

1989 TO 1999: A DECADE OF TRANSPORTATION PLANNING AND IMPLEMENTATION IN ALBERTON

J R van Straten PrEng, S Coetzee PrEng* and Dr H S Joubert PrEng**
Van Straten Associates Consulting Engineers, P O Box 2925, Alberton, 1450
*Town Council of Alberton, P O Box 4, Alberton, 1450
**ARCUS GIBB, P O Box 35007 Menlo Park 0102

1 BACKGROUND

Alberton is a dynamic town located on the south east boundary of Johannesburg in the Eastern Gauteng Area. A geographical perspective of the Greater Alberton Area and footprint of its growth since 1904 are shown in Figure 1. This location and being the industrial hub in the East Rand contributed to make this a sought after area for further residential settlement, the establishment of industries, as well as service industries and retail facilities to serve its growing population.

As indicated, the town experienced rapid growth specifically during the 1970–1980 decade. Primary reasons for this wave of development can be contributed to the urban sprawl of Johannesburg and the excellent regional and national access provided by roads such as the N3, N12, N17 and R59 on its doorstep.

In 1985, the Town Council realised the need to define, to improve access and to increase mobility in and around the Alberton CBD. This led to the construction of the M31 CBD Ring Road System. At this stage the town was well renowned for its sound industrial basis, Alrode, and its high quality road network.

In 1988, the Town Council resolved to adopt a more formal transportation planning approach. This was inter alia triggered by the need to enhance its recently defined CBD and provide an attractive retail centre that would be competitive in the regional context. Another priority was to address the total inadequate provision of passenger transport facilities.

This new approach, with the focus on growth and development, has resulted in a unique partnership between the Council, senior officials and their respective Departments, the community and a team of professional consultants. This partnership has paved the way for a planning and implementation process that has ensured that the needs for development of transportation infrastructure and services are addressed in a pro-active way and that a framework is created to facilitate development.

This paper attempts to describe the transportation planning approach taken in Alberton, how the focus turned to both process and product to ensure the effective management of the Alberton Transportation System specifically with regard to the activities of planning and implementation. The paper shows how institutional and organisational structures were developed to support the planning process, how other planning initiatives were incorporated into the process and how public participation is accommodated. The conclusion focuses on the result namely implementation projects that address a wide scope of priority needs and confirms the effectiveness of this approach.

Specific reference is made in this paper to Eden Park and Thokoza, the previously disadvantaged neighbouring communities of Greater Alberton. Thokoza was included in the Greater Alberton TLC in 1994.

