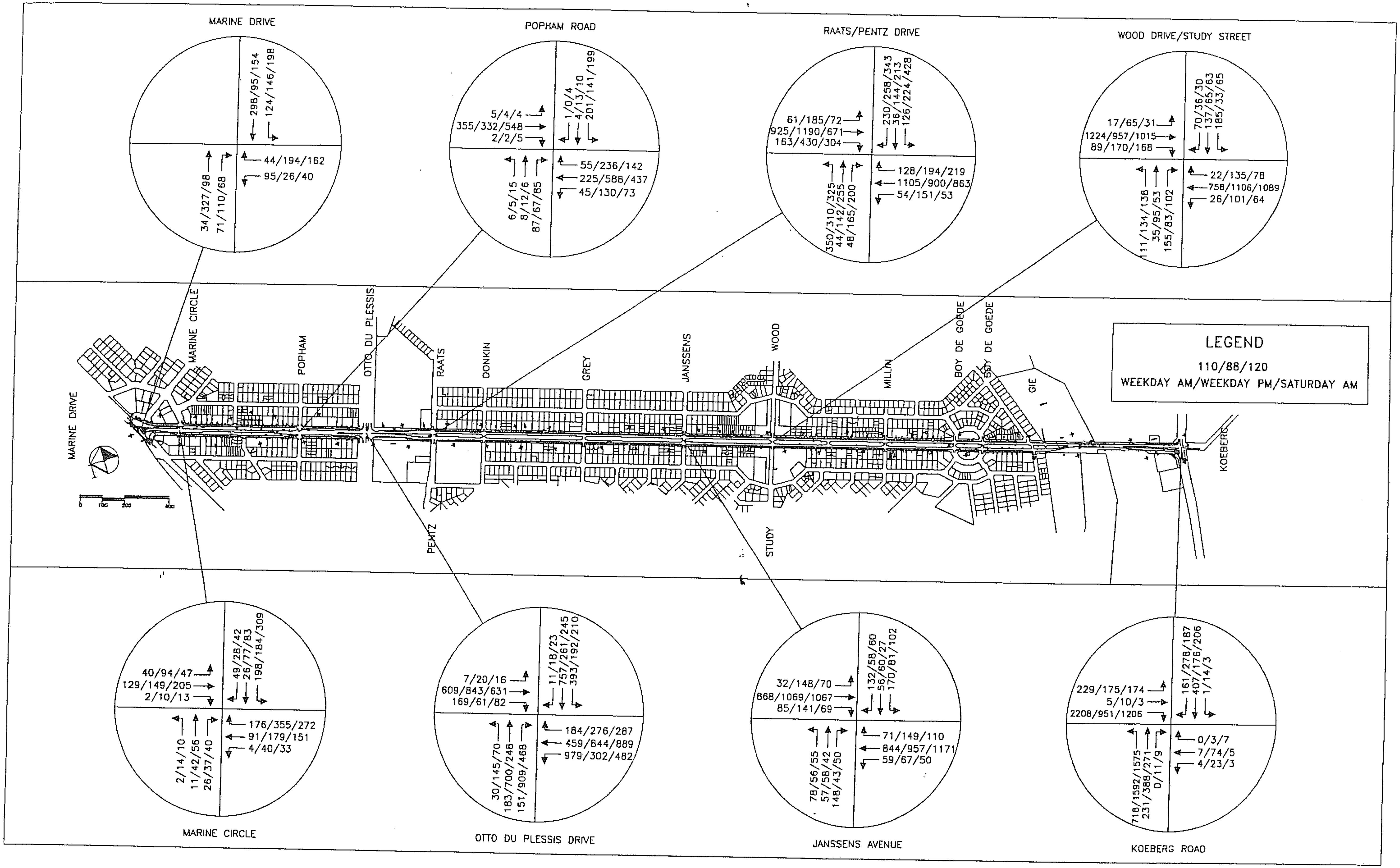


Figure 7.2: Peak Hour Traffic Flows at Intersections

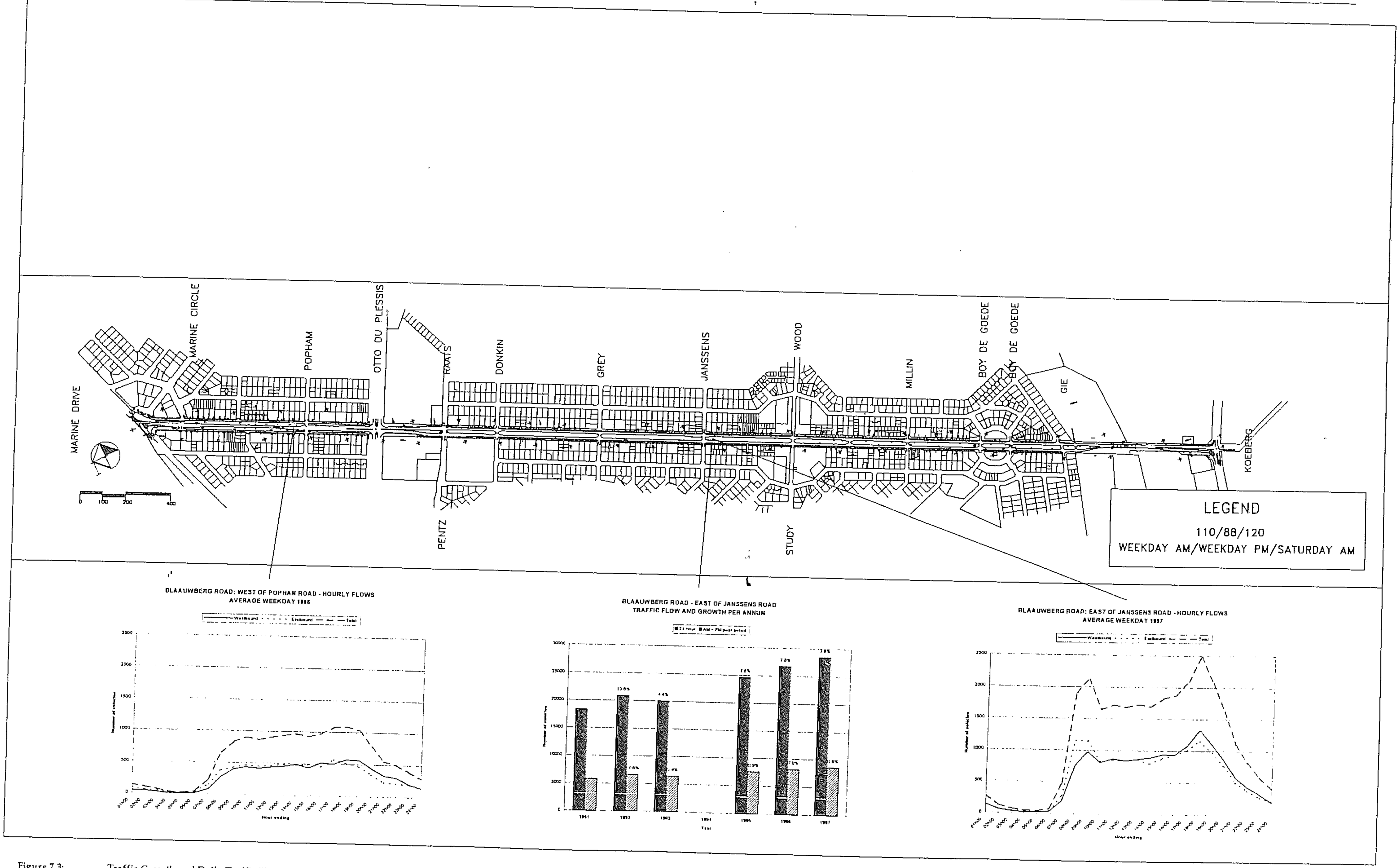


Figure 7.3: Traffic Growth and Daily Traffic Flows

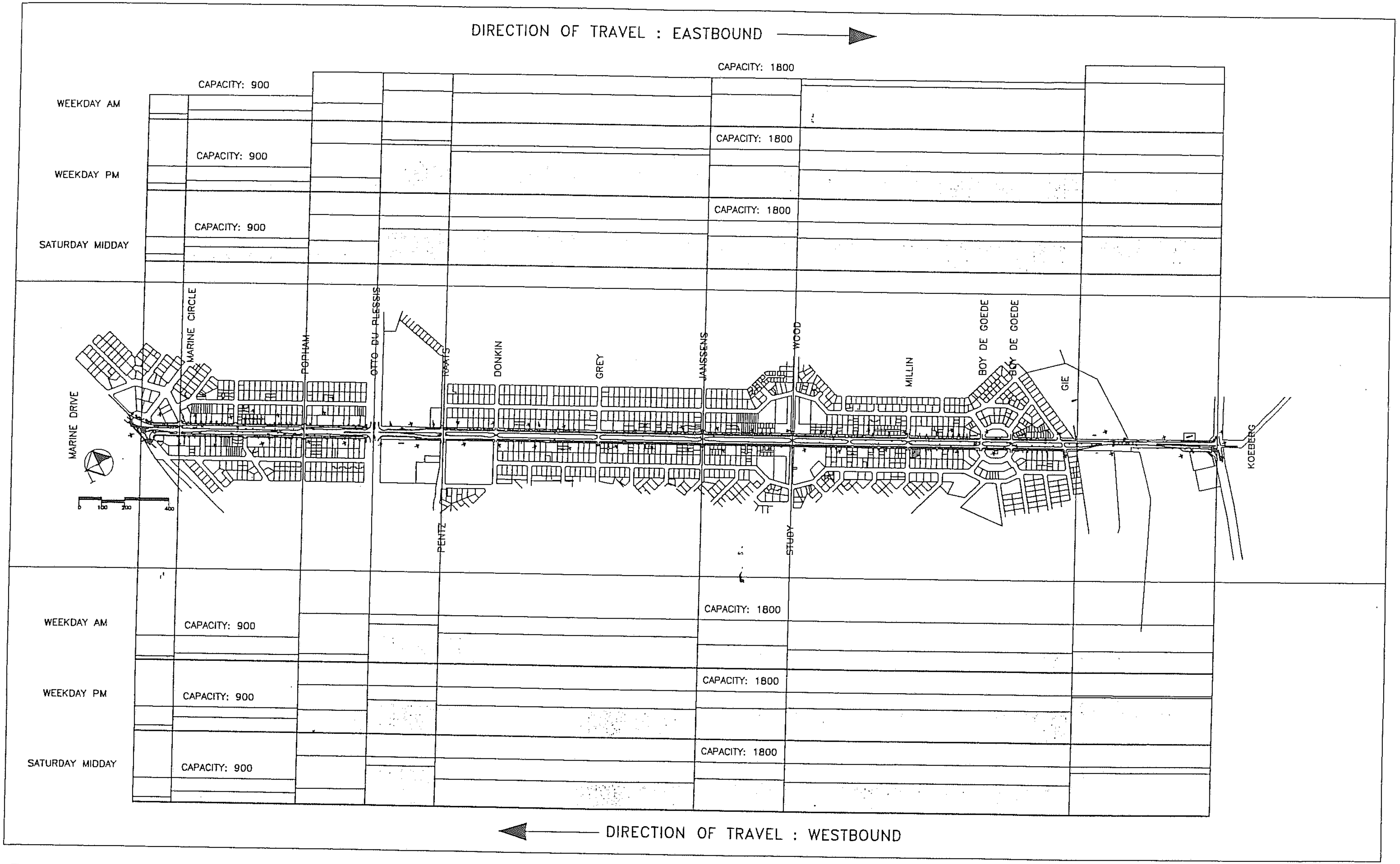


Figure 7.4: Peak Hour Link Flows

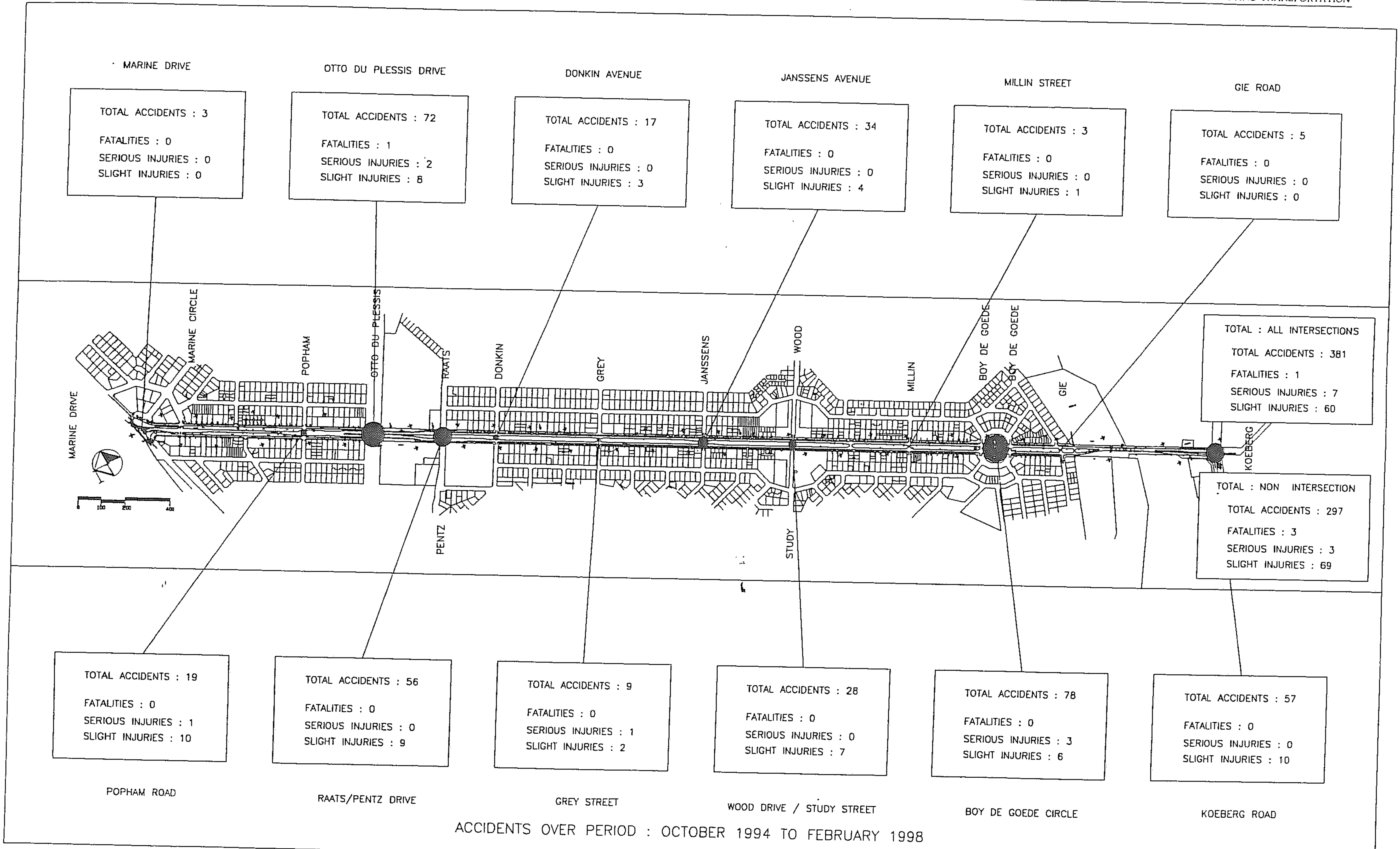


Figure 7.5: Accident Data Along Blaauwberg Road

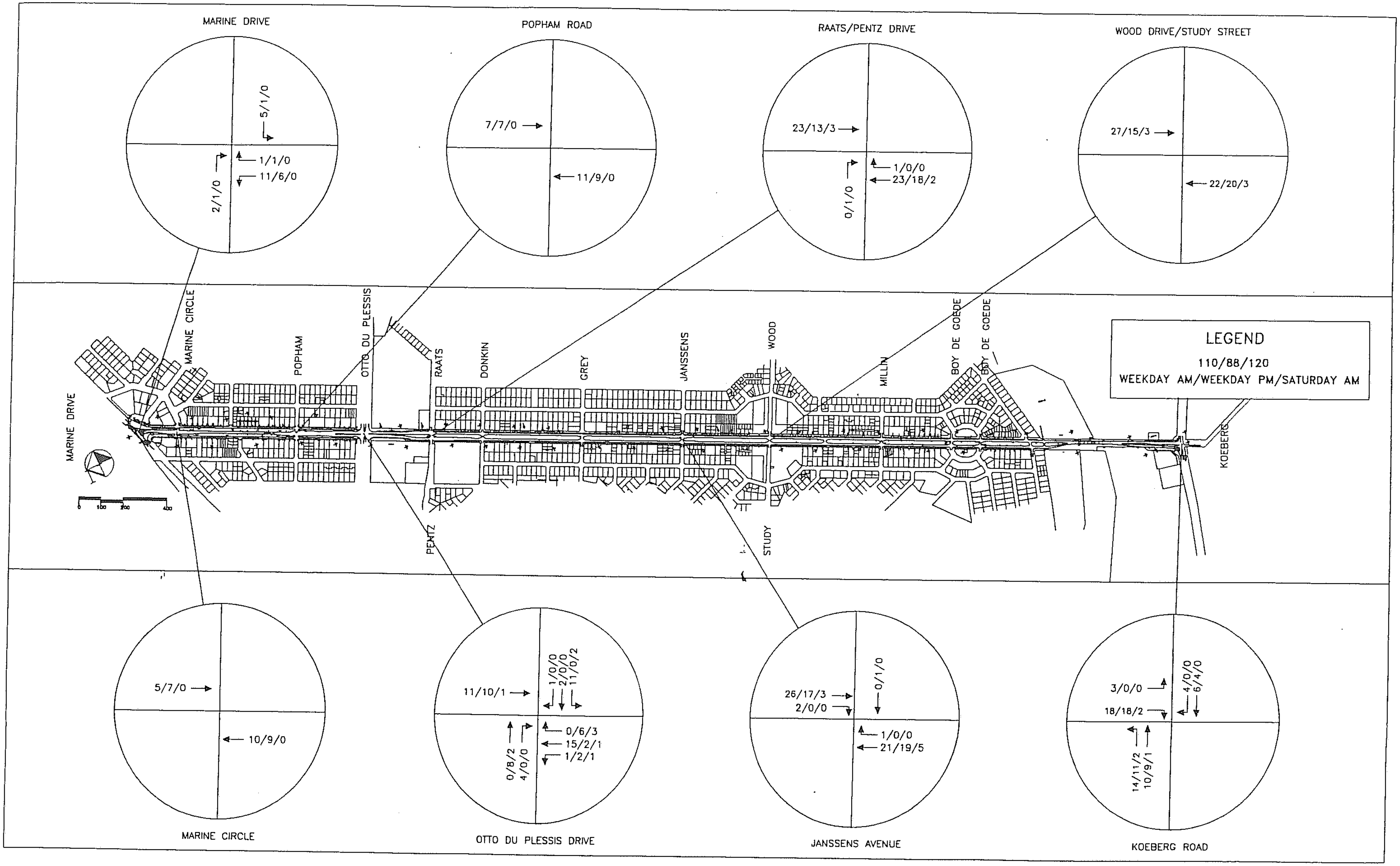


Figure 7.6: Peak Hour Bus Flows at Intersection

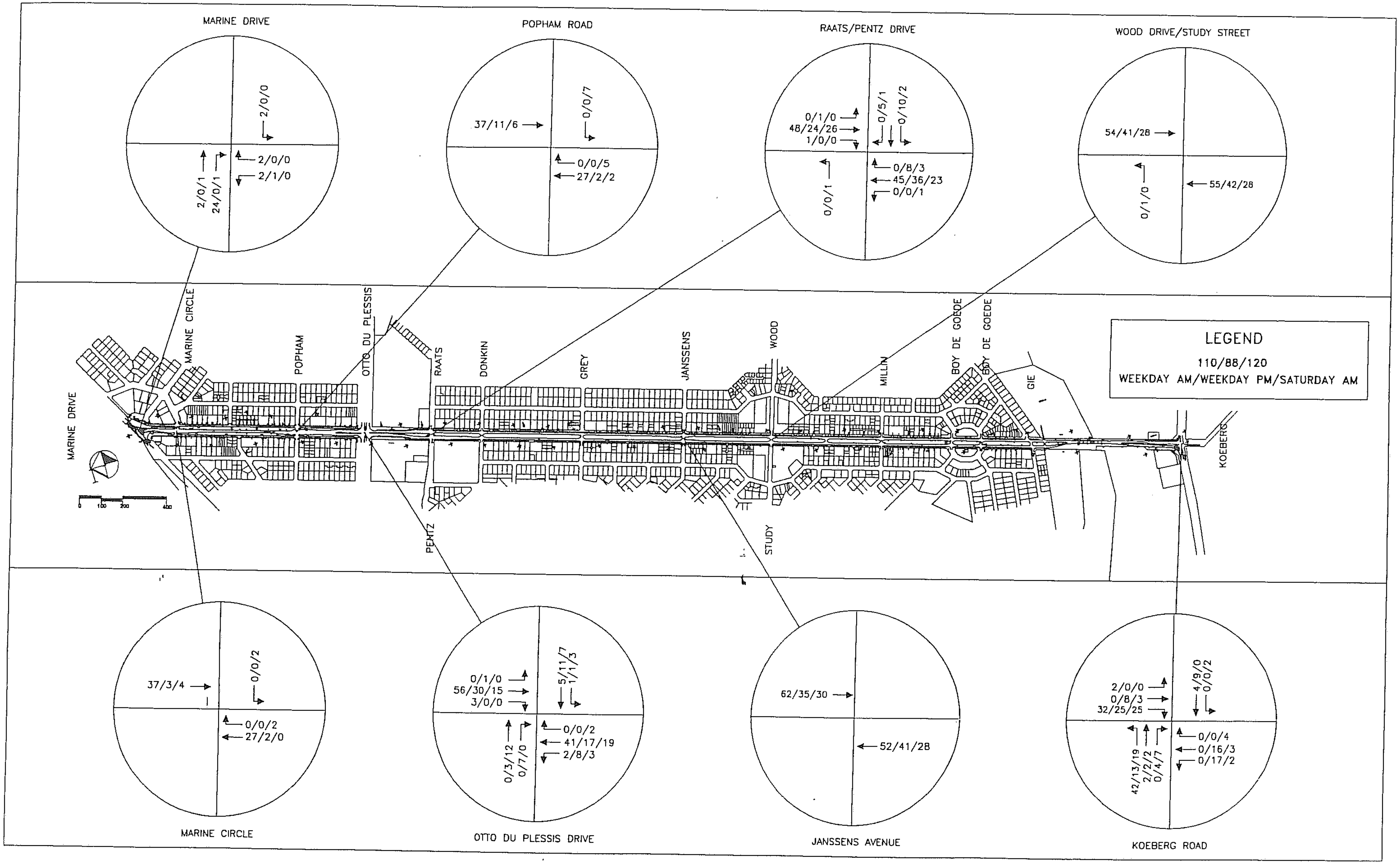


Figure 7.7: Peak Hour Taxi Flows at Intersection

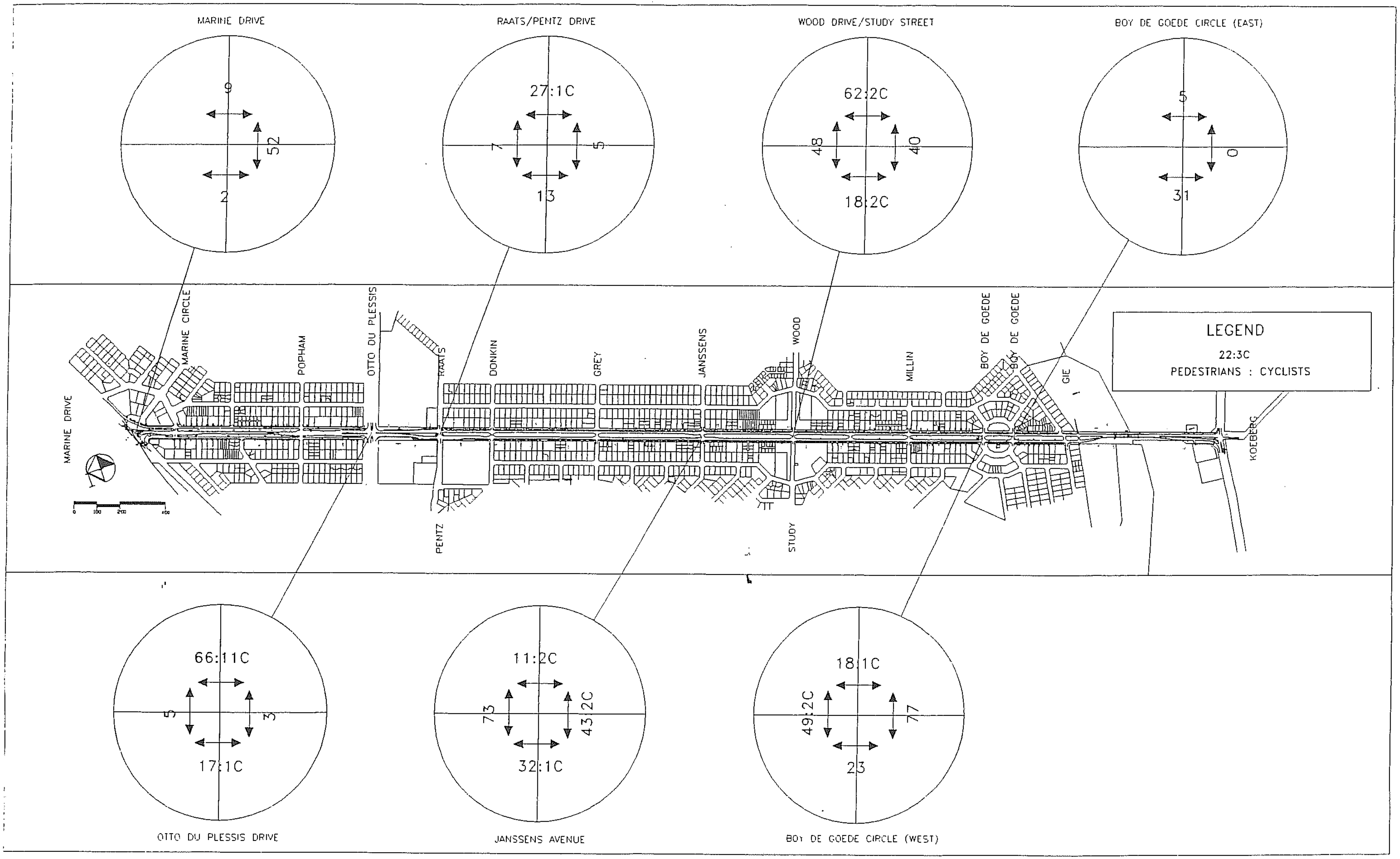


Figure 7.8: Pedestrian and Cyclist Flows at Intersection

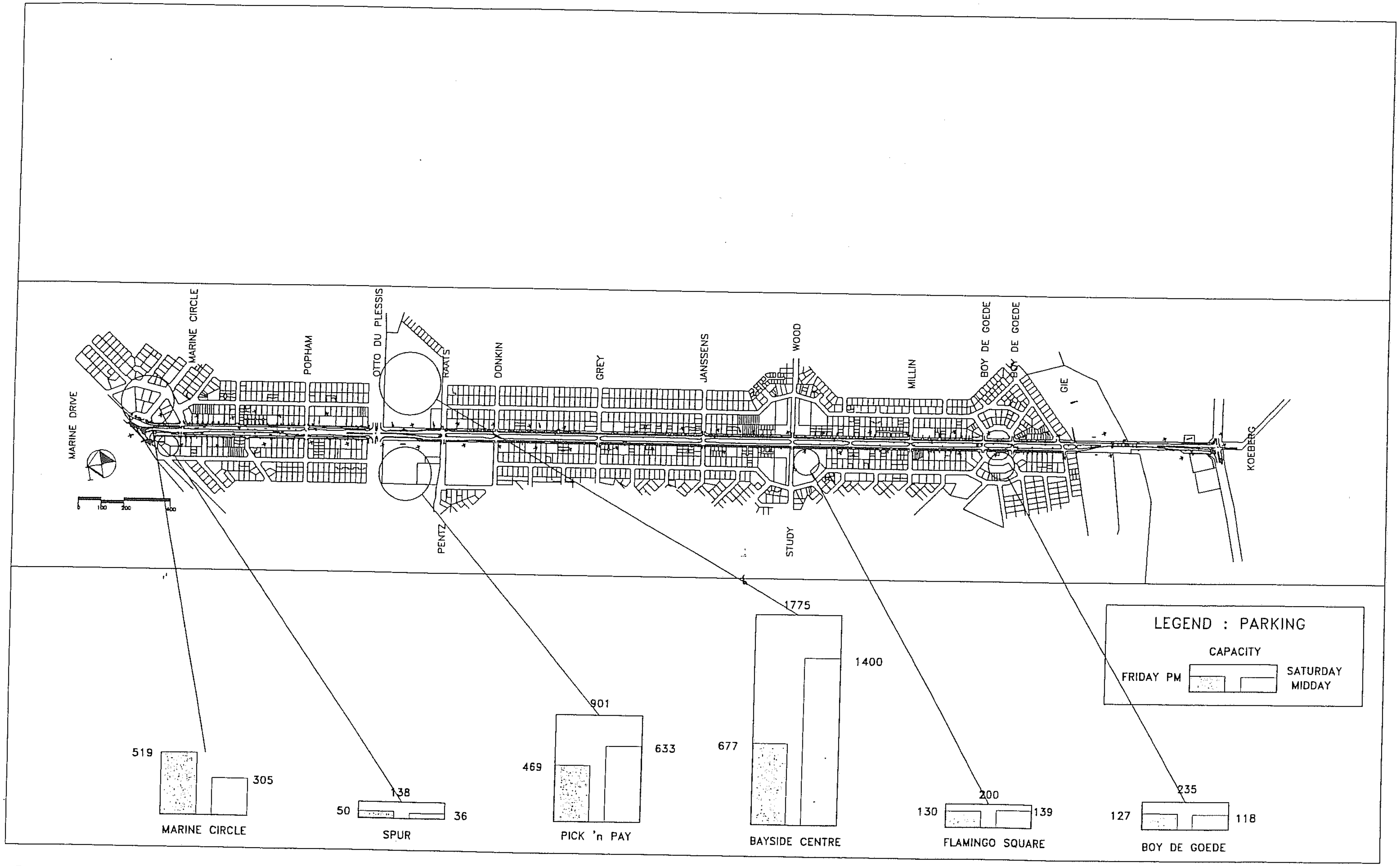


Figure 7.9: Parking Utilisation at Commercial Centres

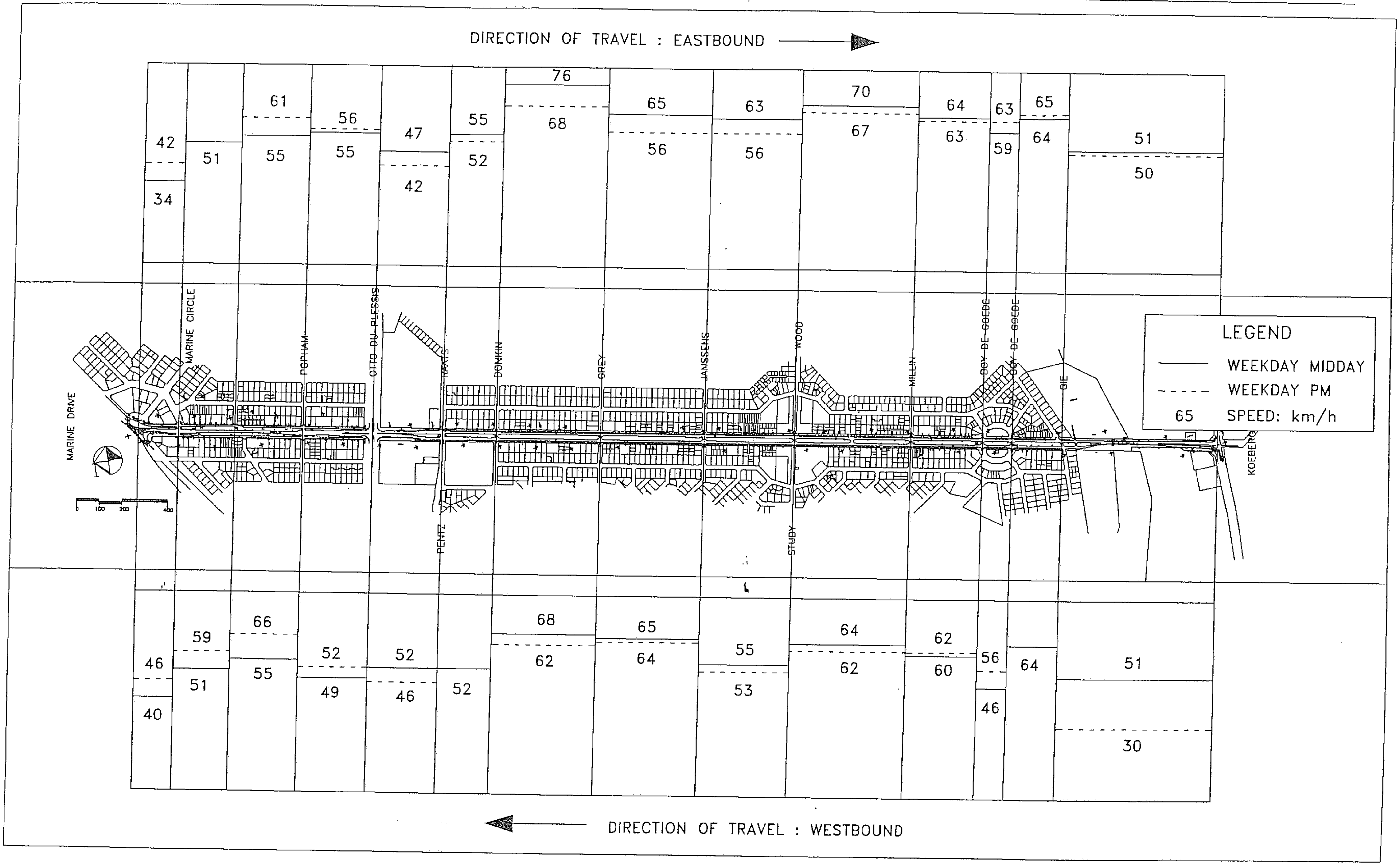


Figure 7.10: Results of Peak Period Speed Surveys

MARINE DRIVE

At present, this signalised intersection operates at a high level of service (LOS B) during the weekday AM, weekday PM and Saturday midday peak hours. During in season recreational peak periods (not analysed in this assessment), congestion is experienced at this intersection.

POPHAM ROAD

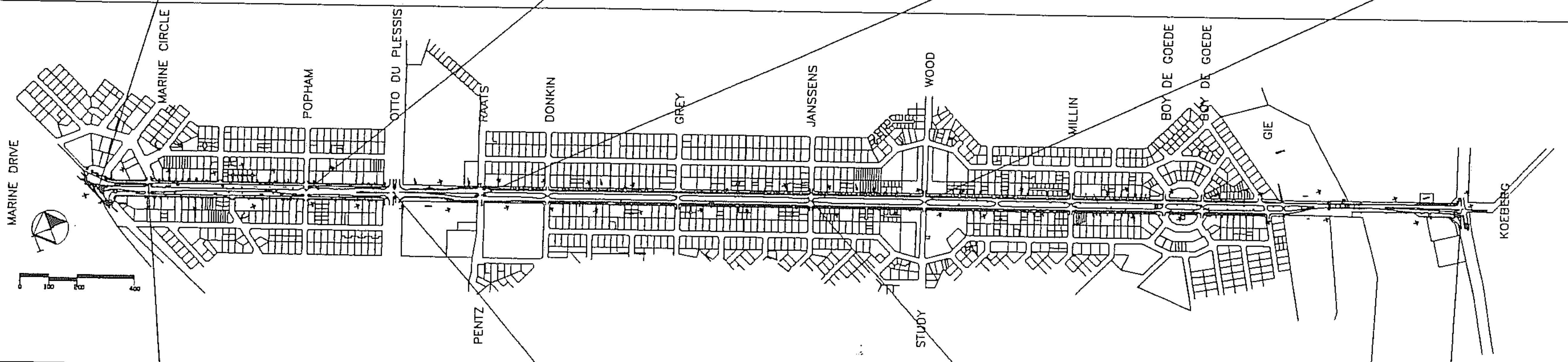
At present, the critical northbound approach to this unsignalised intersection operates at a very low level of service (LOS F) during all peak hours. The main street movements operate at high levels of service (LOS A/B), during all peak hours. During in season recreational peak periods (not analysed in this assessment), congestion is experienced at this intersection.

RAATS/PENTZ DRIVE

At present, this signalised intersection operates at a reasonable level of service (LOS C) during the weekday AM peak hour, and an acceptable level of service (LOS D) during the weekday PM and Saturday midday peak hours.

WOOD DRIVE/STUDY STREET

At present, this signalised intersection operates at a high level of service (LOS B) during the weekday AM and Saturday midday peak hours. During the weekday PM peak hour, the demand exceeds the capacity, and hence the intersection operates at a very low level of service (LOS F).



MARINE CIRCLE

At present, this signalised intersection operates at a high level of service (LOS B) during the weekday AM peak hour, a reasonable level of service (LOS C) during the weekday PM peak hour, and a high level of service (LOS B), during the Saturday midday peak hour. During in season recreational peak periods (not analysed in this assessment), congestion is experienced at this intersection.

OTTO DU PLESSIS DRIVE

At present, this signalised intersection operates at an acceptable level of service (LOS D) during the weekday AM peak hour, and a reasonable level of service (LOS C), during the weekday PM and Saturday midday peak hours.

JANSSENS AVENUE

At present, this signalised intersection operates at a high level of service (LOS B) during the weekday AM, weekday PM and Saturday midday peak hours.

KOEBERG ROAD

At present, this signalised intersection operates at a low level of service (LOS E) during the weekday AM peak hour, and a high level of service (LOS B), during the Saturday midday peak hour. During the weekday PM peak hour, the demand exceeds the capacity, and hence the intersection operates at a very low level of service (LOS F).

Figure 7.11: Summary of Intersection Analyses

7.5 FUTURE LAND USE AND TRAFFIC SCENARIOS

7.5.1 Introduction

As indicated in Figure 7.3, peak hour traffic flows on Blaauwberg Road have shown a growth of 6.8% per annum since 1991. The area to the north of Blaauwberg Road is a major growth area in the Metropolitan context and hence continued growth of traffic on Blaauwberg Road is foreseen. The densification of land use along Blaauwberg Road will contribute to this future growth. The future traffic situation along Blaauwberg Road has been analysed using two approaches as follows:

- The impact the densification of land use along Blaauwberg Road will have on the road network in the vicinity of Blaauwberg Road.
- The impact the extrapolation of historical growth trends (to account for current developments taking place in Table View north area) will have on the road network in the vicinity of Blaauwberg Road.

7.5.2 Densification of land use along Blaauwberg Road

7.5.2.1 Methodology

Based on the vision for Blaauwberg Road as indicated in Section 4 of this report, various growth scenarios were tested to determine the extent to which growth could be accommodated along Blaauwberg Road. Four growth scenarios (A through D) were tested as indicated in Table 7.8.

The following assumptions have been made to facilitate the analysis of the above four development scenarios:

- The Retail/ Commercial Mixed Use was distributed between three of the development nodes along Blaauwberg Road namely Marine Circle (40%), Flamingo Square (50%) and Boy de Goede (10%).
- High density mixed uses have been confined to the first half block on Blaauwberg Road. The mixed use development of residential with commercial or office has been concentrated in the section between Marine Circle and Otto du Plessis Drive (70%) with the remaining 30% occurring in the section between Raats Drive and the Flamingo Square Node.

	Land Use	(Ha)	Land Use Scenario			
			Scenario A	Scenario B	Scenario C	Scenario D
Retail/ Commercial Mixed Use	Retail/ Commercial	14.3	30 000 m^2	45 000 m^2	60 000 m^2	75 000 m^2
High Density Mixed Use	Commercial/ Office Residential[1]	28.5	28 500 m^2 1 140 units (40 du/ha)	57 000 m^2 1 710 units (60 du/ha)	85 500 m^2 2 280 units (80 du/ha)	114 000 m^2 2 850 units (100 du/ha)
Medium Density Residential	Residential[1]	27.2	816 units (30 du/ha)	1 088 units (40 du/ha)	1 360 units (50 du/ha)	1 632 units (60 du/ha)
Low Density Residential	Residential[1]	27.6	552 units (20 du/ha)	828 units (30 du/ha)	966 units (35 du/ha)	1 104 units (40 du/ha)
Retail	Retail	16.3	Bayside Shopping Centre: 31 000 m^2 Table View Mall: 13 000 m^2 Flamingo Square: 4 000 m^2 Circle Centre: 3 000 m^2 Marine Circle: 5 000 m^2			
Total	Residential[1] Retail/ Office/ Commercial		2 508 units 114 500 m^2	3 626 units 158 000 m^2	4 606 units 201 500 m^2	5 586 units 245 000 m^2

Table 7.8: Land Use Scenarios For Blaauwberg Road

Note 1. These numbers include the existing residential units

- Medium density residential uses have been confined to the second half block from Blaauwberg Road.
- Low density residential uses have been confined to the third half block from Blaauwberg Road.
- The existing regional shopping node will not intensify.
-

In order to test the above scenarios it was necessary to determine the existing residential densities for the three half blocks on either side of Blaauwberg Road. The resultant additional development along the route for each of the four development scenarios is indicated in Table 7.9.

Block	Land use	Existing	Proposed Increase			
			Scenario A	Scenario B	Scenario C	Scenario D
1st half block	Retail/Office Commercial Residential	 998 units (35 units/ha)	28 500 m^2 142 units	57 000 m^2 712 units	85 500 m^2 1 282 units	114 000 m^2 1 852 units
2nd half block	Residential	602 units (22 units/ha)	214 units	486 units	758 units	1 030 units
3rd half block	Residential	494 units (18 units/ha)	58 units	334 units	472 units	610 units
Total	Retail/Office Commercial Residential	 2 094 units (25 units/ha)	28 500 m^2 414 units	57 000 m^2 1 532 units	85 500 m^2 2 512 units	114 000 m^2 3 492 units

Table 7.9: Additional Development In Residential Zones Caused By Development Scenarios

To relate the increase in land use to peak hour trips along Blaauwberg Road, further assumptions had to be made as follows:

- An average of 1.4 workers per household for the area
- An average of 30 m^2 of floor area for employees to retail/office and commercial land uses
- 40% of the people will live and work along Blaauwberg Road
- 80% of the people travelling to or from outside the area will use private vehicles, therefore 20% will use public transport (10% taxi and 10% bus)
- Average occupancy of 17.5 people per bus, 8.25 people per taxi and 1.5 per private vehicle
- For the section of Blaauwberg Road between Marine Drive and Otto du Plessis, the trip distribution was assumed to be 30% to and from Marine Drive, 30% to and from Otto du Plessis Drive and 40% to and from Koeberg Road
- For the section of Blaauwberg Road between Otto du Plessis and Koeberg Road, the trip distribution was assumed to be 40% to and from Otto du Plessis Drive and 60% to and from Koeberg Road
- The distribution of new trips generated by the development scenarios was assumed to be 20% to and from the north, and 80% to and from the south
- The PM trip generation and distribution was assumed to be the reverse of the AM trip generation and distribution
- 60% of the trips generated during the peak period will occur during the peak hour.