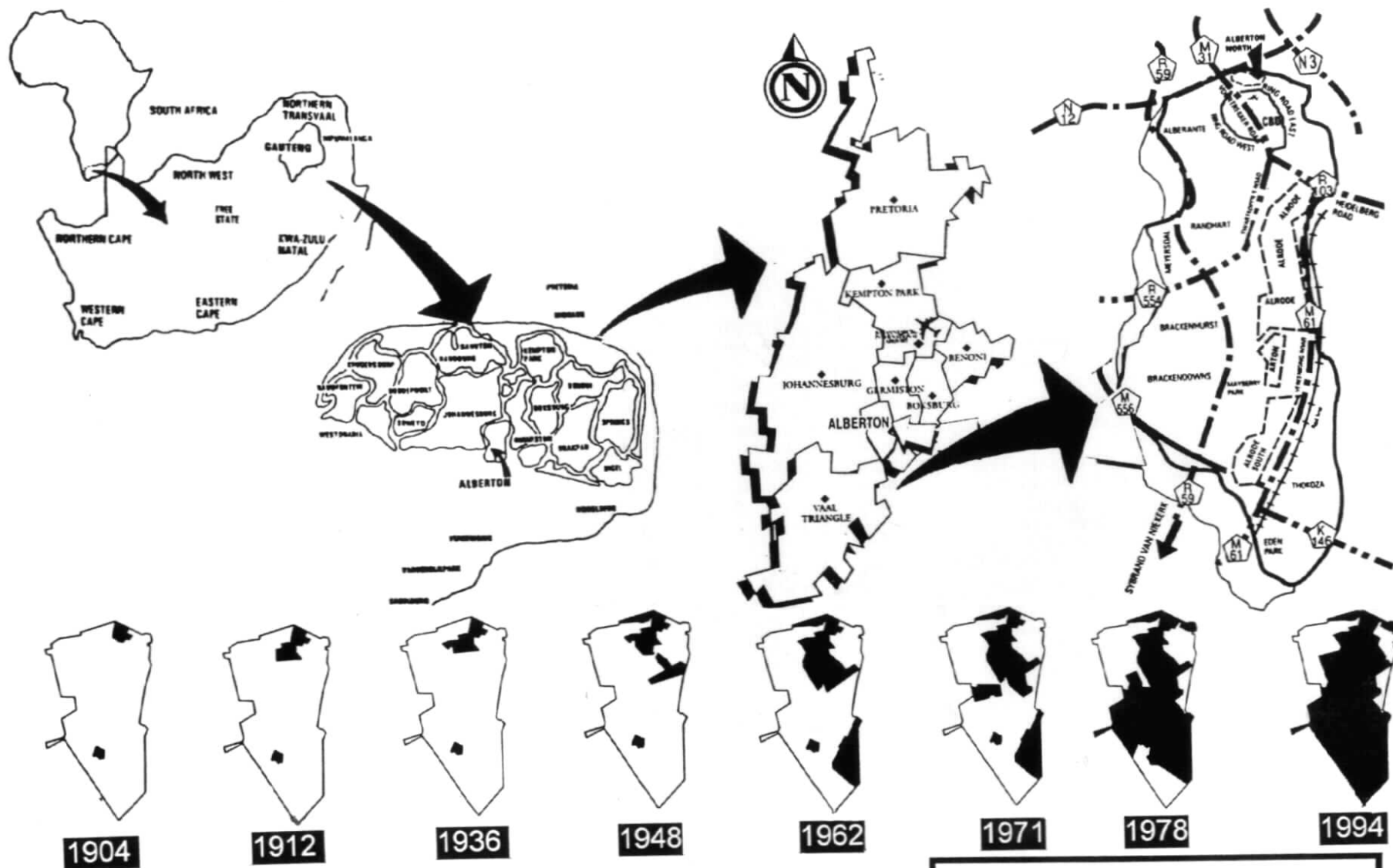


FIGURE 1
GEOGRAPHICAL PERSPECTIVE
AND LOCAL GROWTH

2

THE NEED FOR CHANGE

Before the approach is described in more detail, the need for a changed approach to Transportation Planning in Alberton should be understood. The required change is based on problems and opportunities that can be stated in a broader context as follows :

- Although a magnificent CBD ring road system was completed in 1985, the perception created by Voortrekker Road through the centre of the CBD as a through road persisted. This had multiple negative impacts on the core shopping environment.
- Provision of adequate parking in the Alberton CBD has for many years been a high priority objective. Utilisation surveys, however, showed serious lack of pedestrian links between parking and activity nodes.
- In 1988 no formal taxi ranks existed in the Alberton CBD or adjacent areas. This lack of facilities and resulting negative impacts such as littering, unhygienic conditions and unsafe traffic operations led to the perception that taxi ranks are “push factors rather than pull factors” in the CBD retail context.
- Previous government policy resulted in major delays with regard to the provision of transportation services and infrastructure in areas such as Thokoza and Eden Park. Political unrest, violence, as well as economic factors worsened the situation to the extent that transportation of the majority of people living in these areas became unreliable, uncomfortable, expensive and unsafe.
- Thokoza and Eden Park are located ideally with regard to employment in Alrode and Alrode South. Unfortunately inadequate pedestrian facilities resulted in many serious injuries and road death on the Vereeniging Road and Railway Corridor separating the work place from residential areas.
- Traffic demand at critical access points on the major road network was reaching capacity levels. This required urgent investigation and planning to ensure that acceptable levels of service and support of land use were maintained.
- Land portions south and west of Thokoza, which have seen residential development such as Mpilisweni, the upgrading of Phola Park and Greenfields as well as vacant land west of Alberton with developments such as the De Marionette Shopping Centre, Meyersdal Office and Residential Development and Meyersdal Mall, are both located in transportation corridors that are characterised by over saturated traffic conditions during hours of peak traffic demand. This required the immediate planning for additional road capacity and transportation services.

3

ALBERTON TRANSPORTATION STUDY

During 1989 Alberton Town Council embarked on a Transportation Study that initiated a process of planning, design and implementation of transportation projects over a period of ten years that succeeded in achieving the objectives identified in the study.

The construction of the N3 National Route as a by-pass around Alberton in the early 1970's to replace Voortrekker Road as the link road through Alberton on route from Johannesburg to Durban created the opportunity for the development of the Alberton CBD. One of the bench mark projects in this process was the construction of a Ring Road system around the CBD that was completed in 1985. However, implementation of pedestrianization of Voortrekker Road proved to be a temporary stumbling block and the Council, under direction of the Town Engineer, realised the need for a more structural planning process based on a more analytical approach to develop a situation that

would accommodate transportation demand, satisfy the need of the affected business community, as well as to create the framework for increased economic development.

The Transportation Study that originally focused primarily on transportation demand modelling using the TANDEM suite of programs to gain an insight into demand patterns, to predict future traffic demand, and to analyse a series of road network options, was expanded to include the planning of the Alberton Boulevard. During this process the following aspects were addressed:

i) **Traffic surveys and road side interviews.**

This provided data base of transportation information to co-ordinate the results of future studies.

ii) **Transport Demand Model**

This provided the tool to evaluate future scenarios and analyse road network options.

iii) **Capacity analysis**

Detailed analyses dictated the configuration of intersections and ensured a balanced and functionally efficient system.

iv) **Traffic control**

A co-ordinated traffic signal system replaced the previous vehicle activated controllers and was used to promote an efficient clockwise circulation system on the Ring Roads around the CBD. A roundabout was selected to amplify the entrance to the Boulevard and emphasize the transition in operating environment.

v) **Pedestrian survey**

Realizing the importance of safe and efficient pedestrian circulation, a pedestrian study was undertaken to pin point crossing positions and to develop arcades to integrate parking areas with the Boulevard.

vi) **Parking study**

Observations of parking accumulation, purpose and duration identified the need for additional parking facilities and motivated the concept of a pedestrianized area where provision had to be made for significant vehicular access as well as convenient short term parking at strategic locations.

vii) **Public Transport Study**

Based on observations of commuter patterns, a public transport strategy was developed for the CBD area. A design model was also developed to plan and design minibus taxi ranks.

viii) **Study of loading, services and emerging vehicle needs**

ix) **Traffic Engineering Analyses**

All elements within the Boulevard were dimensioned based on Traffic Engineering analyses.

x) **Public Participation**

Consultation with all affected parties, particularly the business community within the proposed Boulevard, as well as a structured public participation process ensured overwhelming acceptance of the project.

The Transportation Study did not only produce a physical end product, it also entrenched a multi-disciplinary planning process and led to the creation of planning and management structures that still contribute to the efficiency of the Transportation Planning and Implementation process in Alberton.

4 PLANNING PROCESS

a. The Philosophy

The philosophy that underpins the transportation planning approach described in the paper has been developed through experience Transportation Demand Modelling, Traffic Studies in Transportation Systems Management in the Urban Environment, interaction with Transportation and Town Planning officials at Local Authority level, participation in Community Structures that contribute their time and efforts to improve the quality of living in their areas, contact with Political Decision makers, as well as the approach to Local Area Traffic Management (LATM) developed in Australia and a long learning curve based on a cross-pollination with other planning and transportation professions during multi disciplinary projects.

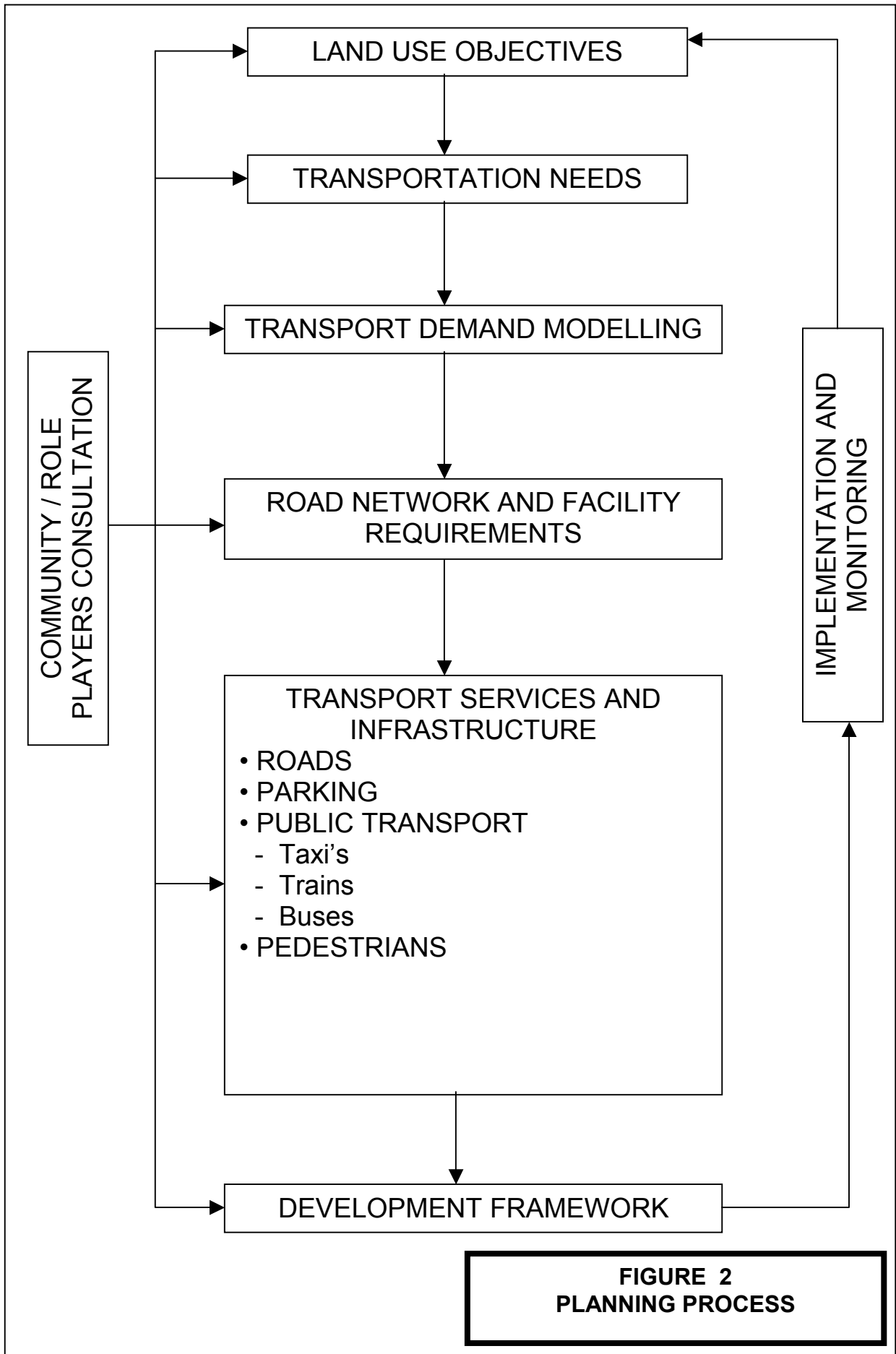
This paper promotes an inter disciplinary approach as an alternative to the typical multi disciplinary approach. In the multi disciplinary approach the conflicting and competing objectives that are amplified by the various disciplines are usually at the centre of the process. Conflict resolution consumes a large amount of time and energy and team members often tend to transgress beyond their fields of expertise. Town Planners often attempt to resolve transportation problems without a proper understanding of the underlying theory and principles and Transportation issues are regarded as inconvenient stumbling blocks in the development process rather than as important stepping-stones to achieve a holistic solution.