- An in:out distribution of flows for the retail/commercial /office of 80%:20% has been used during the AM peak hour and the reverse for the PM peak hour.
- An in:out distribution of flows for the residential of 20%:80% has been used during the AM peak hour and the reverse for the PM peak hour.

7.5.2.2 Discussion of Results

Using the above assumptions, future traffic flows were generated for each development scenario (Refer to worksheets in the Appendices). The resultant link flows in the vicinity of the Marine Drive, Otto du Plessis and Koeberg Road intersections with Blaauwberg Road are indicated in Table 7.10.

Section of Blaauwberg Road	Peak Hour Flow (veh/hr)									
	Existing		Scenario A		Scenario B		Scenario C		Scenario D	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
East of Marine Drive										
Eastbound	195	256	288	280	345	319	406	360	466	401
Westbound	139	220	163	313	202	370	243	431	284	491
Total	334	476	452	594	547	689	649	791	750	892
West of Otto du Plessis										
Eastbound	785	924	842	1 141	933	1 274	1 028	1 415	1 124	1 556
Westbound	500	1 007	717	1 064	850	1 155	991	1 250	1 132	1 346
Total	1 285	1 931	1 559	2 205	1 783	2 429	2 019	2 665	2 256	2 902
East of Otto du Plessis										
Eastbound	1 153	1 944	1 301	2 145	1 420	2 324	1 543	2 493	1 666	2 661
Westbound	1 622	1 422	1 823	1 570	2 002	1 689	2 171	1 812	2 339	1 935
Total	2 775	3 366	3 125	3 716	3 422	4 013	3 714	4 305	4 006	4 597
West of Koeberg Road										
Eastbound	2 437	1 126	2 577	1 428	2 780	1 604	2 964	1 787	3 147	1 971
Westbound	879	1 870	1 181	2 010	1 357	2 213	1 540	2 397	1 724	2 580
Total	3 316	2 996	3 758	3 438	4 137	3 817	4 504	4 184	4 871	4 551

Table 7.10: Predicted Link Flows On Blaauwberg Road For Four Development Scenarios

The following observations regarding the above results have been highlighted:

- Marine Drive and Otto du Plessis Drive: Scenario A, B, C and D flows can be accommodated on a four lane cross section (capacity of a 4 lane cross section of between 3 600 and 4 000 vehicles per hour).
- Otto du Plessis Drive to Koeberg Road: Scenario A, B, C and D flows can be accommodated on a six lane cross section (capacity of a 6 lane cross section of between 5 400 and 6 000 vehicles per hour).
- At present the predominant movement during the AM peak period is a southward commuter movement, as there is an imbalance between workers and job opportunities in the predominantly residential area surrounding Blaauwberg Road. During the evening peak period, the traffic flow regime is generally the reverse of the AM peak period. The provision of job opportunities within the corridor will result in a contra flow movement of traffic to and from the area during peak periods.
- The provision of both jobs and residential accommodation along a public transport corridor will result in people living and working in the corridor. These people may make use of public transport or walk, rather than use their private vehicles.
- The growth in traffic and public transport usage along the route may necessitate the provision of public transport lanes. In addition to these lanes, an adequate supply of bus/taxi stop embayments will need to be provided along the route to ensure that the public transport lanes are not blocked by buses/taxis loading or off loading passengers.
- If it is assumed that the densification will take place over a ten year horizon, the expected annual growth rates of southbound traffic from Blaauwberg Road during the critical AM peak hour are as follows:
  - Scenario A : 0.5% per annum
  - Scenario B : 1.1% per annum
  - Scenario C : 1.8% per annum
  - Scenario D : 2.3% per annum

From the above it should be noted that the densification of land use along Blaauwberg Road will contribute between 0.5 and 2.3% growth per annum to the traffic travelling in the peak direction (southbound) during the critical AM peak hour.

7.5.3 Extrapolation of Historical Growth Trends

7.5.3.1 Methodology

Currently, vehicles exiting the Blaauwberg Road corridor to the south, utilise Otto du Plessis Drive and the section of Blaauwberg Road over the Diep River Bridge in the vicinity of Koeberg Road. No alternative routes exist to the south as the Rietvlei and Diep River pose physical barriers. The above access roads in their present form have a certain capacity based on their cross sections and the effect of intersections along their length. The peak hour capacity of these access points has therefore been estimated as follows:

- Otto du Plessis Drive: Two lanes each carrying approximately 1 200-1 400 vehicles per hour i.e. 2 800 vehicles per hour.
- Blaauwberg Road over Diep River Bridge: Currently being upgraded to a three lane cross section each lane carrying approximately 1 200 vehicles per hour i.e 3 600 vehicles per hour.

The capacity of the above access roads is therefore approximately 6 400 vehicles per hour (post bridge upgrading) in the peak direction of flow. At present, the exiting volume during the AM peak hour is 4 735 vehicles and entering volume during the PM peak hour is 4 061 vehicles.

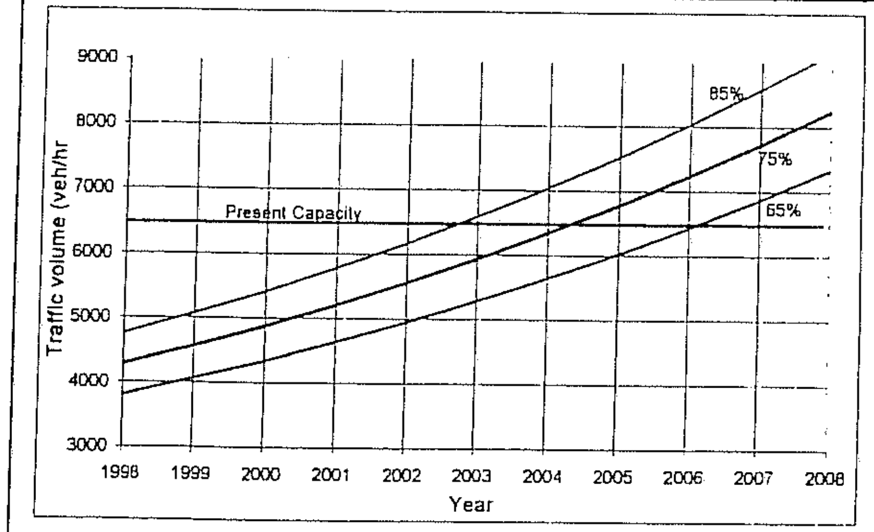


Figure 7.12: Am Peak Hour Southbound Traffic Flow Growth From Blaauwberg Road Corridor

Notes: Percentages indicate mode split by private car

The AM peak hour traffic growth trend has been indicated in Figure 7.12. The figure indicates the peak hour southbound exiting volumes from the Blaauwberg Road corridor for varying modal splits and for a 10 year design horizon.

7.5.3.2 Discussion of results

The following observation regarding Figure 7.12 should be highlighted: If current growth rates continue (6.8% per annum), the reserve capacity will be used up in 4-5 years i.e. by the year 2 002 during the AM peak hour, if the current modal split (85% by private car) is maintained.

- If the modal split is increased to 25% by public transport (75% by private car), then the access roads could accommodate traffic growth till 2 004. This could be achieved by the following techniques:
  - HOV lanes have been proposed on both Koeberg Road and Otto du Plessis Drive to encourage people to car pool or to switch to public transport.
  - When the peak hour flows reach capacity, drivers will change their working hours to avoid the congestion and this will result in the extension of the peak period.
- Between the years 2 002 and 2 004, pressure will mount for the provision of an additional access road to the area i.e the extension of Sandowne Road eastwards to link with N7 Freeway via the future M12 junction or the extension of Blaauwberg Road to the N7. The additional access road would have to distribute traffic to roads other than Koeberg Road and Otto du Plessis. In this regard, the Sandowne Road extension option is preferred to the Koeberg Road extension option as it will distribute traffic directly onto the N7 Freeway. Provided the additional access road has a four lane cross section and public transport usage increases to 25% by public transport, the predicted 2 008 AM peak hour traffic flows should be accommodated on the road network.
- The extension of Blaauwberg Road eastwards to link in with Tygerberg Valley Road and ultimately the future Main Road 28 (M12) will relieve pressure on the Plattekloof Interchange and the Koeberg Road/Plattekloof Road Intersection. The evaluation of the northern versus the southern alignment of Blaauwberg Road extension, should include an analysis of the adequacy with which each of these alignments accommodates traffic moving between Blaauwberg Road, and the Durbanville, Bellville and Parow areas.

7.6 ACCESS CONSIDERATIONS

7.6.1 Introduction

Blaauwberg Road has been divided into three distinct sections from a cross section and access perspective, namely the section between Marine Drive and the West Coast Road (Section I), the section between the West Coast Road and the Diep River Bridge (Section II) and the section between the Diep River Bridge and Koeberg Road (Section III). For Section I, access is provided off service roads running parallel to Blaauwberg Road, while for Section II, direct access is provided to each erf (22 metre frontages) along Blaauwberg Road.

Blaauwberg Road can be classified as a Class II facility in an "intermediate" development environment. Based on the discussion in chapter 5 of this report, this will continue to be applicable for Sections II & III of the route. However, in the future, Section I of Blaauwberg Road could be classified as a Class II facility in an "urban" development environment due to the evolving commercial nature of the area. A summary of the access requirements for Class II facilities in "intermediate" and "urban" environments is indicated in Table 7.11.

Access Type	Primary Distributor Urban Environment		Primary Distributor Intermediate Environment	
	Full Access	Left Only	Full Access	Left Only
Low volume driveway	60m	60m	90m	90m
High volume driveway	120m	75m	180m	100m
Normal side street	120m	90m	180m	120m
Median opening	120m		180m	
Signalised intersection	375m		540m	
Operating speed	50 km/h		60 km/h	

Table 7.11: Minimum Spacing Requirements (In Metres) For Access On Class II Facilities

In order to determine a long term vision for access on Blaauwberg Road, it is necessary to determine the objectives of the Road Authority for this route. The Road Authority objectives are summarised as follows:

- To minimise access points along the route with a view to achieving access spacings which ultimately conform to the requirements of the draft Road Access Policy.
- To retain and enhance the functional classification of this important mobility route.
- To accommodate future traffic flows within the future cross section (vehicular, public transport and pedestrian flows).

It is also necessary to determine what the Local Authority's objectives are for this route. These have been summarised as follows:

- To facilitate development along the route, as there is already significant pressure for development.
- To enhance the environment within the road corridor using urban design principles.
- To comply with the Road Authority objectives

The above objectives have been used to formulate access alternatives for the route.

7.6.2 Alternative Access Proposals

Section I of the route already has service roads, and the ultimate planning for the route is that they remain and that additional lanes can be added to Blaauwberg Road without affecting/disturbing these service roads. Therefore, the present access arrangements can be retained. The present intersections of the service roads with Blaauwberg Road and the side streets are problematic and could be addressed using similar access schemes proposed for Section II.

Section II of the route currently has no service roads and access spacings are typically substandard for a Class II facility. As this section of the route has been defined as an "intermediate" environment, access spacings for low volume driveways should be 90 metres and for high volume driveways 100 metres. Furthermore, access to the corner erfs should be moved to the side streets. The status quo access arrangement for a typical block has been compared to the ultimate access arrangement (Refer to Figure 7.13).

To achieve these access spacings, two options could be considered as follows:

- The consolidation of 4 or 5 adjacent erfs with one access point.
- The provision of a service road would remove the multiple driveways from Blaauwberg Road. Access to the service road could be provided at spacings that conform to the Road Access Policy.

The second option is clearly more achievable and has therefore been pursued. Three alternative service road options have been considered and evaluated and are as follows:

- Alternative A: Access to each block could be provided off the side streets with a two way service road running down the rear of the properties (Refer to Figure 7.14).
- Alternative B: Access to each block could be provided off the side streets with a two way service road running along the front of the properties in the road reserve. A mid block access could be provided with adequate throat length to prevent backup of traffic onto Blaauwberg Road (Refer to Figure 7.14).
- Alternative C: Access to each block could be achieved using a one way service road running along the front of the properties and within the road reserve. The service road would only start 90 metres from the side street and stop 90 metres before the next side street. Corner properties would gain access via the side street. Those properties falling between the corner property and the service road would be accommodated in an interim service road scheme (Refer to Figure 7.15).

7.6.3 Evaluation of Alternative Access Proposals

Alternative A will be very difficult to achieve as the whole block would have to accept the scheme and develop en masse, something which is extremely unlikely. Alternative B will require the corner properties to give up land for the service road, for the benefit of the rest of the block. Furthermore, at mid block, the required throat length for the access and the sections of the service road that will connect to this access will sterilise a number of erfs. Again this scheme will rely on the majority of property owners on the block developing en masse. Alternative C, however, does have the flexibility to accommodate development on an ad hoc basis, as the service road is built entirely in road reserve. Alternative C was therefore chosen as the preferred alternative. The interim scheme for Alternative C has also been developed to accommodate the access points to erfs which fall between the corner erf and the access points 90 metres away. The interim scheme involves a temporary one way service road, which rationalises the access points in the zone between the corner erf and the access 90 metres away, into one access point. While the spacing of the access and egress points to these interim service roads is substandard, the number of access points will be significantly reduced. To achieve the ultimate scheme, consolidation of the corner erfs with the following 4 or 5 erfs (to achieve 90 metre frontage) would need to be pursued to eliminate the temporary service road. The interim scheme for Alternative C is indicated in Figure 7.16.

7.7 CROSS SECTION CONSIDERATIONS

The existing and proposed cross sections for the various sections of Blaauwberg Road are indicated in Figure 7.17. As indicated, for Section I and III only one cross section is proposed, however, for Section II four alternative cross sections have been considered. (See Table 7.12)

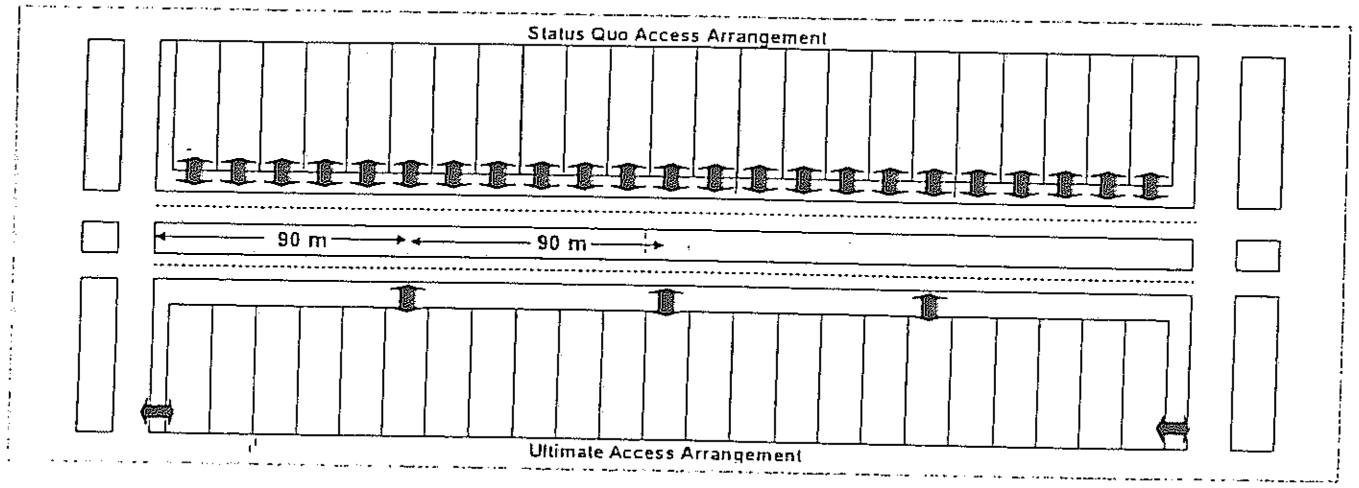


Figure 7.13: Status Quo Versus Ultimate Access Arrangement Service Road Alternatives A& B

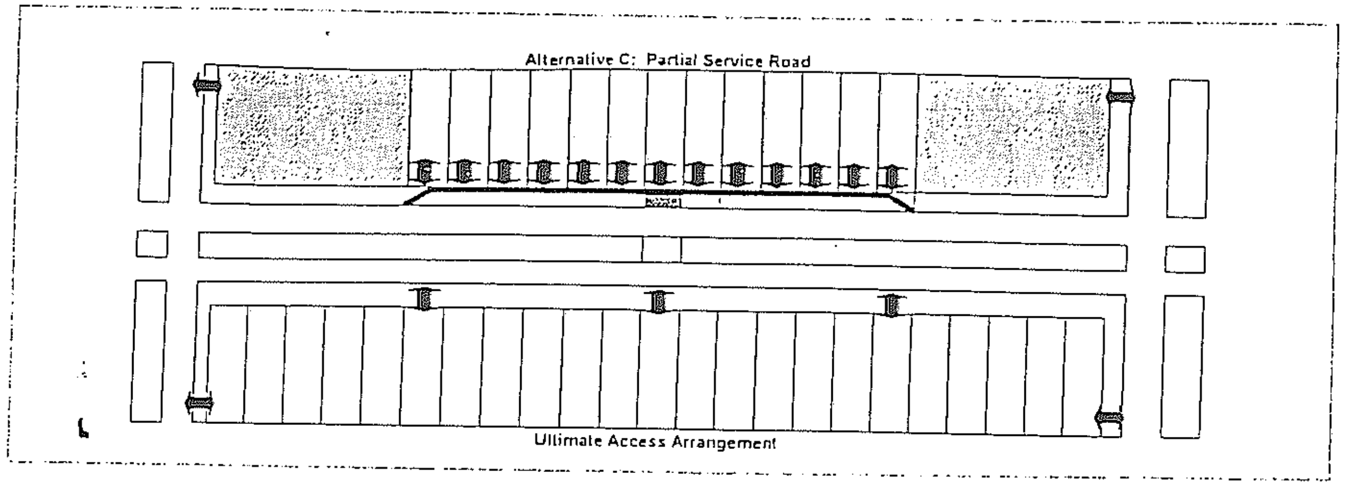


Figure 7.15: Service Road Alternatives C

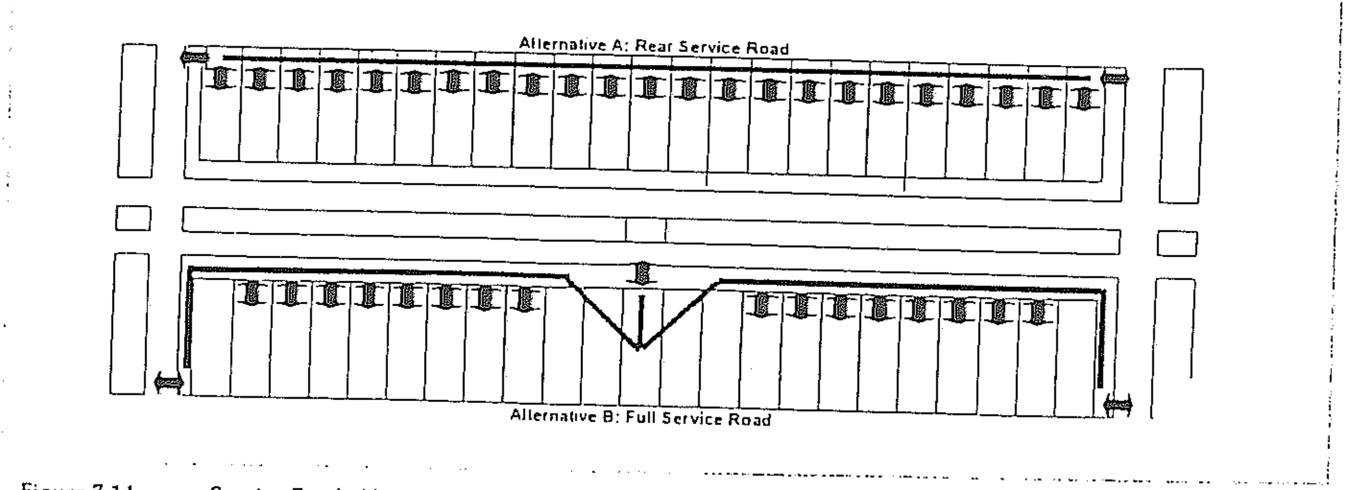


Figure 7.14: Service Road Alternatives A& B

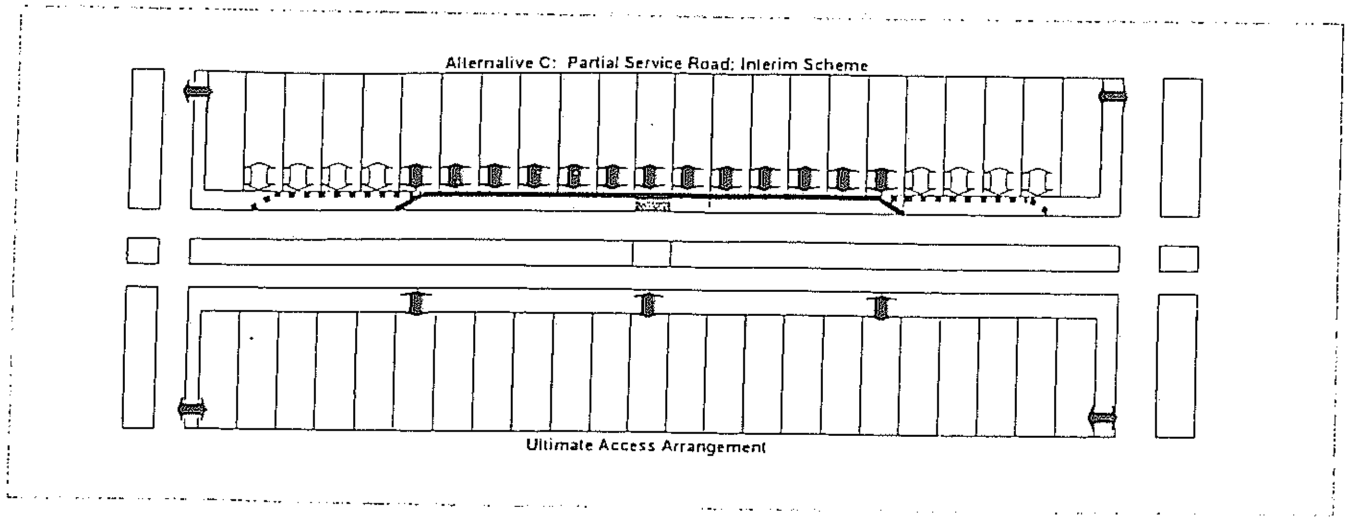


Figure 7.16: Interim Scheme for Alternative C

The future cross section for Section II will need to accommodate a service road within the road reserve, to achieve the ultimate minimum spacing requirements of the draft Road Access Policy. The projected future demands on Blaauwberg Road in terms of traffic volume also indicate that three general use vehicle lanes will be required in each direction, with the possibility of public transport lanes being required in the future. Pedestrian demands should also be addressed in the proposed cross section.

In developing alternative cross sections for Section II, certain constraints also had to be taken into considerations as follows:

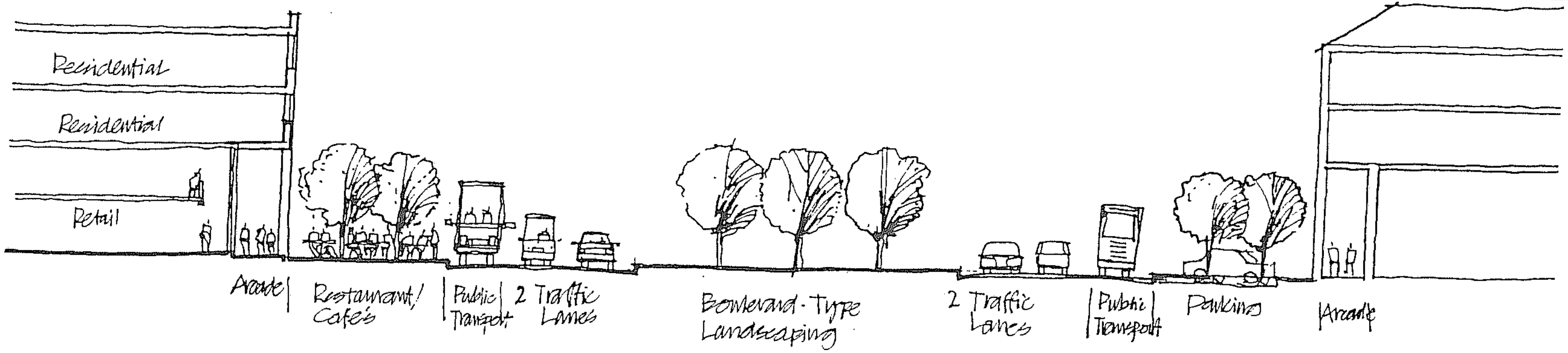
- The two rows of Eucaliptis trees and the single row of Palm trees in the median
- Services namely stormwater pipes, sewers, water mains, Telkom cables, electrical cables and the Caltex effluent pipeline.
- Concern regarding building roads over certain of the above services
- Acceptable geometric standards for vehicle lanes, service lanes, bus lanes and sidewalks
- Traffic control at intersections
- Flexibility of the cross section to cope with future development
- Optimal use of the existing roadworks i.e. surfacing and kerbing to minimise cost

Taking the above constraints and demands into consideration, a comparative evaluation of the four alternatives for Section II has been undertaken and is summarised in Table 7.12. The following points should be highlighted :

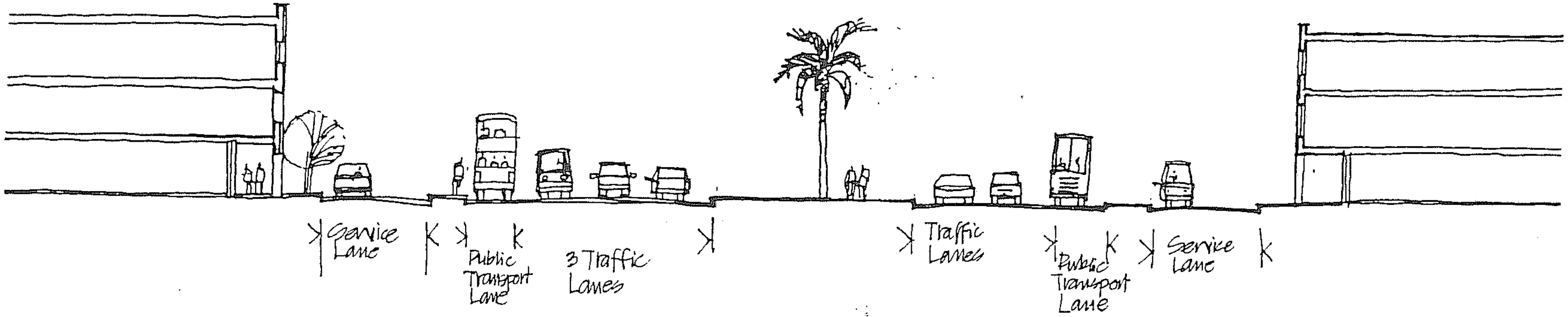
- The vision for Blaauwberg Road motivated by the planning team is that of an ultimate six lane cross section (Alternative IIA). However, the other alternatives have been developed to indicate the flexibility in the road reserve to accommodate public transport lanes if required.
- As discussed in Section 7.4, the roads connecting Blaauwberg Road to the south are constraints to traffic growth on Blaauwberg Road, rather than the cross section of Blaauwberg Road itself. The upgrading of Blaauwberg Road beyond a six lane cross section is therefore questionable.

Effect on	Alternative IIA Six lane cross section	Alternative IIB Kerbside bus lanes	Alternative IIC Undivided median bus lanes	Alternative IID Divided median bus lanes
Trees	No trees will need to be removed	All 230 Eucaliptis trees will have to be removed	All palm trees will have to be moved	No trees will be affected
Sewer	Service road will be built over foul sewer lines	Service road will be built over foul sewer lines	Service road will be built over foul sewer lines	Service road will be built over foul sewer lines
Stormwater, Electrical & Telkom	Under future sidewalks	Under future sidewalks	Under future sidewalks	Under future sidewalks
Watermains	Under future sidewalks	Under future sidewalks	Under future sidewalks	Under future sidewalks
Caltex Pipeline and Effluent Main	No effect on lines	No effect on lines	Bus lane will be built over Caltex Pipeline and effluent main	Bus lane will be built over Caltex Pipeline and effluent main
Roadworks	Optimum use of existing roadworks Wider (4.0 metre) kerb lane to accommodate public transport activities	Optimum use of existing roadworks Wider (4.0 metre) kerb lane to accommodate public transport activities	Optimum use of existing roadworks	Optimum use of existing roadworks Broken down bus will block lane
Pedestrians	Pedestrians have to cross 3 lanes of traffic	Pedestrians have to cross 4 lanes of traffic	Pedestrians have to cross 3 lanes of traffic	Pedestrians have to cross 3 lanes of traffic
Intersection control	PT vehicles share kerbside lane with left turning traffic Do not require separate phase	PT vehicles share kerbside lane with left turning traffic Do not require separate phase	Require separate phase Problematic for PT vehicles to access and egress median bus lane at each end of system	Require separate phase Problematic for PT vehicles to access and egress median bus lane at each end of system
Cost considerations		Tree removal	Moving Palm trees Relocate inspection boxes to Caltex line	Additional kerbing to bus lanes Relocate inspection boxes to Caltex line

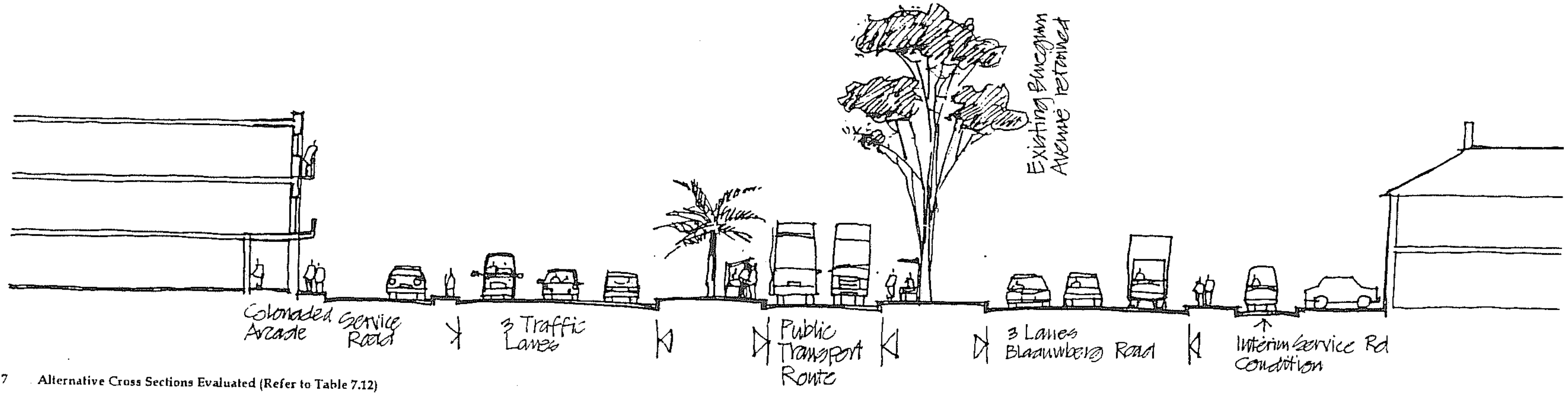
Table 7.12: Comparison of Alternative Cross Sections for Section II



Alternative II A: 6 Lane Section (possibility of no service lane to allow parking courts and street space as indicated)



Alternative II B: 8 Lane Section with Service Lanes (3 traffic / mobility; 1 public transport)



Alternative II C: Undivided Median Bus Lane

Figure 7.17 Alternative Cross Sections Evaluated (Refer to Table 7.12)

SECTION I: MARINE CIRCLE TO WEST COAST ROAD

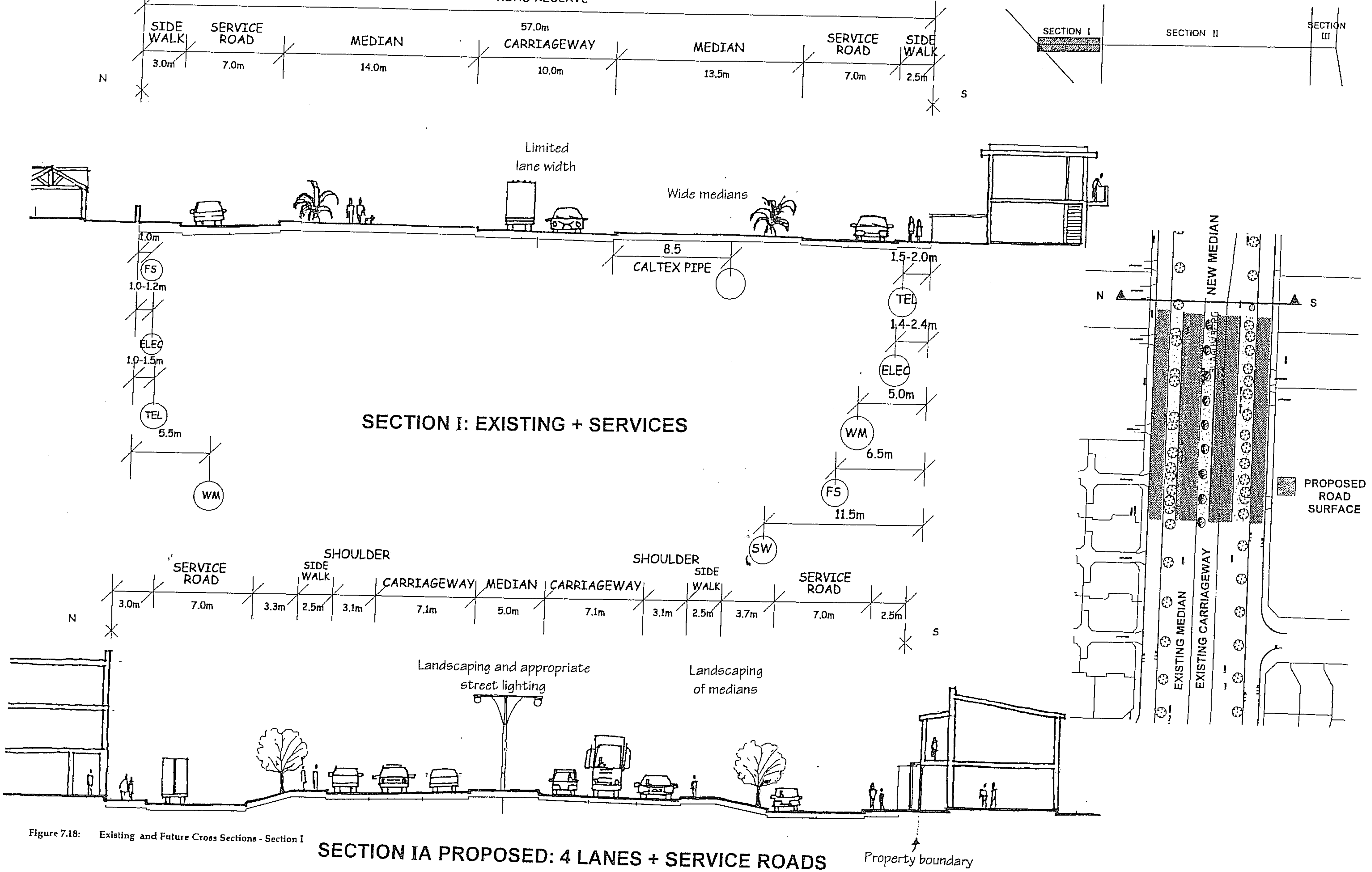


Figure 7.18: Existing and Future Cross Sections - Section I

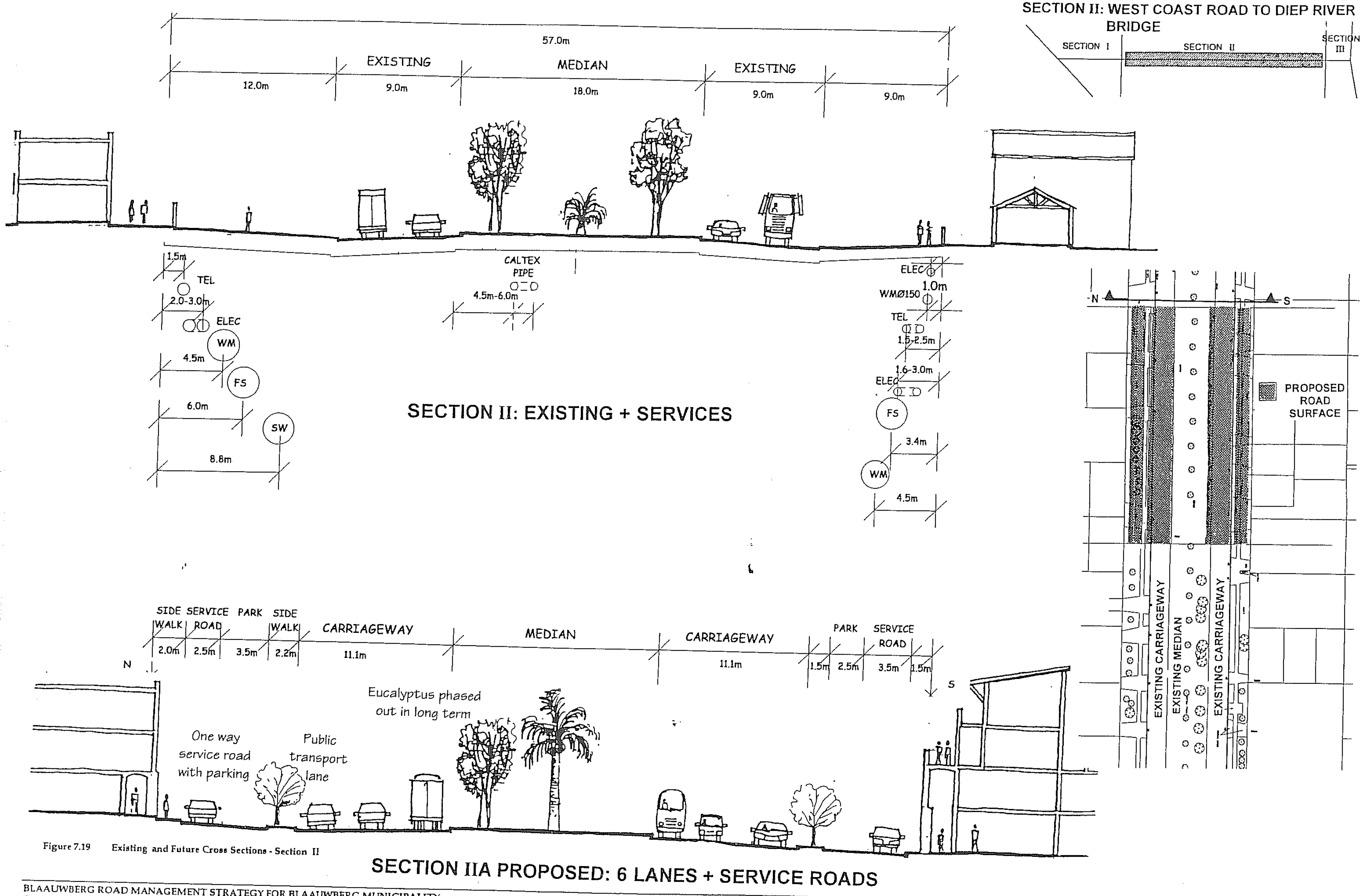


Figure 7.19 Existing and Future Cross Sections - Section II

SECTION III: DIEP RIVER BRIDGE TO KOEBERG ROAD

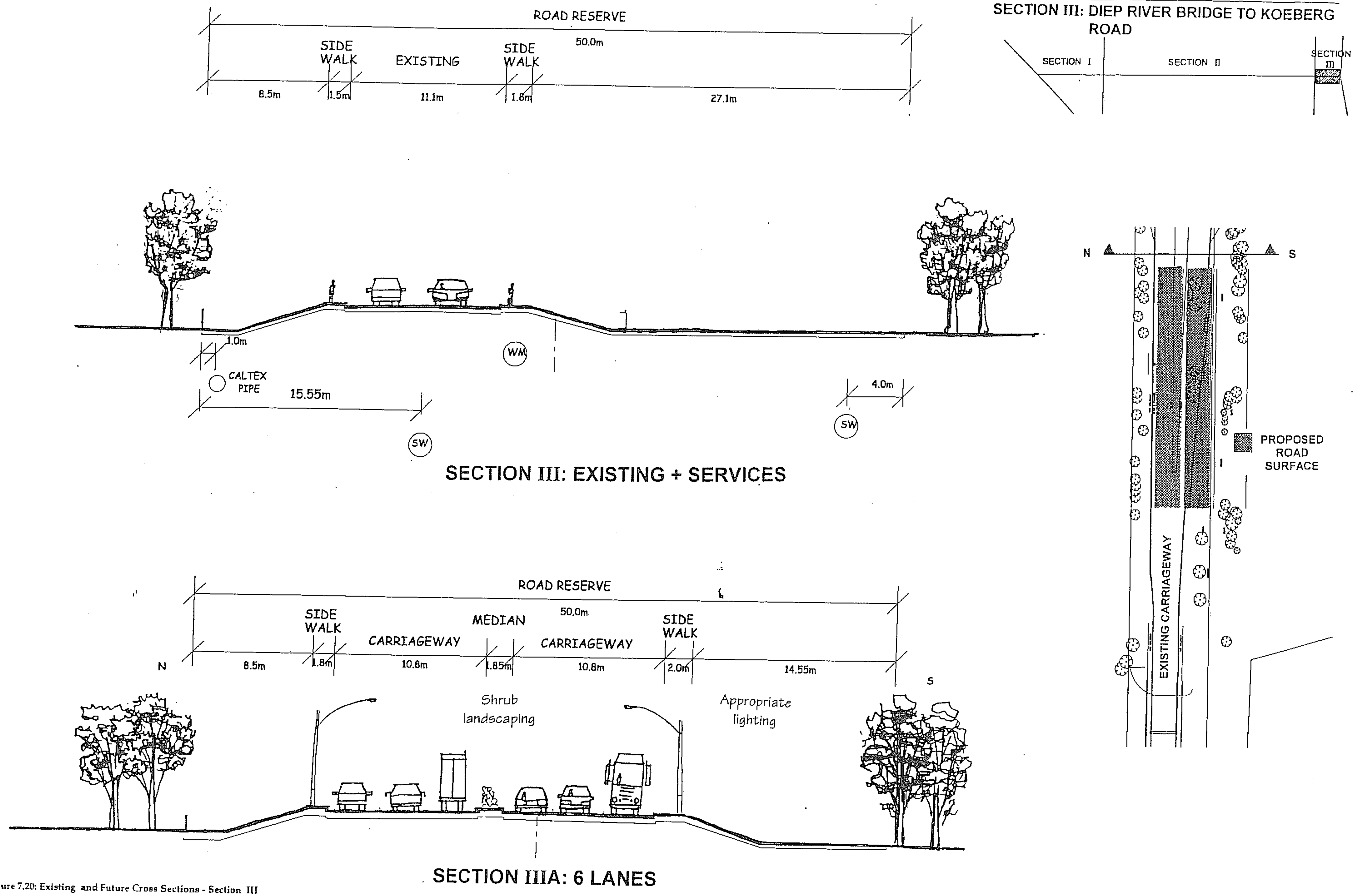


Figure 7.20: Existing and Future Cross Sections - Section III

8.0 MANAGEMENT PROPOSALS

8.1 INTRODUCTION

8.1.1 A Management Framework To Deal With Complexity

The complexity of different conditions, (identified in the Analysis Chapters 5, 6, 7), in Blaauwberg Road over it's 5km length include:

- Different road cross sections within the different "Sections";
- Different block widths leading to a complex access situation;
- The complex patterns of subdivision, consolidation and access;
- The wider northern verge;
- The fact that more Eucalyptus (181) exist in the southern part of the median than the north (50).
- The different road hierarchy classifications along its length;

In addition, a host of alternative road cross sections exist for each section, depending on the "Vision" applied.

The Management Strategy therefore sets out a FLEXIBLE range of OPTIONS that can be applied to a range of different possibilities as expressed in Figure 8.1:

CONDITIONS	VARIABLES			
STREET LOCATION	At a "Node"	Intermediate Zone	South Side	North Side
LAND USE AND CADASTRAL INFORMATION	Subdivision	Consolidation	Size of property involved	Mix of Landuse
BLOCK LOCATION	Mid Block	Corner	Full Block	Half block
TRANSPORT AND ACCESS	Multiple	Grouped	Neighbouring property	Traffic Generation

Figure 8.1: Conditions and Multiple Variables

The Management Strategy therefore is not prescriptive, but attempts to define a range of possibilities, according to the above, which can be used by local authority officials and prospective developers to determine an ideal response to the particular "genius loci" (i.e. each site will be unique in its characteristics and urban/transport response.)

8.1.2 Underlying "Vision"

The Management Plan should attempt to realise, over the long term, the Vision, as discussed in Chapter four. The vision essentially comprises a "Mixed use, multiple access and mobility "corridor". The management strategy will encourage a concentration of mixed-use activities (i.e. high density residential, office and retail) to be primarily confined to the western area along Blaauwberg Road between Marine Drive and the West Coast Road. The remainder of the corridor is envisaged for predominantly high density residential, but allowing office and limited retail activities on sites along Blaauwberg Road. ("Penetration" into the full block will be permitted subject to design principles intended to mitigate impact on the residential "hinterland".)

These general land-use and transport proposals are in accord with current and anticipated economic trends. Existing nodes need to be strengthened and public land released where possible. Links to future, proposed activity hubs such as the Killarney Race Track and Outspan / Parklands Node, need to be created.

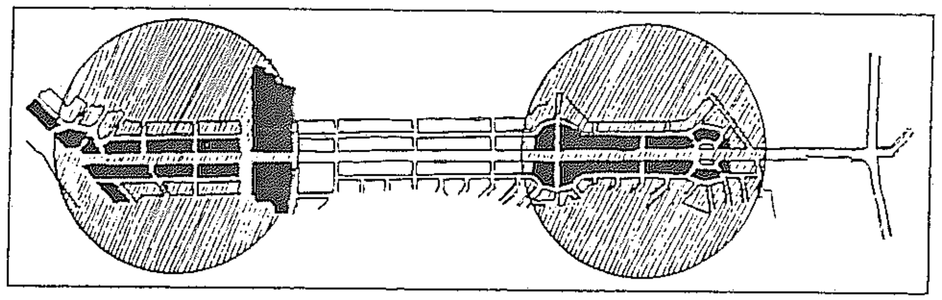
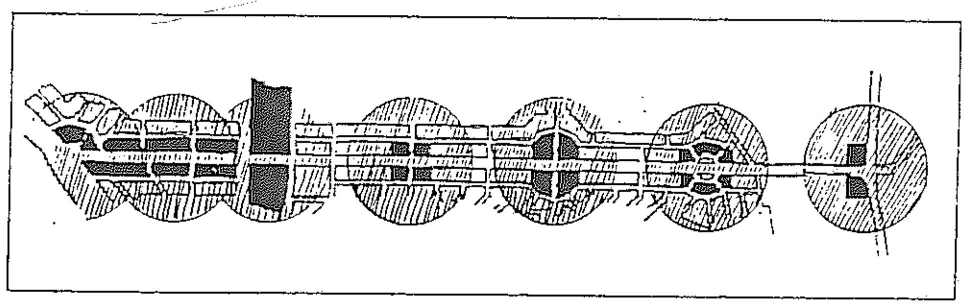


Figure 8.2: Future redevelopment may either be concentrated into two larger, encompassing nodes (above), or within existing nodes (below). Option Two is a preferred scenario as it distributes activities evenly along Blaauwberg Road, enabling continuity, and ensuring accessibility to the wider community.



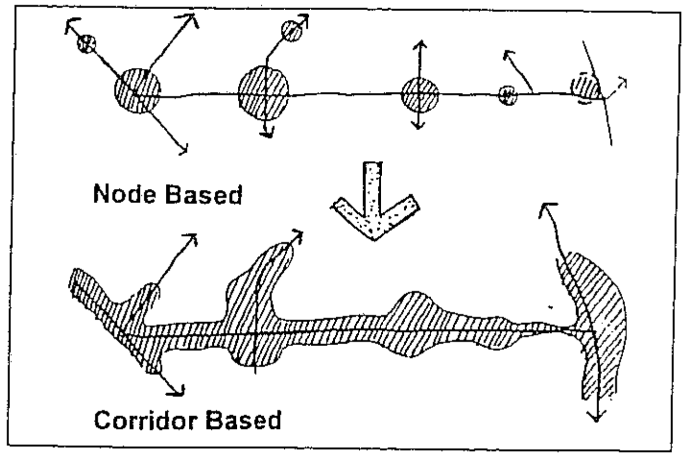


Figure 8.3:

Re-development should take place to ensure a hierarchy of nodes along Blaauwberg Road, eventually resulting in a corridor-based system. Long term scenarios envisage a gradual movement from the nodal based system to the corridor based system.

8.2 URBAN DESIGN FRAMEWORK

The framework and guidelines elaborated below take cognisance of key objectives, namely: to enable both mobility and activity functions; and to effectively integrate land use with transportation policies in creating a vibrant and efficient urban corridor in Blaauwberg Road.

8.2.1 Performance Criteria

Kevin Lynch ("Good City Form"; MIT 1989) describes the following seven key performance criteria. These should be applied to any development applications along Blaauwberg Road:

- *Vitality*: the degree to which the form of the settlement supports the vital functions, requirements and capabilities of human beings.
- *Sense:* the degree to which the settlement can be clearly perceived and mentally differentiated and structured in time and space by its residents and the degree to which that mental structure connects with their values and concepts.
- *Fit*: the degree to which the form and capacity of spaces and channels in a settlement match the pattern and quantity of actions that people customarily engage in, or want to engage in.
- *Access:* the ability to reach other persons, activities, resources, services, information, or places, including the quantity and diversity of the elements which can be reached.
- *Control:* the degree to which the use and access to spaces and activities, and their creation, modification, and management are controlled by those who use, work, or reside in them.
- *Efficiency:* the cost, in terms of other valued things, or creating and maintaining the settlement, for any given level of attainment of the environmental dimensions listed above.
- *Justice:* the way in which environmental benefits and costs are distributed a among persons, according to some particular principle such as equity, need, ability to pay, effort or power.

8.2.2 Design Principles

The desired environmental quality of Blaauwberg Road in future will not be determined only by planning principles and route mobility requirements. It will be necessary to formulate a Strategic Urban Design Framework, incorporating policies and design guidelines in order to achieve a positive urban environment.

The design principles, which form the basis of the Urban Design Framework, are as follows:

- The Public Realm

The Public Realm made up of streets and squares as positive public places. These form the basis of the integrated design approach. Streets and squares should be created as meaningful places for pedestrians and commuters.

The built form (architecture) makes these public spaces, defining place and scale with variations in architectural form. Buildings should interface and relate to public squares and streets.

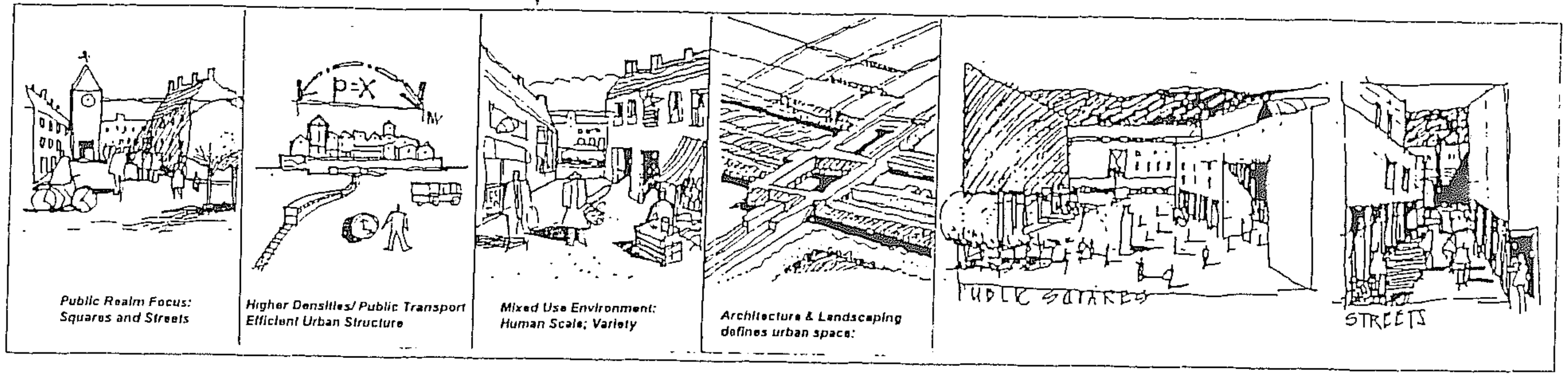


Figure 8.4: Principles of Good City Form

Streets are defined in terms of several environmental conditions: boulevards, avenue spaces, promenades, arcades, sidewalk activity edges (eg restaurants and markets), galleries and pedestrian-scaled activity streets, in a hierarchical order. Squares should be created at special places, at the intersection of major routes, or at prominent places with significant presence or public views.

- Mixed Use Environments

The creation of mixed-use environments, both vertical and horizontal, should be encouraged. The desired land-use character of precincts alongside Blaauwberg Road should, in time, reflect an integration of many land uses.

Ground floor retail development, encouraging small-scaled line shops, creates a contiguous activity edge, with offices on a first (and / or second floor) and residential apartments (on a first, second, third, fourth or fifth floors) creating a work-and-live environment. Increased residential densities will be positive from a densification perspective (MSDF objectives) and increase the thresholds for a Public Transport system to be successful.

- Human Scale

The making of places for people is a primary objective. Building height, variable setback lines, with buildings facing the street in a positive manner (making use of arcades, entrances, galleries, verandahs and balconies) and continuous building facades are mandatory patterns.

The planting of trees, creation of verandahs and galleries, small streets connecting retail to public facilities and squares where urban activity and rituals should be expressed.

The scale of Blaauwberg Road, with a 57-meter-wide road reserve, requires an eventual built form of 4 - 5 storeys on both sides to create a meaningful scale, both for commuters and pedestrians.

- Variety

The desired treatment of street facades are left to individual designers / land owners / architects to create, within the constraints of design guidelines; these are:

- Building heights (restricted to minimum heights of 3,4 or 5 storeys)
- Setback lines (Build-to lines, mandatory)
- Facade lengths and articulation.
- Arcades on Ground Level (single/double storey height)
- Street Interface and pavement conditions - (e.g. market places / restaurants / service roads / parking)
- Balconies on first/second or upper floor levels
- Window and balcony apertures proportioning.

- Landscape and Streetscape Design

The implementation of a landscape and streetscape plan, to allow for :

- street signage for streets, public facilities and retail functions, offices (in groups and corporate head offices)
- street furniture, such as benches, bus shelters, rubbish bins, street lighting.
- Planted treed avenues, to create boulevards, canopied sidewalk spaces, parking courts and public parks.
- Low 'werf' walls, bollards and height-differentiated platforms to create public / semi-public and private realms on the street edges.

- Hierarchy of Routes

A clear hierarchical order defines important routes:

- Blaauwberg Road's western end is a destination, culminating at Marine Circle, with the beach and a spectacular view of Table Mountain.
- The West Coast Road and Koeberg Road are the regional linkages.

- Parking of Vehicles

The parking of vehicles should as far as possible be treated as follows:

- Screening by earth embankments and planting for major parking areas, such as the Bayside shopping centre.
- Treed-courts or 'werf' spaces, created by the planting of trees between vehicle parking bays.
- Internal courtyards, accessible by arched gateways where large developments occur
- Basement parking garages, with access off Blaauwberg Road.

8.3 DESIGN REQUIREMENTS

8.3.1 Building Height and Setback

Mandatory setback conditions and building heights, with a variety of articulation patterns on the facades creates the vibrancy of urban environments.

- **Building Height**

Alongside Blaauwberg Road, diverse height conditions will be applicable. The eventual desired height is 4-5 storeys. An important issue is to realise that building height on both sides of Blaauwberg Road will determine the spatial condition of the road.

- Building height should ideally be increased at corner blocks in order to emphasise intersections, and define spatial enclosure.
- Variation in eaves heights of between 0.5 and 1.2m should be allowed in facade widths to create diversity and variety

- **Setback-Conditions:**

In order to create buildings that address the street in a positive manner, it is essential that a mandatory "build-to" setback condition is applied.

- Building fronts should not be setback further or closer from the setback line, which should be on the present erf boundaries.
- This creates the opportunity for neighbouring buildings to abut one another and create a continuous street facade, which may be interrupted by arcades, streets, and entrances to the rear courtyards of buildings.
- Setbacks should apply for all four or five floors. Stepped-back facades will be allowed for light-penetration purposes or viewing opportunity conditions.

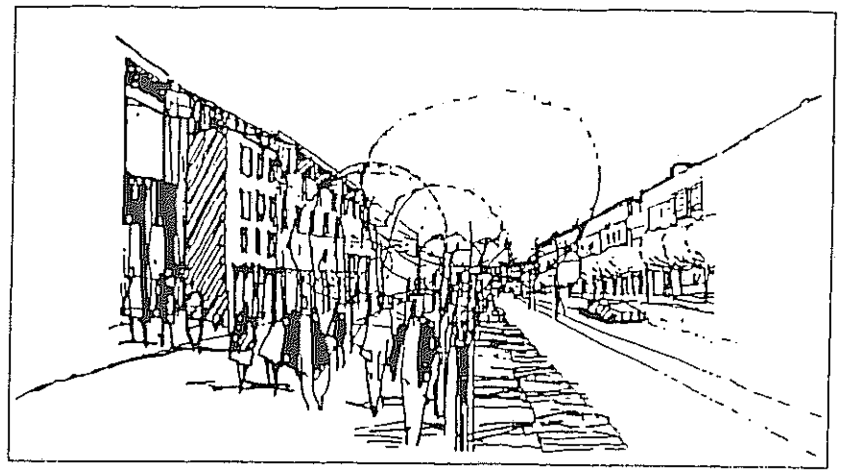


Figure 8.5 Continuous Urban Walls : Heights and Setbacks

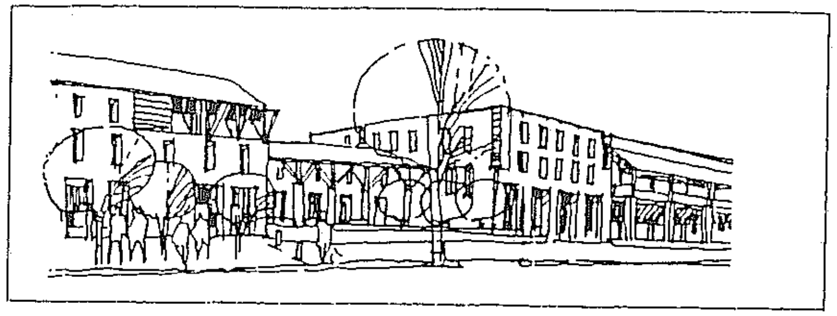


Figure 8.6: Proposed Positive Interface : Buildings face the street

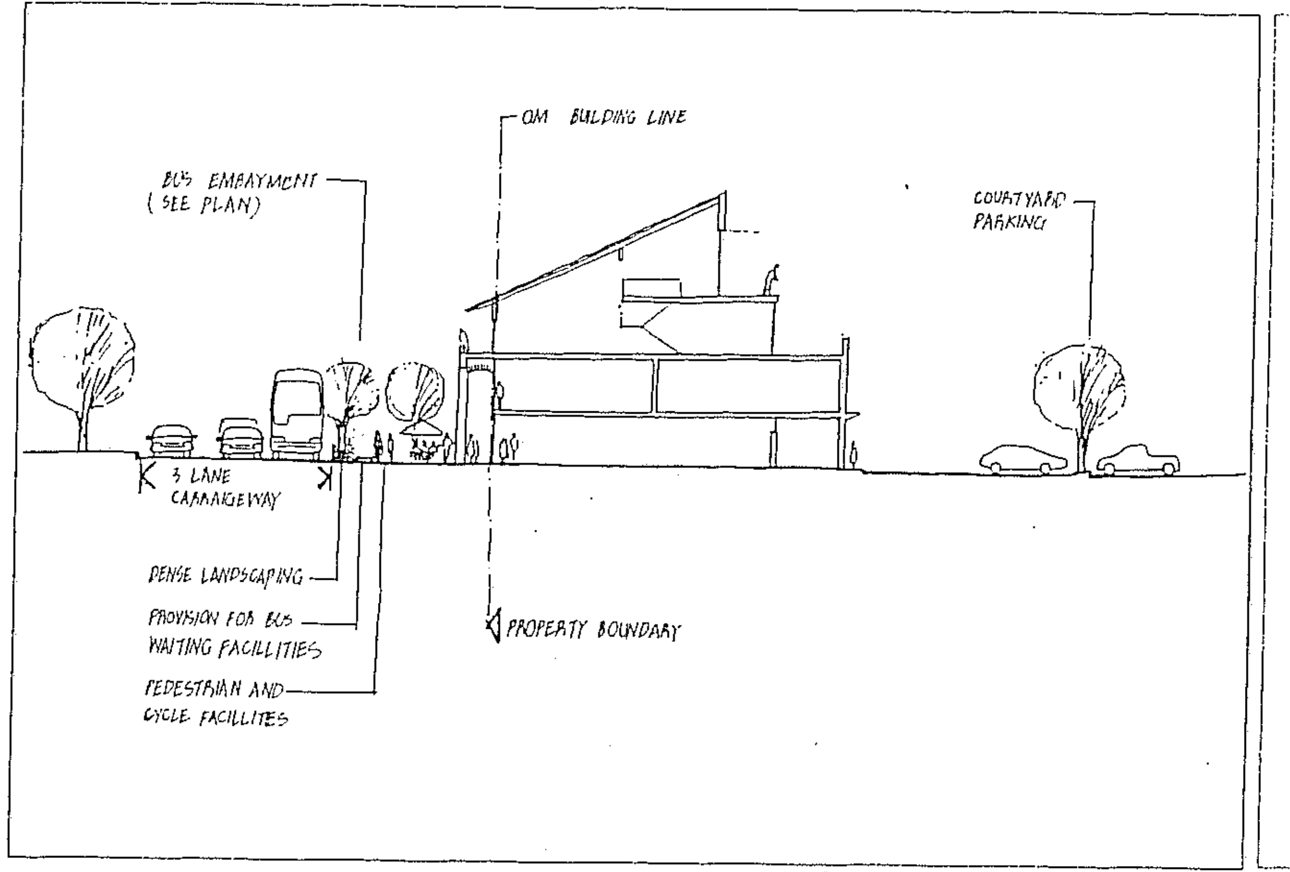


Figure 8.7a: Full Cross Section of Mixed Use Activity Edge

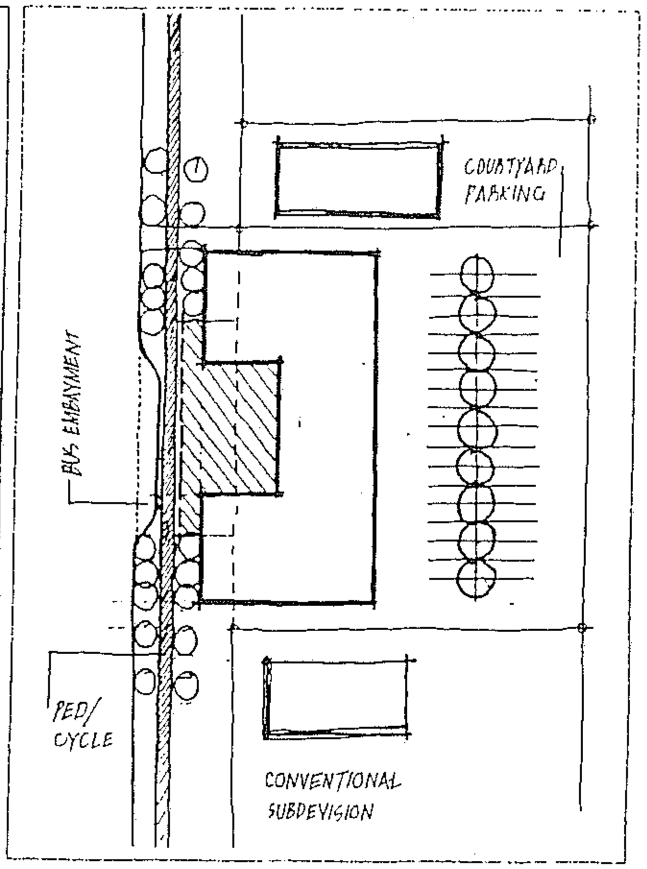


Figure 8.7b: Plan View of Mixed Use Activity Edge

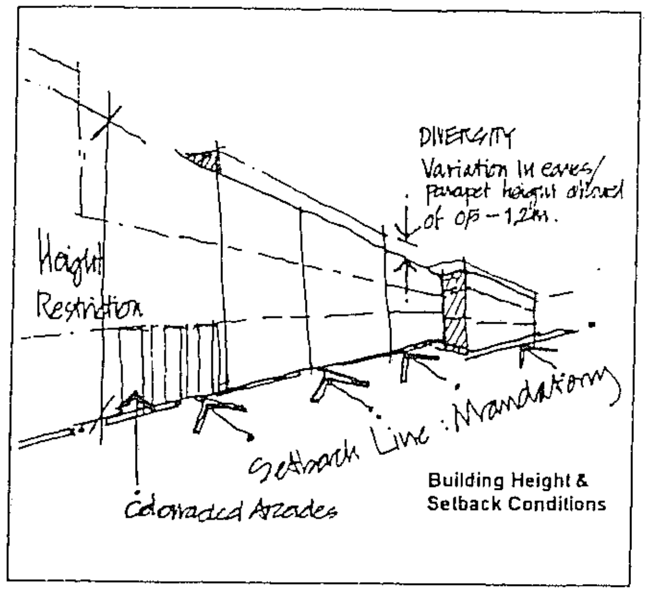
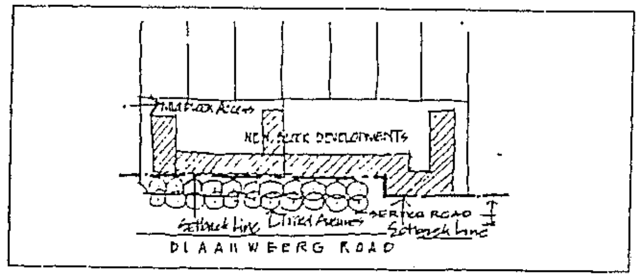


Figure 8.8 Building Height (above) and Setback Conditions (below)



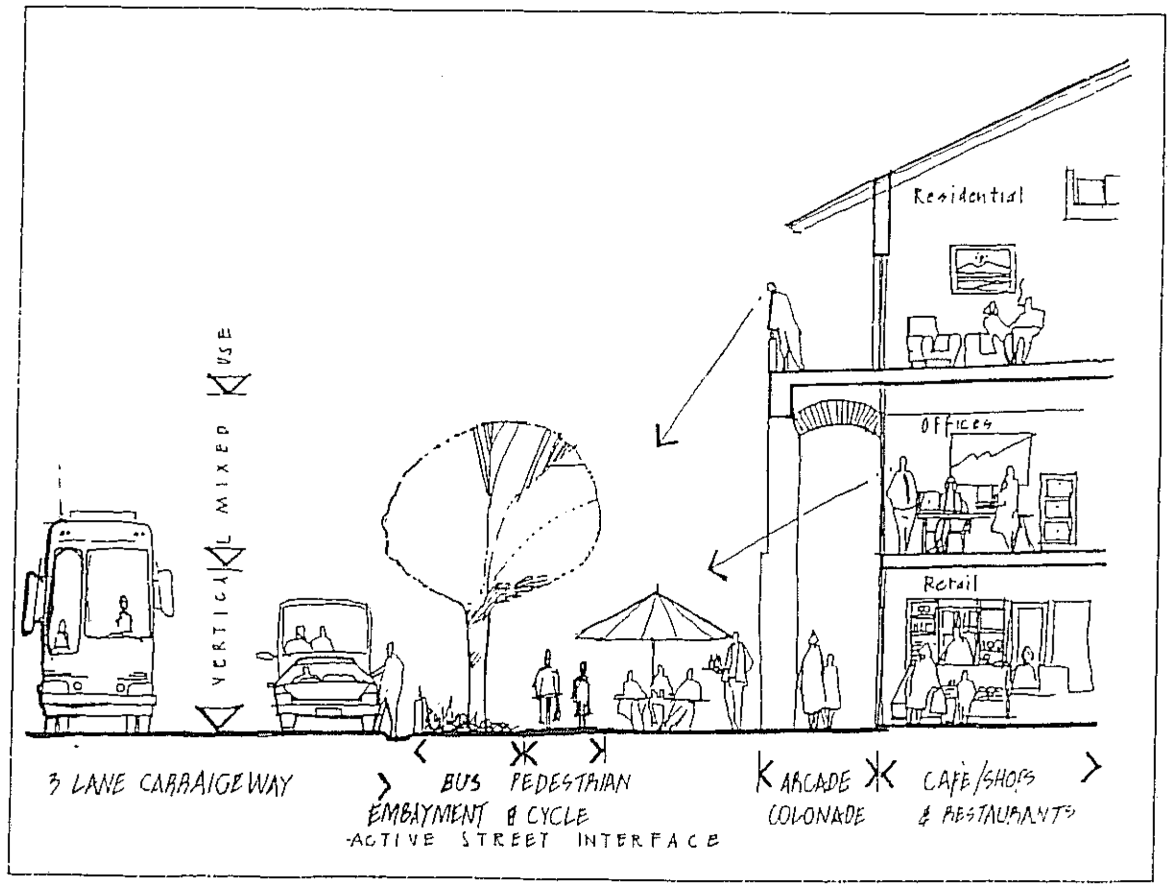


Figure 8.9: Mixed Use Activity Edge

8.3.2 Street Interface Conditions

Several diverse street and building interface conditions could be applied to enable a positive environment where buildings become part of the urban fabric and activate the street edge. The primary objective is to create a street where pedestrians, commuters and motorists experience the public realm as a vibrant and safe space:

- **Interface with Public View-Opportunities**

At specific locations alongside Blaauwberg Road where significant public views can be captured by buildings - specifically the distant view of Table Mountain viewed over Table Bay, the street-building interface should correspond with the viewing opportunity:

- Upper floors of buildings should have balconies, openable for pleasant weather conditions
- Double volume arcades will allow views from a first floor level both onto the street activity and from this level also long distance views.
- Raised platformed stoeps at a lower level will allow views over cars (parking at a level 1.2m lower down) and grant uninterrupted views for restaurants to for instance Table Mountain or other public foci.

- **North facing Street Interface: Summer/Spring**

North facing pavements will enjoy the sun in spring and summer in a shaded canopy of the treed avenues, proposed for Blaauwberg Road. The street-building interface condition will allow for:

- Shaded arcades for pedestrians on the building edges. These colonnaded arcades can on each individual building have diverse treatment, so as to allow for variety of the urban facade.
- Low mass-planted shrubs or flower such as lavender or rosemary hedges, or masses of agapanthus, which reflect the Cape pattern of simple landscaping should serve as visual barriers to Blaauwberg Road for pedestrians.

- **North Facing Pavements: Autumn/ Winter**

On north facing pavements, the street edge should allow for winter and autumn conditions where the sun is less dominant and lower.

- The planting of deciduous trees, in the traditional Cape pattern, such as Plane or Oak Trees will allow the sun to penetrate these pavement spaces in winter and autumn.
- Balconies on upper levels should capture the lower sun, and arcades at ground floor level will also be able to capture sun during the middle of the morning to the middle of the afternoon.

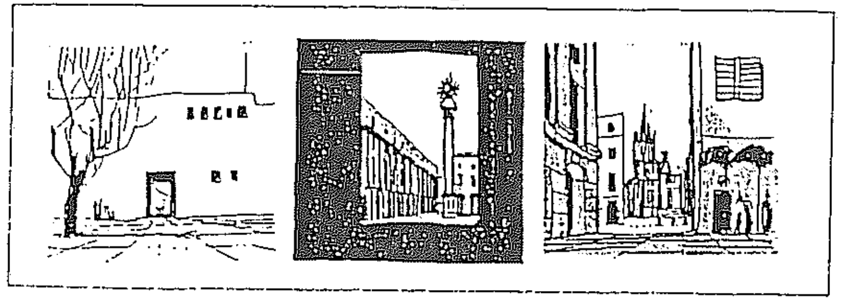


Figure 6.10: Emphasis and Preservation of Landmarks

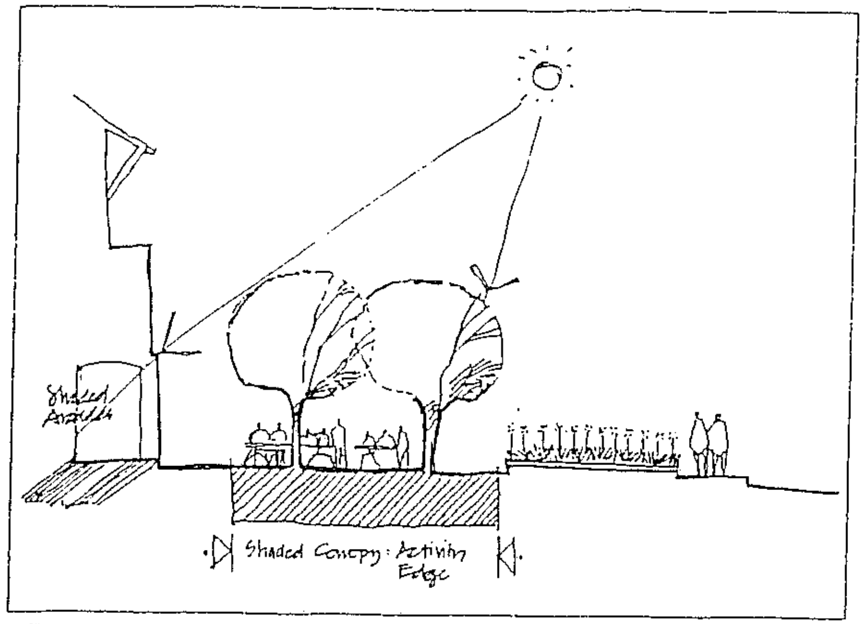


Figure8.11a: North facing street interface : Summer / Spring

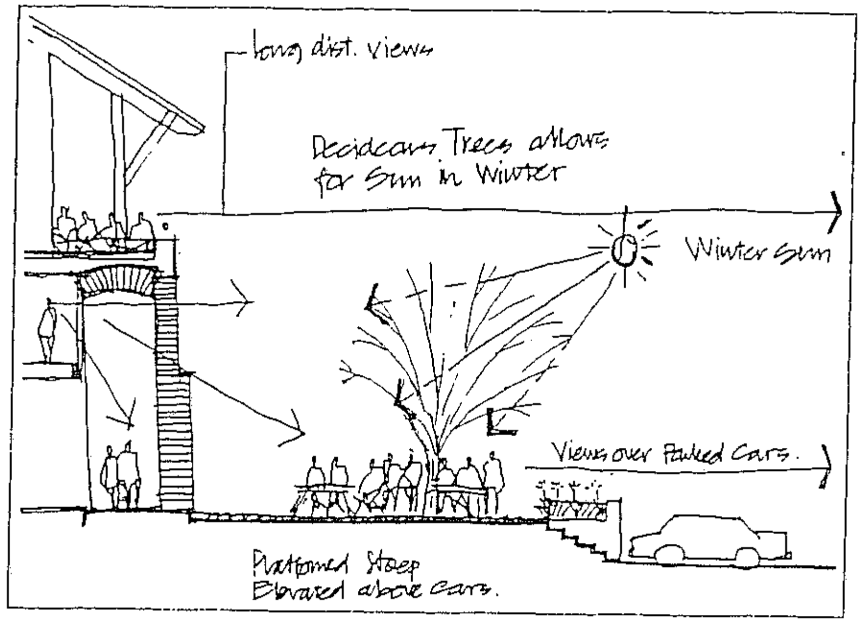


Figure 8.11b: North facing street interface : Autumn / Winter

- **Interface with Large Parking Areas:**

Where shopping centres of a regional or local scale occur, the predominant environmental pattern generally leads to a large tarred parking surfaces with exposed vehicles, glaring in sunlight towards onlookers. If careful planning, landscape and design is applied, this kind of harsh environment could be treated much more sympathetically:

- An earth berm with appropriate planting, hedges or tree-clumps planted densely will in time screen these negative spaces from the public eye.
- If trees are planted between every two parking bays on the tarred surfaces it will help to screen the vehicles by shading.
- Other surface treatments than black tar, and the use of bollards and trees to define space and roads, rather than hard edged kerbstones should be a design objective.

- **Street Interface: parking of vehicles off service roads**

The parking of cars could be accommodated in a shaded tree canopy of two rows of trees planted in a grid pattern. This condition may be applied where retail functions have the need to serve off-street parking customers, as a passing trade.

- A double tree lined canopy with evergreen trees should be considered.
- Bollards or low "werf" walls define the parking bays, and the surface of these spaces are paved similar to the sidewalk space.
- These spaces may also serve as service vehicle delivery bays and on week-ends may become community spaces or external café's / restaurant overflow pavement spaces.

- **Street Interface at Intersections**

At the intersections of routes several diverse conditions may be applicable.

- Buildings may be set back further than the normal setback line (erf boundaries) into the road reserve to create the opportunity for public spaces to be created.
- Buildings may be set-back narrower in order to enclose the space and highlight the intersection as a "pinched" urban space.

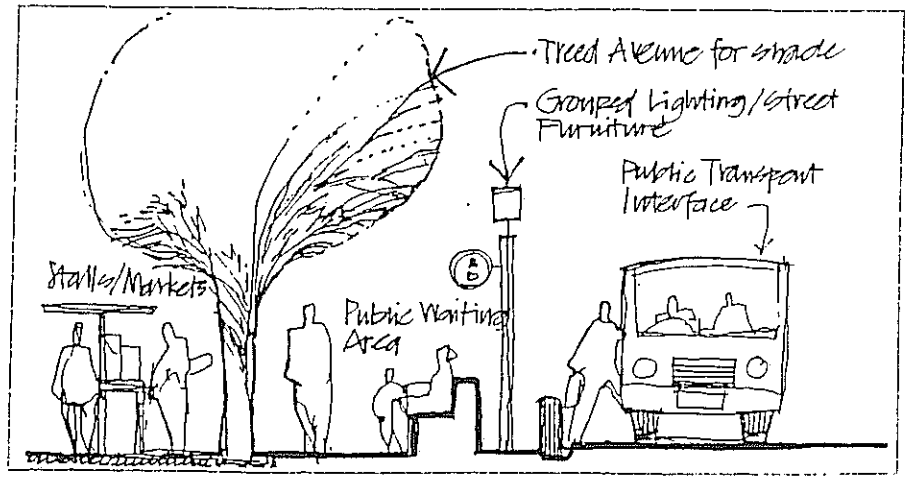


Figure 8.12: Street interface

8.3.3 Accommodating Vehicular Parking

Once the development of an activity edge and the creation of mixed use land use alongside Blaauwberg Road gains momentum, there may be considerable pressure to create spaces to accommodate motor vehicles.

The following short and long term solutions should be considered:

- **Perimeter-block conditions:**

In the instance where consolidations of properties allow larger block developments, a perimeter block condition will be the desired environmental quality with the following parking conditions:

- Basement parking conditions under the buildings, away from the street frontage with an access ramp for vehicles set back from Blaauwberg Road.
- Basement parking will ensure an active street facade and accommodate the increased parking requirement generated by increase bulk on the consolidated sites.

- **Retail Developments where street frontage is required:**

For retail developments of a suburban or urban nature where parking is required in front of the building the treatment of parking should have an environmental objective:

- The design objective should be to make a forecourt, treated in spatial terms as a *Cape werf* space. This is achieved by planting trees between every two parking bays and making low werf walls to enclose the space.

- **Perimeter Blocks with Parking Courts**

The other possible solution for perimeter block developments and the accommodation of parking for vehicles would be to create courtyard spaces between the buildings.

This condition will be applicable for large developments, where the consolidation of a number of sites is granted.

- Parking will be accommodated in a courtyard with trees, similar to the Cape Werf created by retail developments.
- The treed court could double up as a community space on weekends for residents on upper floor residential apartments. Children's playing spaces can also be accommodated here.

- **Parking on Street Edges**

Where the parking of vehicles is required on the street edge for visibility purposes for example, service road conditions will be required to enable the continuous mobility function of Blaauwberg Road.

- Parking will be accommodated under treed canopies, with an active street edge of restaurant spaces interspersed with parking.
- On weekends, parking courts could become community spaces.