The philosophy is that procedures should be developed and implemented with due provision for:

- Participation by various disciplines
- Political input
- Community input
- Participation of relevant authorities
- Planning process
- Technical analysis

b. The Process

The key elements and sequence of the process developed for Alberton are illustrated in Figure 2.



**FIGURE 2
PLANNING PROCESS**

5 INSTITUTIONAL STRUCTURES

The approval and implementation of the Alberton Boulevard project required the co-operation of all Council Departments, as well as the political structure. Implementation of minibus taxi facilities also emphasized the importance to create a forum where a wide range of transportation issues, problems and conflicts can be resolved and where other stakeholders and role players such as the public transport industry and law enforcement officials can participate.

The institutional structures that have been developed during the past decade for the management of transportation planning in Alberton, are shown in Figures 3 and 4. Figure 3 shows the structure that was developed at the decision making level that involved the Council, EXCO, LPDF and IDP Working Groups. Figure 4 shows the structure that was developed at the technical level that involved officials and technical professionals.

6 LAND USE PERSPECTIVE

a. Statistics

Land use statistics reflecting the year 2000 transportation needs of the Greater Alberton Area, are indicated below:

- LAND USE: INDUSTRIAL

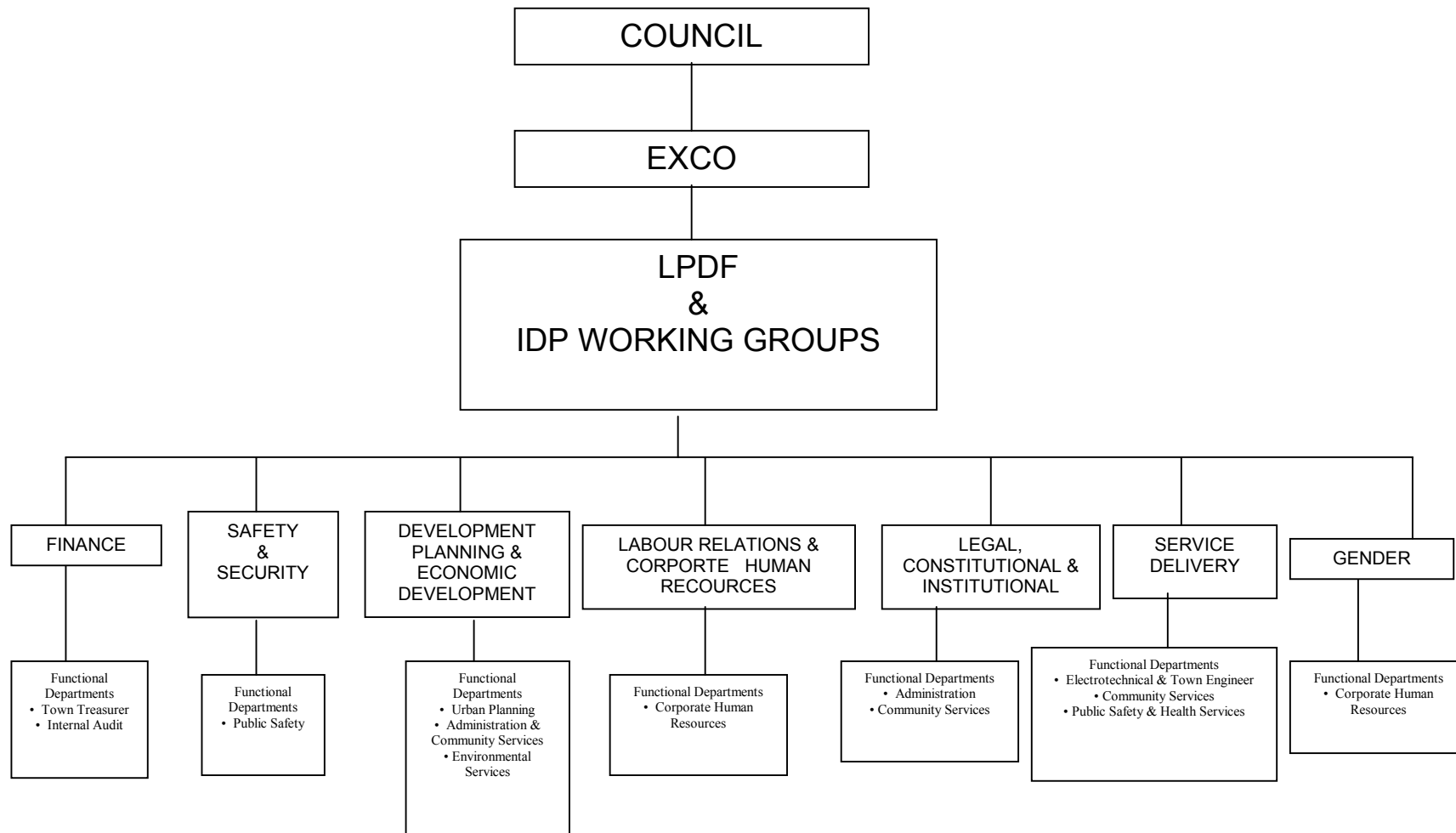
Population	Units
Alberton 89 918	23 896
Thokoza 101 484	13 621
Eden Park 13 966	2 381
TOTAL 205 368	39 898