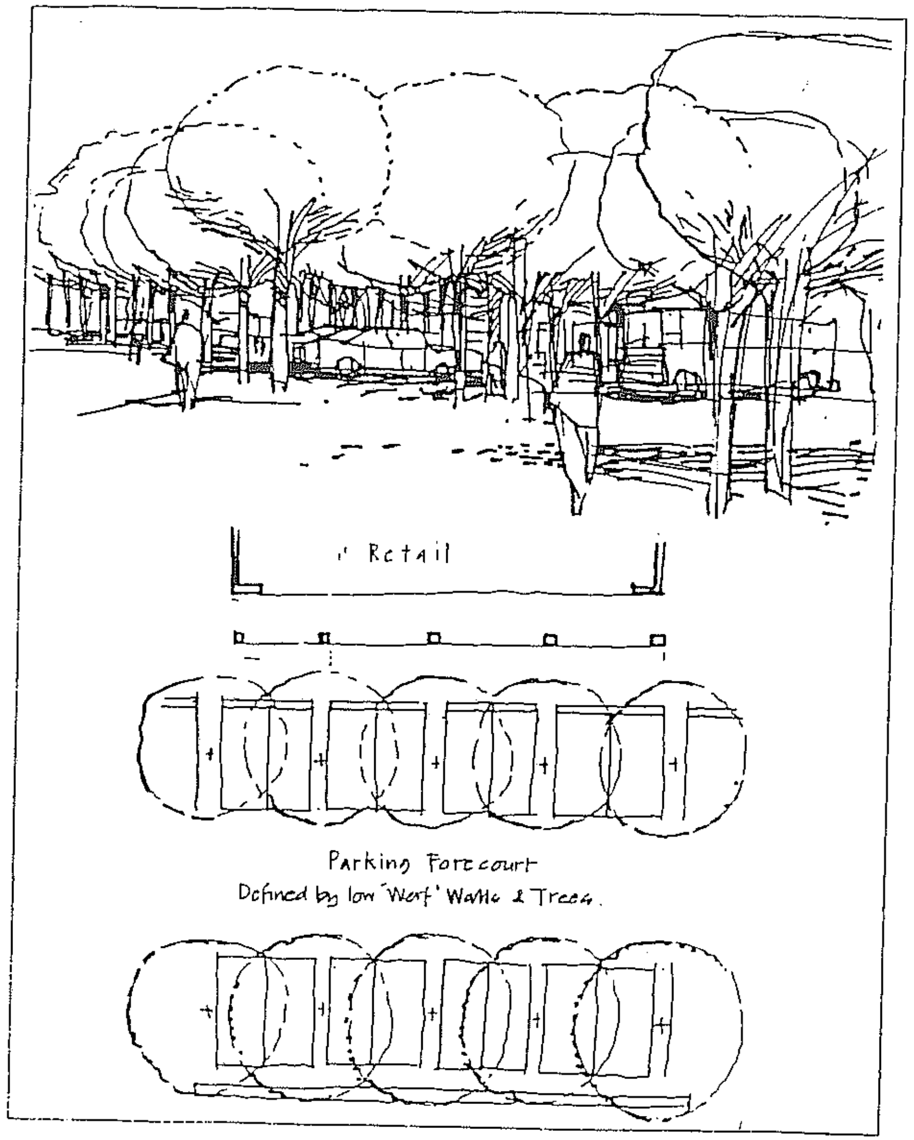


Figure 8.13a: Parking Forecourt

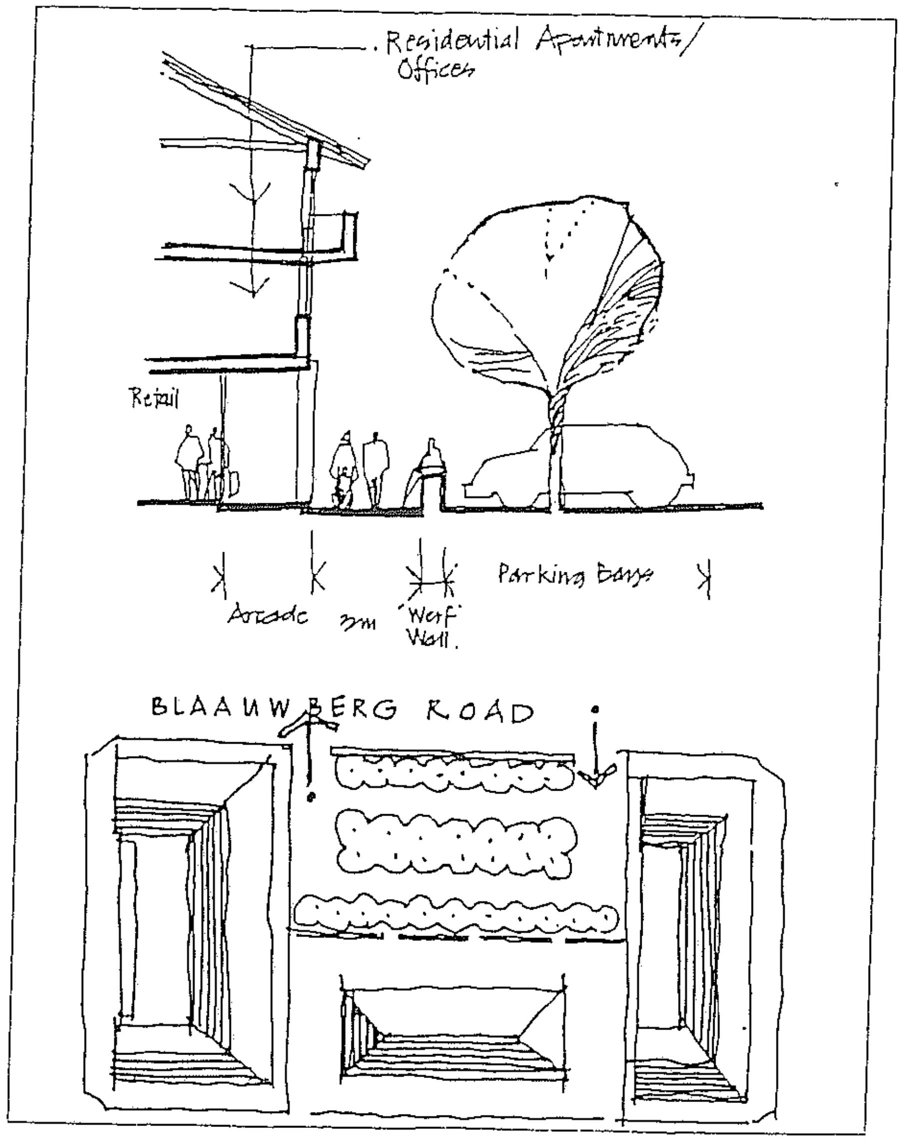


Figure 8.13b: Retail Development with Street Frontage

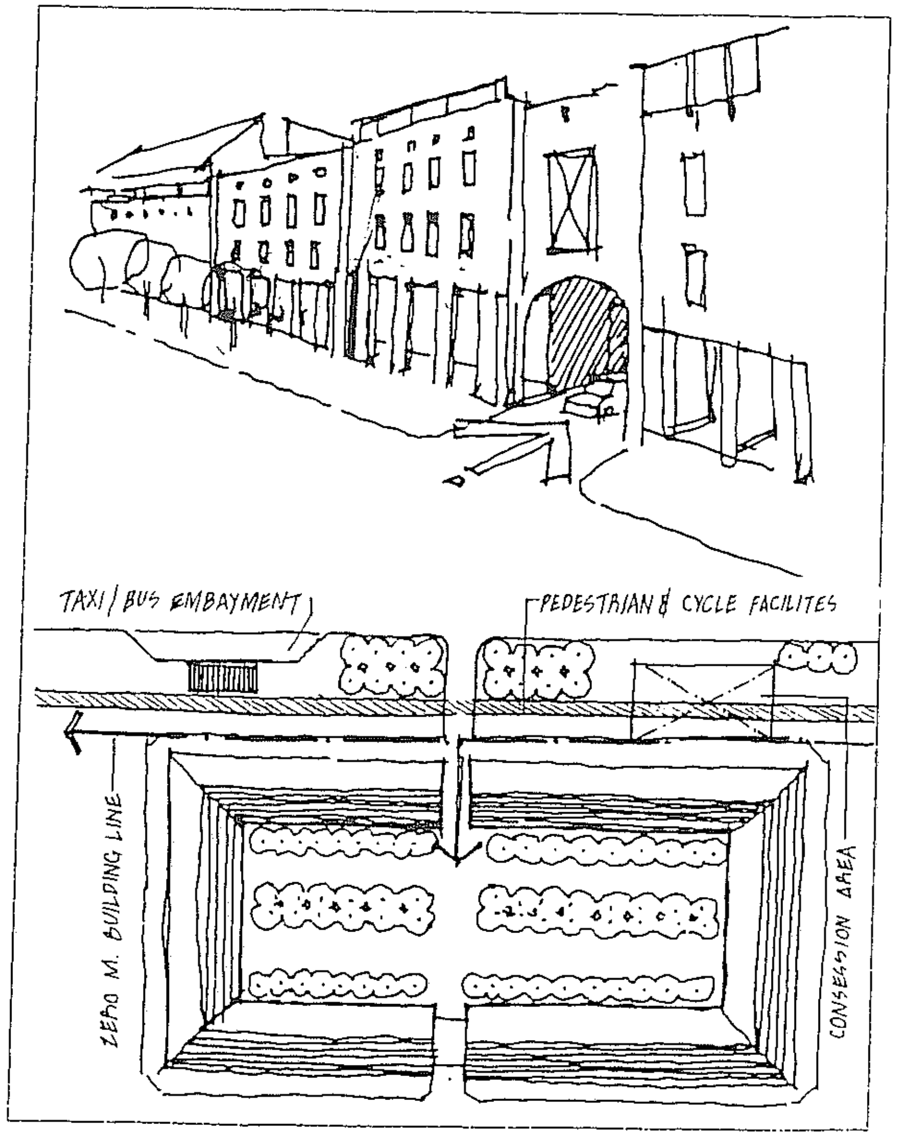


Figure 8.13c: Entrance to parking courts off Blaauwberg Road

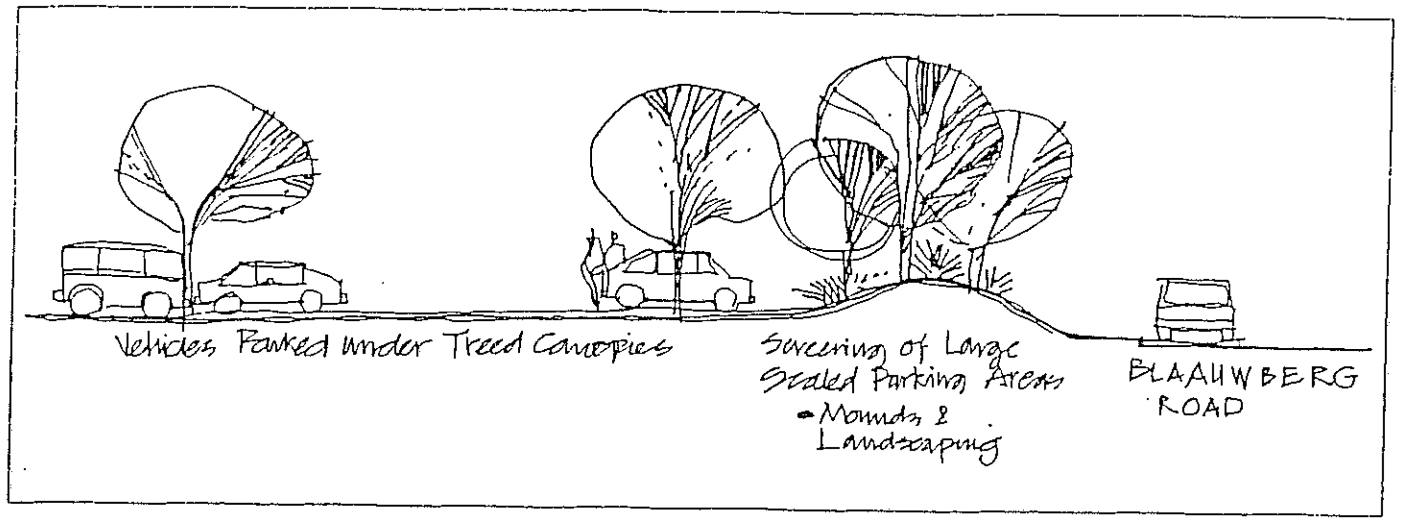


Figure 8.14: Vehicle Parking, e.g. Bayside

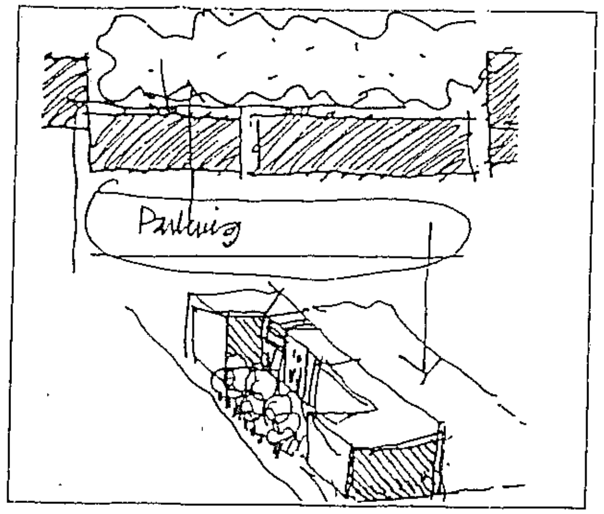


Figure 8.15: Building Form Creating Courts

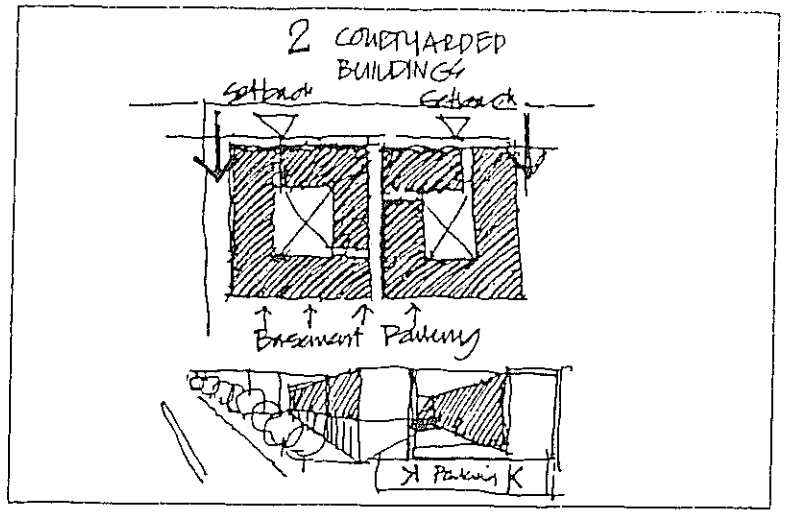


Figure 8.16: Courtyard Buildings

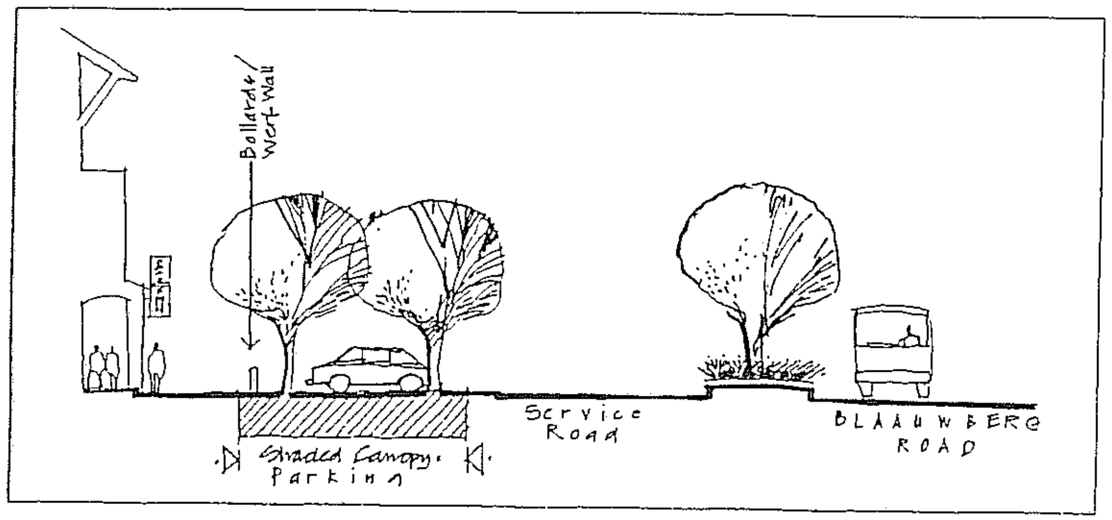


Figure 8.17: Shaded Parking on Street Interface

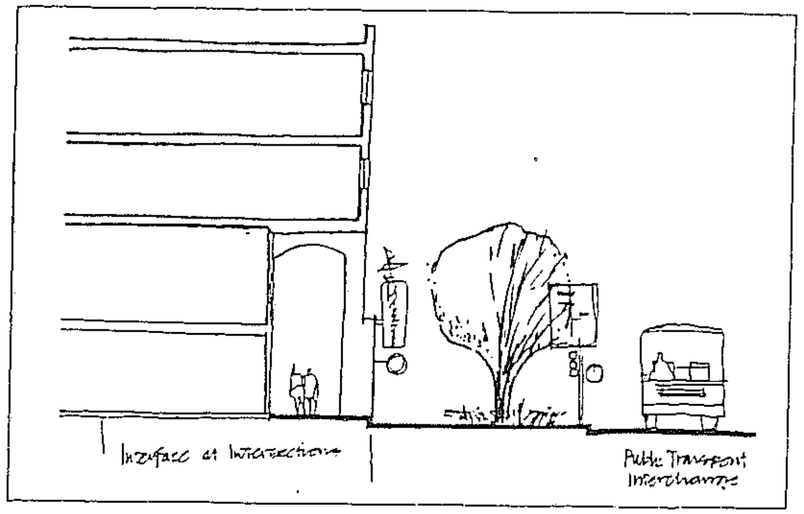


Figure 8.18: Road and Building Interfaces

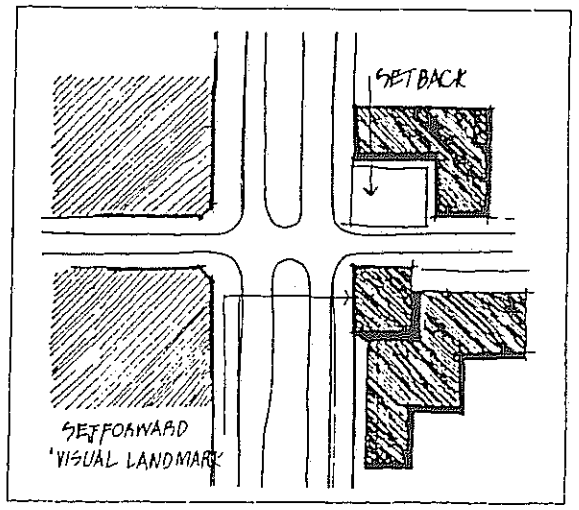


Figure 8.19: Option A+B of Visual Landmark

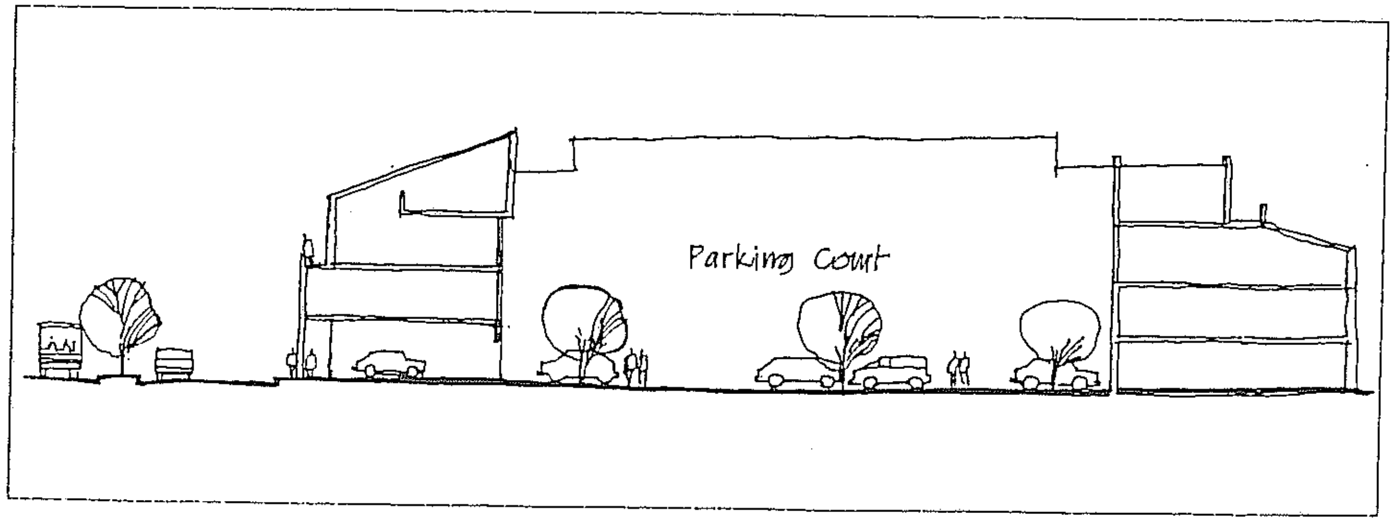


Figure 8.20: Perimeter Blocks with Parking Courts

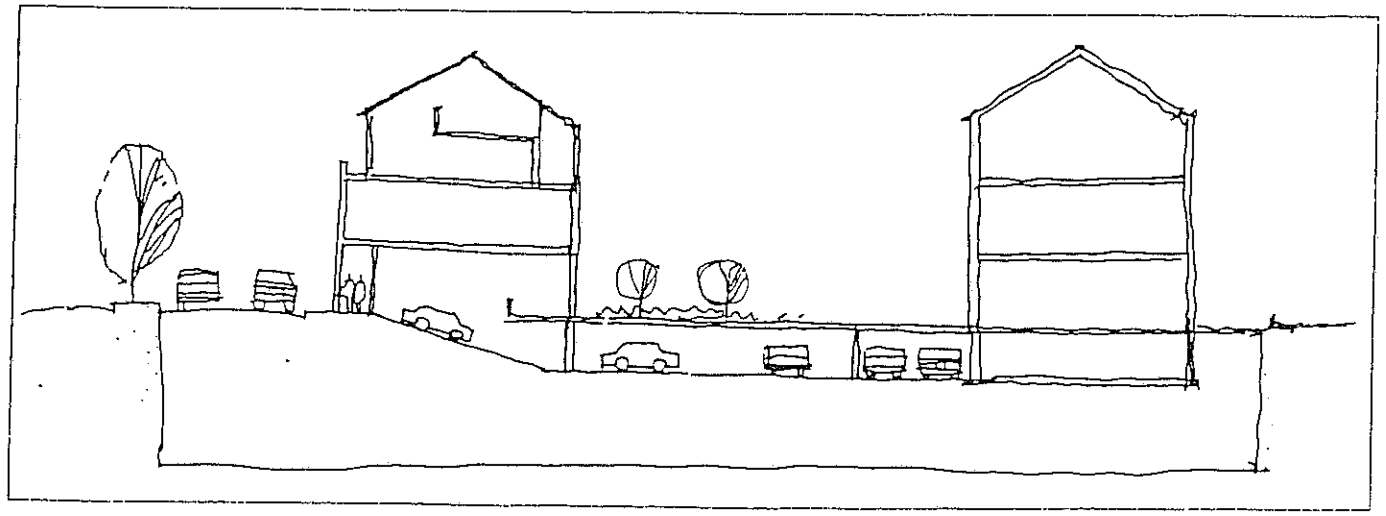


Figure 8.21: Perimeter Blocks with Basement Parking

8.4 IMPLEMENTATION STRATEGY: ACTION AREAS

Five action areas have been identified as priority development nodes along Blaauwberg Road. These action areas occur at the intersection of major routes along Blaauwberg Road and are informed by their specific contextual character, the linkages to the surrounding neighbourhood and the visual, special geometrical and physiographical features and other significant qualities which each site might have. The intention of the action areas are to create positive environments responding to the constraints and needs of each site within a design framework and guidelines.

The five action areas are as follows:

1. Marine Place

Marine Circle defines the most significant edge of Blaauwberg Road, being both an end and a destination. Naturally it is a meaningful place, where the ocean meets the land, the beauty of the beach against the backdrop of Table Mountain across the sea and Table Bay.

The development potential of all the land in this area is immense and it is unclear as to why the urban fabric has not responded in an appropriate manner, facing the Bay and the views with a combination of residential and commercial use structures and meaningful public spaces.

Instead, the present environment is made up a series of inappropriately developed and scaled urban elements. These are:

- The architecture: buildings which are each an individual architectural object, with no relation with their neighbours.
- The resultant place-less quality of the environment is made by the large black tarred parking areas, the width and scale of Blaauwberg Road and service roadways.
- The lack of meaningful place created by the architecture (the buildings are mostly large commercial canopy-architecture with large advertising and signage representing an "American Strip" suburban environment surrounded by single residential and group housing.
- Some large residential tower blocks and mega-structures have been developed, but each are unintegrated with their surroundings and contributes to the isolated way in which buildings are developed in a random pattern.
- Inappropriate or lack of landscaping.
- The environmental quality does not respond to views, weather and wind protection or any natural or commercial landmarks

2. The West Coast and Blaauwberg Road Intersection :
The Regional Shopping Centre Node

The second proposed action area on Blaauwberg Road is at the intersection of Blaauwberg and the West Coast Roads. The present environmental quality is also best described as "American suburban strip" with two large shopping centres on both sides creating the environmental quality which can be described as:

- Large scaled warehouse structures that represent internalised retail development, with no connection to Blaauwberg Road.
- A large black tarred parking area, serving each of these centres and a fuel station. This environment is a car-orientated environment, making it difficult for pedestrians to cross the roadway. The image of the place is that of signage architecture; billboards, advertisements and of cars parked in a large open space.
- Access to Blaauwberg Road from these shopping centres is limited, due to the amount of traffic that is generated by these large regional shopping centres.
- The mono-functional land use of only commercial, with restricted business hours does create a dead urban life quality after hours, which is unsurveilled and therefore unsafe and crime-prone.
- The pavements are landscaped in an inappropriate manner, not contributing to the spatial quality of the road or the shielding of cars from the road.
- The design focus should aim to create a positive environmental quality through appropriate landscaping and a safe environment for pedestrians.

3. Flamingo Square

The third action area occurs at Flamingo Square, which is a rectilinear space, and the availability of institutional and public open space at this intersection makes this a viable public spatial investment option.

The existing environmental quality is characterised by:

- The nature of Blaauwberg Road at this point; a wide mobility route with buildings set back from the road, making an intersection which is poor in terms of spatial definition.
- The architecture is made up of individual buildings with group housing, churches and a suburban retail development, Flamingo Square representing the built fabric.
- The design focus should be to enable the creation of a rectilinear public square at this point, with views from buildings onto Table Mountain in the distance possible.
- The Flamingo Square shopping centre forms the south-eastern edge to this space, and with appropriate landscaping it will be possible to accommodate the shopping centre as part of the space, and create an active and vibrant street edge.
- The square should be surfaced with hard and soft landscaping, with buildings facing onto Blaauwberg Road, so that it becomes a positive environment and experience for pedestrians and commuters.

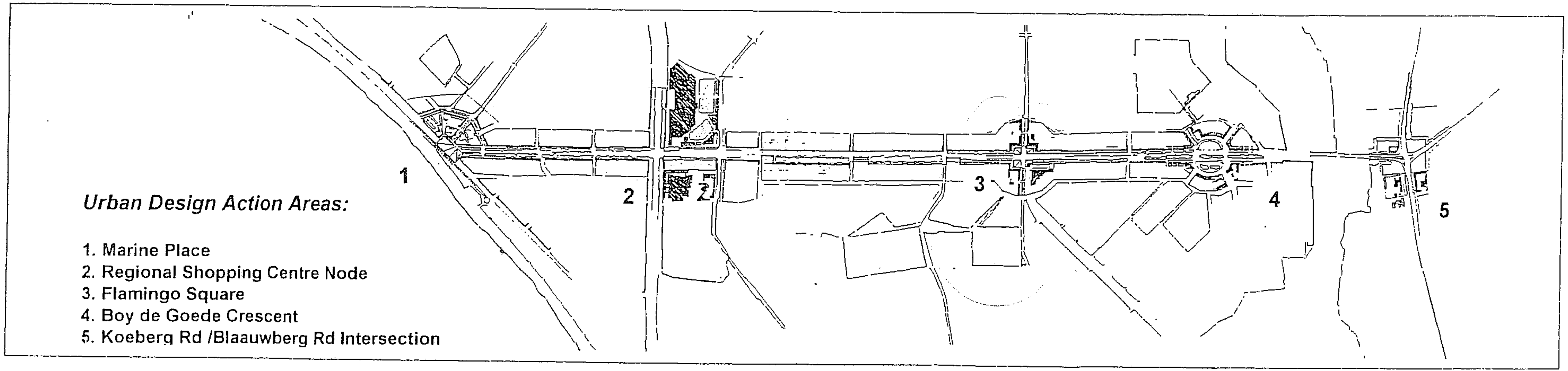


Figure 8.22: Urban Design Action Areas

4. Boy de Goede / Blaauwberg Road Intersection

The intersection with Boy de Goede Circle represents an opportunity for the creation of a positive urban environment. The design informants at this intersection are as follows:

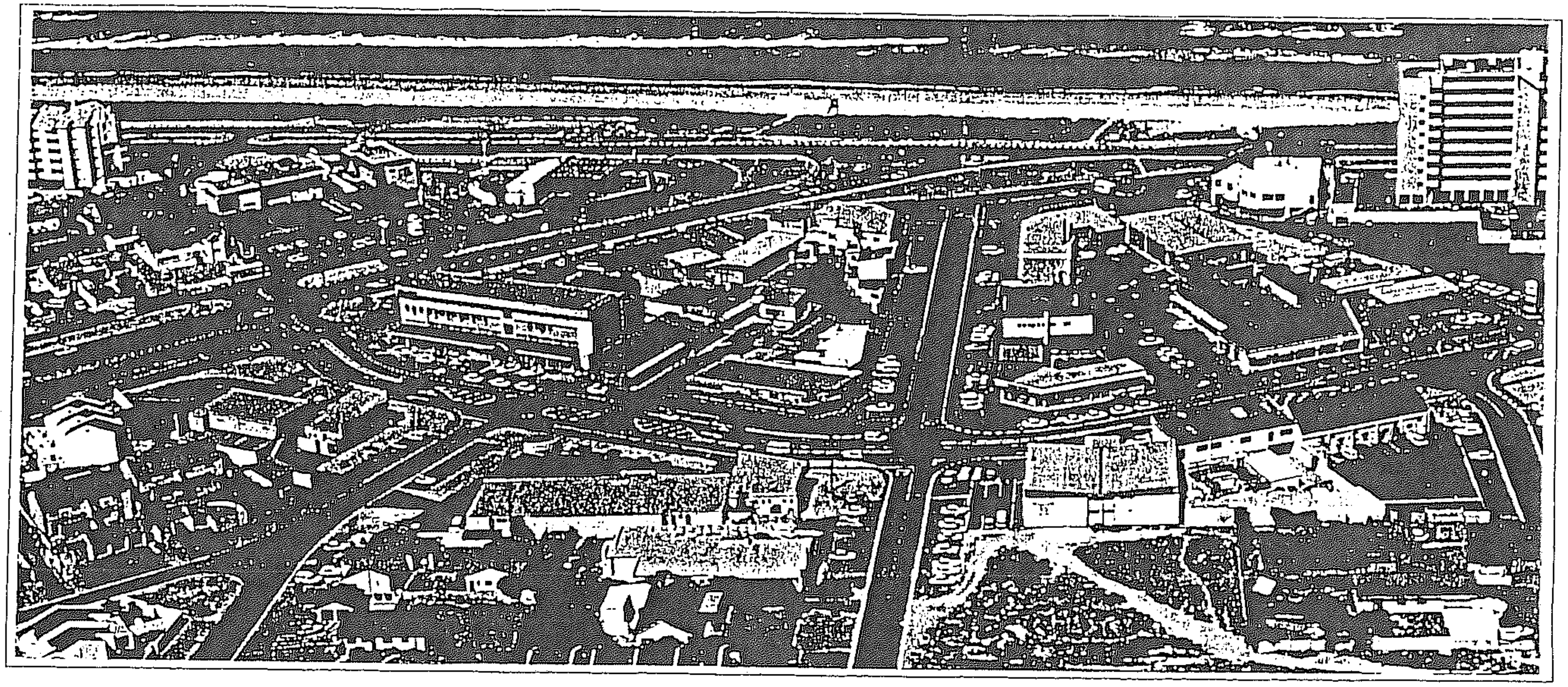
- The existing circular geometry is only expressed by the roads and pavement/ landscaping conditions, and can be improved considerably by urban design parameters and guidelines.
- The suburban shopping complexes to the south could be re-developed as three to four storey buildings, with residential/ offices on a first to third floor level.
- The group housing on the north of the intersection could be redeveloped to enable higher residential densities and to create a "Bath Crescent" type environment, with buildings facing onto Blaauwberg Road in a public manner.

5. Koeberg Road / Blaauwberg Road Intersection:

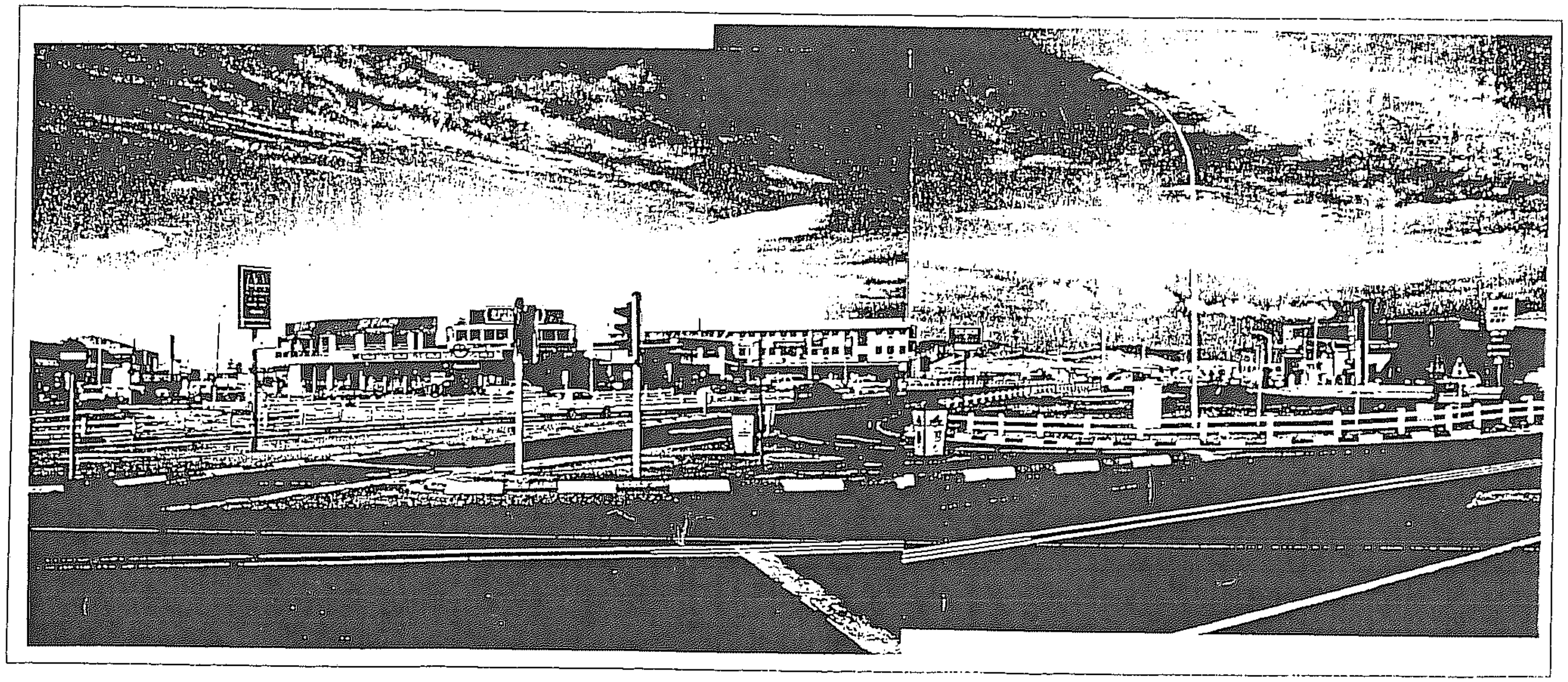
The fifth action area identified is at the intersection of Blaauwberg Road and Koeberg Road, which in future could become part of a link to the N7 freeway and improve the regional access to Blaauwberg Road. At present it thus represents the end of Blaauwberg Road as an axis to the east, and a link to Koeberg Road, which has been identified as an activity corridor for the future.

- The existing Killarney Hotel represents the only viable activity in terms of land use at this intersection with the Oil Refinery presenting a negative edge and the undeveloped Outspan to the north-east represent a major opportunity.
- With appropriate landscaping it will be possible to create a positive public environment, with treed avenue-edges creating opportunities for informal markets and public transport intersections.
- A community space to the northwest, with a planned taxi rank could activate the Outspan as a public space, with linkages to the natural environment of the Diep River.
- The nature of Koeberg Road at this intersection will only become clear in time. From a development potential perspective, the present environmental condition represents the lower edge of the market with the presence of informal settlements further south on Koeberg Road. It could however become a vibrant community space, with considerable public investment in community facilities.

Each of the five Action areas is described more fully below.



(Above and Below) Marine Circle: "Lost Space", A Key Area for Intervention



8.4.1 Marine Circle

The creation of Marine Place will need a significant shift in terms of design constraints inherent in the present town planning scheme. In order to create a meaningful urban environment the following design considerations must be investigated:

- The creation of setback-lines, which become mandatory to enable buildings which create public space.
- Building heights of 4-5 storeys.
- A Landscape framework with treed boulevards and avenues appropriate mass planting such as large beds of appropriate ground cover (refer to landscaping recommendations).
- A rectilinear Public Square with a paved surface, and buildings fronting the space, with colonnaded arcades, galleries, platform stoeps , verandahs and balconies as the architectural language.
- Parking for vehicles are accommodated in courts behind building fronts, or under shaded treed canopies at street level.
- Vehicular access through the square space is allowed and demarcated with bollards and trees.
- The design proposals indicate two tower blocks, on both sides of the Blaauwberg Road intersection with the coastal road, to create a gateway, and landmark at this point.
- Public Transport interface with the street is created with interface with building activity, markets, bus shelters etc.
- An active street edge condition is encouraged with diversity of land use, such as retail, line shops, restaurants and coffee shops on the ground floor and offices/retail on a first floor level, with residential apartments on the top floors. This will enable a vibrant day-night activity.

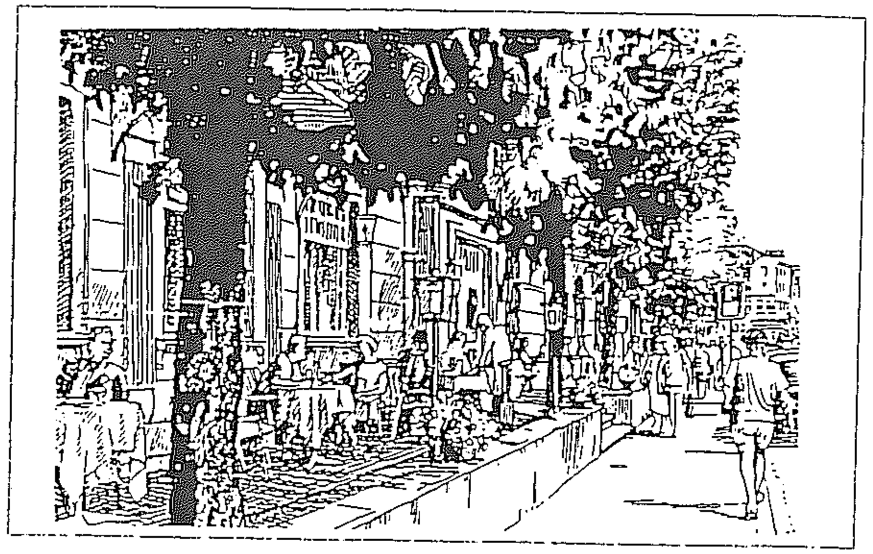


Figure 8.23: Interlaken: Switzerland

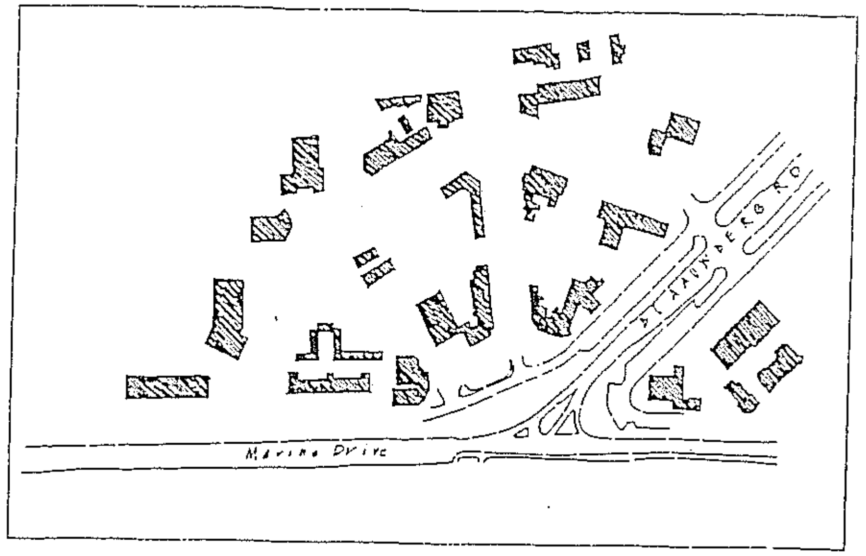


Figure 8.24a: Marine Circle : Existing Building Footprints

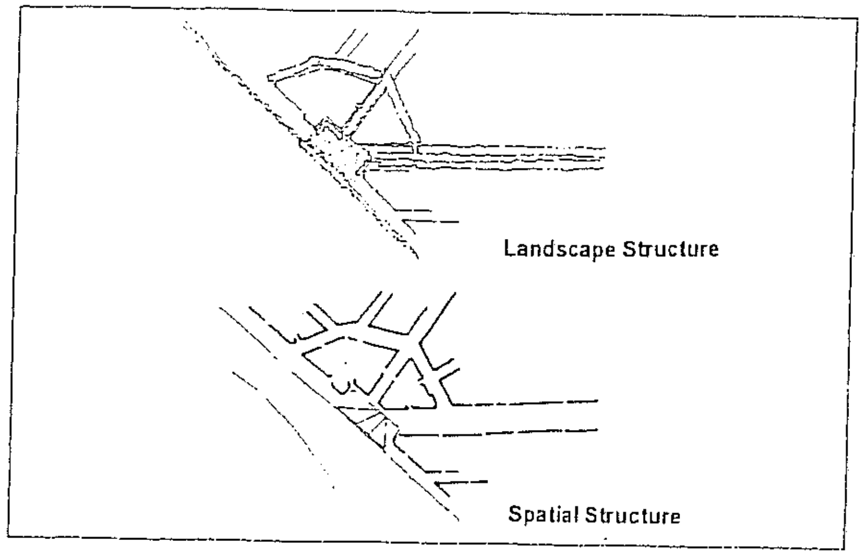


Figure 8.24c: Landscape and Spatial Structure

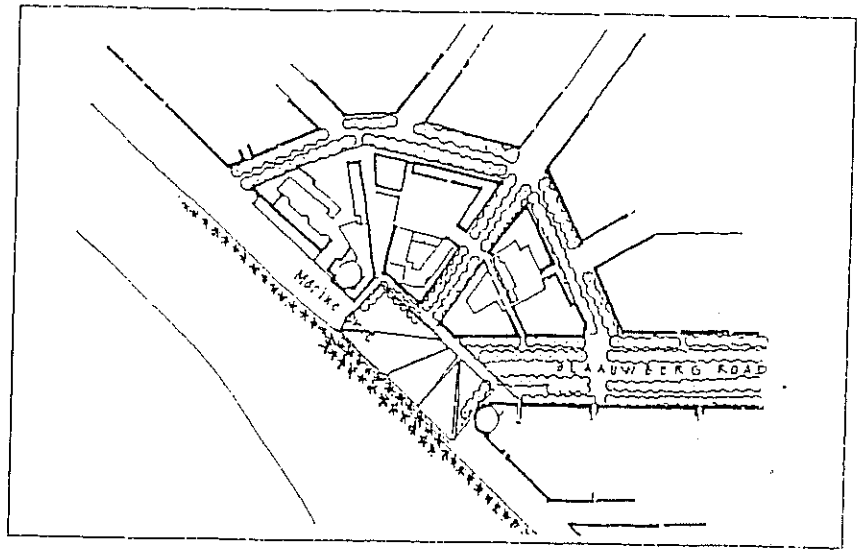


Figure 8.24e: Public Space and Landscape Structure

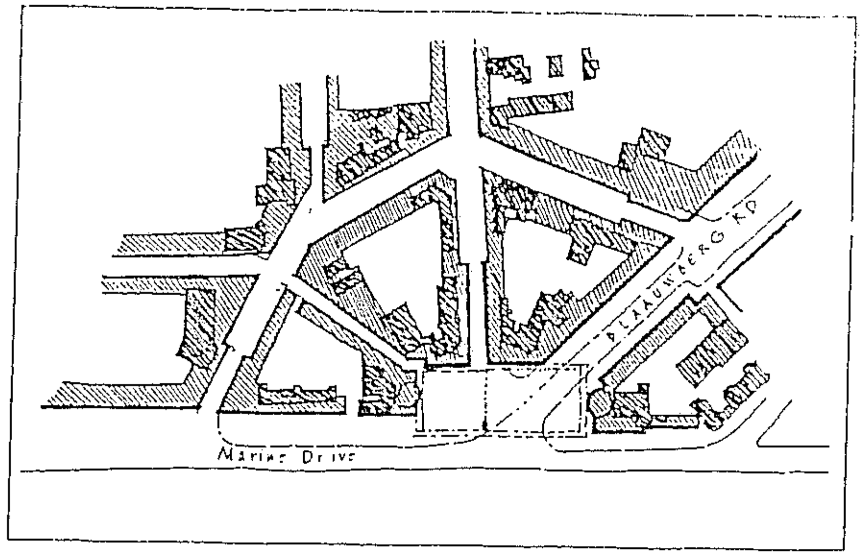


Figure 8.24b: Marine Place : Public Space created by Perimeter Block Development

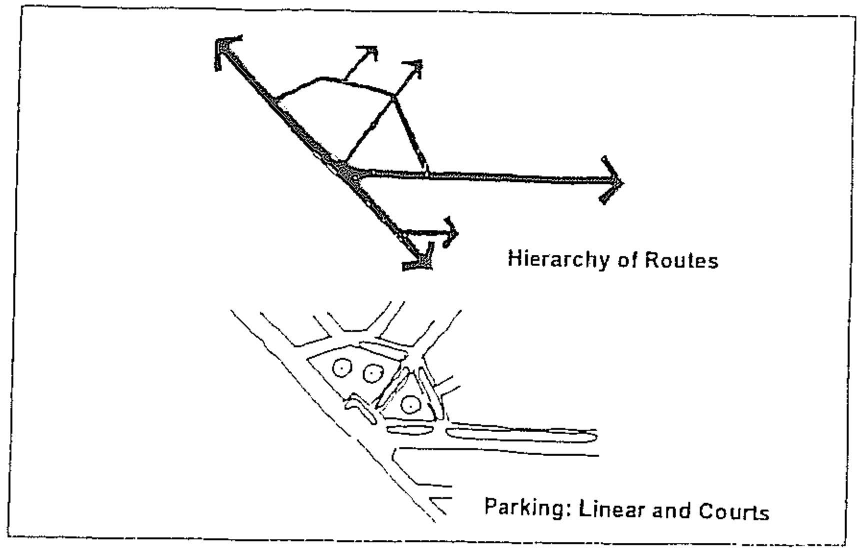


Figure 8.24d: Parking : Linear Courts

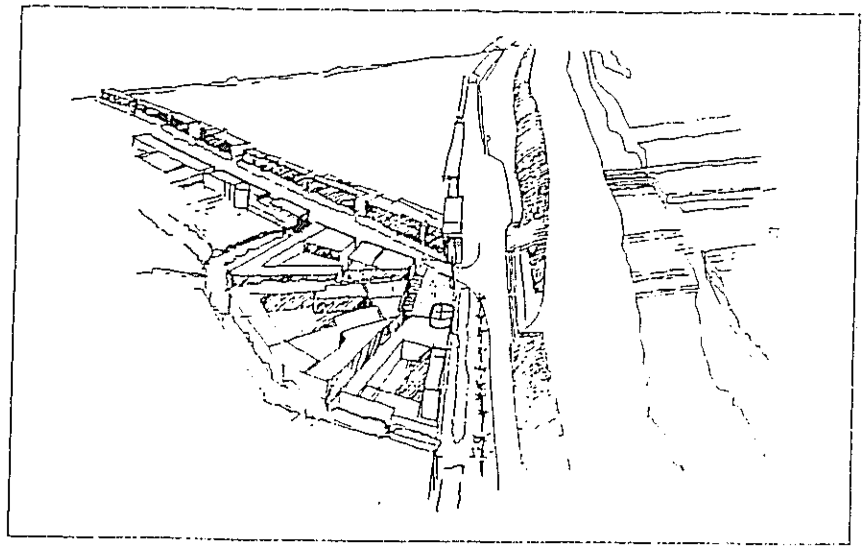


Figure 8.24f: Marine Place : Three-dimensional view

8.4.2 West Coast Road / Blaauwberg Road Intersection: Regional Shopping Centre

The section from this intersection westward with a service road has lead to numerous successful commercial re-zonings, which makes this portion the most active "strip" of Blaauwberg Road. The two large shopping centres developed on the east, although a regional investment and asset of a commercial nature, represents a spatially poor environmental quality:

- The shopping centres' built heights are low (1.5 storeys), which has no spatial impact on the road.
- The proposed landscape framework with treed boulevards and screened planting/berms and mass low planting such as large beds of appropriate indigenous shrubs would in time achieve the desired screening of negative parking spaces.
- Signage needs to conform to acceptable environmental standards and the grouping of signage with street furniture such as bus/taxi waiting sheds, lighting and paved areas are necessary.
- Buildings setbacks to encourage courtyard spaces and buildings with a positive facade fronting Blaauwberg Road should be encouraged if bulk ratio's can be accommodated and public transport becomes a reality (with increased residential densities and thus increased thresholds).
- Pedestrian crossings need to be improved from an environmental and safety perspective.