- LAND USE: INDUSTRIAL

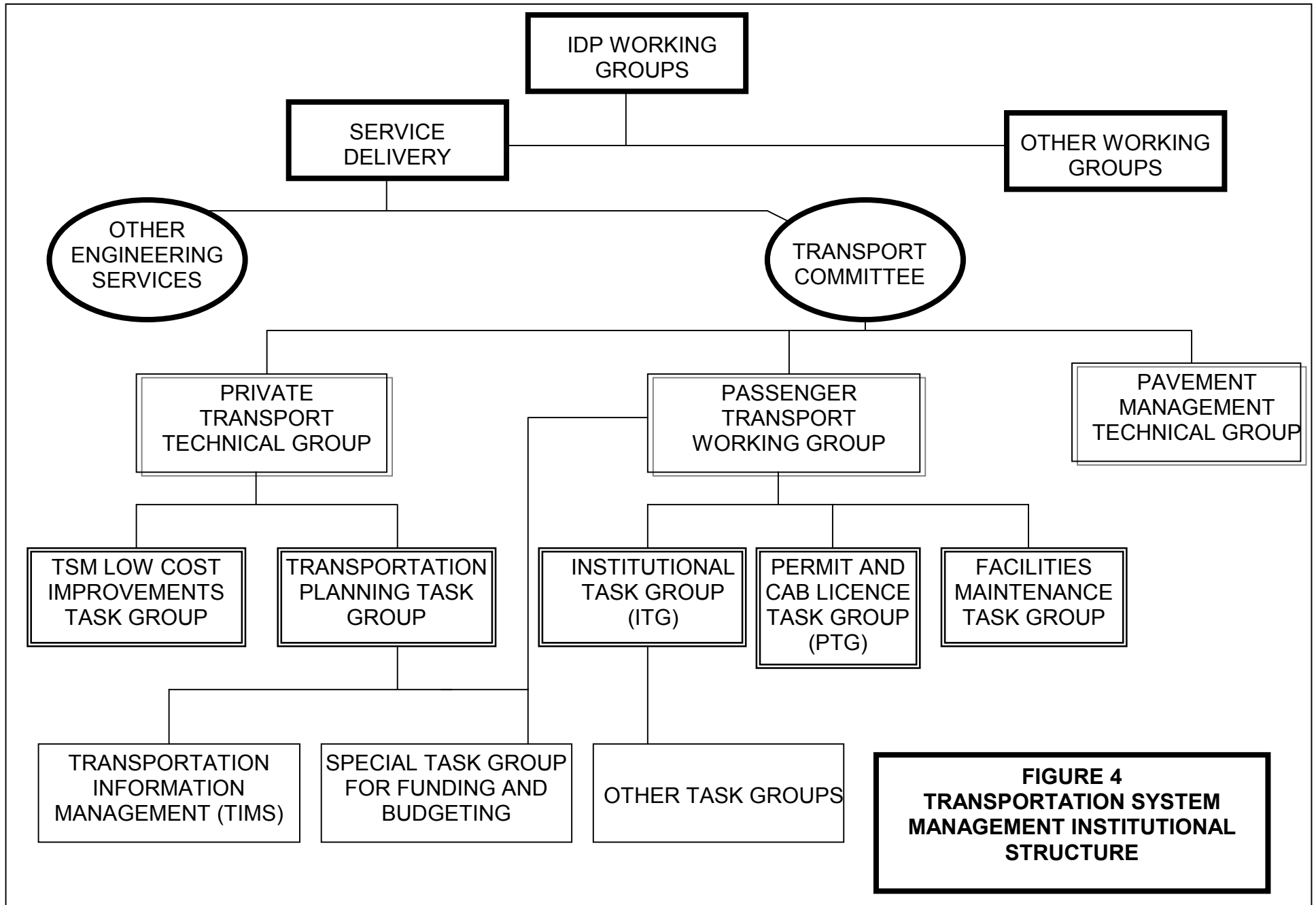
No of Stands	Area (ha)
Alberton 86	82
Alrode 581	652
Alrode South 507	172
TOTAL 1 174	906

- LAND USE: RETAIL AND BUSINESS

No of Stands	Area (ha)
Alberton 493	133
Thokoza 53	0,4
Eden Park 5	0.2
TOTAL 551	134



**FIGURE 3
GREATER ALBERTON INTEGRATED
DEVELOPMENT PLAN 2000
MANAGEMENT & IMPLEMENTATION**



**FIGURE 4
TRANSPORTATION SYSTEM
MANAGEMENT INSTITUTIONAL
STRUCTURE**

b. Trends

Current development trends that direct transportation planning are:

- Residential development to the south specifically low cost housing South of Thokoza and Eden Park and in the new Greenfields townships.
- Commercial and institutional development to the south of the Alberton CBD. A strong medical node including two private hospitals is developing in this area.
- Commercial, retail and medium density residential development in the Klipriviersberg area. This is the largest area of available vacant land in the Greater Alberton area and constitutes an area of approximately 60 hectares.

7 IMPLEMENTATION PROJECTS

To illustrate the effectiveness of the transportation planning approach in terms of addressing the key transportation issues in Alberton, projects that have been implemented during the past decade are categorised and summarised in Table 1. The effort to ensure that projects are not only cost effective in terms of capacity and safety but that they also enhance the project environment must be noted.

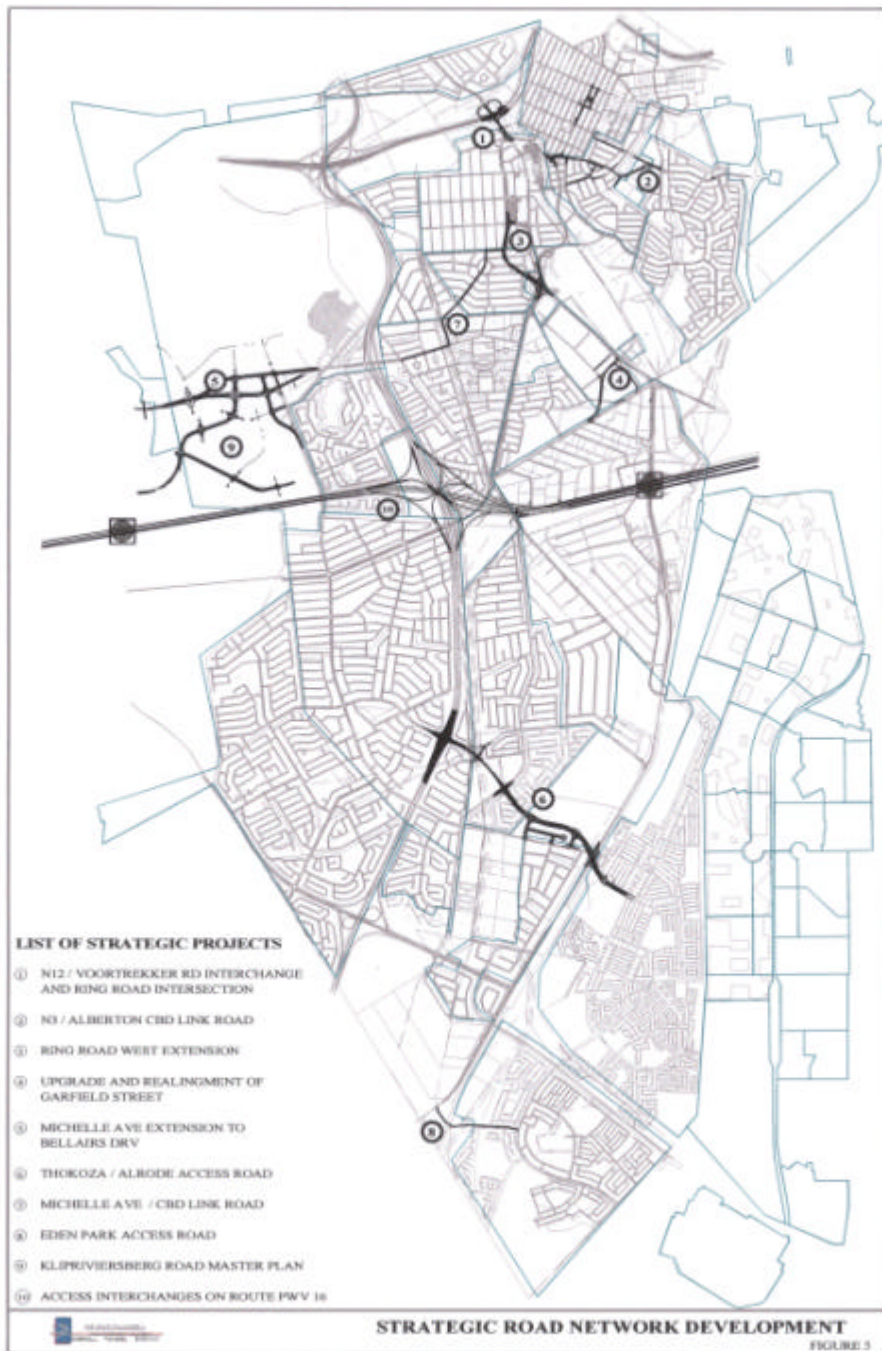
Ten years after the Transportation Study, Alberton is in the unique position that all the objectives have been met and all the recommended projects have been successfully implemented. The additional roads and passenger transport infrastructure provided during this period are indicated below:

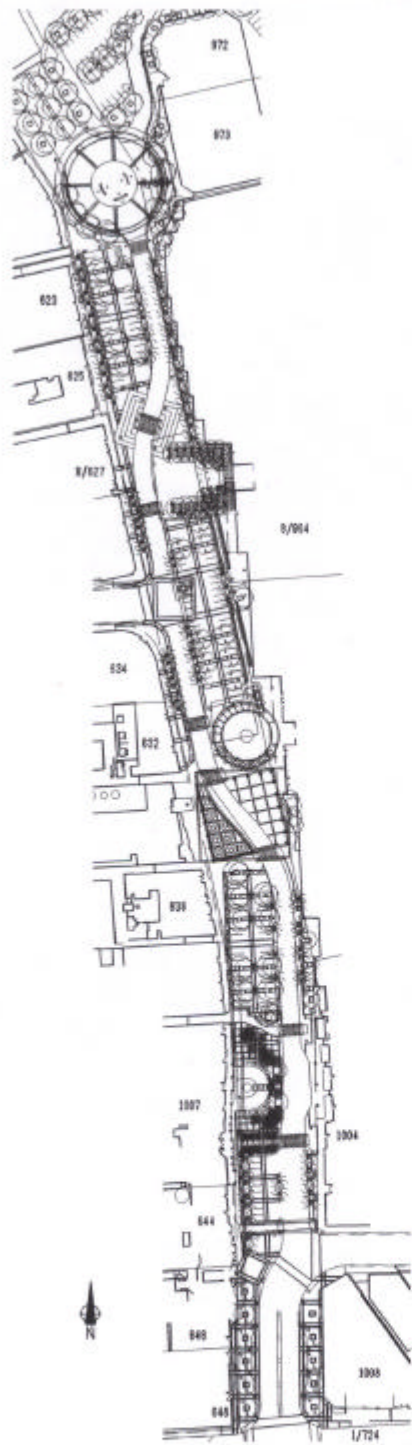
•	ROAD INFRASTRUCTURE		1990		2000	
			Paved roadway (bitumen) 515,0		km 600,0 km	
			Paved roadway (segmented blocks) 0		km 10,1 km	
			Gravel roads 36,0		km 40 km	
•	PUBLIC TRANSPORT: TAXI RANKS		1990		2000	
			NUMBER	CAPACITY	NUMBER	CAPACITY
	Alberton CBD		1	40	3	243
	Alberton North		0	0	1	34
	Thokoza (Kumalo/Yende)		0	0	1	90
	Eden Park		0	0	1	48
	Alrode		1	50	1	50
	TOTAL		2	90	7	465
•	PUBLIC TRANSPORT: BUS TERMINI		1990		2000	
			NUMBER	CAPACITY	NUMBER	CAPACITY
	Terminal		1	8	1	8
	Park and Ride		0	60	1	40

Projects that are regarded as strategic road network development projects are shown in Figure 5. Examples of some urban regeneration and passenger transport projects are shown in Figure 6.

TABLE 1 : IMPLEMENTATION PROJECTS 1990 - 2000

Project/Category/Mode	Project Name	Project Description/Type
Urban Regeneration	<ul style="list-style-type: none"> • Alberton Boulevard 	<ul style="list-style-type: none"> • An integrated vehicle – pedestrian facility
	<ul style="list-style-type: none"> • Parking Areas on Clinton Road 	<ul style="list-style-type: none"> • Parking for approximately 450 vehicles
	<ul style="list-style-type: none"> • Pedestrian walkways and links 	<ul style="list-style-type: none"> • Arcades that link parking to Boulevard
	<ul style="list-style-type: none"> • N12/Voortrekker Rd Interchange and Ring Road Intersection 	<ul style="list-style-type: none"> • Upgrading of interchange and intersections.
	<ul style="list-style-type: none"> • Upgrading of Van Riebeeck Avenue 	<ul style="list-style-type: none"> • Enhancement of activity street and additional parking.
	<ul style="list-style-type: none"> • Upgrading of Second Avenue 	<ul style="list-style-type: none"> • Access management and improved mobility.
	<ul style="list-style-type: none"> • Redruth Street Phase 1 	<ul style="list-style-type: none"> • New bridge over Natalspruit and improved capacity.
	<ul style="list-style-type: none"> • Improved access to Sun Seekers and Zozo 	<ul style="list-style-type: none"> • Access management on CBD Ring Road system.
Passenger Transport Facilities	<ul style="list-style-type: none"> • Padstow Street Taxi Rank 	<ul style="list-style-type: none"> • New CBD taxi rank for 140 vehicles.
	<ul style="list-style-type: none"> • Redruth Street Taxi Rank 	<ul style="list-style-type: none"> • New CBD taxi rank for 50 vehicles.
	<ul style="list-style-type: none"> • Alberton North Taxi Rank 	<ul style="list-style-type: none"> • New CBD taxi rank for 34 vehicles.
	<ul style="list-style-type: none"> • Eden Park Taxi Rank 	<ul style="list-style-type: none"> • New taxi rank for 48 vehicles.
	<ul style="list-style-type: none"> • Kumalo / Yende Street Taxi Rank 	<ul style="list-style-type: none"> • New taxi rank for 90 vehicles.
	<ul style="list-style-type: none"> • Thokoza and Eden park Lay byes 	<ul style="list-style-type: none"> • Approximately 30 lay byes on taxi routes
Pedestrian Facilities	<ul style="list-style-type: none"> • Kumalo Street Pedestrian Bridge 	<ul style="list-style-type: none"> • Pedestrian bridge over Vereeniging Road and railway line.
	<ul style="list-style-type: none"> • Angus Station Pedestrian Bridge 	<ul style="list-style-type: none"> • Pedestrian bridge over Vereeniging Road and railway line.
Strategic Road Projects – Mobility and Access	<ul style="list-style-type: none"> • Michelle Avenue: Glenvista and CBD Link 	<ul style="list-style-type: none"> • Upgrading from a single to a dual carriageway.
	<ul style="list-style-type: none"> • Garfield Street: Upgrading and new link 	<ul style="list-style-type: none"> • Upgrading and realignment of intersection.
	<ul style="list-style-type: none"> • Thokoza / Alrode Access Road 	<ul style="list-style-type: none"> • New link road and interchange from R59 to Thokoza.
	<ul style="list-style-type: none"> • Van Rensburg and Kritzinger Road 	<ul style="list-style-type: none"> • Upgrading of horizontal and vertical alignment.
Local Area Traffic Management (LATM)	Some 250 small to medium sized projects including traffic calming, pedestrian facilities, road closures, guidance signage, access improvements, intersection control etc.	