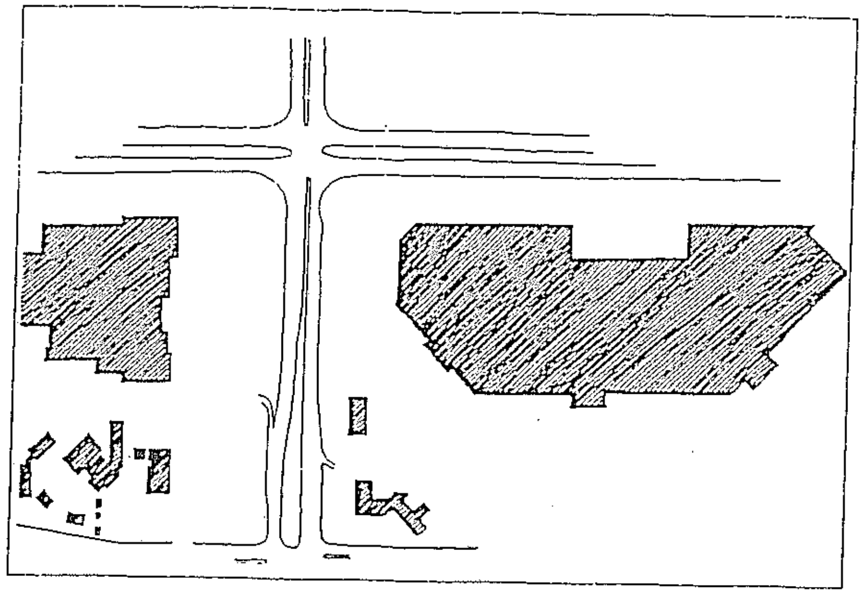


Figure 8.26a: West Coast Road / Blaauwberg Road : Existing Building Footprint

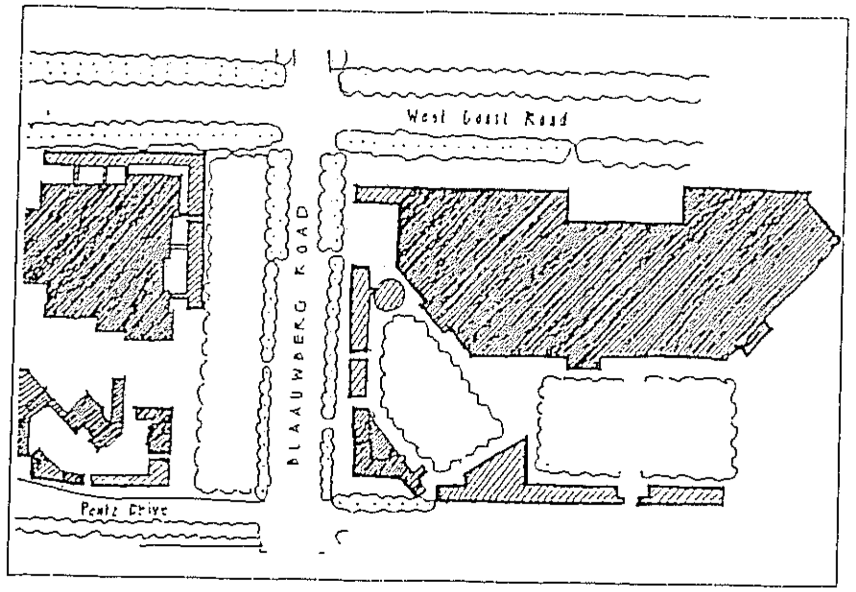


Figure 8.26b: West Coast Road / Blaauwberg Road: Proposed Development Framework

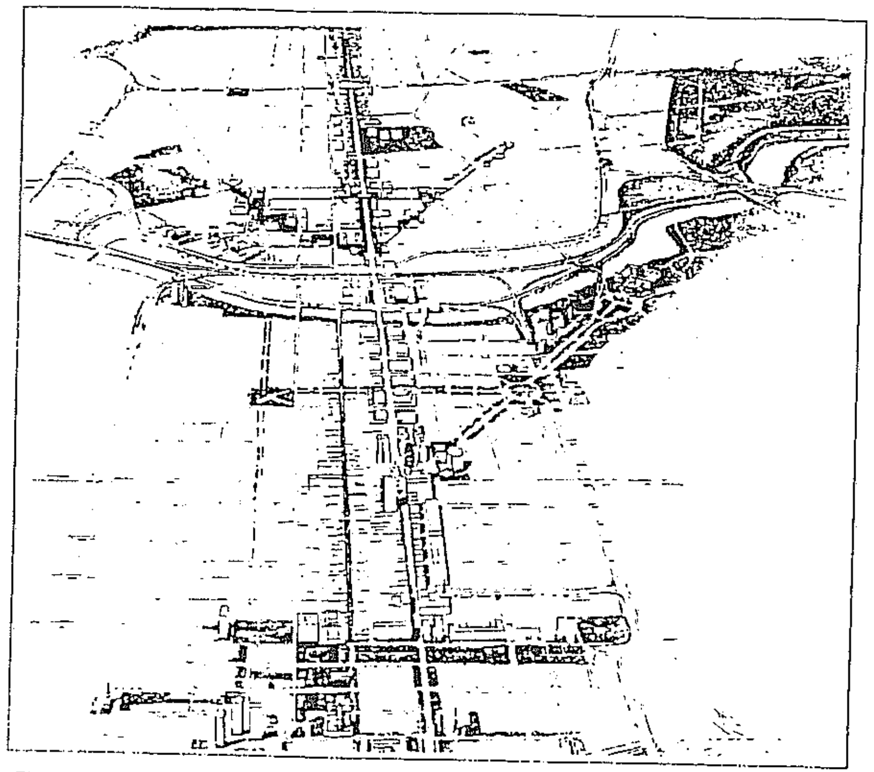


Figure 8.25: Philadelphia Redevelopment Plan. (Source: Trancik, 1986)

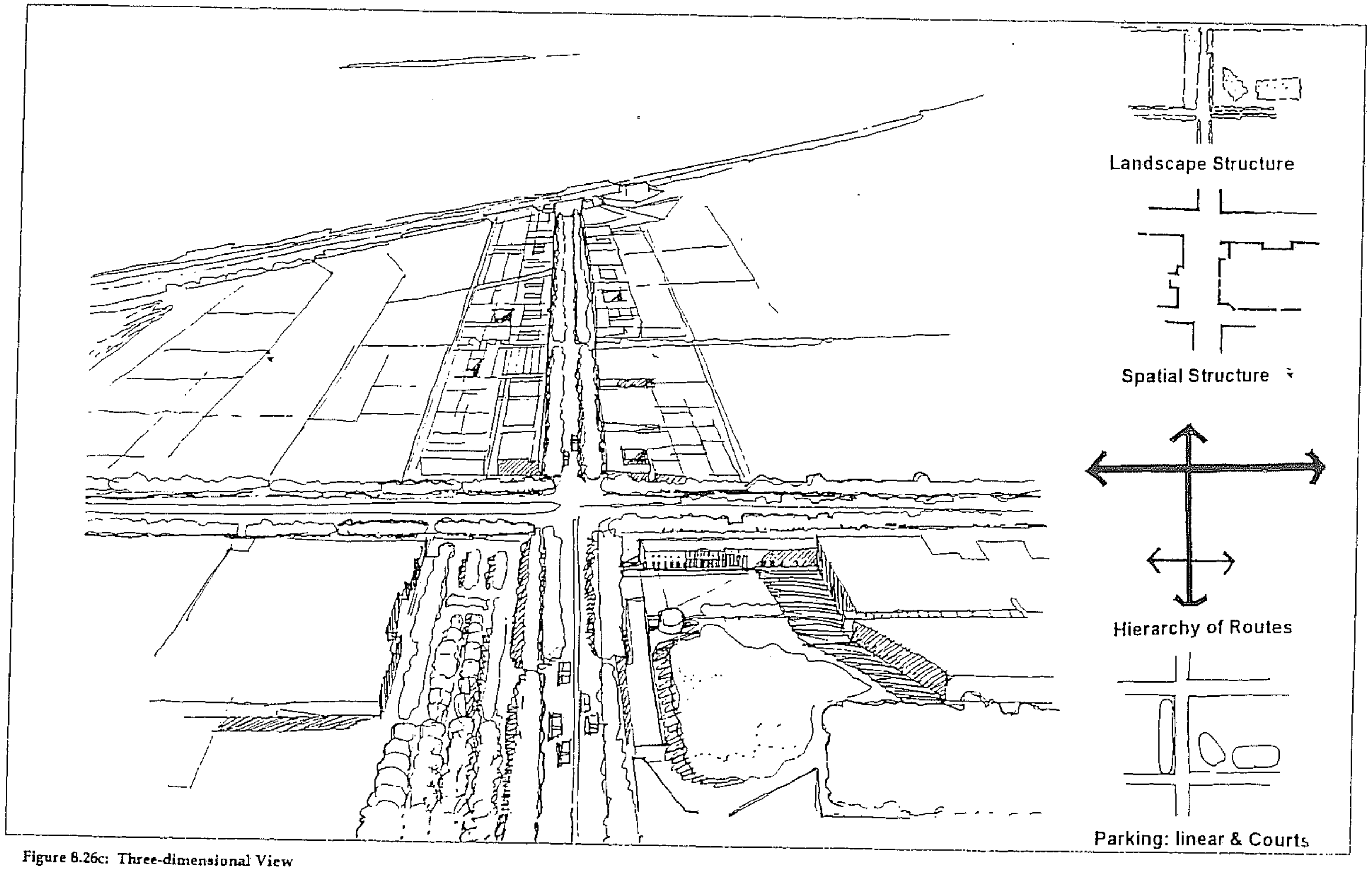


Figure 8.26c: Three-dimensional View

8.4.3 Flamingo Square

Flamingo Square represents the most viable opportunity in terms of development potential for public space. The availability of public land as well as institutional land (churches) may enable the appropriate pre-conditions to be set. In order to create a meaningful urban environment at Flamingo Square it will be necessary to create a Forum of Ratepayers, Landowners etc. to formulate policy and investigate future development potentials. The following design considerations should be explored:

- The creation of setback-lines, which become mandatory to enable buildings which create a rectilinear public space at this intersection.
- Building heights of 4-5 storeys.
- A landscape framework with treed avenues and appropriate hard and soft landscaping.
- A rectilinear public square with paved surface, and buildings fronting the space, with colonnades arcades, galleries, platformed stoeps, verandahs and balconies as the architectural language.
- Parking for vehicles are accommodated in courts behind building fronts, or under shaded treed canopies at street level.
- Vehicular access through the square space is allowed and demarcated with bollards and trees.
- Public transport interface with the street is created through interface with building activity, markets, bus shelters etc.
- An active street edge condition should encourage diverse land uses such as retail, line shops, restaurants and coffee shops on the ground floor and offices on a first floor level, with residential apartments on the top floors
- Development at this intersection will have the benefit of spectacular views onto Table Mountain from the upper floors.

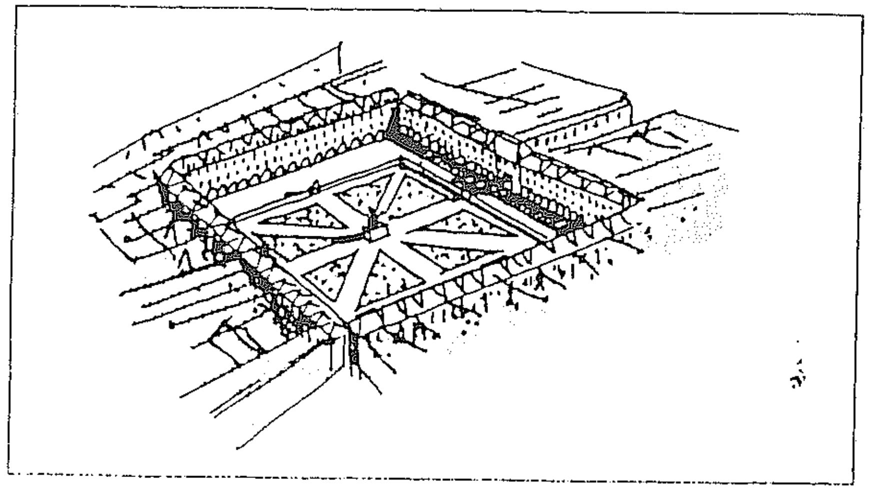


Figure 8.27: Place de Voges: Paris

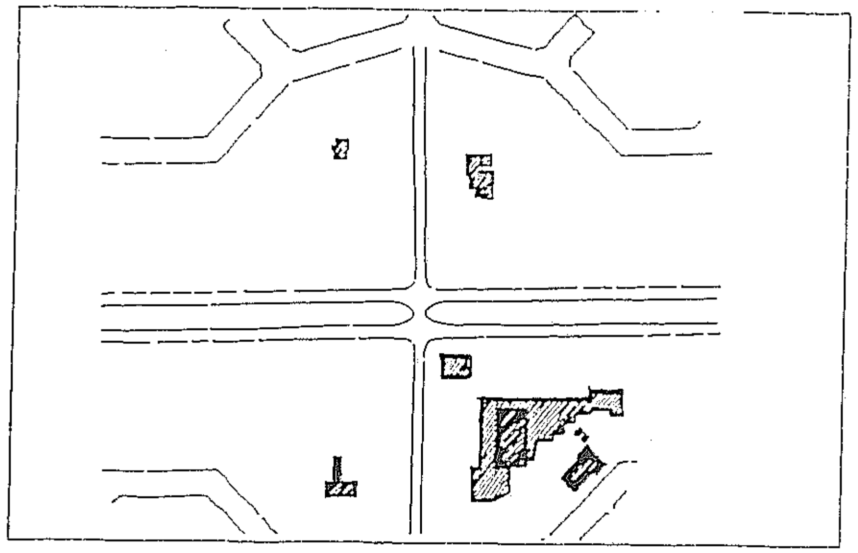


Figure 8.28a: Flamingo Square : Existing Building Footprints

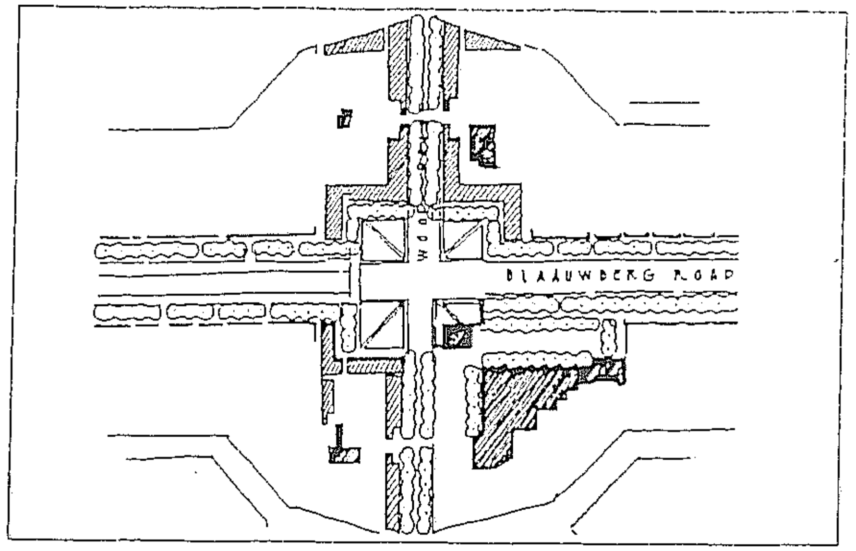


Figure 8.28b: Flamingo Square : Proposed Public Space

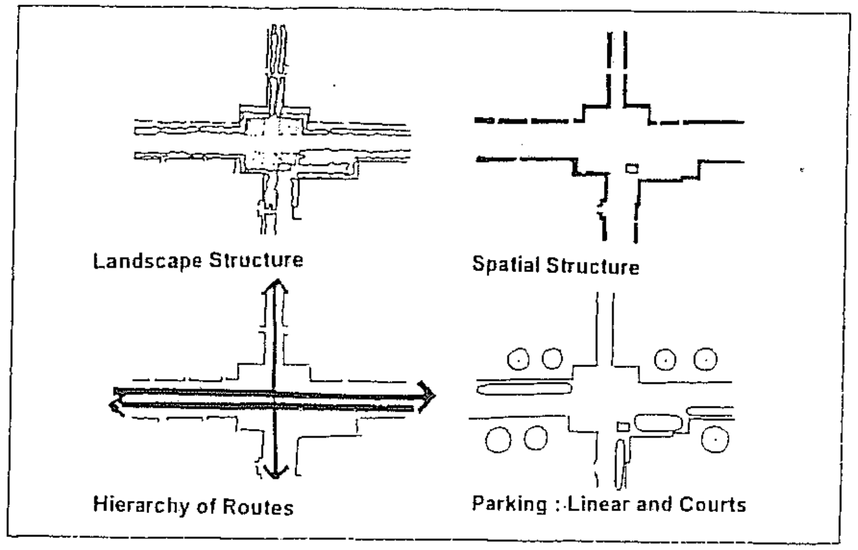


Figure 8.28c: Flamingo Square : Hierarchies and Structures

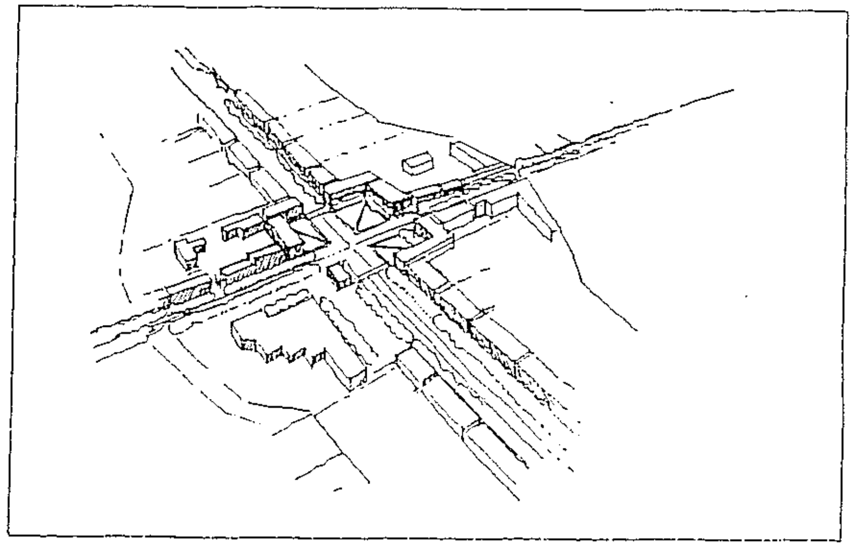


Figure 8.28d: Flamingo Square : Aerial View

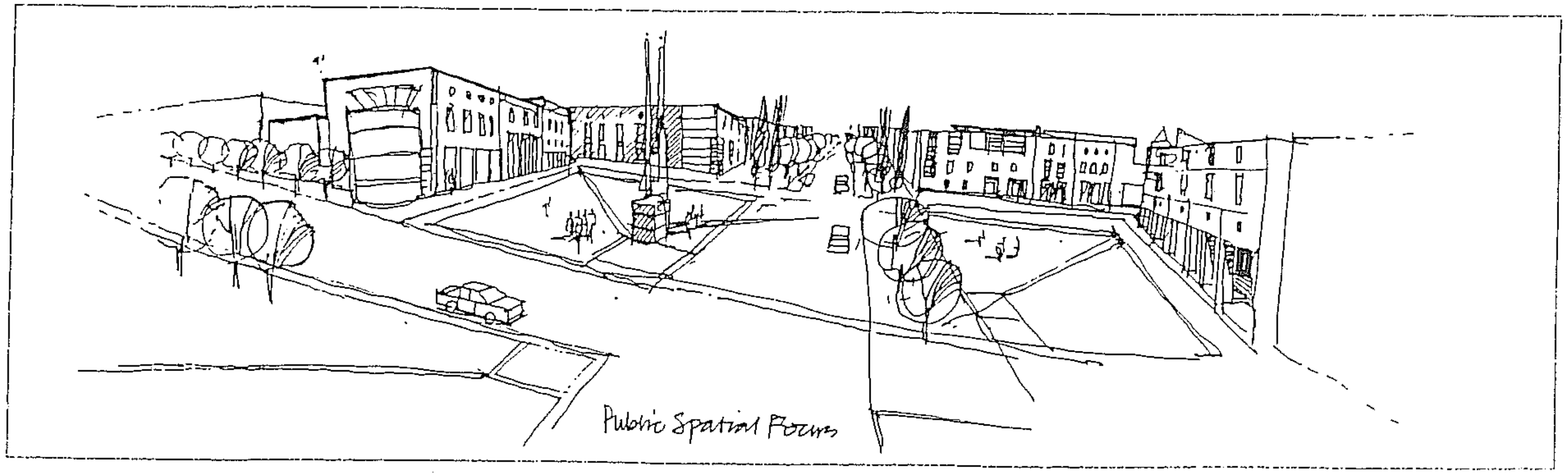


Figure 8.28e: Proposed Flamingo Square

8.4.4 Circle Centre Public Crescent

To enable the making of Boy de Goede as a public space, the inherent circular geometry of the space should be acknowledged and a set of urban design parameters and guidelines formulated in order to achieve a positive environmental quality. Enabling design parameters should be :

- The creation of setback-lines, which become mandatory to enable buildings which create the circular "Bath Crescent" type of public square.
- Eventual building heights of 4-5 storeys, and increase in bulk ratios for consolidations of property.
- A Landscape framework to enable the creation of the circular park onto Blaauwberg Road, with the buildings serving as backdrop.
- Buildings fronting the space, with colonnaded arcades, galleries, platform stoeps, verandahs and balconies as the architectural language.
- Parking for vehicles are accommodated in courts behind building fronts, and in the park space on weekdays, becoming a community park on weekends.
- Public Transport interface with the street is created with interface with building activity, markets, bus shelters etc.
- An active street edge condition is encouraged with diversity of land use, such as retail, line shops, restaurants and coffee shops on the ground floor and offices/retail on a first floor level, with residential apartments on the top floors. This will enable a vibrant day-night activity. The northern edge of Boy de Goede Circle may be developed for residential apartments, with a public facade to Blaauwberg Road.

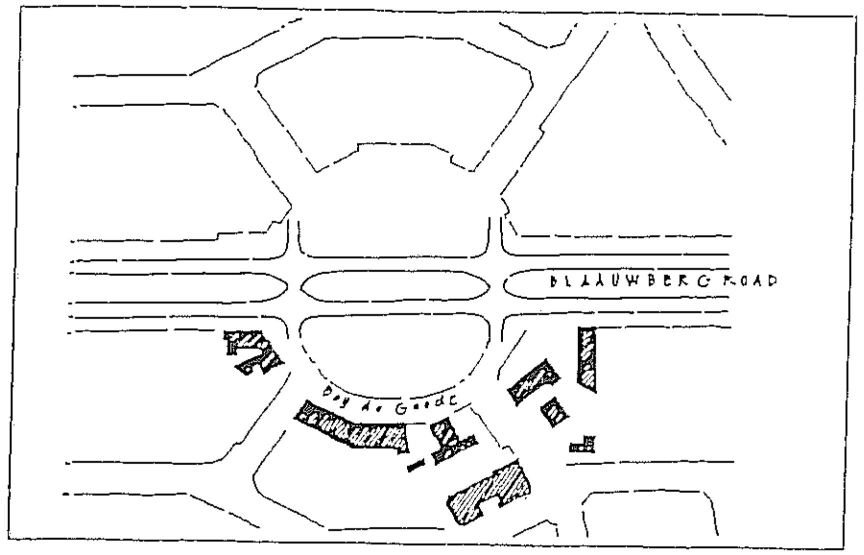


Figure 8.30a: Boy de Goede Crescent : Existing Building Footprints

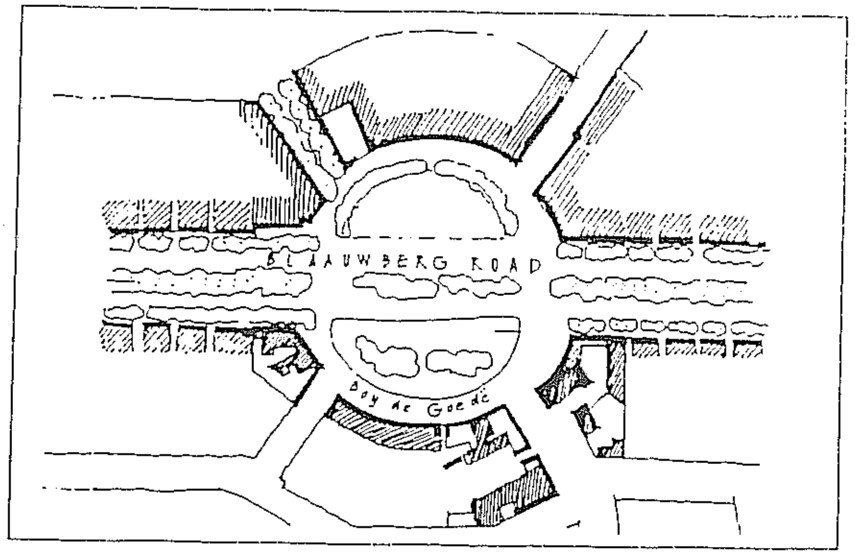


Figure 8.30b: Boy de Goede Crescent : Proposed Public Space

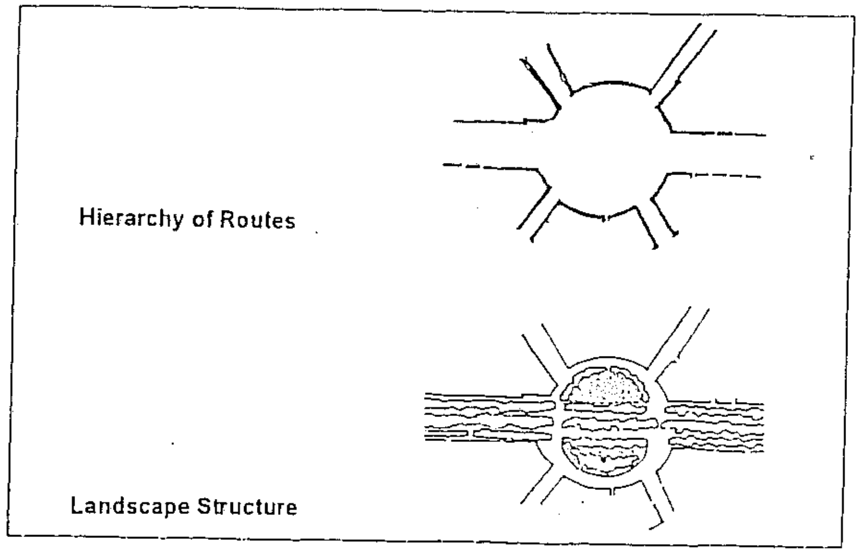


Figure 8.30c: Boy de Goede Crescent : Hierarchy of Routes, Landscape Structure

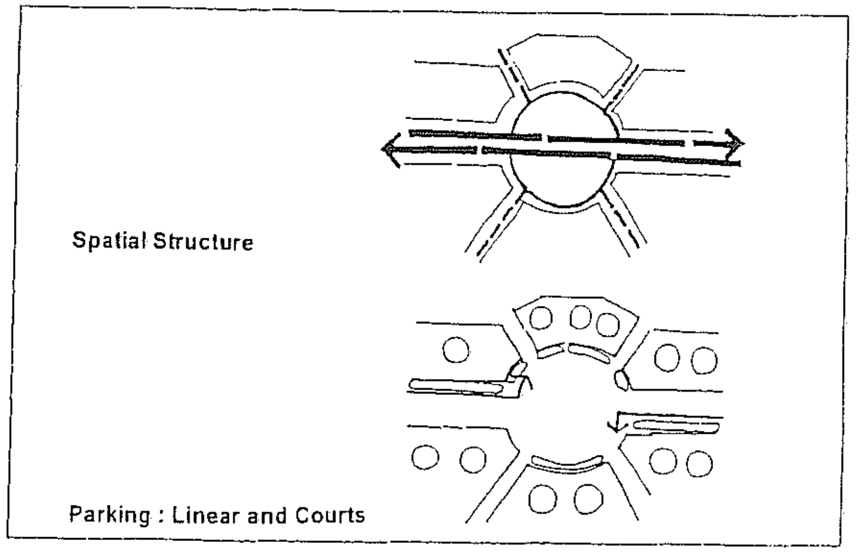


Figure 8.30d: Boy de Goede Crescent : Spatial Structure Parking Areas and Courts

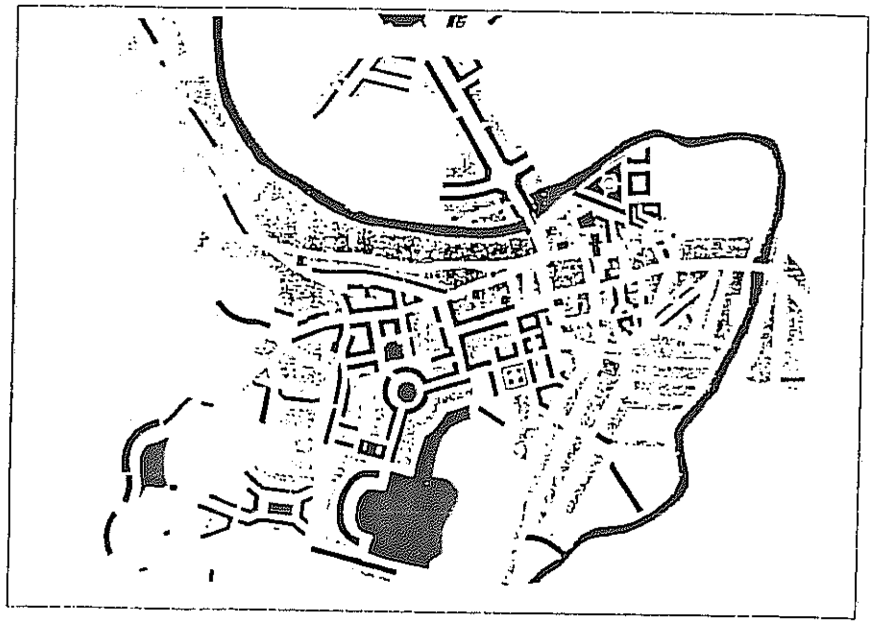


Figure 8.29: Bath, England Crescents and Circusses

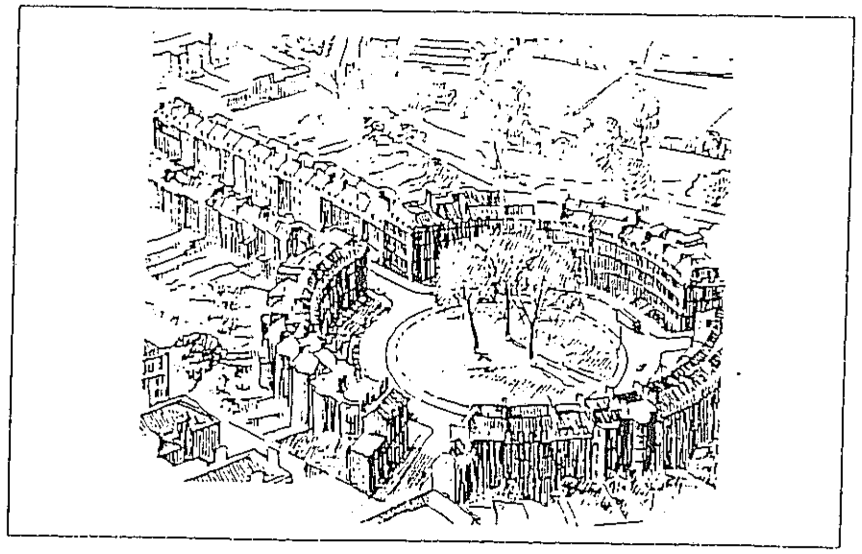


Figure 8.30e: Residential Crescent : Bath, England

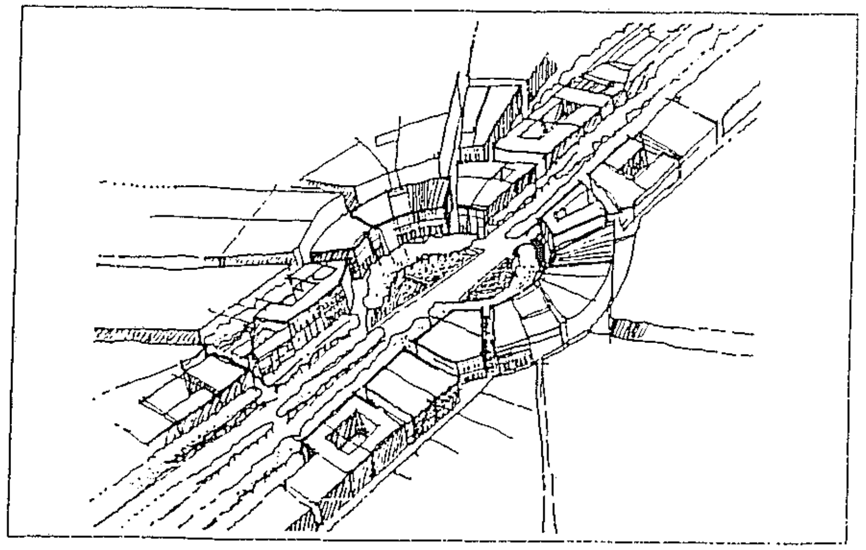


Figure 8.30f: Boy de Goede Crescent : Aerial View

8.4.5 Koeberg Road Intersection

Koeberg Road is at present the termination of the western axis of Blaauwberg Road. The present environmental and development potential is informed by the development of an informal settlement to the south of this intersection. However, bold design impetus and public investment could unleash the latent development potential of the intersection:

- Koeberg Road has been identified as an activity corridor for the future in terms of MSDF policy.

- A possible future link with the N7 freeway is being considered by metropolitan authorities.

- The hotel serves a traditional and an established local amenity function.

- An undeveloped outspan to the northwest could be developed in a positive manner with a community facility. Proposals fo a community hall, clinic, job opportunity centre and resource centre/library could be a major contribution at this intersection, and give impetus to future development.

- The present road intersection will be improved and the linkage to the N7 will probably be an at-grade signalled intersection. This regional link may give major stimulus to the development of Blaauwberg Road as the future activity spine of Table View/ Blaauwberg.

- A landscape framework with treed avenues, soft and hard landscaping, and low 'werf" defining territorial walls could define spaces for informal markets and vendors, corresponding with public transport interchange. The possibility of a future station and the N7 link will enhance potential flows along Blaauwberg Road.

- This edge of Blaauwberg road is both lower end of the market (absence of the ocean and spectacular views towards Table Mountain, compared to Marine Place), but in an area where environmentally sensitive amenities such as picnic spots related to the outspan and the Diep River, can give development its own unique quality.

Figure 8.31a: Place Dauphine, Paris

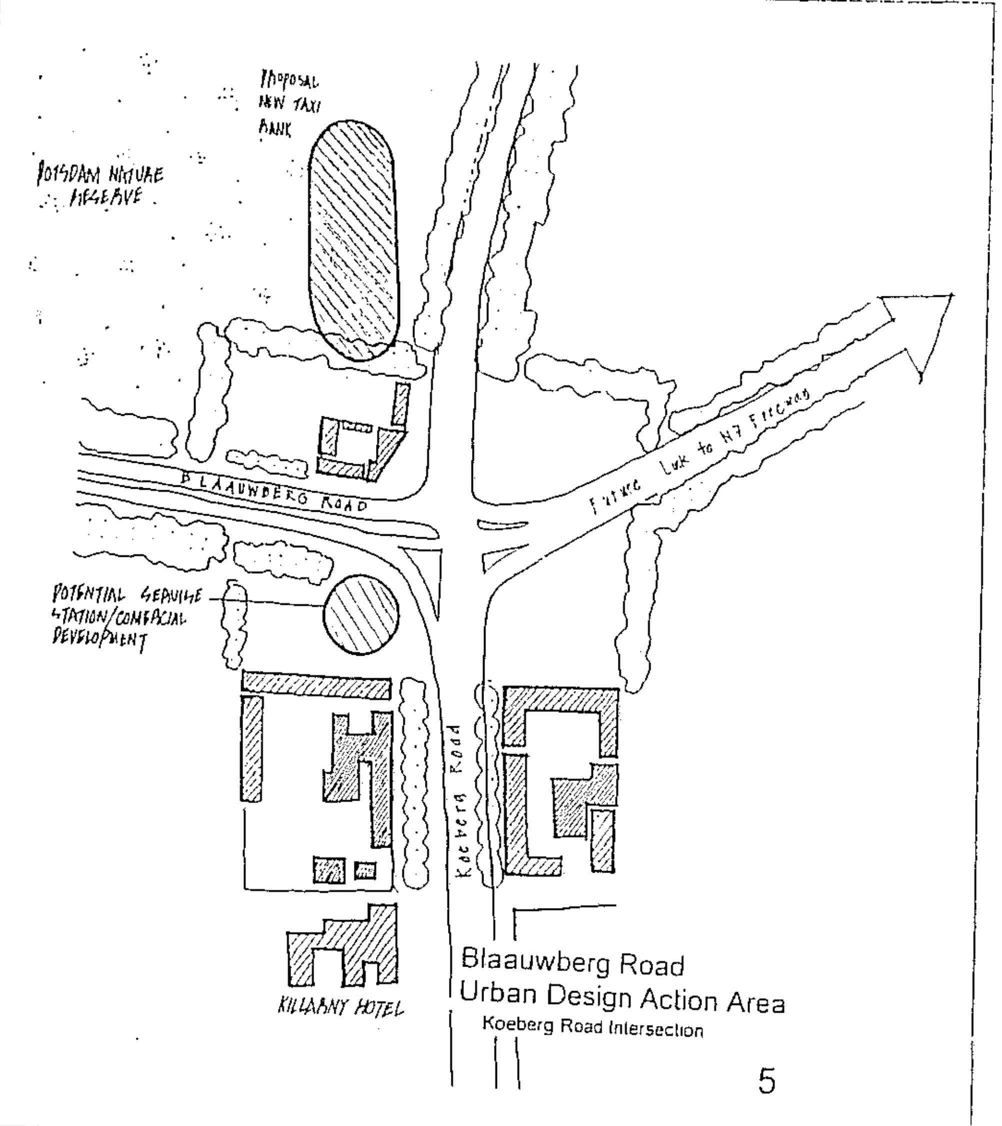


Figure 8.31b: Koeberg Road Intersection, Urban Design Action Area

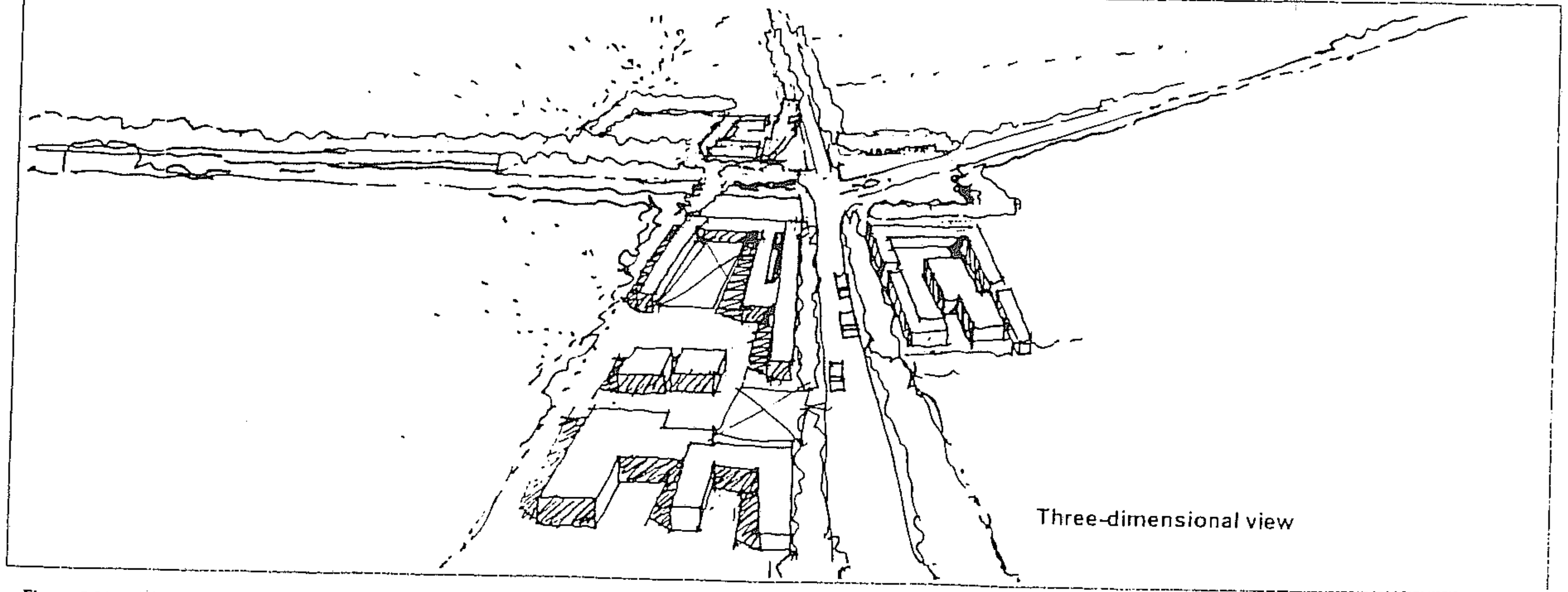


Figure 8.31c: Three Dimensional View

8.5 TRAFFIC AND TRANSPORTATION MANAGEMENT PROPOSALS AND STRATEGIES

8.5.1 Retain and enhance the mobility function of the route

At present, Blaauwberg Road (Class II facility) has a very important role in providing access and mobility to the residents of Table View. Furthermore, it is a very important public transport route linking Atlantis with the rest of the Cape Metropolitan area, in particular the industrial areas e.g. Montague Gardens and Marconi Beam. In the future, the mobility function of this route will need to be protected and enhanced, due to the limited number of crossing of the Diep River and east west routes in the area. In this regard, the number of direct access points onto Blaauwberg Road will have to be reduced, with the use of service roads.

8.5.2 Retain and enhance the public transport function of the route and adjacent road network

Notwithstanding the high number of public transport vehicles which use Blaauwberg Road during peak periods, the use of public transport by Table View residents is low (less than 15% by public transport). This can partially be attributed to the lack of adequate public transport facilities along Blaauwberg Road. Furthermore, in the absence of dedicated rights-of-way, road based public transport modes i.e. buses and taxis, experience similar levels of congestion and travel time delays to private vehicles, and do therefore not offer a reasonable alternative to private transport.

In the future, the constraints posed by the limited number of crossing points on the Diep River and the already congested north-south routes carrying peak period traffic from the area, the role of public transport will become increasingly important. In this regard, the major routes will have to carry a higher number of people. This can be achieved only with a shift to public transport, which should be encouraged through the use of High Occupancy Vehicle (HOV) or public transport lanes. Associated public transport measures involve car pooling, park and ride and feeder services to public transport interchanges.

8.5.3 Investigate additional access roads to the area

i. Sandown Road

Within the next five years, the need for an additional access road i.e. Sandown Road, across the Diep River to link with the N7 via the future Main Road 28 (M12), will be required to cope with the predicted growth of traffic not only caused by intensification of land use along Blaauwberg Road, but also by developments to the north of Blaauwberg Road. This additional route would have to distribute traffic to routes other than Koeberg Road or Otto du Plessis Drive, which are already operating at capacity conditions during commuter peak periods.

ii. Connection to N7

The eastward extension of Blaauwberg Road is also an extremely important link with the Metropolitan Transport System. Currently, there are two alternative alignments under consideration i.e. a northern alignment which provided possibility of direct access onto the N7 and a southerly alignment which links directly to Tygerberg Valley Road and the future Main Road 28 (M12). Finality on the preferred alignment needs to be reached as a matter of urgency. (The recommendation of this study is to support the northern alignment as proposed by Jeffares and Green, refer to 2.9). This strategy should only be implemented at such a time once other key intervention strategies, guidelines and development policies are in place, as the N7 connection will undoubtedly increase traffic and accessibility, and hence redevelopment pressure along the route.

iii. Pentz Drive Link

A detailed investigation of the Pentz Drive link to West Coast Road should be conducted. This link is a road proposal on the Bloubergsvlei sub-regional plan. The link was proposed as part of the proposed redevelopment of the Table View Mall, however, a strong public lobby against the link was encountered and hence the future of the link remains uncertain.

8.5.4 Implement capacity improvements along route

At present, sections of Blaauwberg Road operate at close to capacity conditions during peak periods on weekdays (commuter traffic) and weekends (recreational and shopping traffic). The Diep River Bridge is currently being upgraded to an ultimate six lane cross section. The upgrading of the section of Blaauwberg Road between Marine Circle and Otto du Plessis Drive is already a high priority. With the anticipated growth of traffic in the area, the upgrading of the section of Blaauwberg Road between Otto du Plessis Drive and the Diep River Bridge, to a six lane cross section, is also becoming a high priority.

8.5.5 Implement intersection improvements along route

At present, certain critical intersections along the route are operating at over capacity conditions during peak periods. While the majority of the capacity constraints can be overcome by implementing geometric and traffic control improvements (i.e. intersections of Popham Road and Gie Road with Blaauwberg Road), certain intersections may require grade separation (i.e. Blaauwberg Road/Otto du Plessis Drive intersection) in the future to accommodate traffic growth.

8.5.6 Encourage mixed use developments and higher residential densities along Blaauwberg Road

The intensification of land use along the Blaauwberg Road corridor, which incorporates the introduction of mixed use developments and increased residential densities, was tested. The anticipated growth of traffic on Blaauwberg Road, caused by the above intensification of land use along Blaauwberg Road, was estimated to be between 0.5% to 3% per annum over the next ten years, depending on the level of intensification. The introduction of office, commercial and retail uses along Blaauwberg Road will not only provide jobs for people within the area, but will also cause an increase in traffic in the non peak direction of flow, where reserve capacity exists. The increased residential densities will make public transport more viable, however, commuter traffic flows will increase in the peak direction of flow, thereby exacerbating the already congested road network during peak periods.

8.5.7 Reduce the number of access points onto Blaauwberg Road

The intensification of land uses along Blaauwberg Road will necessitate the need for consolidation of access points along Blaauwberg Road to increase access spacings. For the zones 90 metres on either side of existing intersections, consolidation of adjacent erfs with a consolidated access should be pursued, and corner properties should be granted access off the side streets. For the zones in between these intersection zones, the provision of one way service roads should be pursued to consolidate access. (Refer to Chapter 7 of this report.)

8.5.8 Encourage pedestrian and public transport traffic by providing adequate facilities

The intensification of land use will also cause increased pedestrian and public transport traffic. The promotion of safe pedestrian and public transport facilities is therefore to be encouraged along Blaauwberg Road. These include safe crossing points for pedestrians, sidewalks, bus shelters and bus embayments. The cross section alternatives for the section of Blaauwberg Road between Otto du Plessis Drive and the Diep River Bridge have demonstrated that the flexibility exists in the road reserve, to implement public transport lanes in the future, if they are required.

Principles for transit sensitive design are included in the following section (Section 8.7).

8.5.9 Encourage cyclist traffic by providing adequate facilities

Provision has been made in the preferred cross sections to accommodate pedestrian side walks along both sides of Blaauwberg Road. Cyclist may utilise the service roads and where these service roads are discontinuous, a wider pedestrian path should be provided to accommodate both cyclists and pedestrians. In addition, the routes parallel to Blaauwberg Road (i.e. Arum and North Roads to the north, and Athens and South Roads to the south) are relatively continuous along the length of Blaauwberg Road, and could therefore be encouraged as cyclist routes, thereby removing the majority of cyclists from Blaauwberg Road. The cyclists using these parallel east-west routes could then be guided to safe crossing points on Blaauwberg Road in order to cross Blaauwberg Road. Furthermore, the use of cycling and walking should be encouraged in the future to reduce private car use. Bicycle lock up facilities should be provided at public transport interchanges to encourage commuters to bike and ride.

8.5.10 Encourage public transport use by restricting parking provision at commercial centres

Parking at the major commercial developments along Blaauwberg Road currently satisfy the requirements for the provision of parking for zones which do not promote public transport usage. In the future, the local authority will need to encourage public transport usage, and this may partially be achieved through the restriction of parking at commercial developments, to lower parking ratios, as proposed in the draft Road Access Policy. Parking to mixed use developments along Blaauwberg Road should be provided on site, with overflow parking occurring in the service road, where parking is provided. No parking should occur in Blaauwberg Road itself, as this will reduce the capacity of this mobility corridor.

8.5.11 Investigate high accident areas and implement safety improvements

Accident black spots have been identified (see Chapter 7) and these should be investigated at a more detailed level to understand the causes and formulate safety improvements.

8.5.12 Enhance the safety of the route by reducing vehicle speeds

The speed survey highlighted areas where drivers exceed the speed limit. Speeds should be managed through incorporation of existing and future signalised intersections into the Metropolitan Area Traffic Control System (ATC). This will allow the progression along the route to be timed for a speed at or below the current speed limit.

The installation of signals at the intersections of Gie Road and Popham Road with Blaauwberg Road will also add to the calming of speeds along Blaauwberg Road. The reopening of the northern leg of the Grey Street intersection with Blaauwberg Road should be carefully reconsidered, and if reopened, the need for signalisation should be investigated, due to the substandard shoulder sight distance from Grey Street.

8.5.13 Rationalise Median Breaks and Signalised Intersection Spacing

Existing block widths, and hence median breaks, are randomly spaced along the road. Block widths vary from 125 meters to 518 meters (see Figure 8.33). Such a randomly spaced pattern influences possible physical development patterns. Given intersection access spacing requirements, (DOT Guidelines) versus the existing situation, providing a continuous two-way service road on both the north and south side of Blaauwberg Road, is rendered extremely difficult. (A one-way service option has therefore been proposed.) Furthermore, to improve access along long service roads, additional median breaks are proposed.

An idealised spacing between signalised intersections, regarding this class road would be a minimum of 540 meters (Refer to Chapter 7) for Sections I and II ("intermediate" development environment) and ultimately 375 meters for Section I ("urban" development environment). At a spacing of approximately every 180 meters, median breaks may be introduced. Midway between median breaks, at 90-meter intervals, a left-in and left-out access point could be provided.

8.5.14 Phased Implementation of Preferred Cross Sections

Various cross section alternatives were identified and evaluated in Section 7 of this report. The proposed implementation strategy for the preferred alternative is briefly discussed below. Two forms of development can occur along Blaauwberg Road, namely subdivision of existing erven and consolidation preferred since it reduces points of access. The steps to implementing the preferred access arrangements are identical for each type of development. The steps are as follows:

- The first set of developers to rezone one or more properties will be required to build a section of the service road between the nearest ultimate access point and their property. As the service road will be one way, an access onto Blaauwberg Road will have to be provided at both ends of the constructed section of service road (Refer to Figure 8.35).
- Subsequent developers will have to either follow the above procedure or they will be required to link existing sections of service road that already exist in the vicinity of their property, and to possibly close interim access points that become redundant (Refer to Figure 8.36).
- Access to corner properties should be transferred to the side streets.
- If no further development occurs on the block, the Local Authority may choose to build the unbuilt sections of the service road and rationalise the access to conform to the ultimate access spacings (Refer to Figure 8.37).

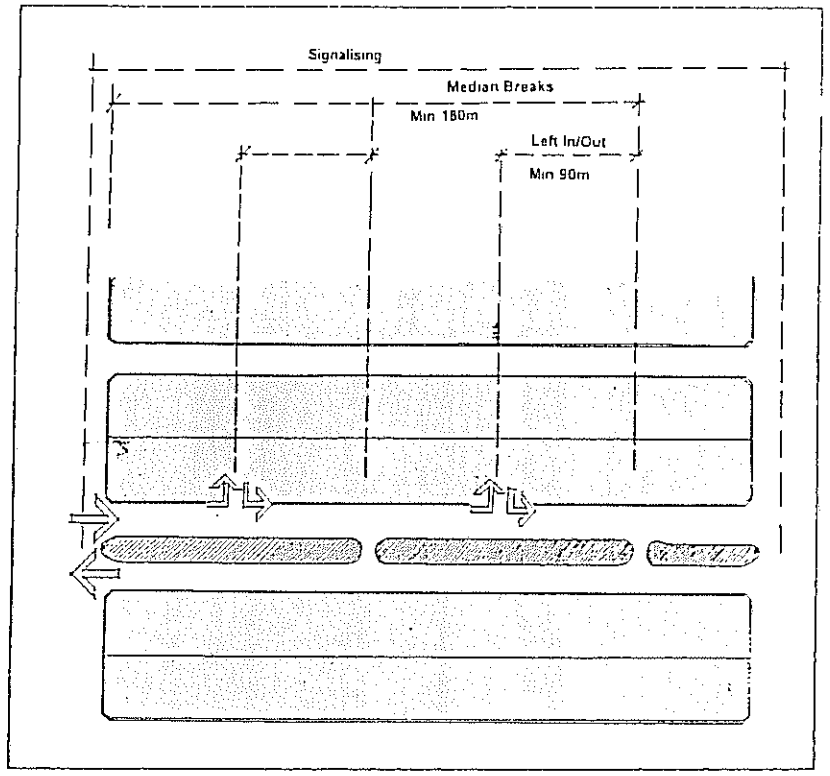


Figure 8.32: Idealised Intersection Spacing

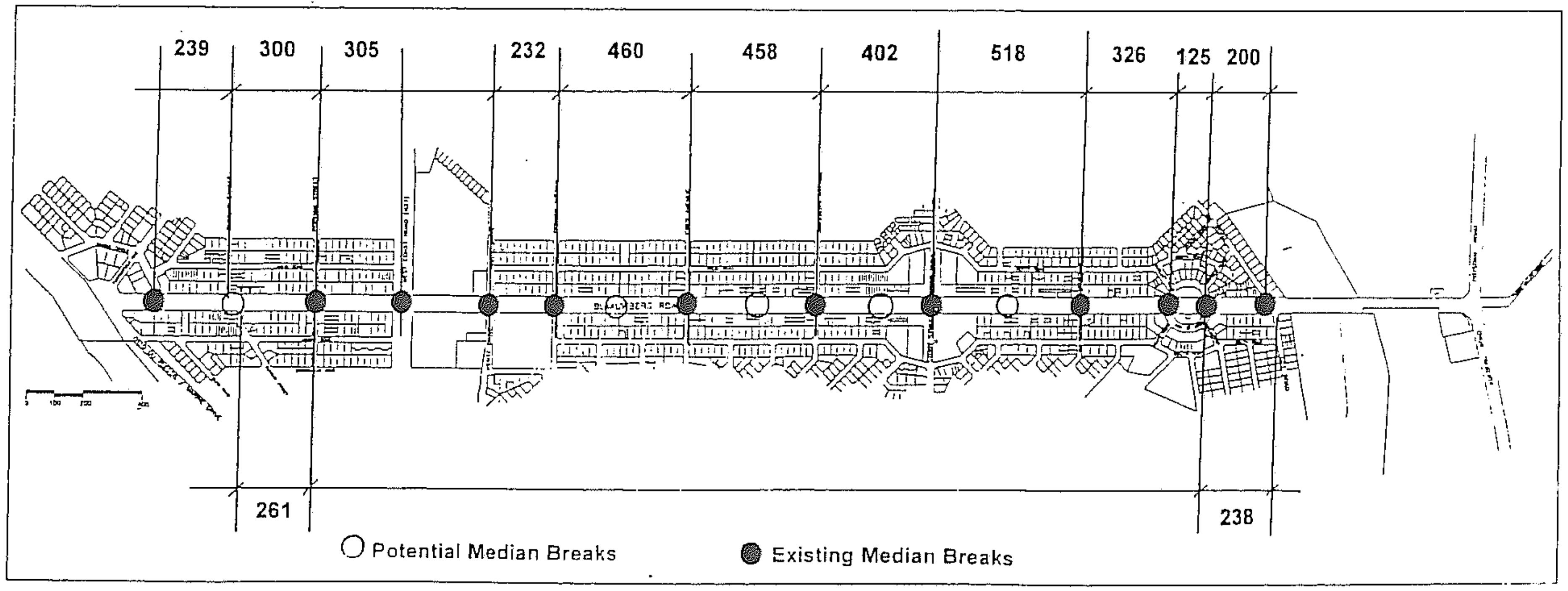


Figure 8.33: Existing Block Widths / Existing and potential median breaks

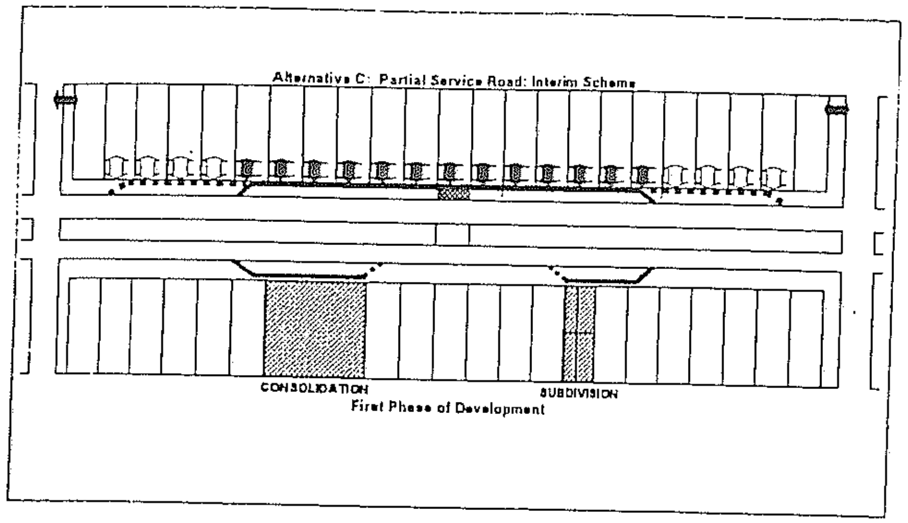


Figure 8.34: First Phase Of Development For Alternative C

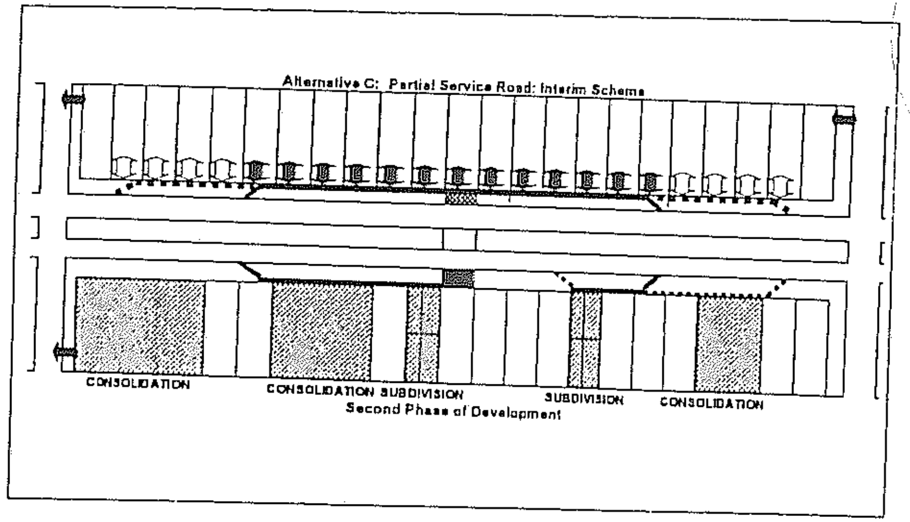


Figure 8.35: Second Phase Development For Alternative C

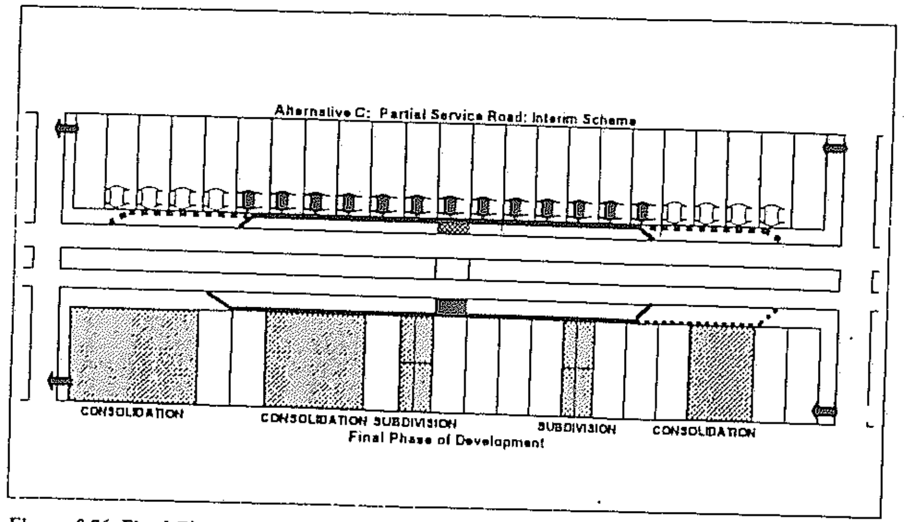


Figure 8.36: Final Phase Of Development For Alternative C

8.6 PROPOSED URBAN PLANNING POLICY

8.6.1 Encourage and Champion the redevelopment of "Marine Square"

Properties around Marine Circle should be considered as a "Special Area". Appropriate urban design controls and conditions as described in this report should guide planning interventions for this area (refer to 8.3). Proposed urban design controls address build-to-lines; building density and fabric; proposed foot-print layouts; desired height restrictions; edge treatment; landscaping; parking conditions; circulation and movement; and aesthetic controls. A creative response to the "genius loci" of the Marine Circle Site must be achieved and it is suggested that Blaauwberg Municipality "Champion" such a cause.

8.6.2 Allow Commercial Use in the Blaauwberg Road Corridor

Properties abutting Blaauwberg Road should be permitted to be rezoned from General Residential use to General Business where appropriate conditions as described in this report can be met. Mixed-use development with an emphasis on higher density residential should be encouraged. Departures from the current Town Planning Scheme should be allowed where appropriate in regard to conditions relating to coverage, height, building lines and parking requirements in order to meet the design principles elaborated in Section 8.

8.6.3 Encourage Redevelopment, Upgrading and Extension of Flamingo Square

The Flamingo Square node should be encouraged to extend by permitting rezonings from Public Open Space and Municipal Use to General Business subject to appropriate urban design parameters. (The proposed extensions of religious use at these intersections is not incompatible with this proposed policy. Such redevelopment should ideally include other community, commercial and residential use. In addition, the impact of parking should be carefully considered, with a reliance on public transport emphasised.)

8.6.4 Rationalise the extent of General Residential Zoning

Properties in the residential hinterland between Raatz Drive and Flamingo Square should be permitted to rezone from Single Residential to General Residential subject to appropriate conditions. Such a policy will create consistency with surrounding areas, enabling General Residential zonings one-and-a-half blocks deep from Blaauwberg Road, thereby increasing public transport and commercial thresholds.

8.6.5 Encourage the Appropriate Development of "The Outspan"

Properties adjacent to Koeberg/Potsdam Road, at the intersection with Blaauwberg Road ("The Outspan" area) should be rezoned in accordance with the prepared integrated development framework. Public land should thereafter, be put out on tender.

8.6.6 Evaluate all Development Proposals in the Context of Recommended Urban Design Principles

Sections 8.2 and 8.3 of this report have elaborated key urban design policies which have been framed as a flexible guideline for future development. All development approvals should include conditions relating to these criteria.

8.6.7 Phasing of Development and Impact on Rear Blocks

It is anticipated that, given the recommendations of 8.6.4 above, that increased impetus may be experienced for residential densification in the blocks behind Blaauwberg Road. This trend should be supported. The diagram opposite (Figure 8.37) conceptually indicates possible phasing of development along the Blaauwberg Corridor over time.

The diagram illustrates that building heights and intensities of use will naturally gravitate away from the road as the corridor intensifies.

Provided that the urban design and landscape recommendations of this report are adhered to, the impact on the residential hinterland should be a positive one.

8.6.8 Encourage consolidation rather than subdivision as a preferred development strategy.

Such a policy, as outlined in the previous chapters of this report will improve the nature of access onto Blaauwberg Road. Ideally four standard erven should be consolidated as a minimum requirement.

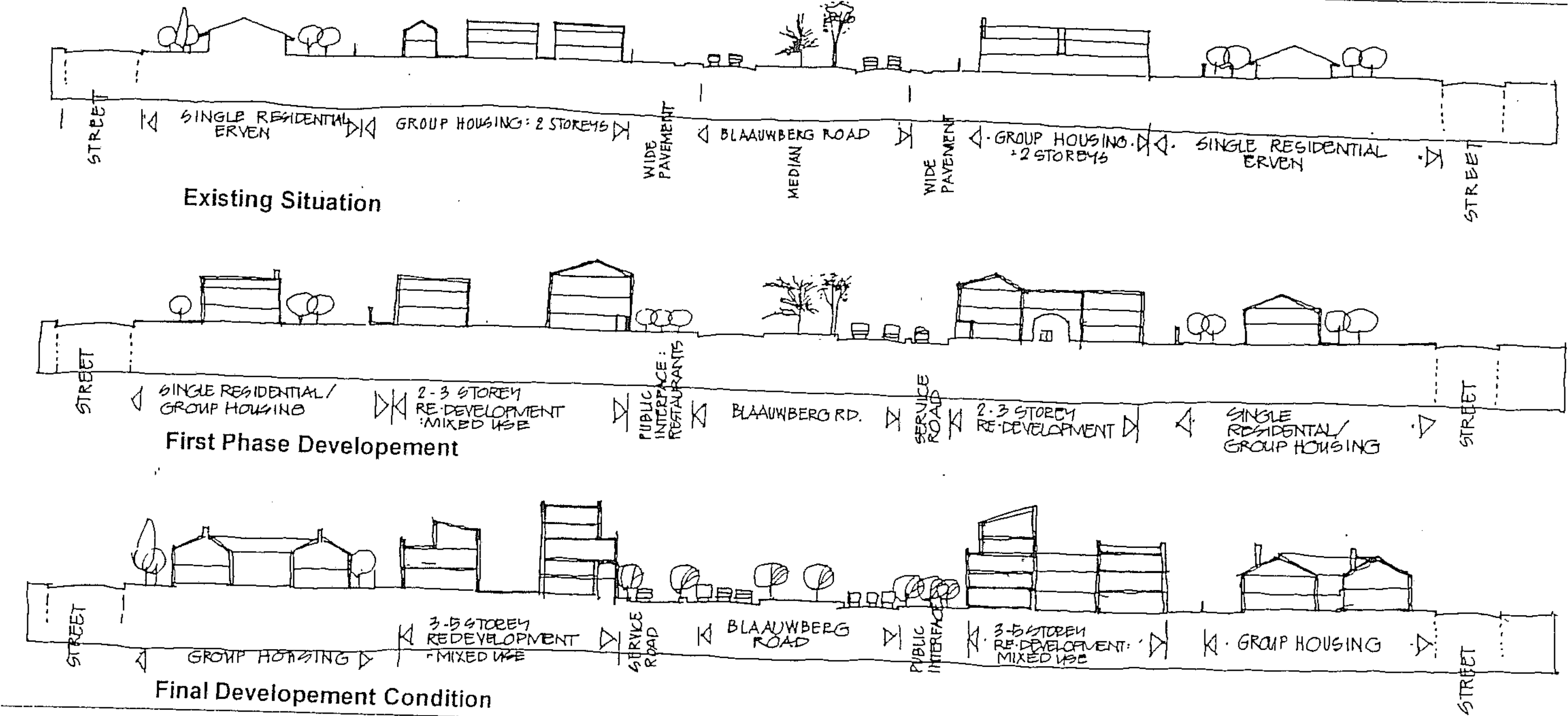
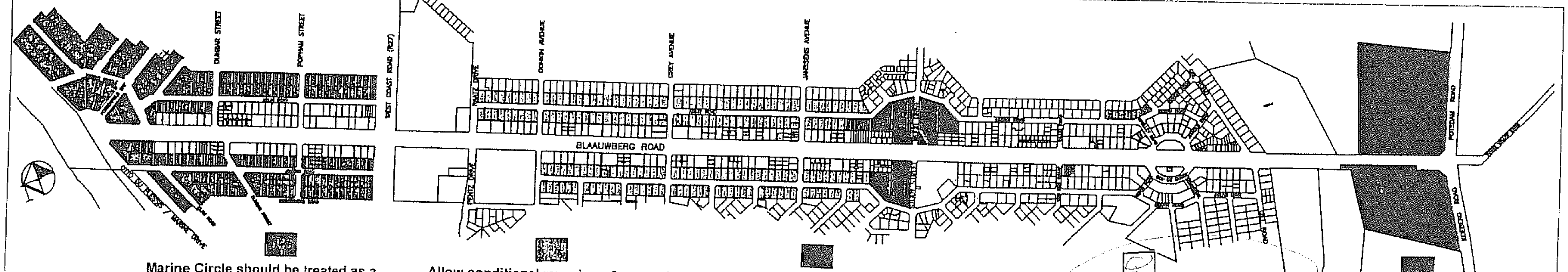


Figure 8.37: Urban Growth And Phasing



Marine Circle should be treated as a "SPECIAL AREA" with appropriate urban design guidelines to permit and encourage a creative response to the uniqueness of place.

Allow conditional rezoning of properties between Raatz and east of Janssens from Single Residential to General Residential. This will create consistency with the areas to the east and west where General Residential zoning is 1.5 blocks deep.

Permit rezoning of properties from POS and Municipal to General Business, subject to urban design parameters, to encourage an intergrated nodal development at Flamingo Square.

All properties abutting Blaauwberg Road should be treated as "Special Area". Mixed use development, subject to appropriate conditions related to coverage, height, building lines and parking requirements should be encouraged.

Rezoning of properties to be subject to an integrated development framework.

Figure 8.38: Intervention Strategy - Policy Areas and Possible Rezoning

8.7 PRINCIPLES AND CRITERIA OF TRANSIT SENSITIVE LAND USE DESIGN

Though the development of the "suburbs' were originally based on private transport based access to the central city, the provision and quality of public transit in the suburbs is limited. However, transit has been, and can again be, an attractive alternative to the car. To be successful, it must compete with the automobile in terms of access, convenience, comfort, and feasibility. The guidelines developed in this study and the requirements for a viable suburb which includes transit are based on the following five principles:

8.7.1 Market Orientation

The driving force in decisions regarding the planning, location, design, frequency, operation and maintenance of public transit should be to provide a user-oriented service. User-oriented transit operates directly between passengers' origins and destinations without transfer, on a convenient schedule, in an attractive setting and at a price which is competitive with the car. With the use of appropriate land use patterns, public transit will be viable and will limit reliance on the private car.

8.7.2 A Land Use Pattern with Concentrated Trip Ends

Appropriate land uses generate and attract trips. Land use should be concentrated to create a number of high volume destinations in order to support a high level of transit service.

8.7.3 A Quality Access System

Access to public transit by pedestrians, cyclists and automobile users should be convenient, attractive, safe and direct. All transit trips begin as pedestrian trips and end as pedestrian trips.

8.7.4 Transit-Oriented Streets

Street systems should be laid out to facilitate efficient transit operations. Design criteria for transit routing should provide for adequate stopping areas, safe pedestrian crossings and proper visibility. Automobile traffic should be restricted if necessary, or dedicated lanes provided for pubic transport to assure that transit vehicles do not experience delays.

A set of criteria is elaborated below which can be used to analyse the compatibility between efficient transit and land use.

- **Land Use Criteria**

  - *Size of Population:* The total number of people who live and/or work within the market area of a transit route must be sufficient for an efficient service. The growing residential hinterland to the north of Blaauwberg road will enhance the catchment population. The analysis section of this report has shown that sufficient residential thresholds already exist.

  - *Density of Land Use*: The residential and/or working population must be concentrated enough to provide a market for transit services. This report recommends a densification policy along the entire corridor.

  - *Concentrated Locations:* The locations and land use should be concentrated in relationship to potential transit stops. The nature of nodal development along the route will underpin the transit system.

  - *Mix of Uses:* A broad mix of uses must be present to minimise travel. The mixing of land uses is a recommended strategy in any redevelopment.

- **Access Criteria**

  Pedestrian paths must be legible, direct, safe and attractive and should connect land uses with the Blaauwberg Road Corridor.

- **Transit Operations Criteria**

  - *Through Routing:* The grid based configuration of streets in Tableview permit easy movement of transit vehicles into an out of the area.

  - *Rights-of-Way:* The wider lane on the shoulder as indicated in the preferred cross-sections can become dedicated public transport ways.

- **Marketability**

  - *Identity:* Transit stops and the aesthetics of the corridor itself should ideally reflect a clear and distinctive identity.

  - *Amenities:* Civic and recreational amenities should be provided to create an attractive living environment as well as be compatible with the high densities recommended.

  - *Design:* Design should provide a "sense of place" and character.

8.7.5 Accommodate Multiple Developers and Development Patterns

The integration of a variety of developments and land use patterns is critical to effective completion of a transit corridor. Regulations must accommodate various building uses; changing market forces also require local development regulations to be flexible.

The use of guidelines for density, land use, and parking gradients as elaborated in this report provides a basis of regulation for development patterns while at the same time allowing flexible development. Developers should respond to the desired land use characteristics of the Blaauwberg Corridor, though each developer should be allowed to reach the objectives in different ways. This provides the diversity and real estate feasibility that is necessary for the long term sustainability of the corridor.

8.7.6 Site Features are required that Improve Access such as:

- An attractive bus stop and embayment area should be provided in the corridor opposite the development if it exceeds a size to be determined b the local authority.
- Reserved parking for car pool should be provided.
- Paved pedestrian walkways and cycle routes along the road adjacent to the site (and through the site where appropriate) should be provided according to a design specification for the corridor.
- Facilities for cyclists should be improved.
- All features must meet handicapped access standards.

8.7.7 Site Designs should:

- Have any large parking areas located at the rear or side of the site.
- Have building entrances oriented towards the corridor.
- Have building entrances, parking areas, transit facilities, and other site activity centres connected by paved and covered walkways.
- Be free of barriers to safe and convenient pedestrian travel (walls, ditches, roads, landscaping, etc. without safe crossings).
- Include shelters, benches, and lighting for pedestrian and transit users.

8.7.8 Developers should be required to use Parking Management such as:

- Limiting parking spaces to the lowest possible number.
- Charging a fee for on-site parking.
- Providing free or reduced rate parking for employee carpools.

8.7.9 Developers should be required to Provide Ridership Incentives such as:

- Distributing information on public transportation options to site tenants.

Providing public transport or carpool subsidies to site employees and residents.

8.8 LANDSCAPE MANAGEMENT

8.8.1 Landscape Policies

- Ensure that future developers take responsibility for maintenance of road verges adjoining their property by means of development conditions. Encourage existing landowners to do the same.

- Ensure that all landscaping is in accordance with recommended plant species and planning intentions in term of preferred future road cross sections. (Refer to 8.8.3).

8.8.2 Eucalyptus Trees in Median

- Continued pollarding / pruning of these trees is essential in maintaining a healthy looking form as well as for safety reasons (i.e. branches falling on traffic or pedestrians).

- Proposed phased felling of the trees, which are of great importance to the aesthetics of Blaauwberg Road, proposed by the Municipality should be **urgently reviewed before any action is taken.**

- These trees have cultural and aesthetic significance and are large enough to provide scale and grandeur to form an impressive avenue, creating the "Blaauwberg Boulevard". It is inconceivable that the interests of some landowners in Blaauwberg Road, who bought properties in most cases knowing that the Eucalyptus avenue existed, should be permitted to dictate a policy of removing these trees.

- In the short term; sufficient alternative tree species should be planted in accordance with the preferred future road cross section. Only when these trees have reached sufficient scale and significance should the phased removal of the Eucalyptus be extremely carefully considered. (A referendum should possibly be conducted in Table View/Blaauwberg Road.)

8.8.3 Recommended Plant Species

i. *Verges of 2m or less* (note: the location of existing services should be taken into account, refer to road cross sections)

Deciduous trees	- Erythrina caffra - Erythrina lysistemon	Provides scale, summer shade, screening
Evergreen trees	- Lagunaria pattersonii	Provides scale, year round shade and greenness and screening
Small shrubs	- Chondropetalum tectorum - Dietes grandiflora	Provides sound buffer, dense screening, foliage form
Groundcovers	- Agapanthus africana - Gazania rigens	Provides foliage, form and year round colour.

ii. *Verges of 2m or more*

Deciduous trees	- Celtis sinesis	Provides scale, summer shade, screening
Fine leafed evergreen trees	- Rhus lancea - Rhus pendulina	Provides scale, year round shade and greenness and screening
Shrubs	- Bauhinia galpinii - Chrysanthemoides monilifera - Coprosma repens - Dodonaea angustifolia - Myoporum laetum - Viburnum sinesis - Agapanthus africana	Provides sound buffer, dense screening, foliage form
Groundcovers	- Agapanthus africana - Carissa 'green carpet' - Chondropetalum tectorum - Dietes grandiflora - Felicia aethiopica - Gazania rigens - Kniphofia praecox - Zantedeschia aethiopica	Provides foliage, form, year round colour

iii. *Median*

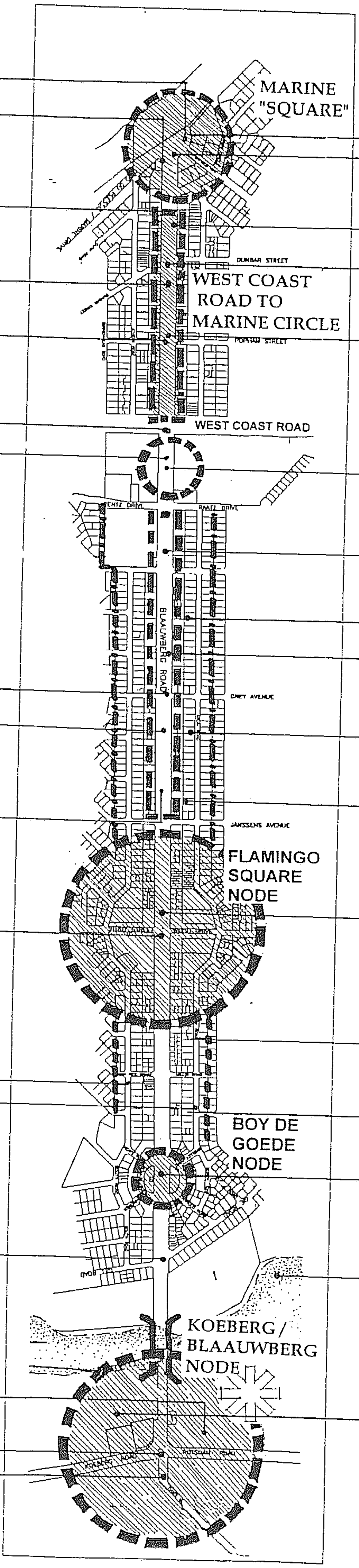
The use of similar trees to that existing (i.e. Palm and eucalyptus) should be followed along the road median.

iv. *Irrigation*

Irrigation of trees on the verge should be phased out as a Council duty and a media campaign launched to encourage abutting land owners to water the street trees and verge landscaping. (This is done in several parts of the world.)

Irrigation of the trees and landscaping in the median should make use of the existing water effluent pipeline if possible.

Figure 8.39: Summary of Intervention Strategy



TRANSPORT PROPOSALS

- Redesign intersection;
- Rationalise service roads
- Widen to 4 lane road (2 lanes in each direction with landscaped median)
- Retain service roads, provide for parking and informal trading and rationalise vehicular conflicts
- Signalise Intersection
- Upgrade intersection
- Improve public transport (bus + taxi) facilities
- Re-open Grey Avenue
- Widen to 3 lanes each direction, (kerbside lanes to facilitate public transport)
- Require service roads and rationalise multiple site access points
- Optimise Signal Phasing along entire corridor
- Facilitate parallel cycleways on side roads
- Gie Road intersection upgrading
- Public transport terminus
- Intersection upgrading
- Finalise design, alignment and budget for extension of Blaauwberg Road to N7 and new railway station

URBAN DESIGN AND LANDSCAPE PROPOSALS

- Release public land for development of "urban Square"
- Intensive landscaping of Medians and shoulders
- Improve pedestrian and landscape character
- Infill development
- Retain landscaped median and extend planting to road verges
- Encourage multiple storey, mixed use to create enclosure and scale
- Urban design and landscape strategy for Circle Centre
- Implement comprehensive urban design and landscape strategy along entire route

LAND USE PROPOSALS

- Encourage and facilitate major redevelopment of Marine "Square"
- Encourage (i.e. rezone) mixed use redevelopment to HIGH DENSITIES
- Control informal trading in medians
- Control informal trading
- Encouraging and allow rezoning to higher residential densities to 2 blocks on each side of corridor
- Facilitate major redevelopment of larger Flamingo Square node
- Encourage higher densities on road corridor (2½ blocks)
- Allow mixed use on road (½ block)
- Provide for access to cyclists and pedestrians to Diep River system
- Allow commercial / industrial redevelopment

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 ADOPT THIS REPORT AS OFFICIAL COUNCIL POLICY

As specified in the Brief, this report will not be formally approved by the Provincial Authorities as a binding Local Structure Plan, but is intended to be approved at Council level in order to promote a policy framework for ongoing development control and decision-making along the Blaauwberg Road Corridor.

The responsible officials of Blaauwberg Municipality are tasked with ensuring that the principles and policies in this management plan are carried out through the development approval process. The responsible official's duties shall include, but are not limited to, the following measures:

- Widely publicise the intentions of the management strategy to all landowners in and around the corridor as well as in the general media.
- Devise a "fast track" approval process to ensure that development along the corridor is an attractive option to developers (in preference to further suburban sprawl models).
- Consider an amendment to the zoning scheme to designate the "Blaauwberg Corridor" as a "Special Area". In particular, the intention of the amendment will be to promote:
    - higher residential densities
    - mixing of uses to include office and retail
    - appropriate urban design and landscape responses to the street

9.2 ACTIVE MARKETING AND PROMOTION OF COUNCILS POLICY FOR BLAAUWBERG ROAD TO ENCOURAGE INVESTMENT

The adoption of this report as official Council Policy should be widely marketed to both the local, development and property investment community.

An investment plan that accesses the resources of the private sector to contribute to upgrading and urban renewal within a facilitative and pro-active Council environment should be actively pursued.

It has been widely established that supportive public sector management will stimulate and encourage private investment that will create multiplier effects in response to "seed capital" that is forthcoming from the public sector.

The Blaauwberg Corridor has incredible investment opportunities, areas like Marine Circle that have not achieved their true potential. The facilitation and "championing" of such development is an important challenge.

9.3 ESTABLISH AN "IMPROVEMENT DISTRICT" ORGANISATION TO MANAGE AND PROMOTE INVESTMENT IN THE CORRIDOR.

Significant local and international precedent exists for the concept of "B.I.D S" (Business Improvement Districts). Such private/public sector initiatives should be investigated, particularly for the key action areas described in Chapter 8. The local authority could provide pro-active facilitation of such initiatives. Further information is available from the consultants who have researched, inter alia, the Central Johannesburg Partnership (CJP) initiative in Johannesburg and have been instrumental in establishing the East City Precinct Association (ECPA) in Cape Town's CBD.

9.4 BUDGET FOR CAPITAL EXPENDITURE

An estimate of proposed road upgrade costs are indicated in Figure 9.1. The following assumptions have been made to determine the above-mentioned costs: -

- R250 / m^2 for roadworks (this includes provision for landscaping);
- 30% in road cost to account for services (this decreases to 20% for new roads);
- Contingency sum at 10%;
- P & G's at 20%;
- Professional fees at 12%;Excludes V.A.T.; and
- Excludes Interchange costs at the N7 and at Koeberg Road.