ALBERTON BOULEVARD



PADSTOW STREET TAXI RANK



SECTION



ELEVATION



PLAN

KHUMALO STREET PEDESTRIAN BRIDGE



EXAMPLES OF URBAN REGENERATION
AND PASSENGER TRANSPORT PROJECTS

FIGURE 6

2 VISION FOR THE NEW MILLENNIUM

Alberton considers itself to be a city of the future – destined to grow and to develop, to create opportunities and to provide a framework and environment to serve the Alberton Community.

Transportation is considered to be a fundamental structuring element and a crucial service element to the community. It is therefore the aim of Transportation planning to be visioning and to create a system that will contribute to meet the needs of a city of the future.

The vision for the new millennium from a transportation viewpoint is to retain the focus on process and product, capitalising on experience gained during the past decade and adjusting the approach where circumstances require. Furthermore, to exploit and build partnerships, guide urban renewal and integration and ensure economic development by providing and maintaining cost effective service and infrastructure to the Alberton Community and other role-players.

The greatest challenge is seen to be the ability to be pro-active and to take the most appropriate actions within an environment that experiences astronomical technological change and where decisions have to be taken with a very low degree of certainty of what the future will be.

It is believed that the above vision will ensure that the Alberton motto stays relevant in all senses of the meaning*a town on the move.*

1989 TO 1999: A DECADE OF TRANSPORTATION PLANNING AND IMPLEMENTATION IN ALBERTON

I R van Straten PrEng, S Coetzee PrEng* and Dr H S Joubert PrEng**
 Van Straten Associates Consulting Engineers, P O Box 2925, Alberton, 1450
 *Town Council of Alberton, P O Box 4, Alberton, 1450
 **ARCUS GIBB, P O Box 35007 Menlo Park 0102

JOHN ROBERT VAN STRATEN

Age : 41
 Parent firm : Van Straten Associates CC
 Position in parent firm : Managing member
 Nationality : South African
 Years with firm : 3

Educational Qualifications

BEng (Civil) (Pretoria) 1982
 BEng (Hons)(Transport) (Pretoria) 1988
 MEng (Transport) (Pretoria) 1992

Professional Qualifications

Registration:
 Professional Engineer
 South African Board for Engineering
 Registration number: 890131
Memberships:
 Member of the South African Institute of
 Civil Engineers (SAICE), RSA
 Member of the South African Association of
 Consulting Engineers (SAACE),, RSA

Professional Career

1977 1982 1985 1987 1990 1992 1993 1994-1997 1997-date	: National Service - SADF Equestrian Centre : Selwyn Price and Partners - Structural engineer : Assistant City Engineer Planning - City Council of Welkom : Jordaan & Joubert Inc (Project Engineer) : Jordaan & Joubert Inc (Associate) : Jordaan & Joubert Inc (Associate and Manager of the East Rand Office) : Jordaan & Joubert Inc (Director and Manager of the East Rand Office) : African Consulting Engineers incorporating Jordaan & Joubert Inc (Director and Manager of the Alberton Office) : Van Straten Associates Consulting Engineers CC (Managing Member)
--	---

Experience: 1982 - date

Experience in the following fields of Civil Engineering
 Structural Engineering
 Municipal Engineering
 Transportation Studies and Traffic Engineering
 Transportation System Management
 Geometrical design
 Construction
 Project Management

Present appointments : June 2000

Larger projects presently appointed for :
 Natalspruit Activity Node Development Framework
 Alberton Southern CBD Road Projects
 Alberton CBD Taxi Rank
 R59-Glen Vista Link Road
 Alberante LATM and Security Area
 Van Rensburg Street Phase 2