The estimated total capital investment for the route is approximately R33,5 million. The Blaauwberg Council should actively pursue funding from Provincial and Metropolitan sources.

9.5 AMEND BLOUBERGSVLEI SUB-REGIONAL PLAN

Blaauwberg Road should be indicated not only as a Class II Transportation route, but also an "activity spine" in accordance with the recommendation of this report.

"Medium density" residential development intensity along Blaauwberg Road should be increased from a maximum of 28 units per hectare to at least a group housing density of 45 units / hectare in order to create the thresholds required for a viable public transport spine.

9.6 REGULARISING NON-CONFORMING USE

All non-conforming uses (identified by comparing existing land use maps; Figure 5.3 and zoning map; Figure 5.5) should be served with notices in terms of Section 39 of the Land Use Planning Ordinance. Such non-conforming uses should be instructed to submit appropriate rezoning or departure applications in order to regularise their activities. Through this process, appropriate conditions can be enforced to ensure that the objectives of the Blaauwberg Road Management Plan are met.

9.7 MAKE PUBLIC LAND AVAILABLE FOR DEVELOPMENT

Public land, particularly in the vicinity of Flamingo Square should be released for development via an open proposal call process.

9.8 CREATE A SENSE OF "OWNERSHIP"

A strong sense of "ownership" of the management plan is critical to its success.

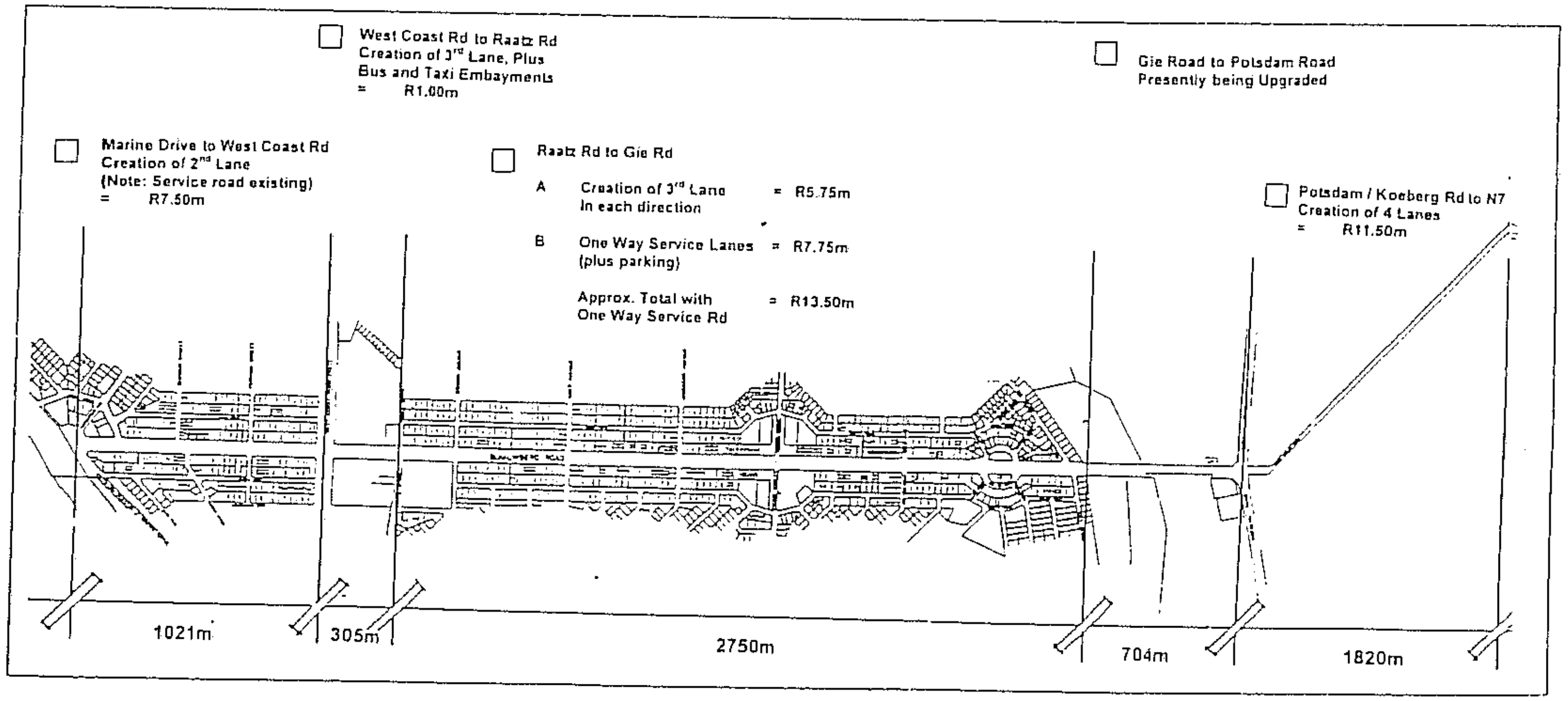


Figure 9.1: Estimated Road Upgrade Costs

11.4 MINUTES OF THE FIRST PUBLIC MEETING HELD ON THE 13TH MAY 1998 AT THE MILNERTON LIBRARY LECTURE HALL

MINUTES

PLACE: Milnerton Library Lecture Hall TIME: 19h00
REF: 97.406/Min13e98 DATE: 13 May 1998
JOB: **Blaauwberg Road Management Strategy**
SUBJECT: Introductory Public Meeting
PRESENT: (See attached Attendance List)

---

1. WELCOME AND INTRODUCTION

1.1 Councilor Donne Murray welcomed all in attendance, highlighted the Local Authority concerns and the process in selection of consultants. The consultants and Blaauwberg Municipality officials were introduced and the Agenda and procedure for the meeting was established.

2. STUDY BRIEF

2.1 Derek Chittenden (DC) presented and outlined the following:

- the Brief, and
- the provisional planning program.

3. PLANNING CONTEXT

3.1 DC gave a short overview of previous studies conducted in the area. These include:

- Metropolitan Spatial Development Framework (MSDF)
- Bloubergsvlei Sub-regional Plan (1991),
- Table View North Structure Plan (1991),
- Milnerton and Environs Structure Plan (1997),
- Marine Circle Draft Framework (1996),
- Blaauwberg Road Upgrading Plan (1995),
- Parklands Development Framework (1997), and
- Potsdam Taxi / Bus Terminus (1997).

3.2 Several aerial photographs of the area were presented.

4. TRAFFIC AND TRANSPORT ISSUES

4.1 John Jones (JJ) of Hawkins Hawkins & Osborn presented and discussed the following:

- The Study Purpose, from a Traffic Engineering perspective,
- The Study Methods used,
- Emme 2 simulation for white collar workers,
- EMME 2 simulation for blue collar workers,
- Transportation problems / issues
- Major routes and suburbs,
- Milnerton Structure Plan, and
- Bloubergsvlei Sub-regional Plan.

5. FUTURE DEVELOPMENT SCENARIOS (VISION) AND THE WAY FORWARD

5.1 This item on the Agenda was presented by Derek Chittenden and covered the following:

- Nodes and Spines, Route Hierarchy and the Metropolitan Open Space System (that is, the influence these have on Blaauwberg Road),
- The vision for Blaauwberg Road, and
- The difference between node and corridor based development.

5.2 Durban Road (Bellville) was introduced as a precedent for Blaauwberg Road and the following overheads were presented:

- Durban Road precedent: "Golden Mile",
- Block comparison between Blaauwberg Road and Durban Road,
- Block penetration scenarios,
- Erf consolidation,
- Density gradient, and
- Zoning and land use.

5.3 The people in attendance were then shown slides of local and international examples, which illustrated "the vision". These included slides of :

- Curitiba (Brazil),
- Sea Point,
- Durban Road,
- Certain parts of Lansdowne Road and Rosmead Avenue,
- Victoria Junction, and
- Dunkley Square.

6. PUBLIC COMMENT / ISSUES / QUESTIONS

6.1 This item on the Agenda was dealt with by Andre Frieslaar (AF) of Hawkins Hawkins & Osborn, who handed reply slips to those present and asked them to write down any questions, suggestions and statements which need to be addressed. Questions and issues which emerged from this include:

A Parking

- Would parking be to the rear or the front of buildings?

B Development / Land Use

- To what depth would redevelopment occur?
- Blaauwberg Road vs Parklands Road (regarding mobility and access functions)
- Precinct or whole road? What is prefered?
- Is the road commercial or residentially approved?
- Will traders still operate on Main Road and all corners?
- With all these high rise buildings and roads, where will the children play?
- As there was previously a 3 level height restriction in the light of the current 8 level buildings, can one really legislate so that levels remain as approved?

C Traffic

- Does enough room exist for 6 lanes and a service lane?
- How do pedestrians cross the new road?
- Three lanes and service roads to the north and south are a must.

D Urban Design

- 3 – 4 storey buildings on Blaauwberg Road preferred. What is the intention from planning?
- Height restriction is needed
- ½ - 1 – 11/2 blocks?

E Program / Time Framework

- Within what timeframe will the project run?
- What timeframe are we looking at before more (double-storey) developments will be viewed i.e. loft-apartments, retail, offices, and consolidation?
- How much time will pass before the proposals are submitted to Council?
- It is already too late.
- When will the Otto du Plessis Road to the beach be built?

F Public Transport

- As local transport does not pay, where will the funds come from to run regular local services? It would be essential that several local services be linked so that one could, for example, travel from Table View To the CBD easily at any time between 6:00 am and 11:00 p.m.
- Since the train service will be essential, what scenarios do we get from Metro?

7. CLOSURE

Councilor Donne Murray thanked everyone for attending and closed the meeting at 9:15 p.m.

MINUTED BY:

MARK JOB

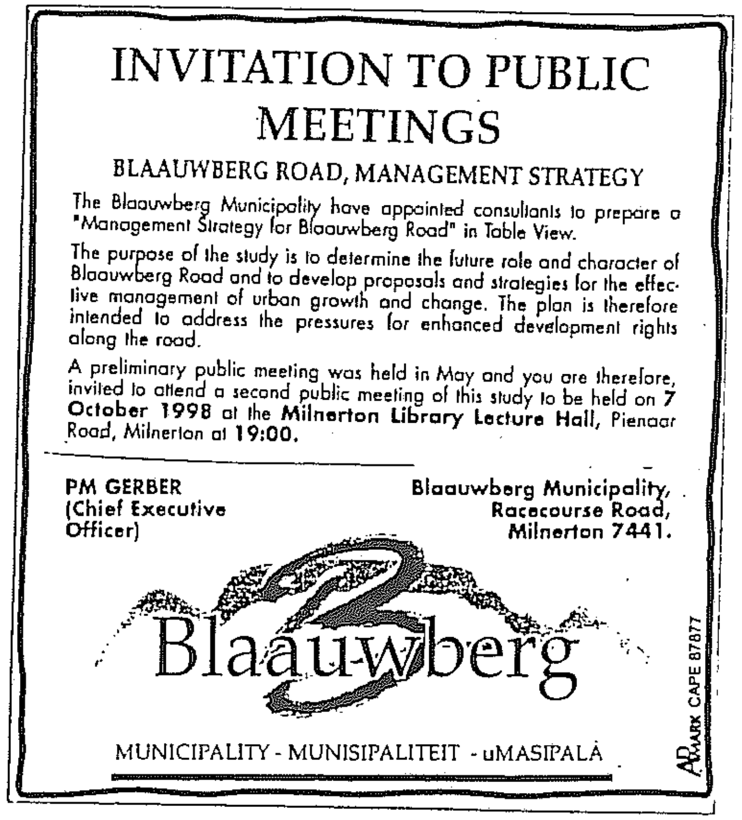
BLAAUWBERG ROAD MANAGEMENT STRATEGY
Introductory Public Meeting: 13 May 1998

ATTENDANCE LIST

NAME	CONTACT NUMBER
Sandra Campbell	551-4878
Nita Arend	557-1736
Wouter Pentz	557-0606
John Vandermade	557-0220
Adam Marcus	082-8932617
Bob Max	52-6493
Gert Behrendt	557-2217
Eric Jansen	554-3377
Dick Groeneweg	554-3390
Enrica van der Linden	557-9686
John Jones	791-7877
Charles Rudman	550-1092
Jaco de Bruyn	550-1073
A. Norris	557-4213
B. Norris	557-4213
Tali Levitan	550-1099
Ilone Collins	418-0510
Bruce Clenfison	557-1728
Ian Neilson	557-4901
André Frieslaar	252-870
Derek Chittenden	461-6302
Donne Murray	
Tanya Winkler	461-6302
Mark Job	461-6302

11.5 PUBLIC PARTICIPATION: INVITATION TO ATTEND THE SECOND PUBLIC MEETING

Advertised in the Argus, Die Burger, Table Talk, and the WesKus News on the 18th September 1998. Notices were also posted along with the Municipal Rates.



INVITATION TO PUBLIC MEETINGS

BLAAUWBERG ROAD, MANAGEMENT STRATEGY

The Blaauwberg Municipality have appointed consultants to prepare a "Management Strategy for Blaauwberg Road" in Table View.

The purpose of the study is to determine the future role and character of Blaauwberg Road and to develop proposals and strategies for the effective management of urban growth and change. The plan is therefore intended to address the pressures for enhanced development rights along the road.

A preliminary public meeting was held in May and you are therefore, invited to attend a second public meeting of this study to be held on **7 October 1998** at the **Milnerton Library Lecture Hall**, Pienaar Road, Milnerton at **19:00.**

PM GERBER
(Chief Executive
Officer)

Blaauwberg Municipality,
Racecourse Road,
Milnerton 7441.

11.6 MINUTES OF THE SECOND PUBLIC MEETING HELD ON THE 07TH OCTOBER 1998 AT THE MILNERTON LIBRARY LECTURE HALL

MINUTES

PLACE: Milnerton Library Lecture Hall TIME: 19h00

REF: 97.406/Min07j98 DATE: 07 October 1998

JOB: BLAAUWBERG ROAD MANAGEMENT STRATEGY

SUBJECT: Second Public Meeting

PRESENT: See attached Attendance List

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1. WELCOME AND INTRODUCTION

1.1 Councilor Donne Murray (DM) welcomed all in attendance and introduced the team of consultants.

1.2 The meeting's procedure, medium of communication and time of closing was established.

1.3 Derek Chittenden (DC) of Chittenden Nicks Partnership outlined the Agenda.

2 STUDY BRIEF AND PROCESS

2.1 Copies of the Executive Summary were distributed.

2.2 DC presented and outlined the following:
- Study Brief and
- Planning Program.

3 PLANNING CONTEXT

3.1 This item on the Agenda was presented by DC and included overheads highlighting:
- the Planning Context and
- Bloubergsvlei Sub-Regional Plan.

4 PRECEDENT AND VISION

4.1 DC called attention to the "Precedent and Vision" by presenting the following:
- the Vision,
- Mobility and Access,
- Slides of :
    - Curitiba,
    - Lansdowne Road,
    - Victoria Road Hout Bay,
    - Voortrekker Road,
    - Rosemead Avenue,

  - Camps Bay,
  - Beach Road Sea Point,
  - Durban Road,
  - Victoria Junction and
  - Dunkley Square
- Durban Road's "Golden Mile" was described in some detail as a Precedent Study.

5 ANALYSIS

5.1 DC presented the following:

- Key Issues affecting the Study Area,
- Analysis undertaken by the consulting team, and
- the Sections, Precincts and Nodes that have become evident after analysis.

6 TRAFFIC AND TRANSPORT

6.1 This Agenda item was outlined by Andrè Frieslaar of Hawkins Hawkins & Osborn and included overheads on:

- The Way to Go,
- Existing System Evaluation,
- Vision for Blaauwberg Road,
- Vision for Section 2,
- Cross-section for Section 2,
- The Ultimate Layout for Section 2,
- Interim Solution,
- Looking into the future,
- Historical Growth Trends,
- Possible Solutions,
- HOV Lanes,
- Park and Ride,
- Bike and Ride, and
- Encouraging pedestrian and Cyclist Traffic.

7 DRAFT MANAGEMENT PROPOSALS

7.1 The Draft Management Proposals were outlined by DC and covered the following:

- Proposed Cross-section of Blaauwberg Road,
- Summary of Proposals,
- Key Action Areas,
- Consolidation and Subdivision Policy
- Consolidation and Access Policy
- Idealised Block Access
- Policy with regard to the Rear Block
- Block Penetration Scenarios
- Intervention Strategy: Zoning
- Urban Design Controls:
  - Mixed Use Activity Edge
  - Sun Conditions
- The New Heart of Table View

8 PUBLIC COMMENTS AND QUESTIONS

8.1 Bruce Clemitson questioned the proposal to encourage business uses at the Flamingo Square Node, when two of the three churches in that node intend to develop and to purchase the remaining municipal land.

8.2 DC responded by clarifying that the consulting team is not only, or specifically encouraging business uses along Blaauwberg Road, but rather mixed use activities. In terms of decentralization, Blaauwberg Road faces stiff competition from other areas in the Metropole.

8.3 Yvonne Driver inquired about pedestrian facilities at the West Coast – Blaauwberg Road intersection. This concern was echoed Mr. Steer.

8.4 John Jones', of Hawkins Hawkins & Osborn, response was that this question was a management issue, a possible strategy being to increase the signalised pedestrian time. Other strategies are the construction of a footbridge, which has financial implications, or subway, which has safety implications. He noted that a number of improvements to this intersection, are on the table.

8.5 Jenny Still raised the concern that action is needed with regard to the West Coast – Blaauwberg Road intersection, before more people lose their lives.

8.6 Ms. Visser raised the issue of informal trading between Marine Circle and the West Coast Road and what could be done about this in the interim and future.

8.7 Councilor Potgieter informed the meeting that this issue was being addressed. Guidelines regulating informal trading still needs to be approved before action can be taken.

8.8 DC responded by saying that the future road cross-section will limit informal trading. Also, the right kind of informal trading needs to be allowed, and not for example, the sale of vehicles.

8.9 Bruce Clemitson suggested the removal of the Blue Gum trees since they may pose a safety hazard.

8.10 DC's response to this was that the positive character afforded by these trees outweighs the problems they pose. In the long term, these trees can be pollarded. In the distant future, they may be removed once other landscape has become established.

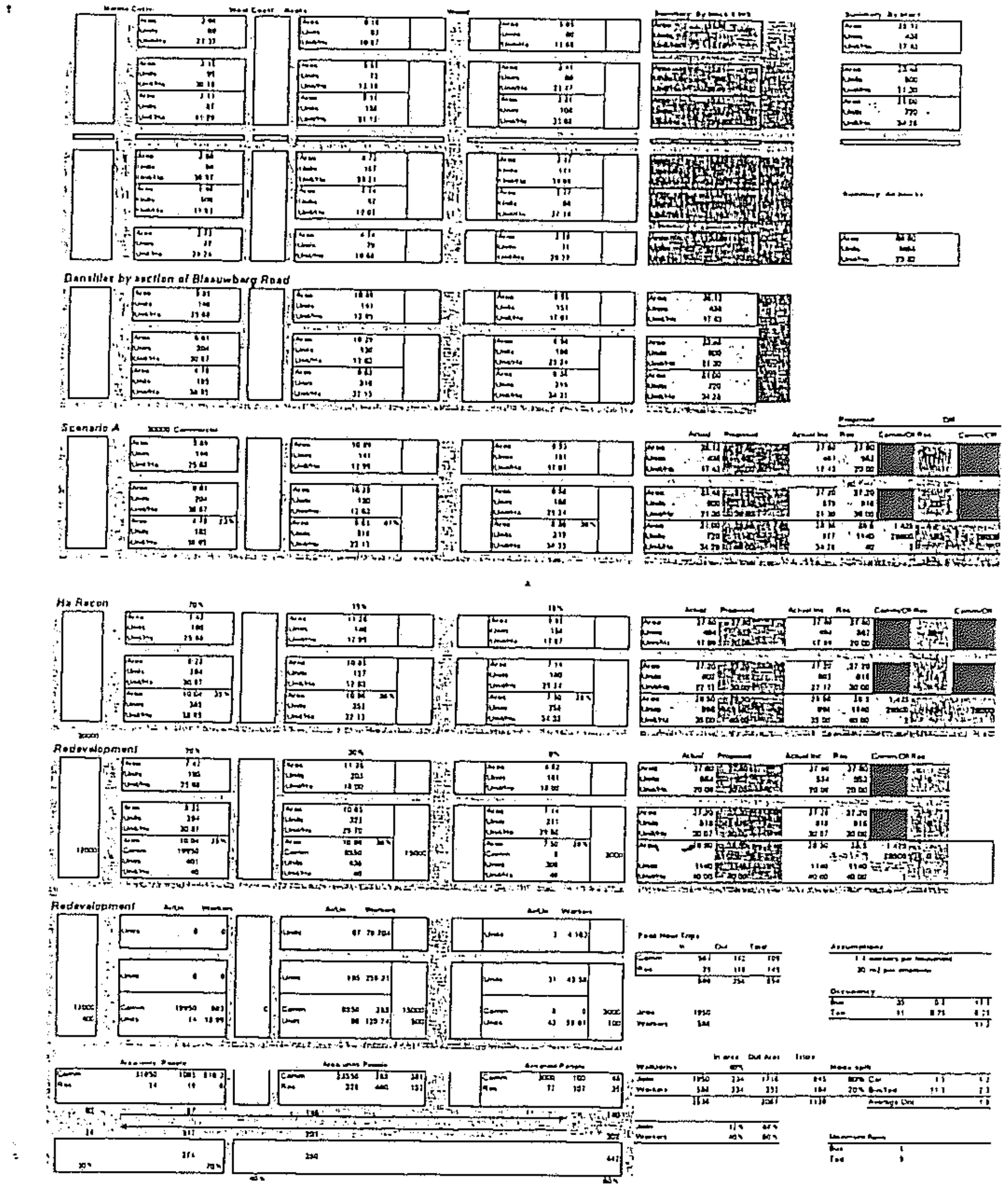
8.11 Ms. Denny Rudolf questioned the proposals with regard to the taxi activity at the Bayside Centre, wanted clarification on the limitation of zoning rights to encourage the "Vision" for the road, and proposed that guidelines be set up to control signage along the road.

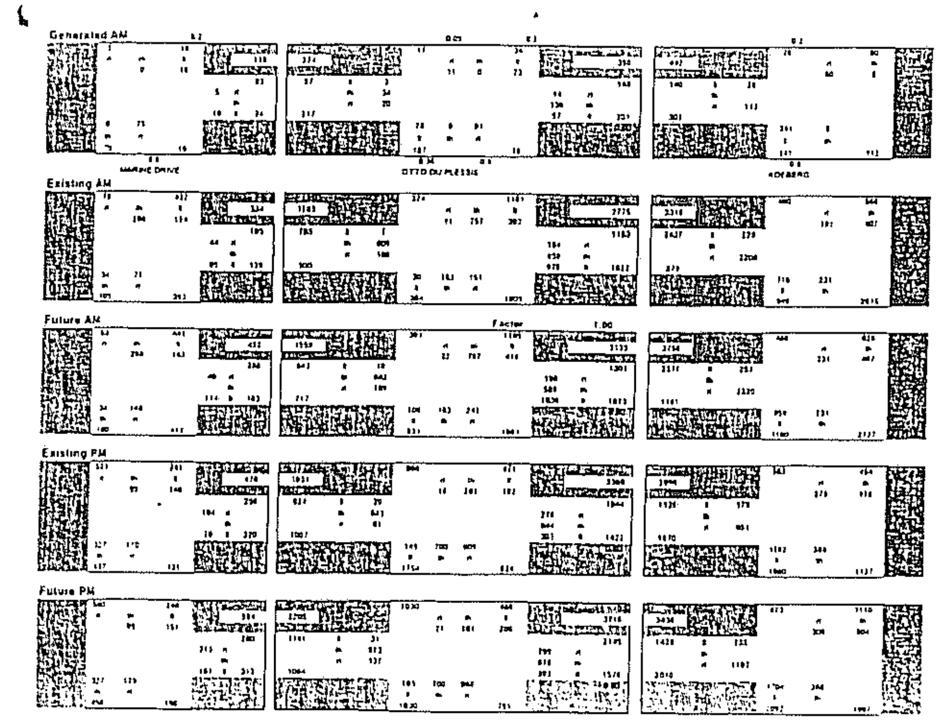
8.12 Pedro Roos of Kruger Roos Architects and Urban Designers responded by saying that developers often negotiate the removal of restrictions, but the team will look at methods to control this.

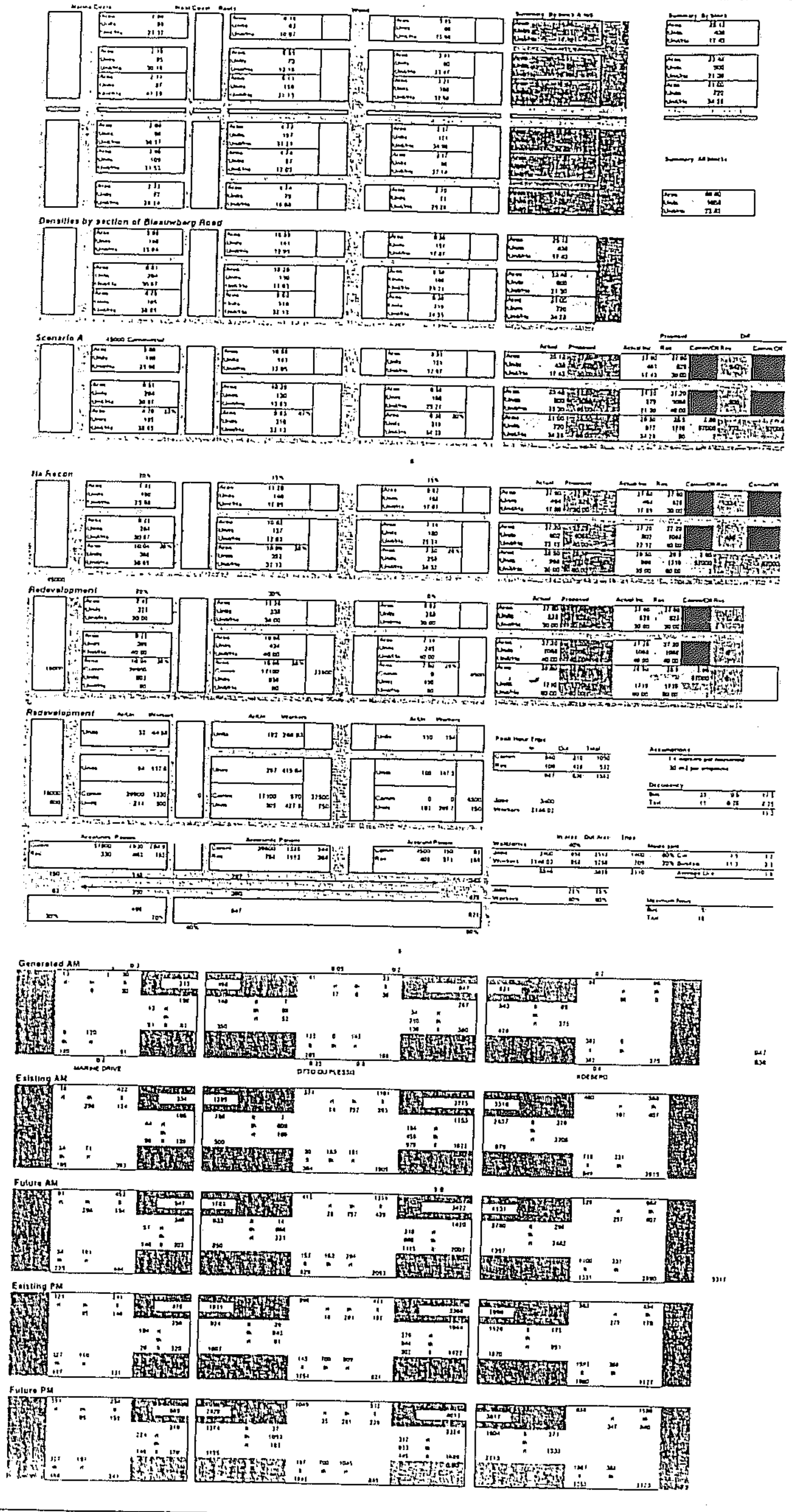
8.13 DC's response was that signage was addressed in the document. People's rights

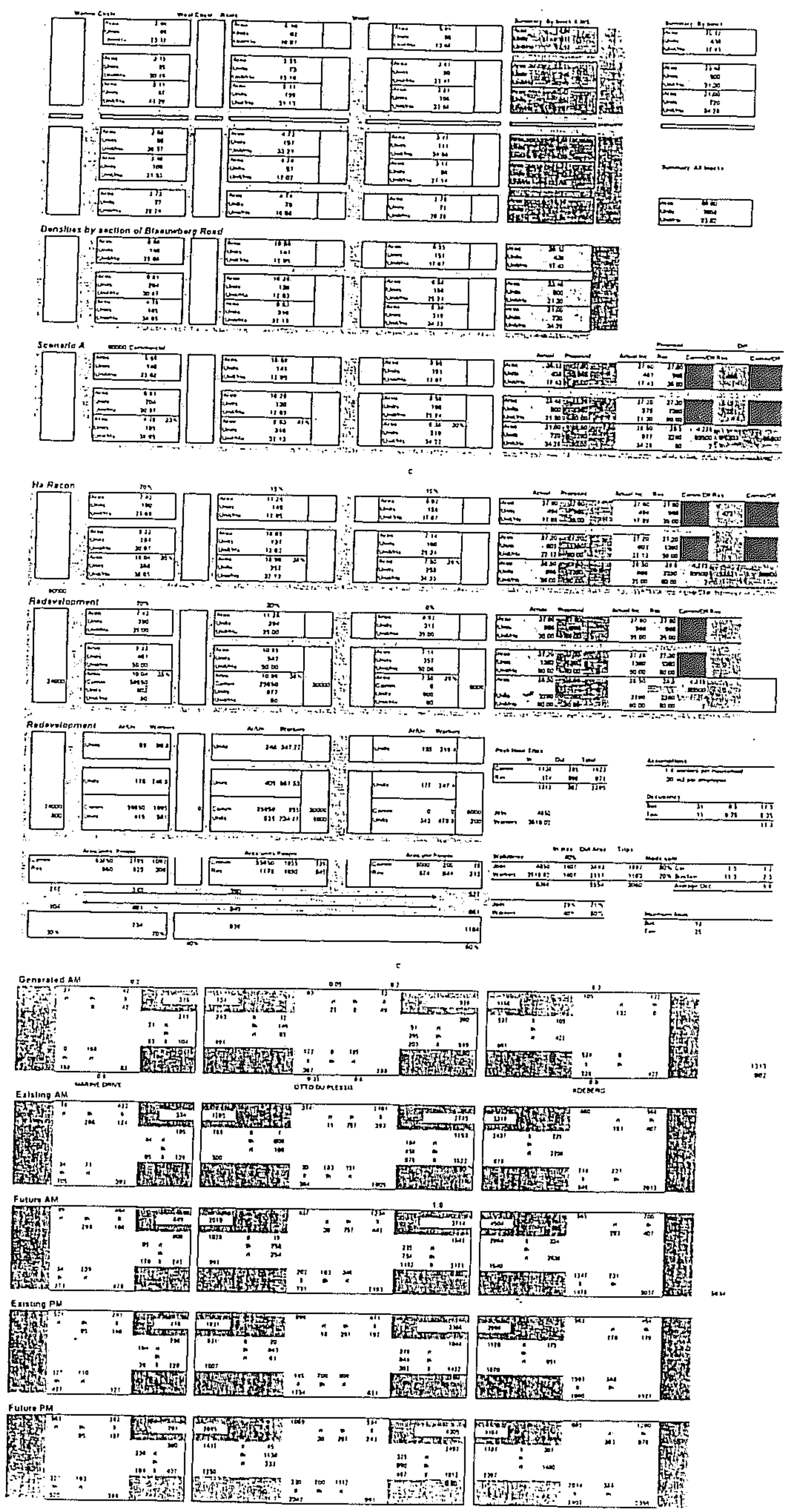
11.7 TRAFFIC & TRANSPORT

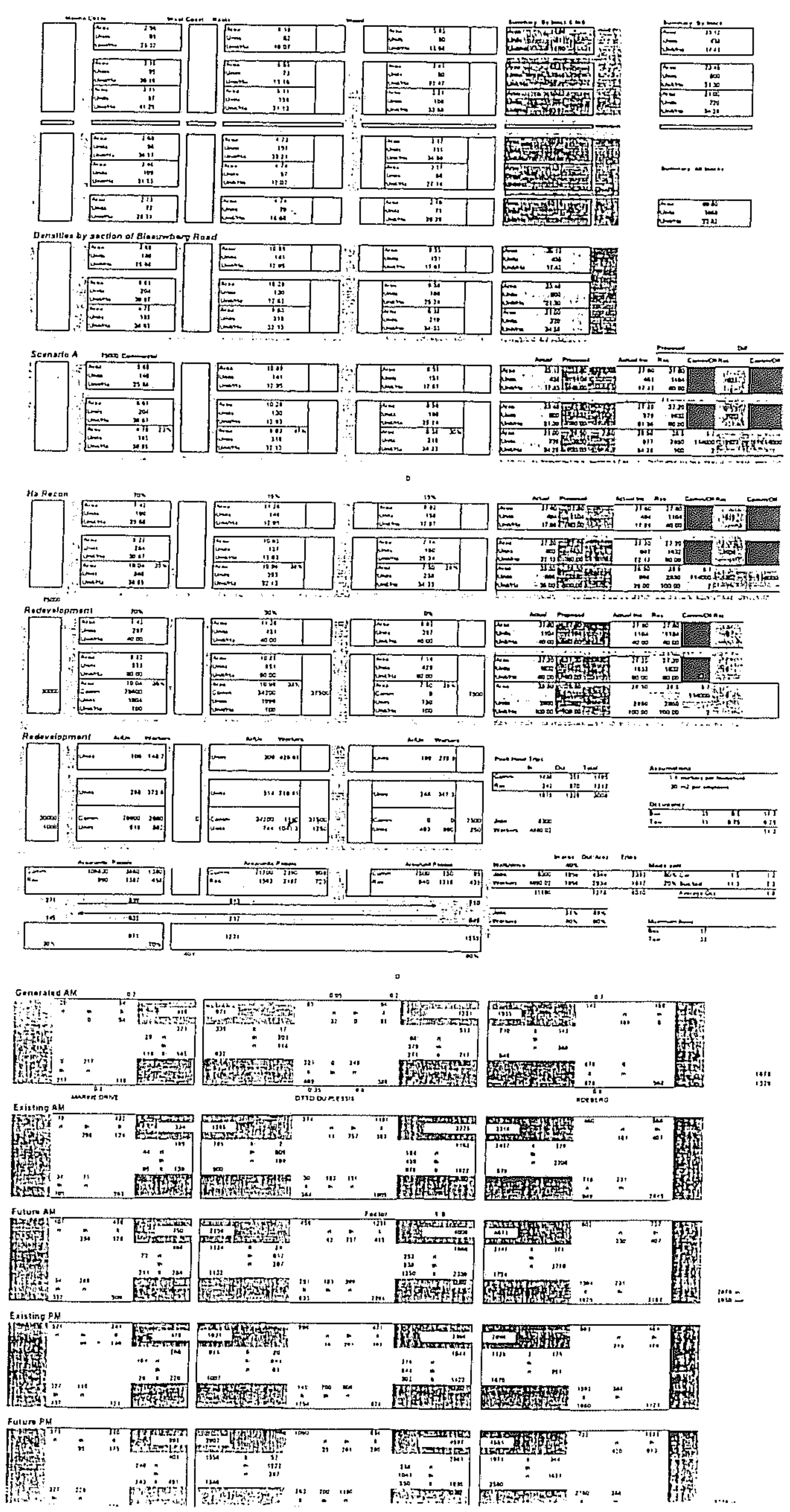
11.7.1 Transportation Model for Blaauwberg Road Redevelopment






Densities by section of Blaauwberg Road
Scenario A
Ha Recon
Redevelopment
Redevelopment
Generated AM
MARINE DRIVE
OTTO DU PLESSIS
KOEBERG
Existing AM
Future AM
Existing PM
Future PM


Densities by section of Blaauwberg Road
Scenario A
Ha Recon
Redevelopment
Redevelopment
Generated AM
MARINE DRIVE
OTTO DU PLESSIS
KOEBERG
Existing AM
Future AM
Existing PM
Future PM


Densities by section of Blaauwberg Road
Scenario A
Ha Recon
Redevelopment
Redevelopment
Generated AM
MARINE DRIVE
OTTO DU PLESSIS
Existing AM
Future AM
Factor
Existing PM
Future PM

11.5.2 Results of Intersection Analysis

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HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                          Hawkins Hawkins & Osborn
=========================================================================
Streets: (E-W) BLAAUWBERG ROAD          (N-S) MARINE CIRCLE
Analyst: HH&O                           File Name: MARCIRWA.HC9
Area Type: Other                        9-11-95 AM
Comment: WEEKDAY
=========================================================================
           |  Eastbound   |  Westbound   |  Northbound  |  Southbound
           | L    T    R  | L    T    R  | L    T    R  | L    T    R
           |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes  | 1    1    1  | 0  > 1  < 0  | 0  > 1    1  | 0  > 1    1
Volumes    | 206  106    5|   2  146   45|  29   12    2|  55   29  224
Lane W (m) |3.40 3.40 3.00|     3.70     |     3.70 3.70|     3.70 3.70
RTOR Vols  |             0|             0|             0|             0
Lost Time  |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
-------------------------------------------------------------------------
                         Signal Operations
Phase Combination 1     2     3     4 |            5     6     7     8
EB  Left          *     *             |NB  Left    *
    Thru          *     *             |    Thru    *
    Right         *     *             |    Right   *
    Peds                *             |    Peds    *
WB  Left                *             |SB  Left    *
    Thru                *             |    Thru    *
    Right               *             |    Right   *
    Peds                *             |    Peds    *
NB  Right                             |EB  Right
SB  Right         *                   |WB  Right
Green          10.0P 22.0P            |Green    15.0P
Yellow/AR       3.0   5.0             |Yellow/AR 5.0
Cycle Length:  60 secs  Phase combination order: #1 #2 #5
-------------------------------------------------------------------------
                  Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                  Approach:
     Mvmts   Cap     Flow    Ratio   Ratio   Delay  LOS   Delay  LOS
     -----  ----  -------   -----   -----   -----  ---   -----  ---
EB   L       635    1687    0.369   0.617     4.5   A      4.2    A
     T      1095    1775    0.110   0.617     3.6   A
     R       889    1441    0.007   0.617     3.4   A
WB   LTR     624    1561    0.351   0.400     9.7   B      9.7    B
NB   LT      419    1479    0.112   0.283    12.1   B     12.1    B
     R       446    1575    0.004   0.283    11.7   B
SB   LT      459    1620    0.209   0.283    12.5   B      8.4    B
     R       803    1606    0.317   0.500     6.9   B
             Intersection Delay =   7.3 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   9.0 sec   Critical v/c(x)    = 0.398
-------------------------------------------------------------------------
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HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                          Hawkins Hawkins & Osborn
=========================================================================
Streets: (E-W) BLAAUWBERG ROAD          (N-S) MARINE CIRLCE
Analyst: HH&O                           File Name: MARCIRWP.HC9
Area Type: Other                        9-11-95 PM
Comment: WEEKDAY
=========================================================================
           |  Eastbound   |  Westbound   |  Northbound  |  Southbound
           | L    T    R  | L    T    R  | L    T    R  | L    T    R
           |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes  | 1    1    1  | 0  > 1  < 0  | 0  > 1    1  | 0  > 1    1
Volumes    | 387  197   44|  13  188  109|  47   49   16|  32   89  232
Lane W (m) |3.40 3.40 3.00|     3.70     |     3.70 3.70|     3.70 3.70
RTOR Vols  |             0|             0|             0|             0
Lost Time  |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
-------------------------------------------------------------------------
                         Signal Operations
Phase Combination 1     2     3     4 |            5     6     7     8
EB  Left          *     *             |NB  Left    *
    Thru          *     *             |    Thru    *
    Right         *     *             |    Right   *
    Peds                *             |    Peds    *
WB  Left                *             |SB  Left    *
    Thru                *             |    Thru    *
    Right               *             |    Right   *
    Peds                *             |    Peds    *
NB  Right                             |EB  Right
SB  Right         *                   |WB  Right
Green          14.0P 20.0P            |Green    13.0P
Yellow/AR       3.0   5.0             |Yellow/AR 5.0
Cycle Length:  60 secs  Phase combination order: #1 #2 #5
-------------------------------------------------------------------------
                  Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                  Approach:
     Mvmts   Cap     Flow    Ratio   Ratio   Delay  LOS   Delay  LOS
     -----  ----  -------   -----   -----   -----  ---   -----  ---
EB   L       586    1720    0.826   0.650    13.5   B      9.5    B
     T      1176    1810    0.209   0.650     3.2   A
     R       955    1469    0.058   0.650     2.9   A
WB   LTR     549    1497    0.705   0.367    15.2   C     15.2    C
NB   LT      350    1398    0.343   0.250    14.3   B     14.1    B
     R       402    1606    0.050   0.250    13.0   B
SB   LT      410    1641    0.368   0.250    14.4   B      9.0    B
     R       849    1591    0.342   0.533     6.2   B
             Intersection Delay =  11.0 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   9.0 sec   Critical v/c(x)    = 0.687
-------------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                          Hawkins Hawkins & Osborn
=========================================================================
Streets: (E-W) BLAAUWBERG ROAD          (N-S) MARINE CIRLCE
Analyst: HH&O                           File Name: MACISATA.HC9
Area Type: Other                        9-11-95 AM
Comment: SATURDAY
=========================================================================
           |  Eastbound   |  Westbound   |  Northbound  |  Southbound
           | L    T    R  | L    T    R  | L    T    R  | L    T    R
           |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes  | 1    1    1  | 0  > 1  < 0  | 0  > 1    1  | 0  > 1    1
Volumes    | 286  159   35|  14  215   49|  42   59   11|  44   87  324
Lane W (m) |3.40 3.40 3.00|     3.70     |     3.70 3.70|     3.70 3.70
RTOR Vols  |             0|             0|             0|             0
Lost Time  |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
-------------------------------------------------------------------------
                         Signal Operations
Phase Combination 1     2     3     4 |            5     6     7     8
EB  Left          *     *             |NB  Left    *
    Thru          *     *             |    Thru    *
    Right         *     *             |    Right   *
    Peds          *     *             |    Peds    *
WB  Left                *             |SB  Left    *
    Thru                *             |    Thru    *
    Right               *             |    Right   *
    Peds          *     *             |    Peds    *
NB  Right                             |EB  Right
SB  Right         *                   |WB  Right
Green          15.0P 19.0P            |Green    13.0P
Yellow/AR       3.0   5.0             |Yellow/AR 5.0
Cycle Length:  60 secs  Phase combination order: #1 #2 #5
-------------------------------------------------------------------------
                  Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                  Approach:
     Mvmts   Cap     Flow    Ratio   Ratio   Delay  LOS   Delay  LOS
     -----  ----  -------   -----   -----   -----  ---   -----  ---
EB   L       686    1754    0.417   0.650     4.5   A      3.9    A
     T      1200    1846    0.133   0.650     3.1   A
     R       974    1499    0.036   0.650     2.9   A
WB   LTR     572    1634    0.486   0.350    12.1   B     12.1    B
NB   LT      382    1529    0.264   0.250    13.8   B     13.7    B
     R       402    1606    0.027   0.250    12.9   B
SB   LT      413    1651    0.317   0.250    14.1   B      8.2    B
     R       892    1622    0.363   0.550     5.9   B
             Intersection Delay =   7.9 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   9.0 sec   Critical v/c(x)    = 0.485
-------------------------------------------------------------------------
```

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HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                          Hawkins Hawkins & Osborn
==========================================================================
Streets: (E-W) BLAAUWBERG ROAD            (N-S) MARINE DRIVE
Analyst: HH&O                             File Name: MARDRWA.HC9
Area Type: Other                          9-11-95 AM
Comment: WEEKDAY
==========================================================================
           |   Eastbound   |   Westbound   |   Northbound  |   Southbound
           | L    T    R   | L    T    R   | L    T    R   | L    T    R
           |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes  | 1    0    1   | 0    0    0   | 1    1    0   | 0    1    1
Volumes    |  52       112|               |  71   53      |      423  124
Lane W (m) |3.66      3.66|               |3.66 3.66      |     3.66 3.66
RTOR Vols  |             0|               |              0|             0
Lost Time  |3.00      3.00|               |3.00 3.00      |     3.00 3.00
--------------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4  |             5     6     7     8
EB  Left          *                    |NB  Left     *     *
    Thru                               |    Thru     *     *
    Right         *                    |    Right
    Peds          *                    |    Peds           *
WB  Left                               |SB  Left
    Thru                               |    Thru           *
    Right                              |    Right          *
    Peds          *                    |    Peds           *
NB  Right                              |EB  Right    *
SB  Right         *                    |WB  Right
Green           11.0P                  |Green    10.0P 28.0P
Yellow/AR        3.0                   |Yellow/AR 3.0   5.0
Cycle Length:  60 secs  Phase combination order: #5 #6 #1
--------------------------------------------------------------------------
                    Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                    Approach:
     Mvmts   Cap    Flow     Ratio   Ratio   Delay   LOS   Delay   LOS
     -----  ----  -------   -----   -----   -----   ---   -----   ---
EB   L       293    1598    0.253   0.183    16.0    C     11.4     B
     R       572    1430    0.280   0.400     9.3    B
NB   L       407    1719    0.248   0.717     4.0    A      3.1     A
     T      1297    1810    0.059   0.717     1.9    A
SB   T       932    1863    0.648   0.500     9.6    B      7.8     B
     R      1161    1584    0.152   0.733     1.8    A
                 Intersection Delay =   7.8 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   6.0 sec   Critical v/c(x)     = 0.485
--------------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                          Hawkins Hawkins & Osborn
==========================================================================
Streets: (E-W) BLAAUWBERG ROAD            (N-S) MARINE DRIVE
Analyst: HH&O                             File Name: MARDRWP.HC9
Area Type: Other                          9-11-95 PM
Comment: WEEKDAY
==========================================================================
           |   Eastbound   |   Westbound   |   Northbound  |   Southbound
           | L    T    R   | L    T    R   | L    T    R   | L    T    R
           |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes  | 1    0    1   | 0    0    0   | 1    1    0   | 0    1    1
Volumes    | 217        29|               | 163  363      |       95  146
Lane W (m) |3.66      3.66|               |3.66 3.66      |     3.66 3.66
RTOR Vols  |             0|               |              0|             0
Lost Time  |3.00      3.00|               |3.00 3.00      |     3.00 3.00
--------------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4  |             5     6     7     8
EB  Left          *                    |NB  Left     *     *
    Thru                               |    Thru     *     *
    Right         *                    |    Right
    Peds          *                    |    Peds           *
WB  Left                               |SB  Left
    Thru                               |    Thru           *
    Right                              |    Right          *
    Peds          *                    |    Peds           *
NB  Right                              |EB  Right    *
SB  Right         *                    |WB  Right
Green           18.0P                  |Green    10.0P 21.0P
Yellow/AR        3.0                   |Yellow/AR 3.0   5.0
Cycle Length:  60 secs  Phase combination order: #5 #6 #1
--------------------------------------------------------------------------
                    Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                    Approach:
     Mvmts   Cap    Flow     Ratio   Ratio   Delay   LOS   Delay   LOS
     -----  ----  -------   -----   -----   -----   ---   -----   ---
EB   L       531    1770    0.459   0.300    13.4    B     12.5     B
     R       818    1584    0.040   0.517     5.4    B
NB   L       851    1770    0.215   0.600     4.1    A      4.6     A
     T      1118    1863    0.365   0.600     4.8    A
SB   T       707    1845    0.151   0.383     9.2    B      4.7     A
     R      1150    1568    0.143   0.733     1.8    A
                 Intersection Delay =   6.5 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   6.0 sec   Critical v/c(x)     = 0.396
--------------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                          Hawkins Hawkins & Osborn
==========================================================================
Streets: (E-W) BLAAUBERG ROAD             (N-S) MARINE DRIVE
Analyst: HH&O                             File Name: MARDSAT.HC9
Area Type: Other                          9-11-95 AM
Comment: SATURDAY
==========================================================================
           |   Eastbound   |   Westbound   |   Northbound  |   Southbound
           | L    T    R   | L    T    R   | L    T    R   | L    T    R
           |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes  | 1    0    1   | 0    0    0   | 1    1    0   | 0    1    1
Volumes    | 170        42|               |  71  103      |      162  208
Lane W (m) |3.66      3.66|               |3.66 3.66      |     3.66 3.66
RTOR Vols  |             0|               |              0|             0
Lost Time  |3.00      3.00|               |3.00 3.00      |     3.00 3.00
--------------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4  |             5     6     7     8
EB  Left          *                    |NB  Left     *     *
    Thru                               |    Thru     *     *
    Right         *                    |    Right
    Peds          *                    |    Peds           *
WB  Left                               |SB  Left
    Thru                               |    Thru           *
    Right                              |    Right          *
    Peds          *                    |    Peds           *
NB  Right                              |EB  Right    *
SB  Right         *                    |WB  Right
Green           18.0P                  |Green    11.0P 20.0P
Yellow/AR        3.0                   |Yellow/AR 3.0   5.0
Cycle Length:  60 secs  Phase combination order: #5 #6 #1
--------------------------------------------------------------------------
                    Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                    Approach:
     Mvmts   Cap    Flow     Ratio   Ratio   Delay   LOS   Delay   LOS
     -----  ----  -------   -----   -----   -----   ---   -----   ---
EB   L       542    1805    0.323   0.300    12.5    B     11.0     B
     R       861    1615    0.050   0.533     5.1    B
NB   L       730    1805    0.100   0.600     3.9    A      3.9     A
     T      1140    1900    0.093   0.600     3.9    A
SB   T       690    1882    0.242   0.367    10.1    B      5.6     B
     R      1146    1599    0.187   0.717     2.1    A
                 Intersection Delay =   6.7 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   9.0 sec   Critical v/c(x)     = 0.266
--------------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                         Hawkins Hawkins & Osborn
===========================================================================
Streets: (E-W) Blaauwberg                   (N-S) Otto du Plessis
Analyst:                                    File Name: BLOTA.HC9
Area Type: Other                            10-21-97
Comment: Weekday AM Existing
===========================================================================
           |  Eastbound    |  Westbound    |  Northbound   |  Southbound   |
           | L    T    R   | L    T    R   | L    T    R   | L    T    R   |
           |----  ----  ----|----  ----  ----|----  ----  ----|----  ----  ----
No. Lanes  | 1    2    2   | 1    2    1   | 2    2    1   | 1    2    1
Volumes    | 184  459  979| 169  609    7| 151  183   30|  11  757  393
Lane W (m) |3.66 3.66 3.66|3.66 3.66 3.66|3.66 3.66 3.66|3.66 3.66 3.66
RTOR Vols  |             0|             0|             0|             0
Lost Time  |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
---------------------------------------------------------------------------
                           Signal Operations
Phase Combination 1     2     3     4  |             5     6     7     8
EB  Left          *     *              |NB  Left     *     *
    Thru          *                    |    Thru     *     *
    Right         *                    |    Right    *     *
    Peds                               |    Peds
WB  Left          *     *              |SB  Left           *
    Thru          *                    |    Thru           *
    Right         *                    |    Right          *
    Peds          .                    |    Peds
NB  Right               *              |EB  Right    *
SB  Right               *              |WB  Right
Green         23.0A 15.0A              |Green    17.0A 19.0A
Yellow/AR       3.0   5.0              |Yellow/AR 3.0   5.0
Cycle Length:  90 secs  Phase combination order: #1 #2 #5 #6
---------------------------------------------------------------------------
                   Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                    Approach:
     Mvmts   Cap     Flow    Ratio   Ratio   Delay   LOS   Delay   LOS
     -----   ----  -------   -----   -----   -----   ---   -----   ---
EB    L      472     1753    0.464   0.478    17.7    C     28.7     D
      T      918     3593    0.624   0.256    20.1    C
      R     1321     2972    0.996   0.444    34.3    D
WB    L      476     1770    0.399   0.478    16.4    C     21.6     C
      T      927     3628    0.774   0.256    23.0    C
      R      383     1500    0.021   0.256    16.2    C
NB    L     1174     3472    0.187   0.456    10.7    B      9.4     B
      T     1621     3559    0.167   0.456     9.3    B
      R      998     1472    0.042   0.678     3.1    A
SB    L      221      947    0.054   0.233    17.3    C     37.1     D
      T      838     3593    1.008   0.233    48.1    E
      R      627     1486    0.666   0.422    15.4    C
                Intersection Delay =  27.5 sec/veh Intersection LOS = D
Lost Time/Cycle, L =   9.0 sec   Critical v/c(x)    = 0.840
---------------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                         Hawkins Hawkins & Osborn
===========================================================================
Streets: (E-W) Blaauwberg                   (N-S) Otto du Plessis
Analyst:                                    File Name: BLOTP.HC9
Area Type: Other                            10-21-97
Comment: Weekday PM Existing
===========================================================================
           |  Eastbound    |  Westbound    |  Northbound   |  Southbound   |
           | L    T    R   | L    T    R   | L    T    R   | L    T    R   |
           |----  ----  ----|----  ----  ----|----  ----  ----|----  ----  ----
No. Lanes  | 1    2    2   | 1    2    1   | 2    2    1   | 1    2    1
Volumes    | 276  844  302|  61  843   20| 909  700  145|  18  261  192
Lane W (m) |3.66 3.66 3.66|3.66 3.66 3.66|3.66 3.66 3.66|3.66 3.66 3.66
RTOR Vols  |             0|             0|             0|             0
Lost Time  |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
---------------------------------------------------------------------------
                           Signal Operations
Phase Combination 1     2     3     4  |             5     6     7     8
EB  Left          *     *              |NB  Left     *     *
    Thru          *                    |    Thru     *     *
    Right         *                    |    Right    *     *
    Peds                               |    Peds
WB  Left          *     *              |SB  Left           *
    Thru          *                    |    Thru           *
    Right         *                    |    Right          *
    Peds                               |    Peds
NB  Right               *              |EB  Right    *
SB  Right               *              |WB  Right
Green         24.0A 13.0A              |Green    23.0A 14.0A
Yellow/AR       3.0   5.0              |Yellow/AR 3.0   5.0
Cycle Length:  90 secs  Phase combination order: #1 #2 #5 #6
---------------------------------------------------------------------------
                   Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                    Approach:
     Mvmts   Cap     Flow    Ratio   Ratio   Delay   LOS   Delay   LOS
     -----   ----  -------   -----   -----   -----   ---   -----   ---
EB    L      433     1753    0.686   0.467    23.0    C     31.0     D
      T      958     3593    0.995   0.267    42.4    E
      R     1552     2972    0.236   0.522     7.6    B
WB    L      437     1770    0.151   0.467    17.2    C     37.9     D
      T      967     3628    0.983   0.267    39.8    D
      R      400     1500    0.055   0.267    15.9    C
NB    L     1169     3472    0.900   0.467    19.1    C     14.6     B
      T     1661     3559    0.497   0.467    11.0    B
      R      981     1472    0.166   0.667     3.6    A
SB    L       82      461    0.244   0.178    20.9    C     19.1     C
      T      639     3593    0.471   0.178    21.9    C
      R      512     1486    0.412   0.344    14.9    B
                Intersection Delay =  24.7 sec/veh Intersection LOS = C
Lost Time/Cycle, L =   6.0 sec   Critical v/c(x)    = 0.823
---------------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                         Hawkins Hawkins & Osborn
===========================================================================
Streets: (E-W) Blaauwberg                   (N-S) Otto du Plessis
Analyst:                                    File Name: BLOTSA.HC9
Area Type: Other                            10-21-97
Comment: Saturday AM Existing
===========================================================================
           |  Eastbound    |  Westbound    |  Northbound   |  Southbound   |
           | L    T    R   | L    T    R   | L    T    R   | L    T    R   |
           |----  ----  ----|----  ----  ----|----  ----  ----|----  ----  ----
No. Lanes  | 1    2    2   | 1    2    1   | 2    2    1   | 1    2    1
Volumes    | 287  889  482|  82  631   16| 468  248   70|  23  245  210
Lane W (m) |3.66 3.66 3.66|3.66 3.66 3.66|3.66 3.66 3.66|3.66 3.66 3.66
RTOR Vols  |             0|             0|             0|             0
Lost Time  |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
---------------------------------------------------------------------------
                           Signal Operations
Phase Combination 1     2     3     4  |             5     6     7     8
EB  Left          *     *              |NB  Left     *     *
    Thru          *                    |    Thru     *     *
    Right         *                    |    Right    *     *
    Peds                               |    Peds
WB  Left          *     *              |SB  Left           *
    Thru          *                    |    Thru           *
    Right         *                    |    Right          *
    Peds                               |    Peds
NB  Right               *              |EB  Right    *
SB  Right               *              |WB  Right
Green         26.0A 14.0A              |Green    16.0A 18.0A
Yellow/AR       3.0   5.0              |Yellow/AR 3.0   5.0
Cycle Length:  90 secs  Phase combination order: #1 #2 #5 #6
---------------------------------------------------------------------------
                   Intersection Performance Summary
     Lane  Group:  Adj Sat    v/c     g/C                    Approach:
     Mvmts   Cap     Flow    Ratio   Ratio   Delay   LOS   Delay   LOS
     -----   ----  -------   -----   -----   -----   ---   -----   ---
EB    L      461     1788    0.649   0.500    20.6    C     21.9     C
      T     1058     3664    0.918   0.289    29.0    D
      R     1414     3030    0.401   0.467    10.3    B
WB    L      457     1770    0.193   0.500    16.5    C     19.1     C
      T     1048     3628    0.679   0.289    19.5    C
      R      433     1500    0.039   0.289    14.9    B
NB    L      923     3575    0.561   0.433    11.7    B     10.5     B
      T     1588     3664    0.176   0.433    10.1    B
      R      976     1515    0.077   0.644     3.9    A
SB    L      207      932    0.126   0.222    18.1    C     16.4     C
      T      798     3593    0.371   0.222    19.3    C
      R      594     1486    0.405   0.400    12.8    B
                Intersection Delay =  18.2 sec/veh Intersection LOS = C
Lost Time/Cycle, L =   9.0 sec   Critical v/c(x)    = 0.708
---------------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                         Hawkins Hawkins & Osborn
=======================================================================
Streets: (E-W) Blaauwberg Road                (N-S) Janssens Avenue
Analyst:                                      File Name: BLJAA.HC9
Area Type: Other                              10-20-97
Comment: Existing Weekday AM - 2.5 sneakers
=======================================================================
               |  Eastbound     |  Westbound     |  Northbound    |  Southbound
               | L    T    R    | L    T    R    | L    T    R    | L    T    R
               |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes      | 1    2  < 0    | 1    2  < 0    | 0  > 1    1    | 0  > 1    1
Volumes        |  71  844    59|  85  868    32| 148   57    78| 132   56  170
Lane W (m)     |3.66 3.66       |3.66 3.66       |     3.66 3.66|     3.66 3.66
RTOR Vols      |              0|              0|              0|              0
Lost Time      |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
-----------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4 |               5     6     7     8
EB  Left          *                   |NB  Left       *
    Thru          *                   |    Thru       *
    Right         *                   |    Right      *
    Peds                              |    Peds
WB  Left          *                   |SB  Left       *
    Thru          *                   |    Thru       *
    Right         *                   |    Right      *
    Peds                              |    Peds
NB  Right                             |EB  Right
SB  Right                             |WB  Right
Green          30.0A                  |Green    20.0A
Yellow/AR       5.0                   |Yellow/AR 5.0
Cycle Length:  60 secs  Phase combination order: #1 #5
-----------------------------------------------------------------------
                   Intersection Performance Summary
     Lane  Group:  Adj Sat   v/c     g/C                     Approach:
     Mvmts   Cap    Flow    Ratio   Ratio   Delay   LOS   Delay   LOS
     -----  ----  -------   -----   -----   -----   ---   -----   ---
EB   L       159     299    0.477   0.533     7.4    B     6.3     B
     TR     1851    3471    0.551   0.533     6.3    B
WB   L       166     311    0.675   0.533    13.6    B     7.8     B
     TR     1858    3483    0.669   0.533     7.2    B
NB   LT      324     884    0.799   0.367    20.0    C    16.8     C
     R       592    1615    0.167   0.367     8.3    B
SB   LT      304     828    0.774   0.367    18.8    C    14.2     B
     R       586    1599    0.362   0.367     9.1    B
              Intersection Delay =   9.2 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   6.0 sec   Critical v/c(x)    = 0.726
-----------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                         Hawkins Hawkins & Osborn
=======================================================================
Streets: (E-W) Blaauwberg Road                (N-S) Janssens Avenue
Analyst:                                      File Name: BLJAP.HC9
Area Type: Other                              10-20-97
Comment: Weekday PM - 2.5 sneakers
=======================================================================
               |  Eastbound     |  Westbound     |  Northbound    |  Southbound
               | L    T    R    | L    T    R    | L    T    R    | L    T    R
               |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes      | 1    2  < 0    | 1    2  < 0    | 0  > 1    1    | 0  > 1    1
Volumes        | 149 1097    67| 141 1069  148|  43   58    56|  58   60    81
Lane W (m)     |3.66 3.66       |3.66 3.66       |     3.66 3.66|     3.66 3.66
RTOR Vols      |              0|              0|              0|              0
Lost Time      |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
-----------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4 |               5     6     7     8
EB  Left          *                   |NB  Left       *
    Thru          *                   |    Thru       *
    Right         *                   |    Right      *
    Peds                              |    Peds
WB  Left          *                   |SB  Left       *
    Thru          *                   |    Thru       *
    Right         *                   |    Right      *
    Peds                              |    Peds
NB  Right                             |EB  Right
SB  Right                             |WB  Right
Green          30.0A                  |Green    20.0A
Yellow/AR       5.0                   |Yellow/AR 5.0
Cycle Length:  60 secs  Phase combination order: #1 #5
-----------------------------------------------------------------------
                   Intersection Performance Summary
     Lane  Group:  Adj Sat   v/c     g/C                     Approach:
     Mvmts   Cap    Flow    Ratio   Ratio   Delay   LOS   Delay   LOS
     -----  ----  -------   -----   -----   -----   ---   -----   ---
EB   L       169     317    0.946   0.533    47.3    E    11.6     B
     TR     1963    3680    0.670   0.533     7.2    B
WB   L       167     314    0.884   0.533    34.6    D    10.6     B
     TR     1851    3471    0.727   0.533     7.9    B
NB   LT      574    1566    0.219   0.367     8.5    B     8.4     B
     R       592    1615    0.118   0.367     8.1    B
SB   LT      562    1532    0.256   0.367     8.6    B     8.5     B
     R       592    1615    0.167   0.367     8.3    B
              Intersection Delay =  10.7 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   6.0 sec   Critical v/c(x)    = 0.665
-----------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                         Hawkins Hawkins & Osborn
=======================================================================
Streets: (E-W) Blaauwberg Road                (N-S) Janssens Avenue
Analyst:                                      File Name: BLJASA.HC9
Area Type: Other                              10-20-97
Comment: Existing Saturday AM - 2.5 sneakers
=======================================================================
               |  Eastbound     |  Westbound     |  Northbound    |  Southbound
               | L    T    R    | L    T    R    | L    T    R    | L    T    R
               |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes      | 1    2  < 0    | 1    2  < 0    | 0  > 1    1    | 0  > 1    1
Volumes        | 110 1171    50|  69 1067    70|  50   42    55|  60   27  102
Lane W (m)     |3.66 3.66       |3.66 3.66       |     3.66 3.66|     3.66 3.66
RTOR Vols      |              0|              0|              0|              0
Lost Time      |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
-----------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4 |               5     6     7     8
EB  Left          *                   |NB  Left       *
    Thru          *                   |    Thru       *
    Right         *                   |    Right      *
    Peds                              |    Peds
WB  Left          *                   |SB  Left       *
    Thru          *                   |    Thru       *
    Right         *                   |    Right      *
    Peds                              |    Peds
NB  Right                             |EB  Right
SB  Right                             |WB  Right
Green          30.0A                  |Green    20.0A
Yellow/AR       5.0                   |Yellow/AR 5.0
Cycle Length:  60 secs  Phase combination order: #1 #5
-----------------------------------------------------------------------
                   Intersection Performance Summary
     Lane  Group:  Adj Sat   v/c     g/C                     Approach:
     Mvmts   Cap    Flow    Ratio   Ratio   Delay   LOS   Delay   LOS
     -----  ----  -------   -----   -----   -----   ---   -----   ---
EB   L       171     320    0.674   0.533    13.3    B     7.7     B
     TR     1995    3740    0.670   0.533     7.2    B
WB   L       171     320    0.445   0.533     6.8    B     7.1     B
     TR     1989    3729    0.660   0.533     7.1    B
NB   LT      580    1581    0.190   0.367     8.4    B     8.3     B
     R       592    1615    0.110   0.367     8.1    B
SB   LT      536    1462    0.185   0.367     8.4    B     8.4     B
     R       586    1599    0.198   0.367     8.4    B
              Intersection Delay =   7.5 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   6.0 sec   Critical v/c(x)    = 0.480
-----------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                    Hawkins Hawkins & Osborn
======================================================================
Streets: (E-W) Blaauwberg Rd                (N-S) Wood Drive
Analyst:                                    File Name: BLWOA.HC9
Area Type: Other                            5-5-97
Comment: Existing Weekday AM
======================================================================
             |  Eastbound     |  Westbound     |  Northbound    |  Southbound
             | L    T    R    | L    T    R    | L    T    R    | L    T    R
             |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes    | 1    2  < 0    | 1    2  < 0    | 0  > 1    1    | 0  > 1    1
Volumes      |   22  758   26|   89 1224   17| 155   35  111|  70  137  185
Lane W (m)   |3.66 3.66      |3.66 3.66      |     3.66 3.66|     3.66 3.66
RTOR Vols    |              0|              0|             0|             0
Lost Time    |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
----------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4 |              5     6     7     8
EB   Left         *                   |NB  Left      *
     Thru         *                   |    Thru      *
     Right        *                   |    Right     *
     Peds                             |    Peds
WB   Left         *                   |SB  Left      *
     Thru         *                   |    Thru      *
     Right        *                   |    Right     *
     Peds                             |    Peds
NB   Right                            |EB  Right
SB   Right                            |WB  Right
Green          35.0A                  |Green    25.0A
Yellow/AR       5.0                   |Yellow/AR 5.0
Cycle Length:  70 secs  Phase combination order: #1 #5
----------------------------------------------------------------------
                  Intersection Performance Summary
      Lane  Group:   Adj Sat    v/c     g/C                    Approach:
      Mvmts   Cap      Flow    Ratio   Ratio    Delay   LOS    Delay   LOS
      -----   ----   -------   -----   -----    -----   ---    -----   ---
EB    L        103      188    0.252   0.529      6.1    B       7.2    B
      TR      1834     3470    0.528   0.529      7.2    B
WB    L        125      236    0.754   0.529     23.1    C       9.7    B
      TR      1947     3683    0.704   0.529      8.8    B
NB    LT       287      744    0.815   0.386     23.7    C      18.4    C
      R        623     1615    0.220   0.386      9.4    B
SB    LT       548     1421    0.478   0.386     11.0    B      10.6    B
      R        623     1615    0.376   0.386     10.2    B
              Intersection Delay =  10.1 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   6.0 sec   Critical v/c(x)    = 0.780
----------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                    Hawkins Hawkins & Osborn
======================================================================
Streets: (E-W) Blaauwberg Rd                (N-S) Wood Drive
Analyst:                                    File Name: BLWOP.HC9
Area Type: Other                            5-5-97
Comment: Existing Weekday PM - 2.5 sneakers
======================================================================
             |  Eastbound     |  Westbound     |  Northbound    |  Southbound
             | L    T    R    | L    T    R    | L    T    R    | L    T    R
             |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes    | 1    2  < 0    | 1    2  < 0    | 0  > 1    1    | 0  > 1    1
Volumes      | 135 1106  101| 170  957   65|  83   95  134|  36   65   33
Lane W (m)   |3.66 3.66      |3.66 3.66      |     3.66 3.66|     3.66 3.66
RTOR Vols    |              0|              0|             0|             0
Lost Time    |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
----------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4 |              5     6     7     8
EB   Left         *                   |NB  Left      *
     Thru         *                   |    Thru      *
     Right        *                   |    Right     *
     Peds                             |    Peds
WB   Left         *                   |SB  Left      *
     Thru         *                   |    Thru      *
     Right        *                   |    Right     *
     Peds                             |    Peds
NB   Right                            |EB  Right
SB   Right                            |WB  Right
Green          40.0A                  |Green    15.0A
Yellow/AR       5.0                   |Yellow/AR 5.0
Cycle Length:  65 secs  Phase combination order: #1 #5
----------------------------------------------------------------------
                  Intersection Performance Summary
      Lane  Group:   Adj Sat    v/c     g/C                    Approach:
      Mvmts   Cap      Flow    Ratio   Ratio    Delay   LOS    Delay   LOS
      -----   ----   -------   -----   -----    -----   ---    -----   ---
EB    L        155      240    1.012   0.646     67.0    F      10.8    B
      TR      2355     3644    0.626   0.646      4.8    A
WB    L        154      238    1.190   0.646       *     *        *     *
      TR      2339     3620    0.493   0.646      4.0    A
NB    LT       390     1493    0.494   0.262     14.0    B      13.5    B
      R        422     1615    0.346   0.262     12.8    B
SB    LT       400     1528    0.315   0.262     12.6    B      12.4    B
      R        422     1615    0.097   0.262     11.8    B
              Intersection Delay = * (sec/veh)   Intersection LOS = *
(g/C)*(V/c) is greater than one. Calculation of D1 is infeasible.
----------------------------------------------------------------------
```

```
HCM: SIGNALIZED INTERSECTION SUMMARY   Version 2.4g        10-05-1998
                    Hawkins Hawkins & Osborn
======================================================================
Streets: (E-W) Blaauwberg Rd                (N-S) Wood Drive
Analyst:                                    File Name: BLWOSA.HC9
Area Type: Other                            5-5-97
Comment: Existing Saturday AM
======================================================================
             |  Eastbound     |  Westbound     |  Northbound    |  Southbound
             | L    T    R    | L    T    R    | L    T    R    | L    T    R
             |---- ---- ----|---- ---- ----|---- ---- ----|---- ---- ----
No. Lanes    | 1    2  < 0    | 1    2  < 0    | 0  > 1    1    | 0  > 1    1
Volumes      |   78 1089   64| 168 1015   31| 102   53  138|  30   63   65
Lane W (m)   |3.66 3.66      |3.66 3.66      |     3.66 3.66|     3.66 3.66
RTOR Vols    |              0|              0|             0|             0
Lost Time    |3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00|3.00 3.00 3.00
----------------------------------------------------------------------
                          Signal Operations
Phase Combination 1     2     3     4 |              5     6     7     8
EB   Left               *             |NB  Left      *
     Thru               *             |    Thru      *
     Right              *             |    Right     *
     Peds                             |    Peds
WB   Left         *     *             |SB  Left      *
     Thru         *     *             |    Thru      *
     Right        *     *             |    Right     *
     Peds                             |    Peds
NB   Right                            |EB  Right
SB   Right                            |WB  Right
Green          10.0A 22.0P            |Green    15.0A
Yellow/AR       3.0   5.0             |Yellow/AR 5.0
Cycle Length:  60 secs  Phase combination order: #1 #2 #5
----------------------------------------------------------------------
                  Intersection Performance Summary
      Lane  Group:   Adj Sat    v/c     g/C                    Approach:
      Mvmts   Cap      Flow    Ratio   Ratio    Delay   LOS    Delay   LOS
      -----   ----   -------   -----   -----    -----   ---    -----   ---
EB    L        120      291    0.700   0.400     20.6    C      20.5    C
      TR      1383     3458    0.941   0.400     20.5    C
WB    L        415     1753    0.431   0.617      6.3    B       4.6    A
      TR      2266     3674    0.516   0.617      4.3    A
NB    LT       386     1364    0.484   0.283     12.3    B      11.8    B
      R        458     1615    0.363   0.283     11.3    B
SB    LT       442     1559    0.224   0.283     10.7    B      10.6    B
      R        458     1615    0.151   0.283     10.4    B
              Intersection Delay =  12.5 sec/veh Intersection LOS = B
Lost Time/Cycle, L =   9.0 sec   Critical v/c(x)    = 0.724
----------------------------------------------------------------------
```

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B: SPECIFIC/CONTEXTUAL

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A great environment and an attractive public realm are not just created by professional specialists - architects, town planners, urban designers, landscape architects, engineers and so on - but by the love and care of citizens who live and work in these environments. Individual contributions may be quite modest but in total can contribute significantly.

9.9 FURTHER STUDIES REQUIRED

The brief specifically calls on the consultants to identify further studies required to implement the management plan. In addition to the strategic recommendations above (e.g. to investigate Improvement District organisations), the following further studies can be identified.

9.9.1 Street Furniture and Landscape Manual

- A street furniture manual encompassing a design approach to street lighting, benches, public transport stops, litter bins etc. should be prepared to encourage a distinctive and holistic approach to the corridor.
- Similarly, a landscape improvement plan should be implemented.
- Sufficient funds (both capital and consultant fees) should be budgeted for these important interventions.

9.9.2 Roads and Transportation

- **Public transport planning for the Blaauwberg Area:**

This report has highlighted the important role public transport will play in the future of the Blaauwberg Area. There is a need to investigate the provision of High Occupancy Vehicle or public transport lanes on Koeberg Road and Otto du Plessis Drive and the provision of park and ride facilities and transport interchanges along these public transport corridors. The study would also need to identify locations for bus embayments and shelters along major routes within the area.

- **Pedestrian and Cyclist route study for the Blaauwberg Area:**

As public transport becomes a more important mode of transport, the need for adequate feeder service to public transport interchanges like a pedestrian/cyclist path system will also become important. A study will need to investigate the provision of a pedestrian/cyclist path system as it relates to schools, commercial centres and public transport interchanges within the area. Crossing points on major roads like Otto du Plessis and Blaauwberg Road will also have to be investigated.

- **Preliminary design of Blaauwberg Road between Otto du Plessis Drive and Koeberg Road:**

This report has motivated cross sections and an access management plan for Blaauwberg Road. In order to implement the management plan, the local authority will have to have the preliminary design of the route completed, so that developers can be instructed and informed on the location of service roads, side walks etc. The investigation of accident black spots along the route and the implementation of safety improvements should also be addressed in the preliminary design

- **Preliminary design of possible future interchange at the Otto du Plessis Drive/Blaauwberg Road intersection:**

This at grade intersection operates at satisfactory levels of service (LOS C/D) during peak hours. As traffic flows increase, the level of performance of this intersection will decrease and the need will arise to grade separate various critical movements to ensure that the movements are accommodated at reasonable levels of service. The grade separation will also improve the safety situation at the intersection and reduce crossing distances for pedestrians (a point highlighted in the public meetings). The preliminary design of this interchange will be required to reserve the land that will be taken up by the proposed interchange.

- **Blaauwberg Road extension to the east:**

A report has recently been completed that evaluated the eastward extension of Blaauwberg Road on two alignments namely the northern alignment (north of the Caltex tank farm) and the southern alignment (between the Caltex tank farm and the Caltex Refinery).

In light of the recommendations of this report, as well as the Jeffares and Green report, the northern option should be actively pursued.

9.10 CONCLUSION

It is hoped that the preparation of this plan is merely the start of imaginatively managing the future of this corridor which, although suffering from its own set of problems, has immense opportunity to become both the "heart" and the "spine" of Table View.

11.0 ANNEXURES

11.1 THE BRIEF

EXECUTIVE COMMITTEE MEETING : 21 OCTOBER 1997

PROPOSED MANAGEMENT STRATEGY FOR BLAAUWBERG ROAD: SCOPE OF STUDY AND APPOINTMENT OF CONSULTANTS

16/1/21/1/4 : TP/tk

1. BACKGROUND:

The ever present pressures for especially commercial development along Blaauwberg Road in Table View as well as the ad hoc manner in which these pressures has been dealt with up till now, has created a urgent need for a holistic view to be formulated on the existing and future role and character of Blaauwberg Road as well as a strategy for the management thereof. This item serves to obtain Council's approval for the initiation of such a study.

2. THE PURPOSE OF THE STUDY

The purpose of the study would be to determine the future role and character of Blaauwberg Road as well as to develop a strategy for management thereof.

3. THE SCOPE OF THE STUDY

The study will require predominantly transportation and land use/urban design inputs. These inputs need to be developed in an integrated manner throughout the process.

A broad outline of the issues which are to be addressed through the study can be summarised as follows:

3.1 TRANSPORTATION

The following issues will have to be addressed through a traffic and transportation input:

(a) The future and existing role and function of Blaauwberg Road in terms of access, mobility and public transport.

(b) Existing and future role of public transport along Blaauwberg Road

(c) Road capacity (existing and future possibilities)

(d) Potential for higher order uses in terms of traffic generation, road capacity and access and road safety standards.

(e) Existing and future parking requirements.

(f) Relationship with future development specifically the proposed extensions and function of Koeberg Road and Raats Drive.

3.2 LAND USE/URBAN DESIGN

The following land use/urban design inputs would be required:

(a) The role and context of Blaauwberg Road in terms of existing Metropolitan, Sub-Regional and Local planning principles and transport considerations.

(b) An understanding of the existing land use trends and uses along Blaauwberg Road.

(c) Proposals for land uses which could be accommodated along Blaauwberg Road as well as the areas adjacent thereto.

(d) Proposals for the appropriate positioning of land uses

(e) The envisaged character of Blaauwberg Road in terms of Environmental and Urban Design considerations.

(f) Consideration of the appropriate interface with residential uses and potential increase of the scope of proposals to beyond Blaauwberg Road itself.

(g) Criteria for Development and development parameters.

(h) Identification of strategic focus areas

3.3 OTHER ISSUES

There are two local structure plans which are at various stages of completion and which have an impact on Blaauwberg Road. The Blaauwberg Road/Koeberg Road Intersection local structure plan has been completed, however has not been formally approved by Council. There are many issues which remain unresolved such as the future extension of Blaauwberg Road to the east as well as the future Koeberg Road alignment to the north. Because these issues cannot be resolved at this stage and are dependant on processes at higher levels of authority it is proposed that the findings of the structure plan be incorporated into the Blaauwberg Road Management Strategy study where impacts can be dealt with more holistically.

Although no report has been finalised for the Marine Circle local structure plan, there are similar issues which have to be dealt with in more broader terms and it is also proposed that the work done up till now on this structure plan be incorporated into the Blaauwberg Road management plan and that the structure plan not be taken further at this stage.'

4. PROPOSALS FOR CONSULTANTS

A lump sum of R500 000 has been made available on the 1997/1998 budget for Town Planning projects. It is envisaged that the proposed study will be conducted over two financial years for which money will then have to be made available on the 1998/1999 budget for the finalisation of the study.

It is envisaged that the total amount which would be required for the study, including public participation would be in the order of R250 000 of which approximately R100 000 would be required for this financial year. However finalisation on the matter would only be possible through the process of appointment of Consultants.

The following expertise will be required for the proposed study:

(a) Town Planners/Urban Designers:

It is proposed that firms with the above combined expertise be considered for appointment. Proposal: MLH Architects and Planners, Chittenden Nicks Partnership, as well as GAPP Architects and Planners. It is proposed that these three firms be requested to make a presentation to Council with regards to proposals for the study as well as relevant experience in the field and an indication of cost. It is then proposed that an appointment be made through that process.

(b) Traffic and Transport Engineers

It is acknowledged that Hawkins, Hawkins and Osborne as well as Jeffares & Green has already done substantial work on Blaauwberg Road and it might therefore be considered not cost effective to suggest alternative appointments. However, it is believed that a policy for the appointment of consultants should be adopted by Council whereby as a matter of principle alternative consultants be appointed. Ninham Shand is suggested as an alternative in this regard.

It is suggested that the same methodology be followed as for the Town Planning consultants and that these consultants be invited to give a presentation of proposals.

(c) Facilitation

It is uncertain at this stage whether a special appointment would need to be made for the facilitation of public participation, however this need to be considered together with the above-mentioned consultants. Where these functions were fulfilled by either the technical consultants or officials in the past it should be recognised that this requires special skills to ensure effective participation of stakeholders and the general public.

5. PROCESS TO BE FOLLOWED

The following process is envisaged for the study:

(a) Draft study scope and brief, appointment of consultants and overall budget to be approved by Council.

(b) Presentations and appointment of Consultants

(c) Clarification and finalisation of brief and determination of process to be followed as well as identification of key stakeholders and method of involvement.

(d) Identification of Problems and Issues (SWOT ANALYSIS)

(e) Determination of Goals and Objectives

(f) Development of Policies and Strategies

(g) Proposals for implementation and management

(h) Identification of further studies required

The route for approval also needs to be considered and whether this plan is to be adopted formally in terms of the Land Use Planning Ordinance or only as a Council policy.

6. CONCLUSION:

In view of the above it is considered critical that the proposed Blaauwberg Road Management Strategy be commenced with as soon as possible to start giving guidance to decision-making in the area.

RECOMMENDATION:

(a) That the initiation of the proposed Blaauwberg Road Management Strategy BE APPROVED by Council on the basis set out in the attached report.

(b) That the Town Planning firms Chittenden/Nicks Partnership, MLH Architects and Planners and GAPP Architects and Planners as well as the Engineering firms Hawkins, Hawkins and Osborne, Ninham Shand and Jeffares and Green BE APPROACHED with the view to a presentation to Council giving clarity on expertise, broad project proposals and envisaged cost relating to their possible appointment.

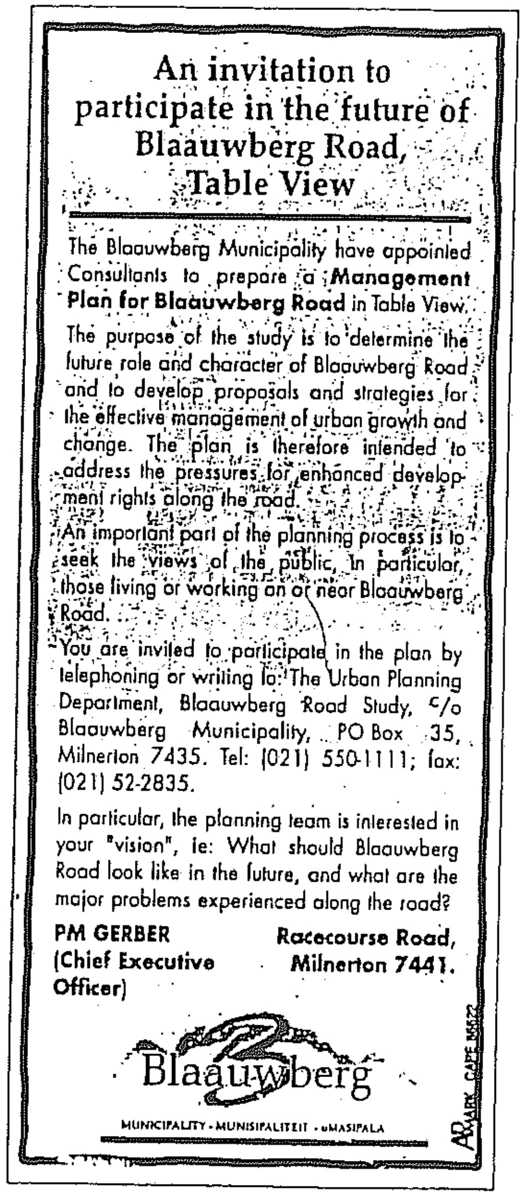
(c) That a further report BE SUBMITTED to Council regarding the budget and phasing of the project.

(d) That the work done on the Marine Circle and Blaauwberg/Koeberg Roads intersection local structure plans BE INCORPORATED into the Blaauwberg Road Management Strategy.

ITEM115 : TP/th

11.2 PUBLIC PARTICIPATION: INVITATION TO CONTRIBUTE TO THE "VISION" FOR BLAAUWBERG ROAD.

Advertised in the Argus on the 17th April 1998.



An invitation to participate in the future of Blaauwberg Road, Table View

The Blaauwberg Municipality have appointed Consultants to prepare a **Management Plan for Blaauwberg Road** in Table View.

The purpose of the study is to determine the future role and character of Blaauwberg Road and to develop proposals and strategies for the effective management of urban growth and change. The plan is therefore intended to address the pressures for enhanced development rights along the road.

An important part of the planning process is to seek the views of the public, in particular, those living or working on or near Blaauwberg Road.

You are invited to participate in the plan by telephoning or writing to: The Urban Planning Department, Blaauwberg Road Study, c/o Blaauwberg Municipality, PO Box 35, Milnerton 7435. Tel: (021) 550-1111; fax: (021) 52-2835.

In particular, the planning team is interested in your "vision", ie: What should Blaauwberg Road look like in the future, and what are the major problems experienced along the road?

PM GERBER
(Chief Executive Officer)

Racecourse Road,
Milnerton 7441.

Blaauwberg
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ADMARK CAPE 56572

11.3 PUBLIC PARTICIPATION: INVITATION TO THE FIRST INTRODUCTORY PUBLIC MEETING.

Advertised in the Argus, Cape Times, Burger, Table Talk and WesKus News on the 30th April 1998.

BLAAUWBERG ROAD MANAGEMENT STRATEGY

INVITATION TO PUBLIC MEETING

The Blaauwberg Municipality have appointed consultants to prepare a "**Management Plan for Blaauwberg Road**" in Table View.

The purpose of the study is to determine the future role and character of Blaauwberg Road and to develop proposals and strategies for the effective management of urban growth and change . The plan is therefore intended to address the pressures for enhanced development rights along the road.

The views of the public play an important role in the planning process, therefore you are invited to attend a public meeting to be held on **13 May 1998** at the **Milnerton Library Lecture Hall**, Pienaar Road , Milnerton at 19h00.